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File PP-1995-178
Date 10/25/99

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, not all entries designated to be scanned, are present in the file. There are also documents specific to certain files, not found on the standard list. For this reason, a checklist has been included. **Remaining items, (not selected for scanning), will be marked present on the checklist. This index can serve as a quick guide for the contents of each file.** **Files denoted with (**) are to be located using the ISYS Query System. Planning Clearance will need to be typed in full, as well as other entries such as Ordinances, Resolutions, Board of Appeals, and etc.**
X	X	***Summary Sheet – Table of Contents**
X	X	Application form
		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
X	X	***Mailing list**
		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 nonbound reports
		Traffic studies
		Individual review comments from agencies
X	X	***Consolidated review comments list**
X	X	***Petitioner's response to comments**
X	X	***Staff Reports**
		***Planning Commission staff report and exhibits**
		***City Council staff report and exhibits**
		***Summary sheet of final conditions**
		***Letters and correspondence dated after the date of final approval (pertaining to change in conditions or expiration date)**

DOCUMENTS SPECIFIC TO THIS DEVELOPMENT FILE:

X	X	Issues for Council Consideration	X	x	Preliminary Major Basin Drainage Map
X	X	Summaries of the costs for Sidewalk/Path Systems - Cobblestone Communities, Inc.	X	x	Preliminary Map – 3, & 4 of 5
X	X	Cobblestone Ridges – Fees, On-Site Options, Off-Site Connection to Prospector Point, City cost of Road Connection	X	X	Area Summary Exhibit
X		Letter from Edward Morris to Lee Garrett – 11/15/95	X	X	Letter from James Soule to City – 11/20/95
X	X	The Ridges Architectural Control Committee	X	X	Letter from Kathy Portner to Steve Craven – 11/16/95
X	X	Letter from James Langford to Hank Masterson – 10/24/95	X	X	Planning Commission Hearing - ** - 1/7/95
X		Letter from Joe Barnes to Thompson – Langford Corporation – 10/25/95	X	X	City Council Minutes - ** - 11/15/95
X	X	Geologic Hazards Report – 10/95	X		Protective Covenants for The Ridges
X	X	Preliminary Drainage Report – 9/95	X		Title Information
X	X	Traffic Impact Analysis	X		E-mail from Dan Wilson to Kathy Portner – 10/26/95
X	X	Vicinity Map	X		Letter from Robert Stubbs to City Council and Commun. Dev. Dept. – 9/26/95
X		Handwritten Notes – Billing Time to Lanai Job			

SUBMITTAL CHECKLIST

MAJOR SUBDIVISION: PRELIMINARY

Location: Ridges, filing #6 - Undeveloped Project Name: _____

ITEMS		DISTRIBUTION
PP-95-178 DESCRIPTION Recpt # 26983 1110 – If rezone the fee is $710 + $15/acre	SSID REFERENCE	● City Community Development ● City Dev. Eng. ● City Utility Eng. ● City Property Agent ● City Parks/Recreation ● City Fire Department ● City Attorney ● City G.J.P.C. (8 sets) ○ City Downtown Dev. Auth. ● City Police ● County Planning ○ Walker Field ● School Dist. #51 ● Irrigation District Redlands Water Power ○ Drainage District ○ Water District ○ Sewer District ● U.S. West ● Public Service ○ GVNP ○ CDOT ● Corps of Engineers ● Colorado Geological Survey $592.00 ← separate check to CO Geological Survey ○ US Postal Service ○ Persigo WWTF ● Ridges ACCO TOTAL REQD
● Application Fee $630 + $15/acre	VII-1	1
● Submittal Checklist*	VII-3	1
● Review Agency Cover Sheet*	VII-3	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 1
● Application Form*	VII-1	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 1
● Assessor's Map	VII-1	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 1
● Evidence of Title *	VII-2	1 1 1
● Names and Addresses	VII-3	1
● Legal Description	VII-2	1 1
● General Project Report	X-7	1 1 1 1 1 1 1 1 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
● Location Map	IX-21	1
● Preliminary Plan	IX-26	1 2 1 1
● 11"x17" Reduction of Prelim. Plan	IX-26	1 1 1 1 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
● Preliminary Drainage Report	X-12	1 2
● Geotechnical Report	X-8	1 1 1
● Traffic Impact Study	X-15	1 2 1

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

DEVELOPMENT APPLICATION

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

Receipt _____
Date _____
Rec'd By _____
File No. PP-95-178

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
[X] Subdivision Plat/Plan	[ ] Minor [X] Major [ ] Resub	~32 acres	Ridges - Rana Road	PR	Residential
[X] Rezone NO				From: To:	
[X] Planned Development	[ ] ODP [X] Prelim [ ] Final				
[ ] Conditional Use					
[ ] Zone of Annex					
[ ] Text Amendment					
[ ] Special Use					
[ ] Vacation					[ ] Right-of-Way [ ] Easement

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

Name	Name	Name
Dynamic Investments, Inc.	Cobblestone Connections, Inc.	Steven Crowell
Address	Address	Address
PO Box 3003	P.O. Box 1168	PO Box 1168
City/State/Zip	City/State/Zip	City/State/Zip
Telluride, CO 81435	Telluride, CO 81435	Telluride, CO 81435
Business Phone No.	Business Phone No.	Business Phone No.
(970) 728-5599	(970) 728-0500	(970) 728-0500

Mike Thompson
Thompson-Langford
529 25 1/2 Road, Suite B210
Grand Junction, CO 81505
(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 t foregoing information is true and complete to the best of our knowledge, and that we assume the responsibility to monitor the status of the applicatic and the review comments. We recognize that we or our representative(s) must be present at all hearings. In the event that the petitioner is n represented, the item will be dropped from the agenda, and an additional fee charged to cover rescheduling expenses before it can again be plac on the agenda.

Steven E. Crowell — 9-27-95
Signature of Person Completing Application — Date

Dynamic Investments, Inc. By: [signature] President 9/28/95
Signature of Property Owner(s) - Attach Additional Sheets if Necessary

COBBLESTONE RIDGES PRELIMINARY PLAN SUBMITTAL

GENERAL PROJECT REPORT (SSID X-7)

A. PROJECT DESCRIPTION

1. LOCATION: Cobblestone Ridges is located in Filing #6 of the Ridges Planned Unit Development off of Rana Road. The property consists of two parcels. Parcel One is a small peninsula of land consisting of 7.517 acres more fully described as Lot 45, Block 9, Ridges Filing #6. Parcel Two is generally a self continued valley floor consisting of 23.049 acres, more fully described as Lot 1, Block 23, Ridges Filing #6.

2. ACREAGE: The total area of the Proposed Development is 23.86 acres. The Potential Future Development is not proposed to be platted at this time (please refer to the Preliminary Plan Map).

3. PROPOSED USE: The proposed use is single family residential on varying lot sizes ranging from approximately 7,900 square feet to 21,000 square feet. The Applicant, Cobblestone Communities Inc., has revised the former plat for Parcel One to eliminate the multi-family site which had a designation for 54 multi-family units and replace it with a single family development consisting of 21 single family units, a significant reduction in density. Parcel Two was originally platted for a total of 83 A lots, 12 B lots and 3.90 acres of multi-family. This platting could have supported in excess of 200 residential units. The City Council of Grand Junction at its hearing held on September 21, 1994, elected to rezone this parcel to 4 dwelling units per acre, or 92 total units. The Applicant is proposing an overall density on this parcel of 92 residential units, 44 single family and 48 multi-family. Collectively the proposed density for Parcels One and Two is a total of 113 units compared to the currently allowable density of 146 units. In addition to a reduction in density, the Applicant is preserving substantial additional open space and developing a small neighborhood park area.

The plan includes sidewalks on all streets. A majority of the lots are located on four cul-de-sacs creating both privacy and a sense of neighborhood for each of the residential streets. All but one cul-de-sac was designed such that it opens up to open space, thus providing both visual relief and immediate access to the open space corridors. The one cul-de-sac where this was not practical (Saddle Way) has instead been designed with a landscaped island to provide the desired visual relief at this point. The geometry of the street surrounding this island exceeds the City of Grand Junction standard with respect to turning movements of emergency vehicles. The Applicant proposes to create a "no parking zone" along the curbing of the island, thus allowing parking only at the curbing that is contiguous to the surrounding lots. This island will be designated as Community Open Space, and will be maintained by the Cobblestone Ridges H.O.A. The open space contiguous to the side yards of lots 22, 34 & 35, contiguous to the rear lots of 46 through 53, and the park located between lots 4 & 5 will also be designated as "Community Open Space" and will be maintained by the Cobblestone Ridges H.O.A.

The Community Open Space along lots 47 through 53 will be bermed to provide privacy for the residents of those lots. In that there will be no lots facing Rana Road along this side of the street, the Applicant proposes no sidewalk contiguous to the berming. The lack of sidewalk along this side of the street would both enhance and preserve the desired privacy for the future residents of the contiguous lots. Additionally, it is believed that a sidewalk in this location would increase the possibility of the berm being hiked upon, or used as jumps by children on bicycles. Either action would defeat the proposed purpose of the berming, and potentially damage any landscaping thereon. To facilitate the desired pedestrian movement within this area, a sidewalk will be placed along Rana Road adjacent to lots 54 and 58 through 62 which

do access Rana Road. Additionally, both a cross walk and handicap ramps will be located at the intersection of Rana Road and Butte Court.

All roads to be developed with in these parcels will be built as Urban Residential Streets as defined in the Street Standards for the City of Grand Junction. All ADT(s) within this development fall within the standards for this street section.

A Traffic Impact Analysis for this project dated February 24, 1995, was prepared by Leigh, Scott & Cleary, Inc. It assumes 155 single family homes to be built in Cobblestone Ridges, far more than are proposed. The report's finds are that the existing off-site roads are adequate to handle this Proposed Development, as well as the traffic to be generated by the buildout of the Ridges Subdivision, with the exception of the ultimate need to extend the westbound left-turn lane on Broadway at the intersection of Broadway and Ridges Blvd. The report further states that the existing improvements are adequate until such time that warrants exist to cause the future widening and signalization of Broadway. These facts were presented to both Mark Relph and Jody Kliska of the City of Grand Junction. Their opinion was consistent with Leigh, Scott & Cleary's Traffic Impact Analysis, and stated that the Applicant's responsibility would be to pay the required Traffic Impact Fee at the time of building permit.

Slopes: The area of Proposed Development is generally on slopes of 10% or less due to the Applicant's desire to provide as much usable space as possible within each lot, and to mitigate potential soils problems possible with the development of steeper sites. Additionally, designs will conform to the recommendations of the project's Geotechnical Report to assure that all necessary mitigation is achieved with respect to site soils conditions.

The Applicant, through both discussions with City staff, and a review of the Ridges Filing #6 Protective Covenants, believes that the following setbacks are consistent with the land uses as proposed for these parcels within The Ridges Filing #6. Minimum setbacks shall be: Front Lot Line - 20 feet; Side Lot Line - 5 feet; and the Rear Lot Line - 10 feet. Additionally, the Applicant agrees to maintain a minimum of 15 feet between buildings where the lots are not angled. The Applicant also agrees to further limit the rear lot line setback for lots 1 through 21 to the location of the "Ridges Line Setback" as designated on the Preliminary Plan Map.

B. PUBLIC BENEFIT

As an infill project, 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, 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 Cobblestone Ridges.

3. SITE ACCESS AND TRAFFIC PATTERNS: Rana Road, which is currently a dead end street, will be constructed into the site 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 the Cobblestone Ridges development being less dense than the Ridges Official Development Plan anticipated. 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. Building sites are located in back of the ridge line on Saddle Way, and the entire project is planned to place houses in the flattest areas of the site. 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

Cobblestone Ridges will be developed in four construction phases as shown on the Preliminary Plan. The first phase is anticipated to begin in early 1996 with the remaining phases to be constructed as dictated by market demand. The Proposed Development is anticipated to be completed within the year 1997.

E. OPEN SPACE PARK FEES

The Applicant believes credit towards the parks and open space fees should be granted as the result of the redesign of this area of the Ridges. The proposed plan will add 3.99 acres of open space and a 0.23 acre private park.

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

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

Robert McKenzie
405 Rana Court
Grand Junction, CO 81503

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

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

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

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

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

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

Mr. Ed Cluff
4120 S. Allison St.
Lakewood, CO 80235

Mr. Richard Genova
2234 Rimrock Rd.
Grand Junction, CO 81503

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

Frank Frigetto
2366 Rana Road
Grand Junction, CO 81503

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

Temple Rock Capital
4120 S. Allison St.
Lakewood, CO 80235

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

James Matarozzo
P.O. Box 168
Collbran, CO 81624

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

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

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

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

Dynamic Investments
P.O. Box 3003
Telluride, CO 81435

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

Mike Thompson
Thompson-Langford
529 25 1/2 Road, Suite B210
Grand Junction, CO 81505

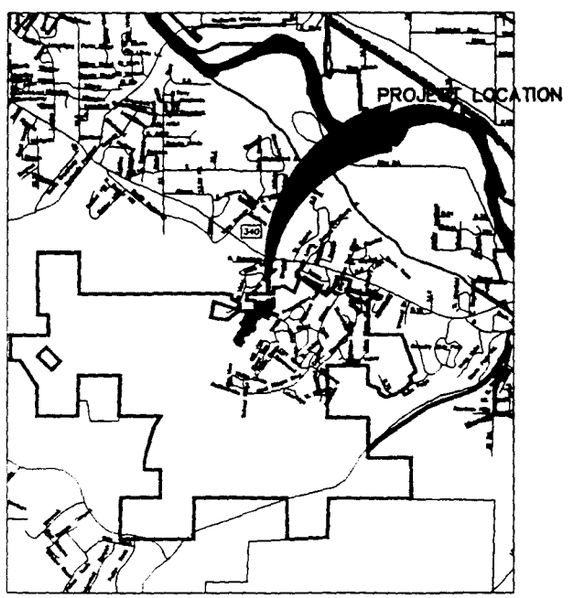
City of Grand Junction
Community Development Dept.
250 N 5th Street
Grand Junction, CO 81501

COBBLESTONE COMMUNITIES, INC.

PRELIMINARY PLAN
FOR

COBBLESTONE RIDGES

OCTOBER, 1995



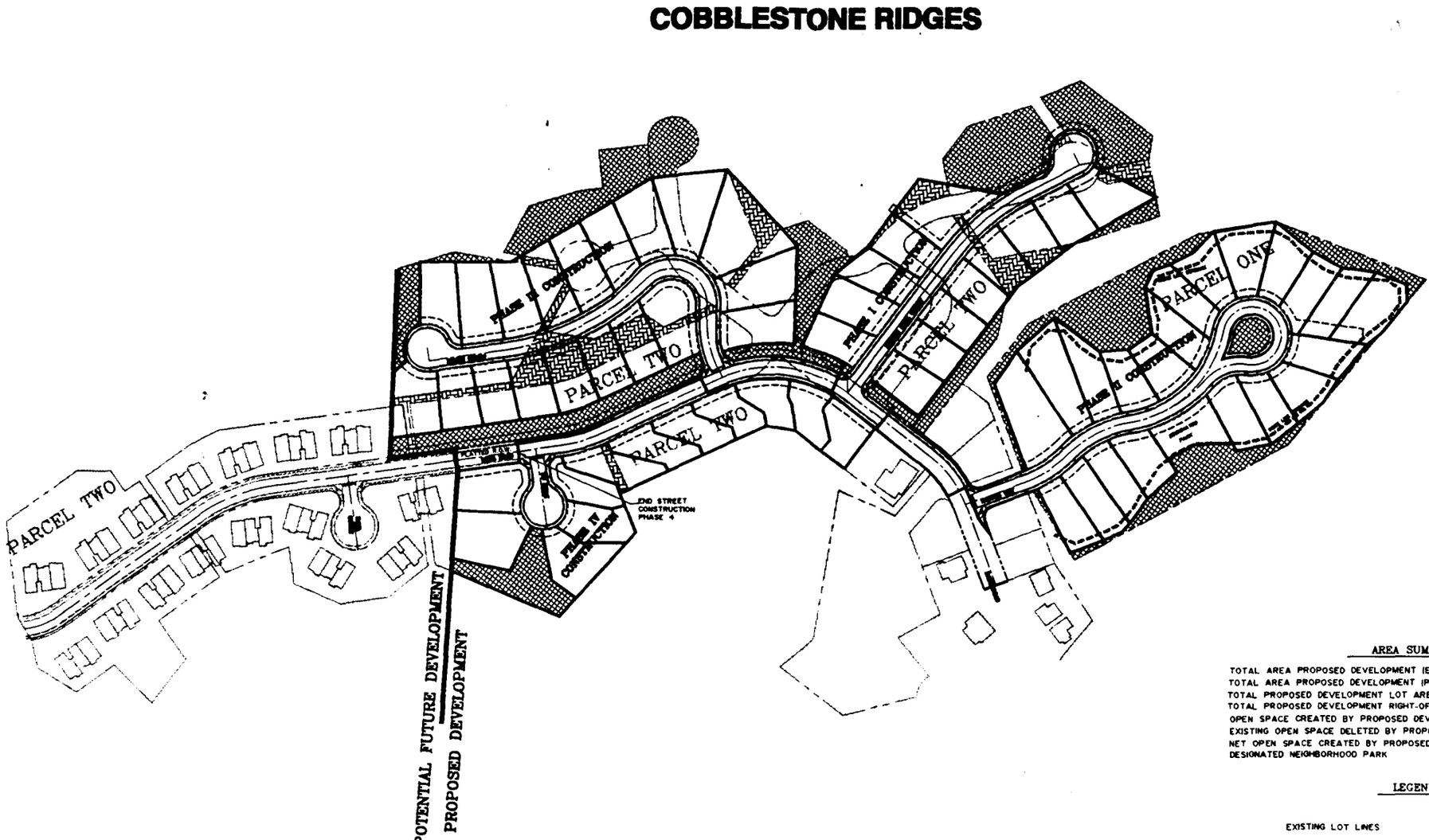
VICINITY MAP

NO.	TITLE
SHEET 1 OF 5	COVER
SHEET 2 OF 2	AREA SUMMARY EXHIBIT
SHEET 3 OF 5	PRELIMINARY PLAN (1 OF 2)
SHEET 4 OF 5	PRELIMINARY PLAN (2 OF 2)
SHEET 5 OF 5	PRELIMINARY MAJOR BASIN DRAINAGE MAP

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

JOB NO. 0252-001

COBBLESTONE RIDGES



AREA SUMMARY

TOTAL AREA PROPOSED DEVELOPMENT (EXISTING LOTTING)	23.86 ACRES
TOTAL AREA PROPOSED DEVELOPMENT (PROPOSED LOTTING)	20.093 ACRES
TOTAL PROPOSED DEVELOPMENT LOT AREA	15.903 ACRES - 66%
TOTAL PROPOSED DEVELOPMENT RIGHT-OF-WAY	3.738 ACRES - 16%
OPEN SPACE CREATED BY PROPOSED DEVELOPMENT	5.264 ACRES
EXISTING OPEN SPACE DELETED BY PROPOSED DEVELOPMENT	1.273 ACRES
NET OPEN SPACE CREATED BY PROPOSED PLAN	3.99 ACRES - 17%
DESIGNATED NEIGHBORHOOD PARK	0.232 ACRES - 1%

LEGEND

EXISTING LOT LINES

LOTLINES PROPOSED DEVELOPMENT

PROPOSED DEVELOPMENT RIHT-OF-WAY

OPEN SPACE CREATED BY PROPOSED DEVELOPMENT

EXISTING OPEN SPACE DELETED BY PROPOSED DEVELOPMENT

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

PREPARED UNDER THE SUPERVISION OF
P.E. NO.
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

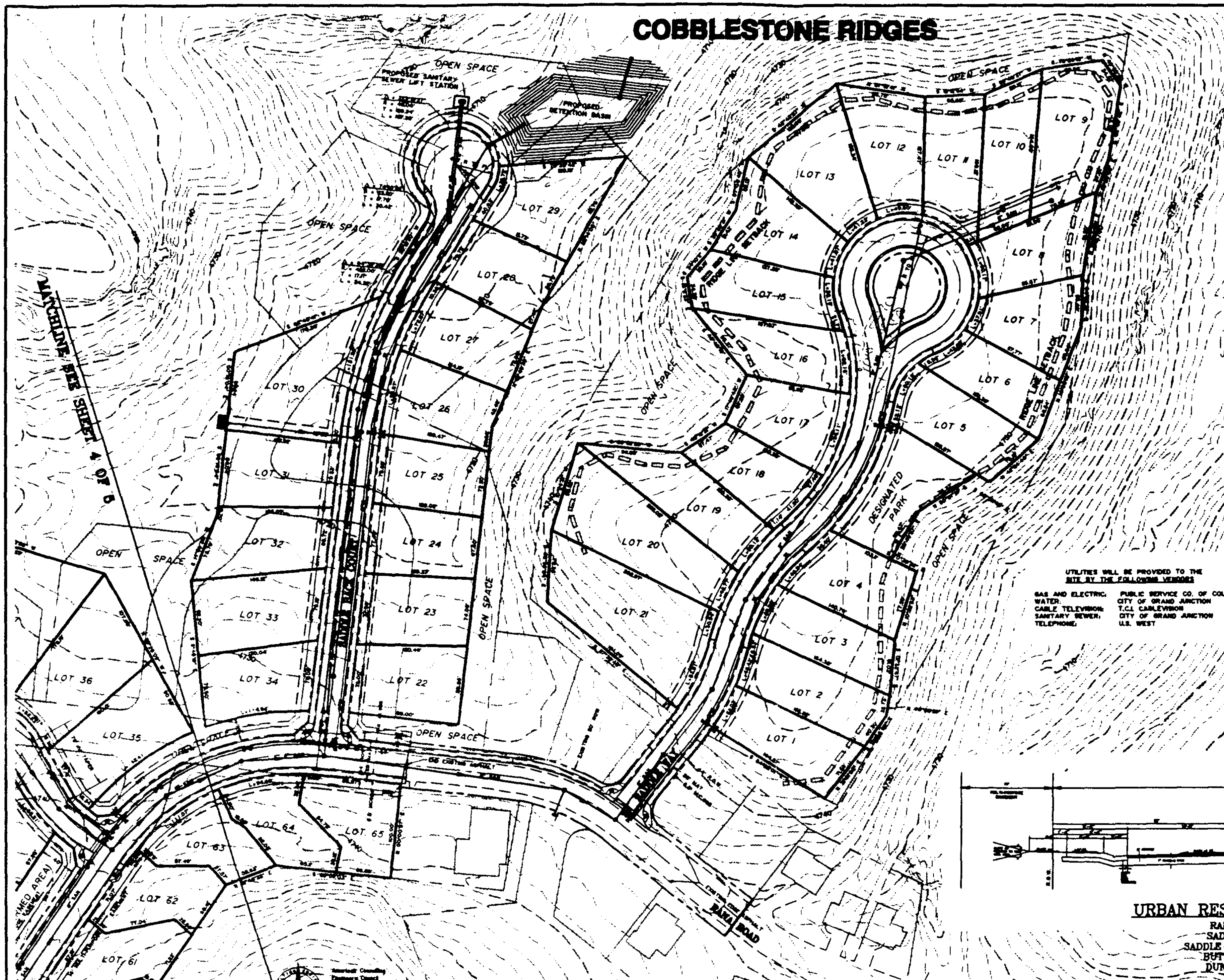
STEVE CRAVEN — COBBLESTONE

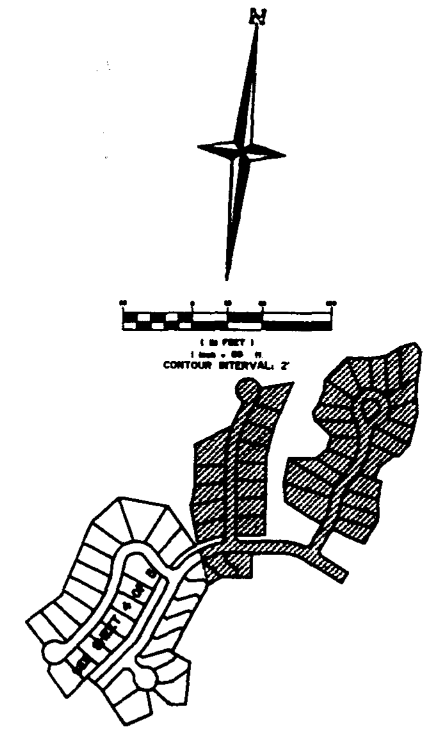
AREA SUMMARY EXHIBIT

SCALE: 1" = 100' | JOB NO.: 0252-003 | DATE: 9/29/98

SHEET NO.: 2 OF 5

COBBLESTONE RIDGES



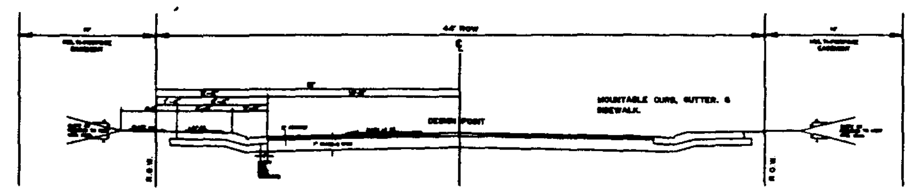


UTILITIES WILL BE PROVIDED TO THE
SITE BY THE FOLLOWING VENDORS

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

LEGEND

PROJECT BENCHMARK
PROPOSED 8" SANITARY SEWER WITH MANHOLE
PROPOSED 4" SANITARY SEWER FORCE MAIN
PROPOSED 8" WATER WITH VALVE, TEE, THRUST BLOCK AND FIRE HYDRANT
EXISTING 8" WATER WITH VALVE AND HYDRANT
PROPOSED 18" STORM SEWER WITH MANHOLE AND CURB INLETS
COMMON TRENCHED ELECTRIC, GAS, TELEPHONE AND CABLE



URBAN RESIDENTIAL STREET

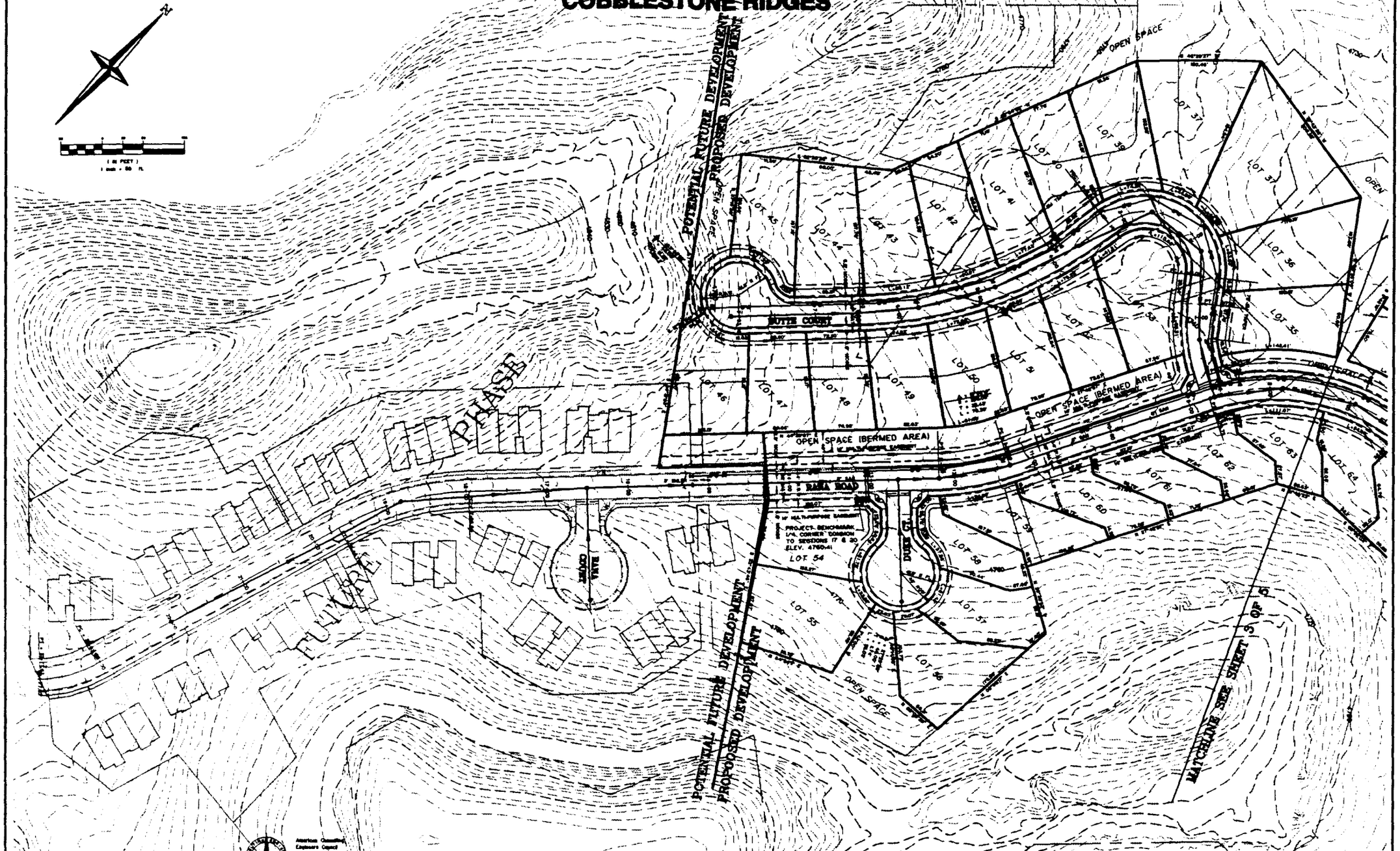
RANA ROAD
SADDLE WAY
SADDLE BACK COURT
BUTTE COURT
DUKE COURT

