

Terracon

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April 29, 1991

Land Development Services, Inc.
4924 South Shields Street
Ft. Collins, Colorado 80526

ATTN: Mr. Dennis Donovan

RE: Pavement Section Recommendations
Clarendon Hills 4th Filing
Ft. Collins, Colorado
Job No. 12915019

Mr. Donovan:

As you requested, a Senior Project Engineer from Terracon Consultants has reviewed existing data on the site soils in the area of the Clarendon Hills 4th Filing and has developed pavement section recommendations for the cul-de-sac roadways to be constructed in this area of the development. The results of that review and evaluation are included with this report.

The available information reviewed as a part of this evaluation included:

<u>Report</u>	<u>Date</u>	<u>Prepared By</u>
Preliminary Geotechnical Investigation for Tracts F, G & J - Clarendon Hills	6/1/89	Empire Laboratories, Inc.
Pavement Design for Clarendon Hills	3/5/86	Empire Laboratories, Inc.
Preliminary Geotechnical Investigation for Ward Smith Farm	2/24/86	Empire Laboratories, Inc.

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In our opinion, the information obtained from these reports was suitable for development of the pavement recommendation for the new cul-de-sac roadways. A schematic diagram outlining the approximate reported location of soil borings performed as a part of the previous explorations is included with this report.

Roadway subgrades are currently being prepared in the Clarendon Hills 4th Filing in accordance with previous report recommendations. Those recommendations include stripping of topsoil from fill areas, preparation of the exposed subgrades and placement of fill soils compacted to at least 95 percent of standard Proctor maximum dry density. Site soils are being used as fill to develop those pavement subgrades.

Hveem stabilometer R-values of 5.5 to 6.2 were established by others in prior testing for the near surface natural sandy silty clays. Those described materials appear consistent with the materials being used for construction of the roadway subgrades. For this pavement evaluation, an R-value of 5.5 was assigned to the prepared subgrades.

An estimated household trip generation of 12 trips per day for automobiles or pickup trucks was used to help establish equivalent daily load axles (EDLA) for the pavement design. In addition, two heavy trucks per week were estimated for each of the cul-de-sacs. Based on those criteria and a 20-year design life, equivalent load axles (ELA's) of approximately 26,000 (3.5 EDLA) were established for design of the cul-de-sac roadways. In accordance with City of Ft. Collins minimum requirements, an EDLA of 5 (ELA of 36,500) was used for the pavement evaluation.

The 1986 AASHTO "Guide for Design of Pavement Structures" was used to help evaluate pavement sections for the residential roadways.

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A reliability of 65 percent, standard deviation of 0.34 and serviceability loss of 2.5 were assumed for the pavement design.

Based on the outlined design criteria, a weighted structural number of 2.14 was established for the roadways. For that design structural number, pavement sections consisting of 3 inches of hot bituminous pavement overlying 4 inches of aggregate base and 4 inches of aggregate subbase would be appropriate for the new streets. Other sections could be considered and we would be pleased to evaluate alternatives at your request.

Hot bituminous pavement for the roadway should consist of high-quality plant mix materials compatible with City of Fort Collins standards for SC Type 1 or SC Type 2 asphaltic concrete. The top 4 inches of aggregate base materials should consist of either Class 5 or Class 6 base as defined by City of Fort Collins criteria. The underlying aggregate could be Class 1 base as defined by City standards.

Care should be taken to develop positive drainage across and away from the pavement edges to avoid wetting of the pavement subgrades and premature pavement failure.

The analysis and recommendations presented in this report are based upon the data discussed in this report. It is recommended that the geotechnical engineer be retained to review the plans and specifications so that comments can be made regarding the interpretation and implementation of our geotechnical recommendations in the design and specifications.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical

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engineering practices. No other warranty, expressed or implied, is made. In the event that any changes in the nature, design or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing by the geotechnical engineer.

We appreciate the opportunity to be of service to you on this project. If you have any questions or require additional information, please do not hesitate to contact us.

Very truly yours,

TERRACON CONSULTANTS SE, INC.

