Pavement & Materials Partnering Committee
Work Product Scoping Document
Revised
Statistical Pay Factors
November 27, 2018

Task Group

Asphalt Task Group

Problem Process

☒ Annual
☐ Expedited
☐ Emerging Initiative

Title

Statistical Pay Factors

Statement of Effort/Improvement

The California Department of Transportation (Caltrans) strategically implemented Superpave (gyratory compactor) specifications for HMA without Statistical Pay Factors in Summer of 2014. After 4 years of fine-tuning the Superpave specifications, Caltrans and Industry are ready to insert Statistical Pay Factors into the Superpave specifications in Section 39. Statistical Pay Factors will incentivize 5 material properties and construction tests for binder content, air voids, the #200 and #8 sieves and field compaction. All pay factor items are related to pavement performance. The Contractor can anticipate a pre-established increase in payment for a Contract bid-item in which a superior level of quality and workmanship, determined by statistical means, has been performed.

Purpose

FHWA has directed Caltrans to implement statistical pay factors for Superpave specifications.

Statistical Pay Factors specifications require the contractor to implement a comprehensive quality control program for HMA production and placement. The QC plan will measure and inspect quality characteristics that impact HMA production/construction at a time when corrective action can be taken to prevent appreciable nonconforming material from being incorporated into the project. The quality control plan establishes minimum quality control testing frequencies to adequately monitor HMA quality. In placing the responsibility for quality on the contractor the quality control program will increase project efficiency, product quality, and contractor accountability.

The new specifications will reduce-state testing by using verified contractor quality control test results for acceptance and payment. State testing will be limited to verification of the contractor's quality control test results for the 5 incentivized Quality Characteristics. The new specifications will provide an incentive for the contractor to consistently produce materials and construction products that exceed the minimum level of quality and workmanship specified.

Background

The QC/QA Program, precursor to Statistical Pay Factors for HMA was implemented and extensively used by Caltrans since 1995. Caltrans and Industry both recognize the value of Quality Control/Quality Assurance (QC/QA) specifications and that failure to comply with either material or construction specifications can result in reduced performance or the premature failure of highway components. Caltrans' current sampling and testing program for the newly revised Section 39 (Superpave) does not include QC/QA specifications for the acceptance of Hot Mix Asphalt (HMA). Caltrans and Industry want to continue to use QC/QA specifications with the new Section 39 specifications to ensure that the quality of the materials and construction incorporated in highway products satisfy the intended use.

Approach

1. Street Ready Assurance

   Collaborate with industry in finalization, implementation, and evaluation of recently completed specification

   Evaluate one construction season data from pilot projects for use to refine specification requirements

   Gather and evaluate contractor and RE feedback after one construction season on the use of the specification on the project for further specification refinement.

2. Performance Tracking/Management

   Identify or develop a data collection program for the first construction season of the Statistical Pay Factors

   Develop an evaluation program to analyze and report data collected for the first construction season to consider:

   - The appropriateness of pay factors
   - Appropriateness of specification limits
   - Consistent District implementation
   - Value (cost to benefit) of the specification changes
   - Number and character of claims associated with the new specification
   - Overall specification effectiveness.
   - Variability of test results for incentivized quality characteristics

3. Consistently Implemented

   Develop a training program for the district and industry personnel for Statistical Pay Factors.

   Assign HQ Statistical Pay Factor Coordinator to work closely with District statistical pay factor (SPF) Coordinators.

   Establish Frequently Asked Questions (FAQ) webpage for Section 39 at HMA Construction page.

   Consistently implement the Statistical Pay Factor specifications across all Districts

4. Pilot Projects (if anticipated)

   All Statistical Pay Factors in the first construction season can be considered as pilot projects.

5. Research Needs (if necessary)

   N/A

Team Members (Indicate CT Chair and Industry Lead)

CT/Industry	Division/Firm Name	Member Name
CT	Maintenance	Kee Foo (Chair)
CT	Construction	Pete Spector
CT	METS	Guadalupe Magana
CT	District	Venu Gopal
Industry	Granite Construction	Tony Limas (Lead)
Industry	Vulcan Materials	Pascal Mascarenhas
Industry	George Reed	Phil Reader
Industry	Sully-Miller Contracting	Don Vivant

Team should not include no more than 4 Caltrans staff and 4 members from Industry. See PMPC Standard Operating Procedures for more information.

