Table of Contents

File SPR-1996-190 Name: Barnes and Noble Bookstore / Café - 2451 F Road

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**
		Reduced copy of final plans or drawings
		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		General Legend and Construction Notes
X	X	Cost Estimate Sheet – 8/21/96, 9/10/96, 9/27/96	X		Standard concrete Details – Exhibit E, I,
X	X	Final Drainage Report – 8/14/96	X		Standard Storm Drain Details
X		Commitment for Title Ins. – Chicago Title Ins. Company	X		Standard Water Line Details
X	X	Development Improvements Agrmt/Initial Acceptance – no release – not recorded 10/23/96 – delivered to City Clerk for retention /scanning - **	X		Accessible Ramp and Parking Stall Details
X	X	Certificate of Occupancy – 5/22/97	X		Miscellaneous Site Specific Details Map
X	X	Planning Clearance - ** - issued 10/23/96	X	X	Landscape Plan – not signed, but will be scanned
X	X	Elevation Maps	X	X	Planting Plan – not signed, but will be scanned
		Monument Sign Diagram	X	X	Two Easements – to be delivered to the City Clerk for retention/scanning – do not have the original-**
X	X	Site Plan	X		Reciprocal Easement Agreement – not recorded/not signed
X	X	Site Improvement Plans – to be scanned	X		Sanitary Sewer Plan and Profile

SUBMITTAL CHECKLIST

SITE PLAN REVIEW

Location: F ¾ 24 ½ Rd Project Name: SPR - Retail Store

Date Received 8-21-96

Receipt # 4475

File # SPR-96-190

ITEMS		DISTRIBUTION																													
DESCRIPTION	SSID REFERENCE	● City Community Development	● City Dev. Eng.	● City Utility Eng.	● City ~~Property Agent~~ Planner	O City Parks/Recreation	● City Fire Department	● City ~~Attorney~~	O City Downtown Dev. Auth.	O County Planning	● County Bldg. Dept.	● Irrigation District G.V.I.C.	● Drainage District G.J.	● Water District Ute	O Sewer District	O U.S. West	O 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						TOTAL REQ'D.
● Application Fee $215	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" Reduction of Assessor's Map	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[illegible]OW	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						
● 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												
● 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													
● Roadway Plan and Profile if not on grading & drainage sheets	IX-28	1	2										1																		
● 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-10,11	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.

PRE-APPLICATION CONFERENCE

Date: 5/28/96
Conference Attendance: Kathy L., Jim Sikema, Dick Scariano, Jim Langford
Proposal: SPR - Retail Bldg 2 story
Location: SE corner F 1/2 Rd

Tax Parcel Number: 2945-091-00-118
Review Fee: _____
(Fee is due at the time of submittal. Make check payable to the City of Grand Junction.)

Additional ROW required? possibly
Adjacent road improvements required? possibly
Area identified as a need in the Master Plan of Parks and Recreation? _____
Parks and Open Space fees required? _____ Estimated Amount: _____
Recording fees required? _____ Estimated Amount: _____
Half street improvement fees/TCP required? TCP - $700/1,000 s.f. Estimated Amount: _____
Revocable Permit required? for landscaping in the ROW
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 # yes
Located in other geohazard area? —

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

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

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

O Other _____
Related Files: _____

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

PRE-APPLICATION CONFERENCE

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

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

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

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

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

Barnes & Noble Retail Development

Site Plan Review Submittal

General Project Report

A. Project Description

The property is located at the corner of 24-1/2 Road and Patterson Road. The lot is 1.62 acres to be developed as a retail outlet for the sale of books, software, and other informational media. The store also includes a coffee shop. The remainder of the site will be used for the required parking, storm water management, and landscaping.

As per agreement with the adjacent land owner to the east, the entry is to be shared, and the access to the subject property is to be by easement. This is to mutually benefit both properties by reducing curb cuts on Patterson Road, allow the subject property to expand parking, and allow the adjacent property to avoid the expense of crossing the irrigation ditch to the north.

B. Public Benefit

The proposed development will provide infill in an area surrounded by commercial uses. The architecture and surrounding landscape will provide an attractive location for a quality retail outlet on a highly visible site. The proposed development will pay its commensurate share of fees and taxes to support the existing infrastructure and operating expenses for the services required.

C. Project Compliance, Compatibility, and Impact

The development meets setbacks, access, parking, and landscape requirements of the existing C-2 zoning. The retail sales area of 13,690 s.f. requires 69 parking spaces. The 38 seats in the restaurant requires 13 spaces, totaling a gross parking requirement of 82 spaces. The proposal shows 91 spaces. The landscape requirements with the proposed tree counts and square footage's of landscaping are shown on the landscape plan.

The surrounding land uses are commercial, with the property to the east remaining undeveloped at this time

Infill Development: The proposed project meets the intent of the promoting the development of infill development, allowing for the efficient use of existing utilities and roadways.

Northwest Area: The Northwest Area Plan promotes the development of the portion of the City due to it's proximity to existing growth areas, accessibility, and existing commercial uses.

Patterson Road Guidelines: "commercial development is appropriate on the south side of Patterson Road from Highway 6&50 to 25-1/2 Road"; "Access points should be designed to serve more than one lot" (entry is designed to be shared with the adjacent lot to the east).

D. Development Schedule and Phasing

construction is scheduled to begin immediately following site plan approval and issuance of a building permit.

OMEGA
REALTY & ASSOCIATES, INC.
COMMERCIAL • RESIDENTIAL • INVESTMENTS

August 12, 1996

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

Re: 24 1/2 and F Road

Dear Sir:

This letter serves as The Sterling Co.'s authorization to allow SB Advisors, Inc., or their respective contractors, Ciavonne & Associates, or Thompson-Langford, to pursue site plan approvals on the southeast corner of 24 1/2 and F Roads. Attached is a legal description for the property.

If you have any questions regarding this authorization or the extent of this approval, please contact me at your earliest convenience.

Sincerely,

Richard Scariano
The Sterling Co.

RS/fah

1048 Independent Ave., Suite A-201, Grand Junction, CO 81505 • (970) 245-7571 • FAX: (970) 245-7555

Final Drainage Report

Barnes and Noble Book Store

August 14, 1996

Prepared for:

Tim Sittema
Sittema - Bullock
5445 DTC Parkway, Penthouse Four
Englewood, CO 80111

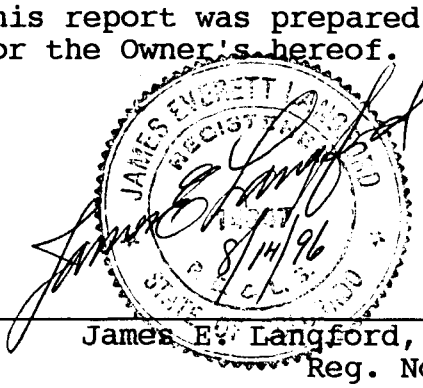
Prepared by:

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

Job No. 0293-001

Engineer's Certification

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



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

Introduction

I. GENERAL LOCATION AND DESCRIPTION:

A. Site and Major Basin Location:

The site of the future Barnes and Noble Book Store is located in Northwest 1/4 of the Northeast 1/4 of Section 9, Township 1 South, Range 1 West of the Ute Meridian. In more local terms, it is located immediately north of the Carmike theater at the intersection of 24 1/2 Road and Patterson Road.

B. Site and Major Basin Description:

The site, located at the southeast corner of the intersection of 24 1/2 Road and Patterson Road, is a parcel approximately 400 feet long by 200 feet wide. The property is hydraulically separated from Patterson Road by the Independent Ranchmen's Ditch; the portion of the ditch to the west running beneath Patterson Road and into the Mall area. The site is presently unoccupied and devoid of vegetation.

II. EXISTING DRAINAGE CONDITIONS:

A. Major Basin:

The site as it presently exists is nearly flat, sloping at slightly less than 0.5% to the west. Due to this lack of gradient, ponding does occur in the center of the site. Stormwater impacting the site either drains out the west end of the parcel onto 24 1/2 Road, or leaches into the ground.

B. Site:

Given the hydraulic isolation of the property, the major drainage basin and the site are essentially the same.

III PROPOSED DRAINAGE CONDITIONS:

A. Changes in Drainage Patterns:

Site stormwater drainage either ponds on-site or overflows into the curb and gutter and runs south along 24 1/4 Road to inlets near the intersection of 24 1/4 Road with State Highway 6 & 50. We are proposing to collect the site stormwater in a detention facility near the northwest corner of the site and regulate the flow to historic levels

directly into the buried portion of the Independent Ranchmen's Ditch.

B. Maintenance Issues:

The on-site collection and detention facilities will be the responsibility of the lot owner.

IV DESIGN CRITERIA AND APPROACH:

A. GENERAL CONSIDERATIONS:

Natural conditions such as the tight adobe soils, high ground water and the extremely flat slopes have historically made this site difficult to drain.

As mentioned earlier in this report, the site is very flat and does not drain well. When a storm does occur that is large enough to cause runoff, the site drains down 24 1/2 Road. With development of this site, drainage down 24 1/2 Road is no longer possible because of the inability of the storm sewer near Highway 6 & 50 to handle the increased flow.

The site is within the 100-year floodplain of the Independent Ranchmen's Ditch. We will be elevating the building to place it at least 1-foot above the identified maximum water surface elevation.

B. Hydrology:

Pre-development Runoff coefficients used in the Rational equation were based on the hydrologic soil group index for the soil type found within the project. For post-development conditions we used the range of coefficients for the various proposed surface covers found in Appendix "B" of the above referenced manual.

According to the Soil Conservation Service soil survey for the Grand Junction Area, the dominant soil type is the Billings soil group having a hydrologic soil group index of "C". The soils on the site are hard packed which would suggest that the site has been used for some commercial or light industrial purpose. This would have suggested classifying the area as a traffic area. To do so would have made the historic runoff too high, closing the gap between the historic and the developed condition thus limiting the required detention. It was felt that using runoff coefficients based on HSG "A" versus HSG "C" would better represent the runoff potential and yield a more realistic detention volume.

Times of Concentration were calculated using the procedures outlined in Appendix "E" of the Storm Water Management Manual.

Given the small size of the project, the site was considered as one basin and analyzed using the Rational Method as described in Section VI. Hydrology, City of Grand Junction Storm Water Management Manual. Stormwater runoff for the 2-year and 100-year events were quantified and routed through a detention facility located in the northwest corner of the site.

C. Hydraulics:

The flow capacity of concrete pans, curb and gutter or underground conduits was calculated using Manning's Equation and the requisite coefficients all found in Appendices "G" & "H".

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.

The two stage outlet control structure was sized using the procedures outlined in Appendix "K".

IV Results and Conclusions

Runoff Results:

2-year historic runoff rate = 0.82 CFS

2-year developed runoff rate = 2.56 CFS

100-year historic runoff rate = 3.10 CFS

100-year developed runoff rate = 6.65 CFS

Detention Facility:

Storage volume for 2-year event = 2242.79 cu-ft.

Storage volume for 100-year event = 3513.87 cu-ft.

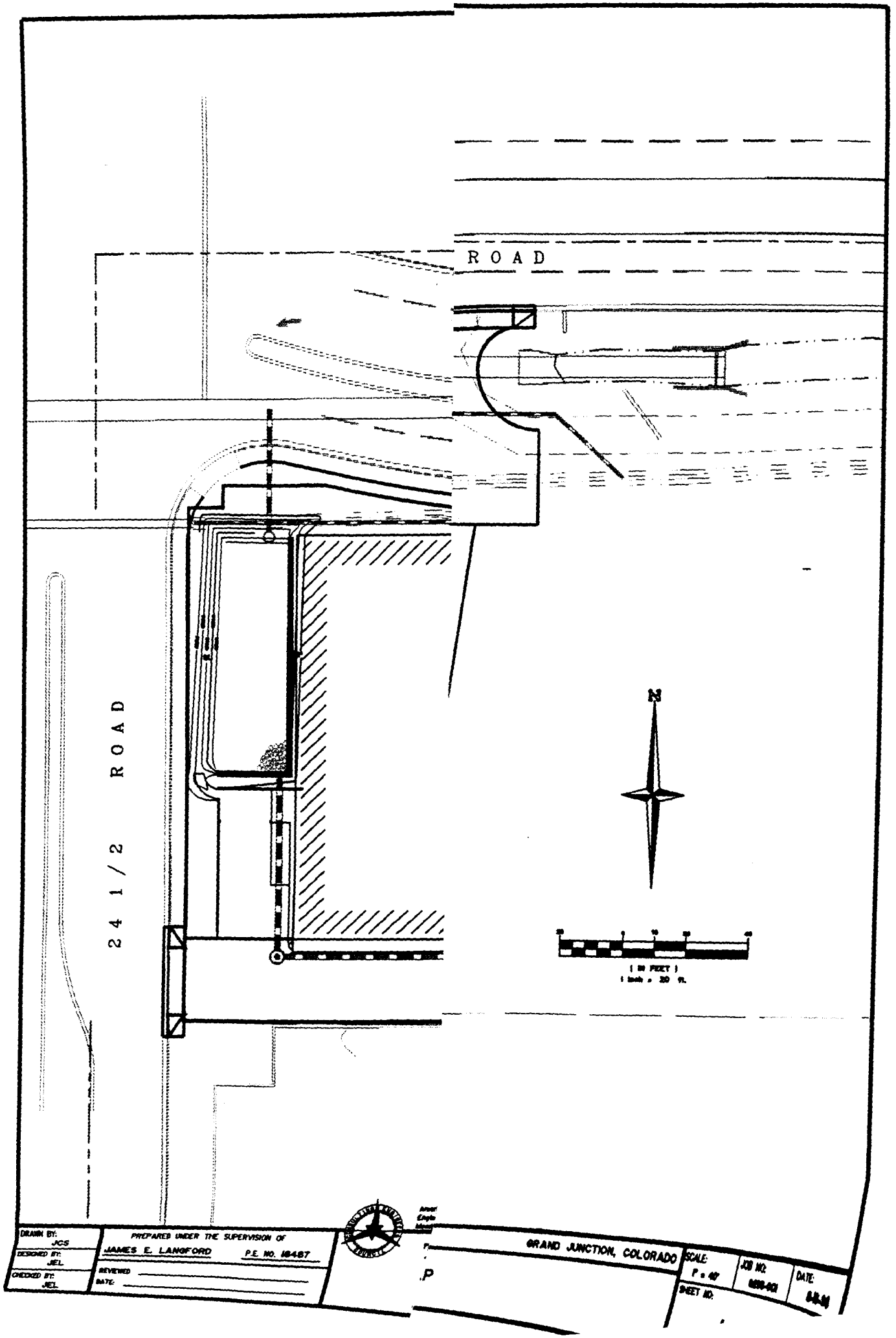
The outlet works will be constructed using a modified CDOT Type "C" inlet with a close mesh grate. An orifice will be constructed in the front face of the box at an invert elevation of 4553.00 which also coincides with the bottom of the pond. A weir will be constructed at the top, just below the close mesh grate. The orifice, having a diameter of 0.50 feet, has been sized to pass the 2-year historic flow when the water surface of the pond is up to the 2-year storage level of 4554.33. The second stage outlet ,or weir, which has been set at the 2-year water surface elevation, and given a width of 1.08 feet in length, will in combination with the orifice, pass the 100-year event when the water surface elevation is up to the 100-year storage level of 4554.9.

The top of the box is to be set at the 100-year water surface elevation and is to be covered with a standard CDOT close mesh steel grating. The steel grating will serve as an emergency overflow in the event of a storm in excess of the maximum design event. The outfall from the outlet works is to be 18-inch PVC pipe.

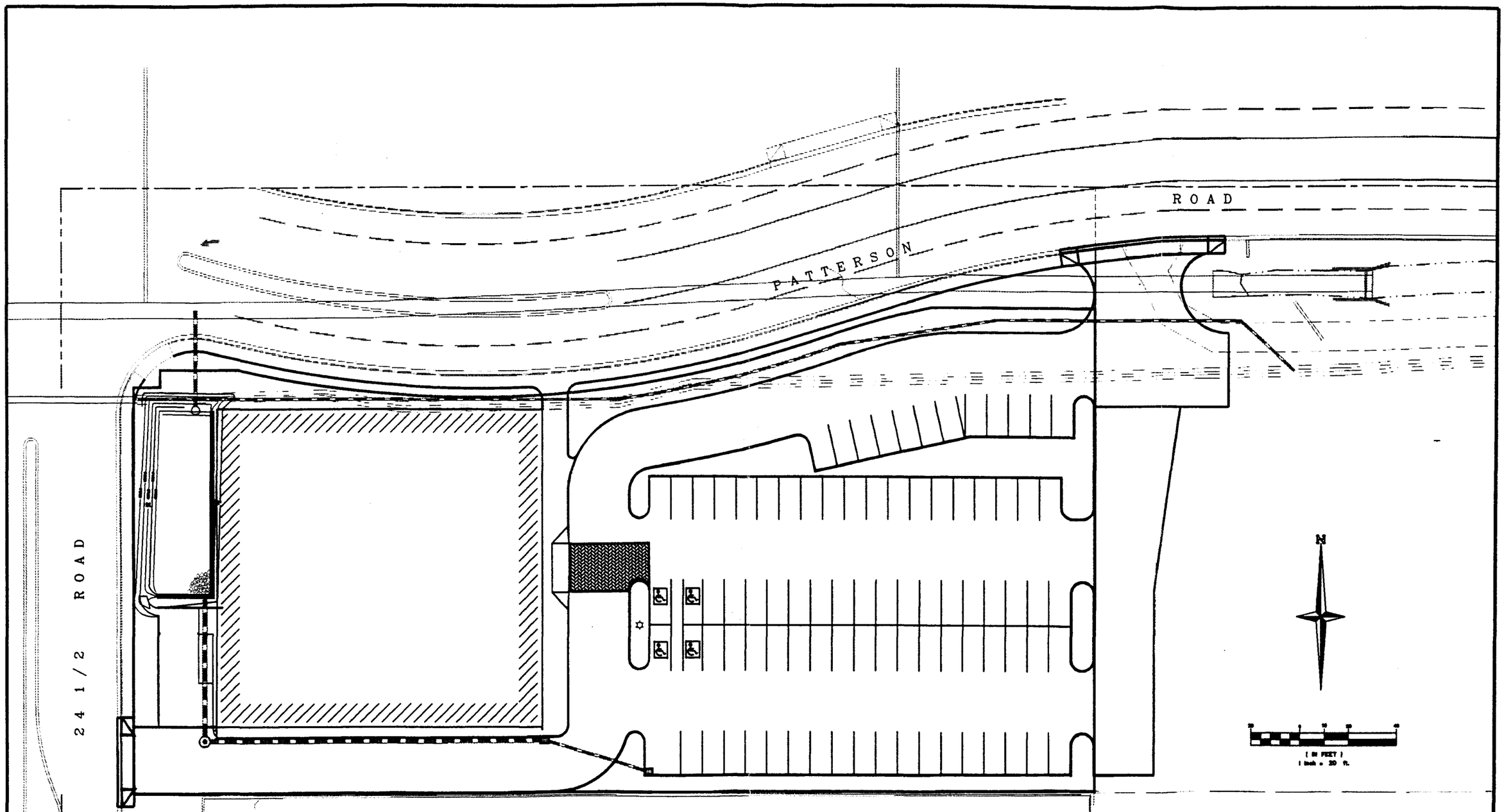
References

"STORMWATER MANAGEMENT MANUAL (SWMM)", City of Grand Junction, June 1994

"MESA COUNTY STORM DRAINAGE CRITERIA MANUAL", Mesa County, Colorado, Final Draft March 1992.



DRAWN BY: JCS	PREPARED UNDER THE SUPERVISION OF	GRAND JUNCTION, COLORADO	SCALE:	JOB NO.	DATE:
DESIGNED BY: JEL	JAMES E. LANGFORD P.E. NO. 18487				
CHECKED BY: JEL	REVIEWED		SHEET NO.		
	DATE:				



ASPHALT AREA = 36,734.62 SF
AREA LANDSCAPE = 12,171.18 SF
AREA BUILDING = 17550.0 SF
CONCRETE AREA = 4042.31 SF
TOTAL AREA = 70,498.11

American Consulting Engineers Council Member

DRAWN BY: JCS	PREPARED UNDER THE SUPERVISION OF	THOMPSON–LANGFORD CORP.	BARNES AND NOBLE RETAIL STORE — GRAND JUNCTION, COLORADO
DESIGNED BY: JEL	JAMES E. LANGFORD P.E. NO. 18487	529 25 1/2 RD., SUITE B210	DRAINAGE MAP
CHECKED BY: JEL	REVIEWED:	GRAND JUNCTION, COLORADO	SCALE: 1" = 40'
	DATE:	PH. (303) 243-8067	JOB NO: 9858-003
			DATE: 8-18-98
			SHEET NO: 1 of 1

REVISION	DATE	DESCRIPTION	BY	CHD

8/16/96 7:36

BARNES & NOBLE, 0293-001
TWO STAGE OUTFALL CALCULATION

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.	4554.33 Ft.		
*	Orifice Invert	4553.00 Ft.		
**	Orifice Dia. (d)	**0.50** Ft.		****Vary orifice diameter until**
*	Discharge (Qr)	0.82 CFS		**areas match**
*	"Co" Coef.	0.60		
X	Area	= (3.1416)d^2/4	=	**0.20 SF**
X		= Qr/0.82C(2gh)^0.5	=	**0.20 SF**

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

*	Water Surf. El.	4554.90
X	Wier Invert El.	4554.33

The 100-year storage elevation is dictated by pond configuration. 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 = 2.56 CFS

Q (orifice) = 0.82CoA(2gh)^0.5 = 1.01 CFS

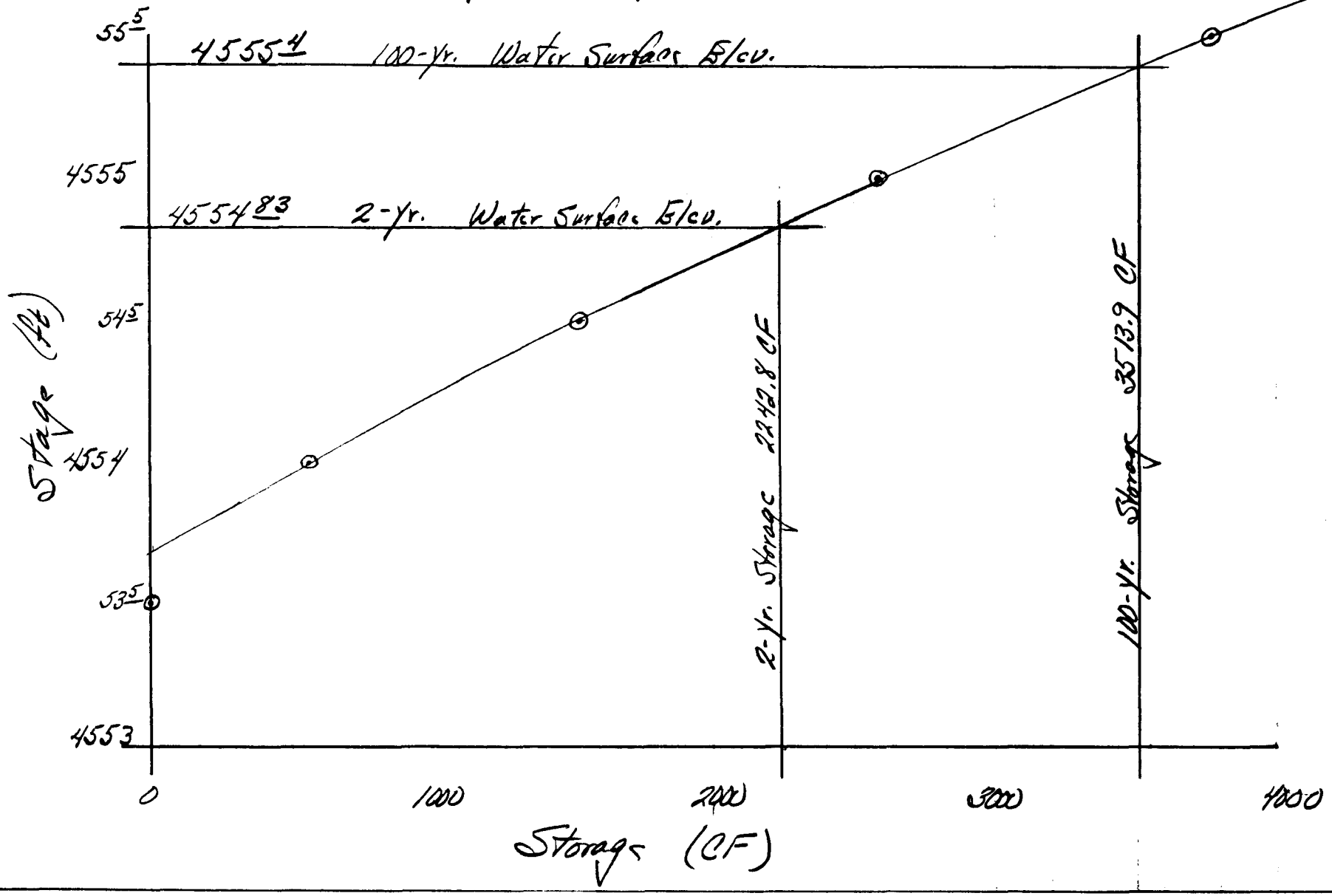
Wier Flow Equasion

Q= CwLH^1.5

X	Wier discharge =	1.55 CFS	
*	"Cw" Coef.	3.33	
X	Flow Depth (H) =	0.57 Ft.	
**	Wier Length (L)	**1.08** Ft.	****Vary unitl "Q" = Q100**

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

Stage Storage Relationship



Banks & Nolo
D1793-001
Plan 1.

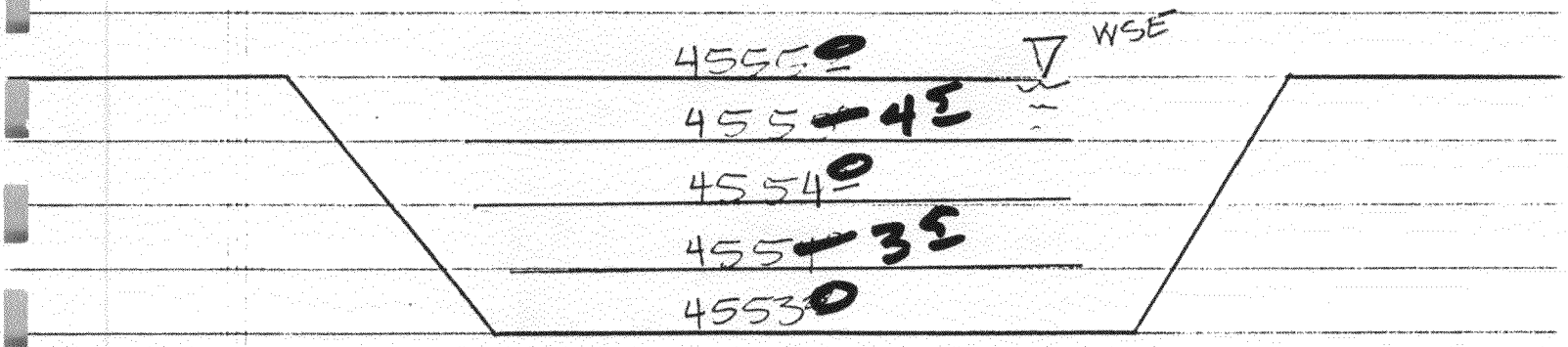
AUGUST 7, 96

BARNES & NOBLE RETAIL STORE (JOB # 0293-001)

PETENTION POND

STAGED STORAGE VOLUME CALCULATION

TOTAL POND VOL = 3,780 cf (7% over REQD 100YR)



* CALCULATIONS PER DCD Earthwork Manual

ELEV	AREA SF	VOL CF	Cumulative Volume
	41½'		
4555.5	2479 SF		3,730 CF
		1182	
4555.0	2240		2,592 CF
		1053	
4554.5	2049		1,539 CF
		972	
4554.0	1870		567 CF
		567	
4553.5	0		0

DETENTION VOLUME

For: Barnes and Noble

USING

METHOD OUTLINED ON PAGE N-4 SWMM

Td = Time of critical storm duration, minutes	
C2 = Runoff coefficient (2-Year Event)	0.81
C100 = Runoff coefficient (100-Year Event)	0.83
A = Area in acres (developed condition)	1.62
Qr2 = Detention pond average release rate, cfs (Note that this will not likely be the historic rate Qh, nor even Qmax)	0.82
Qr100 = Detention pond average release rate, cfs (Note that this will not likely be the historic rate Qh, nor even Qmax)	3.10
Tch2 = Time of concentration (historic), minutes (2-year event)	28.20
Tch100 = Time of concentration (historic), minutes (100-year event)	18.50
Tcd2 = Time of concentration (developed), minutes (2-year event)	5.00
Tcd100 = Time of concentration (developed), minutes (100-year event)	5.00
Id2 = Intensity at Td, inches per hour (2-year event)	1.95
Id100 = Intensity at Td, inches per hour (100-year event)	4.95
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

= 16.85 Min.

