

Physical Properties of Soil-Aggregates

1901 Sharp Point Drive, Suite C
 Fort Collins, Colorado 80525
 Tel: (970) 484-0359
 Fax: (970) 484-0454

Client Name: Crowne Partners, Inc
Address: 505 N. 20th Street, Suite 1150
 Birmingham, AL 35203

Attn: Christina Nawrocki

Project Name: Crowne on Timberline
Location: 6111 South Timberline Road
 Fort Collins, CO.

Project No.: 20141027.0139 **Date of Report:** 22-Oct-14

Sample I.D.# or Description:
 CDOT Class 5 Aggregate Base Course
 Recycled Concrete

Soil-Aggregate Source:
 Ward Pit

Sampled By: Andrew S. **Date:** 17-Oct-14

Submitted By: Andrew S. **Date:** 17-Oct-14

Reviewed By: Scott M. Gruenberger
 Project Manager

Sieve Analysis, AASHTO T27 & T11					Test Standards are AASHTO unless otherwise indicated			
Sieve Size	X Passing Retained % Accumulative	Specification CDOT Table 703-3		Test	Standard	Results	Specifi- cation	
		Min.	Max.					
6"				Fineness Modulus	T27	4.26		
5"				Dry Rodded Unit Wt, pcf	C29			
4"				Lightweight Pieces, %	C123			
3"				Clay Lumps & Friable, %	C142			
2-1/2"				Organic Impurities	C40			
2"				Sulfate Content, %	T290			
1-1/2"	100	100	100	LA Abrasion, % Grade	T96			
1"	100	95	100	Soundness-Mg, %loss	T104			
3/4"	99			Soundness-Na, %loss	T104			
1/2"	84			Resistance R-Value of Soils	T190			
3/8"	87			R-V @ 300 psi exudation				
#4	56	30	70	Resilient Modulus, psi				
#8	45			Liquid Limit	T89	12	30 max.	
#10				Plasticity Index	T90	non plastic	6 max.	
#16	35			Laboratory Compaction Characteristics of Soil				
#20				Maximum Dry Unit Weight, pcf	T99	112.5		
#30	25			Optimum Water Content, %	T99	16.5		
#40				Maximum Dry Unit Weight, pcf	T180			
#50	16			Optimum Water Content, %	T180			
#80				Specific Gravity	Absorption, %	C127		
#100	11				Bulk (Dry)	C127		
#200	8.3	3	15		Bulk (SSD)	C127		
					Apparent	C127		

Comments: () denotes outside of specification limits shown above

Copies to: Client (via e-mail)



Bituminous Mixture Test Results

1901 Sharp Point Drive, Suite C
 Fort Collins, Colorado 80525
 Telephone No.: (970) 484-0359
 Fax No.: (970) 484-0454

Client Name: Crowne Partners, Inc.
Address: 502 N. 20th Street Suite 1150
 Birmingham, AL 35203
Attn.: Christina Nawrocki
Project Name: Crowne on Timberline
Location: Rosen Drive, 116.32 Tons
 600' West of Timberline Rd, 5' south of centerline
 Lift Designation: Bottom

Project No.: 20141027 **Date of Report:** 11-Nov-14
Mix Source: Connell Resources, Inc.
Plant/Pit: Timnath **Report#** 0159
Mix Type: Connell #133 SG (100) PG (64-22) VIRGIN
Sampled By: Connell **Date:** 5-Nov-14
Truck/Ticket No.: 720 184635 **Time:** 11:00:00 AM
Reviewed By: Scott M. Gruenberger
 Project Manager

Test Procedures:

<input type="checkbox"/>	ASTM D2172, Quantitative Extraction of Bitumen from Bituminous Paving Mixtures	Method <u> B </u>
<input checked="" type="checkbox"/>	CP-L 5120, Asphalt Content of Hot-Mix Asphalt by Ignition Method	Method <u> A </u>

Laboratory Testing Information

 0.00 Calibration factor No Temp. compensation factor used 0.0 Moisture content, % 538 Test temp, C
 Sample Mass, gm Yes AC content based upon external scale Date of Calibration Factor

* Note: For Terracon to perform the calibration & determine the correction factor for the mix, it is requested that the supplier provide aggregate produced in the current construction season & designated for use on the project along with the asphalt cement & mix design to perform the calibration process.