DRAWN BY: MWT	PREPARED UNDER THE SUPERVISION OF JAMES E. LANGFORD P.E. NO. 14647	THOMPSON–LANGFORD CORP. 529 25 1/2 RD., SUITE B210 GRAND JUNCTION, COLORADO PH. (303) 243-6067	STEVE CRAVEN — COBBLESTONE RIDGES
DESIGNED BY: JEL/MWT	REVIEWED:		PRELIMINARY PLAN
CHECKED BY: JEL	DATE:		SHEET NO: 3 OF 5

REVISION | DATE | DESCRIPTION | BY | CHD

American Consulting Engineers Council Member

COBBLESTONE RIDGES



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

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

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

REVISION	DATE	DESCRIPTION	BY	CHD

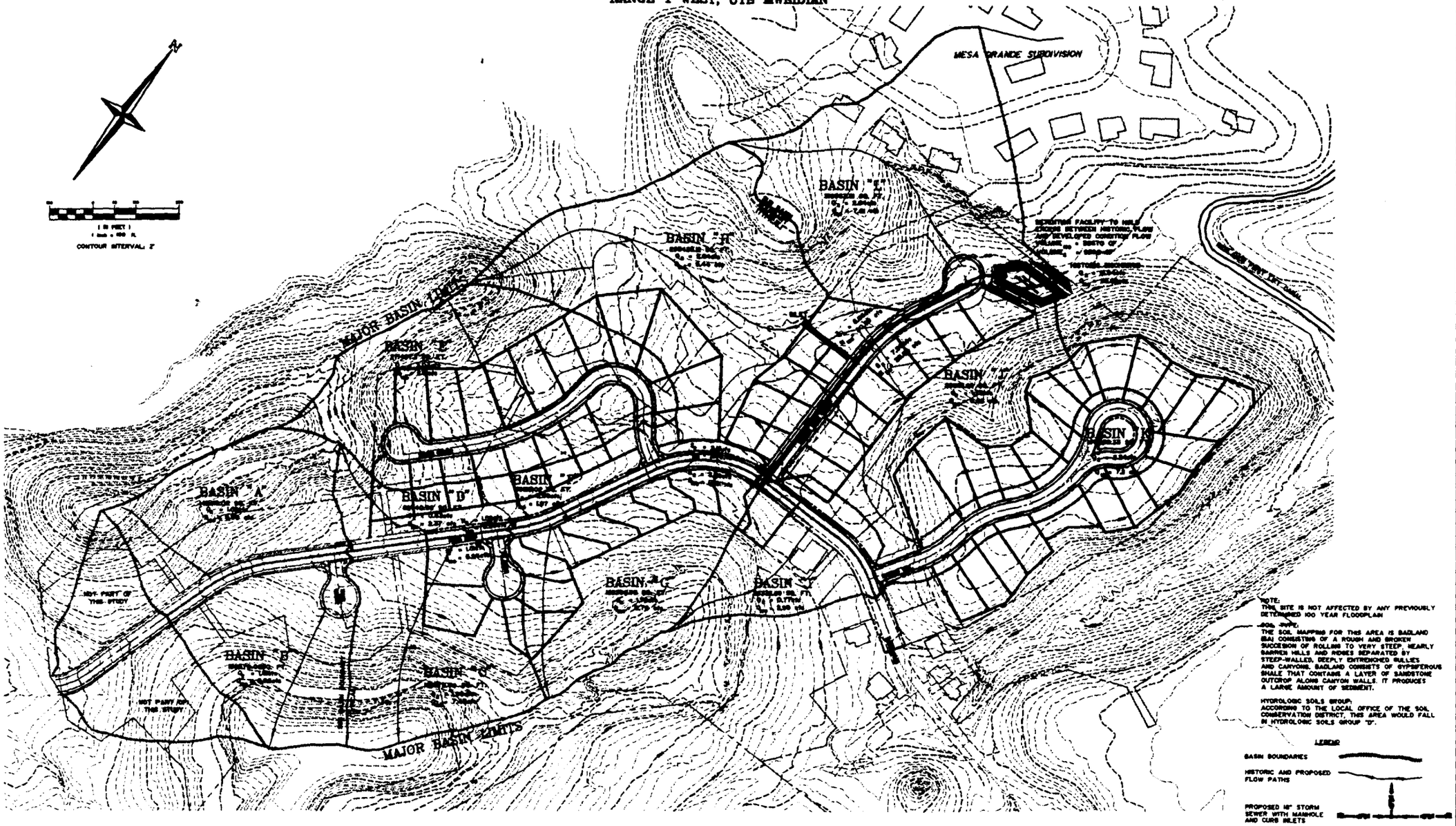
STEVE CRAVEN — COBBLESTONE RIDGES

PRELIMINARY PLAN

SCALE:	JOB NO:	DATE:
1" = 50'	0252-001	9/29/15

SHEET NO:
4 OF 5

PRELIMINARY 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 MWEIDIAN



DRAWN BY: MWT
DESIGNED BY:
CHECKED BY: JEL

PREPARED UNDER THE SUPERVISION OF
JAMES E. LANGFORD P.E. NO. 18487
REVIEWED:
DATE:

American Consulting Engineers Council Member

THOMPSON-LANGFORD CORP.
529 25 1/2 RD., SUITE B210
GRAND JUNCTION, COLORADO
PH (303) 243-8300

REVISION	DATE	DESCRIPTION	BY	CHD

STEVE CRAVEN

COBBLESTONE

SCALE: 1" = 100'

JOB NO: 0332-001

DATE: 10/2/98

Preliminary Drainage Report

Cobblestone Ridges

September 1995

Prepared for:

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

Prepared by:

THOMPSON-LANGFORD CORPORATION
529 25 1/2 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

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

We do no expect to materially alter the historic drainage patterns from this site, but do expect that development of the site will increase the 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 performed for this preliminary study indicate that will be at the intersection of Rana Road and Saddle Back Court. At this point, we will place our first collection basins and convey the excess in an underground collection system to a detention facility planned 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 Cour, but be collected in an underground conduit and carried to the main line in 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. A portion or possibly all of this drainage will be taken underground from this point to the detention facility.

Sinse the detention facility will be located in the open area just off the end of the cul-de-sac, access for maintenance purposes will not be a problem. We intend to explore the possibility of maintaining a permanent pool in the detention area and landscaping the facility to make it an amenity.

Though this report is only "Preliminary", we performed calculations for sizing of the detention facility to ensure that we had sufficient room to construct the needed facility. We are proposing to use a combination of our perviously platted lot area and previously platted open space to accomodate this facility.

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, first onto adjacent private property, and eventually stopping at the Redlands First Lift Canal with no physical means for any storm water to go further. The detention facility will have an outlet control works that will be sized to ensure that discharges for the 2-year and 100-year events are at historic rates.

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 the preliminary alignments for our collection system of gutters and underground conduits to the proposed detention facility at the end of Saddle Back Court. The detention facility will be designed per the requirements of the SWMM.

Hydraulics:

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

The detention facility will be designed to detain both the 2-year and 100-year events, discharging through a two stage outlet only at the historic rates. Discharge calculations will be finalized to assure 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.

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.

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

$\therefore$ I_{d_0} for 39.1 = $\underline{0.77}$ $\frac{A}{in^2}$

$I_{d_{100}}$ for 25.8 = $\underline{2.46}$ $\frac{A}{in^2}$

Detention Volume per [illegible] for method described on pp. H-1 thru H-4, SWMM

"C" – Composite [illegible] "C's" ([illegible])

$C_2 = [3.30(0.55) + 3.18(0.58) + 4.19(0.56) + 1.21(0.62) + 6.23(0.61) + 1.37(0.56) + 4.21(0.56) + 6.78(0.49) + 1.76(0.55) + 6.04(0.53) + 2.42(0.79) + 8.24(0.54)] \div \Sigma \text{Areas} = 27.48/48.93 \text{ Ac.} = \underline{0.56} = C_2$

$C_{100} = [3.30(0.63) + 3.18(0.66) + 4.19(0.64) + 1.21(0.69) + 6.23(0.69) + 1.37(0.61) + 4.21(0.64) + 6.78(0.59) + 1.76(0.65) + 6.04(0.61) + 2.42(0.83) + 8.24(0.63)] \div \Sigma \text{Area} = 31.52/48.93 = \underline{0.64} = C_{100}$

Area: $A_T = 48.93$ Ac

$Q_{r_2} = 13.94$ cfs
$Q_{r_{100}} = 52.62$ cfs

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

$\therefore T_{c_2} = T_{c_B} + 1.1 + 2.0 + 2.3 = 33.7 + 1.1 + 2.0 + 2.3 = \underline{39.1 \text{ min}}$

$T_{c_{100}} = 20.4 + '' \quad '' = \underline{25.8 \text{ min}}$

Historic Flows

$Q_2 = C i A = 0.44(0.67) 47.30 = \underline{13.94 \text{ cfs}}$

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

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

Sed liminator - [illegible] ______ 100-year Flows 7/29/95

Developed

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

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

$Q_{2,3N} = 0.63(2.84)3.30 + 0.69(2.77)3.18 = 11.28$ cfs

S_2

$Q_D = 0.64(2.77)4.19 = 7.43$ 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 = $ [illegible]

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

100-year Routing 7/29/9[illegible]
Lexington

N_1 — $A1_{100}$: $Q_{T_{100}} = Q_A(@T = 19.6)$

$1{,}2_{N_{100}}$: $Q_T = $ ″

S_1 — $B1_{100}$: $Q_{T_{100}} = Q_B(@T = 20.4)$

$1{,}2_{S_{100}}$: $Q_T = $ ″

N_2 — $L2_{100}$: $Q_{T_{100}} = Q_L(@T = 19.5)$

$2{,}3_N$: $Q_T = Q_A(@T = 19.6) + Q_L(@T = 19.5 + 1.1)$

S_2 — $C2_{100}$: $Q_T = Q_C(@T = 21.1)$

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

$F3_{100}$: $Q_{T_{100}} = Q_F(@T = 27.9)$

N_3 — $E3_{100}$: $Q_{T_{100}} = Q_E(@T = 22.0)$

$3{,}4_N$: $Q_T = Q_A(@T = 19.6) + Q_L(@T = 19.5 + 1.1) + \begin{Bmatrix} Q_F(T = 27.9 + 2.0 + 1.1) \\ Q_E(T = 22.0 + 2.0 + 1.1) \end{Bmatrix}$

$G3$: $Q_T = Q_G(@T = 24.8)$

S_3 — $I3$: $Q_T = Q_I(@T = 21.8)$

$K3$: $Q_T = Q_K(@T = 11.9)$

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

N_4 — $L4$: $Q_T = Q_L(@T = 32.0)$

$4{,}5_N$: $Q_T = Q_A(@T = 19.6) + Q_L(@T = 19.5 + 1.1) + \begin{Bmatrix} Q_F(@T = 27.9 + 2.0 + 1.1) \\ Q_E(@T = 22.0 + 2.0 + 1.1) \end{Bmatrix} + $
$+ Q_L(@T = 32.8 + 2.3 + 2.0 + 1.1) + Q_H(@T = 28.7)$

S_4 — $J4$: $Q_T = Q_J(@T = 38.2)$

$4{,}5_S$: $Q_T = Q_B(@T = 20.4) + Q_C(@T = 21.1 + 1.1) + \begin{Bmatrix} 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{Bmatrix} + $
$+ Q_J(@T = 38.2 + 2.3 + 2.0 + 1.1)$

See formula - calculation sheet

2-Year Flows — Developed — 9/23/95

N_1

$Q_A = 0.55(0.84)3.30 = 1.52$ cfs

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

S_1

$Q_B = 0.58(0.82)3.18 = 1.51$ cfs

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

N_2

$Q_D = 0.62(0.84)1.21 = 0.63$ cfs

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

S_2

$Q_C = 0.56(0.81)4.19 = 1.90$ cfs

$Q_{2,3_S} = 0.57(0.82)3.18 + 0.56(0.80)4.19 = 3.37$ cfs

N_3

$Q_F = 0.52(0.71)1.37 = 0.50$ cfs

$Q_E = 0.61(0.80)6.23 = 3.04$ cfs

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

$= 5.56$ cfs

S_3

$Q_G = 0.56(0.76)4.21 = 1.77$ cfs

$Q_I = 0.55(0.80)1.76 = 0.77$ cfs

$Q_K = 0.77(1.17)2.42 = 2.24$ cfs

$Q_{3,4_S} = 0.58(0.82)3.18 + 0.56(0.79)4.19 + 0.56(0.73)4.21 + 0.55(0.77)1.76 +$

$+ 0.77(1.08)2.42 = 7.70$ cfs

N_4

$Q_L = 0.54(0.63)8.24 = 2.84$ cfs

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

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

S_4

$Q_J = 0.53(0.54)6.04 = 1.73$ cfs

$Q_{4,5_S} = 0.58(0.82)3.18 + 0.56(0.79)4.19 + 0.56(0.73)4.21 + 0.55(0.77)1.76 +$

$+ 0.77(1.08)2.42 + 0.53(0.51)6.04 = 9.53$ cfs

* See Pg H-3 SWMM

2-Year Routing

"Lost Lagoon"

9/29/95

N_1
$A1_2 \quad Q_{T_2} = Q_A(@T=32.2)$
$1,2_{N_2} \quad Q_{T_2} = $ "

S_1
$B1_2 \quad Q_{T_2} = Q_B(@T=33.7)$
$1,2_{S_2} \quad Q_{T_2} = $ "

N_2
$D2_2 \quad Q_{T_2} = Q_D(@T=32.0)$
$2,3_{N_2} \quad Q_{T_2} = Q_A(@T=32.2) + Q_D(@T=32.0+1.1)$

S_2
$C2_2 \quad Q_{T_2} = Q_C(@T=34.5)$
$2,3_{S_2} \quad Q_T = Q_B(@T=33.7) + Q_C(@T=34.5+1.1)$

N_3
$F3_2 \quad Q_T = Q_F(@T=45.3)$
$E3_2 \quad Q_{T_2} = Q_E(@T=35.6)$
$3,4_N \quad Q_T = Q_A(@T=32.2) + Q_D(@T=32.0+1.1) + \begin{cases} Q_F(@T=45.3+2.0+1.1) \\ Q_E(@T=35.6+2.0+1.1) \end{cases}$

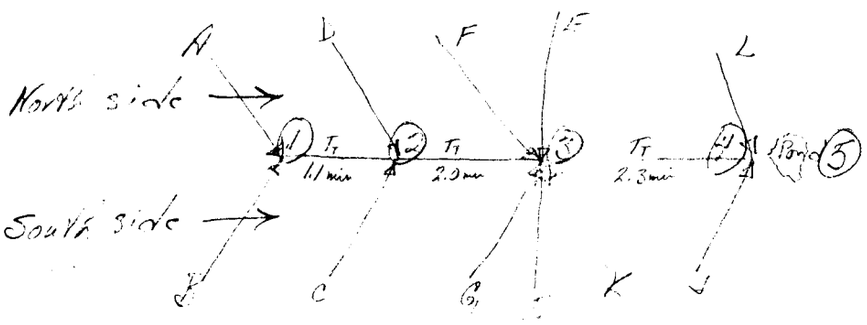
S_3
$G3_2 \quad Q_T = Q_G(@T=40.0)$
$I3_2 \quad Q_T = Q_I(@T=35.6)$
$K3_2 \quad Q_T = Q_K(@T=17.8)$
$3,4_S \quad Q_T = Q_B(@T=33.7) + Q_C(@T=34.5+1.1) + \begin{cases} Q_G(@T=40.0+2.0+1.1) \\ Q_I(@T=35.6+2.0+1.1) \\ Q_K(@T=17.8+2.0+1.1) \end{cases}$

N_4
$L4 \quad Q_T = Q_L(@T=53.0)$
$4,5_N \quad 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
$J4 \quad Q_T = Q_J(@T=62.0)$
$4,5_S \quad Q_T = Q_B(@T=33.7) + Q_C(@T=34.5+1.1) + \begin{cases} Q_G(@T=40.0+2.0+1.1) \\ Q_I(T=35.6+2.0+1.1) \\ Q_K(T=17.8+2.0+1.1) \end{cases} +$
$+ Q_J(@T=62.0+2.3+2.0+1.1) + Q_H(@T=46.0) =$

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	45.5	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



1"=6' T_T

Reach	Length	Slope	Velocity (@ 1/10 depth)	Time (min)
1-2	379 LF	4.5%	5.66 fps	1.1 min
2-3	643 LF	4.5% → 1.5% Ave 4.0%	5.30 fps	2.0 min
3-4	637 LF	4.0% → 3.5% Ave 3.5%	4.76 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					

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.

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		L	S	N*	V*	Tt2	Tt100	Tc2	Tc100	2-Year i	100-Year i
	Descrip. of Flow	Length	Slope	Mannings	Vel.	Travel Time	Travel Time	Time of Concentration		Intensity Grd. Jctn. Curves	Intensity Grd. Jctn. Curves
		ft.	%	coef.	fps	min.	min.	min.	min.		
"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.

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

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

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: [illegible] JOB NO. 0252-001 CALCULATED BY: [illegible] DATE: 9/29/95

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.

REACH	AREA IDENTIFIER			A	P	2	1	E	F	3
REACH	SEGEMENT IDENTIFICATION									
REACH	Tc OR Tr THROUGH BASIN REACH									
OVERLAND FLOW	SURFACE DESCRIPTION (TABLE "E-1")			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
OVERLAND FLOW	"N" VALUE (TABLE "E-1")			0.30	0.30	0.30	0.30	0.30	0.30	0.30
OVERLAND FLOW	FLOW LENGTH, L (TOTAL ≤ 300 FT.)		(ft.)	300	300	300	256	300	116	300
OVERLAND FLOW	LAND SLOPE, S		(ft./ft.)	25.4%	26.7%	22.1%	26.3%	21.0%	1.7%	16.1%
OVERLAND FLOW	$To_2 = 0.50\ (NL)^{.8}/S^{.4}$		(min.)	31.7	33.1	33.5	31.2	34.2	43.7	37.0
OVERLAND FLOW	$To_{100} = 0.30\ (NL)^{.8}/S^{.4}$		(min.)	19.0	19.9	20.1	18.7	20.5	26.2	22.8
SHALLOW CONCENTRATED FLOW	SURFACE DESCRIPTION (FIGURE "E-3")			—	[illegible]	[illegible]	—	[illegible]	—	
SHALLOW CONCENTRATED FLOW	FLOW LENGTH, L		(ft.)	Ø	44	185	Ø	28	Ø	77
SHALLOW CONCENTRATED FLOW	FLOW SLOPE, S		(ft./ft.)	—	22.7%	22.1%	—	21.0%	—	16.1%
SHALLOW CONCENTRATED FLOW	FLOW VELOCITY, V (FIGURE "E-3")		(fps.)	—	4.7 fps	4.7 fps	—	4.7 fps	—	4.0 fps
SHALLOW CONCENTRATED FLOW	TRAVEL TIME = L/(60V)		(min.)	—	0.2	0.7	—	0.1	—	0.4
CHANNEL FLOW	CROSS-SECTIONAL FLOW AREA, a		($ft.^2$)							
CHANNEL FLOW	WETTED PERIMETER, Pw		(ft.)							
CHANNEL FLOW	HYDRAULIC RADIUS, r = a/Pw		(ft.)							
CHANNEL FLOW	CHANNEL SLOPE, S		(ft./ft.)	6.5%	6.5%	4.5%	4.5%	5% ±	4.5%	4.5%
CHANNEL FLOW	MANNING'S COEFFICIENT, n (APPENDIX F)			0.016	0.016	0.016	0.016	0.016	0.016	0.016
CHANNEL FLOW	$V = 1.49r^{.67}S^{.5}/n$		(fps.)	6.8 fps	6.8 fps	5.6 fps	5.6 fps	5.9 fps	5.6 fps	5.6 fps
CHANNEL FLOW	ASSUMED VELOCITY		(fps.)							
CHANNEL FLOW	FLOW LENGTH, L		(ft.)	231	171	135	256	490	564	566
CHANNEL FLOW	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
Tc&Tr	Tr = Tch	100 YEAR	(min.)	19.6	20.5	21.2	19.5	22.0	27.9	24.8
T_L	T_L = 0.6Tc or	2 YEAR	(min.)							
T_L	FROM FIGURE "E-4"	100 YEAR	(min.)							

TRAVEL TIME WORKSHEET: TR-55 METHOD

TABLE "E-3"

PROJECT: [illegible] JOB NO. [illegible] CALCULATED BY: [illegible] DATE: [illegible]

CHECKED BY: _____ DATE: _____

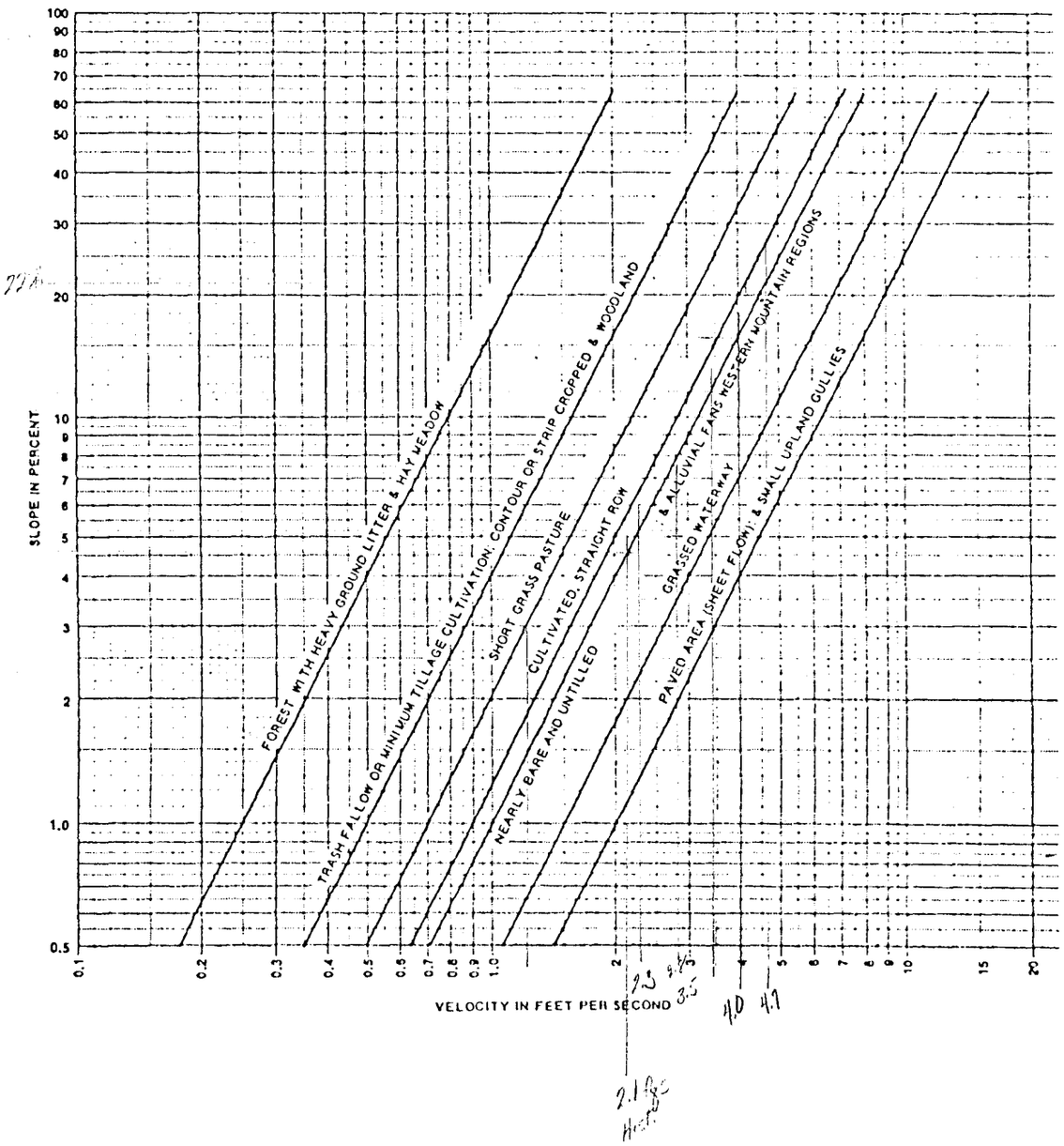
(THE TABLE BELOW IS AN ADAPTATION OF A WORKSHEET PROVIDED IN THE SCS TR-55)
THIS TABLE MAY BE USED IN SUBBASIN Tc CALCULATION, OR FOR TRAVEL TIME OF SUBBASIN RUNOFF THROUGH A LOWER SUBBASIN REACH (Tr).
USE ONLY CHANNEL FLOW FOR Tr CALCULATIONS.

REACH	AREA IDENTIFIER			A	E	A	K	L		
	SEGEMENT IDENTIFICATION									
	Tc OR Tr THROUGH BASIN REACH									
OVERLAND FLOW	SURFACE DESCRIPTION (TABLE "E-1")			Bare Soil	Bare Soil	Bare Soil	Grass	Bare Soil		
	"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")			Bare Soil	Bare Soil	Bare Soil	—	Bare Soil		
	FLOW LENGTH, L		(ft.)	560	24	103	—	322		
	FLOW SLOPE, S		(ft./ft.)	11.6%	20.8%	5.2%	—	7.9%		
	FLOW VELOCITY, V (FIGURE "E-3")		(fps.)	3.4 fps	4.7 fps	2.3 fps	—	2.8 fps		
	TRAVEL TIME = L/(60V)		(min.)	2.7	0.5	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	2.6 fps	5.9 fps	2.6 fps		
	ASSUMED VELOCITY		(fps.)	—						
	FLOW LENGTH, L		(ft.)	—	146	411	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	37.1	11.9	32.8		
Tt	Tt = 0.6Tc or	2 YEAR	(min.)							
	FROM FIGURE "E-4"	100 YEAR	(min.)							

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

JUNE 1994

REPRODUCED FROM FIGURE 15.2, SCS 1972



DETERMINATION OF "Ts"	FIGURE "E-3"

GEOLOGIC HAZARDS REPORT
FOR
THE RIDGES - FILING NO. 6

CITY OF GRAND JUNCTION, COLORADO

OCTOBER, 1995

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GEOLOGIC HAZARDS REPORT
FOR
THE RIDGES - FILING NO. 6

CITY OF GRAND JUNCTION, COLORADO

OCTOBER, 1995

INTRODUCTION

The Ridges - Filing No. 6 is located in Mesa County in the west portion of Grand Junction, Colorado. The property is in Section 17, Township 1 South, Range 1 West, Ute Meridian. The site is a short distance south of Colorado Highway 340 (Broadway).

The property consists of 97.3 acres, a portion of which is to be divided into about 70 lots for single family residences. The site is northwest of the existing residential development known as The Ridges.

The purpose of this report is to identify geologic hazards, particularly hazards that might have an adverse effect on the various features of a residential subdivision, and is based on a surface reconnaissance of the property. Reference was made to Colorado Geological Survey Map Series 5, "Geology for Planning in the Redlands Area, Mesa County, Colorado."

SITE GEOLOGY

The site is on the fringe of the Grand Valley in a location known as the Redlands, which is a rolling and somewhat hilly area between the Uncompahgre highland and the Colorado River. The property is above any irrigation canals and is semiarid with mostly desert shrub vegetation.

The Grand Valley has a history of minor seismic activity and the seismic risk is low. Recent and nearby earthquakes, which occurred in 1971 and 1975, had Richter magnitudes of 4.0 and 4.4, respectively. A mild quake of 2.5 magnitude occurred near Palisade on October 20, 1990. No damage was reported from any of these events.

Geologic Formations and Soils

The topography is formed by a series of low ridges and buttes with intervening small valleys. At the subject site, the ridges are generally capped by the Dakota Formation, and the lower valleys are generally eroded into sandstone, siltstone, and shale of the Burro Canyon Formation.