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

= 11.77 Min.

B&N Detention Volume

```
Qd2     =  Cd*A*Id2
        =       2.56 cfs

Qd100   =  Cd*A*Id100
        =       6.65 cfs

K2      =  Tch2/Tcd2
        =       5.64

K100    =  Tch100/Tcd100
        =       3.70

V2      =  60[Qd2*Td2-Qr2*Td2-Qr2*Tcd2+K2*Qr2*Tcd2/2+Qr2^2*Tcd2/(2Qd2)]
        =    2,242.79 cu-ft.

V100    =  60[Qd100*Td100-Qr100*Td100-Qr100*Tcd100+K100*Qr100*Tcd100/2+Qr100^2*Tcd100/(
        =    3,513.87 cu-ft.
```

RUNOFF VOLUME
For: Barnes and Noble
USING
RATIONAL METHOD Q=CxCfxIxA

BASIN	Q Volume cfs	C Composite Coefficient n/a	Cf Antecedent Precip. Fac. n/a	I* Rainfall Intensity in/hr	A Basin Area acres
Historic (2-Yr)	0.82	0.55	1	0.92	1.6184
Historic (100-Yr)	3.10	0.65	1	2.95	1.6184
Developed (2-Yr)	2.56	0.81	1	1.95	1.6184
Developed (100-Yr)	6.65	0.83	1	4.95	1.6184

*Rainfall intensity was picked from Table A-1, the Intensity/Duration curves for the City of Grand Junction, based on Time of Concentration

TABLE - 2

TIME OF CONCENTRATION and RAINFALL INTENSITIES

For: Barnes and Noble

BASIN	Descrip. of Flow	L Length ft.	S Slope %	N* Mannings coef.	V* Vel. fps	Tt2 Travel Time min.	Tt100 Travel Time min.	Tc2 Time of Concentration min.	Tc100 Time of Concentration min.	2-Year i Intensity Grd. Jctn. Curves	100-Year i Intensity Grd. Jctn. Curves
"Full Site"											
Historic	overland*	300	0.50%	0.030				28.2	18.5	0.92	2.95
	Nat. Ch.***	170	0.50%	n/a	0.70	4.05	4.05				
	C&G**	0	0.00%	0.000	0.00	0.00	0.00				
"Full Site"											
Developed	Landscape*	0	1.00%	0.400				4.0	4.0	1.95	4.95
	Asph. Swale***	275	1.00%	n/a	1.75	2.62	2.62				
	Conc. Swale**	170	0.50%	0.000	2.50	1.13	1.13				
	Pipe Flow	80	0.50%	0.000	5.00	0.27	0.27				

** Used 5 minutes as a minimum

* 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: Barnes and Noble
USING
GRAND JUNCTION RECOMMENDED RUNOFF COEFICIENTS

Description Surface Area	Hydro. Soils Group	Slope <2% Runoff Coeff.'s	Sel. Coeff.		BASIN Historic Unit Area	Wt'd Value	BASIN Developed Unit Area	Wt'd Value
Pavement and Roofs	B*	0.93	0.93	**2-Yr.**			1.34	1.25
	B*	0.95	0.95	**100-Yr.**			1.34	1.27
Green landscaping	B*	0.14 to 0.22	0.22	**2-Yr.**			0.28	0.06
lawns and parks	B*	0.20 to 0.28	0.28	**100-Yr.**			0.28	0.08
**Traffic Area	A**	0.55 to 0.65	0.55	**2-Yr.**	1.62	0.89		
Soil and Gravel	A**	0.65 to 0.70	0.65	**100-Yr.**	1.62	1.05		
Total Basin Area:					1.62		1.62	
COMPOSITE "C" VALUE (2-year)						0.55		0.81
COMPOSITE "C" VALUE (100-year)						0.65		0.83

* The natural soils are in HSG "C", but because we are filling the site with pit run material to get it above the 100-year floodplain, we have used HSG "B" .

** The surface soils at the site are hard packed silts and clays devoid of any vegetation. The area's runoff potential is somewhere between bare ground and a traffic area. It was felt that the lowest classification of traffic area (HSG "A") was most appropriate.

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"

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					

REPRODUCED FROM TABLE 2, LECTURE 2, DAY 2, ACOE 1990

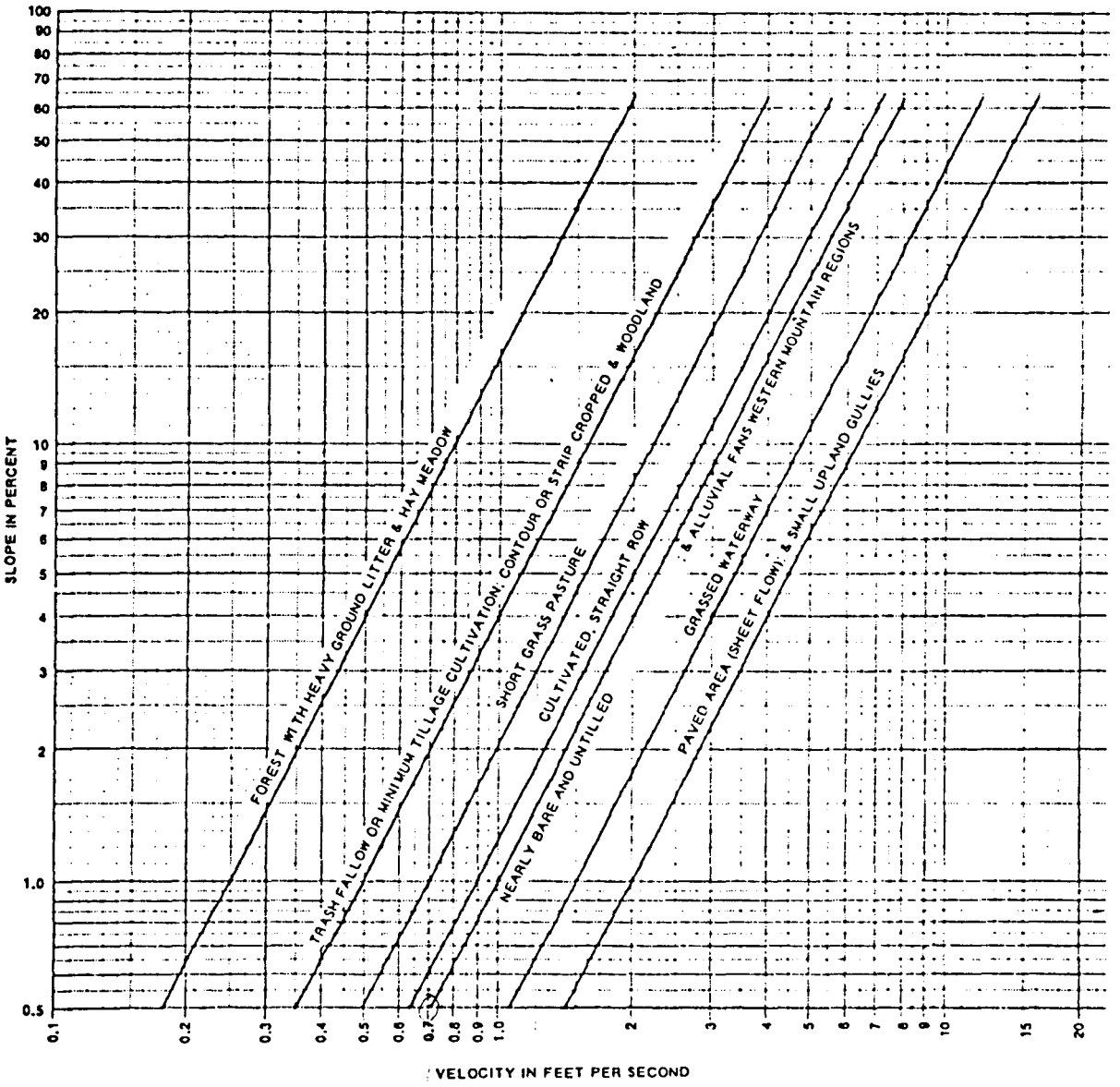
SURFACE	N VALUE	SOURCE
ASPHALT/CONCRETE	0.05 - ~~0.15~~	Developed
BARE PACKED SOIL FREE OF STONE	0.10	C
FALLOW - NO RESIDUE	0.008 - 0.012	B
CONVENTIONAL TILLAGE - NO RESIDUE	0.06 - 0.12	Use 0.09 B Historic
CONVENTIONAL TILLAGE - WITH RESIDUE	~~0.16 - 0.22~~	B
CHISEL PLOW - NO RESIDUE	0.06 - 0.12	B
CHISEL PLOW - WITH RESIDUE	0.10 - 0.16	B
FALL DISKING - WITH RESIDUE	0.30 - 0.50	B
NO TILL - NO RESIDUE	0.04 - 0.10	B
NO TILL (20-40 PERCENT RESIDUE COVER)	0.07 - 0.17	B
NO TILL (60-100 PERCENT RESIDUE COVER)	0.17 - 0.47	B
SPARSE RANGELAND WITH DEBRIS:		
0 PERCENT COVER	0.09 - 0.34	B
20 PERCENT COVER	0.05 - 0.25	B
SPARSE VEGETATION	0.053 - 0.13	F
SHORT GRASS PRAIRIE	0.10 - 0.20	F
POOR GRASS COVER ON MODERATELY ROUGH BARE SURFACE	0.30	C
LIGHT TURF	0.20	A
AVERAGE GRASS COVER	0.4	C
DENSE TURF	0.17 - 0.80	A, C, E, F
DENSE GRASS	0.17 - 0.30	D
BERMUDA GRASS	0.30 - 0.48	D
DENSE SHRUBBERY AND FOREST LITTER	0.4	A

A) CRAWFORD AND LINSLEY (1966).
B) ENGMAN (1986).
C) HATHAWAY (1945).
D) PALMER (1946).
E) RAGAN AND DURU (1972).
F) WOOLHISER (1975).

"N" values provided in this table pertain to both the SCS TR-55 "To" and FHWA 1984 HEC-12 "To" methods

OVERLAND FLOW RESISTANCE FACTOR (N)	TABLE "E-1"

REPRODUCED FROM FIGURE 15.2, SCS 1972



DETERMINATION OF "Ts"	FIGURE "E-3"

United States
Department of
Agriculture

Soil
Conservation
Service

Engineering
Division

Technical
Release 55

June 1986

Urban Hydrology for Small Watersheds

Appendix A: Hydrologic soil groups

Soils are classified into hydrologic soil groups (HSG's) to indicate the minimum rate of infiltration obtained for bare soil after prolonged wetting. The HSG's, which are A, B, C, and D, are one element used in determining runoff curve numbers (see chapter 2). For the convenience of TR-55 users, exhibit A-1 lists the HSG classification of United States soils.

The infiltration rate is the rate at which water enters the soil at the soil surface. It is controlled by surface conditions. HSG also indicates the transmission rate—the rate at which the water moves within the soil. This rate is controlled by the soil profile. Approximate numerical ranges for transmission rates shown in the HSG definitions were first published by Musgrave (USDA 1955). The four groups are defined by SCS soil scientists as follows:

Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sands or gravels and have a high rate of water transmission (greater than 0.30 in/hr).

Group B soils have moderate infiltration rates when thoroughly wetted and consist chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission (0.15-0.30 in/hr).

Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine texture. These soils have a low rate of water transmission (0.05-0.15 in/hr).

Group D soils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission (0-0.05 in/hr).

In exhibit A-1, some of the listed soils have an added modifier; for example, "Abrazo, gravelly." This refers to a gravelly phase of the Abrazo series that is found in SCS soil map legends.

Disturbed soil profiles

As a result of urbanization, the soil profile may be considerably altered and the listed group classification may no longer apply. In these circumstances, use the following to determine HSG according to the texture of the new surface soil, provided that significant compaction has not occurred (Brakensiek and Rawls 1983):

HSG	*Soil textures*
A	Sand, loamy sand, or sandy loam
B	Silt loam or loam
C	Sandy clay loam
D	Clay loam, silty clay loam, sandy clay, silty clay, or clay

Drainage and group D soils

Some soils in the list are in group D because of a high water table that creates a drainage problem. Once these soils are effectively drained, they are placed in a different group. For example, Ackerman soil is classified as A/D. This indicates that the drained Ackerman soil is in group A and the undrained soil is in group D.

Exhibit A-1, continued: Hydrologic soil groups for United States soils

BELMONT	B	BERTRAM	B	BILLINGS,	B	BLACKNOLL	C	BLUE LAKE	A
BELMORE	B	BERTRAND	B	MODERATELY SLOW		BLACKOAR	B/D	BLUE STAR	B
BELPRE	C	BERVILLE	B/D	PERM		BLACKPIPE	C	BLUEBELL	C
BELSAC	B	BERWOLF	B	BILLYCREEK	C	BLACKPRINCE	B	BLUECHIEF	C
BELTED	D	BERYL	B	BILLYHAW	D	BLACKROCK	B	BLUECREEK	D
BELTON	C	BERZATIC	D	BILTMORE	A	BLACKSAN	B	BLUEDOME	C
BELTRAMI	B	BESEMAN	A/D	BINMER	D	BLACKSPAR	D	BLUEFLAT	C
BELTSVILLE	C	BESHERM	C	BINCO	D	BLACKSPOT	D	BLUEGROVE	C
BELUGA	D	BESNER	B	BINDLE	B	BLACKSTON	B	BLUEGULCH	B
BELUGA, DRAINED, SLOPING	C	BESSEMER	C	BINFORD	B	BLACKTHORN	B	BLUEHILL	C
		BESSIE	D	BINGER	B	BLACKTOP	D	BLUEHON	C
BELVOIR	C	BESTROM	C	BINGHAM	B	BLACKWATER	D	BLUEJOINT	B
BELZAR	C	BETHANY	C	BINGHAMPTON	B	BLACKWELL	D	BLUENOSE	B
BEMIDJI	A	BETHEL	B	BINGHAMVILLE	D	BLADEN	D	BLUEPOINT	A
BEN LOMOND	B	BETHERA	D	BINNA	B	BLAG	D	BLUERIM	C
BENCHLEY	C	BETHESDA	C	BINNSVILLE	D	BLAGO	D	BLUESLIDE	D
BENCLARE	C	BETHLEHEM	B	BINS	B	BLAINE	C	BLUESPRIN	C
BENCO	B	BETIS	A	BINTON	C	BLAIR	C	BLUESTONE	D
BENDER	B	BETONNIE	B	BINTON, RECLAIMED	B	BLAIRTON	C	BLUEWING	A
BENDIRE	C	BETRA	C	BIOYA	B	BLAKABIN	C	BLUFF	D
BENEVOLA	C	BETTERAVIA	C	BIPPUS	B	BLAKE	B	BLUFFDALE	C
BENEWAH	D	BETTS	B	BIRCHBAY	C	BLAKELAND	A	BLUFFTON	C/D
BENFIELD	C	BEULAH	B	BIRCHFIELD	D	BLAKENEY	C	BLUFORD	C
BENGAL	C	BEVENT	A	BIRCHWOOD	C	BLAKEWELL	C	BLUM	C
BENGE	B	BEVERIDGE	D	BIRDOW	B	BLALOCK	D	BLY	B
BENHAM	B	BEVERLY	B	BIRDS	C/D	BLAMER	C	BLYBURG	B
BENIN	D	BEVERLY, GRAVELLY	A	BIRDSALL	D	BLANCA	B	BLYTHE	D
BENITO	D	BEW	C	BIRDSBORO	B	BLANCHARD	A	BOARDMAN	D
BENJAMIN	D	BEWLEYVILLE	D	BIRDSLEY	D	BLANCHE	B	BOARDTREE	C
BENKLIN	C	BEXAR	D	BIRDSVIEW	A	BLANCHESTER	B/D	BOASH	D
BENMAN	C	BEZO	D	BIRKBECK	B	BLANCOT	B	BOAZ	C
BENNDALE	B	BEZZANT	B	BIRMINGHAM	B	BLAND	C	BOBBITT	C
BENNINGTON	C	BIBB	C	BIRNEY	B	BLANDING	B	BOBILLO	A
BENRIDGE	B	BIBLESPRINGS	B	BIROME	C	BLANEY	B	BOBNBOB	C
BENSLEY	B	BICE	B	BISBEE	A	BLANKET	C	BOBS	D
BENSON	D	BICKERDYKE	D	BISCARO	D	BLANTON	A	BOBTAIL	C
BENTEEN	C	BICKETT	D	BISCAY	B/D	BLANTON,	B	BOBTOWN	B
BENWY	B	BICKLETON	B	BISGANI,	B	MODERATELY WET		BOCA	B/D
BENZ	D	BICKMORE	C	MODERATELY WET		BLANYON	C	BOCA, DEPRESSIONAL	D
BEOR	D	BICONDOA	D	BISGANI, FLOODED	C	BLAPPERT	D	BOCA, TIDAL	D
BEOSKA	B	BICONDOA, DRAINED	C	BISHOP	D	BLAQUIERE	C	BOCK	B
BEOTIA	B	BIDDEFORD	D	BISMARCK	D	BLASDELL	A	BOCKER	D
BEOWAWE	B	BIDDLEMAN	B	BISOODI	D	BLASE	C	BOCKSTON	B
BEQUINN	B	BIDMAN	C	BISPING	B	BLASINGAME	C	BODE	B
BERCUMB	B	BIDWELL	B	BISSELL	B	BLAYDEN	D	BODECKER	A
BERDA	B	BIEBER	D	BISSONNET	D	BLAZBIRD	D	BODELL	D
BEREA	C	BIEDELL	D	BIT	C	BLAZON	D	BODEN	C
BERENICETON	B	BIEDSAW	C	BITTER	B	BLEAKWOOD	C	BODENBURG	B
BERGHOLZ	C	BIENVILLE	A	BITTER SPRING	B	BLEDSOE	C	BODINE	B
BERGLAND	D	BIG BLUE	D	BITTERROOT	C	BLEIBLERVILLE	D	BODORUMPE	C
BERGQUIST	B	BIG HORN	B	BITTERWATER	B	BLENCOE	D	BODOT	C
BERGSTROM	B	BIG TIMBER	D	BITTON	B	BLEND	D	BOEL	A
BERGSVIK	D	BIGARM	B	BIVANS	D	BLENDON	B	BOEL, OVERWASH	C
BERINO	B	BIGBEE	A	BIXBY	B	BLETHEN	B	BOELUS	A
BERIT	D	BIGBEND	B	BIXLER	C	BLEVINS	B	BOERNE	B
BERKS	C	BIGBROWN	C	BJORK	C	BLEVINTON	B	BOESEL	C
BERKSHIRE	B	BIGELOW	B	BLACHLY	B	BLEWETT	D	BOESEL, PROTECTED	B
BERLAKE	B	BIGETTY	B	BLACK BUTTE	B	BLICHTON	D	BOETTCHER	C
BERLIN	C	BIGFLAT	D	BLACK CANYON	D	BLICKENSTAFF	B	BOGAN	C
BERMESA	C	BIGFOOT	C	BLACK CANYON,	C	BLIMO	B	BOGART	B
BERMUDIAN	B	BIGFORK	C	DRAINED		BLIMSTER	C	BOGGS	C
BERNAL	D	BIGHAMS	B	BLACK RIDGE	D	BLINN	C	BOGGY	C
BERNALDO	B	BIGHILL	B	BLACKA	C	BLISS	C	BOGRAP	B
BERNARD	D	BIGLAKE	A	BLACKBURN	B	BLITZEN	C	BOGUE	D
BERNARDINO	C	BIGMEADOW	C	BLACKDRAW	D	BLOCKHOUSE	D	BOGUS	C
BERNARDSTON	C	BIGNELL	C	BLACKETT	B	BLOMFORD	B/D	BOHANNON	C
BERNHILL	B	BIGRIVER	B	BLACKFOOT	C	BLOOM	D	BOHEMIAN	B
BERNICE	A	BIGSHEEP	B	BLACKFOOT, DRAINED	B	BLOOMFIELD	A	BOHICKET	D
BERNING	C	BIGSPRING	D	BLACKHALL	D	BLOOMING	B	BOHNA	B
BERNOV	B	BIGWIN	C	BLACKHALL, WARM	C	BLOOMSDALE	B	BOHNLY	D
BERRYLAND	B/D	BIGWINDER	D	BLACKHAMMER	B	BLOOR	C	BOHNSACK	B
BERRYMAN	C	BIJORJA	C	BLACKHAWK	D	BLOOR, GRAVELLY	D	BOISTFORT	B
BERSON	B	BIJOU	B	BLACKHOOF	D	SUBSTRATUM		BOJAC	B
BERTAG	C	BILBO	C	BLACKHORSE	C	BLOUNT	C	BOJO	D
BERTELSON	B	BILGER	D	BLACKLEEDO	B	BLOWERS	B	BOLAN	B
BERTHOUD	B	BILLETT	B	BLACKLEG	C	BLUCHER	C	BOLAR	C
BERTIE	B	BILLINGS	C	BLACKLOCK	D	BLUE EARTH	B/D	BOLD	B
BERTO	D			BLACKMAN	C	BLUE EARTH,	D	BOLENT	A
BERTOLOTTI	B			BLACKMOUNT	B	SLOPING		BOLES	C

NOTES: TWO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION.
MODIFIERS SHOWN, E.G., BEDROCK SUBSTRATUM, REFER TO A SPECIFIC SOIL SERIES PHASE FOUND IN SOIL MAP LEGEND.

REPORT CHECKLIST AND OUTLINE

PRELIMINARY DRAINAGE REPORT

CHECKLIST	OK	NA
Typed text		
8½ x 11" format		
Bound: Use bar or spiral binder or staple. Do not use a notebook.		
Title Page: Name of report and preparer, date of preparation and revision (if any)		
Exhibits: Maximum 11" high and 32" wide, bound in report and folded as required to 8½ x 11" size		
Maps attached to or contained in the report: Vicinity Map and Preliminary Major Basin Drainage Map		

OUTLINE

I. GENERAL LOCATION AND DESCRIPTION
- A. Site and Major Basin Location
  1. Streets in the vicinity
  2. Development in the vicinity
- B. Site and Major Basin Description
  1. Acreage
  2. Ground cover types
  3. Hydrologic soil types

II. EXISTING DRAINAGE CONDITIONS
- A. Major Basin
  1. General topography, drainage patterns and features, canals, ditches, wetlands
  2. Previously determined 100-year floodplains
- B. Site
  1. Historic drainage patterns
  2. Inflow characteristics from upstream
  3. Discharge characteristics to downstream sub-basins

III. PROPOSED DRAINAGE CONDITIONS
- A. Changes in Drainage Patterns
  1. Major basin
  2. Site
- B. Maintenance Issues
  1. Access
  2. Ownership and responsibility

IV. DESIGN CRITERIA & APPROACH
- A. General Considerations
  1. Previous drainages studies performed for the area
  2. Master planning issues (large scale considerations)
  3. Constraints imposed by site and other proposed development
- B. Hydrology
  1. Design storms and precipitation
  2. Runoff calculation method
  3. Detention/retention basin design method
  4. Parameter selection procedures
  5. Analysis and design procedures
  6. Justification of proposed methods not presented or referenced in SWMM
- B. Hydraulics
  1. Hydraulic calculation methods
  2. Parameter selection procedures
  3. Analysis and design procedures
  4. Justification of proposed methods not presented or referenced in SWMM

COMMENTS

1. No calculations are required for the Preliminary Drainage Report.
2. It may not be necessary to cover all of the above topics, but the report should address all concerns applicable to the proposed project, even issues not identified above.

SOIL SURVEY

Grand Junction Area, Colorado

Series 1940, No. 19

Issued November, 1955

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with the
COLORADO AGRICULTURAL EXPERIMENT STATION

Billings silty clay loam, 0 to 2 percent slopes (Bc).—This soil, locally called adobe, is one of the most important and extensive in the Grand Valley. It covers nearly one-fifth of the Grand Junction Area. The areas occur on the broad flood plains and very gently sloping coalescing alluvial fans along streams. Many large areas are north of the Colorado River.

The soil is derived from deep alluvial deposits that came mainly from Mancos shale but in a few places from fine-grained sandstone materials. The deposits ordinarily range from 4 to 40 feet deep but in places exceed 40 feet. The deposits have been built up from thin sediments brought in by the streams that have formed the coalescing alluvial fans or have been dropped by the broad washes that have no drainage channel. The thickest deposit, near Grand Junction, was built up by Indian Wash.

The color and texture of the soil profile vary from place to place. The 8- to 10-inch surface soil normally consists of gray, light-gray, light olive-gray, or light brownish-gray silty clay loam. This layer grades into material of similar color and texture that extends to depths of 3 or 4 feet. Below this depth the successive depositional layers show more variation. Although the dominant texture is silty clay loam, the profile may have a loam, clay loam, fine sandy loam, or a very fine sandy loam texture.

Where there are fairly uniform beds of Mancos shale and where the soil is not influenced by materials deposited by adjoining drainage courses, the profile varies only slightly within the upper 3 or 4 feet. In areas bordering drainage courses, however, the soil varies more in texture and color from the surface downward.

One small area about 1½ miles southeast of Loma consists of light grayish-brown or pale-brown heavy silty clay loam that shows only slight variation in texture to depths of 4 to 6 feet. The underlying soil material is more variable. Below depths of 6 to 10 feet the layers generally are somewhat thicker and have a higher percentage of coarse soil material.

Also included with this soil are several small areas totaling about 3 square miles that are dominantly pale yellow. These are located 2½ to 3½ miles northeast of Fruita, 5 miles north of Fruita, 2½ miles northeast of Loma, 3 to 5 miles north of Loma, 1½ miles northwest of Loma, and 4 miles northwest of Mack. In these areas the 8- or 10-inch surface soil is pale-yellow silty clay loam, and the subsoil is a relatively uniform pale-yellow silty clay loam to depths of 4 to 8 feet. The accumulated alluvial layers are difficult to distinguish, but in a few places transitional to Fruita soils there are small areas having a pale-brown to light-yellowish brown color. These transitional areas are included with Billings silty clay loam because they have a finer textured subsoil than is characteristic of the Ravola soils.

Although moderately fine textured, this Billings soil permits successful growth of deep-rooted crops such as alfalfa and tree fruits. Its permeability is normally not so favorable as that of the Mesa, Fruita, and Ravola soils. Its tilth and workability are fair, but it puddles so quickly when wet and bakes so hard when dry that good tilth can be maintained only by proper irrigation and special cultural practices. Runoff is slow and internal drainage is very slow.

Like all other soils in the area, this one has a low organic-matter content. Under natural conditions it contains a moderate concentration of salts derived from the parent rock (Mancos shale). In places, however, it contains so much salt that good yields cannot be obtained. Some large areas are so strongly saline they cannot be used for crops. Generally, this soil is without visible lime, but it is calcareous. In many places small white flecks or indistinct light-colored streaks or seams indicate that lime, gypsum, or salts are present.

Use and management.—About 80 percent of this soil is cultivated. The chief irrigated crops are alfalfa, corn, dry beans, sugar beets, small grains, and tomatoes and other truck crops. Where the soil is located so as to avoid frost damage, tree fruits are grown.

Most of the field crops are grown in the central and western parts of the valley, or from Grand Junction westward. The entire acreage in tree fruits—approximately 3 square miles—lies between Grand Junction and Palisade. Because the climate is more favorable near Palisade, the acreage in orchard fruits is greater there. A few small orchards are located northeast of Grand Junction in the direction of Clifton. The main fruit acreage is between Clifton and Palisade. Peach orchards predominate, but a considerable acreage is in pears, especially near Clifton. Yields depend on the age of the trees and other factors, including management, but the estimated potential yield is somewhat less on this soil than on Mesa soils. This takes into account the slower internal drainage of this soil and its susceptibility to salinity if overirrigated. Yields of other crops vary according to the length of time the land has been irrigated, internal drainage or subdrainage, salt content of the soil, management practices, and local climate.

