



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Design Memorandum No. 16-25 Technical Advisory

June 29, 2016

TO: All Design, Operations, and District Personnel, and Consultants

FROM: /s/Elizabeth W. Phillips
Elizabeth W. Phillips
Manager, Standards and Policy Office
Bridges Division

SUBJECT: HMA Pavements - ESAL Categories and HMA Type A

REVISES: *Indiana Design Manual* Figure 304-15A and 304-15B

SUPERSEDES: Design Memo 13-15

EFFECTIVE: Lettings on or after October 1, 2016

RSP 400-R-641 HMA Pavements revises several aspects of the hot mix asphalt (HMA) mix design requirements. ESAL categories 1 and 5 have been eliminated for QC/QA HMA pavement, and HMA Type A has been eliminated for HMA pavement. The revisions apply to surface, intermediate, and base courses. The RSP is effective for contracts letting on or after October 1, 2016.

QC/QA HMA Pavement Designs

Projects that have an approved QC/QA HMA pavement design utilizing ESAL Category 1 or 5 must be converted to the appropriate ESAL Category as shown below.

Designated ESAL Category from Approved Pavement Design	Revised ESAL Category for Contracts Letting on or after October 1, 2016
ESAL Category 1	Use ESAL Category 2
ESAL Category 5	Use ESAL Category 4

Previously approved pavement designs do not need to be resubmitted. For contracts letting on or after October 1, 2016 with an approved pavement design that specifies QC/QA HMA pavement with ESAL Category 1 or 5, a copy of this memo should be appended to the approved pavement design submitted with the Final Tracings package.

HMA Pavement Designs

Projects that have an approved HMA pavement design utilizing HMA Type A must be converted to HMA Type B.

Designated HMA Type from Approved Pavement Design or Standard Drawing	Revised HMA Type for Contracts Letting on or after October 1, 2016
Type A	Use Type B

Previously approved pavement designs do not need to be resubmitted. For contracts letting on or after October 1, 2016 with an approved pavement design that specifies HMA Type A, a copy of this memo should be appended to the approved pavement design submitted with the Final Tracings package.

Cost Estimate

The cost estimate must be updated to reflect the appropriate pay items. The pay item name and number conversions for 401 and 410 QC/QA HMA pay items and 304, 402, 610, and 715 HMA pay items are an attachment to this memo.

Plan Revisions

Where time allows, plans should be revised accordingly to reflect pay item revisions. Where time does not allow, RSP 400-C-251 ESAL Categories and HMA Type A will be required in all contracts with QC/QA HMA and HMA pay items. The RSP will sunset January 1, 2017. This means for projects letting on or after January 1, 2017, the plans must be revised to reflect the appropriate ESAL Category and HMA Type.

RSP 400-C-251 will also be required for standard items that specify HMA Type A, but do not require a pavement design. These include the following Standard Drawings series.

604-NVUF, Non-Vehicular Use Facilities

610-PRAP, Public Road Approaches

610-UTMO, Median U-Turns

713-TCTR, Temporary Runarounds

Questions

The referenced *Indiana Design Manual* figures have been revised to reflect these changes and are an attachment to this memo. Questions regarding new QC/QA HMA and HMA pavement designs should be directed to Kumar Dave, Pavement Engineering Manager, via email at kdave@indot.in.gov.

