Transportation test procedures

ATT-68 / 2024 – Appeal Testing ACP

Alberta

Contents

1.0 SCOPE

This method describes the procedures and Test Methods used for the appeal of acceptance test results for asphalt content, density, gradation, Marshall air voids and Gyratory air voids.

2.0 TEST PROCEDURES AND DATA SHEETS

Procedure	Data Sheet
ATT-56, Part II, Stratified Random Test Sites, ACP	Stratified Random Test Sites (Such as MAT 6-82)
ATT-5, Coring	N/A
ATT-7, Density, Immersion Method, Saturated Surface Dry Asphalt Concrete Specimens ATT-12, Part II, Filterless Extraction and Filterless Centrifuge Method ATT-26, Sieve Analysis -25,000 µm	Core Density, Extraction and Sieve Analysis (MAT 6-79)
ATT-12, Part III, Correction Factor, Extracted Asphalt Content	Extraction Asphalt Content Correction Factor (Such as MAT 6-75)
ATT-77, Theoretical Maximum Specific Gravity of Bituminous Mixtures (MTD)	N/A

Reporting	Data Sheet
Volume 2 – Construction Contract Admin Appendix B - Form B.15 Appeal Initialization Form	Required for all appeal types (B.15/MAT 6-92A)
Volume 2 – Construction Contract Admin Appendix B - Form B.16 Appeal Testing Form	Appeal Consultant partially fills out this form with appeal results. (B.16/MAT 6-92) ***Remember that Contract specific information is NOT to be included on this form when it is forwarded to the Appeal Consultant.*** Prime Consultant completes the form with project info, etc. (B.16/MAT 6-92) ***after receiving the appeal results***

3.0 PROCEDURE

3.1 Sampling by the Contractor

When an Appeal Asphalt Content Correction Factor is required, the Contractor supplies a minimum of 15 kg of representative aggregate of each split, and a 4l sample of project asphalt cement for the appealed Lot. These materials and a completed Appeal Initialization Form (MAT6-92A), as shown in Figure 1, with the design or target gradation, and design or target aggregate splits are shipped along with the appeal cores to a pre-qualified Appeal Testing Laboratory where they will be used to establish an asphalt content extraction correction factor.

3.2 Appeal Samples Determined by the Consultant

The following core sampling procedures are for **Appeals of Asphalt Content, Density, and Gradation**. The Contractor does the coring under the observation of the Consultant QA technologist or project manager.

1. Core locations are established by the Consultant using the Stratified Random Test Site procedure ATT-56, Part II. The contractor obtains 5 new core samples at the new stratified random locations and gives them to the consultant.

2. For density appeals, the core thickness must meet the requirements described in ATT-5 CORING (or ATT-56, Stratified Randoms, Part II).

3. For asphalt content or gradation appeals, sufficient six-inch diameter cores are taken at the same location, for each of the separate segments, to provide the Appeal Testing Laboratory with a minimum 2000-gram extraction sample. This is the weight after trimming and removing the cut rock, as described in ATT-12, EXTRACTION, Part II Centrifuge. Cores for asphalt content appeals taken on bottom lifts over crack filler, are discarded and re-cored at another random location within the segment.

4. For each cored specimen, a cut-off saw is used to separate the layer to be tested from other pavement layers, and to remove all tack. The Consultant does the sawing and trimming.

5. Each layer to be tested is identified by segment number only and placed in an appeal testing shipping box. For shipping of appeal test cores, the Consultant shall provide shipping boxes of rigid construction with interior protective padding.

6. The Consultant contacts the Project Administrator to confirm which appeal lab to use. Normally the closest appeal lab is chosen, however; the appeal lab selected should not be involved with the project for any QC/QA testing, and not involved in any of the project mix design services.

7. The cores, aggregate and asphalt cement samples (if applicable), along with the completed Appeal Initialization Form (B.15/MAT 6-92A) as shown in Figure 1 are then submitted to the Appeal Testing Laboratory. **Contract specific information IS NOT TO BE INCLUDED on this form,** so that the appeal consultant isn't influenced by what the actual mix design numbers should be.

3.3 Density Appeal Testing

1. Each core is processed as per ATT-7, DENSITY, Immersion Method.

3.4 Asphalt Content Appeal Testing

1. The asphalt content is determined for each segment in accordance with test method ATT-12, Part II, Filterless Extraction and Filterless Centrifuge Method.

2. An asphalt correction factor is determined using test method ATT-12, Part III, CORRECTION FACTOR, Extracted Asphalt Content. The average (uncorrected) extraction asphalt content of the five samples is used as the Target Asphalt Content. Five samples are required to establish a correction factor.

   This correction factor is applied to the extracted asphalt content from the cores to correct for asphalt binder loss due to absorption by the aggregate.

3. The gradation of each extracted sample is determined according to ATT-26, SIEVE ANALYSIS, -25,000 µm AGGREGATE.

3.5 Gradation Appeal Testing

1. Repeat steps 1 and 3 of Section 3.4 above.
   For Gradation Appeals ONLY, ASPHALT CORRECTION FACTORS are NOT REQUIRED, but the UNCORRECTED Asphalt Content of each core will be reported on the appeal form.

3.6 Marshall Air Voids or Gyratory Air Voids Appeal Testing

1. When a Gyratory or Marshall Air Voids Appeal is required on any individual Lot, the Consultant supplies the stored loose mix samples (usually five) for that particular lot to the Appeal Consultant so they can run another set of 5 Theoretical Maximum Specific Gravities.

