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File SPR-1996-031 Name: Bookcliff Station Apartments – 960 Bookcliff Avenue

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**
		***Application form**
		Review Sheets
		Receipts for fees paid for anything
X	X	***Submittal checklist**
X	X	***General project report**
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		Reduction of assessor's map.
		Evidence of title, deeds, easements
		***Mailing list to adjacent property owners**
		Public notice cards
		Record of certified mail
		Legal description
		Appraisal of raw land
		Reduction of any maps – final copy
		***Final reports for drainage and soils (geotechnical reports)**
		Other bound or non-bound reports
		Traffic studies
X	X	***Review Comments**
X	X	***Petitioner's response to comments**
		***Staff Reports**
		***Planning Commission staff report and exhibits**
		***City Council staff report and exhibits**
		***Summary sheet of final conditions**

DOCUMENT DESCRIPTION:

X	X	Correspondence			
X		Planning Clearance – not signed or issued			
X		E-mails			
X	X	Correspondence			
X		Policy of Title Ins. – Date of Policy - 4/20/95			
X		Site Plan – to be scanned			
X		Boundary Dispute Investigation			
X		Elevation map			
X		Grading and Erosion Control Plan			
X		Irrigation Re-Routing Plan and Profile			
X		Drainage Study – Phase III – revised 1/2/97 – and original 1/3/96			
X	X	Drainage Plan – to be scanned			

City of Grand Junction, Colorado
250 North Fifth Street
81501-2668
FAX: (303) 244-1599

June 14, 1995

Mr. Tom Burke
Burke Construction Company
336 Main Street, Suite # 201
Grand Junction, CO 81501

Re: 946 Bookcliff Avenue

Dear Mr. Burke:

According to both City files and Debra Semrau of the Museum of Western Colorado, the residence at 946 Bookcliff Avenue has not been studied regarding its potential as an historical or architectural resource. Also, the property is not included within any designated local, state or national historic preservation district.

Sincerely,

Larry Timm
Director of Community Development

COLORADO HISTORICAL SOCIETY

The Colorado History Museum 1300 Broadway Denver, Colorado 80203-2137

Post-it® Fax Note 7671	Date 10/6	# of pages ▶ 3
To Rick Koch	From Joseph Bell	
Co./Dept.	Co. Colo. Hist. Soc.	
Phone #	Phone # 866-3035	
Fax # 480-6814	Fax #	

October 6, 1995

Mr. Vic Placencio
U.S. Department of Housing and ~~Urban Development~~
First Interstate Tower North
633 17th Street
Denver, Colorado 80202-3607

Re: 946 Bookcliff, Grand Junction

Dear Mr. Placencio:

Our office has reviewed the documentation submit from Robert A. Politano concerning the apartment complex proposed for the above property having CDBG funding involvement.

The project will have an adverse effect on the stone house at this location. We have reviewed the alternatives and justification for this undertaking and accept the justification. To address this adverse effect the owner (Tom Burke) has agreed to do the following to mitigate the impact:

1) The structure will be photographed and the film developed onto archival black and white paper. Each elevation will be photographed. The rear elevation will be photographed with the frame addition and then without the additions; exposing the stone exterior wall. Two corner perspectives will be taken. There will be detail shots of hardware, doors and interior detail unique to this structure.

2) A drawing of each elevation will be prepared. On these drawings the stones will be detailed and numbered.

3) The stone structure will be disassembled. Each stone will be numbered correlating to the prepared drawing. Care will be taken by the work crews so as not to damage the stones.

4) The stones will be donated to the Museum of Western Colorado. They will be stored for future reconstruction.

Your office will need to prepare a Memorandum of Agreement with this office to address this adverse effect. Please draft this document and submit it to this office for comment.

You will need to provide documentation of this finding to the Advisory Council on Historic Preservation. The Council's address is:

Ms. Claudia Nissley, Director
Western Division of Project Review
730 Simms Street, Room 401
Golden, Colorado 80401

We look forward to reviewing the MOA. If you have any questions or need clarification, please contact Joseph Bell, our Historic Preservation Specialist, at (303) 866-3035.

Sincerely,

/James E. Hartmann
State Historic Preservation Officer

cc: Howard Kutzer, HUD
Rick Roth, Colorado Bankers Mortgage

Advisory
Council On
Historic
Preservation

The Old Post Office Building
1100 Pennsylvania Avenue, NW, #809
Washington, DC 20004

Reply to: 730 Simms Street, #401
Golden, Colorado 80401

November 27, 1995

Mr. Vic Placencio
Multifamily Appraiser
U.S. Department of Housing
and Urban Development
Rocky Mountain, Denver
First Interstate Tower North
633 17th Street
Denver, CO 80202-3607

REF: *Demolition of 946 Bookcliff Avenue, Grand Junction, CO*

Dear Mr. Placencio:

Thank you for the letter dated November 1, 1995, concerning the removal of 946 Bookcliff Avenue, a property determined eligible for inclusion in the National Register of Historic Places.

As a follow-up to that letter, the Council recently received a draft Memorandum of Agreement (MOA) from HUD concerning the referenced property to mitigate the adverse effect of the proposed project. Included in this draft MOA is the provision that the stone building at 946 Bookcliff be disassembled, each stone numbered according to drawings, and donated to the Museum of Western Colorado for their future use.

Unfortunately, the Museum of Western Colorado has indicated, as shown in the attached letter, that they are unable to accept the donation of the stone house. Therefore, the Council requests that HUD redraft the MOA omitting the stipulation that directs the owner to donate the stone house to the museum. The MOA should continue to include provisions for the recordation of the building prior to its demolition. Upon receipt of this information we shall review the MOA for acceptance by the Council.

Thank you for your continued cooperation. Please contact Jane Crisler of our staff for assistance at (303) 231-5320.

Sincerely,

Claudia Nissley
Director, Western Office
of Review

SUBMITTAL CHECKLIST

SITE PLAN REVIEW

Location: 960 Bookcliff Project Name: _____

Date Received 2-9-96

Receipt # 3483

File # SPR-96-31

ITEMS		DISTRIBUTION																														
DESCRIPTION	SSID REFERENCE	● City Community Development	● City Dev. Eng.	● City Utility Eng.	● City Property Agent	● City Parks/Recreation- Police	● City Fire Department	● City Attorney	O City Downtown Dev. Auth.	O County Planning	● County Bldg. Dept.	O Irrigation District	O Drainage District	O Water District	O Sewer District	● U.S. West	● Public Service	O GVRP	O CDOT	O Corps of Engineers	O Walker Field	O Persigo WWT	O Mesa County Health	O State Environ. Health	O City Sanitation	O School Dist #51						10 TOTAL REQ'D.
● Application Fee $240	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						
● Planning Clearance*	VII-3	1																														
● ~~11"x17"~~ 8½x11 Reduction of Assessor's Map included	VII-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						
● Evidence of Title	VII-2	1			1			1																								
O Deeds	VII-1	1			1			1																								
O Easements	VII-2	1	1	1	1			1																								
O Avigation Easement	VII-1	1			1			1																								
O ROW	VII-2	1	1	1	1			1																								
O Improvements Agreement/Guarantee*	VII-2	1	1	1				1																								
O CDOT Access Permit	VII-3	1	1																													
O Industrial Pretreatment Sign-off	VII-4	1		1																												
● General Project Report	X-7	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						
● Elevation Drawing	IX-13	1	1																													
● Site Plan	IX-29	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
O 11"x17" Reduction of Site Plan	IX-29					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
● Grading and Drainage Plan	IX-16	1	2										1							1												
O Storm Drainage Plan and Profile	IX-30	1	2										1			1	1	1														
O Water and Sewer Plan and Profile	IX-34	1	2	1			1							1	1	1	1	1														
O Roadway Plan and Profile	IX-28	1	2										1																			
O Road Cross-Sections	IX-27	1	2																													
O Detail Sheet	IX-12	1	2																													
● Landscape Plan	IX-20	2	1	1																												
O Geotechnical Report	X-8	1	1								1																					
● Final Drainage Report	X-5,6	1	2										1																			
O Stormwater Management Plan	X-14	1	2										1							1												
O Phase I and II Environmental Rerpot	X-10,1	1	1																													
O Traffic Impact Study	X-15	1	2																1													

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

February 6, 1996

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

Mr. Tom Burke
Burke Construction
300 Main Street Suite 101
Grand Junction, Colorado 81501

Dear Tom,

Upon reviewing your recent Site Plan Review submittal for a proposed apartment complex at 960 Bookcliff Avenue, I found the deficiencies listed below. The application will not be processed for review until these items are added to the submittal.

1) Landscape Plan
2) Lighting Plan (required when parking exceeds 50 spaces)
3) Engineer's Stamp on Drainage Report/Plan

I have enclosed the portions of the Zoning and Development Code pertinent to the landscape and lighting plans for your information. I briefly discussed the conclusions of the drainage report with Jody Kliska, City Development Engineer. She stated, as previously mentioned to you, that the proposal to drain stormwater to the street and pay a drainage fee will not be acceptable. Please have your engineer contact Jody at 970/244-1591 to discuss other options for the site.

Please do not hesitate to contact me if you have questions regarding this application.

Sincerely,

Kristen Ashbeck
Planner

BOOKCLIFF STATION

PROJECT NARRATIVE

LOCATION: The project is located on the north side of Bookcliff Ave., between ninth and tenth streets.

SIZE: The proposed site is approximately 167' wide by 409' in length or roughly 1.57 acres.

PROPOSED USE: Rental apartments

BENEFIT: Rental units in Grand Junction and Mesa county are currently at a premium. If you add in the demand for student housing, especially within walking distance of the college the demand only grows. We think the benefit to the college and the county is substantial based on current availability of rental units.

COMPLIANCE: The project is currently zoned RSF 64. Much of the area along Bookcliff ave from tenth to twelfth streets consists of multifamily units. The current use is also multifamily rental units. The site can be accessed by either 7th. Street to the west of 12th. Street to the east. Both intersections are controlled by traffic lights. Additionally walking to the student center is easily accomplished by using 9th Street. Utilities are available in Bookcliff Ave. And a new fire hydrant will no doubt be required. Soils are normal for the area and do not oppose any problems to the construction of this project. The units will be open 24 hours a day, and the only signage will be on the front of the building. We anticipate the project starting in late February and be open for occupancy in late August of 1996.

REVIEW COMMENTS

FILE #SPR-96-31 **TITLE HEADING:** Bookcliff Station Apartments

LOCATION: 960 Bookcliff Avenue

PETITIONER: Ten Development Corporation

PETITIONER'S ADDRESS/TELEPHONE: 300 Main Street, Suite 101
Grand Junction, CO 81501
243-0564

PETITIONER'S REPRESENTATIVE: Tom Burke

STAFF REPRESENTATIVE: Kristen Ashbeck

NOTE: THE PETITIONER IS REQUIRED TO SUBMIT FOUR (4) COPIES OF WRITTEN RESPONSE AND REVISED DRAWINGS ADDRESSING ALL REVIEW COMMENTS.

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: AND CALL
U.S. West Communications Developer Contact Group
Developer Contact Group 1-800-526-3557
P.O. Box 1720
Denver, CO 80201

WE NEED TO HEAR FROM YOU AT LEAST 50 DAYS PRIOR TO TRENCHING.

