



# Empire Laboratories, Inc.

A Division of Terracon Companies  
 Materials and Foundation Engineers  
 Fort Collins, Denver, Greeley,  
 Longmont, Colorado Springs, Colorado  
 and Cheyenne, Wyoming

# CONCRETE TEST RESULTS

Tests checked below have been performed by Empire Laboratories, Inc., in accordance with ASTM procedures

<b>SAMPLING</b> ASTM C172	<b>MAKING &amp; CURING TEST SPECIMENS</b> ASTM C31	<b>ASTM C192</b>	<b>CAPPING</b> ASTM C617	<b>COMPRESSIVE STRENGTH</b> ASTM C39
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

NAME OF PROJECT The Village at Southridge PUD

CONTRACTOR CG & S Concrete

ENGINEER OR ARCHITECT City of Fort Collins

LOCATION OF PLACEMENT Curb & Gutter, N. Side in front of 1130 Muirfield St.

EMPIRE JOB NO. 3003 MIX NO. 240/ Batch 60200M REPORT NO. 2

FINE 1560 Lbs. MEDIUM 200 Lbs. COARSE AGG. 1415 Lbs. CEMENT 476 Lbs. FLY ASH 84 Lbs. WATER 31.0 Gals.

REQUIRED STRENGTH 3500 SLUMP 2.0 In. AIR 5.6 % UNIT WEIGHT 144.1 #/Ft.<sup>3</sup> YIELD 27.73 Ft.<sup>3</sup>/Yd.<sup>3</sup>

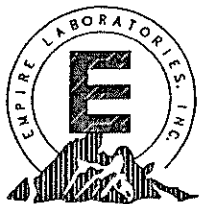
TEMP. (CONCRETE) 68 °F (AMBIENT) 70 °F WRA φ oz/100# AIR ENTRAINMENT 1.51 oz/sack

TRUCK NO. 660 TIME 9:40 CUBIC YARDS 10.0 CALCIUM CHLORIDE φ ACCELERATOR φ

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVERAGE DIA. IN	CROSS SECTIONAL AREA IN <sup>2</sup>	LENGTH INCHES	TYPE OF FRACTURE	CURE	
										DAY/LAB	DAY/FIELD
1	5/21/93	5/28/93	7	96,000	3400	6.0	28.3	12.0	Conical	7	φ
2	5/21	5/28	7	97,000	3430	6.0	28.3	12.0	Conical	7	φ
3	5/21	6/18/93	28								
4	5/21	6/18	28								

CAST BY Empire Labs BROKEN BY: 24 HOUR \_\_\_\_\_ 48 HOUR \_\_\_\_\_ 3 DAY \_\_\_\_\_ 7 DAY CM 14 DAY \_\_\_\_\_ 28 DAY \_\_\_\_\_ 45 DAY \_\_\_\_\_

CONCRETE SUPPLIER Bestway DISTRIBUTION Storck (1); CG & S (1); City (1); Bestway (1)



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SAMPLING  
ASTM C172



MAKING & CURING TEST SPECIMENS  
ASTM C31                      ASTM C192



CAPPING  
ASTM C617



COMPRESSIVE STRENGTH  
ASTM C39



NAME OF PROJECT The Village at Southridge PUD

CONTRACTOR CG & S Concrete

ENGINEER OR ARCHITECT City of Fort Collins

LOCATION OF PLACEMENT Curb & Gutter, Wing Foot St., E. Side, Station F1.07 TW

EMPIRE JOB NO. 3003                      MIX NO. 240/Batch 60201M                      REPORT NO. 3

FINE 1560 Lbs.    MEDIUM 200 Lbs.    COARSE AGG. 1415 Lbs.    CEMENT 476 Lbs.                      FLY ASH 84 Lbs.    WATER 31.0 Gals.

REQUIRED STRENGTH 3500                      SLUMP 3.0 In.    AIR 5.0 %                      UNIT WEIGHT 143.5 #/Ft.<sup>3</sup>                      YIELD 27.83 Ft.<sup>3</sup>/Yd.<sup>3</sup>

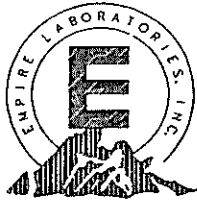
TEMP. (CONCRETE) 72 °F    (AMBIENT) 75 °F    WRA φ oz/100#                      AIR ENTRAINMENT 1.51 oz/sack

TRUCK NO. 603                      TIME 12:00                      CUBIC YARDS 10/90 of 180                      CALCIUM CHLORIDE φ                      ACCELERATOR φ