Corrected Bituminous Content, %
 NP ASTM D5444 4.56 Ignition Method
 Specification limits: 4.5 +/- 0.3
 Sieve Analysis of: X Ignited Mineral Agg.
 Extracted Agg.
 Cold Belt Combined

Physical Properties of Bituminous Mixtures:

 ASTM D6926 @ Blows per Side
 or ASTM D1560-1561 (Hveem)
 or CP-L 5115 N(design) gyrations
 Avg. dia. of mold, mm Average ht, mm:

Sieve Size	Accumulative % Passing	Specification			
		Job Mix		Master Band	
		Min.	Max.	Min.	Max.
1-1/2"	100	100	100	100	
1"	99	90	100	90-100	
3/4"	95	83	95	---	
1/2"	81	70	82	---	
3/8"	73	61	73	---	
1/4"					
#4	53	45	55	---	
#8	43	33	43	19-48	
#10					
#16	32			---	
#30	23	16	24	---	
#40					
#50	15			---	
#80					
#100	9			---	
#200	6.3	3.2	7.2	1-7	

Property	ASTM Standard	Results: Avg. of Specimens	Specification
Bulk Specific Gravity	CP 44		
Bulk Density (pcf)	CP 44		
Theoretical Max. Specific Gravity	CP 51		
Theoretical Density (pcf)	CP 51		
Air Voids (%)	CP 44		
Voids Filled (%)	AI SP-2		
Voids Min. Aggregate (%)	AI MS-2		
Stability (pounds)	T 269		
Flow (1/100 inch)	T245		
Temperature of mix sampled (F)		NP	
Ambient Temp. @ sampling (F)		55	
Hveem Stability	CP-L 5106		
Lottman Test	CP-L 5109		
Conditioned/Dry Strength, psi			
Tensile Strength Ratio (TSR), %			
Fine Aggregate Angularity, %	C 1252		

Comments: () Denotes outside specification limits shown above.

Distribution: Client (via e-mail)

Bituminous Mixture Test Results

1901 Sharp Point Drive, Suite C
 Fort Collins, Colorado 80525
 Telephone No.: (970) 484-0359
 Fax No.: (970) 484-0454

Client Name: Crowne Partners, Inc.
Address: 502 N. 20th Street Suite 1150
 Birmingham, AL 35203
Attn.: Christina Nawrocki
Project Name: Crowne on Timberline
Location: Rosen Drive, 116.32 Tons
 1000' West of Timberline Rd, 5' south of centerline
 Lift Designation: Bottom

Project No.: 20141027
Date of Report: 11 Nov 14
Mix Source: Connell Resources, Inc.
Plant/Pit: Timnath
Report#: .0162
Mix Type: Connell #133 SG (100) PG (64-22) VIRGIN
Sampled By: Connell
Date: 6-Nov-14
Truck/Ticket No.: 720 184635
Time: 12:00 PM
Reviewed By: Scott M. Gruenberger
 Project Manager

Test Procedures:

ASTM D2172, Quantitative Extraction of Bitumen from Bituminous Paving Mixtures Method B

CP-L 5120, Asphalt Content of Hot-Mix Asphalt by Ignition Method Method A

Laboratory Testing Information

0.00 Calibration factor No Temp. compensation factor used 0.0 Moisture content, % 538 Test temp, C
Sample Mass, gm Yes AC content based upon external scale Date of Calibration Factor

* Note: For Terracon to perform the calibration & determine the correction factor for the mix, it is requested that the supplier provide aggregate produced in the current construction season & designated for use on the project along with the asphalt cement & mix design to perform the calibration process.

Corrected Bituminous Content, %
 NP ASTM D5444 **4.73** Ignition Method
 Specification limits: 4.5 +/- 0.3
 Sieve Analysis of: Ignited Mineral Agg.
 Extracted Agg.
 Cold Belt Combined

Physical Properties of Bituminous Mixtures:

ASTM D6926 @ Blows per Side
 or ASTM D1560-1561 (Hveem)
 or CP-L 5115 N(design) gyrations
 Avg. dia. of mold, mm Average. ht, mm:

Sieve Size	Accumulative % Passing	Specification			
		Job Mix		Master Band	
		Min.	Max.	Min.	Max.
1-1/2"	100	100	100	100	
1"	100	90	100	90-100	
3/4"	92	83	95	---	
1/2"	82	70	82	---	
3/8"	73	61	73	---	
1/4"					
#4	53	45	55	---	
#8	38	33	43	19-48	
#10					
#16	29			---	
#30	21	16	24	---	
#40					
#50	14			---	
#80					
#100	9			---	
#200	6.2	3.2	7.2	1-7	

