

**AUDIT TEAM**

***Jim Williamson, CPA, CIA, City Auditor***

***Matt Weller, CPA, Assistant City Auditor***

***Lori Rice, MBA, Audit Manager***

**CAPITAL STREET PROJECT  
CONSTRUCTION ADMINISTRATION**

**JUNE 5, 2012**

**MAYOR AND CITY COUNCIL**

<b><i>Mick Cornett</i></b>	<b><i>Audit Committee, Mayor</i></b>
<b><i>Gary Marrs</i></b>	<b><i>Ward 1</i></b>
<b><i>Ed Shadid</i></b>	<b><i>Ward 2</i></b>
<b><i>Larry McAtee</i></b>	<b><i>Audit Committee, Ward 3</i></b>
<b><i>Pete White</i></b>	<b><i>Ward 4</i></b>
<b><i>David Greenwell</i></b>	<b><i>Audit Committee, Ward 5</i></b>
<b><i>Margaret S. "Meg" Salyer</i></b>	<b><i>Ward 6</i></b>
<b><i>Ronald "Skip" Kelly</i></b>	<b><i>Ward 7</i></b>
<b><i>Patrick J. Ryan</i></b>	<b><i>Ward 8</i></b>



June 5, 2012

The Mayor and City Council:

The Office of the City Auditor has completed an audit of capital project construction administration procedures ensuring timely completion of street projects final accepted during fiscal year 2011.

Based on the results of our audit, we believe that established procedures are not adequate to ensure timely completion of capital street projects; construction timelines and processes for managing those timelines are not adequately developed; and project timeline information is not adequately accumulated and assessed. Though certain street projects final accepted during fiscal year 2011 were completed within the authorized timeframes, the reasonableness of the authorized timeframes could not be determined for those projects.

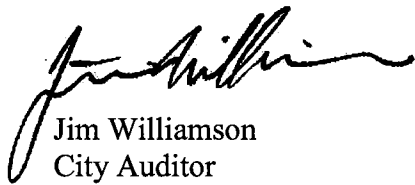
Recommendations for improving project construction administration procedures, discussed in more detail in the attached report, include the following:

- Consideration should be given to allowing contractors to bid varying construction timelines to establish the reasonableness of time authorized for street widening project construction. See Recommendation 1.
- Each location included in street resurfacing contracts should be administered as a separate project. See Recommendation 2.
- The number of days authorized for construction should be clearly defined and consideration should be given to defining authorized construction time in terms of days of traffic restriction to more explicitly recognize citizen inconvenience. See Recommendations 4 and 5.
- Regular monitoring and assessment of project construction timelines should be adequately documented. See Recommendations 7 through 10.
- Project timeline information should be accumulated and assessed to identify and address recurring reasons for project delays. See Recommendations 11, 12 and 15.
- Contractor performance should be sufficiently documented to allow for consideration in future contractor selection decisions. See Recommendations 13 and 14.

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**EXECUTIVE SUMMARY: Audit Report 11-03**

Given the potentially significant impact on working relationships, prior communication with the contractor community will be necessary in implementing many of these recommendations. Additionally, balancing benefits of enhanced project timeliness with related cost considerations will be essential in implementing certain recommendations. These issues along with all other comments, recommendations, suggestions and observations arising from our audit have been discussed in detail with appropriate representatives from management. These discussions were held to assure a complete understanding of the content and emphasis of items in this report. Responses from management are attached to this report.



Jim Williamson  
City Auditor



Matt Weller  
Assistant City Auditor



Lori Rice  
Audit Manager

# CAPITAL STREET PROJECT CONSTRUCTION ADMINISTRATION AUDIT

## AUDIT OBJECTIVES, SCOPE, METHODOLOGY AND BACKGROUND

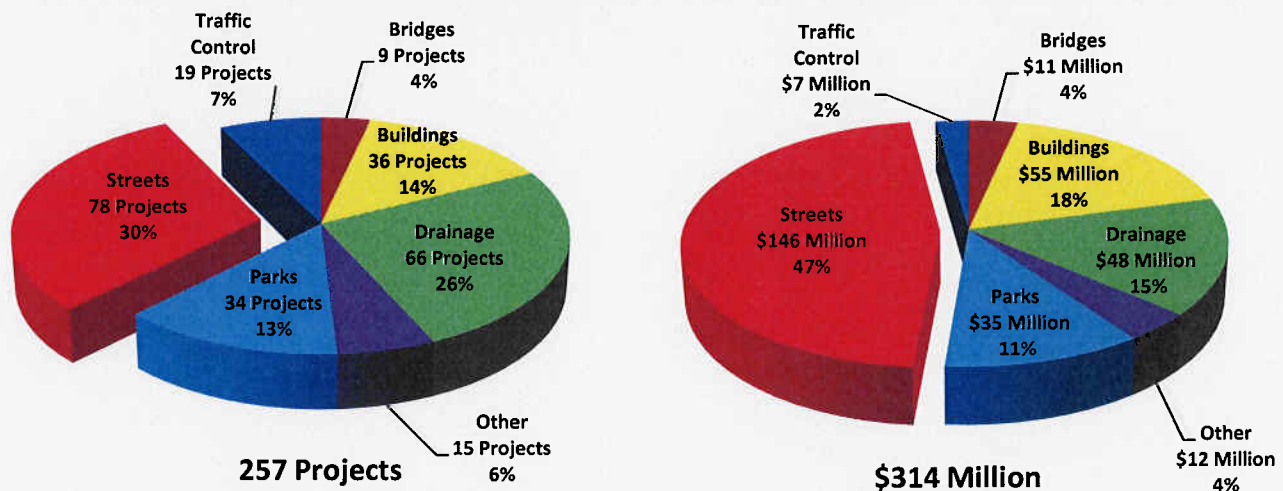
The objective of this audit was to evaluate and determine the adequacy and effectiveness of capital project construction administration procedures established by the Public Works Department (Public Works) to ensure timely completion of street projects final accepted during fiscal year 2011.

Procedures performed during the audit included compilation and assessment of construction project timelines, review and assessment of contract provisions and related enforcement; review of pertinent project documents including City Council Resolutions, project inspection reports, and other relevant correspondence and documentation included in project files; interviews with management regarding processes, procedures and controls; and review of work zone permit data. We did not assess the adequacy of processes for project design, bidding, or final acceptance; work zone permit issuance; or project inspections conducted by the Field Services Division.