4.0 REPORTING PROCESS

1. The Appeal Consultant completes the appeal testing and forwards the appeal test results to the Prime Consultant in the partially filled out Appeal Testing Form (B.16/MAT6-92), then forwards the appeal testing invoice to the Project Administrator who setup the Appeal Testing.

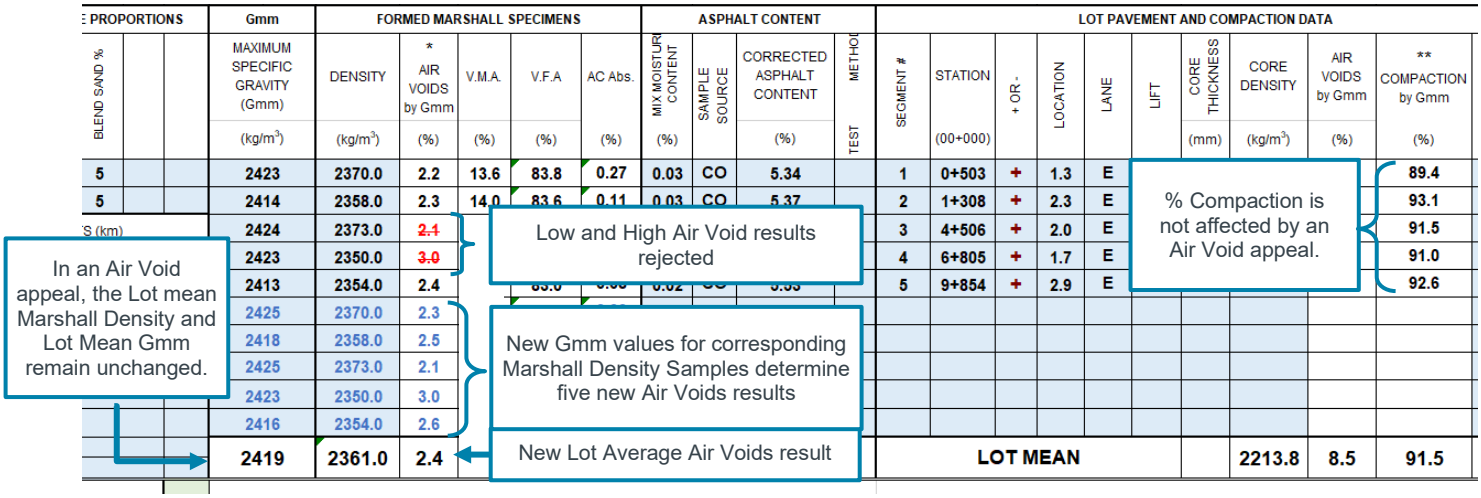
2. The Prime Consultant then completes the Appeal Testing Form (B.16/MAT 6-92), as shown in Figure 2, and calculates the New Appeal Lot Mean value and completes a Revised Lot Paving Report which includes the appeal values and the original values, as per “3.50.4.9 Appeal of Acceptance Test Results and Appeal Testing”. Instructions for how to prepare a new lot report for appeals is detailed in the “Instructions Tab” for the applicable Lot Report form spreadsheet (Appendix B.09A-Marshall, or B.10-Superpave).

3. The completed Appeal Testing form shall be signed by the Contractor. The Contractor is then given a photocopy of the signed form for his records. A copy of the completed and signed Appeal Testing form is also forwarded to the Project Administrator and the Technical Standards Branch.

4. For Gradation Appeals, a New Gradation Price Adjustment Datasheet is created, averaging all the original gradations for Segments 1-5 and all the gradation data for the appeal segments 1-5 added. A new Lot Mean and Range for all tests will be determined and used for acceptance and unit price adjustment (see Figure 3).

5. For Appeals other than gradations, the single-high and single-low test results from the original Lot will be rejected and the remaining test results will be added to the results of the new tests. A new Lot Mean for the test results will be determined and used for acceptance and unit price adjustment.

For air void appeals, the new Theoretical Maximum Specific Gravity results will be used with the original corresponding Marshall or Gyratory densities to determine new Air Voids. The new calculated Air Voids values are added to the remaining original Air Voids to determine the new Lot Mean Air Voids. The new Theoretical Maximum Specific Gravity values will only be considered for the purpose of determining the new calculated Air Voids, they will not be used to determine a new Lot Mean Theoretical Maximum Specific Gravity. An example lot report showing a lot air void appeal is include below in Figure 1, and in Appendix 1.



E PROPORTIONS			Gmm	FORMED MARSHALL SPECIMENS					ASPHALT CONTENT				LOT PAVEMENT AND COMPACTION DATA									
BLEND SAND %			MAXIMUM SPECIFIC GRAVITY (Gmm)	DENSITY	* AIR VOIDS by Gmm	V.M.A.	V.F.A	AC Abs.	MIX MOISTURE CONTENT	SAMPLE SOURCE	CORRECTED ASPHALT CONTENT	METHOD TEST	SEGMENT #	STATION	+ OR -	LOCATION	LANE	LIFT	CORE THICKNESS	CORE DENSITY	AIR VOIDS by Gmm	** COMPACTION by Gmm
			(kg/m^3)	(kg/m^3)	(%)	(%)	(%)	(%)	(%)		(%)			(00+000)					(mm)	(kg/m^3)	(%)	(%)
5			2423	2370.0	2.2	13.6	83.8	0.27	0.03	CO	5.34		1	0+503	+	1.3	E					89.4
5			2414	2358.0	2.3	14.0	83.6	0.11	0.03	CO	5.37		2	1+308	+	2.3	E					93.1
S (km)			2424	2373.0	~~2.1~~								3	4+506	+	2.0	E					91.5
			2423	2350.0	~~3.0~~								4	6+805	+	1.7	E					91.0
			2413	2354.0	2.4								5	9+854	+	2.9	E					92.6
			2425	2370.0	2.3																	
			2418	2358.0	2.5																	
			2425	2373.0	2.1																	
			2423	2350.0	3.0																	
			2416	2354.0	2.6																	
			2419	2361.0	2.4									LOT MEAN						2213.8	8.5	91.5