The uncultivated areas of this soil are mostly inaccessible places adjoining the larger washes, which occur mainly in the western part of the area, and those places that cannot be cropped profitably because they have inadequate drainage and a harmful concentration of salts. The uncultivated land supports a sparse growth of greasewood, saltbush, shadscale, rabbitbrush, ryegrass, peppergrass, and saltgrass. From 70 to 90 acres are required to pasture one animal during a season.

A number of places shown on the map by small marsh symbols are low and seepy. They could be ditched, but their acreage is likely too small to justify the expense. Left as they are, their salt content makes them worthless for any use except pasture.

Sizeable acreages of this soil apparently were overirrigated in the past. Irrigation water applied at higher levels to the north seeps upward in this soil where it occurs in low areas toward the river. Even now, new saline areas are appearing, and existing areas are getting larger. The total acreage affected by salts has remained more or less the same for the last two decades, but affected areas will continue to change in size and shape because of seepage.

Most fields are ditched where necessary. Some uncultivated areas require both leveling and ditching. In places subdrainage is inadequate because irregularities in the underlying shale tend to create pockets and prevent underground water from flowing into the drainage ditches. Also, in some areas where the alluvial mantle is 30 to 40 feet thick, the ditches are not always deep enough to drain the soil. Some areas are seepy because there are no ditches running in an east-west direction to intercept lateral flow of ground water from the over-

irrigated, permeable, medium-textured, stratified soils on the upper parts of the fan to the north. After being leveled, uncultivated areas would have to be cropped for 3 years before their salt content would be reduced enough to permit good yields.

Farmers can increase the organic-matter content of this soil by applying manure liberally and by growing alfalfa or clovers at least part of the time. A combination field crop and livestock type of farming favors improvement of this soil. Many of the small imperfectly drained areas may be kept in pasture. Strawberry clover and sweetclover are well suited, and mixtures of pasture grasses grow well.

Billings silty clay loam, 2 to 5 percent slopes (BD).—This soil covers a relatively small acreage in the Grand Valley. The areas are widely scattered. Except for its stronger slope, the soil is almost the same as Billings silty clay loam, 0 to 2 percent slopes. In a few places, notably north of Loma, there are areas having a pale-yellow color rather than the gray typical of the Billings soils.

Use and management.—Only about 15 percent of this soil is cultivated. Many of the areas lie along large drainageways or washes where they are difficult to reach. Even a larger number have such an uneven surface that considerable leveling would have to be done before they could be cropped. The cost of leveling, together with the expense of controlling erosion and gullying, discourages farmers from using them.

Many of the uncultivated areas have moderate concentrations of salts, but they are not particularly difficult to reclaim because they border natural ditches or washes which afford free disposal of irrigation water. Furthermore, for the most part, they have a porous substratum.

About the same crops are grown on this soil as on Billings silty clay loam, 0 to 2 percent slopes. The average yields are approximately the same.

Billings silty clay, 0 to 2 percent slopes (BA).—This soil, locally called heavy adobe, occurs well toward the Colorado River. It is on alluvial materials—4 to about 40 feet thick—that largely came from Mancos shale. Most of this soil lies east and southeast of Grand Junction and along the railroad between Grand Junction and Fruita.

The 8- or 10-inch surface soil consists of light brownish-gray, gray, or olive-gray silty clay. The layer is similar to the surface layer of Billings silty clay loam soils but it is harder and, in many places, darker. The subsoil consists of similarly colored layers of silty clay loam, silt loam, and silty clay. In places the soil is silty clay to depths exceeding 4 feet.

The entire profile is firm when moist and has a massive structure. The subsoil has many small irregularly shaped light-gray specks or indistinct mottles. Poorly defined light-colored streaks indicate the presence of lime, gypsum, or salts. The surface soil and subsoil are calcareous, the lime being well distributed. The fine texture of the soil greatly retards penetration of roots, moisture, and air.

Surface runoff is very slow to slow where the slope is less than 1 percent. Internal drainage is very slow because the subsoil is massive and very slowly permeable. Even with ample drainage ditches, the discharge of irrigation water is slow.

Tilth and workability are not good, because the soil has a fine texture and a low content of organic matter. Moreover, some fields contain areas 20 to 60 feet across that have excessive amounts of salts. Slick spots also occur. These salty areas and slick spots produce low or negligible yields of most crops and are extremely difficult to eliminate.

Use and management.—About 75 percent of this soil is cultivated. Most of the rest is affected by salts. Small grains, beans, sugar beets, and alfalfa are the chief crops. They yield less than on Billings silty clay loam, 0 to 2 percent slopes. Ordinarily, newly broken fields are cropped to oats or other small grains the first few seasons so that excess salts can be removed. Afterwards, if drainage is adequate, they may be planted to pinto beans, sugar beets, corn, or alfalfa. The very slow permeability of this soil makes it unsuitable for orchard crops. Also, it is located mainly in areas where the frost hazard is great. Probably the greater part of the irrigable acreage is used for sugar beets. Small grains, alfalfa, and pinto beans usually follow in the order named.

Billings silty clay, 2 to 5 percent slopes (BB).—This soil is similar to Billings silty clay, 0 to 2 percent slopes. It differs mainly in having greater slopes and a slightly finer textured and darker gray surface soil. In places, below depths of 3 or 4 feet, the silty clay or clay material is light olive gray.

The tilth and workability are poor. Surface runoff is medium, and internal drainage is very slow. The soil is better suited to irrigation than most of the larger nearly level areas of Billings silty clay, 0 to 2 percent slopes, many of which are affected by salts. Approximately 12 acres of this soil is in peach orchards. All the rest is normally used for cultivated crops, principally corn, pinto beans, and alfalfa. This soil is suited to about the same crops as Billings silty clay, 0 to 2 percent slopes, but it generally produces better yields.

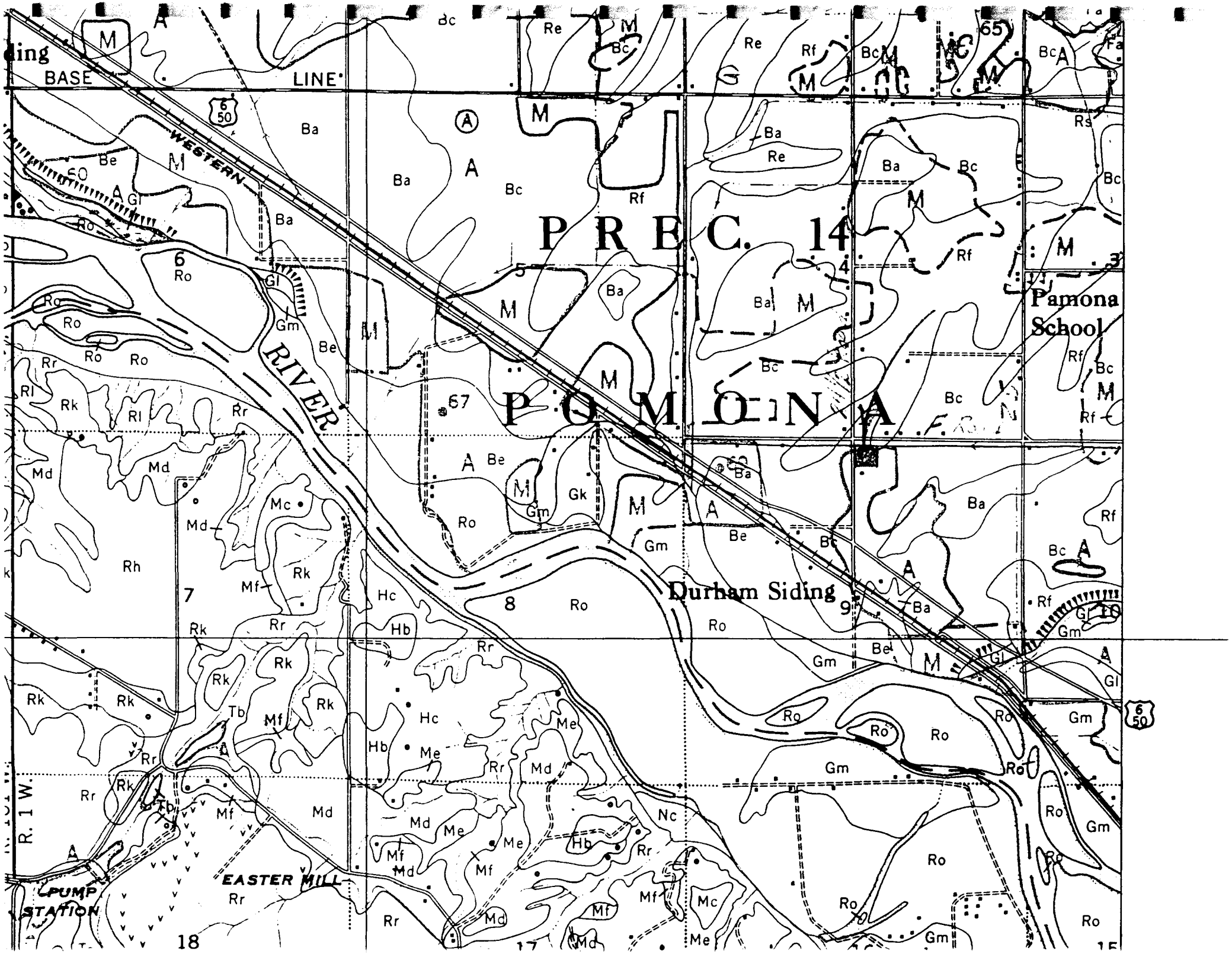
Billings silty clay, moderately deep over Green River soil material, 0 to 2 percent slopes (BE).—This soil occurs on the outer margin of coalescing alluvial fans where 1 to 4½ feet of fine-textured deposits derived from shale overlies Green River soil materials.

Except for a few strips only a few rods wide that adjoin low-lying areas of Green River soils, this soil has not been altered by high overflows from the Colorado River. It is not likely that the main part of the soil will be covered by floodwaters from the Colorado River, as it lies well above the level of normal overflow.

Use and management.—About 85 percent of this soil is cultivated. The principal crops are alfalfa, corn, sugar beets, and pinto beans. A few peach orchards are on this soil near Clifton. Because the underlying strata are coarser, crops produce better on this soil than on most areas of the other Billings silty clay soils. Drainage and saline conditions have to be corrected before the soil will produce well.

Uncultivated acreages of this soil northwest of Grand Junction are saline, imperfectly drained, or both. Their tilth and workability are poor because they have a fine texture and a low content of organic matter.

335914—55——4


BASE LINE
WESTERN
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Durham Siding
EASTER MILL
PUMP STATION
R. 1 W.
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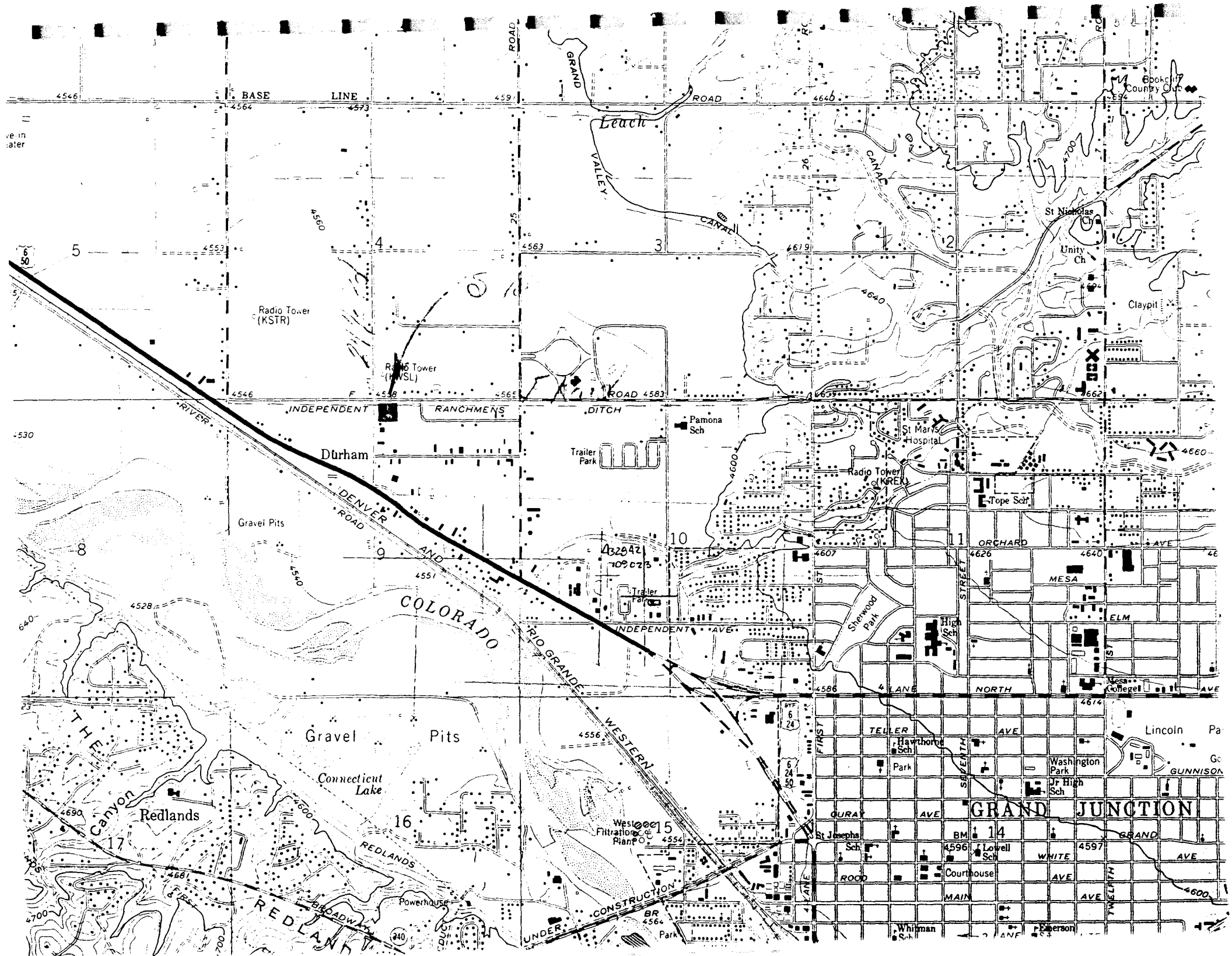

BASE LINE
GRAND VALLEY CANAL
Leach
Bookcliff Country Club
St Nicholas Ch
Unity Ch
Claypit
Radio Tower (KSTR)
Radio Tower (KWSL)
INDEPENDENT RANCHMENS DITCH
ROAD 4583
Pamona Sch
Trailer Park
Durham
St Mary's Hospital
Radio Tower (KREK)
Tope Sch
DENVER AND RIO GRANDE WESTERN ROAD
COLORADO RIVER
Gravel Pits
ORCHARD AVE
MESA ST
ELM ST
Sherwood Park
High Sch
INDEPENDENT AVE
4 LANE NORTH
Mesa College
Gravel Pits
Connecticut Lake
THE Canyon
Redlands
REDLANDS ROAD
Powerhouse
BROADWAY
UNDER CONSTRUCTION
West Filtration Plant
TELLER AVE
Hawthorne Sch
Park
Washington Park
Jr High Sch
Lincoln Park
GUNNISON
GRAND JUNCTION
GURLEY AVE
St Josephs Sch
Lowell Sch
Courthouse
WHITE AVE
ROOD AVE
MAIN AVE
GRAND AVE
Whitman Sch
Emerson
FIRST ST
SEVENTH ST
TWELFTH ST
4 LANE

BARNES AND NOBLE RETAIL STORE

Engineers Opinion of Cost

DATE: 8/20/96
NAME OF DEVELOPMENT: BARNES AND NOBLE RETAIL STORE
LOCATION NW/4 NE/4 SEC 9, T.1 S., R.1 W., U.P.M

PRINTED NAME OF PERSON PREPARING: JOHN C. SMITH

CONSTRUCTION COST ESTIMATE:

	Water system:	Units	Quant	Unit Price	Total Price
1	8" Line Connect	EA	1	175.00	175
2	8" Fittings w/TB's	EA	5	180.00	900
3	6" Fittings w/TB's	EA	3	150.00	450
4	8" G.V.'s and box's	EA	2	500.00	1,000
5	6" G.V.'s and box's	EA	2	400.00	800
6	Fire Hydrant Assymblies	EA	2	1,200.00	2,400
7	8" PVC Waterline	LF	543	12.00	6,516
8	6" PVC Waterline	LF	110	10.50	1,155
9	2 1/2" Fittings	EA	2	100.00	200
10	2 1/2" Serv. Line	LF	26	9.50	247
				Sub-total Potable Water:	**13,843**

	Sewer system:	Units	Quant	Unit Price	Total Price
1	8" Line Connect	EA	1	220.00	220
2	8" PVC Sewer Main	LF	473	15.00	7,095
3	San. Sewer Manhole	EA	3	1,150.00	3,450
4	Drop Manhole Connection	EA	1	350.00	350
5	San. Sewer Serv. Tap	EA	1	50.00	50
6	6" Service Line	LF	90	10.00	900
7	Service Cleanout	EA	1	650.00	650
				Sub-total Sanitary Sewer:	**12,715**

	Site grading and paving	Units	Quant	Unit Price	Total Price
1	Unclassified Excavation	CY	230.00	1.50	345
2	Unclassified Embankment	CY	2100.00	9.00	18,900
3	Asphalt Removal	SY	85.00	3.00	255
4	Asphalt Patch	SY	85.00	30.00	2,550
5	Class-6 A.B.C.	CY	1015.00	16.50	16,748
6	3" Asphalt	SY	4736.00	5.50	26,048
7	6" Barrier Curb (1'Height)	LF	895.00	11.00	9,845
8	2' Standard Curb/Gutter	LF	202.00	11.00	2,222
9	2.5' Drive Over Curb/Gutter	LF	110.00	12.50	1,375
10	2.5' Door Walk	LF	162.00	10.00	1,620
11	5' Conc Walk	LF	516.00	15.00	7,740
12	8' Conc Walk	LF	118.00	24.00	2,832
13	1' Drive Over Curb	LF	350.00	11.50	4,025
14	3' Conc. V-Pan	LF	280.00	16.00	4,480

15	6"Barrier Curb (Variable Height)	FSF	400.00	11.50	4,600
16	Landscape Wall	FSF	350.00	17.50	6,125
17	8" Conc Driveway	SY	87.00	60.00	5,220
18	6" Conc Loading Ramp	SY	50.00	55.00	2,750
19	Conc Filled Bollard	EA	2.00	100.00	200
20	Conc Deco X-Walk	SY	72.00	35.00	2,520
21	Stop Sign	EA	2.00	200.00	400
22	Pavement Striping	GAL	6.00	90.00	540
23	6"Conc Entrance Ramp	SY	28.00	55.00	1,540
24	8"Conc Trash/Loading Pad	SY	104.00	60.00	6,240
25	PSCO Relocates	LS	1.00	4000.00	4,000
				Sub-total Site grading and paving:	**133,120**

	Drainage	Units	Quant	Unit Price	Total Price
1	Connect to Outfall pipe (with Grout Collar)	LS	1.00	800.00	800
2	18" PVC Storm Sewer	LF	41	20.00	820
3	12" PVC Storm Sewer	LF	10	25.00	250
4	Rip-Rap	SY	20.00	50.00	1,000
5	Orifice Control Outlet Struct	EA	1.00	1,500.00	1,500
6	Curb Inlet	EA	1.00	1,500.00	1,500
				Sub-total Drainage:	**5,870**

	Irrigation	Units	Quant	Unit Price	Total Price
1	Connect to Existing	EA	1	500.00	500
3	12" PVC Irrigation	LF	500.00	12.00	6,000
7	12" Fittings	EA	6.00	250.00	1,500
25	Headwall/Frame/Grate	EA	1	1,500.00	1,500
25	Remove Concrete Lined Ditch	LF	500	3.00	1,500
				Sub-total Irrigation:	**11,000**

Total Site Construction Costs: 176,548

9/10/96

EXHIBIT "B"

VOID

BARNES AND NOBLE RETAIL STORE

Engineers Opinion of Cost

DATE: 9/10/96
NAME OF DEVELOPMENT: BARNES AND NOBLE RETAIL STORE
LOCATION NW/4 NE/4, SEC 9, T.1 S., R.1 W., U.P.

PRINTED NAME OF PERSON PREPARING: JOHN C. SMITH

CONSTRUCTION COST ESTIMATE:

	Site grading and paving	Units	Quant	Unit Price	Total Price
1	Unclassified Excavation	CY	65.00	2.00	130
2	Unclassified Embankment	CY	30.00	3.00	90
3	Class-6 A.B.C.	CY	48.00	16.50	792
4	5' Concrete Walk	LF	516.00	15.00	7,740
5	8" Concrete Driveway	SY	87.00	60.00	5,220
6	PSCO Relocates	LS	1	4,000.00	4,000
				Sub-total Site grading and paving:	**17,972**

	Drainage	Units	Quant	Unit Price	Total Price
1	Connect to Outfall Pipe (with Grout Collar)	EA	1.00	800.00	800
2	18" PVC Storm Sewer Pipe	LF	41.00	20.00	820
3	Rip-Rap	SY	20.00	50.00	1,000
4	Retention Pond	LS	1.00	5,000.00	5,000
5	Orifice Controlled Outlet Structure	EA	1.00	1,500.00	1,500
				Sub-total Drainage:	9,120

Total Off Site Construction Costs: 27,092

S, T BUI, LLC
By: [signature] Manager
SIGNATURE OF DEVELOPER

9-24-96
DATE

I have reviewed the estimated costs and time schedule shown above and, bas on the plan layouts submitted to date and the current costs of constructio take no exception to the above.

CITY ENGINEER _____ DATE _____

COMMUNITY DEVELOPMENT _____ DATE _____

9/27/96 EXHIBIT "B"

BARNES AND NOBLE RETAIL STORE

Engineers Opinion of Cost

DATE: 9/27/96
NAME OF DEVELOPMENT: BARNES AND NOBLE RETAIL STORE
LOCATION NW/4 NE/4, SEC 9, T.1 S., R.1 W.,U.P.M

PRINTED NAME OF PERSON PREPARING: JOHN C. SMITH

CONSTRUCTION COST ESTIMATE:

	Site grading and paving	Units	Quant	Unit Price	Total Price
1	Unclassified Excavation	CY	65.00	2.00	130
2	Unclassified Embankment	CY	30.00	3.00	90
3	Class-6 A.B.C.	CY	48.00	16.50	792
4	5' Concrete Walk	LF	140.00	15.00	2,100
4	6' Concrete Walk	LF	384.00	17.00	6,528
5	8" Concrete Driveway	SY	95.00	60.00	5,700
6	PSCO Relocates	LS	1	4,000.00	4,000
				Sub-total Site grading and paving:	**19,340**

	Sewer System	Units	Quant	Price	Price
1	8" Line Connect	EA	1.00	220.00	220
2	8" PVC Sewer Main	LF	458.00	15.00	6,870
3	San Sewer Manhole	EA	2.00	1,150.00	2,300
4	Drop Manhole Connection	EA	1.00	350.00	350
5	San Sewer Serv Tap	EA	1.00	50.00	50
2	6" PVC Sewer Service	LF	90.00	10.00	900
5	Service Cleanout	EA	1.00	650.00	650
				Sub-total Drainage:	**11,340**

	Drainage	Units	Quant	Unit Price	Total Price
1	Connect to Outfall Pipe (with Grout Collar)	EA	1.00	800.00	800
2	18" PVC Storm Sewer Pipe	LF	41.00	20.00	820
3	Rip-Rap	SY	20.00	50.00	1,000
4	Retention Pond	LS	1.00	5,000.00	5,000
5	Orifice Controlled Outlet Structure	EA	1.00	1,500.00	1,500
				Sub-total Drainage:	**9,120**

Total Off Site Construction Costs: **39,800**

SIGNATURE OF DEVELOPER DATE

I have reviewed the estimated costs and time schedule shown above and, bas on the plan layouts submitted to date and the current costs of constructio take no exception to the above.

CITY ENGINEER DATE

COMMUNITY DEVELOPMENT DATE

October 04, 1996

To whom it may concern:

The site for the proposed Barnes & Nobel Bookstore, located at 2450 Patterson Rd. (tax schedule #2945-091-00-118), is zoned C-2 (heavy commercial). According to Section 4-3-4, Use/Zone Matrix, of the Zoning and Development Code, Retail Business is an allowed use in the C-2 zone.

If you have any further questions regarding this information, please do not hesitate to call the City of Grand Junction Community Development Department at (970)244-1430.

Sincerely,

Senta Costello
Planning Technician

REVIEW COMMENTS

FILE #SPR-96-190 **TITLE HEADING:** Barnes & Noble

LOCATION: SE corner 24 ½ & Patterson Roads

PETITIONER: Sittema-Bullock

PETITIONER'S ADDRESS/TELEPHONE: 5445 DTC Parkway, #4
Englewood, CO 80110
303-770-7275

PETITIONER'S REPRESENTATIVE: Ciavonne & Associates

STAFF REPRESENTATIVE: Michael Drollinger

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

CITY COMMUNITY DEVELOPMENT
Michael Drollinger **244-1439**

1. Lighting Plan for parking lot is required as per Code.
2. Bicycle parking is required - see Code; also provide bicycle rack detail.
3. Landscaping Plan is acceptable but will need to be resubmitted if site plan revisions are required.
4. "Stamped" concrete pedestrian decorative crosswalk detail not provided with Landscape Plan; please provide for review.
5. Please contact project planner (244-1439) regarding Comment #4 of the Grand Valley Irrigation Company BEFORE revising plans.

CITY DEVELOPMENT ENGINEER **9/4/96**
Jody Kliska **244-1591**

1. The city TEDS manual requires minimum on-site stacking distance at the driveway of 40'. It appears possible to reconfigure the parking near the driveway to meet this minimum stacking distance.
2. Please provide a copy of the common access agreement with the adjacent parcel.
3. Does the improvements agreement include the curb, gutter and sidewalk improvements on 24 ½ Road and on Patterson? Typically the improvements agreement covers the public improvements and drainage improvements.
4. Drainage report is acceptable.

CITY UTILITY ENGINEER **9/4/96**
Trent Prall **244-1590**

1. Please contact Jodi Romero of the City Customer Service Division at 244-1520 for information regarding sewer plant investment fees.
2. Please contact Dan Tonello with the Industrial Pretreatment section (244-1489) at the Persigo Sewer Treatment Plant for industrial waste review.
3. Public easement and sewer profile required for sewer extension.

4. 6" sewer service line from Barnes and Noble building should terminate in a manhole at the 8" line.

CITY POLICE DEPARTMENT **9/3/96**
Dave Stassen **244-3587**
Is there a lighting plan. Further comments can hold until a lighting plan is provided.

CITY FIRE DEPARTMENT **9/3/96**
Hank Masterson **244-1414**
The Fire Department has no problems with this proposal.

A complete set of sealed building plans must be submitted to the Fire Department for our review. Also, a complete set of plans, specifications, and calculations for the fire sprinkler system and fire alarm system must be submitted. Allow 10 working days for completion of plan reviews.

MESA COUNTY BUILDING DEPARTMENT **8/28/96**
Bob Lee **244-1656**
Need to submit 2 sets of sealed plans and allow 10-14 days for plan review and permit issuance. City licensed contractors are required to perform work.

GRAND VALLEY IRRIGATION **9/3/96**
Phil Bertrand **242-2762**
1. Need clear understanding of storm water into Independent Ranchman ditch (not sure it will be allowed).
2. A canal break and a unique storm on the Bookcliffs in the last 20 years has caused large amounts of run-off water to cross over this property.
3. Must show detailed design of Patterson Road access (this is not to interfere with canal access road).
4. NO permanent building/structures or plants within 30 feet of Independent Ranchman ditch or pipe.
5. Need clear documentation for crossing Independent Ranchman ditch.

UTE WATER **9/3/96**
Gary Mathews **242-7491**
1. Contact with Ute Water is needed to discuss the water line locations and back flow prevention for fire protection.
2. Water mains shall be c-900, class 150. Installation of pipe fittings, valves and services including testing and disinfection shall be in accordance with Ute Water standard specifications and drawings.
3. Construction plans required 48 hours before development begins.
4. Policies and fees in effect at the time of application will apply.

TO DATE, NO COMMENTS RECEIVED FROM:
Grand Junction Drainage District

File #214-94

August 20, 1996

Mr. Michael Drolinger
Community Development Department
City of Grand Junction
250 North 5th St.
Grand Junction, CO. 81501

Dear Mr. Drolinger,

The following is a response to the review Agency Comments concerning the Barnes & Noble Site Plan Submittal, File #SPR-96-190.

