

# Improving Data Quality for Pavement Management System



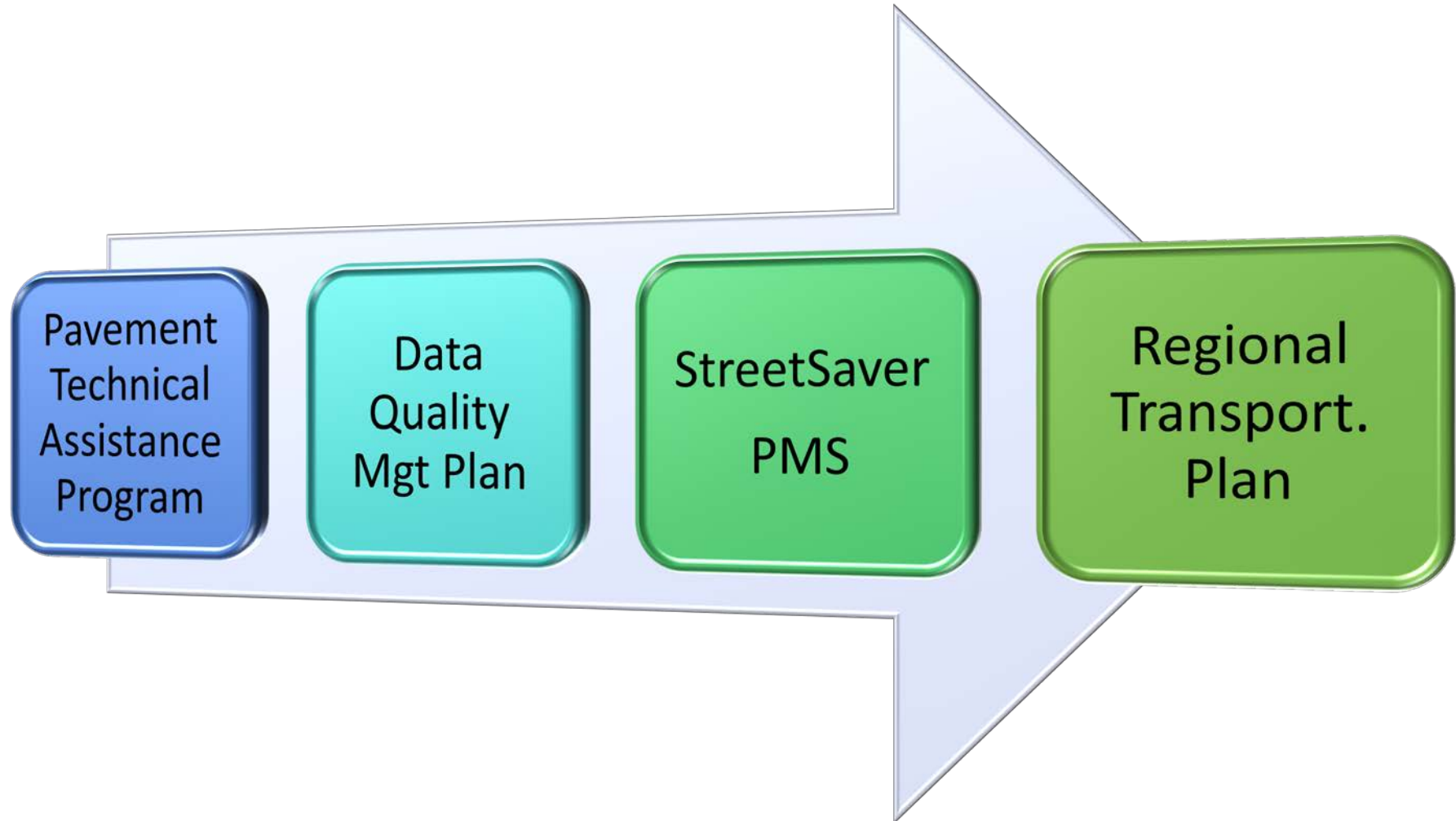
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and  
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*California Pavement Preservation Center*

# Overview

- Background
- Objectives
- MTC's Data Quality Management Plan
- Implementation Status
- Conclusions



# Background



# Objectives

1. Provide consistent pavement distress identification
2. Improve data quality
3. Provide industry standards and accountability
4. Meet min. qualifications requirement for RFP

# Garbage In – Garbage Out



# Data Quality Management Plan

1. Consultant Prequalification
2. Quality Control Plan - before, during, and after production
3. Quality Acceptance
4. Rater Certification Program