Figure 1 - Sample Air Void Appeal Lot Report

6. The original Lot Paving Report results are then amended to reflect the additional appeal results, as indicated in the Standard Specifications for Highway Construction 3.50.4.9 Appeal of Acceptance Test Results and Appeal Testing.

Appendix 1

Sample Forms

Sample 1 - Appendix B15: Appeal Initialization form example (Asphalt Content Appeal)

Alberta

B.15 MAT 6 - 92A/24

APPEAL INITIALIZATION FORM

PRIME CONSULTANT:	**Consulting 123**	CONTACT NAME:	**M.Consultant**	PHONE: / EMAIL:	780-111-2222 / consultant@consulting123.com
DATE SUBMITTED:	**1-Jan-2024**	APPEAL TYPE:	**Asphalt Content**	APPEAL CONSULTANT:	**Appeal Tester Examples ltd.**
LOT NO.	**5**	APPEAL NO.:	**No.1**	PROJECT IDENTIFIER:	**XYZ-1**

APPEAL TYPES
Asphalt Content
ACP Gradation
ACP Density
GBC Gradation
GBC Fractures
L.A. Abrasion
Detrimental Matter
Marshall/Gyratory Air Void Appeal

CORRECTION FACTOR INFORMATION

(Fill out the areas below only if the Appeal is for Asphalt Content)

DESIGN or VIRGIN (if RAP) GRADATION			DESIGN or TARGET AGGREGATE PROPORTIONS %	
SIEVE SIZE (µm)	PERCENT PASSING (%)			
25 000			COARSE AGGREGATE (12.5mm)	**75**
20 000			NATURAL FINES	**10**
16 000	**100**		MANUFACTURED FINES	
12 500	**100**			
10 000	**97**		BLEND SAND	**15**
5 000	**71**			
1250	**43**		COARSE AGGREGATE (20mm)	
630	**32**			
315	**19**		COARSE AGGREGATE (25mm)	
160	**11.6**			
80	**7.5**		OTHER _____	
ASPHALT CEMENT GRADE AND SUPPLIER			% PASSING 5000µm SIEVE IN COARSE	**45**

SHADED AREAS - COMPLETED BY PRIME CONSULTANT - HEADER INFORMATION COMPLETED FOR ALL APPEALS

CORRECTION FACTOR INFORMATION NEEDED FOR ASPHALT CONTENT APPEALS ONLY

COPY SUBMITTED WITH SAMPLES AND SENT TO AN APROVED APPEAL CONSULTANT (AS SPECIFIED IN ATT-68)

FOR PROCEDURES AND TEST METHODS USED FOR THE APPEAL OF ACCEPTANCE TEST RESULTS, SEE ATT-68 APPEAL TESTING

SEND COMPLETED COPIES OF THIS FORM TO: 1. THE PAVEMENT ENGINEERING SECTION (email to tec.constructqa@gov.ab.ca)
2. PROJECT SPONSOR

REMARKS: *The Project Identifier in the header is useful in the case where more than one appeal is sent in by the same consultant for different jobs.*

For asphalt content appeals, the Contractor supplies a minimum of 15 kg of representative aggregate for each split, and a 4L sample *of project asphalt cement for the appealed Lot. The materials and the design gradation are shipped to the Appeal Testing Consultant.*

For Marshall or Gyratory Air Voids appeals, the Consultant will provide the appeal testing laboratory with split samples of loose mix from the appropriate lot (sampled in accordance with 3.50.4.4.2.3 or 3.53.4.4.2.3, Asphalt Mix Sampling)

For core asphalt content or gradation appeals, sufficient cores are taken at the same location to provide the Appeal Testing Lab with a minimum 2000 g extraction sample.

NOTE : Contract Specific Information is NOT to be included on this form.

Revised November 2024 ***Appendix B.15***

Sample 2 - Appendix B.16 Appeal Testing Results, Marshall Air Voids Appeal Example

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B.16 MAT 6-92 / 24

APPEAL TEST RESULTS

APPEAL TYPE & NO: Marshall/Gyratory Air Voids | No. 3

PROJECT:	**Hwy 12:34**	CONTRACT:	**CON0012345**	DATE LAID:	**5-Jul-2024**	DATE CORED:	**10-Jul-2024**
FROM:	**Hwy 1**	LOT NO.:	**3**	CONTRACTOR:	**Paving 123**	PRIME CONSULTANT:	**Consulting 123**
TO:	**Hwy 2**	PROJECT IDENTIFIER:	**Appeal XYZ-2**	PROJECT MANAGER:	**J.Consultant**	**APPEAL CONSULTANT:	**XYZ Tester**

