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File FPP-1996-027-2 Name: Cobblestone Ridges – Rana Road in the Ridges

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**
X		Review Sheets
X		Receipts for fees paid for anything
X	X	***Submittal checklist**
X	X	***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	X	Legal description
		Appraisal of raw land
		Reduction of any maps – final copy
		***Final reports for drainage and soils (geotechnical reports)**
		Other bound or non-bound reports
		Traffic studies
X	X	***Review Comments**
		***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	Correspondence			
X	X	Report of Geotechnical Investigation			
X		Covenants			
X	X	Final Drainage Report			
X		Treasurer's Certificate of Taxes due – ISSUED 8/29/96			
X	X	Planning Commission Minutes – 10/1/96 - **			
X	X	Certification of Plat – Phs. 1-11/6/96 and Phs 2-2/26/97			
X		Posting of Public Notice Signs form – issued 9/16/96			
X	X	Subdivision Plats Phs. 1 & 2 – GIS Historical Maps - **			
X	X	Composite Plan (Phase I and 2)			
X	X	Location Map			
X		Notice of Public Hearing – 9/20/96			

DEVELOPMENT APPLICATION

Community Development Department
250 North 5th Street, Grand Junction, CO 81501
(970) 244-1430

Receipt _____
Date _____
Rec'd By _____
File No. FPP-96-27-2

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		Cobblestone Ridge	PR-4	Residential
☐ Rezone				From: To:	
☐ Planned Development	☐ ODP ☐ Prelim ☐ Final				
☐ Conditional Use					
☐ Zone of Annex					
☐ Variance					
☐ Special Use					
☐ Vacation					☐ Right-of Way ☐ Easement
☐ Revocable Permit					
☐ Site Plan Review					
☐ Property Line Adj.					

Property Owner Name	Developer Name	Representative Name
Dynamic Investments, Inc.	Cobblestone Communities, Inc.	Thompson-Langford Cor
P.O. Box 3003	P.O. Box 1267	529 25½ Rd. Suite B21(
Telluride, CO 81435	Grand Junction, CO 81502	Grand Junction, CO 815(
(970) 728-5599	(970) 257-0500	(970) 243-6067

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 required 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.

Signature of Person Completing Application — Date 8/30/96

Dynamic Investments Inc. By: [signature], President — 8/30/96

Signature of Property Owner(s) - attach additional sheets if necessary — Date

SUBMITTAL CHECKLIST

MAJOR SUBDIVISION: FINAL

Location: Ridgs Project Name: Cobblestone Ridgs

Date Received _____

Receipt # 4530

File # FPP-96 ~~PPR~~

DESCRIPTION 27-2

ITEMS	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)	O City Downtown Dev. Auth.	● City Police	● County Planning	O County Building Department	~~● County Surveyor~~	O Walker Field	● School Dist. #51	● Irrigation District Redlands WD	O Drainage District	O Water District	~~● Sewer District~~ Ridgs ACCO	● U.S. West	● Public Service	~~● Cable~~ Comcast WWTP	O CDOT	O Corps of Engineers	O Colorado Geologic Survey	● U.S. Postal Service	● Persigo WWTF	● TCI Cable			TOTAL REQ'D.
● Application Fee $720 + $15/acre	VII-1	1																														1
● Submittal Checklist*	VII-3	1																														3
● 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	1	1	1			19
● 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	1	1	1			27
● Reduction of 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	1	1	1			27
● Evidence of Title	VII-2	1			1			1																								5
O Appraisal of Raw Land	VII-1	1			1	1																										
● Names and Addresses*	VII-2	1																														3
● Legal Description*	VII-2	1			1																											4
O Deeds	VII-1	1			1			1																								
O Easements	VII-2	1	1	1	1			1													1	1	1						1			
O Avigation Easement	VII-1	1			1			1							1																	
O ROW	VII-2	1	1	1	1			1													1	1	1						1			
● Covenants, Conditions & Restrictions	VII-1	1	1					1																								5
O Common Space Agreements	VII-1	1	1					1																								
● County Treasurer's Tax Cert.	VII-1	1																														3
● Improvements Agreement/Guarantee*	VII-2	1	1	1				1																								6
O CDOT Access Permit	VII-3	1	1																													
O 404 Permit	VII-3	1	1																													
O Floodplain Permit*	VII-4	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	2	1	1	1	1	1	1	1			28
● Composite Plan	IX-10	1	2	1	1																											
● 11"x17" Reduction Composite Plan	IX-10	1				1	1	1	8	1	1	1	1				1	1	1	1	1	1	1	1	1	1		1	1			
● Final Plat	IX-15	1	2	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
● 11"X17" Reduction of Final Plat	IX-15	1							8	1	1	1			1	1	1	1	1	1	1	1	1				1		1			
● Cover Sheet	IX-11	1	2																													
● Grading & Stormwater Mgmt Plan	IX-17	1	2															1							1	1			1			
O Storm Drainage Plan and Profile	IX-30	1	2															1			1	1	1						1			
● Water and Sewer Plan and Profile	IX-34	1	2	1			1												1	1	1	1	1					1	1			
● Roadway Plan and Profile	IX-28	1	2															1														
● Road Cross-sections	IX-27	1	2																													
● Detail Sheet	IX-12	1	2																													
O Landscape Plan	IX-20	2	1	1					8																							
~~● Geotechnical Report~~	X-8	1	1																							1						
O Phase I & II Environmental Report	X-10,11	1	1																													
● Final Drainage Report	X-5,6	1	2															1														5
O Stormwater Management Plan	X-14	1	2															1							1							
O Sewer System Design Report	X-13	1	2	1																1												
O Water System Design Report	X-16	1	2	1															1													
O Traffic Impact Study	X-15	1	2																					1								
● Site Plan – setbacks/fence locations	IX-29	1	2	1	1		1		8																							

NOTES: * An asterisk in the item description column indicates that a form is supplied by the City.

PRE-APPLICATION CONFERENCE

Date: 7/11/96
Conference Attendance: Kathy P. Steve Graves
Proposal: Final Plat/Plan
Location: Cobblestone Ridge

Tax Parcel Number: _____
Review Fee: $720 plus $15
(Fee is due at the time of submittal. Make check payable to the City of Grand Junction.)

Additional ROW required? yes
Adjacent road improvements required? yes
Area identified as a need in the Master Plan of Parks and Recreation? _____
Parks and Open Space fees required? yes Estimated Amount: _____
Recording fees required? _____ Estimated Amount: _____
Half street improvement fees/TCP required? TCP Estimated Amount: _____
Revocable Permit required? _____
State Highway Access Permit required? _____
On-site detention/retention or Drainage fee required? yes

Applicable Plans, Policies and Guidelines _____

Located in identified floodplain? FIRM panel # _____
Located in other geohazard area? _____

Located in established Airport Zone? Clear Zone, Critical Zone, Area of Influence? _____
Avigation Easement required? _____

While all factors in a development proposal require careful thought, preparation and design, the following "checked" items are brought to the petitioner's attention as needing special attention or consideration. Other items of special concern may be identified during the review process.

O Access/Parking	O Screening/Buffering	O Land Use Compatibility
O Drainage	O Landscaping	O Traffic Generation
O Floodplain/Wetlands Mitigation	O Availability of Utilities	O Geologic Hazards/Soils

O Other _____
Related Files: _____

It is recommended that the applicant inform the neighboring property owners and tenants of the proposal prior to the public hearing and preferably prior to submittal to the City.

PRE-APPLICATION CONFERENCE

WE RECOGNIZE that we, ourselves, or our representative(s) must be present at all hearings relative to this proposal and it is our responsibility to know when and where those hearings are.

In the event that the petitioner is not represented, the proposed item will be dropped from the agenda, and an additional fee shall be charged to cover rescheduling expenses. Such fee must be paid before the proposed item can again be placed on the agenda. Any changes to the approved plan will require a re-review and approval by the Community Development Department prior to those changes being accepted.

WE UNDERSTAND that incomplete submittals will not be accepted and submittals with insufficient information, identified in the review process, which has not been addressed by the applicant, may be withdrawn from the agenda.

WE FURTHER UNDERSTAND that failure to meet any deadlines as identified by the Community Development Department for the review process may result in the project not being scheduled for hearing or being pulled from the agenda.

X _____ X _____
Signature(s) of Petitioner(s) Signature(s) of Representative(s)

City of Grand Junction
250 North 5th Street
Grand Junction, CO
81501-2628

City of Grand Junction
250 North 5th Street
Grand Junction, CO
81501-2628

Mr. Gregory Hoskin
P.O. Box 40
Grand Junction, CO
81502-0040

. G.H. Garrett
2386 Plateau Court
Grand Junction, CO
81503

. G.H. Garrett
2386 Plateau Court
Grand Junction, CO
81503

. G.H. Garrett
2386 Plateau Court
Grand Junction, CO
81503

. G.H. Garrett
2386 Plateau Court
Grand Junction, CO
81503

Genie, Inc.
P.O. Box 3299
Grand Junction, CO
81502-3299

Mr. Ed Cluff
4120 South Allison Street
Lakewood, CO 80235

City of Grand Junction
250 North 5th Street
Grand Junction, CO
81501

Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503

Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503

Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503

Dynamic Investments
391 1/2 Hillview Drive
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81503

Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503

Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503

Mr. & Mrs. David Koos
2365 1/2 Rana Road
Grand Junction, CO
81503-3306

Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503-4606

Mr. Robert R. McKenzie
405 Rana Court
Grand Junction, CO
81503-1524

Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503-4606

Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503-4606

Mr. & Mrs. Justin Tate
432 Prospectors Point
Grand Junction, CO
81503

Mr. & Mrs. Larry
Bunnell
432 1/2 Prospectors Pt
Grand Junction, CO
81503

Mr. Richard Genova
2234 Rimrock Road
Grand Junction, CO
81503-1177

Mr. & Mrs. Emmons
P.O. Box 1623
Grand Junction, CO
81502-1623

Mr. & Mrs. Dorman
2368 Rana Road
Grand Junction, CO
81503-1518

Mr. & Mrs. Hughes
2366 1/2 Rana Road
Grand Junction, CO
81503-1518

Mr. Frank Frigetto
2366 Rana Road
Grand Junction, CO
81503-1518

Mr. James Matarozzo
P.O. Box 168
Collbran, CO 81624-
0168

Ms.. Lonna Jill Spriggs
404 Rana Court
Grand Junction, CO
81503-1524

Mr. & Mrs. Patrick Still
430 Prospectors Point
Grand Junction, CO
81503-1578

. Mr. & Mrs. Schaefer
430 1/2 Prospectors Pt
Grand Junction, CO
81503-1578

M.E. Foster
915 Lakeside Court
Grand Junction, CO
81506

. G.H. Garrett
2386 Plateau Court
Grand Junction, CO
81503

. G.H. Garrett
2386 Plateau Court
Grand Junction, CO
81503

Mr. & Mrs. David Koos
2365 1/2 Rana Road
Grand Junction, CO
81503-3306

Temple Rock Capital
4120 South Allison Street
Lakewood, CO 80235

Mr.. Ed Cluff
4120 South Allison Street
Lakewood, CO 80235

Mr. & Mrs. James
Darnell
2361 Rana Road
Grand Junction, CO
81503-1523

Mr. & Mrs. James
Darnell
2361 Rana Road
Grand Junction, CO
81503-1523

Dynamic Investments
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Telluride, CO 81435

Steve Craven
Cobblestone Communities
P.O. Box 1267
Grand Junction, CO 81502

Cobblestone Communities
P.O. Box 1168
Telluride, CO 81435

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

Jim Langford
Thompson-Langford Corp.
529 25 1/2 Rd., Suite B-210
Grand Junction, CO 81505

COBBLESTONE RIDGES PHASE I RE-PHASING ROAD, UTILITIES AND LOT LINE CHANGES PLAN AND PLAT

GENERAL PROJECT REPORT (SSID X-7)

A. PROJECT DESCRIPTION

1. MODIFICATIONS & CHANGES: Phases 1 and 2 of Cobblestone Ridges where previously approved as per the attached map marked "ORIGINAL PLAN/PHASING". Phase 1 consisted of 14 lots, 13 lots to be located on Saddle Back Court, and 1 lot to be located on Rana Road. Phase 2 consisted of 21 lots to be located along Saddle Court. The Modified Plan/ Phasing as attached shows the elimination of Saddle Back Court and the 13 lots that were approved thereon. Instead, 4 lots are proposed fronting Rana Road, with the remaining 4.359 acres of the original Phase 1 being dedicated as additional District Open Space. Within a portion of this new open space, a detention pond has been proposed that uses the nature topography much more efficiently than the previously approved detention pond to achieve needed site drainage requirements. Additionally, 1 lot was eliminated on Saddle Court to allow for the enlargement of other surrounding lots, thus Saddle Court will now consist of 20 lots instead of the original 21.

The modified Phase 1 will consist generally of those improvements that were previously approved for the original Phases 1 and 2 with the following modifications: 1) the elimination of Saddle Back Court and all improvements that were associated therewith, 2) the extension of Rana Road approximately 100 feet further to the west, 3) the relocation of the detention pond as depicted, and 4) modifications to the drainage facility plans at the area of the four newly configured lots along Rana Road. The originally proposed Phase 3 will become the new Phase 2, and the originally proposed Phase 4 will become the new Phase 3.

Additionally, please note that the lots along the south side of Rana Road that were originally proposed to be "Angled Z Lots" will be platted as conventional lots under the Modified Plan/Phasing.

2. LOCATION & ACREAGE: Phases 1 and 2 of Cobblestone Ridges are located in Filing #6 of the Ridges Planned Unit Development taking access from a short extension of Rana Road. Phase 1 and 2 consist of 30.483 and 9.939 acres respectively out of Lot 1, Block 23, Ridges Filing #6.

3. PROPOSED USES: The proposed use for Phase 1 is 26 single family lots. The proposed use for Phase 2 is 21 single family lots. Additional land uses will include open space, a park, greenbelts, a bike path, and a detention area.

B. PUBLIC BENEFIT

As an infill project, Phase I of Cobblestone Ridges will create a more efficient use of existing infrastructure, as well as, assist in the reduction of debt created by the original Ridges Metro District. In addition, Phase I Cobblestone Ridges will provide a significant addition to the area's District Open Space, and will add to the completion of Rana Road, providing a continuation of traffic circulation and utilities to the west as the Official Development Plan for the Ridges envisioned.

C. PROJECT COMPLIANCE, COMPATIBILITY AND IMPACT

1. ADOPTED PLANS OR POLICIES: The project is compatible with the Ridges Official Development Plan. It continues the extension of Rana Road to the West as the ODP envisions and its densities are well below those allowed under the ODP.

2. LAND USE IN THE SURROUNDING AREA: The surrounding area is typified by single family and patio home development which is consistent with the lot sizes and density of Phase I of Cobblestone Ridges.

3. SITE ACCESS AND TRAFFIC PATTERNS: Rana Road, which is currently a dead end street, will be extended to the west. Traffic will enter and exit via Rana Road which is capable of handling the additional traffic generated by this development (see Traffic Impact Analysis).

4. AVAILABILITY OF UTILITIES INCLUDING PROXIMITY OF FIRE HYDRANTS: All utilities will be brought to the site from the east in Rana Road. Fire hydrants will be installed at 500 foot intervals in accordance with the Grand Junction Fire Department requirements.

5. SPECIAL OR UNUSUAL DEMANDS ON UTILITIES: Due to the substantial reduction in density from that which the utilities were originally sized for, this development should not place unusual demand on utilities.

6. EFFECTS ON PUBLIC FACILITIES: Fire, police, sanitation, roads, parks, schools and irrigation. This development is designed in part to be a senior citizen marketed development, therefore its impact on schools will be minimized. Likewise police, fire, sanitation and parks impact is expected to be less than was originally contemplated within the Ridges due to Phase I Cobblestone Ridges development being less dense than that anticipated within the Ridges Official Development Plan. The Ridges Official Development Plan was based on this area developing with the types of uses which are now proposed, and many of the facilities such as parks, roads, utilities and large opens spaces were planned with this growth in mind.

7. SITE SOILS AND GEOLOGY: The geotechnical report describes the soils on the site and the precautions that should be taken in building on these soils.

8. IMPACT OF PROJECT ON SITE GEOLOGY AND GEOLOGICAL HAZARDS: The site is planned to carefully place development to minimize impacts. The entire project is planned to place houses in the flattest areas of the site, and ample open space is left along the steep slopes and ledges and these areas will be left untouched. (see Geotechnical Report)

9. HOURS OF OPERATION: (not applicable to this proposal)

10. SIGNAGE: The Applicant will erect a subdivision entry sign in accordance with the City of Grand Junction sign code.

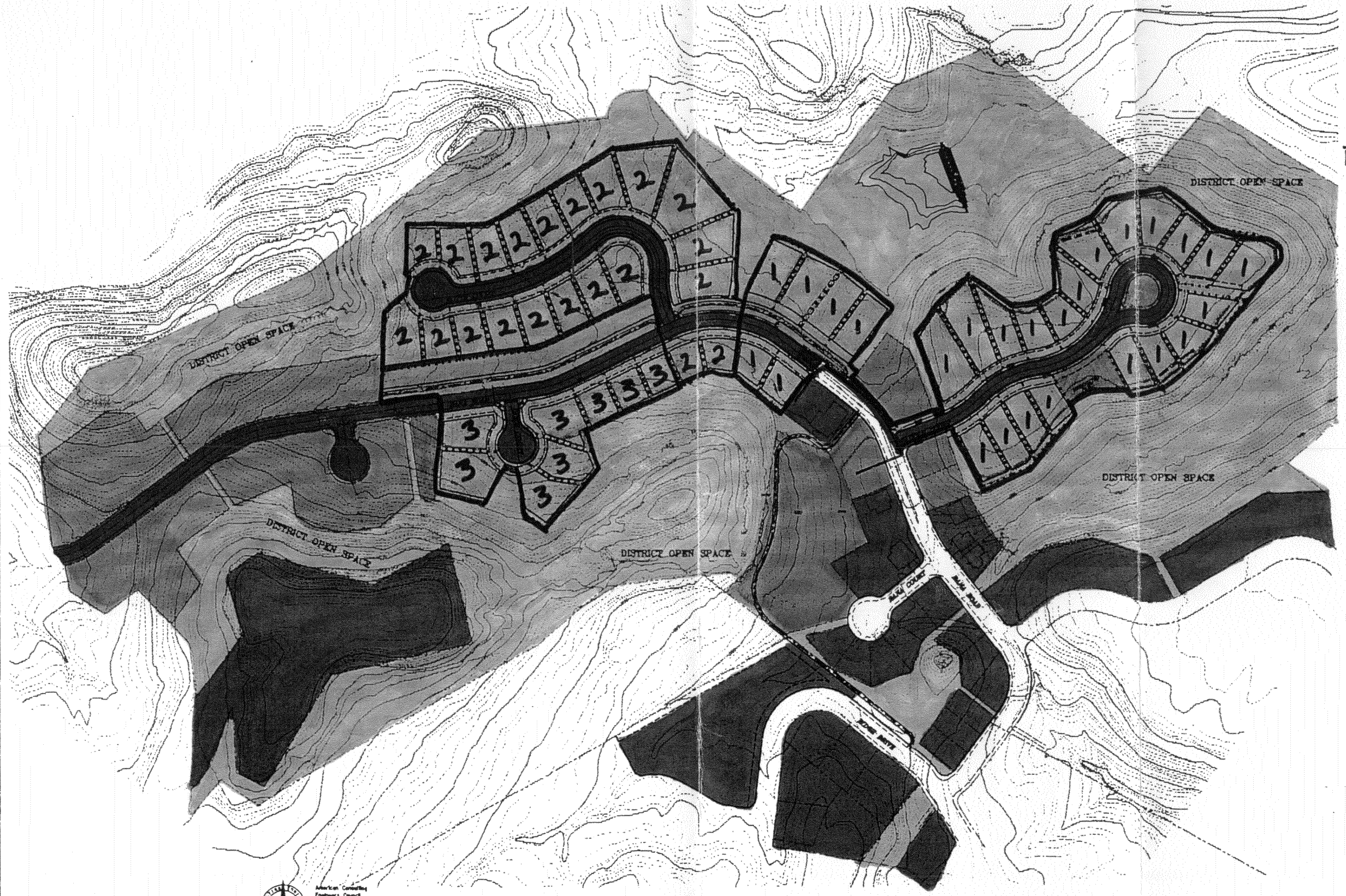
D. DEVELOPMENT SCHEDULE AND PHASING

Phases 1 and 2 of Cobblestone Ridges are anticipated to begin construction in October of 1996, and should be completed by January of 1997.

E. OPEN SPACE PARK FEES

Phase I of Cobblestone Ridges in generally surrounded by District Open Space. Additional Open Space is being added through the re-platting of this area. Open Space and Park fees will be paid as per the City of Grand Junction ordinances.

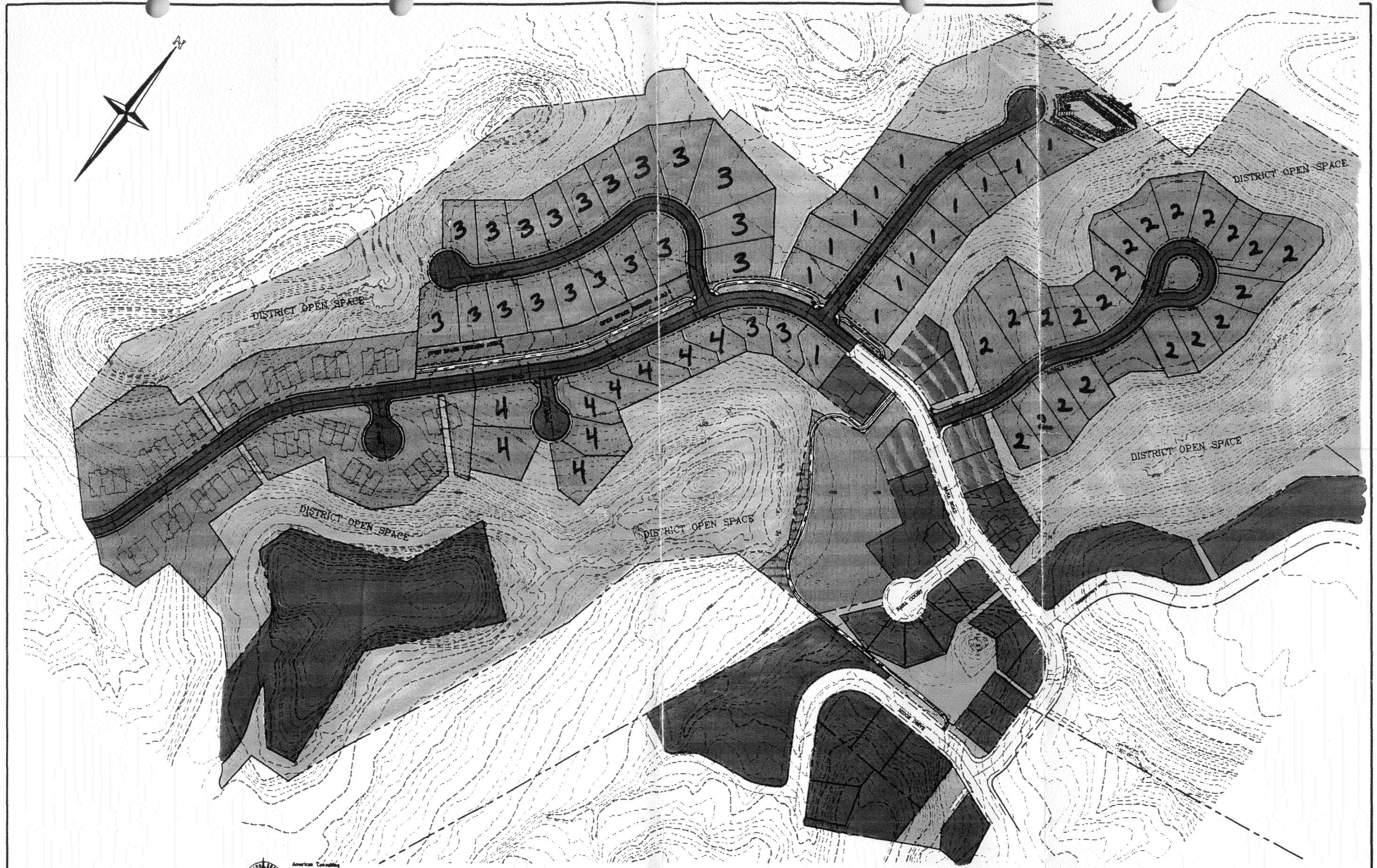
COBBLESTONE RIDGES



DRAWN BY: MWT	PREPARED UNDER THE SUPERVISION OF	THOMPSON-LANGFORD CORP.	REVISION	DATE	DESCRIPTION	BY	CK'D	STEVE CRAVEN	COBBLESTONE
DESIGNED BY: JEL/MWT	_____ P.E. NO. _____	529 25 1/2 RD., SUITE B210						EXHIBIT "A" WITH OFF-SITE PATH EXTENSION	
CHECKED BY: JEL	REVIEWED _____	GRAND JUNCTION, COLORADO							
	DATE: _____	PH. (303) 243-6067							

SCALE:	JOB NO:	DATE:
1" = 100'	0252-001	8/19/96
SHEET NO:		
1 OF 1		

ORIGINAL PLAN/PHASING



American Consulting Engineers Council Member

DRAWN BY: JEL	PREPARED UNDER THE SUPERVISION OF	THOMPSON-LANGFORD CORP.	STEVE CRAVEN — GRAND JUNCTION
DESIGNED BY:	_____ P.E. NO. _____	529 25 1/2 RD., SUITE B210	EXHIBIT "A" WITH OFF-SITE PATH EXTENSION
CHECKED BY:	REVIEWED _____	GRAND JUNCTION, COLORADO	SCALE: 1"=200' — JOB NO: 0252-001 — DATE: 3/12/96
	DATE: _____	PH. (303) 243-6067	SHEET NO: 1 OF 1

REVISION	DATE	DESCRIPTION	BY	CHK'D

FPP-96-27

REPORT OF GEOTECHNICAL INVESTIGATION FOR THE RIDGES, FILING #6 SUBDIVISION A PORTION OF SECTION 17, T1S, R1W OF THE UTE MERIDIAN GRAND JUNCTION, COLORADO

Prepared For:

Cobblestone Communities, Inc.
P.O. Box 1168
Telluride, Colorado 81435

Prepared by:

Western Colorado Testing, Inc.
529 25½ Road, Suite B101
Grand Junction, Colorado 81505
(970) 241-7700

October 24, 1995
Job No. 204195

WESTERN
COLORADO
TESTING,
INC.

REPORT OF GEOTECHNICAL INVESTIGATION FOR THE RIDGES, FILING #6 SUBDIVISION A PORTION OF SECTION 17, T1S, R1W OF THE UTE MERIDIAN GRAND JUNCTION, COLORADO

Prepared For:

Cobblestone Communities, Inc.
P.O. Box 1168
Telluride, Colorado 81435

Prepared by:

Western Colorado Testing, Inc.
529 25 1/2 Road, Suite B101
Grand Junction, Colorado 81505
(970) 241-7700

October 24, 1995
Job No. 204195

TABLE OF CONTENTS

INTRODUCTION

This report presents the results of the geotechnical investigation performed at the site of a proposed 97 plus or minus acre subdivision to be located in a portion of Section 17, Township 1 South, Range 1 West of the Ute Meridian, Grand Junction, Colorado. The subdivision is planned to consist of 69 single family residences. This investigation was authorized by Mr. Steven Craven with Cobblestone Communities, Inc. on September 15, 1995.

Included in this investigation were test borings and a report of our conclusions and recommendations. The scope of our report was limited to the following:

- Evaluating the engineering properties of the subsoils encountered.
- Recommending types and depths of foundation elements.
- Evaluating soil bearing capacity and estimated settlement.
- Presenting recommendations for earthwork and soils related construction with respect to the subsoils encountered.
- Presenting recommended alternative pavement sections.

This report was prepared by the firm of **Western Colorado Testing, Inc. (WCT)** under the supervision of a professional engineer registered in the state of Colorado. Recommendations are based on the applicable standards of the profession at the time of this report within this geographic area. This report

has been prepared for the exclusive use of **Cobblestone Communities, Inc.** for the specific application to the proposed project in accordance with generally accepted geotechnical engineering practices.

The scope of this investigation did not include any environmental assessment for the presence of hazardous or toxic materials in the soil or groundwater on or near this site. If contamination is a concern, it is recommended an environmental assessment be performed.

SITE CONDITIONS

The site is bounded on the east with residential housing. To the south is vacant land for approximately 1/3 to 1/2 mile then followed by residential housing. To the west is vacant ground with sparsely spaced residential housing and to the north is residential housing above the valley on the upper sandstone hills. Generally, the site consists of a valley extending in a southwest to northeasterly direction with sandstone topped hills on either side. The small mesa located in the northeast portion of the site has a sand and gravel surface that appears to have been mined for the granular material. The area is semiarid with a dry valley and sparse grass and weed coverage. The valley slopes to the northeast with approximately 60 to 70 feet of elevation differential down the valley.

PROPOSED CONSTRUCTION

At the time of the field investigation the site had been plotted into 69 residential lots down the valley and on the relatively flat sand and gravel mesa located in the northeast portion of the site. No residences are planned for the sandstone capped

buttes. The residential structures are anticipated to be one to three stories built of conventional wood framing with brick veneer, wood siding or stucco. The structures will be built over reinforced concrete foundations with either wooden floors with crawl spaces or slab-on-grade construction. Slab-on-grade construction is recommended only where there is non-expansive soils. Foundation loads are anticipated to be light to moderate.