We conducted this audit in accordance with generally accepted government auditing standards (GAGAS). GAGAS requires that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our audit findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

The City Council has approved Resolutions to final accept more than 250 capital projects with construction overseen by Public Works costing approximately \$314 million during fiscal years 2008 through 2011. Street projects accounted for 30% of the built projects accepted and 47% of the construction dollars spent during this period as presented in Exhibit 1.

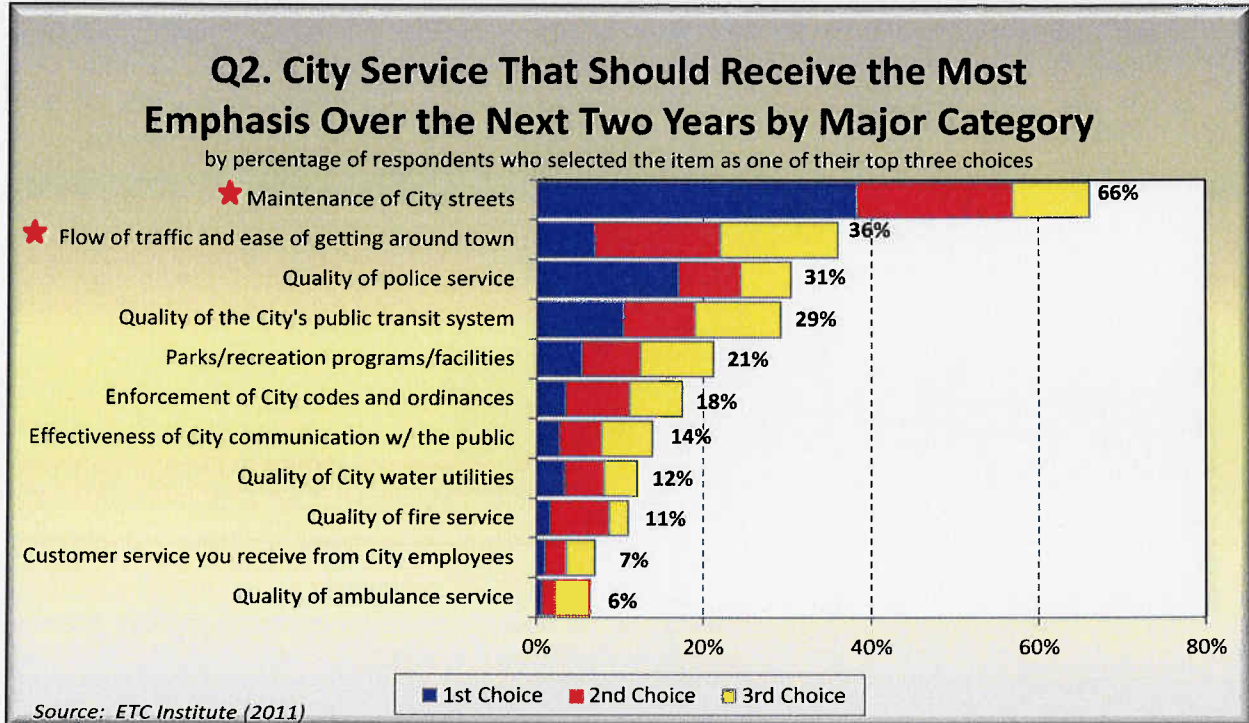
**Exhibit 1. Public Works Administered Capital Projects Final Accepted Fiscal Years 2008-2011**



Source: City Council Resolutions to final accept projects.

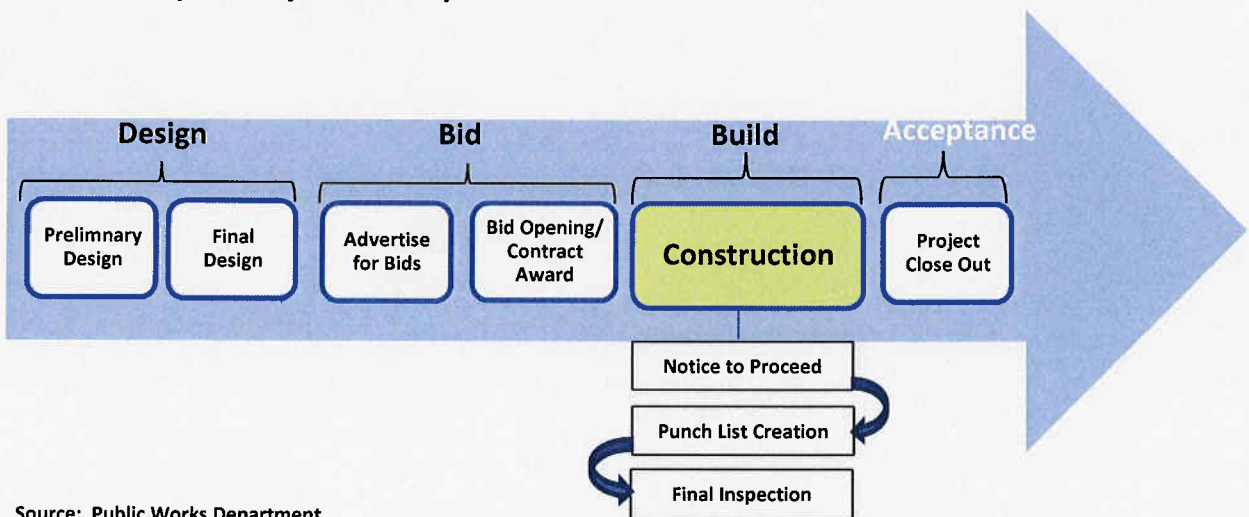
Street conditions and traffic flow are important issues to Oklahoma City citizens. Maintenance of City streets and flow of traffic were ranked within the top three choices of 66% and 36% of citizens surveyed, respectively, as City services that should receive the most emphasis over the next two years in the excerpt of 2011 citizen survey results presented in Exhibit 2.

**Exhibit 2. Excerpt from 2011 Citizen Survey Report Prepared by ETC Institute**



Improving street conditions generally requires street projects significantly impacting traffic flow. Citizen inconvenience is likely to occur during the construction phase of street projects due to restricted traffic flow. Typical capital project delivery phases are illustrated in Exhibit 3.

**Exhibit 3. Capital Project Delivery Phases**



Source: Public Works Department.