Community Development Staff
1. Lighting Plan has been included. The isolux diagram as well as the electrical plan showing the locations has been included.
2. Bicycle parking has been shown on the Landscape Plan, included in this submittal, with a detail.
3. Landscaping has been adjusted to accommodate the entrance reconfiguration.
4. Detail for stamped concrete are shown on the site plan.
5. Grand Valley Irrigation has been contacted, and once the drainage system was explained, had no problems with the proposed system.

Community Development Engineer
1. Plans have been changed to reflect the stacking distance requirement.
2. Access agreement has been included with this submittal.
3. Improvement agreement has been included with this submittal.

Grand Junction City Utility Engineer
1. Thank you for direction concerning fees. City has been contacted concerning sewer investment fees.
2. Industrial pre-treatment has been addressed.
3. Easement is shown on the Site Plan. Sewer Profile has been included on Utilities composite.
4. Manhole has been added.

Grand Junction Police Department
1. Lighting Plan has been included.

Grand Valley Irrigation
1. Grand Valley Irrigation has been contacted, and once the drainage system was explained, had no problems with the proposed system.
3. Design of Patterson Road access an ditch crossing is shown.

Ute Water
1.Applicant has no problem with Ute requirements.

File #214-94

Sincerely,

Craig Roberts
Secretary/Treasurer
Ciavonne & Associates, Inc.

SITTEMA ▪ BULLOCK
REALTY PARTNERS

September 24, 1996

Mr. Michael T. Drollinger
City of Grand Junction
250 North 5th Street
Grand Junction, CO 81501-2668

Re: Barnes & Noble Bookstore
Southeast Corner of 24 1/2 Road and F Road

Dear Michael:

I have enclosed two fully executed copies of the Development Improvements Agreement for the above referenced project. Thank you for sending me the form for this document.

I have attached, as Exhibit B, the cost estimate prepared by our civil engineer for the improvements anticipated by this Agreement. If the form and content of this document meets with your approval, I would appreciate your processing it for signature and returning one fully executed copy to me.

As a follow-up to a discussion we had last week, I would appreciate receiving from you a letter indicating that our proposed use of this site as a retail bookstore complies with the current zoning on this property. As I mentioned, our lender is requiring this "zoning compliance" letter.

Thank you again for all of your efforts on this project. I look forward to finalizing the planning process and beginning construction very shortly.

Sincerely,

SITBUL, LLC
A COLORADO LIMITED LIABILITY COMPANY

Timothy B. Sittema
Manager

/dsm

Enclosures

5445 DTC PARKWAY ■ PENTHOUSE FOUR ■ ENGLEWOOD, CO 80111 ■ TEL: (303) 770-7275 ■ FAX: (303) 771-1758

SITTEMA ▪ BULLOCK

REALTY PARTNERS

October 18, 1996

Mr. Michael T. Drollinger
City of Grand Junction
250 North 5th Street
Grand Junction, CO 81501-2668

Re: Barnes & Noble Bookstore

Dear Michael:

I have enclosed three (3) executed copies of Exhibit B to the Development Improvements Agreement which we had discussed. It is my understanding that you will insert this revised Exhibit B into the documents that I have previously signed and forwarded to you. It is also my understanding that as this work is constructed by our General Contractor, he will be invoicing the City for this work and you will use these proceeds for payment to him. If this is not the case let me know.

I will forward a check in this amount next week. We look forward to getting going on our construction and sincerely appreciate all of your efforts on this project.

Sincerely,

SITBUL, LLC,
A COLORADO LIMITED LIABILITY COMPANY

Timothy B. Sittema
Manager

/tas

5445 DTC PARKWAY ■ PENTHOUSE FOUR ■ ENGLEWOOD, CO 80111 ■ TEL: (303) 770-7275 ■ FAX: (303) 771-4758

October 29, 1996

Bob Lee
Mesa County Building Department
P.O. Box 20000
Grand Junction, CO 81502

Dear Bob,

After reviewing the Restaurant Industrial Pretreatment Permit Application submitted by Gordon Stanfield of Mac Gregor/Wathen Construction, for the Barnes & Noble Book Store to be built at 2450 Patterson Road, Grand Junction, it has been determined that this facility will not be required to install a grease interceptor. If you need more information, please call at 244-1489.

Sincerely,

Catherine Crabb
Assistant Coordinator
Industrial Pretreatment Program

cc: Trent Prall, Utility Engineer, City of Grand Junction
Marcia Rabideaux, Community Development

CERTIFICATE O. OCCUPANCY

BUILDING DI PARTMENT
CITY OF GRAN) JUNCTION
(OR MESA OUNTY)

PERMIT # 58257 DATE 5-22-97

PERMISSION IS HEREBY GRANTED TO Barnes & Noble Bookstore TO OCCUPY THE

BUILDING SITUATED AT 2451 Patterson

LOT _____ BLOCK _____ FILING _____ SUBI IVISION _____

TAX SCHEDULE NUMBER 2945-091-00-118

FOR THE FOLLOWING PURPOSE: Bookstore with coffee shop

THIS CERTIFICATE ISSUED IN CONFORMITY TO SECTIO 307, UNIFORM BUILDING CODE

INSPECTOR Harold O'neal

City Planning Kathleen M. Portner

To: Bobbie Paulson
Cc: Kathy Portner
From: Michael Drollinger
Subject: Barnes and Noble
Date: 5/26/97 Time: 12:53PM

Bobbie:

If you get a C.O. on this while I'm gone please give it to Kathy for signature. I have inspected the site and the improvements have been installed satisfactorily.

Thanks.

mtd

Facsimile Cover Sheet

RUNYON
Architects
AND ASSOCIATES
ARCHITECTURAL DESIGN
PLANNING
PROJECT MANAGEMENT

To: Mike Drollinger
Company: City of Grand Junction Planning Dept.
Phone: 970.244.1439
Fax: 970.244.1599

From: Michael Lewis
Company: Runyon Architects
Phone: 972.233.7705
Fax: 972.387.2553

Project: Grand Junction
RA+A No.: 9642

Date: 6.4.97
Pages incl. cover: 2

Comments:

Mike,

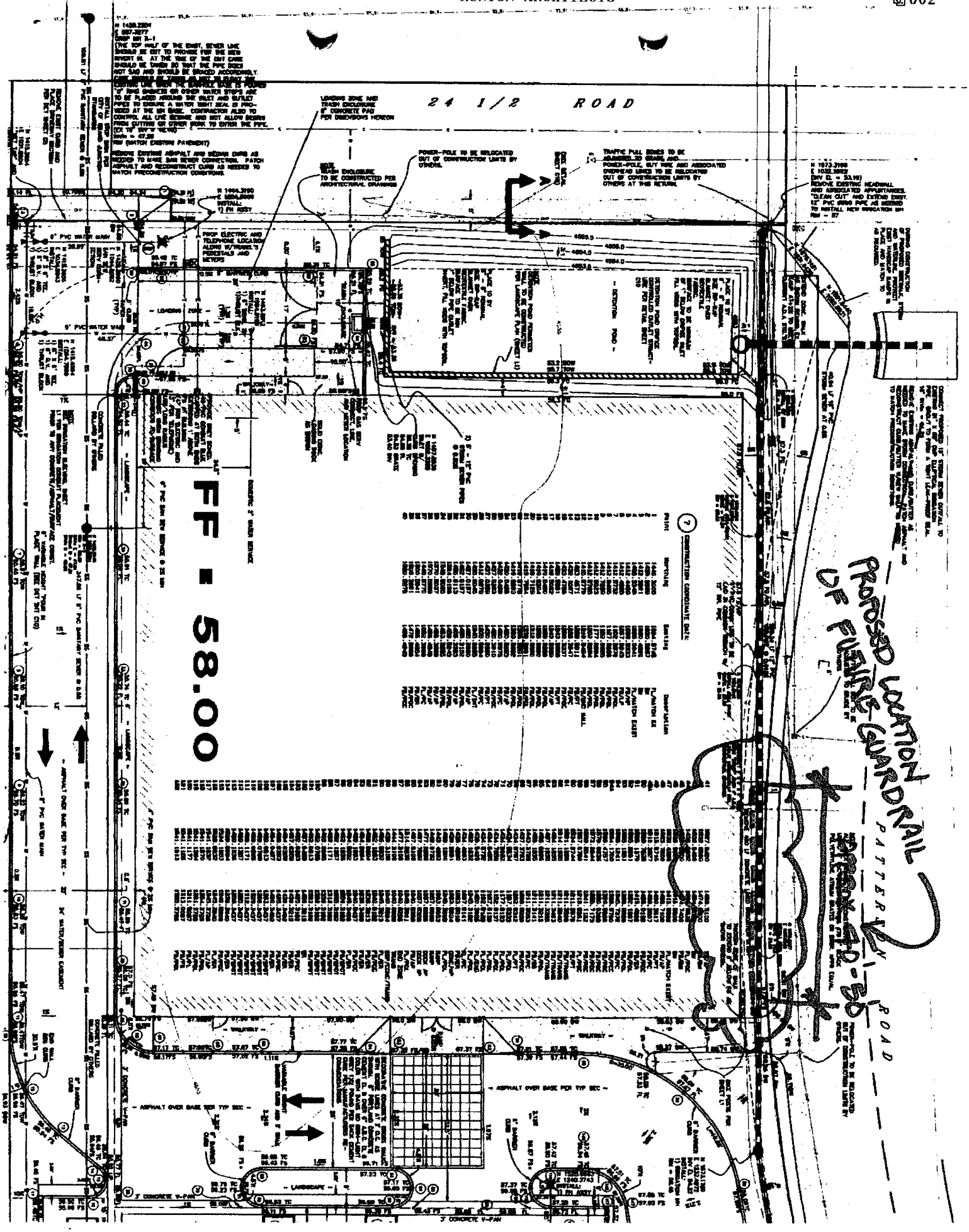
Per our discussion with you this morning, I have attached a site plan indicting the location for the proposed guardrail. The guardrail would be approx. 30" above finish grade and approx. 40' to 50' long. Please review the attached site plan and

Please contact me with questions and comments.

Respectfully,
Michael Lewis

Copies: file 9642

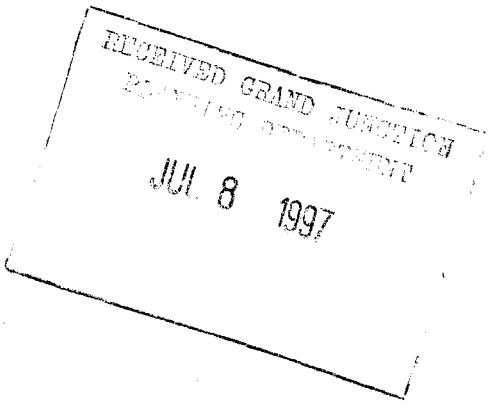
2033 CHENAULT DRIVE, SUITE 150
CARROLLTON, TEXAS 75006
Ph (214) 233-7705 Fax (214) 387-2553


24 1/2 ROAD
FF = 58.00
PROPOSED LOCATION OF PLANTER & GUARDRAIL
PATTERSON ROAD
SEE SHEET 4 OF 10

Facsimile Cover Sheet

RUNYON Architects AND ASSOCIATES
ARCHITECTURAL DESIGN
PLANNING
PROJECT MANAGEMENT

To: Mike Drollinger
Company: City of Grand Junction Planning Dept.
Phone: 970.244.1439
Fax: 970.244.1599



From: Michael Lewis
Company: Runyon Architects
Phone: 972.233.7705
Fax: 972.387.2553

Project: Grand Junction
RA+A No.: 9642

Date: 7.7.97
Pages incl. cover: 4

Comments:

Mike,

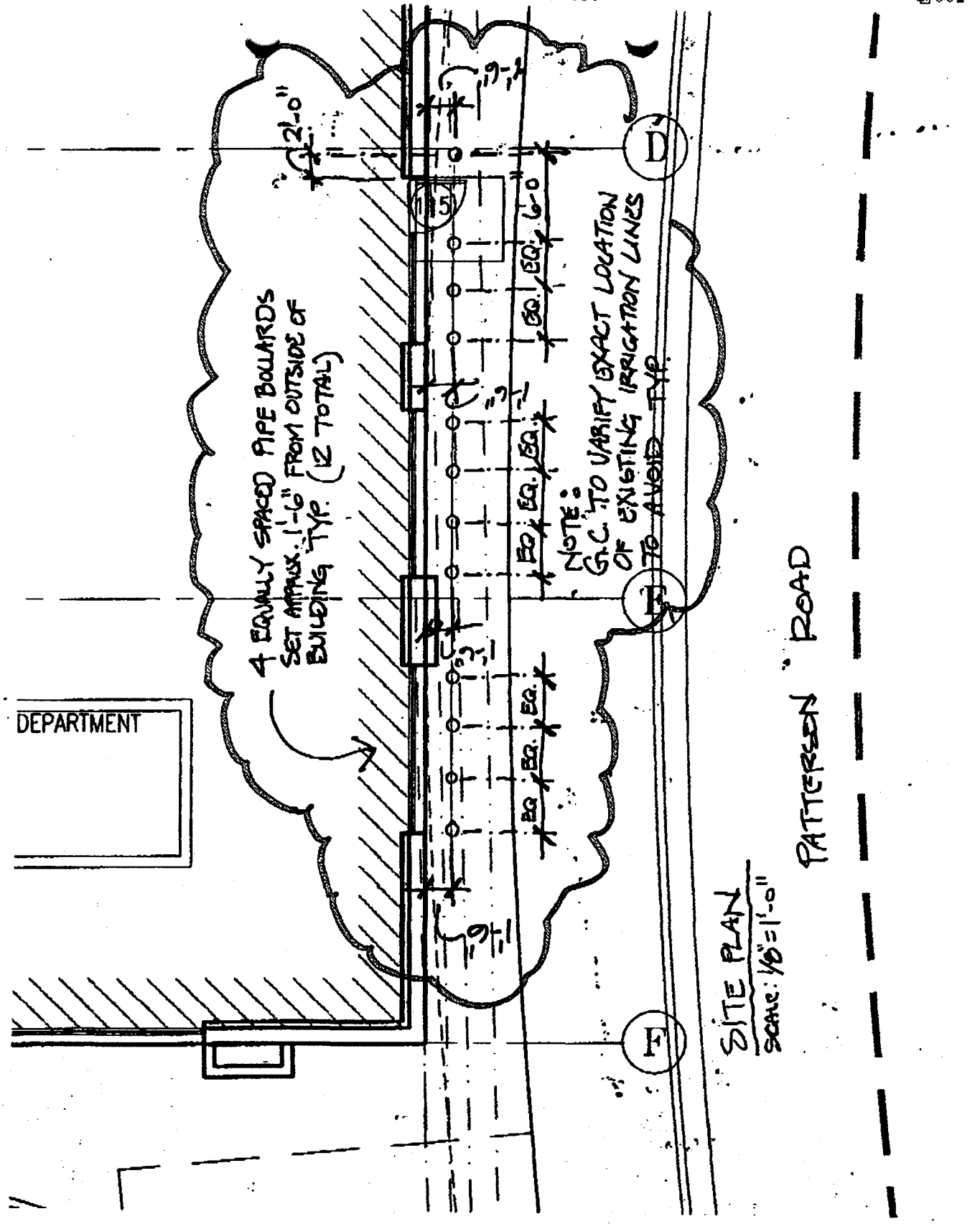
Please review the attached sketches illustrating the pipe bollards proposed for the Grand Junction Barnes & Noble. If you have do not have any comments or revisions, we would like to issue this for construction as soon as possible.

Feel free to contact me with questions or comments.

Respectfully,
Michael Lewis

Copies: file 9642, T.C. Beardslee, Tim Sittema

2033 CHENAULT DRIVE, SUITE 150
CARROLLTON, TEXAS 75006
Ph(214)233-7705 Fax(214)387-2553

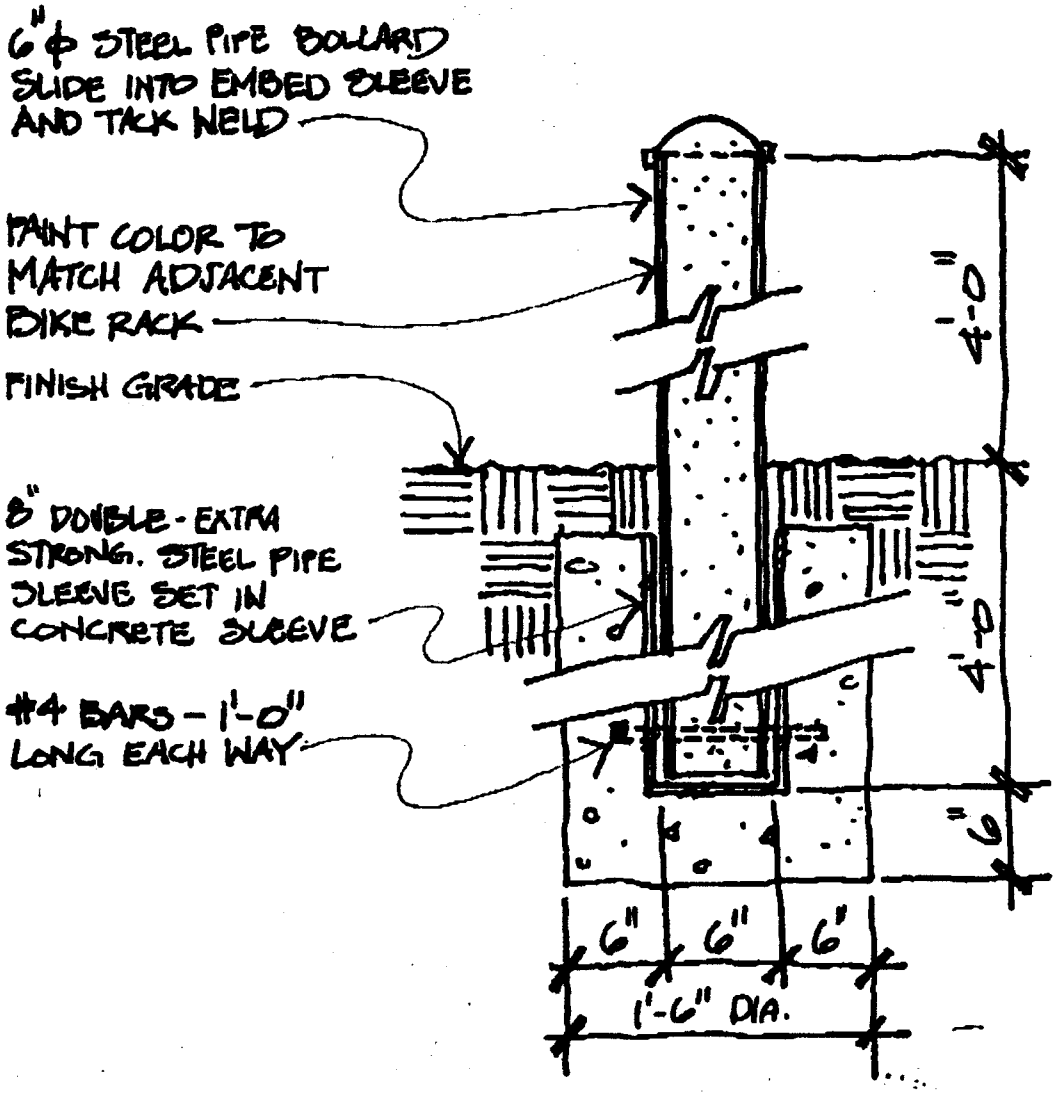


ARCHITECT:
CORTLAND MORGAN, ARCHITECT, AIA
6810 Woodland Dr.
Dallas, Texas 75225 (214) 368-3687

PROJECT COORDINATOR:
RUNYON AND ASSOCIATES
CONTACT: MICHAEL R. LEWIS

Barnes & Noble Booksellers Since 1873
GRAND JUNCTION, CO.
24.5 & F ROAD
GRAND JUNCTION, COLORADO

PROJECT NO. 9642
REVISION NO.
DATE:



PIPE BOLLARD

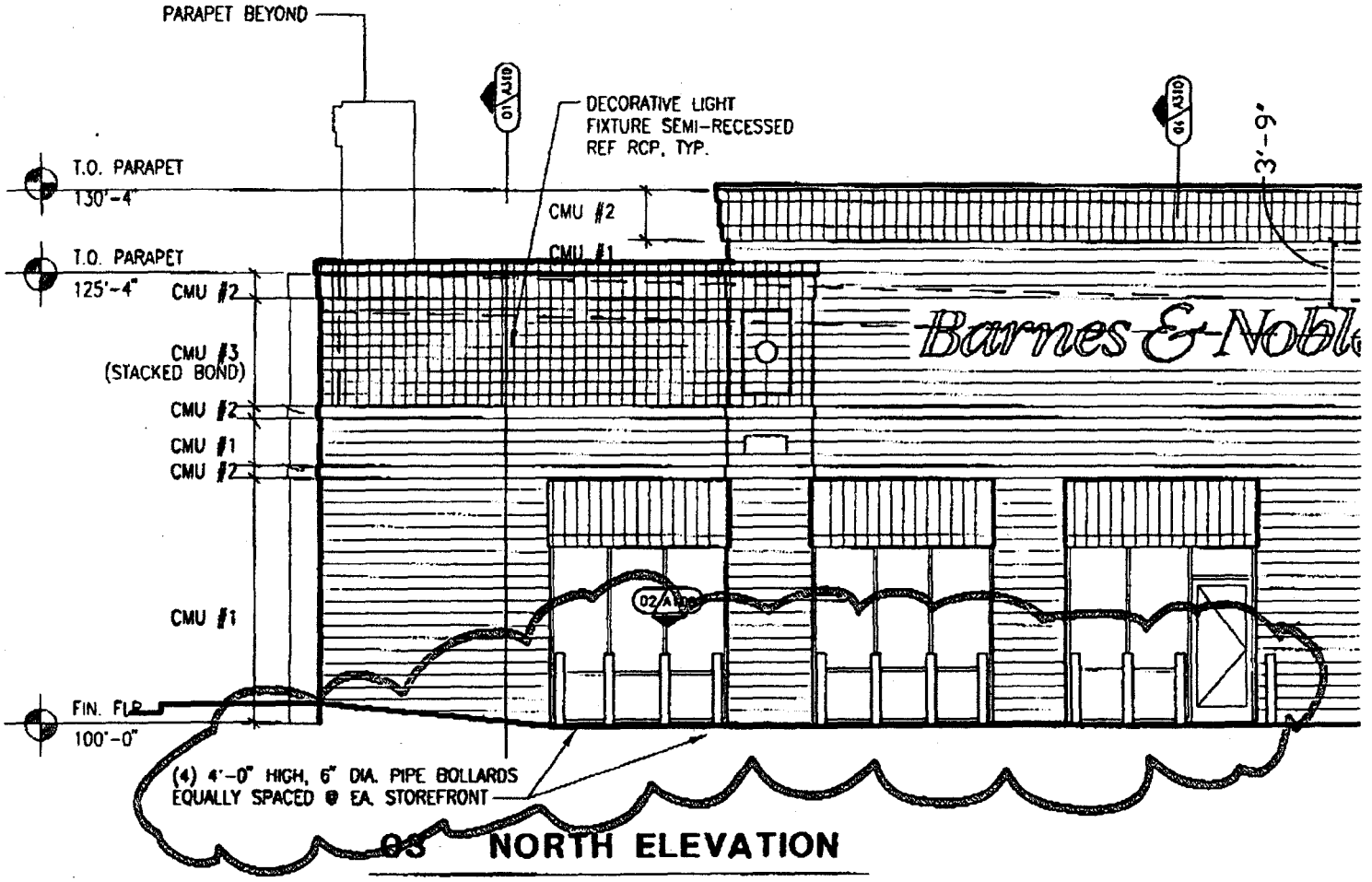
N.T.S.

ARCHITECT:
CORTLAND MORGAN, ARCHITECT, AIA
6810 Woodland Dr.
Dallas, Texas 75225 (214) 368-3867

PROJECT COORDINATOR:
RUNYON AND ASSOCIATES
2600 CITYWEST BLVD. SUITE 150 CARROLLTON, TX 75006 (214) 350-7700
CONTACT: MICHAEL R. LEWIS

Barnes & Noble Booksellers Since 1873
GRAND JUNCTION, CO.
24.5 & F ROAD
GRAND JUNCTION, COLORADO

PROJECT NO. 9642
REVISION NO.
DATE:



03 NORTH ELEVATION

SCALE 1/8"=1'-0"

ARCHITECT:
CORTLAND MORGAN, ARCHITECT, AIA
8910 Woodland Dr.
Dallas, Texas 75228 (214) 388-3887

PROJECT COORDINATOR:
RUNYON AND ASSOCIATES
CONTACT: MICHAEL W. LEWIS

Barnes & Noble Booksellers Since 1873
GRAND JUNCTION, CO.
24.5 & F ROAD
GRAND JUNCTION, COLORADO

PROJECT NO. 9642
REVISION NO.
DATE:

CHANDLER SIGNS
3201 Manor Way
Dallas, TX 75235-5909

FAX COVER SHEET

DATE:	March 14, 1997	**TIME:**	11:01 AM
TO:	Michael Drollinger City Planning	**PHONE:** **fax**	970-244-1439 970-244-1599
FROM:	Patty Pryor	**PHONE:**	214-902-2000
	Chandler Signs	**FAX:**	214-902-2044

RE: BARNES & NOBLE BOOKSELLERS

Number of pages including cover sheet 1

MESSAGE:

Michael, I am sorry I missed you again. I got your voice mail this morning and found you will be out until Tuesday.

I Need to speak to you in regard to permitting information for

the Barnes & Noble Booksellers at 24-1/2 Road & "F" Road there in Grand Junction.

Please call me when you return.

Thanks

copy: Shannon Frost

CHANDLER SIGNS
3201 Manor Way
Dallas, TX 75235-5909

FAX COVER SHEET

DATE:	March ~~14~~ 18, 1997	**TIME:**	~~11:04 AM~~ 8:30
TO:	Michael Drollinger City Planning	**PHONE:** **fax**	970-244-1439 970-244-1599
FROM:	Patty Pryor	**PHONE:**	214-902-2000
	Chandler Signs	**FAX:**	214-902-2044

RE: BARNES & NOBLE BOOKSELLERS

Number of pages including cover sheet 1

MESSAGE:

~~Michael, I am sorry I missed you again. I got your voice mail this morning and found you will be out until Tuesday.~~

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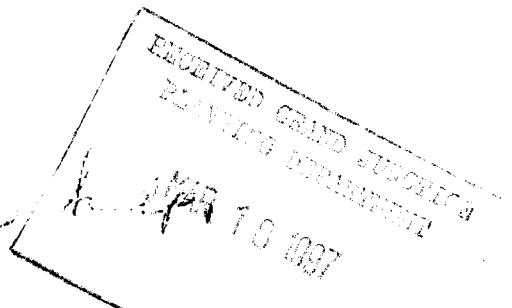
Please call me when you return.