QC/QA HMA PAVEMENT ESAL CATEGORY PAY ITEM CONVERSION LIST			
Letting Prior to October 1, 2016		Letting on or after October 1, 2016	
Approved Pavement Design using ESAL Category 1		Use ESAL Category 2	
401-07338	QC/QA-HMA, 1, 64, SURFACE, 12.5 mm	401-07339	QC/QA-HMA, 2, 64, SURFACE, 12.5 mm
401-11502	QC/QA-HMA, 1, 64, SURFACE, 4.75 mm	401-09970	QC/QA-HMA, 2, 64, SURFACE, 4.75 mm
401-07320	QC/QA-HMA, 1, 64, SURFACE, 9.5 mm	401-07321	QC/QA-HMA, 2, 64, SURFACE, 9.5 mm
401-07344	QC/QA-HMA, 1, 70, SURFACE, 12.5 mm	401-07345	QC/QA-HMA, 2, 70, SURFACE, 12.5 mm
401-07325	QC/QA-HMA, 1, 70, SURFACE, 9.5 mm	401-07327	QC/QA-HMA, 2, 70, SURFACE, 9.5 mm
401-07375	QC/QA-HMA, 1, 70, INTERMEDIATE, 12.5 mm	401-07378	QC/QA-HMA, 2, 70, INTERMEDIATE, 12.5 mm
401-07395	QC/QA-HMA, 1, 70, INTERMEDIATE, 19.0 mm	401-07397	QC/QA-HMA, 2, 70, INTERMEDIATE, 19.0 mm
401-07360	QC/QA-HMA, 1, 70, INTERMEDIATE, 9.5 mm	401-07361	QC/QA-HMA, 2, 70, INTERMEDIATE, 9.5 mm
401-07355	QC/QA-HMA, 1, 64, INTERMEDIATE, 9.5 mm	401-07356	QC/QA-HMA, 2, 64, INTERMEDIATE, 9.5 mm
401-07370	QC/QA-HMA, 1, 64, INTERMEDIATE, 12.5 mm	401-07371	QC/QA-HMA, 2, 64, INTERMEDIATE, 12.5 mm
401-07389	QC/QA-HMA, 1, 64, INTERMEDIATE, 19.0 mm	401-07390	QC/QA-HMA, 2, 64, INTERMEDIATE, 19.0 mm
401-07406	QC/QA-HMA, 1, 64, BASE, 25.0 mm	401-07407	QC/QA-HMA, 2, 64, BASE, 25.0 mm
401-07422	QC/QA-HMA, 1, 64, BASE, 19.0 mm	401-07423	QC/QA-HMA, 2, 64, BASE, 19.0 mm
Approved Pavement Design using ESAL Category 5		Use ESAL Category 4	
401-07349	QC/QA-HMA, 5, 70, SURFACE, 12.5 mm	401-07348	QC/QA-HMA, 4, 70, SURFACE, 12.5 mm
401-08491	QC/QA-HMA, 5, 70, SURFACE, 4.75 mm	401-11971	QC/QA-HMA, 4, 70, SURFACE, 4.75 mm
401-07330	QC/QA-HMA, 5, 70, SURFACE, 9.5 mm	401-07329	QC/QA-HMA, 4, 70, SURFACE, 9.5 mm
401-07337	QC/QA-HMA, 5, 76, SURFACE, 9.5 mm	401-07335	QC/QA-HMA, 4, 76, SURFACE, 9.5 mm
401-07354	QC/QA-HMA, 5, 76, SURFACE, 12.5 mm	401-07353	QC/QA-HMA, 4, 76, SURFACE, 12.5 mm
401-07374	QC/QA-HMA, 5, 64, INTERMEDIATE, 12.5 mm	401-07373	QC/QA-HMA, 4, 64, INTERMEDIATE, 12.5 mm
401-07394	QC/QA-HMA, 5, 64, INTERMEDIATE, 19.0 mm	401-07393	QC/QA-HMA, 4, 64, INTERMEDIATE, 19.0 mm
401-07359	QC/QA-HMA, 5, 64, INTERMEDIATE, 9.5 mm	401-07358	QC/QA-HMA, 4, 64, INTERMEDIATE, 9.5 mm
401-07382	QC/QA-HMA, 5, 70, INTERMEDIATE, 12.5 mm	401-07380	QC/QA-HMA, 4, 70, INTERMEDIATE, 12.5 mm
401-07400	QC/QA-HMA, 5, 70, INTERMEDIATE, 19.0 mm	401-07399	QC/QA-HMA, 4, 70, INTERMEDIATE, 19.0 mm
401-11724	QC/QA-HMA, 5, 70, INTERMEDIATE, 25.0 mm	Eliminated (Contact Office of Pavement Engineering)	
401-07364	QC/QA-HMA, 5, 70, INTERMEDIATE, 9.5 mm	401-07363	QC/QA-HMA, 4, 70, INTERMEDIATE, 9.5 mm
401-07388	QC/QA-HMA, 5, 76, INTERMEDIATE, 12.5 mm	401-07387	QC/QA-HMA, 4, 76, INTERMEDIATE, 12.5 mm
401-07405	QC/QA-HMA, 5, 76, INTERMEDIATE, 19.0 mm	401-07404	QC/QA-HMA, 4, 76, INTERMEDIATE, 19.0 mm
401-11766	QC/QA-HMA, 5, 76, INTERMEDIATE, 25.0 mm	Eliminated (Contact Office of Pavement Engineering)	
401-07369	QC/QA-HMA, 5, 76, INTERMEDIATE, 9.5 mm	401-07368	QC/QA-HMA, 4, 76, INTERMEDIATE, 9.5 mm
401-07429	QC/QA-HMA, 5, 76, INTERMEDIATE, OG 19.0 mm	401-12137	QC/QA-HMA, 4, 76, INTERMEDIATE, OG 19.0 mm
401-07430	QC/QA-HMA, 5, 76, INTERMEDIATE, OG 25.0 mm	401-12138	QC/QA-HMA, 4, 76, INTERMEDIATE, OG 25.0 mm
401-101637	QC/QA-HMA, 5, 76, INTERMEDIATE, OG 9.5 mm	Eliminated (Contact Office of Pavement Engineering)	
401-11637	QC/QA-HMA, 5, 76, INTERMEDIATE, OG, 9.5 mm	Eliminated (Contact Office of Pavement Engineering)	
401-11825	QC/QA-HMA, 5, 76, Base, OG 19.0 mm	401-12139	QC/QA-HMA, 4, 76, Base, OG 19.0 mm
401-09084	QC/QA-HMA, 5, 76, Base, OG 25.0 mm	401-12141	QC/QA-HMA, 4, 76, Base, OG 25.0 mm
401-08365	QC/QA-HMA, 5, 64, BASE, 19.0 mm	401-08364	QC/QA-HMA, 4, 64, BASE, 19.0 mm
401-07410	QC/QA-HMA, 5, 64, BASE, 25.0 mm	401-07409	QC/QA-HMA, 4, 64, BASE, 25.0 mm
410-09086	QC/QA-HMA, 5, 76, SURFACE, 9.5 mm - SMA	410-09530	QC/QA-HMA, 4, 76, SURFACE, 9.5 mm - SMA
410-11846	QC/QA-HMA, 5, 76, SURFACE, 12.5 mm - SMA	410-11777	QC/QA-HMA, 4, 76, SURFACE, 12.5 mm - SMA