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVERAGE DIA. IN	CROSS SECTIONAL AREA IN <sup>2</sup>	LENGTH INCHES	TYPE OF FRACTURE	CURE DAY/LAB	CURE DAY/FIELD
1	5/21/93	5/28/93	7	113,000	4000	6.0	28.3	12.0	Conical	7	φ
2	5/21	5/28	7	112,500	3980	6.0	28.3	12.0	Conical	7	φ
3	5/21	6/18/93	28								
4	5/21	6/18	28								

CAST BY Empire Labs    BROKEN BY: 24 HOUR \_\_\_\_\_ 48 HOUR \_\_\_\_\_ 3 DAY \_\_\_\_\_ 7 DAY CM    14 DAY \_\_\_\_\_ 28 DAY \_\_\_\_\_ 45 DAY \_\_\_\_\_

CONCRETE SUPPLIER Bestway                      DISTRIBUTION Storck (1); CG & S (1); City (1); Bestway (1)



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# CONCRETE TEST RESULTS

REC'D 29 JUN 8AM 10-19

Tests checked below have been performed by Empire Laboratories, Inc., in accordance with ASTM procedures

SAMPLING  
ASTM C172



MAKING & CURING TEST SPECIMENS  
ASTM C31                      ASTM C192



CAPPING  
ASTM C617



COMPRESSIVE STRENGTH  
ASTM C39



NAME OF PROJECT The Village at Southridge PUD

CONTRACTOR CG & S Concrete

ENGINEER OR ARCHITECT City of Fort Collins

LOCATION OF PLACEMENT Curb & Gutter, N. Side in front of 1130 Muirfield St.

EMPIRE JOB NO. 3003                      MIX NO. 240/Batch 60200M                      REPORT NO. 2

FINE 1560 Lbs.    MEDIUM 200 Lbs.    COARSE AGG. 1415 Lbs.    CEMENT 476 Lbs.    FLY ASH 84 Lbs.    WATER 31.0 Gals.

REQUIRED STRENGTH 3500    SLUMP 2.0 In.    AIR 5.6 %    UNIT WEIGHT 144.1 #/Ft.<sup>3</sup>    YIELD 27.73 Ft.<sup>3</sup>/Yd.<sup>3</sup>

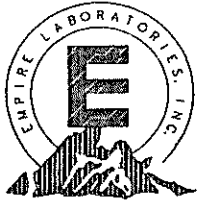
TEMP. (CONCRETE) 68 °F    (AMBIENT) 70 °F    WRA φ oz/100#    AIR ENTRAINMENT 1.51 oz/sack

TRUCK NO. 660    TIME 9:40    CUBIC YARDS 10.0    CALCIUM CHLORIDE φ    ACCELERATOR φ

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVERAGE DIA. IN	CROSS SECTIONAL AREA IN <sup>2</sup>	LENGTH INCHES	TYPE OF FRACTURE	CURE DAY/LAB	CURE DAY/FIELD
1	5/21/93	5/28/93	7	96,000	3400	6.0	28.3	12.0	Conical	7	φ
2	5/21	5/28	7	97,000	3430	6.0	28.3	12.0	Conical	7	φ
3	5/21	6/18/93	28								
4	5/21	6/18	28								

CAST BY Empire Labs    BROKEN BY: 24 HOUR \_\_\_\_\_ 48 HOUR \_\_\_\_\_ 3 DAY \_\_\_\_\_ 7 DAY CM    14 DAY \_\_\_\_\_ 28 DAY \_\_\_\_\_ 45 DAY \_\_\_\_\_

CONCRETE SUPPLIER WMN    DISTRIBUTION Storck (1); CG & S (1); City (1); WMN (1)



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<b>SAMPLING</b> ASTM C172 <input checked="" type="checkbox"/>	<b>MAKING &amp; CURING TEST SPECIMENS</b> ASTM C31 <input checked="" type="checkbox"/>	<b>ASTM C192</b> <input type="checkbox"/>	<b>CAPPING</b> ASTM C617 <input checked="" type="checkbox"/>	<b>COMPRESSIVE STRENGTH</b> ASTM C39 <input checked="" type="checkbox"/>
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NAME OF PROJECT The Village at Southridge PUD

CONTRACTOR CG & S Concrete

ENGINEER OR ARCHITECT City of Fort Collins

LOCATION OF PLACEMENT Curb & Gutter, Wing Foot St., E. Side, Station F1.07 TW

EMPIRE JOB NO. 3003 MIX NO. 240/ Batch 60201M REPORT NO. 3

FINE 1560 Lbs. MEDIUM 200 Lbs. COARSE AGG. 1415 Lbs. CEMENT 476 Lbs. FLY ASH 84 Lbs. WATER 31.0 Gals.

