

## 501-R-540 PCCP PROVISIONS

(Revised 09-14-10)

The Standard Specifications are revised as follows:

SECTION 501, BEGIN LINE 368, DELETE AND INSERT AS FOLLOWS:

**501.25 Pavement Smoothness**

~~The p~~Pavement smoothness will be accepted by means of a profilograph, a 16 ft (4.9 m) long straightedge, or a 10 ft (3 m) long straightedge *as described below*.

**(a) Profilograph**

*When a pay item for Profilograph, PCCP is included in the contract, the Contractor shall furnish, calibrate, and operate an approved profilograph in accordance with ITM 912 for the acceptance of longitudinal smoothness on the mainline traveled way and ramps, including adjacent acceleration or deceleration lane, where both of the following conditions are met:*

~~The profilograph shall be used where all of the following conditions are met:~~

- (a)1. ~~†The design speed is greater than 45 mph (70 km/h), and.~~
- (b)2. ~~†The pavement traveled way or ramp lanes width excluding shoulders are is full constant width and is 0.1 mi (0.16 km) in length or longer.~~

~~If a pay item, profilograph, PCCP, is included in the contract, and the above conditions are met, the Contractor shall furnish, calibrate, and operate an approved profilograph in accordance with ITM 912. The profilogram produced shall become the property of the Department. The profilograph shall remain the property of the Contractor. When a profilograph, PCCP is not included as a pay item, and the above conditions are met, the Department will furnish, calibrate, and operate the profilograph or the Department will develop a change order in accordance with 109.05 to include profilograph, PCCP as a pay item.~~

*The project area, less paving exceptions and areas exempt from profilograph operation in accordance with ITM 912, will be divided into individual smoothness sections measuring 0.1 mi (0.16 km) in length for each lane. Partial length smoothness sections adjacent to project limits, paving exceptions, or areas exempt from profilograph operation will be considered in accordance with ITM 912.*

*If the posted speed limit for an entire smoothness section is less than or equal to 45 mph, the section will be exempt from profilograph operation and the smoothness within the section will be accepted by a 16 ft (4.9 m) straightedge.*

*If the posted speed limit is greater than 45 mph for a portion of a smoothness section and is less than or equal to 45 mph for the remainder, the section smoothness acceptance will be as follows:*

- 1. *By profilograph for the portion of the section with a posted speed limit greater than 45 mph.*

2. *By 16 ft (4.9 m) straightedge for the portion of the section with a posted speed limit less than or equal to 45 mph.*

*At locations where the profilograph is required, all high or low point deviations which are greater than 0.3 in (8 mm) shall be corrected. Corrections shall be made in accordance with 501.25(c).*

***(b) 16 ft (4.9 m) Straightedge and 10 ft (3 m) Straightedge***

*The Department will furnish and operate 16 ft (4.9 m) and 10 ft (3 m) straightedges as described below. The 16 ft (4.9 m) straightedge is used to accept smoothness along the direction of mainline traffic and the 10 ft (3.0 m) straightedge is used to accept smoothness transverse to the direction of mainline traffic. This includes longitudinal smoothness on public road approaches and median crossovers.*

~~The 16 ft (4.9 m) long straightedge shall be used on all full width pavement lanes shorter than 0.1 mi (0.16 km), on tapers, within 50 ft (15 m) of a reinforced concrete bridge approach, and within 50 ft (15 m) of an existing pavement which is being joined, and shoulders greater than 10 ft (3 m) wide.~~

*For contracts which include the profilograph, PCCP pay item, the 16 ft (4.9 m) long straightedge will be used to accept longitudinal smoothness at the following locations:*

1. *All mainline traveled way lanes shorter than 0.1 mi (0.16 km).*
2. *All mainline traveled way lanes within smoothness sections with posted speed limits less than or equal to 45 mph throughout the entire section length.*
3. *All mainline traveled way lanes at locations exempted from profilograph operation in accordance with ITM 912.*
4. *All tapers.*
5. *All turn lanes, including bi-directional left turn lanes.*
6. *All ramps with design speeds of 45 mph (70 km/h) or less.*
7. *All acceleration and deceleration lanes associated with ramps with design speeds of 45 mph (70 km/h) or less.*
8. *All shoulders.*

*For contracts where the profilograph is not used for smoothness acceptance, the 16 ft (4.9 m) straightedge will be used to accept longitudinal smoothness at the above locations and on all mainline traveled way lanes and ramps with design speeds greater than 45 mph (70 km/h). Smoothness acceptance on ramp acceleration or deceleration lanes will also be accepted by the 16 ft (4.9 m) straightedge.*

*The 10 ft (3 m) long straightedge shall be used for transverse slopes, approaches, and crossovers.*

*As soon as the PCCP has cured sufficiently, the smoothness may be checked. ~~Profile testing shall be completed prior to opening the pavement to traffic.~~ The*

Department may direct that the pavement profile be evaluated within 24 h following placement. When profile testing is consistently outside pavement surface tolerances the paving operation shall be discontinued until an amended QCP is submitted. ~~An initial profile index will be determined from the profilogram of this profile. The initial profile index for areas requiring replacement will be adjusted to include the results of a profilogram of all replaced areas.~~

**(c) Smoothness Correction**

Pavement smoothness variations outside specified tolerances shall be corrected by grinding with a groove type cutter or by replacement. Grinding will not be permitted until the PCCP is 10 days old or the flexural strength test is 550 psi (3800 kPa) or greater. The grinding of the pavement to correct the profile shall be accomplished in either the longitudinal or the transverse direction. The PCCP texture after grinding shall be uniform. If the grinding operation reduces the tining grooves to a depth of less than 1/16 in. (1.5 mm) and the longitudinal length of the removal area exceeds 15 ft (4.5 m), or two or more areas are within 30 ft (9.0 m) of each other, the PCCP shall be re-textured in accordance with 504.03.

