

Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

## South Chambers Road & Hess Road Project

Report Date: Nov 1, 2021

Work Order No.: 21-4164.Asphalt.0007; ver: 1

Work Order Date: Oct 29, 2021

Reviewed by: Darian Buelter

### Asphalt

Paving Contractor: Nordstrom Commercial Builders Performed by: Tyler Daniels  
 Weather, High/Low Temp.: Calm|Clear|Sunny, 72 / 47 °F  
 Placement Location: Intersection of South Red Sky Dr and Sliceroo Dr

### Material Information

Mix 1 Identification: Aggregate Industries | 801501 | PG 58-28 | Grading S (3/4")  
 Mix 1 Temperature: 265 - 285 °F After Paver / Before Breakdown

### Testing Equipment

Gauge Used: 91, Instrotek 3500, 1924 Calibration Date: Nov. 2020 Standard Counts: 3004 / 433

### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

### Specifications

Properties	Minimum	Maximum	Deviation
Compaction (%) - Field Testing - HBP Mat Testing	92	96	

### In-Place Asphalt Density (ASTM D 2950 / AASHTO T 355)

Test No.	Location	Lift	Target Density (pcf)	Target Density Source	Density (pcf)	Density Corr. (pcf)	Compaction (%)	Pass or Fail
33	SBL of Sliceroo Dr, 15' South of S. Red Sky Dr	Bottom	153.6	Daily Rice	143.9	0.0	93.7	Pass
34	NBL of Sliceroo D, 10' South of S. Red Sky Dr	Bottom	153.6	Daily Rice	143.4	0.0	93.4	Pass

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## South Chambers Road & Hess Road Project

Report Date: Nov 1, 2021

Work Order No.: 21-4164.Asphalt.0007; ver: 1

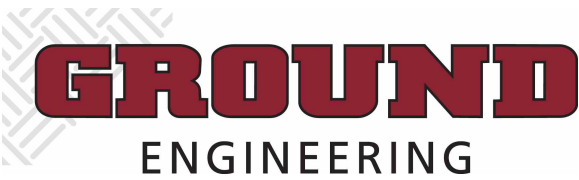
Work Order Date: Oct 29, 2021

Reviewed by: Darian Buelter

### Asphalt

### Photos





Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

## South Chambers Road & Hess Road Project

Report Date: Nov 2, 2021

Work Order No.: 21-4164.Asphalt.0008; ver: 1

Work Order Date: Oct 30, 2021

Reviewed by: Darian Buelter

### Asphalt

Paving Contractor: Nordstrom Commercial Builders Performed by: Leyla Lawson  
 Weather, High/Low Temp.: Calm|Clear|Sunny, 70 / 54 °F  
 Equipment Used: Vibratory Smooth Drum Roller|Plate Compactor  
 Placement Location: South Red Sky Dr entrance, Sta 21+00 to 22+00

### Material Information

Mix 1 Identification: Aggregate Industries | 801501 | PG 58-28 | Grading S (3/4")  
 Mix 1 Temperature: 264 - 288 °F After Paver / Before Breakdown

### Testing Equipment

Gauge Used: 66, Troxler 3440, 37163 Calibration Date: Standard Counts: 2084 / 611

### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

### Specifications

Properties	Minimum	Maximum	Deviation
Compaction (%) - Field Testing - HBP Mat Testing	92	96	

### In-Place Asphalt Density (ASTM D 2950 / AASHTO T 355)

Test No.	Location	Lift	Target Density (pcf)	Target Density Source	Density (pcf)	Density Corr. (pcf)	Compaction (%)	Pass or Fail
35	Sta 21+80	2	153.6	Daily Rice	144.4	0.0	94.0	Pass
36	Sta 21+50	2	153.6	Daily Rice	145.9	0.0	95.0	Pass

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## South Chambers Road & Hess Road Project

Report Date: Nov 2, 2021

Work Order No.: 21-4164.Asphalt.0008; ver: 1

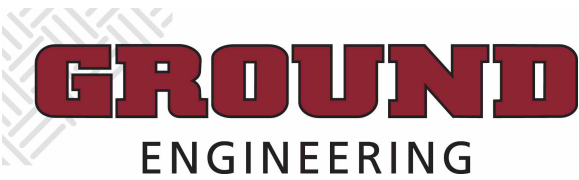
Work Order Date: Oct 30, 2021

Reviewed by: Darian Buelter

### Asphalt

#### Photos





Client: Todd Nordstrom  
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## South Chambers Road & Hess Road Project

Report Date: Nov 2, 2021

Work Order No.: 21-4164.Asphalt.0009; ver: 1

Work Order Date: Nov 1, 2021

Reviewed by: Darian Buelter

### Asphalt

Paving Contractor: Nordstrom Commercial Builders Performed by: Justin Brookhart  
 Weather, High/Low Temp.: Calm|Cloudy, 41 / 31 °F  
 Equipment Used: Paver|Vibratory Smooth Drum Roller  
 Placement Location: Asphalt along Red Sky Dr. 10ft from crosswalk to 30ft from Chambers Rd.

### Material Information

Mix 1 Identification: Aggregate Industries | 801501 | PG 58-28 | Grading S (3/4")  
 Mix 1 Temperature: 310 - 350 °F After Paver / Before Breakdown

### Testing Equipment

Gauge Used: 94, Instrotek 3500, 1939 Calibration Date: May 2021 Standard Counts: 2679 / 439

### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

### Specifications

Properties	Minimum	Maximum	Deviation
Compaction (%) - Field Testing - HBP Mat Testing	92	96	

### In-Place Asphalt Density (ASTM D 2950 / AASHTO T 355)

Test No.	Location	Lift	Target Density (pcf)	Target Density Source	Density (pcf)	Density Corr. (pcf)	Compaction (%)	Pass or Fail
37	Along Red Sky Dr. 20ft from traffic circle crosswalk, 5ft from edge of existing road.	Bottom	153.6	Daily Rice	142.0	0.0	92.4	Pass
38	Along Red Sky Dr. 35ft from Chambers Rd. 5ft from Red Sky Dr.	Bottom	153.6	Daily Rice	145.2	0.0	94.5	Pass

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## South Chambers Road & Hess Road Project

Report Date: Nov 2, 2021

Work Order No.: 21-4164.Asphalt.0009; ver: 1

Work Order Date: Nov 1, 2021

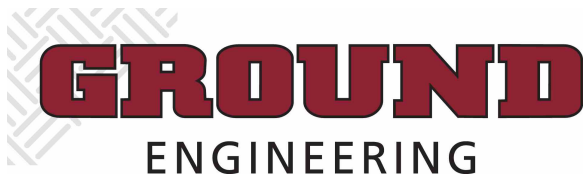
Reviewed by: Darian Buelter

### Asphalt

#### Photos



Asphalt being placed.



Client: Todd Nordstrom  
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## South Chambers Road & Hess Road Project

Report Date: Nov 3, 2021

Work Order No.: 21-4164.Asphalt.0010; ver: 1

Work Order Date: Nov 2, 2021

Reviewed by: Darian Buelter

### Asphalt

Paving Contractor: Nordstrom Commercial Builders      Performed by: Ben Roberts  
 Weather, High/Low Temp.: Cloudy, 48 / 35 °F  
 Equipment Used: Paver|Vibratory Smooth Drum Roller  
 Placement Location: Area along Red Sky Dr shown in attachment  
 Comments: Due to scheduling, Ground was unable to get a sample of fresh asphalt, only testing after placement and compaction

### Material Information

Mix 1 Identification: Aggregate Industries | 801501 | PG 58-28 | Grading S (3/4")  
 Mix 1 Temperature: - °F

### Testing Equipment

Gauge Used: 57, Troxler 3440, 36188      Calibration Date: Dec 2020      Standard Counts: 1825 / 716

### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

### Specifications

Properties	Minimum	Maximum	Deviation
Compaction (%) - Field Testing - HBP Mat Testing	92	96	

### In-Place Asphalt Density (ASTM D 2950 / AASHTO T 355)

Test No.	Location	Lift	Target Density (pcf)	Target Density Source	Density (pcf)	Density Corr. (pcf)	Compaction (%)	Pass or Fail
39	Location 1	Middle	153.6	Daily Rice	144.5	0.0	94.1	Pass

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## South Chambers Road & Hess Road Project

Report Date: Nov 3, 2021

Work Order No.: 21-4164.Asphalt.0010; ver: 1

Work Order Date: Nov 2, 2021

Reviewed by: Darian Buelter

### Asphalt

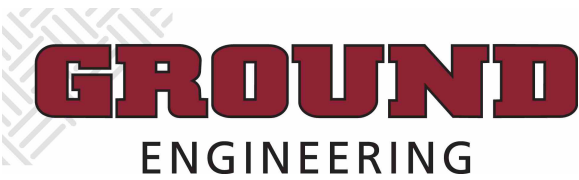
#### Photos



Asphalt placed



Area in yellow represents work area, red number represents test location



Client: Todd Nordstrom  
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## South Chambers Road & Hess Road Project

Report Date: Nov 10, 2021

Work Order No.: 21-4164.Asphalt.0011; ver: 1

Work Order Date: Nov 8, 2021

Reviewed by: Darian Buelter

### Asphalt

Paving Contractor: NCB Performed by: Angelo Donnabella  
 Weather, High/Low Temp.: Calm|Clear|Sunny, 70 / 34 °F  
 Equipment Used: Paver|Smooth Drum Roller  
 Placement Location: Patches along S Chamber Road and S Red Sky Drive, see attachment

### Material Information

Mix 1 Identification: Aggregate Industries | 801501 HMA, 3/4" 75G, 20, 58-28 MF | PG 58-28 | Grading S (3/4")  
 Mix 1 Temperature: 330 - 340 °F After Paver / Before Breakdown

### Testing Equipment

Gauge Used: 18, Troxler 3440, 25185 Calibration Date: 09/2021 Standard Counts: 1900 / 657

### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

### Specifications

Properties	Minimum	Maximum	Deviation
Compaction (%) - Field Testing - HBP Mat Testing	92	96	

### In-Place Asphalt Density (ASTM D 2950 / AASHTO T 355)

Test No.	Location	Lift	Target Density (pcf)	Target Density Source	Density (pcf)	Density Corr. (pcf)	Compaction (%)	Pass or Fail
40	Test location #1	Bottom	153.6	Daily Rice	144.8	0.0	94.3	Pass
41	Test location #2	Bottom	153.6	Daily Rice	143.7	0.0	93.6	Pass
42	Test location #3	Bottom	153.6	Daily Rice	143.6	0.0	93.5	Pass

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## South Chambers Road & Hess Road Project

Report Date: Nov 10, 2021

Work Order No.: 21-4164.Asphalt.0011; ver: 1

Work Order Date: Nov 8, 2021

Reviewed by: Darian Buelter

### Asphalt

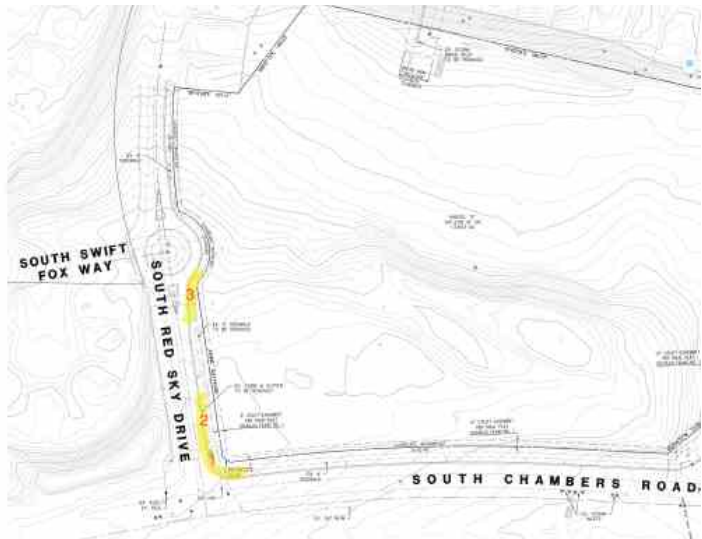
#### Photos



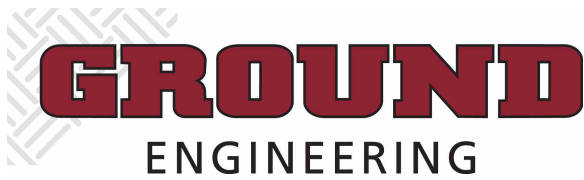
Tested area #1 and #2



Tested area #3



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## South Chambers Road & Hess Road Project

Report Date: Nov 20, 2021

Work Order No.: 21-4164.Asphalt.0013; ver: 1

Work Order Date: Nov 16, 2021

Reviewed by: Darian Buelter

### Asphalt

Paving Contractor: NCB

Performed by: Timur Nazarov

Weather, High/Low Temp.: Calm|Clear|Windy|Sunny, 71 / 65 °F

Placement Location: Chambers road & Hess road. Pass way through.

