Table of Contents

File 1994-0020 Name: Eagle Crest – Preliminary Plan – Lot 16 of Block 9 – Ridges #6

Present	Scanned	
		A few items are denoted with an asterisk (*), which means they are to be scanned for permanent record on the ISYS retrieval system. In some instances, items are found on the list but are not present in the scanned electronic development file because they are already scanned elsewhere on the system. These scanned documents are denoted with (**) and will be found on the ISYS query system in their designated categories. Documents specific to certain files, not found in the standard checklist materials, are listed at the bottom of the page. Remaining items, (not selected for scanning), will be listed and marked present. This index can serve as a quick guide for the contents of each file.
X	X	**Table of Contents**
		***Review Sheet Summary**
X	X	***Application form**
		Review Sheets
		Receipts for fees paid for anything
X	X	***Submittal checklist**
		***General project report**
		Reduced copy of final plans or drawings
		Reduction of assessor's map.
		Evidence of title, deeds, easements
X	X	***Mailing list to adjacent property owners**
		Public notice cards
		Record of certified mail
X		Legal description
		Appraisal of raw land
		Reduction of any maps – final copy
X	X	***Final reports for drainage and soils (geotechnical reports)**
		Other bound or non-bound reports
		Traffic studies
X	X	***Review Comments**
X	X	***Petitioner's response to comments**
X	X	***Staff Reports**
		***Planning Commission staff report and exhibits**
		***City Council staff report and exhibits**
		***Summary sheet of final conditions**

DOCUMENT DESCRIPTION:

X	X	Grading and Drainage Plan	X		Posting of Public Notice Signs – 7/2/94
X	X	Geotechnical Reports from Lincoln DeVore, Inc.	X		Volume by Lane Report
X	X	Preliminary Drainage Report – 2/94			
X		Planning Commission Notice of Public Hearing mail-out-sent 7/22/94			
X		Commitment for Title Insurance from Comonwealth Land Title Ins. Co.			
X	X	Correspondence			
X	X	Preliminary Development Plan – 6/94			
X	X	Entrance Detail Plan			
X	X	Site Development Plan on the Ridges - ** - GIS Historical Maps			
X		Slides of Eagle Crest area			
X	X	Planning Commission Minutes - ** - 3/1/94, 8/2/94			
X	X	City Council Minutes – 9/7/94, 10/26/94 - **			

DEVELOPMENT APPLICATION

Community Development Department
250 North 5th Street Grand Junction, CO 81501
(303) 244-1430

Receipt
Date 2-2-94
Rec'd By MP
File No. #20 94 (2)

We, the undersigned, being the owners of property situated in Mesa County, State of Colorado, as described herein do hereby petition this:

PETITION	PHASE	SIZE	LOCATION	ZONE	LAND USE
[ ] Subdivision Plat/Plan	[ ] Minor [ ] Major [ ] Resub				
[ ] Rezone			From: To:		
[X] Planned Development	[ ] ODP [X] Prelim [ ] Final	2.8± acres		PR	Residential
[ ] Conditional Use					
[ ] Zone of Annex					
[ ] Text Amendment					
[ ] Special Use					
[ ] Vacation					[ ] Right-of-Way [ ] Easement

[X] PROPERTY OWNER [ ] DEVELOPER [X] REPRESENTATIVE

SIDNEY GOTTLIEB		Thomas A. Logue
Name	Name	Name
477 ELLWOOD TERRACE		227 So. 9th Street
Address	Address	Address
ENGLEWOOD, NEW JERSEY 07631		Grand Jct. CO 81501
City/State/Zip	City/State/Zip	City/State/Zip
201-569-0916		245-4099
Business Phone No.	Business Phone No.	Business Phone No.

NOTE: Legal property owner is owner of record on date of submittal.

We hereby acknowledge that we have familiarized ourselves with the rules and regulations with respect to the preparation of this submittal, that the foregoing information is true and complete to the best of our knowledge, and that we assume the responsibility to monitor the status of the application and the review comments. We recognize that we or our representative(s) must be present at all hearings. In the event that the petitioner is not represented, the item will be dropped from the agenda, and an additional fee charged to cover rescheduling expenses before it can again be placed on the agenda.

Thomas A. Logue 2/1/94
Signature of Person Completing Application Date

Sidney Gottlieb

Signature of Property Owner(s) - Attach Additional Sheets if Necessary

Original
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#20 94

DYNAMIC INVESTMENT, INC.
391 1/2 Hillview Drive
Grand Junction, CO 81503-4606

RIDGES METROPOLITAN DISTRICE
P.O. Box 3568
Grand Junction, CO 81502-3568

DYNAMIC INVESTMENT, INC.
391 1/2 Hillview Drive
Grand Junction, CO 81503-4606

Thomas & Lynda H. Rolland
2561 H 3/4 Road
Grand Junction, CO 81505-9539

Entrada Townhouse, LTD
c/o The Fleisher Co.
200 E. Main Street
Aspen, CO 81611-1956

Rose Anne Kelley
2395 3/4 Pleasant Ridge Court
Grand Junction, CO 81503-1516

Larry & Alice M. Daniels
6356 N. Ponderosa Way
Parker, CO 80134-5616

James E. & Kimberly A. Short
2395 Pleasant Ridge Court
Grand Junction, CO 81503-1516

John and Susan Lakey
2393 Pleasant Ridge Court
Grand Junction, CO 81503-1516

Christine H. Slade
424 1/2 Pleasant Hollow Court
Grand Junction, CO 81503-1531

Mary Washburn
424 Pleasant Hollow Court
Grand Junction, CO 81503-1531

Dennis & Maureen Walters
422 1/2 Pleasant Hollow Ct.
Grand Junction, CO 8150301531

Mary Washburn
424 Pleasant Hollow Ct
Grd. Jct. CO 8153

John Lakey
424 Pleasant Hollow Ct.
Grd. Jct. Co 81503

Christine Holland
420 1/2 Pleasant Hollow Ct
Grd. Jct. CO 81503

James Short
2390 Pleasant Ridge Ct
Grd. Jct. CO 81503

Larry Daniels
2395 Pleasant Ridge Ct.
Grd. Jct. CO 81503

Joan Dahlen
422 1/4 Pleasant Hollow Ct.
Grand Junction, CO 81503-1531

William & Virginia Sant
374 Ridge View Dr. #2
Grand Junction, CO 81503-1644

Marna Lake
420 1/2 Pleasant Hollow Ct.
Grand Junction, CO 81503-1531

Shirley Wriston
420 1/4 Pleasant Hollow Ct.
Grand Junction, CO 81503-1531

Alice S. Pauley
419 Pleasant Hollow Ct.
Grand Junction, CO 81503-1591

Carol J. Dinges
2520 S. Gray Ct.
Denver, CO 80227-4017

Ronald Oines
418 1/2 Pleasant Hollow Ct.
Grand Junction, CO 81503-1531

Richar McVern
419 1/2 Pleasant Hollow Ct.
Grand Junction, CO 81503-1591

Lee Courtney
P.O. Box 2837
Grand Junction, CO 81502-2837

Rebecca Watson
418 1/2 Prospectors Pt.
Grand Junction, CO 81503-3300

Joyce Stevenson
418 Prospectors Pt.
Grand Junction, CO 81503-3300

Dennis Stark
426 E. Mayfield Dr.
Grand Junction, CO 81503-1520

Renier Company, Inc.
200 Texas AVe.
Grand Junction, CO 81501-2172

James Musgrave
412 1/2 Prospectors Pt.
Grand Junction, CO 81503-1580

Wendell Hines
576 1/2 Placer St.
Grand Junction, CO 81504-4859

Mary Roberts
410 Prospectors Pt.
Grand Junction, CO 81503-1580

Lew Wunderwald
P.O. BOx 952
Grand Junction, CO 81502

Sidney Gottlieb
477 Elkwood Terrace
Englewood, NJ 07631

Tom Logue
227 S. 9th St.
Grand Junction, CO 81501

City of Grand Junction
250 N. 5th St.
Grand Junction, CO 81501
Attn: Community Development

SUBMITTAL CHECKLIST

MAJOR SUBDIVISION: PRELIMINARY

Location: Prospectors Point (Ridges) Project Name: ______________

DESCRIPTION

#20 94(2)

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ITEMS		DISTRIBUTION																								
DESCRIPTION	SSID REFERENCE	City Community Development	City Dev. Eng.	City Utility Eng.	City Property Agent	City Parks/Recreation	City Fire Department	City Attorney	City G.J.P.C. (8 sets)	City Downtown Dev. Auth.	City Police	County Planning	Walker Field	School Dist. #51	Irrigation District	Drainage District	Water District	Sewer District	U.S. West	Public Service	GVRP	CDOT	Corps of Engineers	Colorado Geological Survey	US Postal Service	Persigo WWTF
		●	●	●	●	●	●	●	●	○	●	○	○	○	○	○	○	○	●	●	○	○	○	○	○	○
● Application Fee	VII-1	1																								
● Submittal Checklist*	VII-3	1																								
● Review Agency Cover Sheet*	VII-3	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
● Application Form*	VII-1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
● Assessor's Map	VII-1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
● Evidence of Title	VII-2	1			1			1																		
● Names and Addresses	VII-3	1																								
● Legal Description	VII-2	1			1																					
● General Project Report	X-7	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
● Location Map	IX-21	1																								
● Preliminary Plan	IX-26	1	2	1	1																					
● 11"x17" Reduction of Prelim. Plan	IX-26	1				1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
● Preliminary Drainage Report	X-12	1	2																							

NOTES:
1) An asterisk in the item description column indicates that a form is supplied by the City.
2) Required submittal items and distribution are indicated by filled in circles, some of which may be filled in during th pre-application conference. Additional items or copies may be subsequently requested in the review process.
3) Each submitted item must be labeled, named, or otherwise identified as described above in the description col

PRELIMINARY DRAINAGE REPORT FOR:

Eagle Crest

February, 1994

#20 94

Original
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Philip M Hart, PE

Prepared For:
Sidney Gottlieb, Eagle Crest, LLC.
477 Elkwood Terrace, Englewood, NJ 07631
201-569-0916

B. Site:

Historically the property drains in a sheet flow fashion from the south to the north at approximately 1.0% slope along the hill top to the adjoining ridge lines which slope at approximately 40%. Most of the storm drainage is intercepted by an existing drainage swale adjacent to Ridges Blvd. and is subsequently conveyed south to the Colorado River.

The property is bounded on all sides by Public Open Space. Off-site flows from sub-basin OF1 are directed in a sheet flow fashion towards Block 29 of Ridges, Filing 6. Offsite runoff from sub-basin OF2 is directed in a sheet flow fashion to Ridges Blvd. drainage channel. These flows are directed to and intercepted by a existing 12" CMP under Ridges Blvd. and ultimately along Ridges Blvd. via an existing 48" x 72" CMP arch pipe.

III. Proposed Drainage Conditions

A. Changes in Drainage Patterns:

Historic offsite drainage patterns will not be altered.

The proposed site plan divides the site into 3 sub-basins labeled as A1 (0.37 acres), A2 (1.74 acres) & A3 (0.69 acres). Runoff from sub-basin A1 shall be conveyed via lot grading and side yard swales over land to a existing natural drainage way ultimately to an existing 42" CMP under Ridges Blvd. Runoff from sub-basin A2 shall be directed via lot grading and roadway alignments to a single curb inlet constructed in Eagle Crest Court adjacent to lot 15. This runoff shall be conveyed to a proposed storm sewer to be located on Public Open Space. The storm sewer will flow to an existing 12" which is to be upgraded and replaced. Runoff from Sub-basin A3 shall be conveyed in a sheet flow fashion via lot grading easterly where it will it combine with flow from sub-basin OF2. This runoff will flow northerly toward a proposed Grated Manhole and storm sewer.

B. Maintenance Issues:

Access to and through the site shall be by dedicated public-right-of-way.

Ownership and responsibility for maintenance of the proposed storm sewer shall be that of the City of Grand Junction.

IV. Design Criteria & Approach

A. Hydrology:

The "Interim Outline of Grading and Drainage Criteria, City of Grand Junction" (Reference 1) and the "Mesa County Storm Drainage Criteria Manual" (Reference 2) shall be used as the basis for analysis and facility design.

As the project is a residential development containing approximately 2.9 acres the "Rational Method" shall be used to calculate historic and developed flow rates. The minor storm shall be the 2 year frequency rainfall event and the major storm shall be 100 year frequency rainfall event. Detention requirements are considered mitigated.

Runoff Coefficients to be used in the computations shall be based on the most recent City of Grand Junction criteria as defined in Reference 1 and shown on Exhibit 1.0.

As the project is located within the Grand Junction Urbanized area, the Intensity Duration Frequency Curves (IDFC) shown on Exhibit 6.0 shall be used for design and analysis.

Times of Concentration shall be calculated based on the Average Velocities For Overland Flow and the Overland Flow Curves as provided in Reference 1 and shown on Exhibits 4.0 and 5.0.

Because off-site flows from sub-basins OF1 and OF2 are directed away from the project site, compliance with off-site drainage considerations for these areas is mitigated.

B. Hydraulics:

All site facilities and conveyance elements shall be designed in accordance with the City of Grand Junction guidelines as provided in Reference 1.

This Preliminary Drainage Study has been prepared to address site specific drainage concerns in accordance with the requirements of the City of Grand Junction, Colorado. The Appendix of this report includes criteria, exhibits, tables and design nomograph to be used in the Final Drainage Study.

V. References

1. Interim Outline of Grading and Drainage Criteria, City of Grand Junction, July, 1992.

2. Mesa County Storm Drainage Criteria Manual, Final Draft, Mesa County, Colorado, March, 1992.

3. Flood Hazard Information, Colorado River and Tributaries, Grand Junction, Colorado, prepared for the City of Grand Junction and Mesa County, by The Department Of The Army, Sacramento District, Corps Of Engineers, Sacramento, California, November, 1976.

4. Flood Insurance Rate Map, Mesa County, Colorado, (Unincorporated Areas), Community Panel Number 080115 0460 B, Federal Emergency Management Agency, Map Revised July 15th, 1992.

5. Soil Survey, Mesa County Area, Colorado, , U.S. Department of Agriculture, issued November, 1955.

APPENDIX

APPENDIX B

RATIONAL METHOD
RECOMMENDED AVERAGE RUNOFF COEFFICIENTS

Land Use or Surface Characteristics	"C" VALUES 2-YR STORM A&B*	2-YR STORM C&D*	100-YR STOR A&B*	100-YR STOR C&D*
Undeveloped Areas (Vacant or pre-development analysis condition)	0.10	0.20	0.25	0.35
Residential Areas				
Less than 1/8 acre per unit	0.55	0.65	0.70	0.80
1/8 acre per unit	0.50	0.60	0.65	0.75
1/4 acre per unit	0.40	0.50	0.55	0.65
1/3 acre per unit	0.35	0.45	0.50	0.60
1/2 acre per unit	0.30	0.40	0.45	0.55
1 acre per unit	0.25	0.35	0.40	0.50
Pavement and Roofs	0.90	0.90	0.95	0.95
Gravel and Soil Traffic areas	0.70	0.70	0.85	0.85
Lawns and Green Landscaping	0.15	0.25	0.30	0.40
Gravel and Non-Green Landscaping	0.45	0.50	0.60	0.70
Parks, Cemeteries, Pastures	0.25	0.35	0.40	0.50
Schools	0.45	0.50	0.60	0.70

* Refers to SCS soil hydrologic group classification.

EXHIBIT 1.0

MESA COUNTY AREA, COLORADO — SHEET NUMBER 21

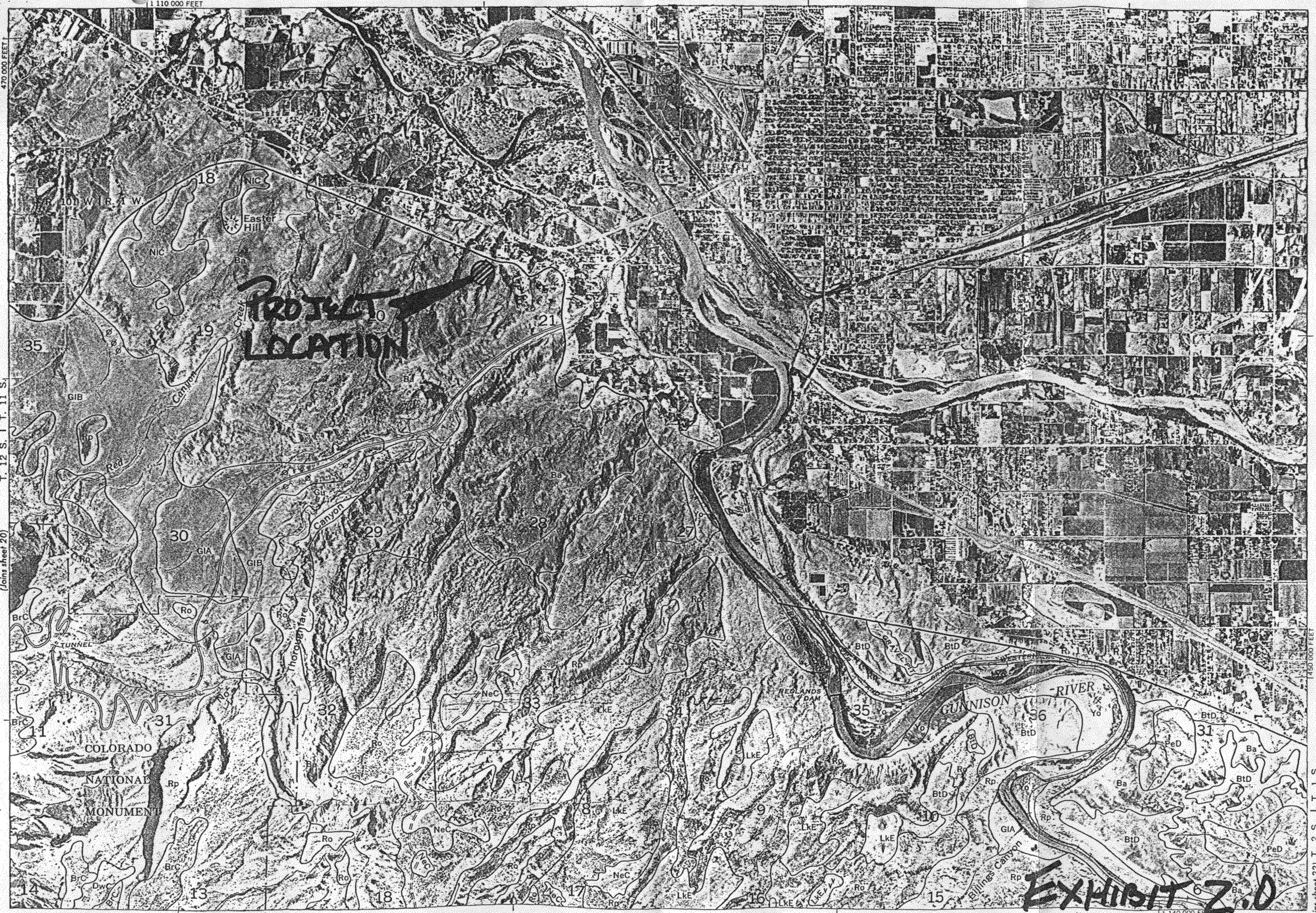


EXHIBIT 2.0

(Joins sheet 41) T. 12 S. | T. 11 S.

470 000 FEET

Photobase from 1954 to 1963 aerial photography. Positions of 10,000-foot grid ticks are approximate and based on the Colorado coordinate system, central zone, 1927 North American datum.

Land division corners are approximately positioned on this map.

Land division corners are approximately positioned on this map.

Table 2: Resistance Factor for Overland Flow.
(SCS 1986 TR-55 & Fhwa 1984 HEC-12)

Surface	N value	Source
Asphalt/Concrete	0.05 ~~0.15~~	a
Bare Packed Soil Free of Stone	0.10	c
Fallow - No Residue	0.008 - 0.012	b
Convential Tillage - No Residue	0.06 - 0.12	b
Convential Tillage - With Residue	0.16 - 0.22	b
Chisel Plow - No Residue	0.06 - 0.12	b
Chisel Plow - With Residue	0.10 - 0.16	b
Fall Disking - With Residue	0.30 - 0.50	b
No Till - No Residue	0.04 - 0.10	b
No Till (20-40 percent residue cover)	0.07 - 0.17	b
No Till (60-100 percent residue cover)	0.17 - 0.47	b
Sparse Rangeland with Debris:		
0 Percent Cover	0.09 - 0.34	b
20 Percent Cover	0.05 - 0.25	b
Sparse Vegeration	0.053 - 0.13	f
Short Grass Prairie	0.10 - 0.20	f
Poor Grass Cover On Moderately Rough Bare Surface	0.30	c
Light Turf	0.20	a
Average Grass Cover	0.4	c
Dense Turf	0.17 - 0.80	a,c,e,f
Dense Grass	0.17 - 0.30	d
Bermuda Grass	0.30 - 0.48	d
Dense Shrubbery and Forest Litter	0.4	a

a) Crawford and Linsley (1966).
b) Engman (1986).
c) Hathaway (1945).
d) Palmer (1946).
e) Ragan and Duru (1972).
f) Woolhiser (1975).