Thanks

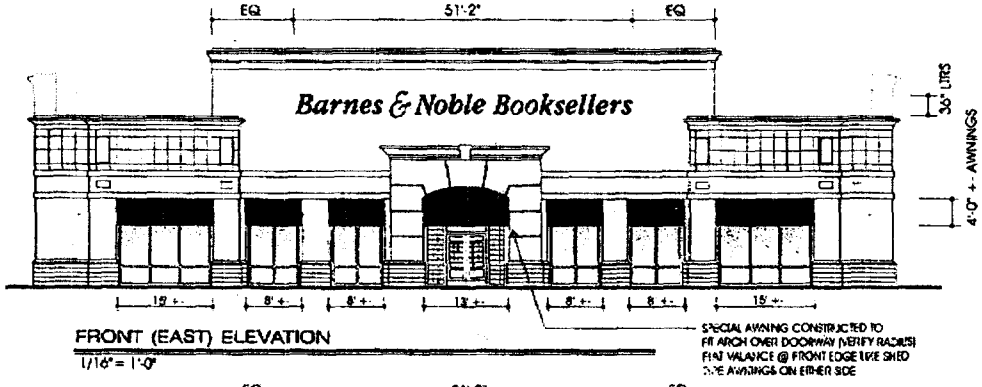
copy: Shannon Frost



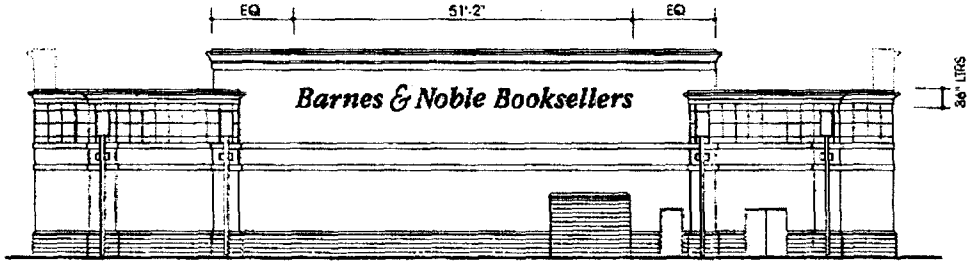
Hi, thanks for speaking to me today

also

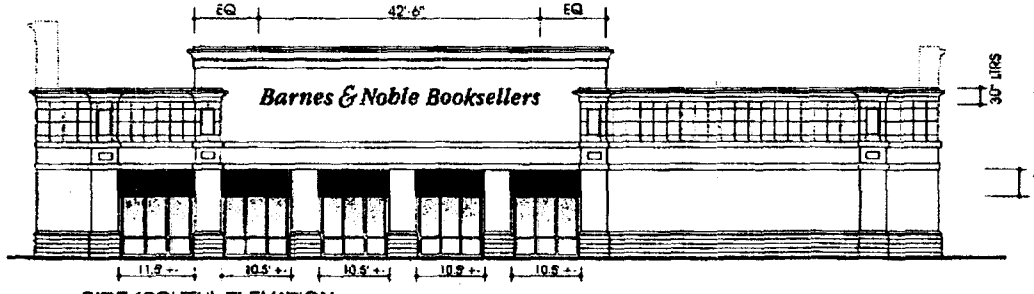
Do we need to permit awnings?



FRONT (EAST) ELEVATION
1/16" = 1'-0"



REAR (WEST) ELEVATION
1/16" = 1'-0"



SIDE (SOUTH) ELEVATION
1/16" = 1'-0"

INSTALLATION NOTES :

1. All roofs are bonded and shall not be penetrated without consent of Roof Company.
2. Plywood backing shall be provided by General Contractor behind sign area of drywit wall system.
3. It is the responsibility of Sign Installer to field verify wall materials and access before installation.
4. On drywit walls spacers shall be used and painted out to protect wall & minimize hardware distraction.

JOB/ORDER NUMBER
DESIGN NUMBER 96-2713-R1
SHEET 1 OF 6

CLIENT BARNES & NOBLE
ADDRESS 24 & F ROAD
CITY/STATE GRAND JUNCTION, CO
SALES S. FROST DATE
ARTIST J. BUSH 8-23-96

APPROVED BY	DATE
ARTWORK	
SALES	
ESTIMATING	
ENGINEERING	
CLIENT	
LAND LORD	

Chandler Signs

3204 Manor Way, Dallas, TX 75235 214-902-1000 FAX 214-902-1004
3281 Cherry Ridge Dr. C401, San Antonio, TX 78230 210-641-3804 FAX 210-349-9774

© DRAWING & THE PROPERTY OF CHANDLER SIGNS, INC. AND AS SUCH IS NOT TO BE USED OR REPRODUCED IN ANY FORM WITHOUT PERMISSION OF CHANDLER SIGNS, INC.

REVISIONS

R1	ADD DF POLE SIGN & DF MONUMENT SIGN 10/14/96

BILL OF MATERIALS

SIGN METHOD OF PRINTS

MARINE	☐ FILE	☐ CAD	
MECHANICAL	☐ PATH	☐ CAM	
SERVICE	☐ PAINT	☐ HEAT TRANS	
CUSTOM	☐ VINYL	☐ PAPER ASSY	
ALUMINUM	☐ NEON	☐ REPAIR	
CHANNEL LTR	☐ ACRYLIC		
ASSEMBLY	☐ AWNING	☐	

TOTAL

51'-2"

36"

Barnes & Noble Booksellers

Ⓐ ELEVATION - LETTER LAYOUT BN-SL-36

3/16"= 1'-0" TWO (2) SIGNS REQUIRED

U.L. LABELS REQUIRED
INSTALL IN ACCORDANCE WITH NATIONAL ELECTRICAL CODES

ELECTRICAL HOOK-UP TO BE PERFORMED BY CUSTOMER

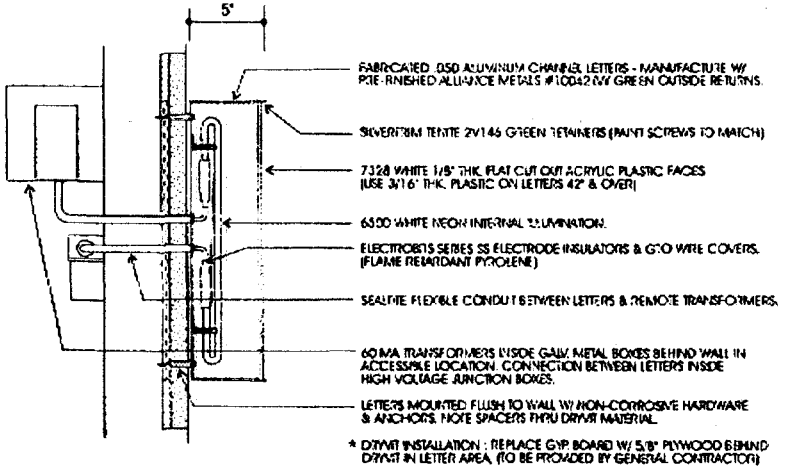
42'-6"

30"

Barnes & Noble Booksellers

Ⓑ ELEVATION - LETTER LAYOUT BN-SL-30

3/16"= 1'-0" ONE (1) SIGN REQUIRED



FACE LIT LETTER SECTION

N.T.S.

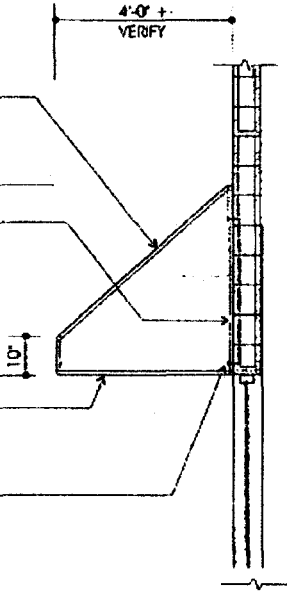
"BREAK DOWN" TYPE SYSTEM FABRICATED SUNBRELLA CANVAS AWNINGS. HEMLOCK GREEN TWEED STYLE #4605 FINISH.
NOTE: ENDS OF AWNING ENCLOSED WITH SAME MATERIAL.
SEE DETAILS & SECTIONS ON SHEET 3

1" SQUARE ALUMINUM TUBE FRAME WELDED CONSTRUCTION. WIRE BRUSH ALL WELDS TO REMOVE SMOKE. BLACK POWER COAT FINISH ON ALL EXPOSED SURFACES. ENDS MADE SEPERATELY & BOLTED ON IN FIELD BEFORE INSTALLATION

BOTTOM OF AWNING IS OPEN.

MOUNT AWNINGS FLUSH TO WALL WITH NON-CORROSIVE HARDWARE COMPATIBLE WITH WALL CONSTRUCTION. (VERIFY)

NOTE: AWNINGS ARE NON- ILLUMINATED. VERIFY ALL AWNING DIMENSIONS W/ FIELD SURVEY BEFORE FABRICATION.



SECTION THRU STOREFRONT @ AWNINGS

3/8"= 1"=0"

WORK ORDER NUMBER
DESIGN NUMBER 96-2713-R1
SHEET 2 OF 6

CLIENT BARNES & NOBLE
ADDRESS 24.4 ROAD & F ROAD
CITY/STATE GRAND JUNCTION, CO
SALES S. FROST DATE
ARTIST J. BUSH 8-23-96

APPROVED BY	DATE
ART DEPT.	
SALES	
ESTIMATING	
ENGINEERING	
CLIENT	
LAND LORD	

Chandler Signs

3301 Industry Way Carrollton, TX 75006 214-962-2900 Fax 214-962-2944
3301 Spring Bridge Dr. C-301 San Antonio, TX 78220 210-349-1404 Fax 210-349-4724

REVISIONS

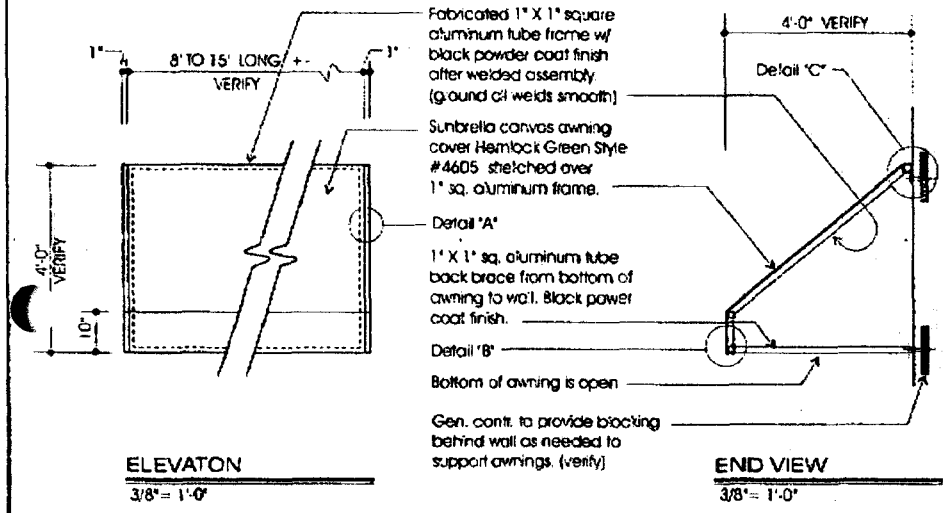
R1	ADD'L OF POLE SIGN & DF MONUMENT SIGN 10/14/96

BILL OF MATERIALS

DISTRIBUTION OF PARTS

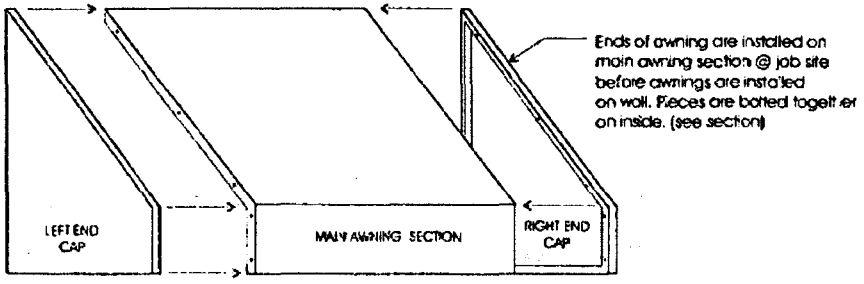
MASTER	☐ FILE	☐ CAD	☐
ELECTRICAL	☐ PUBS	☐ CAM	☐
SERVICE	☐ PAINT	☐ HEAT TRANS	☐
CUSTOMER	☐ VINYL	☐ AWN. ASSY.	☐
ALUMINUM	☐ NEON	☐ INSTALL	☐
CHANNEL	☐ SCREEN		☐
ASSEMBLY	☐ AWNING	☐	☐

TOTAL

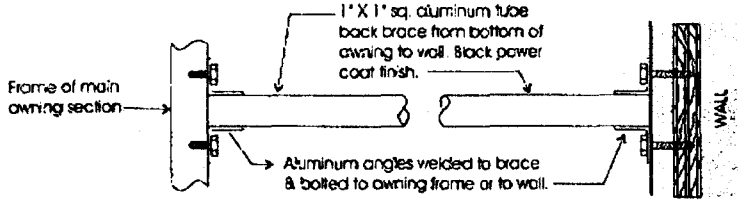


ELEVATON
3/8"= 1'-0"

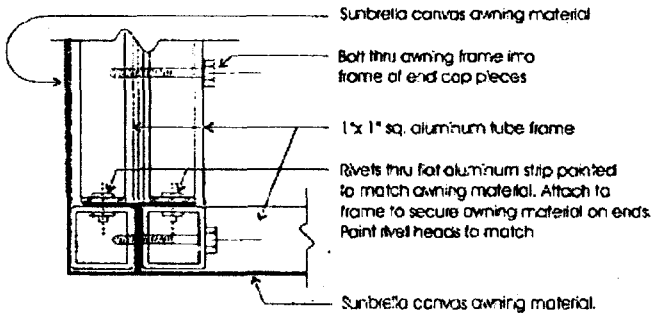
END VIEW
3/8"= 1'-0"



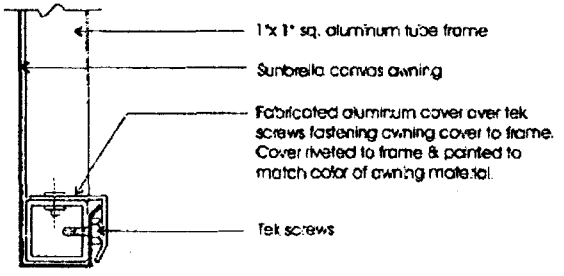
PERSPECTIVE VIEW
N.T. S



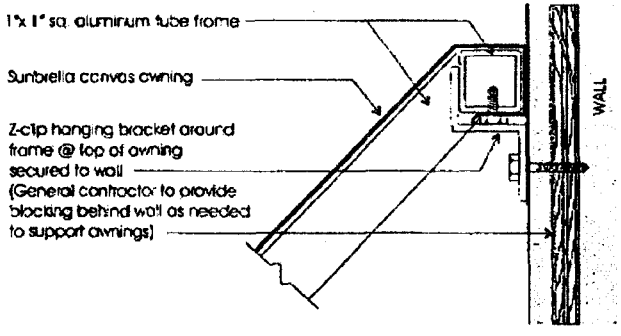
BACK BRACE DETAIL @ BOTTOM OF AWNING
3"= 1'-0"



(A) DETAIL - ENDS BOLTED TO MAIN AWNING SECTION
HALF SIZE



(B) DETAIL - ALUMINUM TEK SCREW COVERS
HALF SIZE



(C) DETAIL - TOP MOUNTING SECTION
HALF SIZE

MORE/ADDENDUM NUMBER
DESIGN NUMBER 96-2713-R1
SHEET 3 OF 6

CLIENT BARNES & NOBLE
ADDRESS 24.4 ROAD & F ROAD
CITY/STATE GRAND JUNCTION, CO
SALES S. FROST DATE
ARTIST J. BUSH 8-23-96

APPROVED BY	DATE
ART DEPT.	
SALES	
ESTIMATING	
ENGINEERING	
CLIENT	
LAND LORD	

Chandler Signs

2751 Midway Valley Dallas, TX 75233 214-902-2000 FAX 214-902-2044
3201 Cherry Ridge St. C-101 San Antonio, TX 78230 210-349-3804 FAX 210-349-8734

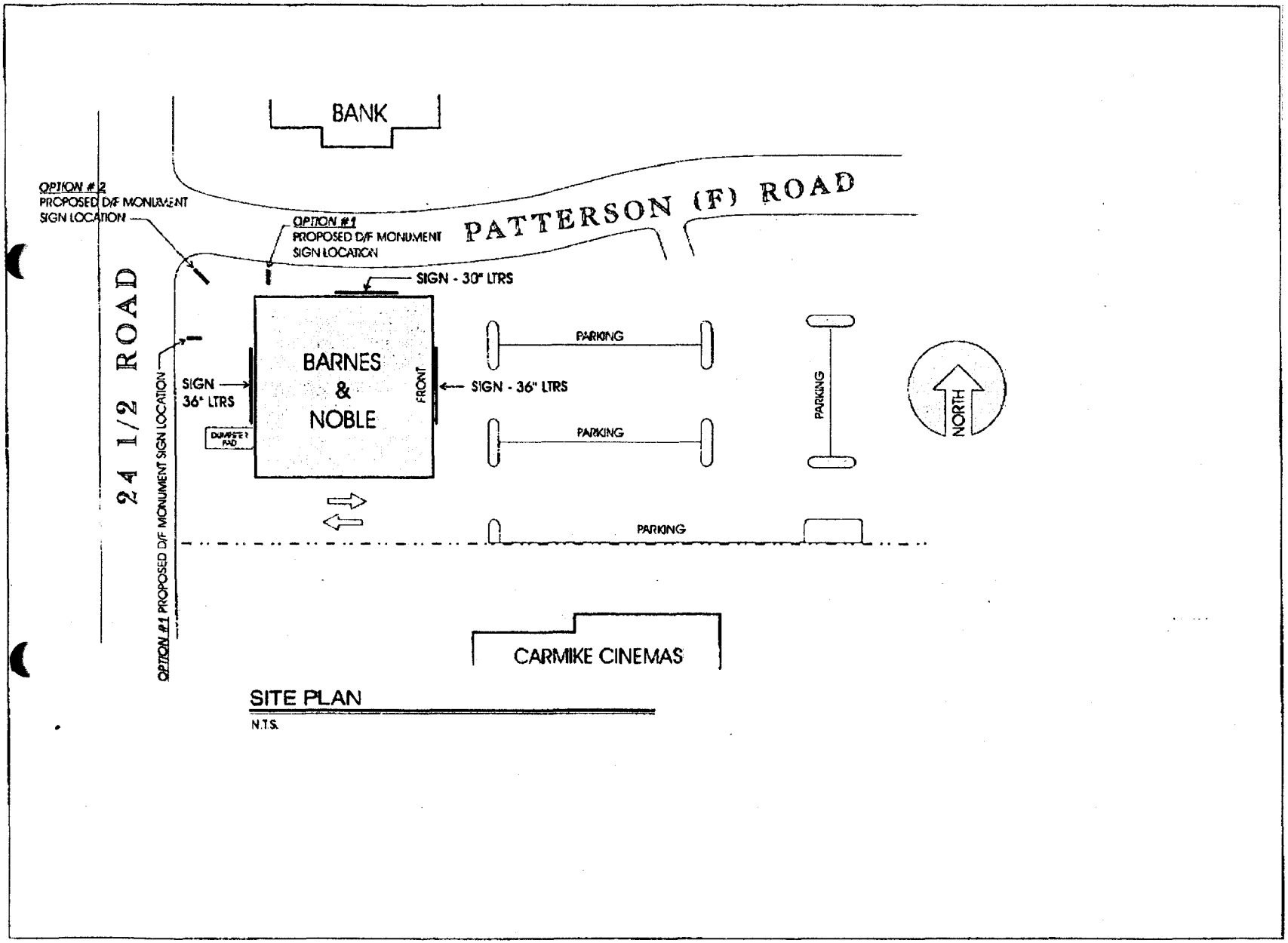
REVISIONS	
#1	ADD DF POLE SIGN & DF MONUMENT SIGN 10/14/96

BILL OF MATERIALS

DISTRIBUTION OF PRINTS

MASTER	☐ FILE	☐ ICAD	☐
ELECTRICAL	☐ FILE	☐ CAM	☐
SERVICE	☐ PAINT	☐ H-FAX TRANS	☐
CUSTOM	☐ VINYL	☐ ANNE ARPL	☐
ALUMINUM	☐ NEON	☐ INSTALL	☐
CHANNEL LTR	☐ SCREEN	☐	☐
ASSEMBLY	☐ AWNING	☐	☐

TOTAL



SITE PLAN

N.T.S.

WORK ORDER NUMBER	
SEARCH NUMBER	96-2713-R1
SHEET	4 of 6
CLIENT	BARNES & NOBLE
ADDRESS	24 & ROAD & F ROAD
CITY/STATE	GRAND JUNCTION, CO
SALES	S. FROST
DATE	8-23-96
ARTIST	J. BUSH

APPROVED BY	DATE
ART DEPT.	
SALES	
ESTIMATING	
ENGINEERING	
CLIENT	
LAND LOAD	

Chandler Signs

REVISIONS	
1	ADD D/F POLE SIGN & D/F MONUMENT SIGN 10/14/96

BILL OF MATERIALS

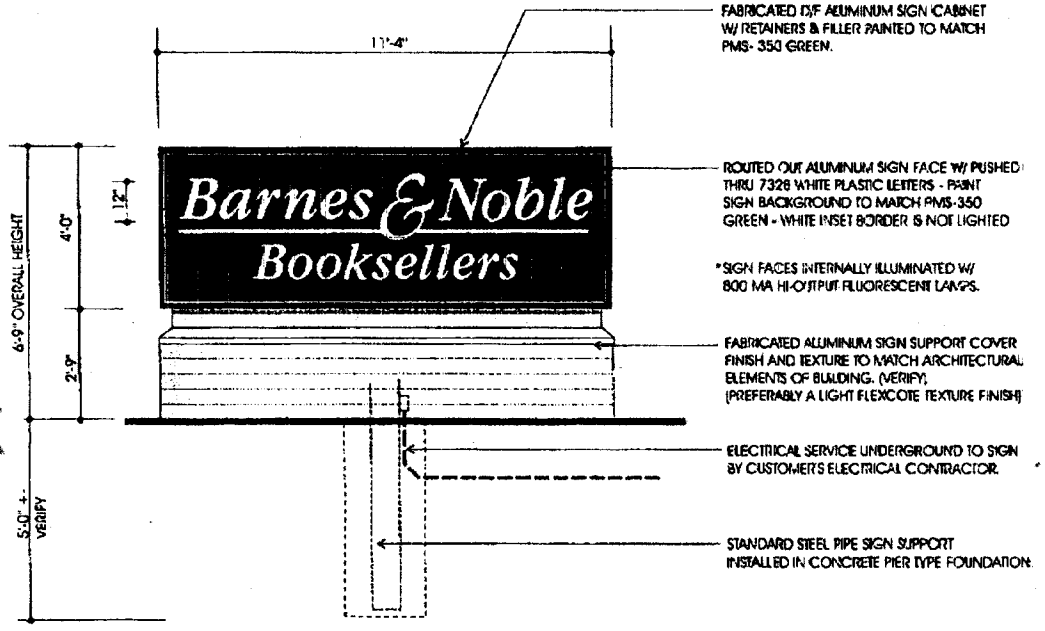
DISTRIBUTION POINTS

MASTER		FILE	CAD
ELECTRICAL		PLOT	CAM
SHOP		PAINT	HEAT TRANS
CUSTOM		VINYL	ANIM. ART
ALUMINUM		NEON	INSTALL
CHAN LTR		SCAN IN	
ASSEMBLY		AWNING	

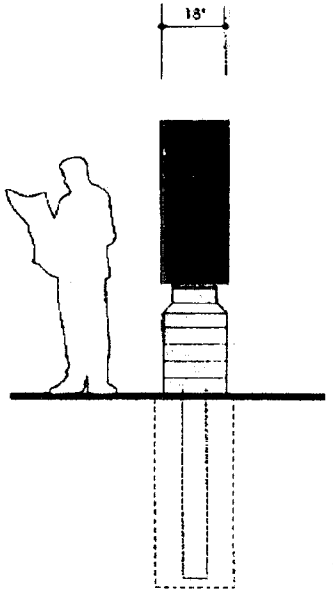
TOTAL

OPTION # 1

ONE D/F MONUMENT SIGN ON 24 1/4 ROAD & ONE D/F MONUMENT SIGN PATTERSON ROAD. (TWO SIGNS TOTAL)



Ⓓ DOUBLE FACE MONUMENT SIGN ELEVATION
3/8"= 1'-0"



END VIEW
3/8"= 1'-0"

WORK ORDER NUMBER
DESIGN NUMBER 96-2713-R1
SHEET 6 OF 6

CLIENT BARNES & NOBLE
ADDRESS 24.4 ROAD & F ROAD
CITY/STATE GRAND JUNCTION, CO
SALES S. FROST DATE
ARTIST J. BUSH 8-23-96

APPROVED DATE
ART DEPT.
SALES
ESTIMATING
ENGINEERING
CLIENT
LAND LEAD

Chandler Signs

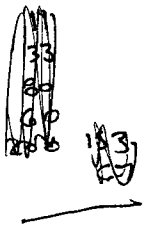
REVISIONS
R1 ADD D/F POLE SIGN & D/F MONUMENT SIGN 10/14/96

FINAL APPROVAL

SETTING STUDIES / PRINTS
MASTER ☐ PAL ☐ CAD
ELECTRICAL ☐ PLOT ☐ CAM
STENCIL ☐ PHOTO ☐ VINYL FIGURE
CUSTOM ☐ VINYL ☐ ARTPL ASSY
ENGINEERING ☐ PRINT ☐ PATTERN
CHANGE ORDER ☐ SCREEN ☐
ASSEMBLY ☐ ARTWORK ☐
TOTAL

→ PM&

	Bldg.	Rd.
F Rd	135 ft	504
24½ Rd	130ft	166



1
11
33
80
60
153
67
504

Allowance

F Rd Bldg 270
Rd 756
MAX 756

24½ Rd Bldg 260
Rd 249
MAX 249

F Rd
263.4 ft² EAST & NORTH

24½ Rd
218.8 ft² WEST & SOUTH

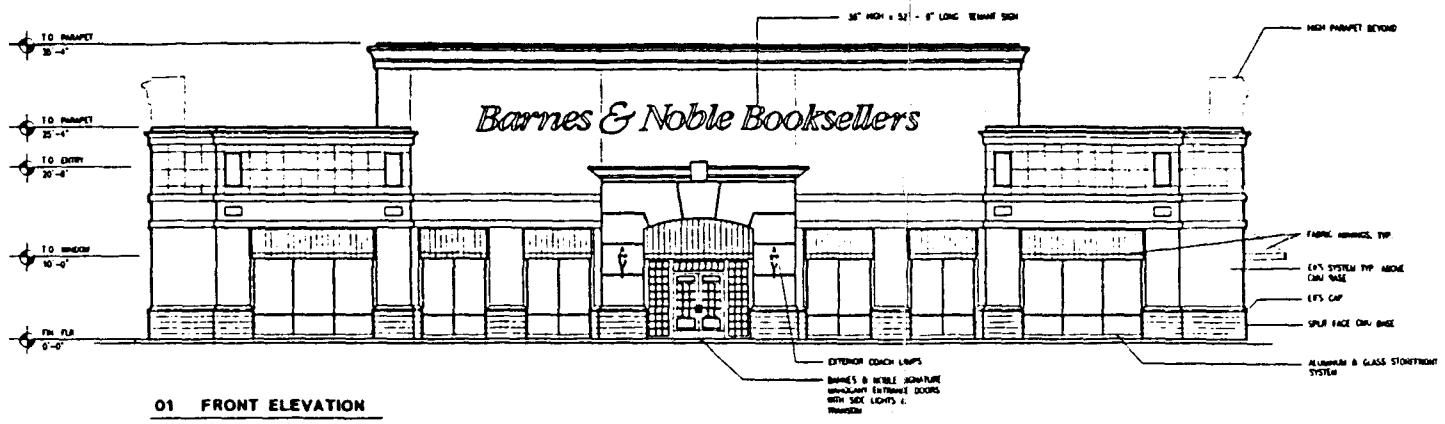
FRONT (EAST) 154 ft²

REAR (WEST) 109.4 ft²

SIDE (SOUTH) 109.4 ft²

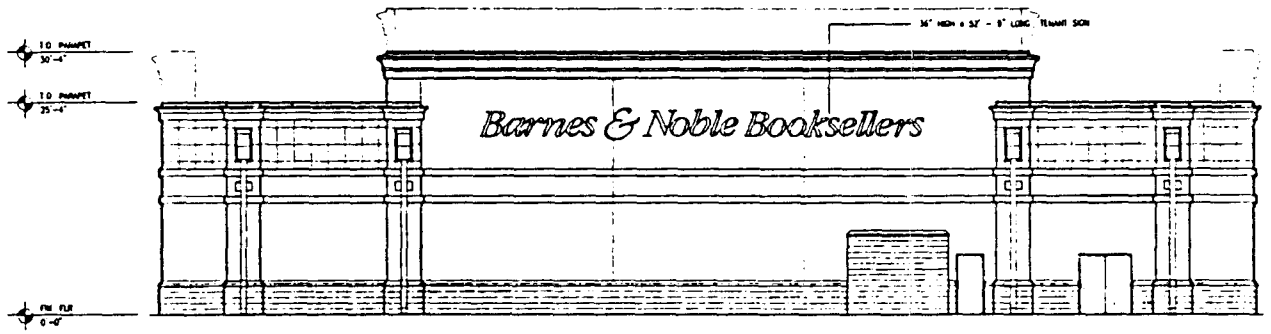
Monument signs 45.3 ft² (proposing two)

North 109.4 ft²



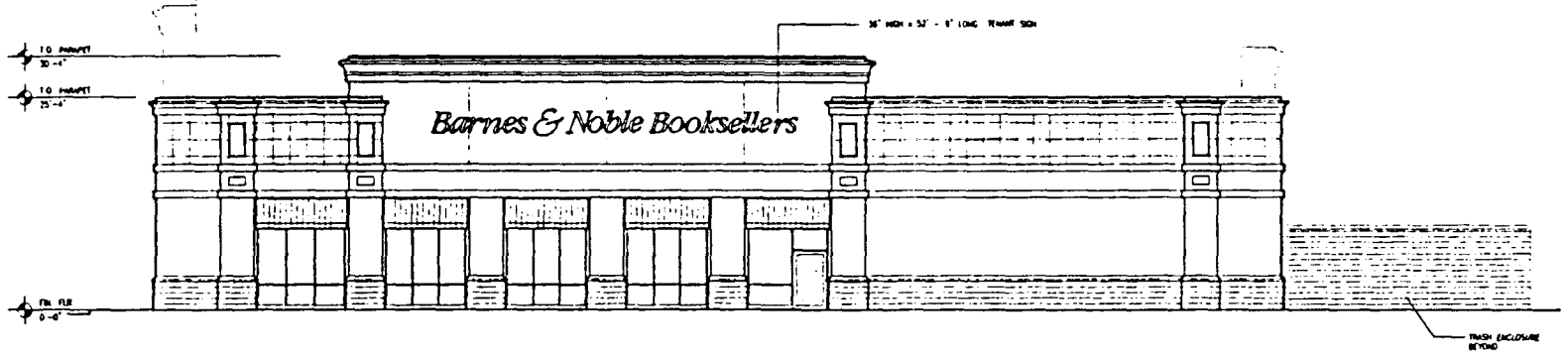
01 FRONT ELEVATION

SCALE 1/8"=1'-0"



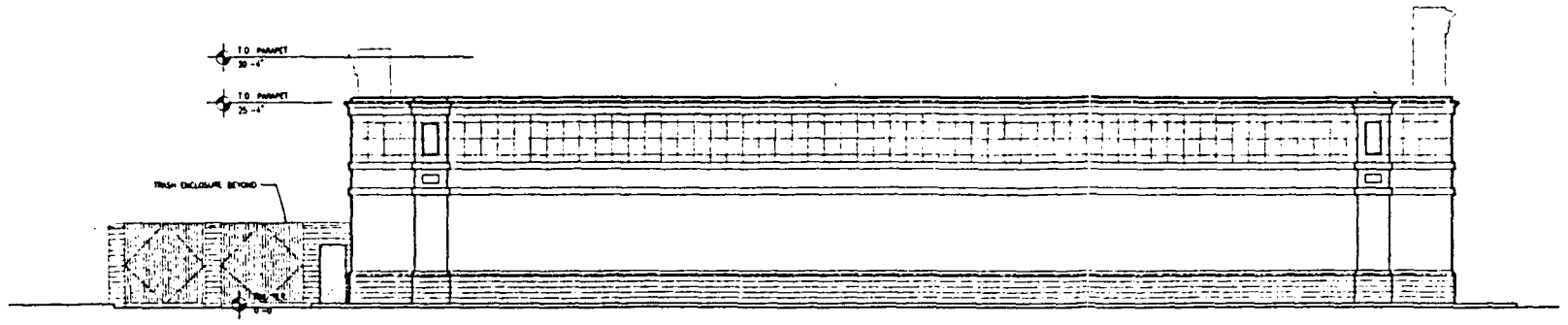
02 REAR ELEVATION

SCALE 1/8"=1'-0"



03 SIDE ELEVATION

SCALE 1/8"=1'-0"



04 SIDE ELEVATION

SCALE 1/8"=1'-0"

PROJECT NO. 9642

Store Number XXXXXX

Barnes & Noble Booksellers Since 1873

GRAND JUNCTION, CO.