FIELD EXPLORATION

The field investigation was conducted on October 2nd and 3rd, 1995. The exploratory program consisted of eighteen (18) soil borings as shown on the Boring Location Plan (Appendix, Figure 1). Borings were located in the field by the drilling crew by pacing distances from land marks shown on the Boring Location Plan and from the contours. The location of the borings should be considered accurate only to the degree implied by the method used.

Test borings were advanced to depths of 12 to 15 feet below the existing grade with a truck-mounted Dietrich D-50 soil sampling rig using 4 inch, continuous flight augers. Borings remained open during drilling with no stabilization drilling methods being required within the depths investigated except boring TH-4. Samples were attempted at both 9 and 14 1/2 feet in boring TH-4 to no avail due to sluffing of the upper granular soils.

Soil samples were obtained at the sampling intervals shown on the Boring Logs (Appendix, Figures 2 through 19). Recovered samples were extracted in the field, sealed in plastic or brass containers, labeled and protected for transportation to the laboratory for testing. Dames and Moore ring barrel, California barrel, and split barrel samples were obtained while performing

Standard Penetration Tests, (SPT) driven in general accordance with ASTM D-1586, "Penetration Test and Split Barrel Sampling of Soils". The N-Value, reported in blows per foot, equals the number of blows required to drive the sampler over the last 12 inches of the sample interval. Bulk samples were obtained from select borings, placed in cloth bags and transported to the laboratory for testing.

Stratification lines represent the approximate boundary between soil types, and the transition may be gradual.

LABORATORY TESTING

The field boring logs were reviewed to outline the depths, thickness, and extent of the various soil strata, and a testing program was established to evaluate the engineering properties of the recovered samples. Specific tests that were performed include moisture contents, density determinations, particle size analysis, Atterberg limits, swell-consolidated tests and soluble sulfate tests. These tests were conducted in general accordance with current ASTM or state-of-the-art test procedures. R-value tests were also performed. The R-value was determined according to the Colorado Department of Transportation procedure which is a modification to ASTM D-2844. The laboratory test results are presented on Figures 20 through 29.

Based on the results of this testing program the field logs were reviewed and supplemented as presented in the Appendix, Figures 2 through 19. These final logs represent our interpretation of the field logs, and reflect the additional information gained from the laboratory testing program.

SUBSURFACE CONDITIONS

As shown on the Boring Logs (Appendix, Figures 2 through 19), the subsurface conditions encountered at the site are fairly uniform. Generally, the soils encountered in the borings consisted of sandy clays to clayey sands with some gravel and occasional cobbles and clayey to silty sand and gravel over interbedded sandstone and shale bedrock. Water was not encountered in the borings at the time of drilling nor 14 to 15 days later.

The overburden soils on top of the sand and gravel topped mesa located in the northeast of the property consisted of slightly clayey, silty, sand and gravels with some cobbles. The sand and gravel materials were dry to slightly moist and light brown in color. Penetration tests indicate the sand and gravel materials are dense. In boring TH-2 a fine grained, silty, clayey, sand was encountered from 2 to 5 1/2 feet, between the sand and gravel materials. The sand material was slightly moist and light brown in color. A penetration test indicates the sand material is loose. Below the sand and gravel materials at depths of 7 to 11 feet was shale or sandstone bedrock material.

The valley soils and the small area south of the existing Rana Road generally consisted of sandy to silty clays with some layers of clayey sands and clayey sand and gravels for the upper materials. The sand and gravels were encountered in boring TH-5 and TH-8 from the surface to 2 1/2 and 3 feet, respectively. The sand and gravels were medium dense, dry to slightly moist and light brown to brown in color. The sands encountered were silty and clayey, fine grained and within the upper 2 1/2 feet except boring TH-16 where the sand was encountered from 2 1/2 to 4 feet. Generally, the sands were loose to medium dense, dry to slightly moist and light brown to brown to yellowish to reddish

brown in color. The clay material was loose when encountered in the upper 8 inches. Generally, the rest of the clay materials encountered were silty to sandy, dry to slightly moist and brown to dark brown to olive brown to almost white in color. Penetration tests indicate the clays encountered below 8 inches are very stiff to hard.

Interbedded sandstone and shale bedrock materials were encountered in all the valley borings ranging in depth from 1 1/2 to 7 feet below the existing ground level. The sandstone bedrock materials encountered were generally fine grained, silty slightly clayey to clayey, dry to slightly moist and light brown to tan in color. Penetration tests indicate the sandstone bedrock is very hard. In boring TH-7 the sandstone had more moisture, was yellowish brown in color and appeared to have weaker cementation. The shale bedrock materials encountered were slightly moist to moist and dark grey to grey to brown to olive brown in color. Penetration tests indicate the shale bedrock materials are generally very hard.

CONCLUSIONS AND RECOMMENDATIONS

Generally, the probable performance of any foundation must be judged with respect to three major types of unsatisfactory behavior. These are bearing capacity failure, excessive movement, and excessive differential movement. Consideration has been given to each of the customary types of foundation elements used to support the proposed structure. In light of the subsurface conditions revealed by the borings and testing program, each has been judged as to whether or not is could economically be constructed under existing conditions, whether it could carry the required load, and whether it would perform satisfactorily.

Based on the subsurface soils encountered in the borings four foundation systems can be used for this site. The four foundation systems are conventional spread footings, conventional spread footings with an over excavation and structural fill replacement, wall on grade and drill pier and grade beam. Each building site should be individually investigated prior to designing and/or constructing foundations.

The four foundation systems will be discussed separately for clarification. However, recommendations that are general to all of the foundation systems will be summarized at the end of this section.

CONVENTIONAL SPREAD FOOTINGS

Conventional spread footings can be used on the sand and gravel topped mesa location in the northeast of the site, bearing on the sand and gravel and where the shale bedrock material is in excess of 3 feet below the bottom of the footings. The following design and construction details should be observed for a spread footing foundation system.

- Footings placed on the natural sand and gravels or gravelly sands should be designed for a maximum allowable soil bearing pressure of 3,000 pounds per square foot. Footings should be proportioned as much as practicable to minimize differential settlement.

- Should cobbles in excess of 6 inches be encountered at bearing depth they should be removed and replaced with structured fill. Large cobbles can cause point loading which will create stress within the structure and possible cracking.

CONVENTIONAL SPREAD FOOTING WITH OVEREXCAVATION

The clay soils and shale bedrock materials encountered in the soil borings range from low to very high expansive potentials. To reduce the risk of foundation movement, all clay and shale soil encountered within a minimum 3 feet of the bottom of the footings should be removed and replaced with non-expansive, structural fill. Following placement and compaction of the structural fill the residental structures can be supported on a spread footing foundation system.

The following design and construction details should be observed for a spread footing foundation system.

- Following placement and compaction of the new structural fill the footings should be designed for an allowable soil bearing pressure of 3,000 pounds per square foot. All footings should be proportioned as much as practicable to minimize differential settlement.

- Structural fill placed for support of footings should consist of a granular, non-expansive non-free draining material compacted to a minimum 95% of the maximum standard Proctor Density (ASTM D-698) at a moisture content of (±) 2% of optimum. Structural fill should extend down from the exterior bottom of the footings at a one horizontal to one vertical projection.

WALL ON GRADE FOUNDATION SYSTEM

Where footings will bear on the sandstone bedrock material and the shale bedrock is at a depth in excess of 2 1/2 to 3 feet below the footing a wall on grade type foundation system can be used. The grade beam can bear directly on the sandstone bedrock material without a footing. In the event the sandstone bedrock surface is sloped we would recommend the grade beam to be

notched into the bedrock or dowells be drilled and grouted into the bedrock and extend up into the grade beam at approximately 4 feet on centers. An allowable bearing pressure of 10,000 pounds per square foot can be used on the hard sandstone bedrock surface. The grade beam should extend through any weathered sandstone.

DRILLED PIER AND GRADE BEAM

The shale materials have a moderate to very high expansion potential and in addition some of the clays have moderate expansive potential. Where these relatively high soil expansion areas are encountered and they cannot be fully removed and replaced by structural fill a drilled pier and grade beam type foundation system is recommended. The piers will be required to extend through the upper overburden soils and bear into the very hard shale and sandstone bedrock material. The deep foundation system is intended to bear the piers into a relatively stable material. Sufficient dead load should be put on the piers to resist potential up lift movements of the piers in the shale bedrock material.

The design and construction criteria presented below should be observed for a drilled pier foundation system.

- Drilled piers should be designed for an allowable end bearing pressure of 20,000 pounds per square foot, and a skin friction of 2,000 pounds per square foot for the portion of the pier into very hard bedrock. Where bedrock is shallow, skin friction should be neglected along the upper 5 feet of the pier.

- Drilled piers, in shale bedrock, should also be designed for a minimum dead-load pressure of 10,000 pounds per square foot, based on the pier bottom end area. If the minimum dead-load requirement cannot be

achieved and the piers are spaced as far apart as practical, the drilled pier length should be extended beyond the minimum bedrock penetration and/or minimum length to make up the dead-load deficit. This can be accomplished by assuming one half of the skin friction given above acts in the direction to resist uplift caused by swelling materials near the top of the drilled pier.

- Piers should penetrate into the firm bedrock a minimum of 5 feet. Piers should also have a minimum length of 12 feet.

- Drilled piers should be reinforced their full length with at least one No. 5 reinforcing rod for each 5 inches of pier diameter.

- A 4-inch void shall be provided beneath the grade beams to concentrate drilled pier loadings and to prevent the expansive material from exerting uplift pressure on the grade beams.

- The minimum spacing requirement between drilled piers should be three diameters from center to center. Drilled piers grouped less than three diameters from center to center should be analyzed on an individual basis to determine the appropriate reduction in end bearing capacity.

- Concrete used in the drilled piers should be a fluid mix with a minimum slump of 4 inches so it will fill the void between reinforcing steel and the pier hole. The concrete should have a minimum 28-day compressive strength of 2,500 psi within the slump range used.

- Drilled pier holes should be properly cleaned prior to placement of concrete.

- No water was observed in the borings drilled. However, if water is encountered dewatering of the piers will be required. The requirements for casing and dewatering can sometimes be reduced by placing concrete immediately upon cleaning and observing the pier hole. In no case should concrete be placed in more than 3 inches of water unless the tremie method is used.

- Care should be taken that the drilled piers are not oversized at the top. Mushroomed drilled pier tops can reduce the effective dead-load pressure on drilled piers.

- Concrete should be placed in drilled piers the same day they are drilled. The presence of water or caving soils may require that concrete be placed immediately after the drilled pier hole is completed. Failure to place concrete the day of drilling will normally result in a requirement for additional bedrock penetration.

- The pier drilling contractor should mobilize equipment of sufficient size and operating condition to achieve the required penetration in the very hard bedrock.

- A representative of the geotechnical engineer should observe installation of the drilled piers on a full-time basis.

GENERAL FOUNDATION SYSTEM DETAILS

With any of the foundation systems the following design and construction details should be observed.

- We estimate total settlement for footings designed and constructed as discussed in these foundation system sections will be approximately one inch, which is generally considered acceptable and was used in our analysis.

- Exterior footings and footings in unheated areas should extend to below the frost depth. The local building codes should be consulted; however, we would recommend a minimum depth of 24 inches.

- Continuous foundation walls or grade beams should be reinforced top and bottom to span an unsupported length of at least twelve (12) feet or the pier spacing designed. A sulfate resistant concrete should be used for all concrete that will come into contact with the on-site soils.

- All loose or disturbed material encountered at footing foundation bearing level should be removed and replaced with new structural fill. The surface of the existing soils should be moisture conditioned and compacted prior to placement of any structural fill.

- A representative of the geotechnical engineer should observe all foundation excavations prior to the placement of fill and concrete.

FLOOR SLABS

The clay and shale soils encountered at the site possess moderate to high shrink swell potential. Slab-on-grade construction presents a problem where expansive materials are present near floor slab elevation because sufficient dead-load cannot be imposed on them to resist the uplift pressure generated when the materials are wetted and expand. The only way to prevent damage as a result of slab movement is to construct a structural floor above a well ventilated crawl space. The floor should be supported on grade beams and piers, or where applicable spread footings, as discussed under foundation analysis. This system should be used where slabs will bear on the shale bedrock materials and where the risk of movement of the clays is to great.

Slabs placed on or near expansive clay materials can experience movement if these materials are subjected to moisture changes. Slab-on-grade construction may be used provided the risk of distress resulting from slab movement is recognized and the following precautions are taken to reduce the effects of movement.

- Floor slabs should be separated from all bearing walls, columns and utility lines with an expansion joint which allows unrestrained vertical movement.

- Interior nonbearing partitions resting on the floor slabs should be provided with slip joints at the bottom so that slab movement is not transmitted to the upper structure. This detail is also important for wall boards, door frames, and stairways. Slip joints which allow at least 3 inches of vertical movement are recommended in areas where expansive soils exist below the structural fill.

- Water lines and gas lines connected to water heaters and/or furnaces resting on the slabs must be constructed with flexibility to allow for slab movement. Heater ducts must be provided with collapsible connections between the furnace and ducts.

- All plumbing lines should be tested before operation.

- Floor slabs should be provided with control joints to reduce damage due to shrinkage cracking.

- The risk of slab movement could be reduced by removing all expansive clay material encountered within 3 feet below the slabs and replacing it with non-expansive structural fill.

- All fill placed below the slabs should consist of a granular, non-expansive, nonfree draining material compacted to at least 95% of the maximum standard Proctor density at a moisture content of -2 to +3% of optimum.

WATER SOLUBLE SULFATES

A sample of the on site soils from test boring TH-2 and TH-15 at depths of 3 and 2 1/2 feet, respectively were tested to determine the concentration of water soluble sulfates. The test results indicate a sulfate content in boring TH-2 at 50 ppm and in boring TH-15 at greater than 2000 ppm. This concentration of water soluble sulfates represents a negligible and a severe degree of sulfate attack on concrete exposed to these materials. Based on the test results, sulfate resistant cement (type II modified or type V) should be used in all concrete exposed to the on-site soils.

PERIMETER DRAIN SYSTEM

Water was encountered at a depth that should not affect the proposed construction; however, it has been our experience that local, perched water table conditions can develop after construction. The source of water could be from excessive snowmelt or irrigation and poor surface drainage accumulating in backfill areas, with subsequent seepage to foundation depth. For this reason, a drain system should be provided around exterior foundation walls. The perimeter drain system should be placed at or below the footing level and typically consist of a perforated 4 inch diameter drain pipe surrounded by at least one pipe diameter of free draining gravel. The gravel should extend to the top of the footing or above and should be completely wrapped in a filter fabric. The drain lines should be graded to "daylight" or to a sump where the water can be removed by pumping. A minimum slope of 1 percent should be used for all drain pipe. The gravel used in the drain system should be minus 2 inch material having less than 20 percent passing the No. 4 sieve and less than 5 percent passing the No. 200 sieve.

SURFACE DRAINAGE AND LANDSCAPING

The success of the foundation and slab-on-grade systems is contingent upon keeping the subgrade soils at a more or less constant moisture content, and by not allowing surface drainage a path to the subsurface. Positive surface drainage away from structures must be maintained at all times. Landscaped areas should be designed and built such that irrigation and other surface water will be collected and carried away from foundation elements.

The final grade of the foundation backfill and any overlying concrete slabs or sidewalks should have a positive slope away from foundation walls on all sides. We recommend a minimum slope of 12 inches in the first 10 feet; however, the slope can

be decreased if the ground surface adjacent to foundations is covered with concrete slabs, sidewalks or asphalt paving.

Backfill material should be placed near optimum moisture content and compacted to at least 90% of maximum standard Proctor density in landscaped areas and to at least 95% of maximum standard Proctor density beneath structural areas (sidewalks, entrance slabs, patios, etc.). All roofs, downspouts, and faucets should discharge well beyond the limits of all backfill. Irrigation within ten (10) feet of the foundation should be carefully controlled and minimized.

PRELIMINARY STREET PAVEMENTS

The pavement section thickness needed at the site is dependent mainly on the subgrade conditions and the traffic loadings. The near surface soils encountered, below the topsoil indicated the pavement subgrade soils are silty to sandy clays or fine grained, silty to clayey sands or sand and gravels. The soils were tested for Atterberg limits and size distribution with the results used to classify the soils using both the Unified and AASHTO classification systems. The soils were then tested to determine the R-value according to the Colorado Department of Transportation (CDOT) procedure which is a modification to ASTM D-2844.

"R" value tests were performed on the clay and a sand-clay mixture with test results of 28 and 31, respectively. Based on the test results, design manual procedures, freeze/thaw conditions and experience with similar projects, the following pavement section alternatives are indicated:

PAVEMENT ALTERNATIVE SECTIONS								
PAVEMENT AREA	DESIGN CRITERIA				ALTERNATIVE	PAVEMENT SECTIONS - INCHES		
	"R" Value	EDLA	RF	WSN		HBP	ABC	Total
Rana Road (Residential)	28	30	2.0	2.50	A B*	6 3	 10	6 13
Cul-de-sac streets	28	5	2.0	1.88	A* B*	5 3	 10	5 13

* Minimum allowed by the City of Grand Junction

"R" Value - CDOT Procedure
RF - Regional Factor
WSN - Weighted Structural Number

HBP - Hot Bituminous Pavement
ABC - Aggregate Base Course (Class 6)
EDLA - Equivalent Daily Load Applications

Once the cut and fill grades are established for the roadway and/or a better traffic count determined, the above sections should be re-evaluated prior to construction.

Pavement performance is directly affected by the degree of compaction, uniformity and the stability of the subgrade. In areas to be paved the existing surface should be stripped of debris, vegetation, topsoil, old fill, frozen soils and any unsuitable materials. The top 8 inches of subgrade should be reworked, moisture conditioned, as required, and compacted to the minimum specifications.

Depending on the roadway cuts some of the subgrade materials may be expansive. The expansive potential will need to be analyzed once grades are set and cuts made. In areas if any, were moderate to high expansive potential soils are encountered some additional subgrade stabilization may be required.

It is recommended that all pavement section materials conform with Colorado Department of Highways Specifications. Aggregate base course material should conform with Class 6 specifications. Aggregate subbase material should conform with Class 2

specifications. Asphaltic concrete pavement should conform with Grading "CX" or "C" specifications and consist of an approved mix design giving required Hveem properties, Lottman data, optimum asphalt content, job mix tolerances and recommended mixing and placement temperatures. Asphaltic concrete should be compacted to 92 to 96 percent of maximum theoretical density as determined by the mix design and production samples. The compaction of all subgrades and fill materials should be performed to the following recommended percent compaction and moisture contents.

Material	Test Method	Minimum % Compaction	Moisture Content
Subgrade	AASHTO T-99	95	Optimum ± 3%
Subbase Course	AASHTO T-180	95	Optimum ± 2%
Base Course	AASHTO T-180	95	Optimum ± 2%

Positive drainage should be provided during construction and maintained throughout the life of the pavement. Adequate drainage is essential for continuing performance.

GENERAL

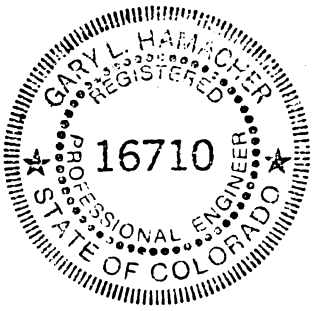
In the event that any changes in the nature, design, or location of the structures are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing. This report is preliminary until more is known of the proposed construction.

The analysis and recommendations submitted in this report are based in part upon the data obtained from the eighteen (18) test borings. The nature and extent of variation at the building site may not become evident until construction. If variations then appear, it will be necessary to reevaluate the recommendations in this report.

It is recommended that the geotechnical engineer be provided the opportunity for general review of the final designs and specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the designs and specifications. It is also recommended that the geotechnical engineer be retained to provide continuous engineering services during construction of the foundations, excavations, and earthwork phases of the work. This is to observe compliance with the design concepts, specifications, or recommendations and to modify these recommendations in the event that subsurface conditions differ from those anticipated.

Respectfully submitted,
WESTERN COLORADO TESTING, INC.

Gary L. Hamacher, P.E.
Senior Geotechnical Engineer
GLH/cc
wpa:204195.rep



APPENDIX

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-2-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-4	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Sparse native grasses	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	15 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Auger	14 1/2'

DEP. FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEP. FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
5	SP-1	50/ 9 1/2"	20	light brown	dry to slightly moist	medium dense to dense	SAND & GRAVEL, silty, with cobbles					5
10				light brown to tan	slightly moist	hard to very hard	SANDSTONE BEDROCK, fine grained Possibly Shale @ 13'					10
15							B.O.H. 14 1/2'					15
20												20
25												25

Figure 5

WESTERN COLORADO TESTING, INC.

Job No. 204195
Date 10/23/95
Project The Ridges, Filing #6
Location Grand Junction, Colorado

BORING LOCATION PLAN

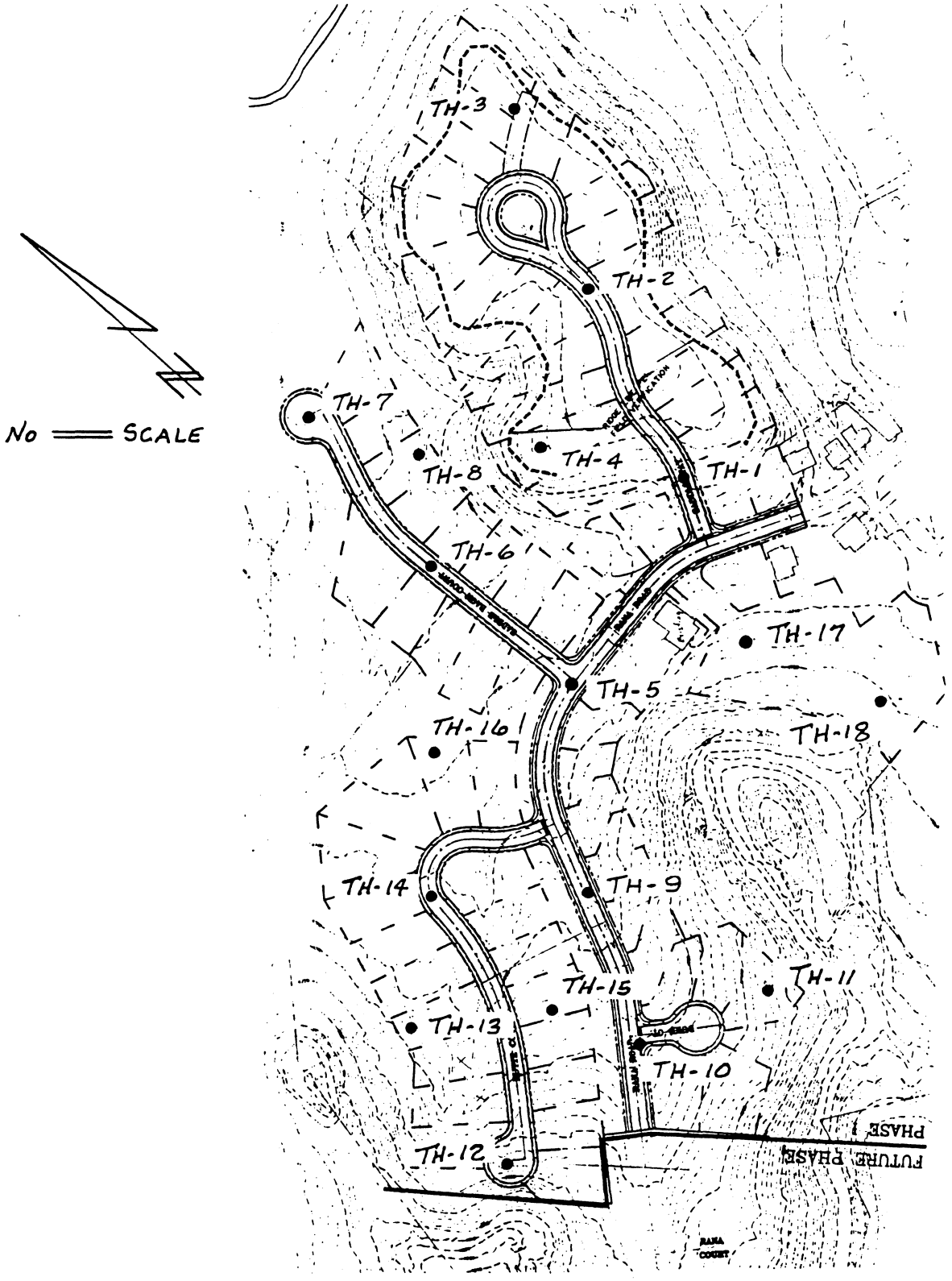


Figure 1

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-2-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-1	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Native grasses & weeds	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	15 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Augers	13 1/2'

DEP. FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEP. FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
5	SP-1	50/6"		light brown	dry to slightly moist	medium dense to dense	SAND, medium grained, gravelly, silty cobbles @ 2 1/2' Clayey @ 6'					5
10	SP-2	50/10"	100	olive, rust, rust	slightly moist	hard to very hard	SHALE BEDROCK					10
15	C-1	50/4"	100				B.O.H. @ 13 1/2'					15
20												20
25												25

Figure 2

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-2-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-2	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Sparse native grasses	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	15 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Augers	15'

DEP. FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEP. FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
				light brown	dry to slightly moist	medium dense	SAND & GRAVEL, with Cobbles					
				light brown	slightly moist	loose	SAND, Fine grained, silty, clayey				soluble sulfates 50 ppm	
	SP-1	7	80					5.8				
5				light brown	slightly moist	dense	SAND & GRAVEL, silty					5
				light brown to tan	slightly moist	hard to very hard	SANDSTONE BEDROCK, fine grained					
	SP-2	50/ 1/2"	N.R.									
10				grey, rust, brown	slightly moist	hard	SHALE BEDROCK					10
	C-1	50/6"	100									
15							B.O.H. @ 15'					15
20							N.R. = No Recovery					20
25												25

Figure 3

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-2-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-3	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Sparse native grasses	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	15 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Auger	14 1/2'

DEP. FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEP. FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
5	SP-1	42	100	light brown	dry to slightly moist	medium dense	SAND & GRAVEL, silty, slightly clayey, with cobbles					5
10				light brown to tan	dry to slightly moist	hard to very hard	SANDSTONE BEDROCK, fine grained					10
15	SP-2	50/ 1/2"	N.R.				B.O.H. @ 14 1/2'					15
20							N.R. = No Recovery					20
25												25

Figure 4

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-3-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-5	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Sparse native grasses	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	14 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Auger	14'

DEP. FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEP. FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
	B-1			brown	dry to slightly moist	medium dense	SAND & GRAVEL, silty, sandstone pieces, slightly clayey					
	SP-1	50/ 2"	50	light brown to tan	dry to slightly moist	very hard	SANDSTONE BEDROCK, fine grained					
5												5
				dark grey	slightly moist	very hard	SHALE BEDROCK					
	SP-2	50/ 1"	100									
10				light brown to tan	dry to slightly moist	very hard	SANDSTONE BEDROCK, fine grained					10
							lense of shale @ 12 1/2'					
15							B.O.H. @ 14'					15
20												20
25												25

Figure 6

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-3-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-6	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Native grasses & weeds	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	14 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Auger	14'

DEP. FT	SAMPLE DATA: SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	SOIL DESCRIPTION: COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	LABORATORY DATA: % MC	DRY DENS pcf	qu tsf	CLASS	DEP. FT
	B-1			brown	moist	stiff	CLAY, silty, calcareous					
				light brown	dry	med. dense	SAND, fine grained, silty					
	C-1	27	100	brown to white	slightly moist	very stiff	CLAY, silty, slightly sandy, calcareous				LL = 27 PI = 12 CL	
5				light brown to tan	dry to slightly moist	very hard	SANDSTONE BEDROCK, fine grained					5
				grey	slightly moist	very hard	SHALE BEDROCK					
	SP-1	50/ 2"	100	light brown to tan	dry to slightly moist	very hard	SANDSTONE BEDROCK, fine grained, some shale lenses					
10												10
	SP-2	50/ 0"	N.R.				B.O.H. 14'					
15												15
20												20
25												25

Figure 7

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-3-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-7	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Native grasses & weeds	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	14 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Augers	14 1/2'

DEP. FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEP. FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
				brown	dry to sl. moist	loose	CLAY, sandy					
	B-1			yellowish brown	slightly moist	med. dense	SAND, fine grained, silty					
	SP-1	50/5"	100	yellowish brown	slightly moist to moist	hard	SANDSTONE BEDROCK, fine grained, silty	5.8				
5												5
				black	moist	firm to medium hard	COAL, some organics, low quality					
				dark grey with rust in fractures	slightly moist	hard to very hard	SHALE BEDROCK					
	D-1	50/6"	90					13.9	119.3			
10												10
	SP-2	50/6"	100									
15							B.O.H. @ 14 1/2'					15
20												20
25												25

Figure 8

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-3-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-8	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Native grasses & weeds	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	14 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Augers	14 1/2'

DEP. FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEP. FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
				light brown	dry to slightly moist	medium dense	SAND & GRAVEL, with cobbles, silty					
	SP-1	44	100	brown to white	slightly moist	very stiff	CLAY, silty, calcareous					
5	C-1	50/5"	N.R.	dark grey to brown	slightly moist	very hard	SHALE BEDROCK Sandstone lenses @ 6 1/2' & 8'					5
	C-2	50/3"	100	light brown to tan	dry to slightly moist	very hard	SANDSTONE BEDROCK fine grained, silty					
10												10
15	SP-2	50/0"	N.R.				B.O.H. @ 14 1/2'					15
20							N.R. No Recovery					20
25												25

Figure 9

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-3-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-9	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Native grasses & weeds	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	14 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Auger	14 1/2'

