Empire Laboratories, Inc.

GEOTECHNICAL ENGINEERING & MATERIALS TESTING

P.O. Box 503 • (303) 484-0359
301 No. Howes • Fort Collins, Colorado 80522

October 7, 1987

RECEIVED
OCT 8 1987
Engineering Dept.

Clarendon Hills Associates
c/o Nordic Construction and Development, Inc.
General Partner
309 West Harmony
Fort Collins, Colorado 80526

Attention: Mr. Gary Nordic, President

Re: Clarendon Hills Subdivision
Fort Collins, Colorado
ELI Project No. 6326-2

Gentlemen:

Enclosed are the results of quantitative extractions done in accordance with ASTM D 2172 and gradation analyses of extracted aggregate done in accordance with ASTM C 117 and C 136 on asphaltic concrete sampled from the above-referenced project in September 1987.

If you have any questions on the data presented, please contact us at your convenience.

Very truly yours,

EMPIRE LABORATORIES, INC.

Eric R. West, P.E.
Corporate Secretary

COLORADO REGISTERED
ERIC R. WEST
20475
PROFESSIONAL ENGINEER

clc

cc: Land Development Services
Connell Resources
City of Fort Collins Engineering Inspection Division

Branch Offices

P.O. Box 1135
Longmont, Colorado 80502
(303) 776-3921

P.O. Box 1744
Greeley, Colorado 80632
(303) 351-0460

P.O. Box 10076
Cheyenne, Wyoming 82003
(307) 632-9224

ASPHALT CONCRETE LABORATORY TEST SUMMARY

Project: Clarendon Hills
Sample No.: 1
Date Sampled: September 1, 1987

Quantitative Extraction, ASTM C 2172
Bitumen Content: 5.60%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification PMBB-1 (% Passing)
3/4"	100.0	100
1/2"	86.0	70-95
3/8"	81.6	60-88
#4	53.3	40-72
#8	41.5	28-58
#16	32.5	-
#30	23.0	-
#50	13.8	9-32
#100	8.0	-
#200	5.1	3-12

Project: Clarendon Hills
Sample No.: 2
Date Sampled: September 1, 1987
Location: Hilldale Drive - N. side, center line 250' E of Clarendon Hills Drive, 2nd Lift

Quantitative Extraction, ASTM C 2172
Bitumen Content: 6.56%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "E" (% Passing)
3/4"	100.0	100
1/2"	90.8	-
3/8"	84.3	-
#4	65.7	44-72
#8	51.7	30-58
#16	40.0	-
#30	27.1	-
#50	10.9	-
#100	9.3	-
#200	6.1	3-12

ASPHALT CONCRETE LABORATORY TEST SUMMARY

Project: Clarendon Hills
Sample No.: 3
Date Sampled: September 2, 1987
Location: Hinsdale Drive - S. side center line, 300' E of Clarendon Hills Drive, 2nd Lift

Quantitative Extraction, ASTM C 2172
Bitumen Content: 6.10%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "E" (% Passing)
3/4"	100.0	100
1/2"	92.9	-
3/8"	83.6	-
#4	64.9	44-72
#8	51.2	30-58
#16	39.6	-
#30	26.4	-
#50	14.9	-
#100	8.4	-
#200	5.4	3-12

Project: Clarendon Hills
Sample No.: 4
Date Sampled: September 2, 1987
Location: Clarendon Hills Drive - Sta. 5+65, North Lane, 2nd Lift

Quantitative Extraction, ASTM C 2172
Bitumen Content: 5.91%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "E" (% Passing)
3/4"	100.0	100
1/2"	92.4	-
3/8"	84.2	-
#4	63.9	44-72
#8	50.2	30-58
#16	39.0	-
#30	26.5	-
#50	15.1	-
#100	8.5	-
#200	5.5	3-12

ASPHALT CONCRETE LABORATORY TEST SUMMARY

Project: Clarendon Hills
Sample No.: 5
Date Sampled: September 3, 1987
Location: Shields Street - East Lane at Voc-Tech Center, Bottom Lift

Quantitative Extraction, ASTM C 2172
Bitumen Content: 4.65%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification PMBB-1 (% Passing)
3/4"	100.0	100
1/2"	81.1	70-95
3/8"	73.7	60-88
#4	62.1	40-72
#8	54.0	28-58
#16	44.7	-
#30	30.4	-
#50	16.5	9-32
#100	9.4	-
#200	6.5	3-12

Project: Clarendon Hills
Sample No.: 6
Date Sampled: September 4, 1987
Location: Shield Street - East Lane, 100' N of Voc-Tech Center Entrance, 2nd Lift

Quantitative Extraction, ASTM C 2172
Bitumen Content: 4.38%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification PMBB-1 (% Passing)
1"	100.0	100
3/4"	97.3	100
1/2"	79.0	70-95
3/8"	73.3	60-88
#4	61.8	40-72
#8	53.1	28-58
#16	42.9	-
#30	28.7	-
#50	15.1	9-32
#100	7.9	-
#200	4.7	3-12

ASPHALT CONCRETE LABORATORY TEST SUMMARY

Project: Clarendon Hills
Sample No.: 7
Date Sampled: September 4, 1987
Location: Batch Plant

Quantitative Extraction, ASTM C 2172
Bitumen Content: 4.31%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification PMBB-1 (% Passing)
1"	100.0	100
3/4"	96.1	100
1/2"	80.8	70-95
3/8"	73.2	60-88
#4	61.7	40-72
#8	52.8	28-58
#16	42.7	-
#30	28.4	-
#50	14.5	9-32
#100	7.4	-
#200	4.4	3-12

Project: Clarendon Hills
Sample No.: 8
Date Sampled: September 10, 1987
Location: Shields Street - Sta. 27+50, East side

Quantitative Extraction, ASTM C 2172
Bitumen Content: 5.77%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification PMBB-1 (% Passing)
1"	100.0	100
3/4"	97.6	100
1/2"	76.7	70-95
3/8"	69.8	60-88
#4	58.8	40-72
#8	50.2	28-58
#16	40.2	-
#30	26.4	-
#50	13.6	9-32
#100	7.2	-
#200	4.4	3-12

ASPHALT CONCRETE LABORATORY TEST SUMMARY

Project: Clarendon Hills
Sample No.: 9
Date Sampled: September 10, 1987
Location: Batch Plant

Quantitative Extraction, ASTM C 2172
Bitumen Content: 4.90%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification PMBB-1 (% Passing)
1"	100.0	100
3/4"	92.2	100
1/2"	78.2	70-95
3/8"	71.5	60-88
#4	60.2	40-72
#8	51.3	28-58
#16	41.7	-
#30	28.6	-
#50	16.5	9-32
#100	9.8	-
#200	6.6	3-12

Project: Clarendon Hills
Sample No.: 10
Date Sampled: September 11, 1987
Location: Shields Street - 300'S of Harmony, 2nd Ribbon from West Side, 2nd Lift