### Material Information

Mix 1 Identification: Aggregate | 75G | PG 58-28 | Grading SX (1/2")

Mix 1 Temperature: 265 - 315 °F After Paver / Before Breakdown

### Testing Equipment

Gauge Used: 56, Troxler 3440, 35815

Calibration Date: 04/2021

Standard Counts: 693 / 2017

### Specifications

Properties	Minimum	Maximum	Deviation
Compaction (%) - Field Testing - HBP Mat Testing	92	96	

### In-Place Asphalt Density (ASTM D 2950 / AASHTO T 355)

Test No.	Location	Lift	Target Density (pcf)	Target Density Source	Density (pcf)	Density Corr. (pcf)	Compaction (%)	Pass or Fail
50	50 ft from the Hess road.	Top	152.8	Daily Rice	143.7	0.0	<b>94.0</b>	<b>Pass</b>
51	50 ft from Hess road second site of the road	Top	152.8	Daily Rice	144.3	0.0	<b>94.4</b>	<b>Pass</b>
52	550". from the Hess road.	Top	152.8	Daily Rice	145.3	0.0	<b>95.1</b>	<b>Pass</b>
53	550 " from Hess road opposite site of the road.	Top	152.8	Daily Rice	146.1	0.0	<b>95.6</b>	<b>Pass</b>
54	1000" from Hess road.	Top	152.8	Daily Rice	144.9	0.0	<b>94.8</b>	<b>Pass</b>
55	1000" from Hess road opposite site of the road.	Top	152.8	Daily Rice	145.8	0.0	<b>95.4</b>	<b>Pass</b>

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## South Chambers Road & Hess Road Project

Report Date: Nov 20, 2021

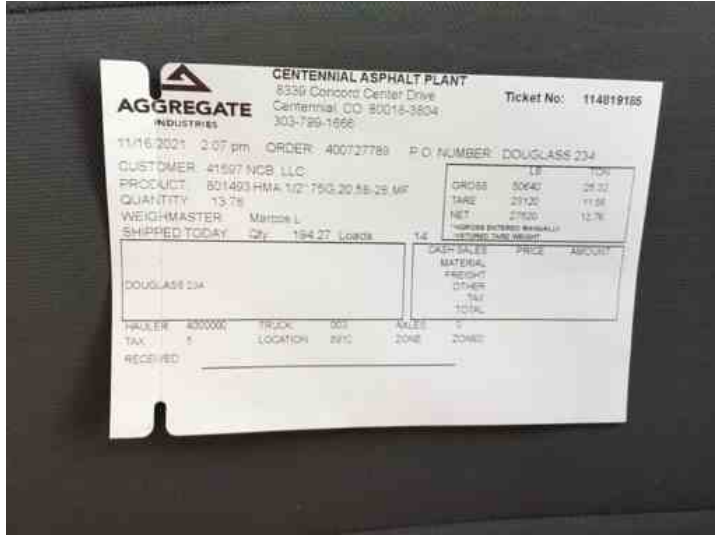
Work Order No.: 21-4164.Asphalt.0013; ver: 1

Work Order Date: Nov 16, 2021

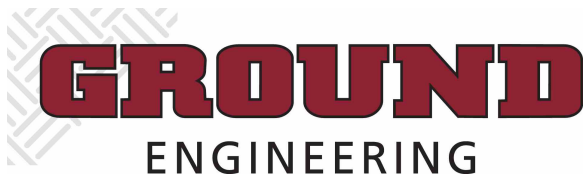
Reviewed by: Darian Buelter

### Asphalt

### Photos



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## South Chambers Road & Hess Road Project

Report Date: Nov 20, 2021

Work Order No.: 21-4164.Asphalt.0014; ver: 1

Work Order Date: Nov 18, 2021

Reviewed by: Darian Buelter

### Asphalt

Paving Contractor: Nordstrom Commercial Builders

Performed by: Justin Brookhart

Weather, High/Low Temp.: Mostly Sunny, 54 / 18 °F

Placement Location: S Lane on Red Sky Road

### Material Information

Mix 1 Identification: Aggregate Industries | 801493 | PG 58-28 | Grading SX (1/2")

Mix 1 Temperature: 240 - 260 °F After Paver / Before Breakdown

### Testing Equipment

Gauge Used: 66, Troxler 3440, 37163

Calibration Date: 10/2021

Standard Counts: 2081 / 621

### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

### Specifications

Properties	Minimum	Maximum	Deviation
Compaction (%) - Field Testing - HBP Mat Testing	92	96	

### In-Place Asphalt Density (ASTM D 2950 / AASHTO T 355)

Test No.	Location	Lift	Target Density (pcf)	Target Density Source	Density (pcf)	Density Corr. (pcf)	Compaction (%)	Pass or Fail
56	80' E of Intersection of Red Sky and Chambers Rd	Top	152.3	Daily Rice	143.4	0.0	94.2	Pass
57	130' E of Intersection of Red Sky and Chambers Rd	Top	152.3	Daily Rice	145.8	0.0	95.7	Pass
58	190' E of Intersection of Red Sky and Chambers Rd	Top	152.3	Daily Rice	144.5	0.0	94.9	Pass

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## South Chambers Road & Hess Road Project

Report Date: Nov 20, 2021

Work Order No.: 21-4164.Asphalt.0014; ver: 1

Work Order Date: Nov 18, 2021

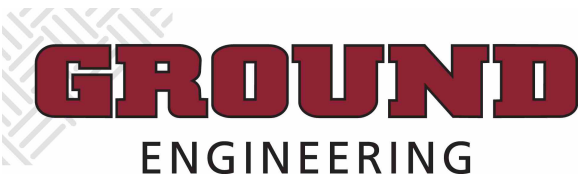
Reviewed by: Darian Buelter

### Asphalt

#### Photos



Red Sky Road paving



Client: Todd Nordstrom  
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## South Chambers Road & Hess Road Project

Report Date: Nov 22, 2021

Work Order No.: 21-4164.Asphalt.0015; ver: 1

Work Order Date: Nov 19, 2021

Reviewed by: Tyeson Weston

### Asphalt

Paving Contractor: NCB Performed by: Angelo Donnabella  
 Weather, High/Low Temp.: Calm|Clear|Sunny, 65 / 43 °F  
 Equipment Used: Skid Steer|Smooth Drum Roller|Paver  
 Placement Location: Patches at intersection of S Red Sky Drive and Sliceroo Drive

### Material Information

Mix 1 Identification: Aggregate Industries | 801493 HMA 1/2" 75G, 20 58-28 MF | PG 58-28 | Grading SX (1/2")  
 Mix 1 Temperature: 320 - 325 °F After Paver / Before Breakdown

### Testing Equipment

Gauge Used: 18, Troxler 3440, 25185 Calibration Date: 09/2021 Standard Counts: 1890 / 658

### On-Site Notifications

Name	Company
Dean Prull	Nordstrom Commercial Builders

### Specifications

Properties	Minimum	Maximum	Deviation
Compaction (%) - Field Testing - HBP Mat Testing	92	96	

### In-Place Asphalt Density (ASTM D 2950 / AASHTO T 355)

Test No.	Location	Lift	Target Density (pcf)	Target Density Source	Density (pcf)	Density Corr. (pcf)	Compaction (%)	Pass or Fail
59	STA 22+05	Bottom	152.3	Daily Rice	145.9	0.0	95.8	Pass
60	STA 22+00	Top	152.3	Daily Rice	144.6	0.0	94.9	Pass
61	STA 21+50	Top	152.3	Daily Rice	143.9	0.0	94.5	Pass
62	STA 21+65	Top	152.3	Daily Rice	141.2	0.0	92.7	Pass

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## South Chambers Road & Hess Road Project

Report Date: Nov 22, 2021

Work Order No.: 21-4164.Asphalt.0015; ver: 1

Work Order Date: Nov 19, 2021

Reviewed by: Tyson Weston

### Asphalt

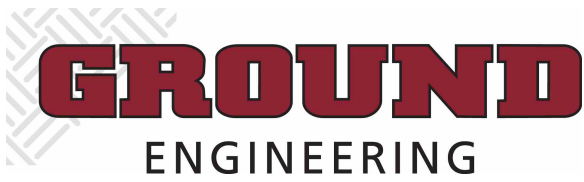
#### Photos



Asphalt being compacted



Highlighted region represents inspected area



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Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 5, 2021

Work Order No.: 21-4164.AsphaltSampling.0007; ver: 1

Work Order Date: Nov 1, 2021

Reviewed by: Darian Buelter

#### Asphalt Sample Summary

Placement Location: Asphalt along Red Sky Dr. 10ft from crosswalk to 30ft from Chambers Rd.

#### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

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## South Chambers Road & Hess Road Project

Report Date: Nov 5, 2021

Work Order No.: 21-4164.AsphaltSampling.0007; ver: 1

Work Order Date: Nov 1, 2021

Reviewed by: Darian Buelter

### Asphalt Sample Summary

Sampled by: GROUND      Mix: Aggregate Industries - West Central Region 801501 (Mix#28 (Denver)) - 2021  
 Sample No.: 6  
 Sampling Method: CDOT CP41 / ASTM D979 / AASHTO T168  
 Quantity Rep. (tons): 55      Obtained From: Paver Auger  
 Sample Location: Asphalt along Red Sky Dr. 10ft from crosswalk to 30ft from Chambers Rd.

### Asphalt Content by Ignition Oven (CDOT CP-L 5120)

Trial	Masses (gm)						Un-corrected AC (%)	Correction Factors (%)			AC Content (%)	
	Basket	Basket + Pre-Ignition HMA	Basket + Post-Ignition HMA	Pre-Ignition HMA	Post-Ignition HMA	Loss		Temp.	Moist.	AC	Result	Specified
1	3052.1	5056.4	4949.7	2,004.3	1,897.6	106.7	5.32	0.00	0.00	0.00	<b>5.32</b>	4.9 - 5.5
2*	-	-	-	-	-	-	-					

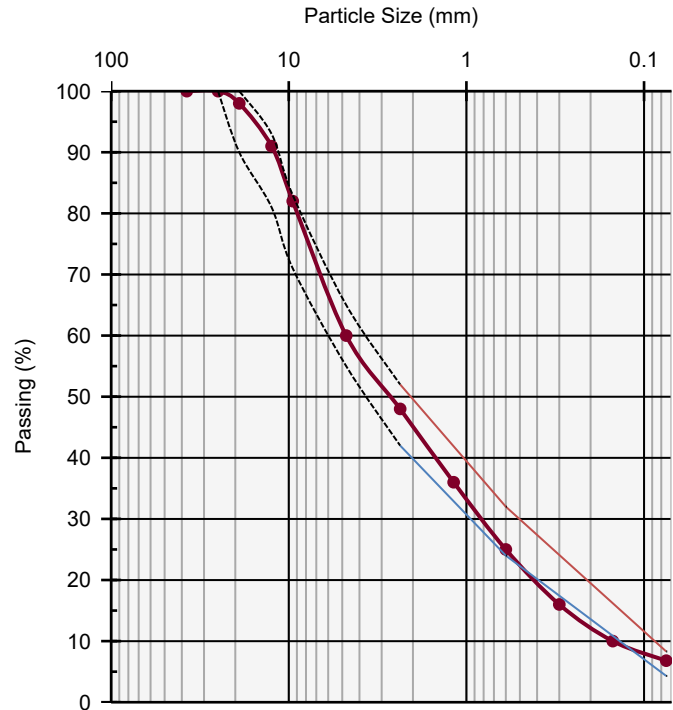
\* For large aggregate mixes.

### Sieve Analysis of Extracted Aggregates (CDOT CP 31)

Sieve	Particle Size (mm)	Mass Retained (gm)	Retained (%)	Passing (%)	Specified Passing (%)
1.5 in	37.5	0.0	0	<b>100</b>	-
1 in	25.0	0.0	0	<b>100</b>	100 min.
3/4 in	19.0	28.9	2	<b>98</b>	90 - 100
1/2 in	12.5	163.1	9	<b>91</b>	81 - 93
3/8 in	9.5	346.5	18	<b>82</b>	71 - 83
No. 4	4.75	768.2	40	<b>60</b>	55 - 65
No. 8	2.36	977.8	52	<b>48</b>	42 - 52
No. 16	1.18	1,207.4	64	<b>36</b>	
No. 30	0.600	1,421.4	75	<b>25</b>	24 - 32
No. 50	0.300	1,593.1	84	<b>16</b>	
No. 100	0.150	1,704.9	90	<b>10</b>	
No. 200	0.075	1,769.4	93.2	<b>6.8</b>	4.3 - 8.3

Sieve corrections were applied if part of testing scope.

Specimen Mass (gm)		Difference (%)
After Wash	After Shake	
1782.4	1781.8	0.03



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### South Chambers Road & Hess Road Project

Report Date: Nov 5, 2021

Work Order No.: 21-4164.AsphaltSampling.0007; ver: 1

Work Order Date: Nov 1, 2021

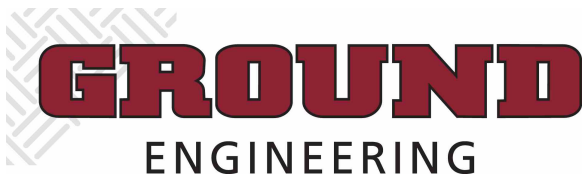
Reviewed by: Darian Buelter

#### Asphalt Sample Summary

#### Theoretical Maximum Specific Gravity and Density (CDOT CP 51)

Trial	Masses (gm)			Test Water Temp. (°F)	Specific Gravity	Max. Specific Gravity		Max. Density (pcf)*	
	Specimen	Flask & Water	Specimen, Flask, & Water			Result	Specified	Result	Specified
1	1504.9	3187.5	4085.8	77	2.481	<b>2.478</b>	2.489	<b>154.2</b>	154.9
2	1504.4	3250.6	4146.8	77	2.474				

\* Using water density of 62.240 (pcf).



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Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 12, 2021

Work Order No.: 21-4164.AsphaltSampling.0008; ver: 2

Work Order Date: Nov 8, 2021

Reviewed by: Darian Buelter

#### Asphalt Sample Summary

Placement Location: Patches along S Chamber Road and S Red Sky Drive

#### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

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## South Chambers Road & Hess Road Project

Report Date: Nov 12, 2021

Work Order No.: 21-4164.AsphaltSampling.0008; ver: 2

Work Order Date: Nov 8, 2021

Reviewed by: Darian Buelter

### Asphalt Sample Summary

Sampled by: GROUND Mix: Aggregate Industries - West Central Region 801501 (Mix#28 (Denver)) - 2021  
 Sample No.: 7  
 Sampling Method: CDOT CP41 / ASTM D979 / AASHTO T168  
 Quantity Rep. (tons): 14.80 Obtained From: Stockpile  
 Sample Location: Chamber Road and S Red Sky Drive.