DEP. FT	SAMPLE DATA: SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	SOIL DESCRIPTION: COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	LABORATORY DATA: % MC	DRY DENS pcf	qu tsf	CLASS	DEP. FT
	B-1			brown	slightly moist	very stiff	CLAY, silty, occasional gravel or small cobble					
	D-1	46	100					6.5	102.1		LL = 33 PI = 18 CL	
5												5
				light brown to tan to yellowish brown	dry to slightly moist	very hard	SANDSTONE BEDROCK, fine grained, silty					
	SP-1	50/ 1"	N.R.				clayey @ 9 1/2'					
10												10
	SP-2	50/ 0"	N.R.				B.O.H. @ 14 1/2'					
15												15
20							N.R. = No Recovery					20
25												25

Figure 10

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-3-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-10	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Native grasses & weeds	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	14 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Augers	13'

DEP. FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEP. FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
	B-1			brown	slightly moist	very stiff	CLAY, silty, sandy, occasional cobble					
	D-1	44	100					7.5	94.1			
5				light brown to tan	dry to slightly moist	very hard	SANDSTONE BEDROCK fine grained					5
	SP-1	50/2"	N.R.				Shale Bedrock lense 9 1/2' - 10' very hard					
10				tan								10
							Auger Refusal @ 13'					
15												15
20							N.R. = No Recovery					20
25												25

Figure 11

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-3-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-11	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Native grasses & weeds	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	14 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Augers	13'

DEP. FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEP. FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
				reddish brown	dry to slightly moist	loose to medium dense	SAND, fine grained, silty, slightly clayey					
	SP-1	38	100	olive to brown	slightly moist	very stiff	CLAY, sandy	10.5				
5				brown	sl. moist to moist	very stiff	CLAY, silty					5
	C-1	50/11"	100	dark brown, grey, yellowish brown	moist	hard	Claystone Bedrock	13.0	109.7			
	SP-2	50/4"	100	light brown to tan	dry to slightly moist	very hard	SANDSTONE BEDROCK fine grained					
10												10
							Auger Refusal @ 13'					
15												15
20												20
25												25

Figure 12

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-3-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-12	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Native grasses & weeds	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	14 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Augers	12'

DEP. FT	SAMPLE DATA: SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	SOIL DESCRIPTION: COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	LABORATORY DATA: % MC	DRY DENS pcf	qu tsf	CLASS	DEP. FT
	B-1			brown	slightly moist	stiff	CLAY, sandy					
	SP-1	50/5"	100	light brown to tan	dry to slightly moist	very hard	SANDSTONE BEDROCK, fine grained, silty					
5				brown	slightly moist	very hard	SHALE BEDROCK					5
				tan	slightly moist	very hard	SANDSTONE BEDROCK					
				brown to dark grey	slightly moist	very hard	SHALE BEDROCK					
	C-1	50/4 1/2"	100	tan to white	dry to slightly moist	very hard	SANDSTONE BEDROCK, fine grained					
10												10
							Auger Refusal @ 12'					
15												15
20												20
25												25

Figure 13

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-3-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-13	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Native grasses & weeds	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	14 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Augers	14 1/2'

DEP. FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEP. FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
				dark brown	slightly moist	loose	CLAY, sandy					
				brown to white	slightly moist	very stiff	CLAY, silty, slightly sandy, calcareous					
	D-1	29	100					12.1	94.7			
5				light brown to tan	slightly moist	very hard	SANDSTONE BEDROCK, fine grained, silty					5
				olive to brown	moist	very hard	SHALE BEDROCK					
	SP-1	50/1"	N.R.	light brown to tan	dry to slightly moist	very hard	SANDSTONE BEDROCK, fine grained					
10												10
15							B.O.H @ 14 1/2 ;					15
20							N.R. = No Recovery					20
25												25

Figure 14

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-3-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-14	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Native grasses & weeds	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	14 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Augers	14 1/2'

DEP. FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEP. FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
	B-1			brown	dry to slightly moist	loose	CLAY, sandy, calcareous					
						very stiff	slightly sandy @ 1'					
	SP-1	31	100					12.1				
				light brown to tan	dry to slightly moist	very stiff	SANDSTONE BEDROCK, fine grained, silty, slightly clayey					
5												5
	SP-2	50/5"	100									
10												10
	SP-3	50/0"	N.R.				B.O.H @ 14 1/2'					
15												15
20												20
							N.R. = No Recovery					
25												25

Figure 15

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-3-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-15	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Native grasses & weeds	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	14 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Augers	14'

DEP. FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEP. FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
				brown	dry	loose	CLAY, sandy					
	SP-1	19	100	brown	slightly moist	very stiff	CLAY, silty	11.9			soluble sulfates > 2000 ppm	
5	D-1	50/7"	100	brown, dark grey	moist	hard to very hard	SHALE BEDROCK					5
	SP-2	50/4 1/2"	80	light brown to tan	dry to slightly moist	very hard	SANDSTONE BEDROCK					
10												10
15	SP-3	50/1"	N.R.				B.O.H @ 14'					15
20							N.R. = No Recovery					20
25												25

Figure 1

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-3-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-16	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Native grasses & weeds	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	14 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Augers	14 1/2'

DEP. FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEP. FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
				dark brown to brown	slightly moist	very stiff	CLAY, silty and sandy					
	C-1	18	100	brown	dry to slightly moist	medium dense	SAND, fine to medium grained	3.5	123.5			
5				light brown	dry to slightly moist	very hard	SANDSTONE BEDROCK fine grained					5
				reddish brown	slightly moist	very hard	SANDSTONE BEDROCK fine grained, clayey					
10	SP-1	50/3"	100									10
15	SP-2	50/0"	N.R.				B.O.H @ 14 1/2'					15
20							N.R. = No Recovery					20
25												25

Figure 17

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-3-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-17	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Native grasses & weeds	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	14 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Augers	15'

DEP. FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEP. FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
							TOP SOIL					
				light brown to reddish brown	slightly moist	loose / med. dense	SAND, fine grained, very silty, clayey					
	SP-1	27	100	reddish brown	slightly moist	very stiff	CLAY, sandy					
5												5
				olive brown	slightly moist	very hard	SHALE BEDROCK, sandy					
	C-1	50/5"	100									
10				brown to light brown	slightly moist	very hard	SANDSTONE BEDROCK, fine grained, clayey to CLAYSTONE BEDROCK, sandy					10
	SP-2	50/6"	100									
15							B.O.H @ 15'					15
20												20
25												25

Figure 18

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No 204195 Date 10-3-95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-18	See Boring Location Plan	-	-	GDI	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Native grasses & weeds	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	14 DAYS	DRILLING METHOD	TOTAL DEPTH
None			None	4" Cont. Flight Augers	14 1/2'

DEP. FT	SAMPLE DATA: SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	SOIL DESCRIPTION: COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	LABORATORY DATA: % MC	DRY DENS pcf	qu tsf	CLASS	DEP. FT
				light brown	slightly moist	loose	SAND, fine grained, silty					
	SP-1	26	100	reddish brown	slightly moist	very stiff	CLAY, sandy, calcareous	6.4			LL = 30 PI = 17 CL	
5												5
				brown to black	slightly moist to moist	very hard	SHALE BEDROCK					
	C-1	50/1"	N.R.				sandstone @ 10 1/2' -11'					
10				olive to brown								10
	SP-2	50/3"	100				B.O.H @ 14 1/2'					
15												15
20							N.R. = No Recovery					20
25												25

Figure 19

WESTERN COLORADO TESTING, INC.
529 25½ Road, Suite B-101
Grand Junction, CO 81505
(303) 241-7700

LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client Cobblestone Communities, Inc.

Job No. 204195

Lab/Invoice No. _____

Date 10-23-95

Reviewed By KA

Project The Ridges, Filing #6

Location Grand Junction, Colorado Sampled By G. Hamacher Date 10-3-95

Type of Material CLAY, sandy, silty Submitted By G. Hamacher Date 10-6-95

Source of Material TH-6 @ 0'-4' Authorized By Client Date 9-15-95

Sieve Analysis, ASTM D422-

Sieve Size	% Passing Accumulative	Specification
3"		
2½"		
2"		
1½"		
1"		
¾"		
½"	100	
⅜"	99	
¼"	-	
No. 4	98	
8	96	
10	96	
16	95	
30	93	
40	91	
50	88	
100	77	
Finer than 200 ASTM D1140-	60.6	

Soil Classification Unified CL AASHTO A-6(6)

Liquid Limit and Plasticity of Soils ASTM D424- LL = 27, PI = 12

Moisture - Density Relations ☐ ASTM D698- ; ☐ ASTM D1557- ; Method _____ Maximum Dry Density, pcf _____ Optimum Moisture, % _____

Specific Gravity of Soils (minus No. 4 material) ASTM D854- Specific Gravity _____

Resistance 'R' Value of Compacted Soils ASTM D2844- 'R' Value 31

Other:

Copies to:

Figure 20

WESTERN COLORADO TESTING, INC.
529 25½ Road, Suite B-101
Grand Junction, CO 81505
(303) 241-7700

LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client Cobblestone Communities, Inc.

Job No. 204195
Lab/Invoice No.
Date 10-23-95
Reviewed By KA

Project The Ridges, Filing #6

Location Grand Junction, Colorado — Sampled By G. Hamacher — Date 10-3-95
Type of Material CLAY, sandy — Submitted By G. Hamacher — Date 10-6-95
Source of Material TH-9 @ 0'-4' — Authorized By Client — Date 9-15-95

Sieve Analysis, ASTM D422-

Sieve Size	% Passing Accumulative	Specification
3"		
2½"		
2"		
1½"		
1"		
¾"	100	
½"	99	
⅜"	99	
¼"	–	
No. 4	98	
8	97	
10	96	
16	95	
30	92	
40	91	
50	86	
100	74	
Finer than 200 ASTM D1140-	61.5	

Soil Classification Unified CL AASHTO A-6(8)

Liquid Limit and Plasticity of Soils ASTM D424- LL = 33, PI = 18

Moisture - Density Relations ☐ ASTM D698- ; ☐ ASTM D1557- ; Method ____ Maximum Dry Density, pcf ____ Optimum Moisture, % ____

Specific Gravity of Soils (minus No. 4 material) ASTM D854- Specific Gravity ____

Resistance 'R' Value of Compacted Soils ASTM D2844- 'R' Value 28

Other:

Copies to:

Figure 21

WESTERN COLORADO TESTING, INC.
529 25½ Road, Suite B-101
Grand Junction, CO 81505
(303) 241-7700

LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client Cobblestone Communities, Inc.

Job No. 204195

Lab/Invoice No. _____

Date 10-23-95

Reviewed By KA

Project The Ridges, Filing #6

Location Grand Junction, Colorado Sampled By G. Hamacher Date 10-3-95

Type of Material CLAY, sandy Submitted By G. Hamacher Date 10-6-95

Source of Material TH-18 @ 2.5'-3.5' Authorized By Client Date 9-15-95

Sieve Analysis, ASTM D422-

Sieve Size	% Passing Accumulative	Specification
3"		
2½"		
2"		
1½"		
1"		
¾"		
½"		
⅜"		
¼"		
No. 4	100	
8	99	
10	99	
16	99	
30	98	
40	97	
50	91	
100	74	
Finer than 200 ASTM D1140-	63.7	

Soil Classification Unified CL AASHTO A-6 (9)

Liquid Limit and Plasticity of Soils ASTM D424- LL = 30 PI = 17

Moisture - Density Relations ☐ ASTM D698- ; ☐ ASTM D1557- ; Method _____ Maximum Dry Density, pcf _____ Optimum Moisture, % _____

Specific Gravity of Soils (minus No. 4 material) ASTM D854- Specific Gravity _____

Resistance 'R' Value of Compacted Soils ASTM D2844- 'R' Value _____

Other:

Natural Moisture Content 6.4%

Copies to:

Figure 22

SWELL CONSOLIDATION TEST

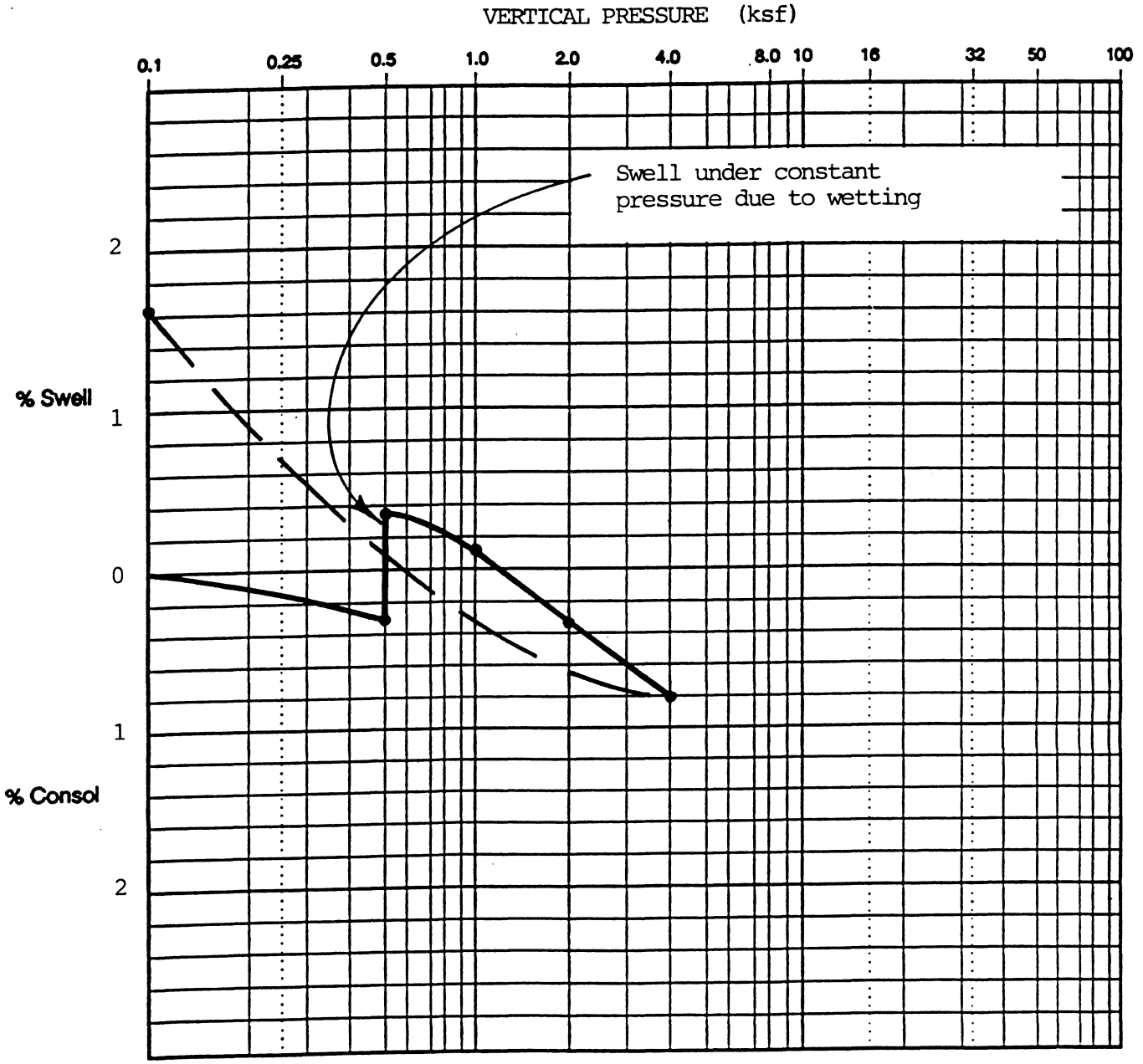
Drill Hole No. TH-7 **Sample No.** D-1 **Sample Depth Interval** 9.0'-9.5'

Sample Description CLAYSTONE BEDROCK, dark grey

Initial Water Content 13.9% **Dry Unit Weight** 119.3 pcf **Initial Saturation** _____

Final Water Content 17.4% **Specific Gravity** _____ ☐ Assumed

Liquid Limit _____ **Plastic Limit** _____ **Plasticity Index** _____ **Classification** _____



WESTERN COLORADO TESTING, INC.
529 25½ Road, Suite B-101
Grand Junction, CO 81505
(303) 241-7700

Project The Ridges, Filing #6

Location Grand Junction, Colorado

Job No. 204195 **Date** 10-23-95

Figure 23

SWELL CONSOLIDATION TEST

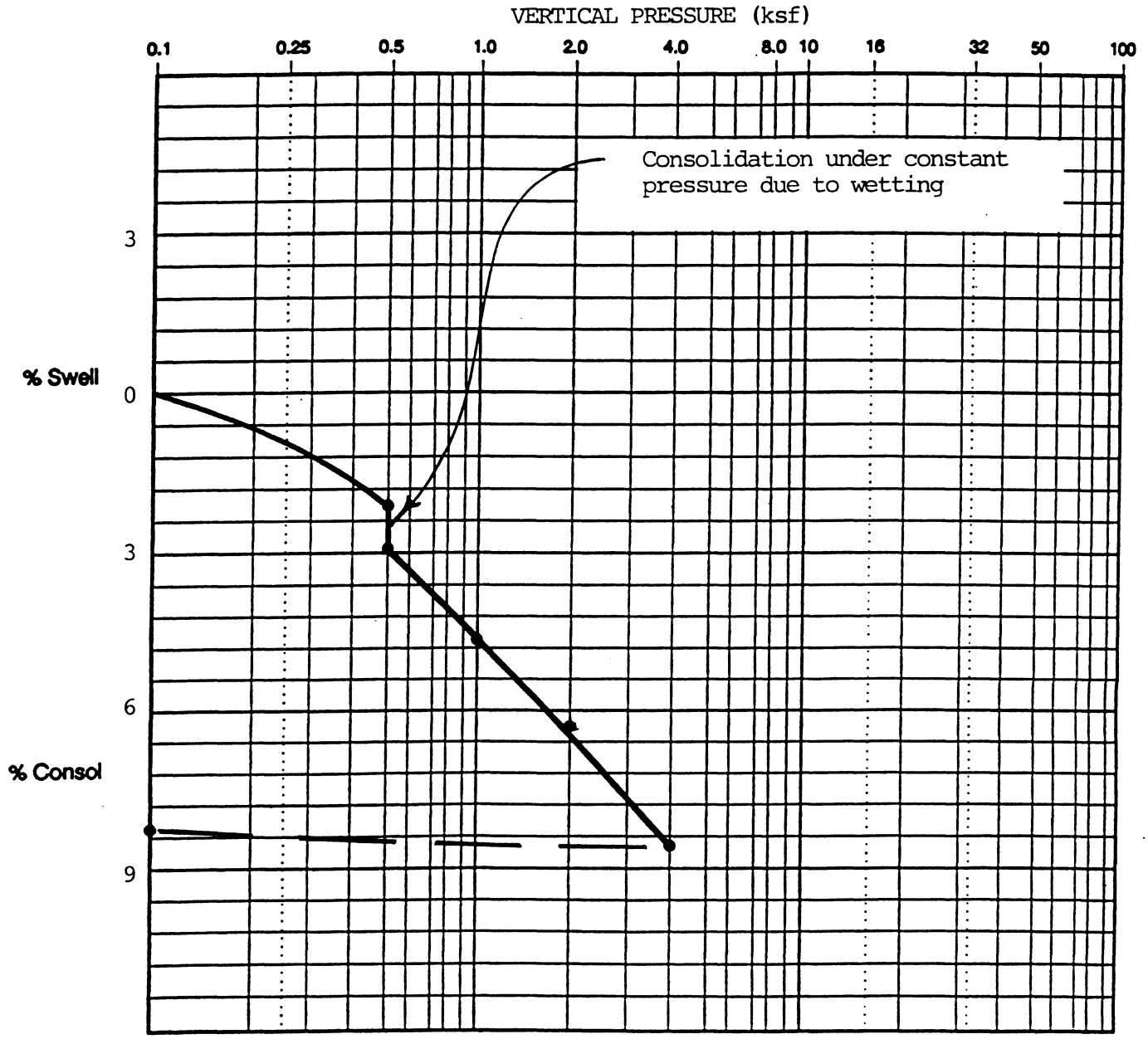
Drill Hole No. TH-9 **Sample No.** D-1 **Sample Depth Interval** 2.5'-3.5'

Sample Description CLAY, sandy, brown

Initial Water Content 6.5% **Dry Unit Weight** 102.1 pcf **Initial Saturation** _____

Final Water Content 17.9% **Specific Gravity** _____ ☐ Assumed

Liquid Limit _____ **Plastic Limit** _____ **Plasticity Index** _____ **Classification** _____



WESTERN COLORADO TESTING, INC.
529 25½ Road, Suite B-101
Grand Junction, CO 81505
(303) 241-7700

Project	The Ridges, Filing #6
Location	Grand Junction, Colorado
Job No. 204195	**Date** 10-23-95

SWELL CONSOLIDATION TEST

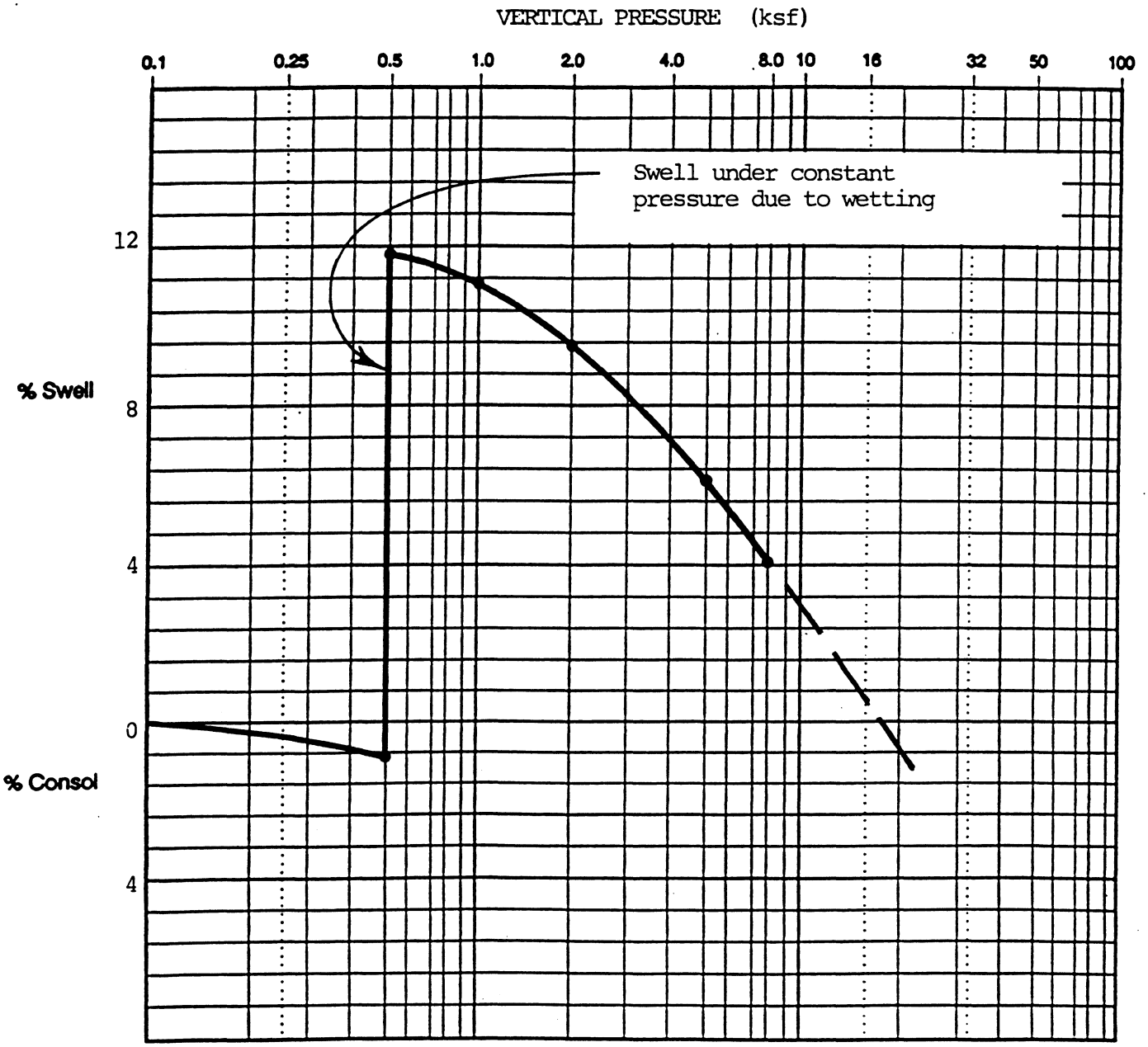
Drill Hole No. TH-11 **Sample No.** C-1 **Sample Depth Interval** 6.5'-7.5'

Sample Description Claystone Bedrock, dark brown to black

Initial Water Content 13.0% **Dry Unit Weight** 109.7 pcf **Initial Saturation** _____

Final Water Content 22.2% **Specific Gravity** _____ ☐ Assumed

Liquid Limit _____ **Plastic Limit** _____ **Plasticity Index** _____ **Classification** _____



WESTERN COLORADO TESTING, INC.
529 25½ Road, Suite B-101
Grand Junction, CO 81505
(303) 241-7700

Project	The Ridges, Filing #6
Location	Grand Junction, Colorado
Job No.	204195
Date	10-23-95

Figure 25

SWELL CONSOLIDATION TEST

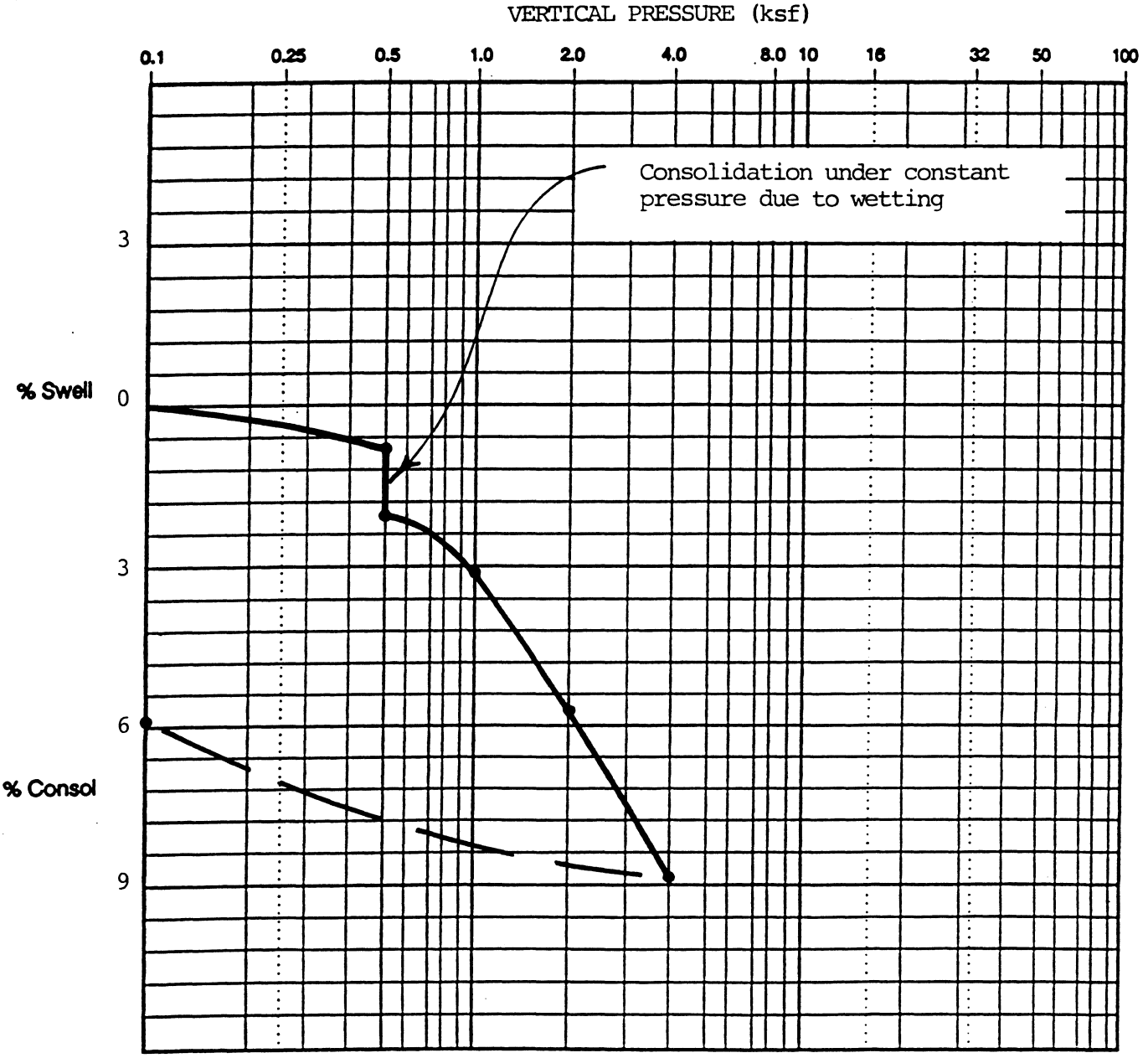
Drill Hole No. TH-13 **Sample No.** D-1 **Sample Depth Interval** 2.5'-3.5'

Sample Description CLAY, sandy, brown to white, calcareous

Initial Water Content 12.1% **Dry Unit Weight** 94.7 pcf **Initial Saturation** _____

Final Water Content 24.1% **Specific Gravity** _____ ☐ **Assumed**

Liquid Limit _____ **Plastic Limit** _____ **Plasticity Index** _____ **Classification** _____



WESTERN COLORADO TESTING, INC.	529 25½ Road, Suite B-101 Grand Junction, CO 81505 (303) 241-7700
Project	The Ridges, Filing #6
Location	Grand Junction, Colorado
Job No.	204195
Date	10-23-95

Figure 26

WESTERN COLORADO TESTING, INC.

Job No. 204195

Lab./Invoice No.