Source: <http://tinyurl.com/mm39ptx>

# Consultant Prequalification



**REQUEST FOR PROPOSALS**  
FOR  
**2014 PAVEMENT MANAGEMENT INSPECTION  
SERVICES**  
(February 3, 2014)

8. Develop a formal data collection Quality Management Plan (QMP). The QMP shall address data quality control for data collection as well as quality acceptance by City staff. Preference will be given to **firms that have been pre-qualified through the MTC Data Quality Management Plan.**

# Consultant Prequalification

**Maintenance and Skilled  
Trades Division**



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## **Request for Proposals**

July 13, 2015

### **District Wide Pavement Assessment**

The East Bay Regional Park District (“District”) is soliciting proposals from consultants to inspect the East Bay Regional Park Districts pavement, implement and maintain our pavement management system. The Consultant’s role will be performing a condition survey of asphalt distress on the Districts’ roads, trails, parking lots and service yards and provide budgetary analyses using the Metropolitan Transportation Commissions’ (MTC) Street Saver software. The consultant shall be licensed to use Street Saver and must meet the requirements specified with the **MTC Data Quality Management Plan**. Consultants shall also provide all necessary equipment to assess and update our current Street Saver database.



# Consultant Prequalification



## County of Yolo

DEPARTMENT OF COMMUNITY SERVICES  
PUBLIC WORKS DIVISION

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- B. Proposer must demonstrate that a consultant meets the following minimum consultant qualifications to be eligible for consideration.
1. To be considered for this work, consultant must have a minimum of two (2) years' experience related to fully implementing and /or performing pavement distress surveys for StreetSaver® pavement management system. Selected consultant must be licensed to use StreetSaver® online prior to beginning work, and be certified by Metropolitan Transportation Commission (MTC) through the Rater Certification Program (RCP).

# Quality Control

Quality Management Report (1-7)

Quality Management Plan (1-5)

- 1. Quality Management Approach
- 2. Deliverables, Protocols, and Quality Standards
- 3. Quality Control
- 4. Acceptance
- 5. Quality Team Roles and Responsibilities
- 6. Quality Reporting Plan
- 7. Acceptance of QM Plan

# Quality Acceptance

3<sup>rd</sup> Neutral Party – California Pavement Preservation Center:

- Verifies quality control plans (QCP) adopted by contractors
- Audits QCP results to ensure contractors are meeting the requirements
- Conducts on-project site audits

# Quality Acceptance (cont'd)

- Checks data collected against prior survey data
- Checks calculated PCI values against PCI values based on performance curve in StreetSaver PMS
- Surveys sample sections previously rated by contractor

Source: <http://tinyurl.com/mm39ptx>



CITY OF CAMPBELL  
Public Works Department  
70 N. First Street  
Campbell, CA 95008  
(408) 866-2150