Property	ASTM Standard	Results: Avg. of Specimens	Specification
Bulk Specific Gravity	CP 44		
Bulk Density (pcf)	CP 44		
Theoretical Max. Specific Gravity	CP 51		
Theoretical Density (pcf)	CP 51		
Air Voids (%)	CP 44		
Voids Filled (%)	AI SP-2		
Voids Min. Aggregate (%)	AI MS-2		
Stability (pounds)	T 269		
Flow (1/100 inch)	T245		
Temperature of mix sampled (F)		NP	
Ambient Temp. @ sampling (F)		65	
Hveem Stability	CP-L 5106		
Lottman Test:	CP-L 5109		
Conditioned/Dry Strength, psi			
Tensile Strength Ratio (TSR), %			
Fine Aggregate Angularity, %	C 1252		

Comments: () Denotes outside specification limits shown above.

Distribution: Client (via e-mail)

Bituminous Mixture Test Results

1901 Sharp Point Drive, Suite C
 Fort Collins, Colorado 80525
 Telephone No.: (970) 484-0359
 Fax No.: (970) 484-0454

Client Name: Crowne Partners, Inc.
Address: 502 N. 20th Street Suite 1150
 Birmingham, AL 35203
Attn.: Christina Nawrocki
Project Name: Crowne on Timberline
Location: Timberline Road, Southbound Deceleration Lane
 80' North of Sta 60+50
 Lift Designation: Top

Project No.: 20141027 **Date of Report:** 23-Jun-15
Mix Source: Connell Resources, Inc.
Plant/Pit: Timnath **Report#:** .0215
Mix Type: Connell #145 S (100) PG (64-22) w/ Lime
Sampled By: Connell **Date:** 17-Jun-15
Truck/Ticket No.: 120 187421 **Time:** 11:00 AM
Reviewed By: Scott M. Gruenberger
 Project Manager

Test Procedures:

<input type="checkbox"/>	ASTM D2172, Quantitative Extraction of Bitumen from Bituminous Paving Mixtures	Method <u>B</u>
<input checked="" type="checkbox"/>	CP-L 5120, Asphalt Content of Hot-Mix Asphalt by Ignition Method	Method <u>A</u>

Laboratory Testing Information

0.00 Calibration factor No Temp. compensation factor used 0.0 Moisture content, % 538 Test temp, C
Sample Mass, gm Yes AC content based upon external scale Date of Calibration Factor

* Note: For Terracon to perform the calibration & determine the correction factor for the mix, it is requested that the supplier provide aggregate produced in the current construction season & designated for use on the project along with the asphalt cement & mix design to perform the calibration process.

Corrected Bituminous Content, %
NP ASTM D5444 **4.86** Ignition Method
 Specification limits: 4.7 +/- 0.3
 Sieve Analysis of: X Ignited Mineral Agg.
Extracted Agg.
Cold Belt Combined

Physical Properties of Bituminous Mixtures:
ASTM D6926 @ Blows per Side
or ASTM D1560-1561 (Hveem)
or CP-L 5115 N(design) gyrations
Avg. dia. of mold, mm Average. ht, mm:

Sieve Size	Accumulative % Passing	Specification			
		Job Mix		Master Band	
		Min.	Max.	Min.	Max.
1-1/2"	100	100	100	100	
1"	100	100	100	100	
3/4"	100	90	100	90-100	
1/2"	83	83	95	---	
3/8"	80	73	85	---	
1/4"					
#4	59	52	62	---	
#8	43	36	46	23-49	
#10					
#16	31			---	
#30	22	16	24	---	
#40					
#50	14			---	
#80					
#100	9			---	
#200	6.4	3.9	7.9	2-8	

Property	ASTM Standard	Results: Avg. of Specimens	Specification
Bulk Specific Gravity	CP 44		
Bulk Density (pcf)	CP 44		
Theoretical Max. Specific Gravity	CP 51		
Theoretical Density (pcf)	CP 51		
Air Voids (%)	CP 44		
Voids Filled (%)	AI SP-2		
Voids Min. Aggregate (%)	AI MS-2		
Stability (pounds)	T 269		
Flow (1/100 inch)	T245		
Temperature of mix sampled (F)		N/A	
Ambient Temp. @ sampling (F)		N/A	
Hveem Stability	CP-L 5106		
Lottman Test:	CP-L 5109		
Conditioned/Dry Strength, psi			
Tensile Strength Ratio (TSR), %			
Fine Aggregate Angularity, %	C 1252		

Comments: () Denotes outside specification limits shown above.

