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File FPP-1996-027 Name: Cobblestone Ridges – Phase 1 – Rana Road in the Ridges – Filing #6

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

DOCUMENT DESCRIPTION:

X	X	Resolution No. – Blue Heron – 11/18/81 – CC Minutes - **			
X		Commitment for Title Ins. – issued by American Title Ins. Co.			
X		Treasurer's Certificate of Taxes Due – 1/30/96			
X	X	Engineering Report			
X	X	Final Drainage Report			
X	X	Stormwater Management Plan			
X	X	Planning Commission Minutes – 3/12/96 - **			
X		Posting of Public Notice Signs – 3/1/96			
X	X	Correspondence			
X		E-mails			
X		Declaration of Covenants and Restrictions - not recorded version			
X	X	DIA Agreement – Bk 2280 / Pg 531 - **			
X		Notice of Public Hearing mail-out – 3/12/96			
X	X	Plans for construction for Phase 1 & 2 - **see GIS Historic Maps** - ** - also contained in file			

DEVELOPMENT APPLICATION

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

Receipt ____________
Date ____________
Rec'd By ____________
File No. ____________

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

PETITION	PHASE	SIZE	LOCATION	ZONE	LAND USE
☒ Subdivision Plat/Plan	☐ Minor ☒ Major ☐ Resub		Rana Rd Ridges, #6	PR-4	Residential
☐ Rezone				From: To:	
☐ Planned Development	☐ ODP ☐ Prelim ☐ Final				
☐ Conditional Use					
☐ Zone of Annex					
☐ Variance					
☐ Special Use					
☐ Vacation					☐ Right-of Way ☐ Easement
☐ Revocable Permit					

☒ PROPERTY OWNER	☒ DEVELOPER	☒ REPRESENTATIVE
Dynamic Investments, Inc	Cobblestone Communities Inc	Thompson/Langford
Name	Name	Name
PO Box 3003	PO BOX 1168	529 25½ Rd. #B21
Address	Address	Address 81505
Telluride, CO 81435	Telluride, CO 81435	Grand Junction, CO
City/State/Zip	City/State/Zip	City/State/Zip
970 728-5599	970 728-0500	970 243-6067
Business Phone No.	Business Phone No.	Business Phone No.

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

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

Steven E. Craven ____________ 1-31-96
Signature of Person Completing Application — Date

Dynamic Investments, Inc. By: [signature] President 1/31/96
Signature of Property Owner(s) - attach additional sheets if necessary — Date

SUBMITTAL CHECKLIST

MAJOR SUBDIVISION: FINAL

Location: Kana Road - Ridges #6 Project Name: Cobblestone Ridges

Date Received 2-1-96

Receipt # 3454

File # FP-96-27

DESCRIPTION	SSID REFERENCE	● City Community Development	● City Dev. Eng.	● City Utility Eng.	● City Property Agent	● City Parks/Recreation	● City Fire Department	● City Attorney	● City G.J.P.C. (8 sets)	O City Downtown Dev. Auth.	● City Police	● County Planning	O County Building Department	● County Surveyor	O Walker Field	● School Dist. #51	● Irrigation District (Redlands Water & P)	O Drainage District	O Water District	O Sewer District	● U.S. West	● Public Service	O GVRP	O CDOT	O Corps of Engineers	O Colorado Geologic Survey	O U.S. Postal Service	● Persigo WWTF	● TCI Cable	● Ridges HOA	TOTAL REQ'D.
● Application Fee $720 plus $15/acre	VII-1	1																													
● Submittal Checklist*	VII-3	1																													
● Review Agency Cover Sheet*	VII-3	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
● Application Form*	VII-1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
● Reduction of Assessor's Map	VII-1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
● Evidence of Title	VII-2	1			1			1																							
O Appraisal of Raw Land	VII-1	1			1	1																									
● Names and Addresses*	VII-2	1																													
● Legal Description*	VII-2	1			1																										
O Deeds	VII-1	1			1			1																							
O Easements	VII-2	1	1	1	1			1													1	1	1						1		
O Avigation Easement	VII-1	1			1			1							1																
O ROW	VII-2	1	1	1	1			1													1	1	1						1		
● Covenants, Conditions & Restrictions	VII-1	1	1					1																						1	
O Common Space Agreements	VII-1	1	1					1																							
● County Treasurer's Tax Cert.	VII-1	1																													
● Improvements Agreement/Guarantee*	VII-2	1	1	1				1																							
O CDOT Access Permit	VII-3	1	1																												
O 404 Permit	VII-3	1	1																												
O Floodplain Permit*	VII-4	1	1																												
● General Project Report	X-7	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	
● Composite Plan	IX-10	1	2	1	1																										
● 11"x17" Reduction Composite Plan	IX-10	1				1	1	1	8	1	1	1	1				1	1	1	1	1	1	1	1	1	1		1	1		
● Final Plat	IX-15	1	2	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
● 11"X17" Reduction of Final Plat	IX-15	1							8	1	1	1			1	1	1	1	1	1	1	1	1				1		1	1	
● Cover Sheet	IX-11	1	2																												
● Grading & Stormwater Mgmt Plan	IX-17	1	2															1							1	1			1		
● Storm Drainage Plan and Profile	IX-30	1	2															1			1	1	1						1		
● Water and Sewer Plan and Profile	IX-34	1	2	1			1												1	1	1	1	1					1	1		
● Roadway Plan and Profile	IX-28	1	2															1												1	
● Road Cross-sections	IX-27	1	2																											1	
● Detail Sheet	IX-12	1	2																												
● Landscape Plan	IX-20	2	1	1					8																					1	
● Geotechnical Report	X-8	1	1																							1					
O Phase I & II Environmental Report	X-10,11	1	1																												
● Final Drainage Report	X-5,6	1	2															1													
O Stormwater Management Plan	X-14	1	2															1							1						
O Sewer System Design Report	X-13	1	2	1																1											
O Water System Design Report	X-16	1	2	1															1												
O Traffic Impact Study	X-15	1	2																					1							
● Site Plan - building envelopes	IX-29	1	2	1	1		1		8																					1	

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

PRE-APPLICATION CONFERENCE

Date: 11/27/95
Conference Attendance: Kathy P., Steve Craven, Mike Thompson
Proposal: Final Plat
Location: Kana Rd - Ridges #6

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

Additional ROW required? Mineral
Adjacent road improvements required? —
Area identified as a need in the Master Plan of Parks and Recreation? no
Parks and Open Space fees required? yes Estimated Amount: _____
Recording fees required? yes Estimated Amount: _____
Half street improvement fees/TCP required? TCP Estimated Amount: _____
Revocable Permit required? _____
State Highway Access Permit required? _____
On-site detention/retention or Drainage fee required? on-site detention

Applicable Plans, Policies and Guidelines _____

Located in identified floodplain? FIRM panel # —
Located in other geohazard area? see geo report

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

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

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

O Other _____
Related Files: _____

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

PRE-APPLICATION CONFERENCE

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

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

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

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

X Steven E Craven
Signature(s) of Petitioner(s)

X Michael D Thompson
Signature(s) of Representative(s)

2945-202-06-944
City of Grand Junction
250 North 5th Street
Grand Junction, CO
81501-2628

2945-202-17-944
City of Grand Junction
250 North 5th Street
Grand Junction, CO
81501-2628

2945-173-00-174
Mr Gregory Hoskin
P.O. Box 40
Grand Junction, CO
81502-0040

2945-201-06-033
G.H. Garrett
2386 Plateau Court
Grand Junction, CO
81503

2945-201-06-034
G.H. Garrett
2386 Plateau Court
Grand Junction, CO
81503

2945-201-06-035
G.H. Garrett
2386 Plateau Court
Grand Junction, CO
81503

2945-201-06-036
G.H. Garrett
2386 Plateau Court
Grand Junction, CO
81503

2945-202-18-025
Genie, Inc.
P.O. Box 3299
Grand Junction, CO
81502-3299

2945-202-18-026
Mr Ed Cluff
4120 South Allison
Street
Lakewood, CO 80235

2945-174-29-941
City of Grand Junction
250 North 5th Street
Grand Junction, CO
81501

2945-174-35-002
Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503

2945-174-36-001
Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503

2945-174-36-002
Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503

2945-0174-36-003
Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503

2945-0174-36-004
Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503

2945-174-36-005
Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503

2945-174-30-061
Mr. & Mrs David Koos
2365 1/2 Rana Road
Grand Junction, CO
81503-3306

2945-174-30-062
Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503-4606

2945-174-30-063
Mr Robert R. McKenzie
405 Rana Court
Grand Junction, CO
81503-1524

2945-174-30-064
Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503-4606

2945-174-30-065
Dynamic Investments
391 1/2 Hillview Drive
Grand Junction, CO
81503-4606

2945-174-29-034
Mr. & Mrs Justin Tate
432 Prospectors Point
Grand Junction, CO
81503

2945-174-29-035
Mr. & Mrs Larry Bunnell
432 1/2 Prospectors Pt
Grand Junction, CO
81503

2945-174-29-036
Mr Richard Genova
2234 Rimrock Road
Grand Junction, CO
81503-1177

2945-174-29-037
Mr. & Mrs Emmons
P.O. Box 1623
Grand Junction, CO
81502-1623

2945-174-29-038
Mr. & Mrs Dorman
2368 Rana Road
Grand Junction, CO
81503-1518

2945-174-29-039
Mr. & Mrs Hughes
2366 1/2 Rana Road
Grand Junction, CO
81503-1518

2945-174-29-040
Mr Frank Frigetto
2366 Rana Road
Grand Junction, CO
81503-1518

2945-174-30-071
Mr James Matarozzo
P.O. Box 168
Collbran, CO 81624-
0168

2945-174-30-072
Ms. Lonna Jill Spriggs
404 Rana Court
Grand Junction, CO
81503-1524

2945-174-29-032
Mr. & Mrs Patrick Still
430 Prospectors Point
Grand Junction, CO
81503-1578

2945-174-29-033
Mr. & Mrs. Schaefer
430 1/2 Prospectors Pt
Grand Junction, CO
81503-1578

2945-202-00-069
M.E. Foster
915 Lakeside Court
Grand Junction, CO
81506

2945-202-06-037
G.H. Garrett
2386 Plateau Court
Grand Junction, CO
81503

2945-202-06-038
G.H. Garrett
2386 Plateau Court
Grand Junction, CO
81503

2945-202-06-039
Mr. & Mrs David Koos
2365 1/2 Rana Road
Grand Junction, CO
81503-3306

2945-202-18-027
Temple Rock Capital
4120 South Allison
Street
Lakewood, CO 80235

2945-202-18-028
Mr. Ed Cluff
4120 South Allison
Street
Lakewood, CO 80235

2945-174-30-057
Mr. & Mrs James Darnell
2361 Rana Road
Grand Junction, CO
81503-1523

2945-174-30-058
Mr. & Mrs James Darnell
2361 Rana Road
Grand Junction, CO
81503-1523

FPP-9627

City of Grand Junction
Property Division
250 N 5th Street
Grand Junction, CO 81501

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

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

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

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

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391 1/2 Hillview Drive
Grand Junction, CO 81503

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2365 1/2 Rana Road
Grand Junction, CO 81503

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

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

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

Richard Genova
2234 Rimrock Road
Grand Junction, CO 81503

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

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

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

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

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

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

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

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

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

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

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

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

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

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

.

COBBLESTONE RIDGES PHASE I FINAL PLAN AND PLAT

GENERAL PROJECT REPORT (SSID X-7)

A. PROJECT DESCRIPTION

1. LOCATION & ACREAGE: Phase I Cobblestone Ridges is located in Filing #6 of the Ridges Planned Unit Development taking access from a short extension of Rana Road. Phase I consists of 5.673 acres out of Lot 1, Block 23, Ridges Filing #6.

3. PROPOSED USE: The proposed use is 13 single family residential lots ranging from approximately 8,900 square feet to 15,700 square feet.

These lots will be located along a single cul-de-sac (Saddle Back Court). Saddle Back Court will be built per the Standard as set forth by the City of Grand Junction in its approval of the Preliminary Plat for Cobblestone Ridges. A detention pond will be built at the north end of Saddle Back Court to facilitate the drainage needs of Cobblestone Ridges. Additionally, a linear greenbelt/bike path will be constructed along the Rana Road improvements within this phase as approved within the Cobblestone Ridges Preliminary Plan.

B. PUBLIC BENEFIT

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

C. PROJECT COMPLIANCE, COMPATIBILITY AND IMPACT

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

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

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

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

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

6. EFFECTS ON PUBLIC FACILITIES: Fire, police, sanitation, roads, parks, schools and irrigation. This development is designed in part to be a senior citizen marketed development, therefore its impact on schools will be minimized. Likewise police, fire, sanitation and parks

impact is expected to be less than was originally contemplated within the Ridges due to Phase I Cobblestone Ridges development being less dense than that anticipated within the Ridges Official Development Plan. The Ridges Official Development Plan was based on this area developing with the types of uses which are now proposed, and many of the facilities such as parks, roads, utilities and large opens spaces were planned with this growth in mind.

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

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

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

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

D. DEVELOPMENT SCHEDULE AND PHASING

Phase I Cobblestone Ridges is anticipated to begin in April of 1996, and should be completed in July of 1996.

E. OPEN SPACE PARK FEES

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

September 26, 1995

City Council and
Community Development Department
City of Grand Junction
215 N. 5th Street
Grand Junction, CO 81501

To whom it may concern:

Cobblestone Communities, Inc. is hereby authorized by Dynamic Investments, Inc. to prepare and present for approval both preliminary and final plats, along with any required and accompanying documents and agreements for:

Lot 45, Block 9, The Ridges Filing #6 and
Lot 1, Block 23, The Ridges Filing #6,
Mesa County, Colorado

Sincerely,

Robert M. Stubbs, President
Dynamic Investments, Inc.

Engineering Report

for

COBBLESTONE RIDGES

and adjoining subdivisions

FOR THE CITY OF GRAND JUNCTION

WASTEWATER PUMPING STATION

February 1996

Prepared for:

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

Prepared by:

THOMPSON-LANGFORD CORPORATION
529 25 1/2 Road, Suite B210
Grand Junction, CO 81505
PH. (303) 243-6067

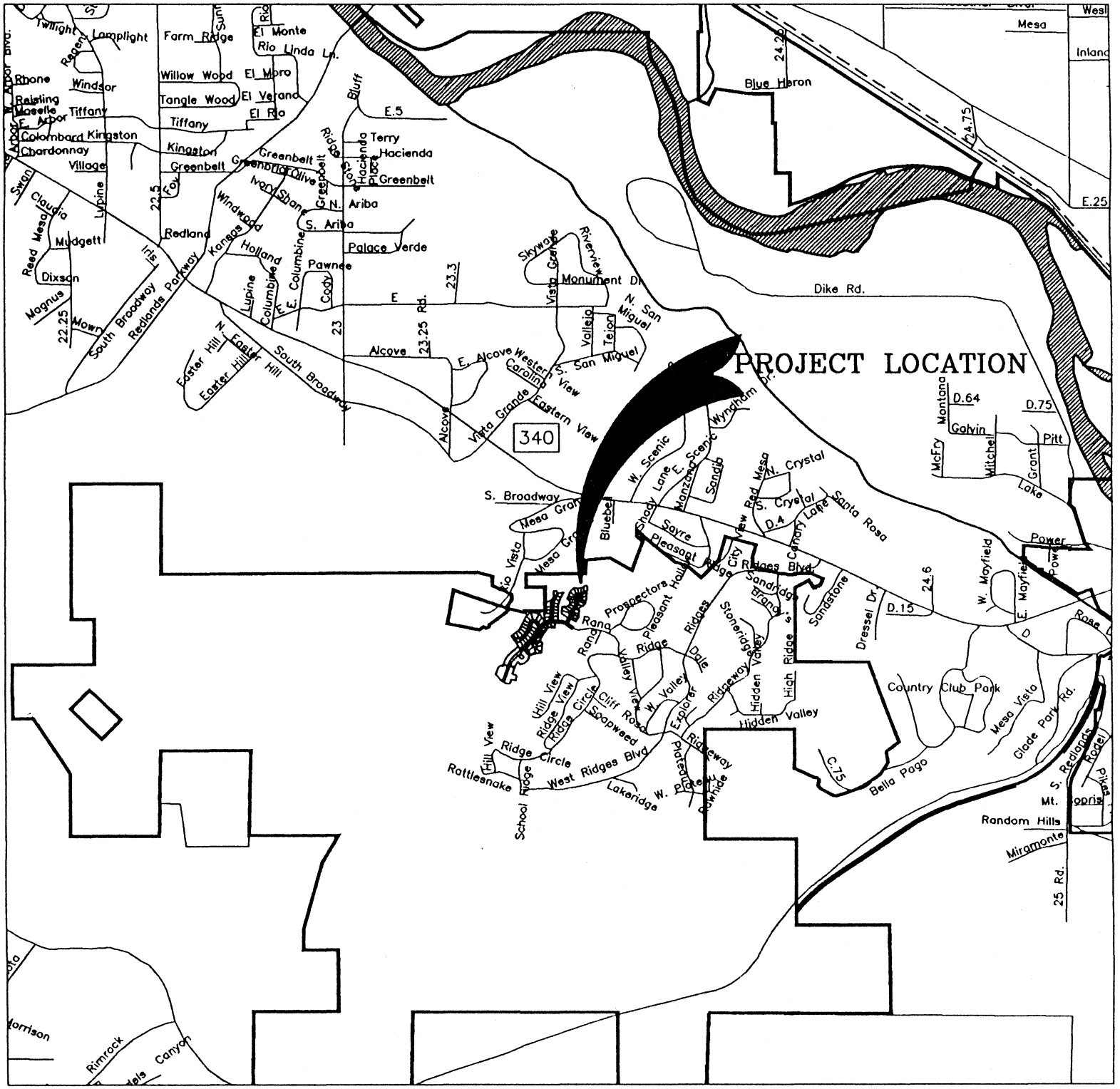
Job No. 0252-001

Engineer's Certification

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

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

COBBLESTONE RIDGES



VICINITY MAP

COBBLESTONE RIDGES

VICINITY MAP

TABLE OF CONTENTS

DESIGN REPORT

Introduction

Cobblestone Ridges, is located in the City of Grand Junction 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.

Of the sixty five lots being proposed for platting as Cobblestone Ridges thirteen (13) lots, located on Saddle Back Court, will not gravity feed into the Ridges collection system. Effluent from these thirteen lots will gravity feed to a lift station at the end of the cul-de-sac and then be pumped back to a manhole on the Ridges gravity system at the intersection of Rana Road and Saddle Back Court. In addition to the thirteen lots in Cobblestone Ridges, the City of Grand Junction and the Mesa County Health Department have requested that we increase the capacity of the Cobblestone Ridges lift station such that it would be capable of servicing thirty two (32) additional dwelling units in the adjoining developed areas.

Construction is anticipated for the Spring of 1996. Once the project has been completed in accordance with the plans as submitted with this application, we will petition the City of Grand Junction to accept the lift station, collection lines and force mains for ownership and maintenance.

Alternatives

Aerated Treatment Lagoons:

Cobblestone Ridges is located in the Grand Junction 201 Sewer Service Area. With the Ridges gravity system only 650 feet from our proposed lift station, construction of a separate treatment facility could not be justified.

On-Site Septic Systems:

On-site septic systems are not being approved in this area.

Gravity Flow to the Existing District System:

Gravity flow is being proposed for all but 13 lots within Cobblestone Ridges. The Cobblestone lots to be served by the lift station are in a valley bottom below the Ridges trunk system. The 32 adjoining lots, which the City and County want us to connect to this system, are on a mesa above this project. The off-site lots are currently being served by septic systems. Not only are all the above lots isolated from the Ridges gravity system, but there are no available trunk lines off-site below the developed or developing area into which we could discharge. Given these site constraints, the only viable option is to construct a small sewage lift station to service the area.

Future Expansion

The City of Grand Junction and the Mesa County Health Department have made an assessment of the sewerage needs of the surrounding area and have asked us to size the lift station to handle an additional 32 lots. A stubout from our collection system has been provided, and the lift station wet well has been increase as needed to accommodate this request.

System Description

As shown on the project construction drawings for Cobblestone Ridges, the proposed lift station will service thirteen lots on Saddle Back Court as well as the 32 additional homes north of this project. Sewage from the station will be pumped through 650 lineal feet of 4-inch Class 160 PVC pipe, constructed in a manner similar to pressurized potable water systems, to a manhole located at the intersection of Rana Road and Saddle Back Court. Here, the flow will combine with the gravity flow from the remaining thirty-one (31) lots and gravity flow into the Ridges collection system.

We are proposing to use a Smith-Loveless model 4B2B wet well mounted system as detailed on the attached sheet. The wet well for the lift station will be constructed of 60-inch RCP to a depth of 12.88 feet. The base will have a grouted 60 degree fillet preventing buildup of solids.

To maintain scouring velocities in the 4-inch force main, a pump operating at 100 gpm was selected. The 100 GPM pumping rate will provide an effluent velocity in the force main of 2.55 fps.

The wet well has been sized to hold no more than 30 minutes of ADF (12.33 gpm) between "Pump On" and Pump Off"

with the pump being off 3.7 minutes at MDF (49.33 gpm) before the cycle restarts.

We discussed the possibility of unplanned power outage and mechanical or electrical failure with the City of Grand Junction. We were told that they do not require overflow storage areas, but address this possibility by requiring "unpowered alarm contacts" to which they connect communications directly to the Persigo Wash Treatment Plant. Upon receipt of an alarm at the plant, they dispatch not only service personnel, but a pumper truck as well.

System Design

Cobblestone Lift Station:

Waste water projections for the Cobblestone Station were based on there being 3.5 persons per residence each generating 100 GPD of sewage flow. Based on the 13 units in Cobblestone, and the additional 32 units off-site, the Average Daily Flow (ADF) to the Cobblestone Station including infiltration, will be 17,757 GPD (12.33 GPM). The Peak Flow using a peaking factor of four (4) becomes 71,028 GPD (49.33 GPM).

A Total Dynamic Head curve was plotted on the graph showing the pump curves indicating that a 5-HP pump with a 9 1/8" impeller operating at 100 GPM would satisfy our needs.

Based on thirty (30) minutes of storage time in the wet well, a "pump on" depth of 4.28 feet was calculated. With an Average Daily Flow (ADF) of 12.33 gpm, a Maximum Design Flow (MDF) of 4 times the ADF of 49.33 gpm and a 30-minute maximum detention time, the wet well will collect 370 gallons of sewage before reaching the "Pump On" condition. Following startup, the pump will run 7.3 minutes at 100 gpm before reaching the "Pump Off" condition. The pump will remain off for 3.7 minutes while the wet well again fills before the cycle is repeated.

Between the "pump on" level mentioned above, and the influent line invert, an additional 203 gallons of storage is available before the influent line would begin to surcharge. The total emergency storage from the "pump on" level to the top of the wet well would be 1263 gallons or 25.6 minutes at the peak flow rate of 49.33 GPM.

A stage storage relationship with real world elevations was tabulated to demonstrate wet well performance.

CHECK LIST

Cobblestone Lift Station:

GENERAL INFORMATION
Entity: Cobblestone Ridges
Receiving entity: City of Grand Junction
Entity maintaining system: City of Grand Junction
In flood plain: No

DESIGN INFORMATION
Design Capacity: Average 100 GPM
Type of station: Wet well mounted pumps
Station accessible: Yes, adjacent to paved road.
Barscreen & grit removal furnished: No

PUMPS
Pump equip. & controls housed?: Yes
# of pumps: Two (2) duplicates
Type of pump: Centrifugal
Capacity of each pump: 100-GPM
Horsepower of each pump: 5-HP
Heads: TDH = 37' (32' Static, 5' Friction)
Pump curve furnished: Yes
Pump opening: 3"
Diameter of pump suction and Discharge: 4"
Pump operator under positive suction head: No - vacuum primed
Electrical wiring: NEMA Type 1 steel enclosure
Individual intake for each pump: Yes
Type of controls: Mercury (Hg) float switches
Are controls affected by influent flows: No, an external drop connection is to be provided.
Shutoff valves on suction/discharge lines of each pump: On discharge "Yes", but not on suction as the pumps are vacuum primed
Check valve on each discharge line: Same as above

WET WELL

Volume of wet well: 1708 gallons total, 648 gallon before surcharging influent line, 445 gallon active storage.
Detention time in wet well: 30.0 min.
Slope of floor in wet well: 60 degree fillets
NPDES permit required: No
Wet well ventilation: N/A
Alt. power supply: No
Average length of power outage: Per PSC, 30 Min.
Type of alarm: Visual at site as well as transmitted to Persigo Wash treatment plant
Force Main: 650 LF of 4" Cl-160 PVC, velocity 2.55 FPS, to be constructed in the same fashion as a pressurized potable water line with thrust blocking of any bends.

LEGAL DESCRIPTION

LEGAL DESCRIPTION

Parcel 1:

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

Parcel 2:

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

MESA COUNTY, COLORADO

DESIGN CALCULATIONS

SEWAGE FLOW GUIDE*

1a/

PLACE	ESTIMATED SEWAGE FLOW, GALLONS PER DAY
Apartments	250 one bedroom
	300 two bedroom
	350 three bedroom
Airports	15 each employee
	15 each passenger
Assembly Halls	2 per seat
Bar	15 each employee
	15 each customer
Bowling Alleys (no food service)	75 per lane
Camps & Resorts	
Luxury Resorts	100
Summer Camps	50
Construction Camps	50
Churches (small)	3-5 per sanctuary seat
Churches (large, with kitchen)	5-7 per sanctuary seat
Country Clubs	50 per member
Dance Halls	2 per person
Drive-in Theaters	5 per car space
Factories (no showers)	25 per employee
Factories (with showers)	35 per employee
Food Service Operations	
Ordinary Restaurant (Not 24-hour)	35 per seat at 400 ppm BOD
24-hour Restaurant	50 per seat at 400 ppm BOD
Restaurant along Freeway (24-hour)	70 per seat at 400 ppm BOD
Tavern (very little food service)	20 per seat at 400 ppm BOD
Curb Service (drive-in)	50 per car space at 400 ppm BOD
Vending Machine Restaurants	70 per seat at 200 ppm BOD
Hospitals (no resident personnel)	200 per bed
Housing	
Luxury Homes	100 per person
Better Subdivision	90 per person
Average Subdivision	80 per person
Low Cost Housing	70 per person
Summer Cottage	50 per person
Average Housing	3.6 per person
Institutions (resident)	100 per person
Laundries (coin-operated)	400 per machine
Laundry wastes require special consideration.	Consult District Sanitary Engineer
Motels & Hotels	100 per unit
Milk Plant Waste	100-225 gallon per 1000 gal. milk processed.
Nursing and Rest Homes	100 per person
Office Buildings	20 per person
Schools – Elementary	15 per pupil
Schools – High and Junior High	20 per pupil
Service Stations	1000 first bay
	500 each additional bay
Shopping Centers (without food service or laundries	0.1 per sq. foot of floor space
Subdivisions	400 per home
Swimming Pool (average)	3-5 per swimmer (design load)
With hot water shower	5-7 per swimmer (design load)
Theaters	
Drive-in	5 per stall
Movie House	5 per seat
Trailer Parks (without service building)	150 per trailer space
With service building	175 per trailer space
Vacation Cottages	50 per person
Youth and Recreation Camps	50 per camper

* Based on Average Conditions. (Individual states may require design based on higher flow rates).

FLC CALCULATION WORK SHEE

DATE 1/30/96

PROJECT Cobble Stone Ridge & Adjacent Subdivisions

LOCATION Grand Junction, CO

Approximate total acreage serviced _____

Average water consumption for area serviced 100 gpcd GPD _____

If not known, figure flow rates by Sewage Flow Guide.

Total number of homes served = 45 @ 100gpcd x 3.5 p/e GPD = total GPD 15,750

School(s) _____ pupil @ _____ GPD = total GPD Ø

Factory(s) _____ employees @ _____ GPD = total GPD Ø

Restaurant(s) _____ total seats (200 meals/day) @ _____ GPD = total GPD Ø

Motel(s) or Hotel(s) _____ units (2 people/unit) @ _____ GPD = total GPD Ø

Σ = 15,750

Others _____

Total length of gravity run (Saddleback Court 6492LF) + (Offsite 2000LF±) = 0.502 mi

Pipe diameter 8" dia. SDR-35 PVC

Infiltration: Per ASTM C-425
500 gallons x 8" pipe diameter = 4000 x 0.502 miles = 2,007 GPD

Total GPD = 17,757

divided by 1440 = total GPM 12.33 gpm

12.33 GPM x 4 [Multiplier for peak flow conditions normally 2.5 for most installations] = 49.33 GPM pump or ejector rating

= 71,028 gpd

Form 211205

TOTAL DYNAMIC HEAD WORK SHEET

PROJECT Cobblestone Ridge & Surrounding Subdivisions DATE 1/30/96

AREA Grand Junction, CO

ENGINEER Jim Langford

Based on Flow Rate of (in 4" PVC)	100	GPM
Wet Well Invert Elevation	4696.12	Ft. above sea level
A = Maximum Flooded Suction Elevation	4701.0	Ft. above sea level
B = Minimum Flooded Suction Elevation	4697.62	Ft. above sea level
C = Pump Invert Elevation	4696.62	Ft. above sea level
D = Maximum Positive Head (A–C)	4.38	Ft.
E = Minimum Positive Head (B–C)	1.0	Ft.
F = Total Suction Lift (Disregards D & E) (when suction lift)		Ft.
G = Maximum Lift Elevation	4728.75	Ft. above sea level
H = Static Lift – Flooded Suction (G–B)	31.13	Ft.
I = Suction Lift (F + G)		Ft.
Force Main Size =	4"	" Dia.
C Factor to be used C=140 C 100 coefficient =	1.23	
Multiplier for Adjusting C = 100 table	0.54	
Total Length of Force Main	650	Ft.
Equivalent Length of Pipe for All Elbows and Fittings	0	
Total Equivalent Force Main Length	650	Ft.
J = Friction Loss Based on Above Flow Rate @ Correct C Factor $= (C_{100})(Coef.)\frac{L}{100} = 1.23 \times 0.54 \times 6.5$	4.32	Ft.
K = Station Loss	0.50	Ft.
L = Maximum TDH (H + J + K)	35.95	Ft.
M = Minimum TDH (G – A + J + K)		Ft.