SEGMENT OR SAMPLE NUMBER	1	2	3	4	5
STATION OF SEGMENT TEST SITE	2+100	4+650	5+002	8+122	9+450
LOCATION FROM CENTERLINE	2.0 m Rt	2.3 m Rt	0.5 m Rt	4.1 m Rt	3.1 m Rt

DENSITY

A. LOT AVERAGE **Select compaction standard**						**B TOTAL**	**AVERAGE**
CORE DRY DENSITY (kg/m³)							

ASPHALT CONTENT

EXTRACTION CORRECTION FACTOR						**C TOTAL**	**AVERAGE**
CORRECTED EXTRACTION ASPHALT CONTENT (%)							

MARSHALL OR GYRATORY AIR VOIDS

D. DENSITY* (kg/m3)	2370	2358	2373	2350	2354	*From original lot report
E. MAX SPECIFIC GRAVITY (kg/m³)	2425	2418	2425	2423	2416	
F. AIR VOIDS	2.27%	2.48%	2.14%	3.01%	2.57%	

GRADATION OF EXTRACTED CORES or GRANULAR BASE COURSE SAMPLES

SIEVE SIZE (µm)	PERCENT PASSING (%)					**AVERAGE**	JOB MIX FORMULA
40 000							
25 000							
20 000							
16 000							
12 500							
10 000							
5 000							
1 250							
630							
315							
160							
80							
% FRACTURES - GBC							

LOT ASPHALT CONTENT, DENSITY OR AIR VOID

DENSITY	the single high and single low test results from the original Lot will be rejected		**G**	**H**	**I**
	THREE REMAINING CORE DRY DENSITY TESTS				
ASPHALT CONTENT	the single high and single low test results from the original Lot will be rejected		**J**	**K**	**L**
	THREE REMAINING ASPHALT CONTENT TESTS				
AIR VOIDS	the single high and single low air voids results from the original Lot will be rejected		**M**	**N**	**O**
	THREE REMAINING ORIGINAL DENSITY TESTS		2370	2358	2354
	THREE REMAINING ORIGINAL MAXIMUM SPECIFIC GRAVITY TESTS		2423	2414	2413
	THREE REMAINING AIR VOID VALUES	LOT 3	2.19%	2.32%	2.45%

P. FINAL LOT DENSITY RESULTS		(B + G + H + I) / 8	kg /m³	
Q. FINAL LOT ASPHALT CONTENT RESULTS		(C + J + K + L) / 8	%	
R. FINAL LOT AIR VOIDS RESULTS		(∑F + M + N + O) / 8	%	2.43%
S. LOT TARGET ASPHALT CONTENT			%	
T. DEVIATION FROM TARGET ASPHALT CONTENT		S - P	%	
U. TARGET AIR VOIDS FROM APPROVED JMF				3.50%
V. DEVIATION OF LOT MEAN AIR VOIDS FROM APPROVED JMF		R - U	%	1.07%
W. FINAL LOT % COMPACTION	**Select compaction standard**	(100 P / A)	%	
X. LOT UNIT PRICE ADJUSTMENT FOR DENSITY or ASPHALT CONTENT or AIR VOIDS	(TABLE 3.50 A, B or G, or TABLE 3.53 A, B or F)		$ / t	**($3.00)**
Y. LOT TONNES OF MIX			t	3000
Z. APPEAL LOT ADJUSTMENT		X x Y	$	**($9,000.00)**

BLUE CELLS=COMPLETED BY APPEAL CONSULTANT ORANGE CELLS=COMPLETED BY PRIME CONSULTANT

SEND COMPLETED COPIES OF THIS FORM TO: tec.constructqa@gov.ab.ca AND Project Sponsor

REMARKS:

Low air voids penalty, also see revised lot report #3.

PROJECT MANAGER | CONTRACTOR | APPEAL CONSULTANT

Revised November 2024 *Appendix B.16*

Sample 3 - Appendix B.09a - Revised lot report for Marshall Air Void Appeal Example

MARSHALL LOT PAVING REPORT

Alberta

B.09a
MAT 6-78/24

TEC CONTRACT NO.	PROJECT NO.				PROJECT FROM	LOT NO.	MIX DESIGN NO.	DESIGN DENSITY (kg/m³)	2364	DESIGN VMA (%)	14.5	COMBINED AGGREGATE Gsb	2.600
12345					Hwy 1	2-Appeal	12345-2						
WEEK ENDING	CL	NO.	A	CS	PROJECT TO	MIX TYPE	PIT NAME	DESIGN Gmm (kg/m3)	2450	DESIGN AC (%)	5.6	DESIGN AC Gsb	1.0250
YY MM DD					Hwy 2	S1	Pit XYZ			TARGET AC (%)	5.6		
2024 06 28	Hwy	12		34	PAVING CONTRACTOR	QA CONSULTANT		DESIGN AIR VOIDS (%)	3.5	DESIGN LIFT THICKNESS (mm)	20	DESIGN AC Abs.(%)	0.80
					Paving 123	Consulting 123							