REQUIRED STRENGTH 3500 SLUMP 3.0 In. AIR 5.0 % UNIT WEIGHT 143.5 #/Ft.<sup>3</sup> YIELD 27.83 Ft.<sup>3</sup>/Yd.<sup>3</sup>

TEMP. (CONCRETE) 72 °F (AMBIENT) 75 °F WRA φ oz/100# AIR ENTRAINMENT 1.51 oz/sack

TRUCK NO. 603 TIME 12:00 CUBIC YARDS 10/90 of 180 CALCIUM CHLORIDE φ ACCELERATOR φ

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVERAGE DIA. IN	CROSS SECTIONAL AREA IN <sup>2</sup>	LENGTH INCHES	TYPE OF FRACTURE	CURE	CURE
										DAY/LAB	DAY/FIELD
1	5/21/93	5/28/93	7	113,000	4000	6.0	28.3	12.0	Conical	7	φ
2	5/21	5/28	7	112,500	3980	6.0	28.3	12.0	Conical	7	φ
3	5/21	6/18/93	28								
4	5/21	6/18	28								

CAST BY Empire Labs BROKEN BY: 24 HOUR        48 HOUR        3 DAY        7 DAY CM 14 DAY        28 DAY        45 DAY       

CONCRETE SUPPLIER WMN DISTRIBUTION Storck (1); CG & S (1); City (1); WMN (1)



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# CONCRETE TEST RESULTS

Tests checked below have been performed by Empire Laboratories, Inc., in accordance with ASTM procedures

**SAMPLING**  
ASTM C172

**MAKING & CURING TEST SPECIMENS**  
ASTM C31  ASTM C192

**CAPPING**  
ASTM C617

**COMPRESSIVE STRENGTH**  
ASTM C39

NAME OF PROJECT The Village at Southridge PUD

CONTRACTOR CG & S Concrete

ENGINEER OR ARCHITECT City of Fort Collins

LOCATION OF PLACEMENT Curb & Gutter, Wing Foot St., E. Side, Station F1.07 TW

EMPIRE JOB NO. 3003 MIX NO. 240/Batch 60201M REPORT NO. 3

FINE 1560 Lbs. MEDIUM 200 Lbs. COARSE AGG. 1415 Lbs. CEMENT 476 Lbs. FLY ASH 84 Lbs. WATER 31.0 Gals.

REQUIRED STRENGTH 3500 SLUMP 3.0 In. AIR 5.0 % UNIT WEIGHT 143.5 #/Ft.<sup>3</sup> YIELD 27.83 Ft.<sup>3</sup>/Yd.<sup>3</sup>

TEMP. (CONCRETE) 72 °F (AMBIENT) 75 °F WRA φ oz/100# AIR ENTRAINMENT 1.51 oz/sack

TRUCK NO. 603 TIME 12:00 CUBIC YARDS 10/90 of 180 CALCIUM CHLORIDE φ ACCELERATOR φ

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVERAGE DIA. IN	CROSS SECTIONAL AREA IN <sup>2</sup>	LENGTH INCHES	TYPE OF FRACTURE	CURE DAY/LAB	CURE DAY/FIELD
1	5/21/93	5/28/93	7	113,000	4000	6.0	28.3	12.0	Conical	7	φ
2	5/21	5/28	7	112,500	3980	6.0	28.3	12.0	Conical	7	φ
3	5/21	6/18/93	28	132,500	4690	6.0	28.3	12.0	Conical	28	φ
4	5/21	6/18	28	133,000	4700	6.0	28.3	12.0	Conical	28	φ

CAST BY Empire Labs BROKEN BY: 24 HOUR \_\_\_\_\_ 48 HOUR \_\_\_\_\_ 3 DAY \_\_\_\_\_ 7 DAY CM 14 DAY \_\_\_\_\_ 28 DAY CM 45 DAY \_\_\_\_\_

CONCRETE SUPPLIER WMN DISTRIBUTION Storck (1); CG & S (1); City (1); WMN (1)



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Longmont, Colorado Springs, Colorado  
and Cheyenne, Wyoming

# CONCRETE TEST RESULTS

REC. D. 702 JUN 25 1993

Tests checked below have been performed by Empire Laboratories, Inc., in accordance with ASTM procedures

SAMPLING  
ASTM C172

MAKING & CURING TEST SPECIMENS  
ASTM C31                      ASTM C192

CAPPING  
ASTM C617

COMPRESSIVE STRENGTH  
ASTM C39

NAME OF PROJECT The Village at Southridge PUD

CONTRACTOR CG & S Concrete

ENGINEER OR ARCHITECT City of Fort Collins

LOCATION OF PLACEMENT Curb & Gutter, N. Side in front of 1130 Muirfield St.