ENGINEERING DATA

Smith & Loveless, Inc.
14040 W. Santa Fe Trail Dr.
Lenexa, Kansas 66215

FRICTION OF WATER IN PIPES AND FITTINGS

WILLIAMS & HAZEN FORMULA C = 100

Loss of Head in Feet Due to Friction per 100 Feet of 15 year old Cast Iron Pipe

* Gallons Per Min.	4 Inch Pipe Vel.	4 Inch Pipe Fric.	6 Inch Pipe Vel.	6 Inch Pipe Fric.	8 Inch Pipe Vel.	8 Inch Pipe Fric.	10 Inch Pipe Vel.	10 Inch Pipe Fric.	12 Inch Pipe Vel.	12 Inch Pipe Fric.	14 Inch Pipe Vel.	14 Inch Pipe Fric.	16 Inch Pipe Vel.	16 Inch Pipe Fric.
40	1.02	0.23												
60	1.53	0.48												
75	1.91	0.78												
100	2.55	1.23	1.13	0.17										
125	3.19	1.86	1.48	0.28										
150	3.83	2.61	1.71	0.32										
175	4.45	3.44	2.00	0.48										
200	5.11	4.43	2.27	0.62										
225	5.77	5.45	2.57	0.74										
250	6.40	6.72	2.80	0.92										
275	7.03	7.99	3.06	1.15										
300	7.66	9.38	3.40	1.30	1.91	0.32								
350	8.90	12.32	3.98	1.75	2.23	0.43								
400	10.21	16.00	4.54	2.22	2.55	0.55	1.63	0.19						
450	11.50	19.80	5.11	2.76	2.87	0.68	1.84	0.23						
500	12.77	24.10	5.67	3.36	3.19	0.83	2.04	0.28	1.42	0.12				
550	....	....	6.24	4.00	3.51	0.99	2.25	0.33	1.57	0.14				
600	....	....	6.81	4.70	3.83	1.16	2.45	0.39	1.71	0.16				
650	....	....	7.38	5.45	4.15	1.34	2.66	0.46	1.85	0.19	1.37	0.09		
700	....	....	7.94	6.25	4.47	1.54	2.86	0.52	2.00	0.22	1.47	0.10		
750	....	....	8.51	7.10	4.79	1.75	3.06	0.59	2.13	0.24	1.58	0.11		
800	....	....	9.08	8.00	5.11	1.97	3.27	0.67	2.28	0.27	1.68	0.13		
850	....	....	9.65	8.95	5.43	2.21	3.48	0.75	2.41	0.31	1.79	0.14		
900	....	....	10.21	9.95	5.75	2.46	3.68	0.83	2.56	0.34	1.89	0.16		
950	....	....	10.78	11.00	6.06	2.71	3.88	0.91	2.70	0.38	2.00	0.18		
1000	....	....	11.35	12.10	6.38	2.98	4.08	1.01	2.84	0.41	2.10	0.20	1.59	0.10
1050	....	....	11.90	13.30	6.70	3.21	4.29	1.09	2.98	0.44	2.20	0.22	1.67	0.11
1100	....	....	12.50	14.40	7.03	3.56	4.49	1.20	3.13	0.49	2.31	0.23	1.75	0.12
1150	....	....	12.95	15.60	7.35	3.84	4.71	1.34	3.27	0.53	2.42	0.25	1.83	0.13
1200	....	....	13.62	16.90	7.66	4.18	4.90	1.41	3.41	0.58	2.52	0.28	1.91	0.14
1250	....	....	14.10	18.50	8.00	4.45	5.11	1.51	3.55	0.62	2.63	0.29	1.99	0.15
1300	....	....	....	....	8.30	4.85	5.31	1.64	3.69	0.67	2.74	0.32	2.07	0.16
1400	....	....	....	....	8.95	5.56	5.71	1.88	3.98	0.78	2.94	0.37	2.22	0.19
1500	....	....	....	....	9.57	6.32	6.13	2.13	4.20	0.88	3.15	0.42	2.39	0.21
1600	....	....	....	....	10.21	7.12	6.53	2.40	4.55	0.98	3.36	0.48	2.55	0.25
1800	....	....	....	....	11.50	8.85	7.35	2.99	5.11	1.23	3.78	0.58	2.87	0.30
2000	....	....	....	....	12.77	10.80	8.17	3.63	5.67	1.50	4.20	0.71	3.19	0.37
2200	....	....	....	....	....	....	8.98	4.33	6.25	1.78	4.60	0.81	3.51	0.46
2400	....	....	....	....	....	....	9.80	5.09	6.81	2.10	5.04	0.96	3.83	0.54
2600	....	....	....	....	....	....	10.61	5.90	7.38	2.43	5.46	1.13	4.15	0.62
2800	....	....	....	....	....	....	11.41	6.77	7.95	2.78	5.88	1.29	4.46	0.70
3000	....	....	....	....	....	....	12.24	7.69	8.52	3.17	6.25	1.50	4.79	0.78
3200									9.10	3.51	6.68	1.67	5.12	0.88
3400									9.66	3.91	7.10	1.86	5.44	0.98
3600									10.25	4.37	7.52	2.08	5.77	1.10
3800									10.80	4.90	7.95	2.36	6.07	1.20
4000									11.35	5.39	8.40	2.55	6.38	1.34
4500									12.78	6.70	9.45	3.20	7.20	1.65
5000									14.20	8.15	10.50	3.90	7.96	2.02
5500									....	....	11.55	4.65	8.78	2.39
6000									....	....	12.60	5.39	9.56	2.82

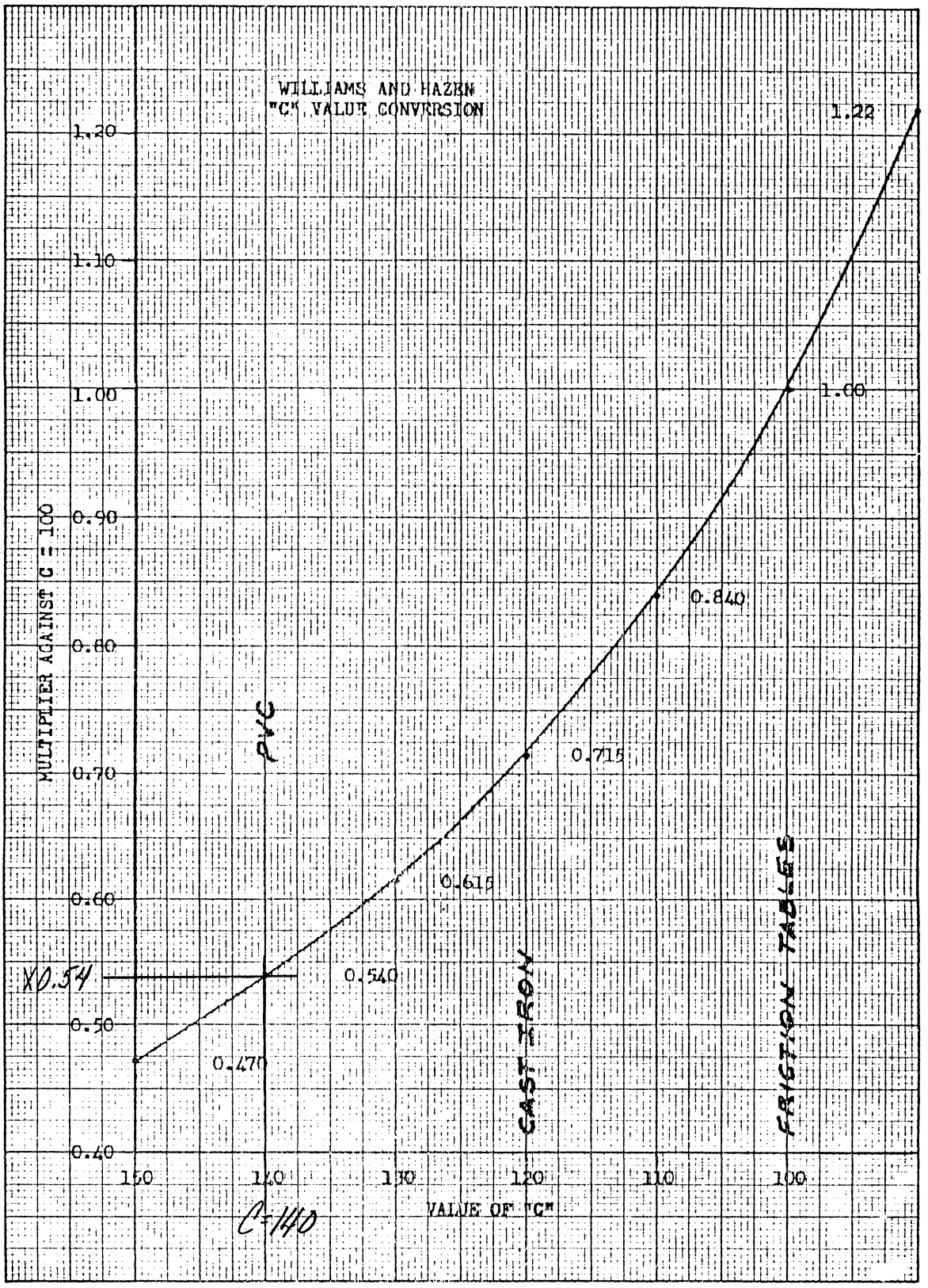
Williams & Hazen Coefficient "C" =	Multiplier to Adjust Chart	Pipe Description
100	1.000	Average 15 year old cast iron pipe
110	0.840	Vitrified sewer pipe
120	0.715	New wrought iron pipe
120	0.715	Average 5 year old cast iron pipe
130	0.615	Average new cast iron pipe
140	0.540	Very straight & smooth cast iron pipe
140	0.540	New steel pipe; Cement asbestos pipe
150	0.470	New CI pipe w/cent. spun bituminous lining

Length of Straight Pipe which will give same Friction Loss as Listed Valves and Fittings

Pipe Size	Std. Elbow	Long Radius Elbow	45° Elbow	Tee through Side	Gate Valve Open	Swing Check Valve Open
4"	11'	7'	5'	22'	2.3'	27'
6"	16'	11'	7.7'	33'	3.5'	40'
8"	21'	14'	10'	43'	4.5'	53'
10"	26'	17'	13'	56'	5.7'	67'
12"	32'	20'	15'	66'	6.7'	80'
14"	36'	23'	17'	76'	8.0'	93'
16"	42'	27'	19'	87'	9.0'	107'

(Add to Actual Pipe Length to get Equivalent Length for use with Friction Factor from above Table)

*Use twice the rated capacity for Mon-O-Ject® and Duo-O-Ject® pneumatic ejector stations



System Head Calculations
(By formula)

Force main length = 650'

10% for minor losses 65'

Total 715'

Force main ID = Varies from mfg to mfg ∴ Use 4.1"

C = 140

$$\text{Friction Head } H_f = \frac{L}{100} 0.2083 \left(\frac{100}{C}\right)^{1.85} \times \frac{Q^{1.85}}{ID^{4.8655}}$$

Q (gpm)	H_f (ft)	Static Head (ft)	TDH (ft)
50	1.16	32.25	33.41
100	4.18	"	36.43
150	8.85	"	41.10
200	15.07	"	47.32
250	22.77	"	55.02
300	31.90	"	64.15

System Head Calculations
(By Tables)

Force main length = 650

Straight line; no minor losses = ϕ

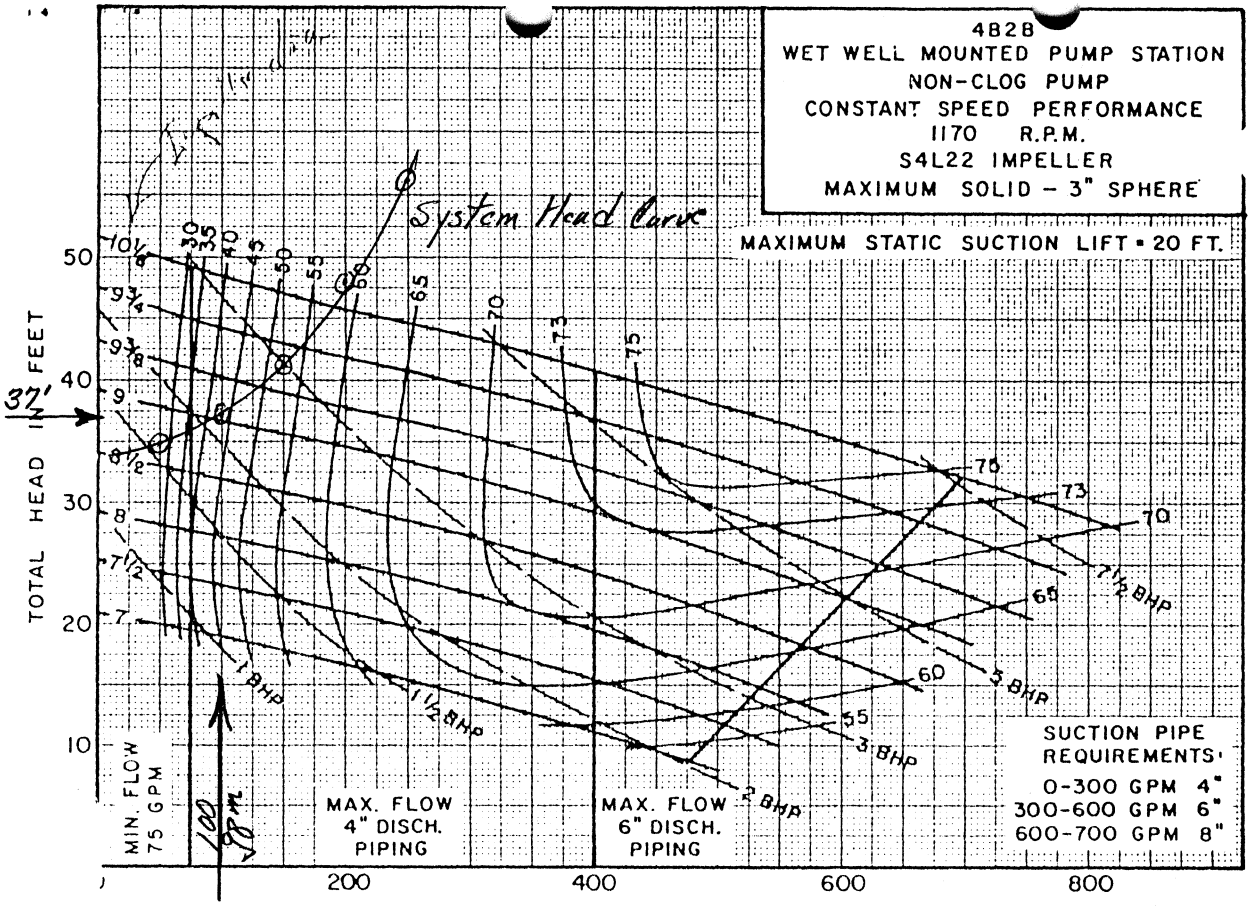
Force main 4" dia

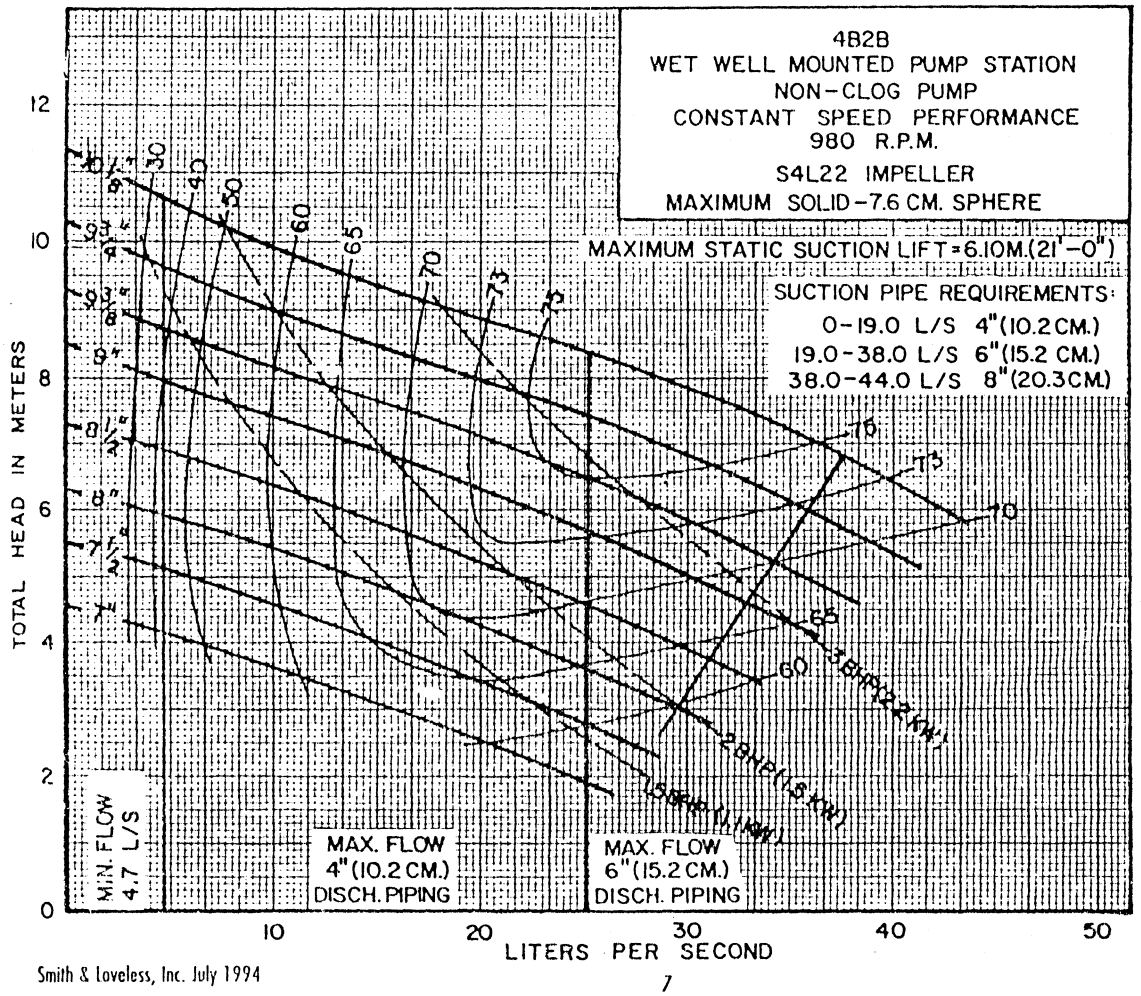
*Losses/100' from Williams & Hazen table attached

**Correction factor from C=100 to C=140

Q(gpm)	Hf* Table x 0.54** x 100's lengths	Static Head	TDH
50	1.24	32.25	33.49
100	4.32	"	36.57
150	9.16	"	41.41
200	15.55	"	47.80
250	23.59	32.25	55.84

Water & Wastewater
Wet Well Mounted
Pump Station





Summary Pump Data

From pump curves on pg-7 under "Wet Well Mounted Pump Stations"

USE:

Smith-Loveless
Model 4B2B pumps
1170 RPM
@ 37' TDH & 100 gpm * 2.55 fps min. velocity
9 1/8" Impeller / 2 BHP min
3+ BHP max ∴ need next higher
USE 5 HP 3-phase w/ 1-Phase converter.

Accessories

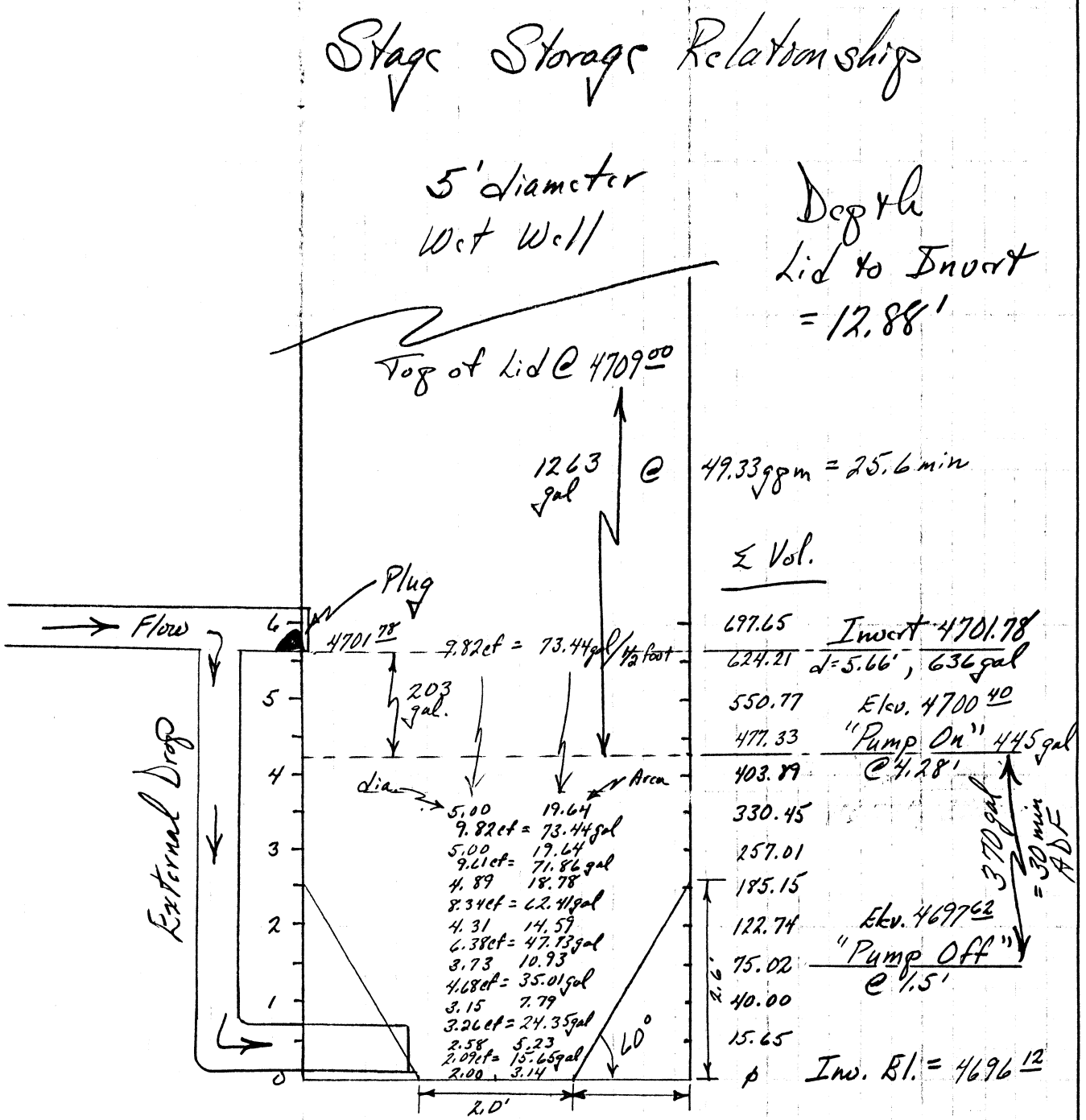
Float Switch Controls (4) pg-5
Alarm Systems
Need unpowered alarm contacts for high water alarm → Alarm light 120 VAC pg-6
(Red globe and guard)
Running Time Meter (each pump) pg-7
Electric Heater pg-7

Transformer (only if 3phase) pg-7
* OK w/ Trent to see if phase conversion acceptable.

Insulated Hood pg-9

Phase Converter Pilot Relays pg-9

Stage Storage Relationship



Lift Station Operations Summary

Min. Design Flow = Ave. Dai. Flow = 12.33 gpm

Max or Peak Design Flow = 4X ADF = 49.33 gpm

CDOH max storage time = 30 min @ Min. Design Flow =
= 30 min X 12.33 gpm = 370 gal
(@ discharge = 100 gpm, = 3.7 min of run time)
"Pump Off" @ 1.5' above floor or 75 gal
"Pump On" @ depth = 4.28 ft or 445 gal storage

Run Time (T_R) @ Max Design Flow (49.33 gpm)

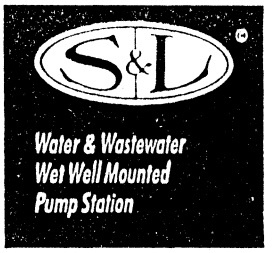
$$\frac{370\text{ gal} + T_R(49.33\text{ gpm})}{100\text{ gpm}} = T_R = 7.30\text{ min.}$$

Therefore:

At peak flow, pump will come on @ d = 4.28 ft and will run for 7.3 min. before "Pump off". The pump will remain off for 3.7 min. while wet well again fills 370 gal at which time the cycle will start over.

TECHNICAL SPECIFICATIONS

WET WELL MOUNTED PUMP STATION WITH DUPLEX NON-CLOG PUMPS



GENERAL

The contractor shall furnish and install one factory-built, automatic pumping station as manufactured by Smith & Loveless®, Inc., Lenexa, Kansas. The station shall be complete with all needed equipment, factory-installed on a welded steel base with fiberglass cover.

The principal items of equipment shall include two vertical, close-coupled, motor driven, vacuum primed, non-clog pumps; valves; internal piping; central control panel with circuit breakers; motor starters and automatic pumping level controls; heater; ventilating blower; priming pumps and appurtenances; and all internal wiring.

OPERATING CONDITIONS

Each pump shall be capable of delivering 100 GPM of raw water or wastewater against a total dynamic head of 37 feet. The minimum acceptable pump efficiency at this condition shall be 43 %. Due to the energy conservation requirements, the minimum efficiency will be enforced. The maximum allowable speed shall be 1170 RPM. The minimum rated horsepower of each pump motor shall be 5. The maximum static suction lift shall be 12.4'.

All openings and passages shall be large enough to permit the passage of a sphere 3" in diameter. The anticipated operating head range is from 34 feet minimum to 37 feet maximum. The pump motors shall not be overloaded beyond their nameplate rating, at the design conditions, nor at any head in the operating range.

CONSTRUCTION

The station shall be constructed in one complete, factory-built assembly. It shall be sized to rest on the top of the well as detailed in the construction drawings. The supporting floor plate shall be minimum 3/8" thick steel with reinforcing, as required, to prevent deflection and ensure an absolutely rigid support.

The pump station shall be enclosed by a hinged fiberglass cover. The cover shall have a suitable drip-lip around the edge and shall be provided with a hasp and staple connection to the floor plate to allow the pump chamber to be locked with a padlock.

The cover shall have a latch mechanism to keep the cover open under load. Adjustable ventilating louvers shall be provided on each end of the fiberglass cover which are capable of being closed during cold weather operation.

A 1/4" thick sliding aluminum manway cover, located exterior to the fiberglass pump chamber, shall be provided, complete with padlocking provisions. The manway shall be an integral part of the station floor plate and provide access to the wet well.

A stanchion with lifting arm shall be provided to lift each pump. The lifting arm shall have a hook over the center of the motor to support a hoist (provided by others) for removal of the motors, impellers and pumps from the station.

The pump volutes and discharge piping shall be mounted in relation to the floor plate as detailed in the construction drawings.

WELDING

All steel structural members shall be joined by electric arc welding with welds of adequate section for the joint involved.

PROTECTION AGAINST CORROSION

All Structural steel surfaces shall be factory blasted with steel grit to remove rust, mill scale, weld slag, etc. All weld spatter and surface roughness shall be removed by grinding. Surface preparation shall comply with SSPC-SP6 specifications. Immediately following cleaning, a single 6-mil dry film thickness of Versapox® epoxy resin shall be factory applied. This coating shall be as formulated by Smith & Loveless for abrasion and corrosion resistance.

Stainless steel, aluminum and other corrosion resistant surfaces shall not be coated. Carbon steel surfaces not otherwise protected shall be coated with a suitable non-hardening rust preventative compound. Auxiliary components, such as the electrical enclosure, ventilating blower and vacuum pumps, shall be furnished with the original manufacturer's coating.

Finish coating shall be accomplished prior to shipment of the station from the factory and shall comply fully with the intent of these specifications. A touch-up kit shall be provided by the pump station manufacturer for repair of any mars or scratches occurring during shipping and installation. This kit shall contain detailed instructions for use and shall be the same material as the original coating.

MAIN PUMPS

The pumps shall be (4") (6") (8") vertical, non-clog type of heavy cast iron construction, especially designed for the use of mechanical seals and vacuum priming. In order to minimize seal wear caused by linear movement of the shaft, the shaft bearing nearest the pump impeller shall be locked in place so that end play is limited to the clearance within the bearing. To minimize seal wear resulting from shaft deflection caused by the radial thrust of the pump, the shaft from the top of the impeller to the lower bearing supporting the impeller shall have a minimum diameter of 1-7/8" for motor frame sizes 213 through 286; 2-1/8" for motor frame sizes 324 and 326; and 3" for frame 364 and larger. The dimension from the lowest bearing to the top of the impeller shall not exceed 6".

The bearing nearest the impeller shall be designed for the combined thrust and radial load. The upper bearing shall be free to move linearly with the thermal expansion of the shaft and shall carry only radial loads.

The shaft shall be solid stainless steel through the mechanical seal to eliminate corrosion and abrasive rust particles. Removable shaft sleeves will not be acceptable if the shaft under the sleeve does not meet the specified minimum diameter.

The pump impeller shall be of the enclosed type made of close-grained cast iron and shall be balanced. The impeller shall be keyed with a stainless steel key and secured to the motor shaft by a stainless steel cap screw equipped with a Nylock or other suitable self-locking device. The impeller shall not be screwed or pinned to the motor pump shaft and shall be readily removable without the use of special tools. To prevent the buildup of stringy materials, grit and other foreign particles around the pump shaft, all impellers less than full diameter shall be trimmed inside the impeller shroud. The shroud shall remain full diameter so that close minimum clearance from shroud to volute is maintained. Both the end of the shaft and the bore of the impeller shall be tapered to permit easy removal of the impeller from the shaft.

The pump shall have an adaptor providing a large water reservoir above the impeller to provide for positive exclusion of air from the impeller. The seal shall be inside this area to assure lubrication. Pumps which do not use hollow priming adaptors for positive lubrication of the seal will not be acceptable.

The pump shall be constructed to permit priming from the low pressure area behind the impeller. Priming from high pressure connections, which tends to cause solids to enter and clog the priming system, will not be acceptable. The priming bowl shall be transparent to enable the operator to monitor the priming level.

The pump shall be arranged so that the rotating element can easily be removed from the volute without disconnecting the electrical wiring or disassembling the motor, impeller, backhead or seal, so that any foreign object may be removed from the pump or suction line.

The pump shaft shall be sealed against leakage by a single mechanical seal constructed so as to be automatically drained and primed each time the pump is drained and primed. Water which lubricates the mechanical seal shall be automatically drained from around the seal if the pump loses prime, in order to allow both the pump and the seal to be drained, thereby preventing freezing and breakage of the seal during power outages in sub-freezing temperatures.

The seal shall be of carbon and ceramic materials, with the mating surfaces lapped to a flatness tolerance of one light band. The rotating ceramic shall be held in mating position with the stationary carbon by a stainless steel spring.

The pump volute shall be furnished with mounting lugs and bolted to the station floor plate, forming a gas-tight seal.

MOTORS

The pump motors shall be vertical, solid shaft, NEMA P base, squirrel cage induction type, suitable for 3 phase, 60 cycle, 230 volt electric current. They shall have Class F insulation. Insulation temperature shall, however, be limited to Class B. The motors shall have normal starting torque and low-starting current, as specified by NEMA Design B characteristics. They shall be open drip-proof design with forced air circulation by integral fan. Openings for ventilation shall be uniformly spaced around the motor frame. Leads shall be terminated in a cast connection box and shall be clearly identified.

The motors shall have 1.15 service factor. The service factor shall be reserved for the owner's protection. The motors shall not be overloaded beyond their nameplate rating, at the design conditions, nor at any head in the operating range as specified under Operating Conditions.

The motor-pump shaft shall be centered, in relation to the motor base, within .005". The shaft run out shall not exceed .003".

The motor shaft shall equal or exceed the diameter specified under "main pump", at all points from immediately below the top bearing to the top of the impeller hub.

A bearing cap shall be provided to hold the bottom motor bearing in a fixed position. Bearing housings shall be provided with fittings for lubrication as well as purging old lubricant.

The motor shall be fitted with heavy lifting eyes or lugs, each capable of supporting the entire weight of the pump and motor.

CONTROLS

The control equipment shall be mounted in a NEMA Type 1 steel enclosure with a removable access cover. The circuit breakers, starter reset buttons, and control switches shall be operable without removing the access cover, for deadfront operation.

A grounding type convenience outlet shall be provided on the side of the cabinet for operation of volt AC devices.

Thermal magnetic air circuit breakers shall be provided for branch disconnect service and short circuit protection of all motor control and auxiliary circuits.

Magnetic across-the-line starters with under-voltage release and overload coils for each phase shall be provided for each pump motor to give positive protection. Each single phase auxiliary motor shall be equipped with an over-current protection device in addition to the branch circuit breaker, or shall be impedance protected. All switches shall be labeled and a coded wiring diagram shall be provided.

To control the operation of the pumps with variations of liquid level in the wet well, a minimum of three (3) mercury displacement switches shall be provided. A 30' cord shall be provided with each switch. The cord shall have a corrosion resistant vinyl jacket and be multi-stranded in order to prevent fatigue.

An automatic alternator with manual switch shall be provided to change the sequence of operation of the pumps every eight hours. Alternating the pumps at less than eight-hour intervals will not be acceptable.

Provisions shall also be made for the pumps to operate in parallel should the level in the wet well continue to rise above the starting level for the low level pump.

HIGH WET WELL LEVEL ALARM [✓] (Optional Item - *Check If Required*)

An adjustable mercury displacement switch shall be provided to sense a high water level condition. The switch shall hang into the wet well and shall activate a contact to indicate the high water condition.

VACUUM PRIMING SYSTEM

A vacuum priming system shall be furnished to prime the main pumps. The system shall be as shown on the vacuum priming schematic and shall include two vacuum pumps, providing 100 percent standby. Vacuum pumps shall have corrosion-resistant internal components. The vacuum priming system shall be complete with vacuum control solenoid valves, prime level sensing probes, float-operated check valves to protect the vacuum pumps, and all necessary shut-off valves as shown on the piping schematic. The float-operated check valves shall have a transparent body for visual inspection.