DATE LAID (dd-mm-yyyy)	AGGREGATE PROPORTIONS					Gmm	FORMED MARSHALL SPECIMENS					ASPHALT CONTENT				LOT PAVEMENT AND COMPACTION DATA									
	COARSE 12.5mm %	MF %	BLEND SAND %			MAXIMUM SPECIFIC GRAVITY (Gmm)	DENSITY	* AIR VOIDS by Gmm	V.M.A.	V.F.A	AC Abs.	MIX MOISTURE CONTENT	SAMPLE SOURCE	CORRECTED ASPHALT CONTENT	TEST METHOD	SEGMENT #	STATION	+ OR -	LOCATION	LANE	LIFT	CORE THICKNESS	CORE DENSITY	AIR VOIDS by Gmm	** COMPACTION by Gmm	CORE MOISTURE CONTENT
25-Jun-2024						(kg/m³)	(kg/m³)	(%)	(%)	(%)	(%)	(%)		(%)			(00+000)					(mm)	(kg/m³)	(%)	(%)	(%)
DESIGN	80	15	5			2423	2370.0	2.2	13.6	83.8	0.27	0.03	BP	5.34		1	0+503	+	1.3	E	B	20	2162.0	10.6	89.4	0.27
PLANT	80	15	5			2414	2358.0	2.3	14.0	83.6	0.11	0.03	BP	5.37		2	1+308	+	2.3	E	B	20	2253.0	6.9	93.1	0.74
LOT PAVING LIMITS (km)						2424	2373.0	~~2.4~~	13.4	84.3	0.29	0.02	BP	5.48		3	4+506	+	2.0	E	B	20	2214.0	8.5	91.5	0.54
FROM	TO		LANE	MAT		2423	2350.0	~~3.0~~	14.3	79.0	0.27	0.03	BP	5.55		4	6+805	+	1.7	E	B	20	2201.0	9.0	91.0	0.38
0+123	10+505		E	R		2413	2354.0	2.4	14.1	83.0	0.08	0.02	BP	5.53		5	9+854	+	2.9	E	B	20	2239.0	7.4	92.6	0.20
						2425	2370.0	2.3	13.6	83.1	0.30															
						2418	2358.0	2.5	14.0	82.1	0.27															
						2425	2373.0	2.1	13.4	84.3	0.30															
						2423	2350.0	3.0	14.3	79.0	0.27															
						2416	2354.0	2.6	14.1	81.6	0.14															
						2419	2361.0	2.4	13.9	82.4	0.23	0.03		5.45			LOT MEAN					20	2213.8	8.5	91.5	0.43

* AIR VOIDS by Gmm = [(Gmm - Marshall Density) / Gmm)] x 100

** COMPACTION by Gmm = [Segment Core Density / Lot mean Gmm] x 100

ADDITIVE
RA Reclaim
CF Coarse Fines
BS Blend Sand
C 2nd Coarse
OR Other_____

MAT
R Right
L Left
C Centerline
RS Right Shoulder
LS Left Shoulder

TEST METHOD
FE Filterless Extraction
NU Nuclear
RE Reflux
FC Filter Centrifuge
IG Ignition
OR Other_____

LANE
N Northbound
S Southbound
W Westbound
E Eastbound

SAMPLE SOURCE CODE
CO Core
BP Behind Paver
CF Cold Feed
OR Other

LIFT
B Bottom Lift
T Top Lift
O Other Lifts

TEST NO.	SAMPLE SOURCE	GRADATION – SIEVE ANALYSIS - % PASSING (µm)											
		25,000	20,000	16,000	12,500	10,000	5,000	2,500	1,250	630	315	160	80
1	BP	100.0	100.0	100.0	98.0	89.0	63.0		32.0	23.0	13.0	8.4	5.2
2	BP	100.0	100.0	100.0	99.0	91.0	61.0		32.0	24.0	15.0	9.5	6.2
3	BP	100.0	100.0	100.0	95.0	89.0	58.0		30.0	23.0	14.0	9.2	6.0
4	BP	100.0	100.0	100.0	96.0	84.0	53.0		26.0	20.0	13.0	8.3	5.3
5	BP	100.0	100.0	100.0	98.0	89.0	62.0		32.0	24.0	15.0	9.2	6.0
QA1													
QA2													
LOT MEAN	1-5	100.0	100.0	100.0	97.2	88.4	59.4		30.4	22.8	14.0	8.9	5.7
	QA1-2												
JOB MIX FORMULA		100.0	100.0	100.0	98.0	88.0	60.0		31.0	23.0	14.0	9.5	6.4
TOLERANCES FOR THE LOT MEAN FROM JOB MIX FORMULA		± 5	± 5	± 5	± 5	± 5	± 5		± 3	± 2	± 2	± 1.5	± 1.5
MAXIMUM RANGE BETWEEN INDIVIDUAL TEST RESULTS IN A LOT		10	10	10	10	10	10		6	5	4	3	3

LOT TONNAGE	3000.00
ASPHALT CONTENT CORRECTION FACTOR (%)	-0.86
MQA (QA or QC ACCEPTANCE LOT)	QA
ESTIMATED LOT PRICE ADJUSTMENT (PER TONNE)	($2.80)
COMMENTS	**HCS: EDITION 16, 2019**
Original Air Voids= 2.5	*Marshall Air Void Appeal*
Appeal Air Voids=2.4	*Revised Lot Report*

TECHNOLOGISTS :

CONSULTANT :

PROJECT MANAGER :

RECEIVED BY :
*** Contractor's Representative

DATE RECEIVED : TIME :
*** Signature indicates receipt of data on the date and time indicated

Revised October 2024 **Appendix B.09a**

Sample 4 - Appendix B.16 Appeal Testing Results, Gradation Appeal Example (include both form B.16 & Gradation adjustment Price sheet from Lot Report form B.09a or B.10)