### Asphalt Content by Ignition Oven (CDOT CP-L 5120)

Trial	Masses (gm)						Un-corrected AC (%)	Correction Factors (%)			AC Content (%)	
	Basket	Basket + Pre-Ignition HMA	Basket + Post-Ignition HMA	Pre-Ignition HMA	Post-Ignition HMA	Loss		Temp.	Moist.	AC	Result	Specified
1	3086.0	5097.1	4984.9	2,011.1	1,898.9	112.2	5.58	0.00	0.00	0.00	5.58	4.9 - 5.5
2*	-	-	-	-	-	-	-					

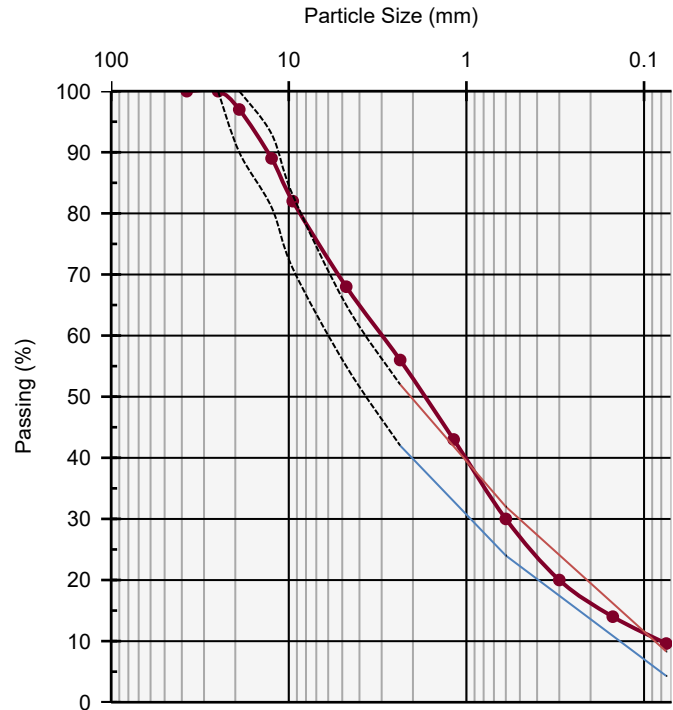
\* For large aggregate mixes.

### Sieve Analysis of Extracted Aggregates (CDOT CP 31)

Sieve	Particle Size (mm)	Mass Retained (gm)	Retained (%)	Passing (%)	Specified Passing (%)
1.5 in	37.5	0.0	0	100	-
1 in	25.0	0.0	0	100	100 min.
3/4 in	19.0	51.9	3	97	90 - 100
1/2 in	12.5	208.0	11	89	81 - 93
3/8 in	9.5	346.2	18	82	71 - 83
No. 4	4.75	616.7	32	68	55 - 65
No. 8	2.36	837.8	44	56	42 - 52
No. 16	1.18	1,086.7	57	43	
No. 30	0.600	1,326.0	70	30	24 - 32
No. 50	0.300	1,516.0	80	20	
No. 100	0.150	1,637.8	86	14	
No. 200	0.075	1,717.0	90.4	9.6	4.3 - 8.3

Sieve corrections were applied if part of testing scope.

Specimen Mass (gm)		Difference (%)
After Wash	After Shake	
1731	1731.0	0.00



Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, samples were received in adequate condition. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

**South Chambers Road & Hess Road Project**

Report Date: Nov 12, 2021

Work Order No.: 21-4164.AsphaltSampling.0008; ver: 2

Work Order Date: Nov 8, 2021

Reviewed by: Darian Buelter

**Asphalt Sample Summary**

**Theoretical Maximum Specific Gravity and Density (CDOT CP 51)**

Trial	Masses (gm)			Test Water Temp. (°F)	Specific Gravity	Max. Specific Gravity		Max. Density (pcf)*	
	Specimen	Flask & Water	Specimen, Flask, & Water			Result	Specified	Result	Specified
1	1507.5	3186.8	4079.3	77	2.451	<b>2.451</b>	2.489	<b>152.6</b>	154.9
2	1506.1	3250.0	4141.7	77	2.451				

\* Using water density of 62.240 (pcf).

**South Chambers Road & Hess Road Project**

Report Date: Nov 20, 2021

Work Order No.: 21-4164.AsphaltSampling.0010; ver: 1

Work Order Date: Nov 16, 2021

Reviewed by: Darian Buelter

**Asphalt Sample Summary**

Placement Location: 50 ft from Hess road.

**Photos**



## South Chambers Road & Hess Road Project

Report Date: Nov 20, 2021

Work Order No.: 21-4164.AsphaltSampling.0010; ver: 1

Work Order Date: Nov 16, 2021

Reviewed by: Darian Buelter

### Asphalt Sample Summary

Sampled by: GROUND      Mix: Aggregate Industries - West Central Region 801501 (Mix#28 (Denver)) - 2021  
 Sample No.: 9  
 Sampling Method: CDOT CP41 / ASTM D979 / AASHTO T168  
 Quantity Rep. (tons):      Obtained From:  
 Sample Location: 50 ft from Hess road.

### Asphalt Content by Ignition Oven (CDOT CP-L 5120)

Trial	Masses (gm)						Un-corrected AC (%)	Correction Factors (%)			AC Content (%)	
	Basket	Basket + Pre-Ignition HMA	Basket + Post-Ignition HMA	Pre-Ignition HMA	Post-Ignition HMA	Loss		Temp.	Moist.	AC	Result	Specified
1	3088.8	4666.1	4580.2	1,577.3	1,491.4	85.9	5.45	0.00	0.00	0.00	<b>5.45</b>	4.9 - 5.5
2*	-	-	-	-	-	-	-					

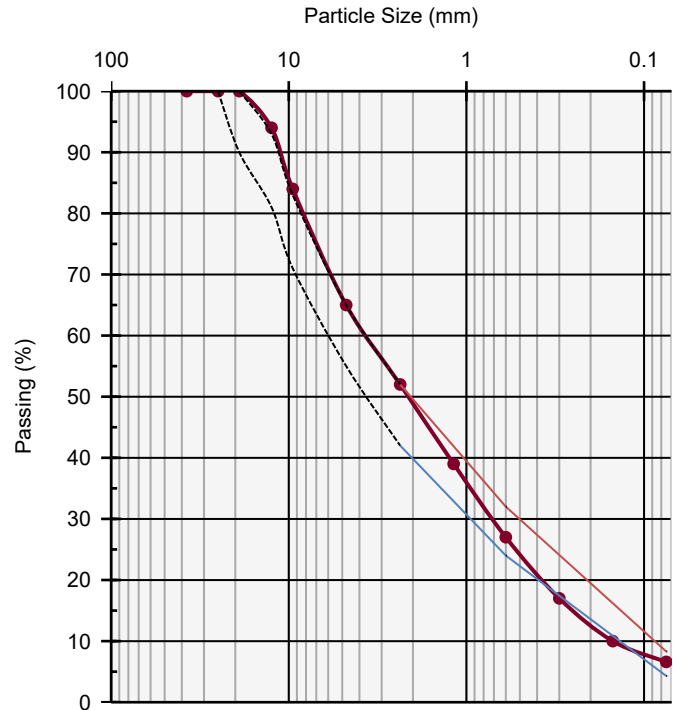
\* For large aggregate mixes.

### Sieve Analysis of Extracted Aggregates (CDOT CP 31)

Sieve	Particle Size (mm)	Mass Retained (gm)	Retained (%)	Passing (%)	Specified Passing (%)
1.5 in	37.5	0.0	0	<b>100</b>	-
1 in	25.0	0.0	0	<b>100</b>	100 min.
3/4 in	19.0	0.0	0	<b>100</b>	90 - 100
1/2 in	12.5	87.5	6	<b>94</b>	81 - 93
3/8 in	9.5	239.8	16	<b>84</b>	71 - 83
No. 4	4.75	529.5	35	<b>65</b>	55 - 65
No. 8	2.36	711.5	48	<b>52</b>	42 - 52
No. 16	1.18	906.9	61	<b>39</b>	
No. 30	0.600	1,093.8	73	<b>27</b>	24 - 32
No. 50	0.300	1,244.1	83	<b>17</b>	
No. 100	0.150	1,339.0	90	<b>10</b>	
No. 200	0.075	1,393.6	93.4	<b>6.6</b>	4.3 - 8.3

Sieve corrections were applied if part of testing scope.

Specimen Mass (gm)		Difference (%)
After Wash	After Shake	
1400.3	1400.3	0.00



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### South Chambers Road & Hess Road Project

Report Date: Nov 20, 2021

Work Order No.: 21-4164.AsphaltSampling.0010; ver: 1

Work Order Date: Nov 16, 2021

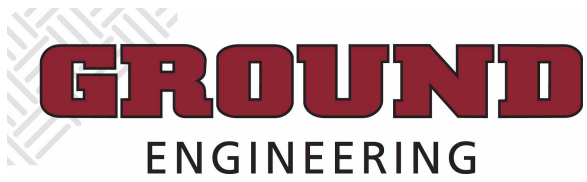
Reviewed by: Darian Buelter

#### Asphalt Sample Summary

#### Theoretical Maximum Specific Gravity and Density (CDOT CP 51)

Trial	Masses (gm)			Test Water Temp. (°F)	Specific Gravity	Max. Specific Gravity		Max. Density (pcf)*	
	Specimen	Flask & Water	Specimen, Flask, & Water			Result	Specified	Result	Specified
1	1004.0	3186.8	3784.5	77	2.471	2.475	2.489	154.0	154.9
2	1002.5	3250.0	3848.0	77	2.478				

\* Using water density of 62.240 (pcf).



Client: Todd Nordstrom  
Nordstrom Commercial Builders  
1755 Liggett Road  
Castle Rock, CO 80109

## South Chambers Road & Hess Road Project

Report Date: Nov 23, 2021

Work Order No.: 21-4164.AsphaltSampling.0011; ver: 1

Work Order Date: Nov 18, 2021

Reviewed by: Darian Buelter

### Asphalt Sample Summary

Placement Location: S lane of Red Sky Dr

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, samples were received in adequate condition. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

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Page 1 of 3

## South Chambers Road & Hess Road Project

Report Date: Nov 23, 2021

Work Order No.: 21-4164.AsphaltSampling.0011; ver: 1

Work Order Date: Nov 18, 2021

Reviewed by: Darian Buelter

### Asphalt Sample Summary

Sampled by: GROUND      Mix: Aggregate Industries - West Central Region 801493-Mix13-2021-Longmont  
 Sample No.: 10  
 Sampling Method: CDOT CP41 / ASTM D979 / AASHTO T168  
 Quantity Rep. (tons): 26      Obtained From: Paver Auger  
 Sample Location: S lane of Red Sky Dr

### Asphalt Content by Ignition Oven (CDOT CP-L 5120)

Trial	Masses (gm)						Un-corrected AC (%)	Correction Factors (%)			AC Content (%)	
	Basket	Basket + Pre-Ignition HMA	Basket + Post-Ignition HMA	Pre-Ignition HMA	Post-Ignition HMA	Loss		Temp.	Moist.	AC	Result	Specified
1	3084.5	4617.6	4532.7	1,533.1	1,448.2	84.9	5.54	0.00	0.00	0.00	<b>5.54</b>	5.4 - 6
2*	-	-	-	-	-	-	-					

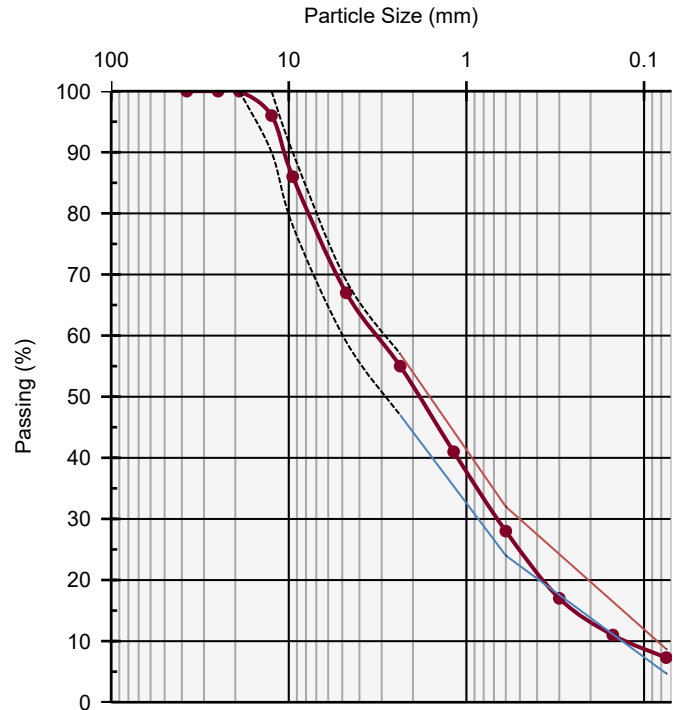
\* For large aggregate mixes.

### Sieve Analysis of Extracted Aggregates (CDOT CP 31)

Sieve	Particle Size (mm)	Mass Retained (gm)	Retained (%)	Passing (%)	Specified Passing (%)
1.5 in	37.5	0.0	0	<b>100</b>	-
1 in	25.0	0.0	0	<b>100</b>	-
3/4 in	19.0	0.0	0	<b>100</b>	100 min.
1/2 in	12.5	61.0	4	<b>96</b>	90 - 100
3/8 in	9.5	200.3	14	<b>86</b>	78 - 90
No. 4	4.75	476.3	33	<b>67</b>	59 - 69
No. 8	2.36	657.9	45	<b>55</b>	47 - 57
No. 16	1.18	858.2	59	<b>41</b>	
No. 30	0.600	1,046.8	72	<b>28</b>	24 - 32
No. 50	0.300	1,196.5	83	<b>17</b>	
No. 100	0.150	1,289.2	89	<b>11</b>	
No. 200	0.075	1,342.4	92.7	<b>7.3</b>	4.7 - 8.7

Sieve corrections were applied if part of testing scope.

Specimen Mass (gm)		Difference (%)
After Wash	After Shake	
1351.2	1351.2	0.00



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### South Chambers Road & Hess Road Project

Report Date: Nov 23, 2021

Work Order No.: 21-4164.AsphaltSampling.0011; ver: 1

Work Order Date: Nov 18, 2021

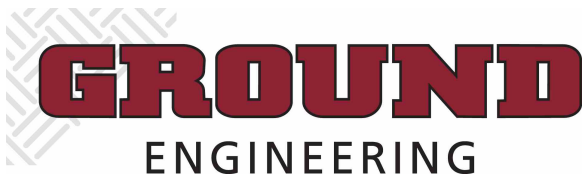
Reviewed by: Darian Buelter

#### Asphalt Sample Summary

#### Theoretical Maximum Specific Gravity and Density (CDOT CP 51)

Trial	Masses (gm)			Test Water Temp. (°F)	Specific Gravity	Max. Specific Gravity		Max. Density (pcf)*	
	Specimen	Flask & Water	Specimen, Flask, & Water			Result	Specified	Result	Specified
1	1002.9	3186.8	3782.6	77	2.464	2.466	2.435	153.5	151.6
2	1003.5	3250.0	3846.8	77	2.467				

\* Using water density of 62.240 (pcf).