MESA COUNTY BUILDING DEPARTMENT **2/13/96**
Bob Lee **244-1656**

Building is required to be one hour fire resistive throughout with the installation of fire sprinklers. We need 2 sets of sealed plans for our review and allow 10-14 days for that review. Handicap accessible units shall comply to '94 Uniform Building Code requirements.

CITY FIRE DEPARTMENT **2/16/96**
Hank Masterson **244-1414**

1. The proposed 25' access drives along the east and west side of the building are dead-end and in excess of 150' in length. Approved turn-around areas are required. One way to accomplish this is to connect both drives with an access drive along the north side of the building.
2. A fire flow survey is required - submit complete sealed building plans to the Fire Department for this purpose and for our required plan review. The fire flow calculated by the survey will determine the number of on-site fire hydrants required. A fire sprinkler system is required: installing a 13-R sprinkler system as allowed by the Fire Code will reduce required fire flows by 25%. Installing a complete NFPA 13 system will reduce flows by 75% and may eliminate the need for on-site fire

hydrants. Contact the Fire Department for more information on this subject.

3. Your fire sprinkler contractor will be required to submit complete plans, specifications and calculations to the Fire Department for our review and approval.
4. Your fire alarm contractor is required to submit complete plans and specifications to the Fire Department for our review and approval.

CITY POLICE DEPARTMENT **2/20/96**
Dave Stassen **244-3587**

To adequately review this project, I need to see a lighting and landscaping plan.

CITY DEVELOPMENT ENGINEER **2/21/96**
Jody Kliska **244-1591**

1. The plan for the street improvements to Bookcliff needs to show a pavement structural section for paving and a cross-section for the extents of paving, curb, gutter and sidewalk. An improvements agreement for the street and sewer improvements is required.
2. Transportation Capacity Payment - $300 per unit x 75 units = $22,500. Credit may be given for constructed public improvements.
3. A drainage fee is not acceptable since there are not facilities in Bookcliff and there are existing drainage problems.
4. Parking spaces at the rear of the property are not usable, since there is no room to turn around.
5. Please show a detail for the retaining walls.
6. The curb cut detail needs to match City standards.

CITY UTILITY ENGINEER **2/22/96**
Trent Prall **244-1590**

See attached comments.

CITY COMMUNITY DEVELOPMENT **2/22/96**
Kristen Ashbeck **244-1437**

See attached comments.

LATE COMMENTS

PUBLIC SERVICE COMPANY **2/28/96**
Jon Price **244-2693**

Public Service Company will require a 10' utility easement along and parallel to the east property line and a 10' utility easement along and parallel to the south property line.

TO DATE, COMMENTS NOT RECEIVED FROM:

City Property Agent
City Attorney

Utility Engineer Review Comments

Date: February 22, 1996 By: Trent Prall

SPR-96-31 Bookcliff Station Apts / 960 Bookcliff / Multifamily Housing / 75 Units
Petitioner: Tom Burke Staff: Kristen

1. Please contact Utility Billing at 244-1580 for information regarding Water and Sewer Plant Investment Fees. All applicable fees must be paid prior to issuance of a building permit.

2. Please clarify distance between existing water line and sewer line. Plan by Paragon Engineering depicts only 3.2' between the two utilities, however the architectural drawings depict 15'. If the design is only 3.2' apart, encasement of the sewer or waterline may be required depending on depth of each utilities. Please see City of Grand Junction Standard Drawing Exhibits "H" and "I".

3. Please show location and size of proposed water and sewer service lines.

4. Sewer extension plan and profile must be stamped by a Registered Civil Engineer. Please also include "Exhibit I" as part of the plan set. City review of plans is required prior to construction. An improvements agreement will be required to cover the cost of construction and inspection for the sewer line. Please also add the following general notes to the sewer plan and profile.

   A. Contractor shall have one signed copy of plans and a copy of the City of Grand Junction's Standard Specifications at the job site at all times.

   B. All sewer mains shall be PVC SDR 35 (ASTM 3034) unless otherwise noted.

   C. All sewer mains shall be laid to grade utilizing a pipe laser.

   D. All service line connections to the new main shall be accomplished with full body wyes or tees. Tapping saddles will not be allowed.

   E. No 4" services shall be connected directly into manholes. 6"

service connections with the mainline will a manhole.

F. The contractor shall notify the City inspection 48 hours prior to commencement of construction.

G. The Contractor is responsible for all required sewer line testing to be completed in the presence of the City Inspector. Pressure testing will be performed after all compaction of street subgrade and prior to street paving. Final lamping will also be accomplished after paving is completed. These tests shall be the basis for issuing initial acceptance of the sewer line extension.

H. The Contractor shall obtain City of Grand Junction Street Cut Permit for all work within existing City road right-of-way prior to construction.

I. A clay cut-off wall shall be placed 10 feet upstream from all new manholes unless otherwise noted. The cut-off wall shall extend from 6 inches below to 6 inches above granular backfill material and shall be 2 feet wide. If native material is not suitable, the contractor shall import material approved by the engineer.

SPR 96-31 BOOKCLIFF STATION APARTMENTS
Community Development / Kristen Ashbeck 2/22/96

GENERAL

1. The plan appears to be trying to place too many units on the site--need to balance building coverage/parking/landscaping.

2. Since this property is comprised of 2 parcels, owner must execute and submit the enclosed form to ensure that the 2 parcels may not be split (sold separately) again.

3. Need to show evidence that right-of-way has been dedicated (Book 978 Page 711? or a copy of the Hartman Subdivision plat).

4. Provide a cross-section of a wall to illustrate how 8.5-foot floors will function.

5. For future information, sign allowance for the RMF-64 zone is 32 square feet and may contain only the building or complex name and name of the agent.

PARKING / LANDSCAPING

1. While the overall landscape requirement for the RMF-64 zone (15%) is met, the plan does not provide the additional landscaping required for large parking lots by section 5-5-1 F. of the Zoning and Development Code (see enclosed excerpt from Code).

   F.2.a. Street Frontage Landscaping: Okay as proposed.

   F.2.b. Parking Area Perimeter Landscaping: The setback of all sides abutting a residential property must be landscaped (10 feet on east and west sides, 20 feet on the rear). Refer to Code for additional specifics.

   F.2.c. Parking Area Interior Landscaping: 5% of net interior area must be landscaped. For each 100 square feet of this area, one tree must be provided. East side requirement: 1,299 sf/13 trees. West side requirement: 1,013 sf/11 trees. Plan does not meet this requirement.

   Planting islands next to parking spaces must have 2.5-foot paved overhang area. Planting islands which parallel parking spaces must be 9 feet wide.

   Landscaping along building or that provided on perimeter may not be counted towards parking area interior landscaping.

   F.2.i. Parking Lot Lighting Requirements: A lighting plan is required.

2. Parking lots currently have a dead-end design which is not acceptable. Need to provide some turn-around space at the end in order to back out of the last space.

3. Bicycle racks sufficient to hold enough bicycles equal to 10% of the vehicular parking requirement are required.

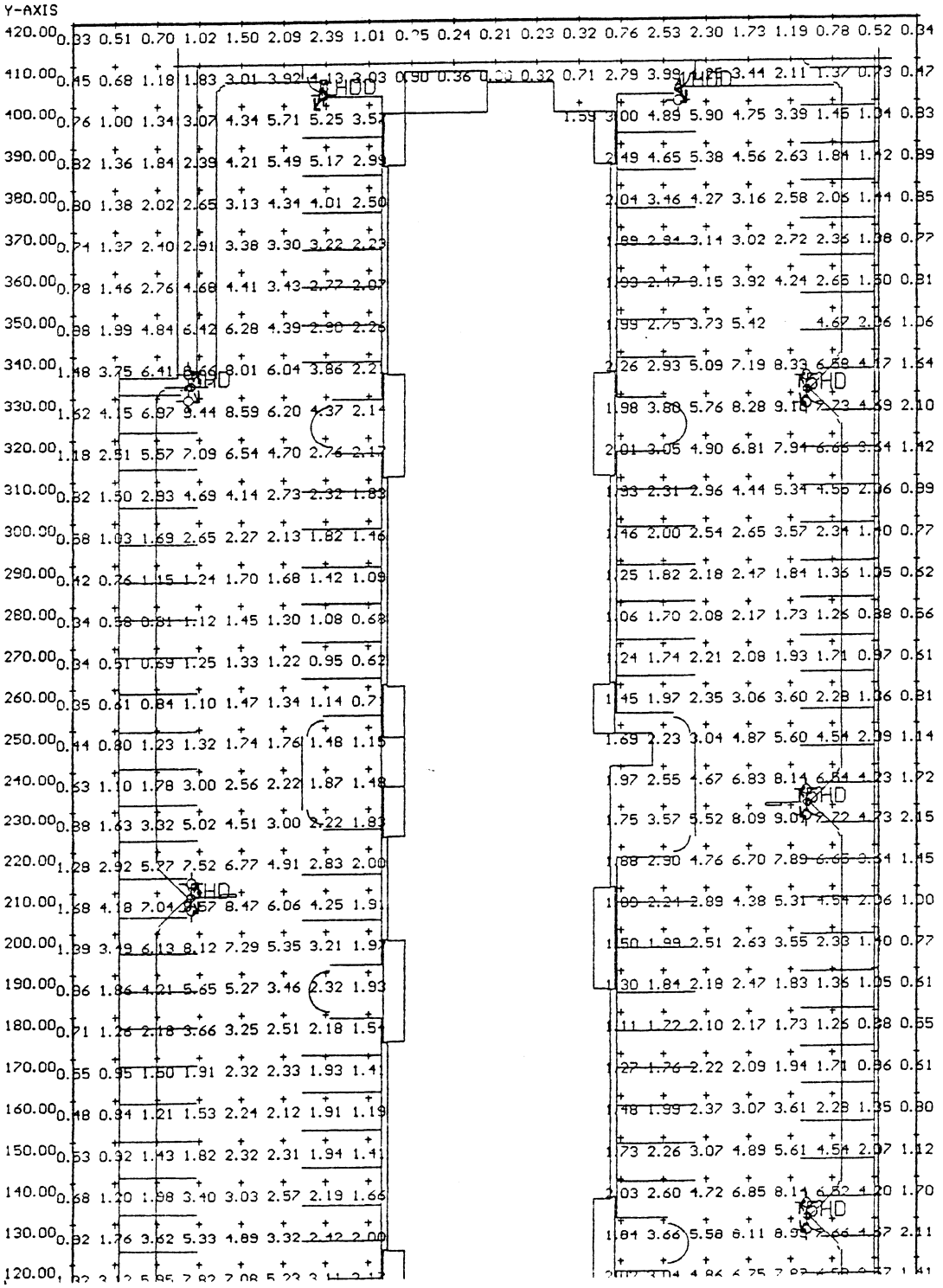
4. There is no provision for trash collection. Need to show location of dumpster(s) and a detail of screening provided around them.