Project Managers in Public Works are responsible for oversight of all phases of street projects from preliminary design through final acceptance of the project by the City Council. Project oversight responsibilities include managing the construction phase of street projects to ensure projects are completed within the number of work days specified in the contract and within budget. Project inspection reports containing documentation of work days used by the contractor on the project are prepared by the Field Services Division of Public Works and periodically submitted to the Project Managers for use in monitoring construction progress.

The following sections of this report include recommendations intended to provide constructive suggestions for improving processes and procedures for administering the construction phase of street projects. The contractor community should be consulted in implementing these recommendations due to the potentially significant impact on City working relationships with contractors. Additionally, many of the recommendations may be applicable to administering other capital projects, in which case management should implement the recommendations for those projects as well. Each recommendation included in this report is immediately followed by *management's response*. *Management's responses* are included as Attachment B to this report.

## RESULTS OF WORK PERFORMED

*Established capital project construction administration procedures are not adequate to ensure timely completion of street projects; construction timelines and processes for managing those timelines are not adequately developed and project timeline information is not adequately accumulated and assessed. Though certain street projects final accepted during fiscal year 2011 were completed within the authorized timeframes, the reasonableness of the authorized timeframes could not be determined for those projects.*

### CONSTRUCTION TIMELINES

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Street widening and street resurfacing projects are the two distinct types of street projects administered by Public Works. Street widening projects involve the widening of a street, generally at a single location, and may include other types of projects (i.e. bridges, drainage, waterlines, etc.) as components. Street resurfacing projects generally involve milling and overlaying existing streets at multiple locations. Resolutions to final accept 11 street widening projects and 11 street resurfacing projects were approved by the City Council during fiscal year 2011.

Because project timelines are not maintained by Project Managers (see CONSTRUCTION TIMELINE MANAGEMENT section of this report) construction timeline data was compiled from City Council Resolutions, bidding documents, inspection reports, and correspondence contained in Public Works project files for all 22 of the street projects final accepted during fiscal year 2011. See Attachment A for individual project timelines. Average timelines for street widening and street resurfacing projects were created using the project timeline data

compiled to compare work days authorized for project construction to work days used by the contractor. While citizens are inconvenienced during project construction, traffic flow is not restricted for the entire construction period; however, data is not available to identify when traffic flow is restricted.

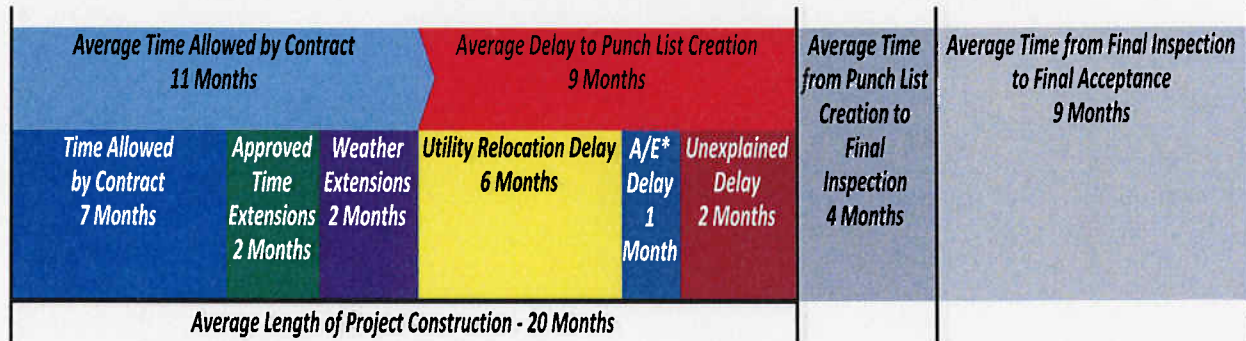
Average timelines for street widening in Exhibits 4 and 5 and street resurfacing projects in Exhibits 6 and 7 were calculated as follows:

- Construction contracts do not specify when counts of work days used by contractors to complete projects should end (see Recommendation 4). Based upon discussions with management, substantial completion and the end of citizen inconvenience from traffic restrictions occur when the project punch list is created. Therefore, we used this as the date of project completion.
- “Average Length of Project Construction” was calculated as the difference between the punch list creation date and the first day of construction work counted in calendar days converted to months.
- “Average Time Allowed by Contract” includes originally allowed contractual work days, City Council-approved requests for work day extensions, and additional work days allowed due to weather, converted to calendar days then to months.
- “Average Delay to Punch List Creation” is the difference between “Average Length of Project Construction” and “Average Time Allowed by Contract”.
- “Unexplained Delays” are delays that could not be explained through examination of documentation in project management files or discussions with Project Managers.
- “Average Time from Punch List Creation to Final Inspection” and “Average Time from Final Inspection to Final Acceptance” do not result in significant citizen inconvenience and were not assessed during the audit. These segments were included to give context to the timelines.

### **Street Widening Projects**

Of 11 street widening projects final accepted during fiscal year 2011, 2 were delayed by utility relocations and 9 were not delayed by utility relocations. The average length of project construction for 2 projects delayed by utility relocations was 20 months including average delays of 9 months as illustrated in Exhibit 4 below.

**Exhibit 4. Average Street Widening Project Timeline Delayed by Utility Relocation**



\* Contracted Architect/Engineer

Public Works revised utility relocation procedures in 2009 to improve the likelihood that all utilities are relocated before construction begins. Construction on both of the projects delayed by utility relocations started prior to implementation of these revised procedures.

The average length of project construction for 9 street widening projects not delayed by utility relocations was 14 months, which is within the average time authorized by contract for completion, as illustrated in Exhibit 5 below.

**Exhibit 5. Average Street Widening Project Timeline Not Delayed by Utility Relocation**



Excluding the 2 projects with utility delays, the individual street widening project timelines in Attachment A show 5 of the projects were not completed within the time allowed by contract, while 4 of the projects were completed within time allowed. These 4 projects were actually completed in less time than authorized which offset the delays on the other 5 projects.

The reasonableness of time allowed for project completion could not be determined because industry standards or other benchmarks were not available. Completion of all street widening projects not delayed by utility relocation within authorized timeframes on average and, in some instances, in less time than authorized suggests that average time authorized for completion may be excessive given the significant control weaknesses discussed later in this report and complexity of these projects.



**Recommendation 1**

After the process recommendations contained within this report are implemented consideration should be given to allowing contractors to propose varying construction timelines and prices for street widening projects. Allowing contractors to bid varying construction timelines would allow the City to establish the reasonableness of time allowed for construction of street widening projects and balance expectations for timeliness of project completion with cost considerations.