RUNYON ANDASSOCIATES Architects
2033 CHENAULT DR. SUITE 150
CARROLLTON, TX 75006
(214) 233-7705

DATE: 07.16.96

REVISIONS

FILE NO.: 9642A300
PLOT SCALE: 1/8"=1'-0"

A300
ELEVATION

SPR-1996-110

City of Grand Junction

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

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

August 14, 1997

Deborah Alexus
The Canada Life Assurance Company
c/o Terrix Financial Corporation
1777 South Harrison Street #507
Denver CO 80210

Dear Ms. Alexus:

As per your request I am forwarding you this letter to confirm that the Barnes and Noble Bookstore located at 2451 Patterson Road is an allowed use in the C-2 (Heavy Commercial) zoning district, and that as of the issuance of the Certificate of Occupancy in June 1997 the store was in compliance with City zoning regulations.

I trust that this letter contains the information you requested. Please do not hesitate to contact me if you have any questions or require additional information.

Sincerely yours,

Michael T. Drollinger
Senior Planner

cc: File

SUBMITTAL CHECKLIST

SITE PLAN REVIEW

Location: F 1/2 Rd Project Name: SPR - Retail Store

Date Received 8-21-96

Receipt # 4475

File # SPR-96-190

ITEMS DESCRIPTION	SSID REFERENCE	DISTRIBUTION ● City Community Development	● City Dev. Eng.	● City Utility Eng.	● City ~~Property Agent~~ Public	O City Parks/Recreation	● City Fire Department	● City ~~Attorney~~	O City Downtown Dev. Auth.	O County Planning	● County Bldg. Dept.	● Irrigation District G.V.I.C	● Drainage District G.J.	● Water District UTE	O Sewer District	O U.S. West	O 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	TOTAL REQ'D.
● Application Fee $215	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	
● Planning Clearance*	VII-3	1																								
● 11"x17" Reduction of Assessor's Map	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	
● 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																		
○W	VII-2	1	1	1	1			1																		
○mprovements 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	
● 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	
● 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	
● Grading and Drainage Plan	IX-16	1	2										1						1							
● 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								
● Roadway Plan and Profile ; typ. for adj. streets	IX-28	1	2										1													
● 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-10,11	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.

PRE-APPLICATION CONFERENCE

Date: 5/28/96
Conference Attendance: Kathy L., Jim Sitterna, Dick Scariano, Jim Langford
Proposal: SFR - Retail Bank 3 story
Location: SE corner F 1/2 24 1/2 Rd

Tax Parcel Number: 2945-091-00-118
Review Fee: _____
(Fee is due at the time of submittal. Make check payable to the City of Grand Junction.)

Additional ROW required? possibly
Adjacent road improvements required? possibly
Area identified as a need in the Master Plan of Parks and Recreation? _____
Parks and Open Space fees required? _____ Estimated Amount: _____
Recording fees required? _____ Estimated Amount: _____
Half street improvement fees/TCP required? TCP - $700/1,000 s.f. Estimated Amount: _____
Revocable Permit required? for landscaping in the ROW
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 # yes
Located in other geohazard area? —

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

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

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

O Other _____
Related Files: _____

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

PRE-APPLICATION CONFERENCE

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

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

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

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

X _____ X _____

Signature(s) of Petitioner(s) Signature(s) of Representative(s)

Barnes & Noble Retail Development

Site Plan Review Submittal

General Project Report

A. Project Description

The property is located at the corner of 24-1/2 Road and Patterson Road. The lot is 1.62 acres to be developed as a retail outlet for the sale of books, software, and other informational media. The store also includes a coffee shop. The remainder of the site will be used for the required parking, storm water management, and landscaping.

As per agreement with the adjacent land owner to the east, the entry is to be shared, and the access to the subject property is to be by easement. This is to mutually benefit both properties by reducing curb cuts on Patterson Road, allow the subject property to expand parking, and allow the adjacent property to avoid the expense of crossing the irrigation ditch to the north.

B. Public Benefit

The proposed development will provide infill in an area surrounded by commercial uses. The architecture and surrounding landscape will provide an attractive location for a quality retail outlet on a highly visible site. The proposed development will pay its commensurate share of fees and taxes to support the existing infrastructure and operating expenses for the services required.

C. Project Compliance, Compatibility, and Impact

The development meets setbacks, access, parking, and landscape requirements of the existing C-2 zoning. The retail sales area of 13,690 s.f. requires 69 parking spaces. The 38 seats in the restaurant requires 13 spaces, totaling a gross parking requirement of 82 spaces. The proposal shows 91 spaces. The landscape requirements with the proposed tree counts and square footage's of landscaping are shown on the landscape plan.

The surrounding land uses are commercial, with the property to the east remaining undeveloped at this time

Infill Development: The proposed project meets the intent of the promoting the development of infill development, allowing for the efficient use of existing utilities and roadways.

Northwest Area: The Northwest Area Plan promotes the development of the portion of the City due to it's proximity to existing growth areas, accessibility, and existing commercial uses.

Patterson Road Guidelines: "commercial development is appropriate on the south side of Patterson Road from Highway 6&50 to 25-1/2 Road"; "Access points should be designed to serve more than one lot" (entry is designed to be shared with the adjacent lot to the east).

D. Development Schedule and Phasing

construction is scheduled to begin immediately following site plan approval and issuance of a building permit.

OMEGA
REALTY & ASSOCIATES, INC.
COMMERCIAL • RESIDENTIAL • INVESTMENTS

August 12, 1996

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

Re: 24 1/2 and F Road

Dear Sir:

This letter serves as The Sterling Co.'s authorization to allow SB Advisors, Inc., or their respective contractors, Ciavonne & Associates, or Thompson-Langford, to pursue site plan approvals on the southeast corner of 24 1/2 and F Roads. Attached is a legal description for the property.

If you have any questions regarding this authorization or the extent of this approval, please contact me at your earliest convenience.

Sincerely,

Richard Scariano
The Sterling Co.

RS/fah

1048 Independent Ave., Suite A-201, Grand Junction, CO 81505 • (970) 245-7571 • FAX: (970) 245-7555

Final Drainage Report

Barnes and Noble Book Store

August 14, 1996

Prepared for:

Tim Sittema
Sittema - Bullock
5445 DTC Parkway, Penthouse Four
Englewood, CO 80111

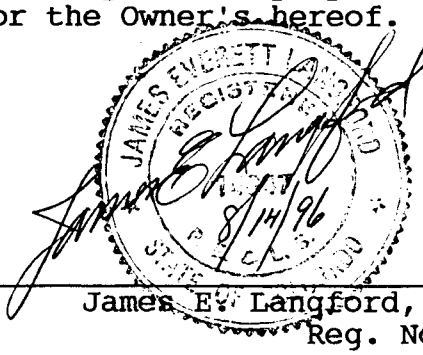
Prepared by:

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

Job No. 0293-001

Engineer's Certification

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



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

Introduction

I. GENERAL LOCATION AND DESCRIPTION:

A. Site and Major Basin Location:

The site of the future Barnes and Noble Book Store is located in Northwest 1/4 of the Northeast 1/4 of Section 9, Township 1 South, Range 1 West of the Ute Meridian. In more local terms, it is located immediately north of the Carmike theater at the intersection of 24 1/2 Road and Patterson Road.

B. Site and Major Basin Description:

The site, located at the southeast corner of the intersection of 24 1/2 Road and Patterson Road, is a parcel approximately 400 feet long by 200 feet wide. The property is hydraulically separated from Patterson Road by the Independent Ranchmen's Ditch; the portion of the ditch to the west running beneath Patterson Road and into the Mall area. The site is presently unoccupied and devoid of vegetation.

II. EXISTING DRAINAGE CONDITIONS:

A. Major Basin:

The site as it presently exists is nearly flat, sloping at slightly less than 0.5% to the west. Due to this lack of gradient, ponding does occur in the center of the site. Stormwater impacting the site either drains out the west end of the parcel onto 24 1/2 Road, or leaches into the ground.

B. Site:

Given the hydraulic isolation of the property, the major drainage basin and the site are essentially the same.

III PROPOSED DRAINAGE CONDITIONS:

A. Changes in Drainage Patterns:

Site stormwater drainage either ponds on-site or overflows into the curb and gutter and runs south along 24 1/4 Road to inlets near the intersection of 24 1/4 Road with State Highway 6 & 50. We are proposing to collect the site stormwater in a detention facility near the northwest corner of the site and regulate the flow to historic levels

directly into the buried portion of the Independent Ranchmen's Ditch.

B. Maintenance Issues:

The on-site collection and detention facilities will be the responsibility of the lot owner.

IV DESIGN CRITERIA AND APPROACH:

A. GENERAL CONSIDERATIONS:

Natural conditions such as the tight adobe soils, high ground water and the extremely flat slopes have historically made this site difficult to drain.

As mentioned earlier in this report, the site is very flat and does not drain well. When a storm does occur that is large enough to cause runoff, the site drains down 24 1/2 Road. With development of this site, drainage down 24 1/2 Road is no longer possible because of the inability of the storm sewer near Highway 6 & 50 to handle the increased flow.

The site is within the 100-year floodplain of the Independent Ranchmen's Ditch. We will be elevating the building to place it at least 1-foot above the identified maximum water surface elevation.

B. Hydrology:

Pre-development Runoff coefficients used in the Rational equation were based on the hydrologic soil group index for the soil type found within the project. For post-development conditions we used the range of coefficients for the various proposed surface covers found in Appendix "B" of the above referenced manual.

According to the Soil Conservation Service soil survey for the Grand Junction Area, the dominant soil type is the Billings soil group having a hydrologic soil group index of "C". The soils on the site are hard packed which would suggest that the site has been used for some commercial or light industrial purpose. This would have suggested classifying the area as a traffic area. To do so would have made the historic runoff too high, closing the gap between the historic and the developed condition thus limiting the required detention. It was felt that using runoff coefficients based on HSG "A" versus HSG "C" would better represent the runoff potential and yield a more realistic detention volume.

Times of Concentration were calculated using the procedures outlined in Appendix "E" of the Storm Water Management Manual.

Given the small size of the project, the site was considered as one basin and analyzed using the Rational Method as described in Section VI. Hydrology, City of Grand Junction Storm Water Management Manual. Stormwater runoff for the 2-year and 100-year events were quantified and routed through a detention facility located in the northwest corner of the site.

C. Hydraulics:

The flow capacity of concrete pans, curb and gutter or underground conduits was calculated using Manning's Equation and the requisite coefficients all found in Appendices "G" & "H".

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.

The two stage outlet control structure was sized using the procedures outlined in Appendix "K".

IV Results and Conclusions

Runoff Results:

2-year historic runoff rate = 0.82 CFS

2-year developed runoff rate = 2.56 CFS

100-year historic runoff rate = 3.10 CFS

100-year developed runoff rate = 6.65 CFS

Detention Facility:

Storage volume for 2-year event = 2242.79 cu-ft.

Storage volume for 100-year event = 3513.87 cu-ft.

The outlet works will be constructed using a modified CDOT Type "C" inlet with a close mesh grate. An orifice will be constructed in the front face of the box at an invert elevation of 4553.00 which also coincides with the bottom of the pond. A weir will be constructed at the top, just below the close mesh grate. The orifice, having a diameter of 0.50 feet, has been sized to pass the 2-year historic flow when the water surface of the pond is up to the 2-year storage level of 4554.33. The second stage outlet ,or weir, which has been set at the 2-year water surface elevation, and given a width of 1.08 feet in length, will in combination with the orifice, pass the 100-year event when the water surface elevation is up to the 100-year storage level of 4554.9.

The top of the box is to be set at the 100-year water surface elevation and is to be covered with a standard CDOT close mesh steel grating. The steel grating will serve as an emergency overflow in the event of a storm in excess of the maximum design event. The outfall from the outlet works is to be 18-inch PVC pipe.

References

"STORMWATER MANAGEMENT MANUAL (SWMM)", City of Grand Junction, June 1994

"MESA COUNTY STORM DRAINAGE CRITERIA MANUAL", Mesa County, Colorado, Final Draft March 1992.

PATTERSON ROAD

24 1/2 ROAD

N

(IN FEET)
1 inch = 20 ft.

ASPHALT AREA = 36,734.62 SF
AREA LANDSCAPE = 12,171.18 SF
AREA BUILDING = 17550.0 SF
CONCRETE AREA = 4042.31 SF
TOTAL AREA = 70,498.11

DRAWN BY:	JCS
DESIGNED BY:	JEL
CHECKED BY:	JEL

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

American Consulting Engineers Council Member

THOMPSON-LANGFORD CORP.
529 25 1/2 RD., SUITE B210
GRAND JUNCTION, COLORADO
PH. (303) 243-8067

REVISION	DATE	DESCRIPTION	BY	CHD

BARNES AND NOBLE RETAIL STORE — GRAND JUNCTION, COLORADO

DRAINAGE MAP

SCALE:	JOB NO:	DATE:
1" = 40'	8858-003	8-18-98

SHEET NO: 1 of 1

8/16/96 7:36

BARNES & NOBLE, 0293-001
TWO STAGE OUTFALL CALCULATION

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.	4554.33 Ft.		
*	Orifice Invert	4553.00 Ft.		
**	Orifice Dia. (d)	**0.50** Ft.		****Vary orifice diameter until**
*	Discharge (Qr)	0.82 CFS		**areas match**
*	"Co" Coef.	0.60		
X	Area	= (3.1416)d^2/4	=	**0.20 SF**
X		= Qr/0.82C(2gh)^0.5	=	**0.20 SF**

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

*	Water Surf. El.	4554.90		
X	Wier Invert El.	4554.33		

The 100-year storage elevation is dictated by pond configuration. 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 = 2.56 CFS

Q (orifice) = 0.82CoA(2gh)^0.5 = 1.01 CFS

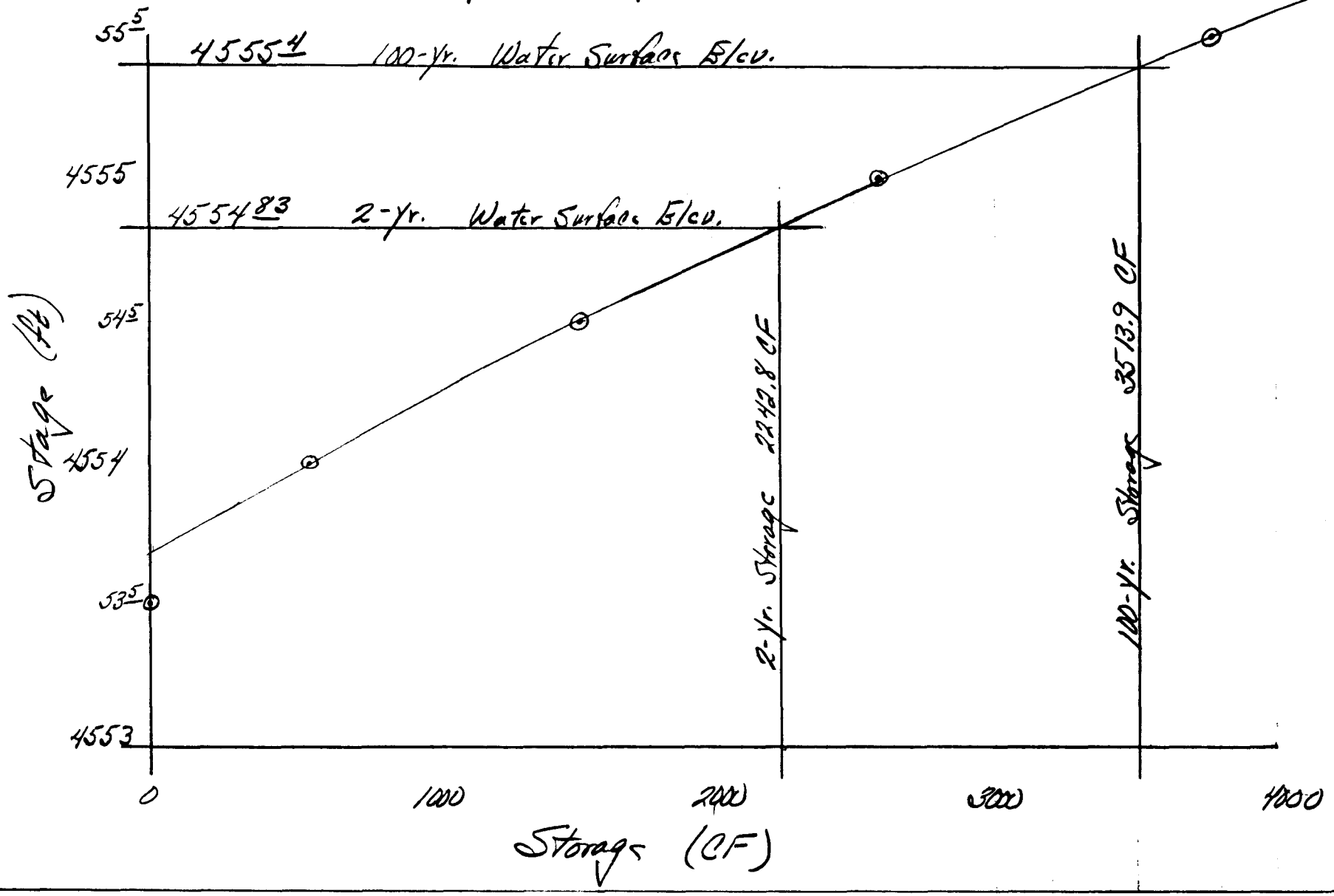
Wier Flow Equasion

Q= CwLH^1.5

X	Wier discharge =	1.55 CFS		
*	"Cw" Coef.	3.33		
X	Flow Depth (H) =	0.57 Ft.		
**	Wier Length (L)	**1.08** Ft.		****Vary unitl "Q" = Q100**

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

Stage Storage Relationship



Comms # 11061.0
07793-001
Plan 1.

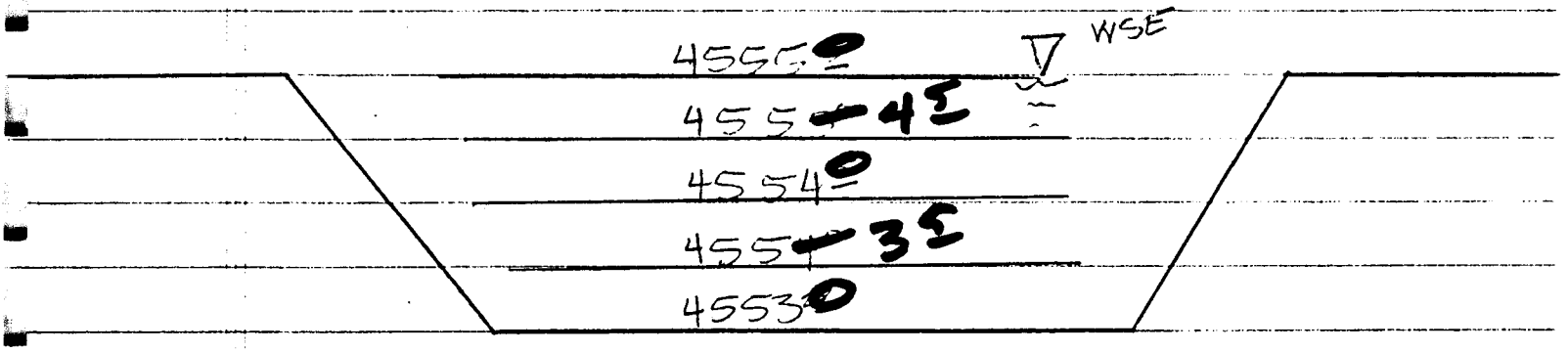
AUGUST 7, 96

BARNES & NOBLE RETAIL STORE (JOB # 0293-001)

PETENTION POND

STAGED STORAGE VOLUME CALCULATION

TOTAL POND VOL = 3,780 cf (7% over REQD 100YR)



* CALCULATIONS PER DCD Earthwork Module

ELEV	AREA SF	VOL CF	Cumulative Volume
4555.5	41" 2479 SF		3,730 CF
		1182	
4555	2240		2,592 CF
		1053	
4554.5	2049		1,539 CF
		972	
4554	1870		567 CF
		567	
4553.5	0		0

DETENTION VOLUME
For: Barnes and Noble
USING
METHOD OUTLINED ON PAGE N-4 SWMM

Td = Time of critical storm duration, minutes	
C2 = Runoff coefficient (2-Year Event)	0.81
C100 = Runoff coefficient (100-Year Event)	0.83
A = Area in acres (developed condition)	1.62
Qr2 = Detention pond average release rate, cfs (Note that this will not likely be the historic rate Qh, nor even Qmax)	0.82
Qr100 = Detention pond average release rate, cfs (Note that this will not likely be the historic rate Qh, nor even Qmax)	3.10
Tch2 = Time of concentration (historic), minutes (2-year event)	28.20
Tch100 = Time of concentration (historic), minutes (100-year event)	18.50
Tcd2 = Time of concentration (developed), minutes (2-year event)	5.00
Tcd100 = Time of concentration (developed), minutes (100-year event)	5.00
Id2 = Intensity at Td, inches per hour (2-year event)	1.95
Id100 = Intensity at Td, inches per hour (100-year event)	4.95
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
= 16.85 Min.

Td100 = (((1832*Cd*A)/(Qr100-(Qr100^2*Tcd)/(213*Cd*A)))^0.5)-17.2
= 11.77 Min.

B&N Detention Volume

```
Qd2      =  Cd*A*Id2
         =        2.56 cfs

Qd100    =  Cd*A*Id100
         =        6.65 cfs

K2       =  Tch2/Tcd2
         =        5.64

K100     =  Tch100/Tcd100
         =        3.70

V2       =  60[Qd2*Td2-Qr2*Td2-Qr2*Tcd2+K2*Qr2*Tcd2/2+Qr2^2*Tcd2/(2Qd2)]
         =    2,242.79 cu-ft.

V100     =  60[Qd100*Td100-Qr100*Td100-Qr100*Tcd100+K100*Qr100*Tcd100/2+Qr100^2*Tcd100/(
         =    3,513.87 cu-ft.
```

RUNOFF VOLUME
For: Barnes and Noble
USING
RATIONAL METHOD Q=CxCfxIxA

BASIN	Q Volume cfs	C Composite Coefficient n/a	Cf Antecedent Precip. Fac. n/a	I* Rainfall Intensity in/hr	A Basin Area acres
Historic (2-Yr)	0.82	0.55	1	0.92	1.6184
Historic (100-Yr)	3.10	0.65	1	2.95	1.6184
Developed (2-Yr)	2.56	0.81	1	1.95	1.6184
Developed (100-Yr)	6.65	0.83	1	4.95	1.6184

*Rainfall intensity was picked from Table A-1, the Intensity/Duration curves for the City of Grand Junction, based on Time of Concentration

TABLE - 2

TIME OF CONCENTRATION and RAINFALL INTENSITIES

For: Barnes and Noble

BASIN	Descrip. of Flow	L Length ft.	S Slope %	N* Mannings coef.	V* Vel. fps	Tt2 Travel Time min.	Tt100 Travel Time min.	Tc2 Time of Concentration min.	Tc100 Time of Concentration min.	2-Year i Intensity Grd. Jctn. Curves	100-Year i Intensity Grd. Jctn. Curves
"Full Site"											
Historic	overland*	300	0.50%	0.030				28.2	18.5	0.92	2.95
	Nat. Ch.***	170	0.50%	n/a	0.70	4.05	4.05				
	C&G**	0	0.00%	0.000	0.00	0.00	0.00				
"Full Site"											
Developed	Landscape*	0	1.00%	0.400				4.0	4.0	1.95	4.95
	Asph. Swale***	275	1.00%	n/a	1.75	2.62	2.62				
	Conc. Swale**	170	0.50%	0.000	2.50	1.13	1.13				
	Pipe Flow	80	0.50%	0.000	5.00	0.27	0.27				

** Used 5 minutes as a minimum

* 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: Barnes and Noble
USING
GRAND JUNCTION RECOMMENDED RUNOFF COEFICIENTS

Description Surface Area	Hydro. Soils Group	Slope <2% Runoff Coeff.'s	Sel. Coeff.		BASIN Historic Unit Area	Wt'd Value	BASIN Developed Unit Area	Wt'd Value
Pavement and Roofs	B*	0.93	0.93	2-Yr.			1.34	1.25
	B*	0.95	0.95	100-Yr.			1.34	1.27
Green landscaping	B*	0.14 to 0.22	0.22	2-Yr.			0.28	0.06
lawns and parks	B*	0.20 to 0.28	0.28	100-Yr.			0.28	0.08
**Traffic Area	A**	0.55 to 0.65	0.55	2-Yr.	1.62	0.89		
Soil and Gravel	A**	0.65 to 0.70	0.65	100-Yr.	1.62	1.05		
Total Basin Area:					1.62		1.62	
COMPOSITE "C" VALUE (2-year)						0.55		0.81
COMPOSITE "C" VALUE (100-year)						0.65		0.83

* The natural soils are in HSG "C", but because we are filling the site with pit run material to get it above the 100-year floodplain, we have used HSG "B" .