Alberta

B.16 MAT 6-92 / 24

APPEAL TEST RESULTS

APPEAL TYPE & NO: ACP Gradation | No. 1

*Also Complete New Lot Report & Gradation Price Adjustment Spreadsheet from Lot Report

PROJECT:	Hwy 12:34	CONTRACT:	CON0012345	DATE LAID:	5-Jul-2024	DATE CORED:	10-Jul-2024
FROM:	Hwy 1	LOT NO.:	3	CONTRACTOR:	Paving 123	PRIME CONSULTANT:	Consulting 123
TO:	Hwy 2	PROJECT IDENTIFIER:	Appeal XYZ-2	PROJECT MANAGER:	J.Consultant	**APPEAL CONSULTANT:	XYZ Tester

SEGMENT OR SAMPLE NUMBER	1	2	3	4	5
STATION OF SEGMENT TEST SITE	2+100	4+650	5+002	8+122	9+450
LOCATION FROM CENTERLINE	2.0 m Rt	2.3 m Rt	0.5 m Rt	4.1 m Rt	3.1 m Rt

DENSITY							
A. LOT AVERAGE	Select compaction standard					B TOTAL	AVERAGE
CORE DRY DENSITY (kg/m³)							

ASPHALT CONTENT							
EXTRACTION CORRECTION FACTOR						C TOTAL	AVERAGE
CORRECTED EXTRACTION ASPHALT CONTENT (%)							

MARSHALL OR GYRATORY AIR VOIDS						
D. DENSITY* (kg/m3)						*From original lot report
E. MAX SPECIFIC GRAVITY (kg/m³)						
F. AIR VOIDS						

GRADATION OF EXTRACTED CORES or GRANULAR BASE COURSE SAMPLES							
SIEVE SIZE (µm)	PERCENT PASSING (%)					AVERAGE	JOB MIX FORMULA
40 000							100
25 000							100
20 000	100	100	100	100	100	**100**	100
16 000	98	98	99	98	100	**99**	99
12 500	90	90	91	91	92	**91**	90
10 000	81	83	83	86	85	**84**	81
5 000	59	63	61	69	63	**63**	63
1 250	29	30	28	34	31	**30**	33
630	21	22	20	24	23	**22**	26
315	13	14	13	15	14	**14**	15
160	8.7	8.8	8.0	9.2	8.8	**8.7**	9.8
80	6.1	6.1	5.5	6.0	5.9	**5.9**	7.1
% FRACTURES - GBC	62	61	60	60	62	**61**	

LOT ASPHALT CONTENT, DENSITY OR AIR VOID					
DENSITY	the single high and single low test results from the original Lot will be rejected		G	H	I
	THREE REMAINING CORE DRY DENSITY TESTS				
ASPHALT CONTENT	the single high and single low test results from the original Lot will be rejected		J	K	L
	THREE REMAINING ASPHALT CONTENT TESTS				
AIR VOIDS	the single high and single low air voids results from the original Lot will be rejected		M	N	O
	THREE REMAINING ORIGINAL DENSITY TESTS				
	THREE REMAINING ORIGINAL MAXIMUM SPECIFIC GRAVITY TESTS				
	THREE REMAINING AIR VOID VALUES				
P. FINAL LOT DENSITY RESULTS			(B + G + H + I) / 8	kg /m³	
Q. FINAL LOT ASPHALT CONTENT RESULTS			(C + J + K + L) / 8	%	
R. FINAL LOT AIR VOIDS RESULTS			(∑F + M + N + O) / 8	%	
S. LOT TARGET ASPHALT CONTENT				%	
T. DEVIATION FROM TARGET ASPHALT CONTENT			S - P	%	
U. TARGET AIR VOIDS FROM APPROVED JMF					
V. DEVIATION OF LOT MEAN AIR VOIDS FROM APPROVED JMF			R - U	%	
W. FINAL LOT % COMPACTION	Select compaction standard		(100 P / A)	%	
X. LOT UNIT PRICE ADJUSTMENT FOR DENSITY or ASPHALT CONTENT or AIR VOIDS		(TABLE 3.50 A, B or G, or TABLE 3.53 A, B or F)		$ / t	
Y. LOT TONNES OF MIX				t	
Z. APPEAL LOT ADJUSTMENT			X x Y	$	See Note

Note: To obtain Gradation Appeal Lot Adjustment, complete Gradation Price Adjustment Sheet from Lot Report

BLUE CELLS=COMPLETED BY APPEAL CONSULTANT ORANGE CELLS=COMPLETED BY PRIME CONSULTANT

SEND COMPLETED COPIES OF THIS FORM TO: tec.constructqa@gov.ab.ca AND Project Sponsor

REMARKS:

Gradation Price Adjustment Sheet and revised lot report attached.

