

**INFORMATION:** FP-03 Metric Version  
 Federal Lands Highway (FLH)  
 FLH Supplemental Specifications

July 2, 2004

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 Director, Office of Program Development

HFPD-3

Federal Lands Highway Division Engineers

**TRANSMITTAL No. 1**

The following are additions and revisions to the FLH Supplemental Specifications to the *Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects* (FP-03) Metric Version. These specification additions and revisions were coordinated through the FLH specification process and are approved by this office.

Each Division shall incorporate the FLH supplemental specifications into its library of specifications. These supplemental specifications shall be used in the special contract requirements of all FLH projects according to the instructions for each supplemental specification and will be incorporated into the next FP.

REMOVE		INSERT		DESCRIPTION
Page(s)	Dated	Page(s)	Dated	
		1	7/2/04	Contents
		2	7/2/04	Special Contract Requirements
		3	7/2/04	SI (Metric to U.S. Customary Conversion Factors)
		106.01-1,2, & 3	7/2/04	Conformity with Contract Requirements
		213.09	7/2/04	Table 213-2 Sampling & Testing Requirements
		302.09	7/2/04	Table 302-3 Sampling & Testing Requirements
		401.16(b)	7/2/04	International roughness index (IRI)
		402.03(b)	7/2/04	Submission
		552.03(v)	7/2/04	Table 552-3 Required Average Compressive Strength
		703.05	7/2/04	Table 703-2 Target Value Ranges for Subbase & Base Gradation
		703.10	7/2/04	Table 703-7 Target Value Ranges for Surface Treatment Aggregate Gradation
		704.02	7/2/04	Bedding Material
		718.08(b)(2)	7/2/04	Square tubular steel signposts
		718.14(g)	7/2/04	Waterborne traffic paint daylight reflectance
		718.15(a)	7/2/04	Epoxy markings pigments
		718.15(g)	7/2/04	Epoxy markings drying time

The Specification Coordination Group (SCG) is working on other specification additions and revisions that will be issued as part of the next FP when approved.

If you have comments on the FP-03 or the FLH Supplemental Specifications, please contact Mr. Dave Green at 202-366-9477 or one of the other SCG members listed on Page 1 of the FLH Supplemental Specifications.

Attachment

FHWA:HFPD-1:DGGreen:dlw:69477:7/2/04:G:Shared/Pshared/Constuction Standards/X-T1  
Metric.doc.

cc: File - HFPD-1 (FLH Supplemental Specifications – Metric Version)  
Reader - HFL-1            Green - HFPD-3

# FP-03

## Metric Version

### FLH SUPPLEMENTAL SPECIFICATIONS

These additions and revisions to the *Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03)* metric version are approved by Federal Lands Highway (FLH). They will be used in the special contract requirements of all FLH projects according to the instructions for each specification. They may also be incorporated into the next update of the FP.

For additions and revisions to the FP-03 and these FLH Supplemental Specifications, please contact one of the following members of the Specification Coordination Group:

Jeffrey Slater	Eastern Federal Lands Highway Division jeffery.slater@fhwa.dot.gov	703-404-6327
Mike Peabody	Central Federal Lands Highway Division micheal.peabody@fhwa.dot.gov	303-716-2175
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Contents (7/2/04):	Page:
Contents (7/2/04)	1 (7/2/04)
Special Contract Requirements (7/2/04)	2 (7/2/04)
Metric to U.S. Customary Conversion Factors (7/2/04)	3 (7/2/04)
106.01 Conformity with Contract Requirements (7/2/04)	106.01-1,2,&3 (7/2/04)
Table 213-2 Sampling and Testing Requirements (7/2/04)	213.09 (7/2/04)
Table 302-3, Sampling and Testing Requirements (7/2/04)	302.09 (7/2/04)
401.16(b) International roughness index (IRI) (7/2/04)	401.16(b) (7/2/04)
402.03(b) Submission (7/2/04)	402.03(b) (7/2/04)
Table 552-3 Required Average Compressive Strength (7/2/04)	552.03(v) (7/2/04)
Table 703-2 Target Value Ranges for Subbase & Base Gradation (7/2/04)	703.05 (7/2/04)
Table 703-7 Target Value Ranges for Single & Multiple Course Surface Treatment Aggregate Gradation (7/2/04)	703.10 (7/2/04)
704.02 Bedding Material (7/2/04)	704.02 (7/2/04)
718.08(b)(2) Square tubular steel posts (7/2/04)	718.08(b)(2) (7/2/04)
718.14(g) Waterborne traffic paint daylight reflectance (7/2/04)	718.14(g) (7/2/04)
718.15(a) Epoxy markings pigments (7/2/04)	718.15(a) (7/2/04)
718.15(g) Epoxy markings drying time (7/2/04)	718.15(g) (7/2/04)

Include the following with all projects:

(7/2/04)

## **SPECIAL CONTRACT REQUIREMENTS**

**Project** \_\_\_\_\_

The following Special Contract Requirements amend and supplement the *Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03) Metric Version*, U. S. Department of Transportation, Federal Highway Administration.