The priming system shall automatically provide positive lubrication of the mechanical seal each time a main pump is primed. To prevent excessive stoppage due to grease accumulation, no passageway in the priming system through which the pumped liquid must pass shall be smaller than the equivalent of a 2-1/2" opening.

ENVIRONMENTAL EQUIPMENT

A ventilating blower shall be provided, capable of delivering 250 cfm at 0.1" static water pressure, in order to remove the heat generated by continuous motor operation. The ventilating blower shall be turned on and off automatically by a pre-set thermostat. A louvered opening shall cover the discharge. An electric heater controlled by a pre-set thermostat shall be furnished. The heater shall be rigidly mounted in the station to prevent removal.

MAIN PIPING

The pump suction shall be drilled and tapped for a 125 pound American Standard flange for ready connection of the suction riser. The discharge line from each pump shall be fitted with a clapper-type check valve and eccentric plug valve. Size, location, and quantity of check valves and plug valves shall be as shown on the construction drawing. The check valve shall be of the spring-loaded type with external lever arm and an easily replaced resilient seat for added assurance against vacuum leaks. Check valves shall have stainless steel shaft with replaceable bronze shaft bushings and shall be sealed with an adjustable Teflon seal. An operating wrench shall be provided for the plug valves.

Protrusions through the floor plate shall be gas-tight where necessary to effect sealing between the equipment chamber and the wet well. Bolted and sealed joints shall be provided at the volutes or suction pipes in order to prevent corrosive, noxious fumes from entering the station. The pump station manufacturer shall extend the suction and discharge connections below the floor plate at the factory so that field connections can be made without disturbing the gas-tight seals.

The manufacturer of the pump station shall provide a compression-type sleeve coupling for installation in the common discharge pipe.

FACTORY TESTS

All components of the pump station shall be given an operational test at the pump station manufacturer's facility to check for excessive vibration, leaks in the piping or seals and correct operation of the automatic control and vacuum priming systems and all auxiliary equipment. Installed pumps shall take suction from a deep wet well, simulating actual service conditions. The control panel shall undergo both a dry logic test and a full operational test with all systems operating.

Factory test instrumentation must include flow measuring with indicator; compound suction gauge; bourdon tube type discharge pressure gauge; electrical meters to measure amperes, volts, kilowatts and power factor; speed indicator and a vibrometer capable of measuring both amplitude and frequency.

SPARE PARTS

A complete replacement pump shaft seal assembly shall be furnished with each pump station. The spare seal shall be packed in a suitable container and shall include complete installation instructions. A spare volute and seal gasket shall be provided.

INSTALLATION AND OPERATING INSTRUCTIONS

Installation of the pump chamber shall be done in accordance with the written instructions provided by the manufacturer.

Operation and maintenance manuals shall be furnished, which will include parts lists of components and complete service procedures and troubleshooting guide.

START-UP

The Manufacturer shall provide the services of a factory-trained representative for a maximum period of one day on-site to perform initial start-up of the pump station and to instruct the owner's operating personnel in the operation and maintenance of the equipment.

GUARANTEE

The manufacturer of the station shall guarantee for one year from date of start-up, not to exceed eighteen months from date of shipment, that the structure and all equipment he provides will be free from defects in material and workmanship. Warranties and guarantees of the suppliers of various components in lieu of a single source responsibility by the Manufacturer will not be accepted. The Manufacturer shall assume prime responsibility for the guarantee of the station and all components.

In the event a component fails to perform as specified or is proven defective in service during the guarantee period, the Manufacturer shall repair or replace, at his discretion, such defective part. He shall further provide, without cost, such labor as may be required to replace, repair or modify major components such as the steel structure, main pumps, main pump motors and main piping manifold. After start-up service has been performed, the labor to replace accessory items, such as the blower, priming pumps, alternator, etc., shall be the responsibility of others.

The repair or replacement of those items normally consumed in service, such as seals, grease, light bulbs, etc., shall be considered as part of routine maintenance and upkeep.

It is not intended that the Manufacturer assume responsibility for contingent liabilities or consequential damages of any nature resulting from defects in design, material, workmanship or delays in delivery, replacement or otherwise.

MANUFACTURED EQUIPMENT

OPTION 1 (Standardization) [*delete this line from final spec text*]

The specifications and drawings detail Smith & Loveless equipment and represent the minimum standard of quality for both equipment and materials of construction. The contractor shall prepare his bid on the basis of the particular equipment and materials specified for the purpose of determining the low bid.

The owner has standardized on the named equipment in order to optimize their operation, maintenance, and safety programs, provide for interchangeability of costly equipment items, reduce stocking levels required for necessary spare parts and provide increased flexibility in the utilization of their pumping stations. Equipment substitutions, since incompatible with the district's standardizations program, will not be considered.

OPTION 2 & 3 (Base Bid with Bid Submittal) (Pick Option 2 or 3) [*delete this line from final spec*]

(2) CONTRACTORS SUBMITTAL WITH BID [*delete this line from final spec*]

The specifications and drawings detail Smith & Loveless equipment and represent the minimum standard of quality for both equipment and materials of construction. The contractor shall prepare his bid on the basis of this equipment for the purpose of determining the low bid without consideration of a possible substitute. Substitution of other makes, may be considered if the equipment proposed for substitution is superior or equal in quality and efficiency to the standards of quality named in the specifications and this is demonstrated to the satisfaction of the engineer. Contractors wishing to offer a deduct for substitute equipment shall include the following submittal information with their proposal.

(3) MANUFACTURERS' SUBMITTAL PRIOR TO BID [*delete line from final spec*]

The specifications and drawings detail Smith & Loveless equipment and represent the minimum standard of quality for both equipment and materials of construction. The contractor shall prepare his bid on the basis of this equipment for the purpose of determining the low bid without consideration of a possible substitute. Substitution of other makes may be considered if the equipment proposed for substitution is superior or equal in quality and efficiency to the standards of quality named in the specifications and this shall have been demonstrated to the satisfaction of the engineer. Approval for the substitution shall be by written addendum only, and if approved, may be bid as a substitute in the appropriate space on the bid form, in addition to the mandatory base bid. To receive consideration, three (3) sets of detailed submittal on the proposed substitution shall be in the engineer's hands at least 21 working days prior to the opening of bids.

BID SUBMITTAL

This submittal shall include all necessary information for the proper determination of the acceptability of the proposed substitution and shall not necessarily be limited to the following:

A. Complete description of the equipment, system, process, or function, including a list of system components and features, drawings, catalog information and cuts, manufacturer's specifications, including materials description.

B. Performance data and curves, and horsepower requirements.

C. Outside utility requirements, such as water, power, air, etc.

D. Functional description of any internal instrumentation and control supplied, including list of parameters monitored, controlled, or alarmed.

E. Addresses and phone numbers of nearest service centers and a listing of the manufacturers or manufacturer's representatives services available at these locations, including addresses and phone numbers of the nearest parts warehouses capable of providing full parts replacement and/or repair services.

F. A list of five installations in the states where similar equipment by the manufacturer is currently in similar service; include contact name, telephone number, mailing address of the municipality or installation, engineer, owner, and installation contractor; if five installations do not exist, the list shall include all that do exist, if any.

G. Detailed information on site, architectural, structural, mechanical, plumbing, electrical, control, and all other changes or modifications to the design and construction work necessary to adapt the equipment or systems to the arrangement shown and/or functions described on the drawings and in the Technical Specifications. This shall include plan view and section sketches illustrating any additional space requirements necessary to provide the minimum adequate clear space within and around the equipment for operation and maintenance, as shown on the drawings and specified.

H. All differences between the specifications and the proposed substitute equipment shall be clearly stated in writing under a heading of "differences".

I. Other specific submittal requirements listed in the detailed equipment and material specifications.

EVALUATION

Approval of the substitution to bid as an alternate shall in no way relieve the contractor from submitting the specified shop drawings for approval or complying fully with all provisions of the specifications and drawings.

If substituted equipment is accepted, the contractor shall, at his own expense, make any changes in the structures, piping, electrical, etc. necessary to accommodate the equipment. If engineering is required due to substitution of alternate equipment, the contractor shall pay for all engineering charges.

To receive final consideration, copies of the manufacturers' quotations for the equipment may be required to document the savings to the satisfaction of the engineer. It is the intent that the owner shall receive the full benefit of the savings in cost of equipment. The contractor's bid price shall be reduced by an amount equal to the savings. In all technical and other evaluations, the decision of the engineer is final.

TYPICAL BID FORM
[add to bid form]

The bid shall be based on the named equipment. Alternate/substitute equipment may be offered as a deduct, provided all conditions of the "manufactured equipment" section are met.

Alternate/substitute manufacturer_____.

Deduct $_____.

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B. Wet Well Mounted Pump Stations

Intrinsically Safe Relay - A relay to provide low current isolated switching for a float switch and/or other device.

Pump No. ____ Priming System - A time delay shall be provided in the station control panel, wired in conjunction with the control and electrode relays for Vacuum Pump No. _____ . The alarm signal shall be initiated if the vacuum pump fails to start or operates for longer than the preset time limit. Interruption of the alarm sequence shall be established when the pump priming electrode makes contact.

Low Temperature Alarm - A preset thermo-disc shall be mounted on the station control panel to activate an alarm signal if the temperature under the fiberglass hood falls below 34 F.

FLOAT SWITCH CONTROL

High Wet Well Level - An adjustable mercury displacement switch shall be provided to sense a high water level condition. The switch shall hang into the wet well and shall activate a contact to indicate the high water condition.

Low Wet Well Level - An adjustable mercury displacement switch shall be provided to sense a low water level conditio. The switch shall hang into the wet well and shall activate a contact to indicate the low water condition.

BUBBLER SYSTEM CONTROL

High Wet Well Level - An adjustable, mercury-tube type, pressure switch shall be provided to sense a high water level condition. The switch shall be connected to the bubbler line and shall activate a contact to indicate the high water condition.

Low Wet Well Level - An adjustable, mercury-tube type, pressure switch shall be provided to sense a low water level condition. The switch shall be connected to the bubbler line and shall activate a contact to indicate the low water condition.

Loss of Air in Bubbler System - An adjustable, mercury-tube type pressure switch shall be provided to sense a low air pressure condition. The switch shall be connected in the bubbler supply line and shall actuate a contact to indicate a low pressure condition. An orifice shall be installed in the supply line, downstream from the mercury switch in order to maintain adequate back-pressure.

Note: Not appropriate for other than direct-air bubbler systems.

C. Pump Station Common Options

Three Phase Power Failure - A relay with double pole double throw contacts to monitor and protect against phase loss (single phasing), under voltage (brown outs) and phase reversal (improper sequence). Automatically resets when three phase service returns to normal.

Adjustable Operating Voltage	Drop Out Voltage
158 - 224	171 - 243
430 - 480	387 - 432

Single Phase Power Failure - A relay with single pole, double throw contacts shall be provided and mounted in the main control panel to signal failure of the 115 volt control power supply.

Pump Failure - Non-Clog Pump No. ____ - A limit switch shall be provided on the external arm of the discharge check-valve for Pump No. _____ to detect failure of the pump to delivery normal operating pressure. An auxiliary time delay relay shall be provided to prevent an alarm signal during pump start-up period.

Station Flooding - A float actuated switch shall be supplied to detect a station flooding condition.

Unauthorized Entry - An adjustable timer shall be provided in the control panel to signal unauthorized entry into the pump station. The timer shall be activated whenever the entrance tube cover is opened/fiberglass cover on wet well mounted pump stations.

A key-operated switch shall be provided on the station control panel to provide authorized personnel a means to deactivate the alarm before the timer completes its cycle.

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Operator Assist Alarm - A momentary contact, manually operated switch shall be mounted on the face of the station control panel and shall actuate an alarm signal when operated. This switch shall function as an emergency operator assist alarm and provide for testing of the alarm system.

ALARM SYSTEMS - ALARM DEVICES

Alarm Light 120 VAC - A vapor-proof light fixture with 50 watt lamp for outdoor pole mounting.

With red globe and guard.
With green globe and guard.
With amber globe and guard.
With clear globe and guard.

Alarm Horn 120 VAC - A vibratone type horn mounted on a weather tight box suitable for pole mounting.

Alarm Bell 120 VAC - A vibratory type bell mounted on a weather tight box suitable for pole mounting.

Horn or Bell Silence Switch - An on-off switch mounted in a weather tight box suitable for pole mounting.

An on-off switch mounted in the station control panel.

Note: The on-off must be manually reset after the fault is cleared to place the alarm circuit in the ready condition.

Horn or Bell Silence Switch With Automatic Reset Relay - A push to silence pushbutton with control relay to automatically reset the alarm circuit to the ready condition after the fault is cleared.

Mounted in the station control panel.

Mounted in a separate NEMA 1 enclosure.

Mounted in a separate weather proof enclosure.

Mounted in a separate NEMA 1 enclosure with red fault indicating panel mounted light.

Push To Test - Push to test feature added to the silence pushbutton to indicate the alarm devices and system is in normal operating condition.

Remote Telemetering

Remote Alarm Panel - An alarm panel to show faulty conditions shall be provided for installation at a remote location.

The panel shall operate from a 115 volt A.C. power supply at the remote point. The panel shall include rectifiers and necessary devices to supply filtered direct current to conform to telephone system requirements.

The fault sensors to be used with this panel shall be of the normally closed type and shall open to indicate an alarm condition. The system shall be fail-safe so that an open in the telephone line shall indicate a failure.

The panel shall indicate an alarm condition by a red light as a visual indication and a horn as an audible signal. A silencing switch shall be provided to turn off the horn.

Mounted in a NEMA 1, compact, sheet steel cabinet with hinged door. The switches indicating light and horn shall be mounted on the door.

(10) ALARM SYSTEM ACCESSORIES

12 Volt DC Battery Charger - Storage batteries and charger shall be supplied to furnish power for alarm conditions in cases of power failure.

The storage batteries (2 - 3 cell, 6 volt) shall be maintenance-free lead-calcium battery concealed in high impact, heat resistant, and permanently sealed containers.

The battery charger shall be solid-state capable of restoring battery to full charge within 12 hours after a discharge not exceeding 1.5 hours. Brown out protection is standard and will activate the unit when A.C. line voltage drops below 85 volts.

Alarm Light 12 Volts DC - A vapor-proof light fixture with 50 watt lamp for outdoor pole mounting.

With red globe and guard.
With green globe and guard.
With amber globe and guard.
With clear globe and guard.

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Alarm Horn 12 Volts DC - A vibratone type horn mounted on a weathertight box suitable for pole mounting.

Horn Silence Switch - An on-off switch mounted in a weathertight box suitable for pole mounting.

(14) RUNNING TIME METER

A running time meter shall be supplied for each pump to show the number of hours of operation. The meter shall be enclosed in a dust and moisture-proof molded plastic case. The flush mounted dial shall register in hours and tenths of hours up to 9999.9 hours before repeating. The meter shall be suitable for operation from a 115 volt, 60 cycle supply.

(15) ELECTRIC HEATER

A 1300/1500 watt, dual range, electric heater with automatic circulating fan, thermostat control and an on-off switch is to be provided. The heater is to be operated by connection to the convenience receptacle located on the control panel.

(17) LARGER SUCTION LINES

Larger Suction Lines for Duplex Pump Stations - Refer to general product specification for description.

(18) SIDE DISCHARGE

The common discharge pipe and the discharge outlet shall be _____ inch, Class 150, cast iron pipe projecting through the side wall of the station, with a plain end just outside the pump chamber.

(19) PRESSURE GAUGE ON PUMP DISCHARGE

A pressure gauge with a brass stop valve and manual air relief fittings shall be installed at the discharge of each pump.

(20) TOOL BOX

A metal tool box complete with the following tools shall be provided. This complement of tools shall include all tools necessary to replace the pump mechanical seal.

1. 9/16" x 1/2" box end wrench
2. 3/4" x 5/8" open end wrench
3. 15/16" x 1" open end wrench
4. 1-1/8" socket
5. 8" T-handle 11"x 1/2" drive
6. 1/2" x 5-1/2" drive extension
7. 6" pipe wrench
8. #3 rawhide mallet
9. Ratchet type hoist
10. Motor lifting bar
11. Lint free cloth
12. Multi-purpose grease

(21) TRANSFORMER

A (2) (3) KVA insulating type transformer shall be provided to supply power for lights, controls and auxiliary devices. The transformer shall have 240/480 volt primary, 120/240 volt secondary, Class F insulation, with temperature rise not to exceed 115 C above a 40 C ambient. The core and coil assembly shall be given a double dip and bake. The coil shall be protected by a metal housing to prevent damage.

(22) WET WELL LEVEL GAUGE

A low pressure diaphragm gauge with a 2-1/2" dial calibrated 0"- 100" of water shall be connected to the air bubbler system to indicate the sewage level in the wet well.

(23) TWO-SPEED PUMP OPERATION - DUPLEX PUMP STATION

Motors - The pump motors shall be vertical, solid shaft, two-speed, two-winding, variable torque, protected drip-proof, induction type, suitable for 3 phase, 60 cycle, _____ volt electric current. The motors shall have normal starting torque and low starting current characteristics. The motors shall not be overloaded at the design condition, nor beyond the nameplate rating plus the standard NEMA 1.15 service factor at any head in the operating range.

Operating Conditions - Each pump shall be capable of delivering _____ GPM against a total dynamic head of _____ ft. at _____ RPM, and a secondary condition of _____ GPM against a total dynamic head of _____ ft. at _____ RPM of raw sewage.

The minimum rated horsepower of each pump motor shall be at a maximum allowable speed of _____ RPM.

All openings and passages shall be large enough to permit the passage of a sphere 3" in diameter and any trash or stringy material which can pass through a 4" house collection system.

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The anticipated operating head ranges are from _____ ft. minimum to _____ ft. maximum at low speed and _____ ft. to _____ ft. at high speed.

(24) PART-WINDING START

To reduce power demand on motor starting, each motor shall be equipped with a part-winding starter.

A separate contactor shall be provided for each winding and each winding shall be protected by separate thermal overload relays.

A pneumatic time delay relay shall be provided for controlling the time between contactor operation.

The time delay relay shall be adjustable, with a dial indicating delay time in seconds.

(26) WET WELL SIMULATING VALVE

A valve shall be provided in the bubbler air supply line to simulate various sewage levels in the wet well. This valve shall facilitate checking and adjustment of the bubbler pressure switches and pump controls.

(28) GENERATOR INTERLOCK H.L. (HIGH LEVEL) PUMP

Provisions shall be made in the control circuit of the lift station to facilitate locking out the standby pump when the emergency generator set is powering the station. An interlock consisting of a normally closed auxiliary contact shall be supplied with the emergency generator controls by the generator manufacturer. This normally closed contact shall be wired to the terminal blocks provided in the lift station control panel by the lift station manufacturer. The interconnecting wiring shall be supplied and connected by the installing contractor.

(30) WET WELL DEBRIS BASKET AND WINCH

(Minimum 50" I.D. Wet Well) - A wet well basket and winch assembly shall be supplied suitable for mounting in the wet well near the wet well manhole cover. The basket shall screen the incoming sewage to the wet well and be easily removable for periodic cleaning.

The assembly shall be placed directly under the manhole cover in such a manner as to avoid interfering with the closing of the cover, yet to allow easy access for operation and servicing. The winch shall be mounted on a bracket attached to the inside wall of the wet well with suitable anchor bolts of cinch anchors. Two 1-1/2" diameter galvanized guide rails shall be anchored at the winch bracket and at the bottom of the wet well to facilitate raising and lowering of the debris basket and basket carrier.

The winch shall be a 350 lb. capacity, one cable safety worm gear winch having a 16:1 gear ratio. A removable winch operating handle extension shall be furnished with the winch so as to allow the operator to crank the winch from outside the wet well. The winch shall be fitted with an idler pulley mounted on the winch bracket to allow the basket to be raised to a maximum height and prevent binding of the cable. The winch cable shall be 1/4" diameter stainless steel and be of the aircraft type.

The debris basket shall be suitable for an inlet pipe of _____ diameter and be made of Type 304 stainless steel 9-gauge wire welded to form a 2" x 2" mesh screening basket.

(38) WATER-TIGHT LID

The top of the entrance tube shall be constructed of 1/4" thick steel plate. A continuous flange shall be provided on the top of the tube to attach it to the vertical cylinder. A rubber gasket shall be provided to seal the top piece to the entrance tube. The entrance tube top shall be blasted and painted with Versapox® paint. A 24" diameter water-tight manway opening shall be provided in the top of the entrance tube. It shall consist of a cast cover, hinged at one side, and with provisions for padlocking the cover closed on the other, and shall be suitably gasketed to prevent water from entering the station should the site be inundated. The manway cover shall be sealed closed by multiple paddle-type cam latches, which shall not require tools to open or close. 4" steel couplings shall be provided in the side of the entrance tube to allow for connection of external vent lines, provided by the installing contractor, which shall be carried to an elevation of at least 18" above the maximum flood level, and provided with return bends. A watertight conduit connection shall be provided in the side of the entrance tube as shown on the drawing.

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(43) TIME DELAY RELAY TO PREVENT SIMULTANEOUS STARTING

Adjustable time delay relays shall be provided to prevent simultaneous starting of the pump motors after power failure.

(45) INSULATED HOOD

The wet well mounted pup station shall be enclosed by a hinged, insulated, fiberglass cover, complete with drip lip, cutouts for ventilation system and hasp to allow the pump station to be locked with a padlock. The insulation shall be minimum 1" urethane.

(48) PHASE CONVERTER PILOT RELAYS

Terminals and/or pilot relays shall be provided in the lift station control panel to facilitate connection to an external phase converter unit.

NOTE: *Consulting engineer should designate the type/manufacturer of phase converter.*

(52) PRIME ALARM

A 5-minute time delay relay shall be connected to each vacuum pump. Contacts shall be provided to automatically shut down the operating vacuum pump, allow starting of the next pump in the operating sequence and signal an alarm on excessive vacuum pump operating time.

Contacts shall be provided for transmitting a (local) (remote) (local and remote) alarm signal.

(55) LEVEL-1 SOLID STATE TWO-PUMP CONTROLLER

The control equipment shall be mounted in a NEMA Type 1 steel enclosure with dead fron*t control and a hinged access cover. The circuit breakers, starter reset buttons, and control switches shall be operable without opening the access cover, for deadfront operation.

A GFI type convenience outlet shall be provided on the side of the cabinet for operation of 120 volt AC devices.

Thermal magnetic air circuit breakers shall be provided for branch disconnect service and short circuit protection of all motor control and auxiliary circuits.

Magnetic across-the-line starters with under-voltage release and overload coils for each phase shall be provided for each pump motor to give positive protection. Each single-phase auxiliary motor shall be equipped with an over-current protection device in addition to the branch circuit breaker, or shall be impedance protected. All switches shall be labeled and a coded wiring diagram shall be provided.

A low pressure bubbler air line shall provide a pneumatic signal to the solid state pump controller, to control the operation of the pumps with variations of liquid level in the wet well.

A low pressure bubbler system shall be provided with two air compressors, a bubbler tube and a ported, panel mounted test valve to simulate rising and falling liquid level in the wet well. This shall provide the operator the means to check the correct starting and stopping levels for the pumps and that the alarm system is functioning.

The two air compressors shall be of the close-coupled, oil-less type. Each compressor shall have a minimum capacity of 0.2 cubic feet of free air per minute at 10 PSI. It shall incorporate a single-phase, 60 cycle, 120 volt, drip-proof, brushless type electric motor. A motor-driven timer shall be provided to automatically alternate the compressors every five minutes. Wiring and piping of the air compressors shall be arranged so that one compressor may be removed without removing the other compressor from service.

The solid state pump controller shall incorporate a Smith & Loveless, Inc. microprocessor capable of controlling the operation of the two pumping units. There shall be no moving parts located in the wet well that affect operation of the controller. Grease, sludge or biological growth shall not affect the accuracy or reliability.

A backup displacement switch system shall be provided to operate the pumps and signal an alarm should failure of the Level-I Controller occur. This standby system shall be activated automatically and provide ON-OFF control for both pumps. Systems that do not provide 100% standby will not be acceptable.

16.3/Ar

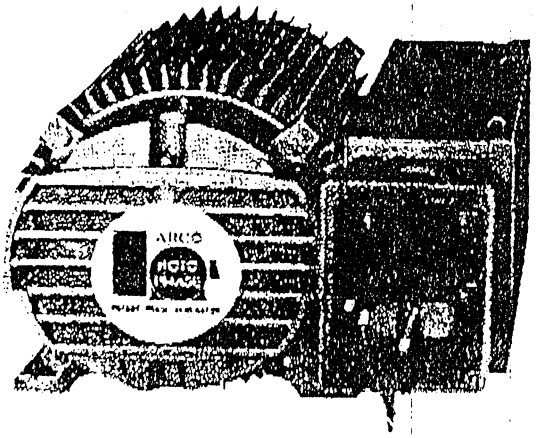
GL UNIT

ARCO

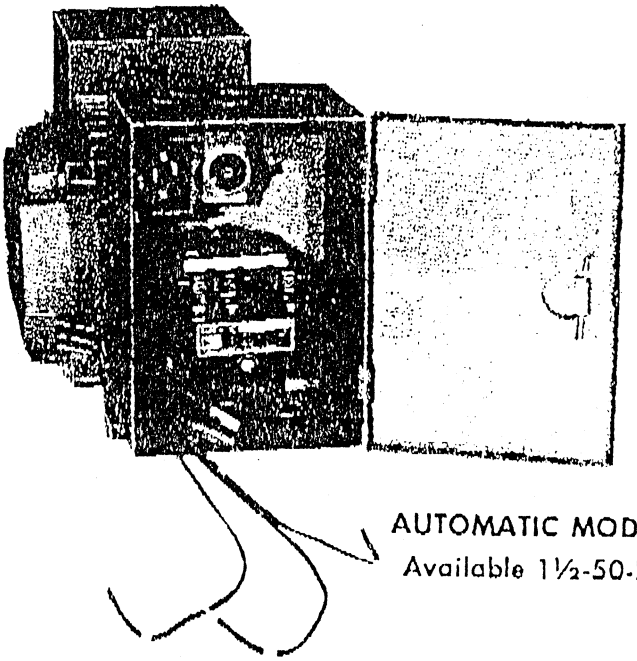
ROTO-PHASE

COMPACT DEPENDABLE ECONOMICAL ROTARY PHASE GENERATORS

to generate 3 Phase Power from a 1 Phase Source



STANDARD MODELS
Available: 1-150 hp



AUTOMATIC MODELS
Available 1½-50-hp

Special Mounting Frames and Fiberglas Weather-Proof/ Environment-Proof Enclosures optionally available.

ARCO ELECTRIC
Box 278 • Shelbyville, Indiana 46176
Area Code (317) 398-9213 or 392-3644

ARCO
ROTO-PHASE

MP/Manufacturer

Who is Arco?

In 1964, Arco acquired the electric motor manufacturing assets and facilities of Shelby Electric, makers of special purpose motors since World War II. Arco continued to manufacture special purpose motors for O.E.M.'s and also make cryogenic types for NASA, some of which are still operating in outer space.
Recently, Arco acquired the engineering data, patterns, dies and some equipment of Dyna Corp. (formerly Brown & Brockmeyer) and expects to be in production in the near future.

What is Arco's experience in phase conversion?

Founders of the Roto-Phase, the original multi-motor three phase generator, time tested and unchanged since 1963, coupled with experienced application engineering, places ARCO #1 in the phase conversion field.
Many Roto-Phase models are CSA approved for sale in Canada.

PP/Product Presentation

In brief, the Roto-Phase is often termed a phase converter, but it is more accurately defined as a phase generator. It generates one voltage which when paralleled with the two voltages generated from a single phase line produces three phase power. Induction as well as resistance three phase loads can be operated from a single phase supply in conjuction with the Roto-Phase with performances favorably comparable to those applied to a solid three phase line.

Arco Roto-Phase allows a combination of motors varing in horsepower, motor speed, duty cycle, etc. to operate simultaneously, individually, intermittently, or continuously, as if they had been connected to a solid 3-phase line. The maximum size of a given motor is limited only by the largest motor horsepower rating of the *Arco Roto-Phase* but where low RPM motors are applied (900 and lower), the resulting higher amperage should be considered. Generally, the total horsepower load should not exceed three times the rating of the phase generator. Additional 3-phase motors may be added to this phase generating system as required, often without further phase generator investment. There are thousands of installations operating up to 25 motors from a single *Arco Roto-Phase* unit.

Features

The *Arco Roto-Phase* system is the only phase generating system available which allows 3-phase motors to operate in a similar manner as if connected to a solid 3-phase line.

Motors requiring long starting cycles, and applications which have frequent starts and stops create no problem. Instant reversing cycles-even those as severe as encountered on a solid 3-phase line are efficiently performed. *Arco Roto-Phase* contains no contactors or electrolytic capacitors to arc or to restrict the number of starts and stops. Multi-speed motors operate equally as well as single-speed units. Ordinary converters are limited to one speed. It makes no difference if motors are Wye or Delta connected. No motor modification is required.

OP/Overall Product, In Place

Examples of Roto-Phase Applications

Augers	Pumps
Compressors	Submersible pumps
Elevators	Cream separators
Fire sirens	Silo unloaders
Paper balers	Hammermills
Saw Mills	Fans
Computers	Hoists
Machine Tools	

How to Select

Match the largest motor to be operated (in *true* HP) with the column entitled "Largest Motor". Next, match the total HP that may operate simultaneously with the column entitled "Recommended HP Capacity". Choose the larger of the two columns.

1. Standard Duty Models are designed to handle one (1)-3 phase motor at the "Largest Motor" indicated. Remainder of load motors should be of lesser HP. Motors may be 3600, 1800, or 1200 RPM. For RPM's of 900 and lower refer to Roto-Phase II, Heavy Duty type.
2. Many submersible pump motors have full load amperages greater than standard motors. Check nameplate full load amperes and: if in doubt, consult Factory.
3. Extremely hard starting applications such as hoists, air conditioners, heat pumps, elevators, laundry extractors, etc., may require Roto-Phase II, Heavy Duty type or Higher Torque model. Consult Factory.
4. Some grain dryers require the motor(s) to run electrically overloaded, often as high as 30% overload. Consult Factory, giving name and model of grain dryer and HP of motors for recommendation as to size and type.
5. Resistance loads (resistance welders, EDM electric discharge machines, etc.) should be sized by *input* load amperes as they relate to equivalent HP in "Largest Motor" column. Consult Factory.

Optional Equipment

1. Pre-wired and mounted Disconnect Switch
2. High starting torque Field Conversion Kit
3. Small motor operation actuator

Weather Proof Enclosures for Roto-Phase

CONSTRUCTION:
High strength fiberglass. Non-conductive and non-corrosive. Flange and lip to protect interior from adverse weather. Screened louvers. No parts to rust. Provision for locking. Pre-wired heat exhaust fan.

DIMENSIONS:
Pad mount type, Model ND-3: 24" × 24" × 24"
Pad mount type, Model ND-9: 42" × 24" × 30" high

Model ND-3 Pad Mount Type
For Models, MG, CMG, M, A, R, B, CM, DBM, CA, DBA, CR, DBR, CB & DBB Roto-Phase

Model ND-9 Pad Mount Type
For Models, C, G, , CC, CG, CP, DBC, DBG: & DBP Roto-Phase

ROTO-PHASE 1

STANDARD DUTY

This unit is the recognized leader and standard of quality, performance, dependability and economy since 1964. All rotary and static phase converters are usually graded, as a matter of custom, against the standard duty Roto-Phase I because of its' leadership and reputation. Roto-Phase I is a general

ROTO-PHASE II

SPECIAL HEAVY DUTY

This unit has greater capacity than any rotary converter made. A substantial increase of iron, copper and matched capacitance provides for harder starting motors to operate as well as handling more large motors and more total horsepower. It is the "Heavy duty" of the Roto-Phase line.

ROTO—PHASE III

LIGHT DUTY

Roto-Phase III is a low cost, light duty rotary phase generator which favorably compares with competitive multi-motor phase generators. Performance and capacity at least equals competitive multi-motor brands and in many ratings will exceed.