PROJECT MANAGER | CONTRACTOR | APPEAL CONSULTANT

Revised November 2024 *Appendix B.16*

Sample 5 - EPS Gradation Price Adjustment Data Sheet Sample (Available in B.09a or B.10 Forms as applicable)

Alberta

GRADATION PRICE ADJUSTMENT DATA SHEET ACP EPS

STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION 16, 2019

Highway	**12:34**	Contract #	**12345**	Lot No.	**2-Appeal**	Date Laid	**25-Jun-2024**
From	**Hwy 1**	To	**Hwy 2**			Lift	**B**
Project Manager		Contractor	**Paving 123**			Aggregate Class (mm)	**16.0**
						QA or QC Acceptance Lot	**QA**

Sieve Size	GRADATIONS OF EXTRACTED CORES									
	20000	16000	12500	10000	5000	1250	630	315	160	80
Segment 1	100.0	100.0	95.0	89.0	67.0	34.0	25.0	16.0	9.6	6.4
Segment 2	100.0	100.0	96.0	89.0	68.0	35.0	26.0	16.0	9.7	6.1
Segment 3	100.0	100.0	95.0	88.0	67.0	32.0	23.0	14.0	9.1	6.0
Segment 4	100.0	100.0	93.0	85.0	64.0	32.0	24.0	14.0	8.9	5.6
Segment 5	99.0	99.0	91.0	83.0	62.0	30.0	23.0	14.0	8.8	5.7
Appeal Segment 1 (only if applicable)	100.0	98.0	90.0	81.0	59.0	29.0	21.0	13.0	8.7	6.1
Appeal Segment 2 (only if applicable)	100.0	98.0	90.0	83.0	63.0	30.0	22.0	14.0	8.8	6.1
Appeal Segment 3 (only if applicable)	100.0	99.0	91.0	83.0	61.0	28.0	20.0	13.0	8.0	5.5
Appeal Segment 4 (only if applicable)	100.0	98.0	91.0	86.0	69.0	34.0	24.0	15.0	8.0	6.0
Appeal Segment 5 (only if applicable)	100.0	100.0	92.0	85.0	63.0	31.0	23.0	14.0	8.8	5.9
A. Lot Mean	**99.9**	**99.2**	**92.4**	**85.2**	**64.3**	**31.5**	**23.1**	**14.3**	**8.8**	**5.9**
B. Job Mix Formula	100.0	99.0	90.0	81.0	63.0	33.0	26.0	15.0	9.8	7.1
C. Difference	0	0	2	4	1	2	3	1	1	1
D. Specification Limits	100	100	80-92	70-84	50-65	26-45	18-38	12-30	8-20	4-10
	Mean Adjustments (within 3.2 Specification)									
E. Mean Tolerance	5	5	5	5	5	3	2	2	1.5	1.5
F. % Out of Mean	0	0	0	0	0	0	1	0	0.0	0.0
G. Mean Adjustments	0	0	0	0	0	0	2	0	0.0	0.0
	Mean Adjustments (Outside Specification 3.2)									
H. % Out of Specifications	0	0	0	1	0	0	0	0	0.0	0.0
I. Mean Adjustments	0	0	0	5	0	0	0	0	0.0	0.0
J. Rejection	no	no	no	no	no	no	no	no	no	no
	Range Values									
K. Allowable Range	10	10	10	10	10	6	5	4	3	3
L. Lot Range	1.0	2.0	6.0	8.0	10.0	7.0	6.0	3.0	1.7	0.9
M. Range Failure	no	no	no	no	no	yes	yes	no	no	no

Lot Adjustment Calculations

N. Total Mean Adjustments (within Specifications)			2.0	Remarks:
O. Lot Gradation Price Adjustment per Tonne(in Spec)	N x $0.04	QA	($0.080)	Note: N3. A tolerance of 3% passing the max-
P. Total Mean Adjustments (outside of Specifications)			5.0	imum size sieve will be permitted provided all
Q. Lot Gradation Price Adjustment per Tonne(out of Spec)	P x $0.4	QA	($2.000)	oversize material passes the next larger stand-
R. Bonus Adjustment(No Adjustments or Range Failures)	+$0.20	QA	$0.000	ard sieve size.
S. Total Lot Price Adjustment for Gradation			($2.080)	
T. Lot Tonnes of Mix			1734.00	
U. Lot Gradation Price Adjustment (Penalty) or Bonus			**($3,606.72)**	

Sample 6 - Appendix B.09a - Revised lot report Gradation Appeal Example

MARSHALL LOT PAVING REPORT

Alberta

B.09a
MAT 6-78/24

TEC CONTRACT NO.	WEEK ENDING YY	MM	DD	PROJECT NO. CL	NO.	A	CS	PROJECT FROM	LOT NO.	MIX DESIGN NO.	DESIGN DENSITY (kg/m³)		DESIGN VMA (%)		COMBINED AGGREGATE Gsb	
12345	2024	06	28	Hwy	12		34	Hwy 1	2-Appeal	12345-2		2355		14.5		2.600
								PROJECT TO	MIX TYPE	PIT NAME	DESIGN Gmm (kg/m3)	2420	DESIGN AC (%)	5.6	DESIGN AC Gsb	1.0250
								Hwy 2	S1	Pit XYZ			TARGET AC (%)	5.6		
								PAVING CONTRACTOR	QA CONSULTANT		DESIGN AIR VOIDS (%)	3.5	DESIGN LIFT THICKNESS (mm)	20	DESIGN AC Abs.(%)	0.80
								Paving 123	Consulting 123							