CDM's LITE*PRO V3.00 Point-By-Point Numeric Output 07:18 2-Oct-96
PROJECT: 3553VER1 AREA: PARKING VRE1 GRID: PARKING 1
VALUES ARE FC, SCALE: 1 IN= 40.0FT, HORZ GRID (U), HORZ CALC, Z= 0.0

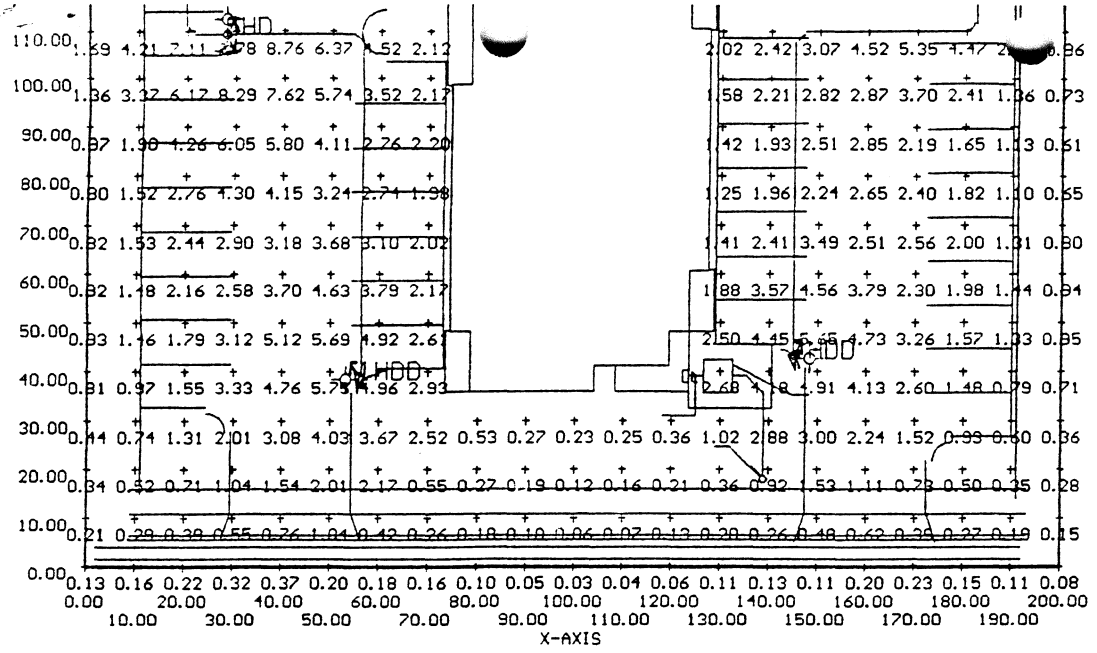
Computed in accordance with IES recommendations

+ MIN=0.03 MAX=9.44 AVE=2.59 AVE/MIN= 75.99 MAX/MIN= 277.34

1HDD <4> = LITHONIA ONE HEAD, 25'RND, FLUSH
5HD <6> = LITHONIA 90DEG, 25'RND, FLUSH



10/2/96


3HD
4HDD
5DD
110.00
100.00
90.00
80.00
70.00
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10.00 30.00 50.00 70.00 90.00 110.00 130.00 150.00 170.00 190.00
X-AXIS

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

April 24, 1996

Tom Burke
Burke Construction
300 Main
Grand Junction, CO 81501
Phone (970)-243-0564

Project: **Bookcliff Station Apartments SPR-96-31**
960 Bookcliff Avenue

Subject: Water and Sewer Availability

Dear Mr. Burke,

The City of Grand Junction agrees to provide water and sanitary sewer service for the above project. Water is available adjacent to property located on Bookcliff Avenue between 9th Street and College Place. Sanitary sewer is available just west of the property and will have to be extended by the owner in order to accommodate the development.

The developer is responsible for extending the sewer and sewer service lines to the property. Water service line and master meter will be set by the City of Grand Junction Water Department after applicable tap fees are paid. Hook-up fees, as outlined in the "Code of Ordinances, City of Grand Junction, Colorado," will be applicable to the project and due at the time the building permit for the project is issued.

Please contact me at (970)-244-1590 if additional information is required.

FOR THE CITY OF GRAND JUNCTION

Trent Prall
Utility Engineer

cc: Kristen Ashbeck, City Community Development Dept.

I:\PW_UTIL\PWDOC\UTILREVW\BC960424

SPR 96-31 BOOKCLIFF STATION APARTMENTS
Response from Ten Development Corp. / Tom Burke

GENERAL

Because the lot is narrow in nature and college housing requirements are fairly specific the density is 30% less than the zoning allows. I think that our revised site plan will show that parking lot requirements and the percentage of landscaping required exceeds the cities codes.

Before construction is started we will execute the required forms to turn this into one parcel.

We are including a subdivision plat with this submittal.

don't have
○ A cross section for the building is included in this submittal.

PARKING LANDSCAPING

Because this project is being designed and constructed as college housing we would purpose that we build a 6' heigh cedar fence in lieu of the landscape strip. It is our opinion that this would provide the neighborhood a much greater degree of privacy and would certainly help to reduce any associated noise.

Interior landscaping has been modified to meet your requirements.

don't have
○ A parking lot lighting plan is provided with this submittal.

Bicycle racks have been added to meet this requirement.

A location has been provided for the dumpster.

RECEIVED GRAND JUNCTION
PLANNING DEPARTMENT
SEP 1 0 1996

FIRE DEPARTMENT

The site plan will show that we are installing a landscaping type of paver to allow for emergency vehicles to drive from one side of the site to the other. Typically this area will appear to have been landscaped however these pavers have been designed to allow for vehicle traffic.

A fire flow survey will be provided when final plans are complete.

CITY POLICE DEPT:

A lighting plan and new landscaping plan is included for review

CITY DEVELOPMENT ENGINEER:

I believe that the only item that needs further discussion is the requirement for on site retention of storm water. I have suggested that we look at this problem again in hopes that we might find a solution to both the cities storm sewer and us using that system. Don Newton said he would be

happy to sit down and discuss the issue. To date this conversation has not taken place.

CITY UTILITY ENGINEER:

Drawings will be changed to reflect the requested changes.

SUMMARY:

As you know Mesa State College continues to have shortages of housing for new students. Although they are in the process of building a new dorm, it still falls short in meeting current demands. Recently the City Council varied the parking requirements on a similar project. We would much rather see leaving the parking alone and making the adjustments to the landscaping. The proposed project still meets the 15% landscaping requirement without the 10' side yard area.

If you have any further questions please don't hesitate to call.

Sincerely'

Thomas M. Burke

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

October 11, 1996

Tom Burke
Burke Construction
300 Main Street
Grand Junction, Colorado 81501

RE: SPR 96-31 Bookcliff Station Apartments

Dear Tom,

This letter is in response to your phone call earlier today regarding scheduling the project referenced above for hearings. Before a decision on the project can be made and therefore scheduled, staff must complete its review of the project. In reviewing the original comments made by staff and your response to them, I have determined that the review cannot be completed until the following items and comments are addressed. Please provide four (4) full sets of this information.

1. Additional copies of the revised Site Plan

2. Grading and Drainage Plan

3. Lighting Plan that correctly shows location of lights and the information must be shown on a full-scale site plan.

4. The response to comments received September 19, 1996 did not address original comments from Utilities Engineer--no revised plan provided.

5. Response to comments did not include a cross-section for the building that was requested with the original comments.

6. Response to comments indicates that a 6' cedar fence will be constructed around the property yet plans show a 5' fence? Is the fencing also provided on the north property line (not shown on plan)?

7. While the landscaping shown exceeds the 15% requirement for the zone, this is in addition to what must also be provided to meet the parking lot landscaping requirements. Thus, the plan still falls short of the total landscape requirement.

8. Parking requirement is not met. 145 spaces required, 137 provided.

9. A variance will be required for the rear yard setback. Once a determination is made on the overall project (in case other variances are necessary), this can be scheduled for a Board of Appeals meeting.

10. Provide evidence that easements have been dedicated as requested by Public Service.

11. Provide evidence that terms of the Memorandum of Agreement with the Colorado Historical Society have been met relative to documentation of the old stone house.

Once this information is received, staff can continue review of the project. Based on any new information provided, there may be further comments and questions that arise before a final decision can be made. Please do not hesitate to contact me if you have questions regarding this project.

Sincerely,

Kristen Ashbeck
Planner

Mesa County Public Works Department
Building Inspection Division

750 Main Street • P.O. Box 20000 • Grand Junction, Colorado 81502-5005 • Ph. (303) 244-1631

PC: Don Koehn

Kathy Portner

October 16, 1996

College Station LLC
P.O. Box 3609
Grand Junction , Colorado 81502-3609

Re: Damaged Building, 960 Bookcliff, Grand Junction, Colorado Tax Parcel Number 2945-111-03-002.

Dear Sirs

Please be advised that the City of Grand Junction has adopted the Uniform Code for the Abatement of Dangerous Buildings, 1994 Edition. The Mesa County Building Division is charged, by contract, with enforcement of the code.

It has been determined after inspection by the Building Division that the structure located at 960 Bookcliff Av Grand Junction, Colorado is dangerous per Items 15, of Section 302 of the Dangerous Building Code.

The building is unfit to be used for dwelling purposes,because of inadequate maintenance, dilapidation, and decay.

The items for which the determination was made are listed below.

1. The ceiling in the hall way is dilapidated to the point of falling.

2. Faulty electric wiring is causing occupants to receive electrical shocks.

3. Walls in bathroom tub-shower area are decayed to the point where framing members are exposed.

4. Carport roof needs repair of support posts.

The structure must be abated by repair, vacation, or demolition within 30 days from the date of this order. After that time the Building Official may proceed to cause the work to be done and charge the costs thereof against the property or its owner.
If vacating the building is your option, the building must be secured and maintained against entry.

A building permit, issued by our office, shall be obtained before the commencement of any repair or demolition work.

Any person having record of title or legal interest in the building may appeal this notice to the Board of Appeals, provided this is made in writing, as provided in the Dangerous Buildings Code and filed within 30 days from the date of service of this notice. Failure to appeal will constitute a waiver of all right to an administrative hearing and determination of the matter.

If the conditions contained herein are not met within the specified time, the matter will be forwarded to the Grand Junction Attorney's Office. Enforcement and compliance shall be as specified in Chapter 7, Section 701, 702 and 703 of the Dangerous Building Code.

Should you have any questions or need my assistance, please contact me at 244-1651.

Sincerely,

Dan Davis
Assistant Building Official

x.c John Shaver, Grand Junction, Assistant City Attorney

Certified Number P 384 470 049

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

November 29, 1996

Tom Burke
Burke Construction
300 Main Street
Grand Junction, Colorado 81501

RE: SPR 96-31 Bookcliff Station Apartments

Dear Tom,

On October 11, 1996 I wrote to you regarding the outstanding requirements for completion of the file referenced above for hearings (see enclosed letter). Per section 4-14-2 of the Zoning and Development Code the applicant has 30 days to respond to staff comments. The 30-day period has passed. The Code further states that a six month extension from the date of original comments may be issued but that period has also passed (original comments were made mid-February 1996). Therefore, if the outstanding items are not submitted and accepted for review by City staff by December 13, 1996, we will consider the project withdrawn and a new application must be made in order to further pursue the project.

Please do not hesitate to contact me if you have further questions regarding this project.

Sincerely,

Kristen

Kristen Ashbeck
Planner

encl

PARAGON ENGINEERING CONSULTANTS, INC.

PHASE III DRAINAGE STUDY
FOR
BOOKCLIFF STATION APARTMENTS
IN
GRAND JUNCTION, COLORADO

JANUARY 3, 1996
Revised: OCTOBER 15, 1996
Revised: January 2, 1997

PREPARED BY:

PARAGON ENGINEERING CONSULTANTS, INC.
6333 S. SANTA FE DRIVE, SUITE C
LITTLETON, CO. 80120
(303) 794-8604
FAX 795-3072

PREPARED FOR:

TEN DEVELOPMENT
300 MAIN, SUITE 101
GRAND JUNCTION, CO 81501
(970) 243-0564

JOB No. 95-022

TABLE OF CONTENTS

APPENDIX

LOCATION and DESCRIPTION

The proposed apartment development, Bookcliff Station Apartments is located in the northeast quarter of Section 1, T1S, R1W of the Ute Meridian in Grand Junction, Colorado. The property is further described as north of Bookcliff Avenue approximately 1 1/4 blocks west of 12th Street.