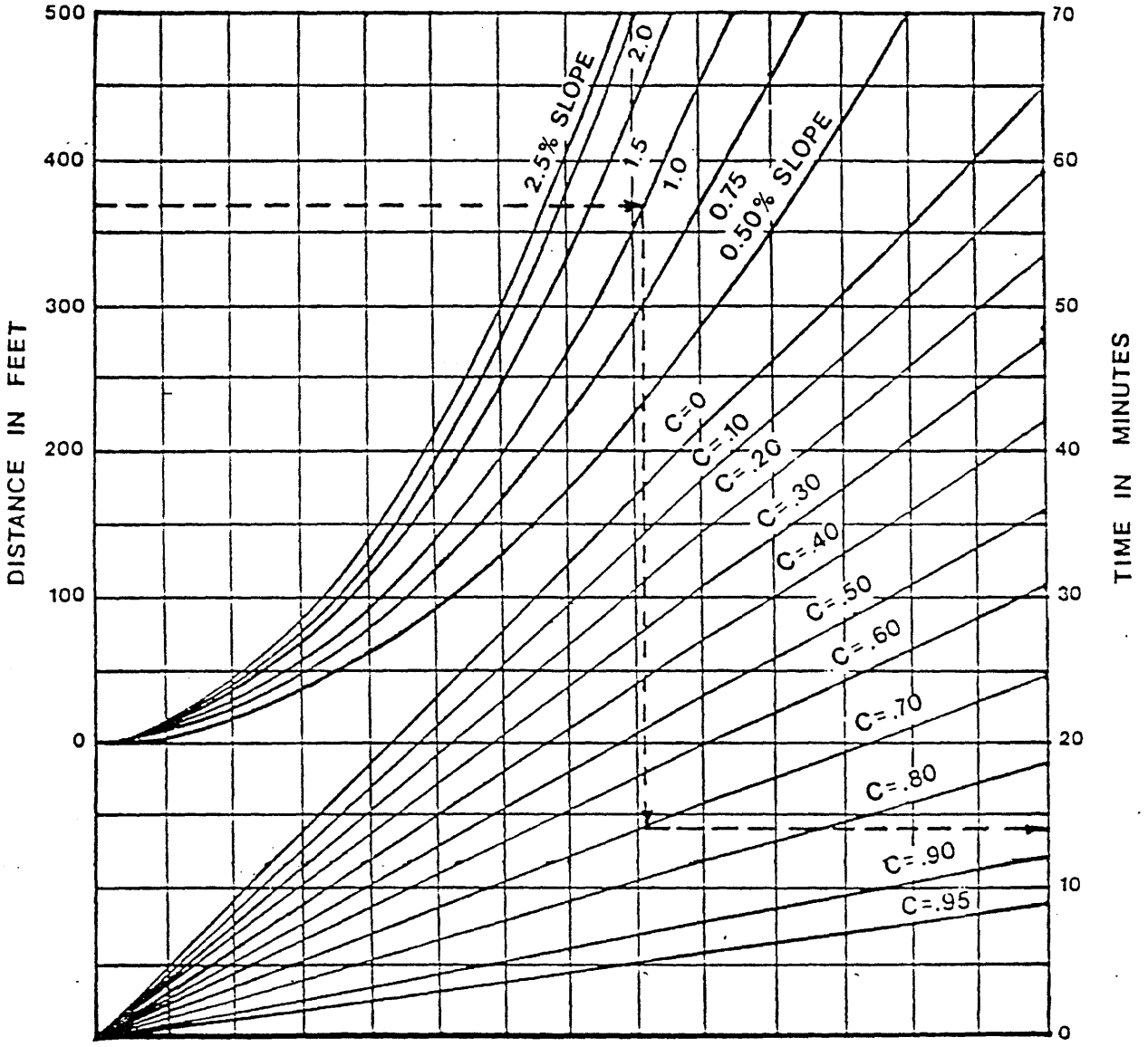
* Asphalt/Concrete n value for open channel flow 0.01 - 0.016

Source: Army Corps of Engineers, Hydrologic Engineering Center, Training Course on Advanced HEC-1, July 1990, Day 2, Lecture 2

EXHIBIT 3.0

MESA COUNTY
STORM DRAINAGE CRITERIAL MANUAL

FIGURE 403



THE ABOVE CURVES ARE A SOLUTION OF THE FOLLOWING EQUATION:

$$t_c = \frac{1.8\,(1.1 - C_{10})\sqrt{L}}{\sqrt[3]{S}}$$

where: t_c = initial flow time (min.)
S = slope of basin (%)
C_{10} = runoff coeficient for 10 year frequency
L = length of basin (ft.)

Notes: 1. The curves are for use with the Rational Method.

2. The curves shall not be used for distances in excess of ~~500~~ 300'

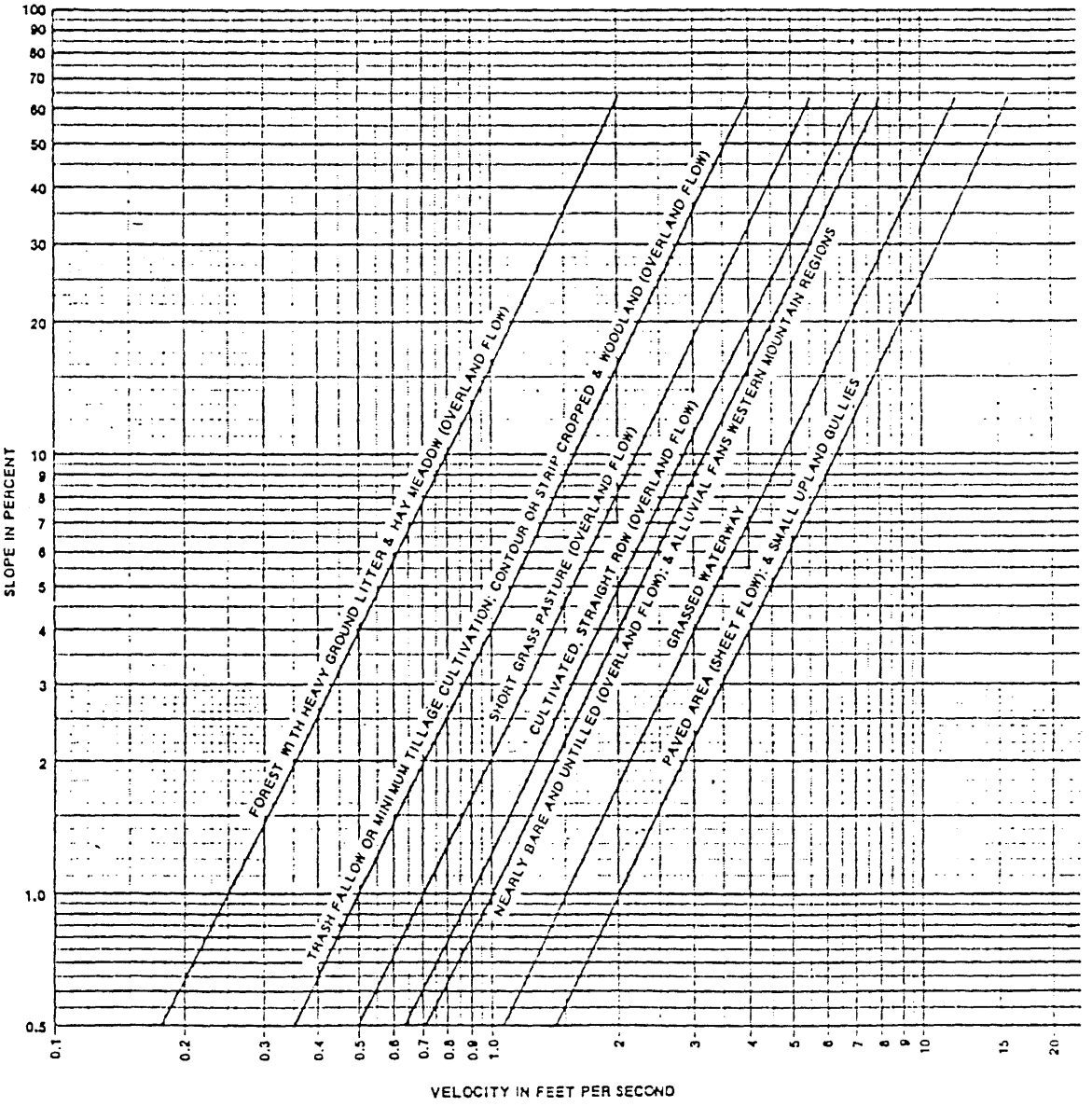
EXHIBIT 4.0

OVERLAND FLOW CURVES

MESA COUNTY
STORM DRAINAGE CRITERIAL MANUAL

FIGURE 402

Taken from TR-55 (1975) and NEH-4, both SCS publications.



AVERAGE VELOCITIES FOR OVERLAND FLOW

EXHIBIT 5.0

APPENDIX "D"
1 of 5

Appendix A.—TABLES

Design Charts for Open Channel Flow HDS No 3 US Dept of Transportation Aug 1961, Reprinted 1977

Table 1.—Manning roughness coefficients, n [1]

	Manning's n range [2]
I. Closed conduits:	
A. Concrete pipe	0.011–0.013
B. Corrugated-metal pipe or pipe-arch:	
1. 2⅔ by ½-in. corrugation (riveted pipe): [3]	
a. Plain or fully coated	0.024
b. Paved invert (range values are for 25 and 50 percent of circumference paved):	
(1) Flow full depth	0.021–0.018
(2) Flow 0.8 depth	0.021–0.016
(3) Flow 0.6 depth	0.019–0.013
2. 6 by 2-in. corrugation (field bolted)	0.03
C. Vitrified clay pipe	0.012–0.014
D. Cast-iron pipe, uncoated	0.013
E. Steel pipe	0.009–0.011
F. Brick	0.014–0.017
G. Monolithic concrete:	
1. Wood forms, rough	0.015–0.017
2. Wood forms, smooth	0.012–0.014
3. Steel forms	0.012–0.013
H. Cemented rubble masonry walls:	
1. Concrete floor and top	0.017–0.022
2. Natural floor	0.019–0.025
I. Laminated treated wood	0.015–0.017
J. Vitrified clay liner plates	0.015
II. Open channels, lined [4] (straight alinement): [5]	
A. Concrete, with surfaces as indicated:	
1. Formed, no finish	0.013–0.017
2. Trowel finish	0.012–0.014
3. Float finish	0.013–0.015
4. Float finish, some gravel on bottom	0.015–0.017
5. Gunite, good section	0.016–0.019
6. Gunite, wavy section	0.018–0.022
B. Concrete, bottom float finished, sides as indicated:	
1. Dressed stone in mortar	0.015–0.017
2. Random stone in mortar	0.017–0.020
3. Cement rubble masonry	0.020–0.025
4. Cement rubble masonry, plastered	0.016–0.020
5. Dry rubble (riprap)	0.020–0.030
C. Gravel bottom, sides as indicated:	
1. Formed concrete	0.017–0.020
2. Random stone in mortar	0.020–0.023
3. Dry rubble (riprap)	0.023–0.033
D. Brick	0.014–0.017
E. Asphalt:	
1. Smooth	0.013
2. Rough	0.016
F. Wood, planed, clean	0.011–0.013
G. Concrete-lined excavated rock:	
1. Good section	0.017–0.020
2. Irregular section	0.022–0.027
III. Open channels, excavated [4] (straight alinement, [5] natural lining):	
A. Earth, uniform section:	
1. Clean, recently completed	0.016–0.018
2. Clean, after weathering	0.018–0.020
3. With short grass, few weeds	0.022–0.027
4. In gravelly soil, uniform section, clean	0.022–0.025
B. Earth, fairly uniform section:	
1. No vegetation	0.022–0.025
2. Grass, some weeds	0.025–0.030
3. Dense weeds or aquatic plants in deep channels	0.030–0.035
4. Sides clean, gravel bottom	0.025–0.030
5. Sides clean, cobble bottom	0.030–0.040
C. Dragline excavated or dredged:	
1. No vegetation	0.028–0.033
2. Light brush on banks	0.035–0.050
D. Rock:	
1. Based on design section	0.035
2. Based on actual mean section:	
a. Smooth and uniform	0.035–0.040
b. Jagged and irregular	0.040–0.045
E. Channels not maintained, weeds and brush uncut:	
1. Dense weeds, high as flow depth	0.08–0.12
2. Clean bottom, brush on sides	0.05–0.08
3. Clean bottom, brush on sides, highest stage of flow	0.07–0.11
4. Dense brush, high stage	0.10–0.14
IV. Highway channels and swales with maintained vegetation [6 7] (values shown are for velocities of 2 and 6 f.p.s.):	
A. Depth of flow up to 0.7 foot:	
1. Bermudagrass, Kentucky bluegrass, buffalograss:	
a. Mowed to 2 inches	0.07–0.045
b. Length 4–6 inches	0.09–0.05
2. Good stand, any grass:	
a. Length about 12 inches	0.18–0.09
b. Length about 24 inches	0.30–0.15
3. Fair stand, any grass:	
a. Length about 12 inches	0.14–0.08
b. Length about 24 inches	0.25–0.13
B. Depth of flow 0.7–1.5 feet:	
1. Bermudagrass, Kentucky bluegrass, buffalograss:	
a. Mowed to 2 inches	0.05–0.035
b. Length 4 to 6 inches	0.06–0.04
2. Good stand, any grass:	
a. Length about 12 inches	0.12–0.07
b. Length about 24 inches	0.20–0.10
3. Fair stand, any grass:	
a. Length about 12 inches	0.10–0.06
b. Length about 24 inches	0.17–0.09
V. Street and expressway gutters:	
A. Concrete gutter, troweled finish	0.012
B. Asphalt pavement:	
1. Smooth texture	0.013
2. Rough texture	0.016
C. Concrete gutter with asphalt pavement:	
1. Smooth	0.013
2. Rough	0.015
D. Concrete pavement:	
1. Float finish	0.014
2. Broom finish	0.016
E. For gutters with small slope, where sediment may accumulate, increase above values of n by	*0.002*
VI. Natural stream channels: [8]	
A. Minor streams [9] (surface width at flood stage less than 100 ft.):	
1. Fairly regular section:	
a. Some grass and weeds, little or no brush	0.030–0.035
b. Dense growth of weeds, depth of flow materially greater than weed height	0.035–0.05
c. Some weeds, light brush on banks	0.035–0.05
d. Some weeds, heavy brush on banks	0.05–0.07
e. Some weeds, dense willows on banks	0.06–0.08
f. For trees within channel, with branches submerged at high stage, increase all above values by	*0.01–0.02*
2. Irregular sections, with pools, slight channel meander; increase values given in 1a–e about	*0.01–0.02*
3. Mountain streams, no vegetation in channel, banks usually steep, trees and brush along banks submerged at high stage:	
a. Bottom of gravel, cobbles, and few boulders	0.04–0.05
b. Bottom of cobbles, with large boulders	0.05–0.07
B. Flood plains (adjacent to natural streams):	
1. Pasture, no brush:	
a. Short grass	0.030–0.035
b. High grass	0.035–0.05
2. Cultivated areas:	
a. No crop	0.03–0.04
b. Mature row crops	0.035–0.045
c. Mature field crops	0.04–0.05
3. Heavy weeds, scattered brush	0.05–0.07
4. Light brush and trees: [10]	
a. Winter	0.05–0.06
b. Summer	0.06–0.08
5. Medium to dense brush: [10]	
a. Winter	0.07–0.11
b. Summer	0.10–0.16
6. Dense willows, summer, not bent over by current	0.15–0.20
7. Cleared land with tree stumps, 100–150 per acre:	
a. No sprouts	0.04–0.05
b. With heavy growth of sprouts	0.06–0.08
8. Heavy stand of timber, a few down trees, little undergrowth:	
a. Flood depth below branches	0.10–0.12
b. Flood depth reaches branches	0.12–0.16
C. Major streams (surface width at flood stage more than 100 ft.): Roughness coefficient is usually less than for minor streams of similar description on account of less effective resistance offered by irregular banks or vegetation on banks. Values of n may be somewhat reduced. Follow recommendation in publication cited [8] if possible. The value of n for larger streams of most regular section, with no boulders or brush, may be in the range of	0.028–0.033

Footnotes to table 1 appear at the top of page 101.

HDS 3 EXHIBIT 5.1

Table 13-3
MANNING'S ROUGHNESS COEFFICIENTS

Lining Category	Lining Type	Depth Ranges 0 - 0.5 (ft)	0.5 - 2.0 (ft)	> 2.0 (ft)
Rigid	Concrete	0.015	0.013	0.013
	Grouted Riprap	0.040	0.030	0.028
	Stone Masonry	0.042	0.032	0.030
	Soil Cement	0.025	0.022	0.020
	Asphalt	0.018	0.016	0.016
Temporary	Woven Paper Net	0.016	0.015	0.015
	Jute Net	0.028	0.022	0.019
	Fiberglass Roving	0.028	0.021	0.019
	Straw and Erosion Net	0.065	0.033	0.025
	Curled Wood Mat	0.066	0.035	0.028
	Nylon Mat	0.036	0.025	0.021
Gravel	1-inch, D_{50}	0.044	0.033	0.030
	2-inch, D_{50}	0.066	0.041	0.034
Rock Riprap	6-inch, D_{50}	0.104	0.069	0.035
	12-inch, D_{50}	---	0.078	0.040

Streets 1016 - 1015

ARAPAHOE CO., COLORADO
1995
EROSION & SEDIMENTATION CONTROL
EXHIBIT 5.2

INTENSITY DURATION FREQUENCY CURVES
GRAND JUNCTION, COLORADO

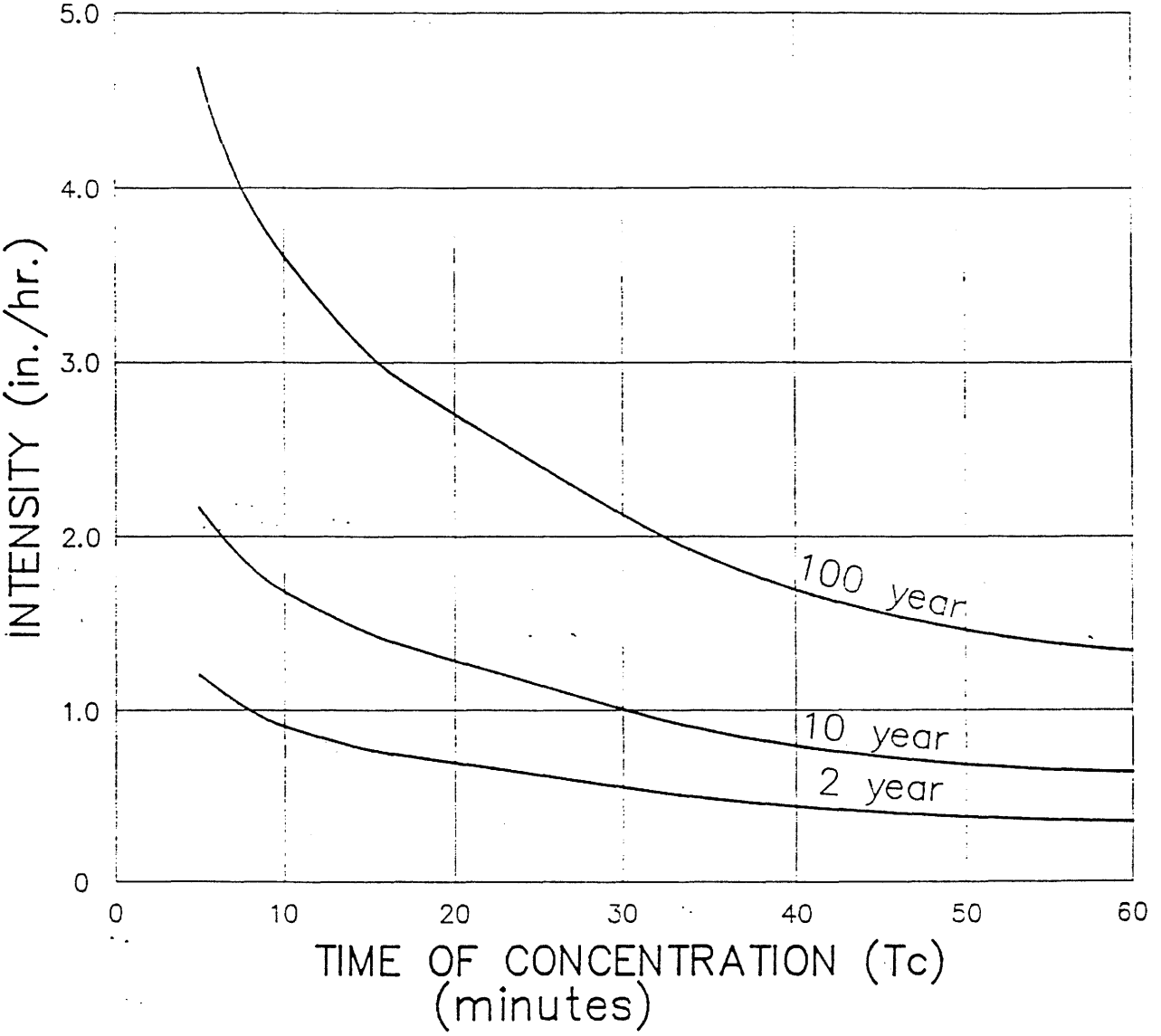


EXHIBIT 6.0

Lincoln DeVore, Inc.
Geotechnical Consultants
1441 Motor St.
Grand Junction, CO 81505

TEL: (303) 242-8968
FAX: (303) 242-1561

March 25, 1994

Mr. Sid Gottlieb
477 Elkwood Terrace
Englewood, New Jersey 07631

Re: Eagle Crest Court
Lot 7, Blk 9, The Ridges, G.J.

Dear Mr. Gottlieb;

At the request of Mr. Tom Logue, personnel of Lincoln-DeVore, Inc. have reviewed our Subsurface Soils Exploration Report for the above referenced site. The Site Development and Drainage and Grading Plans, prepared by Thomas A. Logue, Land Development Consultants, January 1994. Additional information has been provided by Lincoln-DeVore, Inc., in response to the Planning Review comments from the City of Grand Junction Planning Department. Following are our findings and recommendations.

Site Development
Cuts and Fills

It is our understanding the site development will utilize a minimum of earth cut and fill, with the majority being utilized for on-site grading purposes. Due to the slopes which exist along the back lot lines, cut and fill for grading purposes should be carefully accomplished to minimize erosion and slope instability concerns.

Lots 7 - 13 are scheduled for more than 2 feet of fill near the east lot lines. The maximum amount of fill appears to be 5 feet thick, on lots 8 & 9. A small retaining structure is anticipated on lots 8 & 9.

Allowable slope angle for cuts and fills in the native soils is dependent on soil conditions, slope geometry, the moisture content and other factors. Should deep cuts or fills, over 5 feet thick, be planned for this site, we recommend that a slope stability analysis be performed when the location and depth of the cut or fill is known.

Subsurface Water

Due to the proximity of the Dakota Formation, there exists a possibility of a perched water table developing in the alluvial soils which overlie the Formation or within some strata of the Formation. This perched water would probably be the result of increased irrigation due to the presence of lawns and landscaping and roof runoff. This potential perched water could create some problems for slope stability of man-made fills and the natural slopes.

Conclusions and Recommendation

Cuts and Fills

Based on slope stability computations, the maximum stable cut slope which can be constructed in the on-site gravelly soils is 2:1 (horizontal to vertical). Based on similar calculations, the maximum fill slope which can be constructed using the proposed fill soils is 2:1 (horizontal to vertical).