Quantitative Extraction, ASTM C 2172
Bitumen Content: 5.76%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "E" (% Passing)
3/4"	100.0	100
1/2"	88.9	-
3/8"	79.0	-
#4	60.5	44-72
#8	48.2	30-58
#16	37.0	-
#30	24.6	-
#50	13.6	-
#100	7.3	-
#200	4.5	3-12

ASPHALT CONCRETE LABORATORY TEST SUMMARY

Project: Clarendon Hills
Sample No.: 11
Date Sampled: September 12, 1987
Location: Shields Street - Sta. 20+50, West Ribbon, Top Lift

Quantitative Extraction, ASTM C 2172
Bitumen Content: 6.13%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "E" (% Passing)
3/4"	100.0	100
1/2"	93.5	-
3/8"	86.8	-
#4	68.0	44-72
#8	54.9	30-58
#16	42.3	-
#30	28.1	-
#50	15.5	-
#100	8.3	-
#200	5.3	3-12

Project: Clarendon Hills
Sample No.: 12
Date Sampled: September 12, 1987
Location: Ashford Street - 500'S of Clarendon Hills Drive - South Ribbon, Bottom Lift

Quantitative Extraction, ASTM C 2172
Bitumen Content: 6.20%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "E" (% Passing)
3/4"	100.0	100
1/2"	93.3	-
3/8"	84.8	-
#4	66.8	44-72
#8	53.3	30-58
#16	41.4	-
#30	28.4	-
#50	16.2	-
#100	8.7	-
#200	5.4	3-12

ASPHALT CONCRETE LABORATORY TEST SUMMARY

Project: Clarendon Hills
Sample No.: 13
Date Sampled: September 14, 1987
Location: Shields Street - 50'S of center line Harmony, East side center line

Quantitative Extraction, ASTM C 2172
Bitumen Content: 6.31%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "E" (% Passing)
3/4"	100.0	100
1/2"	93.0	-
3/8"	84.7	-
#4	66.7	44-72
#8	53.6	30-58
#16	42.0	-
#30	29.5	-
#50	17.4	-
#100	9.8	-
#200	6.2	3-12

Project: Clarendon Hills
Sample No.: 14
Date Sampled: September 14, 1987
Location: Shields Street

Quantitative Extraction, ASTM C 2172
Bitumen Content: 6.35%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "E" (% Passing)
3/4"	100.0	100
1/2"	91.8	-
3/8"	84.1	-
#4	67.5	44-72
#8	53.9	30-58
#16	41.7	-
#30	28.5	-
#50	16.4	-
#100	9.1	-
#200	5.6	3-12

ASPHALT CONCRETE LABORATORY TEST SUMMARY

Project: Clarendon Hills
Sample No.: 15
Date Sampled: September 15, 1987
Location: Shields Street - 15'E of East Edge at Voc-Tech West Entrance, South Side center line, Top Lift

Quantitative Extraction, ASTM C 2172
Bitumen Content: 5.81%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "E" (% Passing)
3/4"	100.0	100
1/2"	90.6	-
3/8"	71.6	-
#4	49.3	44-72
#8	39.9	30-58
#16	30.0	-
#30	22.3	-
#50	12.7	-
#100	8.2	-
#200	5.1	3-12

Project: Clarendon Hills
Sample No.: 16
Date Sampled: September 15, 1987
Location: Hinsdale Drive - 20'E of Shields, North Side center line, Top Lift

Quantitative Extraction, ASTM C 2172
Bitumen Content: 6.12%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "E" (% Passing)
3/4"	100.0	100
1/2"	87.9	-
3/8"	61.2	-
#4	46.7	44-72
#8	36.0	30-58
#16	24.4	-
#30	14.1	-
#50	10.3	-
#100	7.9	-
#200	4.9	3-12

ASPHALT CONCRETE LABORATORY TEST SUMMARY

Project: Clarendon Hills
Sample No.: 17
Date Sampled: September 17, 1987
Location: Clarendon Hills Drive - 100'N of Hilldale Drive, West Ribbon, Top Lift

Quantitative Extraction, ASTM C 2172
Bitumen Content: 6.51%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "EX" (% Passing)
1/2"	100.0	100
3/8"	95.9	-
#4	70.4	50-78
#8	51.2	34-60
#16	36.8	-
#30	26.2	-
#50	16.5	-
#100	10.1	-
#200	7.9	3-12

Project: Clarendon Hills
Sample No.: 18
Date Sampled: September 18, 1987
Location: Ashford Lane - Sta. 11+25, North Ribbon, Top Lift

Quantitative Extraction, ASTM C 2172
Bitumen Content: 6.10%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "EX" (% Passing)
1/2"	100.0	100
3/8"	94.8	-
#4	64.3	50-78
#8	45.4	34-60
#16	33.1	-
#30	23.8	-
#50	14.9	-
#100	8.7	-
#200	5.3	3-12

ASPHALT CONCRETE LABORATORY TEST SUMMARY

Project: Clarendon Hills
Sample No.: 19
Date Sampled: September 18, 1987
Location: Clarendon Hills Drive - 25'N of Hilldale Drive, West Ribbon, Top Lift

Quantitative Extraction, ASTM C 2172
Bitumen Content: 6.31%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "EX" (% Passing)
1/2"	100.0	100
3/8"	95.7	-
#4	69.8	50-78
#8	50.3	34-60
#16	36.6	-
#30	25.9	-
#50	16.3	-
#100	9.8	-
#200	6.5	3-12

Project: Clarendon Hills
Sample No.: 20
Date Sampled: September 19, 1987
Location: Clarendon Hills Drive - 150'S of Hilldale Drive, West Ribbon, Top Lift

Quantitative Extraction, ASTM C 2172
Bitumen Content: 5.87%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "FX" (% Passing)
1/2"	100.0	100
3/8"	94.3	-
#4	62.4	50-78
#8	44.4	34-60
#16	31.3	-
#30	22.8	-
#50	14.6	-
#100	8.3	-
#200	5.3	3-12

ASPHALT CONCRETE LABORATORY TEST SUMMARY

Project: Clarendon Hills
Sample No.: 21
Date Sampled: September 19, 1987
Location: Saratoga Court - 75'N of center line of cul-de-sac, East Ribbon, Top Lift

Quantitative Extraction, ASTM C 2172

Bitumen Content: 6.15%

Gradation Analysis of Extracted Aggregate, ASTM C 117 & C 136

Sieve Size	(% Passing)	Specification Grading "EX" (% Passing)
1/2"	100.0	100
3/8"	94.4	-
#4	66.8	50-78
#8	46.3	34-60
#16	33.8	-
#30	24.6	-
#50	15.7	-
#100	9.4	-
#200	6.2	3-12

LOVELAND 1707 2ND. AVENUE

Empire Laboratories, Inc.
GEOTECHNICAL ENGINEERING & MATERIALS TESTING

CORPORATE OFFICE
P.O. Box 503 • (303) 484-0359
301 No. Howes • Fort Collins, Colorado 80522

August 10, 1987

RECEIVED AUG 1 0 1987

Connell Resources
3715 South Lincoln
Loveland, Colorado 80537

Attention: Mr. Bill Lauer

Re: Asphaltic Concrete Mix Design - Grading E
Stroh Pit
Loveland, Colorado

Gentlemen:

We have evaluated the material submitted to our laboratory for an asphaltic concrete mix design to meet Colorado State Highway specifications for Grading E by the Hveem method.