***Public Works Response 1***

*Management agrees with the recommendation. Discussion regarding use of alternative bidding methodologies to address project timelines has been on-going for several months. By June 30, 2013, Public Works will bid a street construction project that will be bid using an alternative bidding method as a test case.*

**Street Resurfacing Projects**

Street resurfacing project contracts including multiple locations contemplate separate oversight and management of work at each location by requiring contractors to complete a certain percentage of work at a given location before beginning work at another location. However, all locations included in a street resurfacing project contract are managed as one project.

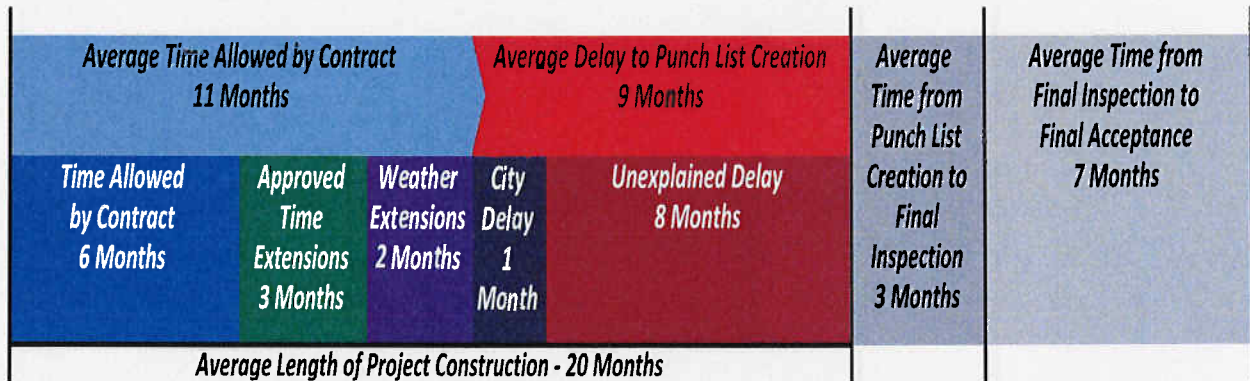
The average length of project construction varies significantly depending on the number of locations included in the resurfacing project. Of 11 resurfacing projects final accepted during fiscal year 2011, 4 included fewer than 10 locations. The average length of construction for these resurfacing projects was 7 months as illustrated in Exhibit 6.

**Exhibit 6. Average Street Resurfacing Project Timeline When Fewer Than 10 Locations**

<b><i>Average Time Allowed by Contract</i></b> <b><i>7 Months</i></b>	<b><i>Average Time from Punch List Creation to Final Inspection</i></b> <b><i>1 Month</i></b>	<b><i>Average Time from Final Inspection to Final Acceptance</i></b> <b><i>5 Months</i></b>
<b><i>Time Allowed by Contract</i></b> <b><i>7 Months</i></b>		
<b><i>Average Length of Project Construction - 7 Months</i></b>		

The average length of construction for 7 resurfacing projects including 10 or more locations was 20 months as illustrated in Exhibit 7.

**Exhibit 7. Average Street Resurfacing Project Timeline When 10 or More Locations**



The average length of project construction nearly triples for resurfacing projects including 10 or more locations, increasing by 13 months. Further, the reasons for most of the delays on street resurfacing projects including 10 or more locations could not be identified through examination of the project files.

**Recommendation 2**

Each location included in a street resurfacing project contract should be managed separately, with separate construction timeline management and established deadlines for completion. Management of construction timelines at each location will allow identification of whether delays occur between work at the multiple locations (little or no citizen inconvenience) or during work at certain locations (citizens inconvenienced).

**Public Works Response 2**

*Management disagrees. It would be very labor intensive and difficult on staff to track work days on each project location. In cases where projects are grouped, the goal is to establish a construction project total value that encourages bidding. Many times, small projects do not bid well when advertised separately. Public Works will implement a system where projects that include multiple locations can be phased to assist in tracking progress and to further encourage timely completion of work.*

**Recommendation 3**

Consideration should be given to limiting locations included in street resurfacing project contracts to a number that can reasonably be managed to timely completion.

### ***Public Works Response 3***

*Management agrees. However, limiting the number of locations could result in increased project costs. Similar concerns are expressed in the response provided in Response No. 2. Effective immediately Public Works will implement a system where projects will be phased to require types of work and/or multiple project locations to be completed by a specific date.*

## **CONSTRUCTION TIMELINE MANAGEMENT**

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Contracts generally specify the following with respect to construction timelines:

- The definition of what constitutes a work day.
- The number of work days allowed for project completion.
- Notice that street or lane closure requires prior approval by the City Engineer.
- The requirement for contractors to submit project schedules before beginning construction and to submit updated project schedules with progress payment claims during construction.
- Liquidated damages to be assessed for failure to complete projects within the number of work days allowed.

Liquidated damage contractual provisions are not enforced. Liquidated damage assessments are not possible due to a lack of documented evidence of construction timeline management and inconsistent measurement of work days used for construction by contractors.

### **Measurement of Work Days Used**

Construction contracts do not specify when counting of work days will end. Field Services Division personnel responsible for completing project inspection reports and logging counts of work days used by contractors stop counting work days used at varying points in the construction timeline. The deadline for completion of project construction is not clear without mutual agreement regarding when counts of work days used by the contractor will end.

### **Recommendation 4**

Construction contracts should specify when work day counts will end and counts of contractor work days used by Field Services Division personnel should end as contractually specified. The contractually specified end of work day counts should represent substantial completion of construction work.

#### ***Public Works Response 4***

*Management agrees. Work days are specifically defined in the City's Standard Specifications for Public Construction. By December 31, 2012 Public Works will revise construction contract language to clearly define substantial completion which will be used to determine when a project is complete and only punch list work is remaining. Because this change will modify construction contracts, Public Works must coordinate with the Municipal Counselor's Office to revise contract language.*

#### **Recommendation 5**

Consideration should be given to contractual specification of construction timelines in terms of days of traffic restriction rather than work days. Such a change would require contractually defining substantial completion of project construction based on when counts of traffic restriction days will end. This approach would provide the optimum method for managing citizen inconvenience from traffic flow restrictions resulting from street construction.