Bookcliff Station Apartments will contain 1.66 acres. The property is currently an apartment development; Bookcliff Apartments, with several older apartments to be torn down with development of this site. An existing irrigation ditch runs through the site. This irrigation ditch will be rerouted through the site by a 12" CMP along the north and west property line. Bookcliff Avenue; which runs along the south boundary line, will be improved with curb and gutter. The soil is assumed to be SCS hydrologic group C.

DRAINAGE DESIGN CRITERIA

Storm water management in Grand Junction is governed by the "Stormwater Management Manual (SWMM). The storm water management plan described herein confirms to that Criteria.

The minor storm frequency analyzed is the 2 year storm. The major storm frequency will be the 100-year storm and, where required, primary structures will be sized to handle this flow.

The following Rational formula was used to compute the storm runoff values:

Q= CIA
Q= Peak runoff rate in cubic feet per second
C= Runoff coefficient
I= Storm intensity in inches per hour
A= Drainage tributary area in acres

In compliance with the current Grand Junction standards, minimum concentration times 5 minutes, developed will be adhered to. Where desirable, composite or weighted "C" values were derived from the data contained within this report.

Flows will be conveyed through the site in 2' pans located in the parking lots to Detention Ponds No.s 1 & 2. where developed flows will be released at allowable rates to Bookcliff Avenue.

HISTORIC RUNOFF

The existing site consists of existing apartments with gravel parking lots. The historic drainage currently flows from northeast to southwest to Bookcliff Avenue. A composite "C" factor of 0.55 an the 2 year and 0.62 in the 100 year was used to calculate runoff. Times of concentration of 15 minutes in the 2 year and 14.3 in the 100 year was used. The 2 year historic runoff is 1.2 cfs with a 100 year runoff of 3.4 cfs.

DEVELOPED RUNOFF

The site will be developed with a single building approximately 365' long by 60' wide positioned in the center of the site. Parking is provided on the west and east side of the building. The site will be graded with two drainage basins, basins A & B.

Basin A is a 0.84 Acre basin; being the east half of the site, which drains to a 2' pan and flows south to Bookcliff Avenue. The minimum time of concentration of 5 minutes was used with a "C" factor of 0.86 in the 2 year and 0.88 in the 100 year. The runoff will be 1.4 cfs in the 2 year and 3.7 cfs in the 100 year.

Basin B is a 0.82 Acre basin; being the west half of the site, which drains to a 2' pan and flows south to Bookcliff Avenue. The minimum time of concentration of 5 minutes was used with a "C" factor of 0.86 in the 2 year and 0.88 in the 100 year. The runoff will be 1.4 cfs in the 2 year and 3.6 cfs in the 100 year. Total runoff from the site for both basin A & B is 2.8 cfs in the 2 year and 7.2 cfs in the 100 year.

DETENTION

The historic runoff is 3.4 cfs in the 100 year storm. The developed runoff is 7.2 cfs. The increase in runoff from the site with this development is 3.8 cfs. Detention volume needed for this site was calculated to be 1,886 Cu. Ft. for the 2 year and 4,356 Cu. Ft. for the 100 year. Detention for Basin A will be provided for in Detention Pond NO. 2, consisting of the landscaped area at the south end of the site, together with a small portion of the easterly parking lot area. Detention for Basin B will be provided for in Detention Pond NO. 1, consisting of a portion of the westerly parking lot area. Maximum ponding depth for the 100-year storm in Pond No. 2 will be approximately 0.8', and approximately 1.0' for Pond No. 1. Control for the 2-year discharge for both ponds will be an orifice plate at the outlet wall structure. The 100-year discharge for both ponds will be controlled weir flow at the outlet wall structure. Released flows from both ponds will be conveyed via concrete pans to sidewalk curb chase sections to the curb and gutter of Bookcliff Avenue.

CONCLUSION

The criteria for the "Stormwater Management Manual" was used in preparing this report. The increase in runoff with new development of this site will be only 3.8 cfs. On-site detention is provided for with the new development. Developed flows will be released at allowable rates to the curb and gutter of Bookcliff Avenue . In conclusion; the existing drainage patterns have been retained with the development of this report with little impact on downstream properties.

REFERENCES

1. City of Grand Junction Stormwater Management Manual.

2. Denver Regional Council of Governments "Urban Storm Drainage Criteria Manuals".

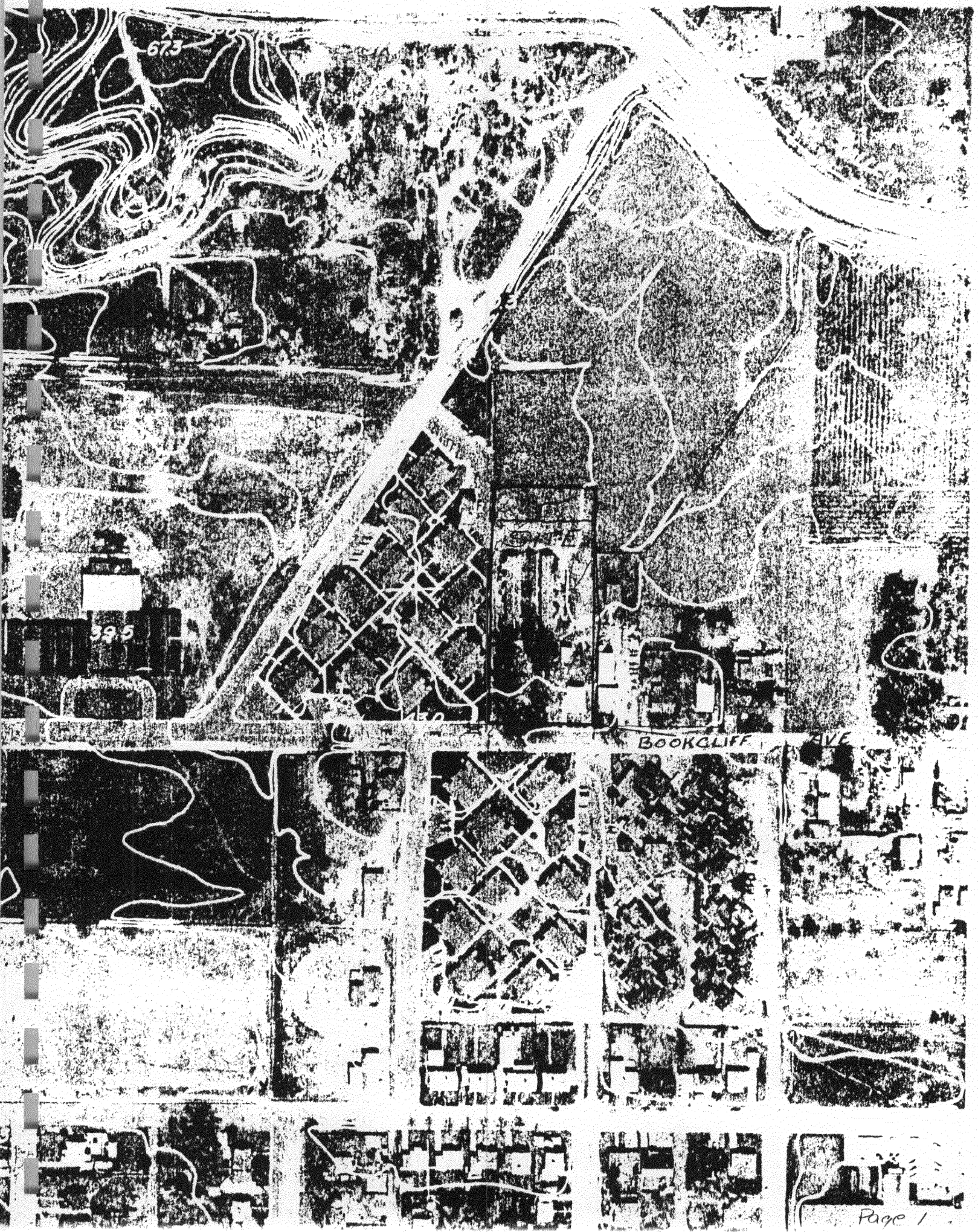
ENGINEERS CERTIFICATION

This report and plan for the Phase III drainage design of Bookcliff Station Apartments was prepared under my direct supervision in accordance with the provisions of the City of Grand Junction Stormwater Management Manual for the owners thereof. I understand that the City of Grand Junction does not and will not assume liability for drainage facilities designed by others.