The aggregate submitted comes from the Stroh pit. The aggregate was combined 35% natural, 35% rock and 30% crushed fines. The specific gravities of the coarse and fine aggregate are 2.61 and 2.62 respectively with a combined specific gravity of 2.62. The AC10 is produced by the Sinclair Oil Company and is provided with a specific gravity of 1.0321.

Aggregate combinations were set up for 5.4%, 5.9%, 6.4% and 6.9% asphaltic cement contents. The job mix formula was set up in accordance with gradation analysis performed and is listed on page 3. Hveem samples were tested in accordance with Colorado State Highway Procedure L-5105. Hveem properties for each oil content are tabulated on page 3, and a graphical representation appears on page 4.

The results of the trial mixture data indicate that an optimum oil content of 5.9% (by weight of total mix) will result in mix containing 5.2% air voids, a unit weight of 143.7 pcf, a stability of 43.8, a cohesiometer value of 170, an Rt value of 98.2, and a strength coefficient of 0.44. The voids in mineral aggregate is 17.6%, and the effective specific gravity of the mix is calculated to be 2.64.

An immersion compression test was performed at the optimum oil content in accordance with Colorado Procedure L-5104. The index of retained strength is 92.9%.

cc: Jack

A Lottmann test was performed at the optimum oil content in accordance with Colorado Procedure L-5109. The index of retained diametral tensile strength is 71.1%, and the permeable voids are 3.60%.

If you have any questions regarding the enclosed test results, please contact us at your convenience.

Very truly yours,

EMPIRE LABORATORIES, INC.

Eric R. West

Eric R. West, P.E.
Corporate Secretary

clc

Re: Grading "E" Asphaltic Concrete Mix Design
Stroh Pit

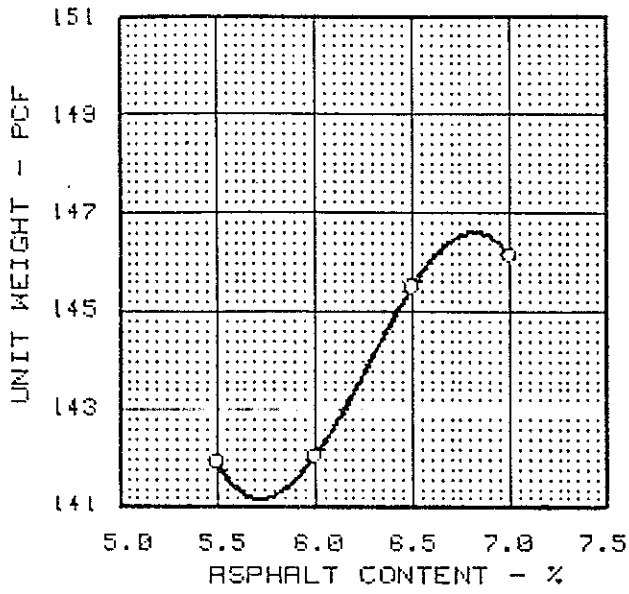
ASPHALT LABORATORY TEST DATA

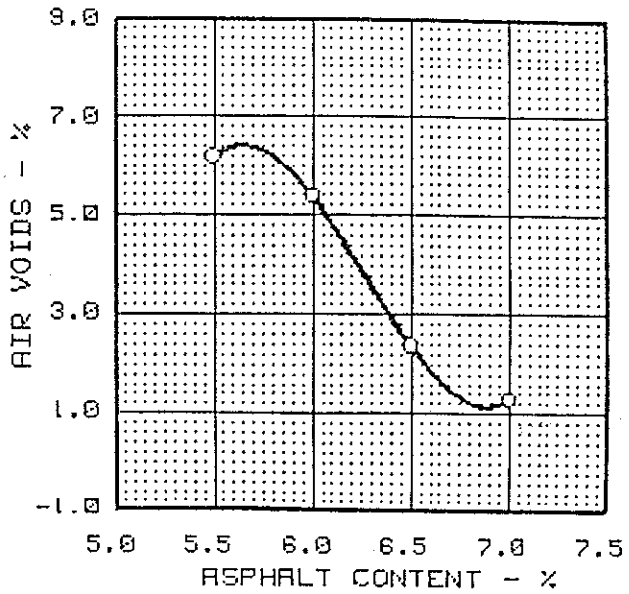
35% Natural; 35% Rock, 30% Crushed Fines

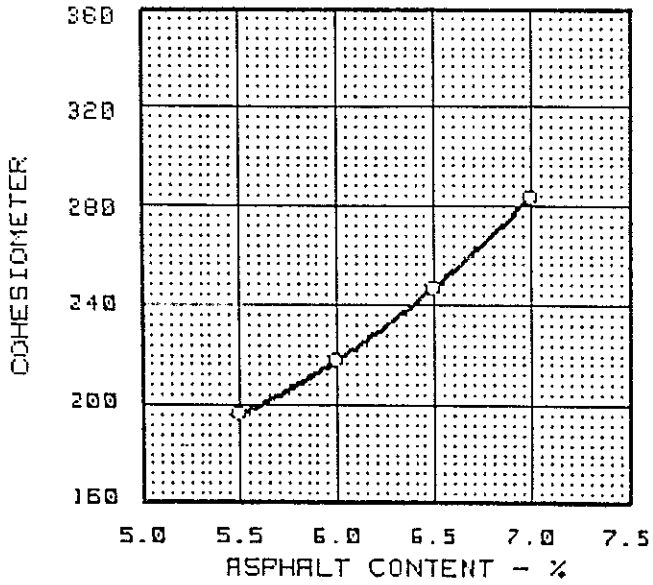
Sieve Size	Job Mix Formula (% Passing)	Colorado State Highway Master Range, Grading "E" (% Passing)
3/4"	100	100
1/2	91±8	-
3/8"	77±8	-
#4	57±8	44-72
#8	46±8	30-58
#16	36±6	-
#30	26±6	-
#50	16±6	-
#100	10±6	-
#200	6±3	3-12