DATE LAID (dd-mm-yyyy)	AGGREGATE PROPORTIONS COARSE 12.5mm %	MF %	BLEND SAND %			Gmm MAXIMUM SPECIFIC GRAVITY (Gmm) (kg/m³)	FORMED MARSHALL SPECIMENS DENSITY (kg/m³)	* AIR VOIDS by Gmm (%)	V.M.A. (%)	V.F.A (%)	AC Abs. (%)	ASPHALT CONTENT MIX MOISTURE CONTENT (%)	SAMPLE SOURCE	CORRECTED ASPHALT CONTENT (%)	TEST METHOD	LOT PAVEMENT AND COMPACTION DATA SEGMENT #	STATION (00+000)	+ OR -	LOCATION	LANE	LIFT	CORE THICKNESS (mm)	CORE DENSITY (kg/m³)	AIR VOIDS by Gmm (%)	** COMPACTION by Gmm (%)	CORE MOISTURE CONTENT (%)
2024-06-25																										
DESIGN	80	15	5			2423	2355.0	2.8	14.1	80.1	0.27	0.03	BP	5.34		1	0+503	+	1.3	E	B	20	2162.0	10.7	89.3	0.27
PLANT	80	15	5			2420	2355.0	2.7	14.1	80.9	0.21	0.03	BP	5.37		2	1+308	+	2.3	E	B	20	2253.0	6.9	93.1	0.74
LOT PAVING LIMITS (km)						2424	2364.0	2.5	13.8	81.9	0.29	0.02	BP	5.48		3	4+506	+	2.0	E	B	20	2214.0	8.6	91.4	0.54
FROM	TO		LANE	MAT		2423	2350.0	3.0	14.3	79.0	0.27	0.03	BP	5.55		4	6+805	+	1.7	E	B	20	2201.0	9.1	90.9	0.38
0+123	10+505		E	R		2413	2353.0	2.5	14.2	82.4	0.08	0.02	BP	5.53		5	9+854	+	2.9	E	B	20	2239.0	7.5	92.5	0.20
						2421	2355.4	2.7	14.1	80.9	0.22	0.03		5.45		LOT MEAN						20	2213.8	8.6	91.4	0.43

* AIR VOIDS by Gmm = [(Gmm - Marshall Density) / Gmm)] x 100

** COMPACTION by Gmm = [Segment Core Density / Lot mean Gmm] x 100

ADDITIVE
RA Reclaim
CF Coarse Fines
BS Blend Sand
C 2nd Coarse
OR Other_____

MAT.
R Right
L Left
C Centerline
RS Right Shoulder
LS Left Shoulder

TEST METHOD
FE Filterless Extraction
NU Nuclear
RE Reflux
FC Filter Centrifuge
IG Ignition
OR Other_____

LANE
N Northbound
S Southbound
W Westbound
E Eastbound

SAMPLE SOURCE CODE
CO Core
BP Behind Paver
CF Cold Feed
OR Other

LIFT
B Bottom Lift
T Top Lift
O Other Lifts

TEST NO.	SAMPLE SOURCE	GRADATION SIEVE ANALYSIS - % PASSING (µm) 25,000	20,000	16,000	12,500	10,000	5,000	2,500	1,250	630	315	160	80
1	CO	100.0	100.0	100.0	95.0	89.0	67.0		34.0	25.0	16.0	9.6	6.4
2	CO	100.0	100.0	100.0	96.0	89.0	68.0		35.0	26.0	16.0	9.7	6.1
3	CO	100.0	100.0	100.0	95.0	88.0	67.0		32.0	23.0	14.0	9.1	6.0
4	CO	100.0	100.0	100.0	93.0	85.0	64.0		32.0	24.0	14.0	8.9	5.6
5	CO	100.0	99.0	99.0	91.0	83.0	62.0		30.0	23.0	14.0	8.8	5.7
6	Appeal Cores	100.0	100.0	98.0	90.0	81.0	59.0		29.0	21.0	13.0	8.7	6.1
7		100.0	100.0	98.0	90.0	83.0	63.0		30.0	22.0	14.0	8.8	6.1
8		100.0	100.0	99.0	91.0	83.0	61.0		28.0	20.0	13.0	8.0	5.5
9		100.0	100.0	98.0	91.0	86.0	69.0		34.0	24.0	15.0	8.0	6.0
10		100.0	100.0	100.0	92.0	85.0	63.0		31.0	23.0	14.0	8.8	5.9
LOT MEAN		1-10 100.0	99.9	99.2	92.4	85.2	64.3		31.5	23.1	14.3	8.8	5.9
JOB MIX FORMULA		100.0	100.0	99.0	90.0	81.0	63.0		33.0	26.0	15.0	9.8	7.1
TOLERANCES FOR THE LOT MEAN FROM JOB MIX FORMULA		± 5	± 5	± 5	± 5	± 5	± 5		±3	±2	±2	±1.5	±1.5
MAXIMUM RANGE BETWEEN INDIVIDUAL TEST RESULTS IN A LOT		10	10	10	10	10	10		6	5	4	3	3

LOT TONNAGE	1734.00
ASPHALT CONTENT CORRECTION FACTOR (%)	-0.86
MQA (QA or QC ACCEPTANCE LOT)	QA
ESTIMATED LOT PRICE ADJUSTMENT (PER TONNE)	($2.08)

COMMENTS	HCS: EDITION 16, 2019
Original Grad. In reject (10,000 µm sieves)	*Gradation Appeal*
Appealed Gradation in Penalty	*Revised Lot Report*

TECHNOLOGISTS :

CONSULTANT :

PROJECT MANAGER :

RECEIVED BY :
*** Contractor's Representative

DATE RECEIVED : TIME :
*** Signature indicates receipt of data on the date and time indicated

Revised October 2024 **Appendix B.09a**