Roto-Phase III has a smaller rotary per HP rating than Arco

Installation

Roto-Phase is the easiest of all converters to install, comparable to installing any electric motor. A disconnect switch or magnetic starter is needed to start the converter and the single Phase

Automatic ROTO-PHASE

16.3/Ar

The Automatic Roto-Phase is a Rotary 3-phase generator—not a static phase converter! Automatic control incorporates magnetic contactor and time-delay relay, enabling the ROTO-PHASE to automatically energize 5 to 15 seconds before load motor energizes.

One or many 3-phase motors can operate from a single-phase line of 230 V. or 460 V. Eliminates maintenance or balancing of motors.

The Automatic Roto-Phase is compact, completely pre-wired and ready to use. Connections are made in a generator-mounted box. Units are available from 1½ to 75 horsepower. Roto-Phase should be selected in capacity equal to largest 3-phase motor used. Fiberglass enclosures are available as an option.

Automatic ROTO-PHASE I

The Automatic Roto-Phase I is particularly suitable for 3-phase sewer lift stations, water pressure systems and similar applications using centrifugal, close-coupled, turbine and submersible pumps—variable speed, constant speed or SCR.

Sewage stations with two pump motors and an alternator are readily handled by a single Roto-Phase. Provides for second pump motor to operate as required. When pump motors de-energize Roto-Phase also de-energizes.

I. Sewer lift stations and water pressure systems with standard motors.

MODEL	MOTORS
CM	(2) 3 H.P.
CA	(2) 5 H.P.
CR	(2) 7½ H.P.
CB	(2) 10 H.P.
CC	(2) 15 H.P.
CG	(2) 20 H.P.
CP	(2) 25 H.P.
CS	(2) 30 H.P.

II SUBMERSIBLE pump motor systems.

MODEL	MOTORS
DBM	(2) 1½ H.P.
DBA	(2) 3 H.P.
DBR	(2) 5 H.P.
DBB	(2) 7½ H.P.
DBC	(2) 10 H.P.
DBG	(2) 15 H.P.
DBP	(2) 20 H.P.
DBS	(2) 25 H.P.

Automatic ROTO-PHASE III

Designed for a single motor application which will be automatically controlled by a time clock, telephone or a remote intelligence. The Roto-Phase only operates when the pump motor is to be energized. The circuit provides for the Roto-Phase to start 5 to 15 seconds before the pump motor starts.

Single Motor Type Rotary Phase Generator

Incorporated magnetic contactor and time delay, permitting Roto-Phase to automatically energize 5 to 15 seconds before load motor energizes.

MODEL	MOTOR
C1	3 HP
C2	5 HP
C3	7½ HP
C4	10 HP
C5	15 HP
C6	20 HP
C7	25 HP
C8	30 HP
C9*	40 HP
C10*	50 HP

purpose multi-motor generating system, operating a number of 3 phase motors having moderate starting torques. Where the largest motor operated equals the HP rating of the Roto-Phase all additional motors ideally are of lesser horsepower.

Model	Largest Motor	Recom. HP Capacity	KVA
MF	1	3	3
MG	1½	5	6
M	3	9	10
A	5	15	20
R	7½	20	30
B	10	30	40
C	15	45	60
G	20	60	80
P	25	75	100
PKT*	30	75	100
PKO*	40	75	100
K-2G*	50	100	160
Y-2P*	60	120	200
L-3G**	75	150	240
W-3P**	100	200	300

*Two Piece Unit **Three Piece Unit

added in 1976. Where there are two motors of equal rating, plus additional smaller motors, Roto-Phase II, Heavy Duty, should be used. Total capacity approximates three times the largest motor rating which can vary with the power factor of individual motors and line voltage.

Model	Largest Motor	Recom. HP Capacity
HD-2	2	9
HD-3	3	12
HD-5	5	20
HD-7	7½	30
HD-10	10	45
HD-15	15	60
HD-20	20	75
HD-25	25	100
HD-30	30	100
HD-40	40	100
HD-2P*	50	120
HD-3G**	60	150
HD-3P**	75	200
HD-4P***	100	220

*Two Piece Unit **Three Piece Unit ***Four Piece Unit

Roto-Phase I or II. Ideally, it is best applied to a single 3 phase motor of equivalent HP; still, it has the same KVA capacity, in many ratings greater, as other light duty multi-motor phase generators.

This unit is intended for easy starting applications requiring low torque only. Some additional load motors can be handled at the same time the largest motor is operating. For high starting torque requirements consult Factory.

Model	Largest Motor	Recom. HP Capacity
ST3	3	5
ST5	5	10
ST7	7½	15
ST10	10	20
ST15	15	30
ST20	20	50
ST25	25	50
ST30	30	60
ST40	40	80
ST50	50	100
ST2G*	60	160
ST2P*	75	200
ST3G**	100	240

*Two Piece Unit **Three Piece Unit

wiring must be adequate to handle the inrush current of all of the motors to be operated. Although the motors are operating 3 phase, wiring should be installed on the basis of single phase. It must be emphasized that our wiring recommendations should be followed.

Roto-Phase can be installed at a remote location where hazardous conditions may exist. Distance is not a factor, providing sufficient size wire is used and allowing for voltage drop. Your utility or electrician can calculate voltage loss.

UA/Uses, Applications

Phase Converter Comparisons

(ROTARY VS. STATIC)

	Roto-Phase (rotary)	Capacitor* (static)	Transformer** (static)	Modified Winding*° (static)
Number of Motors Operated	Numerous	One	One	One
Variety Applications Successfully Handled	Excellent	Limited	Limited	Limited
Maintenance Record	Good	Poor	Poor	Poor
HP Availability	100%	65%	100%	90%
Two-Speed Motor Operation	Yes	No	No	No
Motor Reversing	Good	Poor	Poor	Poor
Frequent Motor Starts	Good	Poor	Poor	Poor
Long Starting Cycles	Good	Poor	Poor	Poor
Swinging Load Operation	Good	Poor	Poor	Poor
Shock Load Operation	Good	Poor	Poor	Poor
Rectifier, SCR Operation	Yes	No	No	No
Phase Balancing Required	No	Yes	Yes	Yes
Produce 3 Phase	Yes	No	No	No
Efficiency, Average	83%	65%	83%	70%
Wave Form	Good	Poor	Poor	Poor
Power Factor	Good	Good	Good	Good
L. R. Torque	Poor	Good	Good	Good
Breakdown Torque	Good	Poor	Poor	Poor
Motor Inrush Current	Low	Low	Low	Low
Ease of Installation	Good	Good	Poor	Poor
Relative % Cost for Three-motor Operation	100%	180%	270%	195%

Rotary: Tradename "Roto-Phase".
*Static: Various tradenames; phase-shifter type.
**Static: Various tradenames; uses auto-transformer.
*°Static: Requires motor winding to be modified by motor shop.

TS/Technical Support

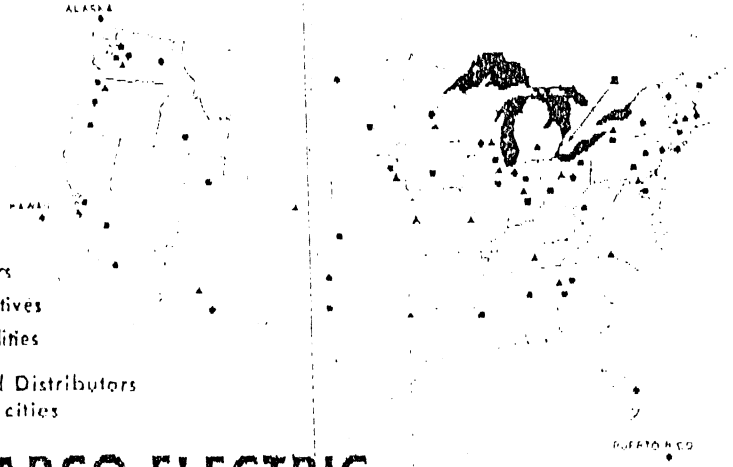
SPECIFICATIONS

Automatic: How to specify: 3-phase pump motors shall be powered by a Rotary Phase Generator (single to 3-phase) which shall automatically energize no less than six (6) seconds nor more than fifteen (15) seconds before pump motor is energized, equivalent to "ROTO-PHASE", Model 10R, Line Voltage 230, Control Voltage 110, as manufactured by ARCO Electric Products Corp., P.O. Box 278, Shelbyville, Indiana 46176, or approved equal.

Manual: Three phase motors shall be powered from a single phase source by a multi-motor rotary phase generator (single to three phase) equal to Arco Roto-Phase, Model_____, KVA_____, Voltage_____, as manufactured by Arco Electric Products Corp., Shelbyville, IN, or approved equal.

AC/Availability

For representative nearest you call SWEET'S BUYLINE



● Stocking Distributors
▲ Factory Representatives
■ Manufacturing Facilities

Other Dealers and Distributors in many principal cities

ARCO ELECTRIC
Box 278 • Shelbyville, Indiana 46176
Area Code (317) 398-9713 or 392-3644

OTHER PRODUCTS MANUFACTURED BY ARCO

- General Purpose Electric Motors
- Special Purpose Electric Motors
- Power Factor Correction Capacitors
- Motor Conduit Boxes

CC/Code Acceptability

LIMITED WARRANTY

Our production control personnel attempt to manufacture each **Arco Roto-Phase** rotary 3-phase generator free from defect in material and workmanship. Every unit is thoroughly tested. Under normal use and service or a period of one year from date of installation or 13 months from date of factory shipment, whichever occurs first, any product, parts or portion thereof will be repaired or replaced at our option, when shipped to us with freight prepaid thereon, provided examination, in our judgment, shows evidence of such defect. It is understood that the phase generator must be properly protected and line voltage not to exceed 10% standard voltage. A product or part which has been subject to accident, alteration, abuse or misuse or misapplication, or has serial numbers altered, defaced or removed, is not covered under this statement, nor is there any responsibility for service to correct conditions due to incorrect installation or misapplication. The Company will not be responsible for expense incurred in any repairs performed by persons other than qualified ARCO ELECTRIC personnel, or service stations individually and specifically authorized in writing by the Company.

This warrany supersedes and is in lieu of all other warranties, expressed or implied, and no person, agent or dealer is authorized to give any warranties on behalf of the manufacturer.

The liability of the Company is limited to the renewal or replacement of the defective part. In no case will the Company be liable for damage or loss incurred because of interruption of service or for consequential damages, labor or expense required to repair or replace defective

(3' X 4' SIGN ON A POST NOT LESS THAN 4' ABOVE THE GROUND)

(LETTER 4" HIGH IN RED)

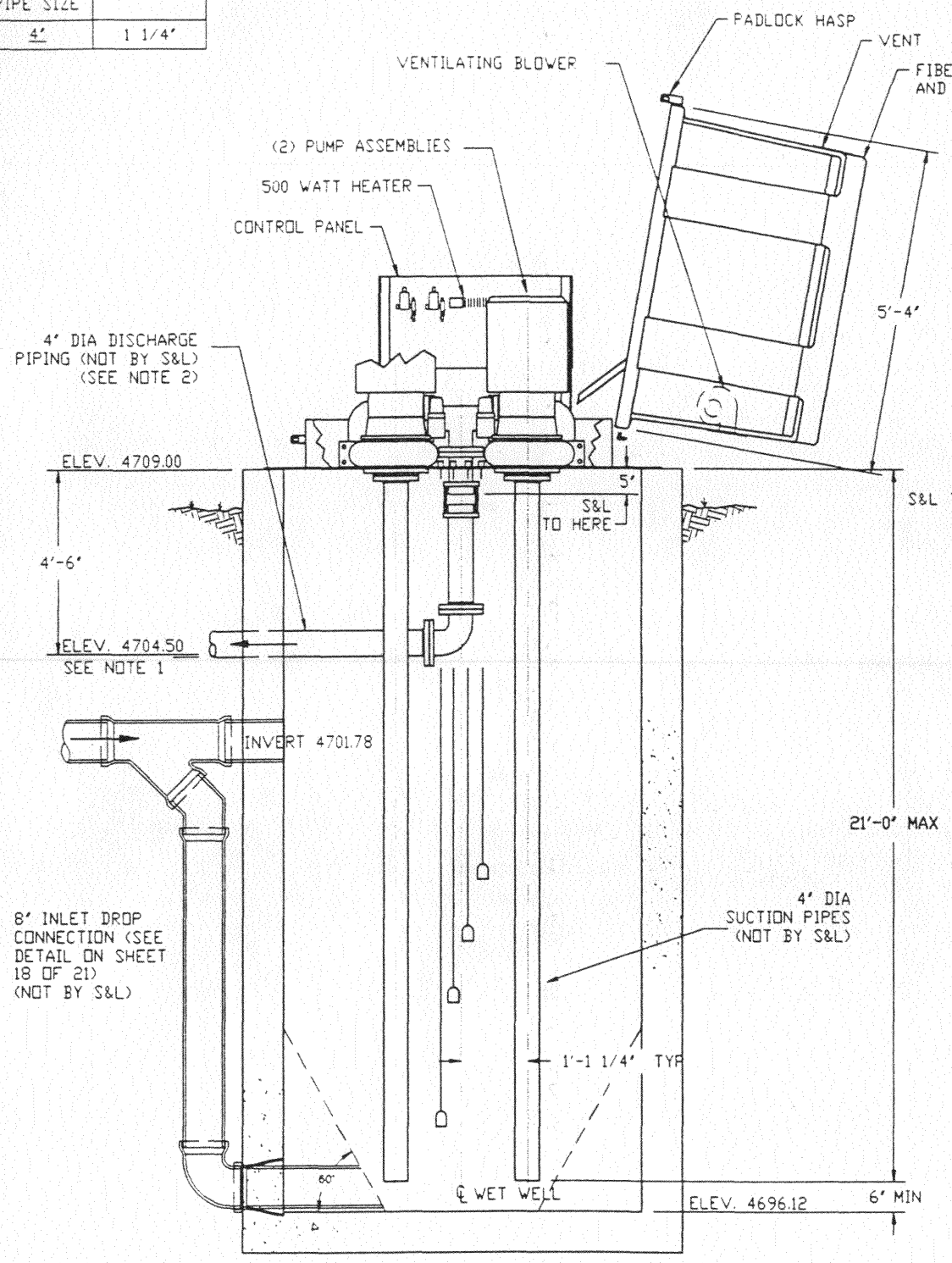
NOTICE OF PROPOSED WASTEWATER PUMPING STATION

(LETTERING 1" HIGH IN BLACK)

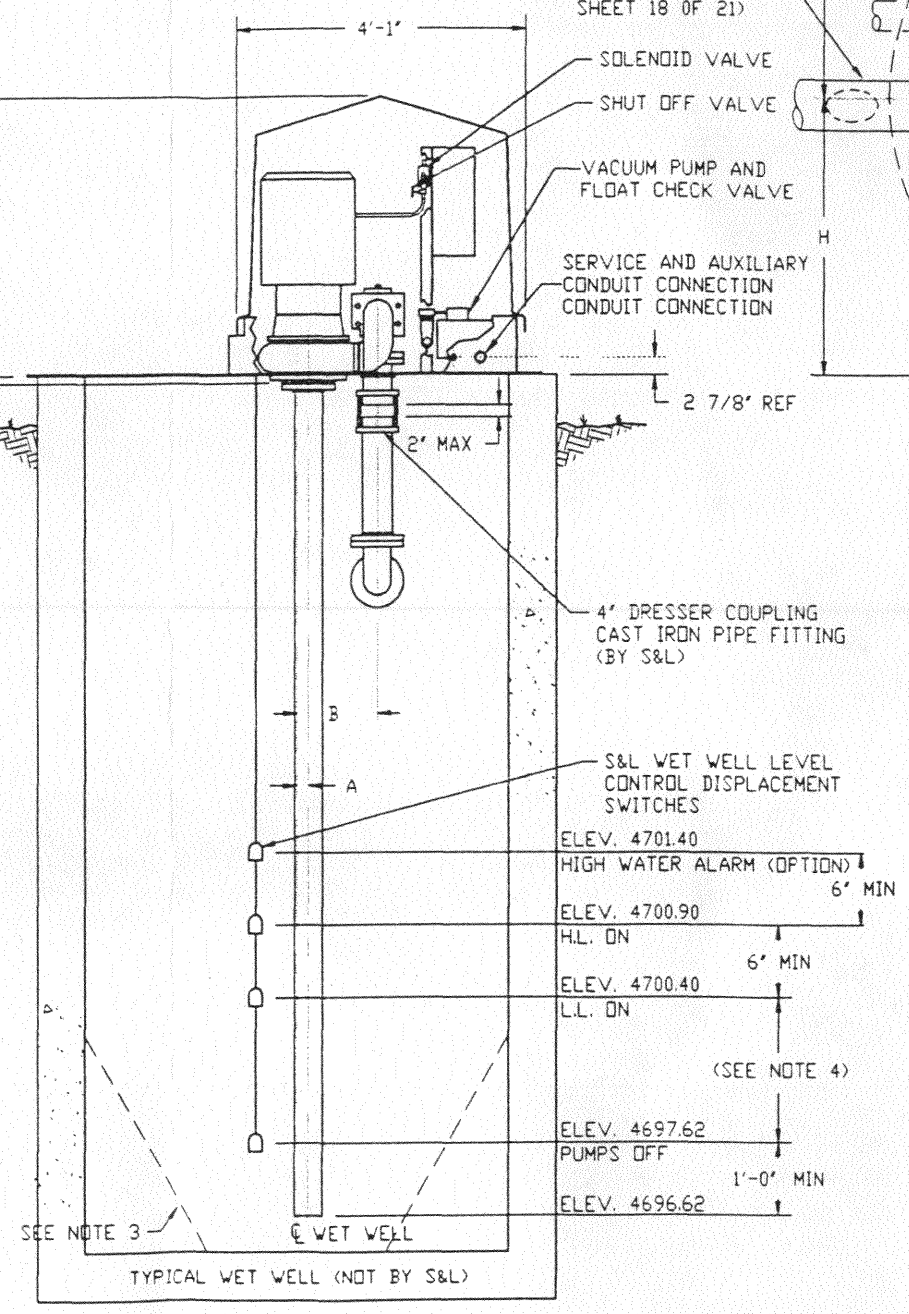
NOTICE IS HEREBY GIVEN THAT THE PROPERTY ON WHICH THIS SIGN IS POSTED SHALL BE CONSIDERED FOR THE CONSTRUCTION OF A WASTEWATER PUMPING STATION. INFORMATION MAY BE OBTAINED BY CONTACTING COBBLESTONE COMMUNITIES, INC., AT (970) 728-0500 OR THE COLORADO DEPARTMENT OF HEALTH, WATER QUALITY CONTROL DIVISION, AT (303) 248-7150

WET WELL DIAMETER	DIM A	DIM B	DIM C	DIM D	DIM E	DIM F	DIM G	DIM H	DIM J
5'-0"	8"	1'-7 13/16"	2'-10"	5'-8"	2'-7 3/8"	2'-11 7/8"	2'-0 1/2"	3'-4"	3'-11 1/2"

SUCTION PIPE SIZE	DIM K
4"	1 1/4"

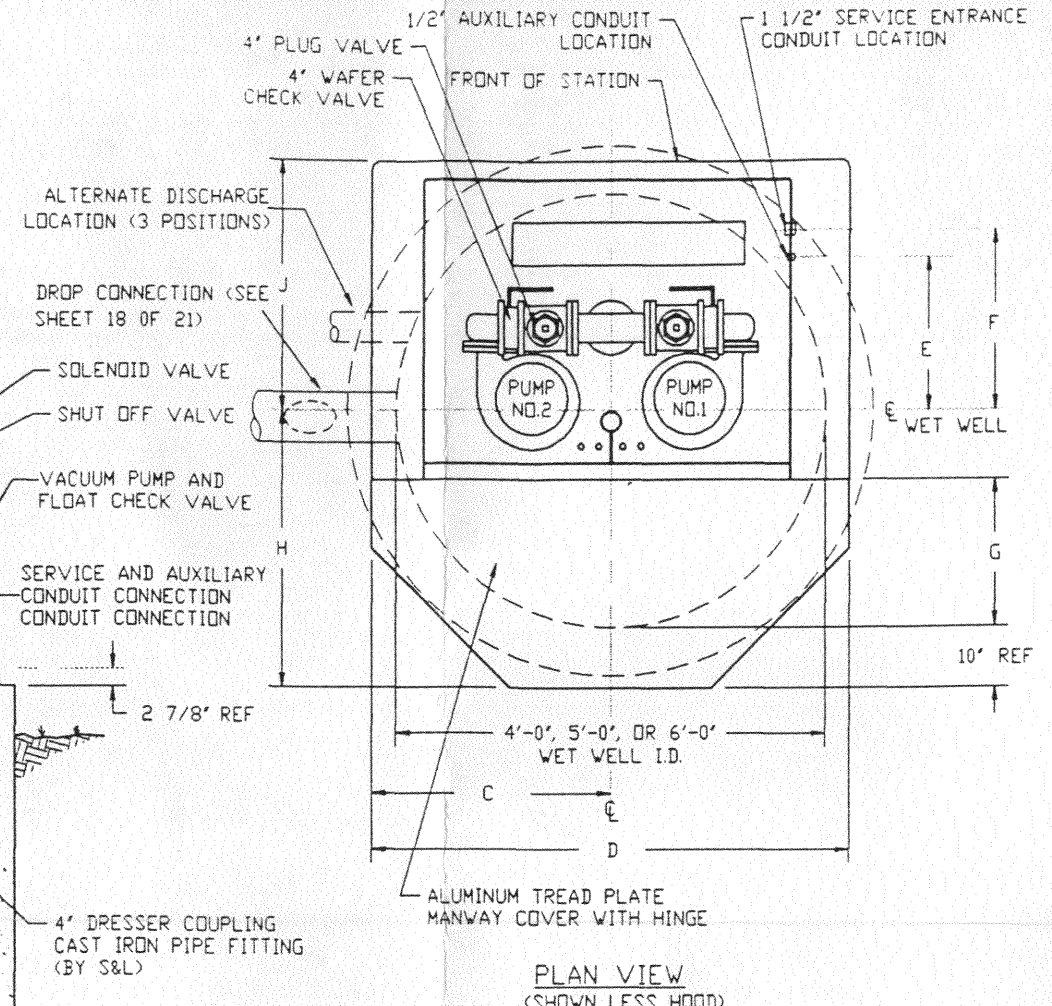


SECTIONAL ELEVATION



TYPICAL WET WELL (NOT BY S&L)

CROSS SECTION



PLAN VIEW
(SHOWN LESS HOOD)

NOTES:

1. IF END OF DISCHARGE LINE IS BELOW ELEVATION OF DISCHARGE LINE AT POINT OF LEAVING WET WELL, CONSULT FACTORY.
2. IF DISCHARGE LINE IS LESS THAN 200 FEET IN LENGTH, A CHECK VALVE MAY BE REQUIRED - CONSULT FACTORY.
3. PROVIDE 60° SLOPE IN WET WELL, AS REQUIRED.
4. VOLUME IN GALLONS BETWEEN L.L. ON AND L.L. OFF SHOULD EQUAL PUMPING RATE IN GPM.
5. PUMP MOTORS - 20 HP MAXIMUM.
6. MAXIMUM CAPACITY - 400 GPM.
7. COPYRIGHT (c) 1994, SMITH & LOVELESS INC.

1/31/96 87C405

SHEET 14 OF 21

LET	ECN NO	DATE	BY APP'D

DRAWN BY: ALEX	DATE: 09/28/94	ALLOWABLE TOLERANCES	FOR
CHECKED BY: DF	DATE: 11/94	FRACTIONS -	WET WELL MOUNTED PUMP STATION MODEL S 4" PIPING 4B2B/4B2D/4C2B/4C2D PUMPS
APPROVED BY: SBM	DATE: 11/94	DECIMALS -	SIZE / U/M EA / WT.
SCALE: NTS	CODE: 9	ANGLES -	FILE NAME \A\SALES\87C405 / PLOT SCALE 1=24.000
ORIGINAL ISSUE N94-30	© Smith & Loveless, Inc 1994		SERIAL NO / DWG NO 87C405 / REV

Smith & Loveless, Inc.

Final Drainage Report

Cobblestone Ridges

January 1996

Prepared for:

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

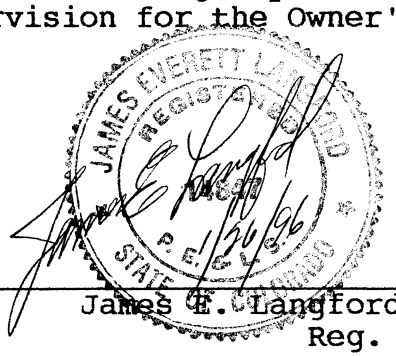
Prepared by:

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

Job. No 0252-001.03

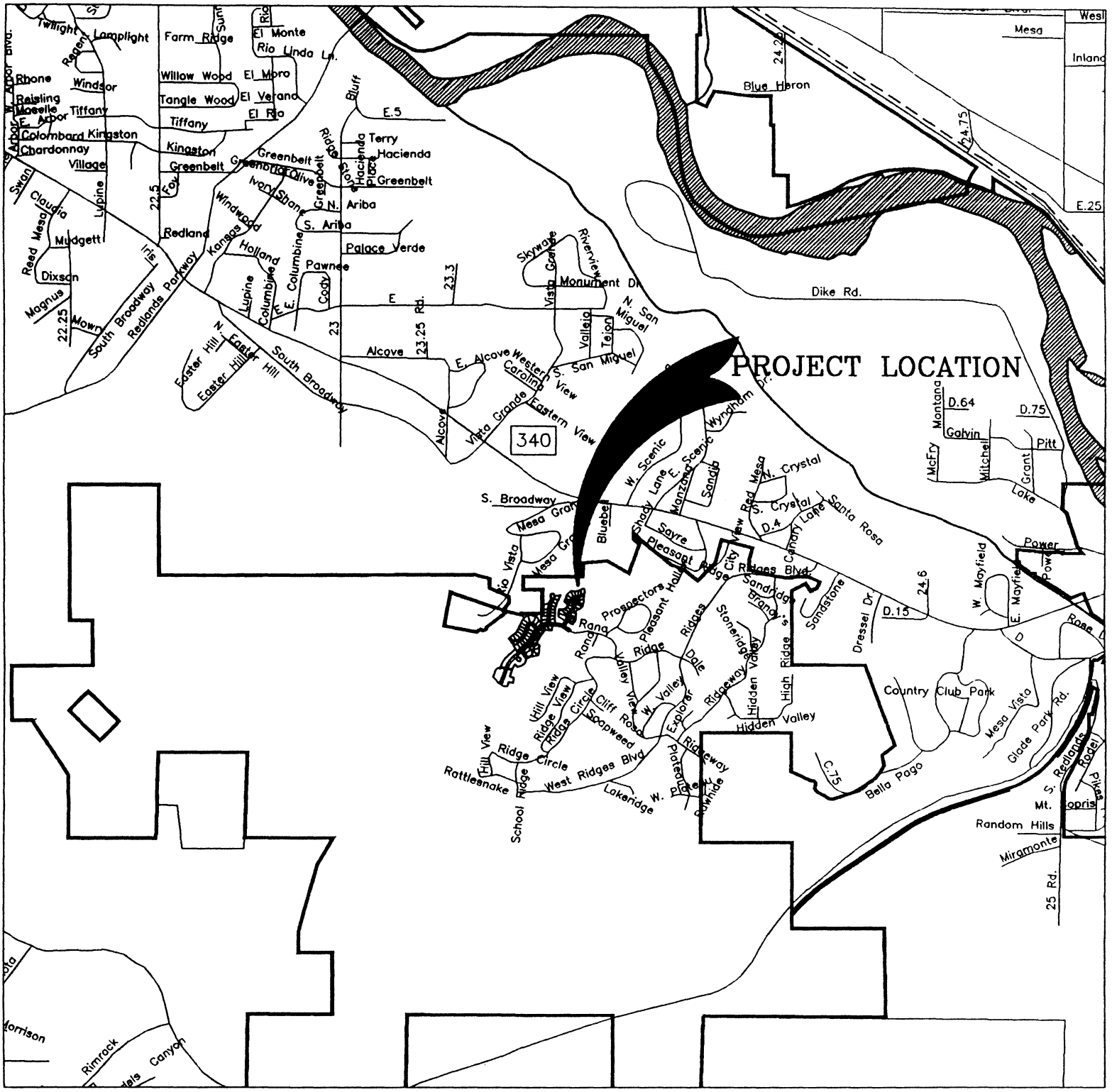
Engineer's Certification

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



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

COBBLESTONE RIDGES



VICINITY MAP

General Location and Description

A. Site and Major Basin Location

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

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

B. Site and Major Basin Description

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

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

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

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

Existing Drainage Conditions

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

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

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

Proposed Drainage Conditions

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

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

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

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

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

Design Criteria & Approach

General Considerations:

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

Hydrology:

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

Hydraulics:

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

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

Results and Conclusions

Runoff Results:

2-year historic runoff rate = 13.94 CFS

2-year developed runoff rate = 20.07 CFS

100-year historic runoff rate = 52.62 CFS

100-year developed runoff rate = 76.90 CFS

Detention Facility:

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

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

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

12/15/95 13:40

TWO STAGE OUTFALL CALCULATOR

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

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

Orifice Flow (2-year event)

*	Water Surf. El.	4704.15	Ft.	
*	Orifice Invert	4702.00	Ft.	
**	Orifice Dia. (d)	2.06	Ft.	**Vary orifice diameter until areas match
*	Discharge (Qr)	13.94	CFS	
*	"Co" Coef.	0.60		

X	Area	= (3.1416)d^2/4	=	3.34 SF
X		= Qr/0.82C(2gh)^0.5	=	3.34 SF

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

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

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

* Q100 discharge = 52.62 CFS

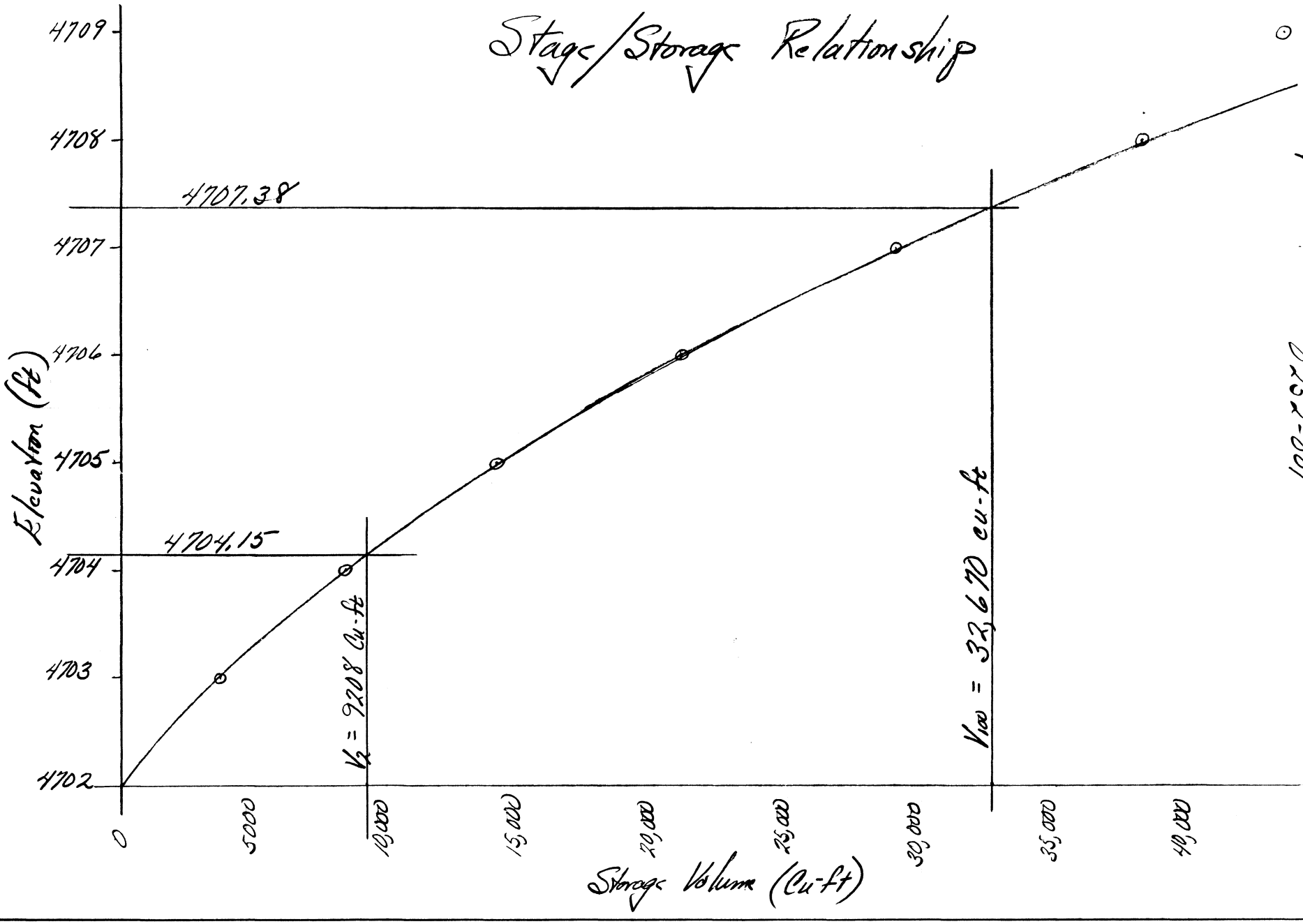
Q = 0.82CoA(2gh)^0.5 = 27.482 CFS

Wier Flow Equasion

Q= CwLH^1.5

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

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



Jim Langford | Gallatin River Ranch | 0252-001 | 12/15/95

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

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

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

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

Detention Volume

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

Qd100    =  Cd*A*Id100
         =       77.04 cfs

K2       =  Tch2/Tcd2
         =        1.25

K100     =  Tch100/Tcd100
         =        1.41

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

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

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: 0252-001

Description: Cobblestone Detention Outlet Works

Solve For Full Flow Capacity

Given Constant Data;