Objectives/Deliverables/Due Dates

The expected deliverables for the Section 39 STATISTICAL PAY FACTOR specifications are:

- Develop automated calculations sheets for determining the statistical pay factors
- Develop Statistical Pay Factors NSSP, similar to those used in Section 39 of the 2010 Standard Specifications
- Update the Quality Control Manual for Statistical Pay Factors

- Designated and trained a HQ personnel as the HQ SPF Coordinator
- Develop a training program for the district and industry personnel to implement the Statistical Pay Factors.
- Develop a charging mechanism for District staff to attend Statistical Pay Factor training.
- Develop data collection for first construction seasons of Statistical Pay Factors
- Develop an evaluation plan to analyze all data collected from the first construction season
- Update cost estimates to reflect SPF impacts at the project level
- Established a FAQ webpage for SPF

Details:

Milestones	Name - Responsible Party	Due Date (Start/Complete)
Automated calculations sheet	Pete Spector and Tony Limas	11/01/18 - 02/01/19
Statistical Pay Factor NSSP	Kee Foo and Tony Limas	11/01/18 - 01/01/19
Update Quality Control Manual	Pete Spector and Tony Limas	11/01/18 – 03/11/19
Training and guidance	Pete Spector and Tony Limas	11/01/18 - 06/01/19
Data collection plan	Pete Spector and Tony limas	11/01/18 – 06/01/19
Data evaluation plan	Kee Foo and Tony Limas	11/01/18 – 10/30/19
Established FAQ webpage	Pete Spector and Tony Limas	11/01/18 – 12/31/19
Established EA for CT training	Kee Foo and Pete Spector	11/01/18 – 12/31/19

Resources To Develop and Implement

	Caltrans Hours	Industry Hours
Automated calculations sheet	200	40
Statistical Pay Factor NSSP	60	20
Update Quality Control Manual	200	100
Training and guidance	250	250

Data collection plan	200	100
Data evaluation plan	40	40
Established a FAQ webpage	40	40
Other Resources	300	300

Benefits

The following benefits are expected from the completion of this effort:

- More consistent control and documentation of the quality of the material and construction of HMA pavements.
- Lower construction costs because the costs of quality control testing will be primarily captured in project capital costs rather than Capital Outlay Support (COS) costs as it is today.
- Improved pavement performance by incorporating a higher percentage of materials meeting designed target values (lower percentage of failing materials).
- Meet FHWA direction to incorporate SPF in Section 39

Estimated Impact to Caltrans and Contractor

- Modifications to the specifications will be new for impacted stakeholders.
- Anticipate a decrease in Caltrans testing related workload and an increase in Contractor testing related workload.
- Appoint HQ and District STATISTICAL PAY FACTOR coordinators Trained HQ and District SPF coordinators to assist REs and resolve conflicts. The Work Product Team will develop the roles and responsibilities of the SPF Coordinator and communicate these in the Quality Control Manual.
- Account for an increase in technician volume for the JT&CP. Industry will conduct a survey to estimate the increase in technician volume. HQ SPF Coordinator will coordinate with the Districts, Cal State Long Beach and other impacted stakeholders. No anticipated increased in Caltrans cost as most testing shifts to contractors. The anticipated increased in contractor testing is expected to be captured in project capital cost. This is offset by a reduction in Caltrans testing that should be reflected in reduced COS costs.
- Reduction in testing disputes. Work Product Team will set up a protocol to evaluate and report this metric.

Impediments to Completion of Deliverables

Available Caltrans staff and industry resources to perform necessary tasks in connection with completion of project.

- Designating and training District SPF Coordinator
- Designating and training a HQ personnel as the HQ SPF Coordinator
- Training Coordinator to set up district wide training
- Establishing a charge mechanism for District staff to train on new responsibilities
- Establish a Chargeable EA for CT trainee
- Getting budget approval for training development and implementation

Recommendation and Approval

This scoping document for Statistical Pay Factors was prepared by Asphalt Subtask Group to address a priority issue with statewide significance and is within the Pavement & Materials Partnering Committee mission as described in the Pavement & Materials Partnering Committee Charter. The Subtask Group members have determined the scope, resources required and timeline for delivery of this project to attempt to ensure that the deliverables are achievable. A signature here indicates that each Task Group and PMPC Executive Committee is committed to providing the resources to support this effort within the prescribed timeframes. Furthermore, it is everyone's responsibility to ensure that the final effort/improvement will be:

1) Street-Ready,
2) Monitored and reported for performance,
3) Successfully implemented statewide as appropriate.

Scoping Document Recommendation and Industry Concurrence by (name and date):

Caltrans Name (Recommendation)	Date	Industry Name (Concurrence)	Date
Tom Pyle, Caltrans Task Group Chair	12-5-18	for Pat Imhoff, Industry Task Group Lead	12/5/18
Blair Anderson, Caltrans Task Group Member	12/5/18	Tracy Zubek, Industry Task Group Co-Member	12/5/18
Tim Greutert, Caltrans Task Group Member	12/5/18		

Scoping Document Approval and Industry Concurrence by (name and date):

Caltrans Name (Approval)	Date	Industry Name (Concurrence)	Date
Sergio Aceves, Caltrans PMPC Executive Committee – Chair Pavement Program	12/11/18	Russ Snyder, Industry PMPC Executive Committee	12/6/18
Ray Hopkins, Caltrans PMPC Executive Committee Headquarters Construction	12/6/18	Charley Rea, Industry PMPC Executive Committee	12/6/18
Tom Ostrom, Caltrans PMPC Executive Committee Structures Policy and Innovation	12/6/18		
Dan Speer, Caltrans PMPC Executive Committee Materials Engineering and Testing Services	12/6/18		

Approval Date: _____