** The surface soils at the site are hard packed silts and clays devoid of any vegetation. The area's runoff potential is somewhere between bare ground and a traffic area. It was felt that the lowest classification of traffic area (HSG "A") was most appropriate.

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"

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					

REPRODUCED FROM TABLE 2, LECTURE 2, DAY 2, ACOE 1990

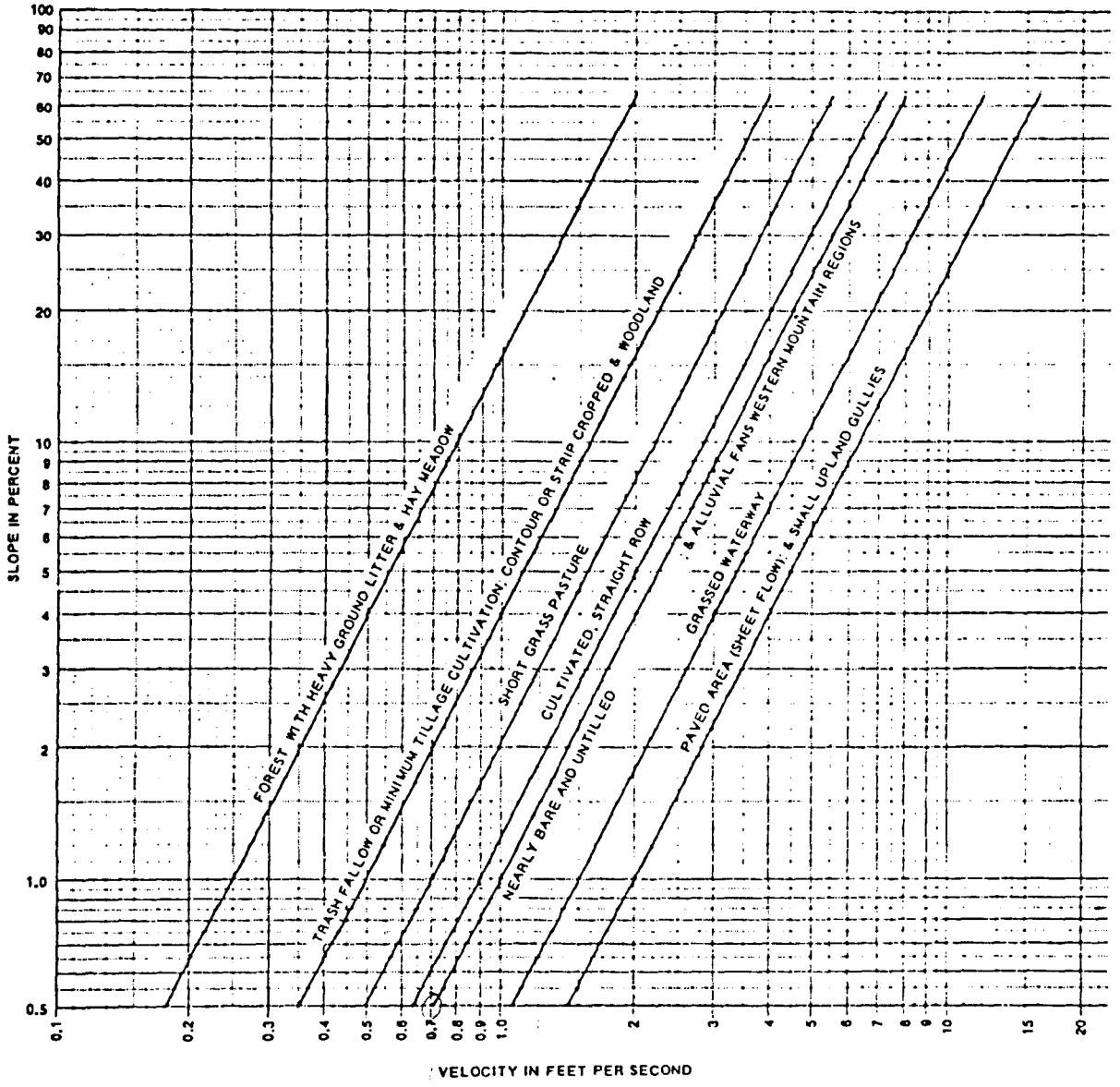
SURFACE	N VALUE	SOURCE
ASPHALT/CONCRETE	0.05 - ~~0.15~~	Developed
BARE PACKED SOIL FREE OF STONE	0.10	C
FALLOW - NO RESIDUE	~~0.008 - 0.012~~	B
CONVENTIONAL TILLAGE - NO RESIDUE	0.06 - 0.12	B Use 0.09 Historic
CONVENTIONAL TILLAGE - WITH RESIDUE	~~0.16 - 0.22~~	B
CHISEL PLOW - NO RESIDUE	0.06 - 0.12	B
CHISEL PLOW - WITH RESIDUE	0.10 - 0.16	B
FALL DISKING - WITH RESIDUE	0.30 - 0.50	B
NO TILL - NO RESIDUE	0.04 - 0.10	B
NO TILL (20-40 PERCENT RESIDUE COVER)	0.07 - 0.17	B
NO TILL (60-100 PERCENT RESIDUE COVER)	0.17 - 0.47	B
SPARSE RANGELAND WITH DEBRIS:		
0 PERCENT COVER	0.09 - 0.34	B
20 PERCENT COVER	0.05 - 0.25	B
SPARSE VEGETATION	0.053 - 0.13	F
SHORT GRASS PRAIRIE	0.10 - 0.20	F
POOR GRASS COVER ON MODERATELY ROUGH BARE SURFACE	0.30	C
LIGHT TURF	0.20	A
AVERAGE GRASS COVER	0.4	C
DENSE TURF	0.17 - 0.80	A, C, E, F
DENSE GRASS	0.17 - 0.30	D
BERMUDA GRASS	0.30 - 0.48	D
DENSE SHRUBBERY AND FOREST LITTER	0.4	A

A) CRAWFORD AND LINSLEY (1966).
B) ENGMAN (1986).
C) HATHAWAY (1945).
D) PALMER (1946).
E) RAGAN AND DURU (1972).
F) WOOLHISER (1975).

"N" values provided in this table pertain to both the SCS TR-55 "To" and FHWA 1984 HEC-12 "To" methods

OVERLAND FLOW RESISTANCE FACTOR (N)	TABLE "E-1"

REPRODUCED FROM FIGURE 15.2, SCS 1972



DETERMINATION OF "Ts"	FIGURE "E-3"

United States
Department of
Agriculture

Soil
Conservation
Service

Engineering
Division

Technical
Release 55

June 1986

Urban Hydrology for Small Watersheds

Appendix A: Hydrologic soil groups

Soils are classified into hydrologic soil groups (HSG's) to indicate the minimum rate of infiltration obtained for bare soil after prolonged wetting. The HSG's, which are A, B, C, and D, are one element used in determining runoff curve numbers (see chapter 2). For the convenience of TR-55 users, exhibit A-1 lists the HSG classification of United States soils.

The infiltration rate is the rate at which water enters the soil at the soil surface. It is controlled by surface conditions. HSG also indicates the transmission rate—the rate at which the water moves within the soil. This rate is controlled by the soil profile. Approximate numerical ranges for transmission rates shown in the HSG definitions were first published by Musgrave (USDA 1955). The four groups are defined by SCS soil scientists as follows:

Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sands or gravels and have a high rate of water transmission (greater than 0.30 in/hr).

Group B soils have moderate infiltration rates when thoroughly wetted and consist chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission (0.15-0.30 in/hr).

Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine texture. These soils have a low rate of water transmission (0.05-0.15 in/hr).

Group D soils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission (0-0.05 in/hr).

In exhibit A-1, some of the listed soils have an added modifier; for example, "Abrazo, gravelly." This refers to a gravelly phase of the Abrazo series that is found in SCS soil map legends.

Disturbed soil profiles

As a result of urbanization, the soil profile may be considerably altered and the listed group classification may no longer apply. In these circumstances, use the following to determine HSG according to the texture of the new surface soil, provided that significant compaction has not occurred (Brakensiek and Rawls 1983):

HSG	*Soil textures*
A	Sand, loamy sand, or sandy loam
B	Silt loam or loam
C	Sandy clay loam
D	Clay loam, silty clay loam, sandy clay, silty clay, or clay

Drainage and group D soils

Some soils in the list are in group D because of a high water table that creates a drainage problem. Once these soils are effectively drained, they are placed in a different group. For example, Ackerman soil is classified as A/D. This indicates that the drained Ackerman soil is in group A and the undrained soil is in group D.

Exhibit A-1, continued: Hydrologic soil groups for United States soils

BELMONT	B	BERTRAM	B	BILLINGS.	B	BLACKNOLL	C	BLUE LAKE	A
BELMORE	B	BERTRAND	B	MODERATELY SLOW		BLACKOAR	B/D	BLUE STAR	B
BELPRE	C	BERVILLE	B/D	PERM		BLACKPIPE	C	BLUEBELL	C
BELSAC	B	BERWOLF	B	BILLYCREEK	C	BLACKPRINCE	B	BLUECHIEF	C
BELTED	D	BERYL	B	BILLYHAW	D	BLACKROCK	B	BLUECREEK	D
BELTON	C	BERZATIC	D	BILTMORE	A	BLACKSAN	B	BLUEDOME	C
BELTRAMI	B	BESEMAN	A/D	BIMMER	D	BLACKSPAR	D	BLUEFLAT	C
BELTSVILLE	C	BESHERM	C	BINCO	D	BLACKSPOT	D	BLUEGROVE	C
BELUGA	D	BESNER	B	BINDLE	B	BLACKSTON	B	BLUEGULCH	B
BELUGA. DRAINED.	C	BESSEMER	C	BINFORD	B	BLACKTHORN	B	BLUEHILL	C
SLOPING		BESSIE	D	BINGER	B	BLACKTOP	D	BLUEMON	C
BELVOIR	C	BESTROM	C	BINGHAM	B	BLACKWATER	D	BLUEJOINT	B
BELZAR	C	BETHANY	C	BINGHAMPTON	B	BLACKWELL	D	BLUENOSE	B
BEMIDJI	A	BETHEL	B	BINGHAMVILLE	D	BLADEN	D	BLUEPOINT	A
BEN LOMOND	B	BETHERA	D	BINNA	B	BLAG	D	BLUERIM	C
BENCHLEY	C	BETHESDA	C	BINNSVILLE	D	BLAGO	D	BLUESLIDE	D
BENCLARE	C	BETHLEHEM	B	BINS	B	BLAINE	C	BLUESPRIN	C
BENCO	B	BETIS	A	BINTON	C	BLAIR	C	BLUESTONE	D
BENDER	B	BETONNIE	B	BINTON. RECLAIMED	B	BLAIRTON	C	BLUEWING	A
BENDIRE	C	BETRA	C	BIOYA	B	BLAKABIN	C	BLUFF	D
BENEVOLA	C	BETTERAVIA	C	BIPPUS	B	BLAKE	B	BLUFFDALE	C
BENEWAH	D	BETTS	B	BIRCHBAY	C	BLAKELAND	A	BLUFFTON	C/D
BENFIELD	C	BEULAH	B	BIRCHFIELD	D	BLAKENEY	C	BLUFORD	C
BENGAL	C	BEVENT	A	BIRCHWOOD	C	BLAKEWELL	C	BLUM	C
BENGE	B	BEVERIDGE	D	BIRDOW	B	BLALOCK	D	BLY	B
BENHAM	B	BEVERLY	B	BIRDS	C/D	BLAMER	C	BLYBURG	B
BENIN	D	BEVERLY. GRAVELLY	A	BIRDSALL	D	BLANCA	B	BLYTHE	D
BENITO	D	BEW	C	BIRDSBORO	F	BLANCHARD	A	BOARDMAN	D
BENJAMIN	D	BEWLEYVILLE	D	BIRDSLEY	D	BLANCHE	B	BOARDTREE	C
BENKLIN	C	BEXAR	D	BIRDSVIEW	A	BLANCHESTER	B/D	BOASH	D
BENMAN	C	BEZO	D	BIRKBECK	B	BLANCOT	B	BOAZ	C
BENNDALE	B	BEZZANT	B	BIRMINGHAM	B	BLAND	C	BOBBITT	C
BENNINGTON	C	BIBB	C	BIRNEY	B	BLANDING	B	BOBILLO	A
BENRIDGE	B	BIBLESPRINGS	B	BIROME	C	BLANEY	B	BOBNBOB	C
BENSLEY	B	BICE	B	BISBEE	A	BLANKET	C	BOBS	D
BENSON	D	BICKERDYKE	D	BISCARO	D	BLANTON	A	BOBTAIL	C
BENTEEN	C	BICKETT	D	BISCAY	B/D	BLANTON.	B	BOBTOWN	B
BENVY	B	BICKLETON	B	BISGANI.	B	MODERATELY WET		BOCA	B/D
BENZ	D	BICKMORE	C	MODERATELY WET		BLANYON	C	BOCA. DEPRESSIONAL	D
BEOR	D	BICONDOA	D	BISGANI. FLOODED	C	BLAPPERT	D	BOCA. TIDAL	D
BEOSKA	B	BICONDOA. DRAINED	C	BISHOP	D	BLAQUIERE	C	BOCK	B
BEOTIA	B	BIDDEFORD	D	BISMARCK	D	BLASDELL	A	BOCKER	D
BEOWAWE	B	BIDDLEMAN	B	BISOODI	D	BLASE	C	BOCKSTON	B
BEQUINN	B	BIDMAN	C	BISPING	F	BLASINGAME	C	BODE	B
BERCUMB	B	BIDWELL	B	BISSELL	E	BLAYDEN	D	BODECKER	A
BERDA	B	BIEBER	D	BISSONNET	D	BLAZBIRD	D	BODELL	D
BEREA	C	BIEDELL	D	BIT	C	BLAZON	D	BODEM	C
BERENICETON	B	BIEDSAW	C	BITTER	B	BLEAKWOOD	C	BODENBURG	B
BERGHOLZ	C	BIENVILLE	A	BITTER SPRING	B	BLEDSOE	C	BODINE	B
BERGLAND	D	BIG BLUE	D	BITTERROOT	C	BLEIBLERVILLE	D	BODORUMPE	C
BERGOUIST	B	BIG HORN	B	BITTERWATER	B	BLENCOE	D	BODOT	C
BERGSTROM	B	BIG TIMBER	D	BITTON	B	BLEND	D	BOEL	A
BERGSVIK	D	BIGARM	B	BIVANS	D	BLENDON	B	BOEL. OVERWASH	C
BERINO	B	BIGBEE	A	BIXBY	B	BLETHEN	B	BOELUS	A
BERIT	D	BIGBEND	B	BIXLER	C	BLEVINS	B	BOERNE	B
BERKS	C	BIGBROWN	C	BJORK	C	BLEVINTON	B	BOESEL	C
BERKSHIRE	B	BIGELOW	B	BLACHLY	B	BLEWETT	D	BOESEL. PROTECTED	B
BERLAKE	B	BIGETTY	B	BLACK BUTTE	B	BLICHTON	D	BOETTCHER	C
BERLIN	C	BIGFLAT	D	BLACK CANYON	D	BLICKENSTAFF	B	BOGAN	C
BERMESA	C	BIGFOOT	C	BLACK CANYON.	C	BLIMO	B	BOGART	B
BERMUDIAN	B	BIGFORK	C	DRAINED		BLIMSTER	C	BOGGS	C
BERNAL	D	BIGHAMS	B	BLACK RIDGE	D	BLINN	C	BOGGY	C
BERNALDO	B	BIGHILL	B	BLACKA	C	BLISS	C	BOGRAP	B
BERNARD	D	BIGLAKE	A	BLACKBURN	B	BLITZEN	C	BOGUE	D
BERNARDINO	C	BIGMEADOW	C	BLACKDRAW	D	BLOCKHOUSE	D	BOGUS	C
BERNARDSTON	C	BIGNELL	C	BLACKETT	B	BLOMFORD	B/D	BOHANNON	C
BERNHILL	B	BIGRIVER	B	BLACKFOOT	C	BLOOM	D	BOHEMIAN	B
BERNICE	A	BIGSHEEP	B	BLACKFOOT. DRAINED	B	BLOOMFIELD	A	BOHICKET	D
BERNING	C	BIGSPRING	D	BLACKHALL	D	BLOOMING	B	BOHNA	B
BERNOW	B	BIGWIN	C	BLACKHALL. WARM	C	BLOOMSDALE	B	BOHNLY	D
BERRYLAND	B/D	BIGWINDER	D	BLACKHAMMER	B	BLOOR	C	BOHNSACK	B
BERRYMAN	C	BIJORJA	C	BLACKHAWK	D	BLOOR. GRAVELLY	D	BOISTFORT	B
BERSON	B	BIJOU	B	BLACKHOOF	D	SUBSTRATUM		BOJAC	B
BERTAG	C	BILBO	C	BLACKHORSE	C	BLOUNT	C	BOJO	D
BERTELSON	B	BILGER	D	BLACKLEED	B	BLOWERS	B	BOLAN	B
BERTHOUD	B	BILLETT	B	BLACKLEG	C	BLUCHER	C	BOLAR	C
BERTIE	B	BILLINGS	C	BLACKLOCK	D	BLUE EARTH	B/D	BOLD	B
BERTO	D			BLACKMAN	C	BLUE EARTH.	D	BOLENT	A
BERTOLOTTI	B			BLACKMOUNT	B	SLOPING		BOLES	C

NOTES: TWO HYDROLOGIC SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION.
MODIFIERS SHOWN, E.G., BEDROCK SUBSTRATUM, REFER TO A SPECIFIC SOIL SERIES PHASE FOUND IN SOIL MAP LEGEND.

REPORT CHECKLIST AND OUTLINE

PRELIMINARY DRAINAGE REPORT

CHECKLIST	OK	NA
Typed text		
8½ x 11" format		
Bound: Use bar or spiral binder or staple. Do not use a notebook.		
Title Page: Name of report and preparer, date of preparation and revision (if any)		
Exhibits: Maximum 11" high and 32" wide, bound in report and folded as required to 8½ x 11" size		
Maps attached to or contained in the report: Vicinity Map and Preliminary Major Basin Drainage Map		

OUTLINE

I. GENERAL LOCATION AND DESCRIPTION
- A. Site and Major Basin Location
  1. Streets in the vicinity
  2. Development in the vicinity
- B. Site and Major Basin Description
  1. Acreage
  2. Ground cover types
  3. Hydrologic soil types

II. EXISTING DRAINAGE CONDITIONS
- A. Major Basin
  1. General topography, drainage patterns and features, canals, ditches, wetlands
  2. Previously determined 100-year floodplains
- B. Site
  1. Historic drainage patterns
  2. Inflow characteristics from upstream
  3. Discharge characteristics to downstream sub-basins

III. PROPOSED DRAINAGE CONDITIONS
- A. Changes in Drainage Patterns
  1. Major basin
  2. Site
- B. Maintenance Issues
  1. Access
  2. Ownership and responsibility

IV. DESIGN CRITERIA & APPROACH
- A. General Considerations
  1. Previous drainages studies performed for the area
  2. Master planning issues (large scale considerations)
  3. Constraints imposed by site and other proposed development
- B. Hydrology
  1. Design storms and precipitation
  2. Runoff calculation method
  3. Detention/retention basin design method
  4. Parameter selection procedures
  5. Analysis and design procedures
  6. Justification of proposed methods not presented or referenced in SWMM
- B. Hydraulics
  1. Hydraulic calculation methods
  2. Parameter selection procedures
  3. Analysis and design procedures
  4. Justification of proposed methods not presented or referenced in SWMM

COMMENTS

1. No calculations are required for the Preliminary Drainage Report.
2. It may not be necessary to cover all of the above topics, but the report should address all concerns applicable to the proposed project, even issues not identified above.

SOIL SURVEY

Grand Junction Area, Colorado

Series 1940, No. 19

Issued November, 1955

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with the
COLORADO AGRICULTURAL EXPERIMENT STATION

Billings silty clay loam, 0 to 2 percent slopes (Bc).—This soil, locally called adobe, is one of the most important and extensive in the Grand Valley. It covers nearly one-fifth of the Grand Junction Area. The areas occur on the broad flood plains and very gently sloping coalescing alluvial fans along streams. Many large areas are north of the Colorado River.

The soil is derived from deep alluvial deposits that came mainly from Mancos shale but in a few places from fine-grained sandstone materials. The deposits ordinarily range from 4 to 40 feet deep but in places exceed 40 feet. The deposits have been built up from thin sediments brought in by the streams that have formed the coalescing alluvial fans or have been dropped by the broad washes that have no drainage channel. The thickest deposit, near Grand Junction, was built up by Indian Wash.

The color and texture of the soil profile vary from place to place. The 8- to 10-inch surface soil normally consists of gray, light-gray, light olive-gray, or light brownish-gray silty clay loam. This layer grades into material of similar color and texture that extends to depths of 3 or 4 feet. Below this depth the successive depositional layers show more variation. Although the dominant texture is silty clay loam, the profile may have a loam, clay loam, fine sandy loam, or a very fine sandy loam texture.

Where there are fairly uniform beds of Mancos shale and where the soil is not influenced by materials deposited by adjoining drainage courses, the profile varies only slightly within the upper 3 or 4 feet. In areas bordering drainage courses, however, the soil varies more in texture and color from the surface downward.

One small area about 1½ miles southeast of Loma consists of light grayish-brown or pale-brown heavy silty clay loam that shows only slight variation in texture to depths of 4 to 6 feet. The underlying soil material is more variable. Below depths of 6 to 10 feet the layers generally are somewhat thicker and have a higher percentage of coarse soil material.

Also included with this soil are several small areas totaling about 3 square miles that are dominantly pale yellow. These are located 2½ to 3½ miles northeast of Fruita, 5 miles north of Fruita, 2½ miles northeast of Loma, 3 to 5 miles north of Loma, 1½ miles northwest of Loma, and 4 miles northwest of Mack. In these areas the 8- or 10-inch surface soil is pale-yellow silty clay loam, and the subsoil is a relatively uniform pale-yellow silty clay loam to depths of 4 to 8 feet. The accumulated alluvial layers are difficult to distinguish, but in a few places transitional to Fruita soils there are small areas having a pale-brown to light-yellowish brown color. These transitional areas are included with Billings silty clay loam because they have a finer textured subsoil than is characteristic of the Ravola soils.

Although moderately fine textured, this Billings soil permits successful growth of deep-rooted crops such as alfalfa and tree fruits. Its permeability is normally not so favorable as that of the Mesa, Fruita, and Ravola soils. Its tilth and workability are fair, but it puddles so quickly when wet and bakes so hard when dry that good tilth can be maintained only by proper irrigation and special cultural practices. Runoff is slow and internal drainage is very slow.

Like all other soils in the area, this one has a low organic-matter content. Under natural conditions it contains a moderate concentration of salts derived from the parent rock (Mancos shale). In places, however, it contains so much salt that good yields cannot be obtained. Some large areas are so strongly saline they cannot be used for crops. Generally, this soil is without visible lime, but it is calcareous. In many places small white flecks or indistinct light-colored streaks or seams indicate that lime, gypsum, or salts are present.

Use and management.—About 80 percent of this soil is cultivated. The chief irrigated crops are alfalfa, corn, dry beans, sugar beets, small grains, and tomatoes and other truck crops. Where the soil is located so as to avoid frost damage, tree fruits are grown.

Most of the field crops are grown in the central and western parts of the valley, or from Grand Junction westward. The entire acreage in tree fruits—approximately 3 square miles—lies between Grand Junction and Palisade. Because the climate is more favorable near Palisade, the acreage in orchard fruits is greater there. A few small orchards are located northeast of Grand Junction in the direction of Clifton. The main fruit acreage is between Clifton and Palisade. Peach orchards predominate, but a considerable acreage is in pears, especially near Clifton. Yields depend on the age of the trees and other factors, including management, but the estimated potential yield is somewhat less on this soil than on Mesa soils. This takes into account the slower internal drainage of this soil and its susceptibility to salinity if overirrigated. Yields of other crops vary according to the length of time the land has been irrigated, internal drainage or subdrainage, salt content of the soil, management practices, and local climate.

The uncultivated areas of this soil are mostly inaccessible places adjoining the larger washes, which occur mainly in the western part of the area, and those places that cannot be cropped profitably because they have inadequate drainage and a harmful concentration of salts. The uncultivated land supports a sparse growth of greasewood, saltbush, shadscale, rabbitbrush, ryegrass, peppergrass, and saltgrass. From 70 to 90 acres are required to pasture one animal during a season.

A number of places shown on the map by small marsh symbols are low and seepy. They could be ditched, but their acreage is likely too small to justify the expense. Left as they are, their salt content makes them worthless for any use except pasture.

Sizeable acreages of this soil apparently were overirrigated in the past. Irrigation water applied at higher levels to the north seeps upward in this soil where it occurs in low areas toward the river. Even now, new saline areas are appearing, and existing areas are getting larger. The total acreage affected by salts has remained more or less the same for the last two decades, but affected areas will continue to change in size and shape because of seepage.

Most fields are ditched where necessary. Some uncultivated areas require both leveling and ditching. In places subdrainage is inadequate because irregularities in the underlying shale tend to create pockets and prevent underground water from flowing into the drainage ditches. Also, in some areas where the alluvial mantle is 30 to 40 feet thick, the ditches are not always deep enough to drain the soil. Some areas are seepy because there are no ditches running in an east-west direction to intercept lateral flow of ground water from the over-

irrigated, permeable, medium-textured, stratified soils on the upper parts of the fan to the north. After being leveled, uncultivated areas would have to be cropped for 3 years before their salt content would be reduced enough to permit good yields.

Farmers can increase the organic-matter content of this soil by applying manure liberally and by growing alfalfa or clovers at least part of the time. A combination field crop and livestock type of farming favors improvement of this soil. Many of the small imperfectly drained areas may be kept in pasture. Strawberry clover and sweetclover are well suited, and mixtures of pasture grasses grow well.

Billings silty clay loam, 2 to 5 percent slopes (BD).—This soil covers a relatively small acreage in the Grand Valley. The areas are widely scattered. Except for its stronger slope, the soil is almost the same as Billings silty clay loam, 0 to 2 percent slopes. In a few places, notably north of Loma, there are areas having a pale-yellow color rather than the gray typical of the Billings soils.

Use and management.—Only about 15 percent of this soil is cultivated. Many of the areas lie along large drainageways or washes where they are difficult to reach. Even a larger number have such an uneven surface that considerable leveling would have to be done before they could be cropped. The cost of leveling, together with the expense of controlling erosion and gullying, discourages farmers from using them.

Many of the uncultivated areas have moderate concentrations of salts, but they are not particularly difficult to reclaim because they border natural ditches or washes which afford free disposal of irrigation water. Furthermore, for the most part, they have a porous substratum.

About the same crops are grown on this soil as on Billings silty clay loam, 0 to 2 percent slopes. The average yields are approximately the same.

Billings silty clay, 0 to 2 percent slopes (BA).—This soil, locally called heavy adobe, occurs well toward the Colorado River. It is on alluvial materials—4 to about 40 feet thick—that largely came from Mancos shale. Most of this soil lies east and southeast of Grand Junction and along the railroad between Grand Junction and Fruita.

The 8- or 10-inch surface soil consists of light brownish-gray, gray, or olive-gray silty clay. The layer is similar to the surface layer of Billings silty clay loam soils but it is harder and, in many places, darker. The subsoil consists of similarly colored layers of silty clay loam, silt loam, and silty clay. In places the soil is silty clay to depths exceeding 4 feet.

The entire profile is firm when moist and has a massive structure. The subsoil has many small irregularly shaped light-gray specks or indistinct mottles. Poorly defined light-colored streaks indicate the presence of lime, gypsum, or salts. The surface soil and subsoil are calcareous, the lime being well distributed. The fine texture of the soil greatly retards penetration of roots, moisture, and air.

Surface runoff is very slow to slow where the slope is less than 1 percent. Internal drainage is very slow because the subsoil is massive and very slowly permeable. Even with ample drainage ditches, the discharge of irrigation water is slow.

Tilth and workability are not good, because the soil has a fine texture and a low content of organic matter. Moreover, some fields contain areas 20 to 60 feet across that have excessive amounts of salts. Slick spots also occur. These salty areas and slick spots produce low or negligible yields of most crops and are extremely difficult to eliminate.