**{REASON: This is the standard title and lead in paragraph to each project's special contract requirements.}**

Include the following with all projects:

(7/2/04)

Delete the title, **SI<sup>(1)</sup> (METRIC) TO ENGLISH CONVERSION FACTORS (approximate)** in the table on page iv and substitute the following:

**SI<sup>(1)</sup> (METRIC) TO U.S. CUSTOMARY CONVERSION FACTORS (approximate)**

Under ILLUNINATION in the same table on page iv, delete the unit, **caldela/m<sup>2</sup>**, and substitute the unit, **candela/m<sup>2</sup>**.

**{REASON: Units of measure that were previously referred to as “English units” are now being referred to as “U.S. Customary units” under the FP-03. The spelling of “candela” is also corrected in the conversion table.}**

(FP-03 Metric version, p. iv)

Include the following with all projects:

(7/2/04)

Delete Subsection 106.01 and substitute the following:

**106.01 Conformity with Contract Requirements.** Follow the requirements of FAR Clause 52.246-12 Inspection of Construction.

References to standard test methods of AASHTO, ASTM, GSA, and other recognized standard authorities refer to the methods in effect on the date of solicitation for bids.

Perform all work to the lines, grades, cross-sections, dimensions, and processes or material requirements shown on the plans or specified in the contract.

Incorporate manufactured materials into the work according to the manufacturer's recommendations or to these specifications, whichever is more strict.

Plan dimensions and contract specification values are the values to be strived for and complied with as the design values from which any deviations are allowed. Perform work and provide material that is uniform in character and reasonably close to the prescribed value or within the specified tolerance range. The purpose of a tolerance range is to accommodate occasional minor variations from the median zone that are unavoidable for practical reasons.

When standard manufactured items are specified (such as fence, wire, plates, rolled shapes, pipe conduits, etc., that are identified by gauge, unit mass, section dimensions, etc.), the identification will be considered to be nominal masses or dimensions. Unless specific contract tolerances are noted, established manufacturing tolerances will be accepted.

The Government may inspect, sample, or test all work at any time before final acceptance of the project. When the Government tests work, copies of test reports are furnished to the Contractor upon request. Government tests may or may not be performed at the work site. If Contractor testing and inspection is verified by the Government, the Contractor's results may be used by the Government to evaluate work for acceptance. Do not rely on the availability of Government test results for process control.

Acceptable work conforming to the contract will be paid for at the contract unit bid price. Four methods of determining conformity and accepting work are described in Subsections 106.02 to 106.05 inclusive. The primary method of acceptance is specified in each Section of work. However, work may be rejected at any time it is found by any of the methods not to comply with the contract.

Remove and replace work that does not conform to the contract, or to prevailing industry standards where no specific contract requirements are noted, at no cost to the Government.

**(a) Disputing Government test results.** If the accuracy of Government test results is disputed, promptly inform the CO. If the dispute is unresolved after reasonable steps are taken to resolve the dispute, further evaluation may be obtained by written request. Include a narrative describing the dispute and a proposed resolution protocol that addresses the following:

- (1) Sampling method;
- (2) Number of samples;
- (3) Sample transport;
- (4) Test procedures;
- (5) Testing laboratories;
- (6) Reporting;
- (7) Estimated time and costs; and
- (8) Validation process.

If the evaluation requires additional sampling or testing be performed, mutually agree with the Government on witnessing procedures and on sampling and testing by a third party laboratory. Use a third party laboratory accredited by the AASHTO accreditation program. Provide proof of the laboratory's accreditation for the test procedures to be used. Do not use the same laboratory that produced the disputed Government test results or that produced the test results used as a basis for the dispute.

The CO will review the proposed resolution protocol and may modify it before final approval and execution.

The Government will use the approved resolution protocol test results to determine the validity of the disputed testing. If the Government test results are validated, the Contractor will be responsible for all costs associated with developing and performing the resolution protocol. If the Government test results are not validated, the Government will be responsible for all costs associated with developing and performing the resolution protocol. If the validity of the Government test results cannot be determined, the Contractor and Government will equally share all costs associated with developing and carrying out the resolution protocol.