Distribution: Client (via e-mail)



Bituminous Mixture Test Results

1901 Sharp Point Drive, Suite C
 Fort Collins, Colorado 80525
 Telephone No.: (970) 484-0359
 Fax No.: (970) 484-0454

Client Name: Crowne Partners, Inc.
Address: 502 N. 20th Street Suite 1150
 Birmingham, AL 35203
Attn.: Christina Nawrocki
Project Name: Crowne on Timberline
Location: Timberline Road
 100' North of Sta 16+98
 Lift Designation: Bottom

Project No.: 20141027 **Date of Report:** 22-Jun-15
Mix Source: Connell Resources, Inc.
Plant/Pit: Timnath **Report#** .0212
Mix Type: Connell #134 SG (75) PG (64-22)
Sampled By: Connell **Date:** 11-Jun-15
Truck/Ticket No.: BL1 187214 **Time:** 8:30 AM
Reviewed By: Scott M. Gruenberger
 Project Manager

Test Procedures:

<input type="checkbox"/>	ASTM D2172, Quantitative Extraction of Bitumen from Bituminous Paving Mixtures	Method	<u>B</u>
<input checked="" type="checkbox"/>	CP-L 5120, Asphalt Content of Hot-Mix Asphalt by Ignition Method	Method	<u>A</u>

Laboratory Testing Information

0.00 Calibration factor No Temp. compensation factor used 0.0 Moisture content, % 538 Test temp, C
Sample Mass, gm Yes AC content based upon external scale Date of Calibration Factor

* Note: For Terracon to perform the calibration & determine the correction factor for the mix, it is requested that the supplier provide aggregate produced in the current construction season & designated for use on the project along with the asphalt cement & mix design to perform the calibration process.

Corrected Bituminous Content, %
 NP ASTM D5444 4.95 Ignition Method
 Specification limits: 4.6 +/- 0.3
 Sieve Analysis of: X Ignited Mineral Agg.
Extracted Agg.
Cold Belt Combined

Physical Properties of Bituminous Mixtures:

ASTM D6926 @ Blows per Side
or ASTM D1560-1561 (Hveem)
or CP-L 5115 N(design) gyrations
Avg. dia. of mold, mm Average ht, mm:

Sieve Size	Accumulative % Passing	Specification			
		Job Mix		Master Band	
		Min.	Max.	Min.	Max.
1-1/2"	100	100	100	100	
1"	97	90	100	90-100	
3/4"	92	83	95	---	
1/2"	80	72	84	---	
3/8"	72	62	74	---	
1/4"					
#4	53	43	53	---	
#8	44	30	40	19-45	
#10					
#16	31			---	
#30	22	15	23	---	
#40					
#50	15			---	
#80					
#100	10			---	
#200	6.9	3.1	7.1	1-7	

Property	ASTM Standard	Results: Avg. of Specimens	Specification
Bulk Specific Gravity	CP 44		
Bulk Density (pcf)	CP 44		
Theoretical Max. Specific Gravity	CP 51	2.476	
Theoretical Density (pcf)	CP 51	154.5	
Air Voids (%)	CP 44		
Voids Filled (%)	AI SP-2		
Voids Min. Aggregate (%)	AI MS-2		
Stability (pounds)	T 269		
Flow (1/100 inch)	T245		
Temperature of mix sampled (F)		295	
Ambient Temp. @ sampling (F)		74	
Hveem Stability	CP-L 5106		
Lottman Test:	CP-L 5109		
Conditioned/Dry Strength, psi			
Tensile Strength Ratio (TSR), %			
Fine Aggregate Angularity, %	C 1252		

Comments: () Denotes outside specification limits shown above.

Distribution: Client (via e-mail)

ASPHALT LABORATORY TEST REPORT

Report Number: 20141027.0212
Service Date: 06/11/15
Report Date: 06/22/15
Task: Hot-Mix Asphalt Testing


1901 Sharp Point Dr Suite C
Ft. Collins, CO 80525
970-484-0359

Distribution List

- (1) Crowne Partners, Inc, Emailed
- (1) Aspen Engineering, Emailed
- (1) Aspen Engineering, Emailed
- (1) City Of Fort Collins CO, Emailed
- (1) Connell Resources Inc, Shane Westlind
- (1) Crowne Partners, Inc, Emailed
- (1) Golden Construction, Emailed
- (1) Golden Construction, Emailed
- (1) Golden Construction, Emailed

Bituminous Mixture Test Results

1901 Sharp Point Drive, Suite C
 Fort Collins, Colorado 80525
 Telephone No.: (970) 484-0359
 Fax No.: (970) 484-0454

Client Name: Crowne Partners, Inc.
Address: 502 N. 20th Street Suite 1150
 Birmingham, AL 35203