01/03/97

Robert P. Gerlofs Registered Professional Engineer Colorado No. 9402

APPENDIX


673
995
BOOKCLIFF AVE

LAND USE OR SURFACE CHARACTERISTICS	SCS HYDROLOGIC SOIL GROUP (SEE APPENDIX "C" FOR DESCRIPTIONS)											
	A			B			C			D		
	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
UNDEVELOPED AREAS Bare ground	.10 - .20 .14 - .24	.16 - .26 .22 - .32	.25 - .35 .30 - .40	.14 - .22 .20 - .28	.22 - .30 .28 - .36	.30 - .38 .37 - .45	.20 - .28 .26 - .34	.28 - .36 .35 - .43	.36 - .44 .40 - .48	.24 - .32 .30 - .38	.30 - .38 .40 - .48	.40 - .48 .50 - .58
Cultivated/Agricultural	.08 - .18 .14 - .24	.13 - .23 .18 - .28	.16 - .26 .22 - .32	.11 - .19 .16 - .24	.15 - .23 .21 - .29	.21 - .29 .28 - .36	.14 - .22 .20 - .28	.19 - .27 .25 - .33	.26 - .34 .34 - .42	.18 - .26 .24 - .32	.23 - .31 .29 - .37	.31 - .39 .41 - .49
Pasture	.12 - .22 .15 - .25	.20 - .30 .25 - .35	.30 - .40 .37 - .47	.18 - .26 .23 - .31	.28 - .36 .34 - .42	.37 - .45 .45 - .53	.24 - .32 .30 - .38	.34 - .42 .42 - .50	.44 - .52 .52 - .60	.30 - .38 .37 - .45	.40 - .48 .50 - .58	.50 - .58 .62 - .70
Meadow	.10 - .20 .14 - .24	.16 - .26 .22 - .32	.25 - .35 .30 - .40	.14 - .22 .20 - .28	.22 - .30 .28 - .36	.30 - .38 .37 - .45	.20 - .28 .26 - .34	.28 - .36 .35 - .43	.36 - .44 .44 - .52	.24 - .32 .30 - .38	.30 - .38 .40 - .48	.40 - .48 .50 - .58
Forest	.05 - .15 .08 - .18	.08 - .18 .11 - .21	.11 - .21 .14 - .24	.08 - .16 .10 - .18	.11 - .19 .14 - .22	.14 - .22 .18 - .26	.10 - .18 .12 - .20	.13 - .21 .16 - .24	.16 - .24 .20 - .28	.12 - .20 .15 - .23	.16 - .24 .20 - .28	.20 - .28 .25 - .33
RESIDENTIAL AREAS 1/8 acre per unit	.40 - .50 .48 - .58	.43 - .53 .52 - .62	.46 - .56 .55 - .65	.42 - .50 .50 - .58	.45 - .53 .54 - .62	.50 - .58 .59 - .67	.45 - .53 .53 - .61	.48 - .56 .57 - .65	.53 - .61 .64 - .72	.48 - .56 .56 - .64	.51 - .59 .60 - .68	.57 - .65 .69 - .77
1/4 acre per unit	.27 - .37 .35 - .45	.31 - .41 .39 - .49	.34 - .44 .42 - .52	.29 - .37 .38 - .46	.34 - .42 .42 - .50	.38 - .46 .47 - .55	.32 - .40 .41 - .49	.36 - .44 .45 - .53	.41 - .49 .52 - .60	.35 - .43 .43 - .51	.39 - .47 .47 - .55	.45 - .53 .57 - .65
1/3 acre per unit	.22 - .32 .31 - .41	.26 - .36 .35 - .45	.29 - .39 .38 - .48	.25 - .33 .33 - .41	.29 - .37 .38 - .46	.33 - .41 .42 - .50	.28 - .36 .36 - .44	.32 - .40 .41 - .49	.37 - .45 .48 - .56	.31 - .39 .39 - .47	.35 - .43 .43 - .51	.42 - .50 .53 - .61
1/2 acre per unit	.16 - .26 .25 - .35	.20 - .30 .29 - .39	.24 - .34 .32 - .42	.19 - .27 .28 - .36	.23 - .31 .32 - .40	.28 - .36 .36 - .44	.22 - .30 .31 - .39	.27 - .35 .35 - .43	.32 - .40 .42 - .50	.26 - .34 .34 - .42	.30 - .38 .38 - .46	.37 - .45 .48 - .56
1 acre per unit	.14 - .24 .22 - .32	.19 - .29 .26 - .36	.22 - .32 .29 - .39	.17 - .25 .24 - .32	.21 - .29 .28 - .36	.26 - .34 .34 - .42	.20 - .28 .28 - .36	.25 - .33 .32 - .40	.31 - .39 .40 - .48	.24 - .32 .31 - .39	.29 - .37 .35 - .43	.35 - .43 .46 - .54
MISC. SURFACES Pavement and roofs	.93 .95	.94 .96	.95 .97	.93 .95	.94 .96	.95 .97	.93 .95	.94 .96	.95 .97	.93 .95	.94 .96	.95 .97
Traffic areas (soil and gravel)	.55 - .65 .65 - .70	.60 - .70 .70 - .75	.64 - .74 .74 - .79	.60 - .68 .68 - .76	.64 - .72 .72 - .80	.67 - .75 .75 - .83	.64 - .72 .72 - .80	.67 - .75 .75 - .83	.69 - .77 .77 - .85	.72 - .80 .79 - .87	.75 - .83 .82 - .90	.77 - .85 .84 - .92
Green landscaping (lawns, parks)	.10 - .20 .14 - .24	.16 - .26 .22 - .32	.25 - .35 .30 - .40	.14 - .22 .20 - .28	.22 - .30 .28 - .36	.30 - .38 .37 - .45	.20 - .28 .26 - .34	.28 - .36 .35 - .43	.36 - .44 .42 - .52	.24 - .32 .30 - .38	.30 - .38 .40 - .48	.40 - .48 .50 - .58
Non-green and gravel landscaping	.30 - .40 .34 - .44	.36 - .46 .42 - .52	.45 - .55 .50 - .60	.45 - .55 .50 - .60	.42 - .50 .48 - .56	.50 - .58 .57 - .65	.40 - .48 .46 - .54	.48 - .56 .55 - .63	.56 - .64 .64 - .72	.44 - .52 .50 - .58	.50 - .58 .60 - .68	.60 - .68 .70 - .78
Cemeteries, playgrounds	.20 - .30 .24 - .34	.26 - .36 .32 - .42	.35 - .45 .40 - .50	.35 - .45 .40 - .50	.32 - .40 .38 - .46	.40 - .48 .47 - .55	.30 - .38 .36 - .44	.38 - .44 .45 - .53	.46 - .54 .54 - .62	.34 - .42 .40 - .48	.40 - .48 .50 - .58	.50 - .58 .60 - .68

NOTES:
1. Values above and below pertain to the 2-year and 100-year storms, respectively.
2. The range of values provided allows for engineering judgement of site conditions such as basic shape, homogeneity of surface type, surface depression storage, and storm duration. In general, during shorter duration storms (Tc ≤ 10 minutes), infiltration capacity is higher, allowing use of a "C" value in the low range. Conversely, for longer duration storms (Tc) 30 minutes), use a ""C value in the higher range.
3. For residential development at less than 1/8 acre per unit or greater than 1 acre per unit, and also for commercial and industrial areas, use values under MISC SURFACES to estimate "C" value ranges for use.

RATIONAL METHOD RUNOFF COEFFICIENTS
(Modified from Table 4, UC-Davis, which appears to be a modification of work done by Rawls)

TABLE "B-1"

Paragon Engineering Consultants, Inc.
6333 South Santa Fe Drive, Suite C
Littleton, Colorado 80120
(303) 794-8604 FAX (303) 795-3072

JOB BOOKCLIFF STATION APARTMENTS
SHEET NO. _____ OF _____
CALCULATED BY UA DATE 1/3/95
CHECKED BY _____ DATE _____
SCALE _____

HISTORIC "C" CALCULATIONS

TOTAL ACREAGE - 1.66 AC OR 72,310 Sq. Ft

EXISTING GROUND COVER

EXISTING BUILDING ROOFS	10,900	Sq. Ft
EXISTING GRAVEL PARKING	34,600	Sq. Ft
EXISTING LANDSCAPING	26,810	Sq. Ft
TOTAL	72,310	

GIVEN:
EXISTING SLOPE = 1.5 %
SOILS GROUP "C"

COMPOSITE "C_{D2}"

$$\frac{(10,900)(0.13) + (34,600)(0.68) + (26,810)(0.24)}{72,310} = 0.55$$

COMPOSITE "C_{D100}"

$$\frac{(10,900)(0.95) + (34,600)(0.76) + (26,810)(0.30)}{72,310} = 0.62$$

Paragon Engineering Consultants, Inc.
6333 South Santa Fe Drive, Suite C
Littleton, Colorado 80120
(303) 794-8604 FAX (303) 795-3072

JOB BOOKCLIFF STATION APT.
SHEET NO. _____ OF _____
CALCULATED BY WA DATE 1/3/95
CHECKED BY _____ DATE _____
SCALE _____

DEVELOPED "C" FACTOR

GIVEN:

SLOPE = 0.5 % T_c = 5 min
SOILS GROUP "C" A = 1.7 Ac

GROUND COVER – 7,714 ft² – LANDSCAPE C_{D2} = 0.20 C_{D100} = 0.026
64,595 ft² – PAVEMENT & ROOFS C_{D2} = 0.93 C_{D100} = 0.95

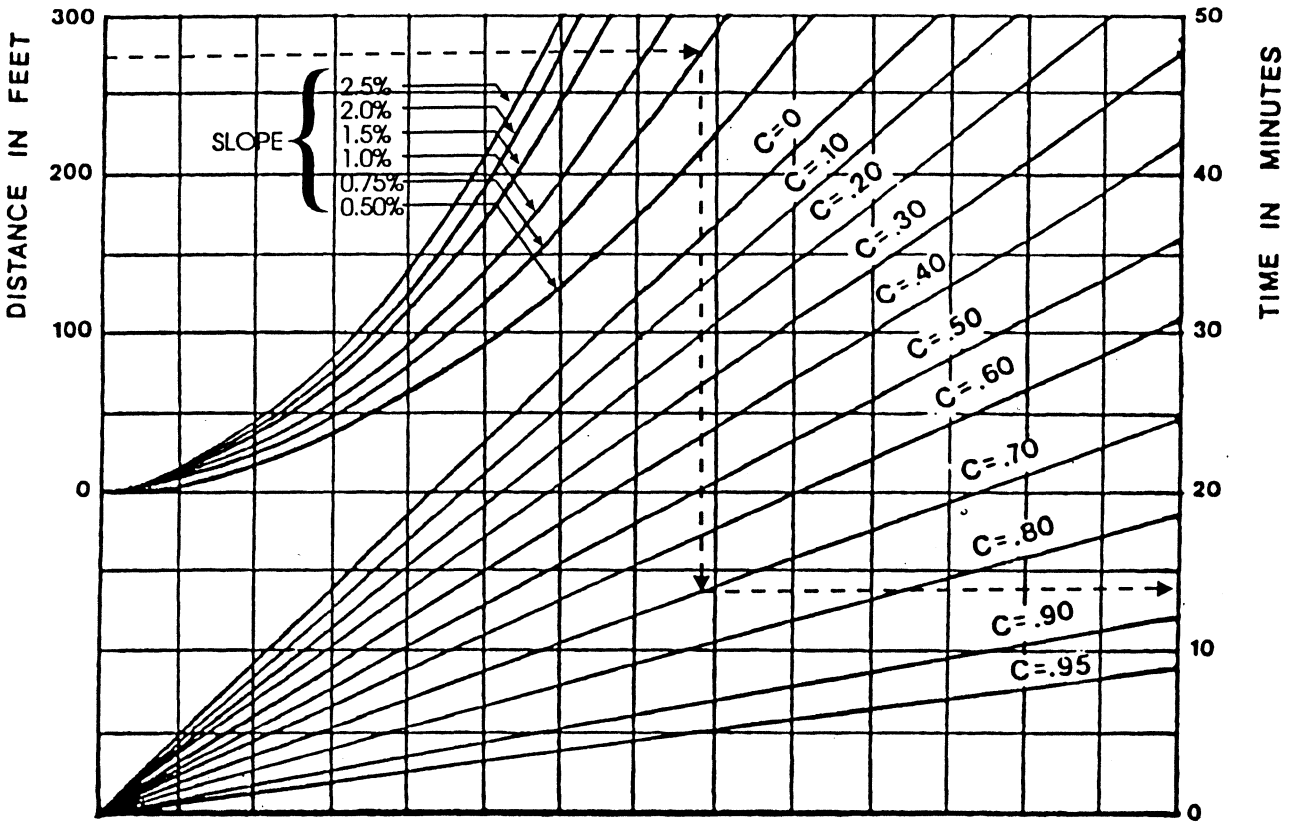
COMPOSITE "C_{D2}"

$$\frac{(7,714)(0.2) + (64,595)(0.93)}{72,309} = 0.86$$

COMPOSITE "C_{D100}"