The Burro Canyon Formation is about 50 to 85 feet thick and consists of massive sandstone with interbedded green siltstone and shale. The formation is of Lower Cretaceous age.

The Dakota Formation is approximately 150 feet thick and consists of brown, gray, and white sandstone with interbedded gray to black organic shale and thin coal beds. The Dakota is of Upper Cretaceous age.

The flat-top hill on the eastern portion of the subdivision (vicinity of proposed Saddle Way street) is a stream terrace deposit of sand, gravel, and cobbles overlying the Dakota Formation. Much of this gravel layer has been removed, probably for road construction material, and its thickness is difficult to estimate. The original thickness appears to have been about 10 to 15 feet; the present depth to bedrock is unknown.

The remainder of the lots (along the proposed Saddle Back Court, Butte Court, and Rana Road) is in a narrow valley trending from southwest to northeast across the west portion of the subdivision. The soils in this lower area are shallow silts and clays with varying amounts of sand over mostly the Burro Canyon Formation. The soil thicknesses are unknown, but from surface observations, appear to be about 1 to 10 feet deep. These fine-grained soils are alluvial origin from the intermittent drainage through this valley, and some slope wash from the hillsides.

The soils at this site have been mapped for agricultural purposes by the Natural Resources Conservation Service as Persayo-Blackston Complex and Blackston gravelly to very gravelly loam. A soils map is attached.

Geologic Structure

The dip of the underlying bedrock is about 3° to the northeast away from the nearby Uncompahgre Uplift. The Redlands fault, a dominant structural feature, is located about 2.3 miles to the southwest.

Foundation Materials

For the purpose of discussion, the geology of the foundations can be divided into two parts, the flat-top hill along the proposed Saddle Way street, and the small valley to the west.

The flat-top hill is a stream terrace with an unknown depth of sand, gravel, and cobbles over Dakota sandstone and shale. The gravelly soils would have good bearing strengths and not be subject to settlement; however, the underlying shales could contain swelling clays that would be subject to expansion upon wetting. The depth to bedrock at each building site should

be determined to ascertain if the shales could influence the structures. Due to the topography, a shallow water table does not exist under this hill, but positive drainage must be maintained away from each residence to prevent wetting of the foundation by roof or flatwork runoff, or landscape irrigation.

The building lots in the valley on the west portion of this site have relatively shallow fine-grained soils, principally silt and clay, over Burro Canyon and some Dakota sandstones, shales, and siltstones. The clay soils and shales could contain expansive clays, and the silt and clay alluvium could be subject to settlement upon saturation. A shallow water table does not exist in this area, but thunderstorms and landscape irrigation could allow saturation around foundations. This possibility must be avoided by proper drainage design and maintenance.

The engineering properties of the soils and bedrock must be ascertained prior to design of the foundation of each residence. The necessary characteristics can be determined by subsurface exploration, sampling of the materials, and laboratory testing of the samples.

The soils and bedrock at this site contain soluble salts that could cause deterioration of concrete. Sulfate resistant cement should be used to avoid this possibility.

Water Table

A shallow ground water table does not exist at this site due to the topographic relief and semiarid climate. No irrigation canals serve this area; the Redlands First Lift Canal does border the property to the north, but is downslope from the subdivision.

Sewage from the subdivision would be conveyed to a central treatment facility.

Slope Stability

The hill on the east side of this site has slopes on the top from 7 percent to essentially level; however, the steeper slopes around the hill vary from about 15 to 33 percent. The building site selection for each lot should consider the moderate hazard of the steeper slope and favor construction on the gentler portion of the lots. The sandstone bed which crops out around the mesa edge, and just below the top, is fairly hard and about 20 to 25 feet thick. This sandstone is underlain by a gray shale and a black carbonaceous shale.

The lots proposed in the valley to the west slope from about 4 to 14 percent, so no slope hazard exists. Some of the lots do approach steeper hillsides, but there is no slope stability

concern unless the slopes were to be disturbed, such as by construction excavation. The distance between the Dakota sandstone ledges on the adjacent hilltops and the proposed building sites should prevent rockfall hazards.

FLOOD POTENTIAL

The property is a topographic high above the nearby Colorado River, and no river flood hazard exists.

A small, poorly defined drainage trends from southwest to northeast through the western portion of the site. This intermittent drainage, and its side tributaries, could convey short-term flows from thunderstorms, and must be considered in the drainage plan.

Lots which abut against the steeper ridges could have a hazard of mud and debris from thunderstorms being carried down the steeper slopes and onto the lots. This debris flow potential is minor, but must be considered in planning each specific residence, cut slopes, and roadways.

RADIATION HAZARD

Uranium mill tailings were used extensively in the Grand Junction area between 1952 and 1965 for landfill and construction. The presence of any uranium tailings should be determined prior to any construction.

MINERAL RESOURCES

No economic minerals are known to exist at this property. The gravel that originally occurred on the east side of the site has been largely removed for construction projects. The Morrison Formation is present at depth, but no uranium has been produced from this area.

CONCLUSIONS

A surface reconnaissance was conducted at The Ridges - Filing No. 6 on September 29, 1995, to identify geologic hazards to subdivision development.

Site-specific investigations, consistent with the type of structure contemplated, should precede any construction at this property to allow design considerations in accordance with subsurface conditions, but no serious geologic hazards have been identified. The main concerns to be addressed are the potential for expansive clays in the fine grained soils and/or shales, and the possibility of settlement in silt and clay soils

if allowed to become saturated. Slope stability concerns can be mitigated by site selection and proper foundation and drainage design. The geotechnical data necessary to allow adequate foundation design can be obtained by appropriate techniques such as drilling or augering, sampling, and laboratory testing of the various materials.

Prepared by:

BARNES GEOLOGIC CONSULTING, INC.

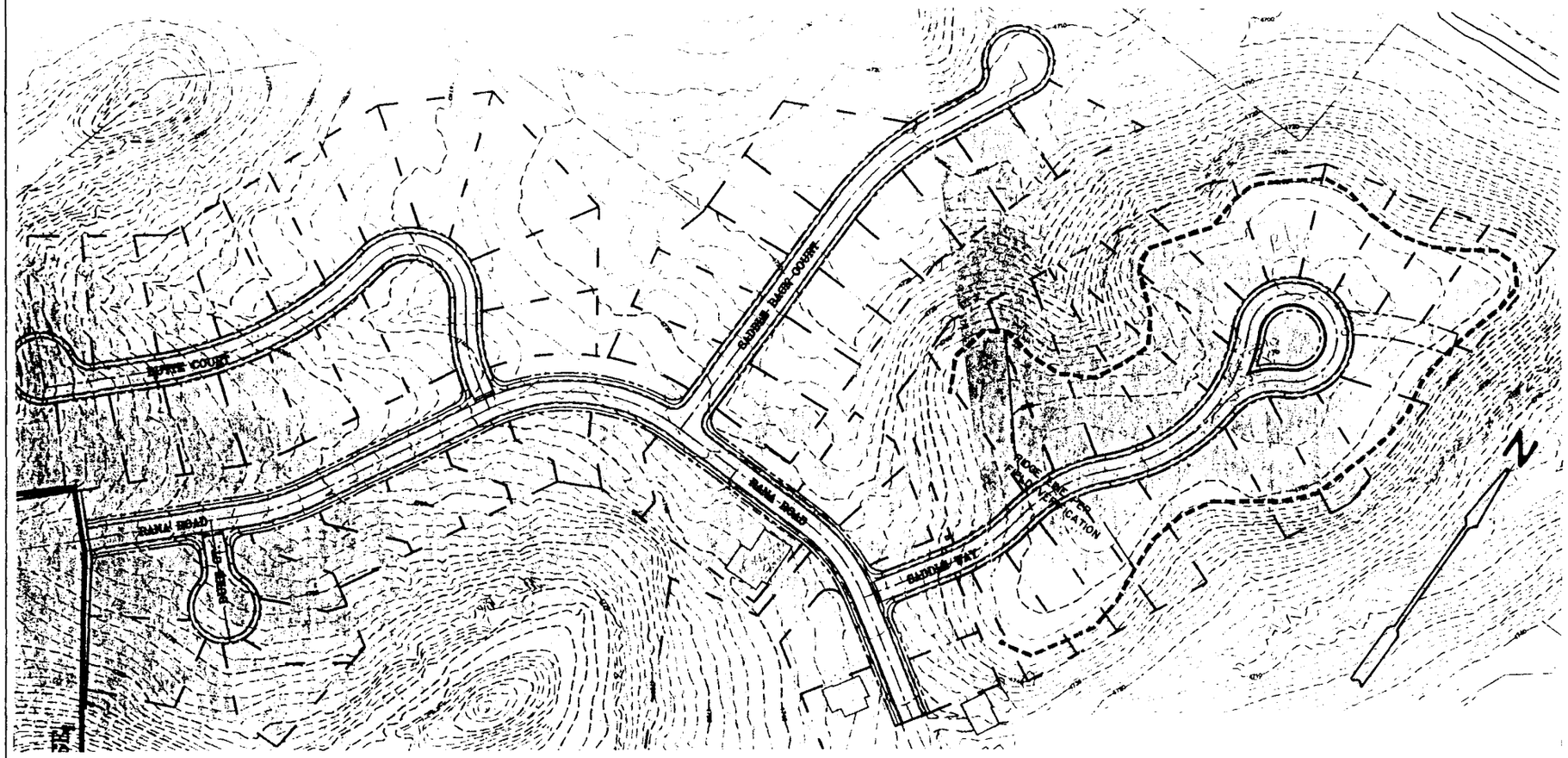
Joe G. Barnes

Joe G. Barnes, President
Engineering Geologist

THE RIDGES - FILING NO. 6 -- Panoramic view looking west (top photo) showing the proposed lot sites in the small valley in the foreground. View looking north (bottom photo) showing the flat-top hill proposed for building sites to the right center.

PHOTOS BY JOE G. BARNES

SEPTEMBER 30, 1995



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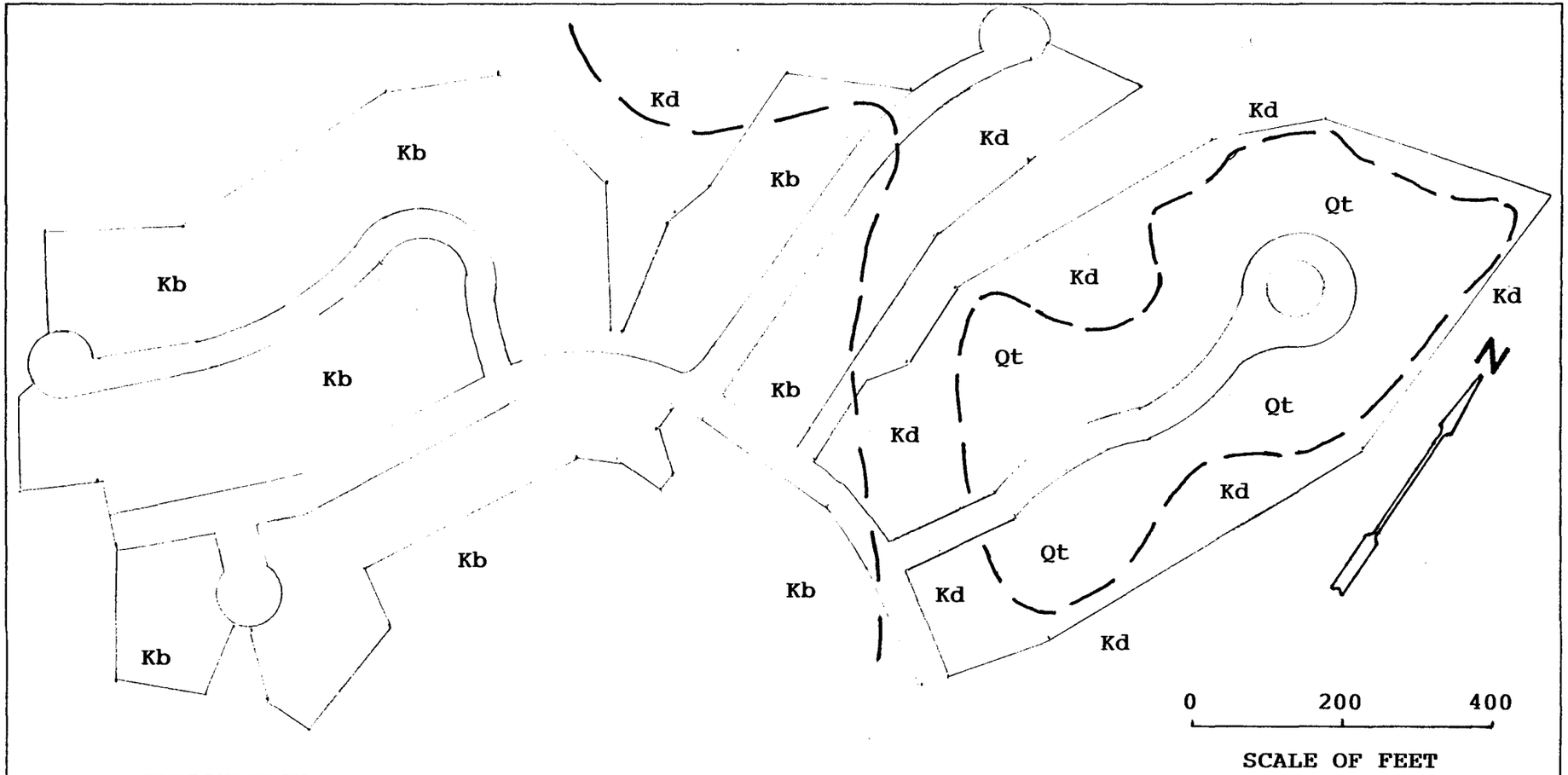
SCALE OF FEET

SITE MAP

THE RIDGES - FILING NO. 6

OCTOBER, 1995



EXPLANATION

Qt	Terrace alluvium: Sand, gravel, and cobbles, Colorado and Gunnison River deposits.
Kd	Dakota Formation: Sandstone and gray to black shale; generally covered with soils, some sandstone outcrops.
Kb	Burro Canyon Formation: Sandstone and green siltstone and shale; covered by thin soils at this site.

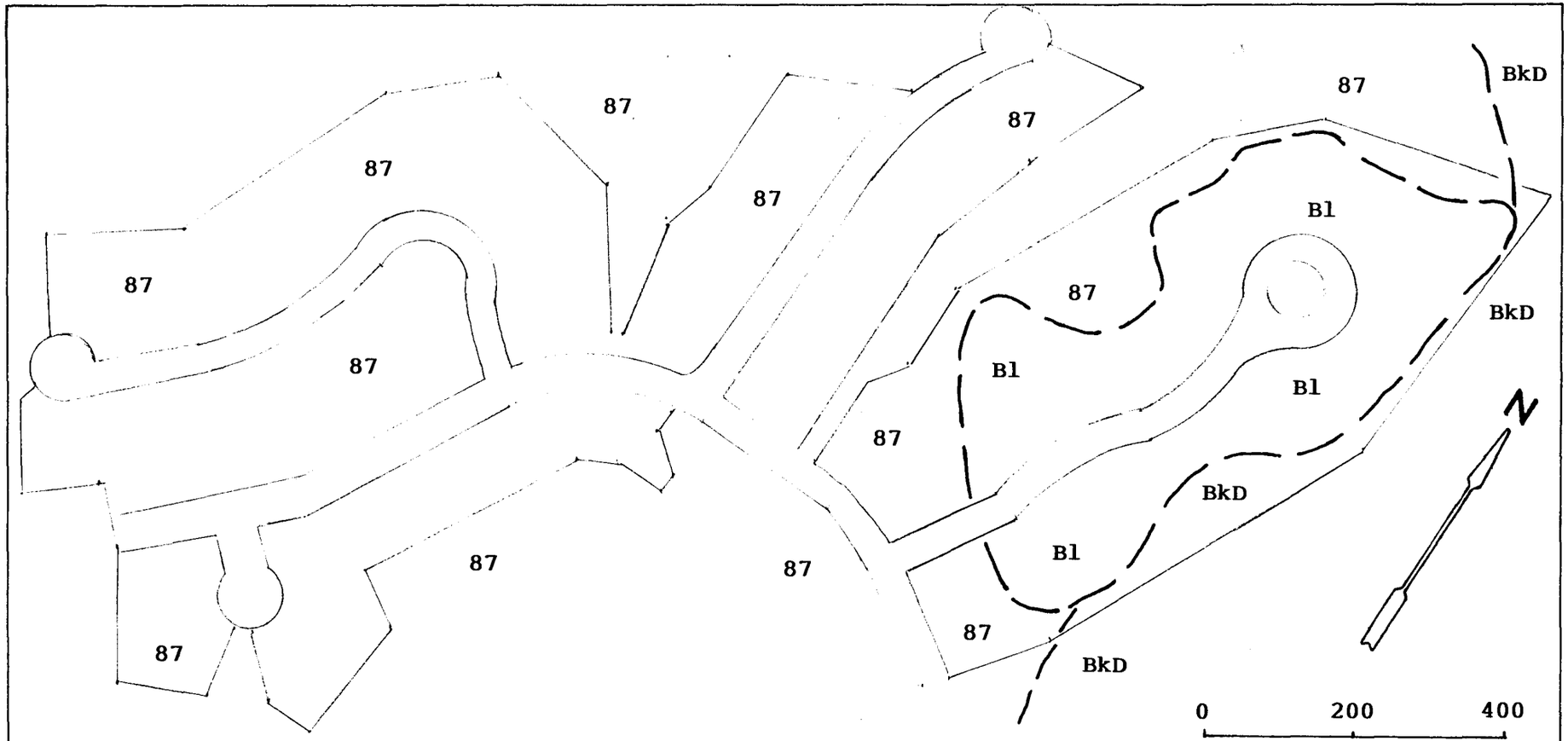
Adapted from "Geology for Planning in the Redlands Area, Mesa County, Colorado", Colo. Geological Survey, Map Series 5, 1976.

GEOLOGY MAP

THE RIDGES - FILING NO. 6

OCTOBER, 1995

Barnes Geologic Consulting, Inc.
Drawn by JGB



EXPLANATION

87	Persayo-Blackston Complex
BkD	Blackston very gravelly loam
Bl	Blackston gravelly loam

Adapted from unpublished Natural Resources Conservation Service data, Grand Junction, Colorado office.

SOILS MAP

THE RIDGES - FILING NO. 6

OCTOBER, 1995

Barnes Geologic Consulting, Inc.
Drawn by JGB

NONTECHNICAL SOILS DESCRIPTION REPORT
FOR DESCRIPTION CATEGORY - SOI

Survey Area- GRAND JUNCTION AREA, COLORADO

Map Symbol	Description

87 PERSAYO-BLACKSTON COMPLEX, 6 TO 45 PERCENT SLOPES

This complex consists of 55 percent Persayo silty clay loam and 25 percent Blackston very gravelly sandy clay loam.

This unit consists of very deep, well drained soils on old terrace remnants. These soils formed in old alluvium derived dominantly from mixed sources and have a loess cap. The surface layer is gravelly loam 3 inches thick. The upper 5 inches of the subsoil are loam, and the lower 6 inches are clay loam. The upper 14 inches of the substratum are very gravelly loam and very gravelly sandy loam, and the lower part to a depth of 70 inches is gravelly sandy loam, extremely gravelly sandy loam, and very gravelly loamy coarse sand. Permeability of this soil is moderate in the upper 14 inches and rapid below 14 inches. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high.

BkD BLACKSTON VERY GRAVELLY LOAM, 5 TO 25 PERCENT SLOPES

This unit consists of very deep, well drained soils on old terrace remnants. These soils formed in old alluvium derived dominantly from mixed sources and have a loess cap. The surface layer is gravelly loam 3 inches thick. The upper 5 inches of the subsoil are loam, and the lower 6 inches are clay loam. The upper 14 inches of the substratum are very gravelly loam and very gravelly sandy loam, and the lower part to a depth of 70 inches is gravelly sandy loam, extremely gravelly sandy loam, and very gravelly loamy coarse sand. Permeability of this soil is moderate in the upper 14 inches and rapid below 14 inches. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high.

B1 BLACKSTON GRAVELLY LOAM, 2 TO 5 PERCENT SLOPES

This unit consists of very deep, well drained soils on old terrace remnants. These soils formed in old alluvium derived dominantly from mixed sources and have

NONTECHNICAL SOILS DESCRIPTION REPORT
FOR DESCRIPTION CATEGORY - SOI

Survey Area- GRAND JUNCTION AREA, COLORADO

Map Symbol	Description

a loess cap. The surface layer is gravelly loam 3 inches thick. The upper 5 inches of the subsoil are loam, and the lower 6 inches are clay loam. The upper 14 inches of the substratum are very gravelly loam and very gravelly sandy loam, and the lower part to a depth of 70 inches is gravelly sandy loam, extremely gravelly sandy loam, and very gravelly loamy coarse sand. Permeability of this soil is moderate in the upper 14 inches and rapid below 14 inches. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate.

TRAFFIC IMPACT ANALYSIS

RIDGES SUBDIVISION

GRAND JUNCTION, COLORADO

Leigh, Scott & Cleary, Inc.

LEIGH, SCOTT & CLEARY, INC.
TRANSPORTATION PLANNING
& TRAFFIC ENGINEERING CONSULTANTS

1889 York Street
Denver, CO 80206
(303) 333-1105
FAX (303) 333-1107

February 24, 1995

Mr. Steven E. Craven
Cobblestone Communities, Inc.
P.O. Box 1168
Telluride, CO 81435

Re: Ridges Subdivision
(LSC #950180)

Dear Mr. Craven:

We are pleased to submit our report of the traffic impact and access requirements associated with the proposed Ridges Subdivision in Grand Junction, Colorado.

This study first provides a summary of the roadway conditions in the vicinity of the proposed development. Next, estimates are made of the amount and directional distribution of vehicular traffic likely to be generated. Finally, an evaluation is made of the ability of the future roadway system to accommodate the generated traffic volumes. Where appropriate, recommendations are made for future roadway improvements and traffic controls. With implementation of the recommended improvements, we have concluded that the additional traffic to be generated can be safely accommodated.

We trust that our findings and conclusions will assist with further planning for The Ridges Subdivision. Please call us if we can be of further assistance.

Sincerely,

LEIGH, SCOTT & CLEARY, INC.

By: _____
Philip N. Scott III, P.E.

PNS/wd

C:\PROJECTS\950180\RIDGES.RPT

Traffic Impact Analysis

Ridges Subdivision

Grand Junction, Colorado

Prepared for:

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

Prepared by:

Leigh, Scott & Cleary, Inc.
1889 York Street
Denver, CO 80206
(303) 333-1105

February 24, 1995
(LSC #950180)

TABLE OF CONTENTS

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LIST OF TABULATIONS

SECTION A
Introduction

The Ridges Subdivision is planned as a significant expansion of the developing Ridges residential community located at the western edge of Grand Junction, Colorado. Figure 1 illustrates the site location relative to the surrounding roadway system. At buildout, the subdivision is planned to consist of 155 single-family homes.

The purpose of this report is to present an evaluation of the traffic impacts associated with the project and to identify the major traffic requirements necessary to serve it. The report summarizes the results of the following analysis procedures:

- A review of the present and future roadway system in the vicinity of the site.
- A determination of the average weekday and peak-hour traffic to be generated by buildout of the development.
- An analysis of the expected directional distribution of project-generated traffic and an assignment of same to the surrounding roadway network.
- An assessment of the development's traffic impact on nearby streets and intersections.
- An evaluation of and recommendations for major traffic improvements which will be required to minimize projected traffic activity.

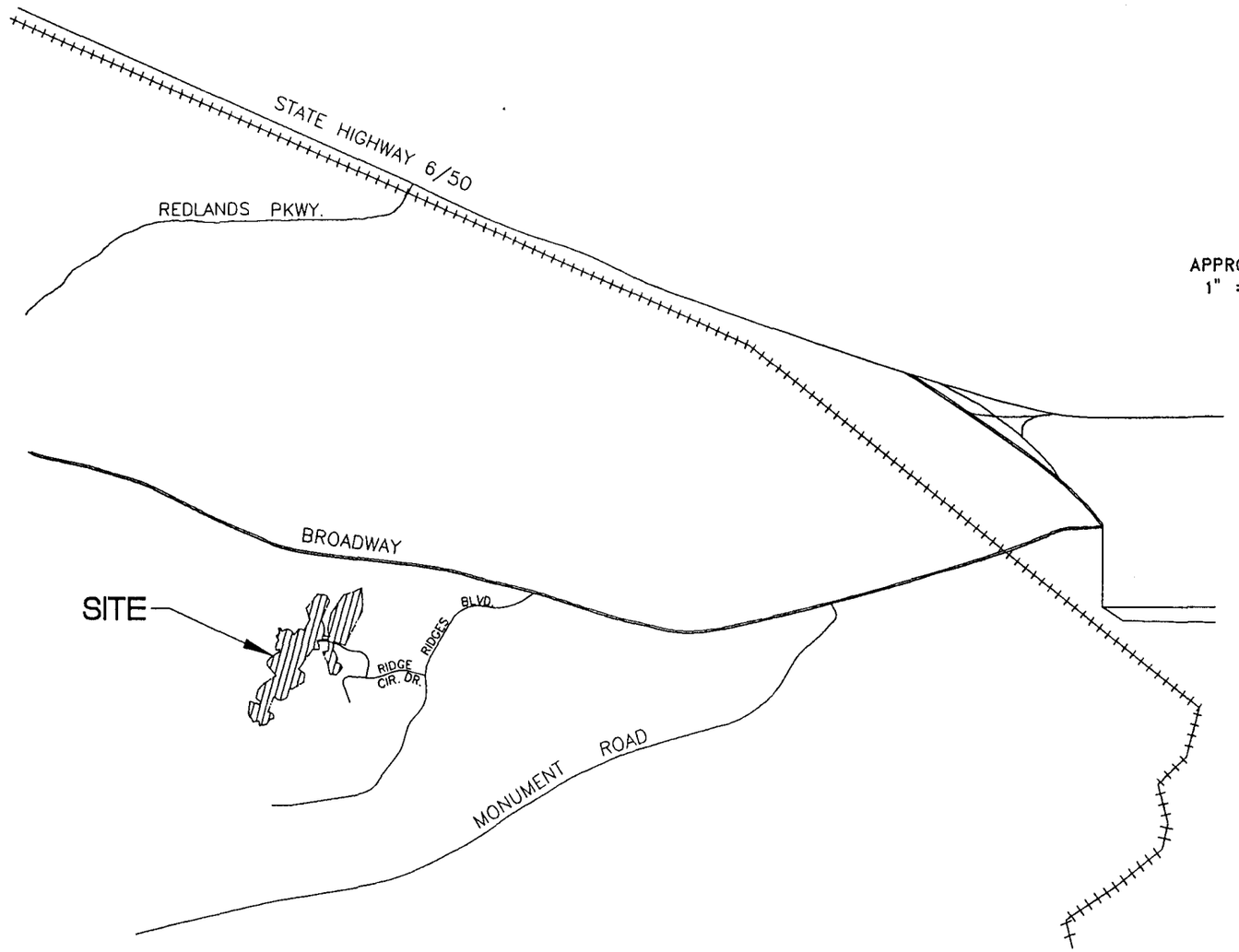


FIGURE 1

SITE LOCATION

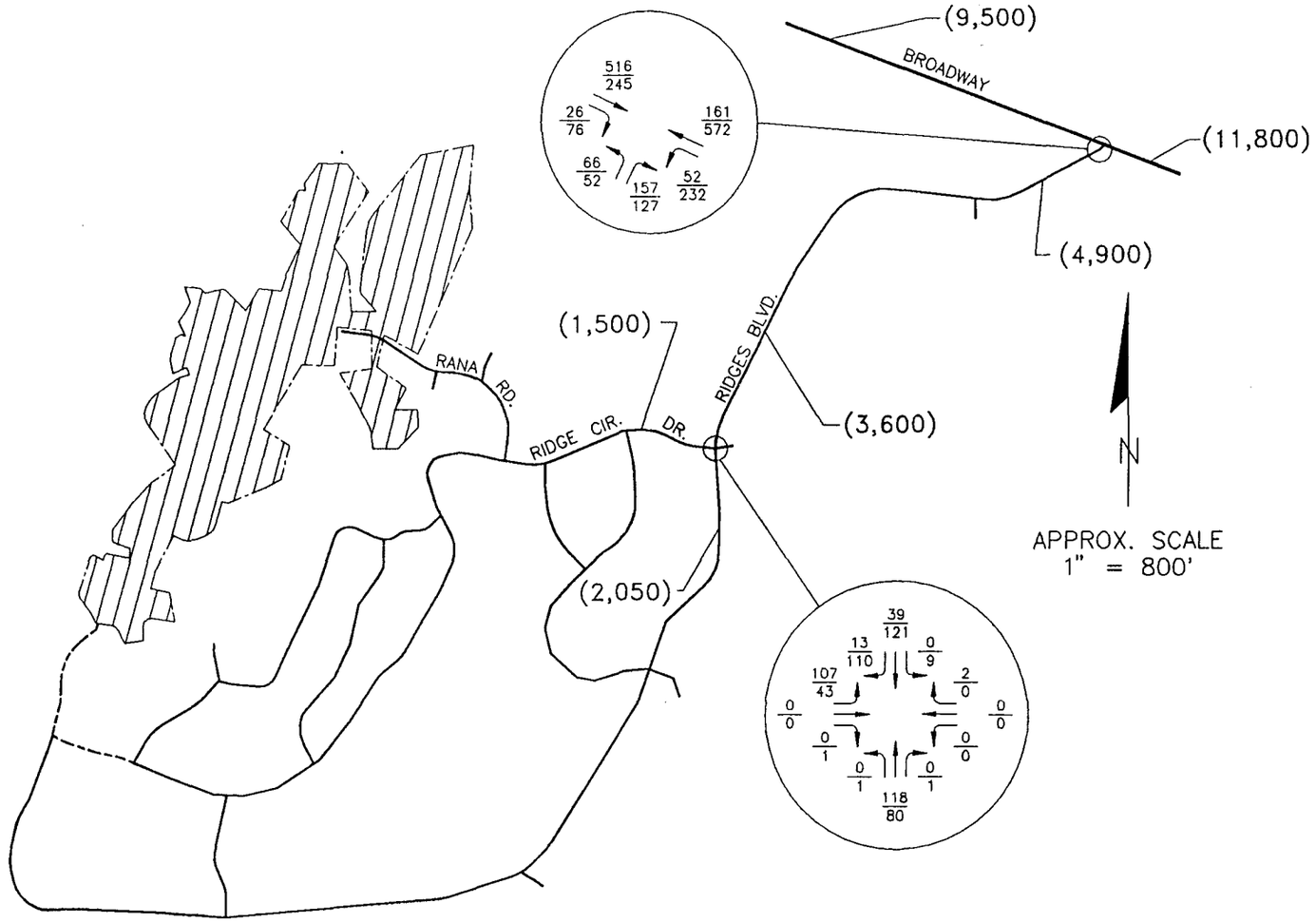
LEIGH, SCOTT & CLEARY, INC.