At points where fill is placed against an existing slope steeper than 10 degrees, we recommend that the existing slope be "benched" and fill placed against the benches in horizontal lifts. We recommend that the fill soil be brought to the optimum moisture content (+/- 2%) prior to placing, then compacted mechanically to at least 90% of the maximum modified Proctor dry density, ASTM D-1557.

It is recommended a geotextile or geogrid reinforced system, with precast modular facing, be utilized for the retaining structure on lots 8 & 9. Such a system could also be utilized for other landscaping retainage on this project.

It is our understanding the proposed residential structures will incorporate full basements, with a 'walkout' opening on the slope side. This particular building configuration often reduces the total soil and building loads at the top of the slopes and, if carefully accomplished, will minimize onsite grading cut and fill.

Adequate site drainage should be provided in the foundation area both during and after construction to prevent the ponding of water and the saturation of the subsurface soils. Paved areas should maintain a minimum gradient of 2%, and landscaped areas should maintain a minimum gradient of 8%. It is further recommended that roof drain downspouts be carried across all backfilled areas and discharged at least 10 feet away from the structure. Proper discharge of roof drain downspouts may require the

use subsurface piping in some areas. Planters, if any, should be so constructed that moisture is not allowed to seep into foundation areas or beneath slabs or pavements.

Subsurface Water

It is recommended that lawn and landscaping irrigation be reasonably limited, so as to prevent complete saturation of subsurface soils. Several methods of irrigation water control are possible, to include, but not limited to:

* Metering the irrigation water.
* Sizing the irrigation distribution service pipes to limit on-site water usage.
* Encourage efficient landscaping practices.
* Enforcing reasonable limits on the size of high water usage landscaping for each lot and any park areas.

It is extremely important that the recommendations contained in the Report of the Subsurface Soils Exploration for the Eagle Crest Court Sub., Lincoln-DeVore, Inc. dated November 26, 1993, be carefully followed during and after construction.

It is believed that all pertinent points have been addressed. If any further questions arise regarding this project or if we can be of any further assistance, please do not hesitate to contact this office at any time.

Respectfully Submitted,

LINCOLN DeVORE, Inc.

by: Edward M. Morris EIT Reviewed By: George D. Morris, PE
Engineer/Western Slope Manager

LD Job No.: 80518-J

SUBSURFACE SOILS EXPLORATION

LOT 17, BLOCK 9
THE RIDGES SUBDIVISION

GRAND JUNCTION, COLORADO

Prepared For:

Mr. Sid Gottlieb
477 Elkwood Terrace
Englewood, New Jersey 87831

Prepared By:

LINCOLN-DeVORE, INC.
1441 Motor Street
Grand Junction, CO 81505

November 26, 1993

Lincoln DeVore, Inc.
Geotechnical Consultants
1441 Motor St.
Grand Junction, CO 81505

TEL: (303) 242-8968
FAX: (303) 242-1561

November 26, 1993

Mr. Sid Gottlieb
477 Elkwood Terrace
Englewood, New Jersey 87831

Re: SUBSURFACE SOILS EXPLORATION
Lot 17, Block 9, The Ridges Subdivision
Grand Junction, Colorado

Dear Mr. Gottlieb:

Transmitted herein are the results of a Subsurface Soils Exploration for the proposed construction of approximately 18 to 20 multi family units on the above referenced location.

If you have any questions after reviewing this report, please feel free to contact this office at any time. This opportunity to provide Geotechnical Engineering services is sincerely appreciated.

Respectfully submitted,
LINCOLN-DeVORE, INC.

By: _____
Edward M. Morris, E.I.T.
Western Slope Branch Manager
Grand Junction, Office

Reviewed by: _____ 12/10/93
George D. Morris, P.E.
Colorado Springs Office

GEORGE D. MORRIS REGISTERED 8051 PROFESSIONAL ENGINEER STATE OF COLORADO

LDTL Job #80051-J

EMM/ss

TABLE OF CONTENTS

INTRODUCTION

PROJECT DESCRIPTION

This report presents the results of our geotechnical evaluation performed to determine the general subsurface conditions of the site applicable to construction of approximately 18 to 20 multi-family units. A vicinity map is included in the Appendix of this report.

Lincoln-DeVore has not seen a set a building plans, but we assume the proposed structures will consist of one and two story, wood framed buildings with the possibility of full basements and concrete floor slabs on grade. Structures of this type typically develop wall loads on the order of 600 to 1100 plf and column loads on the order of 4 to 15 kips.

The characteristics of the subsurface materials encountered were evaluated with regard to the type of construction described above. Recommendations are included herein to match the described construction to the soil characteristics found. The information contained herein may or may not be valid for other purposes. If the proposed site use is changed or types of construction proposed, other than noted herein, Lincoln DeVore should be contacted to determine if the information in this report can be used for the new construction without further field evaluations.

PROJECT SCOPE

The purpose of our exploration was to evaluate the surface and subsurface soil and geologic conditions of the site and, based on the conditions encountered, to provide recommendations pertaining to the geotechnical aspects of the site development as previously described. The conclusions and recommendations included herein are based on an analysis of the data obtained from our field explorations, laboratory testing program, and on our experience with similar soil and geologic conditions in the area.

The scope of our geotechnical exploration consisted of a surface reconnaissance, a geophoto study, subsurface exploration, obtaining representative samples, laboratory testing, analysis of field and laboratory data, and a review of geologic literature.

Specifically, the intent of this study is to:

1. Explore the subsurface conditions to the depth expected to be influenced by the proposed construction.

2. Evaluate by laboratory and field tests the general engineering properties of the various strata which could influence the development.

3. Define the general geology of the site including likely geologic hazards which could have an effect on site development.

4. Develop geotechnical criteria for site grading and earthwork.

5. Identify potential construction difficulties and provide recommendations concerning these problems.

6. Recommend an appropriate foundation system for the anticipated structure and develop criteria for foundation design.

FIELD EXPLORATION AND LABORATORY TESTING

A field evaluation was performed on November 24, 1993, and consisted of a site reconnaissance by our geotechnical personnel and the drilling of 5 shallow exploration borings. These shallow exploration borings were drilled within the assumed building pads near the locations indicated on the Boring Location Plan. The exploration borings were located to obtain a reasonably good profile of the subsurface soil conditions. All exploration borings were drilled using a CME 45B, truck mounted drill rig with continuous flight auger to depths of approximately 8 to 16 feet. Samples were taken with a standard split spoon sampler, lined California sampler, and by bulk methods. Logs describing the subsurface conditions are presented in the attached figures.

Laboratory tests were performed on representative soil samples to determine their relative engineering properties. Tests were performed in accordance with test methods of the American Society for Testing and Materials or other accepted standards. The results of our laboratory tests are included in this report. The in-place moisture content and the standard penetration test values are presented on the attached drilling logs.

FINDINGS

SITE DESCRIPTION

The project site is located in the South East Quarter of Section 17, Township 1 South , Range 1 West of the Ute Principal Meridian, Mesa County, Colorado. More specifically the site is located on Lot 17, Block 9 of Ridges Subdivision, Filing 6 within the limits of the City of Grand Junction.

The topography of the site is that of a relatively flat hilltop with moderate to steep hillsides on the Northeast and South sides. The slope of the hilltop is dropping generally to the North, Northeast. The direction of surface runoff on this site will be locally controlled by the proposed construction, but, in general, surface runoff will travel to the North and East. Surface drainage is fair to good; subsurface drainage is fair.

GENERAL GEOLOGY AND SUBSURFACE DESCRIPTION

The geologic materials encountered under the site consist of a course grain alluvial deposit overlying the Dakota Formation which is considered bedrock on this site. The geologic and engineering properties of the materials found in our 5 shallow exploration borings will be discussed in the following sections.

The soils on this site consist of an alluvial, course grain deposit placed by the action of the ancient Colorado River. These upper soils were found to range from less than 1 foot to up to 14 feet in thickness. These upper soils are quite stratified, containing interbedded sand and silt lenses.

This Soil Type is classified as a silty, sandy gravel and cobble (GM) of course grain size under the Unified Classification System. This soil type is non-plastic and of medium density. This soil will have virtually no tendency to expand upon the addition of moisture. Settlement will be minimal under the recommended foundation loads. This soil will undergo elastic settlement upon application of static foundation pressures. Such settlement is characteristically rapid and should be virtually complete by the end of construction. If the recommended allowable bearing values are not exceeded, and if all other recommendations are followed, differential movement will be within tolerable limits. At shallow foundation depths this soil was found to have an average allowable bearing capacity of 3400 psf maximum. If the bottom of the foundations are founded within 6 feet of the underlying Dakota Formation, a minimum dead load of 1400 psf will be required. The finer grain portion of this soil type contains sulfates in detrimental quantities.

The surface alluvial soils are deposited over medium to dense formational material of the Dakota Formation of cretaceous age. The Dakota Formation can broadly be described as a series of thin to thick sandstones and sandy mudstone beds with interbedded siltstones, shales and thin lignite beds. Many strata of the

Dakota Formation are often carbonaceous. Many of the clayey strata have low to moderate expansive properties and contain scattered sulfate salt deposits. Several samples of the Dakota Formation were obtained in the exploration borings. The clayey samples were grouped together and are described below.

This soil type was classified as a slightly carbonaceous, silty sandy clay (CL) under the Unified Classification System. The Standard Penetration Tests ranged from 48 blows per foot to in excess of 100 blows per foot. Penetration tests of this magnitude indicate that the soil is of medium to high density. Soil moisture content varied from 3.6% to 8.5%, indicating a relatively dry to slightly moist soil. This soil is plastic in some strata and is sensitive to changes in moisture content. With decreased moisture, it will tend to shrink, with some cracking upon desiccation. Upon increasing moisture, it will tend to expand.

Expansion tests were performed on typical samples of the soil and expansive pressures on the order of 1200 to 1400 psf were found to be typical. An isolated strata obtained from Test Boring #? at a depth of 3 feet exhibited a remolded expansion pressure in excess of 3400 psf. While this high value is considered to be somewhat anomalous, the presence of small amounts of very expansive clays must be anticipated in the Dakota Formation.

The allowable maximum bearing value was found to be on the order of 5500 psf. A minimum dead load of 2000 psf will be required over a majority of the site. These allowable bearing capacities are for shallow foundation systems only. This soil was found to contain sulfates in detrimental quantities.

GROUND WATER:

No free water was encountered during drilling on this site. In our opinion the true free water surface is fairly deep in this area, and hence, should not affect construction. Seepage moisture may affect construction if surface drainage is not properly controlled.

Due to the proximity of the Dakota Formation, there exists a possibility of a perched water table developing in the alluvial soils which overlie the formation. This perched water would probably be the result of increased irrigation due to the presence of lawns and landscaping and roof runoff. The exploration holes indicate that the top of the Dakota Formation is relatively flat and that subsurface drainage would probably be quite slow. While it is believed that under the existing conditions at the time of this exploration the construction process would not be effected by any free-flow waters, it is very possible that several years after development is initiated, a troublesome perched water condition may develop which will provide construction difficulties.

In addition, this potential perched water could create some problems for existing or future foundations on this tract. Therefore it is recommended that the future presence of a perched water table be considered in all design and construction of both the proposed residential structures and any subdivision improvements.

Data presented in this report concerning ground water levels are representative of those levels at the time of our field exploration. Groundwater levels are subject to change seasonally or by changed environmental conditions.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL DISCUSSION

No geologic conditions were apparent during our reconnaissance which would preclude the site development as planned, provided the recommendations contained herein are fully complied with. Based on our investigation to date and the knowledge of the proposed construction, the site condition which would have the greatest effect on the planned development is the expansive clays which are encountered in the Dakota Formation.

Since the exact magnitude and nature of the foundation loads are not precisely known at the present time, the following recommendations must be somewhat general in nature. Any special loads or unusual design conditions should be reported to Lincoln DeVore so that changes in these recommendations may be made, if necessary. However, based upon our analysis of the soil conditions and project characteristics previously outlined, the following recommendations are made.

OPEN FOUNDATION OBSERVATION

Since the recommendations in this report are based on information obtained through random borings, it is possible that the subsurface materials between the boring points could vary. Therefore, prior to placing forms or pouring concrete, an open excavation observation should be performed by representatives of Lincoln DeVore. The purpose of this observation is to determine if the subsurface soils directly below the proposed foundations are similar to those encountered in our

exploration borings. If the materials below the proposed foundations differ from those encountered, or in our opinion, are not capable of supporting the applied loads, additional recommendations could be provided at that time.

Since no site grading plan was made available at the time of writing this report, the extent of site grading and the proposed footing elevations is not known. Therefore, these grading recommendations must be considered preliminary until Lincoln DeVore has had the opportunity to review the site grading plans.

EXCAVATION & STRUCTURAL FILL:

Subgrade

Site preparation in all areas to receive structural fill should begin with the removal of all topsoil, vegetation, and other deleterious materials. Prior to placing any fill, the subgrade should be observed by representatives of Lincoln DeVore to determine if the existing vegetation has been adequately removed and that the subgrade is capable of supporting the proposed fills. The subgrade should then be scarified to a depth of 10 inches, brought to near optimum moisture conditions and compacted to at least 90% of its maximum modified Proctor dry density [ASTM D-1557]. The moisture content of this material should be within + or - 2% of optimum moisture, as determined by ASTM D-1557.

Structural Fill

In general, we recommend all structural fill in the area beneath any proposed structure or roadway be compacted to a minimum of 90% of its maximum modified Proctor dry density (ASTM D1557). We recommend that fill be placed and compacted at approximately its optimum moisture content (+/-2%) as determined by ASTM D 1557. Structural fill should be a granular, coarse grained, non-free draining, non-expansive soil. This structural fill should be placed in the overexcavated portion of this site in lifts not to exceed 6 inches after compaction. This Structural Fill must be brought to the required density by mechanical means. No soaking, jetting or puddling techniques of any type should be used in placement of fill on this site.

Non-Structural Fill

We recommend that all backfill placed around the exterior of the building, and in utility trenches which are outside the perimeter of the building and not located beneath roadways or parking lots, be compacted to a minimum of 80% of its maximum modified Proctor dry density (ASTM D-1557).

Fill Limits

To provide adequate lateral support, we recommend that the zone of overexcavation extend at least 3 feet beyond the perimeter of the building on all sides. The Structural Fill should be a minimum of 3 feet in final compacted thickness.

No major difficulties are anticipated in the course of excavating into the surficial soils on the site. It

is probable that safety provisions such as sloping or bracing the sides of excavations over 4 feet deep will be necessary. Any such safety provisions shall conform to reasonable industry safety practices and to applicable OSHA regulations.

Field Observation & Testing:

During the placement of any structural fill, it is recommended that a sufficient amount of field tests and observation be performed under the direction of the geotechnical engineer. The geotechnical engineer should determine the amount of observation time and field density tests required to determine substantial conformance with these recommendations. It is recommended that surface density tests be taken at maximum 2 foot vertical interval.

The opinions and conclusions of a geotechnical report are based on the interpretation of information obtained by random borings. Therefore the actual site conditions may vary somewhat from those indicated in this report. It is our opinion that field observations by the geotechnical engineer who has prepared this report are critical to the continuity of the project.

Slope Angles

Allowable slope angle for cuts in the native soils is dependent on soil conditions, slope geometry, the moisture content and other factors. Should deep cuts be planned for this site, we recommend that a slope stability analysis be performed when the location and depth of the cut is known.

No major difficulties are anticipated in the course of excavating into the surficial soils on the site. It is probable that safety provisions such as sloping or bracing the sides of excavations over 4 feet deep will be necessary. Any such safety provisions shall conform to reasonable industry safety practices and to applicable OSHA regulations. The OSHA Classification for excavation purposes on this site is Soil Class B.

DRAINAGE AND GRADIENT:

Adequate site drainage should be provided in the foundation area both during and after construction to prevent the ponding of water and the saturation of the subsurface soils. We recommend that the ground surface around the structure be graded so that surface water will be carried quickly away from the building. The minimum gradient within 10 feet of the building will depend on surface landscaping. We recommend that paved areas maintain a minimum gradient of 2%, and that landscaped areas maintain a minimum gradient of 8%. It is further recommended that roof drain downspouts be carried across all backfilled areas and discharged at least 10 feet away from the structure. Proper discharge of roof drain downspouts may require the use subsurface piping in some areas. Planters, if any, should be so constructed

that moisture is not allowed to seep into foundation areas or beneath slabs or pavements.

If adequate surface drainage cannot be maintained, or if subsurface seepage is encountered during excavation for foundation construction, a full perimeter drain is recommended for this building. It is recommended that this drain consist of a perforated drain pipe and a gravel collector, the whole being fully wrapped in a geotextile filter fabric. We recommend that this drain be constructed with a gravity outlet. If sufficient grade does not exist on the site for a gravity outlet, then a sealed sump and pump is recommended. Under no circumstances should a dry well be used on this site.

It is recommended that the natural drainage, along the hill slopes, existing prior to construction, be disturbed as little as possible by final grading. In particular, we recommend that water not be channeled along or across any newly filled areas, as this may result in accelerated erosion and damage to the fill. To fully minimize erosion, a vegetative cover should be established as soon after grading is complete as possible.

To give the building extra lateral stability and to aid in the rapidity of runoff, it is recommended that all backfill around the building and in utility trenches in the vicinity of the building be compacted to a minimum of 85% of its maximum Proctor dry density, ASTM D 698. The native soils on this site may be used for such backfill. We recommend that all backfill be compacted using mechanical methods. No water flooding

techniques of any type may be used in placement of fill on this site.

Should an automatic lawn irrigation system be used on this site, we recommend that the sprinkler heads be installed no less than 5 feet from the building. In addition, these heads should be adjusted so that spray from the system does not fall onto the walls of the building and that such water does not excessively wet the backfill soils.

FOUNDATIONS

For foundations which will bear on the course grain alluvial soils and are greater than 5 feet from the Dakota Formation, we recommend the use of a conventional shallow foundation system consisting of continuous spread footings beneath all bearing walls and isolated spread footings beneath all columns and other points of concentrated load. Such a shallow foundation system, resting on the course grain alluvial soils, may be designed on the basis of an allowable bearing capacity of 3400 psf maximum. A minimum dead load of 1400 psf must be maintained for foundations placed within 5 feet of the Dakota Formation.

Contact stresses beneath all continuous walls should be balanced to within + or -150 psf at all points. Isolated interior column footings should be designed for contact stresses of about 150 psf less than the average used to balance the continuous walls. The criterion for balancing will depend somewhat upon the nature of the structure. Single-story, slab on grade structures may be balanced on the basis of dead load only. Multi-story structures may be balanced on the basis of dead load plus 1/2 live load, for up to 3 stories.

It should be noted that the term "footings" as used above includes the wall on grade or "no footing" type of foundation system. On this particular site, the use of a more conventional footing, the use of a "no footing", or the use of voids will depend entirely upon the foundation loads exerted by the structure. We would anticipate the use of conventional footings on this site.

Stem walls for a shallow foundation system should be designed as grade beams capable of spanning at least thirteen feet. These "grade beams" should be horizontally reinforced both near the top and near the bottom. The horizontal reinforcement required should be placed continuously around the structure with no gaps or breaks. A foundation system designed in this manner should provide a rather rigid system and, therefore, be better able to tolerate differential movements associated with stratification differences in the alluvial soils and small amounts of heave due to the swelling clays in the underlying Dakota Formation.

If the design of the upper structure is such that loads can be balanced reasonably well and the foundation is founded greater than 8 feet above the Dakota Formation, a floating structural slab or raft type of foundation could be used on portions of this site. Such a slab would require heavy reinforcing to resist differential bending. It is possible to design such a slab either as a solid or ribbed slab, but in either case, a rimwall must be used for confinement. Any such slab must be specifically designed for the anticipated loading. Such a foundation system will settle to some degree as the softer, underlying soils consolidate, but differential movement is held to a minimum. Because the soils may settle in varying amounts, some minor cracking and heave are possible unless the slabs are specifically designed with the movement in mind.

If foundations are founded very near or on the Dakota Formation then the siltstones and sandstones of the Dakota Formation may be utilized for foundation bearing. At this time Lincoln-DeVore has not been informed of the individual foundation/building plans and is therefore not informed as to the precise wall or column loading plan within any of the proposed buildings. Therefore, three foundation types which could be utilized for these multi-family structures are recommended based on our experience in this area. The choice between these foundation types depends on the internal loading of the foundation members and the amount of excavation planned to achieve the finished lower elevations.

The three foundation types preliminarily recommended are as follows:

1. The voided wall on grade foundation system with a stemwall resting directly on the shale formation.
2. The isolated pad and grade beam foundation system in which the grade beam is voided and loads are transferred to the isolated pads.
3. The drilled pier and fully voided grade beam system with the loads transferred to the piers.

Recommendations given in this report are given for the Shallow Foundation Types No. 1 and 2 and the Deep Foundation Type No. 3.

A conventional shallow foundation system consisting of either a voided wall on grade or an isolated pad and grade beam system, resting on the relatively unweathered expansive clays of the Dakota Formation, may be designed on the basis of an allowable bearing capacity of 6000 psf maximum, and a minimum dead load of 2400 psf must be maintained. Contact

stresses beneath all continuous walls should be balanced to within + or - 200 psf at all points. Isolated interior column footings should be designed for contact stresses of about 200 psf more than the average used to balance continuous walls. The criteria use for balancing will depend somewhat upon the nature of the structure. Single-story, slab on grade structures and single-story crawlspace structures may be balance on the basis of dead load only. Multi-story structures may be balanced on the basis of Dead Load plus one half live load, for up to three stories.

Stem walls for a shallow foundation system should be designed as grade beams capable of spanning at least fourteen feet.

These "grade beams" should be horizontally reinforced both near the top and near the bottom. The horizontal reinforcement required should be placed continuously around the structure with no gaps or breaks. A foundation system designed in this manner should provide a rather rigid system and, therefore, be better able to tolerate differential movements associated with the expansive clays of the Dakota Formation.

FROST PROTECTION

We recommend that the bottom of all foundation components rest a minimum of 1-1/2 feet below finished grade or as required by the local building codes. Foundation components must not be placed on frozen soils.