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

Variable Input Data	Minimum	Maximum	Increment By

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

10/16/95
Cobblestone 0052-001
Storm water handling capability

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

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

NEW DETENTION POND QUANTITES 12/15/95

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

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

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

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

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

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

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

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

Area: A_d = 48.93 Ac

Qr_2 = 13.94 cfs
Qr_{100} = 52.62 cfs

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

∴ Tc_2 = Tc_8 + 1.1 + 2.0 + 2.3 = 33.7 + 1.1 + 2.0 + 2.3 = 39.1 min
Tc_{100} = = 20.4 + " " = 25.8 min

Historic Flows

$Q_2 = CiA = 0.44(0.67)47.30 = 13.94$ cfs

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

Flow Summary @ Proposed Detention Facility

	Q_2	Q_{100}
Historic	13.94 cfs	32.62 cfs
Developed	10.54 + 9.53 = 20.07 cfs	41.34 + 35.56 = 76.90 cfs

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

Developed

N_1

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

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

S_1

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

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

N_2

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

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

S_2

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

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

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

S_3

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

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

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

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

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

S_4

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

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

* See Pg H-3 SWMM 100-year Routing 7/29/95

Developed

N_1

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

$1,2_{N_{100}}$ $Q_T =$ "

S_1

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

$1,2_{S_{100}}$ $Q_T =$ "

N_2

$D2_{100}$ $Q_{T_{100}} = Q_D(@T = 19.5)$

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

S_2

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

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

N_3

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

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

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

S_3

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

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

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

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

N_4

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

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

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

S_4

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

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

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

Scs formulae - calculation sheet

2-Year Flows 9/29/95

Developed

N_1

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

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

S_1

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

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

N_2

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

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

S_2

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

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

N_3

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

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

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

$= 5.56$ cfs

S_3

$Q_G = 0.56(0.76^G)4.21 = 1.79$ cfs

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

$Q_K = 0.79(1.17^K)2.42 = 2.24$ cfs

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

$+ 0.79(1.08^K)2.42 = 7.90$ cfs

N_4

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

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

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

S_4

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

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

$+ 0.79(1.08^K)2.42 + 0.53(0.51^J)6.04 = 9.53$ cfs

* See Pg- H-3 SWMM

2-Year Routing — 9/29/95

[illegible]

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

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

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

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

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

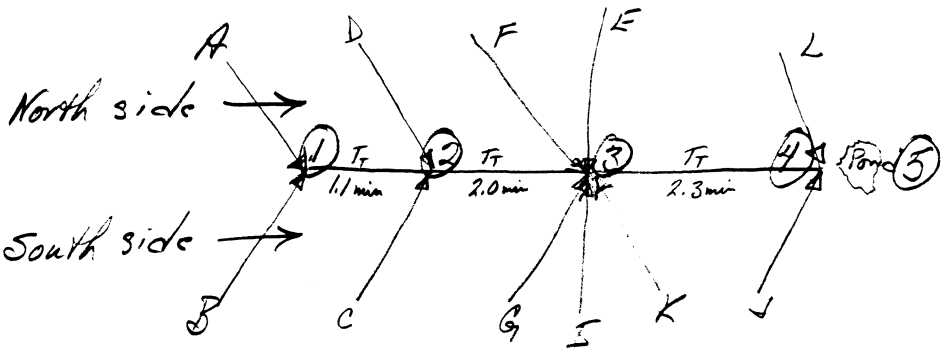
$J4 \quad Q_T = Q_J(@T=62.0)$

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

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

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	45.3	27.9
G	40.0	24.8
H	46.0	28.7
I	35.6	21.8
J	62.0	38.2
K	17.8	11.9
L	53.0	32.8



C & G T_T

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

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

TABLE - 2a

TIME OF CONCENTRATION and RAINFALL INTENSITIES

For: COBBLESTONE RIDGES

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

* Overland "To" based on SCS formula pg. E-2 Storm Water Management Manual

**Mannings Equa. was used to determine gutter and natural swale velocities.
Mannings n=0.016 was used for curb and gutter, and n=0.030 was used for natural swales.

***Figure "E-3", Pg. E-9, Storm Water Management Manual was used for shallow flows.

TABLE - 2b

TIME OF CONCENTRATION and RAINFALL INTENSITIES

For: COBBLESTONE RIDGES

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

* Overland "To" based on SCS formula pg. E-2 Storm Water Management Manual

**Mannings Equa. was used to determine gutter and natural swale velocities.
Mannings n=0.016 was used for curb and gutter, and n=0.030 was used for natural swales.

***Figure "E-3", Pg. E-9, Storm Water Management Manual was used for shallow flows.

TABLE - 2c

TIME OF CONCENTRATION and RAINFALL INTENSITIES

For: COBBLESTONE RIDGES

BASIN	Descrip. of Flow	L Length ft.	S Slope %	N* Mannings coef.	V* Vel. fps	Tt2 Travel Time min.	Tt100 Travel Time min.	Tc2 Time of Concentration min.	Tc100 Time of Concentration 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.

TABLE - 1a

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

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

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

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

CHECKED BY: _____ DATE: _____

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

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

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

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

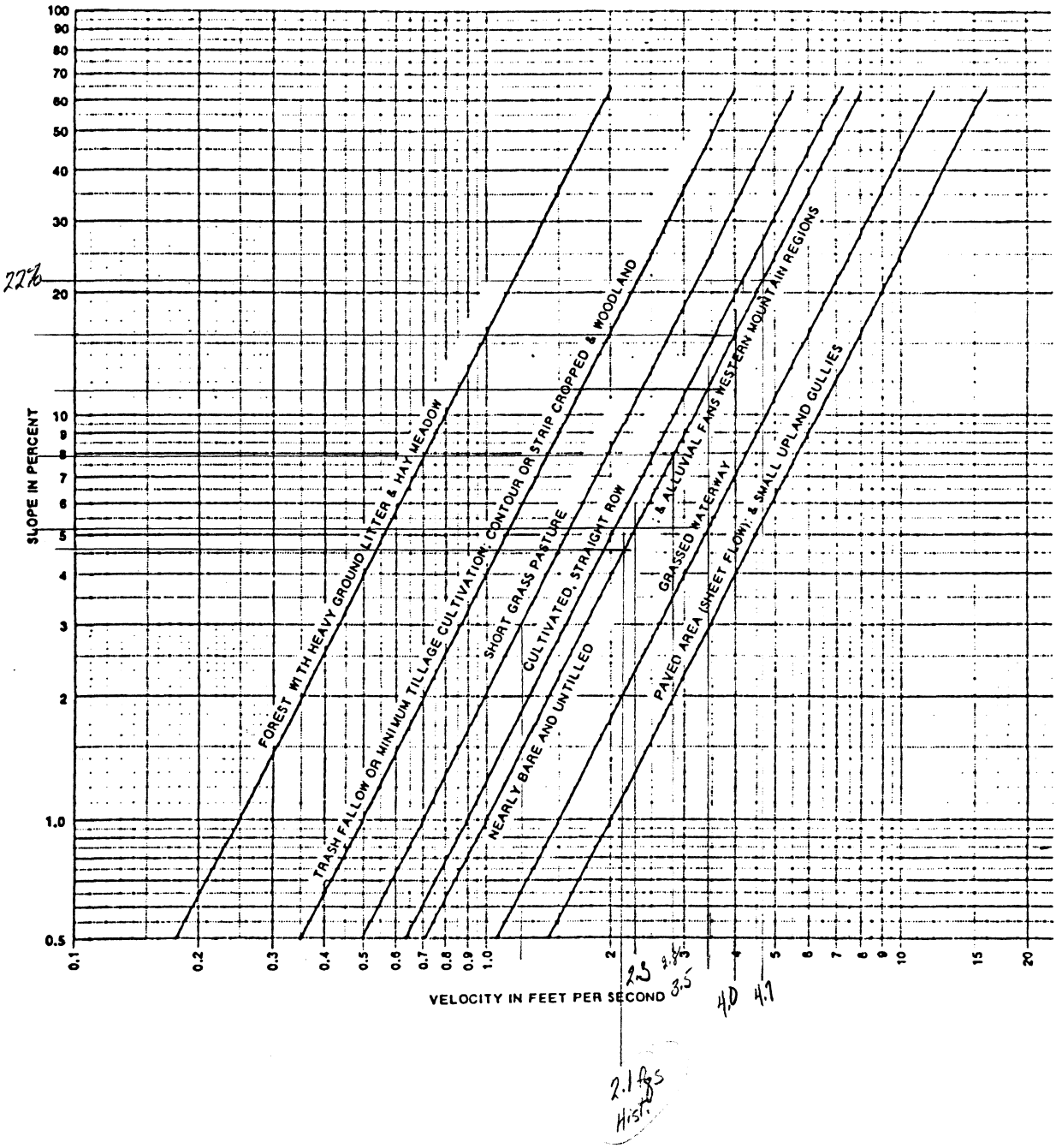
CHECKED BY: _____ DATE: _____

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

				H	E	A	K	L		
REACH	AREA IDENTIFIER			H	E	A	K	L		
	SEGEMENT IDENTIFICATION									
	Tc OR Tr THROUGH BASIN REACH									
OVERLAND FLOW	SURFACE DESCRIPTION (TABLE "E-1")			Pour Grass	Pour Grass	Pour Grass	Lawn	Pour Grass		
	"N" VALUE (TABLE "E-1")			0.30	0.30	0.30	0.30	0.30		
	FLOW LENGTH, L (TOTAL ≤ 300 FT.)		(ft.)	300	300	300	32	300		
	LAND SLOPE, S		(ft./ft.)	11.6%	20.8%	5.2%	2%	7.9%		
	$To_2 = 0.50\ (NL)^{.8}/S^{.4}$		(min.)	43.3	34.3	59.7	14.6	50.5		
	$To_{100} = 0.30\ (NL)^{.8}/S^{.4}$		(min.)	26.0	20.6	35.8	8.8	30.3		
SHALLOW CONCENTRATED FLOW	SURFACE DESCRIPTION (FIGURE "E-3")			Pour Grass	Pour Grass	Pour Grass	—	Pour Grass		
	FLOW LENGTH, L		(ft.)	560	94	103	—	322		
	FLOW SLOPE, S		(ft./ft.)	11.6%	20.8%	5.2%	—	7.9%		
	FLOW VELOCITY, V (FIGURE "E-3")		(fps.)	3.5 fps	4.7 fps	2.3 fps	—	2.8 fps		
	TRAVEL TIME = L/(60V)		(min.)	2.7	0.3	0.7		1.9		
CHANNEL FLOW	CROSS-SECTIONAL FLOW AREA, a		($ft.^2$)	—						
	WETTED PERIMETER, Pw		(ft.)	—						
	HYDRAULIC RADIUS, r = a/Pw		(ft.)	—						
	CHANNEL SLOPE, S		(ft./ft.)	—	0.6%	3.0% ±	5% ±	1% ±		
	MANNING'S COEFFICIENT, n (APPENDIX F)			—	0.016	0.016	0.016	0.016		
	$V = 1.49r^{.67}S^{.5}/n$		(fps.)	—	2.6 fps	4.6 fps	5.9 fps	2.6 fps		
	ASSUMED VELOCITY		(fps.)	—						
	FLOW LENGTH, L		(ft.)	—	146	441	1123	98		
	TRAVEL TIME L/(60V)		(min.)		0.9	1.6	3.2	0.6		
Tc&Tr	Tc = To + Ts + Tch	2 YEAR	(min.)	46.0	35.6	62.0	17.8	53.0		
	Tr = Tch	100 YEAR	(min.)	28.7	21.8	38.1	11.9	32.8		
TL	TL = 0.6Tc or	2 YEAR	(min.)							
	FROM FIGURE "E-4"	100 YEAR	(min.)							

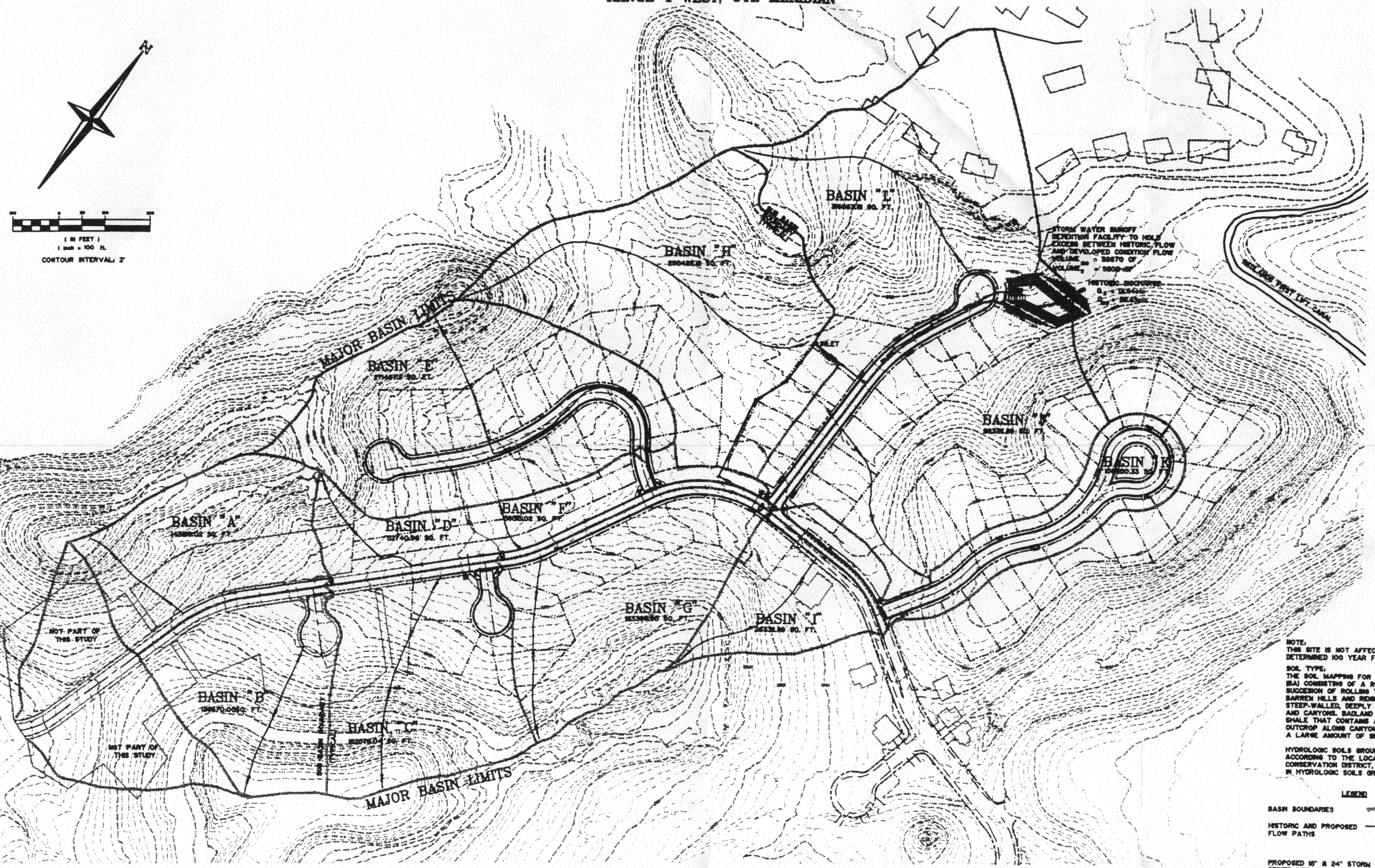
TRAVEL TIME WORKSHEET: TR-55 METHOD | **TABLE "E-3"**

REPRODUCED FROM FIGURE 15.2, SCS 1972



DETERMINATION OF "Ts"	FIGURE "E-3"

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



American Consulting Engineers Council Member

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

DRAWN BY: MWT
DESIGNED BY:
CHECKED BY: JEL

PREPARED UNDER THE SUPERVISION OF
JAMES E. LANGFORD P.E. NO. 16487
REVIEWED
DATE:

REVISION	DATE	DESCRIPTION	BY	CHK'D

STEVE CRAVEN — COBBLESTONE

MAJOR BASIN DRAINAGE MAP

SCALE: 1" = 100' | JOB NO: 0252-001 | DATE: 2/1/96

SHEET NO: 1 OF 1

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

January 12, 1996

Colorado Department of Public Health and Environment
Water Quality Control Division
WQCD-PE-B2
4300 Cherry Creek Drive South
Denver, Colorado 80222-1530

Atten: Permits and Enforcement Section

Please find attached the Storm Water Management Plan and our permit application for Cobblestone Ridges, a development being proposed within the City of Grand Junction. The full construction package for this project will be submitted to the City of Grand Junction for review and approval on February 1, 1996. The exhibit we have attached to this application will be sheet 21 of 21 of the plans for construction.

Respectfully,

James E. Langford, PE & LS

JEL/iml

cc: Steve Craven, Owner
Jodi Kliska, City of Grand Junction Development Engineer

GENERAL PERMIT APPLICATION

STORMWATER DISCHARGES
ASSOCIATED WITH:

CONSTRUCTION ACTIVITY

(Permit No. COR-030000)

FOR AGENCY USE ONLY									
Certification Number									
C	O	R	-	0	3				
Date Received									
Year			Month			Day			

Please print or type. All items must be completed accurately and in their entirety or the application will be deemed incomplete and processing of the permit will not begin until all information is received. Please refer to the instructions for information about the required items. An original signature of the applicant is **required.**

1. **Name and address of the permit applicant:**

Company Name Cobblestone Communities, ICO Mr. Steve Craven

Mailing Address P.O. Box 1168

City, State and Zip Code Telluride, CO 81435

Phone Number (970) 728-0500 Who is applying? Owner ☐ Developer ☒ Contractor ☐

Federal Taxpayer (or Employer) ID#: 84-1218500

Entity Type: Private ☐ Federal ☐ State ☐ County ☐ City ☐ Other: _____

Local Contact (familiar with facility) Mr. James E. Langford

Title Professional Engineer Phone Number (970) 243-6067

2. **Location of the construction site:**

Street Address Rana Road, Saddle Way, Saddle Back Court

City, State and Zip Code Grand Junction, CO 81503

County Mesa Name of plan or development Cobblestone Ridges

Legal Location (Township, Range, section, 1/4 section): South ½ of Section 17 and the North ½ of Section 20, Township 1 South, Range 1 West of the Ute Principal Meridian

Latitude and Longitude _____

3. **Briefly describe the nature of the construction activity:**

Construction activities associated with a planned unit development subdivision consisting of 65 single family residences. Specifically, the site will be subject to clearing, grading, and excavation activities associated with the construction of roadways, utilities, and landscaping within the subdivision boundaries.

4. **Anticipated construction schedule:**

Commencement date: May 1, 1996 Completion date: October 31, 1996

5. **Area of the construction site:** Total area (acres) 20.7 acres total

Area to undergo disturbance (acres) 10.9 acres (Phases I and II); 9.8 acres (Phases III and IV)

6. **The name of the receiving stream(s). (If discharge is to a ditch or storm sewer, also include the name of the ultimate receiving water):** Redlands First Lift Canal, Colorado River

7. **Other environmental permits held for this construction activity (include permit number):**

Not Applicable

8. **Stormwater Management Plan Certification:**

"I certify under penalty of law that a complete Stormwater Management Plan, as described in Appendix A of this application, has been prepared for my facility. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the Stormwater Management Plan is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for falsely certifying the completion of said SWMP, including the possibility of fine and imprisonment for knowing violations."

Steven E Craven 1-10-96

Signature of Applicant Date Signed

Cobblestone Communities, Inc by: Steven E. Craven President

Name (printed) Title

9. **Signature of Applicant (legally responsible person)**

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment."

Steven E Craven 1-10-96

Signature of Applicant Date Signed

Cobblestone Communities, Inc by: Steven E. Craven President

Name (printed) Title

STORM WATER MANAGEMENT PLAN FOR

COBBLESTONE RIDGES

JANUARY 1996

Prepared for:

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1.0 INTRODUCTION

In compliance with the provision of the Colorado Water Quality Control Act (25-8-101 et seq., CRS, 1973 as amended) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq.), the Water Quality Control Commission of the Colorado Department of Public Health and the Environment (CDPH&E) has promulgated regulations and requirements for storm water discharges at Section 6.4.2 of the *Regulations for State Discharge Permit System.*

A storm water discharge permit is required for

> Construction activity including clearing, grading and excavating activities except: operations that result in the disturbance of less than five acres of total land area which are not part of a larger common plan of development or sale (Section 6.4.2[5][c][x]).

Therefore, the construction activities associated with the development of ***Cobblestone Ridges***, a planned unit development subdivision located in Grand Junction, Colorado, require a *Colorado Discharge Permit System (CDPS) General Permit for Storm Water Discharges Associated With Construction Activity*. The application for this permit has been completed, and was submitted to the CDPH&E in January, 1996.

This Storm Water Management Plan (SWMP) has been prepared to demonstrate compliance with the terms and conditions of this Storm Water Discharge Permit. The goal of this SWMP is to reduce pollutants in storm water discharges that may originate from this construction project. This SWMP and its contents have been prepared in accordance with requirements as specified by the CDPH&E.

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Location

The property being studied in this report, Cobblestone Ridges, is located on the Redlands in the northeast corner of the Ridges Planned Unit Development (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 currently 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.

2.2 Property Description

The proposed development consists of approximately 20.7 acres, and is planned to accommodate 65 single family residences. The elevation of the development is approximately 4600 feet above mean sea level. The average annual precipitation for this area is approximately 9 inches, most of which occurs as snow during October through April. The topography of the site is characterized by rolling hills and ridges with shallow canyons and valleys. According to the Soil Survey of Mesa County , the soil mapping unit for this area is designated as Badland (Ba), which is described as:

> consisting of rough and broken succession of rolling to very steep, nearly barren hill and ridges separated by steep-walled, deeply entrenched gullies and canyons. The Badland unit consists of gypsiferous shale that contains layers of sandstone outcrop along canyon walls. It produces a large amount of sediment. Included with this unit are Chipeta and Persayo soils (U.S. Department of Agriculture Soil Conservation Service).

The natural vegetation consists mostly of saltbrush, rabbitbrush, galleta, Indian ricegrass, and sparse pinyon and juniper.

2.3 Construction Activities

The construction activities at this site shall consist of the usual clearing, grading, excavating, cut and filling, and landscaping activities that are commonly employed in the development of unimproved land. Construction activity shall include the construction and installation of roadways, utilities (domestic water lines, sanitary sewer, storm sewer, irrigation water, electrical service, etc.), and designated open-spaces/common areas. Upon completion of these infrastructures, the development of individual lots (i.e., construction of residential

structures and the associated landscaping) will occur in four phases: Phase I construction will focus on the development of the Saddle Back Court portion of Cobblestone Ridges, and Phase II construction activities will develop the Saddle Way portion of the subdivision. Phases III (development of Butte Court) and IV (development of Duke Court) of the subdivision will be developed at a later date in response to market demand.

2.4 Proposed Sequence for Major Construction Activities

Construction activities at this site will adhere to standard construction and engineering protocols and procedures. A generalized description of the sequence of major construction activities is as follows:

Phase I: Clearing and grubbing of proposed roadway alignments and disposal of construction debris.

Phase II: Construction of roadways to proposed subgrade elevations including cut and fill activities as required. Temporary erosional control features will be constructed during this phase. Excess embankment material will be stockpiled in designated areas.

Phase III: Installation of utility infrastructures including domestic water lines, sanitary sewer, storm sewer, irrigation lines, electrical service, etc..

Phase IV: Installation of curbing, gutter, sidewalks, and pavements.

Phase V: Clearing, grubbing, and overlot grading of individual lots.

Phase VI: Construction of single or multiple residential building structures.

Phase VII: Final landscaping of individual lots as required by project covenants, conditions, and restrictions. Swales and temporary erosional control features will be constructed at this time.

2.5 Estimated Areas of Disturbance

Phases I and II of the Cobblestone Ridges development consist of 10.9 acres. Construction of the subdivision infrastructures for these phases will commence in May 1996, and will be completed by October 1996. Construction and completion of residential structures on individual lots will be in response to market demand. Phases III and IV of the Cobblestone Ridges development consist of 9.8 acres. Construction start dates for Phases III and IV are not available at this time. When fully developed, Cobblestone Ridges will result in an estimated 20.7 acres of land disturbance.

2.6 Site Runoff Coefficients and Soil Erosion Potential

Site Runoff Coefficients

Pre-development and post-development runoff coefficients for the site have been calculated for both the 2 year and the 100 year storm events in Tables 1a through 1d of the *Preliminary Drainage Report, Cobblestone Ridges* (September 1995). The pre-construction composite "C" values for all drainage basins identified within the project boundaries have been calculated to be 0.44 and 0.54 for the 2 year and 100 year storm events, respectively. The post-construction composite "C" values for all drainage basins identified within the project boundaries have been calculated to be 0.58 and 0.65 (note: these values have been averaged from the tables) for the 2 year and 100 year storm events, respectively. Calculation of post-construction runoff coefficients assumed that each site was comprised of 40% impervious surfaces and 60% landscape surfaces.

Soil Erosion Potential

As described in the *Soil Survey of Mesa County Area, Colorado* (U.S. Department of Agriculture, Soil Conservation Service) report, the soils that characterize the project site are designated as Badland (Ba). The Badland unit consists of gypsiferous shale that contains layers of sandstone outcrop along canyon walls. It produces a large amount of sediment. Included with this unit are Chipeta and Persayo soils (U.S. Department of Agriculture Soil Conservation Service). This soil survey further reports that the runoff is moderate to rapid, and the hazard of erosion is high for both types of soils. The site soils are classified within the Hydrologic Soils Group "D." In summary, the potential for erosion at the project site is significant in areas where drainage and vegetation are not carefully controlled.

2.7 Existing Vegetation

The natural vegetation consists mostly of native brush (i.e., saltbrush, rabbitbrush), grasses (galleta, Indian ricegrass), and cactus. Pinyon and juniper trees are present, but sparse. The existing ground cover of the project site is estimated to be 75 to 85 percent.

2.8 Other Potential Pollution Sources

Other potential pollution sources that may be encountered at the project site during construction activities include:

- On-site refueling activities of heavy equipment presents a risk for spilling or releasing fuels to the ground surface.

- Equipment failures during earth moving activities can also result in spills of fuels, motor fluids, hydraulic fluids, etc. to the ground surface.

- Construction material storage areas (e.g., fill/barrow materials), if improperly stored, or exposed to storm water is a potential source of storm water pollution.

- Construction waste storage areas (e.g., open dumpsters, excavation wastes, etc.), if improperly stored, or exposed to water is a potential source of storm water pollution.

- Emptying/washing down concrete trucks into drainages can also result in storm water pollution.

- Off-site vehicle tracking.

- Temporary sanitation services for construction workers.

Due to the geographical location of the project site, off-site sources of pollution (i.e., storm water runoff from neighboring developments, commercial or industrial wastes, etc.) entering the project site are not known to exist. The storage of fuel oils, chemicals, fertilizers or other potential pollutants at the project site during the specified construction period is prohibited. In the event it becomes necessary to store such items at the project site, engineering controls must be employed to prevent a release of these pollutants to the environment; to shelter these pollutants from the elements; and to protect against vandalism.

2.9 Non-Storm Water Discharges

Storm water discharge is the only known, anticipated discharge from the project site.

2.10 Name and Location of Receiving Waters

A natural drainage course traverses the length of the project site traveling northeasterly to the Redlands First Lift Canal. There are no conduits in evidence to carry storm water drainage beneath the canal. Storm water runoff either ponds in low areas and percolates into the soils, or if flows are adequate, it may drain directly into the irrigation canal. The canal serves to convey irrigation water to users north of the project site.

3.0 SITE MAP

A site- and project-specific Storm Water Management Plan Site Map has been prepared for the construction activities described in this SWMP. The site map has been prepared to include all applicable elements as required by the permit guidelines. The Site Map has been included as Appendix A to this SWMP. It should be noted that the 100 year flood plain has not been determined for the project area.

4.0 BEST MANAGEMENT PRACTICES (BMPs) FOR STORM WATER POLLUTION PREVENTION

4.1 Erosion and Sediment Controls

Both structural BMPs and non-structural BMPs have been identified to address potential sources of storm water pollutants as discussed in Section 2.0. These BMPs will be implemented before and during construction activities at the project site. This SWMP may be revised at any time during the project to address changing site conditions, or any unexpected circumstances which may result in unexpected storm water pollutants.

The main pollutant of concern at this construction site is sediment. Consequently, the BMPs for this construction site have been developed in accordance with the following criteria: 1) to prevent erosion; 2) to prevent pollutants from the construction materials from mixing with storm water; and 3) to trap pollutants before they can be discharged.

4.1.1 Structural Source Controls

Several structural source controls will be employed to reduce the erosion potential and to capture sediment laden storm water runoff. These controls include the construction of a storm water detention facility, anchored straw bales, silt fencing, temporary diversion ditches and berms, seeding and mulching, and secondary containment. The Site Map identifies specific locations where the use of structural BMPs are necessary to mitigate erosional and storm water runoff impacts.

Storm Water Detention Facility: Storm water runoff impacting the site will be collected via a surface (streets, curb and gutters, catchment basins, etc) and subsurface drainage system. Storm water captured by this collection system will ultimately be discharged to a detention facility located at the lowest topographical point in the development. The storm water detention facility will be located in an open area at the end of the Saddle Back Court cul-de-sac. The facility will be sized to ensure that the historic drainage patterns of the site are not significantly altered, and to prevent possible property damage to downstream property owners.

Anchored Erosion/Straw Bales: Anchored straw bales are to be used to channel storm water runoff in a desired direction, to filter sediment-laden sheet flow, or as erosional checks in ditches. Use of anchored straw bales is specifically required along roadway alignments where the potential for runoff to flow outside of desired flow paths exist. Only certified weed-free (i.e., noxious weeds) straw bales will be used. The installation of the erosion bales are described in Appendix B.

Silt Fencing: Silt fencing may be used to intercept and detain small amounts of sediment from disturbed areas during construction operations to prevent sediment from leaving the site; to decrease the velocity of sheet flows and in low to moderate level channel flows. Silt fencing in typically used along the toe of fills, in transition areas between cut and fills, adjacent to streams/waterways, or along adjacent property lines. Installation guidelines for silt fencing are described in Appendix B.

Temporary diversion ditches and berms: Temporary diversion ditches and berms may be constructed to channel sheet flow away from potential pollution sources, or to contain sheet flow which may already be contaminated. These BMPs are appropriately used where construction materials are stored, vehicle/equipment staging, refueling, and maintenance areas, and vehicle washdown (i.e., cement truck discharges/wastes).