SECTION B
Roadway and Traffic Conditions

The Ridges Subdivision project is located along the western side of the developing Ridges residential community. Access for the site is planned via Broadway, Ridges Boulevard, Ridge Circle Drive and Rana Road.

Broadway (US 340) is an important, east/west arterial route which provides the site with access to the rest of the regional highway system as well as to downtown Grand Junction. Ridges Boulevard is an important two-lane, divided collector route which serves the entire Ridges residential community. At Broadway, Ridges Boulevard traffic is controlled by a south-facing Stop sign. All other roadways in the vicinity of the site (including Ridge Circle Drive and Rana Road) are local, two-lane routes with Stop sign control facing motorists entering the busier of the two intersecting streets.

Figure 2 shows the results of peak-hour turning movement traffic counts at the Ridges Boulevard intersections with both Broadway and Ridge Circle Drive. Peak-hours were found to occur between 7:30 and 8:30 AM and 5:00 to 6:00 PM based on data collected by LSC on February 8 and 9, 1995. All count data is included in Appendix A of this report. Finally, the peak-hour data has been extrapolated in order to estimate current average weekday traffic activity in the vicinity of the two study intersections.



LEGEND:

(2,050) = ESTIMATED AVERAGE WEEKDAY TRAFFIC

$\frac{66}{52}$ = $\frac{\text{MORNING PEAK-HOUR TRAFFIC}}{\text{EVENING PEAK-HOUR TRAFFIC}}$ (SOURCE: LSC COUNTS ON FEB. 8 & 9, 1995)

FIGURE 2

EXISTING TRAFFIC ACTIVITY

LEIGH, SCOTT & CLEARY, INC.

SECTION C

Estimated Traffic Generation

The following tabulation presents estimates of the amount of average weekday and peak-hour traffic to be generated by buildout of the 155 proposed homes. These estimates are based on applicable (Category #210) formulae cited in the current edition of "*Trip Generation*", published by the Institute of Transportation Engineers.

Table 1
Estimated Traffic Generation
The Ridges

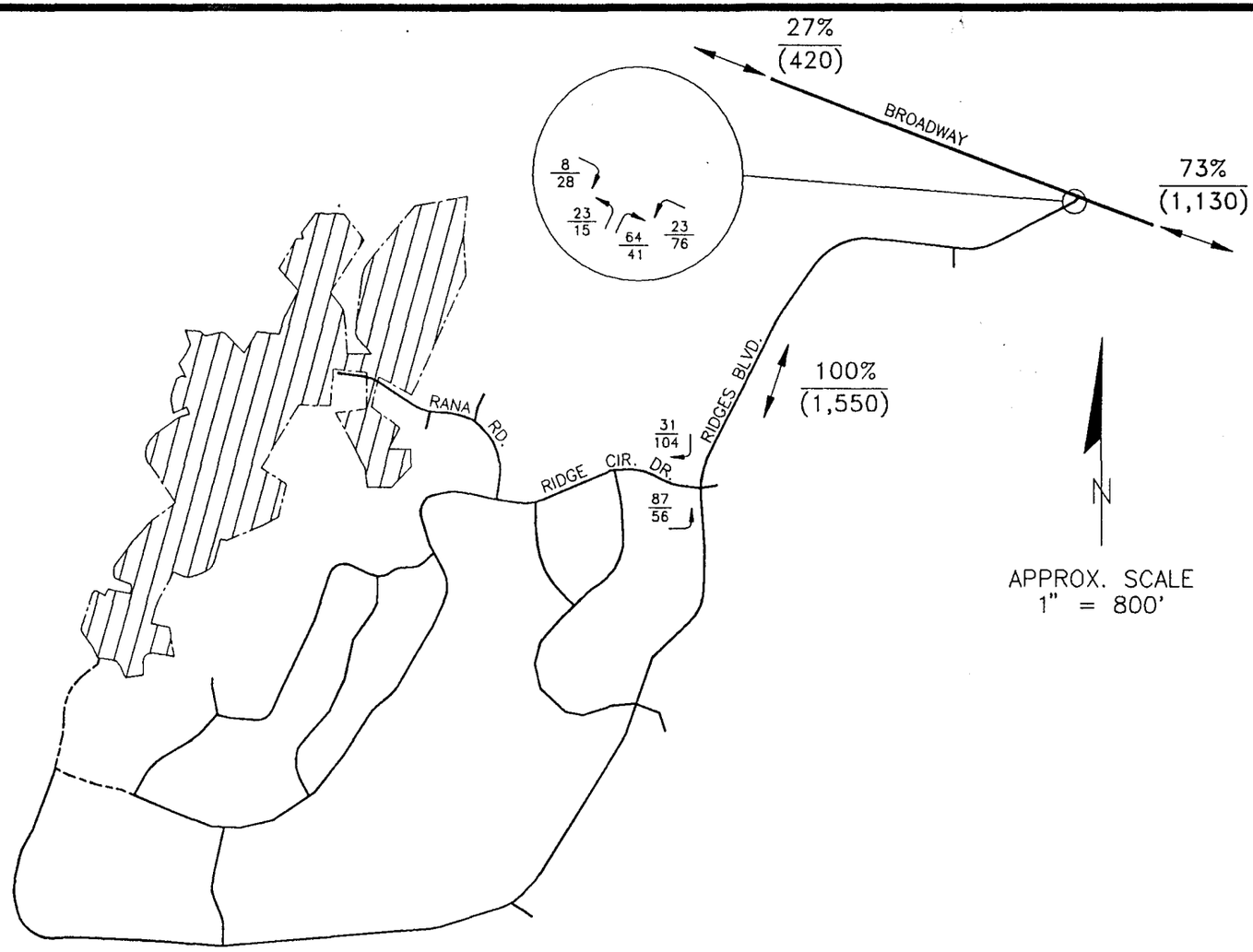
Time Period	Total Vehicle Trips		
	Enter	Exit	Total
Average Weekday	775	775	1,550
Morning Peak-Hour	31	87	118
Evening Peak-Hour	104	56	160

As indicated, buildout of the subdivision is estimated to generate about 1,550 average weekday vehicle-trips. Of these, 31 will enter and 87 exit during the morning peak-hour, whereas 104 and 56 will enter and exit during the evening peak-hour.

SECTION D

Estimated Distribution and Assignment

The directional distribution of traffic to be generated is one of the most important elements in the determination of a given project's traffic impact. Factors which influence the distribution include the relative location of the site, characteristics of the roadway network serving it, the type of proposed land use, and specific access considerations. In this particular instance, commuter peak-hour work trips will strongly influence the subdivision's impacts. Figure 3 illustrates the traffic distribution applicable to the Ridges Subdivision, based on the current distribution indicated with the peak-hour counts shown on Figure 2. Application of this distribution to the generation projections of Table 1 results in the assignment of peak-hour and average weekday traffic which is also shown on Figure 3.



LEGEND:

$\frac{27\%}{(420)}$ = $\frac{\text{PERCENT TRAFFIC DISTRIBUTION}}{\text{AVERAGE WEEKDAY TRAFFIC}}$

$\frac{8}{28}$ = $\frac{\text{MORNING PEAK-HOUR TRAFFIC}}{\text{EVENING PEAK-HOUR TRAFFIC}}$

FIGURE 3

Estimated Traffic Distribution and Assignment

LEIGH, SCOTT & CLEARY, INC.

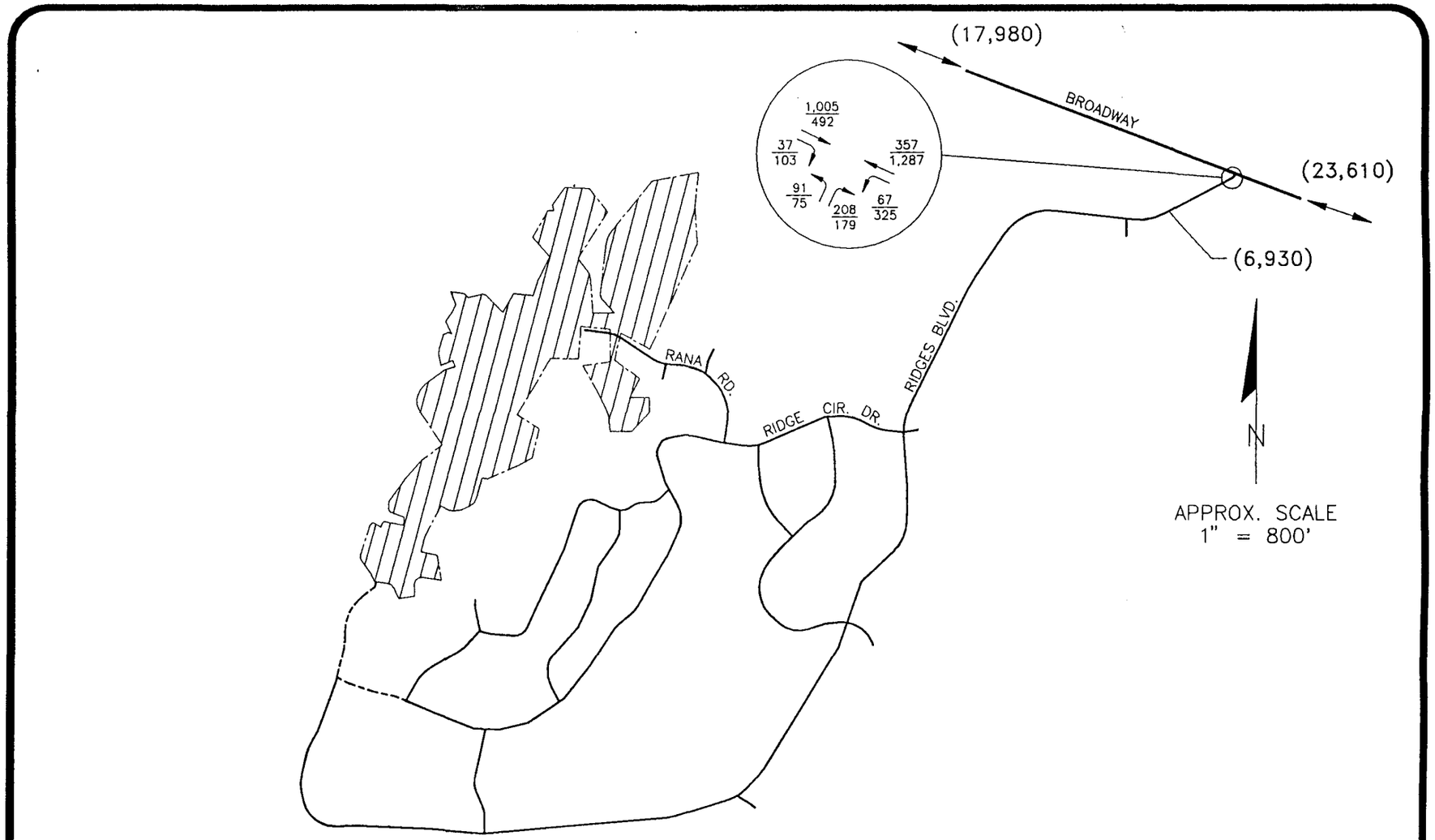
SECTION E
Traffic Analysis

Background Traffic

Figure 4 illustrates projections of 2015 average weekday and peak-hour turning movement traffic at the key intersection of Broadway and Ridges Boulevard. These estimates have been derived from Mesa County's MinUTP transportation model.

Traffic Impacts

In order to assess the traffic impacts of the Ridges Subdivision, related capacity analyses have been performed which compare existing and future traffic operating conditions with those reflecting the addition of project-generated traffic (Figures 5 and 6 reflect these combinations). The methodology used is that presented in the nationally accepted *Highway Capacity Manual* published by the Transportation Research Board of the National Academy of Sciences. The concept of Level of Service (LOS) is used as a basis for computing combinations of roadway operating conditions. By definition, six different Levels of Service are used (A, B, C, D, E, and F) with "A" being a free-flow condition and "E" representing the "capacity" of a given intersection or traffic movement. The following tabulation summarizes the results of our LOS analyses for the proposed Ridges project (actual computer analysis printouts are enclosed in Appendix B):



LEGEND:

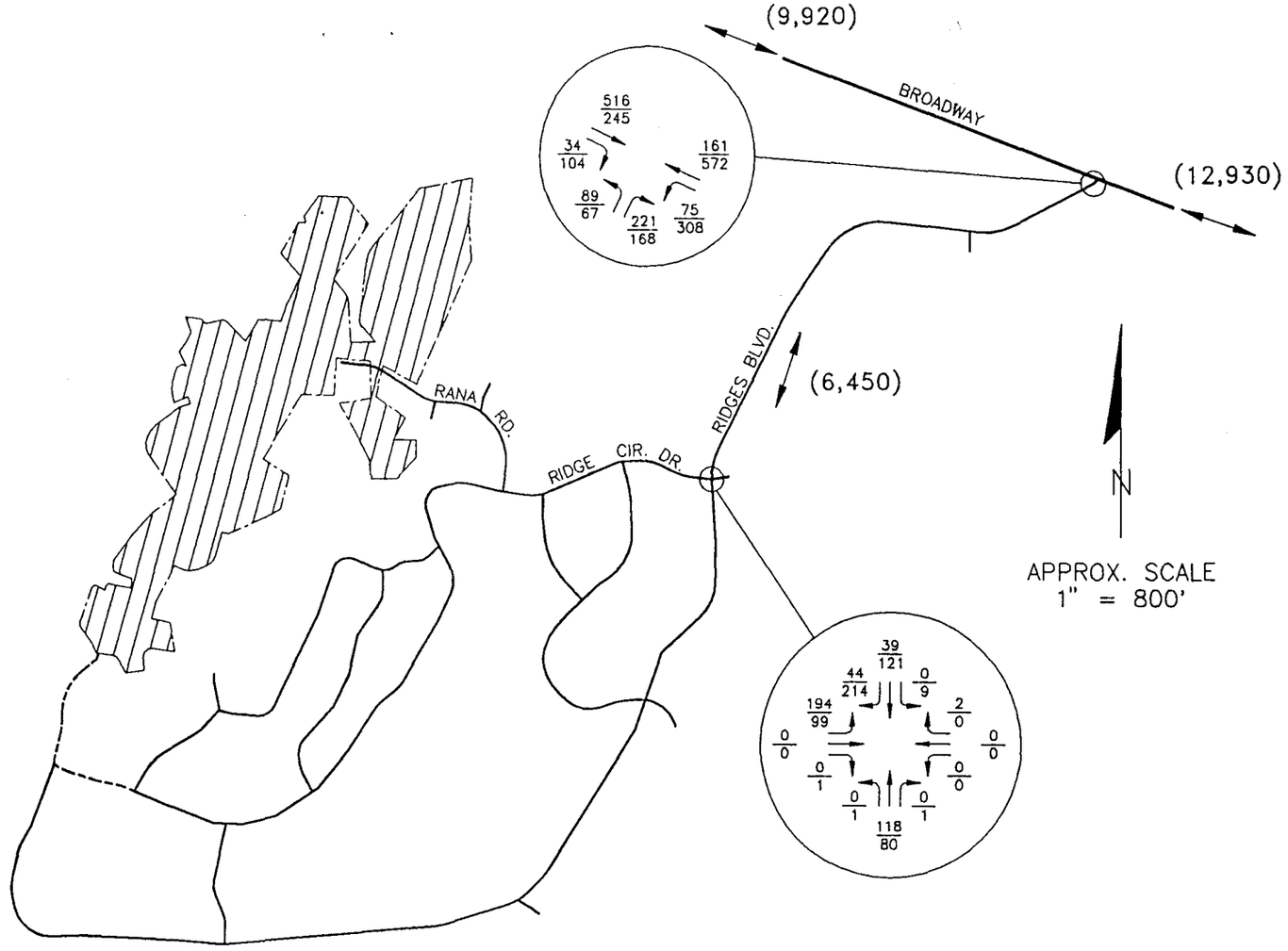
(6,930) = AVERAGE WEEKDAY TRAFFIC

$\frac{91}{75}$ = $\frac{\text{MORNING PEAK-HOUR TRAFFIC}}{\text{EVENING PEAK-HOUR TRAFFIC}}$

FIGURE 4

ESTIMATED 2015 BACKGROUND TRAFFIC

LEIGH, SCOTT & CLEARY, INC.



LEGEND:

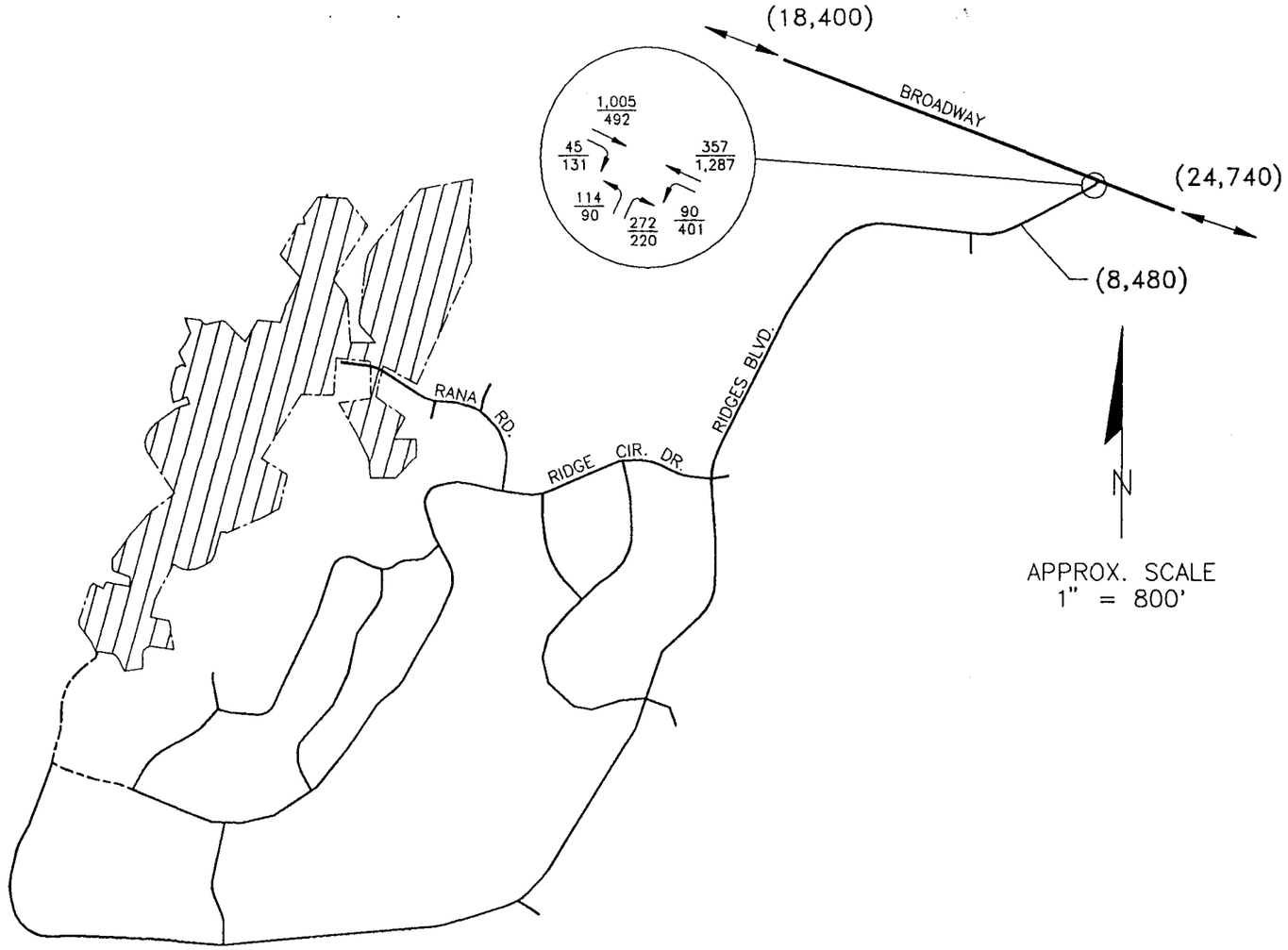
(6,450) = AVERAGE WEEKDAY TRAFFIC

$\frac{89}{67}$ = $\frac{\text{MORNING PEAK-HOUR TRAFFIC}}{\text{EVENING PEAK-HOUR TRAFFIC}}$

FIGURE 5

EXISTING PLUS SITE-GENERATED TRAFFIC

LEIGH, SCOTT & CLEARY, INC.



LEGEND:

(24,740) = AVERAGE WEEKDAY TRAFFIC

$\frac{90}{401}$ = $\frac{\text{MORNING PEAK-HOUR TRAFFIC}}{\text{EVENING PEAK-HOUR TRAFFIC}}$

FIGURE 6

2015 PLUS SITE-GENERATED TRAFFIC

LEIGH, SCOTT & CLEARY, INC.

Table 2
LEVEL OF SERVICE COMPARISONS
The Ridges Subdivision

Ridges Boulevard Intersection	Assumed Traffic	Peak-Hour	Minimum Reserve Capacity	or	Average Intersection Delay (Seconds)	Level of Service
Ridge Circle Drive	Existing	AM	643			A
		PM	613			A
	Existing + Project	AM	538			A
		PM	514			A
Broadway	Existing	AM	1356			D
		PM	35			E
	Existing + Project	AM	112			D
		PM	-6			F
	2015	AM	-42			F
		PM	-57			F
	2015 + Project	AM	-73		(11.9)	F (B)
		PM	-82		(9.9)	F (B)

In all cases, the above Level of Service projections relate to minor street left-turn movements (westbound left at Ridge Circle Drive/Ridges Boulevard and northbound left at Ridges Boulevard/Broadway). The Table 2 values in parentheses are the result of an assumed future traffic signal at Ridges Boulevard and Broadway. Furthermore, all 2015 calculations assume two through lanes in each direction along Broadway. In general, the Table 2 results indicate that the Stop sign controlled Ridge Drive/Ridges Boulevard intersection can easily accommodate the additional traffic to be generated. At Ridges Boulevard and Broadway, however, a traffic signal is likely to be required prior to 2015.

SECTION F

Recommendations and Conclusions

Based on the foregoing analyses, the following recommendations and conclusions are applicable:

1. The proposed 155-home subdivision is projected to generate 775 entering and 775 exiting average weekday vehicle-trips. Of these, 31 would enter and 87 would exit during the morning peak-hour, whereas 104 and 56 will enter and exit during the evening peak-hour.

2. Based on recent traffic counts taken at the Ridges Boulevard/Broadway intersection, the majority (73 percent) of site-generated traffic is expected to be oriented towards the east along Broadway.

3. Buildout of the entire Ridges residential community, including the Ridges Subdivision, is likely to require signalization at the Ridges Boulevard/ Broadway intersection. Installation of this signal should occur when applicable warrants, as defined in the Manual on Uniform Traffic Control Devices, are met.

4. County projections for 2015 traffic indicate a future need for an additional through traffic lane in each direction along Broadway.

5. The existing two-lane local roadway system (Ridges Boulevard, Ridge Circle Drive and Rana Road) can easily accommodate the additional traffic to be generated by buildout of the Ridges Subdivision.

6. Based on the requirements cited in the current edition of the Colorado State Access Code, about 50 feet of additional westbound left-turn lane would be needed to accommodate the traffic associated with buildout of The Ridges. In our opinion, however, the existing 375-foot long left-turn lane is adequate until the highway is widened and signalization is in place.

7. With implementation of the above roadway and traffic improvements, the roadway system in the vicinity of the site can easily accommodate the additional traffic to be generated.