Monolithic slab-on-grade foundation systems typically have an effective soil cover of less than 12 inches. Under normal use, the building and foundation system radiates sufficient heat that frost heave from the underlying soils is not normally a problem. However, additional protection can be provided by applying an insulation board to the exterior of the foundation and extending this board to approximately 18 inches below the final ground surface grade. This board may be applied either prior to or after the concrete is cast and it is very important that all areas of soil backfill be compacted. Local building officials should be consulted for regulatory frost protection depths.

DEEP FOUNDATIONS:

We recommend that drilled piers have a minimum shaft length of 6 feet and be embedded at least 6 feet into the relatively unweathered bedrock. At this level,these piers may be designed for a maximum end bearing capacity of 25000 psf, plus 1800 psf side support considering only the side wall area embedded in the bedrock. Due to the expansive potential of the bedrock, a minimum dead load uplift is required, consisting of a point uplift of 3000 psf and 475 psf side uplift, based on the side wall embedded in the bedrock. The overburden is soft and no supporting or uplift values are assigned to this material. The weight of the concrete in the pier may be incorporated into the required dead load.

Based upon our experience in this area and due to rather poor surface and subsurface drainage conditions of the subdivision, a drilled pier foundation system may be the preferred system for structures founded directly on the Dakota Formation. It must be noted that a drilled pier and fully voided grade beam system is quite rigid and will be quite sensitive to relative differential movements of the individual piers. The possible future presence of subsurface water in the Dakota Formation indicates that a 'Stable Strata Below The Zone of Seasonal Moisture Change' may not be adequately defined at this period of time.

It is recommended that the bottoms of all piers be thoroughly cleaned prior to the placement of concrete. The amount of reinforcing in each pier will depend on the magnitude and nature of loads involved. As a rule of thumb, reinforcing equal to approximately 1/2 of 1% of the gross cross-sectional concrete area should be used. Additional reinforcing should be used if structural conditions warrant. We recommend that reinforcing extend through the full length of pier.

To minimize the possibility of voids developing in the drilled piers, concrete with a slump of 5 to 6 inches is recommended. We recommend that piers be dewatered and thoroughly cleaned of all loose material prior to placing the steel cage and concrete. The pier excavation should contain no more than 2 inches of free water unless the concrete is placed by means of a tremie extending to the bottom of the pier. A free fall in excess of 5 feet is not recommended when placing concrete in drilled piers.

We recommend that casing be pulled as the concrete is being placed and that a 5 foot head of concrete be maintained while pulling the casing. It is recommended that drilled piers be plumb with 2% of their length and that the shaft maintain a constant diameter for the full length of the pier and not allowed to "mushroom" at the top.

DRILLED PIER OBSERVATION:

The foundation installation for drilled piers should be continuously observed by a representative of Lincoln DeVore to determine that the recommended bearing material has been adequately penetrated and that soil conditions are as anticipated by the exploration. This observation will aid in attaining an adequate foundation system. In addition, abnormalities in the subsurface conditions encountered during foundation installation can be identified and corrective measures taken as required. Lincoln DeVore requires a minimum of one working day's notice, and a copy of the foundation plan, to schedule any field observation.

GRADE BEAMS:

A reinforced concrete grade beam is recommended to carry the exterior wall loads in conjunction with the deep foundation system. We recommend that this grade beam be designed to span from bearing point to bearing point and not be allowed to rest on the ground surface between these points. We recommend a void space be left between the bottom of the grade beam and the subgrade below due to the expansive nature of the subgrade soils.

CONCRETE SLABS ON GRADE

Slabs could be placed directly on the natural soils or on a structural fill. We recommend that all slabs on grade be constructed to act independently of the other structural portions of the building. One method of allowing the slabs to float freely is to use expansion material at the slab-structure interface.

Any partitions which will be located on slabs on grade should be constructed with a minimum space of 2 inches at the bottom of the wall. This space should allow for any future potential upward movement of the floor slabs and minimize damage to the walls and roof sections above the slabs.

The partition wall void space is not intended to allow for all potential slab movement, but is intended to serve as an indicator of slab movement. The void space should be maintained for the life of the structure.

It is recommended that slabs on grade placed within 2 feet of the Dakota Formation be constructed over a capillary break of approximately 6 inches in thickness. We recommend that the material used to form the capillary break be free draining, granular material and not contain significant fines. A free draining outlet is also recommended for this break so that it will not trap water beneath the slab. A vapor barrier is recommended beneath the floor slab and above the capillary break. To prevent difficulty in finishing concrete, a 2 inch sand layer should be placed above the break. An alternate method of reducing finishing problems would be to place the vapor barrier beneath approximately 6 inches of a minus 3/4 inch gravel fill.

This method must be very carefully accomplished to minimize excessive puncturing and tearing of the vapor barrier. If the slab is to be placed directly on the expansive soils of the Dakota Formation or on a thin fill overlying these soils, the risk of slab movement is high and stringent mitigation techniques are recommended. No design method known at this time will prevent slab movement should moisture enter the expansive soils below. Therefore, to mitigate the effects of slab movement should they occur, we recommend the following:

1. Control joints should be placed in such a manner that no floor area exceeding 400 square feet remains without a joint. Additional joints should be placed at columns and at inside corners. These control joints should minimize cracking associated with expansive soils by controlling location and direction of cracks.

2. We recommend that all slabs on grade be isolated from structural members of the building. This is generally accomplished by an expansion joint at the floor slab / foundation interface. In addition, positive separation should be maintained between the slab and all interior columns, pipes and mechanical systems extending through the slab.

3. The slab subgrade should be kept moist 3 to 4 days prior to placing the slab. This is done by periodically sprinkling the subgrade with water. However, under no circumstances should the subgrade be kept wet by the flooding or ponding water.

4. Any partitions which will rest on the slabs on grade should be constructed with a minimum void space of 2 inches at the bottom of the wall (see figure in the Appendix). This base should allow for future upward movement of the floor slabs and minimize movement and damage in walls and floors above the slabs. This void may require rebuilding after a period of time, should heave exceed 2 inches.

It is recommended that floor slabs on grade be constructed with control joints placed to divide the floor into sections not exceeding 360 square feet, maximum. Also, additional control joints are recommended at all inside corners and at all columns to control cracking in these areas.

Problems associated with slab 'curling' are usually minimized by proper curing of the placed concrete slab. This period of curing usually is most critical within the first 5 days after placement. Proper curing can be accomplished by continuous water application to the concrete surface or by the placement of a 'heavy' curing compound, formulated to minimize water evaporation from the concrete. Curing by continuous water application must be carefully undertaken to prevent the wetting or saturation of the subgrade soils.

EARTH RETAINING STRUCTURES

The active soil pressure for the design of earth retaining structures may be based on an equivalent fluid pressure of 42 pounds per cubic foot. The active pressure should be used for retaining structures which are free to move at the top (unrestrained walls). For earth retaining structures which are fixed at the top, such as basement walls, an equivalent fluid pressure of 55 pounds per cubic foot may be used. It should be noted that the above values should be modified to take into account any surcharge loads, sloping backfill or other externally applied forces. The above equivalent fluid pressures should also be modified for the effect of free water, if any.

The passive pressure for resistance to lateral movement may be considered to be 318 pcf per foot of depth. The coefficient of friction for concrete to soil may be assumed to be .35 for resistance to lateral movement. When combining frictional and passive resistance, the latter must be reduced by approximately 1/3.

We recommend that the backfill behind any retaining wall be compacted to a minimum of 85% of its maximum modified Proctor dry density, ASTM D-1557. The backfill material should be approved by the Soils Engineer prior to placing and a sufficient amount of field observation and density tests should be performed during placement. Placing backfill behind retaining walls before the wall has gained sufficient strength to resist the applied lateral earth pressures is <u>not</u> recommended.

Drainage behind retaining walls is considered critical. If the backfill behind the wall is not well drained, hydrostatic pressures are allowed to build up and lateral earth pressures will be considerably increased. Therefore, we recommend a vertical drain be installed behind any impermeable retaining walls. Because of the difficulty in placement of a gravel drain, we recommend the use of a composite drainage mat similar to Exxon Battledrain or Tensar MD Series NS-1100. An outfall must be provided for this drain.

REACTIVE SOILS

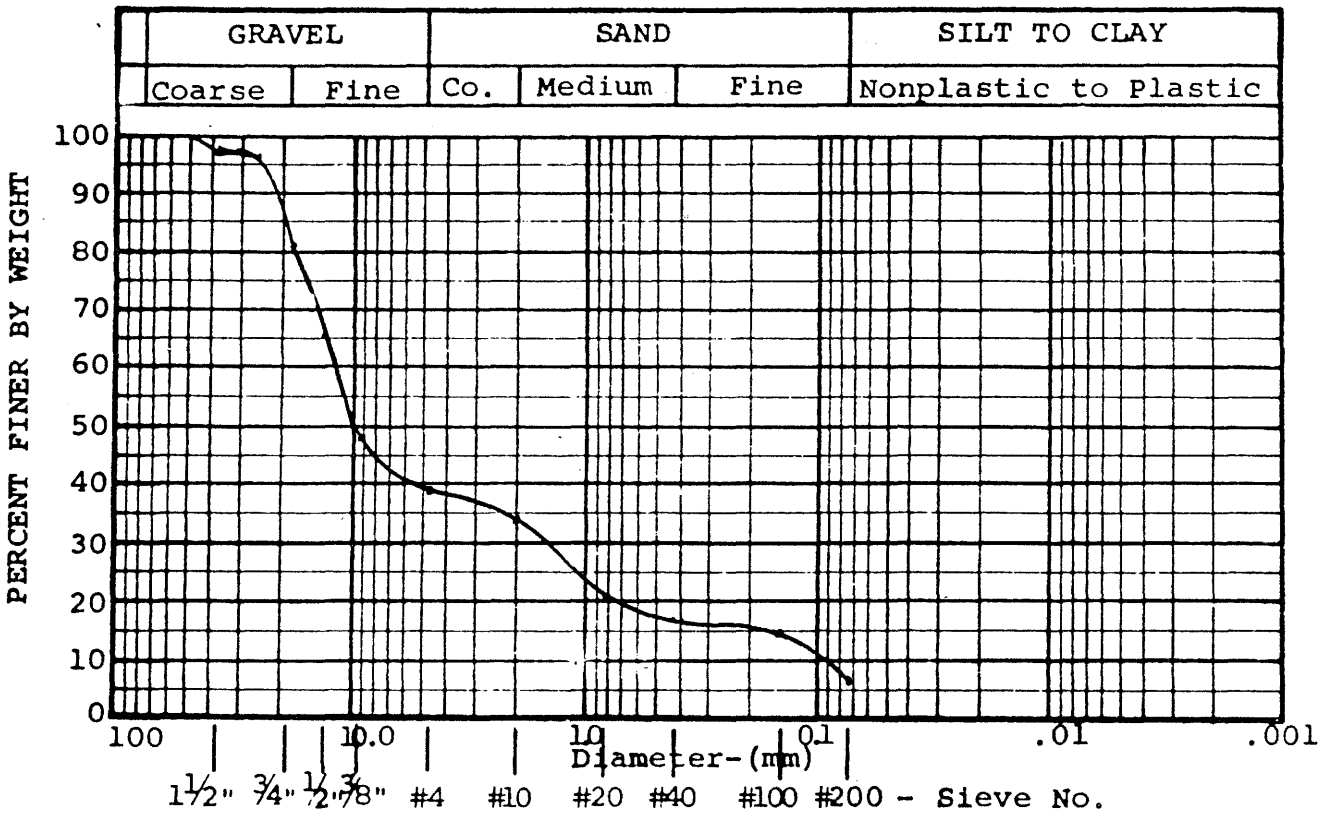
Since groundwater in the Grand Junction area typically contains sulfates in quantities detrimental to a Type I cement, a Type II or Type I-II or Type II-V cement is recommended for all concrete which is in contact with the subsurface soils and bedrock. Calcium chloride should not be added to a Type II, Type I-II or Type II-V cement under any circumstances.

LIMITATIONS

This report is issued with the understanding that it is the responsibility of the owner, or his representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project, and are incorporated into the plans. In addition, it is his responsibility that the necessary steps are taken to see that the contractor and his sub-contractors carry out these recommendations during construction. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in acceptable or appropriate standards may occur or may result from legislation or the broadening of engineering knowledge. Accordingly, the findings of this report may be invalid, wholly or partially, by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of 3 years.

The recommendations of this report pertain only to the site investigated and are based on the assumption that the soil conditions do not deviate from those described in this report. If any variations or undesirable conditions are encountered during construction or the proposed construction will differ from that planned on the day of this report, Lincoln DeVore should be notified so that supplemental recommendations can be provided, if appropriate.

Lincoln DeVore makes no warranty, either expressed or implied, as to the findings, recommendations, specifications or professional advice, except that they were prepared in accordance with generally accepted professional engineering practice in the field of geotechnical engineering.



Soil Sample SILTY GRAVEL (GM) Sample Location TB #1 @ 3'

Sample No. I FINE PORTION ONLY

Specific Gravity

Moisture Content 5.0%

Effective Size .092 mm

Cu 111

Cc 2

Fineness Modulus

L.L. % P.I. N.P. %

Bearing 3400 psf

Sulfates 250 ppm

Sieve Size	% Passing
1-1/2"	97
1"	96
3/4"	81
1/2"	66
3/8"	48
#4	39
#10	34
#20	21
#40	17
#100	15
#200	7
0.0200	
0.0050	

Lincoln DeVore, Inc.
Geotechnical Consultants

SSE LOT 17, BLK 9, THE RIDGES SUB.

SID GOTTLIEB

DATE 12-8-93

JOB NO. 80051-J

DRAWN EMM

SUMMARY SHEET

Soil Sample CARBONACEOUS SILTY SANDY CLAY DAKOTA FORMATION
Location LOT 17, BLK 9, THE RIDGES SUB.
Boring No. 3 Depth 8
Sample No. II

Test No. 80051-J
Date 12-1-93
Test by JLS

Natural Water Content (w) 3.9 %
Specific Gravity (Gs) _____

In Place Density (γ_o) 109.5 pcf

SIEVE ANALYSIS:

Sieve No.	% Passing
1 1/2"	
1"	
3/4"	
1/2"	
4	100
10	99
20	88
40	78
100	65
200	59

HYDROMETER ANALYSIS:

Grain size (mm)	%
.02	41
.005	28

Plastic Limit P.L. 18 %
Liquid Limit L. L. 32 %
Plasticity Index P.I. 14 %
Shrinkage Limit _____ %
Flow Index _____
Shrinkage Ratio _____ %
Volumetric Change _____ %
Lineal Shrinkage _____ %

MOISTURE DENSITY: ASTM METHOD

Optimum Moisture Content - w_o _____ %
Maximum Dry Density - γ_d _____ pcf
California Bearing Ratio (av) _____ %
Swell: 1 Days 4.7 %
Swell against 1400 psf Wo gain 16.3 %

BEARING:

Housel Penetrometer (av) 5500 psf
Unconfined Compression (qu) _____ psf
Plate Bearing: _____ psf
Inches Settlement _____
Consolidation % under psf

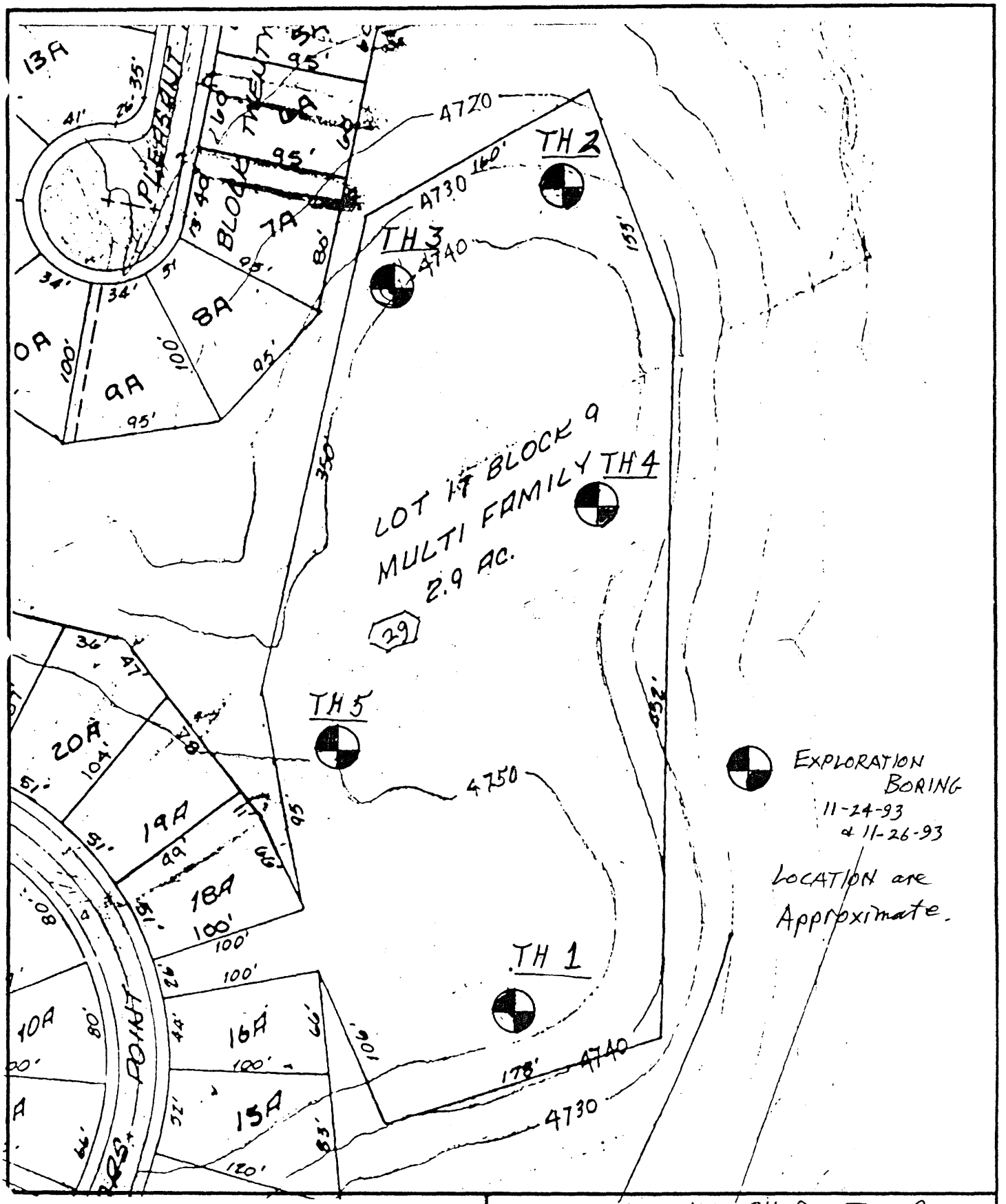
PERMEABILITY:

K (at 20°C) _____
Void Ratio _____

Sulfates 1500 ppm.

SOIL ANALYSIS

LINCOLN-DeVORE TESTING LABORATORY
COLORADO SPRINGS, COLORADO



Lincoln DeVore, Inc.
Geotechnical Consultants

SSE LOT 17 - BLK 9 THE RIDGES

SID GOTTLIEB

DATE 11-29-93

JOB NO. 80051-J

DRAWN EHM

BORING NO. 1

ELEVATION: 4752'

DEPTH (FT.)	LOG	DESCRIPTION			BLOW COUNT	SOIL DENSITY pcf	WATER %
		Alluvial Terrace Deposit					
		Sand Lenses	Stratified	Medium Density			
	I	GM Silty, Sandy Gravels	Slightly Moist	BULK			5.0%
5					5		
			Increasing Cobble Sizes				
		Non-Plastic Silty Fines					
	I	GM Sandy Gravels & Cobbles		Slightly Moist			
10		Stratified	Medium Density		10		
		Medium Density	Slightly Moist				
		Decreasing Fines, Increasing Cobble Sizes					
				BULK			2.7%
15	II	SILTSTONE	Rippable Formation to 16'		15		
		Dakota Formation	Weathered, Medium Density				
		T.D. @ 16'					
20					20		
25					25		
30					30		

Blow Counts are cumulative for each 6 inches of sampler penetration

No Free Water During Drilling 11/24/93

LOG OF SUBSURFACE EXPLORATION

Lot 17, Block 9, The Ridges, Fil 6
Grand Junction, Colorado

Date: 12/27/93

Mr. Sid Gottlieb

Job No. 80051-J

Drawn: EMM

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

BORING NO. 2

ELEVATION: 4731'

DEPTH (FT.)	LOG	DESCRIPTION		BLOW COUNT	SOIL DENSITY pcf	WATER %
		Dakota Formation	Shales are expansive			
		Siltstone, Shale and thin Sandstone Strata				
		II Kd	Carbonaceous Strata	CS	48/6	123.2	8.5%
5			Very Stratified	5	94/12	
		Dakota Formation			158/18	
		Considered Rippable to 7'				
		Hard Sandstone bed	Possibly NOT Rippable			
		T.D. @ 8'				
10				10		
15				15		
20				20		
25				25		
30				30		

Blow Counts are cumulative for each 6 inches of sampler penetration

No Free Water During Drilling 11/24/93

LOG OF SUBSURFACE EXPLORATION

Lot 17, Block 9, The Ridges, Fil 6
Grand Junction, Colorado

Date: 12/27/93

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

Mr. Sid Gottlieb

Job No. 80051-J

Drawn EMM

BORING NO. 3

ELEVATION: 4738'

DEPTH (FT.)	LOG	DESCRIPTION					BLOW COUNT	SOIL DENSITY pcf	WATER %
		Alluvial Terrace Deposit	Non-Plastic Silty Fines						
		Many Sandy Lenses	Stratified	Medium Density					
	I GM	Silty, Sandy Cobbles			BULK				2.2%
5			Very Sandy	Slightly Moist		5			
		Dakota Formation	Slightly Moist						
		Siltstone, Shale and thin Sandstone Strata							
	II Kd	Carbonaceous Strata		Shales are expansive		CS	50/6	109.5	3.9%
10		Very Stratified				10	72/12	96.2	3.6%
		Considered Rippable to 11-1/2'					165/18		
		Hard Sandstone bed	Possibly NOT Rippable						
		T.D. @ 12'							
15						15			
20						20			
25						25			
30						30			