#### ***Public Works Response 5***

*Management agrees. By June 30, 2013 Public Works will develop a lane-rental program that will be incorporated into its street construction and resurfacing projects. The intent will be to limit lane closures and traffic restrictions that may inconvenience citizens. This change will involve both public and private construction and Public Works anticipates an ordinance change in order to implement this recommendation.*

#### **Approval of Street Closures**

Temporary complete street closure for construction has not been approved by the City Engineer as a matter of policy when average daily traffic counts exceed 10,000. Street closure has been allowed on certain recently awarded street widening project contracts to realize shorter construction timelines and lower costs agreed to by the contractor.

#### **Recommendation 6**

When practical, given traffic counts and alternate access routes, consideration should continue to be given to requesting contractors to propose varying construction timelines and prices for street widening projects with and without temporary complete street closure. This would allow management to weigh potentially lower project costs and shorter construction timelines against increased citizen inconvenience from street closure.

### ***Public Works Response 6***

*Management agrees. There have been two recent street construction projects that were constructed under full closure conditions. PC-0369 – May Avenue, NW 192<sup>nd</sup> Street north to the city limits, was constructed under a full closure and resulted in the project being opened to traffic within five months of contract award. PC-0371 – NW 178<sup>th</sup> Street, Portland Avenue to May Avenue is presently under construction and closed to traffic. By closing the street the number of approved work days was reduced by 110, and completion time will be 13 months. The ability to allow full closure will not be applicable to all street construction projects, particularly major arterial streets due to high traffic volumes.*

### **Documented Evidence of Timeline Management**

The following significant deficiencies were identified in the evidence of construction timeline management documented by Project Managers:

- Contractually required project schedules were not consistently obtained from contractors.
- Project progress in terms of work days used by contractors was not routinely assessed nor did routine documented interactions with contractors occur regarding assessed project progress.
- Project files did not include documentation of reasons for all project delays (“Unexplained Delays” in Exhibits 4 and 7), details of utility relocation delays on street widening projects, or documented dispositions of contractor requests for extensions of time to complete street resurfacing projects.

### **Recommendation 7**

Project construction schedules should be consistently obtained from contractors by Project Managers at the beginning of construction and updated schedules should be obtained during construction. The construction schedules should be retained and used to manage construction timeline progress.

### ***Public Works Response 7***

*Management agrees. The standard project specifications used in bidding work will be revised by September 30, 2012 to require mandatory submission of a project schedule prior to issuance of a work order. The specifications will require periodic updates and will be utilized by Project Managers and Construction Inspectors overseeing the work. Training of Project Managers on Critical Path Method (CPM) is required and will be completed during summer 2012.*

## **Recommendation 8**

Project Managers should routinely assess project construction progress in terms of work days used by the contractor compared to work days allowed for project construction and routinely interact with contractors regarding the assessed progress. Routine interactions with contractors should include at a minimum:

- Periodic confirmation of the City's counts of work days used with the contractor and/or reconciliation of the City's work day counts to the counts confirmed by contractors.
- Documented discussions of contractor plans to complete delayed projects within authorized timeframes.

### ***Public Works Response 8***

*Management agrees. Public Works currently conducts a monthly construction progress meeting to review progress on all G.O. Bond projects that are under construction. Effective immediately, Project Managers will perform work-day assessments throughout the construction period. They will notify contractors in writing, and/or meet when it has been determined that the project is approaching a delay status. Project Manager will also continue attending bi-weekly construction meetings with the contractor, and will identify any scheduling concerns as they arise.*

## **Recommendation 9**

Documented evidence of construction timeline management included in project files should be complete. Project Managers should document the reason for, length of, and details relating to all project delays. Approvals or denials of all requests from contractors for extensions of time to complete projects should be documented.

### ***Public Works Response 9***

*Management agrees. Public Works and the Information Technology Department have been developing a new Construction Project Management System (CMS). The system is anticipated to be ready by July 1, 2012. CMS includes functionality whereby correspondence between the City and the contractor can be attached for future reference. Public Works will implement a policy and work to train all Project Managers regarding the procedure to be used to document delays in construction projects.*

## **Enforcement of Liquidated Damage Provisions**

The inability of Public Works to consider enforcing liquidated damage provisions when contractors fail to complete projects within the number of work days allowed in contracts significantly restricts their ability to manage construction timelines. Contractually allowed days to complete projects may be disregarded by contractors due to this inability to consider enforcement.

### **Recommendation 10**

Enforcement of liquidated damage provisions in construction contracts should be considered for each delayed project based on documented assessments of construction timeline management evidence accumulated by the Project Manager. The process for enforcing liquidated damage provisions should be designed such that both the City and the contractor are treated equitably and strong contractor working relationships are maintained.

### ***Public Works Response 10***

*Management agrees. The ability to enforce liquidated damage provisions is contingent on the City's ability to thoroughly document delays in construction. The ability to document delays will be part of the policy changes and staff training in this area.*

## **MANAGEMENT STRUCTURE**

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The structure in Public Works for managing construction timelines does not include sufficient accumulation and assessment of relevant data by Project Managers, evaluating contractor timeliness and architectural/engineering firm (A/E firm) performance, or utilizing performance measurement to be effective.

### **Data Accumulation and Assessment**

Sufficient, relevant construction timeline data is not centrally accumulated and assessed by Project Managers to identify recurring causes of construction delays. Data relevant for managing construction timelines such as expected construction completion dates, work days allowed to complete construction, and work days used for construction are dispersed throughout electronic project files maintained by Public Works within various documents. Accumulating and assessing relevant data could help in identifying recurring causes for project delays, which could then be assessed for appropriate process changes to reduce construction timelines and citizen inconvenience.

Design of sidewalks and wheel chair ramps required by the Americans with Disabilities Act (ADA) is an example of a recurring cause of construction delays identified on street resurfacing projects during the audit. Public Works significantly increased work days allowed to complete

certain resurfacing projects to accommodate anticipated time to design related sidewalks and ramps during construction (field design). Compiling information on these projects could provide management with a basis for determining whether field design of sidewalks and ADA ramps should be continued or these items should be designed before construction begins to reduce citizen inconvenience.

### **Recommendation 11**

Data relevant for managing construction timelines and identifying recurring causes of construction delays should be accumulated by Project Managers in a centralized database. Minimum construction timeline data that should be accumulated includes:

- Expected project completion dates based on contractually allowed work days.
- Quantifications of approved work day extensions by reason for the extension.
- Quantifications of construction delays in work days by reason for the delay.
- Actual project completion dates based on counts of work days used by contractors.