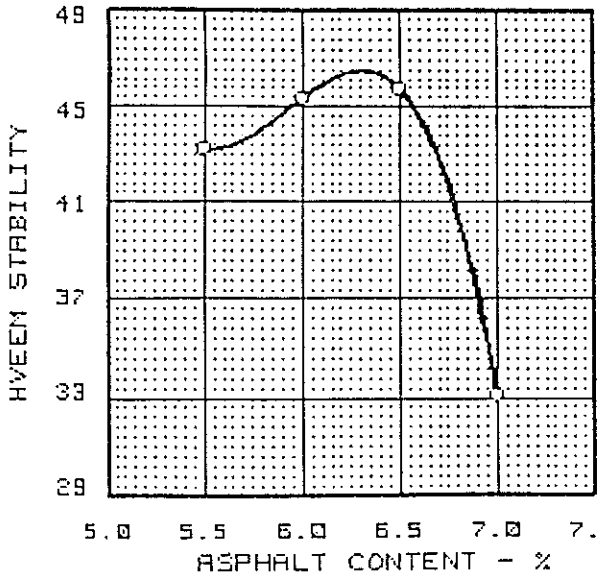
Hveem Properties					Specifications
Asphalt Content, %	5.4	5.9	6.4	6.9	-
Bulk Specific Gravity	2.289	2.295	2.350	2.354	-
Unit Weight, PCF	142.8	143.2	146.7	146.9	-
Maximum Theoretical Specific Gravity	2.438	2.421	2.404	2.387	-
Air Voids, %	6.1	5.2	2.2	1.4	3-6
Stability	42.8	43.8	44.4	42.8	37 Min.
Cohesiometer	108	170	239	276	-
Resistance Rt	94.8	98.2	101.9	103.2	95 Min.
Strength Coefficient	0.40	0.44	0.44	0.44	0.44
Molding Temp., °F.	260	260	260	260	-

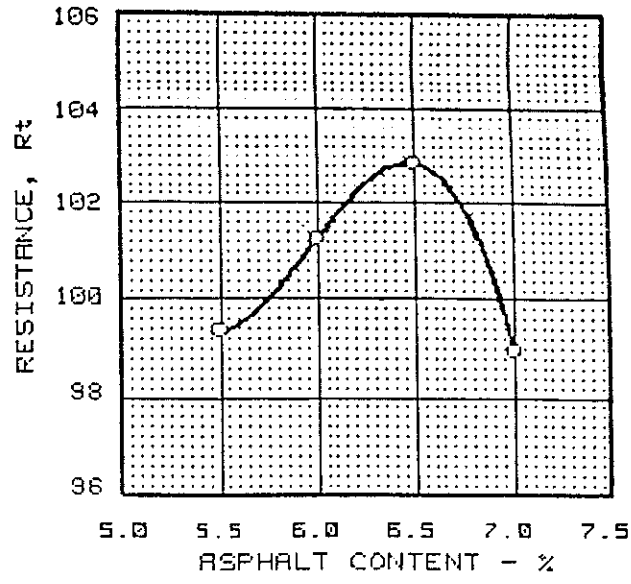
HVEEM PROPERTIES











EMPIRE LABORATORIES, INC.
Materials and Foundation Engineers
Fort Collins, Colorado
Greeley, Colorado
Longmont, Colorado
Colorado Springs, Colorado
Cheyenne, Wyoming

CONCRETE TEST RESULTS

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

SAMPLING C172-82	MAKING & CURING TEST SPECIMENS Field C31-85	MAKING & CURING TEST SPECIMENS Laboratory C192-81	CAPPING C617-85b	COMPRESSIVE STRENGTH C39-86
[X]	[X]	[ ]	[X]	[X]

NAME OF PROJECT Clarendon Hills

CONTRACTOR Keifer Concrete/Connell Resources

ENGINEER OR ARCHITECT Stewart Engineering MIX NO.

LOCATION OF PLACEMENT 25'S of Harmony & Shields - curb and gutter

EMPIRE JOB NO. 2287 REPORT NO. 11

FINE Lbs. MEDIUM Lbs. COARSE AGG. Lbs. CEMENT Lbs. FLY ASH Lbs. WATER 0 Gals.

REQUIRED STRENGTH 3500 SLUMP 1-1/2 In. AIR 5.2 % UNIT WEIGHT 0 #/Ft.³ YIELD 0 Ft.³/Yd.³

TEMP. (CONCRETE) °F (AMBIENT) °F WRA 0 AIR ENTRAINMENT 2.12 oz/sack

TRUCK NO. 6 TIME 12:45 CUBIC YARDS 8 CALCIUM CHLORIDE 0 ACCELERATOR 0

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVG. DIA IN	CROSS SECTIONAL AREA IN²	LENGTH IN	TYPE OF FRACTURE	Cure	
										Lab	Day/Field
1	8/28/87	9/8/87	11	49,800	3950	4.0	12.6	8.0	conical		11
2	8/28/87	9/25/87	28	54,000	4290	4.0	12.6	8.0	conical	17	11
3	8/28/87	9/25/87	28	53,000	4210	4.0	12.6	8.0	conical	17	11

PLEASE NOTE:
The cylinders tested (in accord with ASTM C39) were not prepared by representatives of the laboratory. As such, the cylinders may not be representative of the concrete as placed

CAST BY: Contractor BROKEN BY: 3 day 7 day LEM 14 day 28 day JK 45 day CONCRETE SUPPLIER: Poudre Premix

DISTRIBUTION: Clarendon Hills Assoc. (1); Land Development Ser. (1); Connell Resources (1); City of Ft. Collins (1); Poudre Premix (1)

EMPIRE LABORATORIES, INC.
Materials and Foundation Engineers
Fort Collirs, Colorado
Greeley, Colorado
Longmont, Colorado
Colorado Springs, Colorado
Cheyenne Wyoming

CONCRETE TEST RESULTS

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

SAMPLING C172-82	MAKING & CURING TEST SPECIMENS Fie d C31-85	Laboratory C192-81	CAPPING C617-85b	COMPRESSIVE STRENGTH C39-86
[X]	[X]	[ ]	[X]	[X]

NAME OF PROJECT Clarenden Hills

CONTRACTOR Kiefer Concrete

ENGINEER OR ARCHITECT Stewart Eng. MIX NO.

LOCATION OF PLACEMENT Clarenden Hill's & Shields, Curb & Gutter (North Side)

EMPIRE JOB NO. 2287 REPORT NO. 12

FINE 1371 Lbs. MEDIUM 1728 Lbs. COARSE AGG. Lbs. CEMENT 564 Lbs. FLY ASH Lbs. WATER 20 Gals.