APPENDIX A

Peak-Hour Traffic Counts

COUNTER MEASURES

Site Code :
N-S Street: RIDGES BLVD.
E-W Street: CH-340
:

PAGE: 1
FILE: CH-340

Movements by: Primary

DATE: 2/08/95

Time Begin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
6:30	0	0	0	0	17	2	15	0	3	3	45	0	85
6:45	0	0	0	0	25	2	19	0	13	1	82	0	142
HR TOTAL	0	0	0	0	42	4	34	0	16	4	127	0	227
7:00 AM	0	0	0	0	26	3	37	0	17	2	98	0	183
7:15	0	0	0	0	28	14	37	0	13	6	127	0	225
7:30	0	0	0	0	54	12	53	0	25	9	135	0	288
7:45	0	0	0	0	39	16	23	0	14	6	166	0	264
HR TOTAL	0	0	0	0	147	45	150	0	69	23	526	0	960
8:00 AM	0	0	0	0	40	10	44	0	14	5	88	0	201
8:15	0	0	0	0	40	19	51	0	12	6	89	0	217
Break													
4:00 PM	0	0	0	0	101	40	26	0	9	11	73	0	260
4:15	0	0	0	0	89	45	23	0	10	9	48	0	224
4:30	0	0	0	0	116	42	29	0	5	12	75	0	279
4:45	0	0	0	0	123	57	28	0	8	13	64	0	293
HR TOTAL	0	0	0	0	429	184	106	0	32	45	260	0	1056
5:00 PM	0	0	0	0	130	74	25	0	12	25	61	0	327
5:15	0	0	0	0	147	56	23	0	12	16	57	0	311
5:30	0	0	0	0	149	52	42	0	15	17	66	0	341
5:45	0	0	0	0	146	50	37	0	13	18	61	0	325
HR TOTAL	0	0	0	0	572	232	127	0	52	76	245	0	1304
DAY TOTAL	0	0	0	0	1270	494	512	0	195	159	1335	0	3965

COUNTER MEASURES

Site Code :
N-S Street: RIDGES BLVD.
E-W Street: CH-340
:

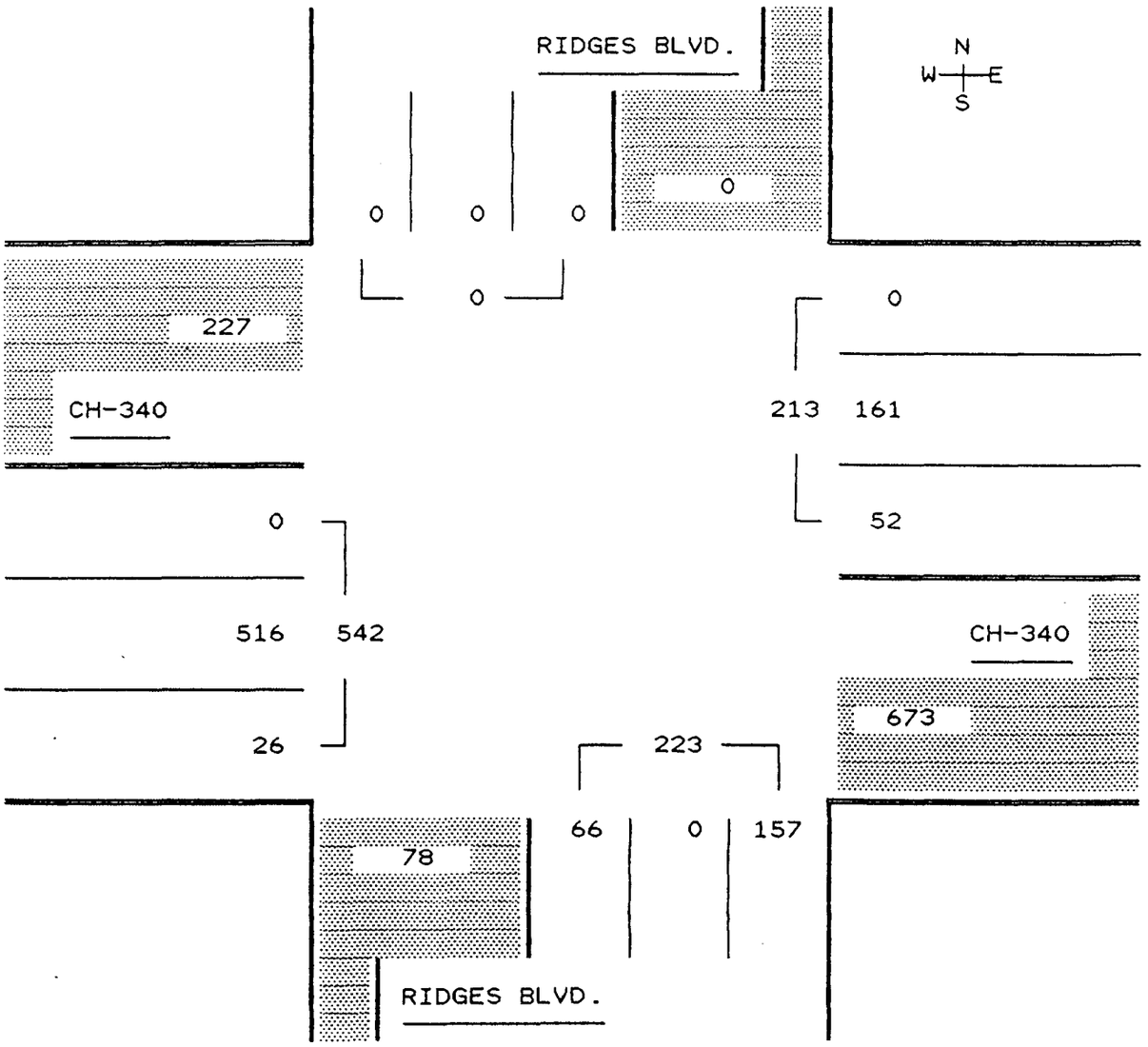
PAGE: 1
FILE: CH-340

Movements by: Primary

DATE: 2/08/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 6:30 AM - 8:30 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	12:00 AM	0.00	0	0	0	0	0	0	0
East	7:30 AM	0.87	0	173	57	230	0	75	25
South	7:30 AM	0.76	171	0	65	236	72	0	28
West	7:00 AM	0.80	23	526	0	549	4	96	0
Entire Intersection									
North	7:15 AM	0.00	0	0	0	0	0	0	0
East		0.81	0	161	52	213	0	76	24
South		0.71	157	0	66	223	70	0	30
West		0.79	26	516	0	542	5	95	0



COUNTER MEASURES

Site Code :
N-S Street: RIDGES BLVD.
E-W Street: CH-340
:

PAGE: 1
FILE: CH-340

Movements by: Primary

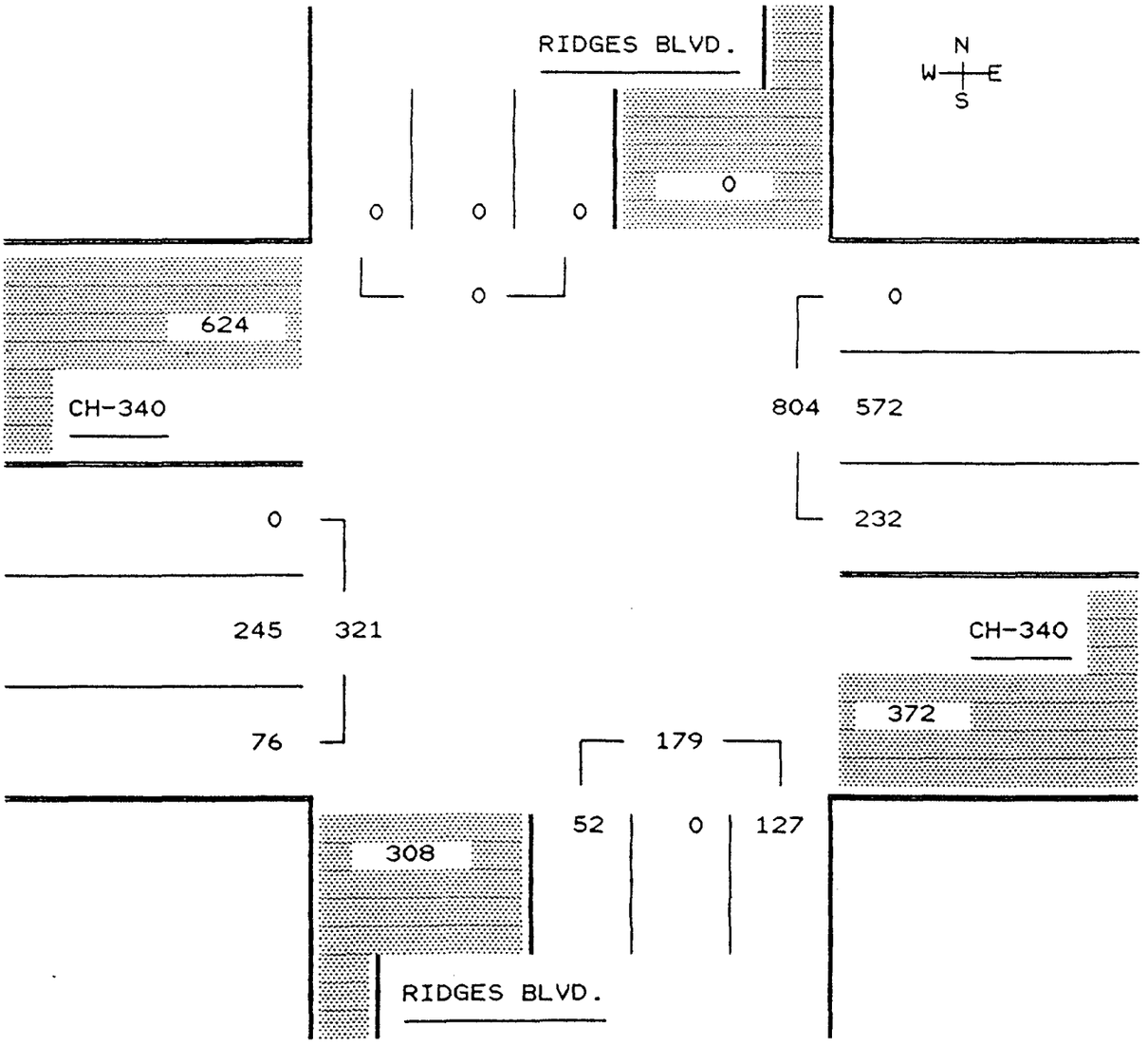
DATE: 2/08/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	4:45 PM	0.00	0	0	0	0	0	0	0
East	5:00 PM	0.99	0	572	232	804	0	71	29
South	5:00 PM	0.79	127	0	52	179	71	0	29
West	4:30 PM	0.93	66	257	0	323	20	80	0

Entire Intersection

North	5:00 PM	0.00	0	0	0	0	0	0	0
East		0.99	0	572	232	804	0	71	29
South		0.79	127	0	52	179	71	0	29
West		0.93	76	245	0	321	24	76	0



COUNTER MEASURES

Site Code :
N-S Street: RIDGES BLVD.
E-W Street: RIDGE DR./DALE CT.
:

PAGE: 1
FILE: RIDGES

Movements by: Primary

DATE: 2/09/95

Time Begin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
6:30	2	4	0	2	0	0	1	11	1	0	0	6	27
6:45	1	6	2	0	0	0	0	15	0	1	0	17	42
HR TOTAL	3	10	2	2	0	0	1	26	1	1	0	23	69
7:00 AM	4	4	1	1	0	0	0	18	0	0	0	18	46
7:15	1	6	0	0	0	0	0	25	0	2	0	25	59
7:30	5	9	0	0	0	0	0	37	0	0	0	23	74
7:45	3	13	0	2	0	0	0	25	0	0	0	44	87
HR TOTAL	13	32	1	3	0	0	0	105	0	2	0	110	266
8:00 AM	1	5	0	0	0	0	0	27	0	0	0	21	54
8:15	4	12	0	0	0	0	0	29	0	0	0	19	64
Break													
4:00 PM	12	20	4	0	1	0	1	6	1	1	1	11	58
4:15	19	16	0	2	0	0	1	13	1	3	2	10	67
4:30	15	15	1	1	0	0	1	12	1	0	0	10	56
4:45	29	21	0	1	0	0	1	12	0	0	0	7	71
HR TOTAL	75	72	5	4	1	0	4	43	3	4	3	38	252
5:00 PM	18	37	1	0	0	0	0	15	0	0	0	10	81
5:15	34	32	2	0	0	0	0	15	0	0	0	10	93
5:30	30	26	4	0	0	0	1	22	0	1	0	11	95
5:45	28	26	2	0	0	0	0	28	1	0	0	12	97
HR TOTAL	110	121	9	0	0	0	1	80	1	1	0	43	366
DAY TOTAL	206	252	17	9	1	0	6	310	5	8	3	254	1071

COUNTER MEASURES

Site Code :
N-S Street: RIDGES BLVD.
E-W Street: RIDGE DR./DALE CT.
:

PAGE: 1
FILE: RIDGES
DATE: 2/09/95

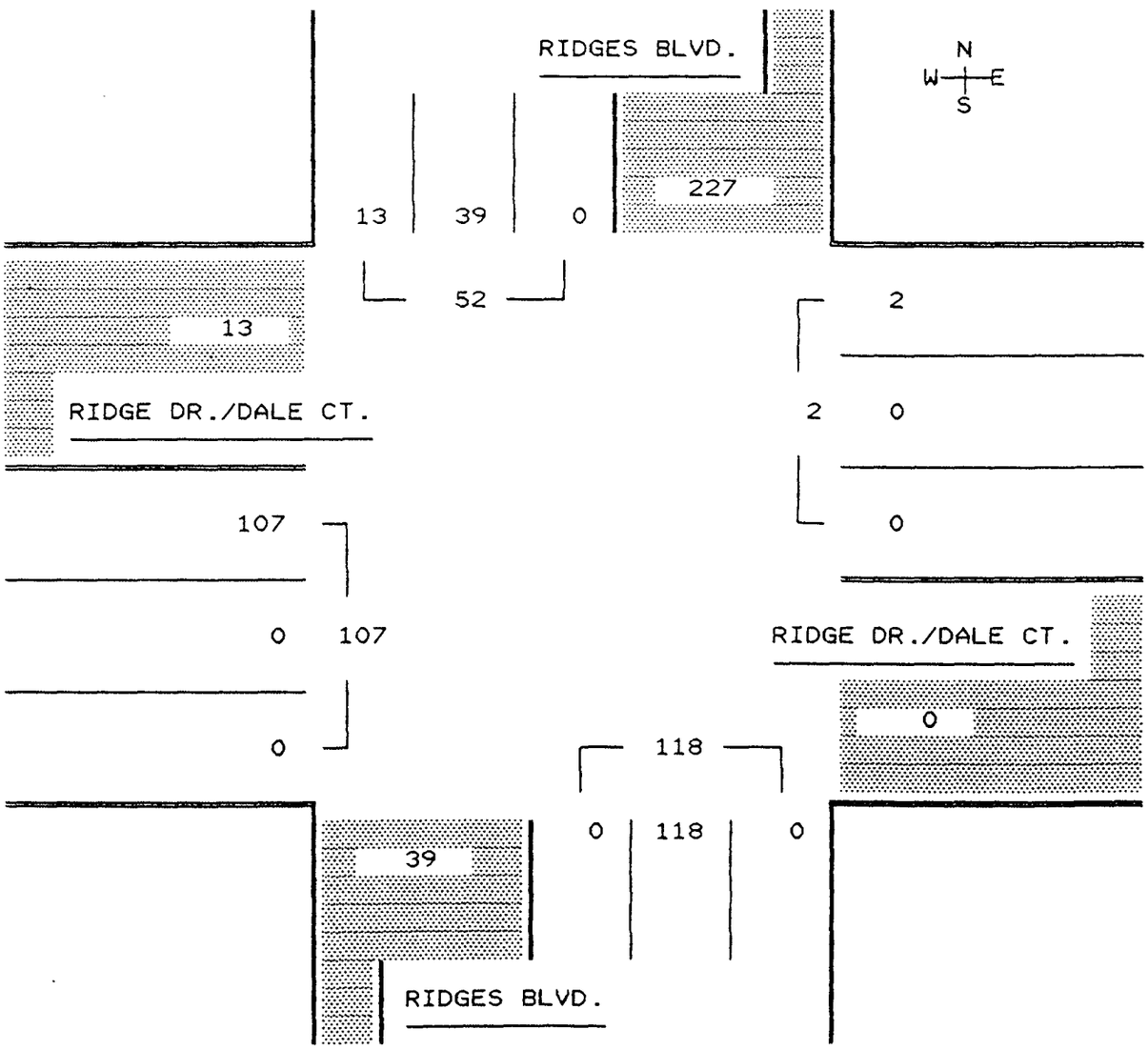
Movements by: Primary

PEAK PERIOD ANALYSIS FOR THE PERIOD: 6:30 AM - 8:30 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	..... VOLUMES ..... Right	Thru	Left	Total	.... PERCENTS ... Right	Thru	Left
North	7:30 AM	0.81	13	39	0	52	25	75	0
East	6:30 AM	0.38	3	0	0	3	%100	0	0
South	7:30 AM	0.80	0	118	0	118	0	%100	0
West	7:15 AM	0.65	2	0	113	115	2	0	98

Entire Intersection

North	7:30 AM	0.81	13	39	0	52	25	75	0
East		0.25	2	0	0	2	%100	0	0
South		0.80	0	118	0	118	0	%100	0
West		0.61	0	0	107	107	0	0	%100



COUNTER MEASURES

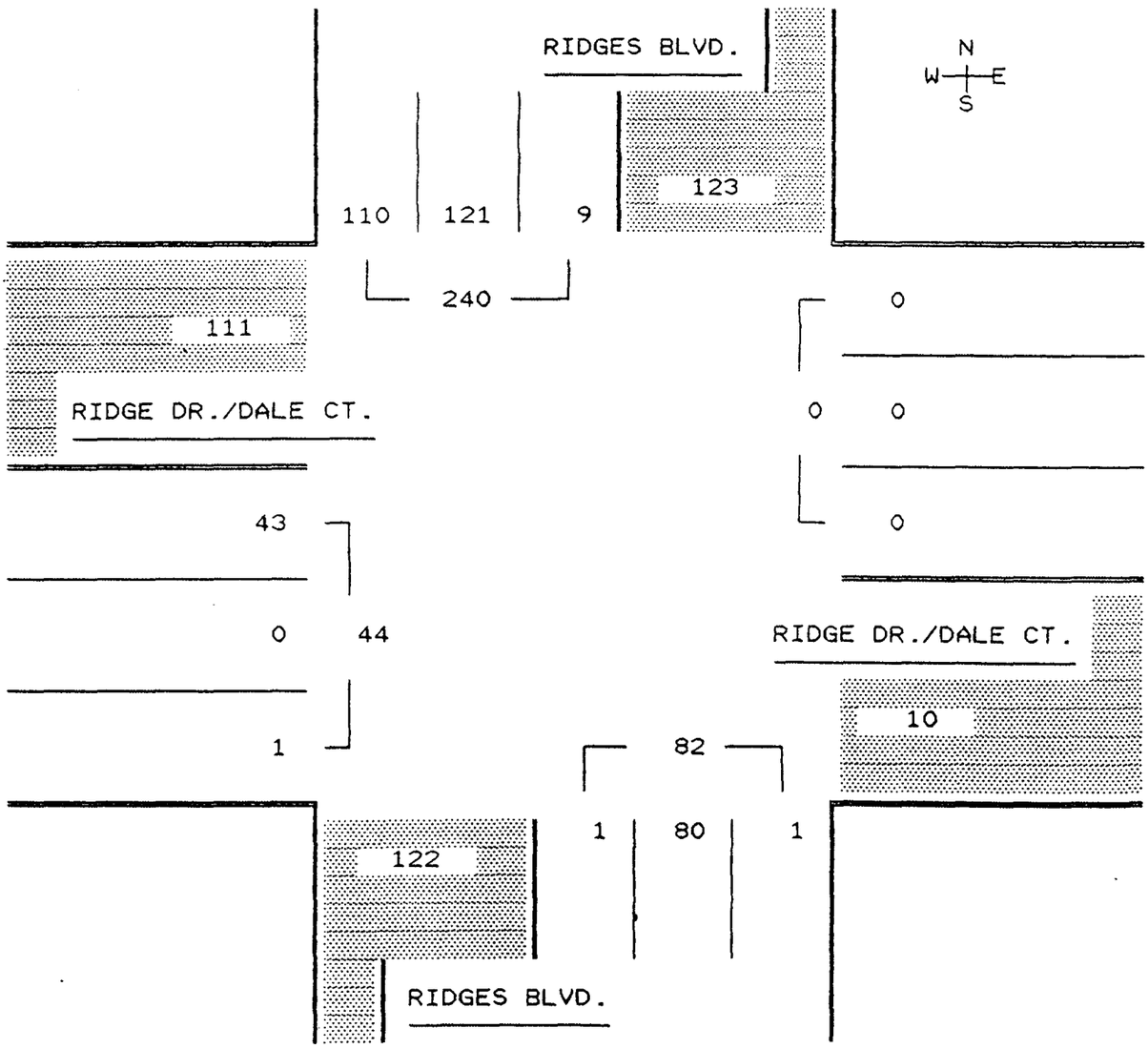
Site Code :
N-S Street: RIDGES BLVD.
E-W Street: RIDGE DR./DALE CT.
:

PAGE: 1
FILE: RIDGES
DATE: 2/09/95

Movements by: Primary

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	5:00 PM	0.88	110	121	9	240	46	50	4
East	4:00 PM	0.63	4	1	0	5	80	20	0
South	5:00 PM	0.71	1	80	1	82	1	98	1
West	4:00 PM	0.75	4	3	38	45	9	7	84
Entire Intersection									
North	5:00 PM	0.88	110	121	9	240	46	50	4
East		0.00	0	0	0	0	0	0	0
South		0.71	1	80	1	82	1	98	1
West		0.92	1	0	43	44	2	0	98



APPENDIX B

Capacity Calculation Printouts

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 30

PEAK HOUR FACTOR..... 1

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... RIDGES DR./DALE CT.

NAME OF THE NORTH/SOUTH STREET..... RIDGES BLVD.

NAME OF THE ANALYST..... MRM

DATE OF THE ANALYSIS (mm/dd/yy)..... 02-16-1995

TIME PERIOD ANALYZED..... AM PEAK

OTHER INFORMATION.... EXISTING TRAFFIC

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	107	0	0	0
THRU	0	0	118	39
RIGHT	0	2	0	13

NUMBER OF LANES AND LANE USAGE

	EB	WB	NB	SB
LANES	1	1	1	1
LANE USAGE	LTR	LTR		

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	1	0
WESTBOUND	4	1	0
NORTHBOUND	4	1	0
SOUTHBOUND	4	1	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS					
	EB	5.50	5.50	0.00	5.50
	WB	5.50	5.50	0.00	5.50
MAJOR LEFTS					
	SB	5.00	5.00	0.00	5.00
	NB	5.00	5.00	0.00	5.00
MINOR THROUGHS					
	EB	6.00	6.00	0.00	6.00
	WB	6.00	6.00	0.00	6.00
MINOR LEFTS					
	EB	6.50	6.50	0.00	6.50
	WB	6.50	6.50	0.00	6.50

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... RIDGES DR./DALE CT.
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; AM PEAK
OTHER INFORMATION.... EXISTING TRAFFIC

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M		SHARED CAPACITY c (pcph) SH		RESERVE CAPACITY c = c - v R SH		LOS
MINOR STREET									
EB LEFT	110	755	754	>	754	>	643	>	A
THROUGH	0	832	832	> 754	832	> 643	832	>A	A
RIGHT	0	998	998	>	998	>	998	>	A
MINOR STREET									
WB LEFT	0	750	750	>	750	>	750	>	A
THROUGH	0	825	825	> 976	825	> 974	825	>A	A
RIGHT	2	976	976	>	976	>	974	>	A
MAJOR STREET									
SB LEFT	0	997	997		997		997		A
NB LEFT	0	1000	1000		1000		1000		A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... RIDGES DR./DALE CT.
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; AM PEAK
OTHER INFORMATION.... EXISTING TRAFFIC

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 30

PEAK HOUR FACTOR..... 1

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... RIDGES DR./DALE CT.

NAME OF THE NORTH/SOUTH STREET..... RIDGES BLVD.

NAME OF THE ANALYST..... MRM

DATE OF THE ANALYSIS (mm/dd/yy)..... 02-16-1995

TIME PERIOD ANALYZED..... PM PEAK

OTHER INFORMATION.... EXISTING TRAFFIC

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	43	0	1	9
THRU	0	0	80	121
RIGHT	1	1	1	110

NUMBER OF LANES AND LANE USAGE

	EB	WB	NB	SB
LANES	1	1	1	1
LANE USAGE	LTR	LTR		

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	1	0
WESTBOUND	4	1	0
NORTHBOUND	4	1	0
SOUTHBOUND	4	1	0

CRITICAL GAPS

	TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS				
EB	5.50	5.50	0.00	5.50
WB	5.50	5.50	0.00	5.50
MAJOR LEFTS				
SB	5.00	5.00	0.00	5.00
NB	5.00	5.00	0.00	5.00
MINOR THROUGHS				
EB	6.00	6.00	0.00	6.00
WB	6.00	6.00	0.00	6.00
MINOR LEFTS				
EB	6.50	6.50	0.00	6.50
WB	6.50	6.50	0.00	6.50

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... RIDGES DR./DALE CT.
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; PM PEAK
OTHER INFORMATION.... EXISTING TRAFFIC

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
EB LEFT	44	662	658	> 658	> 613	> A
THROUGH	0	738	733	> 662	733 > 617	733 >A A
RIGHT	1	915	915	> 915	> 914	> A
MINOR STREET						
WB LEFT	0	618	614	> 614	> 614	> A
THROUGH	0	691	686	> 996	686 > 995	686 >A A
RIGHT	1	996	996	> 996	> 995	> A
MAJOR STREET						
SB LEFT	9	1000	1000	1000	991	A
NB LEFT	1	956	956	956	955	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... RIDGES DR./DALE CT.
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; PM PEAK
OTHER INFORMATION.... EXISTING TRAFFIC

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 30

PEAK HOUR FACTOR..... 1

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... RIDGES DR./DALE CT.

NAME OF THE NORTH/SOUTH STREET..... RIDGES BLVD.

NAME OF THE ANALYST..... MRM

DATE OF THE ANALYSIS (mm/dd/yy)..... 02-16-1995

TIME PERIOD ANALYZED..... AM PEAK

OTHER INFORMATION.... EXISTING PLUS SITE-GENERATED TRAFFIC

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	194	0	0	0
THRU	0	0	118	39
RIGHT	0	2	0	44

NUMBER OF LANES AND LANE USAGE

	EB	WB	NB	SB
LANES	1	1	1	1
LANE USAGE	LTR	LTR		

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	1	0
WESTBOUND	4	1	0
NORTHBOUND	4	1	0
SOUTHBOUND	4	1	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS					
	EB	5.50	5.50	0.00	5.50
	WB	5.50	5.50	0.00	5.50
MAJOR LEFTS					
	SB	5.00	5.00	0.00	5.00
	NB	5.00	5.00	0.00	5.00
MINOR THROUGHS					
	EB	6.00	6.00	0.00	6.00
	WB	6.00	6.00	0.00	6.00
MINOR LEFTS					
	EB	6.50	6.50	0.00	6.50
	WB	6.50	6.50	0.00	6.50

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... RIDGES DR./DALE CT.
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; AM PEAK
OTHER INFORMATION.... EXISTING PLUS SITE-GENERATED TRAFFIC

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
EB LEFT	200	739	738	738	538	A
THROUGH	0	816	816	738 816	538 816	A A
RIGHT	0	997	997	997	997	A
MINOR STREET						
WB LEFT	0	719	719	719	719	A
THROUGH	0	794	794	976 794	974 794	A A
RIGHT	2	976	976	976	974	A
MAJOR STREET						
SB LEFT	0	997	997	997	997	A
NB LEFT	0	1000	1000	1000	1000	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... RIDGES DR./DALE CT.
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; AM PEAK
OTHER INFORMATION.... EXISTING PLUS SITE-GENERATED TRAFFIC

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 30

PEAK HOUR FACTOR..... 1

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... RIDGES DR./DALE CT.

NAME OF THE NORTH/SOUTH STREET..... RIDGES BLVD.

NAME OF THE ANALYST..... MRM

DATE OF THE ANALYSIS (mm/dd/yy)..... 02-16-1995

TIME PERIOD ANALYZED..... PM PEAK

OTHER INFORMATION.... EXISTING PLUS SITE-GENERATED TRAFFIC

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: 4-LEG

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE EASTBOUND: STOP SIGN

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	99	0	1	9
THRU	0	0	80	121
RIGHT	1	1	1	214

NUMBER OF LANES AND LANE USAGE

	EB	WB	NB	SB
LANES	1	1	1	1
LANE USAGE	LTR	LTR		

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	1	0
WESTBOUND	4	1	0
NORTHBOUND	4	1	0
SOUTHBOUND	4	1	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS					
	EB	5.50	5.50	0.00	5.50
	WB	5.50	5.50	0.00	5.50
MAJOR LEFTS					
	SB	5.00	5.00	0.00	5.00
	NB	5.00	5.00	0.00	5.00
MINOR THROUGHS					
	EB	6.00	6.00	0.00	6.00
	WB	6.00	6.00	0.00	6.00
MINOR LEFTS					
	EB	6.50	6.50	0.00	6.50
	WB	6.50	6.50	0.00	6.50

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... RIDGES DR./DALE CT.
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; PM PEAK
OTHER INFORMATION.... EXISTING PLUS SITE-GENERATED TRAFFIC

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M		SHARED CAPACITY c (pcph) SH		RESERVE CAPACITY c = c - v R SH		LOS
MINOR STREET									
EB LEFT	102	620	616	>	616	>	514	>	A
THROUGH	0	693	689	> 617	689	> 514	689	>A	A
RIGHT	1	862	862	>	862	>	861	>	A
MINOR STREET									
WB LEFT	0	542	538	>	538	>	538	>	A
THROUGH	0	602	598	> 996	598	> 995	598	>A	A
RIGHT	1	996	996	>	996	>	995	>	A
MAJOR STREET									
SB LEFT	9	1000	1000		1000		991		A
NB LEFT	1	857	857		857		856		A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... RIDGES DR./DALE CT.
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; PM PEAK
OTHER INFORMATION.... EXISTING PLUS SITE-GENERATED TRAFFIC

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 45

PEAK HOUR FACTOR..... 1

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BROADWAY

NAME OF THE NORTH/SOUTH STREET..... RIDGES BLVD.

NAME OF THE ANALYST..... MRM

DATE OF THE ANALYSIS (mm/dd/yy)..... 02-16-1995

TIME PERIOD ANALYZED..... AM PEAK

OTHER INFORMATION.... EXISTING TRAFFIC

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	52	66	--
THRU	516	161	0	--
RIGHT	26	0	157	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	1	2	--

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	1	0
WESTBOUND	4	1	0
NORTHBOUND	4	1	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.10	6.10	0.00	6.10
MAJOR LEFTS	WB	5.80	5.80	0.00	5.80
MINOR LEFTS	NB	7.90	7.90	0.00	7.90

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; AM PEAK
OTHER INFORMATION.... EXISTING TRAFFIC

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	68	237	224	224	156	D
RIGHT	162	720	720	720	558	A
MAJOR STREET						
WB LEFT	54	551	551	551	498	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; AM PEAK
OTHER INFORMATION.... EXISTING TRAFFIC

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 45

PEAK HOUR FACTOR..... 1

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BROADWAY

NAME OF THE NORTH/SOUTH STREET..... RIDGES BLVD.