Date 10-23-95

Reviewed by

RESISTANCE 'R' VALUE AND EXPANSION PRESSURE

Client Cobblestone Communities, Inc. Project The Ridges, Filing #6

Location Grand Junction, Colorado Sampled By G. Hamacher Date 10-3-95

Type of Material CLAY, sandy, silty Submitted By G. Hamacher Date 10-6-95

Source of Material TH-6 @ 0'-4' Authorized By Client Date 9-15-95

ASTM D2844-	Specimen		
	A	B	C
Compactor Pressure, psi	150	200	250
Exudation Pressure, psi	239	302	338
Moisture at Compaction, %	14.2	13.4	12.8
Dry Density at Compaction, pcf	118.8	120.7	123.0
Corrected 'R' Value	27	31	36
Expansion Dial Read, x10^{-4}			
Expansion, psf			

Atterberg Limits, ASTM D424- LL = 27 PI = 12

Sieve Analysis, ASTM D422-

Sieve Size	% Passing Accumulative	Specification	As Tested Grading
3"			
2½"			
2"			
1½"			
1"			
¾"			
½"	100		
⅜"	99		
¼"	-		
No. 4	98		
No. 8	96		
No. 10	96		
No. 16	95		
No. 30	93		
No. 40	91		
No. 50	88		
No. 100	77		
Finer than 200 ASTM D1140-	60.6		

Corrected 'R' Value at 300 psi 31

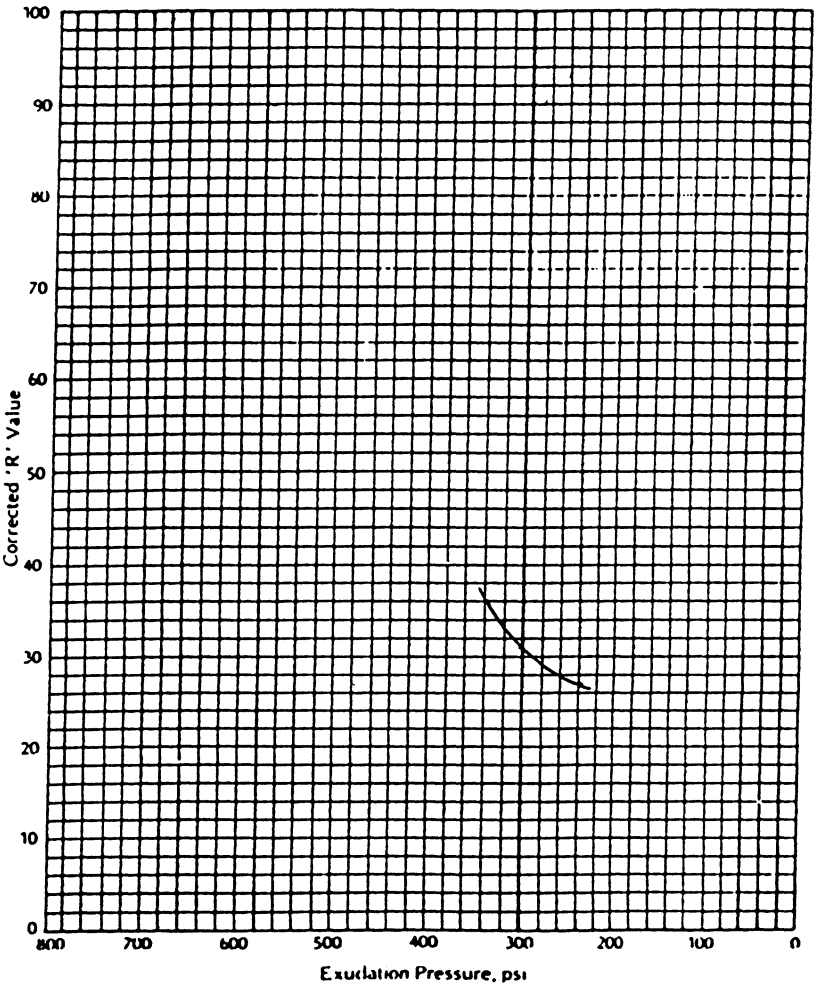


Figure 27

WESTERN COLORADO TESTING, INC.

Job No. 204195

Lab./Invoice No.

Date 10-18-95

Reviewed by

RESISTANCE 'R' VALUE AND EXPANSION PRESSURE

Client Cobblestone Communities, Inc. Project The Ridges, Filing #6

ıcation Grand Junction, Colorado Sampled By G. Hamacher Date 10-3-95

Type of Material CLAY, sandy Submitted By G. Hamacher Date 10-6-95

ɔurce of Material TH-9 @ 0'-4' Authorized By Client Date 9-15-95

ASTM D2844-	Specimen		
	A	B	C
Compactor Pressure, psi	160	125	250
xudation Pressure, psi	298	239	505
Moisture at Compaction, %	13.9	14.8	13.1
Dry Density at Compaction, pcf	119.0	116.4	120.8
Corrected 'R' Value	28	22	37
Expansion Dial Read, x10^{-4}			
xpansion, psf			
Atterberg Limits, ASTM D424-	LL = 33	PI = 18	

ve Analysis, ASTM D422-

Sieve Size	% Passing Accumulative	Specification	As Tested Grading
3"			
2½"			
2"			
1½"			
1"			
¾"	100		
½"	99		
⅜"	99		
¼"	-		
No. 4	98		
No. 8	97		
No. 10	96		
No. 16	95		
No. 30	92		
No. 40	91		
No. 50	86		
No. 100	71		
Finer than 200 ASTM D1140-	61.5		

Corrected 'R' Value at 300 psi 28

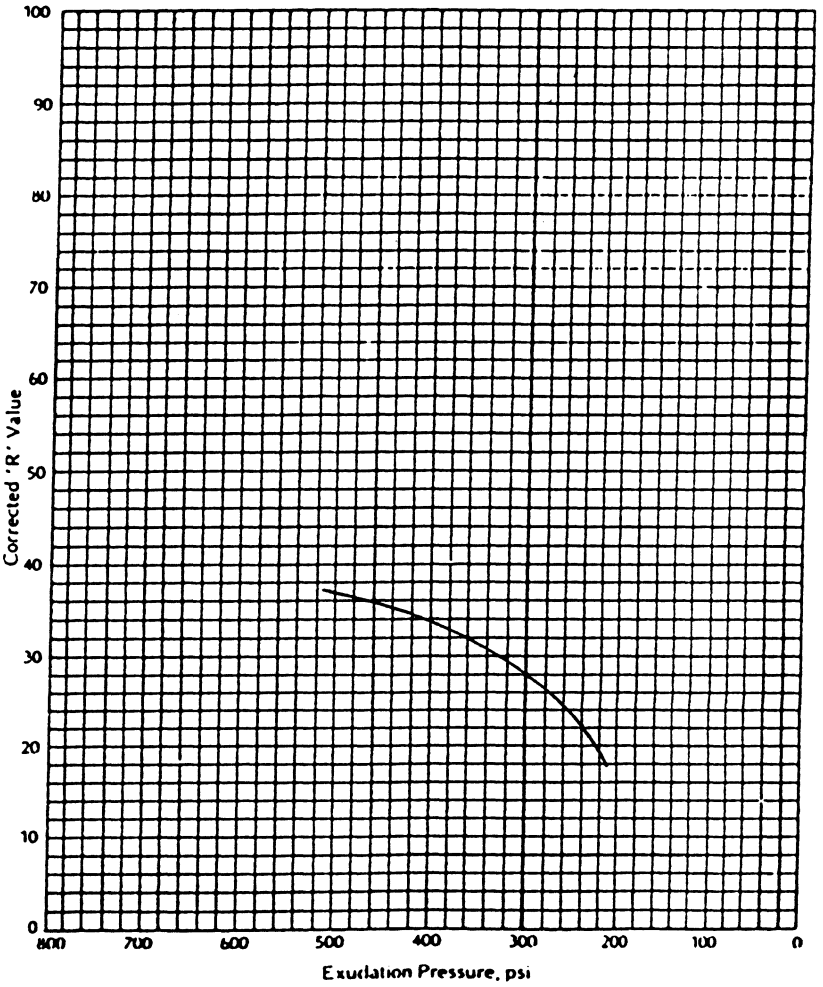


Figure 28

WESTERN COLORADO TESTING, INC.

Project The Ridges, Filing #6
Location Grand Junction, Colorado
Job No 204195 Date 10-23-95

SUMMARY OF SOIL TESTS

Test Hole No.	Sample No.	Sample Depth (ft)	Sample Dia. (in)	Sample Hgt. (in)	Water Content (%)	Density		R - Value	Unconfined Compression		Atterberg Limits			Corr Test	% Pass #200 Sieve	Classification Or Remarks
						Wet (pcf)	Dry (pcf)		QU (tsf)	Strain (%)	LL	PL	PI			
TH-2	SP-1	3.0 - 4.0	1.5		5.8										92.8	Soluble Sulfates 50 ppm
TH-6	B-1	0.0 - 4.0	Bulk					31			27	15	12		60.6	
TH-7	SP-1	2.5 - 3.0	1.5		5.8											
TH-7	D-1	9.0 - 9.5	2.42		13.9	135.9	119.3							•		
TH-9	B-1	0.0 - 4.0	Bulk					28			33	15	18		61.5	
TH-9	D-1	2.5 - 3.5	2.42		6.5	108.7	102.1							•		
TH-10	D-1	3.0 - 4.0	2.42		7.5	101.2	94.1									
TH-11	SP-1	2.5 - 3.5	1.5		10.5											
TH-11	C-1	6.5 - 7.5	1.94		13.0	124.0	109.7							•		
TH-13	D-1	2.5 - 3.5	2.42		12.1	106.2	94.7							•		
TH-14	SP-1	2.5 - 3.5	1.5		12.1											
TH-15	SP-1	2.5 - 3.5	1.5		11.9											Soluble Sulfates > 2000 ppm
TH-16	C-1	2.5 - 3.5	1.94		3.5	127.8	123.5									
TH-18	SP-1	2.5 - 3.5	1.5		6.4						30	13	17		63.7	

Figure 29

FPP-96-27-2

Final Drainage Report

Cobblestone Ridges

January 1996

Prepared for:

Steve Craven
Cobblestone Communities, Inc.
P.O. Box 1168
Telluride, CO 81435

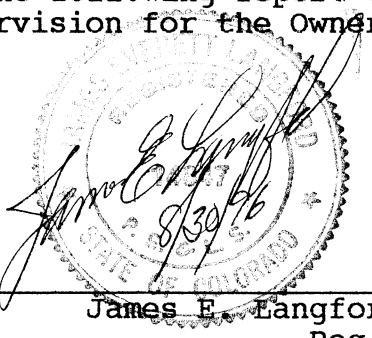
Prepared by:

THOMPSON-LANGFORD CORPORATION
529 251/2 RD., SUITE B-210
Grand Junction, CO 81505
PH. 243-6067

Job. No 0252-001.03

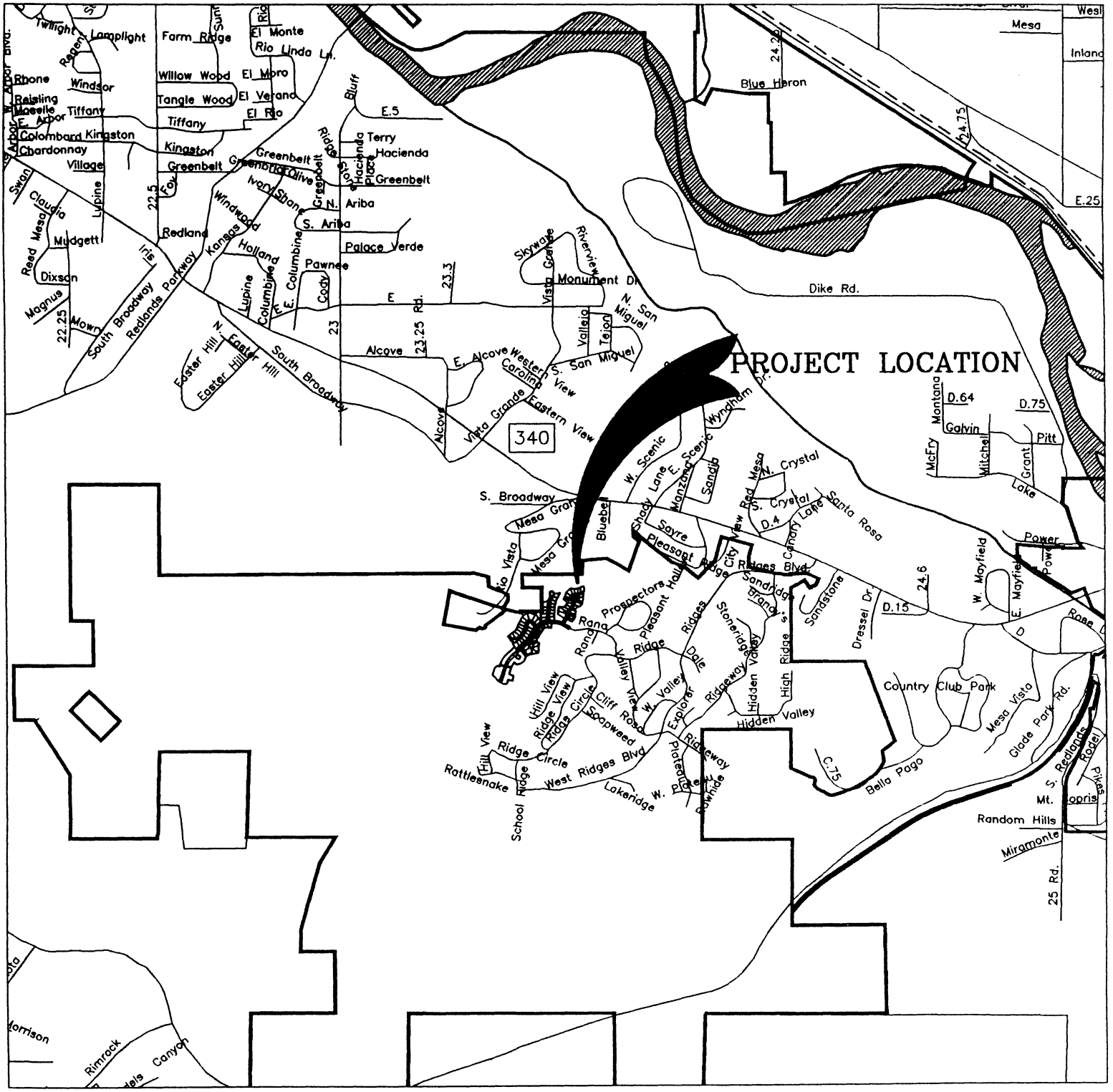
Engineer's Certification

I hereby certify that the following report was prepared by me or under my direct supervision for the Owner's hereof.



James E. Langford, PE & LS
Reg. No. 14847

COBBLESTONE RIDGES



VICINITY MAP

General Location and Description

A. Site and Major Basin Location

The property being studied in this report, Cobblestone Ridges, is located on the Redlands in the northwest corner of The Ridges P.U.D.. Cobblestone Ridges is a replat of a portion of The Ridges Filing No. Six, originally platted into single family residential lots by Paragon in 1980 and subsequently replatted in 1984 by Beck, Shrum and Associates, Inc. to remove the lotlines. More Specifically, the site is located in the South 1/2 of Section 17 and the North 1/2 of Section 20, Township 1 South, Range 1 West of the Ute Principal Meridian.

The area is presently accessed by Rana Road leading from the Ridges and terminating just inside the property. Rana Road is planned to be extended southwesterly up the major drainage and over the crest of the drainage divide. In future plattings, the road will be extended southeasterly connecting into West Ridges Boulevard.

B. Site and Major Basin Description

1. Acreage: The area being studied in this report includes the area replatted by Beck, Shrum and Associates in 1984 which totaled 23.049 acres, and Multi-Family Lot 49, Block Nine which comprised 7.641 acres for a total of 30.690 acres.

2. Ground cover types: Vegetation on the site is mainly saltbrush, sparse pinyon and juniper, and some grass.

3. Soil type: The soil mapping unit for this area is Badland (Ba) consisting of a rough and broken succession of rolling to very steep, nearly barren hills and ridges separated by steep-walled, deeply entrenched gullies and canyons. Badland consists of gypsiferous shale that contains layer of sandstone outcrop along canyon walls. It produces a large amount of sediment.

4. Hydrologic Soils Group: According to the local office of the Soil Conservation District, this area would fall in Hydrologic Soils Group "D".

Existing Drainage Conditions

A natural drainage course traverses the length of the site traveling northeasterly to the Redlands First Lift

Canal. There are no conduits in evidence to carry storm water drainage beneath the canal, therefore it would appear that all runoff flows since construction of the canal have either ponded on private property between our site and the canal, slowly leaching into the surrounding soils, or after filling the low areas and saturating the surrounding soils, have overflow into the canal.

The site is not impacted by any identified 100-year floodplain.

Proposed Drainage Conditions

The drainage facilities we have proposed will materially alter the historic drainage patterns from this site, but will increase runoff.

Storm water drainage impacting the site will collect in the proposed roadway bisecting the valley, traveling in the curb and gutter on Rana Road until such time as the accumulation of runoff during the specified design storm event exceeds the allowed capacity of the curb and gutter. Calculations were performed for this study that indicated that our underground system needs to start at the intersection of Rana Road and Saddle Back Court. At this point, we have located our first collection basins which convey the excess in an underground collection system to a detention facility to be constructed in the extreme northeast corner of the property just beyond the proposed cul-de-sac at the end of Saddle Back Court. Drainage from Basin H will be not be allowed to surface flow to Saddle Back Court, but be collected in the underground conduit system and carried to the detention facility at the end of Saddle Back Court.

Drainage from the lots situated on the plateau in previously platted Lot 49 will be collected in Saddle Way, the street servicing the plateau. The drainage will then be carried southwesterly in the curb and gutter to the intersection with Rana Road. From the intersection, the drainage will be carried in the curb and gutter of Rana Road west to it's intersection with Saddle Back Court. At the intersection, the runoff is collected in the underground system and taken to the detention facility.

Sinse the detention facility has been located in the open area just off the end of the cul-de-sac, access for maintenance purposes will not be a problem.

The detention facility and it's associated outlet works have been designed to detain for the 2 and 100 year events and discharge at their respective historic rates.

Design Criteria & Approach

General Considerations:

To our knowledge, the area has not been included in any previous formal drainage studies. The area is hydraulically isolated from the rest of the Ridges, receiving negligible amounts of runoff from adjacent developed areas, and contributing nothing to the presently developed portions of the Ridges. All site drainage will be discharged down valley to our detention facility. The historic flows will be released from our facility onto adjacent private property, and eventually stopping at the Redlands First Lift Canal with no physical means for any storm water to go further.

Hydrology:

The site has been divided into logical drainage basins and analyzed using the Rational Method as described in Section VI. Hydrology, City of Grand Junction Storm Water Management Manual. Flows for the 2 and 100 year events have been calculated and routed in our collection system of gutters and underground conduits to the proposed detention facility at the end of Saddle Back Court. The detention facility has been designed per the requirements of the SWMM.

Hydraulics:

Street carrying capacities were analyzed using the criteria outlined in Section VII. Hydraulics, City of Grand Junction Storm Water Management Manual. When the street inundation limits were reached we began the underground system which was sized to carry at a minimum the excess flow to the detention facility.

The detention facility was designed to detain both the 2-year and 100-year events, discharging through a two stage outlet only at the historic rates. Discharge calculations are included as an appendix to this report assuring that during the 2-year event, only the historic 2-year flow is released from the facility, and during the 100-year event the combinations of the outlets will discharge only the historic 100 year flow.

Results and Conclusions

Runoff Results:

2-year historic runoff rate = 13.94 CFS

2-year developed runoff rate = 20.07 CFS

100-year historic runoff rate = 52.62 CFS

100-year developed runoff rate = 76.90 CFS

Detention Facility:

Storage volume for 2-year event = 9,208 cu-ft.

Storage volume for 100-year event = 32,670 cu-ft.

The outlet works will consist of a concrete box with an inside measure of 4' x 4'. An orifice is to be constructed in the sidewall of the box. The orifice is to have a diameter of 2.06 feet with its invert aligned with the bottom of the detention facility at elevation 4702.00. The second stage outlet will be a wier extending from the top of the orifice to the top of the box at elevation 4707.38. The wier opening is to be 1.30 feet in width. The detailed plans for the structure will call for steel rods to span the openings to prevent children from entering the box. The rods are to be spaced 6-inches apart. The top of the box is to be covered with a steel grating as called for on the details. The steel grating will serve as an emergency overflow in the event of a storm in excess of the maximum design event. The top of the berm is to be constructed to an elevation of 4708.5. The outfall from the outlet works is to be 36-inch RCP with a minimum slope of 1.15%.

12/15/95 13:40

TWO STAGE OUTFALL CALCULATOR

Procedure as described in the City of Grand Junction's Storm Water Management Manual
See Page N-5

NOTE:
* Enter data from Drainage Study
** Vary this number until the desired result is obtained
X Calculated by spreadsheet (no entry required)

Orifice Flow (2-year event)

*	Water Surf. El.	4704.15 Ft.		
*	Orifice Invert	4702.00 Ft.		
**	Orifice Dia. (d)	2.06 Ft.		**Vary orifice diameter until areas match
*	Discharge (Qr)	13.94 CFS		
*	"Co" Coef.	0.60		
X	Area	= (3.1416)d^2/4	=	3.34 SF
X		= Qr/0.82C(2gh)^0.5	=	3.34 SF

Combined Wier Flow and Orifice Flow (100-year event)

*	Water Surf. El.	4707.38
X	Wier Invert El.	4704.15

The 100-year storage elevation is set by storage requirements. The elevation of the invert of the wier is set equal to the 2-year storage elevation. The wier width will be calculated such that the discharge when added to the orifice discharge equals the 100-year discharge.

* Q100 discharge = 52.62 CFS

Q = 0.82CoA(2gh)^0.5 = 27.482 CFS

Wier Flow Equasion

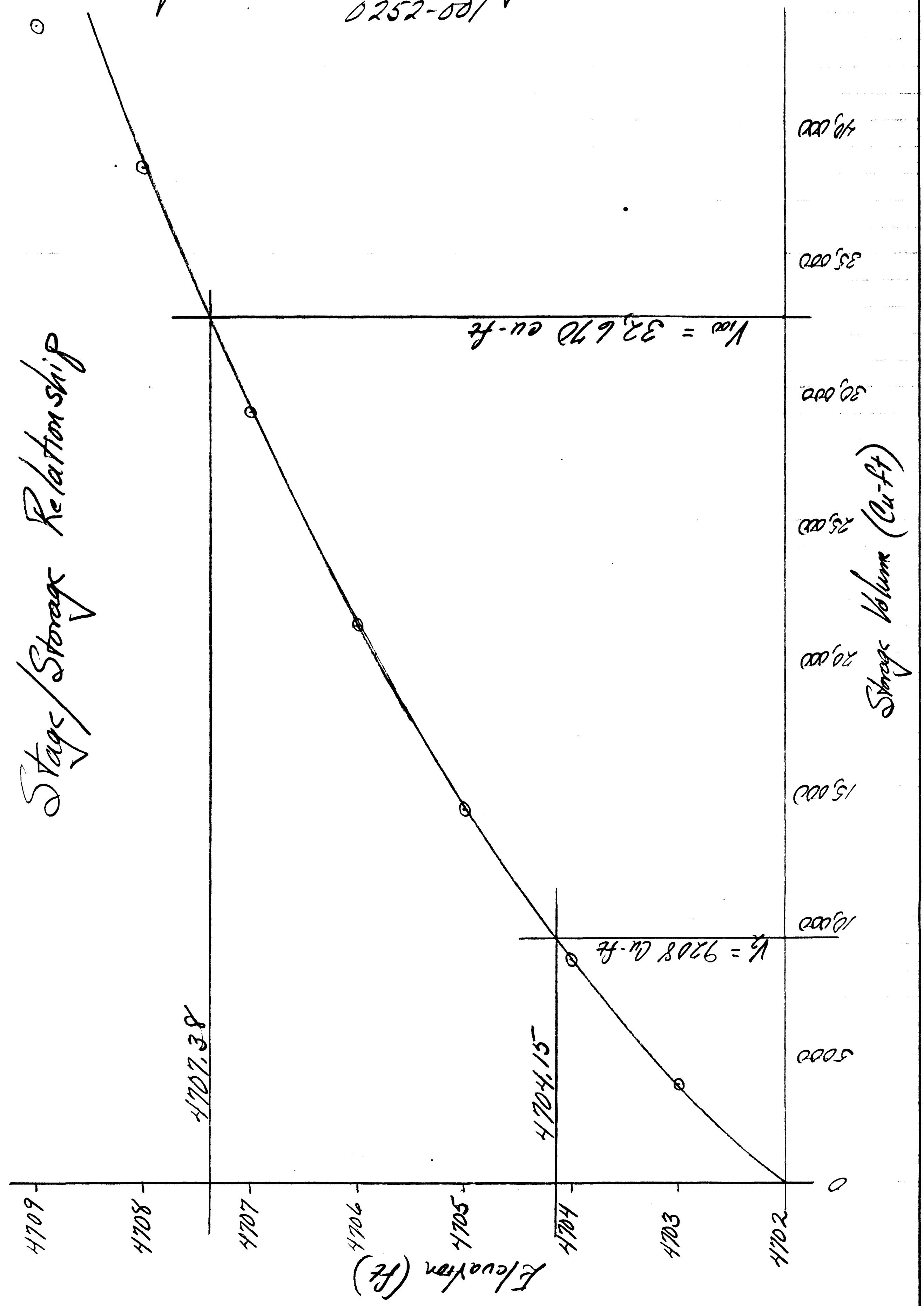
Q= CwLH^1.5

X	Wier discharge =	25.14 CFS	
*	"Cw" Coef.	3.33	
X	Flow Depth (H) =	3.23 Ft.	
**	Wier Length (L)	1.30 Ft.	**Vary unitl "Q" = Q100

Q= Wier Flow + Orifice Flow
52.62 CFS **If this calculated flow equals the historic 100-year flow then the wier length is correct.

Jim Langford | Cobblestone Ridges | 12/15/95

0252-001



DETENTION VOLUME
For: COBBLESTONE RIDGES
USING
METHOD OUTLINED ON PAGE N-4 SWMM

Td = Time of critical storm duration, minutes	
C2 = Runoff coefficient (2-Year Event)	0.56
C100 = Runoff coefficient (100-Year Event)	0.64
A = Area in acres (developed condition)	48.93
Qr2 = Detention pond average release rate, cfs (Note that this will not likely be the historic rate Qh, nor even Qmax)	13.94
Qr100 = Detention pond average release rate, cfs (Note that this will not likely be the historic rate Qh, nor even Qmax)	52.62
Tch2 = Time of concentration (historic), minutes (2-year event)	48.70
Tch100 = Time of concentration (historic), minutes (100-year event)	36.30
Tcd2 = Time of concentration (developed), minutes (2-year event)	39.10
Tcd100 = Time of concentration (developed), minutes (100-year event)	25.80
Id2 = Intensity at Td, inches per hour (2-year event)	0.77
Id100 = Intensity at Td, inches per hour (100-year event)	2.46
Qd = Runoff rate at Td, cfs	
K = Ratio of pre-and post-development Tc	
V2 = Storage volume (2-year event) cu. ft.	
V100 = Storage volume (100-year event) cu. ft.	

Td2 = (((633.4*Cd2*A)/(Qr2-(Qr2^2*Tcd2)/(81.2*Cd2*A)))^0.5)-15.6
= 25.01 Min.

Td100 = (((1832*Cd*A)/(Qr100-(Qr100^2*Tcd)/(213*Cd*A)))^0.5)-17.2
= 19.80 Min.

Detention Volume

```
Qd2      =  Cd*A*Id2
         =       21.10 cfs

Qd100    =  Cd*A*Id100
         =       77.04 cfs

K2       =  Tch2/Tcd2
         =        1.25

K100     =  Tch100/Tcd100
         =        1.41

V2       =  60[Qd2*Td2-Qr2*Td2-Qr2*Tcd2+K2*Qr2*Tcd2/2+Qr2^2*Tcd2/(2Qd2)]
         =    9,207.96 cu-ft.

V100     =  60[Qd100*Td100-Qr100*Td100-Qr100*Tcd100+K100*Qr100*Tcd100/2+Qr100^2*Tcd100/(
         =   32,670.03 cu-ft.
```

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: 0252-001

Description: Cobblestone Detention Outlet Works

Solve For Full Flow Capacity

Given Constant Data;

Diameter.....	3.00
Slope.....	0.0115
Mannings n.....	0.010
Discharge.....	92.98

Variable Input Data	Minimum	Maximum	Increment By

			COMPUTED	COMPUTED	COMPUTED	COMPUTED
Diameter ft	Channel Slope ft/ft	Mannings 'n'	Discharge cfs	Depth ft	Velocity fps	Capacity Full cfs
3.00	0.0115	0.010	92.98	3.00	13.15	92.98

10/16/95
Cobblestone 0252-001
Storm water handling capability

We plan to start the underground system at the S-sec of Saddle Bank Court and Rana Rd. The plan was to start the system when the accumulation of runoff was such that we were nearly at the street carrying capacity during the 100 yr. event. We were not at this limit at the above named intersection, but we were going to reach and surpass it before getting to the end of the cul-de-sac. It was felt that physical conditions for forcing flow into an inlet were best at an S-sec, therefore, it was decided to start the underground system at the above named intersection.

