



9th International Conference on
MANAGING PAVEMENT ASSETS (ICMPA9)

Improving Data Quality for Pavement Management System

Sui G. Tan

**Metropolitan Transportation Commission
and**

DingXin Cheng

California Pavement Preservation Center



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

Overview

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



Background

Pavement
Technical
Assistance
Program

Data
Quality
Mgt Plan

StreetSaver
PMS

Regional
Transport.
Plan

Objectives

- (1) Provide consistent pavement distress identification
- (2) Improve data quality
- (3) Provide industry standards and accountability
- (4) Meet the minimum qualifications required for responding to RFP

Garbage In – Garbage Out



Data Quality Management Plan

- Consultant prequalification
- Quality control plan - before, during, and after production
- Quality acceptance
- Rater Certification Program (New)

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.**

Quality Acceptance

3rd 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>

End Location	Previous Inspection		M&R Between Inspection			Last Inspection		Projected PCI	Diff
	Date	PCI	Date	Treatment Name	PCI	Date	PCI		
S/O CHAPMAN DR (SOUTH XSEC)	9/12/2012	73				10/2/2013	63	70	-7
511 ft N/O HACIENDA AV	6/16/2011	64				10/2/2013	55	60	-5
END	6/16/2011	80				10/2/2013	75	77	-2
LATIMER AV	6/24/2011	83				10/11/2013	70	80	-10
CAMPBELL AV	6/24/2011	83				10/11/2013	86	81	5
END	6/23/2011	91				10/19/2013	84	87	-3
173 ft SW/O CASTRO CT	6/23/2011	91				10/19/2013	89	87	2
CALIFORNIA ST	7/7/2011	76				10/11/2013	70	73	-3
ORCHARD CITY DR	7/7/2011	82				10/11/2013	86	79	7
HAMILTON AV	9/28/2012	66				10/11/2013	79	63	16
DAVID AV	9/28/2012	65				10/11/2013	87	63	24
PAYNE AV	9/28/2012	65				10/11/2013	80	63	17
ALMARIDA DR	7/6/2011	83				10/11/2013	69	80	-11
WESTFIELD AV	7/6/2011	75				10/11/2013	53	72	-19
END	7/8/2011	71				10/4/2013	53	67	-14
85 ft E/O WREN WY @ CTY	7/8/2011	66				10/4/2013	71	62	9

Rater Certification Program

Eligibility:

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



How to be Certified?

- Must attend a distress survey class
- Pass an 8-hour field exam
- Pass an online knowledge exam

What distress type is predominant in this photo?

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



Rater Certificate

- Good for 2 years

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

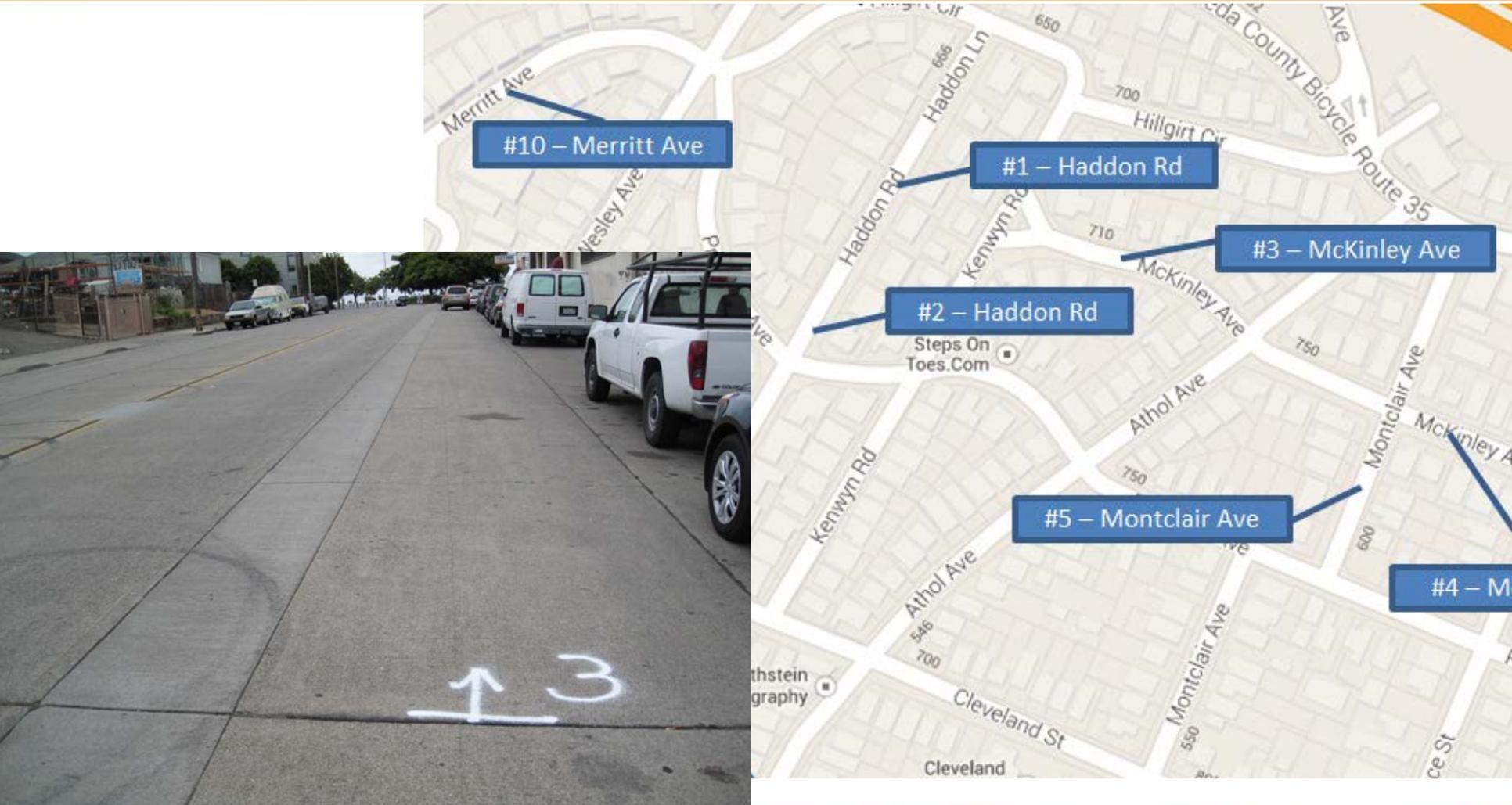
- 1) 50% or more of the PCI values must be within ± 8 PCI points of the ground truth (12 out of 24 sections)**
- 2) 12.5% or less of the PCI values can be between ± 18 PCI points of the ground truth (3 or less out of 24 sections)**

Implementation Status

- Field Exam
 - 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

Conclusions & Recommendations

- Condition data (PCI) drives treatment recommendations
- DQMP provides a documented framework for dealing with consultant selection, quality control, and quality acceptance
- QCP must be established prior to data collection
- Rater Certification Program was developed to ensure data quality standards among raters

Just Remember...

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

Questions

Sui Tan, PE
StreetSaver Program Manager
Metropolitan Transportation Commission
stan@mtc.ca.gov

Dr. DingXin Cheng, Director
California Pavement Preservation Center
dxcheng@csuchico.edu