**(b) Alternatives to removing and replacing non-conforming work.** As an alternative to removal and replacement, the Contractor may submit a written request to:

- (1) Have the work accepted at a reduced price; or
- (2) Be given permission to perform corrective measures to bring the work into conformity.



The request must contain supporting rationale and documentation. Include references or data justifying the proposal based on an evaluation of test results, effect on service life, value of material or work, quality, aesthetics, and other tangible engineering basis. The CO will determine disposition of the nonconforming work.

**{REASON: During the March 2004 MTT meeting Bruce Wasill was asked to develop a supplemental spec for addressing disputed test results. He distributed a draft to the MTT on 3/16/04 and addressed various comments from MTT members in a final draft that was distributed to Dave Green on 5/12/04. Subsection 106.01 was reorganized and the new disputed test results material was added in 106.01(a) and distributed to the MTT and SCG on 5/17/04. The only comment received was from Jose Ramirez, who asked for a time requirement on the process. The word “promptly was added to the first sentence of 106.01(a) to address this comment. 6/30/04 comments from WFL and CFL were incorporated into the final wording.}**

(FP-03 Metric version, p. 22 & 23)

When subgrade stabilization is required, include the following:

(7/2/04)

In Table 213-2, Sampling and Testing Requirements, delete the ditto mark (“”) that is the last item in the Split Sample column and substitute the word, **Yes**.

**{REASON: This corrects an error in Table 213-2.}**

(FP-03 Metric version, p. 136)

When treated aggregate courses are required, include the following:

(7/2/04)

In Table 302-3, Sampling and Testing Requirements, add a ditto mark (“) in the “Liquid limit” row under the “Reporting Time” column to indicate that the reporting time for liquid limit test resulting is 4 hours.

**{REASON: This corrects an error in Table 302-3.}**

(FP-03 Metric version, p. 195)

When the international roughness index (IRI) method of measuring pavement roughness is permitted, include the following: (7/2/04)

Delete the first sentence of subsection 401.16(b) and substitute the following:

**401.16(b) International roughness index (IRI).** For type III or IV pavement roughness, furnish an inertial profiler conforming to AASHTO PP 50 and validated according to AASHTO PP 49.

**{REASON: In reviewing a proposed IRI press release it was discovered that the FLH divisions are developing SCR's and Division supplemental specs to implement IRI. The only error in the FP-03 spec is corrected here. In an 5/10/04 e-mail, Bruce Wasill noted that AASHTO renumbered the standards from the way the ETG submitted them. The FP used the numbering system set up by the ETG, but the correct number for validating the inertial profiler as published by AASHTO is PP 49 instead of PP 51.}**

(FP-03 Metric version, p. 232)

When the Marshall mix design method is permitted, include the following: (7/2/04)

Delete the first sentence of subsection 402.03(b) and substitute the following:

**402.03(b) Submission.** Submit written job-mix formulas with Form FHWA 1607 (Hveem) or Form 1622 (Marshall) for approval at least 28 days before production.

**{REASON: This corrects a subsection 402.03(b) error in the FHWA form number for a Marshall mix design.}**

(FP-03 Metric version, p. 241)

When structural concrete is required, include the following:

(7/2/04)

Delete Table 552-3 and substitute the following:

**Table 552-3**  
**Required Average Compressive Strength When Data**  
**Are Not Available to Establish a Standard Deviation**

<b>Specified Compressive Strength (<math>f'_c</math>) (MPa)</b>	<b>Required Average Compressive Strength (<math>f'_{cr}</math>) (MPa)</b>
Less than 21	$f'_c + 7.0$
21 to 35	$f'_c + 8.5$
Over 35	$1.10f'_c + 5.0$

**{REASON: The MTT asked Mike Peabody to check the accuracy of FP-03 compared to ACI 318. On 12/16/03, Mike distributed a recommended change to the MTT. On 5/19/04, Dave Green distributed Mike's recommendation to the MTT and SCG. On 5/26/04, Wade Johnson sent Dave a comment from Marc Veneroso suggesting that all values in Table 552-3 be rounded to the nearest MPa or 100 psi. Mike and Marc resolved this comment as addressed in the table above.}**

(FP-03 Metric version, p. 349)

When base course aggregate, grading E is permitted, include the following: (7/2/04)

In Table 703-2, delete the “436 – 74 (6)” percent by mass passing for grading E (base) 4.75 millimeter sieve size and substitute “36 – 74 (6).”