NAME OF THE ANALYST..... MRM

DATE OF THE ANALYSIS (mm/dd/yy)..... 02-16-1995

TIME PERIOD ANALYZED..... PM PEAK

OTHER INFORMATION.... EXISTING TRAFFIC

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	232	52	--
THRU	245	572	0	--
RIGHT	76	0	127	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	1	2	--

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	1	0
WESTBOUND	4	1	0
NORTHBOUND	4	1	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.10	6.10	0.00	6.10
MAJOR LEFTS	WB	5.80	5.80	0.00	5.80
MINOR LEFTS	NB	7.90	7.90	0.00	7.90

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; PM PEAK
OTHER INFORMATION.... EXISTING TRAFFIC

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	54	120	89	89	35	E
RIGHT	131	820	820	820	689	A
MAJOR STREET						
WB LEFT	239	723	723	723	484	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; PM PEAK
OTHER INFORMATION.... EXISTING TRAFFIC

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 45

PEAK HOUR FACTOR..... 1

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BROADWAY

NAME OF THE NORTH/SOUTH STREET..... RIDGES BLVD.

NAME OF THE ANALYST..... MRM

DATE OF THE ANALYSIS (mm/dd/yy)..... 02-16-1995

TIME PERIOD ANALYZED..... AM PEAK

OTHER INFORMATION.... EXISTING PLUS SITE-GENERATED TRAFFIC

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	75	89	--
THRU	516	161	0	--
RIGHT	34	0	221	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	1	2	--

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	1	0
WESTBOUND	4	1	0
NORTHBOUND	4	1	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.10	6.10	0.00	6.10
MAJOR LEFTS	WB	5.80	5.80	0.00	5.80
MINOR LEFTS	NB	7.90	7.90	0.00	7.90

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; AM PEAK
OTHER INFORMATION.... EXISTING PLUS SITE-GENERATED TRAFFIC

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	92	225	204	204	112	D
RIGHT	228	716	716	716	489	A
MAJOR STREET						
WB LEFT	77	546	546	546	468	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; AM PEAK
OTHER INFORMATION.... EXISTING PLUS SITE-GENERATED TRAFFIC

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 45

PEAK HOUR FACTOR..... 1

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BROADWAY

NAME OF THE NORTH/SOUTH STREET..... RIDGES BLVD.

NAME OF THE ANALYST..... MRM

DATE OF THE ANALYSIS (mm/dd/yy)..... 02-16-1995

TIME PERIOD ANALYZED..... PM PEAK

OTHER INFORMATION.... EXISTING PLUS SITE-GENERATED TRAFFIC

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	308	67	--
THRU	245	572	0	--
RIGHT	104	0	168	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	1	2	--

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	1	0
WESTBOUND	4	1	0
NORTHBOUND	4	1	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.10	6.10	0.00	6.10
MAJOR LEFTS	WB	5.80	5.80	0.00	5.80
MINOR LEFTS	NB	7.90	7.90	0.00	7.90

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; PM PEAK
OTHER INFORMATION.... EXISTING PLUS SITE-GENERATED TRAFFIC

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	69	100	63	63	-6	F
RIGHT	173	806	806	806	632	A
MAJOR STREET						
WB LEFT	317	698	698	698	381	B

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; PM PEAK
OTHER INFORMATION.... EXISTING PLUS SITE-GENERATED TRAFFIC

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 45

PEAK HOUR FACTOR..... 1

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BROADWAY

NAME OF THE NORTH/SOUTH STREET..... RIDGES BLVD.

NAME OF THE ANALYST..... MRM

DATE OF THE ANALYSIS (mm/dd/yy)..... 02-16-1995

TIME PERIOD ANALYZED..... AM PEAK

OTHER INFORMATION.... 2015 TRAFFIC

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	67	91	--
THRU	1005	357	0	--
RIGHT	37	0	208	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	3	3	2	--

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	1	0
WESTBOUND	4	1	0
NORTHBOUND	4	1	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.10	6.10	0.00	6.10
MAJOR LEFTS	WB	5.80	5.80	0.00	5.80
MINOR LEFTS	NB	7.90	7.90	0.00	7.90

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; AM PEAK
OTHER INFORMATION.... 2015 TRAFFIC

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	94	63	52	52	-42	F
RIGHT	214	648	648	648	434	A
MAJOR STREET						
WB LEFT	69	280	280	280	210	C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; AM PEAK
OTHER INFORMATION.... 2015 TRAFFIC

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 45

PEAK HOUR FACTOR..... 1

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BROADWAY

NAME OF THE NORTH/SOUTH STREET..... RIDGES BLVD.

NAME OF THE ANALYST..... MRM

DATE OF THE ANALYSIS (mm/dd/yy)..... 02-16-1995

TIME PERIOD ANALYZED..... PM PEAK

OTHER INFORMATION.... 2015 TRAFFIC

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	325	75	--
THRU	492	1287	0	--
RIGHT	103	0	179	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	3	3	2	--

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	1	0
WESTBOUND	4	1	0
NORTHBOUND	4	1	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.10	6.10	0.00	6.10
MAJOR LEFTS	WB	5.80	5.80	0.00	5.80
MINOR LEFTS	NB	7.90	7.90	0.00	7.90

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; PM PEAK
OTHER INFORMATION.... 2015 TRAFFIC

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	77	48	21	21	-57	F
RIGHT	184	767	767	767	582	A
MAJOR STREET						
WB LEFT	335	514	514	514	179	D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; PM PEAK
OTHER INFORMATION.... 2015 TRAFFIC

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 45

PEAK HOUR FACTOR..... 1

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BROADWAY

NAME OF THE NORTH/SOUTH STREET..... RIDGES BLVD.

NAME OF THE ANALYST..... MRM

DATE OF THE ANALYSIS (mm/dd/yy)..... 02-16-1995

TIME PERIOD ANALYZED..... AM PEAK

OTHER INFORMATION.... 2015 PLUS SITE-GENERATED TRAFFIC

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	90	114	--
THRU	1005	357	0	--
RIGHT	45	0	272	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	3	3	2	--

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	------	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	1	0
WESTBOUND	4	1	0
NORTHBOUND	4	1	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.10	6.10	0.00	6.10
MAJOR LEFTS	WB	5.80	5.80	0.00	5.80
MINOR LEFTS	NB	7.90	7.90	0.00	7.90

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; AM PEAK
OTHER INFORMATION.... 2015 PLUS SITE-GENERATED TRAFFIC

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	117	61	45	45	-73	F
RIGHT	280	645	645	645	365	B
MAJOR STREET						
WB LEFT	93	277	277	277	184	D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; AM PEAK
OTHER INFORMATION.... 2015 PLUS SITE-GENERATED TRAFFIC

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 45

PEAK HOUR FACTOR..... 1

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BROADWAY

NAME OF THE NORTH/SOUTH STREET..... RIDGES BLVD.

NAME OF THE ANALYST..... MRM

DATE OF THE ANALYSIS (mm/dd/yy)..... 02-16-1995

TIME PERIOD ANALYZED..... PM PEAK

OTHER INFORMATION.... 2015 PLUS SITE-GENERATED TRAFFIC

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	401	90	--
THRU	492	1287	0	--
RIGHT	131	0	220	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	3	3	2	--

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	1	0
WESTBOUND	4	1	0
NORTHBOUND	4	1	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.10	6.10	0.00	6.10
MAJOR LEFTS	WB	5.80	5.80	0.00	5.80
MINOR LEFTS	NB	7.90	7.90	0.00	7.90

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; PM PEAK
OTHER INFORMATION.... 2015 PLUS SITE-GENERATED TRAFFIC

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	93	48	10	10	-82	F
RIGHT	227	755	755	755	528	A
MAJOR STREET						
WB LEFT	413	496	496	496	83	E

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BROADWAY
NAME OF THE NORTH/SOUTH STREET.... RIDGES BLVD.
DATE AND TIME OF THE ANALYSIS..... 02-16-1995 ; PM PEAK
OTHER INFORMATION.... 2015 PLUS SITE-GENERATED TRAFFIC

HCM: SIGNALIZED INTERSECTION SUMMARY 02-16-1995

Leigh, Scott & Cleary, Inc.

Streets: (N-S) RIDGES BLVD. (E-W) BROADWAY
Analyst: MRM File Name: RSX2AM.HC9
Area Type: Other 2-16-95 AM PEAK
Comment: 2015 PLUS SITE-GENERATED TRAFFIC

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1					2	1	1	2	
Volumes	114	1	272					1005	45	90	357	
Lane Width	12.0	12.0	12.0					12.0	12.0	12.0	12.0	
RTOR Vols			54						9			0

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
NB Left	*				EB Left				
Thru	*				Thru	*			
Right	*				Right	*			
Peds					Peds				
SB Left					WB Left	*	*		
Thru					Thru	*	*		
Right					Right				
Peds					Peds				
EB Right					NB Right		*		
WB Right					SB Right				
Green	32.0A				Green	40.0P	6.0A		
Yellow/A-R	4.0				Yellow/A-	4.0	4.0		
Lost Time	3.0				Lost Time	2.0	3.0		

Cycle Length: 90.0 secsPhase combination order: #1 #5 #6

Intersection Performance Summary

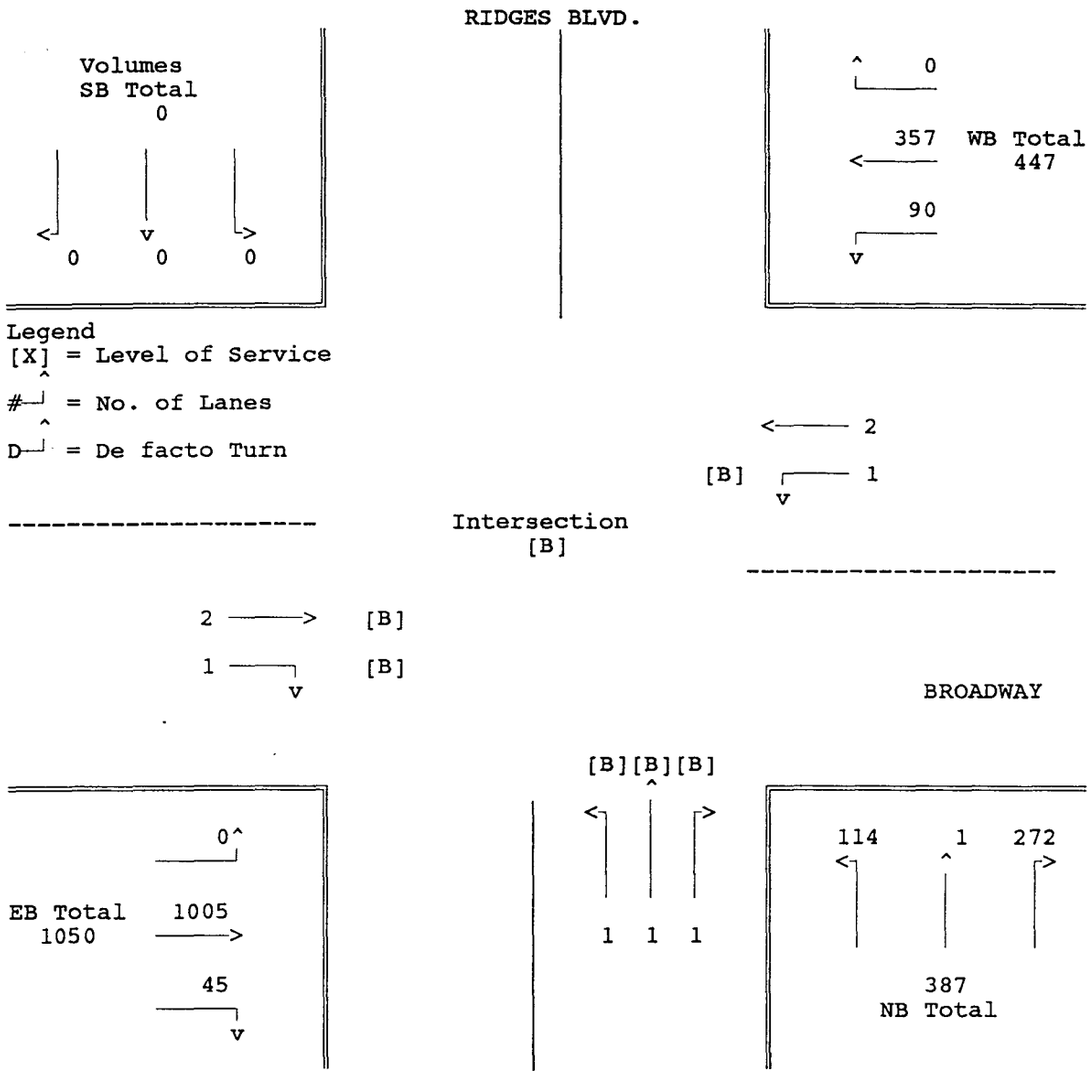
	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
NB	L	690	1881	0.17	0.37	14.7	B	12.2	B
	T	726	1980	0.00	0.37	13.7	B		
	R	804	1683	0.28	0.48	10.9	B		
EB	T	1848	3960	0.60	0.47	13.9	B	13.8	B
	R	785	1683	0.05	0.47	10.0	B		
WB	L	146	1881	0.42	0.57	9.5	B	7.3	B
	T	2288	3960	0.17	0.58	6.8	B		

Intersection Delay = 11.9 sec/veh Intersection LOS = B

Lost Time/Cycle, L = 5.0 sec Critical v/c(x) = 0.441

INTERSECTION DIAGRAM

Intersection: RIDGES BLVD. and BROADWAY
Time period: AM PEAK



HCM: SIGNALIZED INTERSECTION SUMMARY 02-16-1995

Leigh, Scott & Cleary, Inc.

Streets: (N-S) RIDGES BLVD. (E-W) BROADWAY
Analyst: MRM File Name: RSX2PM.HC9
Area Type: Other 2-16-95 PM PEAK
Comment: 2015 PLUS SITE-GENERATED TRAFFIC

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	1					2	1	1	2	
Volumes	90		1 220					492	131	401	1287	
Lane Width	12.0	12.0	12.0					12.0	12.0	12.0	12.0	
RTOR Vols			55						26			0

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
NB Left	*				EB Left			
Thru	*				Thru	*		
Right	*				Right	*		
Peds					Peds			
SB Left					WB Left	*	*	
Thru					Thru	*	*	
Right					Right			
Peds					Peds			
EB Right					NB Right		*	
WB Right					SB Right			
Green	26.0A				Green	37.0P	15.0A	
Yellow/A-R	4.0				Yellow/A-	4.0	4.0	
Lost Time	3.0				Lost Time	2.0	3.0	

Cycle Length: 90.0 secs Phase combination order: #1 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
NB	L	564	1881	0.17	0.30	17.7	C	12.2	B
	T	594	1980	0.00	0.30	16.8	C		
	R	860	1683	0.20	0.51	9.1	B		
EB	T	1716	3960	0.32	0.43	12.8	B	12.6	B
	R	729	1683	0.15	0.43	11.8	B		
WB	L	334	1881	0.73	0.63	14.1	B	8.6	B
	T	2552	3960	0.56	0.64	7.0	B		

Intersection Delay = 9.9 sec/veh Intersection LOS = B

Lost Time/Cycle, L = 5.0 sec Critical v/c(x) = 0.434

INTERSECTION DIAGRAM

Intersection: RIDGES BLVD. and BROADWAY
Time period: PM PEAK

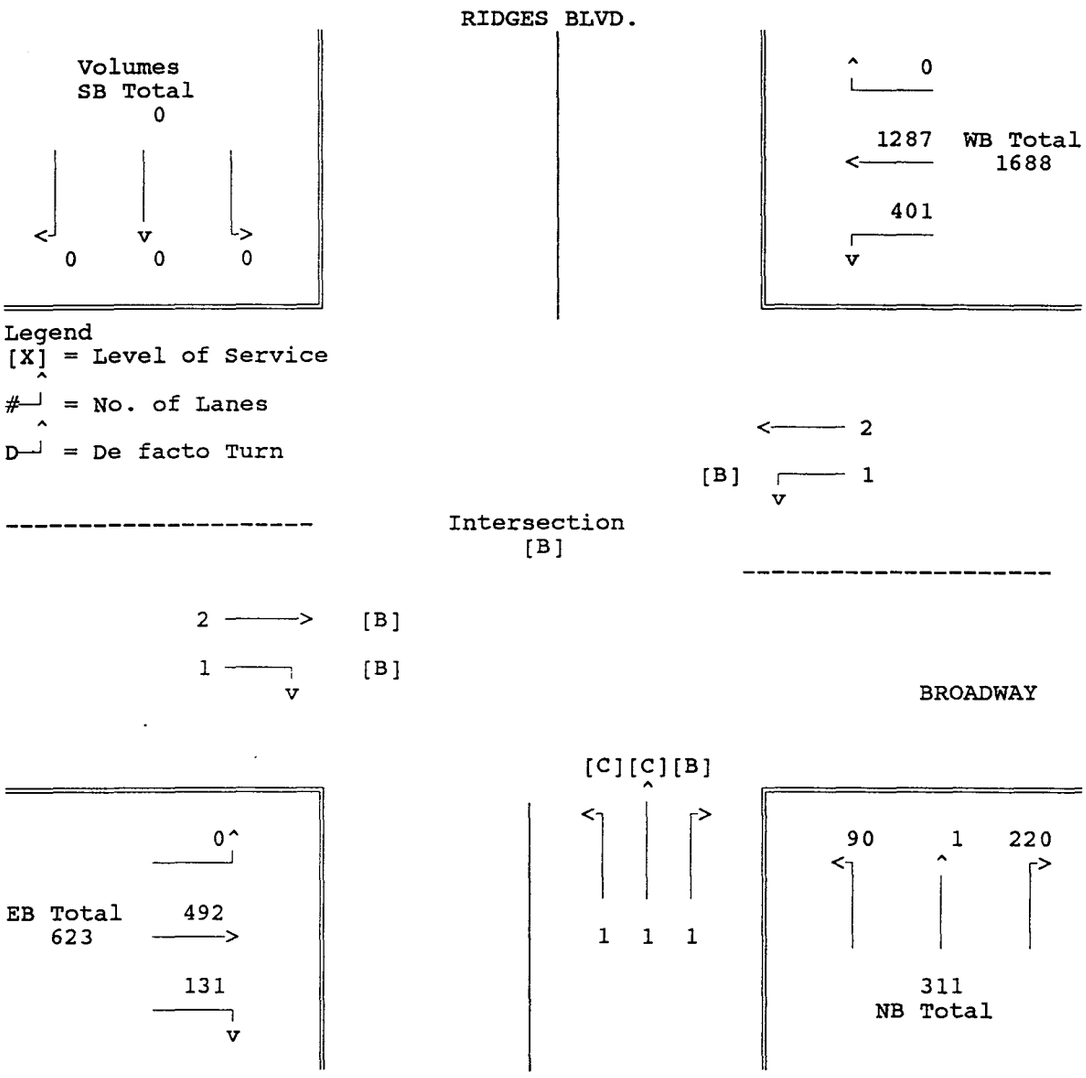


EXHIBIT "B"

THOMPSON-LANGFORD CORPORATION
ENGINEERING AND LAND SURVEYING
Independence Plaza
529 25 1/2 Rd., Suite B 210
Grand Junction, CO 81505
PH. 243-6067

October 24, 1995

Mr. Hank Masterson
Grand Junction Fire Dept.
330 Sou. 6th Street
Grand Junction, CO 81501

Re: Cobblestone Ridges, City File #PP-95-178

Dear Hank:

Mike and I would like to thank you again for giving us the quick lesson in doing a flow test. Based on the results of the test (1175 gpm at 64 psi residual), I calculated a new residual at our upper most hydrant at 500 gpm of 49 psi. I understood your minimum to be a 20 psi residual at 500 gpm.

The utility composite you requested will be provided in the set of construction drawings at the Final Plat stage. The main waterline in Rana Road will be stubbed out at the end of this project for eventual connection/looping back to the Ridges distribution system in later phases.

I trust this satisfies your concerns expressed in your review comments. If you have any further questions or need additional information, please give me a call.

Respectfully,

James E. Langford, PE & LS

JEL/iml

cc: Steve Craven

10/24/95
Cobblestone Ridge
Fire Flow

Jim L.

Flow Test @ entr. to project 1175 gpm @ 64 psi

Calculation of pressure at upper hydrant @ 500 gpm

$$\frac{P_1}{\gamma} + Z_1 + \frac{V_1^2}{2g} = \frac{P_2}{\gamma} + Z_2 + \frac{V_2^2}{2g} + h_L$$

1175 gpm in 8" pipe = 7.51 fps
500 gpm in " " = 3.18 fps with $h_{L_{8"pipe}} = 0.83'/100'$
$\gamma_{water} = 62.4$ pcf
$h_{L_{Tees}} = 33'$ pipe each

731 LF of water main w/ 4 Tees to upper hydrant

$\therefore h_L = \left(\frac{731 + 4(43)}{100}\right) 0.83 = 7.49'$ head

$$\frac{64 psi\,(144\ sf/si)}{62.4 pcf} + 4732 + \frac{(7.51 fps)^2}{2(32.2 fps^2)} = \frac{P_2(144)}{62.4 pcf} + 4761 + \frac{(3.18 fps)^2}{2(32.2 fps^2)} + 7.49$$

$$4880.57 = \frac{P_2(144)}{62.4} + 4768.65$$

$$48.49 psi = P_2$$

At 500 gpm, we will have 48.49 psi residual

OK!

EXHIBIT C

Barnes Geologic Consulting, Inc.
2325 Elderberry Court
Grand Junction, CO 81506

October 25, 1995

Thompson-Langford Corporation
529½ Road, Suite B210
Grand Junction, CO 81505

Dear Sirs:

As requested by Mr. Gary Hamacher of Western Colorado Testing Inc., I have prepared the following responses to the concerns numbered 8 and 9 by Ms. Kathy Portner on page 3 of the Review Comments dated 10-17-95 -- The Ridges - Filing No. 6.

8. The Geologic Hazards Report mentions a minor potential of mud and debris being carried by thunderstorm runoff onto lots which abut against steeper slopes. Lots 44, 45, and 46 at the west end of Butte Court and Lots 55 and 56 on Duke Court abut against 30 to 60 percent slopes where storm flows could erode soil and rock, and deposit the debris onto a developed lot. Although such an event would be expected to occur infrequently, damage could occur to lawns, patios, pools, etc. Protection against such a debris flow can be provided by small diversion ditches or other means to divert the debris flow away from the lots.

No areas exist where rockfalls are considered a hazard to the proposed lots. Although ledges of Dakota sandstone do occur in the western portion of the proposed subdivision, the distance of about 100 to 150 feet from the outcrops to the lots will not allow tumbling rocks to reach the lots.

The sandstone tends to break into blocky, somewhat cubical shapes, due to the rock separating along bedding planes and vertical joints. The loose rocks presently existing below the ledges can be observed to have only moved a few feet before stopping.

9. Only minor flood runoff is possible along the small gullies trending through the west portion of the proposed subdivision due to the limited drainage basin. This potential hazard will be mitigated by designing the streets to convey the storm runoff, and by sloping the lots towards the streets.

Joe G. Barnes

Joe Barnes, President
Engineering Geologist

Copy to: Western Colorado Testing Inc., Attn: Gary Hamacher

REVIEW COMMENTS

FILE #PP-95-178 **TITLE HEADING:** Preliminary Plan - Cobblestone Ridges Subdivision

LOCATION: undeveloped areas of The Ridges, Filing #6

PETITIONER: Dynamic Investments

PETITIONER'S ADDRESS/TELEPHONE: P.O. Box 3003
Telluride, CO 81435
728-5599

PETITIONER'S REPRESENTATIVE: Steve Craven, Cobblestone Communities
Mike Thompson, 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., OCTOBER 26, 1995.

U.S. WEST **10/4/95**
Max Ward **244-4721**

New or additional telephone facilities necessitated by this project may result in a "contract" and up-front monies required from developer, prior to ordering or placing of said facilities. For more information, please call 1-800-526-3557.

GRAND JUNCTION FIRE DEPARTMENT **10/10/95**
Hank Masterson **244-1414**

1. A complete utility composite showing locations of proposed hydrants must be submitted to the Fire Department. Hydrants should be placed at all major intersections, be spaced at 500' intervals, and be located so that all lot frontages are within 250' of a hydrant.
2. The 8" water line proposed to serve this subdivision will be a dead-end line in excess of 1,000' in length. City standards require this line to be looped (fed from two directions). The requirement for a looped line may be waived provided: 1) the petitioner submits documentation from a licensed engineer showing that the minimum fire flow requirement of 500 gallons per minute will be provided at all hydrant locations, and 2) petitioner submits documentation showing that the required looping is impractical.

CITY PROPERTY AGENT **10/11/95**
Steve Pace **244-1452**

No plat to review.

PUBLIC SERVICE COMPANY **10/11/95**
G. Lewis **244-2698**

No objections. Standard 14' front lot easements per City of Grand Junction specifications would be adequate to install gas and electric facilities.

U.S. ARMY CORP OF ENGINEERS **10/12/95**
Ken Jacobson **243-1199**

Based on a site inspection by Mr. Randy Snyder of this office on October 11, 1995, and the information you provided, we have determined that this project will not require a Department of the Army permit. We have assigned number 199575390 to this determination.

MESA COUNTY SCHOOL DISTRICT #51 **10/16/95**
Lou Grasso **242-8500**

SCHOOL - ENROLLMENT / CAPACITY - IMPACT
Scenic Elementary - 298 / 325 - 30
Redlands Middle School - 552 / 650 - 15
Fruita Monument High School - 1337 / 1100 - 20

CITY DEVELOPMENT ENGINEER **10/16/95**
Jody Kliska **244-1591**

1. Rana Road should be constructed to a residential collector street section. This will match with the existing pavement width of Rana Road and allow for future traffic loads. We have allowed modification of the street standard in the past to allow the driveover curb instead of the vertical curb where homes front on the street.
2. The detention pond appears to be partially located on the existing open space. It will be necessary for the Parks Department to determine if this is an appropriate use of the open space and an easement from the City may be required.

CITY POLICE DEPARTMENT **10/16/95**
Dave Stassen **244-3587**

This proposal poses only limited concerns for the Police Department. Additional calls for service would be the largest impact on the Police Department. The use of cul-de-sacs is consistent with current crime prevention by limiting access to non-residents. Also the use of berms and landscaping instead of screening fences or walls is good as long as bushes are kept below 3' at maturity and trees are provided no lower than 7' at maturity.

REDLANDS WATER & POWER **10/13/95**
Gregg Strong **243-2173**

1. There shall be no encroachments of any kind on our canal rights-of-way.
2. No bridges of any kind shall be placed on our canal without approval from our Board of Directors.
3. Any utilities over or under our canal must have approval from our Board of Directors.
4. No wastewater shall be returned to our canal.
5. No recreational use of our canal rights-of-way will be allowed.

COMMUNITY DEVELOPMENT DEPARTMENT **10/17/95**
Kathy Portner **244-1446**

1. How will the designated park be developed?
2. The sideyard setbacks must be either a standard setback for all lots, not a setback and building separation requirement, or building envelopes shown and approved for all lots.
3. Please clarify how the rear yard setback will apply to lots 1 through 21. Will the required setback be at the ridge line setback or 10' from the ridge line setback?
4. Because this proposal involves City owned open space, approval for land swaps must be made by the City Council. Therefore, this request will go to Planning Commission and City Council for review and approval.
5. The proposed detention basin appears to be partially located within City owned open space. Please clarify.
6. The request to delete the sidewalk requirement on one side of Rana Road must be reviewed and approved by the City Council.
7. Only the City Council can approve a credit to open space fees for land dedicated. The private park will definitely be considered for a credit. City Parks will have to make a recommendation on the request for credit for the net gain in public open space. An estimate of fair market value of that property should be submitted for review.
8. The Geologic Report indicates the potential for mud and debris flows down steeper slopes. Those areas should be clearly defined and specific mitigation proposed. Are there any rock fall areas to consider?
9. Is flash flooding a concern in this valley?

CITY UTILITY ENGINEER **10/18/95**
Trent Prall **244-1590**

SEWER, WATER & IRRIGATION - CITY OF GRAND JUNCTION
Conceptually adequate, more comments on final submittal.

CITY PARKS & RECREATION DEPARTMENT **10/17/95**
Shawn Cooper **244-3869**

Although additional open space has been created, it appears access points to the existing open space has been decreased. We request 15' pedestrian easements be provided between the following lots (or in the proximity): 17 & 18, 11 & 12, 25 & 26, 37 & 37 (38), 62 & 63. All areas intended for HOA maintenance must be agreed for to be in perpetuity and designated as such on documents/plats. Construction of the park area must conform to all applicable safety and accessibility standards.

The elimination of the walk along Rana Drive is not advisable. If pedestrian access to the berm is desired, another alternative might be desirous, such as a small wall, shrubbery, or ornamental fencing. Pedestrian access should not be eliminated in this area, nor should they be required to cross the street.