18" RCP @ 1% can carry 11.4 cfs which is nearly the 100 yr event at the S-sec, ∴ all laterals will be this size. The curb & gutter can carry 37.4 cfs or 18.7 cfs/side at 2% which is the worst case condition near the end of the cul-de-sac. The main line will be constructed of 24" RCP. At 2% it can carry 34.7 cfs flowing full. This will keep the street dry up to the lateral coming in from Basin "H". The line will be surcharging at this point. To provide relief so that we will not experience overflow at the Inlet in Basin H, an inlet at the road should also be constructed over the incoming lateral

NEW DETENTION POND QUANTITES 12/15/95

4702	3302.51		
		3756.72	3756.72
4703	4210.93		
		4704.13	8460.85
4704	5197.33		
		5729.06	14189.91
4705	6260.79		
		6831.84	21021.75
4706	7402.89		
		8012.79	29034.54
4707	8622.68		
		9270.43	38304.97
4708	9918.17		
		5125.62	43430.59
4708.5	10584.30		

I_d - Intensity has been taken from Table A-1 for the T_e (average) as calculated above.

$\therefore$ I_{d_θ} for 39.1 = $\frac{0.77}{\epsilon}$

$I_{d_{100}}$ for 25.8 = $\frac{2.46}{\epsilon}$

Detention Volume parameters for method described on RV N-1 thru N-4, SWMM

"C_d" – Composite derived from individual basin "C's" (assumed to be developed condition)

C_{d_2} = [3.30(0.55) + 3.18(0.58) + 4.19(0.56) + 1.21(0.62) + 6.23(0.61) + 1.37(0.52) + 4.21(0.56) + 6.78(0.49) + 1.76(0.55) + 6.04(0.53) + 2.42(0.79) + 8.24(0.54)]
÷ Σ Areas = 27.48 / 48.93 Ac. = 0.56 = C_2

$C_{d_{100}}$ = [3.30(0.63) + 3.18(0.66) + 4.19(0.64) + 1.21(0.69) + 6.23(0.69) + 1.37(0.61) + 4.21(0.64) + 6.78(0.59) + 1.76(0.63) + 6.04(0.61) + 2.42(0.83) + 8.24(0.63)]
÷ Σ Areas = 31.52 / 48.93 = 0.64 = C_{100}

Area: A_d = 48.93 Ac

Qr_2 = 13.94 cfs
Qr_{100} = 52.62 cfs

T_c – Time of concentration has been taken as the T_c for the most remote basin plus the curb & gutter travel time from design point 1. to design point 4

∴ T_{c_2} = T_{c_B} + 1.1 + 2.0 + 2.3 = 33.7 + 1.1 + 2.0 + 2.3 = 39.1 min
$T_{c_{100}}$ = = 20.4 + " " = 25.8 min

Historic Flows

$Q_2 = C i A = 0.44(0.67)\,47.30 = 13.94$ cfs

$Q_{100} = 0.54(2.06)\,47.30 = 52.62$ cfs

Flow Summary @ Proposed Detention Facility

	Q_2	Q_{100}
Historic	13.94 cfs	52.62 cfs
Developed	10.54 + 9.53 = 20.07 cfs	41.34 + 35.56 = 76.90 cfs

Scc formulas - calculation sheet ___ 100-year Flows 9/29/95

DCUC logged

N_1

$Q_A = 0.63(2.84)3.30 = 5.90$ cfs

$Q_{1,2N} = 0.63(2.84)3.30 = 5.90$ cfs

S_1

$Q_B = 0.66(2.84)3.18 = 5.96$ cfs

$Q_{1,2S} = 0.66(2.84)3.18 = 5.96$ cfs

N_2

$Q_D = 0.69(2.84)1.21 = 2.37$ cfs

$Q_{2,3N} = 0.63(2.84)3.30 + 0.69(2.77)3.18 = 11.98$ cfs

S_2

$Q_C = 0.64(2.77)4.19 = 7.43$ cfs

$Q_{2,3S} = 0.66(2.84)3.18 + 0.64(2.70)4.19 = 13.20$ cfs

N_3

$Q_F = 0.61(2.36)1.37 = 1.97$ cfs

$Q_E = 0.69(2.70)6.23 = 11.61$ cfs

$Q_{3,4N} = 0.63(2.84)3.30 + 0.69(2.77)1.21 + 0.61(2.23)1.37 + 0.69(2.51)6.23 = 20.87$ cfs

S_3

$Q_G = 0.64(2.51)4.21 = 6.76$ cfs

$Q_I = 0.63(2.70)1.76 = 2.99$ cfs

$Q_K = 0.83(3.54)2.42 = 7.11$ cfs

$Q_{3,4S} = 0.66(2.84)3.18 + 0.64(2.70)4.19 + 0.64(2.36)4.21 + 0.63(2.51)1.76 +$
$+ 0.83(3.24)2.42 = 28.85$ cfs

N_4

$Q_H = 0.59(2.36)6.78 = 9.44$ cfs

$Q_L = 0.63(2.00)6.04 = 7.61$ cfs

$Q_{4,5N} = 0.66(2.84)3.18 + 0.64(2.70)4.19 + 0.64(2.36)4.21 + 0.63(2.51)1.76 +$
$+ 0.83(3.24)2.42 + 0.63(2.00)2.42 + 0.59(2.36)6.78 = 41.34$ cfs

S_4

$Q_J = 0.61(1.85)6.04 = 6.82$ cfs

$Q_{4,5S} = 0.66(2.84)3.18 + 0.64(2.70)4.19 + 0.64(2.36)4.21 + 0.63(2.51)1.76 +$
$+ 0.83(3.24)2.42 + 0.61(1.82)6.04 = 35.56$ cfs

* See Pg H-3 SWMM

100-year Routing 7/29/95

Developed

N_1

$A1_{100}$ $\quad Q_{T100} = Q_A (@T = 19.6)$

$1,2N_{100}$ $\quad Q_T = \quad "$

S_1

$B1_{100}$ $\quad Q_{T100} = Q_B (@T = 20.4)$

$1,2S_{100}$ $\quad Q_T = \quad "$

N_2

$D2_{100}$ $\quad Q_{T100} = Q_D (@T = 19.5)$

$2,3N$ $\quad Q_T = Q_A (@T = 19.6) + Q_D (@T = 19.5 + 1.1)$

S_2

$C2_{100}$ $\quad Q_T = Q_C (@T = 21.1)$

$2,3S_{100}$ $\quad Q_T = Q_B (@T = 20.4) + Q_C (@T = 21.1 + 1.1)$

N_3

$F3_{100}$ $\quad Q_{T100} = Q_F (@T = 27.9)$

$E3_{100}$ $\quad Q_{T100} = Q_E (@T = 22.0)$

$3,4N$ $\quad Q_T = Q_A (@T = 19.6) + Q_D (@T = 19.5 + 1.1) + \begin{cases} Q_F (T = 27.9 + 2.0 + 1.1) \\ Q_E (T = 22.0 + 2.0 + 1.1) \end{cases}$

S_3

$G3$ $\quad Q_T = Q_G (@T = 24.8)$

$I3$ $\quad Q_T = Q_I (@T = 21.8)$

$K3$ $\quad Q_T = Q_K (@T = 11.9)$

$3,4S$ $\quad Q_T = Q_B (@T = 20.4) + Q_C (@T = 21.1 + 1.1) + \begin{cases} Q_G (@T = 24.8 + 2.0 + 1.1) \\ Q_I (@T = 21.8 + 2.0 + 1.1) \\ Q_K (@T = 11.9 + 2.0 + 1.1) \end{cases}$

N_4

$L4$ $\quad Q_T = Q_L (@T = 32.8)$

$4,5N$ $\quad Q_T = Q_A (@T = 19.6) + Q_D (@T = 19.5 + 1.1) + \begin{cases} Q_F (@T = 27.9 + 2.0 + 1.1) \\ Q_E (@T = 22.0 + 2.0 + 1.1) \end{cases} +$

$+ Q_L (@T = 32.8 + 2.3 + 2.0 + 1.1) + Q_H (@T = 28.7)$

S_4

$J4$ $\quad Q_T = Q_J (@T = 38.2)$

$4,5S$ $\quad Q_T = Q_B (@T = 20.4) + Q_C (@T = 21.1 + 1.1) + \begin{cases} Q_G (@T = 24.8 + 2.0 + 1.1) \\ Q_I (@T = 21.8 + 2.0 + 1.1) \\ Q_K (@T = 11.9 + 2.0 + 1.1) \end{cases} +$

$+ Q_J (@T = 38.2 + 2.3 + 2.0 + 1.1)$

See formulas - calculation sheet

2-Year Flows

9/29/95

Developed

N_1

$Q_A = 0.55(\overset{A}{0.84})3.30 = 1.52$ cfs

$Q_{1,2_N} = 0.55(\overset{A}{0.84})3.30 = 1.52$ cfs

S_1

$Q_B = 0.58(\overset{B}{0.82})3.18 = 1.51$ cfs

$Q_{1,2_S} = 0.58(\overset{B}{0.82})3.18 = 1.51$ cfs

N_2

$Q_D = 0.62(\overset{D}{0.84})1.21 = 0.63$ cfs

$Q_{2,3_N} = 0.55(\overset{A}{0.84})3.30 + 0.62(\overset{D}{0.83})1.21 = 2.15$ cfs

S_2

$Q_C = 0.56(\overset{C}{0.81})4.19 = 1.90$ cfs

$Q_{2,3_S} = 0.58(\overset{B}{0.82})3.18 + 0.56(\overset{C}{0.80})4.19 = 3.39$ cfs

N_3

$Q_F = 0.52(\overset{F}{0.71})1.37 = 0.50$ cfs

$Q_E = 0.61(\overset{E}{0.80})6.23 = 3.04$ cfs

$Q_{3,4_N} = 0.55(\overset{A}{0.84})3.30 + 0.62(\overset{D}{0.83})1.21 + 0.52(\overset{F}{0.68})1.37 + 0.61(\overset{E}{0.77})6.23$

$= 5.56$ cfs

S_3

$Q_G = 0.56(\overset{G}{0.76})4.21 = 1.79$ cfs

$Q_I = 0.55(\overset{I}{0.80})1.76 = 0.77$ cfs

$Q_K = 0.79(\overset{K}{1.17})2.42 = 2.24$ cfs

$Q_{3,4_S} = 0.58(\overset{B}{0.82})3.18 + 0.56(\overset{C}{0.79})4.19 + 0.56(\overset{G}{0.73})4.21 + 0.55(\overset{I}{0.77})1.76 +$

$+ 0.79(\overset{K}{1.08})2.42 = 7.90$ cfs

N_4

$Q_L = 0.54(\overset{L}{0.63})8.24 = 2.84$ cfs

$Q_{4,5_N} = 0.55(\overset{A}{0.84})3.30 + 0.62(\overset{D}{0.83})1.21 + 0.52(\overset{F}{0.68})1.37 + 0.61(\overset{E}{0.79})6.23 +$

$+ 0.54(0.58)8.24 + 0.49(0.70)6.78 = 10.54$ cfs

S_4

$Q_J = 0.53(\overset{J}{0.54})6.04 = 1.73$ cfs

$Q_{4,5_S} = 0.58(\overset{B}{0.82})3.18 + 0.56(\overset{C}{0.79})4.19 + 0.56(\overset{G}{0.73})4.21 + 0.55(\overset{I}{0.77})1.76 +$

$+ 0.79(\overset{K}{1.08})2.42 + 0.53(0.51)6.04 = 9.53$ cfs

* Sec Pg- H-3 SWMM

2-Year Routing 9/29/95

Download

N_1 $A1_2$ $Q_{T_2} = Q_A(@T=32.2)$

$1,2_{N_2}$ $Q_{T_2} =$ "

S_1 $B1_2$ $Q_{T_2} = Q_B(@T=33.7)$

~~$1,2_{S_2}$ $Q_{T_2} =$ "~~

N_2 $D2_2$ $Q_{T_2} = Q_D(@T=32.0)$

$2,3_{N_2}$ $Q_{T_2} = Q_A(@T=32.2) + Q_D(@T=32.0+1.1)$

S_2 $C2_2$ $Q_{T_2} = Q_C(@T=34.5)$

$2,3_{S_2}$ $Q_T = Q_B(@T=33.7) + Q_C(@T=34.5+1.1)$

N_3 $F3_2$ $Q_{T_2} = Q_F(@T=45.3)$

$E3_2$ $Q_{T_2} = Q_E(@T=35.6)$

$3,4_N$ $Q_T = Q_A(@T=32.2) + Q_D(@T=32.0+1.1) + \begin{cases} Q_F(@T=45.3+2.0+1.1) \\ Q_E(@T=35.6+2.0+1.1) \end{cases}$

S_3 $G3_2$ $Q_T = Q_G(@T=40.0)$

$I3_2$ $Q_T = Q_I(@T=35.6)$

$K3_2$ $Q_T = Q_K(@T=17.8)$

$3,4_S$ $Q_T = Q_B(@T=33.7) + Q_C(@T=34.5+1.1) + \begin{cases} Q_G(@T=40.0+2.0+1.1) \\ Q_I(@T=35.6+2.0+1.1) \\ Q_K(@T=17.8+2.0+1.1) \end{cases}$

N_4 $L4$ $Q_T = Q_L(@T=53.0)$

$4,5_N$ $Q_T = Q_A(@T=32.2) + Q_D(@T=32.0+1.1) + \begin{cases} Q_F(@T=45.3+2.0+1.1) \\ Q_E(@T\ 35.6+2.0+1.1 \end{cases} +$

$+ Q_L(@T=53.0+2.3+2.0+1.0) + Q_H(@T=46.0)$

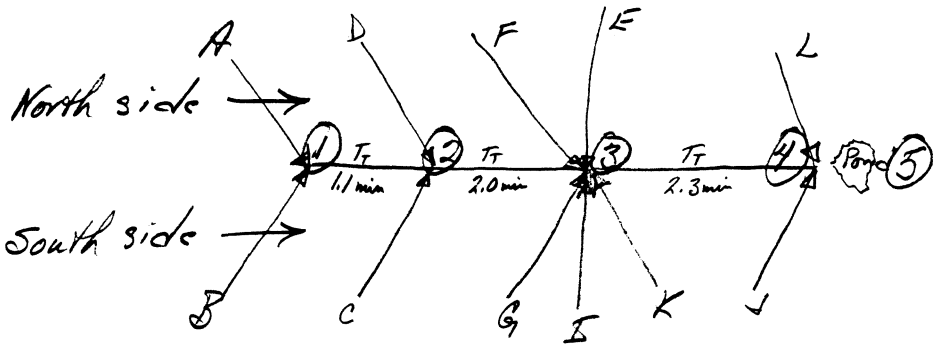
S_4 $J4$ $Q_T = Q_J(@T=62.0)$

$4,5_S$ $Q_T = Q_B(@T=33.7) + Q_C(@T=34.5+1.1) + \begin{cases} Q_G(@T=40.0+2.0+1.1) \\ Q_I(T=35.6+2.0+1.1) \\ Q_K(T=17.8+2.0+1.1) \end{cases} +$

$+ Q_J(@T=62.0+2.3+2.0+1.1) + Q_H(@T=46.0) =$

Tabulation – Time of Concentration (T_c)

Basin	T_{c_2}	$T_{c_{100}}$
A	32.2	19.6
B	33.7	20.4
C	34.5	21.1
D	32.0	19.5
E	35.6	22.0
F	45.3	27.9
G	40.0	24.8
H	46.0	28.7
I	35.6	21.8
J	62.0	38.2
K	17.8	11.9
L	53.0	32.8



C&G T_T

Reach	Length	Slope	Velocity (@ 1/10 d depth)	Time (min)
1-2	379 LF	4.5%	5.62 fps	1.1 min
2-3	643 LF	4.5 → 1.5% Use 4.0%	5.30 fps	2.0 min
3-4	688 LF	4.0% → 2.0% Use 3.5%	4.96 fps	2.3 min

TABLE "A-1" INTENSITY-DURATION-FREQUENCY (IDF) TABLE					
Time (min)	2-Year Intensity (in/hr)	100-Year Intensity (in/hr)	Time (min)	2-Year Intensity (in/hr)	100-Year Intensity (in/hr)
5	1.95	4.95	33	0.83	2.15
6	1.83	4.65	34	0.82	2.12
7	1.74	4.40	35	0.81	2.09
8	1.66	4.19	36	0.80	2.06
9	1.59	3.99	37	0.79	2.03
10	1.52	3.80	38	0.78	2.00
11	1.46	3.66	39	0.77	1.97
12	1.41	3.54	40	0.76	1.94
13	1.36	3.43	41	0.75	1.91
14	1.32	3.33	42	0.74	1.88
15	1.28	3.24	43	0.73	1.85
16	1.24	3.15	44	0.72	1.82
17	1.21	3.07	45	0.71	1.79
18	1.17	2.99	46	0.70	1.76
19	1.14	2.91	47	0.69	1.73
20	1.11	2.84	48	0.68	1.70
21	1.08	2.77	49	0.67	1.67
22	1.05	2.70	50	0.66	1.64
23	1.02	2.63	51	0.65	1.61
24	1.00	2.57	52	0.64	1.59
25	0.98	2.51	53	0.63	1.57
26	0.96	2.46	54	0.62	1.55
27	0.94	2.41	55	0.61	1.53
28	0.92	2.36	56	0.60	1.51
29	0.90	2.31	57	0.59	1.49
30	0.88	2.27	58	0.58	1.47
31	0.86	2.23	59	0.57	1.45
32	0.84	2.19	60	0.56	1.43
Source: Mesa County 1991					

TABLE - 2a

TIME OF CONCENTRATION and RAINFALL INTENSITIES
For: COBBLESTONE RIDGES

BASIN	Descrip. of Flow	L Length ft.	S Slope %	N* Mannings coef.	V* Vel. fps	Tt2 Travel Time min.	Tt100 Travel Time min.	Tc2 Time of Concentration min.	Tc100 Time of Concentration min.	2-Year i Intensity Grd. Jctn. Curves	100-Year i Intensity Grd. Jctn. Curves
"A"											
Post-devel.	overland*	300	25.40%	0.300		31.65	18.99	32.2	19.6	0.84	2.84
	Nat. Ch.***	0	0.00%	n/a	4.70	0.00	0.00				
	C&G**	231	6.50%	0.016	6.80	0.57	0.57				
"B"											
Post-devel.	overland*	300	22.70%	0.300		33.11	19.87	33.7	20.4	0.82	2.84
	Nat. Ch.***	44	22.70%	n/a	4.70	0.16	0.16				
	C&G**	171	6.50%	0.016	6.80	0.42	0.42				
"C"											
Post-devel.	overland*	300	22.10%	0.300		33.47	20.08	34.5	21.1	0.81	2.77
	Nat. Ch.***	185	22.10%	n/a	4.70	0.66	0.66				
	C&G**	135	4.50%	0.016	5.60	0.40	0.40				
"D"											
Post-devel.	overland*	300	26.30%	0.300		31.22	18.73	32.0	19.5	0.84	2.84
	Nat. Ch.***	0	0.00%	0.000	0.00	0.00	0.00				
	C&G**	256	4.50%	0.016	5.60	0.76	0.76				

* Overland "To" based on SCS formula pg. E-2 Storm Water Management Manual
**Mannings Equa. was used to determine gutter and natural swale velocities.
Mannings n=0.016 was used for curb and gutter, and n=0.030 was used for natural swales.
***Figure "E-3", Pg. E-9, Storm Water Management Manual was used for shallow flows.

TABLE - 2b

TIME OF CONCENTRATION and RAINFALL INTENSITIES
For: COBBLESTONE RIDGES

BASIN	Descrip. of Flow	L Length ft.	S Slope %	N* Mannings coef.	V* Vel. fps	Tt2 Travel Time min.	Tt100 Travel Time min.	Tc2 Time of Concentration min.	Tc100 Time of Concentration min.	2-Year i Intensity Grd. Jctn. Curves	100-Year i Intensity Grd. Jctn. Curves
"E"											
Post-devel.	overland*	300	21.00%	0.300		34.16	20.49	35.6	22.0	0.80	2.70
	Nat. Ch.***	28	21.00%	n/a	4.70	0.10	0.10				
	C&G**	490	5.00%	0.016	5.90	1.38	1.38				
"F"											
Post-devel.	overland*	116	1.70%	0.300		43.66	26.19	45.3	27.9	0.71	2.36
	Nat. Ch.***	0	0.00%	n/a	0.00	0.00	0.00				
	C&G**	564	4.50%	0.016	5.60	1.68	1.68				
"G"											
Post-devel.	overland*	300	16.10%	0.300		37.99	22.79	40.0	24.8	0.76	2.51
	Nat. Ch.***	97	16.10%	n/a	4.00	0.40	0.40				
	C&G**	526	4.50%	0.016	5.60	1.57	1.57				
"H"											
Post-devel.	overland*	300	11.60%	0.300		43.31	25.99	46.0	28.7	0.70	2.31
	Nat. Ch.***	560	11.60%	n/a	3.50	2.67	2.67				
	C&G**	0	0.00%	0.000	0.00	0.00	0.00				

* Overland "To" based on SCS formula pg. E-2 Storm Water Management Manual
**Mannings Equa. was used to determine gutter and natural swale velocities.
Mannings n=0.016 was used for curb and gutter, and n=0.030 was used for natural swales.
***Figure "E-3", Pg. E-9, Storm Water Management Manual was used for shallow flows.

TABLE - 2c

TIME OF CONCENTRATION and RAINFALL INTENSITIES
For: COBBLESTONE RIDGES

BASIN	Descrip. of Flow	L Length ft.	S Slope %	N* Mannings coef.	V* Vel. fps	Tt2 Travel Time min.	Tt100 Travel Time min.	Tc2 Time of Concentration min.	Tc100 min.	2-Year i Intensity Grd. Jctn. Curves	100-Year i Intensity Grd. Jctn. Curves
"I"											
Post-devel.	overland*	300	20.80%	0.300		34.29	20.57	35.6	21.8	0.80	2.70
	Nat. Ch.***	94	20.80%	n/a	4.70	0.33	0.33				
	C&G**	146	0.60%	0.016	2.60	0.94	0.94				
"J"											
Post-devel.	overland*	300	5.20%	0.300		59.70	35.82	62.0	38.2	0.54	2.00
	Nat. Ch.***	103	5.20%	n/a	2.30	0.75	0.75				
	C&G**	441	3.00%	0.016	4.60	1.60	1.60				
"K"											
Post-devel.	overland*	32	2.00%	0.300		14.60	8.76	17.8	11.9	1.17	3.54
	Nat. Ch.***	0	0.00%	n/a	0.00	0.00	0.00				
	C&G**	1123	5.00%	0.016	5.90	3.17	3.17				
"L"											
Post-devel.	overland*	300	7.90%	0.300		50.50	30.30	53.0	32.8	0.63	2.15
	Nat. Ch.***	322	7.90%	n/a	2.80	1.92	1.92				
	C&G**	98	1.00%	0.016	2.60	0.63	0.63				

* Overland "To" based on SCS formula pg. E-2 Storm Water Management Manual
**Mannings Equa. was used to determine gutter and natural swale velocities.
Mannings n=0.016 was used for curb and gutter, and n=0.030 was used for natural swales.
***Figure "E-3", Pg. E-9, Storm Water Management Manual was used for shallow flows.

TABLE - 2d

TIME OF CONCENTRATION and RAINFALL INTENSITIES
For: COBBLESTONE RIDGES

BASIN	Descrip. of Flow	L Length ft.	S Slope %	N* Mannings coef.	V* Vel. fps	Tt2 Travel Time min.	Tt100 Travel Time min.	Tc2 Time of Concentration min.	Tc100 Time of Concentration min.	2-Year i Intensity Grd. Jctn. Curves	100-Year i Intensity Grd. Jctn. Curves
"Full Site"											
Pre-devel.	overland*	273	22.30%	0.300		30.92	18.55	48.7	36.3	0.67	2.06
	Nat. Ch.***	2237	4.60%	n/a	2.10	17.75	17.75				
	C&G**	0	0.00%	0.000	0.00	0.00	0.00				

* Overland "To" based on SCS formula pg. E-2 Storm Water Management Manual
**Mannings Equa. was used to determine gutter and natural swale velocities.
Mannings n=0.016 was used for curb and gutter, and n=0.030 was used for natural swales.
***Figure "E-3", Pg. E-9, Storm Water Management Manual was used for shallow flows.

TABLE - 1a

COMPOSITE RUNOFF COEFICIENTS
For: COBBLESTONE RIDGES
USING
GRAND JUNCTION RECOMMENDED RUNOFF COEFICIENTS

Description Surface Area	Hydro. Soils Group	Runoff Coeff.'s	Selected Coeff.	BASIN "A" Post-devel. Unit Area	BASIN "A" Post-devel. Wt'd Value	BASIN "B" Post-devel. Unit Area	BASIN "B" Post-devel. Wt'd Value	BASIN "C" Post-devel. Unit Area	BASIN "C" Post-devel. Wt'd Value
Pavement and Roofs	D	0.95	0.95	0.69	0.66	0.89	0.85	0.99	0.94
	D	0.97	0.97	0.69	0.67	0.89	0.86	0.99	0.96
Green landscaping	D	0.40 to 0.48	0.45	0.71	0.32	0.71	0.32	0.92	0.41
	D	0.50 to 0.58	0.55	0.71	0.39	0.71	0.39	0.92	0.51
Undeveloped Areas	D	0.40 to 0.48	0.44	1.90	0.84	1.58	0.70	2.28	1.00
Bare/Meadow 6+%	D	0.50 to 0.58	0.54	1.90	1.03	1.58	0.85	2.28	1.23
Total Basin Area:				**3.30**		**3.18**		**4.19**	
COMPOSITE "C" VALUE (2-year)					**0.55**		**0.58**		**0.56**
COMPOSITE "C" VALUE (100-year)					**0.63**		**0.66**		**0.64**

Each building site was assumed to have 40% impervious surfaces and 60% landscape surfaces

TABLE - 1b

COMPOSITE RUNOFF COEFICIENTS
For: COBBLESTONE RIDGES
USING
GRAND JUNCTION RECOMMENDED RUNOFF COEFICIENTS

Description Surface Area	Hydro. Soils Group	Runoff Coeff.'s	Selected Coeff.	BASIN "D" Post-devel. Unit Area	BASIN "D" Post-devel. Wt'd Value	BASIN "E" Post-devel. Unit Area	BASIN "E" Post-devel. Wt'd Value	BASIN "F" Post-devel. Unit Area	BASIN "F" Post-devel. Wt'd Value
Pavement and Roofs	D	0.95	0.95	0.42	0.40	2.08	1.98	0.20	0.19
	D	0.97	0.97	0.42	0.41	2.08	2.02	0.20	0.19
Green landscaping	D	0.40 to 0.48	0.45	0.35	0.16	1.91	0.86	0.31	0.14
	D	0.50 to 0.58	0.55	0.35	0.19	1.91	1.05	0.31	0.17
Undeveloped Areas	D	0.40 to 0.48	0.44	0.44	0.19	2.24	0.99	0.86	0.38
Bare/Meadow 6+%	D	0.50 to 0.58	0.54	0.44	0.24	2.24	1.21	0.86	0.46
Total Basin Area:				**1.21**		**6.23**		**1.37**	
COMPOSITE "C" VALUE (2-year)					**0.62**		**0.61**		**0.52**
COMPOSITE "C" VALUE (100-year)					**0.69**		**0.69**		**0.61**

Each building site was assumed to have 40% impervious surfaces and 60% landscape surfaces

TABLE - 1c

COMPOSITE RUNOFF COEFICIENTS
For: COBBLESTONE RIDGES
USING
GRAND JUNCTION RECOMMENDED RUNOFF COEFICIENTS

Description Surface Area	Hydro. Soils Group	Runoff Coeff.'s	Selected Coeff.	BASIN "G" Post-devel. Unit Area	BASIN "G" Post-devel. Wt'd Value	BASIN "H" Post-devel. Unit Area	BASIN "H" Post-devel. Wt'd Value	BASIN "I" Post-devel. Unit Area	BASIN "I" Post-devel. Wt'd Value
Pavement and Roofs	D	0.95	0.95	1.00	0.95	0.69	0.66	0.38	0.36
	D	0.97	0.97	1.00	0.97	0.69	0.67	0.38	0.37
Green landscaping	D	0.40 to 0.48	0.45	1.06	0.48	1.04	0.47	0.34	0.15
	D	0.50 to 0.58	0.55	1.06	0.58	1.04	0.57	0.34	0.19
Undeveloped Areas	D	0.40 to 0.48	0.44	2.15	0.95	5.05	2.22	1.04	0.46
Bare/Meadow 6+%	D	0.50 to 0.58	0.54	2.15	1.16	5.05	2.73	1.04	0.56
Total Basin Area:				**4.21**		**6.78**		**1.76**	
COMPOSITE "C" VALUE (2-year)					**0.56**		**0.49**		**0.55**
COMPOSITE "C" VALUE (100-year)					**0.64**		**0.59**		**0.63**

Each building site was assumed to have 40% impervious surfaces and 60% landscape surfaces

TABLE - 1d

COMPOSITE RUNOFF COEFICIENTS
For: COBBLESTONE RIDGES
USING
GRAND JUNCTION RECOMMENDED RUNOFF COEFICIENTS

Description Surface Area	Hydro. Soils Group	Runoff Coeff.'s	Sel. Coeff.	BASIN "J" Post-devel. Unit Area	BASIN "J" Post-devel. Wt'd Value	BASIN "K" Post-devel. Unit Area	BASIN "K" Post-devel. Wt'd Value	BASIN "L" Post-devel. Unit Area	BASIN "L" Post-devel. Wt'd Value	BASIN Full Site Pre-devel. Unit Area	BASIN Full Site Pre-devel. Wt'd Value
Pavement and Roofs	D	0.95	0.95	1.02	0.97	1.63	1.55	1.63	1.55	0.00	0.00
	D	0.97	0.97	1.02	0.99	1.63	1.58	1.63	1.58	0.00	0.00
Green landscaping	D	0.40 to 0.48	0.45	1.06	0.48	0.47	0.21	0.47	0.21	0.00	0.00
	D	0.50 to 0.58	0.55	1.06	0.58	0.47	0.26	0.47	0.26	0.00	0.00
Undeveloped Areas	D	0.40 to 0.48	0.44	3.96	1.74	0.32	0.14	6.14	2.70	47.30	20.81
Bare/Meadow 6+%	D	0.50 to 0.58	0.54	3.96	2.14	0.32	0.17	6.14	3.32	47.30	25.54
Total Basin Area:				**6.04**		**2.42**		**8.24**		**47.30**	
COMPOSITE "C" VALUE (2-year)					**0.53**		**0.79**		**0.54**		**0.44**
COMPOSITE "C" VALUE (100-year)					**0.61**		**0.83**		**0.63**		**0.54**