Crushed Rock Construction Staging Pad: A crushed rock staging pad may be constructed to reduce off-site tracking of sediment from construction traffic onto asphaltic public roadways. Entry into, and exit from the site by all vehicles shall be directed through a construction staging area consisting of a crushed rock pad 50 feet long (minimum) and 20 feet wide (minimum) with a thickness of at least six inches. The crushed rock shall be 1 1/2 inches or larger. The crushed rock staging area shall be constructed as soon as practicable.

Secondary Containment: Examples of secondary containment structures include the construction of temporary soil berms around construction material/waste piles, lined impoundments for vehicle washdown wastes, overpacks for fuels, motor fluids, chemicals stored on-site, etc..

4.1.2 Non Structural Source Controls

The Non structural BMPs that may be employed at this construction site consist of both interim and temporary stabilization, and pollution prevention/minimization practices and procedures. Examples of non structural BMPs include use of erosional matting/mulching, revegetation, separation and isolation of wastes, employing "good housekeeping" practices, and minimizing the amount of soil that has to be disturbed.

Erosional matting/mulching: This BMP involves the application of plant residues or other suitable material to the soil surface. Typical mulching materials used include straw, hay, and wood cellulose fiber. Mulching is used to provide temporary protection for exposed soils against erosion where temporary or permanent seeding operations are not feasible, especially during adverse growing seasons.

Revegetation: This BMP involves the planting of temporary or permanent vegetation on disturbed areas. Disturbed areas not designated for immediate construction or permanent landscaping should be temporarily revegetated. In the event that construction activity ceases for a period of 60 calendar days, disturbed areas including cut and fill slopes shall be revegetated with a annual or perennial seed mixture. Recommendations for seeding such areas are presented in Appendix B.

Separation and Isolation of Wastes: All wastes considered to be potential pollutant sources that are generated during the construction activity will be appropriately stored and disposed of.

Good Housekeeping: Good housekeeping practices shall be employed at the construction site to minimize the potential for pollutants entering storm water runoff. Such practices include immediately cleaning up spills of fuels or petroleum products, ensuring that waste materials are properly stored and promptly disposed, placement of portable toilets in locations where accidental tipping will not occur, etc.

Minimizing the amount of disturbed soils: Efforts should be made to minimize the amount and area of soils to be disturbed.

4.2 Materials Handling and Spill Prevention

Spill Prevention and Response Procedures: Spills at the construction site can be largely prevented through proper training and the conscientious efforts of construction personnel during the performance of routine activities. Specifically, on-site refueling activities pose the largest threat for releasing hazardous pollutants to the environment. Efforts should be made to refuel equipment away from drainages and waterways, and if possible, attempt to use the same location such as a designated equipment refueling/staging area. If a release of a hazardous substance does occur during construction activities, construction personnel will take appropriate action to minimize the impact of the spill. This will be accomplished by using sorbent material that will be stored at the construction site. Sorbent material may consist of clay, sawdust, straw, kitty litter, booms, pads, or other suitable materials.

Releases of pollutants may also occur as equipment is operated during construction. In the event that a release of fuel, lubricant, or coolant occurs, efforts will be made to stop the release, and the spilled fluids will be cleaned up as soon as possible. All contaminated soils and spent/used clean up materials shall be containerized (i.e., drums, dumpsters, etc.) and stored on site, until appropriate disposal methods have been identified. The necessary repairs will be made to the equipment to prevent a continued release of potential pollutants.

Depending on the nature of the spill and the material involved, Mr. Steve Craven, the SWMP Administrator (or his designated representative), should be notified first at (970) 728-0500. If a significant amount of pollutants have been discharged to the irrigation canal, notification to the downstream water users association (i.e., Redlands Water and Power Co., 243-2173) would be appropriate.

In the event of a spill or release of petroleum products in an amount equal to, or exceeding 25 gallons, the release should be reported to both the CDPH&E Emergency Management Program Hotline at 1-303-756-4455 and the National Response Center at 1-800-424-8802.

5.0 FINAL STABILIZATION AND LONGTERM STORM WATER MANAGEMENT

Storm water discharges associated construction activities are considered to no longer exist once the disturbed site has been stabilized. As soon as practicable after construction activities have been completed in a disturbed area, permanent stabilization of the site should commence to prevent further erosion. The long term management controls that will prevent and control storm water pollution at this construction project include the construction of the storm water detention facility at the end of Saddle Back Court; construction of the surface and sub-surface storm water drainage and collection system; grassy/vegetative swales; permanent landscaping of roadways; and construction and landscaping of residential structures on individual building lots. Any covenants, conditions, or restrictions yet to be established for the development may also stipulate landscaping schedules.

6.0 OTHER CONTROLS

Portable Toilet Service/Maintenance

All "porta potties" will be pumped and serviced on a schedule to be established with the subcontractor who provides the service. All porta potties will be located in a safe area away from waterways, and where accidental tipping will not occur.

Solid Waste Disposal

All solid waste (i.e., construction debris) generated during the construction of residential structures shall be containerized in a dumpster. The schedule for disposal and service of the dumpster will be established by the disposal provider. If possible, dumpsters should be covered or tarped when not in use to prevent precipitation from collecting inside the container. If precipitation is allowed to accumulate inside the dumpster, hazardous contaminants may be leached from construction debris and wastes, and may leak from the dumpster onto the ground surface. Dumpsters should be centrally located and away from waterways and drainages.

Dust Suppression

The use of dust suppression water may be necessary to prevent dust during construction activities. However, application of dust suppressant water shall not be excessive resulting in erosional impacts.

7.0 INSPECTION, MAINTENANCE, AND RECORDKEEPING

Preventative maintenance involves the regular inspection and testing of the BMPs and other storm water pollution controls that comprise the storm water pollution prevention system. BMPs and erosional controls shall be inspected for cracks, leaks, or other conditions which could result in breakdowns or system failures, which may ultimately result in discharge of pollutants to storm sewers and surface waters. Adjustments, repairs, and replacement of BMPs and erosional controls will be made as necessary. All structural controls identified in Section 4.1.1 will be inspected and maintained.

The Storm water discharge permit requires that a thorough inspection of the storm water management system be performed at least every 14 days, **and** after any precipitation or snowmelt event that caused surface erosion. The contractor shall be responsible for inspecting the entire site on a bi-weekly basis to ensure compliance, and to identify any existing or potential sedimentation problems. It is recommended that these inspections be documented using a dedicated inspection form. Inspection forms should be kept in a "SWMP Log Book" and maintained for the duration of the construction project. The inspection form to be used is included as Appendix B.

8.0 REFERENCES

1. *Soil Survey of Mesa County Area, Colorado*, U.S. Department of Agriculture Soil Conservation Service, 1978.

2. *Report of Geotechnical Investigation for The Ridges, Filing #6 Subdivision, a Portion of Section 17, T1S, R1W, of the Ute Meridian, Grand Junction, Colorado*, prepared by Western Colorado Testing, Inc., October 24, 1995.

3. *Preliminary Drainage Report, Cobblestone Ridges,* prepared by Thompson-Langford Corporation, September 1995.

4. *Construction Guidance Document: Preparing a Stormwater Management Plan,* prepared by the Colorado Department of Public Health and the Environment, Water Quality Control Commission, 1994.

5. *Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, Summary Guidance,* prepared by the U.S. Environmental Protection Agency, Office of Water (EN-336), October 1992.

6. *Storm Water Management Manual,* prepared by the City of Grand Junction, 1994.

7. *Urban Storm Drainage Criteria Manual, Volume 3 - Best Management Practices,* prepared by the Urban Drainage and flood Control District, Denver, Colorado, September, 1992.

CERTIFICATION OF STORM WATER MANAGEMENT PLAN PREPARATION

The undersigned hereby certify that this document has been prepared in accordance with good engineering practices, and that this document and all attachments were prepared under the direction or supervision of qualified personnel. The information reported in this document is, to the best of my knowledge and belief, true, accurate, and complete.

Prepared by: _____
Michael J. Gardner, Environmental Engineer

Reviewed and Approved by: _____
James E. Langford, PE & LS
Reg. No. 14847

APPENDIX A

STORM WATER MANAGEMENT PLAN SITE MAP

STORM WATER MANAGEMENT PLAN SITE MAP
FOR COBBLESTONE RIDGES
LOCATED IN THE S 1/2 OF SECTION 17
AND THE N 1/2 OF SECTION 20, TOWNSHIP 1 SOUTH,
RANGE 1 WEST, UTE MERIDIAN

OVERLOT GRADING EROSION CONTROL AND REVEGETATION

1. EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO DISTURBANCE CAUSED BY ONSITE GRADING. NEWLY CONSTRUCTED OR MODIFIED DRAINAGE INLETS, CATCH-BASINS OR DRAINAGE SWALES ARE TO BE PROTECTED IMMEDIATELY UPON INSTALLATION.

2. PRIOR TO ANY GRADING ACTIVITY ONSITE, CATCH BASINS OR CULVERTS WITHIN THE CONSTRUCTION VICINITY SHALL BE PROTECTED FROM SILT INTRUSION BY COVERING THE INLET WITH FILTER FABRIC. CLEAN FILTER FABRIC SHALL BE MAINTAINED TO ALLOW FOR DRAINAGE. AT THE COMPLETION OF SITE CONSTRUCTION, REMOVE FILTER FABRIC AND CLEAN INLET AS NEEDED.

3. STRIP 6" OF TOPSOIL FROM ALL AREAS TO BE SURFACED AND STOCKPILE TOPSOIL IN AREA DESIGNATED BY OWNER OR ENGINEER.

4. UPON COMPLETION OF CUT AND FILL ACTIVITIES WITHIN ALL SWALE SECTIONS, SLOPE CUTS AND EMBANKMENTS AND OTHER AREAS DISTURBED BY CONSTRUCTION, SCARIFY SUBGRADE AND SPREAD A MINIMUM OF 6" OF TOPSOIL WHERE REVEGETATIVE SEEDING IS TO OCCUR.

5. COMPACT TOPSOIL TO 85-95% STANDARD DENSITY AND FINISH GRADE TO ELEVATIONS SHOWN ON GRADING PLAN. ELIMINATE LOW SPOTS, ROUND OUT ABRUPT CHANGES IN SLOPE AND PROVIDE POSITIVE DRAINAGE IN ROADSIDE SWALE SECTIONS.

6. AFTER COMPLETION OF GRADING ACTIVITIES, BROADCAST SEED WITH SPECIAL SEED MIX LISTED BELOW AND HYDROMULCH WITH AN ORGANIC MULCH. IN AREAS WHICH HAVE A SLOPE AT OR EXCEEDING 3:1, ADD AN APPROVED TACKIFIER TO HYDROMULCH.

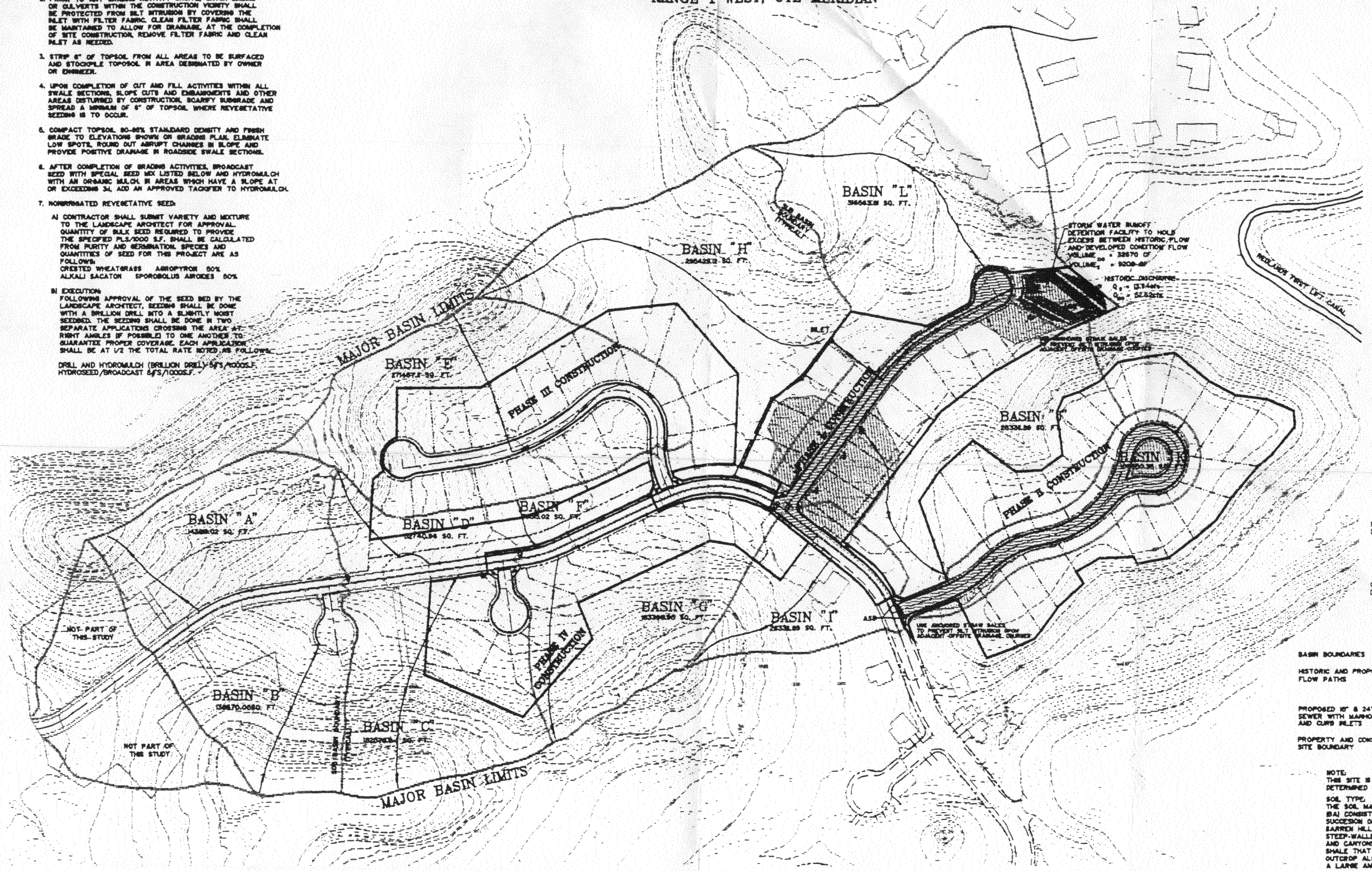
7. NONIRRIGATED REVEGETATIVE SEED:

   A) CONTRACTOR SHALL SUBMIT VARIETY AND MIXTURE TO THE LANDSCAPE ARCHITECT FOR APPROVAL. QUANTITY OF BULK SEED REQUIRED TO PROVIDE THE SPECIFIED PLS/1000 S.F. SHALL BE CALCULATED FROM PURITY AND GERMINATION. SPECIES AND QUANTITIES OF SEED FOR THIS PROJECT ARE AS FOLLOWS:

CRESTED WHEATGRASS	AGROPYRON	50%
ALKALI SACATON	SPOROBOLUS AIROIDES	50%

   B) EXECUTION:
   FOLLOWING APPROVAL OF THE SEED BED BY THE LANDSCAPE ARCHITECT, SEEDING SHALL BE DONE WITH A BRILLION DRILL INTO A SLIGHTLY MOIST SEEDBED. THE SEEDING SHALL BE DONE IN TWO SEPARATE APPLICATIONS CROSSING THE AREA AT RIGHT ANGLES (IF POSSIBLE) TO ONE ANOTHER TO GUARANTEE PROPER COVERAGE. EACH APPLICATION SHALL BE AT 1/2 THE TOTAL RATE NOTED AS FOLLOWS:

   DRILL AND HYDROMULCH (BRILLION DRILL)-5#'S/1000S.F.
   HYDROSEED/BROADCAST 8#'S/1000S.F.



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

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

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

American Consulting Engineers Council Member

DRAWN BY: MWT	PREPARED UNDER THE SUPERVISION OF JAMES E. LANGFORD P.E. NO. 18487	THOMPSON-LANGFORD CORP. 529 25 1/2 RD., SUITE B210 GRAND JUNCTION, COLORADO PH. (303) 243-6067
DESIGNED BY:	REVIEWED _____ DATE _____	
CHECKED BY: JEL		

REVISION	DATE	DESCRIPTION	BY	CHK'D

STEVE CRAVEN — COBBLESTONE COMMUNITIES, INC.

STORM WATER MANAGEMENT PLAN SITE MAP

SCALE:	JOB NO:	DATE:
1" = 100'	0252-001	1/1/96

SHEET NO. 21 OF 21

APPENDIX B

GUIDELINES FOR INSTALLATION OF SITE SPECIFIC BMPs

B-1: SEEDING

Planting of temporary or permanent vegetation on disturbed areas.

I. Application

Disturbed areas not designated for immediate construction or permanent landscaping shall be temporarily revegetated. In the event construction activity ceases for a period of sixty (60) calendar days, disturbed areas including cut and fill slopes shall be revegetated with an annual and perennial seed mixture.

II. Proposed Seed Mixture

The following mixture may be used for revegetation purposes.

15% Annual Rye Grass
25% Perennial Rye Grass
12% Nordan Crested Wheatgrass
12% Fairway Crested Wheatgrass
12% Blue Gramma
12% Red Fescue
12% Buffalo Grass

Seed shall be planted at a minimum rate of 5 pounds per acre if using a seed drill, or 10 pounds per acre if using a broadcast method.

III. Construction Guidelines

For non-irrigated areas, soils must not be frozen at time of seeding. In general, seeds must be buried 1/2 inch into the soil (if using standard drill seeding methods), and between the dates of September 1 and June 15. All seeding operations shall be performed at right angles to the slope. When needed to improve germination of seeds, mulch may be applied immediately after seeding. Soil retention blankets may be required on steep slopes (2:1 and steeper).

B-2: MULCHING

Application of plant residues or other suitable material to the soil surface. Typical mulching material includes straw, hay, and wood cellulose fiber.

I. Application

Used to provide temporary protection for exposed soils against erosion where temporary or permanent seeding operations are not feasible, especially during adverse growing seasons. Mulching may also be used to protect newly seeded areas and to protect soil stockpiles. Mulching is to be used only of disturbed areas as a temporary cover.

II. Construction Guidelines

Material

- Hay shall consist of native grasses free of noxious weed seeds.
- Straw shall consist of clean cereal grain.
- Wood cellulose fiber shall consist of virgin wood cellulose processed into a uniform fibrous physical state.
- Tackifiers shall not contain any material which may inhibit germination or growth of plants.

Spreading Procedure

Hay and straw mulch shall be spread at a rate of two tons per acre. At a minimum, 50% of the mulch (by weight) shall be more than two inches and less than 10 inches. Applied mulch shall reach a uniform distribution so that no more than 10% of the soil surface shall be exposed. Hay and straw mulch shall me anchored to the soil surface using tackifiers, blankets, nets, or with the use of a mulch crimping machine. Mechanical anchoring is preferred and recommended for slopes flatter than 3:1. When using blankets or nets, these may need to be anchored to the soil with staples, or as required by the manufacturer's specifications.

Wood cellulose fiber mulch shall be mixed with water and a tackifying agent. The mixture shall contain no more than 50 pounds of wood cellulose per 100 gallons of water. Application shall be at a rate of 1500 pounds per acre with a hydraulic seeder or mulcher.

B-3: ANCHORED STRAW BALE OR EROSION BALE

A temporary sediment barrier consisting of a row of entrenched and anchored straw bales.

I. Application

Anchored straw bales (erosion bales) are commonly used along the toe of fills; as erosion checks in ditches; and as diversions and filters in unfinished drop inlets, culvert inlets, and outlets.

II. Use Limitations

Erosion bales are not appropriate for use if the drainage area is greater than 1/4 acre per 100 feet of barrier length. The maximum slope length behind the barrier should not be longer than 100 feet. The slope gradient behind the barrier must be less than 50%. For use in minor swales or ditch lines, the maximum contributing drainage area must be less than one acre. Erosion bales should not be used for durations longer than 3 months. Erosion bales should only be used in areas of sheet flow, and in no circumstances are they to be used in active streams or in swales where there is a potential for failure. In general, erosion bales are not to be used where the control of sediment is critical or in high risk areas. Anchored bales are not to be used where they cannot be entrenched as required and firmly anchored. The useful life of an erosion bale is relatively short; therefore, the barrier may have to be replaced one or more times during the construction project.

III. Construction Guidelines

All bales shall be either wire-bound or string tied. Erosion bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales (to prevent deterioration of bindings). The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. After the bales are staked, the excavated soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be built up to 4 inches against the uphill side of the barrier. Each base shall be securely anchored by at least two 2"x2" stakes or #4 rebars driven toward the previously laid bale to force the bales together. Stakes or rebars shall be driven 12 inches minimum into the ground to securely anchor the bales. Gaps between bales shall be filled by wedging with straw to prevent water from escaping between the bales. The main consideration is to obtain tight joints. Erosion bales will not filter sediment out of the water if the water is allowed to flow between, around, or under the bales. Loose straw or hay scattered over the area immediately uphill from an erosion bale barrier tends to increase barrier efficiency. Since erosion bales deteriorate quickly, the inspection during construction shall be frequent, and repair/replacement shall be made promptly as needed. Erosion bales shall be removed when they have served their usefulness, but not before the upslope areas have been permanently stabilized.

Sheet Flow Applications
Bales shall be placed in a single row, lengthwise on the contour with ends of adjacent bales tightly abutting.

Channel Flow Applications
Bales shall be placed in a single row, lengthwise, oriented perpendicular to the contour, with ends of bales tightly abutting. The barrier shall be extended to such a length that the bottoms of the end bales are higher than the top of the lowest bale to assure that sediment-laden runoff will flow either through or over the barrier but not around it.

B-4: SILT FENCING

A temporary vertical barrier of filter fabric attached and supported by posts and entrenched into the ground.

I. Application

Used to intercept and detain small amounts of sediment from disturbed areas during construction operations to prevent sediment from leaving the site. Silt fencing is also used to decrease the velocity of sheet flows and low-to-moderate level channel flows. Silt fencing is typically used along the toe of fills in transition areas between cut and fill areas, and adjacent to streams, along private property, etc.. Silt fencing may also be used around median and yard inlets as applicable, and behind curb and gutter or sidewalks to prevent silting of the pavement.

II. Use Limitations

Where the size of the drainage areas in no more than 1/4 acre per 100 feet of silt fence length; the maximum slope length behind the barrier is 100 feet; and the maximum gradient behind the barrier is 50%. On steep slopes care should be given to placing alignment of fence perpendicular to the general direction of the flow. Silt fencing should not be used in areas where rocky soils will prevent keying in the filter fabric.

III. Construction Guidelines

Materials
The synthetic filter fabric shall conform to the requirements described in the Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction. The synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0 to 120 degrees F. If a burlap fabric is used, it shall be purchased in a continuous roll and cut to the length of the barrier to avoid creating joints in the barrier. Posts for silt fencing shall be metal or hardwood with a minimum length of 42 inches. Pine wood shall not be used.

Wood posts shall have a minimum diameter or cross section of 1.25 inches. Metal posts shall be "studded tee" or "U" type with minimum weight of 1.33 pounds per linear foot. Metal posts shall be painted and protected against corrosion. Metal posts shall also have projections for fastening wire to them. Wire fence reinforcement for silt fences using standard strength filter cloth shall be a minimum of 42 inches in height, a minimum of 14 gauge and shall have a maximum mesh spacing of 6 inches.

Installation

Silt fences must be located along a terrain contour and the area below the fence must be undisturbed or stabilized. The posts shall be driven vertically into the ground to a minimum depth of 18 inches. A trench shall be excavated approximately 6 inches wide and 6 inches deep along the line of posts and upslope from the barrier; the bottom one foot of the barrier shall be buried into this trench. The trench shall be backfilled and the soil compacted. The filter materials shall be fastened securely to metal or wood posts using wire ties, or to the wood posts with 3/4 inches long #9 heavy duty staples. Filter material shall not be stapled to existing trees.

If a filter barrier is to be constructed across a ditch line or swale, the barrier shall be of sufficient length to eliminate end flow, and the plan configuration shall resemble an arc or horseshoe with the ends oriented upslope. When/if joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum 6-inch overlap, and securely sealed. When standard strength filter fabric is used, a wire mesh support shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least 3/4 inch long, tie wires or hog rings. The wire shall extend into the trench a minimum of 2 inches and shall not extend more than 36 inches above the original ground surface.

APPENDIX C

STORM WATER DISCHARGE PERMIT INSPECTION CHECKLIST

STORM WATER DISCHARGE PERMIT INSPECTION CHECKLIST

for Construction Activities Associated with Cobblestone Ridges Development,

Grand Junction, CO

The storm water discharge permit requires that a thorough inspection of the storm water management system be performed at least every 14 days, **and** after any precipitation or snow melt event that causes surface erosion. This checklist documents the inspections and maintenance activities that are required under the terms and conditions of the storm water discharge permit.

Date of Inspection: _____

Inspected By: _____

List the storm water management system components (i.e., BMPs) that were inspected and describe their condition (good, fair, poor): _____

_____

_____

_____

If erosional controls and/or equipment are in need of repair, describe the preventive maintenance activities and actions performed: _____

_____

_____

_____

Were any spills, leaks, or overflows of petroleum products or other hazardous substances observed since the last inspection? If so, include time, date, weather conditions at time of release, and the actions taken to clean up the spilled material: _____

_____

_____

_____

Comments: _____

_____

_____

_____

GENERAL PERMIT APPLICATION

STORMWATER DISCHARGES
ASSOCIATED WITH:

CONSTRUCTION ACTIVITY

(Permit No. COR-030000)

FOR AGENCY USE ONLY									
Certification Number									
C	O	R	-	0	3				
Date Received									
Year			Month			Day			

Please print or type. All items must be completed accurately and in their entirety or the application will be deemed incomplete and processing of the permit will not begin until all information is received. Please refer to the instructions for information about the required items. An original signature of the applicant is **required.**

1. **Name and address of the permit applicant:**

Company Name Cobblestone Communities, ICO Mr. Steve Craven

Mailing Address P.O. Box 1168

City, State and Zip Code Telluride, CO 81435

Phone Number (970) 728-0500 Who is applying? Owner ☐ Developer ☒ Contractor ☐

Federal Taxpayer (or Employer) ID#: 84-1218500

Entity Type: Private ☐ Federal ☐ State ☐ County ☐ City ☐ Other: _____

Local Contact (familiar with facility) Mr. James E. Langford

Title Professional Engineer Phone Number (970) 243-6067

2. **Location of the construction site:**

Street Address Rana Road, Saddle Way, Saddle Back Court

City, State and Zip Code Grand Junction, CO 81503

County Mesa Name of plan or development Cobblestone Ridges

Legal Location (Township, Range, section, 1/4 section): South ½ of Section 17 and the North ½ of Section 20, Township 1 South, Range 1 West of the Ute Principal Meridian

Latitude and Longitude _____

3. **Briefly describe the nature of the construction activity:**

Construction activities associated with a planned unit development subdivision consisting of 65 single family residences. Specifically, the site will be subject to clearing, grading, and excavation activities associated with the construction of roadways, utilities, and landscaping within the subdivision boundaries.

4. **Anticipated construction schedule:**

Commencement date: May 1, 1996 Completion date: October 31, 1996

5. **Area of the construction site:** Total area (acres) 20.7 acres total

Area to undergo disturbance (acres) 10.9 acres (Phases I and II); 9.8 acres (Phases III and IV)

6. **The name of the receiving stream(s). (If discharge is to a ditch or storm sewer, also include the name of the ultimate receiving water):** Redlands First Lift Canal, Colorado River

7. **Other environmental permits held for this construction activity (include permit number):**

Not Applicable

8. **Stormwater Management Plan Certification:**

"I certify under penalty of law that a complete Stormwater Management Plan, as described in Appendix A of this application, has been prepared for my facility. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the Stormwater Management Plan is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for falsely certifying the completion of said SWMP, including the possibility of fine and imprisonment for knowing violations."

Steven E Craven 1-10-96

Signature of Applicant Date Signed

Cobblestone Communities, Inc by: Steven E. Craven President

Name (printed) Title

9. **Signature of Applicant (legally responsible person)**

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment."

Steven E Craven 1-10-96

Signature of Applicant Date Signed

Cobblestone Communities, Inc by: Steven E. Craven President

Name (printed) Title

Petitioner's Response to Review Comments

File #FPP-96-27, Final Plan--Cobblestone Ridges Subdivision, The Ridges, Filing #6

Petitioner:

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

Petitioner's Representative:

Steve Craven
Cobblestone Communities, Inc.
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
(970) 243-6067

Staff Representative: Kathy Portner

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

REDLANDS WATER & POWER: No response solicited.

PUBLIC SERVICE COMPANY: Acknowledged and understood.

MESA COUNTY SCHOOL DISTRICT #51: Acknowledged and understood.

CITY POLICE DEPARTMENT: Acknowledged and understood.

TCI CABLEVISION: Acknowledged and understood.

U.S. WEST: Acknowledged and understood.

CITY DEVELOPMENT ENGINEER:

1) The Detention Facility Tract has been shown and dedicated to the homeowner's association on the revised plat.

2) The temporary drainage and irrigation easement at the entry to Saddleback Court is addressing the utilities which extend outside the boundaries of platted Phase 1.

3) The existing asphalt on Rana Road ends at Station 5+11.29 , where Phase 1 construction is to begin. It is the developer's intention to construct street improvements from this point to the west curb return of Saddleback Court, Sta. 6+39.00. The dveloper intends to construct all improvements on Saddle Way, now Saddle Court, and the curb and gutter on the north side of Rana Road to Sta. 5+11.29 during Phase 2 construction. The pedestrian trail will be consructed as the street improvements it adjoins are constructed. The off-site pedestrian trail will be constructed during Phase 2 construction. The plans for the off-site path construction will be submitted to the City Development Engineer and the Community Development Department as soon as they are completed. It is the developer's understanding that the City of Grand Junction will pay for all costs related to design and construction of the off-site pedestrian trail at the time said costs are incurred.

4) The outlet protection for the detention pond is on private property to serve as erosion control. The affected property owner is being contacted to request an Easement.

5) Grades as shown on Plans are acceptable per conversation with Jody Kliska dated 02/22/96.

6) The street lights mentioned are shown on sheet 3 of 21, "Water Plan and Utility Composite" and have been added to sheet 4 of 21, "Grading and Drainage Plan".

7) The improvements agreement is revised to reflect additions per your comments.

COMMUNITY DEVELOPMENT DEPARTMENT:

1) The plans for the required off-site pathway system will be submitted to the COMMUNITY DEVELOPMENT DEPARTMENT and the CITY DEVELOPMENT ENGINEER for approval as soon as they are completed. It is the developer's intention to construct this path system during Phase 2 construction. It is the developer's understanding that the City of Grand Junction will pay for all costs related to design and construction of the off-site pedestrian path at the time said costs are incurred.

2) The detention pond has been designated as a separate tract and dedicated to the Homeowner's Association on the revised Plat.

3) Lots 9 & 10 on Saddle Way, now Saddle Court, have been reconfigured as requested.

4) Cobblestone Ridges will work with the City of Grand Junction to do what is necessary to finalize the Open Space transfer.

5) The Architectural style for Cobblestone Ridges is still in the developmental stages. The developer would like to request permission for approval of sign location, size and design when this is complete so that the signage is consistent with the architecture.

6) The name Saddle Way has been changed to Saddle Court.

GRAND JUNCTION FIRE DEPARTMENT:

1) Acknowledged and understood.

2) Hydrant relocation per recommendations are shown on revised plans.

3) Prior to preliminary submittal we met on site to perform tests required to determine that a minimum fire flow would be available at all hydrants of this development. The calculations showing affirmative results were submitted with the preliminary submittal package. At the previously mentioned meeting we discussed the fact that looping of the waterline would be possible as Rana Road was extended south by future development beyond the limits of Cobblestone Ridges.

CITY PARKS & RECREATION:

1) Acknowledged and understood.

2) No response solicited

3) Acknowledged and understood.

CITY PROPERTY AGENT:

1) There is no Lien Holder.

2) Acknowledged and corrected.

3) Acknowledged and corrected.

4) Acknowledged and corrected.