Blow Counts are cumulative for each 6 inches of sampler penetration

No Free Water During Drilling 11/26/93

LOG OF SUBSURFACE EXPLORATION

Lot 17, Block 9, The Ridges, Fil 6
Grand Junction, Colorado

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

Mr. Sid Gottlieb

Date: 12/27/93

Job No.: 80051-J

Drawn: EMM

BORING NO. 4

ELEVATION: 4742'

DEPTH (FT.)	LOG	DESCRIPTION				BLOW COUNT	SOIL DENSITY pcf	WATER %
		Alluvial Terrace Deposit	Silty, Sandy Gravels					
		Many Sandy Lenses	Stratified	Medium Density				
	I GM	Silty, Sandy Cobbles		Slightly Moist	BULK			5.4%
5						5		
		Non-Plastic Silty Fines	Very Sandy					
	I GM	Sandy Gravels & Cobbles		Medium Density	BULK			1.9%
10		Stratified		Slightly Moist		10		
		Decreasing Fines, Increasing Cobble Sizes						
		Medium Density	Slightly Moist					
		Drill Refusal on Large Cobbles						
15		T.D. @ 14'				15		
20						20		
25						25		
30						30		

Blow Counts are cumulative for each 6 inches of sampler penetration

No Free Water During Drilling 11/24/93

LOG OF SUBSURFACE EXPLORATION

Lot 17, Block 9, The Ridges, Fil 6
Grand Junction, Colorado

Date: 12/27/93

Mr. Sid Gottlieb

Job No.: 80051-J

Drawn: EMM

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

BORING NO. 5

ELEVATION: 4749'

DEPTH (FT.)	LOG	DESCRIPTION				BLOW COUNT	SOIL DENSITY pcf	WATER %
		Alluvial Terrace Deposit	Silty, Sandy Gravels					
		Many Sandy Lenses	Stratified	Medium Density				
	I GM	Silty, Sandy Cobbles		Slightly Moist	BULK			5.4%
5		Non-Plastic Silty Fines	Very Sandy			5		
		Coarse sandy Cobbles						
			Medium Density					
			Slightly Moist					
	I GM	Coarse sandy Cobbles			BULK			1.9%
10		Stratified				10		
		Drill Refusal on Large Cobbles						
		T.D. @ 9'						
		Some weathered Dakota Sandstone						
15		on Drill Teeth, Possible Dakota Formation				15		
		at bottom of Drill Hole						
20						20		
25						25		
30						30		

Blow Counts are cumulative for each 6 inches of sampler penetration

No Free Water During Drilling 11/26/93

LOG OF SUBSURFACE EXPLORATION

Lot 17, Block 9, The Ridges, Fil 6
Grand Junction, Colorado

Date: 12/27/93

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

Mr. Sid Gottlieb

Job No. 80051-J

Drawn EMM

STAFF REVIEW

FILE: #20-94

DATE: February 17, 1994

STAFF: Kathy Portner

REQUEST: Preliminary Plan--Eagle Crest

LOCATION: Lot 17, Block 9, Filing 6, The Ridges

APPLICANT: Sidney Gottlieb

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Residential

SURROUNDING LAND USE:

NORTH:	Open Space and Residential
SOUTH:	Open Space and Residential
EAST:	Open Space and Residential
WEST:	Open Space and Residential

EXISTING ZONING: PR-4

PROPOSED ZONING: PR-4

SURROUNDING ZONING:

NORTH:	PR-4
SOUTH:	PR-4
EAST:	PR-4
WEST:	PR-4

RELATIONSHIP TO COMPREHENSIVE PLAN:

The Ridges Development Plan identifies this lot as a "Multi-family" site with no specific density assigned. One of the notes on the plat for The Ridges Filing No. Six states "3. All multi-family areas are to be developed through county processes and regulations, number of units per acre is variable. No other guidance is given for the development of the multi-family lots.

STAFF ANALYSIS:

The proposal is for the replatting and developing of a 3 acre multi-family lot in the Ridges, Filing #6. A total of 35 housing units are proposed, 20 condominiums within 3 buildings and 15 single family lots, for a density of 11.9 units per acre.

The Ridges development received approval through the County review process for an overall density of 4 units per acre. In looking at how each of the six filings that have been recorded have developed or could develop, a total number of remaining units that could be allocated to each of the multi-family lots can be derived. The presumed density of 12 units per acre remaining for the multi-family lots in filing six is assuming that the overall density of 4 units per acre was meant to include density transfers from the less densely developed areas and dedicated open space to the multi-family lots. It's not clear that that was indeed the intent of the original approval. Therefore, it is the City's opinion at this time that the density of any of the multi-family lots should not exceed 4 units per acre as a maximum density; and that, in fact, densities that high may not even be possible in some situations because of the capacity of existing road systems and/or geologic constraints.

Because of the inadequacy of the existing road system that this development would be accessing, the preliminary plan cannot be adequately reviewed by staff without a complete Traffic Impact Analysis of existing conditions and this development's impacts on Prospector Point, Rana Road and Ridge Circle Drive to its intersection with Ridges Blvd.

The creation of lots along the bluff where the majority of the proposed building envelopes are over the steep escarpment of the bluff line is not acceptable. That type of development will have significant visual impacts from the surrounding open space and Ridges Blvd. Section 7-4-5 of the Zoning and Development Code dealing with site planning and design requirements of a planned development states: "Site planning and design shall preserve, to the maximum extent possible, the existing natural features which enhance the attractiveness of the area and shall blend harmoniously with all uses and structures contained within and surrounding the PD". Section 7-4-6 of the Code further states: "Land which is unsuitable for development because of potential hazards such as flooding, landslides, excessive slopes, rockfall, subsidence, avalanches, high water table, air or vehicular traffic hazards, or if developed, may be detrimental to the health, safety, or general welfare of existing or future residents shall not be developed unless the hazards are eliminated or mitigated by approved design and construction plans. Consideration shall be given to preservation of areas of significant natural amenities. Those areas determined undevelopable according to the terms of this section shall be preserved in their natural state".

A complete geologic study is required at this time to adequately review the proposal and determine the necessary setback from the bluff line to maintain slope stability. Such a study must also be reviewed by the State Geologic Survey.

The proposed subdivision sign does not meet the requirements of the Zoning and Development Code for subdivision identification signs. Such signs cannot exceed 32 sq. ft. and cannot be over 8 feet above ground level.

Show the location of the proposed pathway system through the private open space linking with

the public open space pathway system.

Although the proposed development is surrounded by Ridges Open Space, the open space is steep and not easily accessible directly from the development. The proposed provision of 5.4% of the developed area for private open space is not adequate to serve the 35 units, especially the proposed 20 condominium units which have virtually no yards or open space areas surrounding the buildings.

What are the proposed maximum building elevations?

The City's parking requirement for residential structure with 4 or fewer units is 2 spaces per unit. The requirement for structures with 5 or more units is 1.5 spaces per unit, plus 1 space per every five spaces. If the proposed street standard would preclude on-street parking the off-street parking provided would need to be increased.

STAFF RECOMMENDATION:

RESPONSE TO REVIEW COMMENTS

March 22, 1994

Title: EAGLE CREST, Preliminary Plan

File No: 20-94

Location: Lot 19, Block 9, The Ridges, Filing 6

RESPONSE TO DEVELOPMENT ENGINEER:

1. Attached is a the proposed pedestrian circulation plan.

2. Attached is a detail of the intersection geometry at Eagle Crest Court and Prospector Point.

3. Pavement design calculations, street lighting plan, traffic signs, mail collection areas, and solid waste pick-up locations will be provided with the Final Plat and Plan.

4. The entrance sign will be modified as requested by the Community Development Department.

5. Parking Stalls will be increased to meet City Standards. The parking area off of the Cul-de-Sac will be eliminated.

6. The informal gravel pathway will be upgrade as requested by the Parks Department.

7. The 65 foot centerline radius will be increased to 80 feet.

8. The southerly driveway entrance to the parking lot will be eliminated as requested.

9. The 14 foot multi-purpose easement will be added to both sides of Eagle Crest Court.

10. The existing 12" CMP across Ridges Blvd. will be replaced with a 24" RCP.

11. The storm sewer pipe line will be modified to eliminate any manholes on the slope.

12. An drainage easement across the Open Space will be provided with the Final Plat and Plan.

RESPONSE TO U.S. WEST:

Comments do not require a response.

RESPONSE TO CITY PARKS:

The proposed pathway will consist of an eight foot wide asphalt paved surface. The trail route will be selected as recommended by the Parks Dept. An easement will be dedicated to the Public on the Final Plat. Open Space fees will be paid prior to the recording of the Final Plat.

RESPONSE TO POLICE DEPARTMENT:

1. The plan as submitted calls for the construction of a sidewalk in front of all units including the condominium area. If it is the City's desire, the applicant will construct an additional sidewalk along the Northwesterly side of Eagle Crest Court.

2. Parking provided meets the requirements of Section 5-5-1 of the Zoning and Development Code.

3. If it is the City's desire the southerly parking lot entrance can be eliminate with the submission of the Final Plat and Plan. The plan as submitted, calls for the construction of a pedestrian path between the proposal and the existing nearby trail system.

4. The street width, as proposed meets the current requirements for local streets in the City of Grand Junction.

RESPONSE TO PUBLIC SERVICE CO:

The open area in front of the condominium units will be designated as a utility easement on the Final Plat.

RESPONSE TO CITY UTILITY ENGINEER:

Sewer easements will be increased to 20 feet. A plan and profile for the Sanitary Sewer improvements will be provided with the Final Plant and Plan.

RESPONSE TO FIRE DEPARTMENT:

A fire flow survey will be provide with the submission of the Final building plans and Plat. The fire hydrant will be relocated as requested.

RESPONSE TO COMMUNITY DEVELOPMENT:

1. A Traffic Impact Analysis is attached.

2. A Subsurface Soils Report and supplemental statement regarding slope stability is attached. Copies have been transmitted to the State Geologist for their review.

3. The entrance sign will be modified as requested.

4. The subject site is almost completely surrounded by District Open Space. The Private Open Space will be increased in size with the elimination of the parking area adjacent to the Cul-de-Sac.

5. Maximum building elevation on the site will be limited to 32 feet.

6. It is the applicants understanding that the City's Local Street Section permits allows for on street parking limited to one side.

7. Attached are the City's density allocations for the multi-family lots within The Ridges, as provided to the applicant .

RESPONSE TO CITY PROPERTY AGENT:

Once the final configuration of the storm drainage pipeline is determined a metes and bounds legal description will be provided.

April 7, 1994

Thomas A. Logue
227 S. 9th Street
Grand Junction, CO 81501

Dear Tom:

We have reviewed the additional information submitted for the review of the proposed Eagle Crest development in the Ridges. This cursory review was to determine the completeness of the reports only. Attached are comments from Jody Kliska requesting additional information for the traffic analysis. The revised report must be received in our office no later than 5:00 p.m. April 13, 1994 for this project to continue in the review process for the May Planning Commission hearing. All other items will be addressed through the normal review process and you will be given an opportunity to respond to staff comments under the same schedule as all other projects being reviewed this month.

I'd like to remind you that at this time it is still the City's opinion that this property has a density of 4 units per acre unless a plan is adopted that indicates a different density. We are working on a Ridges plan, to include density alternatives, to be considered by the Planning Commission and City Council and hope to get it to the May 3rd Planning Commission hearing.

Thank you for your cooperation.

Sincerely,

Katherine M. Portner
Planning Supervisor

THOMAS A. LOGUE
LAND DEVELOPMENT CONSULTANTS

April 12, 1994

Colorado Geological Survey
715 State Centennial Building
1313 Sherman Street
Denver, CO 80203

RE: EAGLE CREST SUBDIVISION

Staff:

The City of Grand Junction has requested your comments in reference to Eagle Crest Subdivision. We have enclosed the following items:

1. Site Development Plan (2 sheets)
2. Site Grading and Drainage Plan
3. Project Narrative
4. Subsurface Soils Report
5. Slope Stability Report
6. Review Fee

Your comments should be returned to Ms. Kathy Portner, Community Development Department, City of Grand Junction, 250 North 5th. Street, Grand Junction, CO 81501.

We would like to thank you in advance for your prompt response to our request.

Respectfully,

Thomas A. Logue

Thomas A. Logue

xc: Kathy Portner
Sid Gottlieb

227 SOUTH 9TH STREET • GRAND JUNCTION, COLORADO 81501
(303) 245-4099

STATE OF COLORADO

COLORADO GEOLOGICAL SURVEY
Division of Minerals and Geology

Department of Natural Resources
1313 Sherman Street, Room 715
Denver, Colorado 80203
Phone (303) 866-2611
FAX (303) 866-2461

DEPARTMENT OF
NATURAL
RESOURCES

May 11, 1994 MA-94-0043

Ms. Kathy Portner
City of Grand Junction
Community Development Department
250 North 5th Street
Grand Junction, Colorado 81501

Re: Proposed Eagle Crest Subdivision -- The Ridges Area,
City of Grand Junction

Dear Ms. Portner:

At the request of Mr. Thomas A. Logue [Land Development Consultants], Grand Junction, who was apparently directed to do so by your office, we have reviewed the materials submitted for and made a field inspection of the site of the proposed multi-family residential subdivision referenced above. The following comments summarize our findings.

(1) The general geology of this site consists of gravels of the ancestral Colorado River which are of variable thickness. These gravels overlie Dakota Formation bedrock which consists predominantly of sandstones and shales.

(2) The foundation-design recommendations made in the submitted Lincoln DeVore report thoroughly discuss the options available considering the different building types possible. In the long term it probably will be less problematical for reliable foundation performance to build structures without basements. Eventually a perched water table will form at the contact between the gravels and the Dakota Formation and rise in the gravels. The gravels are capable of supporting a shallow foundation system, but are not thick enough in most places on the site that basement walls could be founded on them. If basements are used, a drilled-pier and grade-beam foundation system probably would be the best alternative, but this would necessitate installation of foundation drains. Although restrictions on irrigation might lessen the amount of water-table rise, reliable enforcement of such restrictions is

usually difficult to achieve. In any event and especially if the contact between the gravels and the Dakota is above the level of the basement floor, water seepage into basements will be likely (eventually).

(3) The flatter and nearly level parts of this site should present few construction problems. However, placement of fills in the steeper areas should be done with extreme care as specified by the soils and foundation engineer. Depending on specific site building plans, it may be desirable to overexcavate the gravels, place structural fill, and then replace the gravels (as fill) on top of the newly placed materials. Some of the fill placements for other (newer) houses in the vicinity appear to have been placed in an uncontrolled fashion.

(4) Care should be taken to ensure that runoff and ground-water seepage from this parcel is not directed toward the rear yards of the existing houses along Pleasant Hollow (Filing 6, Block 29 of The Ridges). This may necessitate installing an interceptor drain between the north and northwest sides of this parcel and these built-out lots. Surface drainage from parking areas, roofs, and proposed Eagle Crest Court should be controlled and not allowed to run down hill into the open spaces or adjacent property.

In summary we believe that this proposal is entirely feasible (conceptually, because we have not seen the actual construction plans) from a geologic standpoint. This assumes that the proponent will follow advice and build according to designs made by qualified soils and foundation and drainage engineers. Following the recommendations made above and those in the submitted geotechnical report should be made conditions of this approval.

Sincerely,

James M. Soule

James M. Soule
Engineering Geologist

THOMAS A. LOGUE
LAND DEVELOPMENT CONSULTANTS

#20 94(2)

June 30, 1994

Community Development Dept.
City of Grand Junction
250 North 5th. Street
Grand Junction, CO 81501

RE: EAGLE CREST

Dear Staff:

Accompanying is a revised Site Development Plan for Eagle Crest Subdivision located in The Ridges.

We have not included the following items with the submittal since they are in your existing file:

1. Legal Description
2. Proof of Ownership Document
3. Legal Description
4. List of Surrounding Property Owners

If you require the above items, contact our office and we will see that you receive them promptly.

Respectfully,

Thomas A. Logue

227 SOUTH 9TH STREET • GRAND JUNCTION, COLORADO 81501
(303) 245-4099

PRELIMINARY DEVELOPMENT PLAN

FOR

EAGLE CREST AT THE RIDGES

Grand Junction, Colorado

June, 1994

#20 94(-2)

Prepared For:
Sidney Gottlieb, Eagle Crest, LLC.
477 Elkwood Terrace, Englewood, NJ 07631
201-569-0916

A *LAND*esign Partner

TABLE OF CONTENTS

PROJECT NARRATIVE

PRELIMINARY DEVELOPMENT PLAN FOR:

EAGLE CREST AT THE RIDGES

INTRODUCTION - Accompanying is a modified Development Plan which will superseces a develpment proposal which was reviewed in March of this year. But, was with drawn prior to any Public Hearings.

LOCATION - Eagle Crest contains approximately 3 acres. Eagle Crest is located in the City of Grand Junction on the Redlands. The property is located in part of the SE 1/4 of Section 17, Township One South, Range One West, of the Ute Meridian. The site is also known as Lot 17, The Ridges, Filing Six.

EXISTING LAND USE - The site is vacant of structures and is in a fallow state. Agricultural production has never occurred on the property. The site is not affected by any natural drainage flows since it is located on the top of a hill. Topography of the property is flat on the hill top. However, slopes of the hill side within the site approach 40 percent at the steepest areas. The hill top within Eagle Crest slopes towards the east at an average rate of 1.5 percent. The subject property is zoned PR (Planned Unit Development) by the City of Grand Junction.

SURROUNDING LAND USE -The surrounding land use in the vicinity of the subject property is considered to be of moderate to high intensity. Predominate uses include single family dwellings on subdivided tracts intermixed with multi-family condominium units. Agricultural production is nonexistent in the vicinity of the subject site. The only non-residential uses are found along Ridges Blvd. and consist of light office uses. Public Open Spaces almost surround the property. At-

#20 94-(2)

tached is an "Assessor's Map" which depicts the configuration of various properties in the area surrounding Eagle Crest.

PROPOSED LAND USE - The proposal calls for 12 single family building sites on the 3 acres, resulting in a density 4.0 dwelling units per acre. The accompanying Preliminary Site Development Plan depicts the relationship of each lot to the property boundary, designated building envelopes, roadway access, and other features of the proposed development. Lot size ranges between 7400 and 9500 square feet.

An eight foot wide concrete pathway is proposed to be constructed between the proposed new street in Eagle Crest to an existing pathway system adjacent to Ridges Blvd. in Public Open Space. All open areas in and around the proposed residential units will be totally landscaped utilizing low water requirement plantings.

Solid waste collection areas and postal pick up points will be provided, as directed by the City of Grand Junction.

Besides the individual lot development standards presented herein, strict architectural controls will be instigated to protect the development from undesirable influences. To achieve this, a set of covenants, conditions and restrictions (C.C.& R's) will be adopted to insure ongoing protection to the future residents of Eagle Crest and surrounding property owners. The accompanying Site Development Plan suggests the minimum building setback requirements that will be incorporated in the lot building envelopes.

#20 94-(2)

LAND USE SUMMARY			
USE	UNITS	AREA	% OF TOTAL
STREET		0.14	5.0
LOTS	12	2.81	95.0
TOTAL	12	2.95	100.0
DENSITY: 4.0 DU/AC			

ACCESS - Access to Eagle Crest is gained from a series of interconnecting street to Ridges Blvd. The subject property has direct access to Prospectors Point, which is designated as local street by the City of Grand Junction. Review of the accompanying maps reveal that access to Prospector Point is gained from Rana Road and Ridge Drive, and Ridges Blvd. which ultimately connects with Colorado State Highway 340.

Proposed roadway improvements call for the construction of approximately 550 feet of new public street. The site's street frontage on Prospector Point is approximately 26 feet. Due to the limited street frontage coupled with the topographic constraints of the hill top a modified public street section is proposed. The traveled way varies in width, from 20 feet to 28 feet of paving. Areas of the street which are less than 28 feet in width will be posted for No Parking. The street right-of-way will also serve as a utility corridor.

UTILITY SERVICE

DOMESTIC WATER - All units within Eagle Crest will be served by a domestic water distribution system. An existing 8 inch water main is located within

#20 94-(2)

Prospector Point. and will be extended within the property. All of the existing water mains are owned and maintained by the Ute Water Conservancy District. Fire hydrants will be placed throughout the development. Sufficient flows and pressure exist to provide adequate water supply for fire protection.

SANITARY SEWER - A new sanitary sewage collection system will be constructed to serve all lots within the development. Sewer service will be extended from an existing 8 inch main stub located at the north end of the property. It is estimated that peak sewage flows generated by the lots within the development will be 3,600 gallons per day.

ELECTRIC, GAS, PHONE & CATV - Electric, gas, and communication lines will be extended to each lot within the development from existing lines located next to the proposed development. Lines will be located in a "common trench" adjacent to the dedicated road right-of-way.

IRRIGATION WATER - Due to the nature of the development, irrigation water will not be utilized. Irrigation of the landscaped areas will utilize domestic water supplies.

DRAINAGE - A Drainage Report which evaluates the impacts on existing drainage patterns previously submitted to the City Engineering Department. Data contained within the original report will not change with the new site development plan. Most of the future drainage will be carried on the ground surface to the proposed street system to a point near the north property line. The proposal calls for the construction of a piped storm sewer to the existing drainage system within The Ridges along Ridges Blvd. detention of storm water will not be attempted. The site is not affected by drainage from off-site sources.

#20 a4 (2)

DEVELOPMENT SCHEDULE - The rate at which development of Eagle Crest, will occur is dependent upon the City's future growth and housing needs. At this point in time it is anticipated that the site will be fully developed and ready for construction of the new dwellings by fall of this year.

LOCATION MAP
EAGLE CREST
ON THE RIDGES

THOMAS A. LOGUE
LAND DEVELOPMENT CONSULTANT

PROJECT NO. C:\SC\WORK\PP\9400G	SHEET	OF
DATE: JANUARY, 1994	1	5

#20 94 (2)

RIDGES FILING 6

10A

7A

6A

9A

8A

10' UTILITY EASEMENT

PROPOSED 20' UTILITY EASEMENT

20' UTILITY EASEMENT

22A

21A

20A

19A

18A

16A

15A

DISTRICT OPEN SPACE

9
0.22 AC.

8
0.29 AC.

10
0.19 AC.

11
0.18 AC.

12
0.18 AC.

7
0.16 AC.

6
0.15 AC.

5
0.17 AC.

4
0.18 AC.

3
0.20 AC.

2
0.21 AC.

1
0.17 AC.