EMPIRE JOB NO. 3003                      MIX NO. 240/Batch 60200M                      REPORT NO. 2

FINE 1560 Lbs.    MEDIUM 200 Lbs.    COARSE AGG. 1415 Lbs.    CEMENT 476 Lbs.    FLY ASH 84 Lbs.    WATER 31.0 Gals.

REQUIRED STRENGTH 3500    SLUMP 2.0 In.    AIR 5.6 %    UNIT WEIGHT 144.1 #/Ft.<sup>3</sup>    YIELD 27.73 Ft.<sup>3</sup>/Yd.<sup>3</sup>

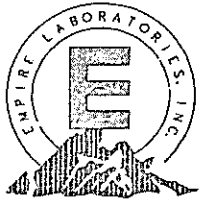
TEMP. (CONCRETE) 68 °F    (AMBIENT) 70 °F    WRA φ oz/100#    AIR ENTRAINMENT 1.51 oz/sack

TRUCK NO. 660    TIME 9:40    CUBIC YARDS 10.0    CALCIUM CHLORIDE φ    ACCELERATOR φ

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVERAGE DIA. IN	CROSS SECTIONAL AREA IN <sup>2</sup>	LENGTH INCHES	TYPE OF FRACTURE	CURE	CURE
										DAY/LAB	DAY/FIELD
1	5/21/93	5/28/93	7	96,000	3400	6.0	28.3	12.0	Conical	7	φ
2	5/21	5/28	7	97,000	3430	6.0	28.3	12.0	Conical	7	φ
3	5/21	6/18/93	28	121,000	4280	6.0	28.3	12.0	Conical	28	φ
4	5/21	6/18	28	119,000	4210	6.0	28.3	12.0	Conical	28	φ

CAST BY Empire Labs    BROKEN BY: 24 HOUR \_\_\_\_\_ 48 HOUR \_\_\_\_\_ 3 DAY \_\_\_\_\_ 7 DAY CM    14 DAY \_\_\_\_\_ 28 DAY CM    45 DAY \_\_\_\_\_

CONCRETE SUPPLIER WMN    DISTRIBUTION Storck (1); CG & S (1); City (1); WMN (1)



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SAMPLING ASTM C172 <input checked="" type="checkbox"/>	MAKING & CURING TEST SPECIMENS ASTM C31 <input checked="" type="checkbox"/>	ASTM C192 <input type="checkbox"/>	CAPPING ASTM C617 <input checked="" type="checkbox"/>	COMPRESSIVE STRENGTH ASTM C39 <input checked="" type="checkbox"/>
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NAME OF PROJECT The Village At Southridge P.U.D.

CONTRACTOR C G & S Concrete

ENGINEER OR ARCHITECT City of Fort Collins Engineering

LOCATION OF PLACEMENT Curb & Gutter - N. Side of Street - STA 2 + 50

EMPIRE JOB NO. 3003 MIX NO. 6010A REPORT NO. 1

FINE 1350 Lbs. MEDIUM φ Lbs. COARSE AGG. 1680 Lbs. CEMENT 508 Lbs. FLYASH 56 Lbs. WATER 33.0 Gals.

REQUIRED STRENGTH 3500 SLUMP 2 In. AIR 6.4 % UNIT WEIGHT 139.9 #/Ft.<sup>3</sup> YIELD 27.69 Ft.<sup>3</sup>/Yd.<sup>3</sup>

TEMP. (CONCRETE) 70 °F (AMBIENT) 35 °F WRA 3.0 oz/100# AIR ENTRAINMENT .750 oz/sack

TRUCK NO. 17 TIME 10:45 CUBIC YARDS 8.0 CALCIUM CHLORIDE φ ACCELERATOR φ

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVERAGE DIA. IN	CROSS SECTIONAL AREA IN <sup>2</sup>	LENGTH INCHES	TYPE OF FRACTURE	CURE	CURE
										DAY/LAB	DAY/FIELD
1	1/22/93	1/29/93	7	91,500	3240	6.0	28.3	12.0	Conical	7	φ
2	1/22	1/29/93	7	91,000	3220	6.0	28.3	12.0	Conical	7	φ
3	1/22	2/19/93	28								
4	1/22	2/19	28								

CAST BY Empire Labs BROKEN BY: 24 HOUR        48 HOUR        3 DAY        7 DAY CR 14 DAY        28 DAY        45 DAY       

CONCRETE SUPPLIER Bestway DISTRIBUTION Storck (1); CG & S (1); Bestway (1); City (1)