REQUIRED STRENGTH 3500 SLUMP 2 In. AIR 7.8 % UNIT WEIGHT 141.57 #/Ft³ YIELD 27.45 Ft³/Yd³

TEMP. (CONCRETE) 75 °F (AMBIENT) 76 °F WRA AIR ENTRAINMENT 1.86oz/ cwt

TRUCK NO. 6 TIME 3:30 CUBIC YARDS 5 CALCIUM CHLORIDE ACCELERATOR 1%

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVG. DIA. IN	CROSS SECTIONAL AREA IN²	LENGTH IN	TYPE OF FRACTURE	Cure	
										Lab	Day/Field
1	9/9/87	9/16/87	7	95,700	3880	6.0	28.3	12.0	conical	7	
2	9/9/87	9/16/87	7	95,200	3360	6.0	28.3	12.0	conical	7	
3	9/9/87	10/07/87	28								
4	9/9/87	10/07/87	28								

CAST BY: Empire Lab BROKEN BY: 3 day 7 day CB 14 day 28 day 45 day CONCRETE SUPPLIER: Poudre Pre-Mix

DISTRIBUTION: Clarendon (1); Land Development Services (1); Connell Resources (1); City Eng. Dept (1); Poudre Pre-Mix (1)

EMPIRE LABORATORIES, INC.
Materials and Foundation Engineers
Fort Collins, Colorado
Greeley, Colorado
Longmont, Colorado
Colorado Springs, Colorado
Cheyenne, Wyoming

CONCRETE TEST RESULTS

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

SAMPLING C172-82	MAKING & CURING TEST SPECIMENS Field C31-85	MAKING & CURING TEST SPECIMENS Laboratory C192-81	CAPPING C617-85b	COMPRESSIVE STRENGTH C39-86
[X]	[X]	[ ]	[X]	[X]

NAME OF PROJECT Clarendon Hills

CONTRACTOR Kiefer

ENGINEER OR ARCHITECT Stewart Engineering MIX NO.

LOCATION OF PLACEMENT Crosspan

EMPIRE JOB NO. 2287 REPORT NO. 13

FINE 1371 Lbs. MEDIUM 1728 Lbs. COARSE AGG. Lbs. CEMENT 564 Lbs. FLY ASH Lbs. WATER Gals.

REQUIRED STRENGTH 4000 SLUMP 3 3/4 In. AIR 7.1 % UNIT WEIGHT #/Ft.³ YIELD Ft.³/Yd.³

TEMP. (CONCRETE) 72 °F (AMBIENT) 73 °F WRA AIR ENTRAINMENT 1 oz/sack

TRUCK NO. 5 TIME 9:45 CUBIC YARDS CALCIUM CHLORIDE 16 oz/100# ACCELERATOR

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVG. DIA.-IN	CROSS SECTIONAL AREA IN²	LENGTH IN	TYPE OF FRACTURE	Cure	
										Lab	Day/Field
1	9/10/87	9/17/87	7	48700	4090	4.0	12.6	8.0	conical	6	1
2	9/10/87	10/8/87	28								
3	9/10/87	10/8/87	28								
									PLEASE [illegible]		
									The cylinders tested (in accord with ASTM C39) were not prepared by representatives of the laboratory. As such, the cylinders may not be representative of the concrete as placed.		

CAST BY: Contractor BROKEN BY: 3 day 7 day 14 day 28 day 45 day CONCRETE SUPPLIER: Poudre Premix

DISTRIBUTION: Clarendon Hills (1); Land Development Services (1); Connell Resources (1); Ft. Collins Eng. Dept. (1)

Poudre Premix (1)

EMPIRE LABORATORIES, INC.
Materials and Foundation Engineers
Fort Collins, Colorado
Greeley, Colorado
Longmont Colorado
Colorado Springs, Colorado
Cheyenne, Wyoming

CONCRETE TEST RESULTS

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

SAMPLING C172-82	MAKING & CURING TEST SPECIMENS Field C31-85	MAKING & CURING TEST SPECIMENS Laboratory C192-81	CAPPING C617-85b	COMPRESSIVE STRENGTH C39-86
[X]	[X]	[ ]	[X]	[X]

NAME OF PROJECT Clarendon Hills

CONTRACTOR Kiefer

ENGINEER OR ARCHITECT Stewart Engineering MIX NO. _____

LOCATION OF PLACEMENT Crosspan

EMPIRE JOB NO. 2287 REPORT NO. 13

FINE 1371 Lbs. MEDIUM 1728 Lbs. COARSE AGG. _____ Lbs. CEMENT 564 Lbs. FLY ASH _____ Lbs. WATER _____ Gals.

REQUIRED STRENGTH 4000 SLUMP 3 3/4 In. AIR 7.1 % UNIT WEIGHT _____ #/Ft.³ YIELD _____ Ft.³/Yd.³

TEMP. (CONCRETE) 72 °F (AMBIENT) 73 °F WRA _____ AIR ENTRAINMENT 1 oz/sack

TRUCK NO. 5 TIME 9:45 CUBIC YARDS _____ CALCIUM CHLORIDE 16 oz/100# ACCELERATOR _____

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVG. DIA. IN	CROSS SECTIONAL AREA IN²	LENGTH IN	TYPE OF FRACTURE	Cure	
										Lab	Day/Field
1	9/10/87	9/17/87	7	48700	4090	4.0	12.6	8.0	conical	6	1
2	9/10/87	10/8/87	28	53000	4210	4.0	12.6	8.0	conical	27	1
3	9/10/87	10/8/87	28	54100	4290	4.0	12.6	8.0	conical	27	1
									PLEASE [illegible]		
									The cylinders tested (in accord with ASTM C39) were not prepared by representatives of the laboratory. As such, the cylinders may not be representative of the concrete as placed.		

CAST BY: Contractor BROKEN BY: 3 day ____ 7 day ____ 14 day ____ 28 day ____ 45 day ____ CONCRETE SUPPLIER: Poudre Premix

DISTRIBUTION: Clarendon Hills (1); Land Development Services (1); Connell Resources (1); Ft. Collins Eng. Dept. (1)

EMPIRE LABORATORIES, INC.
Materials and Foundation Engineers
Fort Collins, Colorado
Greeley, Colorado
Longmont, Colorado
Colorado Springs, Colorado
Cheyenne, Wyoming

CONCRETE TEST RESULTS

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

SAMPLING C172-82	MAKING & CURING TEST SPECIMENS Field C31-85	MAKING & CURING TEST SPECIMENS Laboratory C192-81	CAPPING C617-85b	COMPRESSIVE STRENGTH C39-86
X	X		X	X

NAME OF PROJECT Clarendon Hills

CONTRACTOR Kiefer Concrete MIX NO.

ENGINEER OR ARCHITECT Stewart Engineering

LOCATION OF PLACEMENT Curb & gutter Sta. 0+00 to 6+00 REPORT NO. 8

EMPIRE JOB NO. 2287

FINE 1371 Lbs. MEDIUM 1728 Lbs. COARSE AGG. 0 Lbs. CEMENT 564 Lbs. FLY ASH 0 Lbs. WATER 27 Gals.