Attn.: Christina Nawrocki
Project Name: Crowne on Timberline
Location: Timberline Road, Southbound Deceleration Lane
 18' East, 80' North of Sta 60+50
 Lift Designation: Middle

Project No.: 20141027 **Date of Report:** 22-Jun-15
Mix Source: Connell Resources, Inc.
Plant/Pit: Timnath **Report#** .0213
Mix Type: Connell #134 SG (75) PG (64-22)
Sampled By: Connell **Date:** 11-Jun-15
Truck/Ticket No.: BL1 187317 **Time:** 10:15 AM
Reviewed By: Scott M. Gruenberger

Test Procedures:

ASTM D2172, Quantitative Extraction of Bitumen from Bituminous Paving Mixtures Method B
 X CP-L 5120, Asphalt Content of Hot-Mix Asphalt by Ignition Method Method A

Laboratory Testing Information

 0.00 Calibration factor No Temp. compensation factor used 0.0 Moisture content, % 538 Test temp, C
 Sample Mass, gm Yes AC content based upon external scale Date of Calibration Factor

* Note: For Terracon to perform the calibration & determine the correction factor for the mix, it is requested that the supplier provide aggregate produced in the current construction season & designated for use on the project along with the asphalt cement & mix design to perform the calibration process.

Corrected Bituminous Content, %
 NP ASTM D5444 5.11 Ignition Method
 Specification limits: 4.6 +/- 0.3
 Sieve Analysis of: X Ignited Mineral Agg.
 Extracted Agg.
 Cold Belt Combined

Physical Properties of Bituminous Mixtures:
 ASTM D6926 @ Blows per Side
 or ASTM D1560-1561 (Hveem)
 or CP-L 5115 N(design) gyrations
 Avg. dia. of mold, mm Avere. ht, mm:

Sieve Size	Accumulative % Passing	Specification			
		Job Mix		Master Band	
		Min.	Max.	Min.	Max.
1-1/2"	100	100	100	100	
1"	98	90	100	90-100	
3/4"	93	83	95	---	
1/2"	81	72	84	---	
3/8"	74	62	74	---	
1/4"					
#4	56	43	53	---	
#8	42	30	40	19-45	
#10					
#16	32			---	
#30	23	15	23	---	
#40					
#50	16			---	
#80					
#100	10			---	
#200	6.9	3.1	7.1	1-7	

Property	ASTM Standard	Results: Avg. of Specimens	Specification
Bulk Specific Gravity	CP 44		
Bulk Density (pcf)	CP 44		
Theoretical Max. Specific Gravity	CP 51		
Theoretical Density (pcf)	CP 51		
Air Voids (%)	CP 44		
Voids Filled (%)	AI SP-2		
Voids Min. Aggregate (%)	AI MS-2		
Stability (pounds)	T 269		
Flow (1/100 inch)	T245		
Temperature of mix sampled (F)		290	
Ambient Temp. @ sampling (F)		81	
Hveem Stability	CP-L 5106		
Lottman Test:	CP-L 5109		
Conditioned/Dry Strength, psi			
Tensile Strength Ratio (TSR), %			
Fine Aggregate Angularity, %	C 1252		

Comments: () Denotes outside specification limits shown above.
 Distribution: Client (via e-mail)

EARTHWORK OBSERVATION REPORT

Report Number: 20141027.0021
Service Date: 07/09/14
Report Date: 07/10/14

Terracon

1901 Sharp Point Dr Suite C
Ft. Collins, CO 80525
970-484-0359

Client

Crowne Partners, Inc
Attn: Christina Nawrocki
505 N. 20th Street
Suite 1015
Birmingham, AL 35203

Project

Crowne on Timberline
6111 South Timberline Road
Fort Collins, CO

Project Number: 20141027

As requested by Shane Westland with Connell Resources, a Terracon technician visited the job site on July 09, 2014 to observe continuing sanitary sewer trench backfill. One excavator was down and no backfill was being performed. The soil removed east of manhole A-5 was being processed for moisture to be placed in the trench after machinery is repaired. The wetter material removed was taken to the east end of the site and spread out to allow drying.

Services:

Terracon Rep.: Kevin M. Mielbeck

Reported To: Juan (Connell)

Contractor: Connell

Report Distribution:

(1) Crowne Partners, Inc, Christina
Nawrocki

(1) Connell Resources Inc, Shane
Westland

Reviewed By: _____



Todd A. Turney

Department Manager

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.