$$\frac{(7,714)(0.26) + (64,595)(0.95)}{72,309} = 0.88$$

MODIFIED FROM FIGURE 403, MESA COUNTY



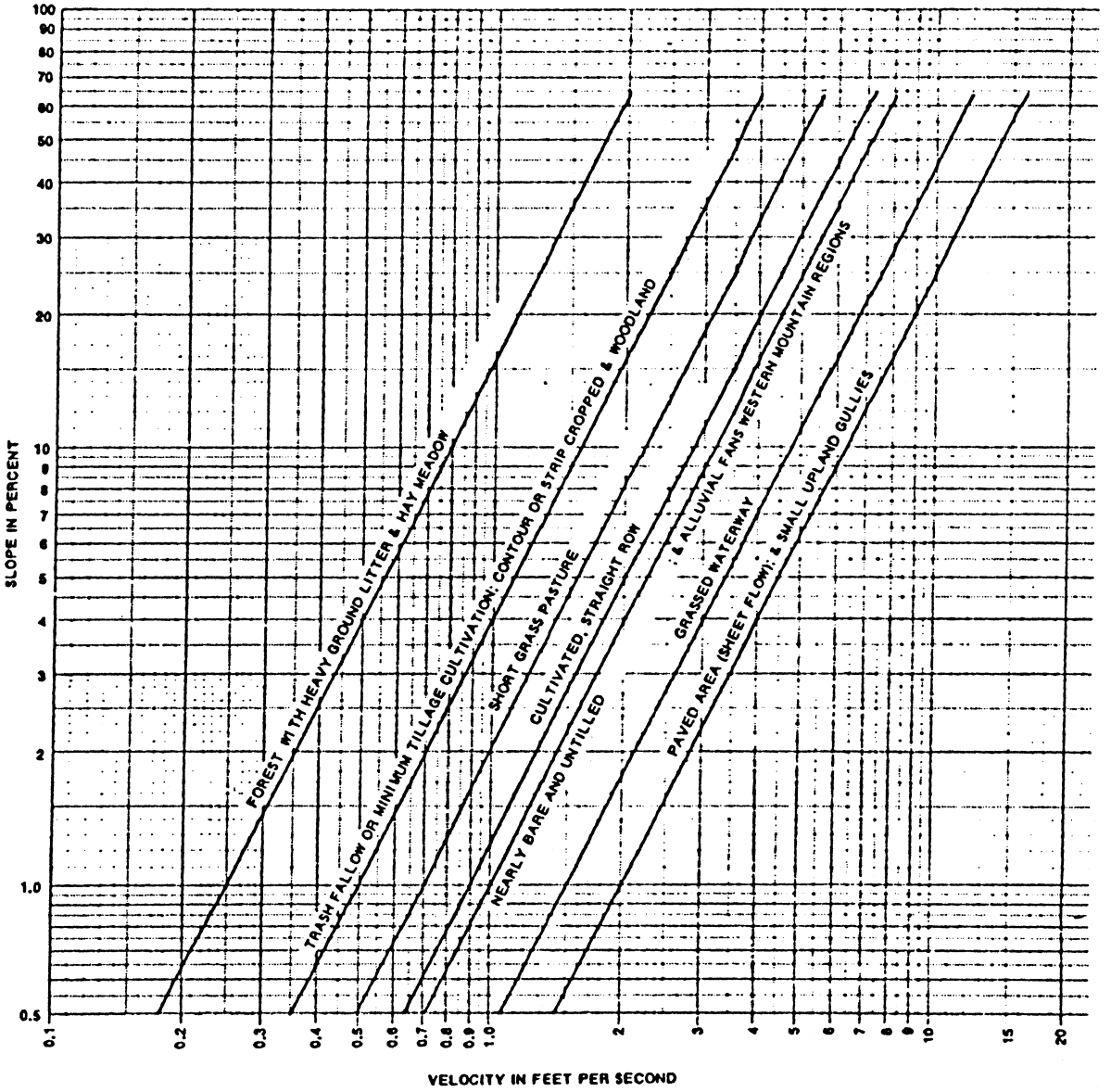
THE ABOVE CURVES ARE A SOLUTION OF THE FOLLOWING EQUATION:

$$To = \frac{1.8\ (1.1 - C)\sqrt{L}}{\sqrt[3]{S}}$$

WHERE: To = OVERLAND FLOW TIME (MIN.)
S = SLOPE OF BASIN (%)
C = RUNOFF COEFFICIENT (SEE TABLE "B-1" IN APPENDIX "B")
L = LENGTH OF BASIN (ft)

GRAPHICAL DETERMINATION OF "To:" FAA METHOD	FIGURE "E-2"

REPRODUCED FROM FIGURE 15.2, SCS 1972



DETERMINATION OF "Ts"	FIGURE "E-3"

PROJECT: BookCliff JOB NO. 95-022 CALCULATED BY: WA DATE: 1/3/95

STATION ART

CHECKED BY: _____ DATE: _____

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

REACH	AREA IDENTIFIER			H	A	B				
	SEGEMENT IDENTIFICATION									
	Tc OR Tr THROUGH BASIN REACH									
OVERLAND FLOW	SURFACE DESCRIPTION (TABLE "A-1")			APARTMENTS	LANDSCAPE	LANDSCAPE				
	RATIONAL COEFFICIENT, C_2, C_{100} (TABLE "B-1")			C_2=0.55 C_{100}=0.62	C_2=0.86 C_{100}=0.88	C_2=0.86 C_{100}=0.88				
	FLOW LENGTH, L (TOTAL ≤ 300 FT.)		(ft.)	300'	30'	30'				
	LAND SLOPE, S		(ft./ft.)	1.7%	2%	2%				
	To_2 (FIGURE "E-2")		(min.)	2.4	2	2				
	To_{100} (FIGURE "E-2")		(min.)	2.3	2	2				
SHALLOW CONCENTRATED FLOW	SURFACE DESCRIPTION (FIGURE "E-3")			GRAVEL						
	FLOW LENGTH, L		(ft.)	140						
	FLOW SLOPE, S		(ft./ft.)	1.6						
	FLOW VELOCITY, V (FIGURE "E-3")		(fps.)	2.5						
	TRAVEL TIME = L/(60V)		(min.)	0.9						
CHANNEL FLOW	CROSS-SECTIONAL FLOW AREA, a		($ft.^2$)							
	WETTED PERIMETER, Pw		(ft.)							
	HYDRAULIC RADIUS, r = a/Pw		(ft.)							
	CHANNEL SLOPE, S		(ft./ft.)							
	MANNING'S COEFFICIENT, n (APPENDIX F)									
	$V = 1.49r^{2/3}S^{1/2}/n$		(fps.)							
	ASSUMED VELOCITY (FIGURE E-3)		(fps.)		1.5	1.5				
	FLOW LENGTH, L		(ft.)		365'	365'				
	TRAVEL TIME L/(60V)		(min.)		4.0	4.0				
Tc&Tr	Tc = To + Ts + Tch	2 YEAR	(min.)	24.9	6.0	6.0				
	Tr = Tch	100 YEAR	(min.)	23.9	6.0	6.0				
Tt	T_t = 0.6Tc or	2 YEAR	(min.)	15.0	5.0	5.0				
	FROM FIGURE "E-4"	100 YEAR	(min.)	14.3	5.0	5.0				

TRAVEL TIME WORKSHEET: FAA METHOD — **TABLE "E-5"**

JUNE 1994

E.12 Page 7

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

CALCULATED BY UA
DATE 1/3/95
CHECKED BY _____

STANDARD FORM SF-3

STORM DRAINAGE SYSTEM DESIGN (RATIONAL METHOD PROCEDURE)

JOB NO 95-022
PROJECT BOOKCLIFF STATION
DESIGN STORM 2

	STREET	DESIGN POINT	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
			AREA DESIGN	AREA (AC)	RUNOFF COEFF	t_c (MIN)	C·A (AC)	I IN/HR	Q (CFS)	t_c (MIN)	Σ(C·A) (AC)	I (IN/HR)	Q (CFS)	SLOPE (%)	STREET FLOW (CFS)	DESIGN FLOW (CFS)	SLOPE (%)	PIPE SIZE	LENGTH (FT)	VELOCITY (FPS)	t_t (MIN)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
1			HISTORIC																			
2	BOOKCLIFF AVE	1	H	1.66	0.55	15.0	0.91	1.28	1.2													
3																						
4			DEVELOPED																			
5																						
6	BOOKCLIFF AVE	2	A	0.84	0.86	5	0.72	1.95	1.4													
7	BOOKCLIFF AVE	3	B	0.82	0.86	5	0.71	1.95	1.4	5	1.43	1.95	2.8									
8																						
9																						
10																						
11																						

CALCULATED BY WR
DATE 11/3/95
CHECKED BY _____

STANDARD FORM SF-3

STORM DRAINAGE SYSTEM DESIGN (RATIONAL METHOD PROCEDURE)

JOB NO 95-022
PROJECT BOOKCLIFF STATION
DESIGN STORM 100

	STREET	DESIGN POINT	DIRECT RUNOFF: AREA DESIGN	AREA (AC)	RUNOFF COEFF	t_c (MIN)	C·A (AC)	I IN/HR	Q (CFS)	TOTAL RUNOFF: t_c (MIN)	Σ(C·A) (AC)	I (IN/HR)	Q (CFS)	STREET: SLOPE (%)	STREET FLOW (CFS)	PIPE: DESIGN FLOW (CFS)	SLOPE (%)	PIPE SIZE	TRAVEL TIME: LENGTH (FT)	VELOCITY (FPS)	t_t (MIN)	REMARKS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
1				HISTORIC																		
2	BOOKCLIFF AVE	1	H	1.66	0.62	14.3	1.03	3.33	3.4													
3																						
4				DEVELOPED																		
5																						
6	BOOKCLIFF AVE	2	A	0.84	0.85	5	0.74	4.95	3.7													
7	BOOKCLIFF AVE	3	B	0.82	0.85	5	0.72	4.95	3.6	5	1.46	4.95	7.2									
8																						
9																						
10																						
11																						

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JOB BOX CLIFF STATION AMT
SHEET NO. ____ OF ____
CALCULATED BY GA DATE 10/9/96
CHECKED BY ____ DATE ____
SCALE ____

DETENTION VOLUME CALCULATION

GIVEN:

$Q_{2\,MAX} = 1.2$ $C_{d_2} = 0.86$ $A = 1.66$ $T_{c_{H_2}} = 15.0$

$Q_{100\,MAX} = 3.4$ $C_{d_{100}} = 0.86$ $T_{c_{d_2}}, T_{c_{d_{100}}} = 5$ min $T_{c_{H100}} = 14.3$

$Q_r = (0.82) Q_{MAX}$

$Q_{r_2} = (0.82)(1.2) = 0.98$ cfs

$Q_{r_{100}} = (0.82)(3.4) = 2.79$ cfs

$$T_{d_2} = \left[\frac{(633.4)(0.86)(1.66)}{0.98 - \frac{(0.98)^2(5)}{(81.2)(0.86)(1.66)}}\right]^{0.5} - 15.6 = 15.74$$

$K_2 = \frac{15.0}{5.0} = 3.00$

$K_{100} = \frac{14.3}{5} = 2.86$

$$T_{d_{100}} = \left[\frac{(1832)(0.88)(1.66)}{2.79 - \frac{(2.79)^2(5)}{(213)(0.88)(1.66)}}\right]^{0.5} - 17.2 = 14.49$$

$$V_2 = 60\left[(2.8)(15.44) - (0.98)(15.44) - (0.98)(5) + \frac{(3.00)(0.98)(5)}{2} + \frac{(0.98)^2(5)}{(2)(2.8)}\right]$$

$V_2 = 60\,[43.23 - 15.13 - 4.9 + 7.35 + 0.88]$

$V_2 = 1,885.8$ CU. FT

$$V_{100} = 60\left[(7.2)(14.49) - (2.71)(14.49) - (2.79)(5) + \frac{(2.86)(2.79)(5)}{2} + \frac{(2.79)^2(5)}{(2)(7.2)}\right]$$