TYPICAL BUILDING ENVELOPE

EAGLE CREST CT.

BLUFF LINE

SEE DETAIL

BEGIN TAPER

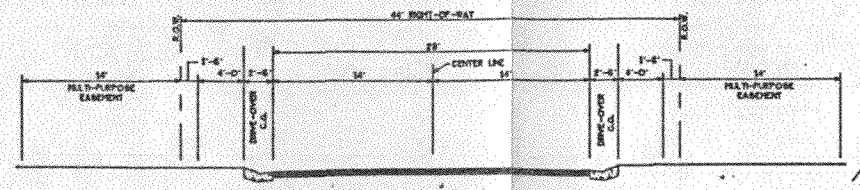
END TAPER

12' Ped. ROW

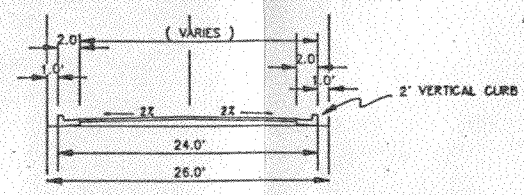
8' WIDE CONC. PATH TO EXISTING. MAX 10% SLOPE

DISTRICT OPEN SPACE

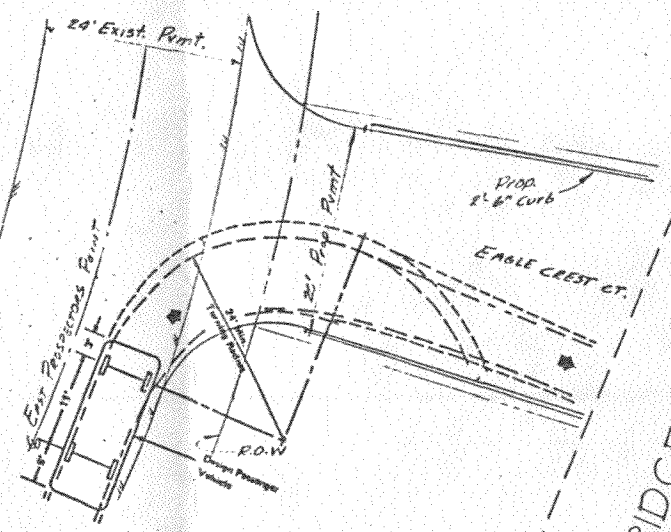
RIDGES BOULEVARD



EAGAL CREST COURT



ENTRY SECTION



ENTRANCE DETAIL

LAND USE SUMMARY		
USE	ACRES	PERCENT
STREETS	0.14	5 %
LOTS	2.81	95 %
TOTAL	2.95	100 %

SCALE 1"=30'

0' 30' 60' 90'

REVISED 06/30/94

SITE DEVELOPMENT PLAN
EAGLE CREST
ON THE RIDGES

T A L THOMAS A. LOGUE
LAND DEVELOPMENT CONSULTANTS
257 SOUTH 7TH STREET GRAND JUNCTION, COLORADO 81501
(303) 245-4091

PROJECT NO. C:\SC\WORK\94006\94006	SHEET	OF
DATE: JANUARY , 1994	2	3

TAL
A LANDesign Partner

THOMAS A. LOGUE
LAND DEVELOPMENT CONSULTANTS

July 20, 1994

City of Grand Junction
Community Development Dept.
250 N. 5th Street
Grand Junction, CO 81501
Attention: Ronnie Edwards

re: Eagle Crest Subdivision

Dear Ronnie:

This letter is to acknowledge that the mailing list of addresses previously submitted with the Preliminary Plan Application of the above-referenced project are still valid for use with the Final Submittal.

If there are any questions regarding this matter, please feel free to contact my office.

Sincerely,

Thomas A. Logue

TAL/wle

200 NORTH 6TH STREET • GRAND JUNCTION, COLORADO 81501
(303) 245-4099

REVIEW COMMENTS

FILE #20-94-2 **TITLE HEADING:** Preliminary Plan
Eagle Crest Subdivision

LOCATION: Lot 17, Block 9, The Ridges Filing #6

PETITIONER: Sidney Gottlieb

PETITIONER'S ADDRESS/TELEPHONE: 477 Elkwood Terrace
Englewood, NJ 07631
201-569-0916

PETITIONER'S REPRESENTATIVE: Tom Logue

STAFF REPRESENTATIVE: Kathy Portner

NOTE: WRITTEN RESPONSE BY THE PETITIONER TO THE REVIEW COMMENTS IS REQUIRED ON OR BEFORE 5:00 P.M., July 25, 1994.

PUBLIC SERVICE **7/07/94**
Dale Clawson **244-2695**

Electric and Gas: The 14' utility easements at the westerly edges of Lots 1 & 12 need to extend across the Pedestrian Right-of-Way and the District Open Spaces.

CITY FIRE DEPARTMENT **7/07/94**
Hank Masterson **244-1400**

The hydrant locations shown are fine. A fire flow survey needs to be done to ensure adequate flows. City engineering road standards must be complied with to ensure Fire Department access for apparatus at intersection of Eagle Crest Point and Prospector Point.

CITY UTILITY ENGINEER **7/06/94**
Bill Cheney **244-1590**

Water: The water system is part of the Ridges Metropolitan District and is maintained by the City.
Sewer: No comment at this time.

CITY PARKS AND RECREATION DEPT. **7/07/94**
Don Hobbs **244-1542**

Open space fees based upon 12 units X $225 = $2,700 due for these fees.

Concrete alignment shall be approved by this department and shall meet all City specifications for trail construction. Path is to be a public facility.

U.S. WEST **7/11/94**
Leon Peach **244-4964**

New or additional telephone facilities necessitated by this project may result in a "contract" and up-front monies required from developer, prior to ordering or placing of said facilities. For more information, please call.

CITY POLICE DEPT. **7/15/94**
Dave Stassen **244-3587**

The only concerns I can see are the width of both the sidewalks and the street at the entrance.

CITY DEVELOPMENT ENGINEER **7/18/94**
Jody Kliska **244-1591**

City standards require 44' ROW and 28' pavement width. The entrance does not meet this. A minimum 20' radius is required at the intersection. What will the 12" CMP on Ridges Blvd. be replaced with? How will the City access manholes on the slope? A drainage easement across the open space will be required. What happens to the pedestrian path? Does it end abruptly as shown on the plans?

COMMUNITY DEVELOPMENT DEPARTMENT **7/19/94**
Kathy Portner **244-1446**

See attached comments.

STAFF REVIEW

FILE: #20-94(2)

DATE: July 19, 1994

STAFF: Kathy Portner

REQUEST: Preliminary Plan--Eagle Crest

LOCATION: Lot 17, Block 9, Filing 6, The Ridges

APPLICANT: Sidney Gottlieb

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Single Family Residential

SURROUNDING LAND USE:

NORTH:	Open Space and Residential
SOUTH:	Open Space and Residential
EAST:	Open Space and Residential
WEST:	Open Space and Residential

EXISTING ZONING: PR-4

PROPOSED ZONING: PR-4

SURROUNDING ZONING:

NORTH:	PR-4
SOUTH:	PR-4
EAST:	PR-4
WEST:	PR-4

RELATIONSHIP TO COMPREHENSIVE PLAN:

The Ridges Development Plan identifies this lot as a "Multi-family" site with no specific density assigned. One of the notes on the plat for The Ridges Filing No. Six states "3. All multi-family areas are to be developed through county processes and regulations, number of units per acre is variable. No other guidance is given for the development of the multi-family lots.

STAFF ANALYSIS:

The proposal is for the replatting and developing of a 2.95 acre multi-family lot in the Ridges, Filing #6. Twelve single family lots are proposed for an overall density of 4.1 units per acre.

The following issues must be addressed:

1. Because of the inadequacy of the existing road system that this development would be accessing, the preliminary plan cannot be adequately reviewed by staff without a complete Traffic Impact Analysis of existing conditions and this development's impacts on Prospector Point, Rana Road and Ridge Circle Drive to its intersection with Ridges Blvd.

2. For this proposed density the street section must include sidewalk, where ever there is sufficient width, with connections into the open space pathway system. The proposed path adjacent to lot 1 is too steep. It appears the slope adjacent to lot 5 is less steep and would provide the opportunity for the path to switch-back down the slope.

3. The proposed drainage pipe through the open space will require obtaining an easement from the City.

4. Lot ten's building envelope must maintain the 20' setback around the cul-de-sac.

5. Lot 8 must maintain the 20' setback from the bluff line.

6. The building envelopes for lots 5 and 7 appear to be unbuildable. Show the building design for those lots.

7. Although staff appreciates the reduction in the number of units shown on this plan, we still have a great concern that the configuration, location and topography of this site cannot support this number of units. Given all the constraints of the lot, staff would support a proposal for up to 4 single family lots on the site accessed by a common private drive. This would decrease the infrastructure costs of the development and provide large view lots much more conducive to the site.

STAFF RECOMMENDATION:

RESPONSE TO REVIEW COMMENTS

July 25, 1994

Title: EAGLE CREST SUBDIVISION, Preliminary Plan

File No: 20-94-2

Location: Lot 17, Block 9, The Ridges Filing 6

RESPONSE TO PUBLIC SERVICE CO:

The requested 14 ft. utility easements will be included on the Final Plat.

RESPONSE TO FIRE DEPARTMENT:

Comments do not require response.

RESPONSE TO CITY UTILITY ENGINEER:

Comments do not require response.

RESPONSE TO CITY PARKS:

$2700.00 will be paid to the City Parks and Recreation Department prior to the Recording of the Final Plat.

Detailed construction plans for the proposed trail will be provided to the department with the Final Plat and Plan.

RESPONSE TO U.S. WEST:

Comments do not require response.

RESPONSE TO POLICE DEPARTMENT:

Due to the existing width of the properties frontage on Prospector Point no other alternative is feasible.

RESPONSE TO DEVELOPMENT ENGINEER:

Due to the existing width of the properties frontage on Prospector Point it is impossible to obtain the City's standard street and right-of-way width.

The existing 12" CMP on Ridges Blvd. is proposed to be replace with a 18" RCP.

A drainage easement will be provided across the Open Space will be provided with the Final Plat Submittal. This will be coordinated with the City's Property Manager. Routing of the storm sewer and easement will be designed in a manner which will maintain access to the Manholes at a rate not exceeding 12% slope.

The pedestrian plat will connect to an existing pathway south of the property within the Open Space.

RESPONSE TO COMMUNITY DEVELOPMENT:

1. A Traffic Study and Report was transmitted to the department in March of 1994. This study was completed for another development proposal. Data contained within the report is considered to be valid for the current development proposal.

2. Based on testimony given during a public hearing for development standards for The Ridges, it was the applicants understanding that sidewalks would not be required. However, the Preliminary Plan proposes adequate right-of-way width to accommodate sidewalks. The proposed off-site walk will be relocated to Lot 5 on the Final Plat and Plan.

3. A drainage easement will be provided across the Open Space and will be provided with the Final Plat Submittal. This will be coordinated with the City's Property Manager

4. The northerly building envelope line will be increased to a minimum of 20 feet from the cul de sac right-of-way line on the Final Plat and Plan.

5. The actual bluff line will be established on the site with the assistance of a qualified soils engineer. The staff will be invited to view the bluff line location prior to defining the field location on the Final Plat and Plan.

6. A specific building design will be provided for Lots 5 and 7 with the Final Plat and Plan submittal. These lots will require the construction of a two story dwelling.

7. As stated within the staff's report, "The Ridges Development Plan identifies this lot as a "Multi-family" site with no specific density assigned."

In November of 1993 the applicant received a copy of a letter from the City which indicated that the total number of units available to be in the range of 36 dwelling units. Based on the November letter the applicant purchased the property and submitted a preliminary plan to the City for review. The Preliminary Plan submitted in February included a mix of 20 condominium units and 15 cluster single family lots. After an initial review of the

application by the staff and several meetings between the staff and applicant, it was determined that a total of 12 units may be more suitable for the site. Therefore, the applicant withdrew the application and resubmitted the current development proposal. The applicant would like to proceed to the Planning Commission with the current application, as submitted.

STAFF REVIEW

FILE: #20-94(2)

DATE: July 27, 1994

STAFF: Kathy Portner

REQUEST: Preliminary Plan--Eagle Crest

LOCATION: Lot 17, Block 9, Filing 6, The Ridges

APPLICANT: Sidney Gottlieb

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Single Family Residential

SURROUNDING LAND USE:

NORTH:	Open Space and Single Family Residential
SOUTH:	Open Space and Single Family Residential
EAST:	Open Space and Single Family Residential
WEST:	Open Space and Single Family and Multi-family Residential

EXISTING ZONING: PR-4

PROPOSED ZONING: PR-4

SURROUNDING ZONING:

NORTH:	PR-4
SOUTH:	PR-4
EAST:	PR-4
WEST:	PR-4

RELATIONSHIP TO COMPREHENSIVE PLAN:

The Ridges Development Plan identifies this lot as a "Multi-family" site with no specific density assigned. One of the notes on the plat for The Ridges Filing No. Six states "3. All multi-family areas are to be developed through county processes and regulations, number of units per acre is variable". No other guidance is given for the development of the multi-family lots.

The overall density for the Ridges is 4 units per acre. The City is working on an amended plan for the Ridges that will specifically identify the maximum densities for the multi-family

lots. Whatever maximum density is assigned will be limited by the individual site constraints, such as infrastructure and topography.

STAFF ANALYSIS:

The proposal is for the replatting and development of a 2.95 acre multi-family lot in the Ridges, Filing #6. Twelve single family lots are proposed for an overall density of 4.1 units per acre. The buildable area of the site is limited by the relatively steep slopes to the east and south. The development potential of the site is further limited by the narrow access of 26' to Prospector Point Drive. The traffic capacity of Prospector Point Drive is greatly limited by its narrow width and awkward geometry.

The developer had originally proposed 20 condominium units and 15 single family lots for the site. Staff comments on that proposal were that the existing constraints of the site would not allow that kind of density and that a lower density should be considered. The developer withdrew that proposed plan and resubmitted the plan for 12 single family lots, which equates to approximately 4 units per acre, which is the overall assigned density for the Ridges. Staff had indicated to the developer that the reduction in units would certainly be more appropriate for the site, but that the proposal would have to be reviewed in the context of the site constraints. Although the reduction in the number of units shown on this plan is better than the original proposal, staff still has a great concern that the configuration, location and topography of this site cannot support this number of units. The major concern with approving this number of lots is the inadequate roadway width at the intersection of the proposed Eagle Crest Court with Prospector Point Drive. The turning radii is not adequate and is especially of concern for Fire vehicle access.

Given all the constraints of the lot, staff would support a proposal for up to 4 single family lots on the site accessed by a common private drive. This would decrease the infrastructure costs of the development and provide large view lots much more conducive to the site. The design standards of the private drive would be decided on prior to submittal of a final plat.

How drainage from the site will be handled is another concern. The proposal is to pipe the drainage down the steep slope to the east into existing drainage facilities. An easement through the open space would have to be obtained from the City. Burying a pipe down the slope will require blasting through rock ledges, leaving scars on the hillside that will be almost impossible to restore. If the pipe is to be above ground it will be very visible along the entrance to the Ridges. How the energy of the steep fall will be dissipated is also a concern.

If Eagle Crest Court is to be a public road it must meet City standards, including curb, gutter and sidewalk. Connections to the existing pathway system below the development should also be provided with a trail section through the proposed lot 5 down the slope at an acceptable grade, connecting to the trail system at the bottom. Trail section must be approved by the City Parks Department.

The building envelopes for lots 5 and 7 do not appear to have adequate depth for construction.

The developer has indicated that specific house plans for those lots will be provided with the final plan/plat.

For staff to support the proposed plan the following requirements must be met:

1. Additional ROW must be obtained for the proposed Eagle Crest Court at its intersection with Prospector Point Drive to meet minimum design standards, including curb, gutter and sidewalk.

2. Specific building envelopes for lots 5 and 7 must be submitted with the final plan.

3. All building envelopes must maintain a 20' setback from the bluff line and the ROW.

4. Utility easements must be provided to Prospector Point Drive in an alignment acceptable to all utility providers.

5. A pathway must be constructed through lot 5 connecting to the existing trail system at the bottom of the slope.

6. An alternative means of dealing with storm drainage must be proposed and considered rather than a drainage pipe through the open space.

STAFF RECOMMENDATION:

Staff recommends denial of the request for 12 lots as proposed. If Planning Commission chooses to approve the request, staff recommends the 6 conditions listed above be included.

Staff recommends approval of allowing up to 4 single family lots accessing a private drive with the following conditions:

1. The standards for the private drive will be determined prior to the final plan/plat.
2. A homeowner's association is formed for maintenance of the private drive.
3. An alternative means of dealing with storm drainage be proposed and considered rather than a drainage pipe through the open space.

As per the Zoning and Development Code, a development containing 4 lots can be reviewed and approved through a one-step process which does not require preliminary plan review. Therefore, a proposal for 4 lots could be submitted directly as a final plan/plat.

RECOMMENDED PLANNING COMMISSION MOTION:

Mr. Chairman, on item #20-94(2), Preliminary Plan for Eagle Crest, I move we deny the request as proposed, but approve allowing up to 4 single family lots accessing a private drive with the conditions as recommended by staff.

STAFF REVIEW

FILE: #20-94(2)

DATE: August 2, 1994

STAFF: Kathy Portner

REQUEST: Preliminary Plan--Eagle Crest

LOCATION: Lot 17, Block 9, Filing 6, The Ridges

APPLICANT: Sidney Gottlieb

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Single Family Residential

SURROUNDING LAND USE:

NORTH:	Open Space and Single Family Residential
SOUTH:	Open Space and Single Family Residential
EAST:	Open Space and Single Family Residential
WEST:	Open Space and Single Family and Multi-family Residential

EXISTING ZONING: PR-4

PROPOSED ZONING: PR-4

SURROUNDING ZONING:

NORTH:	PR-4
SOUTH:	PR-4
EAST:	PR-4
WEST:	PR-4

RELATIONSHIP TO COMPREHENSIVE PLAN:

The Ridges Development Plan identifies this lot as a "Multi-family" site with no specific density assigned. One of the notes on the plat for The Ridges Filing No. Six states "3. All multi-family areas are to be developed through county processes and regulations, number of units per acre is variable". No other guidance is given for the development of the multi-family lots.

The overall density for the Ridges is 4 units per acre. The City is working on an amended plan for the Ridges that will specifically identify the maximum densities for the multi-family

lots. Whatever maximum density is assigned will be limited by the individual site constraints, such as infrastructure and topography.

STAFF ANALYSIS:

The proposal is for the replatting and development of a 2.95 acre multi-family lot in the Ridges, Filing #6. Twelve single family lots are proposed for an overall density of 4.1 units per acre. The buildable area of the site is limited by the relatively steep slopes to the east and south. The development potential of the site is further limited by the narrow access of 26' to Prospector Point Drive. The traffic capacity of Prospector Point Drive is greatly limited by its narrow width and awkward geometry.

The developer had originally proposed 20 condominium units and 15 single family lots for the site. Staff comments on that proposal were that the existing constraints of the site would not allow that kind of density and that a lower density should be considered. The developer withdrew that proposed plan and resubmitted the plan for 12 single family lots, which equates to approximately 4 units per acre, which is the overall assigned density for the Ridges. Staff had indicated to the developer that the reduction in units would certainly be more appropriate for the site, but that the proposal would have to be reviewed in the context of the site constraints. Although the reduction in the number of units shown on this plan is better than the original proposal, staff still has a great concern that the configuration, location and topography of this site cannot support this number of units. The major concern with approving this number of lots is the inadequate roadway width at the intersection of the proposed Eagle Crest Court with Prospector Point Drive. The turning radii is not adequate and is especially of concern for Fire vehicle access.

Given all the constraints of the lot, staff would support a proposal for up to 4 single family lots on the site accessed by a common drive built to a standard in conformance with the rest of the Ridges development. This would decrease the infrastructure costs of the development and provide large view lots much more conducive to the site. The design standards of the drive would be decided on prior to submittal of a final plat.

How drainage from the site will be handled is another concern. The proposal is to pipe the drainage down the steep slope to the east into existing drainage facilities. An easement through the open space would have to be obtained from the City. Burying a pipe down the slope will require blasting through rock ledges, leaving scars on the hillside that will be almost impossible to restore. If the pipe is to be above ground it will be very visible along the entrance to the Ridges. How the energy of the steep fall will be dissipated is also a concern.

If Eagle Crest Court is to be a public road accessing 12 lots as proposed it must meet City standards, including curb, gutter and sidewalk. In those sections where the City standard cannot be met because of ROW width constraints, an alternative design would have to address pedestrian access, adequate pavement width and turning radius for safe access at the intersection and drainage. Connections to the existing pathway system below the development should also be provided with a trail section through the proposed lot 5 down the slope at an

acceptable grade, connecting to the trail system at the bottom. Trail section must be approved by the City Parks Department. Combining a trail system with the proposed drainage pipe through the open space should be considered to minimize the disturbance to the open space.

The developer has proposed that Eagle Crest Court be allowed as a private drive. After further review staff is recommending against Eagle Crest Court being a private drive no matter how many units are accessed off of it. The City's experience has been that homeowners are not willing to keep up with the maintenance of private drives and eventually look to the City to take them over. There is also the issue of refuse collection on private drives. There is not room for trash receptacles at the entrance of the proposed drive and it is a liability for trash collection vehicles to drive on private roads.

The building envelopes for lots 5 and 7 do not appear to have adequate depth for construction. The developer has indicated that specific house plans for those lots will be provided with the final plan/plat.

For staff to support the proposed plan the following requirements must be met:

1. Additional ROW must be obtained for the proposed Eagle Crest Court at its intersection with Prospector Point Drive to meet minimum design standards, including curb, gutter and sidewalk or an alternative design must be submitted accommodating adequate roadway width and turning radii at the intersection, drainage, and pedestrian access.

2. Specific building plans for lots 5 and 7 must be submitted with the final plan.

3. All building envelopes must maintain a 20' setback from the bluff line and the ROW.

4. Utility easements must be provided to Prospector Point Drive in an alignment acceptable to all utility providers.

5. A pathway must be constructed through lot 5 connecting to the existing trail system at the bottom of the slope.

6. An alternative means of dealing with storm drainage must be proposed and considered rather than a drainage pipe through the open space.