RIDGES ARCHITECTURAL CONTROL COMMITTEE **10/18/95**
c/o Ted Munkres **243-0929**

See attached comments and attachments.

LATE COMMENTS

MESA COUNTY PLANNING **10/20/95**
Matt Osborn **244-1724**

The redesign with a lower density and additional open space is an improvement.
Building envelopes and erosion control measures should be provided.
The length of the Butte Court cul-de-sac could be reduced.
Pedestrian access to the common open space should be provided from the Saddle Way cul-de-sac.

TO DATE, COMMENTS NOT RECEIVED FROM:
City Attorney
Colorado Geologic Survey
Colorado Department of Transportation

Petitioner's Response to Review Comments

File #PP-95-178, Preliminary Plan--Cobblestone Ridges Subdivision, The Ridges, Filing #6

Petitioner:

Dynamic Investments
P.O. Box 3003
Telluride, CO 81435

Petitioner's Representative:

Steve Craven
P.O. Box 1168
Telluride, CO 81435
(970) 728-0500

Mike Thompson
Thompson Langford Corp.
529 25 1/2 Road, Suite B210
Grand Junction, CO 81505

Staff Representative: Kathy Portner

Following are the petitioner's response to review comments as attached hereto as Exhibit A.

U.S. West: Acknowledged and understood.

Grand Junction Fire Department:

1) Acknowledged and understood.

2) It is currently impractical to loop the identified 8" water line. As future development occurs on tracts to the south of the petitioner's property, it may be feasible to loop the system in the future. Given the existing conditions, the petitioner requests that the requirement for a looped line be waived based upon the documentation from Thompson-Langford showing that the minimum fire flow requirement of 500 gpm will be provided at all hydrant locations (see Exhibit B).

City Property Agent: No response solicited.

Public Service Company: Acknowledged and understood.

U.S. Army Corp. of Engineers: Acknowledged and understood.

Mesa County School District: No response solicited.

City Development Engineer:

1) The design philosophy of Cobblestone Ridges is to maintain as much of the rural/open feel of the area being developed as is feasible while providing the necessary infrastructure to properly service the future residents of Cobblestone Ridges. In keeping with this philosophy, the petitioner has proposed an Urban Residential Street section for Rana Road in an attempt to keep the visual impact of the pavement section to be built to a minimum and still meet the circulation requirements of the proposed development. The number of residential units proposed to be served by this section of Rana Road are 44 single family and 48 multi-family. According to city standard, this would generate an A.D.T. of 701 ((44 X 9.55) + (48 X 5.86))--far less than the stated carrying capacity of 1,000 A.D.T. for an Urban Residential Street. The petitioner acknowledges that there is a future potential for additional traffic from the south, but believes that the majority of that traffic will naturally use West Ridges Blvd. for its ingress and egress from the Ridges, and that a Urban Residential Street will be more than adequate to handle all potential future traffic that might venture to the north. Accordingly, the petitioner asks that an Urban Residential Street section be recommended for the extension of Rana Road.

2) The detention pond is partially located on the existing open space. The petitioner intends to grass the detention pond to provide an additional park opportunity for the residents of the Ridges. This area will be ideal for area residents to play ball with their children. Accordingly, the petitioner feels that this is an appropriate use of this area. If the City so desires, the petitioner is willing to acquire the area of district open space needed for the detention pond through the open space trade that is currently anticipated in this project. The area needed is approximately 1/3 of an acre, thus, the increase of district open space created by this project would be reduced by this amount, but the entire detention area would then be contained within the petitioner's new property boundaries. This concept has been approved by Shawn Cooper of the City Parks & Recreation Department.

City Police Department:

The petitioner also believe that the use of cul-de-sacs is advantageous to the security of the proposed development. Although the petitioner is proposing the use of a berm to provide screening, it does not intend to limit the future homeowner options to that of berming. the suggestion of vegetation heights is acknowledged, and will be considered when the berm improvements are put in place.

Redlands Water & Power: All stated conditions are acknowledged and understood.

Community Development Department:

1) The petitioner currently envisions the park development to include a large grass area, a meandering walkway, two log picnic benches, and two standing barbecues--one along side each picnic bench, and the planting of trees. The barbecues and bench will be permanently attached to the ground. These improvements will provide for a desirable picnic area for the local residents.

2) The side yard setbacks shall be a minimum of 5 feet for all lots.

3) The rear yard setback on lots 1-21 shall be 10 feet from the ridge line setback except for the construction of shade structures such as patio covers, gazebos, etc. Such shade structures shall be allowed to the ridges line setback, but not beyond.

4) Acknowledged and understood.

5) The detention pond is partially located on the existing open space. The petitioner intends to grass the detention pond to provide an additional park opportunity for the residents of the Ridges. This area will be ideal for area residents to play ball with their children. Accordingly, the petitioner feels that this is an appropriate use of this area. If the City so desires, the petitioner is willing to acquire the area of district open space needed for the detention pond through the open space trade that is currently anticipated in this project. the area needed is approximately 1/3 of an acre, thus, the increase of district open space created by this project would be reduced by this amount, but the entire detention area would then be contained within the petitioners new property boundaries. This concept has been approved by Shawn Cooper of the City Parks & Recreation Department.

6) Acknowledged and understood.

7) The petitioner acknowledges the potential for credit for the improved park, and will submit a summary of both land and improvement costs when the improvement plans for the park are further along. The petitioner is meeting with city Parks on 10-25-95 to further discuss this issue. The petitioner also requests a clarification with respect to the following:

a) When the Ridges was originally planned and approved, a large amount of parks and open space were dedicated/committed to in order to meet the developments parks and open space requirements. Accordingly, why are parks & open space fees still applicable within the Ridges.

8) There is a minor potential for mud and debris being carried onto certain lots within the proposed development as identified in the October 23, 1995, letter from Barnes Geologic Consulting, Inc. To mitigate this potential, the petitioner will install small diversion ditches as outline in the previously mentioned letter (see Exhibit C).

9) Please see Exhibit C.

City Utility Engineer: Acknowledged and understood.

City Parks & Recreation Department:

On Wednesday, October 25, 1995, the petitioner (Steve Craven & Mike Thompson) met with Shawn Cooper of the City Parks & Recreation Department. The following issues were discussed.

1) Access Points: Nearly all lots in the proposed development directly access open space. Although the number of additional community access points have been somewhat reduced, the size and quality of the access points have been greatly increased. It was agreed that the access point between lots 34 and 35 would be increased in width to a minimum of 25 feet to match the minimum of the other access points designed by the petitioner. All other aspects of the petitioner's design may remain the same as proposed.

2) All area intended for HOA maintenance will be in perpetuity and designated as such on documents/plat.

3) Construction of the park area will conform to all applicable safety and accessibility standards.

4) The walkway along Rana Road is a controversial issue. the petitioner still feels that its design is desirable while Mr. Cooper feels that a walkway should be included in this section if there is a walkway along the remainder of Rana Road.

Ridges Architectural Control Committee:

The petitioner acknowledges the existence of the Protective Covenants for the Ridges Filing #6, and is in receipt of same. The petitioner has reviewed same, and finds it's contents generally acceptable, but feels that several clarifications need to be made. The property proposed for development was platted for a combination of multi-family units and 'A' lots within Ridges Filing #6. Accordingly, the petitioner maintains that all single family lots proposed within Cobblestone Ridges will be evaluated with respect to the covenants as 'A' lots. Further, the petitioner acknowledges that the City of Grand Junction has placed density limitations on each of the remaining undeveloped parcels within the Ridges. To be consistent with this action, the petitioner agrees to limit each lot within Phase I of Cobblestone Ridges to one single family unit per lot. An interpretation of the minimum side yard setbacks has been made, and is to be applied as a 5 foot minimum.

The petitioner acknowledges the ACCO's plans to assure harmony and conformity with the Ridges, and will make all reasonable efforts to assist the ACCO in maintaining the same.

1) Two copies of the development plan and accompanying documents will be submitted.

2) Any changes to the covenants will be submitted.

3) Street Lighting will be assessed against the current Ridges standards and the City of Grand Junction Standards. The developer will attempt to meet this request if it meets with the approval of the governing bodies, and does not adversely affect the health, safety and welfare of the potential residents of Cobblestone Ridges.

4) Trails: the petitioner shares the ACCO's concerns regarding the inconsistency and lack of harmony created by replacing the trail system originally envisioned for the Ridges with City standard sidewalks as currently required by the City of Grand Junction. The developer will attempt to meet with both the ACCO and representatives of the City of Grand Junction to find an acceptable resolution to this problem.

5) The requirements stated in this section are acknowledged and understood. The bermed area proposed along Rana road will be platted as an open space lot. The responsibility for maintenance will be that of the Cobblestone Ridges H.O.A. or maintenance association.

Petitioner's Response to Mesa County Planning/ Matt Osborn

Project: Cobblestone Ridges- File #PP-95-178

Date: October 30, 1995

1) The Petitioner agrees that the new design is an improvement.

2) a) Building set backs have been provided. Applying these setbacks creates a building envelope.

   b) Erosion control measures have been provided.

3) The length of Butte Court could be reduced, but given the negative effects that this would have on Lots 45 & 46, the Petitioner has chosen not to do so.

4) Pedestrian access to the common open space is provided from the Saddle Way cul-de-sac along the south sides of both Lots 1 and 21. Additionally, public access to the open space is also provided at the park site between Lots 4 and 5. Given the severity of the topography along the ridge line for the remainder of Saddle Way, additional access points are not viewed to be of benefit.

Mike Thompson, Petitioner's Representative for
Cobblestone Communities, Inc.

The Ridges
ARCHITECTURAL CONTROL COMMITTEE

Cobblestone Ridges Subdivision is a proposed replat of Ridges Filing No. Six. Mesa County Clerk and Recorder office indicates it was recorded in Mesa County on October 4, 1984 in Book 13 on Page 279. The recorded protective covenants for the Ridges PUD Filing Number Six. Copy attached. Are applicable to this replat.

Where as the Architectural Control Committee (ACCO) is charged with certain responsibilities and obligations under the covenants more specifically to approve or disapprove applications for any proposed change in the existing state of property (ART 11-1). The ACCO plans to assure harmony and conformity with the existing development so as to maintain a sense of neighborhood as intended by the original overall development plan. Accordingly, the ACCO makes the following recommendations and or requirements for this application:

1. Plans and Specifications

Two copies of the development plan and accompanying documentation will be submitted for approval. (One to be retained by the ACCO.)

2. Covenants

Any changes to the covenants of Filing Six need to be submitted to the ACCO for review.

3. Street Lighting

Will be placed no more frequently than in the existing developed portion of the Ridges and will be shielded to avoid light pollution of existing properties.

4. Trails

Paved walk and bicycle trails must be incorporated into the development and linked to the existing system. This will be in place of sidewalks which the ACCO has unanimously agreed is inconsistent with the original concept of the Ridges and has inherent drawbacks and dangers in this PUD. i.e.: sidewalk's and paths are at times difficult to connect in that they have different materials, grades and feel to the user. The terrane in the ridges is such that a person (more particularly a child) on in line skates, skate boards, or bicycles adjacent to automobile traffic can be a more dangerous combination than isolated trails. (To outlaw roller traffic on sidewalks appears to not be an effective solution.)

The committee also believes people purchased their homes in the Ridges because of the existing nature of the development to add sidewalks to a portion of the PUD creates an unacceptable mix of development style. The introduction of maintaining a snow free sidewalk that fronts on open space, a park or existing right of ways, would require maintenance by the city or homeowners association; that maintenance is questionable to the committee.

5. Open Space

Large open space will be preserved in an undisturbed state except as necessary for development. All disturbed open space will be revegetated. An acceptable plan must be submitted to the ACCO for revegetation.

Burmed areas and small strips of open space must be incorporated into the lots or an acceptable plan submitted for revegetation and maintenance by the homeowners association, city or others.

A plan controlling the use of open space as a staging, storage, access, or dump site during development and or residential construction must be submitted to the ACCO prior to approval.

The original developers of the Ridges PUD had a plan, style, vision or concept for the development of this beautiful but unique property. It is very different from developing an orchard or corn field that is relatively flat where traditional methods can easily be employed. The ACCO is committed to maintaining continuity within this PUD, to that end we submit the above recommendation and requirements.

Roxane Lewis
383 Hidden Valley Court
Grand Junction, CO 81503
241-5028

Lee Garrett
2397 Mariposa Drive
Grand Junction, CO 81503
243-0572

Ted Munkres
121 Chipeta Avenue
Grand Junction, CO 81501
243-0929

Cynthia Adair
PO Box 38
Grand Junction, CO 81502
256-9644

STAFF REVIEW

FILE: #PP-95-178

DATE: November 7, 1995

STAFF: Kathy Portner

REQUEST: Cobblestone Ridges--Preliminary Plan

LOCATION: Ridges, Filing #6

APPLICANT: Cobblestone Communities, Inc.

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Attached and 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, 4 units per acre)

PROPOSED ZONING: No change

SURROUNDING ZONING:

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

EXECUTIVE SUMMARY:

The developer of the Cobblestone Ridges, located in filing #6 of the Ridges at the end of Rana Road, is requesting that the City accept land in lieu of Parks and Open Space fees and approve a modified street standard along Rana Road. The developer is also proposing an exchange of small sections of existing open space surrounding the development for dedication of new open space.

RELATIONSHIP TO COMPREHENSIVE PLAN:

No Comprehensive Plan exists for this area. The Amended Final Plan for Ridges, as adopted by the Planning Commission and City Council does apply. 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 los and 3.90 acres of multi-family units. The current proposal is for Preliminary Plan approval for 65 single family lots on 23.86 acres of the site and Outline Development Plan approval for 48 attached units on 6.706 acres of the site. The proposed plan does not exceed the maximum density of 4 units per acre allowed on the site.

Traffic Impacts

The applicant submitted a Traffic Impact Analysis for this project with findings that the existing off-site roads are adequate to handle this proposed development as well as the traffic to be generated by the buildout of filing 1-6 of the Ridges. The report does indicate an need to extend the westbound left-turn land on Broadway at the intersection of Broadway and Ridges Blvd. at some point of buildout, but that the existing improvements are adequate until such time that warrants exist to cause the future widening and signalization of Broadway. The City agrees that this applicant's responsibility should be to pay the required Transportation Capacity Payment for those future improvements.

Geologic Report

A full geologic report was submitted for review. The plan is in accordance with the recommendations of the report. An addendum to the report recommends that small diversion ditches or other means be used to divert potential mud and debris flows from vulnerable lots. The report indicates that no areas exist where rockfalls are considered a hazard to the proposed lots. The design also includes a "Ridge Line Setback" designation and the proposed development is generally on slopes of 10% or less.

Fire Protection

City Fire Department comments noted that the proposed 8" water line will be a dead-end line in excess of 1,000' in length. The line must be looped unless the petitioner submits documentation from a licensed engineer showing that the minimum fire flow requirement of 500 gallons per minute will be provided at all hydrant locations and the petitioner submits

documentation showing that the required looping is impractical. The applicant has submitted the calculation showing that the required flow could be met and has requested the looping requirement be waived until the property to the south of the development develops.

Street Standards

The applicant is proposing to build the extension to Rana Road to a urban residential street standard of 28' of pavement and curb, gutter and sidewalk. City staff agrees with the petitioners estimation of ADT for this section of Rana Road and concurs with the urban residential street standard rather than a collector section.

The petitioner is requesting that the sidewalk requirement be waived for that side of Rana Road adjacent to lots 47 through 53 where a privacy berm is proposed. Since none of those lots will front directly onto Rana Road along that section, staff supports the request that sidewalks not be included in that location.

The Ridges Architectural Control Committee has expressed some concern over sidewalk being required at all in this development. Staff agrees that if an alternative pathway system is proposed that provides pedestrian access for all lots that it can be considered in lieu of standard sidewalk requirements. However, such a system has not been proposed.

Revised Comments

Staff has had further discussions with the applicant on the sidewalk issue. There are now three options to be considered by the Planning Commission and City Council. They are as follows:

1. **City standard street section as proposed which would require Council approval to delete the sidewalk on the north side of Rana Road adjacent to lots 47 through 53.**

2. **A detached asphalt pathway, 8' wide, along the north-west side of Rana Road with no other sidewalks in the development.**

3. **City standard street section as proposed except along the north-west side of Rana Road which would have a detached pathway, 8' wide, asphalt or concrete, with area between pathway and street to be landscaped.**

City staff supports options 1 and 3 with the trail section being concrete. With option 3 the developer would request credits to TCP and Parks and Open Space fees to off-set the increased cost of improvements.

With any of the options, the City proposes the developer build a trail linkage, either along Rana Road or through the open space and have the cost of those improvements credited to the TCP for the development.

Parks and Open Space

The proposed development would require that some existing public open space be eliminated and reconfigured into the new design. The proposed development would create 5.264 acres of open space and delete 1.273 acres of open space for a net gain of 3.99 acres of open space. The design also includes a .232 acre designated private park site in phase II.

The majority of the open space would be incorporated into the overall City owned public open space with the following exceptions:

1. The .232 acre designated park site in phase II will be private.
2. The center island of Saddleway Court will be private open space.
3. The bermed area along Rana Road will be private open space.

Nearly all of the lots in the proposed development directly access open space. Although the number of additional public access points have been somewhat reduced, the size and quality of the access points have been greatly increased. The petitioner has agreed with Parks staff that the access point between lots 34 and 35 would be increased in width to a minimum of 25 feet to match the minimum of the other access points designed by the petitioner.

The applicant is requesting a credit to Parks and Open Space fees for the value of the open space dedicated. Credit for private open space cannot be considered. The Council can consider a credit for public dedication based on the value of the land. Staff recommends that a credit not be allowed for the open space dedications because the dedications do not supply substantial usable open space, nor is the open space deemed to be necessary in the Parks Master Plan. However, the proposed open space does further enhance the development and the Ridges as a whole.

Lot Configuration--Revised Comments

Lots 9 and 10 on Saddle Way should be reconfigured to provide street frontage for both lots with a shared ingress/egress easement.

Setbacks

The applicant is proposing the following setbacks:

Front lot line--20'
Side lot line--5'
Rear lot line--10'*

*The rear yard setback on lots 1-21 shall be 10' from the ridge line setback except for the construction of shade structures such as patio covers, gazebos, etc. Such shade structures shall be allowed to the ridge line setback, but not beyond. Staff agrees with the proposed setbacks.

STAFF RECOMMENDATION:

Staff recommends approval of the ODP for future phases and approval of the Preliminary Plan as presented with the following conditions:

1. All requirements of the Fire Department must be met with the final submittal.

2. All streets shall be built to the urban residential street standard. Sidewalk will not be required adjacent to lots 47 through 53 where a privacy berm is proposed and sidewalk will not be required on the inside loop of Saddleback Court adjacent to the open space island. **A detached, 8' wide, concrete pathway will be considered along the north-west side of Rana Road. Staff recommends that the additional cost associated with the detached pathway be considered for a credit to the TCP and/or Parks and Open Space Fees.**

3. Alternative pedestrian/bicycle ways may be considered with final plan/plat review in lieu of standard sidewalk if such pathways provide access to all lots.

4. The open space additions and deletions as proposed are acceptable with the modification that the access between lots 34 and 35 be increased in width to a minimum of 25 feet.

5. **Lots 9 and 10 on Saddle Way shall be reconfigured so that both lots have street frontage and a shared ingress/egress easement.**

6. **A trail linkage from this development to the existing trail system south of Prospector Point shall be put in by the developer with the cost being a credit to the TCP.**

RECOMMENDED PLANNING COMMISSION MOTION:

Mr. Chairman, on item #PP-95-178, I move we approve the ODP and Preliminary Plan subject to the conditions as listed by staff.

Mr. Chairman, on item #PP-95-178, I move we recommend approval of the request to modify the street standards to allow for the deletion of sidewalk adjacent to lots 47 through 53 on Rana Road and on the inside loop of Saddleback Court adjacent to the open space island.
or:
Mr. Chairman, on item #PP-95-178, I move we recommend approval of the request to amend the street standards to allow for a detached, 8' wide, concrete pathway along the north-west side of Rana Road with City street standards applying everywhere else, with the additional cost of the pathway system being a credit to the TCP and Parks and Open Space Fees and that sidewalk not be required on the inside loop of Saddleback Court.

Mr. Chairman, on item #PP-95-178, I move we recommend approval of the request for credit to open space fees for the value of the public open space dedicated.
(Note: Staff is recommending the motion be denied)

November 15, 1995

Mr. Lee Garrett, Ridges ACCO
383 W. Valley Circle
Grand Junction, CO 81503

RE: Proposed Cobblestone Ridges, Grand Junction, CO

Dear Mr. Garrett;

I have considered the Geotechnical implications of different types of development in the proposed Cobblestone Ridges, within the Ridges Subdivision, Grand Junction, Colorado. Following are my thoughts, from a Geotechnical standpoint.

GENERAL

The Cobblestone Ridges Development, as I understand it, is essentially the continuation of Rana Road, to include Saddleback Drive which runs approximately North-South. As I understand the project, this is essentially the West 1/2 of the original Ridges Filing #6 Development. The majority of the Development will be within the lower portion of the small valley, which trends approximately North-Northeast to South-Southwest. Saddleback Drive, which is in the lowest part of the valley is West of and approximately parallel to Hillview Drive.

This particular tract has been utilized for very limited agricultural (grazing) uses. It is not believed this tract has ever been irrigated and is presently in a semi-arid to arid environment. The land forms and vegetation are consistent with the semi-arid to arid pediment along the North base of the Colorado National Monument.

GEOLOGY

The area geology is essentially that of an ancient, dissected erosional surface of the Dakota and Burro Canyon Formations. The original erosion features originated on the higher ground toward the Colorado National Monument and trended North-Northeast toward the Ancient Colorado River. The alignment of the subsequent gully/valleys and ridge features essentially follow the major rock fracture pattern in this portion of the ridges and is quite similar to the fracture pattern in the Grand Valley. This fracture pattern is controlled by the Uncompaghre Uplift/Redlands Fault at the base of the Colorado National Monument and regional faulting of which the Redlands Fault is a very small portion of.

Very thin, reddish to pink sandy silts of the Redlands Alluvium are present in some of these lower gullies/valleys. In this particular valley, along the alignment of Saddleback Drive, the Redlands Alluvium is very thin to non-existent. The Redlands Alluvium is a portion of ancient mud flow/debris flows which originated on the higher elevations within the present Colorado National Monument.

The bedrock within this area is quite changeable. The ridge lines in this area are capped with a thin to massive bedded sandstone. This sandstone comprises the bottom portion of the Dakota Formation. In some areas, the basal member of the Dakota Formation is characterized by a coarse grained chert conglomerate. In this particular part of the Ridges, this chert conglomerate is fairly thin to non-existent.

Beneath the Dakota Formation and, comprising the lowest slopes and valley floor of the proposed development along Saddleback Drive, is the upper members of the Burro Canyon Formation. The Burro Canyon Formation is described as a stratified, lensatic sequence of mudstones, occasional claystones with thin argillaceous siltstones, thin sandstones and occasional shale strata. In general, the mudstones and fine grained portions of the Burro Canyon Formation are often times gray-green to gray colored. The mudstones, argillaceous siltstones and occasional shales exhibit variable expansive characteristics. The expansive characteristics of the Burro Canyon Formation ranges from very slight to a low potential. In general, the Burro Canyon Formation does not exhibit extreme shrink swell characteristics, as compared to other geologic rock units in the Grand Junction area and Western Colorado.

GEOTECHNICAL CONSIDERATIONS

In general, the rock units of the Burro Canyon Formation will be encountered in most building, utility and road construction in this area. In cases where sufficient thicknesses of Redlands Alluvium are present, the Burro Canyon Formation will not be exposed during some road construction however, the low expansive characteristics of the Burro Canyon Formation will effect the construction and performance of buildings and other improvements for this Development.

The Burro Canyon rocks are presently in an arid to semi-arid condition and may be considered to be relatively stable under the existing environmental conditions. As site development proceeds, site drainage will be changed and irrigation will be introduced. The soil and rock units will undergo changes commensurate to the environmental changes during and after Development.

The direct consequence of this environmental change will be partially accounted for in the proper design and proper construction of the individual building foundations in this area.

The subdivision improvements which are most sensitive to environmental changes associated with increased surface and soil mois-

ture are rigid concrete flat work and curb and gutter. In general, flat work (garage slabs, driveway aprons, sidewalks, drainage pans and curb and gutter) will tend to undergo significant differential movement and cracking. Construction of any of these improvements within the first 5 years of development and prior to finish landscaping of at least 2/3 of the building units and any associated parks, is not advisable due to very high initial maintaince cost. Flexible pavements such as asphalt or stabilized aggregate base course are more tolerant of movement and generally perform in a reasonable manner.

The original development schemes for the Ridges was driven by economics. Construction in areas of medium relief, such as the Ridges is best accomplished, both in the short and long term, is most economical if entire road sections are minimized. In general, flexible paving should be utilized for just road surfaces, walk surfaces and drainage ways. Drainage ways, to include borrow ditches, are easiest maintained if kept in a "primitive" condition as long as possible. Erosion, due to subsequent development and prior to final establishment of individual lot landscaping, tends to produce significant amounts of sediment which plug relatively finished and sophisticated drainage works.

The new environmental conditions of a development tend to disrupt stability of surface soils which tend to move either laterally or vertically. Cracking and significant displacement any small rigid features such as curb and gutter, isolated drainage pans and sidewalks must be anticipated as the development environment stabilizes. Construction of these rigid "finished" features at an early date in the development process is generally costly in both the short and long term.

It is for very good reason that asphalt paved roadways, with reasonably carefully constructed borrow ditches, slightly oversized drainage pipes and an absence of sidewalk versus walking paths is commonly used in the areas of higher relief throughout Colorado, both Western Slope and Eastern Slope.

It is believed that all pertinent points have been addressed for this preliminary discussion. If any further questions arise regarding this subject or if I can be of any further assistance, please do not hesitate to contact me at any time.

Respectfully Submitted,

by: Edward M. Morris PE

Cobblestone Communities, Inc.

November 15, 1995

Katherine Portner, AICP
City of Grand Junction
Community Development Department

Via Fax To: (970) 244-1599

Dear Kathy:

Following are summaries of the costs for Sidewalk/Path Systems for both our original plan as per the City of Grand Junction's Standards, and the new plan as recommended by the City Planning Commission. Additionally, I have included a suggested cost sharing breakdown between the City of Grand Junction and Cobblestone with respect to the increases in costs to build the Planning Commission recommended plan.

As you will see, after taking a hard look at these different scenarios, we have determined that the cost difference between plans is estimated to be $116,221.46. This is substantially higher than the original estimate of approximately $84,000.00. Given the original estimate, and receiving full credits for both TCP and Parks and Open Space Fees, the net increase in costs to Cobblestone would have been (84,000-32,500-14,625) $36,875.00, or approximately $567.00 per lot. This amount caused us to break our overall budgets for the project, but after careful consideration, we felt we could ultimately live with this increase in an effort to meet the needs of all parties involved. Now the net increase would be (116,221-32,500-14,625) $69,069, or approximately $1,063 per lot. This is of a magnitude that the project cannot afford. At this level of increase, our options are to either find other ways to offset some of these costs, or to increase densities in order to offset these costs.

Substantially changing the plan for the project at this point in order to increase densities is not an option that we would like to pursue. I believe the project has a great deal of merit the way it is planned, and do not want to change it. Additionally, this would only exacerbate the traffic issues that the neighbors are so concerned about.

The Cost Sharing proposal that follows attempts to fairly distribute the increased costs between the City and Cobblestone along the theoretical lines that were set forth in the Planning Commissions recommendations, but takes these ideas one step further with respect to their application. In summary, Cobblestone would receive fee credits in full for both TCP and Parks & Open Space Fees for both the proposed 65 units to be developed, and for an additional 10 units for Lot 66, Bl. 13, which is the parcel of land that the off-site trail will be routed through. These additional 10 units of credit may be used for this parcel, or any other that Cobblestone may develop within the Ridges. In-turn, Cobblestone would provide the necessary land for the path within this parcel, as well as build the path through the parcel. Contrary to the Planning Commissions Recommendations, the City would be

responsible for the cost of the remainder of the Off-Site Sidewalk/Path System. Cobblestone would still agree to build the improvements. Under this scenario, additional costs to Cobblestone are increased to $49,277.43, or $657.03 per lot (based on 75 lots).

It is Cobblestone's belief that the City's participation in the off-site improvements is an appropriate use of TCP funds, and will be more useful, and less expensive than the possibility of extending Rana Road to the south.

Please keep in mind that although Cobblestone is receiving fee credits, the majority of them will only be realized upon the pulling of building permits (TCP fees), thus the up-front costs and land risk to Cobblestone will be substantially increased under the Planning Commission's recommended plan.

The advantages to the Ridges and the City are obvious, and the only true out of pocket cost to the City is its portion of the Off-Site system. As previously stated, I believe this can be justified by providing a trail linkage for all the development that has been built between the current trail system and Cobblestone Ridges.