$60\,[104.33 - 40.427 - 13.95 + 19.95 + 2.7]$

$V_{100} = 4,356$ CU. FT

PROJECT NAME:		POND 1 VOLUME - BOOK CLIFF STATION				JOB NO.	95-022	
TITLE:		DETENTION POND 1				SHEET:	1 of 1	
BY:		PF				DATE:	OCT 11,1996	
MAJOR BASIN:		1						
TRIBUTARY AREA:			0.82					
PERCENT IMPERVIOUS:			86					
REQUIRED DETENTION VOLUME (cu. ft.):					ALLOWABLE RELEASE RATE (CFS):			
		V(2) =	943				Q(2) =	0.5
		V(100) =	2178				Q(100) =	1.4

VOLUME OF A RESERVOIR

Volume Equation: Vol (V) = 1/3h (A1 + A2 + (A1*A2)^1/2)

V = VOLUME IN CUBIC FEET (FT^3)
h = CONTOUR INTERVAL IN FEET (FT)
A1 , A2 = AREA ENCLOSED BY SUCCESSIVE CONTOURS IN SQUARE FEET (FT^2)

(1) CONTOUR ELEV. (FT)	(2) AREA (sq. ft.)	(3) A1 + A2 (sq. ft.)	(4) (A1 *A2)^1/2 (sq. ft.)	(5) (A1+A2) +(A1*A2)^1/2 (sq. ft.)	(6) h (FT)	(7) h/3 (FT)	(8) VOL. (cu. ft.)	(9) ACCUMULATED VOL. (cu. ft.)
99.51	0							0
		2000	0	2000	0.49	0.16	320	
100	2000							320
		8600	3633.18	12233.18	0.5	0.17	2079.64	
100.5	6600							2399.64
		17200	8364.21	25564.21	0.5	0.17	4345.92	
101	10600							6745.56

2 YEAR WATER SURFACE ELEV. =	100.15	
100 YEAR WATER SURFACE ELEV. =	100.45	
REQUIRED BERM ELEV. =	101.45	FILE NAME: GJP1

GIVEN: 2yr. release rate = 0.5 cfs (½ total site)

2yr. water surface elevation = 100.15

INVERT @ channel @ outlet = 99.51

$h = 100.15 - 99.51 = 0.64'$

$C_d = 0.65$

Solve for orifice opening

$Q = C_d A (2gh)^{1/2}$

$0.5 = (0.65) A [2(32.2)(\quad)]^{1/2}$

$A = 0.1198 \text{ FT}^2$

diameter $= (4A/\pi)^{1/2}$

$= ([(4)(0.1198)]/\pi)^{1/2}$

$= 0.3906' = 4.69''$ opening

∴ USE ORIFICE PLATE w/ 4.69" dia. opening for 2 yr. release control

Given: 100 yr release rate = 1.4 cfs − 0.5 cfs (2 yr) = 0.9 cfs

100 yr water surface elevation = 100.45

$h = 100.45 - 100.15 = 0.30$

$C = 3.4'$

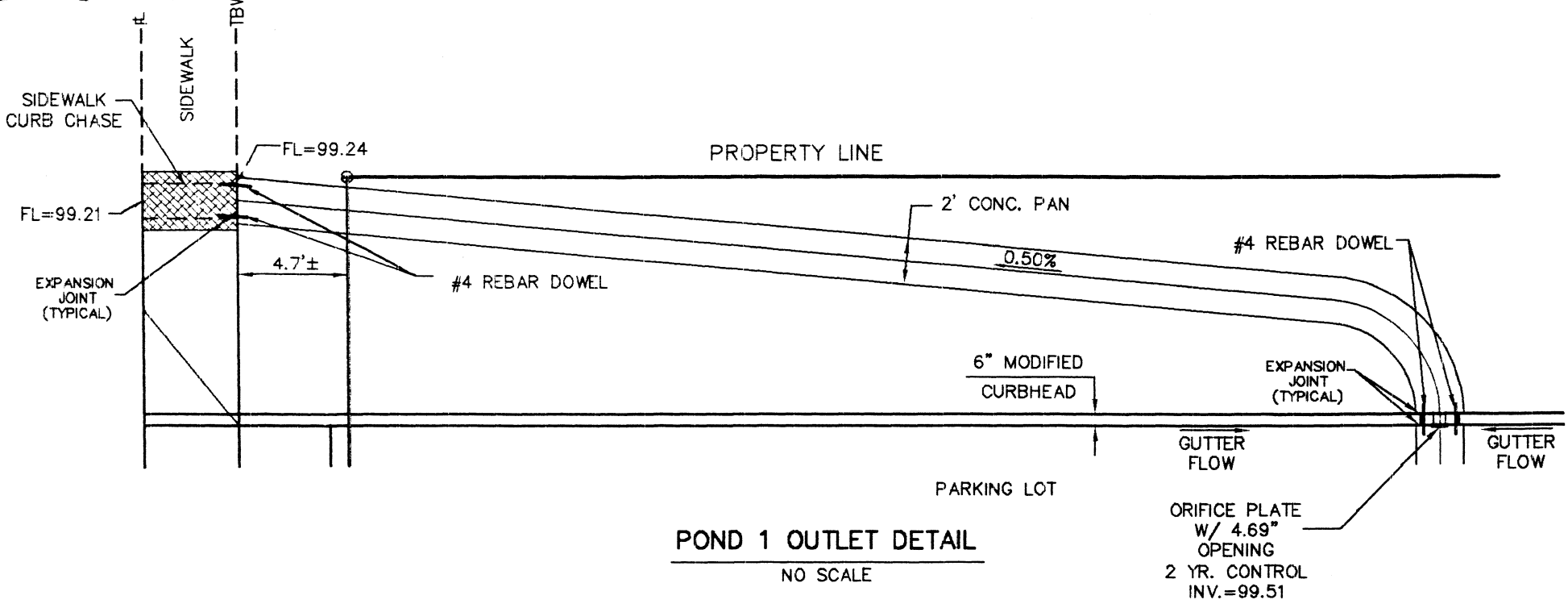
Solve for weir length

$Q = CLH^{3/2}$ $\quad L = Q/CH^{3/2}$

$= 0.9/(3.4)(.30)^{3/2}$

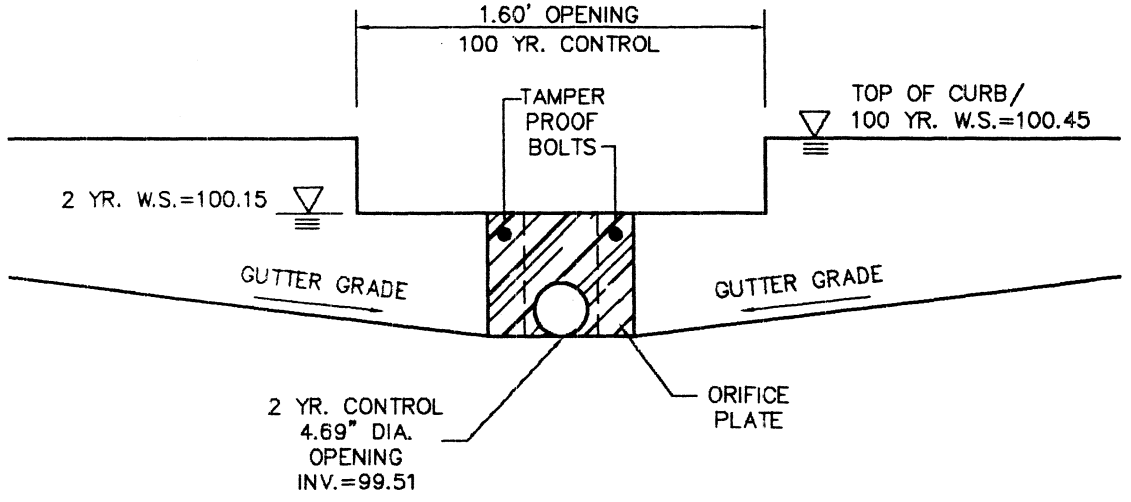
$= 1.61'$

– SEE OUTLET DETAIL SHEET W/ THIS REPORT



POND 1 OUTLET DETAIL

NO SCALE



MODIFIED CURBHEAD FOR POND 1 OUTLET

NO SCALE

PROJECT NAME:	POND 2 VOLUME - BOOK CLIFF STATION	JOB NO.	95-022
TITLE:	DETENTION POND 2	SHEET:	1 of 1
BY:	PF	DATE:	OCT 11,1996
MAJOR BASIN:	1		
TRIBUTARY AREA:	0.82		
PERCENT IMPERVIOUS:	86		

REQUIRED DETENTION VOLUME (cu. ft.):		ALLOWABLE RELEASE RATE (CFS):	
V(2) =	943	Q(2) =	0.5
V(100) =	2178	Q(100) =	1.4

VOLUME OF A RESERVOIR

Volume Equation: Vol (V) = 1/3h (A1 + A2 + (A1*A2)^1/2)

V = VOLUME IN CUBIC FEET (FT^3)
h = CONTOUR INTERVAL IN FEET (FT)
A1 , A2 = AREA ENCLOSED BY SUCCESSIVE CONTOURS IN SQUARE FEET (FT^2)

(1) CONTOUR ELEV. (FT)	(2) AREA (sq. ft.)	(3) A1 + A2 (sq. ft.)	(4) (A1 *A2)^1/2 (sq. ft.)	(5) (A1+A2) +(A1*A2)^1/2 (sq. ft.)	(6) h (FT)	(7) h/3 (FT)	(8) VOL. (cu. ft.)	(9) ACCUMULATED VOL. (cu. ft.)
99.71	0							0
		140	0	140	0.29	0.1	14	
100	140							14
		940	334.66	1274.66	0.5	0.17	216.69	
100.5	800							230.69
		5720	1983.94	7703.94	0.5	0.17	1309.67	
101	4920							1540.36
		14480	6858.22	21338.22	0.37	0.12	2560.59	
101.37	9560							4100.95

2 YEAR WATER SURFACE ELEV. =	100.83	
100 YEAR WATER SURFACE ELEV. =	101.09	
REQUIRED BERM ELEV. =	102.09	FILE NAME: GJP2

GIVEN: 2 yr. release rate = 0.5 cfs ($\frac{1}{2}$ total site)