STAFF RECOMMENDATION:

Staff recommends denial of the request for 12 lots as proposed. If Planning Commission chooses to approve the request, staff recommends the 6 conditions listed above be included.

Staff recommends approval of allowing up to 4 single family lots accessing a drive with the following conditions:

1. The standards for the public drive will be determined prior to the final plan/plat.
2. An alternative means of dealing with storm drainage be proposed and considered rather than a drainage pipe through the open space.

As per the Zoning and Development Code, a development containing 4 lots can be reviewed and approved through a one-step process which does not require preliminary plan review. Therefore, a proposal for 4 lots could be submitted directly as a final plan/plat.

RECOMMENDED PLANNING COMMISSION MOTION:

Mr. Chairman, on item #20-94(2), Preliminary Plan for Eagle Crest, I move we deny the request as proposed, but approve allowing up to 4 single family lots accessing a public drive with the conditions as recommended by staff.

STAFF REVIEW

FILE: #20-94(2)

DATE: August 11, 1994

STAFF: Kathy Portner

REQUEST: Preliminary Plan--Eagle Crest

LOCATION: Lot 17, Block 9, Filing 6, The Ridges

APPLICANT: Sidney Gottlieb

EXECUTIVE SUMMARY: Request for approval of a modified street section without curb, gutter or sidewalk to access up to 8 residential lots.

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Single Family Residential

SURROUNDING LAND USE:

NORTH:	Open Space and Single Family Residential
SOUTH:	Open Space and Single Family Residential
EAST:	Open Space and Single Family Residential
WEST:	Open Space and Single Family and Multi-family Residential

EXISTING ZONING: PR-4

PROPOSED ZONING: PR-4

SURROUNDING ZONING:

NORTH:	PR-4
SOUTH:	PR-4
EAST:	PR-4
WEST:	PR-4

RELATIONSHIP TO COMPREHENSIVE PLAN:

The Ridges Development Plan identifies this lot as a "Multi-family" site with no specific density assigned. One of the notes on the plat for The Ridges Filing No. Six states "3. All multi-family areas are to be developed through county processes and regulations, number of units per acre is variable". No other guidance is given for the development of the multi-family lots.

The overall density for the Ridges is 4 units per acre. The City is working on an amended plan for the Ridges that will specifically identify the maximum densities for the multi-family lots. Whatever maximum density is assigned will be limited by the individual site constraints, such as infrastructure and topography.

STAFF ANALYSIS:

The proposal is for the replatting and development of a 2.95 acre multi-family lot in the Ridges, Filing #6. Twelve single family lots are proposed for an overall density of 4.1 units per acre. The buildable area of the site is limited by the relatively steep slopes to the east and south. The development potential of the site is further limited by the narrow access of 26' to Prospector Point Drive. The traffic capacity of Prospector Point Drive is greatly limited by its narrow width and awkward geometry.

The developer had originally proposed 20 condominium units and 15 single family lots for the site. Staff comments on that proposal were that the existing constraints of the site would not allow that kind of density and that a lower density should be considered. The developer withdrew that proposed plan and resubmitted the plan for 12 single family lots, which equates to approximately 4 units per acre, which is the overall assigned density for the Ridges. Staff had indicated to the developer that the reduction in units would certainly be more appropriate for the site, but that the proposal would have to be reviewed in the context of the site constraints. Although the reduction in the number of units shown on this plan is better than the original proposal, staff still has a great concern that the configuration, location and topography of this site cannot support this number of units. The major concern with approving this number of lots is the inadequate roadway width at the intersection of the proposed Eagle Crest Court with Prospector Point Drive. The turning radii is not adequate and is especially of concern for Fire vehicle access.

Given all the constraints of the lot, staff would support a proposal for up to 4 single family lots on the site accessed by a common drive built to a standard in conformance with the rest of the Ridges development. This would decrease the infrastructure costs of the development and provide large view lots much more conducive to the site. The design standards of the drive would be decided on prior to submittal of a final plat.

How drainage from the site will be handled is another concern. The proposal is to pipe the drainage down the steep slope to the east into existing drainage facilities. An easement through the open space would have to be obtained from the City. Burying a pipe down the slope will require blasting through rock ledges, leaving scars on the hillside that will be almost impossible to restore. If the pipe is to be above ground it will be very visible along the entrance to the Ridges. How the energy of the steep fall will be dissipated is also a concern.

If Eagle Crest Court is to be a public road accessing 12 lots as proposed it must meet City standards, including curb, gutter and sidewalk. In those sections where the City standard cannot be met because of ROW width constraints, an alternative design would have to address pedestrian access, adequate pavement width and turning radius for safe access at the

intersection and drainage. Connections to the existing pathway system below the development should also be provided with a trail section through the proposed lot 5 down the slope at an acceptable grade, connecting to the trail system at the bottom. Trail section must be approved by the City Parks Department. Combining a trail system with the proposed drainage pipe through the open space should be considered to minimize the disturbance to the open space.

The developer has proposed that Eagle Crest Court be allowed as a private drive. After further review staff is recommending against Eagle Crest Court being a private drive no matter how many units are accessed off of it. The City's experience has been that homeowners are not willing to keep up with the maintenance of private drives and eventually look to the City to take them over. There is also the issue of refuse collection on private drives. There is not room for trash receptacles at the entrance of the proposed drive and it is a liability for trash collection vehicles to drive on private roads.

The building envelopes for lots 5 and 7 do not appear to have adequate depth for construction. The developer has indicated that specific house plans for those lots will be provided with the final plan/plat.

For staff to support the <u>proposed</u> plan the following requirements must be met:

1. Additional ROW must be obtained for the proposed Eagle Crest Court at its intersection with Prospector Point Drive to meet minimum design standards, including curb, gutter and sidewalk or an alternative design must be submitted accommodating adequate roadway width and turning radii at the intersection, drainage, and pedestrian access.

2. Specific building plans for lots 5 and 7 must be submitted with the final plan.

3. All building envelopes must maintain a 20' setback from the bluff line and the ROW.

4. Utility easements must be provided to Prospector Point Drive in an alignment acceptable to all utility providers.

5. A pathway must be constructed through lot 5 connecting to the existing trail system at the bottom of the slope.

6. An alternative means of dealing with storm drainage must be proposed and considered rather than a drainage pipe through the open space.

STAFF RECOMMENDATION:

Staff recommends denial of the request for 12 lots as proposed. If Planning Commission chooses to approve the request, staff recommends the 6 conditions listed above be included.

Staff recommends approval of allowing up to 4 single family lots accessing a drive with the following conditions:

1. The standards for the public drive will be determined prior to the final plan/plat.
2. An alternative means of dealing with storm drainage be proposed and considered rather than a drainage pipe through the open space.

As per the Zoning and Development Code, a development containing 4 lots can be reviewed and approved through a one-step process which does not require preliminary plan review. Therefore, a proposal for 4 lots could be submitted directly as a final plan/plat.

PLANNING COMMISSION APPROVAL:

Planning Commission at their August 2, 1994 hearing approved the request for approval of the preliminary plan for 12 lots subject to the staff conditions with the following modifications or clarifications:

1. That adequate ROW be obtained to meet the minimum City street standard for all of Eagle Crest Court.

2. That a pathway be constructed which meets City requirements connecting to the existing trail system at the bottom of the slope (not specifying it be through lot 5).

PLANNING COMMISSION RECOMMENDATION:

Planning Commission went on to recommend to City Council that up to 8 lots be allowed with a modified street standard which was compatible with the rest of the Ridges, with no curb, gutter or sidewalks, and a pavement width as approved by the City Development Engineer.

The request before Council is to consider the Planning Commission recommendation on a modified street standard for up to 8 lots. If Council chooses to approve the request staff recommends the following motion:

To approve a modified street section, with no curb, gutter or sidewalk, but with adequate pavement width and thickness as approved by the City Development Engineer to access up to 8 lots, with the following conditions:

1. **The modified standard would use the existing ROW to accommodate the minimum pavement width needed for safe ingress and egress from the site, with no curb, gutter or sidewalk on any of the street section.**

2. **Additional improvements, which can be accommodated within the existing ROW of Prospector Point, may be required for adequate turning radii into and out of the site.**

3. **On-street parking restrictions will apply on those sections of the street that do not**

meet standard width.

4. A separate pathway system down the slope will not be required.

5. All building envelopes must maintain a 20' setback from the bluff line and ROW.

6. Utility easements must be provided to Prospector Point Drive in an alignment acceptable to all utility providers.

7. An alternative means of dealing with storm drainage must be proposed and considered rather than a drainage pipe through the open space.

8. A final plan and plat must be submitted for review and approval through the Planning Commission incorporating all of the above conditions.

#20-94

September 20, 1996

Sidney Gottlieb
c/o Monument Realty
759 Horizon Drive
Grand Junction, CO 81506

City of Grand Junction, Colorado
250 North Fifth Street
81501-2668
FAX: (970)244-1599

Subject: Eagle Crest Subdivision

Dear Mr. Gottlieb:

A final inspection of the streets and drainage facilities in Eaqle CrestSubdivision was conducted on July 3, 1996. As a result of this inspection, a list of remaining items was given to your representative for completion. These items were reinspected and found to be satisfactorily completed.

"As Built" record drawings and required test results for the streets and drainage facilities were received on September 13, 1996. These have been reviewed and found to be acceptable.

In light of the above, the streets, sewer and drainage improvements are eligible to be accepted for future maintenance by the City of Grand Junction one year after the date of substantial completion. The date of substantial completion is July 3, 1996.

Your warranty obligation for all materials and workmanship for a period of one year beginning with the date of substantial completion will expire upon acceptance by the City.
If you are required to replace or correct any defects which are apparent during the period of the warranty, a new acceptance date and extended warranty period will be established by the City.

Thank you for your cooperation in the completion of the work on this project.

Sincerely,

Jody Kliska
City Development Engineer

Sincerely,

Trenton Prall
City Utility Engineer

cc: Don Newton
Doug Cline
Walt Hoyt
Kathy Portner
Landesign
Jerry O-Brien

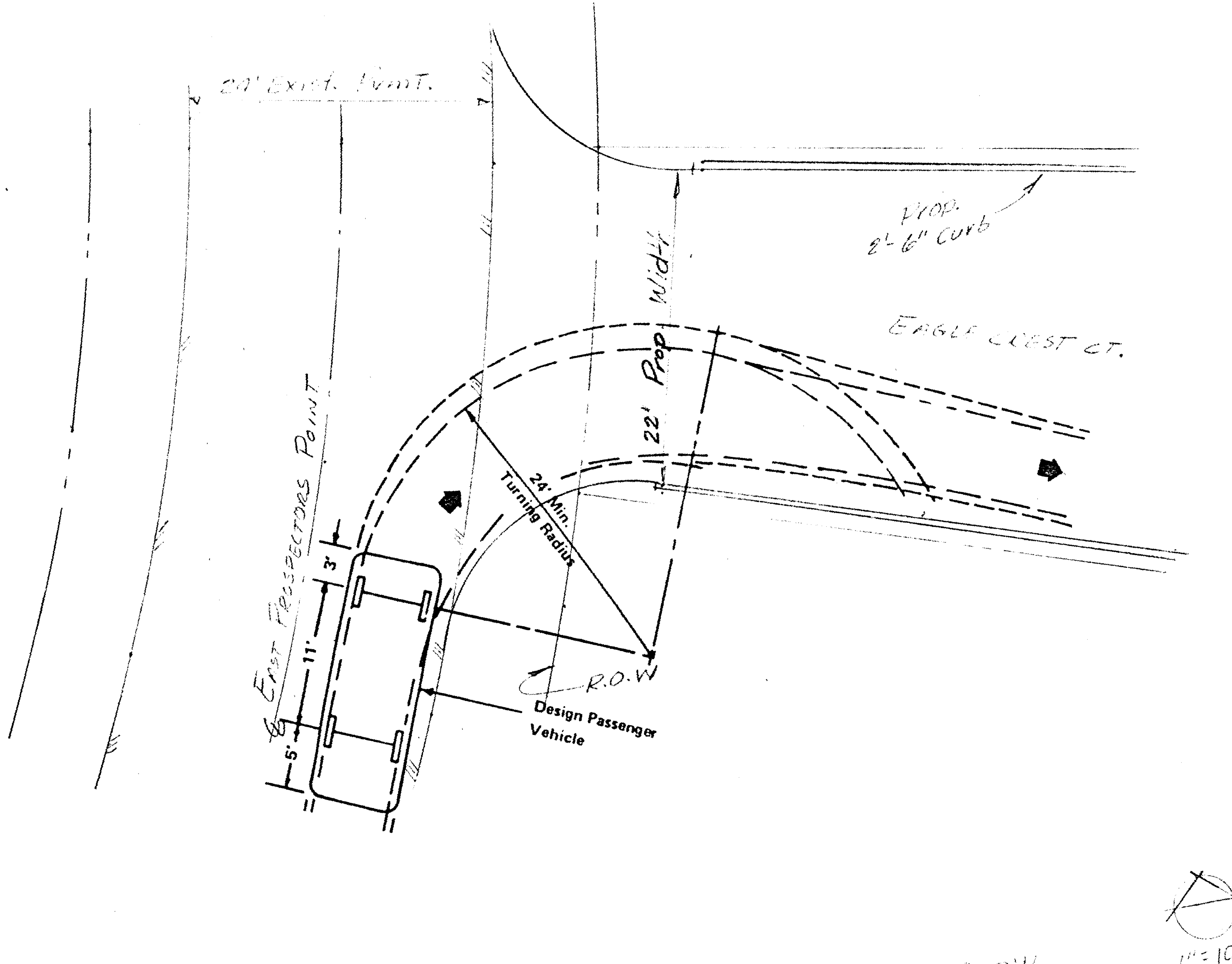
TYPE LEGAL DESCRIPTION(S) BELOW, USING ADDITIONAL SHEETS AS NECESSARY. USE SINGLE SPACING WITH A ONE INCH MARGIN ON EACH SIDE.

****

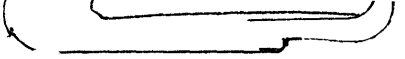
Lot 17, Block 9, The Ridges, Filing No. Six, City of Grand Junction, Mesa County, Colorado

Original
Do NOT Remove
From Office

#2094



Entrance Detail



- Developer & Dennis Stark - 6-8 units may be acceptable & appropriate
- PC Motion - Plan & Recommendation on St. standard & state reasons

STAFF REVIEW

FILE: #20-94(3)

DATE: October 17, 1994

STAFF: Kathy Portner

REQUEST: Preliminary Plan--Eagle Crest

LOCATION: Lot 17, Block 9, Filing 6, The Ridges

APPLICANT: Sidney Gottlieb

EXECUTIVE SUMMARY: Request for approval of a final plan and plat for 8 single family lots.

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Single Family Residential

SURROUNDING LAND USE:

NORTH:	Open Space and Single Family Residential
SOUTH:	Open Space and Single Family Residential
EAST:	Open Space and Single Family Residential
WEST:	Open Space and Single Family and Multi-family Residential

EXISTING ZONING: PR-4

PROPOSED ZONING: PR-4

SURROUNDING ZONING:

NORTH:	PR-4
SOUTH:	PR-4
EAST:	PR-4
WEST:	PR-4

RELATIONSHIP TO COMPREHENSIVE PLAN:

The Ridges Development Plan identifies this lot as a "Multi-family" site with no specific density assigned. One of the notes on the plat for The Ridges Filing No. Six states "3. All multi-family areas are to be developed through county processes and regulations, number of units per acre is variable". No other guidance is given for the development of the multi-family lots.

The overall density for the Ridges is 4 units per acre.

STAFF ANALYSIS:

The proposal is for the replatting and development of a 2.95 acre multi-family lot in the Ridges, Filing #6. Eight single family lots are proposed for an overall density of 2.7 units per acre. The buildable area of the site is limited by the relatively steep slopes to the east and south. The development potential of the site is further limited by the narrow access of 26' to Prospector Point Drive. The traffic capacity of Prospector Point Drive is greatly limited by its narrow width and awkward geometry.

The developer had originally proposed 20 condominium units and 15 single family lots for the site. Staff comments on that proposal were that the existing constraints of the site would not allow that kind of density and that a lower density should be considered. The developer withdrew that proposed plan and resubmitted a plan for 12 single family lots, which equates to approximately 4 units per acre, which is the overall assigned density for the Ridges. Staff had indicated to the developer that the reduction in units would certainly be more appropriate for the site, but that the proposal would have to be reviewed in the context of the site constraints. Planning Commission and City Council reviewed that plan and approved a total of eight single family lots provided additional ROW was acquired by the developer to widen the narrow access to 34'. The plan was also approved with sidewalk on only one side of the ROW.

1. All building envelopes must maintain a 20' setback from the bluff line and the ROW. Show the building envelopes on the contour map to verify that setback.

2. Utility easements must be provided to Prospector Point Drive in an alignment acceptable to all utility providers.

3. A pathway must be constructed along the drainage way connecting to the existing trail along Ridges Blvd. The path must be paved and not exceed a maximum grade as approved by the City Parks Dept. The applicant must verify with the Parks Dept. the maximum acceptable grade and trail location.

4. An easement for the storm drainage pipe is required. A legal description must be submitted.

5. How is the portion of the ROW without improvements to be used?

TRAFFIC STUDY AND REPORT

EAGLE CREST SUBDIVISION

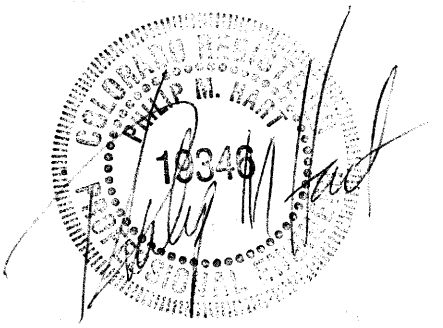
March 23, 1994

PREPARED FOR:
Sid Gottlieb
477 Elkwood Terrace
Englewood, NJ 07631

HART GROUP, PC
ENGINEERS • DESIGNERS • PLANNERS
227 SOUTH 9TH STREET, GRAND JUNCTION, COLORADO 81501
(303) 244-9180

PARTNER IN
LAND DESIGN
A JOINT VENTURE PARTNERSHIP

This study was prepared by me or under my direct supervision according to current information and guidelines.



INTRODUCTION

This study and report is written to address the written comments made regarding the traffic impact due to the development of Eagle Crest Subdivision in review comment dated February 15, 1994. Traffic volume and parking concerns were mentioned in these comments as possible problems which may arise due to the additional housing created by this subdivision.

Additional ADT will be created by development which is currently under construction and by this development. By inspecting the site, it appears that more developments may occur in the area as shown by the presence of numerous real estate signs offering vacant land available for development. The problems which are mentioned in the comments are already being created by the current development and building construction taking place. There are a few changes which could be made to the current streets which could alleviate some of the congestion.

This report will attempt to provide inexpensive changes and alterations to traffic control to alleviate problems created by current and future development.

CURRENT STREET INFORMATION

Street Widths

Proposed Eagle Crest Court	28 foot pavement
Prospectors Point	24 foot pavement
Rana Road	35 foot pavement
Ridge Circle Drive	38 foot pavement

Signage

Currently, no traffic control signs are present on Prospectors Point and a stop sign is located on Prospectors Point at the intersection with Rana Road. A stop sign is also located on Rana Road at the intersection with Ridge Circle Drive.

Parking

Parking is currently allowed on both sides of all streets as no "NO PARKING" signs are evident on the site. Parking use on Ridge Circle Drive is infrequent due to the frontage of homes in the section from Rana Road down to Ridges Boulevard is on the side streets except for 3 or 4 homes.

Parking on Rana Road is slight to moderate. Currently parking for home construction personnel and trades makes it difficult to determine how much parking usage is by the residents and how much is construction related.

Prospectors Point is used for parking of the residents. However, construction parking makes this street difficult to evaluate as well. The narrow template of this street seems to be the main cause of congestion in the area.

Curb and Gutter/Ditch Section

Currently all roads in the area are designed as suburban ditch section "country template" streets. Ditches are either non existent or of minimum depth.

Paving

Paving in the area of study is in good to excellent condition. Only a few areas of damage are evident at the edges of the paving.

TRAFFIC VOLUME

It has been estimated by the City of Grand Junction that the ADT of the area at Rana Road and Prospectors Point due to the three developments at build-out will be 933 ADT according to the following:

Proposed Eagle Crest Court	260
Columbine Village	253
Prospectors Point	420

Recommended volume by street design is as follows:

Eagle Crest Court	0 to 1000 ADT
Prospectors Point	< 500 ADT (no on street parking)
Rana Road	2001 to 8000 ADT (no on street parking)

Note: these ratings were developed from similar sections from the Mesa County Standard Specifications for Road and Bridge Construction. See Appendix A and B.

CONCLUSIONS

Street Widths

Street widths on the streets are adequate if parking is limited (see conclusions - parking) Prospectors Point seems to be the one street which will be close or over capacity due to it's width (24'). It's capacity is less than 500 ADT and at buildout of Prospectors Point and Eagle Crest the ADT will be 680. This shortfall could be made up by limiting the parking on Prospectors Point to one side of the street, or by designating parking limits to marked locations.

Additionally, a solution to the width\parking would be to make Prospectors Point a ONE WAY loop starting at the intersection of the loop. This would allow parking on both sides of the street and provide adequate width for one lane of traffic. It would be a minor inconvenience due to the short length of the loop area.

Signage

Additional signage could be used to slow traffic and allow access from streets with stop signs to thru streets, however, it may not be a means to alleviate congestion in the area. Some signage is needed at the loop of Prospectors Point whether it is made "one way" or not as traffic entering the loop intersection is not told who has right of way and both directions are not told to yield or stop. In observing the intersection for a few minutes, it was obvious that some signage is needed to alleviate confusion.

Parking

Parking should be limited on Prospectors Point if the "one way" option is not used. Parking on Rana Road should be limited between Ridge Circle Drive and Prospectors Point, which is the section that will carry the full 933 ADT.
In addition, parking should be eliminated within 100 feet of the intersections at; Prospectors Point/Eagle Crest Court, Prospectors Point/Prospectors Point loop intersection, Prospectors Point/Rana Road and Rana Road/Ridge Circle Drive.

Curb and Gutter/Ditch Section

While curb and gutter would be desirable on the existing streets, it would not be cost effective to construct them in this area.