Client: Todd Nordstrom  
Nordstrom Commercial Builders  
1755 Liggett Road  
Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 29, 2021

Work Order No.: 21-4164.AsphaltSampling.0012; ver: 2

Work Order Date: Nov 19, 2021

Reviewed by: Darian Buelter

#### Asphalt Sample Summary

Placement Location: S lane S Red Sky Drive

#### On-Site Notifications

Name	Company
Dean Prull	Nordstrom Commercial Builders

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, samples were received in adequate condition. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Nov 29, 2021

Work Order No.: 21-4164.AsphaltSampling.0012; ver: 2

Work Order Date: Nov 19, 2021

Reviewed by: Darian Buelter

### Asphalt Sample Summary

Sampled by: GROUND Mix: Aggregate Industries - West Central Region 801493-Mix13-2021-Longmont  
 Sample No.: 11  
 Sampling Method: CDOT CP41 / ASTM D979 / AASHTO T168  
 Quantity Rep. (tons): 10.23 Obtained From: Stockpile  
 Sample Location: Round

### Asphalt Content by Ignition Oven (CDOT CP-L 5120)

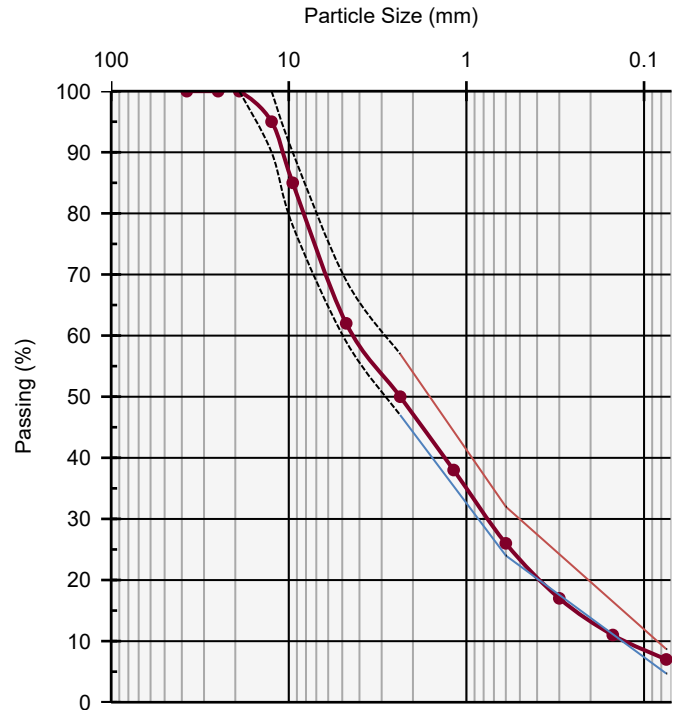
Trial	Masses (gm)						Un-corrected AC (%)	Correction Factors (%)			AC Content (%)	
	Basket	Basket + Pre-Ignition HMA	Basket + Post-Ignition HMA	Pre-Ignition HMA	Post-Ignition HMA	Loss		Temp.	Moist.	AC	Result	Specified
1	3080.4	5089.6	4985.4	2,009.2	1,905.0	104.2	5.19	0.00	0.00	0.00	5.19	5.4 - 6
2*	-	-	-	-	-	-	-					

\* For large aggregate mixes.

### Sieve Analysis of Extracted Aggregates (CDOT CP 31)

Sieve	Particle Size (mm)	Mass Retained (gm)	Retained (%)	Passing (%)	Specified Passing (%)
1.5 in	37.5	0.0	0	100	-
1 in	25.0	0.0	0	100	-
3/4 in	19.0	0.0	0	100	100 min.
1/2 in	12.5	89.3	5	95	90 - 100
3/8 in	9.5	276.2	15	85	78 - 90
No. 4	4.75	718.4	38	62	59 - 69
No. 8	2.36	948.1	50	50	47 - 57
No. 16	1.18	1,178.0	62	38	
No. 30	0.600	1,401.7	74	26	24 - 32
No. 50	0.300	1,583.2	83	17	
No. 100	0.150	1,698.0	89	11	
No. 200	0.075	1,765.8	93.0	7.0	4.7 - 8.7

Sieve corrections were applied if part of testing scope.



Specimen Mass (gm)		Difference (%)
After Wash	After Shake	
1777.5	1777.1	0.02

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### South Chambers Road & Hess Road Project

Report Date: Nov 29, 2021

Work Order No.: 21-4164.AsphaltSampling.0012; ver: 2

Work Order Date: Nov 19, 2021

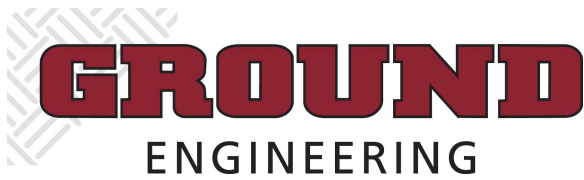
Reviewed by: Darian Buelter

### Asphalt Sample Summary

#### Theoretical Maximum Specific Gravity and Density (CDOT CP 51)

Trial	Masses (gm)			Test Water Temp. (°F)	Specific Gravity	Max. Specific Gravity		Max. Density (pcf)*	
	Specimen	Flask & Water	Specimen, Flask, & Water			Result	Specified	Result	Specified
1	1507.1	3186.8	4083.8	77	2.470	<b>2.472</b>	2.435	<b>153.9</b>	151.6
2	1509.5	3250.0	4149.0	77	2.473				

\* Using water density of 62.240 (pcf).



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Oct 28, 2021

Work Order No.: 21-4164.Compaction.0061; ver: 1

Work Order Date: Oct 25, 2021

Reviewed by: Darian Buelter

#### Compaction

Earthwork Contractor: Nordstrom Commercial Builders      Performed by: Justin Brookhart  
 Equipment Used: Excavator|Loader|Water Truck|Skid Steer|Backhoe      Nuclear Gauge: 94, Instrotek 3500, 1939  
 Weather, High/Low Temp.: Windy|Mostly Sunny, 68/35 (°F)      Standard Counts: 2669 / 440  
 Placement Location: Curb along south side of S. Red Sky Dr. STA 10+70 to STA 14+00

#### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

#### Material Properties

Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Soil Type	Proctor Method
109.8	16.7	A-2-4 (0)	T180 A
110.5	17.0	A-2-7 (1)	T180 A

#### Specifications

Spec. ID - Specification Title	Property	Specified
084 - Curb and Gutter Subgrade - Non-Cohesive T180	Moist. Dev. (%)	-2 to 2
084 - Curb and Gutter Subgrade - Non-Cohesive T180	Relative Comp. (%)	95 min.

#### Nuclear Soil Density and Moisture Content (ASTM D6938 and D4718 / AASHTO T310 and T224)

#### Results

Test No.	Spec. ID	Test Location	Elevation (ft)	Gauge Total Wet Density (pcf)	Corr. Field Dry Density (pcf)	Corr. Field MC (%)	Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Relative Comp. (%)	Moist. Dev. (%)	Pass or Fail
25	84	STA 14+00; at entrance to Sliceroo Dr. see 1 on attached.	RSG	123.2	107.1	15.0	110.5	17.0	97.0	-2.0	Pass
26	84	STA 13+66 center of crosswalk. See 2 on attached.	RSG	125.9	106.5	18.2	110.5	17.0	96.4	1.2	Pass
27	84	STA 12+20; see 3 on attached.	RSG	121.7	105.1	15.8	109.8	16.7	95.7	-0.9	Pass
28	84	STA 11+15; See 4 on attached.	RSG	120.3	104.3	15.3	109.8	16.7	95.0	-1.4	Pass

Commonly Used Abbreviations:

RSG = Rough Surface Grade  
 BG = Below Grade  
 RFG = Rough Footing Grade

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Oct 28, 2021

Work Order No.: 21-4164.Compaction.0061; ver: 1

Work Order Date: Oct 25, 2021

Reviewed by: Darian Buelter

### Compaction

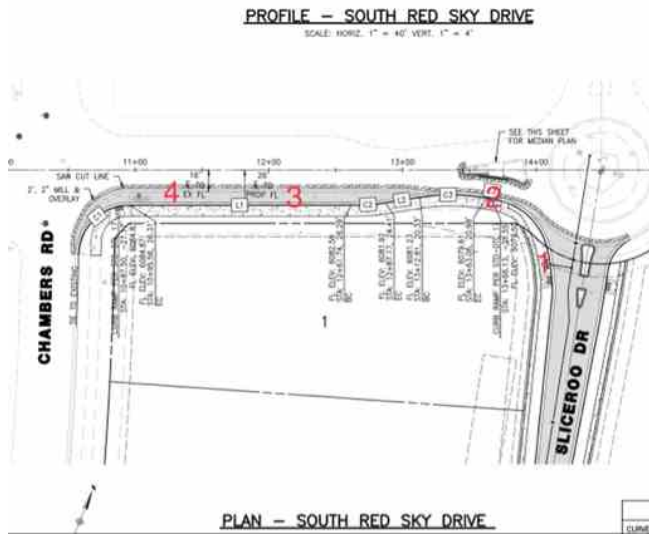
#### Photos



Compaction testing area for tests 1 and 2.

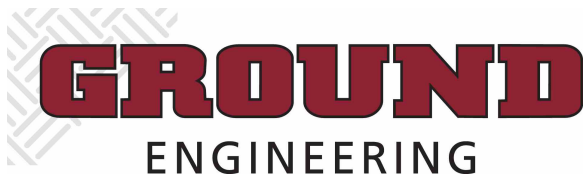


Compaction testing area for sites 3 and 4.



Compaction testing sites.

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Oct 28, 2021

Work Order No.: 21-4164.Compaction.0062; ver: 1

Work Order Date: Oct 27, 2021

Reviewed by: Darian Buelter

#### Compaction

Earthwork Contractor: Nordstrom Commercial Builders      Performed by: James Macdonald  
 Equipment Used: Other, No compaction equipment visible      Nuclear Gauge: 66, Troxler 3440, 37163  
 Weather, High/Low Temp.: Windy|Sunny, 54/34 (°F)      Standard Counts: 2085 / 609  
 Item/Structure Type/Number: Curb and Gutter subgrade  
 Placement Location: Curb and Gutter subgrade on S side of Roundabout on S side of Red Sky Rd

#### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

#### Material Properties

Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Soil Type	Proctor Method
106.0	18.1	A-7-6 (6)	T180 A

#### Specifications

Spec. ID - Specification Title	Property	Specified
085 - Curb and Gutter Subgrade - Cohesive T99	Relative Comp. (%)	95 min.
085 - Curb and Gutter Subgrade - Cohesive T99	Moist. Dev. (%)	0 to 4

#### Nuclear Soil Density and Moisture Content (ASTM D6938 and D4718 / AASHTO T310 and T224)

#### Results

Test No.	Spec. ID	Test Location	Elevation (ft)	Gauge Total Wet Density (pcf)	Corr. Field Dry Density (pcf)	Corr. Field MC (%)	Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Relative Comp. (%)	Moist. Dev. (%)	Pass or Fail
29	85	Middle of SW portion of Roundabout	RSG	122.7	102.8	19.3	106.0	18.1	97.0	1.2	Pass

Commonly Used Abbreviations:

RSG = Rough Surface Grade  
 BG = Below Grade  
 RFG = Rough Footing Grade

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Oct 28, 2021

Work Order No.: 21-4164.Compaction.0062; ver: 1

Work Order Date: Oct 27, 2021

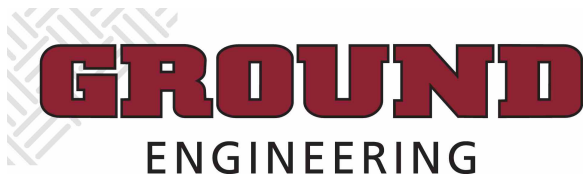
Reviewed by: Darian Buelter

### Compaction

#### Photos



Curb and Gutter subgrade



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Oct 29, 2021

Work Order No.: 21-4164.Compaction.0063; ver: 1

Work Order Date: Oct 28, 2021

Reviewed by: Darian Buelter

#### Compaction

Earthwork Contractor: Nordstrom Commercial Builders      Performed by: James Macdonald  
 Equipment Used: Other, No compaction equipment visible      Nuclear Gauge: 66, Troxler 3440, 37163  
 Weather, High/Low Temp.: Sunny, 55/28 (°F)      Standard Counts: 2079 / 616  
 Item/Structure Type/Number: Curb and Gutter subgrade  
 Placement Location: Curb and Gutter subgrade at S side of Red Sky Road Roundabout

#### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

#### Material Properties

Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Soil Type	Proctor Method
106.0	18.1	A-7-6 (6)	T180 A

#### Specifications

Spec. ID - Specification Title	Property	Specified
085 - Curb and Gutter Subgrade - Cohesive T99	Relative Comp. (%)	95 min.
085 - Curb and Gutter Subgrade - Cohesive T99	Moist. Dev. (%)	0 to 4

#### Nuclear Soil Density and Moisture Content (ASTM D6938 and D4718 / AASHTO T310 and T224)

#### Results

Test No.	Spec. ID	Test Location	Elevation (ft)	Gauge Total Wet Density (pcf)	Corr. Field Dry Density (pcf)	Corr. Field MC (%)	Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Relative Comp. (%)	Moist. Dev. (%)	Pass or Fail
30	85	10' S of SE corner of roundabout	RSG	127.0	107.3	18.4	106.0	18.1	101.2	0.3	Pass

Commonly Used Abbreviations:

RSG = Rough Surface Grade  
 BG = Below Grade  
 RFG = Rough Footing Grade

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Oct 29, 2021

Work Order No.: 21-4164.Compaction.0063; ver: 1

Work Order Date: Oct 28, 2021

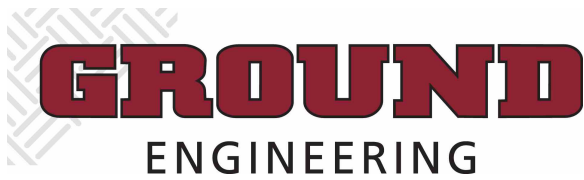
Reviewed by: Darian Buelter

### Compaction

#### Photos



Curb and Gutter subgrade



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 10, 2021

Work Order No.: 21-4164.Compaction.0064; ver: 1

Work Order Date: Nov 6, 2021

Reviewed by: Darian Buelter

#### Compaction

Earthwork Contractor: Nordstrom Commercial Builders      Performed by: Justin Brookhart  
 Equipment Used: Backhoe|Scraper|Skid Steer|Smooth Drum      Nuclear Gauge: 94, Instrotek 3500, 1939  
 Weather, High/Low Temp.: Calm|Clear, 71/45 (°F)      Standard Counts: 2657 / 445  
 Placement Location: Curbs along south corner of Red Sky Dr. and S. Chambers Rd. and corner of Red Sky Dr. and Sliceroo.

#### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

#### Material Properties

Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Soil Type	Proctor Method
122.2	9.3	A-2-4 (0)	T180 A

#### Specifications

Spec. ID - Specification Title	Property	Specified
084 - Curb and Gutter Subgrade - Non-Cohesive T180	Moist. Dev. (%)	-2 to 2
084 - Curb and Gutter Subgrade - Non-Cohesive T180	Relative Comp. (%)	95 min.

#### Nuclear Soil Density and Moisture Content (ASTM D6938 and D4718 / AASHTO T310 and T224)

#### Results

Test No.	Spec. ID	Test Location	Elevation (ft)	Gauge Total Wet Density (pcf)	Corr. Field Dry Density (pcf)	Corr. Field MC (%)	Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Relative Comp. (%)	Moist. Dev. (%)	Pass or Fail
31	84	Curb along southwest corner of Red Sky Dr and Sliceroo. STA 14+00; see 2 on attached.	RSG	127.0	117.8	7.8	122.2	9.3	96.4	-1.5	Pass
32	84	Curb along south east corner of Red Sky Dr. and S. Chambers Rd. STA 11+00; see 1 on attached.	RSG	124.9	116.1	7.6	122.2	9.3	95.0	-1.7	Pass

Commonly Used Abbreviations:

RSG = Rough Surface Grade  
 BG = Below Grade  
 RFG = Rough Footing Grade

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Nov 10, 2021

Work Order No.: 21-4164.Compaction.0064; ver: 1

Work Order Date: Nov 6, 2021

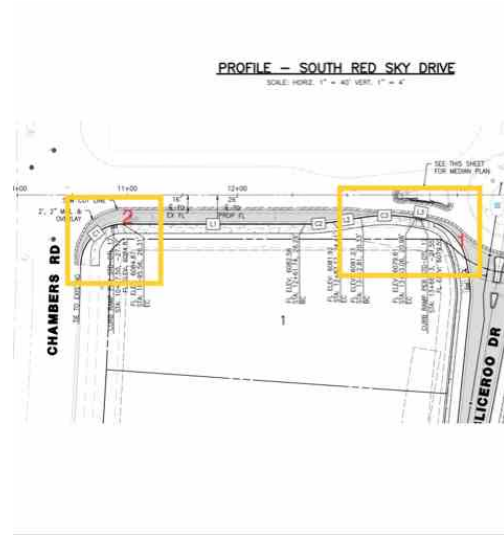
Reviewed by: Darian Buelter

### Compaction

#### Photos

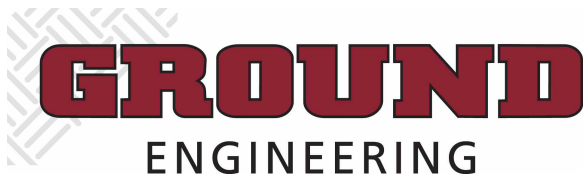


Compaction testing site near traffic circle.



Locations of compaction testing.

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 20, 2021

Work Order No.: 21-4164.Compaction.0065; ver: 1

Work Order Date: Nov 12, 2021

Reviewed by: Darian Buelter

#### Compaction

Earthwork Contractor: NCB  
 Equipment Used: Trencher  
 Weather, High/Low Temp.: Calm|Clear|Frost, 26/22 (°F)  
 Item/Structure Type/Number: Curb & Gutter RSG  
 Placement Location: Curb gutters on each side of entrance from Hess road.

Performed by: Timur Nazarov  
 Nuclear Gauge: 66, Troxler 3440, 37163  
 Standard Counts: 612 / 2085

#### Material Properties

Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Soil Type	Proctor Method
110.5	17.0	A-2-7 (1)	T180 A

#### Specifications

Spec. ID - Specification Title	Property	Specified
084 - Curb and Gutter Subgrade - Non-Cohesive T180	Moist. Dev. (%)	-2 to 2
084 - Curb and Gutter Subgrade - Non-Cohesive T180	Relative Comp. (%)	95 min.

#### Nuclear Soil Density and Moisture Content (ASTM D6938 and D4718 / AASHTO T310 and T224)

#### Results

Test No.	Spec. ID	Test Location	Elevation (ft)	Gauge Total Wet Density (pcf)	Corr. Field Dry Density (pcf)	Corr. Field MC (%)	Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Relative Comp. (%)	Moist. Dev. (%)	Pass or Fail
33	84	Curb gutter @ Entrance from Hess road, left site.	RSG	125.3	108.5	15.5	110.5	17.0	98.2	-1.5	Pass
34	84	Curb gutter @ Entrance from Hess road, right site.	RSG	121.1	105.1	15.2	110.5	17.0	95.1	-1.8	Pass

Commonly Used Abbreviations:

RSG = Rough Surface Grade  
 BG = Below Grade  
 RFG = Rough Footing Grade

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## South Chambers Road & Hess Road Project

Report Date: Nov 20, 2021

Work Order No.: 21-4164.Compaction.0065; ver: 1

Work Order Date: Nov 12, 2021

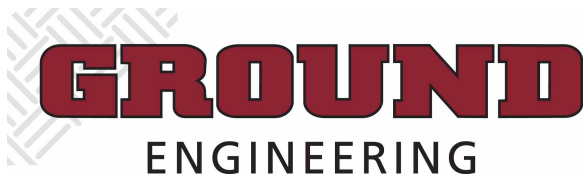
Reviewed by: Darian Buelter

### Compaction

#### Photos



Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 26, 2021

Work Order No.: 21-4164.Compaction.0066; ver: 1

Work Order Date: Nov 13, 2021

Reviewed by: Tyeson Weston

#### Compaction

Earthwork Contractor: Nordstrom Commercial Builders      Performed by: Leyla Lawson  
 Equipment Used: Remote Trench Roller      Nuclear Gauge: 18, Troxler 3440, 25185  
 Weather, High/Low Temp.: Sunny|Windy, 65/54 (°F)      Standard Counts: 1890 / 658  
 Item/Structure Type/Number: Pavement Subgrade  
 Placement Location: Pavement Subgrade Sta 10+50 to 11+00

#### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

#### Material Properties

Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Soil Type	Proctor Method
110.5	17.0	A-2-7 (1)	T180 A

#### Specifications

Spec. ID - Specification Title	Property	Specified
082 - Pavement Subgrade - Non-Cohesive T180	Moist. Dev. (%)	-2 to 2
082 - Pavement Subgrade - Non-Cohesive T180	Relative Comp. (%)	95 min.

#### Nuclear Soil Density and Moisture Content (ASTM D6938 and D4718 / AASHTO T310 and T224)

#### Results

Test No.	Spec. ID	Test Location	Elevation (ft)	Gauge Total Wet Density (pcf)	Corr. Field Dry Density (pcf)	Corr. Field MC (%)	Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Relative Comp. (%)	Moist. Dev. (%)	Pass or Fail
38	82	Sta 10+75	RSG	123.8	105.0	17.9	110.5	17.0	95.0	0.9	Pass

Commonly Used Abbreviations:

RSG = Rough Surface Grade  
 BG = Below Grade  
 RFG = Rough Footing Grade

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**South Chambers Road & Hess Road Project**

Report Date: Nov 26, 2021

Work Order No.: 21-4164.Compaction.0066; ver: 1

Work Order Date: Nov 13, 2021

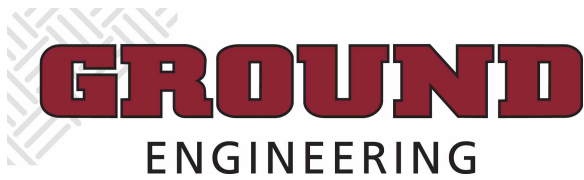
Reviewed by: Tyeson Weston

**Compaction**

**Photos**



Hess Rd and Red Sky Dr



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 20, 2021

Work Order No.: 21-4164.Compaction.0067; ver: 1

Work Order Date: Nov 15, 2021

Reviewed by: Darian Buelter

#### Compaction

**Earthwork Contractor:** Nordstrom Commercial Builders **Performed by:** Jeff DeCoster  
**Equipment Used:** Backhoe **Nuclear Gauge:** 69, Troxler 3440, 37442  
**Weather, High/Low Temp.:** Mostly Sunny|Partly Cloudy, 72/46 (°F) **Standard Counts:** 2150 / 771  
**Item/Structure Type/Number:** Subgrade  
**Placement Location:** Sidewalk subgrade at Chambers Road and South Red Sky Drive.  
**Comments:** GEC arrived on site and was not scheduled compaction. On site GC with Nordstrom Commercial Builders requested compaction testing on NW sidewalk. Earth work crew on site informed GEC that this area of sidewalk was passed in previous days. Following discrepancies were created for failing tests. GC was notified about failing compaction.

#### Discrepancies

The following discrepancies were added as a result of services performed. It is the contractor's responsibility to resolve reported discrepancies and schedule retesting. A list of open discrepancies can be provided upon request.

Number	Description
Compaction 20	Douglas County - Subgrade and Embankment - Flatwork Subgrade - Non-Cohesive T180 - Sample/Test 36
Compaction 21	Douglas County - Subgrade and Embankment - Flatwork Subgrade - Non-Cohesive T180 - Sample/Test 37

#### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

#### Material Properties

Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Soil Type	Proctor Method
118.0	13.4	A-2-6 (0)	T180 A

#### Specifications

Spec. ID - Specification Title	Property	Specified
086 - Flatwork Subgrade - Non-Cohesive T180	Moist. Dev. (%)	-2 to 2
086 - Flatwork Subgrade - Non-Cohesive T180	Relative Comp. (%)	95 min.

#### Nuclear Soil Density and Moisture Content (ASTM D6938 and D4718 / AASHTO T310 and T224)

#### Results

Test No.	Spec. ID	Test Location	Elevation (ft)	Gauge Total Wet Density (pcf)	Corr. Field Dry Density (pcf)	Corr. Field MC (%)	Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Relative Comp. (%)	Moist. Dev. (%)	Pass or Fail
36	86	35' east / 8' south from SE corner of Chambers Road and South Red Sky Drive.	RSG	118.8	109.4	8.6	118.0	13.4	92.7	-4.8	Fail
37	86	80' east / 8' south from SE corner of Chambers Road and South Red Sky Drive.	RSG	116.4	107.8	8.0	118.0	13.4	91.3	-5.4	Fail

Commonly Used Abbreviations:

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 RFG = Rough Footing Grade

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## South Chambers Road & Hess Road Project

Report Date: Nov 20, 2021

Work Order No.: 21-4164.Compaction.0067; ver: 1

Work Order Date: Nov 15, 2021

Reviewed by: Darian Buelter

### Compaction

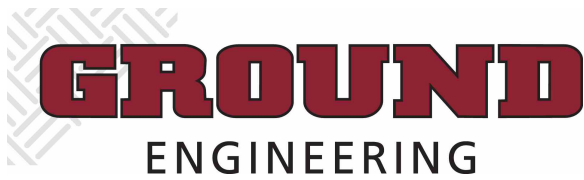
#### Photos



View of subgrade testing (west end)



East end of NW sidewalk along South Red Sky Drive



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 23, 2021

Work Order No.: 21-4164.Compaction.0068; ver: 1

Work Order Date: Nov 22, 2021

Reviewed by: Tyeson Weston

#### Compaction

Earthwork Contractor: Nordstrom Commercial Builders      Performed by: Ben Roberts  
 Equipment Used: Plate Compactor/Jumping Jack      Nuclear Gauge: 57, Troxler 3440, 36188  
 Weather, High/Low Temp.: Sunny, 70/45 (°F)      Standard Counts: 1824 / 706  
 Placement Location: Sidewalk subgrade in area shown on attachment

#### On-Site Notifications

Name	Company
Todd Nordstrom	Nordstrom Commercial Builders

#### Material Properties

Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Soil Type	Proctor Method
123.9	11.3	A-2-6 (0)	T180 A

#### Specifications

Spec. ID - Specification Title	Property	Specified
086 - Flatwork Subgrade - Non-Cohesive T180	Moist. Dev. (%)	-2 to 2
086 - Flatwork Subgrade - Non-Cohesive T180	Relative Comp. (%)	95 min.