Each building site was assumed to have 40% impervious surfaces and 60% landscape surfaces

PROJECT: Cobblestone Ridge JOB NO. 0252-001 CALCULATED BY: LBL DATE: 9/20/95

CHECKED BY: _____ DATE: _____

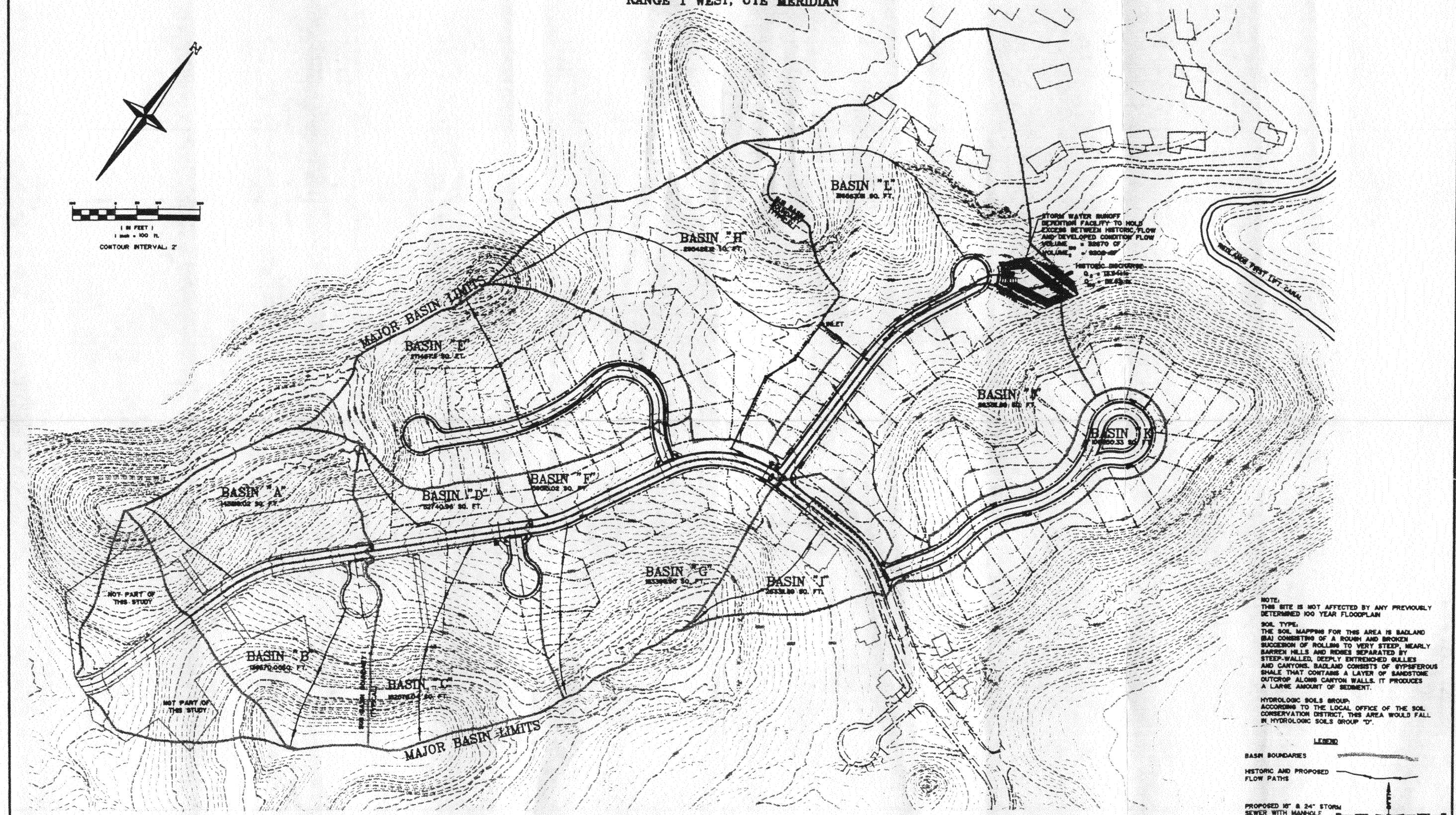
(THE TABLE BELOW IS AN ADAPTATION OF A WORKSHEET PROVIDED IN THE SCS TR-55)
THIS TABLE MAY BE USED IN SUBBASIN Tc CALCULATION, OR FOR TRAVEL TIME OF SUBBASIN RUNOFF THROUGH A LOWER SUBBASIN REACH (Tr).
USE ONLY CHANNEL FLOW FOR Tr CALCULATIONS.

				A	B	C	D	E	F	G
REACH	AREA IDENTIFIER			A	B	C	D	E	F	G
	SEGEMENT IDENTIFICATION									
	Tc OR Tr THROUGH BASIN REACH									
OVERLAND FLOW	SURFACE DESCRIPTION (TABLE "E-1")			Pour Grass	Pour Grass	Pour Grass	Pour Grass	Pour Grass	Pour Grass	Pour Grass
	"N" VALUE (TABLE "E-1")			0.30	0.30	0.30	0.30	0.30	0.30	0.30
	FLOW LENGTH, L (TOTAL ≤ 300 FT.)		(ft.)	300	300	300	236	300	116	300
	LAND SLOPE, S		(ft./ft.)	25.4%	22.7%	22.1%	26.3%	21.0%	1.7%	14.1%
	$To_2 = 0.50\ (NL)^{.8}/S^{.4}$		(min.)	31.7	33.1	33.5	31.2	34.2	43.7	38.0
	$To_{100} = 0.30\ (NL)^{.8}/S^{.4}$		(min.)	19.0	19.9	20.1	18.7	20.5	26.2	22.8
SHALLOW CONCENTRATED FLOW	SURFACE DESCRIPTION (FIGURE "E-3")			—	Pour Grass	Pour Grass	—	Pour Grass	—	
	FLOW LENGTH, L		(ft.)	ϕ	44	185	ϕ	28	ϕ	97
	FLOW SLOPE, S		(ft./ft.)	—	22.7%	22.1%	—	21.0%	—	16.1%
	FLOW VELOCITY, V (FIGURE "E-3")		(fps.)	—	4.7 fps	4.7 fps	—	4.7 fps	—	4.0 fps
	TRAVEL TIME = L/(60V)		(min.)	—	0.2	0.7	—	0.9	—	0.4
CHANNEL FLOW	CROSS-SECTIONAL FLOW AREA, a		($ft.^2$)							
	WETTED PERIMETER, Pw		(ft.)							
	HYDRAULIC RADIUS, r = a/Pw		(ft.)							
	CHANNEL SLOPE, S		(ft./ft.)	6.5%	6.5%	4.5%	4.5%	5% ±	4.5%	4.5%
	MANNING'S COEFFICIENT, n (APPENDIX F)			0.016	0.016	0.016	0.016	0.016	0.016	0.016
	$V = 1.49r^{.67}S^{.5}/n$		(fps.)	6.8 fps	6.8 fps	5.6 fps	5.6 fps	5.9 fps	5.6 fps	5.6 fps
	ASSUMED VELOCITY		(fps.)							
	FLOW LENGTH, L		(ft.)	231	171	135	256	490	564	526
	TRAVEL TIME L/(60V)		(min.)	0.6	0.4	0.4	0.8	1.4	1.7	1.6
Tc&Tr	Tc = To + Ts + Tch	2 YEAR	(min.)	32.3	33.7	34.6	32.0	35.7	45.3	40.0
	Tr = Tch	100 YEAR	(min.)	19.6	20.5	21.2	19.5	22.0	27.9	24.8
TL	TL = 0.6Tc or	2 YEAR	(min.)							
	FROM FIGURE "E-4"	100 YEAR	(min.)							

TRAVEL TIME WORKSHEET: TR-55 METHOD

TABLE "E-3"

MAJOR BASIN DRAINAGE MAP
FOR COBBLESTONE RIDGES
LOCATED IN THE S 1/2 OF SECTION 17 AND THE N 1/2 OF SECTION 20, TOWNSHIP 1 SOUTH, RANGE 1 WEST, UTE MERIDIAN



NOTE:
THIS SITE IS NOT AFFECTED BY ANY PREVIOUSLY DETERMINED 100 YEAR FLOODPLAIN

SOIL TYPE:
THE SOIL MAPPING FOR THIS AREA IS BADLAND (BA) CONSISTING OF A ROUGH AND BROKEN SUCCESSION OF ROLLING TO VERY STEEP, NEARLY BARREN HILLS AND RIDGES SEPARATED BY STEEP-WALLED, DEEPLY ENTRENCHED GULLIES AND CANYONS. BADLAND CONSISTS OF GYPSIFEROUS SHALE THAT CONTAINS A LAYER OF SANDSTONE OUTCROP ALONG CANYON WALLS. IT PRODUCES A LARGE AMOUNT OF SEDIMENT.

HYDROLOGIC SOILS GROUP:
ACCORDING TO THE LOCAL OFFICE OF THE SOIL CONSERVATION DISTRICT, THIS AREA WOULD FALL IN HYDROLOGIC SOILS GROUP "D".

LEGEND

BASIN BOUNDARIES

HISTORIC AND PROPOSED FLOW PATHS

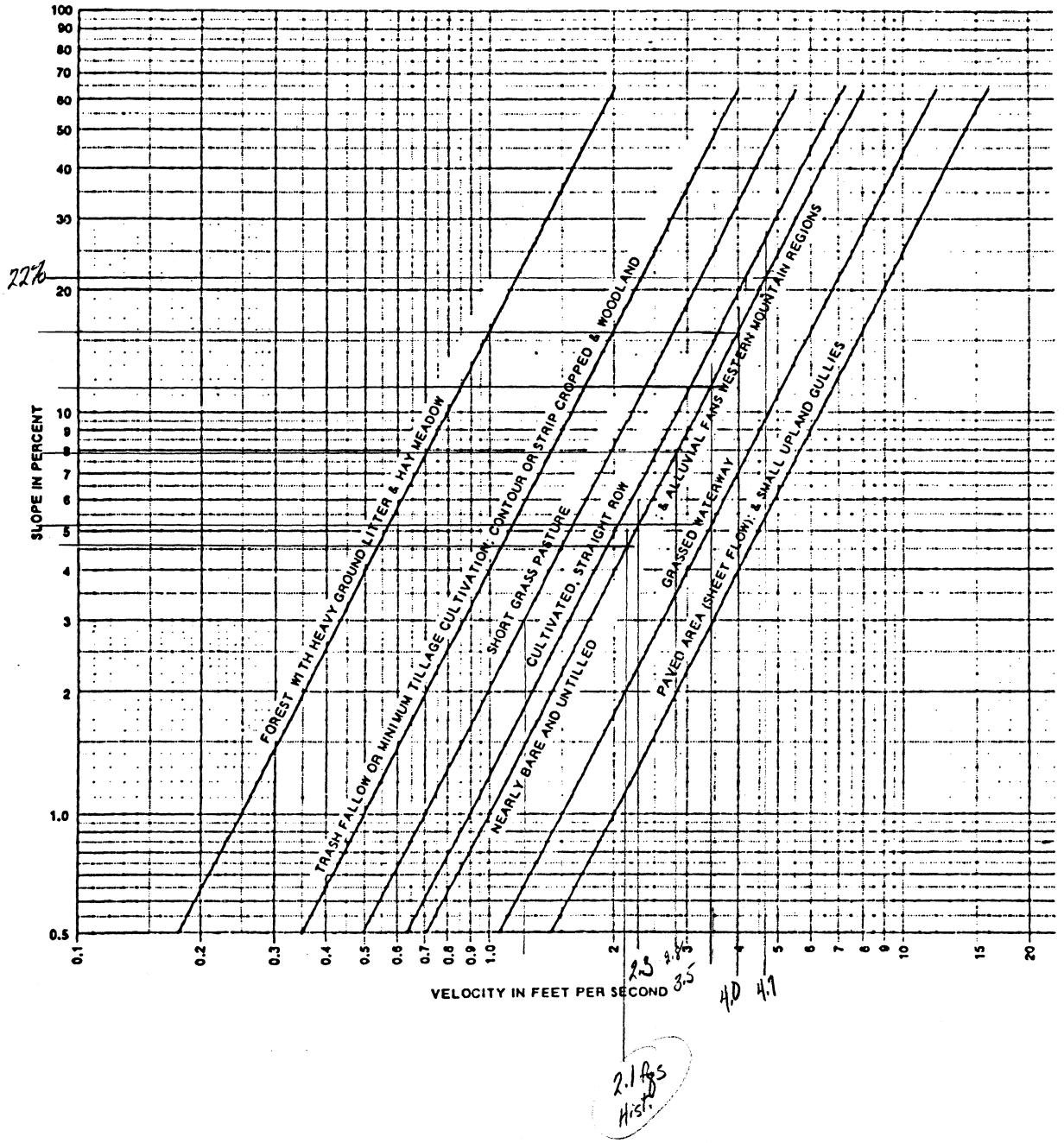
PROPOSED 18" & 24" STORM SEWER WITH MANHOLE AND CURB INLETS

American Consulting Engineers Council Member

DRAWN BY: MWT	PREPARED UNDER THE SUPERVISION OF	THOMPSON-LANGFORD CORP.	STEVE CRAVEN — COBBLESTONE
DESIGNED BY:	JAMES E. LANGFORD P.E. NO. 16487	529 25 1/2 RD., SUITE B210	SCALE: 1" = 100' — JOB NO: 0252-001 — DATE: 2/1/96
CHECKED BY: JEL	REVIEWED ____ DATE: ____	GRAND JUNCTION, COLORADO PH. (303) 243-6067	MAJOR BASIN DRAINAGE MAP — SHEET NO: 1 OF 1

REVISION	DATE	DESCRIPTION	BY	CHD

REPRODUCED FROM FIGURE 15.2, SCS 1972



DETERMINATION OF "Ts"	FIGURE "E-3"

PROJECT: Cobblestone Ridges JOB NO. 0252-001 CALCULATED BY: JEL DATE: 9/20/95

CHECKED BY: _____ DATE: _____

(THE TABLE BELOW IS AN ADAPTATION OF A WORKSHEET PROVIDED IN THE SCS TR-55)
THIS TABLE MAY BE USED IN SUBBASIN Tc CALCULATION, OR FOR TRAVEL TIME OF SUBBASIN RUNOFF THROUGH A LOWER SUBBASIN REACH (Tr).
USE ONLY CHANNEL FLOW FOR Tr CALCULATIONS.

				H	I	A	K	L		
REACH	AREA IDENTIFIER			H	I	A	K	L		
	SEGEMENT IDENTIFICATION									
	Tc OR Tr THROUGH BASIN REACH									
OVERLAND FLOW	SURFACE DESCRIPTION (TABLE "E-1")			Pour Grass	Pour Grass	Pour Grass	Lawn	Pour Grass		
	"N" VALUE (TABLE "E-1")			0.30	0.30	0.30	0.30	0.30		
	FLOW LENGTH, L (TOTAL ≤ 300 FT.)		(ft.)	300	300	300	32	300		
	LAND SLOPE, S		(ft./ft.)	11.6%	20.8%	5.2%	2%	7.9%		
	$To_2 = 0.50\ (NL)^{.8}/S^{.4}$		(min.)	43.3	34.3	57.7	14.6	50.5		
	$To_{100} = 0.30\ (NL)^{.8}/S^{.4}$		(min.)	26.0	20.6	35.8	8.8	30.3		
SHALLOW CONCENTRATED FLOW	SURFACE DESCRIPTION (FIGURE "E-3")			Pour Grass	Pour Grass	Pour Grass	—	Pour Grass		
	FLOW LENGTH, L		(ft.)	560	94	103	—	322		
	FLOW SLOPE, S		(ft./ft.)	11.6%	20.8%	5.2%	—	7.9%		
	FLOW VELOCITY, V (FIGURE "E-3")		(fps.)	3.5 fps	4.7 fps	2.3 fps	—	2.8 fps		
	TRAVEL TIME = L/(60V)		(min.)	2.7	0.3	0.7		1.9		
CHANNEL FLOW	CROSS-SECTIONAL FLOW AREA, a		($ft.^2$)	—						
	WETTED PERIMETER, Pw		(ft.)	—						
	HYDRAULIC RADIUS, r = a/Pw		(ft.)	—						
	CHANNEL SLOPE, S		(ft./ft.)	—	0.6%	3.0% ±	5% ±	1% ±		
	MANNING'S COEFFICIENT, n (APPENDIX F)			—	0.016	0.016	0.016	0.016		
	$V = 1.49r^{.67}S^{.5}/n$		(fps.)	—	2.6 fps	4.6 fps	5.9 fps	2.6 fps		
	ASSUMED VELOCITY		(fps.)	—						
	FLOW LENGTH, L		(ft.)	—	146	441	1123	98		
	TRAVEL TIME L/(60V)		(min.)		0.9	1.6	3.2	0.6		
Tc&Tr	Tc = To + Ts + Tch	2 YEAR	(min.)	46.0	35.6	62.0	17.8	53.0		
	Tr = Tch	100 YEAR	(min.)	28.7	21.8	38.1	11.9	32.8		
TL	T_L = 0.6Tc or	2 YEAR	(min.)							
	FROM FIGURE "E-4"	100 YEAR	(min.)							

TRAVEL TIME WORKSHEET: TR-55 METHOD — **TABLE "E-3"**

Grand Junction Community Development Department
Planning • Zoning • Code Enforcement
250 North Fifth Street
Grand Junction, Colorado 81501-2668
(970) 244-1430 FAX (970) 244-1599

August 9, 1996

Steve Craven
Cobblestone Communities, Inc.
P.O. Box 1267
Grand Junction, CO 81502

RE: Cobblestone Ridges Minor Change (FPP-96-27)

Dear Mr. Craven:

The request for a minor change to the Cobblestone Ridges development plan, as outlined in a letter from you dated June 27, 1996, has been approved. As required by the Zoning and Development Code, notice was sent to all those who testified at the hearings concerning Cobblestone Ridges. We received no response from that notice.

The approved minor change is as follows:

> The maximum height for single family residences to be built in Cobblestone Ridges Phases 1 through 4, shall not exceed 28 feet except for lots 1 through 8 of the proposed Block 1, Phase 2 (Saddle Court). Any 3 of theses 8 lots shall have a maximum height of 28 feet, while the remaining 5 lots shall have a maximum height of 25 feet. Height shall be measured from the highest natural finished grade line immediately adjoining the foundation or structure, and shall not include the chimney.

All other conditions of approval shall remain.

Sincerely,

Katherine M. Portner
Acting Community Development Director

Cobblestone Communities, Inc.

August 14, 1996

Katherine Portner, AICP
Acting Community Development Director
City of Grand Junction
Community Development Department
250 North 5th Street
Grand Junction, CO 81501

RE: Model Park, Cobblestone Ridges

Dear Kathy:

Please find enclosed an approval by the Ridges ACCO for our proposed model complex within Cobblestone Ridges. As you can see from the letter, we plan to operate the Model Complex for from 18 to 24 months. It is my understanding that approvals are generally for one year. Please advise as to be best way to deal with the time issue given that we have the ACCO's approval for the extended period.

As always, thank you for your assistance in this matter.

Sincerely,

Steven E Cramer

Cobblestone Communities, Inc.

P.O. Box 1267 • Grand Junction, Colorado 81502 • (970) 257-0500 • Fax (970) 257-7475

Cobblestone Communities, Inc.

July 25, 1996

Ridges Architectural Control Committee
c/o Roxanne Lewis
383 Hidden Valley Court
Grand Junction, CO 81503

RE: Cobblestone Ridges Model Complex

Dear ACCO Members:

Cobblestone intends to construct a model complex within its project, Cobblestone Ridges. Its current intent is to construct two model homes within Phases 1 - 4 of Cobblestone Ridges. These models will be fully landscaped, a plan for the same will be submitted to the ACCO for approval. Within the garages of these models, both a sales office and design center will be constructed and operated.

The Declaration of Covenants, Conditions, and Restrictions as approved for Cobblestone Ridges specifically allows for these uses. The City of Grand Junction also allows these uses. The Protective Covenants For "The Ridges" PUD, "The Ridges Filing Number Six", specifically allows for these uses with respect to the original developer, or for multi-family projects, but is silent with respect to our specific situation.

As in the past, Cobblestone respects the ACCO's duties and opinions, and would like to assure that there is a mutual understanding and agreement with respect to the operation of Cobblestone's on-site model complex.

Initially, Cobblestone intends to locate an on-site sales trailer within Cobblestone Ridges. This sale trailer will be operated for 4 to 5 months while the construction of the model complex is being completed. Upon the completion of the model complex, the sales trailer will be removed from the project. Hours of operation for either the sales trailer of the model complex will typically be limited to between 9:00 A.M. and 9:00 P.M. Under special circumstances they may extend past these limits.

Flags, lighting and signage are typically part of such a model complex. Cobblestone intends to erect flags in front of (within the lots of) the model homes. To assure that the flags will not create any undue visual impact with respect to neighboring properties, their height will be limited to the same height restriction which the models will be subject to. Lighting is generally used to accent a model complex. To assure consistency with the Ridges Covenants, any additional lighting used within the model complex will be ground based, and will not be directed toward the sky or neighboring homes in such a manner as to create a light pollution nuisance. Signage will be typical of informational and directional signage. All signage will be submitted to the ACCO for its review.

P.O. Box 1267 • Grand Junction, Colorado 81502 • (970) 257-0500 • Fax (970) 257-7475

Parking will be available on-site for all anticipated traffic to be generated by the model complex.

Cobblestone anticipates that this model complex will be in operation for 18 to 24 months. Cobblestone is making a substantial investment in this model complex in an effort to professionally market both its product and to present its development within the Ridges in the best possible light. On-site staff will be both professional and courteous, and will have the responsibility to be stewards of Cobblestone Ridges and its relationship with the remainder of the community. It is Cobblestone's intent to be an excellent neighbor--we believe that if we are, the neighbors will become our best sales people. Accordingly, we will take great care in the operation of our proposed model complex.

Cobblestone is seeking an approval of this letter of intent with respect to its model complex. If there are issues that need further discussion, I am available at your convenience. As always, your assistance is greatly appreciated.

Sincerely,

Steven E. Craven

Steven E. Craven

Cobblestone Communities, Inc.

Approved by:

Ted Munkres

Roxanne Lewis

Glen Ouldhurst

Ridges ACCO

Steve,
Lee and Cynthia were not present at our meeting. If you'd like I'm sure they wouldn't mind if you stopped by their homes.
Lee is out of town for a week.
How are things going?
When do you plan to begin excavation?
Roxanne

REVIEW COMMENTS

FILE #FPP-96-27-2 **TITLE HEADING:** Cobblestone Ridges

LOCATION: Rana Road in the Ridges

PETITIONER: Cobblestone Communities

PETITIONER'S ADDRESS/TELEPHONE: P.O. Box 1267
Grand Junction, CO 81502
257-0500

PETITIONER'S REPRESENTATIVE: Thompson-Langford

STAFF REPRESENTATIVE: Kathy Portner

NOTE: THE PETITIONER IS REQUIRED TO SUBMIT FOUR (4) COPIES OF WRITTEN RESPONSE AND REVISED DRAWINGS ADDRESSING ALL REVIEW COMMENTS ON OR BEFORE 5:00 P.M., SEPTEMBER 23, 1996.

CITY COMMUNITY DEVELOPMENT **9/16/96**
Kathy Portner **244-1446**

1. Clarify what the ridge setback line is shown on the Filing 1 plat. The requirements was that the ridge line be shown and that the required setback be 10' from the ridgeline with the provision that shade structures, such as gazebos and patio covers, can be built to the ridge line but not beyond. The setback language should include those provisions.
2. The earlier approval required that the off-site pathway system be designed and built by the developer of Cobblestone Ridges and paid for by the City. It was to have been built with filing 2. With the new phasing plan, it should be built with filing 1. The location and design should be coordinated with Public Works and Parks (see the attached proposed alignment).
3. Submit design plans for the common open space to be maintained by the homeowner's association. Those improvement costs must be included in the Development Improvement Agreement.

CITY DEVELOPMENT ENGINEER **9/16/96**
Jody Kliska **244-1591**

1. On the plat, shouldn't the open space in the cul-de-sac be designated as a separate tract?
2. Please notify me of proposed construction schedule and any changes in contractor information. Construction plans for this project have been previously approved, and only those portions which have been changed need be approved again.

CITY UTILITY ENGINEER **9/13/96**
Jim Shanks **244-1557**

WATER
No objections.

IRRIGATION:
1. If irrigation is to be provided with this project, show irrigation lines on the utility composite.

SEWER

2. Either Manhole D6 or Manhole D7 can be eliminated (one of the two).
3. Please ensure the following notes are on the sewer plans:
   - A. Contractor shall have one signed copy of plans and a copy of the City of Grand Junction Standard Specifications at the job site at all times.
   - B. All sewer mains shall be PVC SDR 35 (ASTM 3034) unless otherwise noted.
   - C. All sewer mains shall be laid to grade utilizing a pipe laser.
   - D. All service line connections to the new main shall be accomplished with full body wyes or tees. Tapping saddles will not be allowed.
   - E. No 4" services shall be connected directly into manholes.
   - F. The contractor shall notify the City inspector 48 hours prior to commencement of construction.
   - G. The Contractor is responsible for all required sewer line testing to be completed in the presence of the City Inspector. Pressure testing will be performed after all compaction of street subgrade and prior to street paving. Final lamping will also be accomplished after paving is completed. These tests shall be the basis of acceptance of the sewer line extension.
   - H. The Contractor shall obtain City of Grand Junction Street Cut Permit for all work within existing City right-of-way prior to construction.
   - I. A clay cut-off wall shall be placed 10 feet upstream from all new manholes unless otherwise noted. The cut-off wall shall extend from 6" below to 6" above granular backfill material and shall be 2 feet wide. If native material is not suitable, the contractor shall import material approved by the engineer.
   - J. Sewer stub outs shall be capped and plugged. Stub out shall be identified with a steel fence post buried 1 below finished grade. As-built surveying of stub out is required PRIOR to backfill.
   - K. Show appropriate benchmark.

CITY PROPERTY AGENT **9/16/96**
Steve Pace **256-4003**

COBBLESTONE RIDGES

1. Need to address ingress/egress easements in the dedication.
2. The ridge setback line on Block 1 should be dimensioned.
3. Should there be a 14' multi-purpose easement along Lots 1 through 4, Block 2 adjacent to Rana Road?
4. Need to dimension the 30' multi-purpose and ingress/egress easements on Lot 9 & 10, Block 1.
5. Lien holder approval certificate??
6. There are several monuments that are not shown on the westerly end of Block 1, a northerly angle point on Block 5, and a southerly angle point between Blocks 4 & 5.
7. Need to address the temporary turnaround easement in the dedication.

COBBLESTONE RIDGES, PHASE 2

1. Lien holder approval certificate??

CITY FIRE DEPARTMENT **9/16/96**
Hank Masterson **244-1414**

1. Grading the utility composite for Phase II-move the hydrant proposed at lot 12 to the east side of lot 10.

2. A reminder from previous submittal review comments: The fire lines for this project must extend to the border of the project so that future extension and looping of the lines is possible. In future submittals, petitioner must show where the extension and looping will occur.

REDLANDS WATER & POWER **9/5/96**
Gregg Strong **243-2173**
This project has no impact on Redlands facilities.

RIDGES ARCHITECTURAL CONTROL COMMITTEE **9/12/96**
Lee Garrett
Downsizing approved by committee.

U S WEST **9/9/96**
Max Ward **244-4721**
For timely telephone service, as soon as you have a plat and power drawing for your development, please.....

MAIL COPY TO: AND CALL THE TOLL-FREE NUMBER FOR:
U S West Communications Developer Contact Group
Developer Contact Group 1-800-526-3557
P.O. Box 1720
Denver, CO 80201

We need to hear from you at least 60 days prior to trenching.

U S POSTAL SERVICE **9/5/96**
Mary Barnett **244-3434**
If sidewalks are put in then centralized delivery is required. If not sidewalks, then curbside boxed pared on the lot line OR centralized delivery is acceptable.

LATE COMMENTS

TCI CABLEVISION **9/16/96**
Glen Vancil **245-8777**

1. We require the developers to provide, at no charge to TCI Cablevision, an open trench for cable service where underground service is needed and when a roadbore is required, that too must be provided by the developer. The trench and/or roadbore may be the same one used by other utilities so long as there is enough room to accommodate all necessary lines.
2. We require developers to provide, at no charge to TCI Cablevision, fill-in of the trench once cable has been installed in the trench.
3. We require developers to provide, at no charge to TCI Cablevision, a 4" PVC conduit at all utility road crossings where cable TV will be installed. This 4" conduit will be for the sole use of cable TV.

4. Should your subdivision contain cul-de-sac's the driveways and property lines (pins) must be clearly marked prior to the installation of underground cable. If this is not done, any need to relocate pedestals or lines will be billed directly back to your company.
5. TCI Cablevision will provide service to your subdivision so long as it is within the normal cable TV service area. Any subdivision that is out of the existing cable TV area may require a construction assist charge, paid by the developer, to TCI Cablevision in order to extend the cable TV service to that subdivision.
6. TCI will normally not activate cable service in a new subdivision until it is approximately 30% developed. Should you wish cable TV service to be available for the first home in your subdivision it will, in most cases, be necessary to have you provide a construction assist payment to cover the necessary electronics for that subdivision.