### ***Public Works Response 11***

*Management agrees. The new Construction Management System (CMS) database will include functionality to specifically track project timelines. Project Managers will be trained on the CMS system and will be required to use the system once it is available.*

### **Recommendation 12**

Project Managers should routinely assess accumulated construction timeline data for recurring causes of project delays. The reasons for recurring project delays should be investigated and relevant project management processes should be evaluated to determine if an effective method to reduce or eliminate the recurring delays can be identified.

### ***Public Works Response 12***

*Management agrees. The primary reason for construction delays are utility relocations. Relocation of utilities to accommodate the widening of city streets is not a revenue generating activity for any of the utility companies. As a result, relocating electric, gas, telecommunication, and cable television is not a top priority for the utility companies. Public Works has increased its efforts to be proactive in providing project schedules to all the utility companies far in advance of the scheduled contract award date to allow for time to relocate utilities that are in conflict with planned construction. Utility conferences are held prior to contract award to*



*identify conflicts and establish timelines for relocation. Additional recurring causes will be evaluated as they are identified.*

### **Contractor and A/E Firm Performance Evaluation**

The City Ordinance to establish the Prequalification Review Board (Board) provides that the Board may consider contractor ability to perform timely before approving or renewing prequalification. However, documented evaluations of the timeliness of contractor performance are not performed by Project Managers and routinely presented to the Board for consideration. Some attempts to present contractors to the Board for prequalification denial based on recurring inability to complete projects within authorized timelines have been unsuccessful due to inadequate supporting evidence.

### **Recommendation 13**

Project Managers should perform documented evaluations of the timeliness of contractor performance. Documented evaluation results should be routinely considered by the Prequalification Review Board and prequalification denial considered for contractors consistently demonstrating an inability to complete projects within authorized timelines.

### ***Public Works Response 13***

*Management agrees. By September 30, 2012, Public Works will create standard correspondence that will be used by Project Managers to notify consultants and contractors when they are not completing projects in a timely manner. This correspondence will be the basis for information provided to the City's Prequalification Board when considering prequalification renewal for contractors, and Consultant Selection for architects and engineers.*

The accuracy and completeness of project design and utility location services provided by A/E firms affect project construction timelines. The City Council Resolution adopting procedures for A/E firm selection requires that firms selected be evaluated at the conclusion of projects. Public Works has an A/E firm evaluation form that includes criteria affecting construction timelines. However, these evaluations are not completed. Documented evidence of performance on previous projects is not available for consideration in selection of A/E firms for future projects.

### **Recommendation 14**

Public Works should complete A/E firm evaluations at the conclusion of projects in accordance with the City Council Resolution. Evidence of A/E firm performance with respect to activities affecting construction timelines on previous projects should be considered in selecting A/E firms for future projects.

#### ***Public Works Response 14***

*Management agrees. The A/E consultant evaluation form has not been consistently completed and used for accurately reporting A/E performance. The Department will immediately implement use of the evaluation form so it can be used as a tool in future consultant selection processes.*

#### **Performance Measurement**

Public Works included “the percentage of construction projects completed on time” as a Leading for Results (LFR) performance measure for the Engineering Division in budgets for fiscal years 2011 and 2012. This performance measure was not calculated or used to manage performance.

#### **Recommendation 15**

Public Works should measure “the percentage of construction projects completed on time” and use the result as an indicator of the success of or need for improvement in construction project administration processes.

#### ***Public Works Response 15***

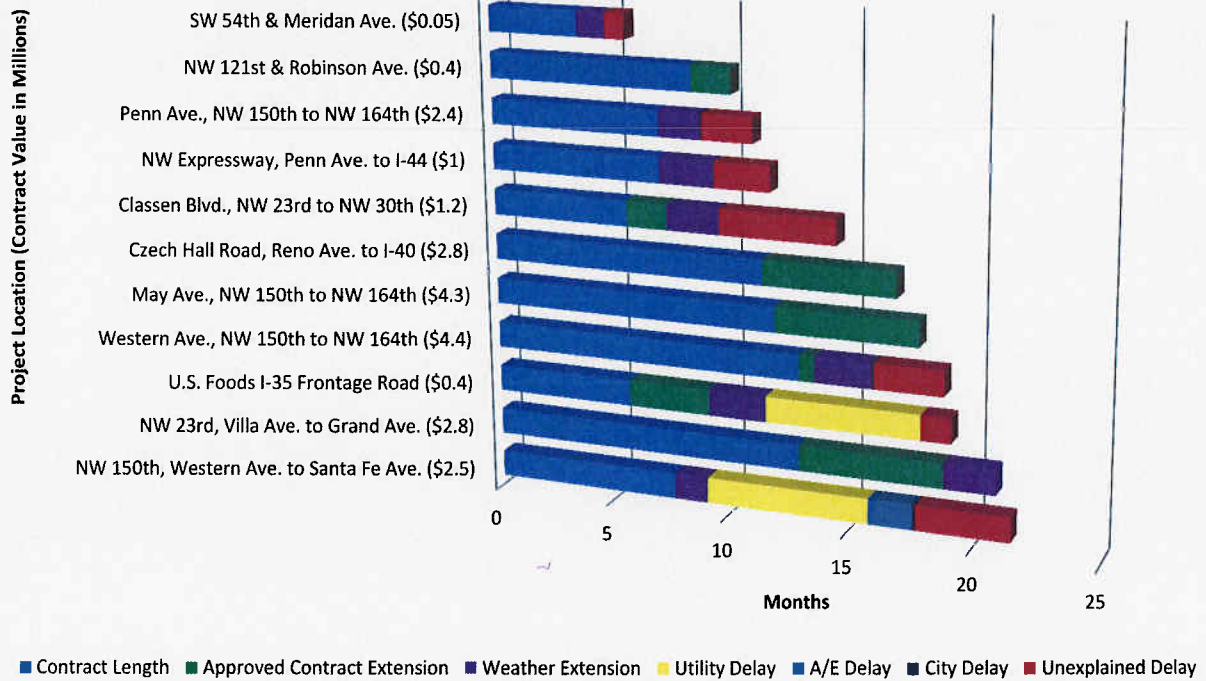
*Management agrees. Time is an important component of project management. By September 30, 2012 changes to the bidding documents incorporating project scheduling requirements will be implemented, and Project Managers will be trained to enforce project timelines. Public Works will add the “percentage of construction projects completed on time” performance measure to its FY 2013 Strategic Business Plan.*