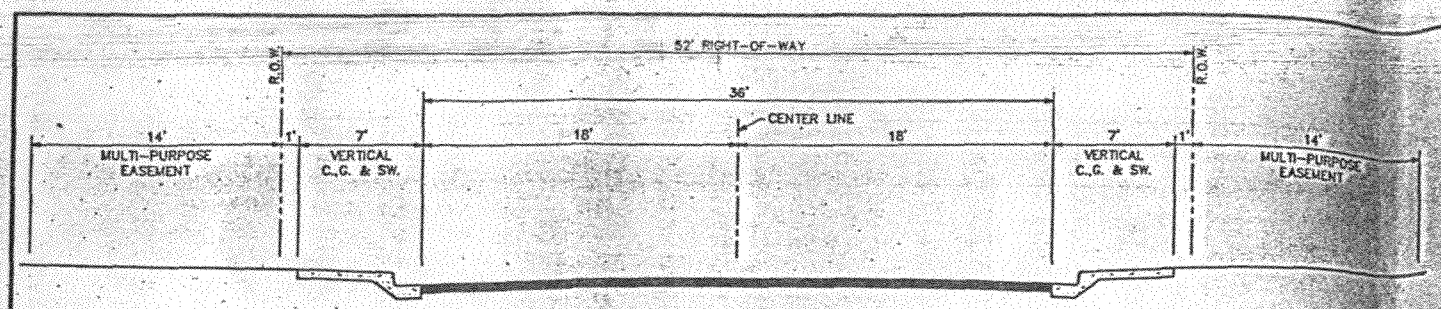
Paving

Paving on the existing streets is currently in good conditions.

RECOMMENDATIONS

1. Eliminate parking within 100 feet of the intersections mentioned above.
2. Eliminate parking on Rana Road between Ridge Circle Drive and Prospectors Point
3. Make Prospectors Point a "ONE WAY" counterclockwise loop.

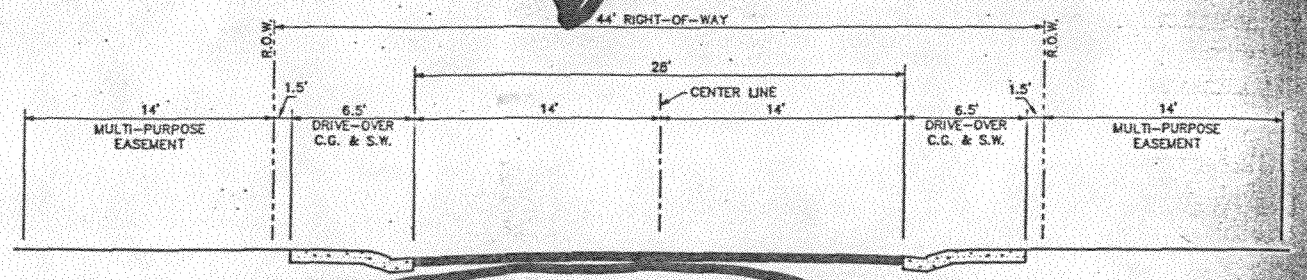
These modifications would be inexpensive and would alleviate some of the congestion and sight distance problems which are anticipated at build-out.



URBAN RESIDENTIAL COLLECTOR

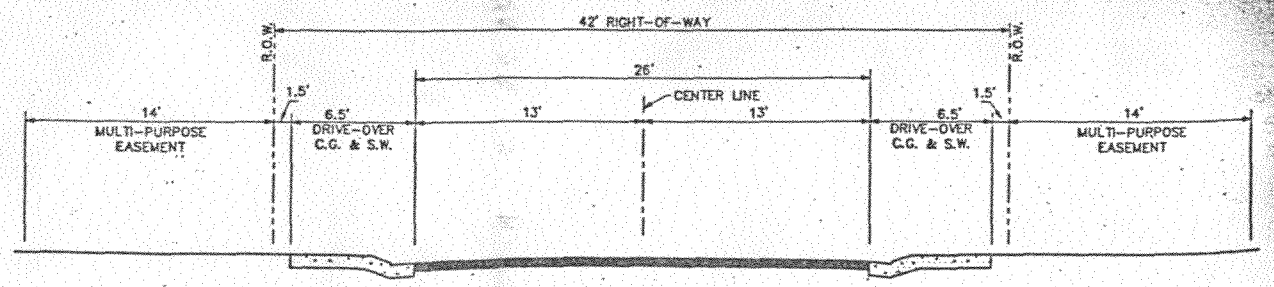
1000 TO 3,000 A.D.T.
ON STREET PARKING ALLOWED
ONLY WHERE LEFT TURN LANE IS NOT REQUIRED

EAGLE CREST COURT



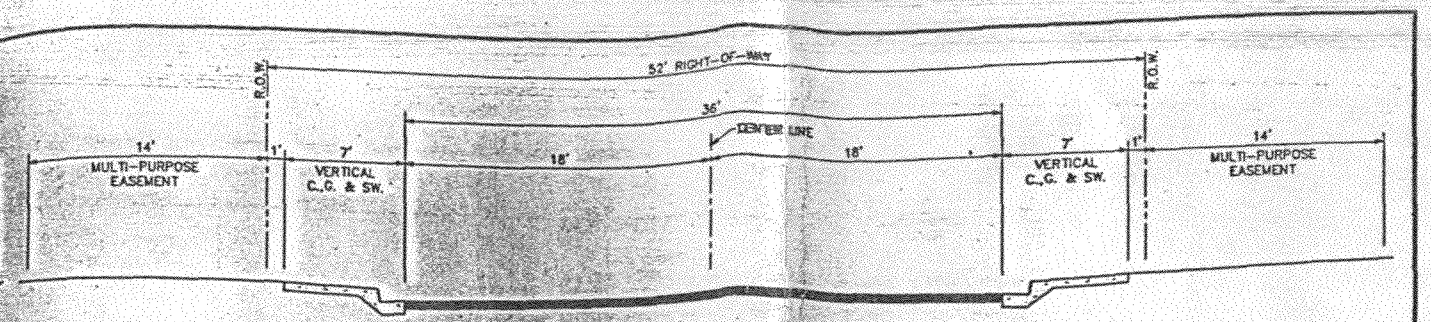
URBAN RESIDENTIAL SUBCOLLECTOR

250 to 1000 A.D.T.



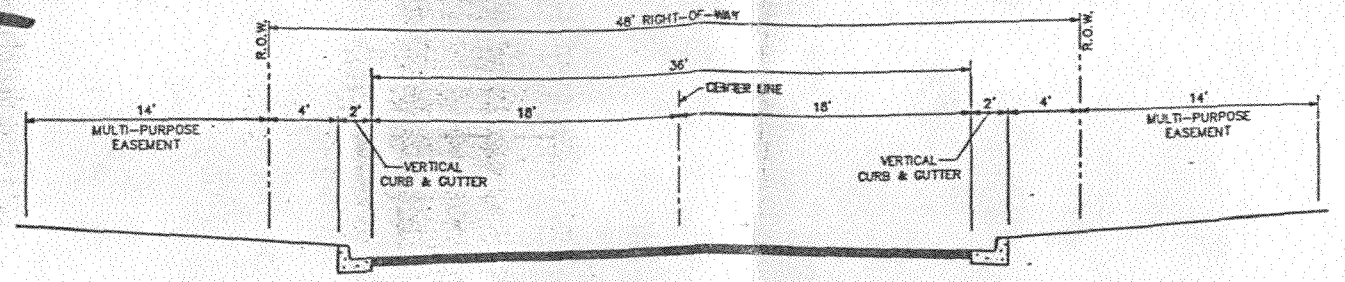
URBAN RESIDENTIAL ACCESS

0 to 250 A.D.T.
MAXIMUM LENGTH OF DEAD END STREET 1000'



COMMERCIAL STREET SECTION

0 to 3000 ADT
NO ON-STREET PARKING



INDUSTRIAL STREET SECTION

0 to 3000 ADT
NO ON-STREET PARKING

NOTE:
STREETS IN INDUSTRIAL AREAS MAY BE CONSTRUCTED WITH 5' WIDE LONGITUDINAL "V" PANS IN LIEU OF CURBS & GUTTERS WHERE APPROVED BY THE COUNTY.

RESIDENTIAL TRIP GENERATION RATES

DEVELOPMENT TYPE	VEHICLE TRIPS PER DWELLING UNIT WEEKDAY	PEAK HOUR
SINGLE-FAMILY DETACHED	9.55	1.02
APARTMENT, GENERAL	6.47	0.69
CONDOMINIUMS/TOWNHOUSES	5.86	0.54
MOBILE HOME PARK	4.81	0.58
RETIREMENT COMMUNITY	3.30	0.34
PLANNED UNIT DEVELOPMENT	7.44	0.72
CHURCH – TRIPS PER 1,000 SQ. FT. FLOOR AREA	9.32	1.42

REFERENCE FOR ABOVE AND OTHER DEVELOPMENTS:
LATEST EDITIONS OF THE "TRIP GENERATION MANUAL" BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (I.T.E.)

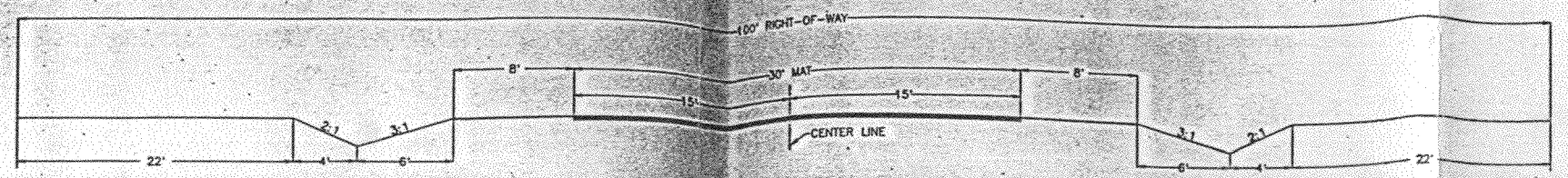
A.D.T.=AVERAGE DAILY TRAFFIC

NOTES:

1. DRIVE OVER CURBS ARE ALLOWED ONLY ON RESIDENTIAL SUBCOLLECTORS AND ACCESS STREETS.
2. ALL STREETS AND ROADWAYS SHALL BE SURFACED WITH HOT BITUMINOUS PAVEMENT (HBP) OR PORTLAND CEMENT CONCRETE (PCC). ALL PAVEMENT STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE COLORADO DIVISION OF HIGHWAYS, ROADWAY DESIGN MANUAL (LATEST EDITION). MINIMUM ASPHALT PAVEMENT THICKNESS SHALL BE 3" ON RESIDENTIAL STREETS AND 4" ON COMMERCIAL, INDUSTRIAL OR MIXED USE STREETS.
3. SEE EXHIBIT "D" FOR DETAILS OF MULTI-PURPOSE EASEMENTS ADJACENT TO ROAD RIGHT-OF-WAY.
4. DRIVEWAY CULVERTS ON RURAL ROADS SHALL BE INSTALLED AND MAINTAINED BY PROPERTY OWNERS.

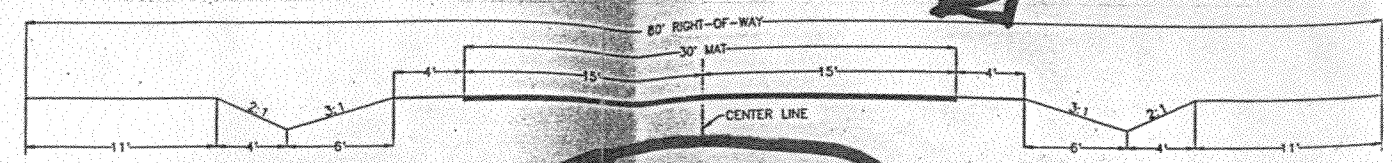
APPENDIX 'A'

DRAWN CITY DATE	SCALE	MESA COUNTY DEPARTMENT OF PUBLIC WORKS DIVISION OF ENGINEERING AND DESIGN	EXHIBIT "B1" URBAN STREET STANDARDS
REVISED GC DATE 4-92	PLAN HORIZ. N.T.S.		SHEET 1 OF 2
DESIGN DATE	PROFILE HORIZ.		FILE EX-B1-92
CHECKED DATE 9-14-92	VERT.		PROJECT NO.
APPROVED DATE			

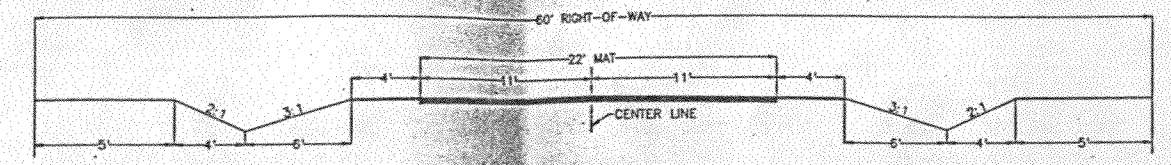


PRINCIPAL ARTERIAL SECTION
GREATER THAN 8,000 ADT
(2 LANE WITH NO PARKING)

PANA ROAD

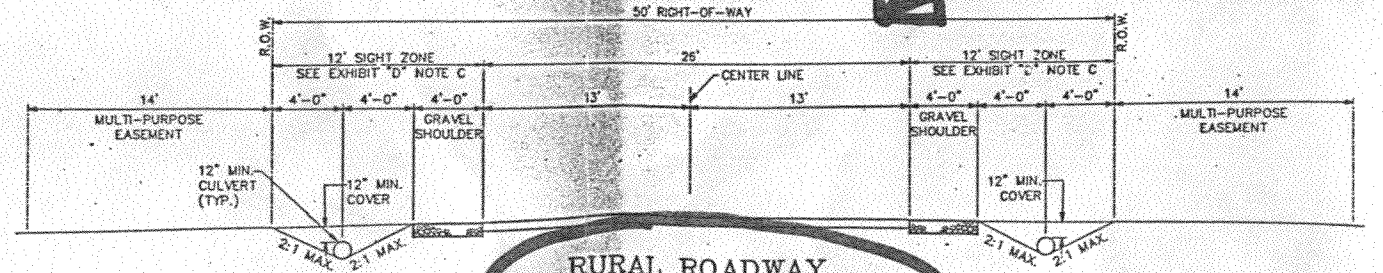


MINOR ARTERIAL SECTION
2,001 TO 8,000 ADT
(2 LANE WITH NO PARKING)

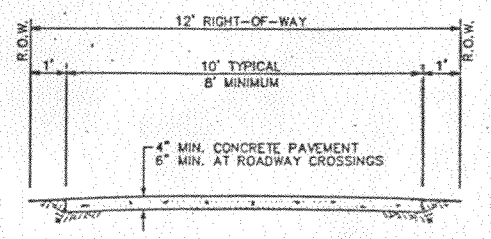


COLLECTOR SECTION
501 TO 2,000 ADT
(2 LANE WITH NO PARKING)

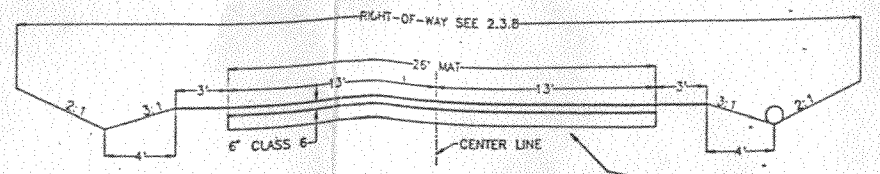
PROSPECTORS POINT



RURAL ROADWAY
RESIDENTIAL DENSITIES OF NO MORE THAN ONE DWELLING UNIT PER 2 ACRES, LESS THAN 500 A.D.T.



TWO-WAY OFF STREET BICYCLE PATH



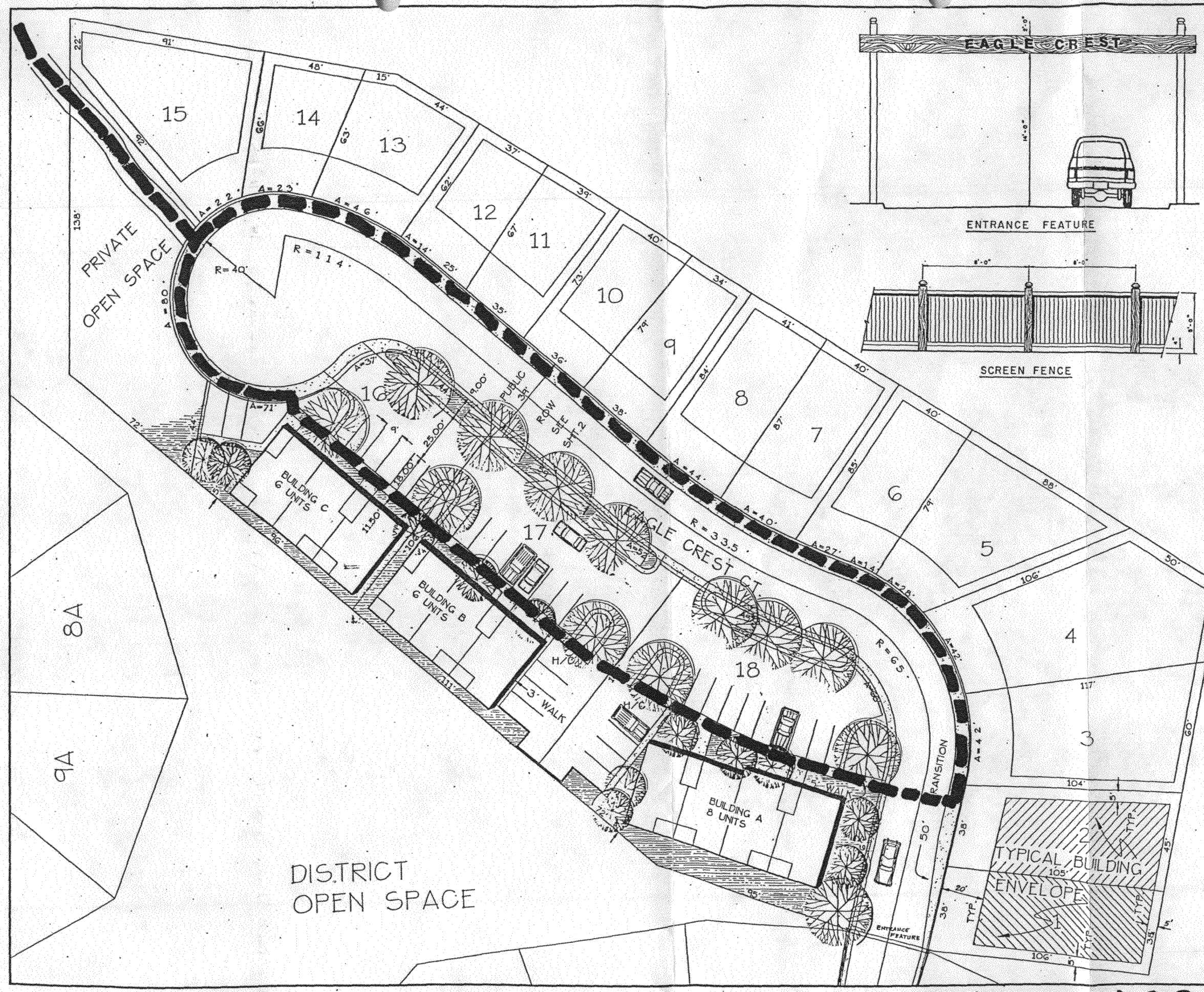
RURAL ROAD GRAVEL SECTION

NOTE:
1) FLOWLINE OF ROADSIDE DITCH TO BE BELOW SUB GRADE.

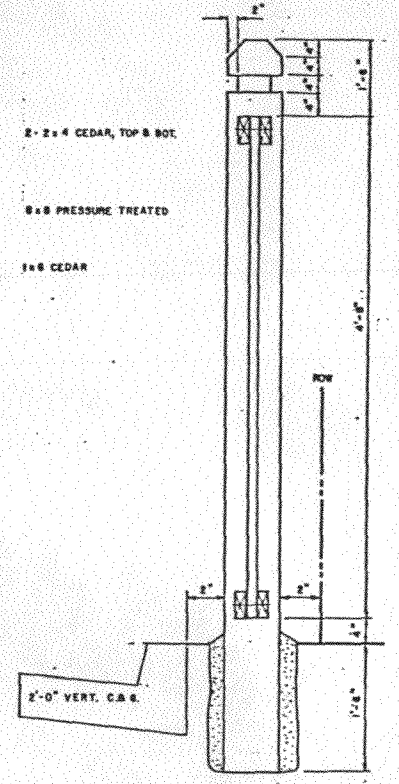
2) DRIVEWAY CULVERTS ON RURAL ROADS SHALL BE INSTALLED AND MAINTAINED BY THE PROPERTY OWNER.

APPENDIX 'B'

DRAWN GC DATE 5-92	SCALE	MESA COUNTY DEPARTMENT OF PUBLIC WORKS DIVISION OF ENGINEERING AND DESIGN	EXHIBIT "C" RURAL STREET STANDARDS
REVISED ____ DATE ____	PLAN PROFILE		SHEET 1 OF 1
DESIGN ____ DATE ____	HORIZ. N.T.S. HORIZ. ____		FILE EX-C-92
CHECKED GC DATE 9-24-92	VERT. ____		PROJECT NO. ____
APPROVED ____ DATE ____			



POST DETAIL



DEVELOPMENT SCHEDULE		
PHASE	YEAR	LOT #
I	1994	1-7
II	1995	8-15
III	1996	16
IV	1997	17
V	1998	18

LAND USE SUMMARY			
USE	UNITS	AREA	% OF TOTAL
CLUSTER SINGLE FAMILY	15	1.30	44.1
CONDO. AREA	20	0.85	28.8
PUBLIC ROADS ROW		0.64	21.7
PRIVATE OPEN SPACE		0.16	5.4
TOTAL	35	2.95	100
CONDO PARKING: 36 SPACES (1.8 spaces per unit)			
DENSITY: 11.9 DU/AC			

SCALE 1"=20'

0' 23' 40' 60'

SITE DEVELOPMENT PLAN
EAGLE CREST
ON THE RIDGES

T&L THOMAS A. LOGUE
LAND DEVELOPMENT CONSULTANT

PROJECT NO. EAGLECREST94005	SHEET	OF
DATE: JANUARY, 1994	3	5

PEDESTRIAN CIRCULATION