LATE COMMENTS

CITY PARKS & RECREATION **9/16/96**
Shawn Cooper **244-3869**

1. Parks & Open Space Fee - 45 lots x $225 = $10,125.
2. Detention facility is to be privately maintained and not by the City.

TO DATE, NO COMMENTS RECEIVED FROM:
City Attorney
City Police Department
Mesa County Planning
Mesa County School District #51
Public Service Company
Persigo Wastewater Treatment Facility

Cobblestone Communities, Inc.

September 17, 1996

Katherine Portner, AICP
Acting Community Development Director
City of Grand Junction
Community Development Department
250 North 5th Street
Grand Junction, CO 81501

Via Fax to: 1-970-244-1599

RE: Letter to Michael Wise, Cornerstone Private Capital, Cobblestone Phases 1 & 2

Dear Kathy:

As we discussed the other day over the phone, I am required to obtain some information from the City with respect to the status of our project, Cobblestone Ridges, for our lender Cornerstone Private Capital (Cornerstone). I believe that I have successfully answered most of their questions, but two issues still remain that I would like to ask you to address in a letter. Cornerstone would like to ascertain the following:

Issues

1) Utilities & Roads: All utility services necessary for the operation of Cobblestone Ridges Phases 1 & 2 are available at the boundary of the property. All roads necessary for ingress and egress to Cobblestone Ridges Phases 1 & 2 have been dedicated to public use.

2 Zoning: Cobblestone Ridges Phases 1 & 2 comply in all respects with applicable zoning, ordinances and regulations as they pertain to the development of land contained therein.

If I could call upon you to write a letter to Cornerstone with respect to these issues, you assistance would be greatly appreciated. The letter should be addressed to:

Michael R. Wise
Cornerstone Private Capital
P.O. Box 12357
Aspen, CO 81612

The terms of my agreement with Michael are such that I need this letter within the next week. Should this create a problem for you, please call me at your earliest convenience. The letter will be part of a package that I am to deliver to Michael. Accordingly, I would like to pick it up from your office when it is ready. Please contact me upon it completion so that I may do the same.

As always, thank you for your assistance.

Sincerely,

Cobblestone Communities, Inc.

Steven E. Craven

Cobblestone Communities, Inc.

September 23, 1996

Katherine Portner, AICP
Acting Community Development Director
City of Grand Junction
Community Development Department
250 North 5th Street
Grand Junction, CO 81501

RE: Changes to Plan/Plat, Cobblestone Ridges Phases 1 & 2 as submitted.

Dear Kathy:

We have made a minor change to the Plan and Plat as submitted and wanted to call your attention to it. The (4) four new lots along Rana Road where the original Phase 1 was located were previously submitted with the path detached from the curb and gutter section. The path is now show as attached to the curb and cutter section.

We would like to maintain an attached section as is proposed along the existing lots gaining access from Rana Road. It will be a much more efficient and trouble free construction process if built in this manner. Additionally, we feel that awareness of pedestrians at these driveway crossing will be higher in this location. Mike Thompson has discussed this matter with Jody Kliska.

This change will result in the some very slight acreage changes. Please see the following table for a summary of the same:

	Current	Previous
Lots	23.390	23.252
Streets	1.211	1.374
Common Area	1.498	1.498
District Open Space	4.384	4.359

Please let me know if you have any concerns regarding these changes.

Sincerely,

Cobblestone Communities, Inc.

Steven E. Craven

P.O. Box 1267 • Grand Junction, Colorado 81502 • (970) 257-0500 • Fax (970) 257-7475

STAFF REPORT

FILE: FPP-96-27-2

DATE: September 24, 1996

STAFF: Kathy Portner

REQUEST: Final Plat/Plan, Filings 1 and 2, Cobblestone Ridges

LOCATION: Ridges, Filing #6

APPLICANT: Cobblestone Communities, Inc., Steve Craven

EXECUTIVE SUMMARY:

Final plan/plat for Cobblestone Ridges, Filings 1 and 2 was approved by Planning Commission in March. The applicant is proposing a revision to those filings.

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Detached Single Family Homes

SURROUNDING LAND USE:

NORTH:	Undeveloped and Single Family Residential (4 units/acre)
SOUTH:	Undeveloped
EAST:	Attached and Detached Single Family (4 units/acre)
WEST:	Undeveloped

EXISTING ZONING: PR-4 (Planned Residential with an overall density of 4 units/acre)

SURROUNDING ZONING:

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

RELATIONSHIP TO COMPREHENSIVE PLAN:

The Growth Plan shows the Ridges area as Residential Medium Low density of 2 to 3.9 units per acre. The Amended Final Plan for the Ridges, as adopted by the Planning Commission and City Council, also applies. The proposed plan meets the general development standards of the Ridges Plan in the following ways:

1. The design does preserve, as much as possible, the natural features which enhance the attractiveness of the area.

2. Steep slopes are preserved as open space.

STAFF ANALYSIS:

Cobblestone Ridges is located in Filing #6 of the Ridges at the end of Rana Road. It consists of two parcels of land, one small mesa consisting of 7.517 acres that was originally designated as a multi-family site, and 23.079 acres of a valley floor that was at one time platted into 83 A lots, 12 B lots and 3.90 acres of multi-family units. A Preliminary Plan has been approved for 65 single family lots on 23.86 acres of the site and an Outline Development Plan was approved for 48 attached units on 6.706 acres of the site. The Preliminary approval included open space additions and deletions and a modified street standard to include curb and gutter on all streets, no sidewalks and a 8' wide concrete pathway along the north side of Rana Road through the development and connecting to the existing pathway system south of Prospector Point. The developer of Cobblestone Ridges will be responsible for building all of the trail, but the City will pay for the cost of the trail off-site from the development.

The applicant had received final approval for filings 1 and 2, but is now proposing modifications to the plan. The revised Preliminary Plan consists of 55 single family lots on 23.65 acres. The final plat/plan for filing #1 consists of 26 single family lots on 13.713 acres and the final plat/plan for filing #2 consists of 21 single family lots on 6.425 acres.

The approved setbacks are:

Front Yard--20'
Rear Yard-- 10'
Side Yard-- 5'
Rear Yard setbacks for those lots along Saddle Court shall be 10' from the ridge line, except for the construction of shade structures, such as patio covers and gazebos. Such shade structures shall be allowed to the ridge line but not beyond.

Setbacks shall be so noted on the plats and the ridge line for those lots along Saddle Court shall be shown.

The developer has submitted extensive landscaping plans for the private open space, as requested, and the cost of those improvements will be included in the Development Improvements Agreement.

STAFF RECOMMENDATION:

Staff recommends approval of the revised Preliminary Plan and Final Plan/Plat for Filings 1 and 2.

RECOMMENDED PLANNING COMMISSION MOTION:

Mr. Chairman, on item #FPP-96-27-2, I move we approved the revised Preliminary Plan and Final Plan/Plat for Filings 1 and 2.


RANA ROAD
HILL VIEW DR.
RIDGE VIEW DR.
RIDGE CIR. DR.

PETITIONER'S RESPONSE TO REVIEW COMMENTS

FILE: #FPP-96-27-2

TITLE: COBBLESTONE RIDGES

LOCATION: RANA ROAD IN THE RIDGES

PETITIONER: COBBLESTONE COMMUNITIES, INC. (Cobblestone)

PETITIONER'S REPRESENTATIVE: THOMPSON-LANGFORD

STAFF REPRESENTATIVE: KATHY PORTNER

PETITIONER'S RESPONSES

City Community Development

1) The "Ridges Setback Line" as shown is meant to be the actual setback restriction. We are aware that this line as has several names throughout the entitlement process of Cobblestone Ridges, and that this may have caused some confusion. Accordingly we have elected to call this line the "Ridges Setback Line" so that there would be no misunderstanding. If the Community Development Department would like us also to show the actual ridge line we can, but we felt this to be redundant. Please advise.

2) Cobblestone agrees that the path should be built during the Phase 1 improvement period of Cobblestone Ridges, and agrees to do the same. Pursuant to the City's agreement to pay for the same, Cobblestone suggests that Thompson-Langford as the Applicants Representative be hired to: 1) create working drawings and specifications for the path, 2) establish a bid package for the path, 3) obtain bids from at least three approved and qualified contractors for the construction of the path, and 4) be hired to provide construction management for the path. Further, that the City will enter into and conclude negotiations with Thompson-Langford for the payment for same.

3) Acknowledged.

City Development Engineer

1) Acknowledged.

2) Upon the establishment of a new construction schedule we will notify you of the same. We acknowledge that only the changes to the construction plans need to be approved.

City Utility Engineer

Irrigation: Acknowledged.

Sewer: Thank you for your comments--we will address them.

City Property Agent

Thank you for your comments--we will address them.

City Fire Department

Comment # 1 Acknowledged.

#2) We acknowledge the need for future looping. Currently, looping is impractical, and previous documentation has been provided demonstrating that the proposed development will provide the required 500 gpm at all hydrant locations.

Redlands Water & Power

Thank you.

Ridges ACCO

Thank you.

U S West

We will notify you as early as possible.

U S Postal Service

Paired boxes are preferred.

I thank all of you for your comments.

Sincerely,

Cobblestone Communities, Inc.

Steven E. Craven

Steven E. Craven

REVIEW COMMENTS

FILE #FPP-96-27-2 **TITLE HEADING:** Cobblestone Ridges

LOCATION: Rana Road in the Ridges

PETITIONER: Cobblestone Communities

PETITIONER'S ADDRESS/TELEPHONE: P.O. Box 1267
Grand Junction, CO 81502
257-0500

PETITIONER'S REPRESENTATIVE: Thompson-Langford

STAFF REPRESENTATIVE: Kathy Portner

NOTE: THE PETITIONER IS REQUIRED TO SUBMIT FOUR (4) COPIES OF WRITTEN RESPONSE AND REVISED DRAWINGS ADDRESSING ALL REVIEW COMMENTS ON OR BEFORE 5:00 P.M., SEPTEMBER 23, 1996.

CITY COMMUNITY DEVELOPMENT **9/16/96**
Kathy Portner **244-1446**

1. Clarify what the ridge setback line is shown on the Filing 1 plat. The requirements was that the ridge line be shown and that the required setback be 10' from the ridgeline with the provision that shade structures, such as gazebos and patio covers, can be built to the ridge line but not beyond. The setback language should include those provisions.
2. The earlier approval required that the off-site pathway system be designed and built by the developer of Cobblestone Ridges and paid for by the City. It was to have been built with filing 2. With the new phasing plan, it should be built with filing 1. The location and design should be coordinated with Public Works and Parks (see the attached proposed alignment).
3. Submit design plans for the common open space to be maintained by the homeowner's association. Those improvement costs must be included in the Development Improvement Agreement.

CITY DEVELOPMENT ENGINEER **9/16/96**
Jody Kliska **244-1591**

1. On the plat, shouldn't the open space in the cul-de-sac be designated as a separate tract?
2. Please notify me of proposed construction schedule and any changes in contractor information. Construction plans for this project have been previously approved, and only those portions which have been changed need be approved again.

CITY UTILITY ENGINEER **9/13/96**
Jim Shanks **244-1557**

WATER
No objections.

IRRIGATION:
1. If irrigation is to be provided with this project, show irrigation lines on the utility composite.

SEWER

2. Either Manhole D6 or Manhole D7 can be eliminated (one of the two).
3. Please ensure the following notes are on the sewer plans:
   - A. Contractor shall have one signed copy of plans and a copy of the City of Grand Junction Standard Specifications at the job site at all times.
   - B. All sewer mains shall be PVC SDR 35 (ASTM 3034) unless otherwise noted.
   - C. All sewer mains shall be laid to grade utilizing a pipe laser.
   - D. All service line connections to the new main shall be accomplished with full body wyes or tees. Tapping saddles will not be allowed.
   - E. No 4" services shall be connected directly into manholes.
   - F. The contractor shall notify the City inspector 48 hours prior to commencement of construction.
   - G. The Contractor is responsible for all required sewer line testing to be completed in the presence of the City Inspector. Pressure testing will be performed after all compaction of street subgrade and prior to street paving. Final lamping will also be accomplished after paving is completed. These tests shall be the basis of acceptance of the sewer line extension.
   - H. The Contractor shall obtain City of Grand Junction Street Cut Permit for all work within existing City right-of-way prior to construction.
   - I. A clay cut-off wall shall be placed 10 feet upstream from all new manholes unless otherwise noted. The cut-off wall shall extend from 6" below to 6" above granular backfill material and shall be 2 feet wide. If native material is not suitable, the contractor shall import material approved by the engineer.
   - J. Sewer stub outs shall be capped and plugged. Stub out shall be identified with a steel fence post buried 1 below finished grade. As-built surveying of stub out is required PRIOR to backfill.
   - K. Show appropriate benchmark.

CITY PROPERTY AGENT **9/16/96**
Steve Pace **256-4003**

COBBLESTONE RIDGES

1. Need to address ingress/egress easements in the dedication.
2. The ridge setback line on Block 1 should be dimensioned.
3. Should there be a 14' multi-purpose easement along Lots 1 through 4, Block 2 adjacent to Rana Road?
4. Need to dimension the 30' multi-purpose and ingress/egress easements on Lot 9 & 10, Block 1.
5. Lien holder approval certificate??
6. There are several monuments that are not shown on the westerly end of Block 1, a northerly angle point on Block 5, and a southerly angle point between Blocks 4 & 5.
7. Need to address the temporary turnaround easement in the dedication.

COBBLESTONE RIDGES, PHASE 2

1. Lien holder approval certificate??

CITY FIRE DEPARTMENT **9/16/96**
Hank Masterson **244-1414**

1. Grading the utility composite for Phase II-move the hydrant proposed at lot 12 to the east side of lot 10.

2. A reminder from previous submittal review comments: The fire lines for this project must extend to the border of the project so that future extension and looping of the lines is possible. In future submittals, petitioner must show where the extension and looping will occur.

REDLANDS WATER & POWER **9/5/96**
Gregg Strong **243-2173**
This project has no impact on Redlands facilities.

RIDGES ARCHITECTURAL CONTROL COMMITTEE **9/12/96**
Lee Garrett
Downsizing approved by committee.

U S WEST **9/9/96**
Max Ward **244-4721**
For timely telephone service, as soon as you have a plat and power drawing for your development, please.....

MAIL COPY TO:
U S West Communications
Developer Contact Group
P.O. Box 1720
Denver, CO 80201

AND

CALL THE TOLL-FREE NUMBER FOR:
Developer Contact Group
1-800-526-3557

We need to hear from you at least 60 days prior to trenching.

U S POSTAL SERVICE **9/5/96**
Mary Barnett **244-3434**
If sidewalks are put in then centralized delivery is required. If not sidewalks, then curbside boxed pared on the lot line OR centralized delivery is acceptable.

LATE COMMENTS

TCI CABLEVISION **9/16/96**
Glen Vancil **245-8777**

1. We require the developers to provide, at no charge to TCI Cablevision, an open trench for cable service where underground service is needed and when a roadbore is required, that too must be provided by the developer. The trench and/or roadbore may be the same one used by other utilities so long as there is enough room to accommodate all necessary lines.
2. We require developers to provide, at no charge to TCI Cablevision, fill-in of the trench once cable has been installed in the trench.
3. We require developers to provide, at no charge to TCI Cablevision, a 4" PVC conduit at all utility road crossings where cable TV will be installed. This 4" conduit will be for the sole use of cable TV.

4. Should your subdivision contain cul-de-sac's the driveways and property lines (pins) must be clearly marked prior to the installation of underground cable. If this is not done, any need to relocate pedestals or lines will be billed directly back to your company.
5. TCI Cablevision will provide service to your subdivision so long as it is within the normal cable TV service area. Any subdivision that is out of the existing cable TV area may require a construction assist charge, paid by the developer, to TCI Cablevision in order to extend the cable TV service to that subdivision.
6. TCI will normally not activate cable service in a new subdivision until it is approximately 30% developed. Should you wish cable TV service to be available for the first home in your subdivision it will, in most cases, be necessary to have you provide a construction assist payment to cover the necessary electronics for that subdivision.

LATE COMMENTS

CITY PARKS & RECREATION **9/16/96**
Shawn Cooper **244-3869**

1. Parks & Open Space Fee - 45 lots x $225 = $10,125.
2. Detention facility is to be privately maintained and not by the City.

PUBLIC SERVICE COMPANY **9/20/96**
Gary Lewis **244-2698**

No objections. 14' front lot easements should be sufficient to serve the development.

TO DATE, NO COMMENTS RECEIVED FROM:
City Attorney
City Police Department
Mesa County Planning
Mesa County School District #51
Persigo Wastewater Treatment Facility

Grand Junction Community Development Department
Planning • Zoning • Code Enforcement
250 North Fifth Street
Grand Junction, Colorado 81501-2668
(970) 244-1430 FAX (970) 244-1599

September 26, 1996

Michael R. Wise
Cornerstone Private Capital
P.O. Box 12357
Aspen, CO 81612

RE: Cobblestone Ridges

Dear Mr. Wise:

The City is currently reviewing revisions to the proposed Cobblestone Ridges project in Grand Junction. The project is scheduled to go before the Planning Commission on October 1, 1996 for consideration of the revised Preliminary and the Final plats/plans for filings 1 and 2. Staff is recommending approval.

All utility services necessary for the operation of Cobblestone Ridges Phases 1 and 2 are available at the boundary of the property. All roads necessary for ingress and egress to Cobblestone Ridges Phases 1 and 2 have been dedicated to public use. In addition, Cobblestone Ridges Phases 1 and 2 comply in all respects with applicable zoning, ordinances and regulations as they pertain to the development of land contained therein.

If you need further information please call me at 244-1446.

Sincerely,

Katherine M. Portner

Katherine M. Portner
Acting Community Development Director

xc: Steve Craven

COBBLESTONE COMMUNITIES, INC.
P.O. BOX 1267
GRAND JUNCTION , CO 81502
PHONE: (970) 257-0500
FAX: (970) 257-7475

FAX TRANSMITTAL

to: Kathy Portner 1-970-244-1599
company name: City of Grand Junction - Comm. Dev.
from: Steve Crane
date: 10-3-96
number of pages, including transmittal: 2

message: Item (C) on the followins page has language with respect to "Approvals". This language is in connection with Phases I & II of Cobblestone Ridges. This applies to the development of the land in these two phases only.

If you could write a short letter with respect to our approvals, it would be most appreciated. It can be faxed to me @ 257-7475.

Thank you, Steve

If all copies are not received, please call (970) 257-0500.

CORNERSTONE
PRIVATE CAPITAL

and Rents, and Fixture Filing;

(3) Loan Agreement;

(4) Assignment of Leases and Rents;

(5) Environmental Indemnity executed by Borrower and Guarantor;

(6) UCC Financing Statements;

(7) Assignment and Pledge;

(8) Guaranty executed by Guarantor;

c. Approvals. All permits and approvals required under applicable law in connection with the ownership and development of the Real Property have been obtained and are in full force and effect and are not subject to revocation or termination during the term of the Loan.

d. Insurance. Within five (5) days following acceptance of this Commitment, Borrower has furnished Lender with a policy or policies of insurance in amounts and with insurers acceptable to Lender. Policies of insurance shall contain the complete address or legal description of the Real Property, have deductible amounts not greater than $1,000, be for a term of not less than one year, and cancelable only upon thirty (30) days prior written notice to Lender. Policies of insurance shall include the following:

(i) Comprehensive general liability insurance for injury to person or property in the amount of not less than $1,500,000 combined single limit naming Lender as additional insured.

(ii) Such other and further insurance as Lender may require.

e. Organization. Borrower has furnished Lender with copies of Borrower's

MRW

Grand Junction Community Development Department
Planning • Zoning • Code Enforcement
250 North Fifth Street
Grand Junction, Colorado 81501-2668
(970) 244-1430 FAX (970) 244-1599

October 8, 1996

Steve Craven
Cobblestone Communities, Inc.
P.O. Box 1267
Grand Junction, CO 81502

RE: Cobblestone Ridges (file FPP-96-27-2)

Dear Steve:

This will confirm the Planning Commission approval of Cobblestone Ridges, Filings 1 and 2. The final plats for the filings and final construction drawings must be submitted for staff review and approval prior to commencement of any work.

Sincerely,

Kathy

Katherine M. Portner
Acting Community Development Director

Cobblestone Communities, Inc.

NEIGHBORHOOD MEMORANDUM

TO: RIDGES' RESIDENTS

FROM: COBBLESTONE COMMUNITIES, INC.

SUBJECT: COBBLESTONE RIDGES

DATE: DECEMBER 2, 1996

Dear Neighbor,

Just a short note to let you know what is going on at the end of Rana Road. We're excited to have just started moving dirt for a new subdivision to be called Cobblestone Ridges. We anticipate the majority of this development work to take approximately 2 to 3 months. Obviously, there will be large construction equipment moving around the site... and we know from experience this oftentimes causes a lot of curiosity, especially with children. We also know many of you cross this area on your morning walks and bike rides. We have cautioned our sub-contractors to keep their eyes open for you and would appreciate your alertness as well. We apologize in advance for any inconveniences we might cause over the next few months.

For your information, Cobblestone Ridges will be a covenant controlled community consisting of 60 home sites ranging in size from approximately ¼ to nearly ½ acre with every home site backing up to open space (See following page). It will be divided into two areas; the Trails and the Pointe. Along Rana Road, we have included a 8 foot wide concrete trail for all of you to enjoy. Once the lots are finished, we will begin building ranch and two story homes ranging in size from approximately 1,550 to 2,650 square feet. We will provide you with more information on these homes as they become available.

Your new neighbor,

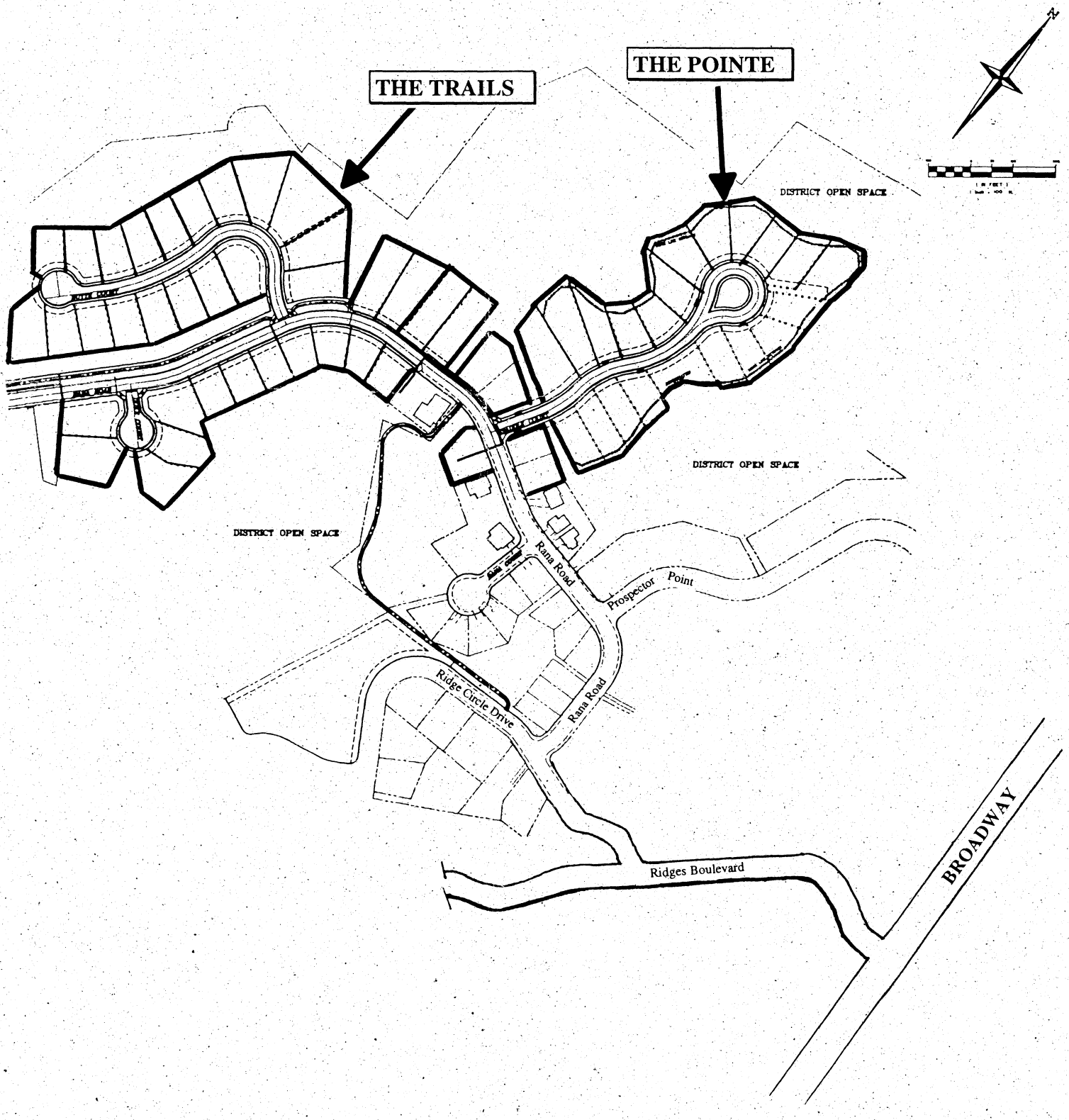
COBBLESTONE COMMUNITIES, INC.

P.S. If any of your friends, relatives or co-workers will be looking for a new home in 1997, please tell them to keep Cobblestone Ridges in mind.

PLEASE PARDON OUR DUST!

P.O. Box 1267 • Grand Junction, Colorado 81502 • (970) 257-0500 • Fax (970) 257-7475

COBBLESTONE RIDGES



FPP-96-27-2

CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS & UTILITIES
250 NORTH 5TH STREET
GRAND JUNCTION, CO 81501
(970) 244-4003

TO THE MESA COUNTY CLERK & RECORDER:

THIS IS TO CERTIFY that the herein named Subdivision Plat,

COBBLESTONE RIDGES,

Situated in the S ~~1/2~~ 1/2 of Section 17, & N 1/2 OF SECTION 20

Township 1 SOUTH, Range 1 WEST,

of the UTE Meridian in the City of Grand Junction, County of Mesa, State of Colorado, has been reviewed under my direction and, to the best of my knowledge, satisfies the requirements pursuant to C.R.S. 38-51-106 and the Zoning and Development Code of the City of Grand Junction for the recording of subdivision plats in the office of the Mesa County Clerk and Recorder.

This certification makes no warranties to any person for any purpose. It is prepared to establish for the County Clerk and Recorder that City review has been obtained. This certification does not warrant: 1) title or legal ownership to the land hereby platted nor the title or legal ownership of adjoiners; 2) errors and/or omissions, including, but not limited to, the omission(s) of rights-of-ways and/or easements, whether or not of record; 3) liens and encumbrances, whether or not of record; 4) the qualifications, licensing status and/or any statement(s) or representation(s) made by the surveyor who prepared the above-named subdivision plat.

Dated this 6 day of November, 1996.

City of Grand Junction,
Department of Public Works & Utilities

By: James L. Shanks
James L. Shanks, P.E., P.L.S.
Director of Public Works & Utilities

1778367 0302PM 11/19/96
MONIKA TODD CLK&REC MESA COUNTY CO

Recorded in Mesa County
Date: 11-19-96
Plat Book: 15 Page: 199 200-201
Drawer: CC101

11/19/96
3:02
B2280 P500
Rec # 1778369

g:\special\platcert.doc

CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS & UTILITIES
250 NORTH 5TH STREET
GRAND JUNCTION, CO 81501
(970) 244-4003

TO THE MESA COUNTY CLERK & RECORDER:

THIS IS TO CERTIFY that the herein named Subdivision Plat,

COBBLESTONE RIDGES PHASE II,

Situated in the S ~~½~~ 1/2 of Section 17, & N 1/2 OF SECTION 20

Township 1 SOUTH, Range 1 WEST,

of the UTE Meridian in the City of Grand Junction, County of Mesa, State of Colorado, has been reviewed under my direction and, to the best of my knowledge, satisfies the requirements pursuant to C.R.S. 38-51-106 and the Zoning and Development Code of the City of Grand Junction for the recording of subdivision plats in the office of the Mesa County Clerk and Recorder.

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Dated this 6th day of November, 1996.

City of Grand Junction,
Department of Public Works & Utilities

1778368 0302PM 11/19/96
MONIKA TODD CLK&REC MESA COUNTY CO

By: James L. Shanks
James L. Shanks, P.E., P.L.S.
Director of Public Works & Utilities

Recorded in Mesa County
Date: 11-19-96
Plat Book: 15 Page: 202 203
Drawer: QC102

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Cobblestone Ridges
Revised Preliminary
Plan & Phasing Plan for
Cobblestone Ridges -
23.86 acres
55 single family lots

Final Plat/Plan - for the revised
Filings 1 & 2
Filing #1 - 30.483 acres
26 single family lots

Filing #2 - 9.939 acres
21 single family lots

POSTING OF PUBLIC NOTICE SIGNS

The posting of the Public Notice Sign is to make the public aware of development proposals. The requirement and procedure for public notice sign posting are required by the City of Grand Junction Zoning and Development Code.

To expedite the posting of public notice signs the following procedure list has been prepared to help the petitioner in posting the required signs on their properties.