REQUIRED STRENGTH 3500 SLUMP 1.0 In. AIR 4.1 % UNIT WEIGHT 148.11 #/Ft³ YIELD 26.25 Ft³/Yd³

TEMP. (CONCRETE) 77 °F (AMBIENT) 78 °F WRA 0 AIR ENTRAINMENT 1.65 oz/sack

TRUCK NO. 15 TIME 8:18 CUBIC YARDS 8 CALCIUM CHLORIDE 0 ACCELERATOR 0

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVG. DIA IN	CROSS SECTIONAL AREA IN²	LENGTH IN	TYPE OF FRACTURE	Cure	
										Lab	Day/Field
1	7/29/87	8/5/87	7	113,600	4010	6.0	28.3	12.0	Conical	X	
2	7/29/87	8/5/87	7	112,900	3990	6.0	28.3	12.0	Conical	X	
3	7/29/87	8/26/87	28	142,800	5050	6.0	28.3	12.0	conical	28	
4	7/29/87	8/26/87	28	145,100	5130	6.0	28.3	12.0	conical	28	

CAST BY: Empire Laboratories BROKEN BY: 3 day ___ 7 day CB 14 day ___ 28 day CB 45 day ___ CONCRETE SUPPLIER: Poudre Premix

DISTRIBUTION: Clarendon Hills (1); Land Devel. Serv. (1); Connell (1); Poudre Premix (1); City of Ft. Collins (1)

EMPIRE LABORATORIES, INC.
Materials and Foundation Engineers
Fort Collins, Colorado
Greeley, Colorado
Longmont, Colorado
Colorado Springs, Colorado
Cheyenne, Wyoming

CONCRETE TEST RESULTS

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

SAMPLING C172-82	MAKING & CURING TEST SPECIMENS Field C31-85	Laboratory C192-81	CAPPING C617-85b	COMPRESSIVE STRENGTH C39-86
[X]	[X]	[ ]	[X]	[X]

NAME OF PROJECT Clarendon Hills

CONTRACTOR Connell Resources

ENGINEER OR ARCHITECT _____ MIX NO. _____

LOCATION OF PLACEMENT Curb & gutter

EMPIRE JOB NO. 2287 REPORT NO 9

FINE 1371 Lbs. MEDIUM 3/4" 1728 Lbs. COARSE AGG. - Lbs. CEMENT 564 Lbs. FLY ASH 0 Lbs. WATER 29.25 Gals.

REQUIRED STRENGTH 3500 SLUMP 2-1/4 In. AIR 4.8 % UNIT WEIGHT 144.49 #/Ft.³ YIELD 27.03 Ft.³/Yd.³

TEMP. (CONCRETE) 79 °F (AMBIENT) 83 °F WRA 0 AIR ENTRAINMENT 1.88 oz/sack

TRUCK NO. 22 TIME 8:45 CUBIC YARDS 8 CALCIUM CHLORIDE 0 ACCELERATOR 0

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVG. DIA. IN	CROSS SECTIONAL AREA IN²	LENGTH IN	TYPE OF FRACTURE	Cure	
										Lab	Day/Field
1	7/31/87	8/7/87	7	92,700	3280	6.0	28.3	12.0	Conical	7	
2	7/31/87	8/7/87	7	91,900	3250	6.0	28.3	12.0	Conical	7	
3	7/31/87	8/28/87	28	119,600	4230	6.0	28.3	12.0	Conical	28	
4	7/31/87	8/28/87	28	119,800	6.0	6.0	28.3	12.0	Conical	28	

CAST BY: Empire Laboratories BROKEN BY: 3 day ____ 7 day CB 14 day ____ 28 day ____ 45 day ____ CONCRETE SUPPLIER: Poudre Premix

DISTRIBUTION: Clarendon Hills (1); Land Development (1); Connell Res. (1); Poudre Premix (1); City of Ft. Collins (1)

EMPIRE LABORATORIES, INC.
Materials and Foundation Engineers
Fort Collins, Colorado
Greeley, Colorado
Longmont, Colorado
Colorado Springs, Colorado
Cheyenne, Wyoming

CONCRETE TEST RESULTS

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

SAMPLING C172-82	MAKING & CURING TEST SPECIMENS Field C31-85	MAKING & CURING TEST SPECIMENS Laboratory C192-81	CAPPING C617-85b	COMPRESSIVE STRENGTH C39-86
☐	☐	☐	X	X

NAME OF PROJECT Clarendon Hills

CONTRACTOR Connell Resources

ENGINEER OR ARCHITECT _____ MIX NO. _____

LOCATION OF PLACEMENT Curb and Gutter

EMPIRE JOB NO. 2287 REPORT NO. 10

FINE _____ Lbs. MEDIUM _____ Lbs. COARSE AGG. _____ Lbs. CEMENT _____ Lbs. FLY ASH _____ Lbs. WATER _____ Gals.

REQUIRED STRENGTH 3500 SLUMP _____ In. AIR 4.7 % UNIT WEIGHT _____ #/Ft.³ YIELD _____ Ft.³/Yd.³

TEMP. (CONCRETE) _____ °F (AMBIENT) _____ °F WRA _____ AIR ENTRAINMENT _____

TRUCK NO. _____ TIME _____ CUBIC YARDS _____ CALCIUM CHLORIDE _____ ACCELERATOR _____

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVG. DIA. IN	CROSS SECTIONAL AREA IN²	LENGTH IN	TYPE OF FRACTURE	Cure	
										Lab	Day/Field
1	8/19/87	8/26/87	7	47,000	3730	4.0	12.6	8.0	Conical	7	
2	8/19/87	9/16	28								
3	8/19/87	9/16	28								

PLEASE NOTE.

The cylinders tested (in accord with ASTM C39) were not prepared by representatives of the laboratory. As such, the cylinders may not be representative of the concrete as placed.

CAST BY: Poudre PreMic BROKEN BY: 3 day ____ 7 day CB 14 day ____ 28 day ____ 45 day ____ CONCRETE SUPPLIER: Poudre PreMix

DISTRIBUTION: Clarendon Hills Assoc.(1) Land Deve. Services (1) Connell Res (1) City (1) Poudre Premix (1)

EMPIRE LABORATORIES, INC.
Materials and Foundation Engineers
Fort Collins, Colorado
Greeley, Colorado
Longmont, Colorado
Colorado Springs, Colorado
Cheyenne, Wyoming

CONCRETE TEST RESULTS

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

SAMPLING C172-82	MAKING & CURING TEST SPECIMENS Field C31-85	MAKING & CURING TEST SPECIMENS Laboratory C192-81	CAPPING C617-85b	COMPRESSIVE STRENGTH C39-86
[X]	[X]	[ ]	[X]	[X]

NAME OF PROJECT Clarendon Hills

CONTRACTOR Kiefer Concrete

ENGINEER OR ARCHITECT _____ MIX NO. _____

LOCATION OF PLACEMENT Curb & gutter, Sta 4+00

EMPIRE JOB NO. 2287 REPORT NO. 7

FINE 1371 Lbs. MEDIUM 1728 Lbs. COARSE AGG. _____ Lbs. CEMENT 451 Lbs. FLY ASH 113 Lbs. WATER 27 Gals.