#### Nuclear Soil Density and Moisture Content (ASTM D6938 and D4718 / AASHTO T310 and T224)

#### Results

Test No.	Spec. ID	Test Location	Elevation (ft)	Gauge Total Wet Density (pcf)	Corr. Field Dry Density (pcf)	Corr. Field MC (%)	Lab Max. Dry Density (pcf)	Lab Opt. MC (%)	Relative Comp. (%)	Moist. Dev. (%)	Pass or Fail
39	86	Location 1	RSG	132.2	118.2	11.8	123.9	11.3	95.4	0.5	Pass
40	86	Location 2	RSG	130.7	118.6	10.2	123.9	11.3	95.7	-1.1	Pass

Commonly Used Abbreviations:

RSG = Rough Surface Grade  
 BG = Below Grade  
 RFG = Rough Footing Grade

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## South Chambers Road & Hess Road Project

Report Date: Nov 23, 2021

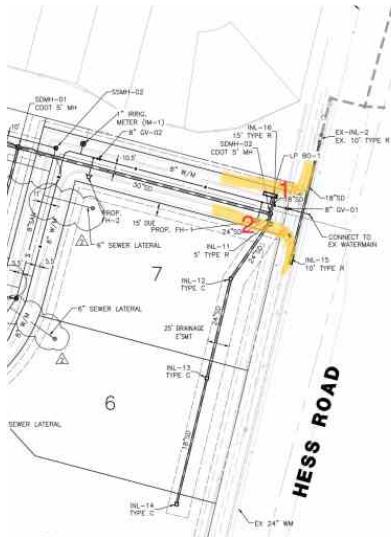
Work Order No.: 21-4164.Compaction.0068; ver: 1

Work Order Date: Nov 22, 2021

Reviewed by: Tyeson Weston

### Compaction

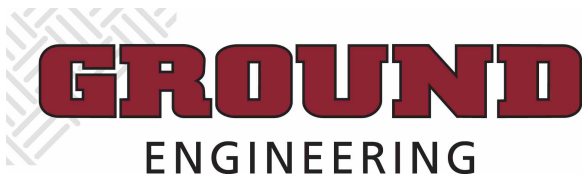
#### Photos



Area in yellow represents work area, red numbers represent test locations



Sidewalk subgrade



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 23, 2021  
 Work Order Date: Oct 25, 2021

Work Order No.: 21-4164.Concrete.0024; ver: 3  
 Reviewed by: Darian Buelter

#### Concrete

Concrete Contractor: Nordstrom Commercial Builders  
 Placement Method: Tailgated  
 Total Quantity Placed: 10 yd<sup>3</sup>  
 Placement Location: Curb along south side of S. Red Sky Dr. STA 10+70 to STA 14+00

Performed by: Justin Brookhart  
 Finish Method: Machine Finished  
 Weather: Windy|Mostly Sunny

#### On-site Notifications, Specification, and Mix Information

On-Site Notification(s)	Item / Structure Type	Test	Specified	Mix Design
Todd Nordstrom with Nordstrom Commercial Builders	Sidewalk / Curb and Gutter	Air Content (%)	5 to 8	-
		Slump (in)	2 to 4	-
	Aggregate Industries 7456122	Unit Weight (pcf)	-	-
		Comp. Strength (psi)	4500	-

#### Sampling (ASTM C172 / AASHTO R60 / CDOT CP61)

Sample No.	Location	Sampled From	Quantity (yd <sup>3</sup> )	Truck No.	Ticket No.	Batch Time	Test Time	Air Temp. (°F)	Water Added (gal)
22	Curb along S. Red Sky Dr.	Point of Placement	10	9220	62317755	9:29 AM	10:09 AM	64	0

#### Field Tests (ASTM C138, C143, C231, and C1064 / AASHTO T119, T121, and T152)

Sample No.	Concrete Temp. (°F)	Slump (in)	Air Cont. (%)	Meas. Vol. (ft <sup>3</sup> )	Empty Meas. (lb)	Full Meas. (lb)	Unit Wt. (pcf)	Lab Samples Cast
22	79	3	5.5	0.250	8.17	44.30	144.5	Yes

#### Compressive Strength (ASTM C31 and C39 / AASHTO T22 and T23)

Sample No.	Lab ID	Age (d)	Diameter (in)	Area (in <sup>2</sup> )	Fracture Type	Max. Load (lb-f)	Corrected Strength (psi)	Strength at Acceptance (psi)
22	C2716	7	4.00	12.57	2 / Cone & Split	55,620	4,430	-
	C2717	28	4.00	12.57	2 / Cone & Split	63,790	5,080	5,080
	C2718	28	4.00	12.57	2 / Cone & Split	64,350	5,120	5,120
	C2719	28	4.00	12.57	5 / Side	64,600	5,140	5,140
<b>Average Compressive Strength (psi):</b>							<b>5,110</b>	

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Nov 23, 2021

Work Order No.: 21-4164.Concrete.0024; ver: 3

Work Order Date: Oct 25, 2021

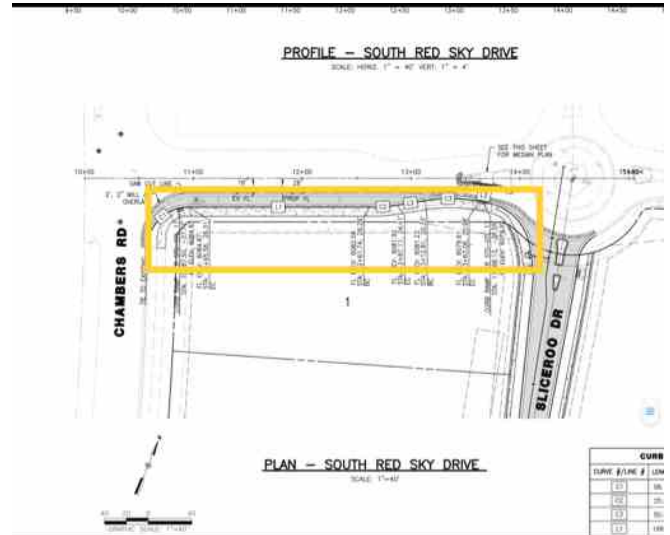
Reviewed by: Darian Buelter

### Concrete

#### Photos

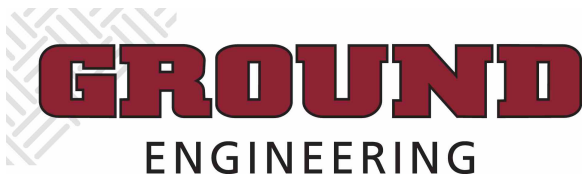


Concrete placement and finishing.



Concrete placement area.

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 24, 2021

Work Order No.: 21-4164.Concrete.0025; ver: 3

Work Order Date: Oct 27, 2021

Reviewed by: Darian Buelter

#### Concrete

Concrete Contractor: Nordstrom Commercial Builders

Performed by: James Macdonald

Placement Method: Tailgated

Finish Method: Hand Finished

Total Quantity Placed: 10 yd<sup>3</sup>

Weather: Sunny|Windy

Placement Location: Curb and Gutter on S side of Roundabout on Red Sky Dr

#### On-site Notifications, Specification, and Mix Information

Item / Structure Type	Test	Specified	Mix Design
Curb and Gutter	Air Content (%)	5 to 8	-
	Slump (in)	2 to 4	-
Mix Placed	Unit Weight (pcf)	-	-
Aggregate Industries 7456122	Comp. Strength (psi)	4500	-

#### Sampling (ASTM C172 / AASHTO R60 / CDOT CP61)

Sample No.	Location	Sampled From	Quantity (yd <sup>3</sup> )	Truck No.	Ticket No.	Batch Time	Test Time	Air Temp. (°F)	Water Added (gal)
23	Curb and Gutter on S side of Roundabout on Red Sky Dr	Point of Delivery	10	9246	62317873	2:13 PM	2:47 PM	57	0

#### Field Tests (ASTM C138, C143, C231, and C1064 / AASHTO T119, T121, and T152)

Sample No.	Concrete Temp. (°F)	Slump (in)	Air Cont. (%)	Meas. Vol. (ft <sup>3</sup> )	Empty Meas. (lb)	Full Meas. (lb)	Unit Wt. (pcf)	Lab Samples Cast
23	70	3	6.7	.250	8.45	44.35	143.6	Yes

#### Compressive Strength (ASTM C31 and C39 / AASHTO T22 and T23)

Sample No.	Lab ID	Age (d)	Diameter (in)	Area (in <sup>2</sup> )	Fracture Type	Max. Load (lb-f)	Corrected Strength (psi)	Strength at Acceptance (psi)
23	C2825	7	4.00	12.57	3 / Columnar	53,860	4,290	-
	C2826	28	4.00	12.57	3 / Columnar	73,220	5,830	5,830
	C2827	28	4.00	12.57	2 / Cone & Split	69,170	5,500	5,500
	C2828	28	4.00	12.57	3 / Columnar	68,070	5,420	5,420
<b>Average Compressive Strength (psi):</b>								<b>5,580</b>

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Nov 24, 2021

Work Order No.: 21-4164.Concrete.0025; ver: 3

Work Order Date: Oct 27, 2021

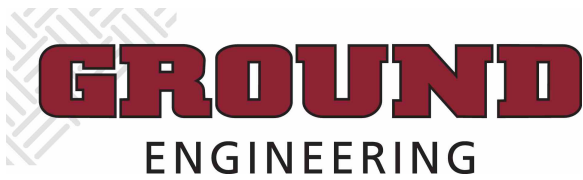
Reviewed by: Darian Buelter

### Concrete

#### Photos



Curb and Gutter on Red Sky Rd roundabout



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 26, 2021  
 Work Order Date: Oct 28, 2021

Work Order No.: 21-4164.Concrete.0026; ver: 3  
 Reviewed by: Darian Buelter

#### Concrete

Concrete Contractor: Nordstrom Commercial Builders  
 Placement Method: Tailgated  
 Total Quantity Placed: 10 yd<sup>3</sup>  
 Placement Location: Curb and Gutter on S side of Red Sky Road Roundabout

Performed by: James Macdonald  
 Finish Method: Hand Finished  
 Weather: Sunny

#### On-site Notifications, Specification, and Mix Information

On-Site Notification(s)	Item / Structure Type	Test	Specified	Mix Design
Todd Nordstrom with Nordstrom Commercial Builders	Curb and Gutter	Air Content (%)	5 to 8	-
		Slump (in)	2 to 4	-
	Aggregate Industries 7456122	Unit Weight (pcf)	-	-
		Comp. Strength (psi)	4500	-

#### Sampling (ASTM C172 / AASHTO R60 / CDOT CP61)

Sample No.	Location	Sampled From	Quantity (yd <sup>3</sup> )	Truck No.	Ticket No.	Batch Time	Test Time	Air Temp. (°F)	Water Added (gal)
24	Curb and Gutter on SE corner of Red Sky Road Roundabout	Point of Delivery	10	9612	62317977	1:43 PM	2:09 PM	55	0

#### Field Tests (ASTM C138, C143, C231, and C1064 / AASHTO T119, T121, and T152)

Sample No.	Concrete Temp. (°F)	Slump (in)	Air Cont. (%)	Meas. Vol. (ft <sup>3</sup> )	Empty Meas. (lb)	Full Meas. (lb)	Unit Wt. (pcf)	Lab Samples Cast
24	70	2.5	5.9	.250	8.45	44.55	144.4	Yes

#### Compressive Strength (ASTM C31 and C39 / AASHTO T22 and T23)

Sample No.	Lab ID	Age (d)	Diameter (in)	Area (in <sup>2</sup> )	Fracture Type	Max. Load (lb-f)	Corrected Strength (psi)	Strength at Acceptance (psi)
24	C2961	7	4.00	12.57	5 / Side	51,090	4,060	-
	C2962	28	4.00	12.57	2 / Cone & Split	73,840	5,870	5,870
	C2963	28	4.00	12.57	3 / Columnar	70,710	5,630	5,630
	C2964	28	4.00	12.57	3 / Columnar	69,250	5,510	5,510
<b>Average Compressive Strength (psi):</b>								<b>5,670</b>

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Nov 26, 2021

Work Order No.: 21-4164.Concrete.0026; ver: 3

Work Order Date: Oct 28, 2021

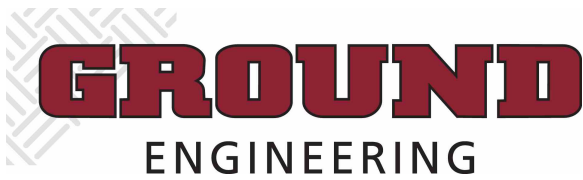
Reviewed by: Darian Buelter

### Concrete

#### Photos



Curb and Gutter on SE corner of Red Sky Road Roundabout



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Dec 7, 2021  
 Work Order Date: Nov 6, 2021

Work Order No.: 21-4164.Concrete.0027; ver: 3  
 Reviewed by: Darian Buelter

#### Concrete

Concrete Contractor: Nordstrom Commercial Builders  
 Placement Method: Tailgated  
 Total Quantity Placed: 15 yd<sup>3</sup>  
 Placement Location: Curbs along south corner of Red Sky Dr. and S. Chambers Rd. and corner of Red Sky Dr. and Sliceroo.

Performed by: Justin Brookhart  
 Finish Method: Trowel Finished|Hand Finished  
 Weather: Calm|Clear

#### On-site Notifications, Specification, and Mix Information

On-Site Notification(s)	Item / Structure Type	Test	Specified	Mix Design
Todd Nordstrom with Nordstrom Commercial Builders	Sidewalk / Curb and Gutter	Air Content (%)	5 to 8	-
	Mix Placed	Slump (in)	2 to 4	-
	Aggregate Industries 7456122	Unit Weight (pcf)	-	-
		Comp. Strength (psi)	4500	-

#### Sampling (ASTM C172 / AASHTO R60 / CDOT CP61)

Sample No.	Location	Sampled From	Quantity (yd <sup>3</sup> )	Truck No.	Ticket No.	Batch Time	Test Time	Air Temp. (°F)	Water Added (gal)
25	Curb along southwest corner of Red Sky Dr. and Sliceroo. STA 14+10	Point of Placement	10	9262	62318494	6:42 AM	7:24 AM	40	0
26	Curb along south corner of Red Sky Dr. and S. Chambers Rd. STA 10+50	Point of Placement	15	169	62318500	9:07 AM	10:02 AM	56	0

#### Field Tests (ASTM C138, C143, C231, and C1064 / AASHTO T119, T121, and T152)

Sample No.	Concrete Temp. (°F)	Slump (in)	Air Cont. (%)	Meas. Vol. (ft <sup>3</sup> )	Empty Meas. (lb)	Full Meas. (lb)	Unit Wt. (pcf)	Lab Samples Cast
25	66	4	5.7	0.250	8.20	43.51	141.2	Yes
26	71	4	5.0	0.250	8.20	44.32	144.5	

#### Compressive Strength (ASTM C31 and C39 / AASHTO T22 and T23)

Sample No.	Lab ID	Age (d)	Diameter (in)	Area (in <sup>2</sup> )	Fracture Type	Max. Load (lb-f)	Corrected Strength (psi)	Strength at Acceptance (psi)
25	C3435	7	4.00	12.57	3 / Columnar	54,630	4,350	-
	C3436	28	4.00	12.57	2 / Cone & Split	64,940	5,170	5,170
	C3437	28	4.00	12.57	2 / Cone & Split	60,090	4,780	4,780
	C3438	28	4.00	12.57	5 / Side	61,140	4,860	4,860
<b>Average Compressive Strength (psi):</b>								<b>4,940</b>

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Dec 7, 2021

Work Order No.: 21-4164.Concrete.0027; ver: 3

Work Order Date: Nov 6, 2021

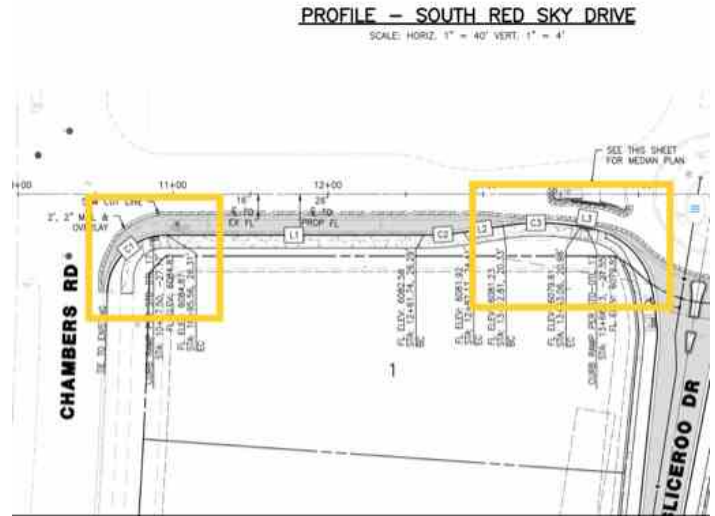
Reviewed by: Darian Buelter

### Concrete

#### Photos

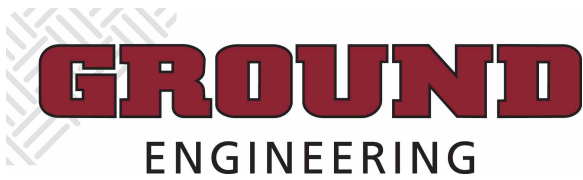


Concrete placement and finishing.