HMA PAVEMENT PAY ITEM CONVERSION LIST			
Letting Prior to October 1, 2016		Letting on or after October 1, 2016	
Approved Pavement Design using HMA Type A		Use HMA Type B	
304-07489	HMA PATCHING, TYPE A	304-07490	HMA PATCHING, TYPE B
304-07492	WIDENING WITH HMA, TYPE A	304-07493	WIDENING WITH HMA, TYPE B
402-10083	HMA FOR TEMPORARY PAVEMENT, A	402-10084	HMA FOR TEMPORARY PAVEMENT, B
402-07450	HMA WEDGE AND LEVEL, TYPE A	402-07451	HMA WEDGE AND LEVEL, TYPE B
610-07486	HMA FOR APPROACHES, TYPE A	610-07487	HMA FOR APPROACHES, TYPE B
715-08282	HMA FOR STRUCTURE INSTALLATION, TYPE A	715-08305	HMA FOR STRUCTURE INSTALLATION, TYPE B

Initial AADTT, trucks per day	Design ESALs, millions	QC/QA-HMA Category*
AADTT < 51	< 0.3	2
51 ≤ AADTT < 510	0.3 ≤ ESAL < 3	2
510 ≤ AADTT < 1700	3 ≤ ESAL < 10	3
1700 ≤ AADTT < 5100	10 ≤ ESAL < 30	4
AADTT ≥ 5100	≥ 30	4

2-LANE ROAD

Initial AADTT, trucks per day	Design ESALs, millions	QC/QA-HMA Category*
AADTT < 57	< 0.3	2
57 ≤ AADTT < 570	0.3 ≤ ESAL < 3	2
570 ≤ AADTT < 1900	3 ≤ ESAL < 10	3
1900 ≤ AADTT < 5700	10 ≤ ESAL < 30	4
AADTT ≥ 5700	≥ 30	4

4-LANE ROAD

Initial AADTT, trucks per day	Design ESALs, millions	QC/QA-HMA Category*
AADTT < 87	< 0.3	2
87 ≤ AADTT < 870	0.3 ≤ ESAL < 3	2
870 ≤ AADTT < 2900	3 ≤ ESAL < 10	3
2900 ≤ AADTT < 8700	10 ≤ ESAL < 30	4
AADTT ≥ 8700	≥ 30	4

6-LANE ROAD

Initial AADTT, trucks per day	Design ESALs, millions	QC/QA-HMA Category*
AADTT < 114	< 0.3	2
114 ≤ AADTT < 1140	0.3 ≤ ESAL < 3	2
1140 ≤ AADTT < 3800	3 ≤ ESAL < 10	3
3800 ≤ AADTT < 11400	10 ≤ ESAL < 30	4
AADTT ≥ 11400	≥ 30	4

8-LANE ROAD

* For open-graded mixtures OG 19.0 and OG 25.0, the QC/QA-HMA category is 4.

ESAL CATEGORY FOR QC/QA-HMA MIXTURES

Figure 304-15A

Initial AADTT, trucks per day	Design ESALs, millions	HMA Category
AADTT < 51	< 0.3	B
51 ≤ AADTT < 510	0.3 ≤ ESAL < 3	B
510 ≤ AADTT < 1700	3 ≤ ESAL < 10	C
AADTT ≥ 1700	≥ 10	D

2-LANE ROAD

Initial AADTT, trucks per day	Design ESALs, millions	HMA Category
AADTT < 57	< 0.3	B
57 ≤ AADTT < 570	0.3 ≤ ESAL < 3	B
570 ≤ AADTT < 1900	3 ≤ ESAL < 10	C
AADTT ≥ 1900	≥ 10	D

4-LANE ROAD

Initial AADTT, trucks per day	Design ESALs, millions	HMA Category
AADTT < 87	< 0.3	B
87 ≤ AADTT < 870	0.3 ≤ ESAL < 3	B
870 ≤ AADTT < 2900	3 ≤ ESAL < 10	C
AADTT ≥ 2900	≥ 10	D

6-LANE ROAD

Initial AADTT, trucks per day	Design ESALs, millions	HMA Category
AADTT < 114	< 0.3	B
114 ≤ AADTT < 1140	0.3 ≤ ESAL < 3	B
1140 ≤ AADTT < 3800	3 ≤ ESAL < 10	C
AADTT ≥ 3800	≥ 10	D

8-LANE ROAD

MIXTURE TYPE FOR HMA MIXTURES

Figure 304-15B