REQUIRED STRENGTH 3500 SLUMP 1 3/4 In. AIR 3.5 % UNIT WEIGHT 149.0 #/Ft.³ YIELD 26.11 Ft.³/Yd.³

TEMP. (CONCRETE) 75 °F (AMBIENT) 78 °F WRA _____ AIR ENTRAINMENT 1.41 oz/sack

TRUCK NO. 15 TIME 8:50 CUBIC YARDS 7 1/2 CALCIUM CHLORIDE _____ ACCELERATOR _____

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVG. DIA. IN	CROSS SECTIONAL AREA IN²	LENGTH IN	TYPE OF FRACTURE	Cure	
										Lab	Day/Field
1	7-23-87	7-30-87	7	107,400	3800	6.0	28.3	12.0	conical	7	
2	7-23	7-30	7	103,500	3660	6.0	28.3	12.0	conical	7	
3	7-23	8-20	28	151,600	5360	6.0	28.3	12.0	conical	28	
4	7-23	8-20	28	151,800	5360	6.0	28.3	12.0	conical	28	

CAST BY: Empire Laboratories BROKEN BY: 3 day ____ 7 day RD 14 day ____ 28 day CB 45 day ____ CONCRETE SUPPLIER: Poudre Pre-mix

DISTRIBUTION: Clarendon Hills Assoc. (1); Land Development Serv. (1); COnnell Resources (1); Poudre Pre-mix (1)

EMPIRE LABORATORIES, INC.
Materials and Foundation Engineers
Fort Collins, Colorado
Greeley, Colorado
Longmont Colorado
Colorado Springs, Colorado
Cheyenne, Wyoming

CONCRETE TEST RESULTS

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

SAMPLING C172-82	MAKING & CURING TEST SPECIMENS Field C31-85	MAKING & CURING TEST SPECIMENS Laboratory C192-81	CAPPING C617-85b	COMPRESSIVE STRENGTH C39-86
[X]	[X]	[ ]	[X]	[X]

NAME OF PROJECT Clarendon Hills

CONTRACTOR Cornell Resources

ENGINEER OR ARCHITECT _____ MIX NO. _____

LOCATION OF PLACEMENT Catch Basin – Hinsdale @ Clarendon Hills Dr.

EMPIRE JOB NO. 2287 REPORT NO. 4

FINE 1400 Lbs. 3/4" MEDIUM 1696 Lbs. COARSE AGG. 0 Lbs. CEMENT 564 Lbs. FLY ASH - Lbs. WATER 26 Gals.

REQUIRED STRENGTH 3500 SLUMP 3-3/4 In. AIR 5.1 % UNIT WEIGHT 143.72 #/Ft.³ YIELD 27.0 Ft.³/Yd.³

TEMP. (CONCRETE) 77 °F (AMBIENT) 84 °F WRA - AIR ENTRAINMENT 0.94 oz/sack

TRUCK NO. 26 TIME 1:40 CUBIC YARDS 5 CALCIUM CHLORIDE 0 ACCELERATOR 0

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVG. DIA. IN	CROSS SECTIONAL AREA IN²	LENGTH IN	TYPE OF FRACTURE	Cure	
										Lab	Day/Field
1	7/10/87	7/17/87	7	67,600	2390	6.0	28.3	12.0	Conical	X	
2	7/10/87	7/17/87	7	69,200	2450	6.0	28.3	12.0	Conical	X	
3	7/10/87	8/7/87	28	126,800	4480	6.0	28.3	12.0	Conical	X	
4	7/10/87	8/7/87	28	132,000	4660	6.0	28.3	12.0	Conical	X	

CAST BY: Empire Laboratories BROKEN BY: 3 day ____ 7 day CB 14 day ____ 28 day CB 45 day ____ CONCRETE SUPPLIER: Poudre Premix

DISTRIBUTION: Clarendon Hills (-); Land Development Ser. (1); Connell Resources (1); Poudre Premix (1), City of Ft. Collins (

EMPIRE LABORATORIES, INC.
Materials and Foundation Engineers
Fort Collins, Colorado
Greeley, Colorado
Longmont Colorado
Colorado Springs, Colorado
Cheyenne Wyoming

CONCRETE TEST RESULTS

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

SAMPLING C172-82	MAKING & CURING TEST SPECIMENS Field C31-85	MAKING & CURING TEST SPECIMENS Laboratory C192-81	CAPPING C617-85b	COMPRESSIVE STRENGTH C39-86
[X]	[X]	[ ]	[X]	[X]

NAME OF PROJECT Clarendon Hills

CONTRACTOR Kiefer Concrete

ENGINEER OR ARCHITECT _____ MIX NO. _____

LOCATION OF PLACEMENT Inlet tops (curb and gutter) - Hinsdale @ Clarendon Hills Dr.

EMPIRE JOB NO. 2287 REPORT NO. 5

FINE 1400 Lbs. 3/4" MEDIUM 1696 Lbs. COARSE AGG. 0 Lbs. CEMENT 564 Lbs. FLY ASH 0 Lbs. WATER 27 Gals.

REQUIRED STRENGTH 3750 SLUMP 2-3/4 In. AIR 5.1 % UNIT WEIGHT 145.20 #/Ft.³ YIELD 26.76 Ft.³/Yd.³

TEMP. (CONCRETE) 77 °F (AMBIENT) 87 °F WRA 0 AIR ENTRAINMENT 1.41 oz/sack

TRUCK NO. 15 TIME 3:40 CUBIC YARDS 4-1/4 CALCIUM CHLORIDE - ACCELERATOR -

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVG. DIA. IN	CROSS SECTIONAL AREA IN.²	LENGTH IN	TYPE OF FRACTURE	Cure	
										Lab	Day/Field
1	7/15/87	7/22/87	7	103,100	3640	6.0	28.3	12.0	Conical	X	
2	7/15/87	7/22/87	7	97,400	3440	6.00	28.3	12.0	Conical	X	
3	7/15/87	8/12/87	28	142,200	5020	6.0	28.3	12.0	Conical	X	
4	7/15/87	8/12/87	28	145,100	5130	6.0	28.3	12.0	Conical	X	

CAST BY: Empire Laboratories BROKEN BY: 3 day ____ 7 day CB 14 day ____ 28 day CB 45 day ____ CONCRETE SUPPLIER: Poudre Premix

DISTRIBUTION: Clarendon Hills Assoc. (1); Land Development (1); Connell Resources (1); Poudre Premix (1); City of Ft. Collins (1)

EMPIRE LABORATORIES, INC.
Materials and Foundation Engineers
Fort Collins, Colorado
Greeley, Colorado
Longmont, Colorado
Colorado Springs, Colorado
Cheyenne, Wyoming

CONCRETE TEST RESULTS

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

SAMPLING C172-82	MAKING & CURING TEST SPECIMENS Field C31-85	MAKING & CURING TEST SPECIMENS Laboratory C192-81	CAPPING C617-85b	COMPRESSIVE STRENGTH C39-86
[X]	[X]	[ ]	[X]	[X]

NAME OF PROJECT Clarendon Hills

CONTRACTOR Kiefer Construction Co.