5) State Statutes do not require monumentation of interior lot corners until the lots are sold. If the City has a requirement which overrides the State Statutes, this will be complied with.

6) Acknowledged and corrected.

7) Acknowledged and corrected.

8) Acknowledged and corrected.

CITY UTILITY ENGINEER:

1) Asphalt cut and patch costs have been added to the Improvements Agreements.

2) The cost of a radio alarm for the lift station has been added to the Improvements Agreement.

3) The lift station has been over-sized to handle additional flow from homes off of Mesa Grande and Rio Vista Roads . It is the developer's understanding that the City of Grand Junction will pay for all additional costs related to said over-sizing.

4) The easement has been changed as requested.

5) The revised lift station application has been submitted.

6) The detail of the force main discharge has been revised per your request.

7) The common trench detail shown on sheet 12 has been revised per your request.

8) A note has been added to the construction plans requiring tracing wire in the trench for the sewer force main.

9) Acknowledged and corrected.

Mike Thompson

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

Thompson-Langford
RECV'D 2/16/96
PC. HEARING 3-12-96

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 1 - 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

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
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Gregg Strong **243-2173**
No impact to our facilities.

PUBLIC SERVICE COMPANY **2/7/96**
Gary Lewis **244-2698**
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Lou Grasso **242-8500**
SCHOOL - ENROLLMENT / CAPACITY - IMPACT
Scenic Elementary - 298 / 325 - 3
Redlands Middle School - 552 / 650 - 2
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Dave Stassen **244-3587**
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CITY UTILITY ENGINEER **2/9/96**
Jim Shanks **244-1554**
See attached comments.

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

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Duncan Brown **244-1414**

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Max Ward **244-4721**

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Jody Kliska **244-1591**

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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

ADDITIONAL COMMENTS

CITY DEVELOPMENT ENGINEER **2/21/96**
Jody Kliska **244-1591**
Need dedication for ingress/egress easement.

PUBLIC SERVICE COMPANY **2/20/96**
Gary Lewis **244-2698**
14' multi-purpose easements adjacent to all street R.O.W.'s per City of Grand Junction specifications, will be sufficient for installation of gas and electric facilities to this subdivision. Street light placement will be determined by Public Service Company at time of application for service.

CITY POLICE DEPARTMENT **2/21/96**
Dave Stassen **244-3587**
Like the other sections of this development I would suggest using lower level (pedestrian level) lighting.

TCI CABLEVISION **2/21/96**
Glen Vancil **245-8777**
See attached comments.

RIDGES A.C.C.O. **2/23/96**
Ted Munkres / Lee Garrett
1. The covenants for the Ridges, Filing #6 must be incorporated into, and made a part of, the proposed Cobblestone covenants. The current Ridges A.C.C.O. must approve all future improvements on the property.
2. Included is a copy of our original comments. All appear to now meet our requirements.

We're taking television into tomorrow.

TCI Cablevision of Western Colorado, Inc.

February 22, 1996

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

Ref. No. CON19605

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

The Ridges
ARCHITECTURAL CONTROL COMMITTEE Organization

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 (ARTICLE 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: FPP-96-27

DATE: February 28, 1996

STAFF: Kathy Portner

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

LOCATION: Ridges, Filing #6

APPLICANT: Cobblestone Communities, Inc., Steve Craven

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Detached Single Family Homes

SURROUNDING LAND USE:

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

EXISTING ZONING: PR-4 (Planned Residential, 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 lots and 3.90 acres of multi-family units. A Preliminary Plan has been approved for 65 single family lots on 23.86 acres of the site and an Outline Development Plan was approved for 48 attached units on 6.706 acres of the site.

Following are the conditions of approval of the Preliminary Plan:

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

2. 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.

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

4. Parks and Open Space fees and TCP will be paid in full.

5. A modified street standard was approved by Council 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. Colored concrete shall be considered.

The applicant is requesting final approval for Filings 1 and 2 with this submittal.

Filing #1

The proposed Filing #1 consists of 13 single family lots on 5.67 acres along a cul-de-sac, Saddle Back Court. Filing #1 will also include a detention facility as a separate tract to be owned and maintained by the homeowner's association for Cobblestone Ridges. The proposed setbacks, as approved with the Preliminary Plan are:

Front Yard--20'
Rear Yard--10'
Side Yard--5'

Filing #1 also includes a portion of the approved open space swaps. Prior to final recording of the plat, staff will determine if the full 44' of ROW is needed for Saddle Back Court since

sidewalks are not required. The proper designation and dedication language for those areas shown as "District Open Space" will also be determined prior to recording.

Filing #2

The proposed Filing #2 consists of 21 single family lots on 6.27 acres along a cul-de-sac, Saddle Way. Saddle Way must be designated a Court in accordance with the City Street Naming System. Filing #2 also includes two common open space tracts to be dedicated and maintained by the homeowners. The setbacks as approved with the Preliminary Plan are:

Front Yard--20'

Rear Yard--10' from the ridge line 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.

Side Yard--5'

The final plat must show the location of the ridge line.

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

The petitioner has addressed all other conditions of approval of the Preliminary Plan.

STAFF RECOMMENDATION:

Staff recommends approval of the final plat and plan for Filing #1 and #2 with the following conditions:

1. All technical concerns of the review agencies must be addressed with the final, revised plats and construction drawings.

2. Saddle Way must be designated as a Court.

3. The final plat for Filing #2 must show the ridge line. Rear yard setbacks shall be designated as 10' for ridge line 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.

4. Lots 9 and 10 in Filing #2 shall be reconfigured so that both lots have street frontage and a shared ingress/egress easement.

5. The developer will be responsible for all costs of the required lift station, with the exception of the materials required for the upsizing of the lift station, which will be paid for by the City of Grand Junction.

RECOMMENDED PLANNING COMMISSION MOTION:

Mr. Chairman, on item #FPP-96-27, I move we approve the final plat/plan for Cobblestone Ridges, Filings 1 and 2 subject to staff conditions.


RANA RD.
HILL VIEW DR.

STAFF REVIEW

FILE: FPP-96-27

DATE: March 12, 1996

STAFF: Kathy Portner

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

LOCATION: Ridges, Filing #6

APPLICANT: Cobblestone Communities, Inc., Steve Craven

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Detached Single Family Homes

SURROUNDING LAND USE:

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

EXISTING ZONING: PR-4 (Planned Residential, 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 lots and 3.90 acres of multi-family units. A Preliminary Plan has been approved for 65 single family lots on 23.86 acres of the site and an Outline Development Plan was approved for 48 attached units on 6.706 acres of the site.

Following are the conditions of approval of the Preliminary Plan:

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

2. 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.

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

4. Parks and Open Space fees and TCP will be paid in full.

5. A modified street standard was approved by Council 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. Colored concrete shall be considered.

After further review of the detached pedestrian pathway system approved, staff recommends a connection also be made between Saddle Back Court and Saddle Court along Rana Road.

The applicant is requesting final approval for Filings 1 and 2 with this submittal.

Filing #1

The proposed Filing #1 consists of 13 single family lots on 5.67 acres along a cul-de-sac, Saddle Back Court. Filing #1 will also include a detention facility as a separate tract to be owned and maintained by the homeowner's association for Cobblestone Ridges. The proposed setbacks, as approved with the Preliminary Plan are:

Front Yard--20'
Rear Yard--10'
Side Yard--5'

Filing #1 also includes a portion of the approved open space swaps. Prior to final recording of the plat, staff will determine if the full 44' of ROW is needed for Saddle Back Court since sidewalks are not required. The proper designation and dedication language for those areas shown as "District Open Space" will also be determined prior to recording.

Filing #2

The proposed Filing #2 consists of 21 single family lots on 6.27 acres along a cul-de-sac, Saddle Way. Saddle Way must be designated a Court in accordance with the City Street Naming System. Filing #2 also includes two common open space tracts to be dedicated and maintained by the homeowners. The setbacks as approved with the Preliminary Plan are:

Front Yard--20'

Rear Yard--10' from the ridge line 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.

Side Yard--5'

The final plat must show the location of the ridge line.

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

The petitioner has addressed all other conditions of approval of the Preliminary Plan.

STAFF RECOMMENDATION:

Staff recommends approval of the final plat and plan for Filing #1 and #2 with the following conditions:

1. All technical concerns of the review agencies must be addressed with the final, revised plats and construction drawings.

2. Saddle Way must be designated as a Court.

3. The final plat for Filing #2 must show the ridge line. Rear yard setbacks shall be designated as 10' for ridge line 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.

4. Lots 9 and 10 in Filing #2 shall be reconfigured so that both lots have street frontage and a shared ingress/egress easement.

5. The developer will be responsible for all costs of the required lift station, with the exception of the materials required for the upsizing of the lift station, which will be paid for by the City of Grand Junction. Requests for City cost sharing of any additional

costs of the lift station must be approved by the Director of Public Works.

6. The pathway system shall connect to Saddle Court along Rana Road.

RECOMMENDED PLANNING COMMISSION MOTION:

Mr. Chairman, on item #FPP-96-27, I move we approve the final plat/plan for Cobblestone Ridges, Filings 1 and 2 subject to staff conditions.

Approval -- 6-0

file

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

March 27, 1996

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

RE: FPP-96-27 Cobblestone Ridges, Filings 1 and 2

Dear Steve:

This is in follow-up to the approval of the final plat and plan for Filings 1 and 2, Cobblestone Ridges. At their March 12, 1996 hearing, Planning Commission approved Filings 1 and 2 with the following conditions:

1. All technical concerns of the review agencies must be addressed with the final, revised plats and construction drawings.

2. Saddle Way must be designated as a Court.

3. The final plat for Filing #2 must show the ridge line. Rear yard setbacks shall be designated as 10' from ridge line 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.

4. Lots 9 and 10 in Filing #2 shall be reconfigured so that both lots have street frontage and a shared ingress/egress easement.

5. The developer will be responsible for all costs of the required lift station, with the exception of the materials required for the upsizing of the lift station, which will be paid for by the City of Grand Junction. Requests for City cost sharing of any additional costs of the lift station must be approved by the Director of Public Works.

6. The pathway system shall connect to Saddle Court along Rana Road.

As approved by City Council, you will be responsible for the design and construction of the off-site trail connecting into Prospector Point and the City will pay for it. It will be constructed with Filing #2.

As we discussed, you can request a credit to the TCP for the additional segment of pathway to be provided along Rana Road to Saddle Court that was not a part of the original Council approved plan. The Director of Public Works will make the decision on the credit. An appeal of his decision must be made to the Board of Appeals.

Prior to commencing construction all construction drawings must be approved by the City Development Engineer and Utility Engineer. Four sets of final drawings must be submitted with an approved Development Improvements Agreement and Guarantee. A pre-construction meeting with the City Engineering Department is also required.

Prior to recording either of the plats, all improvements for that filing must be completed and accepted or improvements must be guaranteed with a Bank Letter of Credit, Disbursement Agreement or cash deposited with the City. Payment of the Parks and Open Space fees for each filing is also required prior to recording the plats. The TCP and school impact fee will be collected at the time Planning Clearances are issued for Building Permits. The TCP is $500 per unit, unless a credit is granted. The school impact fee is $292 per unit.

If you have any questions on any of the above please call me at 244-1446. I look forward to continuing to work with you on this project.

Sincerely,

Kathy

Katherine M. Portner
Planning Supervisor

xc: Jody Kliska
Mike Thompson, Thompson/Langford

called Steve 5/3/96

★ 1. finalize DIA addendum – copy sent to John 4/22/96
★ 2. off-site trail agreement – E-mail sent 4/22/96
   send bills directly to City
   work out design & construction
3. trail extension – credit toward TCP
   will submit letter w/ cost estimates
4. Lift station credits to Jim Shanks
5. Want to record plats w/in 2-3 wks

Status of colored concrete?

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

August 9, 1996

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

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

Dear Mr. Craven:

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

The approved minor change is as follows:

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

All other conditions of approval shall remain.

Sincerely,

Katherine M. Portner
Acting Community Development Director

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

July 30, 1996

Dear Property Owner:

Attached is a request by the developer of the proposed Cobblestone Ridges to amend the plan for his development by allowing a maximum height of 28 feet for some of the single family homes. The original proposal was for a maximum height of 25 feet for all units. The Ridges ACCO has already approved the proposal.

Section 7-5-6.A of the Grand Junction Zoning and Development Code requires that notice of requests for minor changes to a development plan be sent to any person who testified concerning the project at a public meeting. Therefore, you are being sent this notice.

If you have questions or concerns with the request you can call me at 244-1446. A decision on this request will be made after August 6, 1996.

Sincerely,

Katherine M. Portner

Katherine M. Portner
Acting Community Development Director

Cobblestone Communities, Inc.

June 27, 1996

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

RE: Minor Change to Protective Covenants for "The Ridges" PUD, The Ridges Filing Number 6.

Dear Kathy:

Cobblestone Communities, Inc. is requesting a minor change to the Protective Covenants for "The Ridges" PUD, The Ridges Filing Number 6 ('the Covenants"). This change would effect the maximum allowable height within Cobblestone Ridges 1 - 4, and would read as follows:

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

This language has been approved by the Ridges Architectural Control Committee via the powers vested in it under Article II of the Covenants (please see attached letter).

Of the five base plans that Cobblestone is planning to offer at Cobblestone Ridges, one plan exceeds the current 25 foot height limit as defined for single family structures. Additionally, a second plan exceeds this limit when the loft option is chosen. To enable Cobblestone to offer the best possible plans, the change requested herein will be necessary.

In reviewing any potential impact of this change, it was noted that Phases 1, 3, and 4 of Cobblestone Ridges are generally self-contained with respect to any visual impact on the remainder of The Ridges, and that the change requested would generally not impact other areas of the community. With respect to Phase 2, this site has always been designated Multi-Family. As Multi-Family, it has always had a 28 foot height limit. Accordingly, a 28 foot height limit coupled with far less massing than originally anticipated (due to a drastic reduction to the previously proposed density) should not alarm anyone.

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

Even so, we performed a study of impacts as allowed given the currently allowable height of 25 feet built in a walk-out condition such as those in Columbine Village, and what it is Cobblestone is proposing (please see Exhibit A as attached hereto). It is approximately 400 feet between the homes in Columbine Village and the ridge edge along the easterly side of Cobblestone Ridges Phase 2. In a walk-out condition, a home would generally protrude from the ridge edge approximately 40 feet, and would be allowed to rise 25 feet from the highest finished grade. This would result in a structure 25 feet above finished grade at a distance of 360 feet from the neighboring property. Under Cobblestone's proposal, the worst case condition would be a 28 foot structure at approximately 410 feet from the neighboring structure. Exhibit A shows that the impact of the 25 foot structure at 360 feet is greater than a 28 foot structure at 410 feet, even without the consideration of proximity.

It was also determined that once structures were built along the easterly edge of Phase 2 (Lots 1 - 8), that they would mask the remainder of the structures in Phase 2. This brought our focus to those 8 lots along the easterly edge. Given the mix of product that we believe will exist, Cobblestone has proposed to limit the number of units within Phase 2, Lots 1 - 8 that could exceed the 25 foot height limit as it currently exists for single family to any 3 of the 8 lots. Thus, the language approved by the Ridges Architectural Control Committee, and as proposed herein reflects the same.

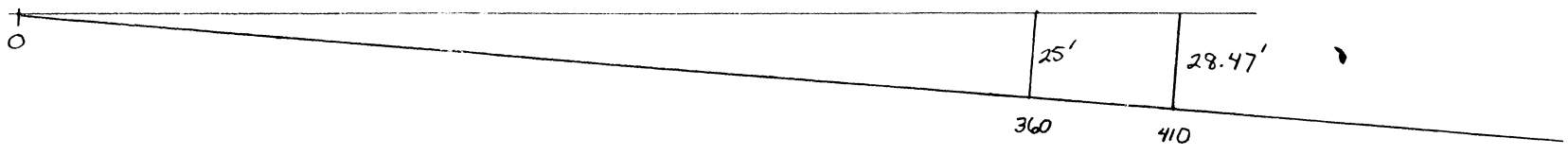
Please contact me should you have any questions. Thank you for your assistance in this matter.

Sincerely,

Steven E Cramer

Cobblestone Communities, Inc.

Exhibit A



RIDGES ARCHITECTURAL CONTROL COMMITEE R.A.C.Co.

June 18,1996

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

Re: Request for variance in height limitation, Filing Six

Dear Mr. Craven:

At its board meeting of June 12,1996, the Ridges ACCO voted to approve your request for a variance to the height limits for Cobblestone Ridges Phases 1 through 4. The variance shall be as follows:

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

Sincerely,

Ridges ACCO

Ted Munkres, Pres.
121 Chipeta
243-0929

Lee Garrett, V.Pres.
2397 Mariposa Dr.
243-0572

Glenn Carlsrud, Member
2341 Rattlesnake Ct.
248-6494

Roxanne Lewis, Sec.
383 Hidden Valley Ct.
241-5028

Cynthia Adair, Tres.
399 West Valley Circle
256-9644

Connie Badini
422 Prospector Point
Grand Junction, CO 81503

Bill Boll
383 Hill View Dr.
Grand Junction, CO 81503

Chuck Wanebo
381 1/2 Hillview Ct.
Grand Junction, CO 81503

Patti & Gary Stubler
2374 Rana Rd.
Grand Junction, CO 81503

Tom Bentley
2371 1/2 Rana Rd.
Grand Junction, CO 81503

Rob Cartilege
430 1/2 Prospector Point
Grand Junction, CO 81503

Bill Odell
406 Prospector Point
Grand Junction, CO 81503

Leslie Shaffer
430 1/2 Prospector Point
Grand Junction, CO 81503

Gary Stuble
2371 Rana Rd.
Grand Junction, CO 81503

Roxanne Lewis
383 Hidden Valley Ct.
Grand Junction, CO 81503

Patrick Still
430 Prospector Point
Grand Junction, CO 81503

Ted Munkres
121 Chipeta Ave.
Grand Junction, CO 81501

Lee Garrett
2397 Mariposa
Grand Junction, CO 81503

Dorothy Hoskin
411 Rio Vista Dr.
Grand Junction, CO 81503

Cobblestone Communities, Inc.

December 3, 1997

Mr. Norm Frankie, President
Alpine Bank
225 N. 5th Street
Grand Junction, CO 81501

RE: DIA Draw Request, Cobblestone Ridges & Cobblestone Ridges Phase 2

Dear Norm:

The following is our December draw request with respect to the DIA for Cobblestone Ridges. Attached you will find a budget breakdown, payment breakdown, invoices, and lien releases. I am available to answer any questions you may have. Please contact me when the checks have been signed.

Summary of Advance

Check To	Line Item	Amount
Good Earth Landscaping, LLC	Landscaping	$ 6,968.36

The following parties hereby certify that the related materials and labor with respect to the advances as outlined above has been completed and incorporated into the project.

Thank you for your help.

Submitted this 3rd day of December, 1997.

CONDITIONAL WAIVER OF LIEN RIGHTS

OWNER/DEVELOPER:

Cobblestone Ridges, LLC
P.O. Box 1267
Grand Junction, CO 81502

CONTRACTOR/PROFESSIONAL/LABORER/MATERIALMAN:

Good Earth Landscaping, LLC
550 36 5/8 Rd
Palisade, CO 81526

PROPERTY:

Cobblestone Ridges, and
Cobblestone Ridges Phase 2

The undersigned does hereby accept a check from Cobblestone Ridges, LLC in the amount of $ 6,968.36 as full payment for all services, materials labor or supplies delivered or provided to the development project commonly known as Cobblestone Ridges and Cobblestone Ridges Phase 2, City of Grand Junction, Mesa County, Colorado, on or before the date of this waiver. When the check has been properly endorsed and has been paid by the Bank upon which it is drawn, this waiver shall become effective to waive and release any and all lien rights which the undersigned may have against the following described real property

Lot 1, Block 23, a Re-plat of Lots 48A-73A, Block 9; Lots 31B-56A, Block 13; Lots 313-40A, Block 23; Lots 1A-7A, Block 28; The Ridges Filing #6; AND Lot 3, The Ridges Filing 6B as Shown on the Plat Recorded December 2, 1994, in Plat Book 14 at Page 302, and as Disclosed on the Plat for The Ridges Filing #6; County of Mesa, State of Colorado,

A portion of which is also legally described as follows:

Lots 1-20, Block 1, Cobblestone Ridges;
Lots 1-4, Block 2, Cobblestone Ridges;
Lots 1-2, Block 3, Cobblestone Ridges;
Lots 1-11, Block 1, Cobblestone Ridges Phase 2;
Lots 1-8, Block 2, Cobblestone ridges Phase 2; and
Lots 1-2, Block 3, Cobblestone Ridges Phase 2;
County of Mesa, State of Colorado,

all of which is collectively (the "Property").

Subject to the payment of the check described above, the undersigned does hereby waive and release the above described Property from any and all claims and liens for materials furnished and/or labor or services performed.

Dated this 3rd day of December, 1997.

GOOD EARTH LANDSCAPING, L.L.C.
LIEN CLAIMANT: (Business Name)

Robynn Sundermeier, Owner/Manager
BY: (Name & Title)

Developer: Cobblestone Ridges, LLC

By: Cobblestone Communities, Inc., Its Manager

Steven E. Craven, President — Date: 12/3/97

City Engineer: Jody Kliska P.E.

Jody Kliska — Date: 12-4-97

CITY OF
grand junction
COLORADO
serving the community together

PUBLIC WORKS
& UTILITIES

July 30, 2004

Mike Stubbs
Dynamic Investments
570 Walnut Avenue
Grand Junction, CO 81501

Regarding: Cobblestone Ridges Phase 3 & 4
Erosion Problems

Dear Mr. Stubbs,

This letter will serve to confirm our telephone conversation today regarding ongoing erosion problems at the subject property.

The Homeowner's Association and the City have experienced ongoing problems regarding stormwater runoff laden with sediment discharging onto the public street (Rana Road), storm drain system and private properties immediately downstream of these properties.

The City is requesting that you enact mitigating measures to control erosion and discharge of sediment-laden stormwater runoff, as soon as reasonably possible. It would be intended that these measures be an interim act until final development of the property occurs. I have attached information and suggestions for economically controlling stormwater pollution specific to this project.

It is anticipated that the City will have stormwater pollution ordinances in place at the end of the year, at which point compliance with this request may be mandatory.

I would be happy to work with you to make sure that these stormwater control measures are installed properly and efficiently.

If you have any questions, please contact me at 256-4155.

Sincerely yours,

Laura C. Lamberty, PE
Development Engineer

C: Tim Moore, Public Works Manager
Kimberly Greathouse, Cobblestone Ridges Homeowners Association

ATTENTION ALL COBBLESTONE HOMEOWNERS

WHAT: Meeting with city engineer
WHY : Discuss 2 drainage issues negatively impacting Cobblestone Homeowners
WHEN: Thursday, July 8, 2004 at 7PM
WHERE: Cobblestone Park (located on cul-de-sac at top of Saddle Ct.)
Bring a chair or blanket to sit upon
Bad weather alternative: 414 Saddle Ct

A majority of homeowners attending the June 3, 2004 annual meeting requested an opportunity to address a city engineer about two drainage/runoff concerns which negatively impact our community.

1) Runoff/mud that drains off the hill at the rear of Rana Rd properties (2300 block/east side). This drainage leaves mud/debris in back yards and creates stability concerns.

2) Runoff/mud that washes down from property lying between the end of Rana Rd and the Redlands golf course. This drainage has left mud up to 2" thick on Rana Rd (2300 block), clogged storm drains, and backed debris onto sidewalks/yards.

The Cobblestone HOA Board strongly urges members to attend this meeting. Previous drainage issues concerning our subdivision have proven that city officials are more likely to help us resolve our problems when confronted with a show of solidarity and support. If you are unable to attend, please fill out the form provided below and leave it with a board member or mail it to the HOA's property manager.

Kimberly Greathouse	George Krug	Sandy Crowley	Dean Pfannenstiel
414 Saddle Ct.	410 Butte Ct	407 Butte Ct	603 281/4 Rd/ GJ 81506

Name:
Address:

I am concerned about drainage issue #1_____
#2_____

Comments:

PROPERTY DESCRIPTION.

All of that property platted as district open space on the Replat of The Ridges, Filing No. Six according to the plat thereof recorded in Book 13 at Page 279-281 as Reception No. 1373032 lying within the boundaries of the following described parcel:

A parcel of land situated in the SE1/4 and SW1/4 of Section 17, and the NE1/4 and NW1/4 of Section 20, Township 1 South, Range 1 West of the Ute Meridian, County of Mesa, State of Colorado, being more particularly described as follows:

Beginning at a point whence the B.L.M. brass cap for the one-quarter corner common to said Sections 17 and 20 bears South 68°11'17" East a distance of 218.58 feet, and with all bearings herein being relative to North 00°15'56" West between said one-quarter corner and the Mesa County Survey Marker at the Center-South 1/16 corner of said Section 17;
Thence North 27°42'57" East, a distance of 319.63 feet;
Thence North 61°46'23" East, a distance of 58.63 feet;
Thence South 89°59'03" East, a distance of 125.00 feet;
Thence North 00°00'57" East, a distance of 100.00 feet;
Thence North 06°37'17" East, a distance of 50.33 feet;
Thence South 89°59'03" East, a distance of 80.01 feet
Thence North 00°00'57" East, a distance of 22.00 feet;
Thence North 89°59'03" West, a distance of 30.32 feet;
Thence North 00°00'57" East, a distance of 328.83 feet;
Thence North 15°49'39" East, a distance of 115.17 feet;
Thence North 15°49'39" East, a distance of 27.47 feet;
Thence North 23°14'06" East, a distance of 183.94 feet;
Thence South 79°20'42" West, a distance of 137.54 feet; to a point of cusp on a 48.00 foot radius curve concave to the southeast;
Thence 190.24 feet along the arc of said curve, through a central angle of 227°05'05", with a chord bearing South 64°40'29" West, a distance of 88.01 feet; to a point of reverse curvature;
Thence 30.42 feet along the arc of a 23.50 foot radius curve to the right, through a central angle of 74°10'24", with a chord bearing South 11°46'52" East, a distance of 28.34 feet;
Thence South 25°18'20" West tangent to said curve, a distance of 60.93 feet;
Thence 34.32 feet along the arc of a 422.00 foot radius tangent curve to the left, through a central angle of 4°39'35", with a chord bearing South 22°58'33" West, a distance of 34.31 feet;
Thence South 62°45'41" West, a distance of 170.20 feet;
Thence South 00°16'04" East, a distance of 178.98 feet;
Thence South 14°50'36" West, a distance of 76.79 feet;
Thence South 11°46'19" East, a distance of 141.57 feet;
Thence South 27°47'36" East, a distance of 18.67 feet; to a point of cusp on a 297.00 foot radius curve concave to the southeast;
Thence 25.01 feet southwesterly along the arc of said curve, through a central angle of 4°49'27", with a chord bearing South 62°12'24" West, a distance of 25.00 feet; to a point of cusp;
Thence North 27°47'36" West, a distance of 39.74 feet;
Thence North 35°26'09" West, a distance of 158.61 feet;
Thence North 79°43'56" West, a distance of 206.23 feet;
Thence South 46°29'27" West, a distance of 150.46 feet;
Thence South 22°04'53" West, a distance of 327.36 feet;
Thence South 52°28'38" West, a distance of 182.89 feet;

Thence South 37°14'38" East, a distance of 107.01 feet;
Thence 89.06 feet along the arc of a 48.00 foot radius non-tangent curve to the left, through a central angle of 106°18'30", with a chord bearing South 16°01'59" East, a distance of 76.82 feet;
Thence South 12°58'54" West, a distance of 28.90 feet;
Thence South 34°31'03" East, a distance of 92.00 feet;
Thence South 44°39'07" West, a distance of 349.95 feet;
Thence South 26°26'26" West, a distance of 60.45 feet;
Thence South 16°57'27" West, a distance of 112.64 feet;
Thence South 73°02'33" East, a distance of 100.00 feet;
Thence South 16°57'27" West, a distance of 15.00 feet;
Thence North 73°02'33" West, a distance of 100.00 feet;
Thence South 16°57'27" West, a distance of 35.00 feet;
Thence North 73°02'33" West, a distance of 50.00 feet;
Thence South 52°59'05" West, a distance of 68.01 feet;
Thence South 16°57'27" West, a distance of 172.15 feet;
Thence South 44°09'53" East, a distance of 194.31 feet;
Thence South 69°18'47" East, a distance of 54.38 feet;
Thence South 48°34'51" East, a distance of 55.68 feet;
Thence North 85°07'37" East, a distance of 92.27 feet;
Thence North 17°22'27" East, a distance of 92.69 feet;
Thence South 82°13'53" East, a distance of 107.54 feet;
Thence North 00°00'56" East, a distance of 111.78 feet;
Thence North 73°02'33" West, a distance of 95.00 feet;
Thence North 16°57'27" East, a distance of 150.00 feet;
Thence North 73°02'33" West, a distance of 100.00 feet;
Thence North 16°57'27" East, a distance of 15.00 feet;
Thence South 73°02'33" East, a distance of 100.00 feet;
Thence North 30°07'45" East, a distance of 135.55 feet;
Thence South 45°20'53" East, a distance of 75.53 feet;
Thence North 75°41'37" East, a distance of 100.68 feet;
Thence North 44°39'07" East, a distance of 97.48 feet;
Thence North 13°36'37" East, a distance of 100.68 feet;
Thence North 45°20'53" West, a distance of 175.53 feet;
Thence North 44°39'07" East, a distance of 15.00 feet;
Thence South 45°20'53" East, a distance of 175.53 feet;
Thence North 75°29'57" East, a distance of 34.76 feet;
Thence North 33°43'46" West, a distance of 25.33 feet;
Thence North 64°54'11" East, a distance of 118.78 feet;
Thence North 11°42'00" West, a distance of 99.49 feet; to a point of cusp on a 48.00 foot radius curve concave to the north;
Thence 23.03 feet easterly and northeasterly along the arc of said curve, through a central angle of 27°29'38", with a chord bearing North 70°47'13" East, a distance of 22.81 feet;
Thence South 48°14'58" East, a distance of 103.73 feet;
Thence North 88°09'38" East, a distance of 60.31 feet;
Thence North 05°03'17" East, a distance of 176.95 feet;
Thence North 59°38'23" West, a distance of 84.55 feet to the Point of Beginning.