Areas of concrete placement.

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Dec 13, 2021  
 Work Order Date: Nov 12, 2021

Work Order No.: 21-4164.Concrete.0028; ver: 3  
 Reviewed by: Darian Buelter

#### Concrete

Concrete Contractor: NCB LLC  
 Placement Method: Tailgated  
 Total Quantity Placed: 10 yd<sup>3</sup>  
 Placement Location: Curb gutter @ Entrance from Hess road.

Performed by: Timur Nazarov  
 Finish Method: Hand Finished  
 Weather: Calm|Clear|Frost

#### On-site Notifications, Specification, and Mix Information

On-Site Notification(s)	Item / Structure Type	Test	Specified	Mix Design
Dean Prull with Nordstrom Commercial Builders	Curb and Gutter	Air Content (%)	5 to 8	-
		Slump (in)	2 to 4	-
	Mix Placed	Unit Weight (pcf)	-	-
	Concrete direct 7456122	Comp. Strength (psi)	4500	-

#### Sampling (ASTM C172 / AASHTO R60 / CDOT CP61)

Sample No.	Location	Sampled From	Quantity (yd <sup>3</sup> )	Truck No.	Ticket No.	Batch Time	Test Time	Air Temp. (°F)	Water Added (gal)
27	Curb gutter @ Entrance from Hess road. Storm sewer inlet slab.	Point of Delivery	10	9232	62318722	8:55 AM	9:20 AM	26	0

#### Field Tests (ASTM C138, C143, C231, and C1064 / AASHTO T119, T121, and T152)

Sample No.	Concrete Temp. (°F)	Slump (in)	Air Cont. (%)	Meas. Vol. (ft <sup>3</sup> )	Empty Meas. (lb)	Full Meas. (lb)	Unit Wt. (pcf)	Lab Samples Cast
27	76	4	7.9	.250	8.50	42.87	137.5	Yes

#### Compressive Strength (ASTM C31 and C39 / AASHTO T22 and T23)

Sample No.	Lab ID	Age (d)	Diameter (in)	Area (in <sup>2</sup> )	Fracture Type	Max. Load (lb-f)	Corrected Strength (psi)	Strength at Acceptance (psi)
27	C3710	7	4.00	12.57	3 / Columnar	50,990	4,060	-
	C3711	28	4.00	12.57	5 / Side	56,050	4,460	4,460
	C3712	28	4.00	12.57	5 / Side	61,280	4,880	4,880
	C3713	28	4.00	12.57	2 / Cone & Split	62,180	4,950	4,950
<b>Average Compressive Strength (psi):</b>								<b>4,760</b>

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Dec 13, 2021

Work Order No.: 21-4164.Concrete.0028; ver: 3

Work Order Date: Nov 12, 2021

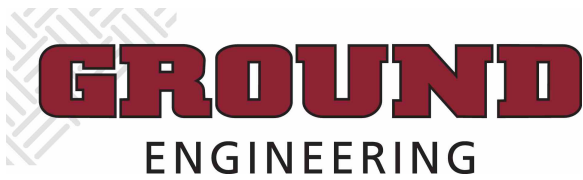
Reviewed by: Darian Buelter

### Concrete

#### Photos



Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Dec 2, 2021  
 Work Order Date: Nov 13, 2021

Work Order No.: 21-4164.Concrete.0029; ver: 2  
 Reviewed by: Tyeson Weston

#### Concrete

Concrete Contractor: Nordstrom Commercial Builders  
 Placement Method: Tailgated  
 Total Quantity Placed: 12 yd<sup>3</sup>  
 Placement Location: Curb and Gutter along Red Sky Dr Sta 11+50 to 13+00

Performed by: Leyla Lawson  
 Finish Method: Hand Finished  
 Weather: Sunny|Windy

#### On-site Notifications, Specification, and Mix Information

On-Site Notification(s)	Item / Structure Type	Test	Specified	Mix Design
Todd Nordstrom with Nordstrom Commercial Builders	Sidewalk / Curb and Gutter	Air Content (%)	5 to 8	-
		Slump (in)	2 to 4	-
	Mix Placed	Unit Weight (pcf)	-	-
	Aggregate Industries 7456122	Comp. Strength (psi)	4500	-

#### Sampling (ASTM C172 / AASHTO R60 / CDOT CP61)

Sample No.	Location	Sampled From	Quantity (yd <sup>3</sup> )	Truck No.	Ticket No.	Batch Time	Test Time	Air Temp. (°F)	Water Added (gal)
32	Sta 12+25	Point of Delivery	12	9261	84616218	8:47 AM	9:21 PM	60	0

#### Field Tests (ASTM C138, C143, C231, and C1064 / AASHTO T119, T121, and T152)

Sample No.	Concrete Temp. (°F)	Slump (in)	Air Cont. (%)	Meas. Vol. (ft <sup>3</sup> )	Empty Meas. (lb)	Full Meas. (lb)	Unit Wt. (pcf)	Lab Samples Cast
32	78	3	5.0	0.250	8.55	44.56	144.0	Yes

#### Compressive Strength (ASTM C31 and C39 / AASHTO T22 and T23)

Sample No.	Lab ID	Age (d)	Diameter (in)	Area (in <sup>2</sup> )	Fracture Type	Max. Load (lb-f)	Corrected Strength (psi)	Strength at Acceptance (psi)
32	C4041	7	4.00	12.57	2 / Cone & Split	57,830	4,600	-

Average Compressive Strength (psi):

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

### South Chambers Road & Hess Road Project

Report Date: Dec 2, 2021

Work Order No.: 21-4164.Concrete.0029; ver: 2

Work Order Date: Nov 13, 2021

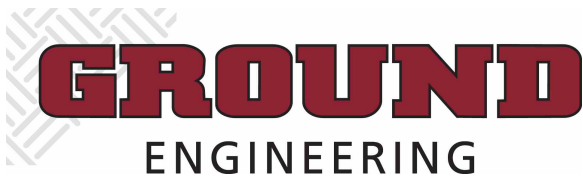
Reviewed by: Tyeson Weston

#### Concrete

#### Photos



Curb and Gutter along Red Sky Dr



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 24, 2021  
 Work Order Date: Nov 16, 2021

Work Order No.: 21-4164.Concrete.0031; ver: 2  
 Reviewed by: Darian Buelter

#### Concrete

Concrete Contractor: NC  
 Placement Method: Tailgated  
 Total Quantity Placed: 20 yd<sup>3</sup>  
 Placement Location: Sidewalk along S. Red Sky Drive (see attached)

Performed by: Evan Anderson  
 Finish Method: Hand Finished  
 Weather: Sunny

#### On-site Notifications, Specification, and Mix Information

On-Site Notification(s)	Item / Structure Type	Test	Specified	Mix Design
Todd Nordstrom with Nordstrom Commercial Builders	Sidewalk / Curb and Gutter	Air Content (%)	5 to 8	-
		Slump (in)	2 to 4	-
	Mix Placed	Unit Weight (pcf)	-	-
	Aggregate Industries 7456122	Comp. Strength (psi)	4500	-

#### Sampling (ASTM C172 / AASHTO R60 / CDOT CP61)

Sample No.	Location	Sampled From	Quantity (yd <sup>3</sup> )	Truck No.	Ticket No.	Batch Time	Test Time	Air Temp. (°F)	Water Added (gal)
30	Sidewalk along S. Red Sky Drive, location 1	Point of Delivery	10	9262	62318875	8:26 AM	9:23 AM	55	0

#### Field Tests (ASTM C138, C143, C231, and C1064 / AASHTO T119, T121, and T152)

Sample No.	Concrete Temp. (°F)	Slump (in)	Air Cont. (%)	Meas. Vol. (ft <sup>3</sup> )	Empty Meas. (lb)	Full Meas. (lb)	Unit Wt. (pcf)	Lab Samples Cast
30	72	4	6.5	.250	7.50	43.11	142.4	Yes

#### Compressive Strength (ASTM C31 and C39 / AASHTO T22 and T23)

Sample No.	Lab ID	Age (d)	Diameter (in)	Area (in <sup>2</sup> )	Fracture Type	Max. Load (lb-f)	Corrected Strength (psi)	Strength at Acceptance (psi)
30	C3835	7	4.00	12.57	5 / Side	42,370	3,370	-

Average Compressive Strength (psi):

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Nov 24, 2021

Work Order No.: 21-4164.Concrete.0031; ver: 2

Work Order Date: Nov 16, 2021

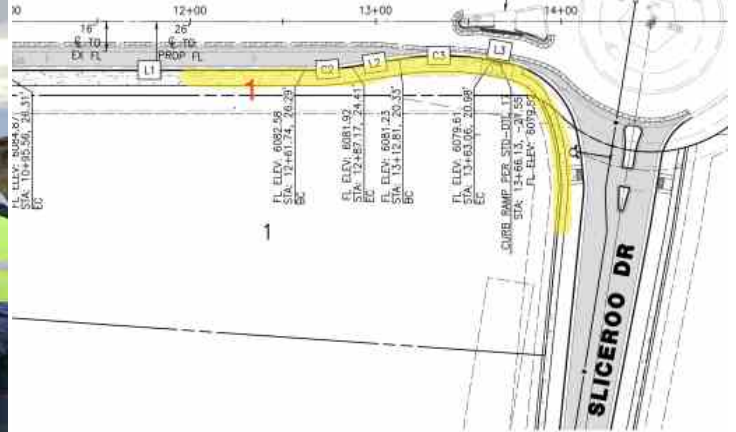
Reviewed by: Darian Buelter

### Concrete

#### Photos



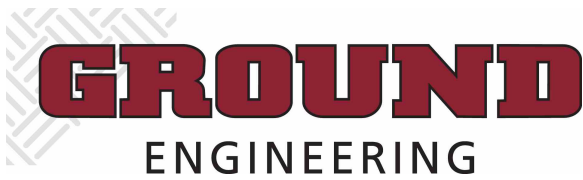
Sidewalk along S. Red Sky Drive



PLAN - SOUTH RED SKY DRIVE

Concrete placement area and testing location

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 24, 2021  
 Work Order Date: Nov 17, 2021

Work Order No.: 21-4164.Concrete.0032; ver: 2  
 Reviewed by: Darian Buelter

#### Concrete

Concrete Contractor: Nordstrom Commercial Builders  
 Placement Method: Tailgated  
 Total Quantity Placed: 10 yd<sup>3</sup>  
 Placement Location: Flatwork on Sliceroo Dr.

Performed by: Logan Boyles  
 Finish Method: Broom Finished|Float Finished|Hand Finished|Trowel Finished  
 Weather: Calm|Clear

#### On-site Notifications, Specification, and Mix Information

On-Site Notification(s)	Item / Structure Type	Test	Specified	Mix Design
Todd Nordstrom with Nordstrom Commercial Builders	Sidewalk / Curb and Gutter	Air Content (%)	5 to 8	-
		Slump (in)	2 to 4	-
		Unit Weight (pcf)	-	-
		Comp. Strength (psi)	4500	-
	Mix Placed			
	Aggregate Industries 7456122			

#### Sampling (ASTM C172 / AASHTO R60 / CDOT CP61)

Sample No.	Location	Sampled From	Quantity (yd <sup>3</sup> )	Truck No.	Ticket No.	Batch Time	Test Time	Air Temp. (°F)	Water Added (gal)
31	20' S of Roundabout on Sliceroo Dr	Point of Delivery	10	9207	62318948	8:47 AM	9:57 AM	29	5

#### Field Tests (ASTM C138, C143, C231, and C1064 / AASHTO T119, T121, and T152)

Sample No.	Concrete Temp. (°F)	Slump (in)	Air Cont. (%)	Meas. Vol. (ft <sup>3</sup> )	Empty Meas. (lb)	Full Meas. (lb)	Unit Wt. (pcf)	Lab Samples Cast
31	70	2	5.1	0.250	8.49	44.02	142.1	Yes

#### Compressive Strength (ASTM C31 and C39 / AASHTO T22 and T23)

Sample No.	Lab ID	Age (d)	Diameter (in)	Area (in <sup>2</sup> )	Fracture Type	Max. Load (lb-f)	Corrected Strength (psi)	Strength at Acceptance (psi)
31	C3921	7	4.00	12.57	5 / Side	64,910	5,160	-

Average Compressive Strength (psi):

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Nov 24, 2021

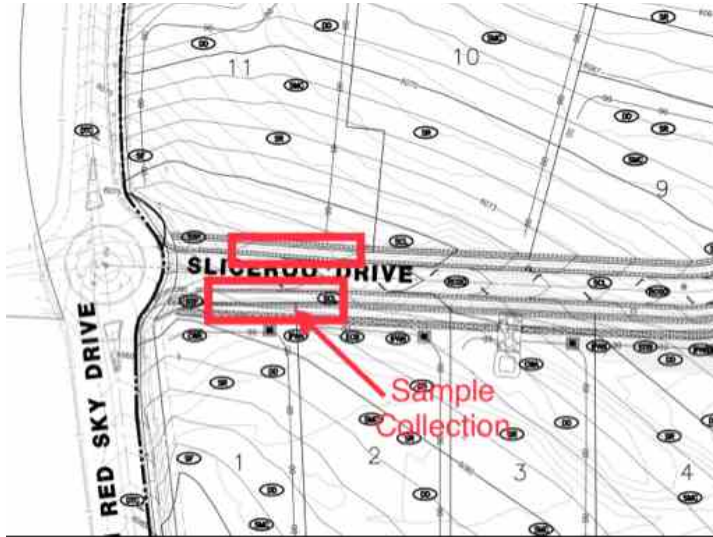
Work Order No.: 21-4164.Concrete.0032; ver: 2