1. All petitioners/representatives will receive a copy of the Development Review Schedule for the month advising them of the date by which the sign needs to be posted. **IF THE SIGN HAS NOT BEEN PICKED UP AND POSTED BY THE REQUIRED DATE, THE PROJECT WILL NOT BE SCHEDULED FOR THE PUBLIC HEARING.**
2. A deposit of $50.00 per sign is required at the time the sign is picked up.
3. You must call for utility locates before posting the sign. Mark the location where you wish to place the sign and call 1-800-922-1987. You must allow two (2) full working days after the call is placed for the locates to be performed.
4. Sign(s) shall be posted in a location, position and direction so that:
   a. It is accessible and readable, and
   b. It may be easily seen by passing motorists and pedestrians.
5. Sign(s) MUST be posted at least **10 days** before the Planning Commission hearing date and, if applicable, shall stay posted until after the City Council Hearing(s).
6. **After the Public Hearing(s) the sign(s) must be taken down and returned to the Community Development Department within FIVE (5) working days to receive a full refund of the sign deposit.** For each working day thereafter the petitioner will be charged a $5.00 late fee. After eight working days Community Development Department staff will retrieve the sign and the sign deposit will be forfeited in its' entirety.

The Community Development Department staff will field check the property to ensure proper posting of the sign. If the sign is not posted, or is not in an appropriate place, the item will be pulled from the public hearing agenda.

I have read the above information and agree to its terms and conditions.

J K Mallory — 9.16.96

SIGNATURE — DATE

FILE #/NAME FPP-96-27(2) Cobblestone — RECEIPT # 4591

PETITIONER/REPRESENTATIVE: Cobblestone Comm. (Steve Graven) — PHONE # ~~245-4~~ 728-5758

DATE OF HEARING: 10/1/96 — **POST SIGN(S) BY:** 9/20/96

DATE SIGN(S) PICKED-UP 9/16/96 — **RETURN SIGN(S) BY:**

DATE SIGN(S) RETURNED 10/2/96 — RECEIVED BY: SLC

V#4000 8228

FPP-1996-027-2

CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS & UTILITIES
250 NORTH 5TH STREET
GRAND JUNCTION, CO 81501
(970) 244-4003

TO THE MESA COUNTY CLERK & RECORDER:

THIS IS TO CERTIFY that the herein named Subdivision Plat,

COBBLESTONE RIDGES PHASE 2 REPLAT,

Situated in the S 1/2 N 1/2 of Section 17 20,

Township 1 SOUTH, Range 1 WEST,

of the UTE Meridian in the City of Grand Junction, County of Mesa, State of Colorado, has been reviewed under my direction and, to the best of my knowledge, satisfies the requirements pursuant to C.R.S. 38-51-106 and the Zoning and Development Code of the City of Grand Junction for the recording of subdivision plats in the office of the Mesa County Clerk and Recorder.

This certification makes no warranties to any person for any purpose. It is prepared to establish for the County Clerk and Recorder that City review has been obtained. This certification does not warrant: 1) title or legal ownership to the land hereby platted nor the title or legal ownership of adjoiners; 2) errors and/or omissions, including, but not limited to, the omission(s) of rights-of-ways and/or easements, whether or not of record; 3) liens and encumbrances, whether or not of record; 4) the qualifications, licensing status and/or any statement(s) or representation(s) made by the surveyor who prepared the above-named subdivision plat.

Dated this 26 day of February, 1997.

City of Grand Junction,
Department of Public Works & Utilities

By: James L. Shanks
James L. Shanks, P.E., P.L.S.
Director of Public Works & Utilities

1789624 1013AM 02/28/97
MONIKA TODD CLK&REC MESA COUNTY CO

Recorded in Mesa County
Date: ____________
Plat Book: 15 Page: 266 + 267
Drawer: DD12
g:\special\platcert.doc Fee $20.00 1.00

March 9, 1999

$4,000 do Trent

Steve Craven
c/o Cobblestone Communities Inc.
P.O. Box 903
Glenwood Springs, CO 81602
970-945-4664 / Fax: 970-945-4665

Via certified mail return receipt requested
Via Facsimile to (970)-945-4665

Project: FP-96-198 Cobblestone Ridges Filings #1 and #2

Subject: Unacceptable Irrigation Risers

Steve,
In response to your February 26, 1999 letter and our phone conversation on March 3, 1999, the City will consider the following to correct the deficiencies in the irrigation system at Cobblestone Ridges.

1. **Installation of valves and boxes.** The City's Pipeline Maintenance Division (or subcontractor) will install 45 risers/valve systems in the proper location. This will minimize the amount of time the system will need to be down in order to reconnect the taps as well establish some continuity in the system. The cost, time and materials, (T&M) shall be divided evenly over the 45 irrigation taps. It's my understanding that you have no problem with the capability of City crews and waive claims based on their work

2. **Cost allocation.** For Ridges irrigation taps, the City normally charges a $260 Irrigation Plant Investment Fee and then T&M for installation of a tap. If the irrigation system had been properly constructed in the first place a material fee of $135 would have been charged to cover the cost of the risers and lids. Given that the initial construction was not correct, I propose that costs be assessed as follows:

   Cobblestone Communities share. The developer will be responsible for the time and material expenses for all irrigation taps sold as of the date of this letter. According to City records, ten taps have already been sold. The City proposes that the developer pay 10/45ths for the T&M associated with those nine taps.

   City of Grand Junction's share. The City will charge 1/45th of the T&M costs to each of the unsold taps at the time they sell.

3. **Guarantee.** The City has estimated the cost of the work and materials at approximately $500 per tap. The developer must guarantee the nine taps sold to date by depositing $5,000.00 in cash or certified funds with me by March 12, 1999. If the cost is less than estimated a refund will be made to the developer within 30 days of completion of all of work on the taps. In no event will the developer be required to pay more than $500 per tap.

If the proceeding accurately reflects your understanding of our discussion and proposed agreement, please sign below as indicated and return this letter and $5,000.00 to me by no later than March 12, 1999.

Your prompt attention to this matter is expected. Your failure to respond to this letter and to satisfactorily guarantee the necessary work by March 12, 1999 will result in the City taking action against Cobblestone Communities as stated in the February 25, 1999 letter.

If you have any questions please give me a call at 244-1590.

Sincerely,

Trent Prall, P.E.
Utility Engineer

I have read the foregoing and agree to the terms and conditions stated and that the same shall be an enforceable contract. I agree that there is sufficient consideration to support this agreement, and that this agreement is properly and adequately formed. I have authority by and on behalf of Cobblestone Communities Inc. to act for and bind the corporation and/or its successors in interest.

_____ _____

Steve Craven Date
Cobblestone Communities Inc.

Attest:

_____

cc: Greg Trainor, Utility Manager
Terry Franklin, Water Services Superintendent
Butch Kissell, Pipeline Maintenance Supervisor
Kerrie Ashbeck, City Development Engineer
Jim Langford, Thompson-Langford Engineering
Jodi Romero, Customer Service Manager
John Shaver, Assistant City Attorney

i:\pw_util\pwdoc\utilrevw\sc990308.doc

City of Grand Junction
Community Development Department
Planning • Zoning • Code Enforcement
250 North 5th Street
Grand Junction, CO 81501-2668

Phone: (970) 244-1430
FAX: (970) 244-1599

March 31, 1999

Steve Craven
c/o Cobblestone Communities, Inc.
P.O. Box 903
Glenwood Springs, CO 81602

RE: FP-96-198 Cobblestone Ridges Filings #1 and #2

Dear Steve:

The City has reviewed the file for Cobblestone Ridges, Filings #1 and #2 and inspected the required improvements. The only outstanding requirement is the deposit of $4,000 to the City to cover the cost of correcting deficiencies in the irrigation system at Cobblestone Ridges. The City has estimated the cost of the work and materials to correct the deficiencies to be approximately $400 per tap. The $4,000 deposit, in cash or certified funds, is to cover the ten taps sold to date. If the cost is less than estimated, a refund will be made to the developer within 30 days of completion of all of the work on the taps.

When the depostit is received, we are prepared to release the Development Improvements Agreement and accept the public improvements.

If you have any questions, please feel free to contact me at 244-1446. Thank you for your cooperation.

Sincerely,

Katherine M. Portner
Planning Manager

xc: Trent Prall, City Utility Engineer
Kerrie Ashbeck, City Development Engineer

Cobblestone Communities, Inc.

Copy of release form sent 4/22/99

April 5, 1999

Katherine M. Portner
Planning Manager
Community Development Department
250 North 5th Street
Grand Junction, CO 81501-2668

RE: FP-96-198 Cobblestone Ridges Filings #1 and #2

Dear Katherine:

Pursuant to your letter, dated March 31, 1999 and attached hereto, please find enclosed a check in the amount of $4,000.00. Upon receiving this letter and check please notify Alpine Bank of the release of the Development Improvements Agreement and please send us a release notification also.

Thank you for reviewing all the outstanding issues and your cooperation in resolving this last outstanding issue.

Sincerely,

Joel I Parker
Cobblestone Ridges

cc: Trent Prall, City Utility Engineer

P.O. Box ~~1267~~ • ~~Grand Junction, Colorado 81502~~ • ~~(970) 257-0500~~ • ~~Fax (970) 257-7475~~
703 Glenwood Springs CO 81602 945-4664 945-4665

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

****

Parcel 1:

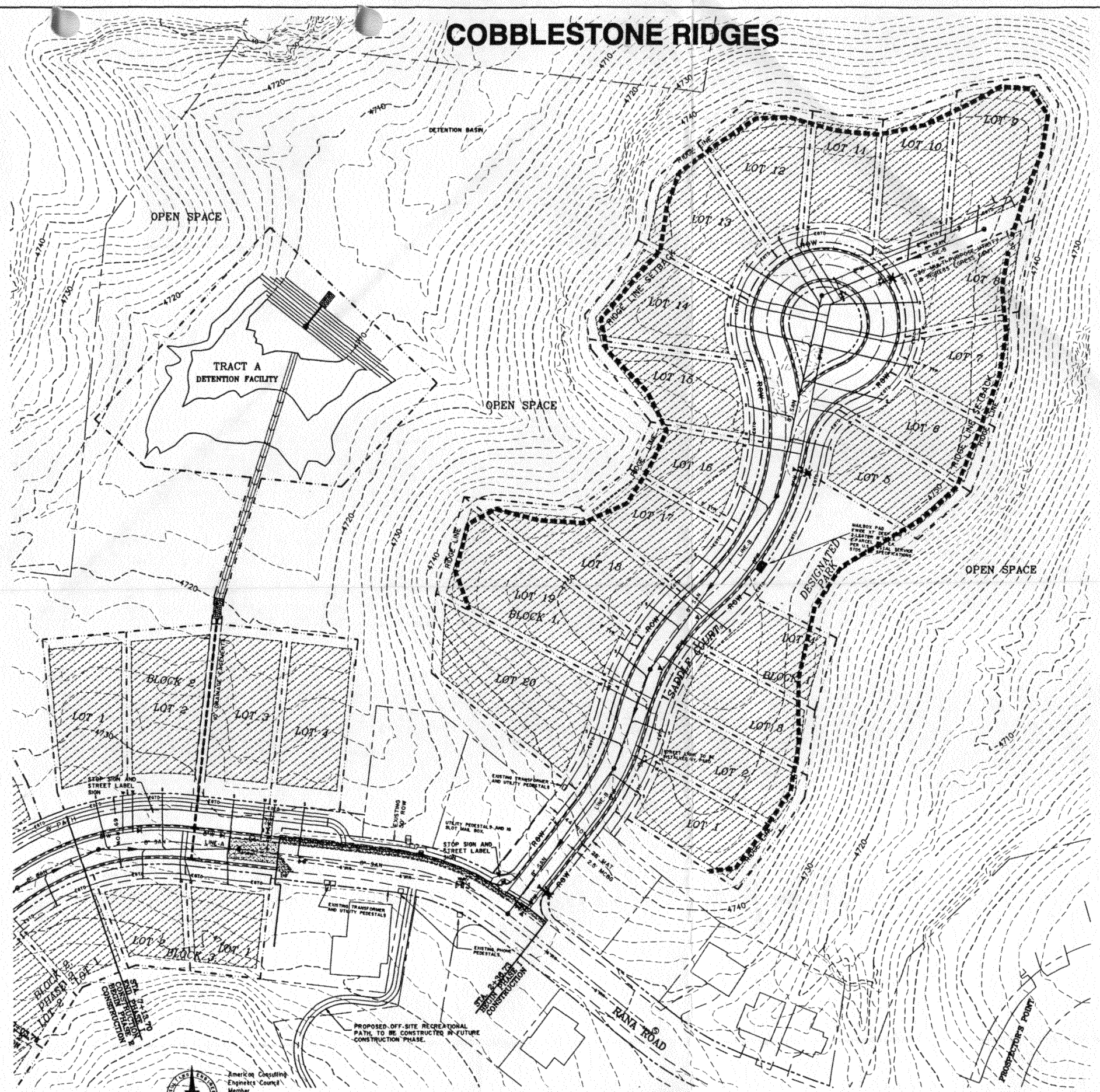
Lot 3,
The Ridges Filing 6B as shown on Plat recorded December 2, 1994, in Plat Book 14 at Page 302, and as disclosed on Plat for The Ridges, Filing No. Six

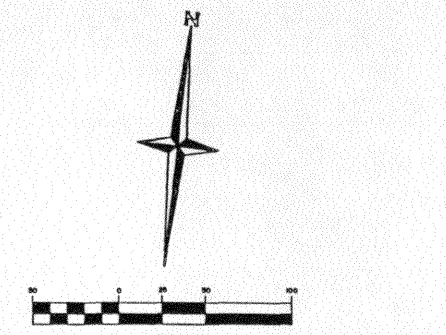
Parcel 2:

Lot 1,
Block 23,
Replat of Lots 48A through 73A, Block Nine; Lots 31B through 56A, Block Thirteen; Lots 3B through 40A, Block Twenty-Three; Lots 1A through 7A, Block Twenty-Eight; The Ridges Filing No. Six

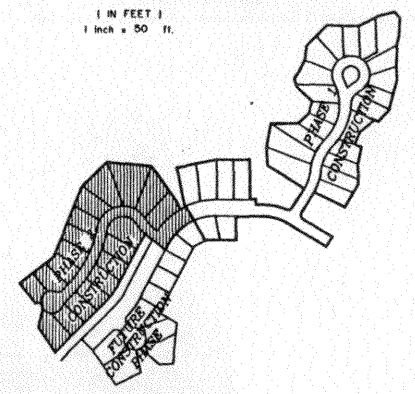
MESA COUNTY, COLORADO

COBBLESTONE RIDGES





AREA SUMMARY	
PHASE 1	
LOTS	6.482 ACRES
RIGHTS-OF-WAY	1.374 ACRES
PRIVATE PARK	0.232 ACRES
PHASE 2	
LOTS	5.218 ACRES
RIGHTS-OF-WAY	1.107 ACRES
OPEN SPACE (PER PLAT)	5.628 ACRES



PROJECT BENCHMARK:
MCSM AT THE S1/4 CORNER OF SECTION 17
ELEVATION: 4760.71

LEGEND

PROJECT BENCHMARK

PROPOSED 8" SANITARY SEWER WITH MANHOLE — 8" SAN

PROPOSED 4" SANITARY SEWER FORCE MAIN — 4"FM

PROPOSED 8" WATER WITH VALVE, TEE, THRUST BLOCK AND FIRE HYDRANT — 8"W

EXISTING 8" WATER WITH VALVE AND HYDRANT — 8"W

PROPOSED 18" STORM SEWER WITH MANHOLE AND CURB INLETS — 18"ST

COMMON TRENCHED ELECTRIC, GAS, TELEPHONE AND CABLE — EGTG

UTILITIES WILL BE PROVIDED TO THE SITE BY THE FOLLOWING VENDORS

GAS AND ELECTRIC:	PUBLIC SERVICE CO. OF COLORADO
WATER:	CITY OF GRAND JUNCTION
CABLE TELEVISION:	T.C.I. CABLEVISION
SANITARY SEWER:	CITY OF GRAND JUNCTION
TELEPHONE:	U.S. WEST

NOTE:
BUILDING ENVELOPES SHOWN HEREON ARE BASED UPON THE FOLLOWING BUILDING SETBACKS:
FRONT = 20'
REAR = 10'
SIDE = 5'
WITH THE EXCEPTION OF SADDLE WAY WHERE THE REAR SETBACK WILL BE 10' FROM THE RIDGE LINE EXCEPT FOR SHADE STRUCTURES SUCH AS PATIO COVERS, GAZEBOS, ETC. SUCH STRUCTURES SHALL BE ALLOWED TO THE RIDGE LINE BUT NOT BEYOND.

NOTE:
SEE GRADING AND DRAINAGE PLAN (SHEET 4 OF 21) IN "COBBLESTONE PLANS FOR CONSTRUCTION, PHASES 1 & 2" FOR STREET CONSTRUCTION DETAILS.

NOTE:
THIS SITE IS NOT AFFECTED BY ANY PREVIOUSLY DETERMINED 100 YEAR FLOODPLAIN

APPROVED FOR CONSTRUCTION	APPROVED AS CONSTRUCTED
CITY OF GRAND JUNCTION ENGINEERING DATE	CITY OF GRAND JUNCTION ENGINEERING DATE

DRAWN BY: MWT	PREPARED UNDER THE SUPERVISION OF	REVISION	DATE	DESCRIPTION	BY	CHD
DESIGNED BY: JEL/MWT	JAMES E. LANGFORD P.E. NO. 14847					
CHECKED BY: JEL	REVIEWED					
	DATE:					

American Consulting Engineers Council Member

THOMPSON-LANGFORD CORP.
529 25 1/2 RD., SUITE B210
GRAND JUNCTION, COLORADO
PH. (303) 243-6067

STEVE CRAVEN — COBBLESTONE RIDGES

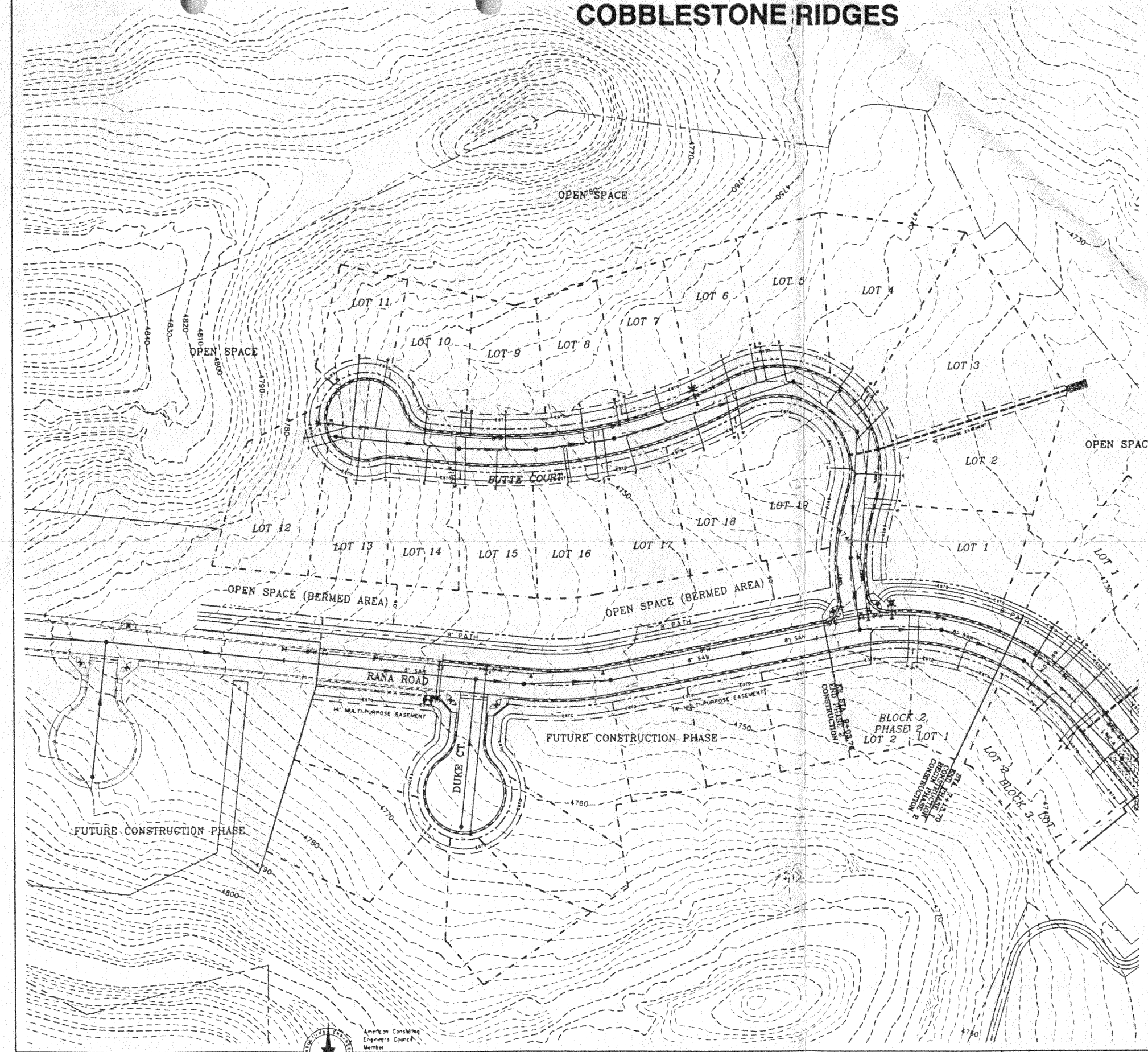
COMPOSITE PLAN (PHASE 1)

D:\DCA\P\0252-001\VERSION2

SCALE:	JOB NO:	DATE:
1" = 50'	0252-001	9/2/96

SHEET NO: 1 OF 1

COBBLESTONE RIDGES



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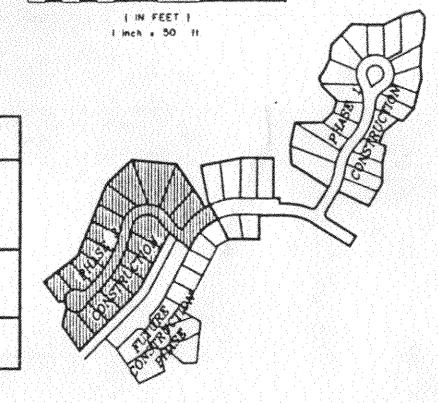

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MCSM AT THE S1/4 CORNER OF SECTION 17
ELEVATION: 4760.71

LEGEND

- PROJECT BENCHMARK
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- PROPOSED 4" SANITARY SEWER FORCE MAIN
- PROPOSED 8" WATER WITH VALVE, TEE, THRUST BLOCK AND FIRE HYDRANT — 8"W
- EXISTING 8" WATER WITH VALVE AND HYDRANT — 8"W
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UTILITIES WILL BE PROVIDED TO THE SITE BY THE FOLLOWING VENDORS

GAS AND ELECTRIC:	PUBLIC SERVICE CO. OF COLORADO
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APPROVED FOR CONSTRUCTION	APPROVED AS CONSTRUCTED
CITY OF GRAND JUNCTION ENGINEERING — DATE	CITY OF GRAND JUNCTION ENGINEERING — DATE

DRAWN BY:	MWT
DESIGNED BY:	JEL/MWT
CHECKED BY:	JEL

PREPARED UNDER THE SUPERVISION OF
JAMES E. LANGFORD P.E. NO. 14847
REVIEWED
DATE:

American Consulting Engineers Council Member

THOMPSON-LANGFORD CORP.
529 25 1/2 RD., SUITE B210
GRAND JUNCTION, COLORADO
PH. (303) 243-6067

REVISION	DATE	DESCRIPTION	BY	CHD

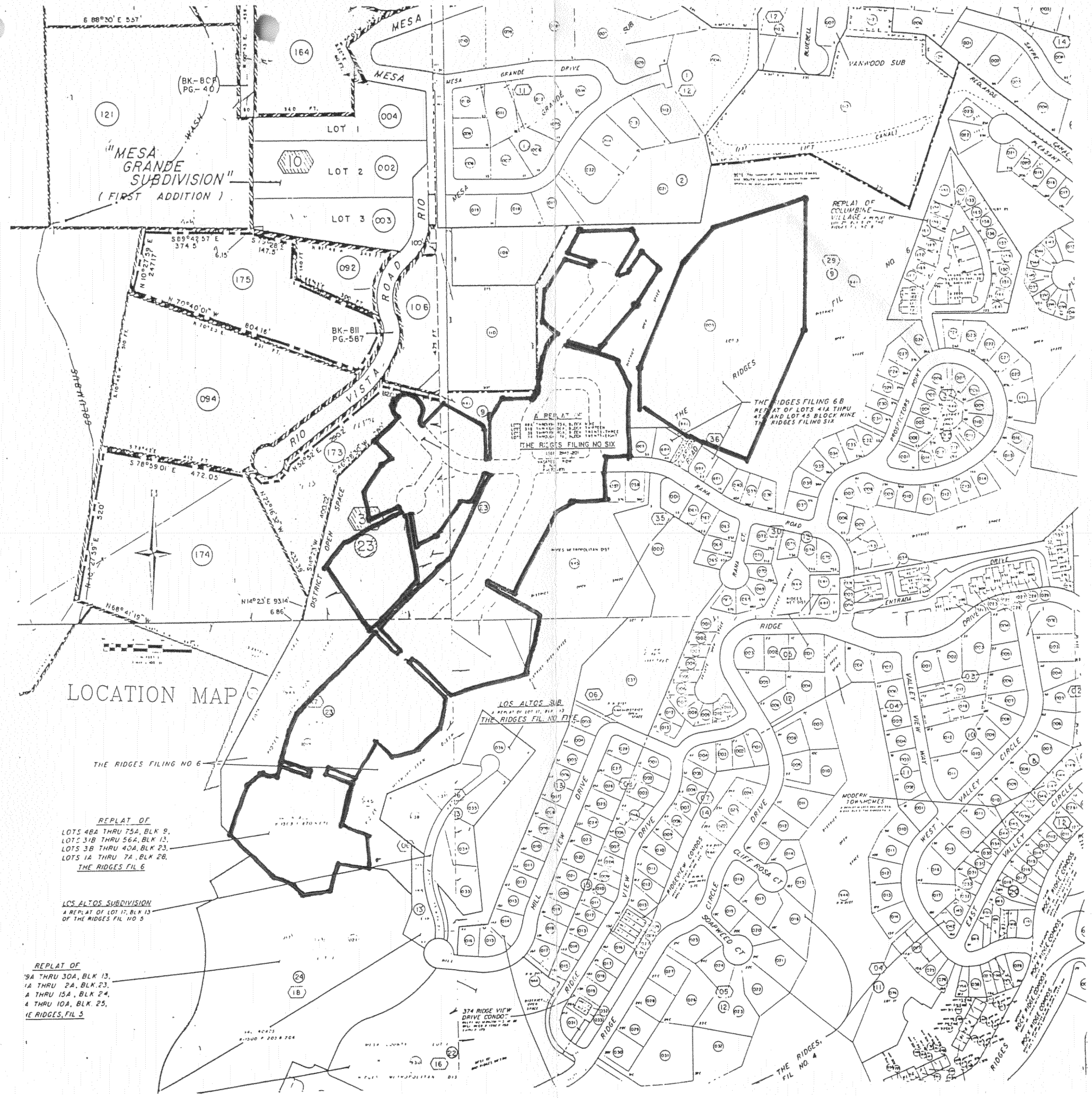
STEVE CRAVEN — COBBLESTONE RIDGES

COMPOSITE PLAN (PHASE 2)

D:\DGN\JOB252-001\VERSION2

SCALE:	JOB NO:	DATE:
1" = 50'	0252-001	9/2/96

SHEET NO: 1 OF 1


LOCATION MAP
"MESA GRANDE SUBDIVISION"
(FIRST ADDITION)
LOT 1
LOT 2
LOT 3
BK-BCP PG.-40
BK-811 PG.-587
MESA
MESA GRANDE DRIVE
RIO VISTA ROAD
RIO
DISTRICT OPEN SPACE
THE RIDGES
THE RIDGES FILING 6 B
REPLAT OF LOTS 41A THRU 47 AND LOT 45 BLOCK NINE THE RIDGES FILING SIX
A REPLAT OF
THE RIDGES FILING NO SIX
THE RIDGES FILING NO 6
REPLAT OF
LOTS 48A THRU 75A, BLK 9,
LOTS 31B THRU 56A, BLK 13,
LOTS 3B THRU 40A, BLK 23,
LOTS 1A THRU 7A, BLK 28,
THE RIDGES FIL 6
LOS ALTOS SUBDIVISION
A REPLAT OF LOT 17, BLK 13 OF THE RIDGES FIL NO 5
LOS ALTOS SUB
THE RIDGES FIL NO FIVE
REPLAT OF
9A THRU 30A, BLK 13,
1A THRU 2A, BLK 23,
A THRU 15A, BLK 24,
A THRU 10A, BLK 25,
E RIDGES, FIL 5
374 RIDGE VIEW DRIVE CONDO
REPLAT OF COLUMBINE VILLAGE
FIL NO 6
VANWOOD SUB
BLUEBELL
SAYRE
REDLANDS
PLEASANT
CANAL
LIFT CANAL
PROSPECTORS POINT
RANA ROAD
RANA CT
ENTRADA DRIVE
RIDGE
VALLEY VIEW WAY
WEST VALLEY CIRCLE
EAST VALLEY CIRCLE
MODERN TOWNHOMES
RIDGEVIEW CONDOS
CLIFF ROSA CT
SOAPWEED CT
CIRCLE
HILL VIEW DRIVE
RIDGE VIEW DRIVE
RIDGE CIRCLE DRIVE
ROCK RIDGE CONDOS
THE RIDGES, FIL NO 4
RIDGES
COLUMBUS
WASH
S 88°30' E 537'
S 89°42'57" E 374.5
N 10°27'59" E 247.17
N 70°40'01" W 804.16'
S 78°59'01" E 472.05
N 25°16'30" W
S 14°23' W
N 14°23' E 93.14'
N 68°41'19" W
N 10°27'59" E 520'
121
164
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002
003
10
100
106
092
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