**ATTACHMENT A**

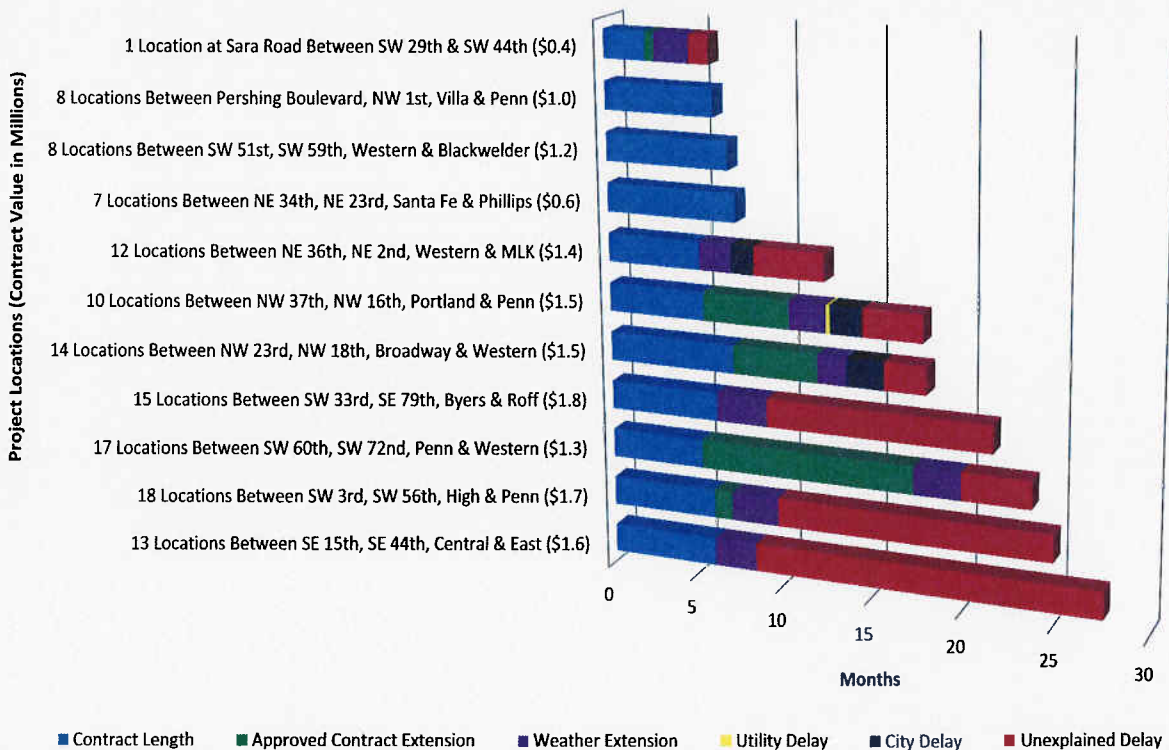
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**INDIVIDUAL PROJECT TIMELINES**

**STREET WIDENING PROJECTS BY LENGTH OF CONSTRUCTION  
FINAL ACCEPTED DURING FISCAL YEAR 2011**



**STREET RESURFACING PROJECTS BY LENGTH OF CONSTRUCTION  
FINAL ACCEPTED DURING FISCAL YEAR 2011**



**ATTACHMENT B**

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**MANAGEMENT'S RESPONSE**



# MEMORANDUM

The City of  
**OKLAHOMA CITY**

TO: Jim Williamson  
City Auditor

THROUGH: James D. Couch  
City Manager

FROM: Eric J. Wenger, P.E., Director  
Public Works / City Engineer

DATE: May 31, 2012

SUBJECT: Management Response to Capital Street Project Construction Administration  
Audit



*Rec for James Couch*

*ejw*

The following constitute the Public Works Department's response to the Draft Audit Report on Capital Street Project Construction Administration dated February 27, 2012.

## Recommendation No. 1:

After the process recommendations contained within this report are implemented consideration should be given to allowing contractors to propose varying construction timelines and prices for street widening projects. Allowing contractors to bid varying construction timelines would allow the City to establish the reasonableness of time allowed for construction of street widening projects and balance expectations for timelines of project completion and cost considerations.

## Response No. 1:

Management agrees with the recommendation. Discussion regarding use of alternative bidding methodologies to address project timelines has been on-going for several months. By June 30, 2013, Public Works will bid a street construction project that will be bid using an alternative bidding method as a test case.

## Recommendation No. 2:

Each location included in a street resurfacing project contract should be managed separately, with separate construction timeline management and established deadlines for completion. Management of construction timelines at each location will allow identification of whether delays occur between work at multiple locations (little or no citizen inconvenience) or during work at certain locations (citizens inconvenienced).

Response No. 2:

Management disagrees. It would be very labor intensive and difficult on staff to track work days on each project location. In cases where projects are grouped, the goal is to establish a construction project total value that encourages bidding. Many times, small projects do not bid well when advertised separately. Public Works will implement a system where projects that include multiple locations can be phased to assist in tracking progress and to further encourage timely completion of work.

Recommendation No. 3:

Consideration should be given to limiting locations included in street resurfacing project contracts to a number that can reasonably be managed to timely completion.

Response No. 3:

Management agrees. However, limiting the number of locations could result in increased project costs. Similar concerns are expressed in the response provided in Response No. 2. Effective immediately Public Works will implement a system where projects will be phased to require types of work and/or multiple project locations to be completed by a specific date.

Recommendation No. 4:

Construction contracts should specify when work day counts will end and counts of contractor work days used by Field Services Division personnel should end as contractually specified. The contractually specified end of work day counts should represent substantial completion of construction work.

Response No. 4:

Management agrees. Work days are specifically defined in the City's Standard Specifications for Public Construction. By December 31, 2012 Public Works will revise construction contract language to clearly define substantial completion which will be used to determine when a project is complete and only punch list work is remaining. Because this change will modify construction contracts, Public Works must coordinate with the Municipal Counselor's Office to revise contract language.

Recommendation No. 5:

Consideration should be given to contractual specification of construction timelines in terms of days of traffic restriction rather than work days. Such a change would require contractually defining substantial completion of project construction based on when counts of traffic restriction days will end. This approach would provide the optimum method for managing citizen inconvenience from traffic flow restrictions resulting for street construction.