**{REASON: This corrects a typographical error in Table 703-2.}**

(FP-03 Metric version, p. 601)

When asphalt surface treatment aggregate is required, include the following: (7/2/04)

Delete Table 703-7 and substitute the following:

**Table 703-7  
 Target Value Ranges for  
 Single and Multiple Course Surface Treatment Aggregate Gradation**

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 & T 11)					
	Grading Designation					
	A	B	C	D	E	F
37.5 mm	100 <sup>(1)</sup>					
25 mm	90-100(3)	100 <sup>(1)</sup>				
19 mm	0-35(5)	90-100(3)	100 <sup>(1)</sup>			
12.5 mm	0-8(3)	0-35(5)	90-100(3)	100 <sup>(1)</sup>		
9.5 mm	—	0-12(3)	0-35(5)	85-100(3)	100 <sup>(1)</sup>	100 <sup>(1)</sup>
4.75 mm	—	—	0-12(3)	0-35(5)	85-100(3)	85-100 <sup>(1)</sup>
2.36 mm	—	—	—	0-8(3)	0-23(4)	—
75 μm	0-1(1)	0-1(1)	0-1(1)	0-1(1)	0-1(1)	0-10 <sup>(1)</sup>

(1) Statistical procedures do not apply.

( ) The value in the parentheses is the allowable deviation (±) from the target values.

**{REASON: This corrects errors in Table 703-7 to make statistical procedures not apply on designated 100 percent passing-sieves.}**

(FP-03 Metric version, p. 605)



When bedding material is required, include the following:

(7/2/04)

Delete Subsection 704.02 and substitute the following:

**704.02 Bedding Material.** Furnish a well graded, free draining material free of excess moisture, muck, frozen lumps, roots, sod, or other deleterious material conforming to the following:

- |  |   |
|--|---|
| (a) Maximum particle size                                    | 12.5 mm or half the corrugation depth, whichever is smaller |
| (b) Material passing 75- $\mu$ m sieve, AASHTO T 27 and T 11 | 10% max.  |

**{REASON: Mike Peabody recommended this change to the MTT in his 12/16/03 e-mail. He suggested that the uncompacted bedding material must be free draining and move around easily in order to conform to the shape of the bottom of the pipe. The fines content therefore needs to be limited. It is currently limited under item (b) by soil classification (i.e. A-1, A-2-4, A-2-5 or A-3) to a maximum of 35 percent that is much too high. The bedding material must at least be equivalent to base material. The fines content in base material is limited to 7.0 % max with an allowable deviation of 3% (i.e. 10 %) (see Table 703-2). CFL comments dated 6/30/04 recommended deleting the soil classification requirement and adding “a well graded, free draining” to the first paragraph. These recommendations are adopted here.}**

(FP-03 Metric version, p. 612)

When square tubular steel signposts are permitted, include the following: (7/2/04)

**718.08(b)(2)(c)** Delete the existing subsection and substitute the following:

(c) Galvanizing after punching  
(inside and outside of post)

ASTM A 653M,  
coating Z275 designation

**{REASON: This corrects the ASTM designation and some typographical errors in Subsection 718.08(b)(2)(c).}**

(FP-03 Metric version, p. 672)

When waterborne traffic paint is permitted, include the following: (7/2/04)

**718.14(g)** Delete the existing subsection and substitute the following:

**(g) Daylight reflectance.** (Without glass beads)

- |                         |   |
|-------------------------|---|
| (1) White, ASTM E 1347  | 84% relative to magnesium<br>oxide standard |
| (2) Yellow, ASTM E 1347 | 55% relative to magnesium<br>oxide standard |

**{REASON: This corrects some typographical errors in Subsection 718.14(g) and also adopts CFL's 6/30/04 recommendation to delete the reference to "FTMS 141 method 6121" in ASTM E 1347.}**

(FP-03 Metric version, p. 675)

When epoxy markings are permitted, include the following:

(7/2/04)

**718.15(a)(2)** Delete the existing subsection and substitute the following:

**(2) Yellow.**

(a) Chrome yellow (PbCrO<sub>4</sub>), 23% min.  
ASTM D 126, type III.

(b) Epoxy resin 70 to 77%

**{REASON: This corrects some typographical errors in Subsection 718.15(a)(2).}**

(FP-03 Metric version, p. 676)

When epoxy markings are permitted, include the following:

(7/2/04)

**718.15(g)** Delete the existing subsection and substitute the following:

**(g) Drying time.** 0.38-millimeter film thickness with beads.

- |                                      |   |
|--------------------------------------|---|
| (1) Laboratory at 22 °C, ASTM D 711  | 30 minutes maximum to<br>no-pick-up condition |
| (2) Field at 25 °C, viewed from 15 m | 10 minutes maximum to<br>no-pick-up condition |

**{REASON: This corrects some typographical errors in Subsection 718.15(g).}**

(FP-03 Metric version, p. 677)