*At locations where the profilograph is used, all areas having a high or low point deviation in excess of 0.3 in. (8 mm) shall be corrected. In addition, smoothness sections with a deficient profile index in accordance with 501.28(d) shall be corrected. After the corrective action is complete, the profilograph shall be operated throughout the entire affected smoothness section to verify the adequacy of the corrective action.*

~~When~~ At locations where the 16 ft (4.9 m) straightedge is used, the pavement variations shall be corrected to 1/4 in. (6 mm) or less. ~~When~~ At locations where the 10 ft (3 m) straightedge is used, the pavement variations shall be corrected to 1/8 in. (3 mm) or less.

~~When the profilograph is used, the pavement variations shall be corrected in accordance with 501.28(d). In addition to the requirements for the profile index, all areas having a high or low points deviation in excess of 0.3 in. (8 mm) shall be corrected. Verifying profilograph measurements will be taken only in the 0.1 mi (0.16 km) length where corrections have been performed.~~

SECTION 501, BEGIN LINE 543, DELETE AND INSERT AS FOLLOWS:

**(b) Air Content**

When test results for air content exceed the allowable tolerance or range, a pay factor will be assessed as follows:

**1. Lots**

Lot Average Air Content	
Percent %	Pay Factors
<del>&gt; 10.0</del> 9.8	*
<del>10.0</del> 9.7 – 9.8	0.80
<del>9.7 – 9.9</del>	0.85
9.5 – 9.6	<del>0.91</del> 0.90

9.3 – 9.4	<del>0.96</del> 0.95
9.0 – 9.2	<del>0.98</del> 0.99
5.7 – 8.9	1.00
<del>5.0</del> 5.6	<del>0.99</del> 0.93
<del>4.7</del> 4.9	0.98
<del>4.6</del> 5.5	<del>0.88</del> 0.90
<del>4.5</del> 5.4	<del>0.80</del> 0.85
<4.5 5.3	* 0.79
<5.3	*

- \* The PCCP will be adjudicated as a failed material in accordance with normal Department practice as listed in 105.03. The PCCP may be subject to removal and replacement or left in place with reduced or no payment.

Lot Range for Air Content	
Percent %	Pay Factors
0.0 – 2.5	1.00
2.6 – 3.0	0.99
3.1 – 3.5	0.97
> 3.5	*

- \* The PCCP will be adjudicated as a failed material in accordance with normal Department practice as listed in 105.03. The PCCP may be subject to removal and replacement or left in place with reduced or no payment.

## 2. Sublots

If a subplot value is less than ~~4.0~~ 5.0% or greater than 10.0%, the PCCP will be adjudicated as a failed material in accordance with normal Department practice in accordance with 105.03. For a subplot completely removed, the subplot test value from the replacement subplot will replace the original test value.

SECTION 501, BEGIN LINE 562, DELETE AND INSERT AS FOLLOWS:

### (d) Smoothness

When the pavement smoothness is tested with a profilograph, pavement will be based on a zero blanking band on the final profile index ~~after corrective action~~. A Quality Assurance Pay Factor (PFs) for smoothness will apply to the planned thickness of the PCCP. The quality assurance adjustment for each section will include the total area of each pavement lane ~~excluding shoulders~~ *measured by the profilograph* for 0.1 mi (0.16 km) long section represented by the profile index calculated by the following formula:

$$q_s = (PF_s - 1.00) \times A \times U$$

where:

- $q_s$  = quality assurance adjustment for smoothness for one section  
 $PF_s$  = pay factor for smoothness  
 $A$  = area of the section, SYS (m<sup>2</sup>)  
 $U$  = unit price for the material \$/SYS (\$/m<sup>2</sup>)

*For smoothness sections that are less than 0.1 mi (0.16 km) in length or require profilograph operation along both lane edges, the profile index used to obtain the*

*smoothness pay factor used in the above formula will be determined in accordance with ITM 912.*

The quality assurance adjustment for smoothness,  $Q_s$ , for the contract will be the total of the quality assurance adjustments for smoothness,  $q_s$ , on each section by the following formula:

$$Q_s = \sum q_s$$

*Regardless of the tabulated value, the maximum pay factor for a smoothness section where corrective action has been performed will be 1.00.*

SECTION PAY FACTORS FOR SMOOTHNESS ( $PI_{0.0}$ ) ZERO BLANKING BAND	
Design Speed Greater Than 45 mph (70 km/hr)	
Profile Index in./0.1 mi. (mm/0.16 km)	Pay Factor, $PF_s$
Over 0.00 to 1.40 in. (Over 0 to 35 mm)	1.06
Over 1.40 to 1.60 in. (Over 35 to 40 mm)	1.05
Over 1.60 to 1.80 in. (Over 40 to 45 mm)	1.04
Over 1.80 to 2.00 in. (Over 45 to 50 mm)	1.03
Over 2.00 to 2.40 in. (Over 50 to 60 mm)	1.02
Over 2.40 to 2.80 in. (Over 60 to 70 mm)	1.01
Over 2.80 to 3.60 in. (Over 70 to 90 mm)	1.00
Over 3.60 to 3.80 in. (Over 90 to 95 mm)	0.96
All pavements with a Profile Index ( $PI_{0.0}$ ) greater than 3.80 in. (95 mm) shall be corrected to a profile index less than or equal to 3.80 in. (95mm).	