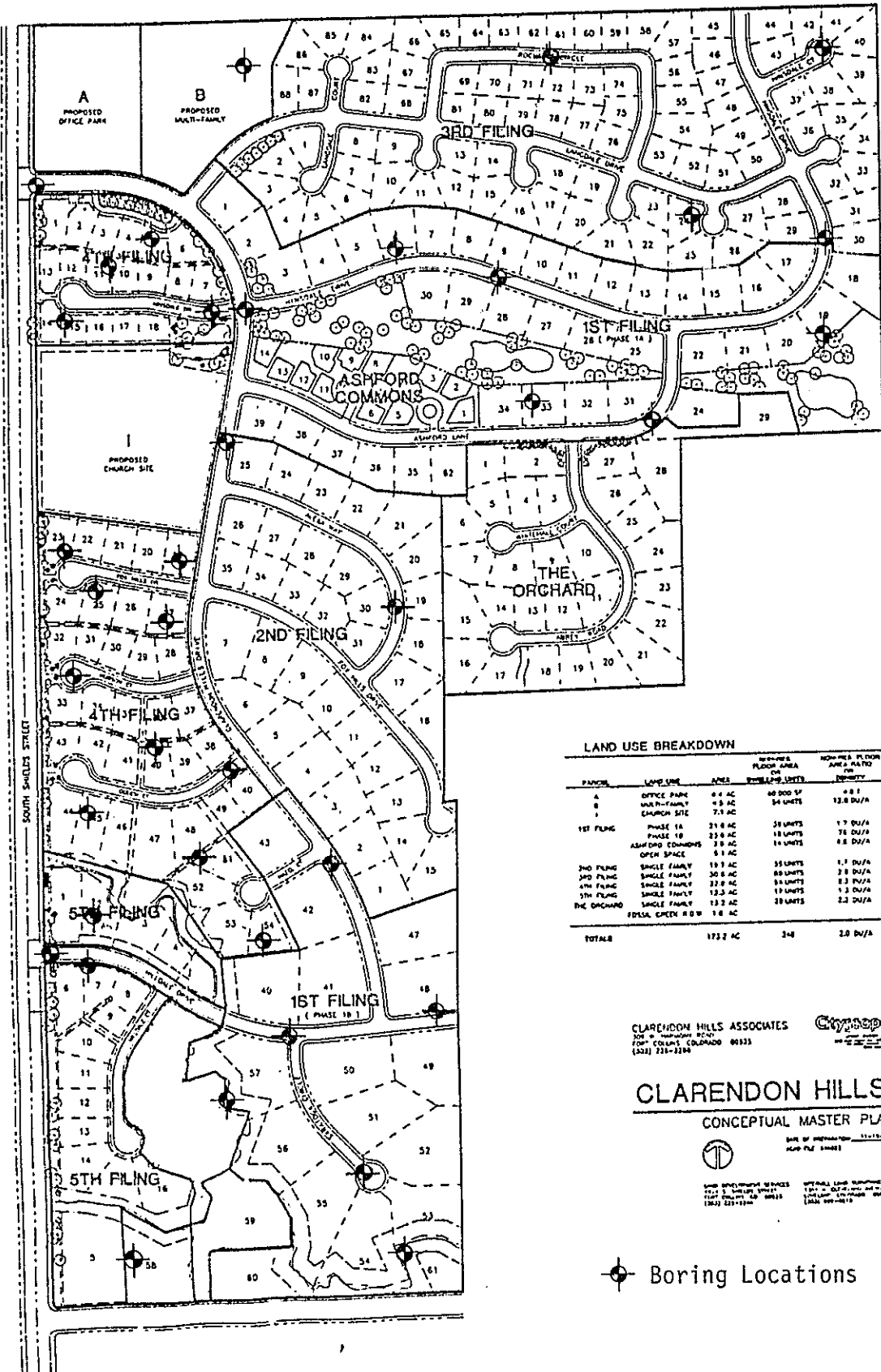


Lester L. Litton, P.E.
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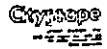
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LAND USE BREAKDOWN

PANEL	LAND USE	ACRES	RESIDENTIAL FLOOR AREA OR TOTAL FLOOR AREA	NO. OF UNITS	RESIDENTIAL FLOOR AREA RATIO OR DENSITY
A	OFFICE PARK	4.4 AC	40,000 SF		4.8 D/F
B	MULTI-FAMILY	9.9 AC	84 UNITS		12.8 D/F
I	CHURCH SITE	7.9 AC			
1ST FILING	PHASE 1A	31.8 AC	28 UNITS		1.7 D/F
	PHASE 1B	22.8 AC	18 UNITS		7.6 D/F
	ASHFORD COMMONS	2.8 AC	14 UNITS		8.8 D/F
	OPEN SPACE	9.1 AC			
2ND FILING	SINGLE FAMILY	19.7 AC	55 UNITS		1.7 D/F
3RD FILING	SINGLE FAMILY	30.8 AC	89 UNITS		2.8 D/F
4TH FILING	SINGLE FAMILY	32.8 AC	94 UNITS		3.3 D/F
5TH FILING	SINGLE FAMILY	13.3 AC	19 UNITS		1.3 D/F
	THE ORCHARD	13.2 AC	28 UNITS		2.2 D/F
	FOREST, GREEN & SW	1.8 AC			
TOTAL		173.2 AC	248		2.0 D/F

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CLARENDON HILLS
 CONCEPTUAL MASTER PLAN

DATE OF PREPARATION: 11/11/04
 MAP FILE: 104021



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UTILITY LINE RECORDING, INC.
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