Kathy. We are really stretching it to commit to our part of the Proposed Cost Sharing Agreement. Please understand that this is the best we can do--we cannot incur any higher per lot costs for the proposed Sidewalk/Pathway System. If this cost sharing agreement does not meet with the City's approval, we would strongly request that we return to the City Street Standards for this project.

Sincerely,

Steven E Cramer

Cobblestone Communities, Inc.

Cobblestone Ridges Street Standards Comparison: Sidewalk/Path Systems

1) Built per City of Grand Junction Street Standards

	Units	Quantity	Unit Cost	Totals
Sidewalks				
Mount. Curb & Gutter	LF	695.00	11.00	7,645.00
Mount. Curb, Gutter, & Sidewalk	LF	6,189.00	16.50	102,118.50
Base Course (10" Curb & Gutter, 6" Sidewalk)	Tons	2,026.00	11.50	23,299.00

Total Sidewalk/Path per City Standards **133,062.50**

Cobblestone Ridges Street Standards Comparison: Sidewalk/Path Systems

2) Built per Planning Commission Recommendation/Asphalt

On-Site System

	Units	Quantity	Unit Cost	Sub-Totals	Totals
Sidewalks					
Mount. Curb & Gutter	LF	1,033.00	11.00	11,363.00	
Mount. Curb, Gutter, & Sidewalk	LF	5,636.00	16.50	92,994.00	
Base Course (10" Curb & Gutter, 6" Sidewalk)	Tons	1,914.34	11.50	22,014.91	
Total Sidewalks					126,371.91
Land Value (Trail/Added Parkway)	Lots	7.00	5,000.00		35,000.00
Trail					
Engineering	EA	1.00	1,500.00	1,500.00	
Surveying	EA	1.00	600.00	600.00	
Dirt Work/Grading	LF	1,056.00	2.00	2,112.00	
Trail Prep	LF	1,056.00	0.55	580.80	
Asphalt	LF	1,056.00	12.50	13,200.00	
Total Trails					17,992.80
Landscape Parkway					
Dirt Work/Grading	LF	654.00	2.00	1,308.00	
Landscape & Irrigation	SF	11,149.00	2.50	27,872.50	
Total Landscape					29,180.50
Total On-Site					**208,545.21**

Off-Site System	Units	Quantity	Unit Cost	Sub-Totals	Totals
Land Value (Trail/Bordering Land)	Acres	0.31	25,000.00		7,750.00
Sidewalks					
Mount. Curb, Gutter, & Sidewalk	LF	296.00	16.50	4,884.00	
Base Course (10" Curb & Gutter, 6" Sidewalk)	Tons	118.00	11.50	1,357.00	
Total Sidewalks					6,241.00
Trail					
Engineering	EA	1.00	1,500.00	1,500.00	
Surveying	EA	1.00	600.00	600.00	
Dirt Work/Grading	LF	1,061.00	2.00	2,122.00	
Trail Prep	LF	1,061.00	0.55	583.55	
Asphalt	LF	1,061.00	12.50	13,262.50	
Total Trail					18,068.05
Total Off-Site					**32,059.05**
Total Sidewalk/Path per Commission Recommendation/Asphalt					**240,604.26**

Cobblestone Ridges Street Standards Comparison: Sidewalk/Path Systems

3) Built per Planning Commission Recommendation/Concrete

On-Site System

	Units	Quantity	Unit Cost	Sub-Totals	Totals
Sidewalks					
Mount. Curb & Gutter	LF	1,033.00	11.00	11,363.00	
Mount. Curb, Gutter, & Sidewalk	LF	5,636.00	16.50	92,994.00	
Base Course (10" Curb & Gutter, 6" Sidewalk)	Tons	1,914.34	11.50	22,014.91	
Total Sidewalks					126,371.91
Land Value (Trail/Added Parkway)	Lots	7.00	5,000.00		35,000.00
Trail					
Engineering	EA	1.00	1,500.00	1,500.00	
Surveying	EA	1.00	600.00	600.00	
Dirt Work/Grading	LF	1,056.00	2.00	2,112.00	
Trail Prep	LF	1,056.00	0.55	580.80	
Base	LF	1,056.00	2.60	2,745.60	
Concrete	LF	1,056.00	14.00	14,784.00	
Total Trails					22,322.40
Landscape Parkway					
Dirt Work/Grading	LF	654.00	2.00	1,308.00	
Landscape & Irrigation	SF	11,149.00	2.50	27,872.50	
Total Landscape					29,180.50
Total On-Site					**212,874.81**

Off-Site System	Units	Quantity	Unit Cost	Sub-Totals	Totals
Land Value (Trail/Bordering Land)	Acres	0.31	25,000.00		7,750.00
Sidewalks					
Mount. Curb, Gutter, & Sidewalk	LF	296.00	16.50	4,884.00	
Base Course (10" Curb & Gutter, 6" Sidewalk)	Tons	118.00	11.50	1,357.00	
Total Sidewalks					6,241.00
Trail					
Engineering	EA	1.00	1,500.00	1,500.00	
Surveying	EA	1.00	600.00	600.00	
Dirt Work/Grading	LF	1,061.00	2.00	2,122.00	
Trail Prep	LF	1,061.00	0.55	583.55	
Base	LF	1,061.00	2.60	2,758.60	
Concrete	LF	1,061.00	14.00	14,854.00	
Total Trail					22,418.15
Total Off-Site					**36,409.15**

Total Sidewalk/Path per Commission Recommendation/Concrete **249,283.96**

Sidewalk/Path Cost Sharing

Suggested Sharing of Excess Costs per Planning Commission Reccomendations

Total Costs per P.C. Recs.	249,283.96
Less: Cost per City Standards	133,062.50
Net Increase in Costs	116,221.46

City of Grand Junction Participation

Fees Credits	Quantity	Unit Price	Sub-Total	Total
Proposed Development				
TCP	65.00	500.00	32,500.00	
Parks & Open Space	65.00	225.00	14,625.00	
				47,125.00
Future Development (Lot 66, Bl. 13)				
TCP	10.00	500.00	5,000.00	
Parks & Open Space	10.00	225.00	2,250.00	
				7,250.00
Construction of Off-Site Path (TCP Funds) (Existing Open Space or Streets)	1.00	18,446.74		18,446.74
Total City of Grand Junction Participation				**72,821.74**

Cobblestone Participation

Total Costs per P.C. Recs.	249,283.96	
Less: Cost per City Standards	133,062.50	
Total Increased Costs		116,221.46
Less: City Participation		
Off-Site Path	18,446.74	
Fee Credits		
Proposed Development	47,125.00	
Future Development	7,250.00	
Total City Participation		72,821.74
Sub-Total Cobblestone Participation		**43,399.72**
Overhead, Admin., & Const. Mang. (8% of Const. Costs)		5,877.72
Total Cobblestone Participation		**49,277.43**
Previously Projected Cobblestone Participation		36,875.00
Increase in Cobblestone Participation		**12,402.43**
Cost per Lot to Cobblestone (75 lots)		**657.03**

Cobblestone Ridges

Fees

Phase I (65 Single Family Units):

TCP	$32,500
Parks & Open Space Fee	$14,625

Phase II (48 Attached Units):

TCP	$19,200
Parks & Open Space Fee	$10,800

On-Site Options

1) City Standard Sidewalk $133,062.50

2) Planning Commission Recommendation
(Includes City Standard Sidewalk-Modified)

A)	Asphalt Path	$208,545.21
B)	Concrete Path	$212,874.81

Off-Site Trail Connection to Prospector Point

1)	Asphalt	$32,059.05
2)	Concrete	$36,409.15

Cobblestone Ridges

City Cost of Road Connection
Rana Road to West Ridges Boulevard

Right of Way	$26,620
Recycled Asphalt Construction	$33,245
Total	$59,865

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

November 16, 1995

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

RE: Cobblestone Ridges (PP-95-178)

Dear Steve:

This is to summarize the approvals for the proposed Cobblestone Ridges. Planning Commission, at their November 7, 1995 hearing, approved the Outline Development Plan for 48 attached units and the Preliminary Plan for 65 single family lots subject to the following conditions:

1. All requirements of the Fire Department must be met with the final submittal.

2. Alternative pedestrian/bicycle ways may be considered with final plan/plat review in lieu of standard sidewalk if such pathways provide access to all lots (See Council action).

3. The open space additions and deletions as proposed are acceptable with the modification that the access between lots 34 and 35 be increased in width to a minimum of 25 feet.

4. Lots 9 and 10 on Saddle Way shall be reconfigured so that both lots have street frontage and a shared ingress/egress easement.

5. A trail linkage from this development to the existing trail system south of Prospector Point shall be put in by the developer with the cost being a credit to the TCP (See Council action).

At their November 16th hearing, the City Council approved in concept the proposal to delete some existing public open space areas to be replaced with new public open space. The Council denied the request to waive Parks and Open Space for the net gain in dedicated open space. Finally, the Council approved 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 Council also recommended that colored

concrete be considered for the trail. Credits to TCP were not approved.

I think this sums up the approvals. All future filings will require review and approval through Planning Commission. You will need to set up a pre-application conference when you're ready to proceed with the first filing.

Thank you for your diligence in working through some of the issues surrounding development in the Ridges. Speaking for myself and Jody Kliska, we thoroughly enjoyed working with you on this project and were very impressed with the excellent design and attention to detail. I think Cobblestone Ridges will be a great addition to the Ridges and the community as a whole.

Sincerely,

Katherine M. Portner
Planning Supervisor

STATE OF COLORADO

COLORADO GEOLOGICAL SURVEY
Division of Minerals and Geology

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

DEPARTMENT OF NATURAL RESOURCES

FAXED 11/20/95

November 20, 1995

MA-96-0021

City of Grand Junction
Community Development Department
215 North 5th Street
Grand Junction, Colorado 81501

Re: Proposed Cobblestone Ridges Subdivision -- *The Ridges* Area, Grand Junction

Gentlemen:

At your request, we have reviewed the materials submitted for and made a field inspection of the site of the proposed residential subdivision indicated above. The following comments summarize our findings.

(1) We concur completely with the findings presented in the geologic and the geotechnical reports prepared by Barnes Geologic Consulting, Inc., Grand Junction, and Western Colorado Testing, Inc., Grand Junction, respectively. The conclusions expressed in the Barnes report are based, in part, on data obtained by the Colorado Geological Survey. My field check of our prior work (by another author) and Mr. Barnes' mapping and conclusions confirms their observations. The recomendations about foundation types made by Colorado Testing appear to be sound. We do recommend that each foundation excavation (i.e. the "open hole") be inspected by a qualified soils and foundation engineer and that he collaborate with individual building architect(s) prior to selection of final foundation designs. For lots on the steeper slopes and for those in or near the one drainage channel on the parcel, we recommend that a drainage engineer be consulted with by the architect(s) as well.

In summary, we think that this subdivision proposal is entirely feasible if the good design and engineering practices outlined above and in the submitted documents are followed and made conditions of its approval.

Sincerely,

James M. Soule

James M. Soule
Engineering Geologist

REVIEW COMMENTS

FILE #FPP-96-27 **TITLE HEADING:** Cobblestone Ridges, Phase I

LOCATION: Rana Road, Ridges Filing #6

PETITIONER: Cobblestone Communities, Inc.

PETITIONER'S ADDRESS/TELEPHONE: P.O. Box 1168
Telluride, CO 81435
728-0500

PETITIONER'S REPRESENTATIVE: Steve Craven

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., FEBRUARY 23, 1996.

REDLANDS WATER & POWER **2/6/96**
Gregg Strong **243-2173**
No impact to our facilities.

PUBLIC SERVICE COMPANY **2/7/96**
Gary Lewis **244-2698**
14' multi-purpose easements adjacent to all street rights-of-way per City of Grand Junction specifications will be sufficient for installation of gas and electric facilities to this subdivision. Street light placements will be determined by Public Service Company at time of application for service.

MESA COUNTY SCHOOL DISTRICT #51 **2/7/96**
Lou Grasso **242-8500**
SCHOOL - ENROLLMENT / CAPACITY - IMPACT
Scenic Elementary - 298 / 325 - 3
Redlands Middle School - 552 / 650 - 2
Fruita Monument High School - 1337 / 1100 - 2

CITY POLICE DEPARTMENT **2/8/96**
Dave Stassen **244-3587**
The only thing I would suggest for this development is that the developer contact the Crime Prevention office when deciding where and what type of lights are to go in.

CITY UTILITY ENGINEER **2/9/96**
Jim Shanks **244-1554**
See attached comments.

TCI CABLEVISION **2/9/96**
Glen Vancil **245-8777**

See attached comments.

GRAND JUNCTION FIRE DEPARTMENT **2/9/96**
Duncan Brown **244-1414**

1. PHASE I - Road width and cul-de-sac diameter acceptable for emergency vehicle access. Hydrant placement location of Rana Road South of Lot 1, Block 1, Phase 1 and proposed hydrant location Block 1, Phase 1 between lots 4 & 5 is acceptable.
2. PHASE 2 - Road width and cul-de-sac acceptable for emergency vehicle access. Proposed hydrant location of corner of Rana Road and Saddleway on north side of Rana Road and east side of Saddleway is acceptable. Other hydrant can be placed at Block 1, Phase 2, SW corner of Lot 5. An additional hydrant is no needed between Lots 11 and 12, Block 1, Phase 2 if the hydrants are placed as described above.
3. GENERAL - Developer must provide utility composite showing plans/specifications of loop fire line in future phases.

U.S. WEST **2/9/96**
Max Ward **244-4721**

For timely telephone service, as soon as you have a plat and power drawing for your housing development, please:

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

AND

CALL:
Developer Contact Group
1-800-526-3557

WE NEED TO HEAR FROM YOU AT LEAST 60 DAYS PRIOR TO TRENCHING.

CITY DEVELOPMENT ENGINEER **2/14/96**
Jody Kliska **244-1591**

1. On the plat, the detention pond needs to be shown and dedicated to the Homeowners's Association.
2. What is the purpose of the temporary drainage, irrigation easement at the entry to Saddleback Court?
3. Please show on the construction drawings the extent of the improvements being proposed at the time. There are phasing lines shown, however, it appears Rana Road needs to be constructed from where it currently ends to where Phase 1 begins as part of Phase 1, not Phase 2. Also please indicate how much of the pedestrian trail will be constructed now. When is the off-site pedestrian trail scheduled to be constructed.
4. The outlet protection (riprap) for the detention pond appears to be on private property. If so, an easement from the property owner is required.
5. The 9.7% grade on Saddle Way exceed the City requirements of 8.0% in a cul-de-sac (SWMM page X-1).
6. No street lights are shown on the plans or provided for in the improvements agreement. Section 5-4-10.B of the Zoning and Development Code requires street lights. The TEDS manual provides further guidance for location, generally at intersections and cul-de-sacs.

7. The improvements agreement cost estimate needs to include costs for City inspection, quality control testing and inspection, engineering and surveying including as-builts. Also, the improvements agreement estimate needs to reflect what is being construct with this filing. (See comment #3.)

COMMUNITY DEVELOPMENT DEPARTMENT **2/15/96**
Kathy Portner **244-1446**

1. The plans must include the required off-site pathway system connecting to the trail system below Prospector Point. The developer is responsible for building the trail and the City will pay for it.
2. The detention pond must be designated as a separate tract dedicated to the Homeowner's Association.
3. Lots 9 & 10 on Saddle Way shall be configured so that both lots have street frontage and a shared ingress/egress easement (I do not have the plat for these lots yet).
4. Cobblestone Ridges will be responsible for creating the deeds necessary for the open space contemplated.
5. Please indicate the specific sign location, size and design proposed for the development.
6. In accordance with Section 5-3-4 of the Code, Saddle Way should be changed to Saddle Court.

CITY PARKS & RECREATION **2/12/96**
Shawn Cooper **244-3869**

1. Parks & Open Space fees - 34 lots x $225 = $7,650.
2. Trail easements and open space accesses are provided.
3. Private open spaces, i.e. designated park and cul-de-sac island are to be maintained by developer/ Homeowners Association.

CITY PROPERTY AGENT **2/15/96**
Steve Pace **256-4003**

1. Lien Holder Approval Certificate (if needed).
2. The 15' drainage and irrigation easement along the southerly line of Lots 1 through 5, Block 2 needs to be dimensioned.
3. Detention and retention easements are addressed in the dedication but none are shown on the plat.
4. Irrigation easements need to be addressed in the dedication.
5. The legend doesn't show monumentation for interior lot corners.
6. The match line on sheet 3 of 3 seems to be in the wrong location.
7. There is missing dimensions on the line between Lot 1, Block 5 / Lot 1, Block 6.
8. Shouldn't' there be some dimensions tieing Lot 1, Block 4 to the rest of the subdivision?

TO DATE, COMMENTS NOT RECEIVED FROM:
City Attorney
Mesa County Planning
Mesa County Surveyor
Ridges Architectural Control Committee

February 9, 1996

To: Kathy Portner

From: Jim Shanks

Re: FPP-96-27 Cobblestone Ridges (Phase 1)

I have reviewed the utility plans for Phase 1 the above referenced project and have the following comments:

1. In Exhibit "B" of the Improvements Agreement under sewer system; Item #5 (Asphalt cut and patch) is shown as zero. The plans show that both the water and sewer lines will require excavation in Rana Road. An appropriate amount for such work should be included.

2. The cost of a radio alarm for the lift station will be the responsibility of the developer. This alarm should be included in the improvements agreement. We estimate $1800. Please contact Larry Brown at the Persigo Wash wastewater treatment plant (244-1487) for specific details.

3. The lift station should be sized to accommodate the additional flow generated from the homes off of Mesa Grande and Rio Vista Roads to the southwest of this proposed development. The sewer system will pay the cost of the materials to oversize the lift station.

4. The drainage easement shown between lots 4 and 5 of Block 2 should be shown as a utility easement to accommodate any future water or sewer connections to the west.

5. We are waiting for the revised lift station application.

6. The detail of the discharge of the force main into manhole A-2 should be changed to show the 4" force main ending after the first 45 degree bend and then an invert constructed to connect and match to the invert of the gravity sewer. Also, manhole A-2 should be epoxy coated.

7. The common trench detail A-A on sheet 12 should show the bedding encasing the pipe as is shown in the typical trench detail on sheet 18.

8. Tracing wire will be required in the trench on the sewer force main.

9. The notes for the lift station on sheet 12 references details on sheet 16. The lift station details are actually on sheet 14.

We're taking television into tomorrow.

TCI Cablevision of Western Colorado, Inc.

February 9, 1996

Cobblestone Ridges
Steve Craven
% Community Development Department
250 North 5th Street
Grand Junction, CO 81501

Ref. No. CON19602

Dear Mr. Craven;

We are in receipt of the plat map for your new subdivision, **Cobblestone Ridges**. We will be working with the other utilities to provide service to this subdivision in a timely manner.

I would like to take this opportunity to bring to your attention a few details that will help both of us provide the services you wish available to the new home purchasers. These items are as follows:

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.

Should you have any other questions or concerns please feel free to contact me at any time. If I am out of the office when you call please leave your name and phone number with our office and I will get back in contact with you as soon as I can.

Sincerely,

Glen Vancil

Glen Vancil,
Construction Supervisor 245-8777

2502 Foresight Circle
Grand Junction, CO 81505
(970) 245-8750

STAFF REVIEW

FILE: #PP-95-178

DATE: November 1, 1995

STAFF: Kathy Portner

REQUEST: Cobblestone Ridges--Preliminary Plan

LOCATION: Ridges, Filing #6

APPLICANT: Cobblestone Communities, Inc.

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Attached and 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, 4 units per acre)

PROPOSED ZONING: No change

SURROUNDING ZONING:

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

RELATIONSHIP TO COMPREHENSIVE PLAN:

No Comprehensive Plan exists for this area. The Amended Final Plan for Ridges, as adopted by the Planning Commission and City Council does apply. 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 los and 3.90 acres of multi-family units. The current proposal is for Preliminary Plan approval for 65 single family lots on 23.86 acres of the site and Outline Development Plan approval for 48 attached units on 6.706 acres of the site. The proposed plan does not exceed the maximum density of 4 units per acre allowed on the site.

Traffic Impacts

The applicant submitted a Traffic Impact Analysis for this project with findings that the existing off-site roads are adequate to handle this proposed development as well as the traffic to be generated by the buildout of filing 1-6 of the Ridges. The report does indicate an need to extend the westbound left-turn land on Broadway at the intersection of Broadway and Ridges Blvd. at some point of buildout, but that the existing improvements are adequate until such time that warrants exist to cause the future widening and signalization of Broadway. The City agrees that this applicant's responsibility should be to pay the required Transportation Capacity Payment for those future improvements.

Geologic Report

A full geologic report was submitted for review. The plan is in accordance with the recommendations of the report. An addendum to the report recommends that small diversion ditches or other means be used to divert potential mud and debris flows from vulnerable lots. The report indicates that no areas exist where rockfalls are considered a hazard to the proposed lots. The design also includes a "Ridge Line Setback" designation and the proposed development is generally on slopes of 10% or less.

Fire Protection

City Fire Department comments noted that the proposed 8" water line will be a dead-end line in excess of 1,000' in length. The line must be looped unless the petitioner submits documentation from a licensed engineer showing that the minimum fire flow requirement of 500 gallons per minute will be provided at all hydrant locations and the petitioner submits documentation showing that the required looping is impractical. The applicant has submitted the calculation showing that the required flow could be met and has requested the looping requirement be waived until the property to the south of the development develops.

Street Standards

The applicant is proposing to build the extension to Rana Road to a urban residential street

standard of 28' of pavement and curb, gutter and sidewalk. City staff agrees with the petitioners estimation of ADT for this section of Rana Road and concurs with the urban residential street standard rather than a collector section.

The petitioner is requesting that the sidewalk requirement be waived for that side of Rana Road adjacent to lots 47 through 53 where a privacy berm is proposed. Since none of those lots will front directly onto Rana Road along that section, staff supports the request that sidewalks not be included in that location.

The Ridges Architectural Control Committee has expressed some concern over sidewalk being required at all in this development. Staff agrees that if an alternative pathway system is proposed that provides pedestrian access for all lots that it can be considered in lieu of standard sidewalk requirements. However, such a system has not been proposed.

Parks and Open Space

The proposed development would require that some existing public open space be eliminated and reconfigured into the new design. The proposed development would create 5.264 acres of open space and delete 1.273 acres of open space for a net gain of 3.99 acres of open space. The design also includes a .232 acre designated private park site in phase II.

The majority of the open space would be incorporated into the overall City owned public open space with the following exceptions:

1. The .232 acre designated park site in phase II will be private.
2. The center island of Saddleway Court will be private open space.
3. The bermed area along Rana Road will be private open space.

Nearly all of the lots in the proposed development directly access open space. Although the number of additional public access points have been somewhat reduced, the size and quality of the access points have been greatly increased. The petitioner has agreed with Parks staff that the access point between lots 34 and 35 would be increased in width to a minimum of 25 feet to match the minimum of the other access points designed by the petitioner.

The applicant is requesting a credit to Parks and Open Space fees for the value of the open space dedicated. Credit for private open space cannot be considered. The Council can consider a credit for public dedication based on the value of the land. Staff recommends that a credit not be allowed for the open space dedications because the dedications do not supply substantial usable open space, nor is the open space deemed to be necessary in the Parks Master Plan. However, the proposed open space does further enhance the development and the Ridges as a whole.

Setbacks

The applicant is proposing the following setbacks:

Front lot line--20'
Side lot line--5'
Rear lot line--10'*

*The rear yard setback on lots 1-21 shall be 10' from the ridge line setback except for the construction of shade structures such as patio covers, gazebos, etc. Such shade structures shall be allowed to the ridge line setback, but not beyond. Staff agrees with the proposed setbacks.

STAFF RECOMMENDATION:

Staff recommends approval of the ODP for future phases and approval of the Preliminary Plan as presented with the following conditions:

1. All requirements of the Fire Department must be met with the final submittal.

2. All streets shall be built to the urban residential street standard. Sidewalk will not be required adjacent to lots 47 through 53 where a privacy berm is proposed and sidewalk will not be required on the inside loop of Saddleback Court adjacent to the open space island.

3. Alternative pedestrian/bicycle ways may be considered with final plan/plat review in lieu of standard sidewalk if such pathways provide access to all lots.

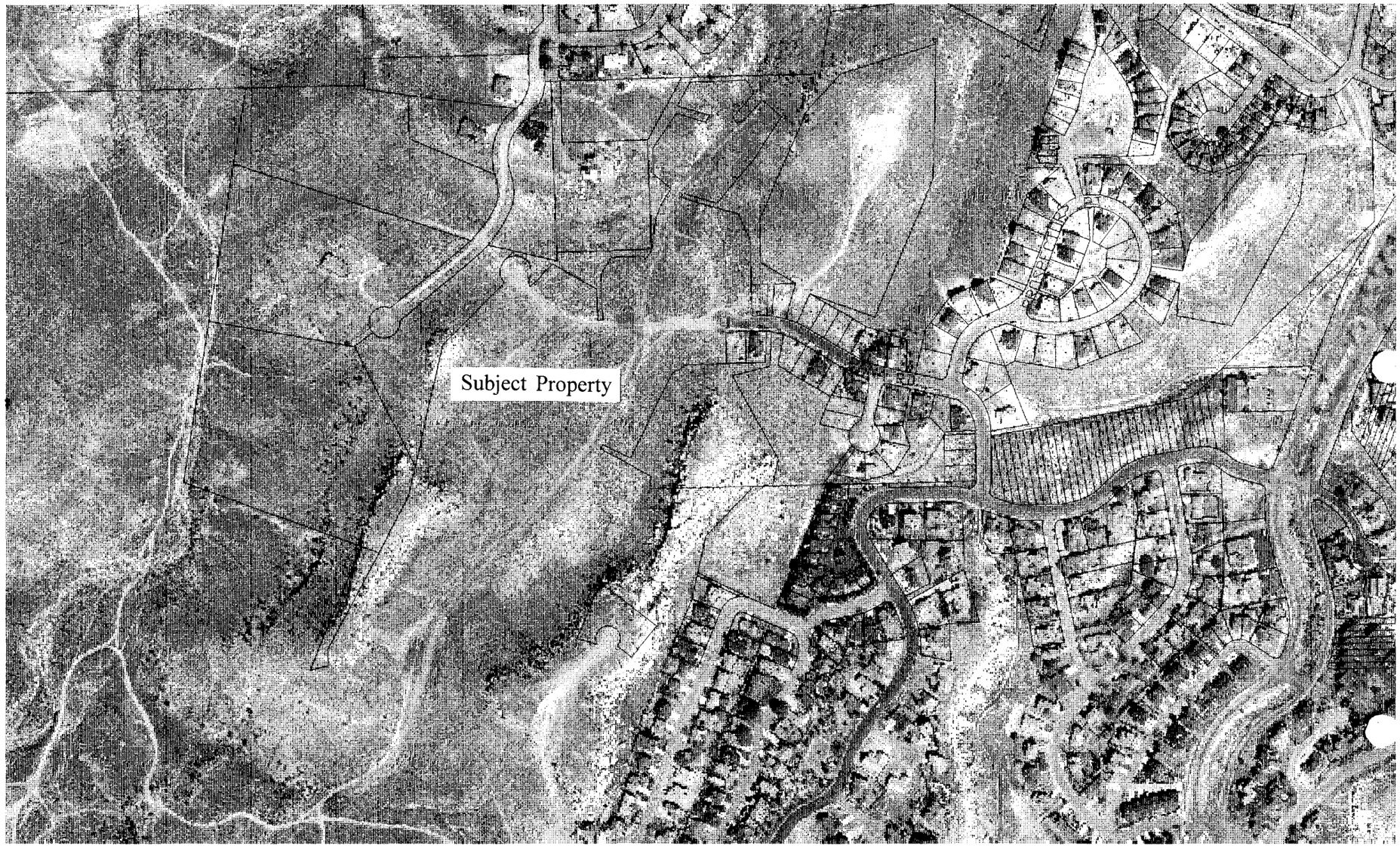
4. The open space additions and deletions as proposed are acceptable with the modification that the access between lots 34 and 35 be increased in width to a minimum of 25 feet.

RECOMMENDED PLANNING COMMISSION MOTION:

Mr. Chairman, on item #PP-95-178, I move we approve the ODP and Preliminary Plan subject to the conditions as listed by staff.

Mr. Chairman, on item #PP-95-178, I move we recommend approval of the request to modify the street standards to allow for the deletion of sidewalk adjacent to lots 47 through 53 on Rana Road and on the inside loop of Saddleback Court adjacent to the open space island.

Mr. Chairman, on item #PP-95-178, I move we recommend approval of the request for credit to open space fees for the value of the public open space dedicated.
(Note: Staff is recommending the motion be denied)


Subject Property