Work Order Date: Nov 17, 2021

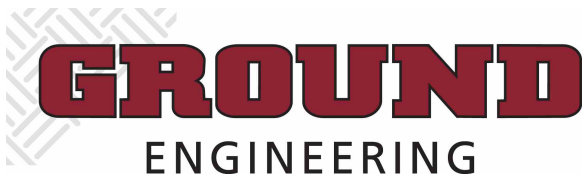
Reviewed by: Darian Buelter

### Concrete

#### Photos



Work area and sample collection



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 30, 2021  
 Work Order Date: Nov 22, 2021

Work Order No.: 21-4164.Concrete.0034; ver: 2  
 Reviewed by: Tyeson Weston

#### Concrete

Concrete Contractor: Nordstrom Commercial Builders  
 Placement Method: Tailgated  
 Total Quantity Placed: 10 yd<sup>3</sup>  
 Placement Location: Sidewalk at intersection of Sliceroo Dr and Hess Rd, see attachment

Performed by: Ben Roberts  
 Finish Method: Hand Finished  
 Weather: Sunny

#### On-site Notifications, Specification, and Mix Information

On-Site Notification(s)	Item / Structure Type	Test	Specified	Mix Design
Todd Nordstrom with Nordstrom Commercial Builders	Sidewalk / Curb and Gutter	Air Content (%)	5 to 8	-
		Slump (in)	2 to 4	-
	Mix Placed	Unit Weight (pcf)	-	-
	Aggregate Industries 7456122	Comp. Strength (psi)	4500	-

#### Sampling (ASTM C172 / AASHTO R60 / CDOT CP61)

Sample No.	Location	Sampled From	Quantity (yd <sup>3</sup> )	Truck No.	Ticket No.	Batch Time	Test Time	Air Temp. (°F)	Water Added (gal)
33	Location 1	Point of Delivery	10	9221	62319174	6:25 AM	7:18 AM	55	15

#### Field Tests (ASTM C138, C143, C231, and C1064 / AASHTO T119, T121, and T152)

Sample No.	Concrete Temp. (°F)	Slump (in)	Air Cont. (%)	Meas. Vol. (ft <sup>3</sup> )	Empty Meas. (lb)	Full Meas. (lb)	Unit Wt. (pcf)	Lab Samples Cast
33	70	4	6.2	.249	7.94	43.23	141.7	Yes

#### Compressive Strength (ASTM C31 and C39 / AASHTO T22 and T23)

Sample No.	Lab ID	Age (d)	Diameter (in)	Area (in <sup>2</sup> )	Fracture Type	Max. Load (lb-f)	Corrected Strength (psi)	Strength at Acceptance (psi)
33	C4080	7	4.00	12.57	2 / Cone & Split	63,260	5,030	-

Average Compressive Strength (psi):

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Nov 30, 2021

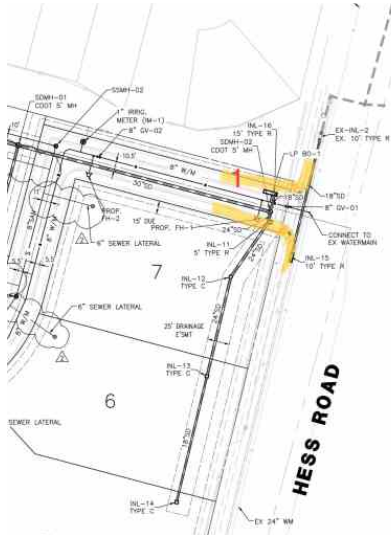
Work Order No.: 21-4164.Concrete.0034; ver: 2

Work Order Date: Nov 22, 2021

Reviewed by: Tyeson Weston

### Concrete

#### Photos



Area in yellow represents work area, red number represents test location



Sidewalk placement

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Nov 23, 2021

Work Order No.: 21-4164.Concrete.0035; ver: 2

Work Order Date: Nov 22, 2021

Reviewed by: Tyeson Weston

### Concrete

Concrete Contractor: NCM, LLC

Performed by: Jeff DeCoster

Placement Method: Tailgated

Finish Method: Float Finished|Hand Finished

Total Quantity Placed: 8.50 yd<sup>3</sup>

Weather: Mostly Sunny|Partly Cloudy

Placement Location: Sidewalk along roundabout on south red sky drive (see attached).

### On-site Notifications, Specification, and Mix Information

On-Site Notification(s)	Item / Structure Type	Test	Specified	Mix Design
Todd Nordstrom with Nordstrom Commercial Builders	Sidewalk / Curb and Gutter	Air Content (%)	5 to 8	-
	Mix Placed	Slump (in)	2 to 4	-
	Aggregate Industries 9456623	Unit Weight (pcf)	-	-
		Comp. Strength (psi)	4500	-

### Sampling (ASTM C172 / AASHTO R60 / CDOT CP61)

Sample No.	Location	Sampled From	Quantity (yd <sup>3</sup> )	Truck No.	Ticket No.	Batch Time	Test Time	Air Temp. (°F)	Water Added (gal)
34	Test location 1	Point of Placement	8.50	9227	84616437	3:09 PM	3:42 PM	69	8

### Field Tests (ASTM C138, C143, C231, and C1064 / AASHTO T119, T121, and T152)

Sample No.	Concrete Temp. (°F)	Slump (in)	Air Cont. (%)	Meas. Vol. (ft <sup>3</sup> )	Empty Meas. (lb)	Full Meas. (lb)	Unit Wt. (pcf)	Lab Samples Cast
34	69	3.25	5.0	0.250	7.67	43.65	143.9	

### Photos

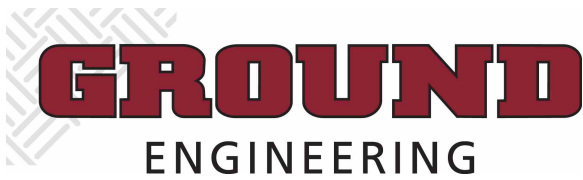


View of concrete placement and delivery method



Yellow number represents test location

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.



Client: Todd Nordstrom  
 Nordstrom Commercial Builders  
 1755 Liggett Road  
 Castle Rock, CO 80109

### South Chambers Road & Hess Road Project

Report Date: Nov 30, 2021  
 Work Order Date: Nov 23, 2021

Work Order No.: 21-4164.Concrete.0036; ver: 2  
 Reviewed by: Tyeson Weston

#### Concrete

Concrete Contractor: NCB LLC  
 Placement Method: Tailgated  
 Total Quantity Placed: 8 yd<sup>3</sup>  
 Placement Location: ADA Ramp entrance from Sliceroo Dr to Hess STA 11+00 - 10+50, L of CL  
 Comments: Refer to storm plans for stationing

Performed by: Davonte Fuller  
 Finish Method: Trowel Finished|Hand Finished  
 Weather: Partly Sunny|Mostly Cloudy

#### On-site Notifications, Specification, and Mix Information

Item / Structure Type	Test	Specified	Mix Design
Sidewalk / Curb and Gutter	Air Content (%)	5 to 8	-
	Slump (in)	2 to 4	-
Concrete Direct 7456122	Unit Weight (pcf)	-	-
	Comp. Strength (psi)	4500	-

#### Sampling (ASTM C172 / AASHTO R60 / CDOT CP61)

Sample No.	Location	Sampled From	Quantity (yd <sup>3</sup> )	Truck No.	Ticket No.	Batch Time	Test Time	Air Temp. (°F)	Water Added (gal)
35	STA 10+60, L of CL	Point of Placement	8	160	62319318	2:40 PM	3:45 PM	70	0

#### Field Tests (ASTM C138, C143, C231, and C1064 / AASHTO T119, T121, and T152)

Sample No.	Concrete Temp. (°F)	Slump (in)	Air Cont. (%)	Meas. Vol. (ft <sup>3</sup> )	Empty Meas. (lb)	Full Meas. (lb)	Unit Wt. (pcf)	Lab Samples Cast
35	78	3	6.5	.250	8.62	44.15	142.1	Yes

#### Compressive Strength (ASTM C31 and C39 / AASHTO T22 and T23)

Sample No.	Lab ID	Age (d)	Diameter (in)	Area (in <sup>2</sup> )	Fracture Type	Max. Load (lb-f)	Corrected Strength (psi)	Strength at Acceptance (psi)
35	C4105	7	4.00	12.57	5 / Side	60,840	4,840	-

Average Compressive Strength (psi):

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

## South Chambers Road & Hess Road Project

Report Date: Nov 30, 2021

Work Order No.: 21-4164.Concrete.0036; ver: 2

Work Order Date: Nov 23, 2021

Reviewed by: Tyeson Weston

### Concrete

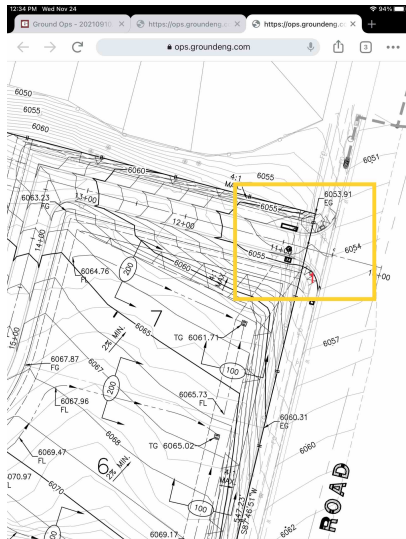
#### Photos



Pouring the ADA Ramp and hand finishing



Location of cylinder samples opposite the ADA Ramp



Test location AdA Ramp

Results apply only to the specific items and locations referenced and at the time of testing, observations or special inspections. Unless noted otherwise, specimens were received in adequate condition. Compressive strength specimens, if tested, were capped in accordance with ASTM C1231 or ASTM C617, as applicable. This report should not be reproduced, except in full, without the written permission of GROUND Engineering Consultants, Inc.

### South Chambers Road & Hess Road Project

Report Date: Nov 20, 2021

Work Order No.: 21-4164.ReinforcingSteel.0005; ver: 1

Work Order Date: Nov 12, 2021

Reviewed by: Darian Buelter

#### Reinforcing Steel

General Contractor: NCB

Performed by: Timur Nazarov

Installation Contractor: NCB

Documents Used: Structural Plans,

Placement Location: Storm sewer inlet on Hess Road.

#### Placement Area

	Conforms	Does Not Conform	Not Applicable	Not Observed
Placement Condition:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Formwork, Falsework, and Void Forms:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Construction Joints:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Reinforcement

Surface Condition:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Type, Grade, and Size:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Profile and Quantity:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spacing and Clearances:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bends, Hooks, Spirals, Stirrups, and Ties:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### Splices

Lap Splices:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical Splices:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Welded Splices:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Connections

Dowels:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Embedded Items and Anchor Bolts:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Conformance Comments

6'x6' OC EW #4 continuous at the corners. Dowels 12' OC with 12' in bedded in to slab. Dowels are # 4.

## South Chambers Road & Hess Road Project

Report Date: Nov 20, 2021

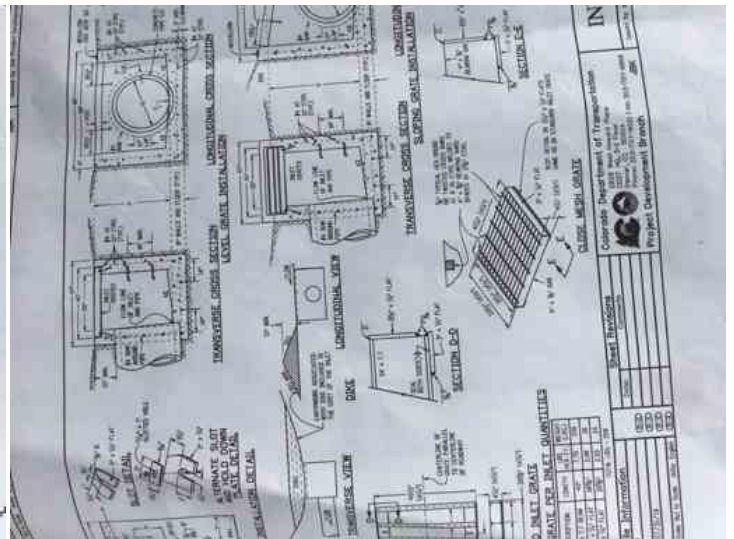
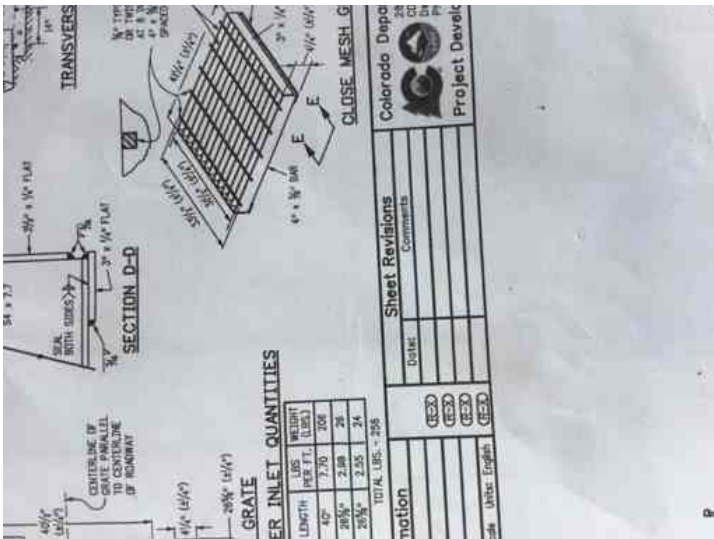
Work Order No.: 21-4164.ReinforcingSteel.0005; ver: 1

Work Order Date: Nov 12, 2021

Reviewed by: Darian Buelter

### Reinforcing Steel

#### Photos



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