ENGINEER OR ARCHITECT _____ MIX NO. _____

LOCATION OF PLACEMENT Curb & gutter & walk North section of Clarendon Hills Dr. &/or Ashford Ln.

EMPIRE JOB NO. 2287 REPORT NO. 6

FINE 1371 Lbs. MEDIUM 1728 Lbs. COARSE AGG. 0 Lbs. CEMENT 451 Lbs. FLY ASH 113 Lbs. WATER 26.25 Gals.

REQUIRED STRENGTH 3500 SLUMP 1-3/4 In. AIR 4.3 % UNIT WEIGHT 146.93 #/Ft.³ YIELD 26.50 Ft.³/Yd.³

TEMP. (CONCRETE) 76 °F (AMBIENT) 75 °F WRA 0 AIR ENTRAINMENT 1.38 oz/sack

TRUCK NO. 22 TIME 9:50 CUBIC YARDS 8 CALCIUM CHLORIDE 0 ACCELERATOR 0

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVG. DIA. IN	CROSS SECTIONAL AREA IN²	LENGTH IN	TYPE OF FRACTURE	Cure	
										Lab	Day/Field
1	7/16/87	7/23/87	7	113,200	4000	6.0	28.3	12.0	Conical	X	
2	7/16/87	7/23/87	7	111,800	3950	6.0	28.3	12.0	Conical	X	
3	7/16/87	8/13/87	28	152,600	5390	6.0	28.3	12.0	Conical	X	
4	7/16/87	8/13/87	28	152,700	5400	6.0	28.3	12.0	Conical	X	

CAST BY: Empire Laboratories BROKEN BY: 3 day ____ 7 day CB 14 day ____ 28 day CB 45 day ____ CONCRETE SUPPLIER: Poudre Premix

DISTRIBUTION: Clarendon Hills Associates (1); Land Development Serv. (1); Connell Resources (1); Poudre Premix (1)

EMPIRE LABORATORIES, INC.

Materials and Foundation Engineers

For: Collins, Colorado
Greeley, Colorado
Longmont, Colorado
Colorado Springs, Colorado
Cheyenne, Wyoming

CONCRETE TEST RESULTS

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

SAMPLING C172-82	MAKING & CURING TEST SPECIMENS Field C31-85	MAKING & CURING TEST SPECIMENS Laboratory C192-81	CAPPING C617-85b	COMPRESSIVE STRENGTH C39-86
[X]	[X]	[ ]	[X]	[X]

NAME OF PROJECT Clarendon Hills

CONTRACTOR Kiefer Concrete

ENGINEER OR ARCHITECT Stewart Engineering MIX NO.

LOCATION OF PLACEMENT Curb & gutter Sta. 0+00 to 6+00 Clarendon Hills Dr. between Hazel Ct. & Hillsdale Dr.

EMPIRE JOB NO. 2287 REPORT NO. 8

FINE 1371 Lbs. MEDIUM 1728 Lbs. COARSE AGG. 0 Lbs. CEMENT 564 Lbs. FLY ASH 0 Lbs. WATER 27 Gals.

REQUIRED STRENGTH 3500 SLUMP 1.0 In. AIR 4.1 % UNIT WEIGHT 148.11 #/Ft.³ YIELD 26.25 Ft.³/Yd.³

TEMP. (CONCRETE) 77 °F (AMBIENT) 78 °F WRA 0 AIR ENTRAINMENT 1.65 oz/sack

TRUCK NO. 15 TIME 3:18 CUBIC YARDS 8 CALCIUM CHLORIDE 0 ACCELERATOR 0

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVG. DIA. IN	CROSS SECTIONAL AREA IN²	LENGTH IN	TYPE OF FRACTURE	Cure	
										Lab	Day/Field
1	7/29/87	8/5/87	7	113,600	4010	6.0	28.3	12.0	Conical	X	
2	7/29/87	8/5/87	7	112,900	3990	6.0	28.3	12.0	Conical	X	
3	7/29/87	8/26/87	28								
4	7/29/87	8/26/87	28								

CAST BY: Empire Laboratories BROKEN BY: 3 day 7 day CB 14 day 28 day 45 day CONCRETE SUPPLIER: Poudre Premix

DISTRIBUTION: Clarendon Hills (1); Land Devel. Serv. (1); Connell (1); Poudre Premix (1); City of Ft. Collins (1)

EMPIRE LABORATORIES, INC.
Materials and Foundation Engineers
Fort Collins, Colorado
Greeley, Colorado
Longmont, Colorado
Colorado Springs, Colorado
Cheyenne Wyoming

CONCRETE TEST RESULTS

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

SAMPLING C172-82	MAKING & CURING TEST SPECIMENS Fie d C31-85	Laboratory C192-81	CAPPING C617-85b	COMPRESSIVE STRENGTH C39-86
[X]	[X]	[ ]	[X]	[X]

NAME OF PROJECT Clarendon Hills

CONTRACTOR Connell Resources

ENGINEER OR ARCHITECT _____ MIX NO. _____

LOCATION OF PLACEMENT Curb & gutter

EMPIRE JOB NO. 2287 REPORT NO. 9

FINE 1371 Lbs. 3/4" MEDIUM 1728 Lbs. COARSE AGG. - Lbs. CEMENT 564 Lbs. FLY ASH 0 Lbs. WATER 29.25 Gals.

REQUIRED STRENGTH 3500 SLUMP 2-1/4 In. AIR 4.8 % UNIT WEIGHT 144.49 #/Ft.³ YIELD 27.03 Ft.³/Yd.³

TEMP. (CONCRETE) 79 °F (AMBIENT) 83 °F WRA 0 AIR ENTRAINMENT 1.88 oz/sack

TRUCK NO. 22 TIME 8:45 CUBIC YARDS 8 CALCIUM CHLORIDE 0 ACCELERATOR 0

CYLINDER NO.	DATE MADE	DATE BROKEN	BREAK DAYS	BREAK POUNDS	BREAK PSI	AVG. DIA. IN	CROSS SECTIONAL AREA IN.²	LENGTH IN	TYPE OF FRACTURE	Cure	
										Lab	Day/Field
1	7/31/87	8/7/87	7	92,700	3280	6.0	28.3	12.0	Conical	7	
2	7/31/87	8/7/87	7	91,900	3250	6.0	28.3	12.0	Conical	7	
3	7/31/87	8/28/87	28								
4	7/31/87	8/28/87	28								

CAST BY: Empire Laboratories BROKEN BY: 3 day ____ 7 day CB 14 day ____ 28 day ____ 45 day ____ CONCRETE SUPPLIER: Poudre Premix

DISTRIBUTION: Clarendon Hills (1); Land Development (1); Connell Res. (1); Poudre Premix (1); City of Ft. Collins (1)