Response No. 5:

Management agrees. By June 30, 2013 Public Works will develop a lane-rental program that will be incorporated into its street construction and resurfacing projects. The intent will be to limit lane closures and traffic restrictions that may inconvenience citizens. This change will involve both public and private construction and Public Works anticipates an ordinance change in order to implement this recommendation.

Recommendation No. 6:

When practical, given traffic counts and alternate access routes, consideration should continue to be given to requesting contractors to propose varying construction timelines and prices for street widening projects with and without temporary complete street closure. This would allow management to weigh potentially lower project costs and shorter construction timelines against increased citizen inconvenience from street closure.

Response No. 6:

Management agrees. There have been two recent street construction projects that were constructed under full closure conditions. PC-0369 – May Avenue, NW 192<sup>nd</sup> Street north to the city limits, was constructed under a full closure and resulted in the project being opened to traffic within five months of contract award. PC-0371- NW 178<sup>th</sup> Street, Portland Avenue to May Avenue is presently under construction and closed to traffic. By closing the street the number of approved work days was reduced by 110, and completion time will be 13 months. The ability to allow full closure will not be applicable to all street construction projects, particularly major arterial streets due to high traffic volumes.

Recommendation No. 7:

Project construction schedules should be consistently obtained from contractors by Project Managers at the beginning of construction and updated schedules should be obtained during construction. The construction schedules should be retained and used to manage construction timeline progress.

Response No. 7:

Management agrees. The standard project specifications used in bidding work will be revised by September 30, 2012 to require mandatory submission of a project schedule prior to issuance of a work order. The specifications will require periodic updates and will be utilized by Project Managers and Construction Inspectors overseeing the work. Training of Project Managers on Critical Path Method (CPM) is required and will be completed during summer 2012.

Recommendation No. 8:

Project Managers should routinely assess project construction progress in terms of work days used by the contractor compared to work days allowed for project construction and routinely interact with the contractor regarding the assessed progress. Routine interactions with contractors should include at a minimum:

- Periodic confirmation of the City's counts of work days used with the contractors and/or reconciliation of the City's work day counts to the counts confirmed by the contractors.
- Development of documented recovery plans for delayed projects.

Response No. 8:

Management agrees. Public Works currently conducts a monthly construction progress meeting to review progress on all G.O. Bond projects that are under construction. Effective immediately, Project Managers will perform work-day assessments throughout the construction period. They will notify contractors in writing, and/or meet when it has been determined that the project is approaching a delay



status. Project Manager will also continue attending bi-weekly construction meetings with the contractor, and will identify any scheduling concerns as they arise.

Recommendation No. 9:

Documented evidence of construction timeline management included in project files should be complete. Project Managers should document the reason for, length of, and details relating to all project delays. Approvals or denials of all requests from contractors for extensions of time to complete projects should be documented.

Response No. 9:

Management agrees. Public Works and the Information Technology Department have been developing a new Construction Project Management System (CMS). The system is anticipated to be ready by July 1, 2012. CMS includes functionality whereby correspondence between the City and the contractor can be attached for future reference. Public Works will implement a policy and work to train all Project Managers regarding the procedure to be used to document delays in construction projects.

Recommendation No. 10:

Enforcement of liquidated damage provisions in construction contracts should be considered for each delayed project based on documented assessments of construction timeline management evidence accumulated by the Project Manager. The process for enforcing liquidated damage provisions should be designed such that both the City and the contractor are treated equitably and strong contractor working relationships are maintained.

Response No. 10:

Management agrees. The ability to enforce liquidated damage provisions is contingent on the City's ability to thoroughly document delays in construction. The ability to document delays will be part of the policy changes and staff training in this area.

Recommendation No. 11:

Data relevant for managing construction timelines and identifying recurring causes of construction delays should be accumulated by Project Managers in a centralized database. Minimum construction timeline data that should be accumulated includes:

- Expected project completion dates based on contractually allowed work days.
- Quantifications of approved work day extensions by reason for the extension.
- Quantifications of construction delays in work days by reason for the delay.
- Actual project completion dates based on counts of work days used by contractors.

Response No. 11:

Management agrees. The new Construction Management System (CMS) database will include functionality to specifically track project timelines. Project Managers will be trained on the CMS system and will be required to use the system once it is available.

Recommendation No. 12:

Project Managers should routinely assess accumulated construction timeline data for recurring causes of project delays. The reasons for recurring project delays should be investigated and relevant project management processes should be evaluated to determine if an effective method to reduce or eliminate the recurring delays can be identified.

Response No. 12:

Management agrees. The primary reason for construction delays are utility relocations. Relocation of utilities to accommodate the widening of city streets is not a revenue generating activity for any of the utility companies. As a result, relocating electric, gas, telecommunication, and cable television is not a top priority for the utility companies. Public Works has increased its efforts to be proactive in providing project schedules to all the utility companies far in advance of the scheduled contract award date to allow for time to relocate utilities that are in conflict with the planned construction. Utility conferences are held prior to contract award to identify conflicts and establish timelines for relocation. Additional recurring causes will be evaluated as they are identified.

Recommendation No. 13:

Project Managers should perform documented evaluations of the timeliness of contractor performance. Documented evaluation results should be routinely considered by the Prequalification Board and prequalification denial considered for contractors consistently demonstrating an inability to complete projects within authorized timelines.

Response No. 13:

Management agrees. By September 30, 2012, Public Works will create standard correspondence that will be used by Project Managers to notify consultants and contractors when they are not completing projects in a timely manner. This correspondence will be the basis for information provided to the City's Prequalification Board when considering prequalification renewal for contractors, and Consultant Selection for architects and engineers.

Recommendation No. 14:

Public Works should complete A/E firm evaluations at the conclusion of projects in accordance with the City Council Resolution. Evidence of A/E firm performance with respect to activities affecting construction timelines on previous projects should be considered in selecting A/E firms for future projects.

Response No. 14:

Management agrees. The A/E consultant evaluation form has not been consistently completed and used for accurately reporting A/E performance. The Department will immediately implement use of the evaluation form so it can be used as a tool in future consultant selection processes.

Recommendation No. 15:

Public Works should measure "the percentage of construction projects completed on time" and use the result as an indicator of the success of or need for improvement in construction project administration processes.

Response No. 15:

Management agrees. Time is an important component of project management. By September 30, 2012 changes to the bidding documents incorporating project scheduling requirements will be implemented, and Project Managers will be trained to enforce project timelines. Public Works will add the “percentage of construction projects completed on time” performance measure to its FY 2013 Strategic Business Plan.