## PCI Difference Between Inspections

Printed: 04/17/2014

| Street ID | Section ID | Street Name   | Begin Location                 | End Location                | Previous Inspection |     | M&R Between Inspection |                |     | Last Inspection |     | Projected PCI | Diff |
|-----------|------------|---------------|--------------------------------|-----------------------------|---------------------|-----|------------------------|----------------|-----|-----------------|-----|---------------|------|
|           |            |               |                                |                             | Date                | PCI | Date                   | Treatment Name | PCI | Date            | PCI |               |      |
| CAPRI     | 20         | CAPRIDR       | S/O HACIENDA AV                | S/O CHAPMAN DR (SOUTH XSEC) | 9/12/2012           | 73  |                        |                |     | 10/2/2013       | 63  | 70            | -7   |
| CAPRI     | 30         | CAPRIDR       | N/O HACIENDA AV                | 511 #N/O HACIENDA AV        | 6/16/2011           | 64  |                        |                |     | 10/2/2013       | 55  | 60            | -5   |
| CAPRI     | 40         | CAPRIDR       | PV CHG(511 FT N/O HACIENDA AV) | END                         | 6/16/2011           | 80  |                        |                |     | 10/2/2013       | 75  | 77            | -2   |
| CARLYN    | 10         | CARLYN AV     | HAMILTON AV                    | LATIMER AV                  | 6/24/2011           | 83  |                        |                |     | 10/11/2013      | 70  | 80            | -10  |
| CARLYN    | 20         | CARLYN AV     | LATIMER AV                     | CAMPBELL AV                 | 6/24/2011           | 83  |                        |                |     | 10/11/2013      | 86  | 81            | 5    |
| CASTCT    | 10         | CASTRO CT     | CASTRO DR                      | END                         | 6/23/2011           | 91  |                        |                |     | 10/19/2013      | 84  | 87            | -3   |
| CASTRO    | 10         | CASTRO DR     | CALADO AV                      | 173#SW/O CASTRO CT          | 6/23/2011           | 91  |                        |                |     | 10/19/2013      | 89  | 87            | 2    |
| CATLPA    | 10         | CATALAPA LN   | WINCHESTER BLVD                | CALIFORNIA ST               | 7/7/2011            | 76  |                        |                |     | 10/11/2013      | 70  | 73            | -3   |
| CENTRL    | 10         | CENTRALAV     | CIVIC CENTER DR                | ORCHARD CITY DR             | 7/7/2011            | 82  |                        |                |     | 10/11/2013      | 86  | 79            | 7    |
| CENTRL    | 30         | CENTRALAV     | GRANT AV                       | HAMILTON AV                 | 9/28/2012           | 66  |                        |                |     | 10/11/2013      | 79  | 63            | 16   |
| CENTRL    | 50         | CENTRALAV     | HAMILTON AV                    | DAVID AV                    | 9/28/2012           | 65  |                        |                |     | 10/11/2013      | 87  | 63            | 24   |
| CENTRL    | 60         | CENTRALAV     | DAVID AV                       | PAYNE AV                    | 9/28/2012           | 65  |                        |                |     | 10/11/2013      | 80  | 63            | 17   |
| CENTRL    | 70         | CENTRALAV     | PAYNE AV                       | ALMARIDA DR                 | 7/6/2011            | 83  |                        |                |     | 10/11/2013      | 69  | 80            | -11  |
| CENTRL    | 80         | CENTRALAV     | ALMARIDA DR                    | WESTFIELD AV                | 7/6/2011            | 75  |                        |                |     | 10/11/2013      | 53  | 72            | -19  |
| CENTUC    | 10         | CENTURY CT    | CENTURY DR                     | END                         | 7/8/2011            | 71  |                        |                |     | 10/4/2013       | 53  | 67            | -14  |
| CENTUR    | 10         | CENTURY DR    | VIRGINIA AV                    | 85#E/O WREN WY @ CTY        | 7/8/2011            | 66  |                        |                |     | 10/4/2013       | 71  | 62            | 9    |
| CHAMBR    | 10         | CHAMBERLIN LN | HACIENDA AV                    | SAN TOMAS AQUINO RD         | 6/14/2011           | 95  |                        |                |     | 10/1/2013       | 90  | 89            | 1    |
| CHAPMN    | 10A        | CHAPMAN DR    | VIRGINIA AV                    | PVMNT CHANGE                | 6/16/2011           | 86  |                        |                |     | 10/3/2013       | 37  | 84            | -47  |

# Rater Certification Program

## Eligibility:

- P-TAP consultant's raters
- Local agency's raters
- Any other data collection vendors



# Rater Certification

- Good for 2 years
- Must attend a distress survey class
- Pass an 8-hour field Rater Certification Exam
- Pass an online knowledge exam

## Recertification:

- Attend a refresh distress survey course
- Pass an online knowledge exam
- Re-certified for another 2 years
- Every 4 years must take field test



# Administration of Certification

California Pavement Preservation Center (California State University, Chico)

- ❑ Manages registration
- ❑ Manages issuance and renewal of certification
- ❑ Manages and develops online exam



# Acceptance Criteria

- 1)** *50% or more of the PCI values must be within +/-8 PCI points of the ground truth (12 out of 24 sections)*
- 2)** *12.5% or less of the PCI values can be between +/-18 PCI points of the ground truth (3 or less out of 24 sections)*

# Implementation Status

## Field Exams

- 2013 – 77% pass (out of 26)
- 2014 – 47% pass (out of 15)
- Test sites near MTC
- MTC modified ASTM D6433 protocol
- 20 AC sample sections
- 4 PCC sample sections



# Test Sites



# Online Knowledge Exam

30 random questions in four categories:

- Inspection procedures
- Asphalt pavement distress identification
- Concrete pavement distress identification
- PCI calculations

# Online Knowledge Exam

What distress type is predominant in this photo?

- A. Longitudinal and transverse cracking
- B. Alligator cracking
- C. Patching and utility cuts
- D. Rutting



# Conclusions & Recommendations

1. DQMP is a “Work in Progress”
2. DQMP provides a documented framework for dealing with consultant selection, quality control, and quality acceptance
3. QCP must be established prior to data collection
4. Rater Certification Program was developed to ensure data quality standards among raters

Just Remember...

**If it wasn't  
documented, it  
didn't happen!**

# References

- NCHRP Synthesis of Highway Practice 401 – Quality Management of Pavement Condition Data Collection (Flintsch and McGhee 2009)
- Practical Guide for Quality Management of Pavement Condition Data Collection, FHWA 2013



# Questions?

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