Empire Laboratories, Inc.
GEOTECHNICAL ENGINEERING & MATERIALS TESTING

CORPORATE OFFICE
P.O. Box 503 • 301 No. Howes
Fort Collins, Colorado 80522
(303) 484-0359
FAX No. (303) 484-0454

August 28, 1991

Chaparral

Coulson Excavating
3609 N. County Road #13
Loveland, CO 80535

Attention: Mr. Jack Sullivan

Re: Chaparral Subdivision
Asphalt Extraction/Gradation - Sample #1
Grading SC Type - 2

Gentlemen:

Enclosed are the results of quantitative extractions performed in accordance with ASTM D 2172, Method A, and gradation analysis of extracted aggregate performed in accordance with ASTM C 117 and C 136 on asphaltic concrete sampled from the above-referenced project on August 27, 1991.

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

Very truly yours,

EMPIRE LABORATORIES, INC.

Gary M. Martinson
Manager of Construction Observation
and Field Services

lcb

cc: City of Fort Collins Engineering Department - Mr. Lance Newlin

Branch Offices

P.O. Box 16859
Colorado Springs, CO 80935
(719) 597-2116

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

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

P.O. Box 5659
Cheyenne, WY 82003
(307) 632-9224

Member of Consulting Engineers Council

ASPHALT CONCRETE LABORATORY TEST SUMMARY

Project: Chaparral Subdivision
Sample No.: 1 Lift No.: 1st
Date Sampled: 8-27-91 Time: 8:20 Truck No.: 501
Temperature: 271°F
Location: Santa Fe Court, North Cul-de-Sac, 21' W. & 12' S. of Manhole

Quantitative Extraction, ASTM D 2172 Method A

Asphalt Cement Content - 5.5%

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

Sieve Size	% Passing	City of Fort Collins SC Type 2 Specifications % Passing
3/4"	100.	100
1/2"	88.3	---
3/8"	78.9	---
#4	60.4	38-72
#8	47.4	25-58
#16	36.4	---
#30	25.0	---
#50	14.9	---
#100	8.0	---
#200	5.1	3-12

Terracon
CONSULTANTS SE, INC.
1609 OakRidge Drive, Suite 101
Ft. Collins, Colorado 80525
(303) 226-5611

Gerald R. Olson, P.E.
James A. Cunningham, P.E.
C. Frod Schoell, P.E.
Lester L. Litton, P.E.

July 6, 1990

Coulson Excavating Company
3609 North County Road No. 13
Loveland, Colorado 80538

ATTN: Mr. Ken Coulson

RE: Laboratory Asphaltic Concrete Testing
Chapparal Subdivision P.U.D.
Fort Collins, Colorado
Job No. 12901032

Mr. Coulson:

We have completed the requested laboratory testing on the asphaltic concrete pavement material sampled by Terracon personnel on July 5, 1990 for the referenced project. Results of that testing are included with this letter.

As requested, a quantitative extraction to determine the asphalt cement content and a gradation analysis of the extracted aggregate were performed on a representative portion of the material sample in general accordance with ASTM Specifications D-2172, C-117 and C-136. The mix design for the asphaltic concrete was not provided to us; therefore, no aggregate gradation specification is listed on the attached summary sheet. However, the gradation analysis indicates that the material sampled by our personnel is within the acceptable range for grading "E" and/or grading "C" based on the State of Colorado Department of Highways master range table.

We appreciate the opportunity to be of service to you on this project. If you have any questions regarding the enclosed information, or if we can be of further service to you in any other way, please do not hesitate to contact us.

Very truly yours,

TERRACON CONSULTANTS SE, INC.

Robert L. Decker
Robert L. Decker, C.E.T.

Lester L. Litton
Lester L. Litton, P.E.
Colorado No. 23957

ASPHALTIC CONCRETE LABORATORY TEST SUMMARY
Terracon Project No. 12901032

Project: Chapparal Subdivision P.U.D.

Sample No: 01032-ACA

Date Sampled: 7/5/90 Time: 10:00 a.m.

Location: Laredo Lane - North Lane - 100' of W. end pavement

Truck No: 501 Temperature: 270°F

Quantitative Extraction, ASTM D-2172

Asphalt Cement Content 5.51 %

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

Sieve Size	% Passing	Job Mix Formula
1 1/2"		
1"		
3/4"	100	(Not Provided)
1/2"	87.8	
3/8"	76.2	
#4	59.3	
#8	48.4	
#16	37.4	
#30	24.2	
#50	13.6	
#100	7.8	
#200	4.7	

ASPHALT CONCRETE LABORATORY TEST SUMMARY

Project: Landmark Engineering, Ltd.

Sample No.: 1

Date Sampled: October 2, 1989 Contractor: Coulson Construction

Location: Intersection of Laredo and Sante Fe Lane

Lift No.: 1 Temperature: 270°F

Quantitative Extraction, ASTM C 2172

Asphalt Cement Content: 5.96%

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

Sieve Size	3/4"	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200
% Pass.	100.0	90.2	78.9	58.6	44.0	33.8	22.9	13.7	9.2	6.3
Spec. Grade. E	100.0			44/72	30/58					3/12

ASPHALT CONCRETE LABORATORY TEST SUMMARY

Project: Landmark Engineering, Ltd.

Sample No.: 2

Date Sampled: October 2, 1989 Contractor: Coulson Construction

Location: 100' South of Casa Grande on Laredo

Lift No.: 1 Temperature: 270° F.

Quantitative Extraction, ASTM C 2172

Asphalt Cement Content: 5.72%

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

Sieve Size	3/4"	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200
% Pass.	100.0	89.6	77.8	57.4	43.6	32.9	23.0	14.2	9.4	6.1
Spec. Grade. E	100.0			44/72	30/58					3/12