2 yr. water surface elevation = 100.83

INVert channel @ outlet = 99.71

$h = 100.83 - 99.71 = 1.12'$

$C_d = 0.65$

$Q = C_d A (2gh)^{1/2}$

$0.5 = (0.65) A [(2)(32.2)(1.12)]^{1/2}$

$A = 0.0906 FT^2$

diameter $= (4A/\pi)^{1/2}$

$= ((4)(0.0906)/\pi)^{1/2}$

$= 0.3396$ FT or 4" dia. opening

∴ use orifice plate w/ 4" dia. opening for 2 yr. release control

Given: 100 yr. release rate = 1.4 cfs − 0.5 cfs (2 yr) = 0.9 cfs

100 yr. water surface elevation = 101.09

$h = 101.09 - 100.83 = 0.26'$

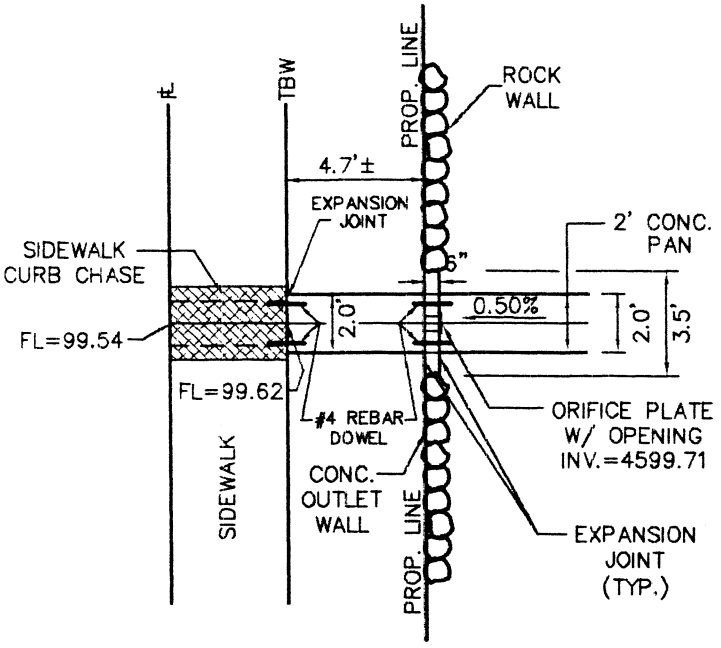
$C = 3.4$

$L = Q/CH^{3/2}$

$= 0.9/(3.4)(.26)^{3/2}$

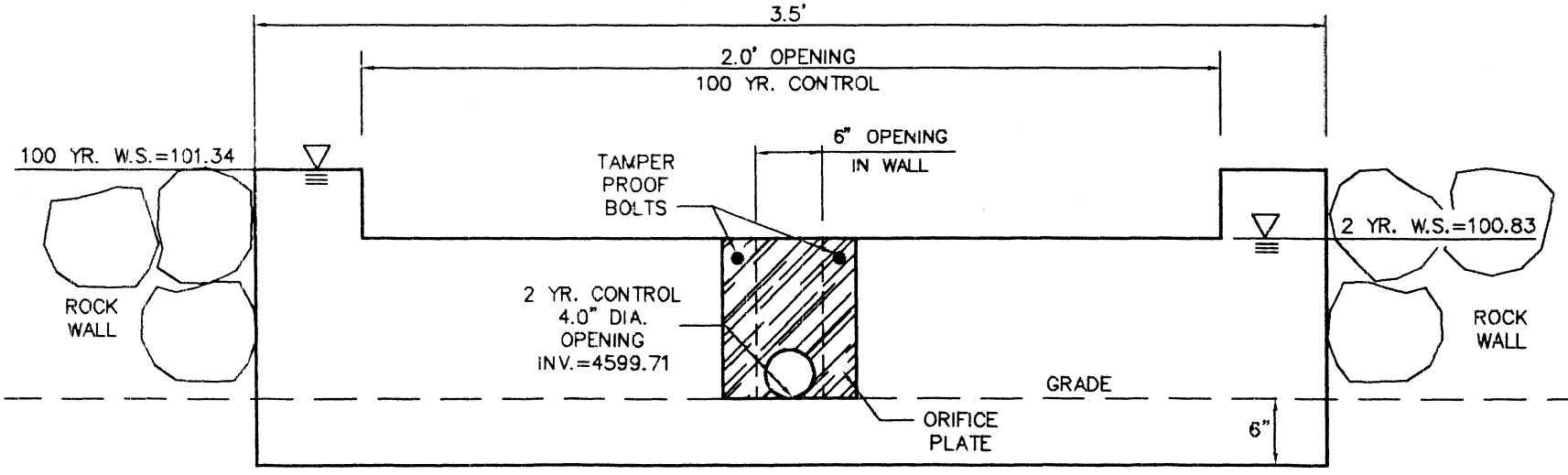
$= 2.0'$

– SEE outlet detail sheet w/ this report



POND 2 OUTLET DETAIL

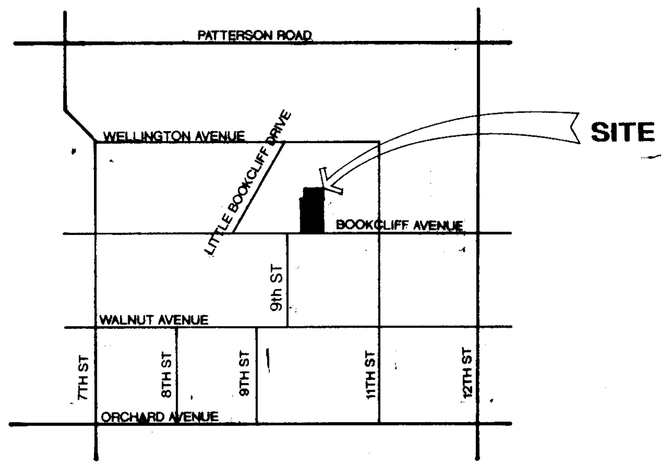
NO SCALE



MODIFIED CURBHEAD FOR POND 2 OUTLET

NO SCALE

Pg 17



VICINITY MAP

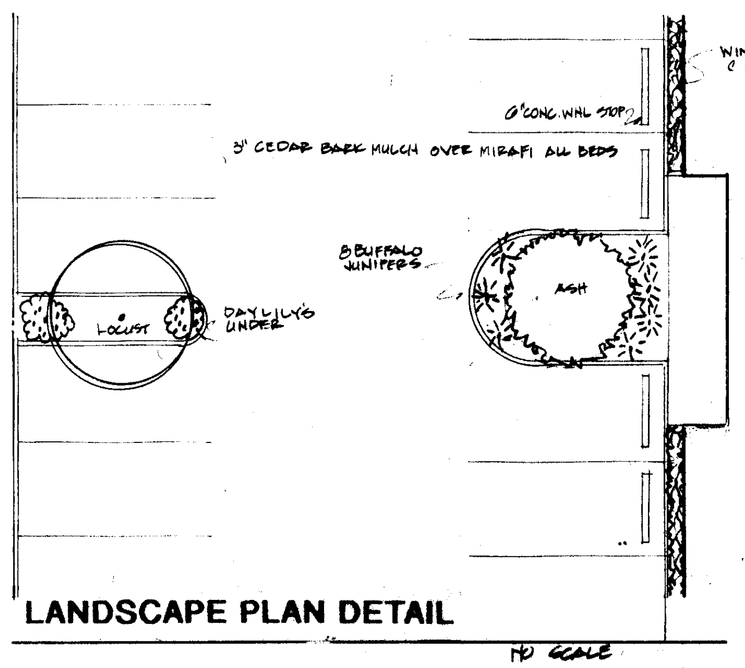
SITE DATA

BUILDING COVERAGE	18,198	S.F.	26%
PARKING 137 SP	40,804	S.F.	58 %
LANDSCAPING	10943	S.F.	16 %
TOTAL SITE AREA	69,945	S.F.	100 %
GROSS BUILDING AREA	72,792	S.F.	

——— INDICATES DIRECTION OF DRAINAGE

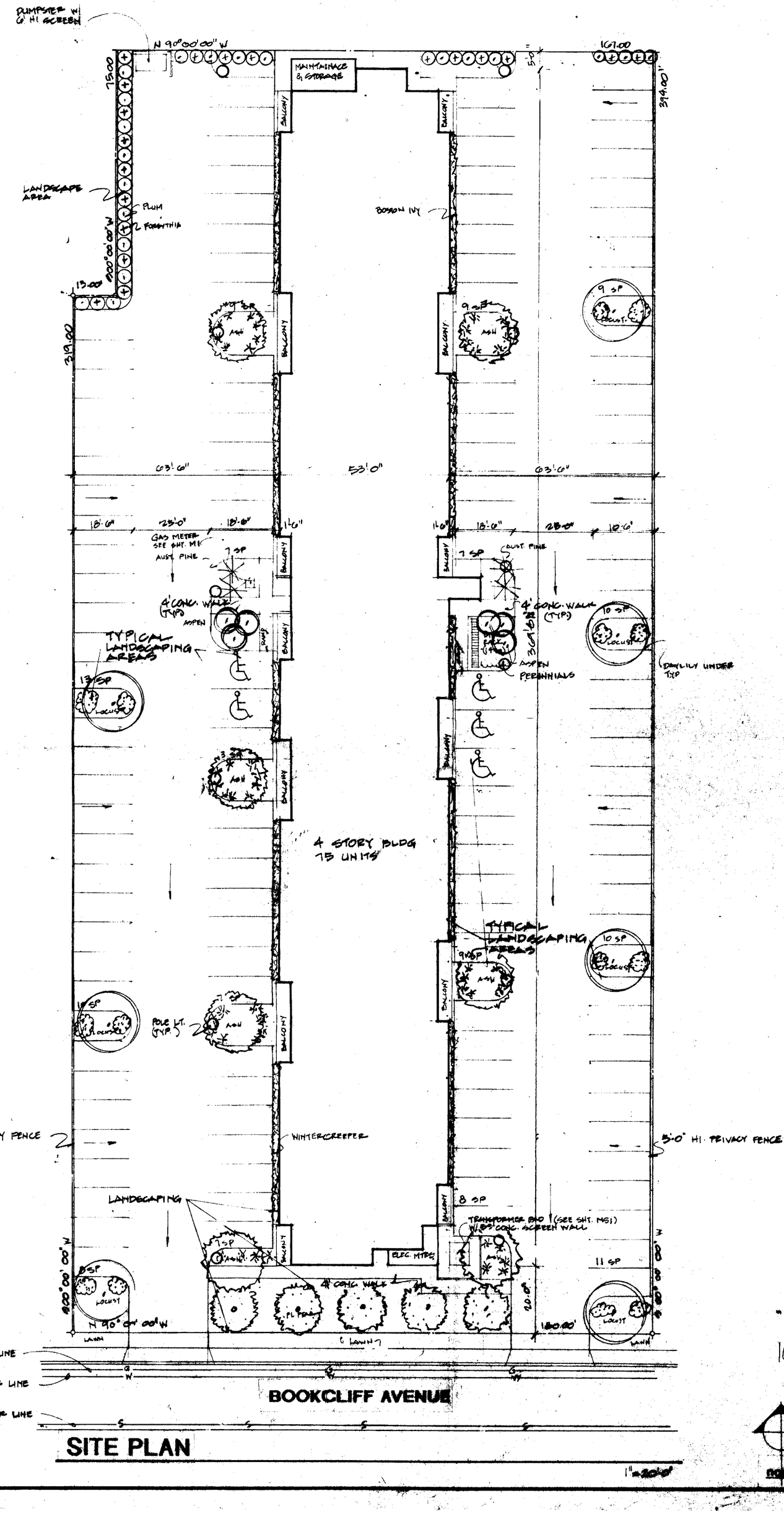
LANDSCAPE SCHEDULE

SYMBOL	PLANT	SIZE	QTY.
	IMPERIAL HONEY LOCUST	2" CAL.	7
	MARSHALL'S GREEN ASH	2" CAL.	7
	AUTUMN BLAZE FLOWERING PEAR	2" CAL.	5
	ASPEN CLUMPS MULTI-STEM	8'-10'	6
	AUSTRIAN PINE	6'-7'	4
	CISTENA PLUM	5 gal	20
	SPRING GLORY FORSYTHIA	5 gal	19
	BOSTON IVY	1 gal	70
	WINTERCREEPER EUONYMUS	1 gal	70
	BUFFALO JUNIPER	5 gal	49
	DAYLILY'S	1 gal	80
	PERENNIAL FLOWERS TBD	1 gal	30



LANDSCAPE PLAN DETAIL

NO SCALE



SITE PLAN

1" = 20'-0"

10/2/96

north

robert a. politano architect

Apartments

Bookcliff