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

****

Parcel 1:

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

Parcel 2:

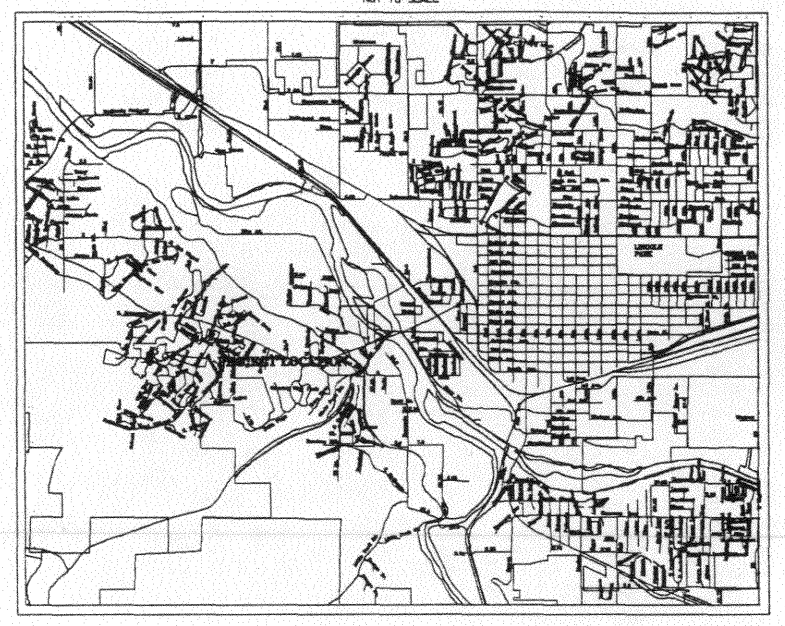
Lot 1,
Block 23,
Replat of Lots 48A through 73A, Block Nine; Lots 31B through 56A, Block Thirteen; Lots 3B through 40A, Block Twenty-Three; Lots 1A through 7A, Block Twenty-Eight; The Ridges Filing No. Six

MESA COUNTY, COLORADO

COBBLESTONE RIDGES PHASE 2

A REPLAT OF LOT 1 BLOCK 4 COBBLESTONE RIDGES
CITY OF GRAND JUNCTION, MESA COUNTY, COLORADO

VICINITY MAP
NOT TO SCALE



CURVE TABLE

CURVE #	ARC	RADIUS	DELTA	CHORD BEARING	CHORD
C1	52.03'	273.00'	10°55'09"	S22°12'02"W	51.95'
C2	43.42'	273.00'	09°06'47"	S12°11'04"W	43.38'
C3	16.83'	200.00'	04°50'59"	S10°03'10"W	16.82'
C4	59.86'	200.00'	17°09'13"	N21°03'16"E	59.65'
C5	46.94'	200.00'	13°26'53"	N36°21'19"E	46.84'
C6	36.40'	286.00'	07°17'32"	N39°25'59"E	36.38'
C7	135.70'	286.00'	27°11'06"	S22°11'40"W	134.43'
C8	22.12'	286.00'	04°26'50"	N06°23'12"E	22.11'
C9	50.18'	70.00'	41°04'25"	N24°46'31"E	49.11'
C10	19.96'	70.00'	16°20'14"	S53°24'51"W	19.89'
C11	43.69'	80.00'	31°17'14"	S45°56'21"W	43.14'
C12	37.31'	80.00'	27°08'58"	S18°43'16"W	37.56'
C13	80.17'	80.00'	43°05'46"	N18°24'04"W	58.77'
C14	82.06'	80.00'	44°28'44"	N56°10'18"W	80.51'
C15	49.50'	80.00'	35°27'18"	S77°52'40"W	48.72'
C16	41.22'	80.00'	29°31'25"	S46°23'18"W	40.77'
C17	41.87'	80.00'	29°59'25"	N15°37'53"E	41.40'
C18	39.19'	80.00'	28°04'42"	S13°23'58"E	38.80'
C19	21.77'	200.00'	06°14'18"	S24°18'53"E	21.76'
C20	68.18'	200.00'	19°31'35"	S11°25'57"E	67.83'
C21	94.11'	200.00'	26°57'42"	S11°48'41"W	93.25'
C22	27.46'	200.00'	07°51'56"	S23°13'31"W	27.43'
C23	41.30'	242.00'	09°46'17"	S38°07'07"W	41.25'
C24	11.14'	244.00'	02°37'00"	S41°48'15"W	11.14'
C25	60.13'	244.00'	14°07'07"	S33°24'12"W	59.97'
C26	48.77'	244.00'	11°27'06"	S20°37'06"W	48.69'
C27	30.94'	244.00'	07°15.52"	S11°15.37"W	30.92'
C28	83.91'	229.00'	20°59'40"	S18°07'31"W	83.44'
C29	106.89'	251.00'	24°23'56"	N19°49'39"E	106.08'
C30	137.38'	222.00'	35°27'04"	N35°21'13"E	135.18'
C31	179.27'	264.00'	38°54'28"	N23°37'32"E	175.85'
C32	92.19'	92.00'	57°24'41"	N36°52'36"E	88.38'
C33	272.32'	58.00'	269°00'59"	N70°55'31"W	82.73'
C34	234.77'	282.00'	80°26'30"	S02°51'44"W	223.98'
C35	41.72'	114.00'	20°58'13"	S51°05'52"W	41.49'
C36	189.03'	36.00'	269°00'59"	S73°55'31"E	51.36'
C37	44.48'	244.00'	10°26'50"	N22°12'36"W	44.43'

NOTICE: According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.

DEDICATION

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned, Dynamic Investments, Inc., is the owner of that real property in the City of Grand Junction, County of Mesa, State of Colorado, being situated in the Southwest one-quarter and Southwest one-quarter of Section 17, and the Northeast one-quarter and the Northwest one-quarter of Section 20, Township 1 South, Range 1 West of the Ute Meridian, City of Grand Junction, County of Mesa, State of Colorado, as described in Book 1725 at Page 368 and in Book 1759 at Page 89 of the Mesa County records, as shown on the accompanying plat, said property being more particularly described as follows:

Lot 1 Block 4, Cobblestone Ridges, City of Grand Junction, County of Mesa, Colorado.

That said owner has caussed the said real property to be laid out and surveyed as COBBLESTONE RIDGES PHASE 2, a replat of Lot 1 Block 4, Cobblestone Ridges, a subdivision of a part of the City of Grand Junction, County of Mesa, State of Colorado.

That said owner does hereby dedicate and set apart real property as shown and labeled on the accompanying plat as follows:

- All Streets and Rights-of-Way to the City of Grand Junction for the use of the public forever;
- All District Open Space tracts to the City of Grand Junction for the use of the public.
- All Common Open Space tracts to the Homeowners Association of lots and tracts hereby platted for the purpose of parks.
- All Multi-Purpose Easements to the City of Grand Junction for the use of public utilities as perpetual easements for the installation, operation, maintenance and repair of utilities and appurtenances thereto including, but not limited to electric lines, cable TV lines, natural gas pipelines, sanitary sewer lines, water lines, telephone lines, irrigation lines, and also for the installation and maintenance of traffic control facilities, street lighting, street treas and grade structures;
- All Drainage Easements to the owners of lots and tracts hereby platted as perpetual easements for the conveyance of runoff water which originates within the area hereby platted or from upstream areas, through natural or man-made facilities above or below ground;
- All Detantion/Retantion Easements to the owners of lots and tracts hereby platted for the purpose of conveying and detaining/retaining runoff water which originates from the area hereby platted, and also for the conveyance of runoff from upstream areas;

All easements include the right of ingress and egress on, along, over, under, and through and across by the beneficiaries, their successors, or assigns, together with the right to trim or remove interfering trees and brush, and in Drainage and Detantion/Retantion easements, the right to dredge, provided, however, that the beneficiaries of said easements shall utilize the same in a reasonable and prudent manner. Furthermore, the owners of lots or tracts hereby platted shall not burden nor overburden said easements by erecting or placing any improvements thereon which may prevent reasonable ingress and egress to and from the easement.

IN WITNESS WHEREOF said owner has caused his name to be hereunto subscribed this _____ day of _____ A.D. 1996.

_____
Willis Stubbs, Secretary - Treasurer
Dynamic Investments, Inc.

State of Colorado)
)ss
County of Mesa)

This plat was acknowledged before me by _____ on this _____ day of _____ A.D. 1996, for the aforementioned purposes.

_____
Notary Public

My address is: _____

My Commission expires:_____

CITY APPROVAL

This plat of COBBLESTONE RIDGES PHASE 2, a subdivision of the City of Grand Junction, County of Mesa, State of Colorado, was approved this _____ day of _____, 1996.

_____ _____
City Manager Mayor

COUNTY CLERK AND RECORDER'S CERTIFICATE

I hereby certify that this instrument was filed in the office of the Clerk and Recorder of Mesa County, Colorado, at _____ o'clock ___.M., this _____ day of _____, 1996, and is duly recorded in Plat Book No._____ Page _____ as Reception No._____

_____
Clerk and Recorder of Mesa County

DECLARATION OF COVENANTS

This property is subject to the effect of restrictions as set forth on the plat of the Ridges, Filing No. Six, and convenants, conditions, and restrictions as contained in instrument recorded in Book 1318 at Page 22, and as amended by instrument recorded in Book 1795 at Page 564, and covenants, conditions, and restrictions as contained in instrument recorded in Book 1845 at Page 388, and covenants, conditions, and restrictions as contained in an instrument recorded in Book _____ at Page _____.

SURVEYOR'S STATEMENT:

I, Kenneth Scott Thompson, being a registered Professional Land Surveyor in the State of Colorado, do hereby state that this subdivision plat and survey of COBBLESTONE RIDGES PHASE 2 were made by me and/or under my direct supervision and that to the best of my knowledge, belief, and information both are accurate and conform to all applicable laws and regulations of the State of Colorado and to all applicable requirements of the zoning and development code of the City of Grand Junction.

_____ _____
Kenneth Scott Thompson P.L.S. 18480 Date

AREA SUMMARY

LOTS:	4.969 ACRES	79.2%
STREETS:	0.971 ACRES	15.5%
OPEN SPACE:	0.335 ACRES	5.3%
TOTAL:	6.265 ACRES	100.0%

NOTE: AREA TOTALS REFLECT PROPERTY AFFECTED BY THIS PLAT

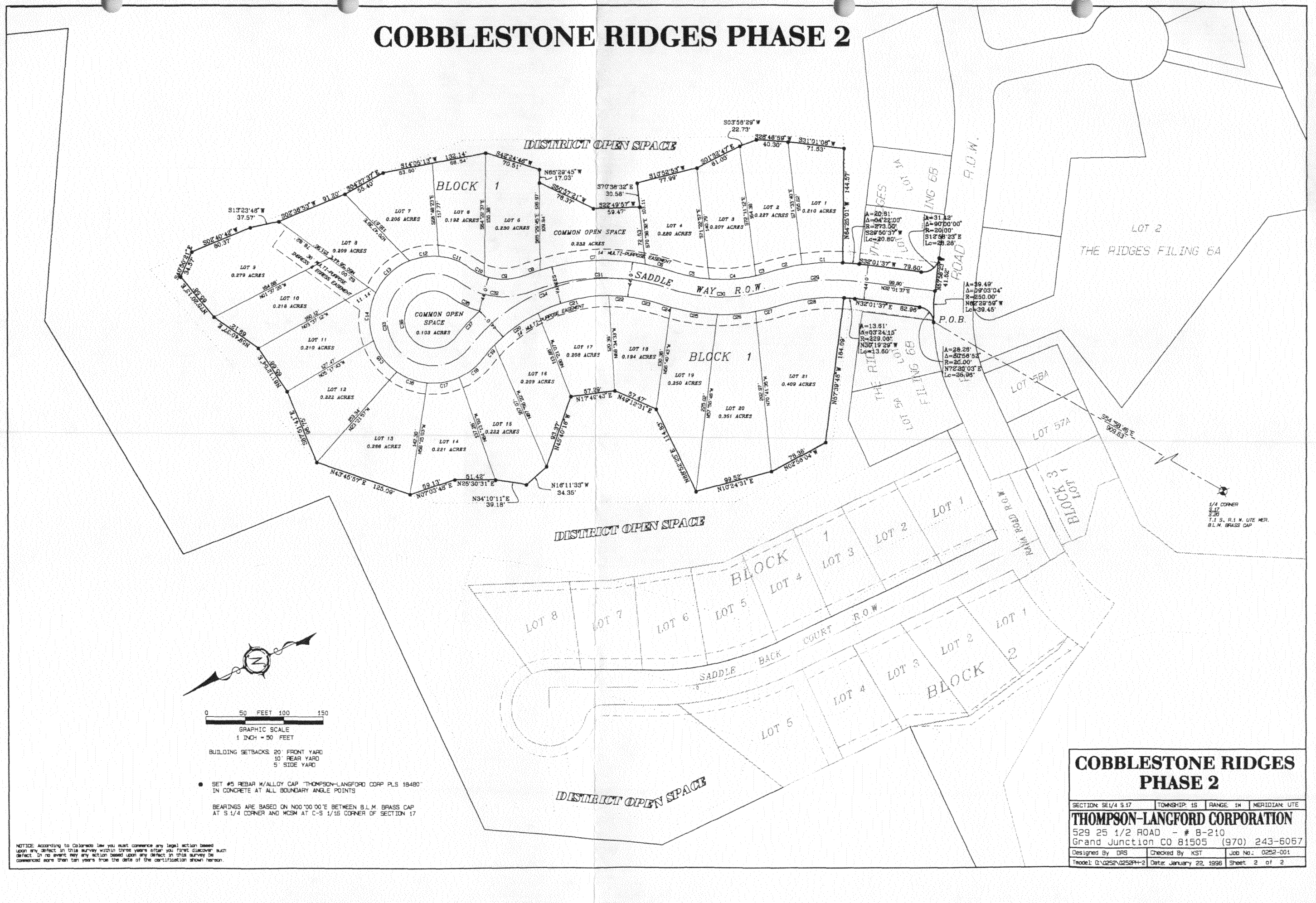
COBBLESTONE RIDGES PHASE 2

SECTION: SE 1/4 S.17	TOWNSHIP: 1S	RANGE: 1W	MERIDIAN: UTE

THOMPSON-LANGFORD CORPORATION
529 25 1/2 ROAD - # B-210
Grand Junction CO 81505 (970) 243-6067

Designed By: DRS	Checked By: KST	Job No.: 0252-001
Tmodel: D:\0252\0252PH-2	Date: January 22, 1996	Sheet 1 of 2

COBBLESTONE RIDGES PHASE 2



0 50 FEET 100 150

GRAPHIC SCALE
1 INCH = 50 FEET

BUILDING SETBACKS: 20' FRONT YARD
10' REAR YARD
5' SIDE YARD

● SET #5 REBAR W/ALLOY CAP "THOMPSON-LANGFORD CORP PLS 18480" IN CONCRETE AT ALL BOUNDARY ANGLE POINTS

BEARINGS ARE BASED ON N00°00'00"E BETWEEN B.L.M. BRASS CAP AT S 1/4 CORNER AND MCSM AT C-S 1/16 CORNER OF SECTION 17

NOTICE: According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.

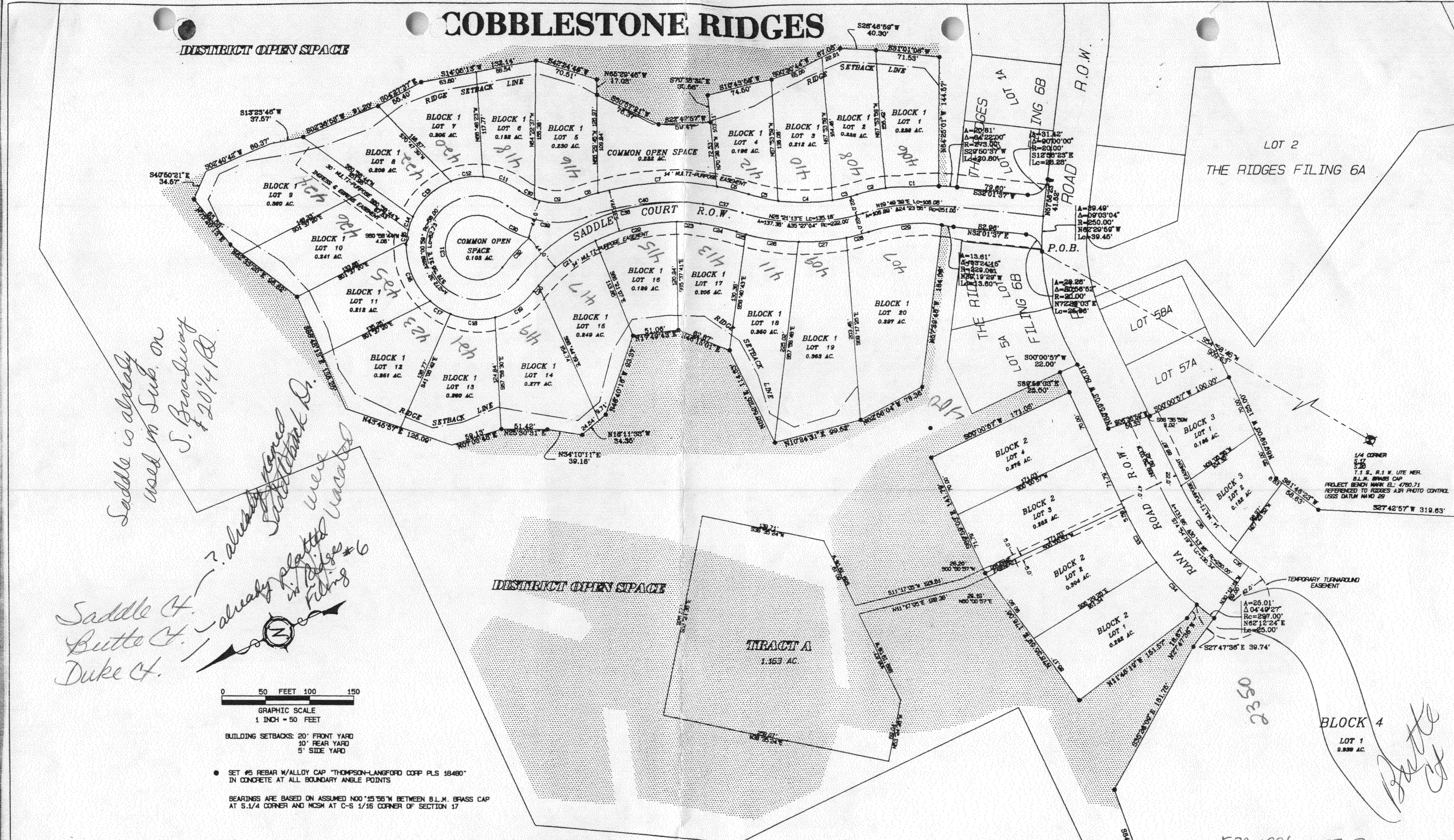
COBBLESTONE RIDGES PHASE 2

SECTION: SE1/4 S.17	TOWNSHIP: 1S	RANGE: 1W	MERIDIAN: UTE

THOMPSON-LANGFORD CORPORATION
529 25 1/2 ROAD - # B-210
Grand Junction CO 81505 (970) 243-6067

Designed By: DRS	Checked By: KST	Job No.: 0252-001
Tmodel: D:\0252\0252PH-2	Date: January 22, 1996	Sheet 2 of 2

COBBLESTONE RIDGES


DISTRICT OPEN SPACE
BLOCK 1 LOT 1 0.228 AC.
BLOCK 1 LOT 2 0.226 AC.
BLOCK 1 LOT 3 0.212 AC.
BLOCK 1 LOT 4 0.196 AC.
BLOCK 1 LOT 5 0.230 AC.
BLOCK 1 LOT 6 0.192 AC.
BLOCK 1 LOT 7 0.206 AC.
BLOCK 1 LOT 8 0.208 AC.
BLOCK 1 LOT 9 0.360 AC.
BLOCK 1 LOT 10 0.241 AC.
BLOCK 1 LOT 11 0.212 AC.
BLOCK 1 LOT 12 0.361 AC.
BLOCK 1 LOT 13 0.260 AC.
BLOCK 1 LOT 14 0.277 AC.
BLOCK 1 LOT 15 0.249 AC.
BLOCK 1 LOT 16 0.199 AC.
BLOCK 1 LOT 17 0.205 AC.
BLOCK 1 LOT 18 0.360 AC.
BLOCK 1 LOT 19 0.363 AC.
BLOCK 1 LOT 20 0.397 AC.
COMMON OPEN SPACE 0.232 AC.
COMMON OPEN SPACE 0.103 AC.
SADDLE COURT R.O.W.
RIDGE SETBACK LINE
14' MULTI-PURPOSE EASEMENT
30' MULTI-PURPOSE INGRESS & EGRESS EASEMENT
LOT 2
THE RIDGES FILING 6A
THE RIDGES LOT 1A FILING 6B
THE RIDGES LOT 5A FILING 6B
LOT 58A
LOT 57A
ROAD R.O.W.
P.O.B.
RANA ROAD R.O.W.
BLOCK 2 LOT 1 0.282 AC.
BLOCK 2 LOT 2 0.304 AC.
BLOCK 2 LOT 3 0.282 AC.
BLOCK 2 LOT 4 0.276 AC.
BLOCK 3 LOT 1 0.186 AC.
BLOCK 3 LOT 2 0.182 AC.
BLOCK 4 LOT 1 9.939 AC.
TRACT A 1.163 AC.
TEMPORARY TURNAROUND EASEMENT
1/4 CORNER S.17 S.20 T.1 S., R.1 W. UTE MER. B.L.M. BRASS CAP
PROJECT BENCH MARK EL: 4760.71 REFERENCED TO RIDGES AIR PHOTO CONTROL USGS DATUM NAVD 29
S27°42'57"W 319.63'
S27°47'36"E 39.74'
N45°23'27"E 150.46'
S84°36'02"E 190.36'
0 50 FEET 100 150
GRAPHIC SCALE
1 INCH = 50 FEET
Saddle Ct.
Butte Ct.
Duke Ct.
Saddle is already used in Sub. on S. Broadway #2014102
2350
Butte Ct
2945-174 201

BUILDING SETBACKS: 20' FRONT YARD
10' REAR YARD
5' SIDE YARD

● SET #5 REBAR W/ALLOY CAP "THOMPSON-LANGFORD CORP PLS 18480" IN CONCRETE AT ALL BOUNDARY ANGLE POINTS

BEARINGS ARE BASED ON ASSUMED N00°15'56"W BETWEEN B.L.M. BRASS CAP AT S.1/4 CORNER AND MCSM AT C-S 1/16 CORNER OF SECTION 17

NOTICE: According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.

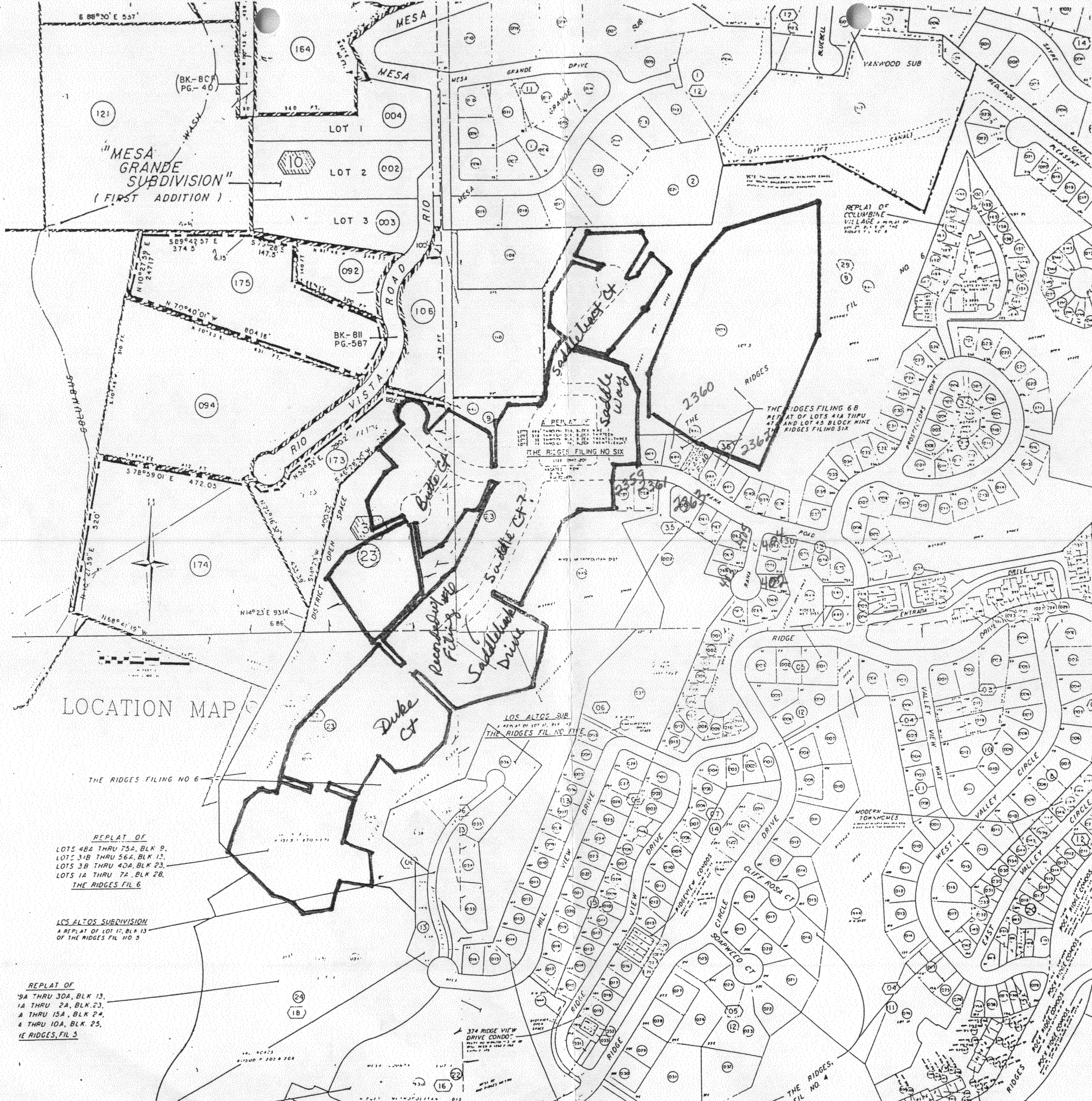
FPP-1996-027-2

COBBLESTONE RIDGES

SECTION: S/2 S.17, N/2 S.20	TOWNSHIP: 1S	RANGE: 1W	MERIDIAN: U

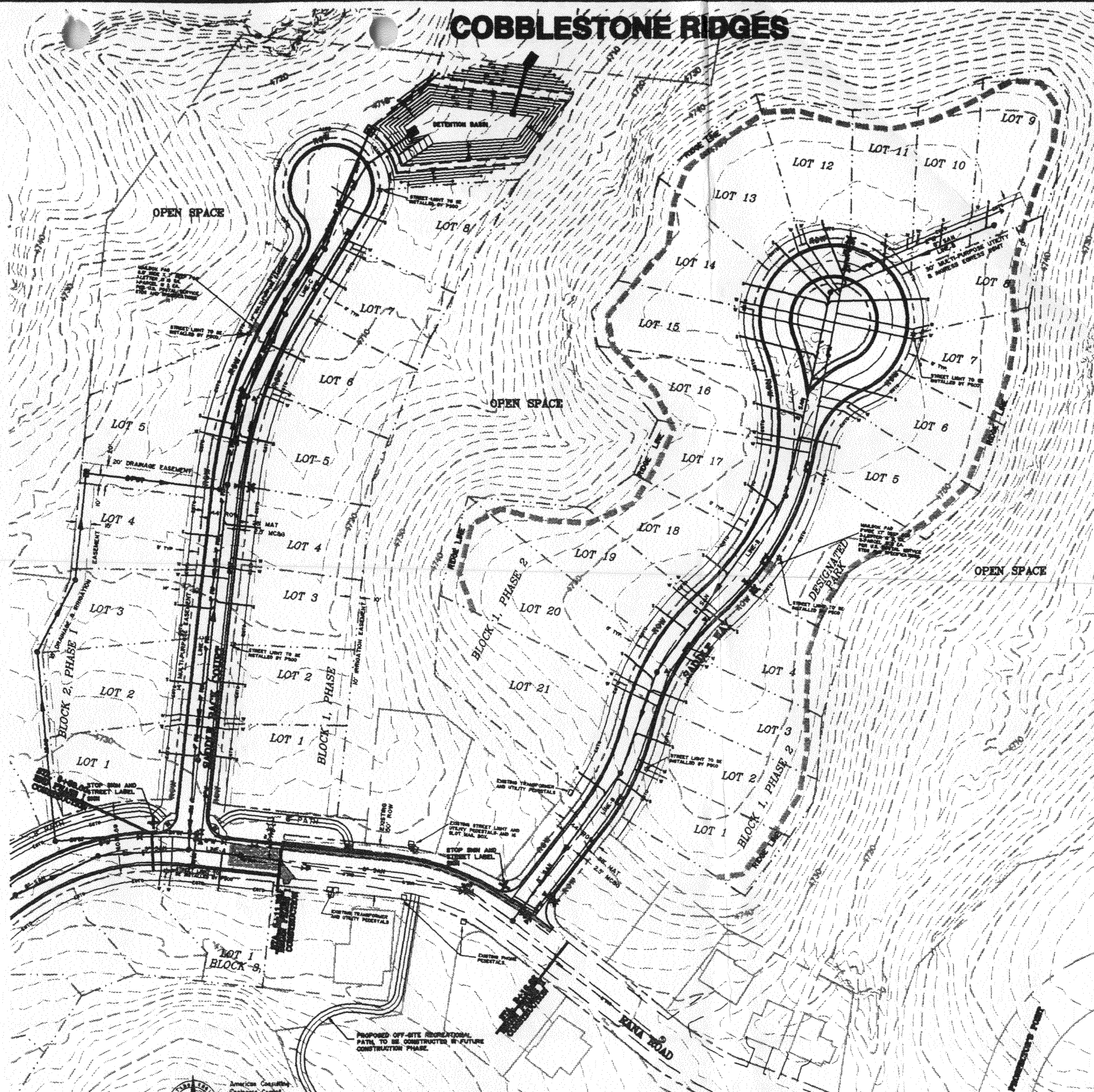
THOMPSON-LANGFORD CORPORATION
529 25 1/2 ROAD - # B-210
Grand Junction CO 81505 (970) 243-60

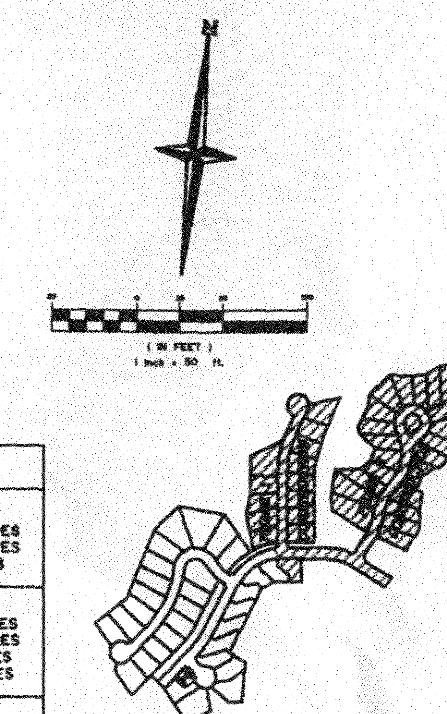
Designed By: DRS	Checked By: KST	Job No.: 0252-001
Tmodel: D:\0252\0252REV	Date: Sept. 3, 1996	Sheet 2 of 2



LOCATION MAP
"MESA GRANDE SUBDIVISION" (FIRST ADDITION)
LOT 1
LOT 2
LOT 3
RIO VISTA ROAD
THE RIDGES FILING NO SIX
THE RIDGES FILING NO 6
THE RIDGES FILING 6B
LOS ALTOS SUB
VALLEY VIEW WAY
CLIFF ROSA CT
SOAPWEED CT
Saddle Way
Saddlehorn Ct
Butte Ct
Saddle Ct 7
Saddlehorn Drive
Duke Ct
REPLAT OF
LOTS 48A THRU 75A, BLK 9,
LOTS 31B THRU 56A, BLK 13,
LOTS 3B THRU 40A, BLK 23,
LOTS 1A THRU 7A, BLK 28,
THE RIDGES FIL 6
LOS ALTOS SUBDIVISION
A REPLAT OF LOT 17, BLK 13 OF THE RIDGES FIL NO 5
374 RIDGE VIEW DRIVE CONDO
THE RIDGES, FIL NO 4

COBBLESTONE RIDGES





AREA SUMMARY	
PHASE 1	
LOTS	3.004 ACRES
RIGHTS-OF-WAY	0.754 ACRES
OPEN SPACE	1.681 ACRES
PHASE 2	
LOTS	4.962 ACRES
RIGHTS-OF-WAY	0.942 ACRES
OPEN SPACE	1.496 ACRES
PRIVATE PARK	0.232 ACRES
OPEN SPACE AREAS ADDRESS OPEN SPACE CREATED BY THIS PLAN.	

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

LEGEND

- PROJECT BENCHMARK
- PROPOSED 8" SANITARY SEWER WITH MANHOLE (8" SAN)
- PROPOSED 4" SANITARY SEWER FORCE MAIN
- 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 (EGTC)

UTILITIES WILL BE PROVIDED TO THE SITE BY THE FOLLOWING VENDORS

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

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

NOTE:
SEE GRADING AND DRAINAGE PLAN (SHEET 4 OF 28 IN "COBBLESTONE PLANS FOR CONSTRUCTION, PHASES 1 & 2" FOR STREET CONSTRUCTION DETAILS.

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

APPROVED FOR CONSTRUCTION
CITY OF GRAND JUNCTION ENGINEERING — DATE

APPROVED AS CONSTRUCTED
CITY OF GRAND JUNCTION ENGINEERING — DATE

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

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

American Consulting Engineers Council Member

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

REVISION	DATE	DESCRIPTION	BY	CHD

STEVE CRAVEN — COBBLESTONE RIDGES

COMPOSITE PLAN

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