Use and management.—About 75 percent of this soil is cultivated. Most of the rest is affected by salts. Small grains, beans, sugar beets, and alfalfa are the chief crops. They yield less than on Billings silty clay loam, 0 to 2 percent slopes. Ordinarily, newly broken fields are cropped to oats or other small grains the first few seasons so that excess salts can be removed. Afterwards, if drainage is adequate, they may be planted to pinto beans, sugar beets, corn, or alfalfa. The very slow permeability of this soil makes it unsuitable for orchard crops. Also, it is located mainly in areas where the frost hazard is great. Probably the greater part of the irrigable acreage is used for sugar beets. Small grains, alfalfa, and pinto beans usually follow in the order named.

Billings silty clay, 2 to 5 percent slopes (BB).—This soil is similar to Billings silty clay, 0 to 2 percent slopes. It differs mainly in having greater slopes and a slightly finer textured and darker gray surface soil. In places, below depths of 3 or 4 feet, the silty clay or clay material is light olive gray.

The tilth and workability are poor. Surface runoff is medium, and internal drainage is very slow. The soil is better suited to irrigation than most of the larger nearly level areas of Billings silty clay, 0 to 2 percent slopes, many of which are affected by salts. Approximately 12 acres of this soil is in peach orchards. All the rest is normally used for cultivated crops, principally corn, pinto beans, and alfalfa. This soil is suited to about the same crops as Billings silty clay, 0 to 2 percent slopes, but it generally produces better yields.

Billings silty clay, moderately deep over Green River soil material, 0 to 2 percent slopes (BE).—This soil occurs on the outer margin of coalescing alluvial fans where 1 to 4½ feet of fine-textured deposits derived from shale overlies Green River soil materials.

Except for a few strips only a few rods wide that adjoin low-lying areas of Green River soils, this soil has not been altered by high overflows from the Colorado River. It is not likely that the main part of the soil will be covered by floodwaters from the Colorado River, as it lies well above the level of normal overflow.

Use and management.—About 85 percent of this soil is cultivated. The principal crops are alfalfa, corn, sugar beets, and pinto beans. A few peach orchards are on this soil near Clifton. Because the underlying strata are coarser, crops produce better on this soil than on most areas of the other Billings silty clay soils. Drainage and saline conditions have to be corrected before the soil will produce well.

Uncultivated acreages of this soil northwest of Grand Junction are saline, imperfectly drained, or both. Their tilth and workability are poor because they have a fine texture and a low content of organic matter.

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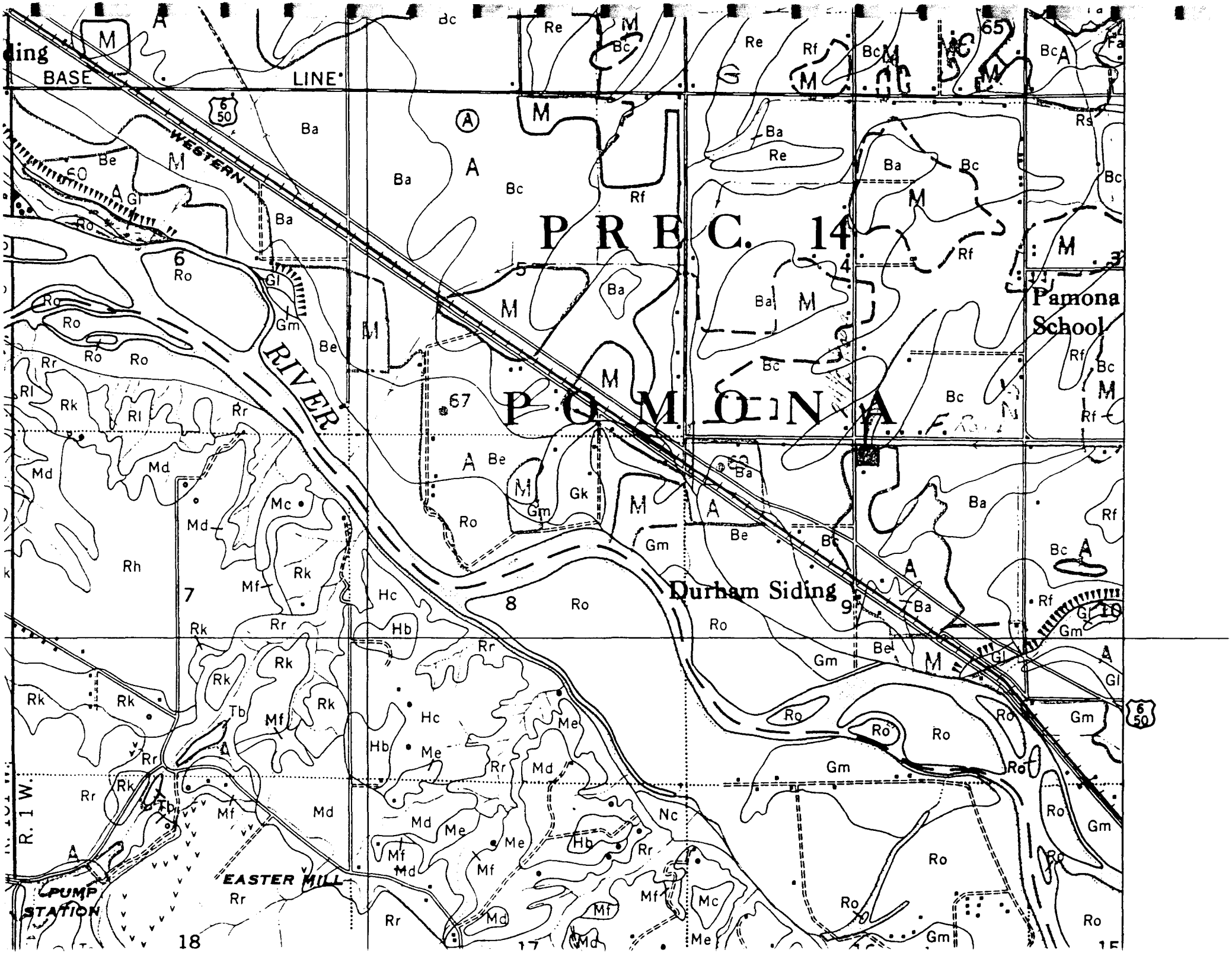
BASE LINE
WESTERN
RIVER
PREC. 14
POMONA
Pamona School
Durham Siding
EASTER MILL
PUMP STATION
R. 1 W.
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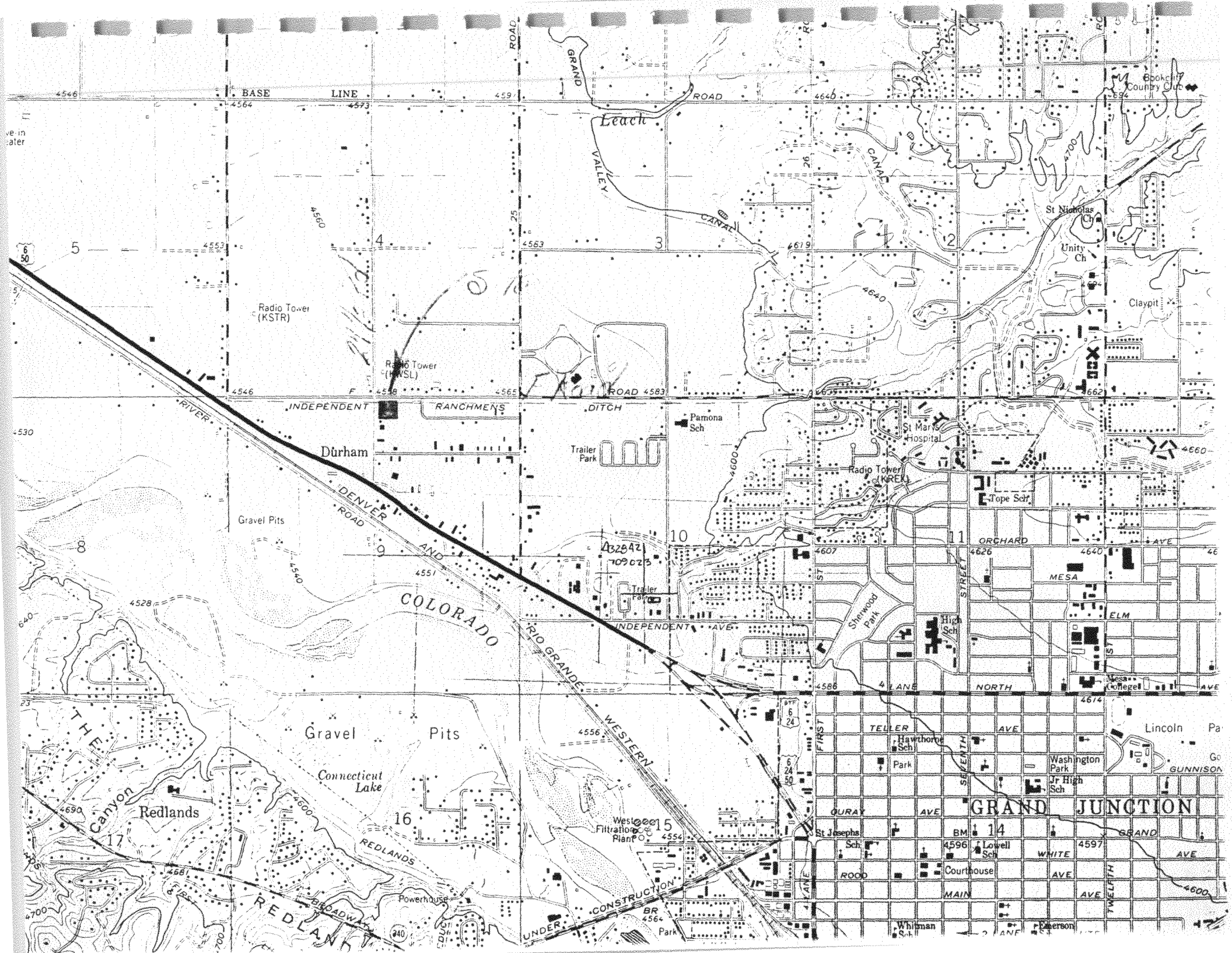

BASE LINE
GRAND VALLEY CANAL
GRAND VALLEY CANAL
Leach
Bookcliff Country Club
St Nicholas Ch
Unity Ch
Claypit
Radio Tower (KSTR)
Radio Tower (KWSL)
INDEPENDENT RANCHMENS DITCH
Pamona Sch
St Marys Hospital
Trailer Park
Radio Tower (KREX)
Tope Sch
Durham
DENVER AND RIO GRANDE WESTERN ROAD
COLORADO RIVER
Gravel Pits
ORCHARD AVE
MESA ST
Sherwood Park
High Sch
INDEPENDENT AVE
ELM
NORTH 4 LANE
Mesa College
TELLER AVE
Hawthorne Sch
Park
Washington Park
Jr High Sch
GUNNISON
GRAND JUNCTION
GURLEY AVE
St Josephs Sch
Lowell Sch
WHITE AVE
ROOD AVE
Courthouse
MAIN AVE
GRAND AVE
Whitman Sch
Emerson
Gravel Pits
Connecticut Lake
THE Canyon
Redlands
REDLANDS
BROADWAY
Powerhouse
Water Filtration Plant
UNDER CONSTRUCTION
Park
FIRST
SEVENTH
TWELFTH
LANE

BARNES AND NOBLE RETAIL STORE

Engineers Opinion of Cost

DATE: 8/20/96
NAME OF DEVELOPMENT: BARNES AND NOBLE RETAIL STORE
LOCATION NW/4 NE/4 SEC 9, T.1 S., R.1 W., U.P.M

PRINTED NAME OF PERSON PREPARING: JOHN C. SMITH

CONSTRUCTION COST ESTIMATE:

	Water system:	Units	Quant	Unit Price	Total Price
1	8" Line Connect	EA	1	175.00	175
2	8" Fittings w/TB's	EA	5	180.00	900
3	6" Fittings w/TB's	EA	3	150.00	450
4	8" G.V.'s and box's	EA	2	500.00	1,000
5	6" G.V.'s and box's	EA	2	400.00	800
6	Fire Hydrant Assymblies	EA	2	1,200.00	2,400
7	8" PVC Waterline	LF	543	12.00	6,516
8	6" PVC Waterline	LF	110	10.50	1,155
9	2 1/2" Fittings	EA	2	100.00	200
10	2 1/2" Serv. Line	LF	26	9.50	247
				Sub-total Potable Water:	**13,843**

	Sewer system:	Units	Quant	Unit Price	Total Price
1	8" Line Connect	EA	1	220.00	220
2	8" PVC Sewer Main	LF	473	15.00	7,095
3	San. Sewer Manhole	EA	3	1,150.00	3,450
4	Drop Manhole Connection	EA	1	350.00	350
5	San. Sewer Serv. Tap	EA	1	50.00	50
6	6" Service Line	LF	90	10.00	900
7	Service Cleanout	EA	1	650.00	650
				Sub-total Sanitary Sewer:	**12,715**

	Site grading and paving	Units	Quant	Unit Price	Total Price
1	Unclassified Excavation	CY	230.00	1.50	345
2	Unclassified Embankment	CY	2100.00	9.00	18,900
3	Asphalt Removal	SY	85.00	3.00	255
4	Asphalt Patch	SY	85.00	30.00	2,550
5	Class-6 A.B.C.	CY	1015.00	16.50	16,748
6	3" Asphalt	SY	4736.00	5.50	26,048
7	6" Barrier Curb (1'Height)	LF	895.00	11.00	9,845
8	2' Standard Curb/Gutter	LF	202.00	11.00	2,222
9	2.5' Drive Over Curb/Gutter	LF	110.00	12.50	1,375
10	2.5' Door Walk	LF	162.00	10.00	1,620
11	5' Conc Walk	LF	516.00	15.00	7,740
12	8' Conc Walk	LF	118.00	24.00	2,832
13	1' Drive Over Curb	LF	350.00	11.50	4,025
14	3' Conc. V-Pan	LF	280.00	16.00	4,480

15	6"Barrier Curb (Variable Height)	FSF	400.00	11.50	4,600
16	Landscape Wall	FSF	350.00	17.50	6,125
17	8" Conc Driveway	SY	87.00	60.00	5,220
18	6" Conc Loading Ramp	SY	50.00	55.00	2,750
19	Conc Filled Bollard	EA	2.00	100.00	200
20	Conc Deco X-Walk	SY	72.00	35.00	2,520
21	Stop Sign	EA	2.00	200.00	400
22	Pavement Striping	GAL	6.00	90.00	540
23	6"Conc Entrance Ramp	SY	28.00	55.00	1,540
24	8"Conc Trash/Loading Pad	SY	104.00	60.00	6,240
25	PSCO Relocates	LS	1.00	4000.00	4,000
				Sub-total Site grading and paving:	**133,120**

	Drainage	Units	Quant	Unit Price	Total Price
1	Connect to Outfall pipe (with Grout Collar)	LS	1.00	800.00	800
2	18" PVC Storm Sewer	LF	41	20.00	820
3	12" PVC Storm Sewer	LF	10	25.00	250
4	Rip-Rap	SY	20.00	50.00	1,000
5	Orifice Control Outlet Struct	EA	1.00	1,500.00	1,500
6	Curb Inlet	EA	1.00	1,500.00	1,500
				Sub-total Drainage:	**5,870**

	Irrigation	Units	Quant	Unit Price	Total Price
1	Connect to Existing	EA	1	500.00	500
3	12" PVC Irrigation	LF	500.00	12.00	6,000
7	12" Fittings	EA	6.00	250.00	1,500
25	Headwall/Frame/Grate	EA	1	1,500.00	1,500
25	Remove Concrete Lined Ditch	LF	500	3.00	1,500
				Sub-total Irrigation:	**11,000**

Total Site Construction Costs: 176,548

9/10/96

EXHIBIT "B"

VOID

BARNES AND NOBLE RETAIL STORE

Engineers Opinion of Cost

DATE: 9/10/96
NAME OF DEVELOPMENT: BARNES AND NOBLE RETAIL STORE
LOCATION NW/4 NE/4, SEC 9, T.1 S., R.1 W., U.P.

PRINTED NAME OF PERSON PREPARING: JOHN C. SMITH

CONSTRUCTION COST ESTIMATE:

				Unit	Total
	Site grading and paving	Units	Quant	Unit Price	Total Price
1	Unclassified Excavation	CY	65.00	2.00	130
2	Unclassified Embankment	CY	30.00	3.00	90
3	Class-6 A.B.C.	CY	48.00	16.50	792
4	5' Concrete Walk	LF	516.00	15.00	7,740
5	8" Concrete Driveway	SY	87.00	60.00	5,220
6	PSCO Relocates	LS	1	4,000.00	4,000
				Sub-total Site grading and paving:	**17,972**

				Unit	Total
	Drainage	Units	Quant	Price	Price
1	Connect to Outfall Pipe (with Grout Collar)	EA	1.00	800.00	800
2	18" PVC Storm Sewer Pipe	LF	41.00	20.00	820
3	Rip-Rap	SY	20.00	50.00	1,000
4	Retention Pond	LS	1.00	5,000.00	5,000
5	Orifice Controlled Outlet Structure	EA	1.00	1,500.00	1,500
				Sub-total Drainage:	**9,120**

Total Off Site Construction Costs: 27,092

S, T BUI, LLC
By: [signature] Manager
SIGNATURE OF DEVELOPER

9-24-96
DATE

I have reviewed the estimated costs and time schedule shown above and, bas on the plan layouts submitted to date and the current costs of constructio take no exception to the above.

CITY ENGINEER DATE

COMMUNITY DEVELOPMENT DATE

6/27/96

EXHIBIT "B"

BARNES AND NOBLE RETAIL STORE

Engineers Opinion of Cost

DATE: 9/27/96
NAME OF DEVELOPMENT: BARNES AND NOBLE RETAIL STORE
LOCATION NW/4 NE/4, SEC 9, T.1 S., R.1 W.,U.P.M

PRINTED NAME OF PERSON PREPARING: JOHN C. SMITH

CONSTRUCTION COST ESTIMATE:

	Site grading and paving	Units	Quant	Unit Price	Total Price
1	Unclassified Excavation	CY	65.00	2.00	130
2	Unclassified Embankment	CY	30.00	3.00	90
3	Class-6 A.B.C.	CY	48.00	16.50	792
4	5' Concrete Walk	LF	140.00	15.00	2,100
4	6' Concrete Walk	LF	384.00	17.00	6,528
5	8" Concrete Driveway	SY	95.00	60.00	5,700
6	PSCO Relocates	LS	1	4,000.00	4,000
				Sub-total Site grading and paving:	**19,340**

	Sewer System	Units	Quant	Price	Price
1	8" Line Connect	EA	1.00	220.00	220
2	8" PVC Sewer Main	LF	458.00	15.00	6,870
3	San Sewer Manhole	EA	2.00	1,150.00	2,300
4	Drop Manhole Connection	EA	1.00	350.00	350
5	San Sewer Serv Tap	EA	1.00	50.00	50
2	6" PVC Sewer Service	LF	90.00	10.00	900
5	Service Cleanout	EA	1.00	650.00	650
				Sub-total Drainage:	**11,340**

	Drainage	Units	Quant	Unit Price	Total Price
1	Connect to Outfall Pipe (with Grout Collar)	EA	1.00	800.00	800
2	18" PVC Storm Sewer Pipe	LF	41.00	20.00	820
3	Rip-Rap	SY	20.00	50.00	1,000
4	Retention Pond	LS	1.00	5,000.00	5,000
5	Orifice Controlled Outlet Structure	EA	1.00	1,500.00	1,500
				Sub-total Drainage:	**9,120**

Total Off Site Construction Costs: 39,800

SIGNATURE OF DEVELOPER _____ DATE _____

I have reviewed the estimated costs and time schedule shown above and, bas on the plan layouts submitted to date and the current costs of constructio take no exception to the above.

CITY ENGINEER _____ DATE _____

COMMUNITY DEVELOPMENT _____ DATE _____

October 04, 1996

To whom it may concern:

The site for the proposed Barnes & Nobel Bookstore, located at 2450 Patterson Rd. (tax schedule #2945-091-00-118), is zoned C-2 (heavy commercial). According to Section 4-3-4, Use/Zone Matrix, of the Zoning and Development Code, Retail Business is an allowed use in the C-2 zone.

If you have any further questions regarding this information, please do not hesitate to call the City of Grand Junction Community Development Department at (970)244-1430.

Sincerely,

Senta Costello
Planning Technician

REVIEW COMMENTS

FILE #SPR-96-190 **TITLE HEADING:** Barnes & Noble

LOCATION: SE corner 24 ½ & Patterson Roads

PETITIONER: Sittema-Bullock

PETITIONER'S ADDRESS/TELEPHONE: 5445 DTC Parkway, #4
Englewood, CO 80110
303-770-7275

PETITIONER'S REPRESENTATIVE: Ciavonne & Associates

STAFF REPRESENTATIVE: Michael Drollinger

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

CITY COMMUNITY DEVELOPMENT
Michael Drollinger **244-1439**

1. Lighting Plan for parking lot is required as per Code.
2. Bicycle parking is required - see Code; also provide bicycle rack detail.
3. Landscaping Plan is acceptable but will need to be resubmitted if site plan revisions are required.
4. "Stamped" concrete pedestrian decorative crosswalk detail not provided with Landscape Plan; please provide for review.
5. Please contact project planner (244-1439) regarding Comment #4 of the Grand Valley Irrigation Company BEFORE revising plans.

CITY DEVELOPMENT ENGINEER **9/4/96**
Jody Kliska **244-1591**

1. The city TEDS manual requires minimum on-site stacking distance at the driveway of 40'. It appears possible to reconfigure the parking near the driveway to meet this minimum stacking distance.
2. Please provide a copy of the common access agreement with the adjacent parcel.
3. Does the improvements agreement include the curb, gutter and sidewalk improvements on 24 ½ Road and on Patterson? Typically the improvements agreement covers the public improvements and drainage improvements.
4. Drainage report is acceptable.

CITY UTILITY ENGINEER **9/4/96**
Trent Prall **244-1590**

1. Please contact Jodi Romero of the City Customer Service Division at 244-1520 for information regarding sewer plant investment fees.
2. Please contact Dan Tonello with the Industrial Pretreatment section (244-1489) at the Persigo Sewer Treatment Plant for industrial waste review.
3. Public easement and sewer profile required for sewer extension.

4. 6" sewer service line from Barnes and Noble building should terminate in a manhole at the 8" line.

CITY POLICE DEPARTMENT **9/3/96**
Dave Stassen **244-3587**
Is there a lighting plan. Further comments can hold until a lighting plan is provided.

CITY FIRE DEPARTMENT **9/3/96**
Hank Masterson **244-1414**
The Fire Department has no problems with this proposal.

A complete set of sealed building plans must be submitted to the Fire Department for our review. Also, a complete set of plans, specifications, and calculations for the fire sprinkler system and fire alarm system must be submitted. Allow 10 working days for completion of plan reviews.

MESA COUNTY BUILDING DEPARTMENT **8/28/96**
Bob Lee **244-1656**
Need to submit 2 sets of sealed plans and allow 10-14 days for plan review and permit issuance. City licensed contractors are required to perform work.

GRAND VALLEY IRRIGATION **9/3/96**
Phil Bertrand **242-2762**
1. Need clear understanding of storm water into Independent Ranchman ditch (not sure it will be allowed).
2. A canal break and a unique storm on the Bookcliffs in the last 20 years has caused large amounts of run-off water to cross over this property.
3. Must show detailed design of Patterson Road access (this is not to interfere with canal access road).
4. NO permanent building/structures or plants within 30 feet of Independent Ranchman ditch or pipe.
5. Need clear documentation for crossing Independent Ranchman ditch.

UTE WATER **9/3/96**
Gary Mathews **242-7491**
1. Contact with Ute Water is needed to discuss the water line locations and back flow prevention for fire protection.
2. Water mains shall be c-900, class 150. Installation of pipe fittings, valves and services including testing and disinfection shall be in accordance with Ute Water standard specifications and drawings.
3. Construction plans required 48 hours before development begins.
4. Policies and fees in effect at the time of application will apply.

TO DATE, NO COMMENTS RECEIVED FROM:
Grand Junction Drainage District

File #214-94

August 20, 1996

Mr. Michael Drolinger
Community Development Department
City of Grand Junction
250 North 5th St.
Grand Junction, CO. 81501

Dear Mr. Drolinger,

The following is a response to the review Agency Comments concerning the Barnes & Noble Site Plan Submittal, File #SPR-96-190.

Community Development Staff
1. Lighting Plan has been included. The isolux diagram as well as the electrical plan showing the locations has been included.
2. Bicycle parking has been shown on the Landscape Plan, included in this submittal, with a detail.
3. Landscaping has been adjusted to accommodate the entrance reconfiguration.
4. Detail for stamped concrete are shown on the site plan.
5. Grand Valley Irrigation has been contacted, and once the drainage system was explained, had no problems with the proposed system.

Community Development Engineer
1. Plans have been changed to reflect the stacking distance requirement.
2. Access agreement has been included with this submittal.
3. Improvement agreement has been included with this submittal.

Grand Junction City Utility Engineer
1. Thank you for direction concerning fees. City has been contacted concerning sewer investment fees.
2. Industrial pre-treatment has been addressed.
3. Easement is shown on the Site Plan. Sewer Profile has been included on Utilities composite.
4. Manhole has been added.

Grand Junction Police Department
1. Lighting Plan has been included.

Grand Valley Irrigation
1. Grand Valley Irrigation has been contacted, and once the drainage system was explained, had no problems with the proposed system.
3. Design of Patterson Road access an ditch crossing is shown.

Ute Water
1.Applicant has no problem with Ute requirements.

File #214-94

Sincerely,

Craig Roberts
Secretary/Treasurer
Ciavonne & Associates, Inc.

SITTEMA ▪ BULLOCK
REALTY PARTNERS

September 24, 1996

Mr. Michael T. Drollinger
City of Grand Junction
250 North 5th Street
Grand Junction, CO 81501-2668

Re: Barnes & Noble Bookstore
Southeast Corner of 24 1/2 Road and F Road

Dear Michael:

I have enclosed two fully executed copies of the Development Improvements Agreement for the above referenced project. Thank you for sending me the form for this document.

I have attached, as Exhibit B, the cost estimate prepared by our civil engineer for the improvements anticipated by this Agreement. If the form and content of this document meets with your approval, I would appreciate your processing it for signature and returning one fully executed copy to me.

As a follow-up to a discussion we had last week, I would appreciate receiving from you a letter indicating that our proposed use of this site as a retail bookstore complies with the current zoning on this property. As I mentioned, our lender is requiring this "zoning compliance" letter.

Thank you again for all of your efforts on this project. I look forward to finalizing the planning process and beginning construction very shortly.

Sincerely,

SITBUL, LLC
A COLORADO LIMITED LIABILITY COMPANY

Timothy B. Sittema
Manager

/dsm

Enclosures

5445 DTC PARKWAY ■ PENTHOUSE FOUR ■ ENGLEWOOD, CO 80111 ■ TEL: (303) 770-7275 ■ FAX: (303) 771-1758

SITTEMA ▪ BULLOCK
REALTY PARTNERS

October 18, 1996

Mr. Michael T. Drollinger
City of Grand Junction
250 North 5th Street
Grand Junction, CO 81501-2668

Re: Barnes & Noble Bookstore

Dear Michael:

I have enclosed three (3) executed copies of Exhibit B to the Development Improvements Agreement which we had discussed. It is my understanding that you will insert this revised Exhibit B into the documents that I have previously signed and forwarded to you. It is also my understanding that as this work is constructed by our General Contractor, he will be invoicing the City for this work and you will use these proceeds for payment to him. If this is not the case let me know.

I will forward a check in this amount next week. We look forward to getting going on our construction and sincerely appreciate all of your efforts on this project.

Sincerely,

SITBUL, LLC,
A COLORADO LIMITED LIABILITY COMPANY

Timothy B. Sittema
Manager

/tas

5445 DTC PARKWAY ■ PENTHOUSE FOUR ■ ENGLEWOOD, CO 80111 ■ TEL: (303) 770-7275 ■ FAX: (303) 771-1758

October 29, 1996

Bob Lee
Mesa County Building Department
P.O. Box 20000
Grand Junction, CO 81502

Dear Bob,

After reviewing the Restaurant Industrial Pretreatment Permit Application submitted by Gordon Stanfield of Mac Gregor/Wathen Construction, for the Barnes & Noble Book Store to be built at 2450 Patterson Road, Grand Junction, it has been determined that this facility will not be required to install a grease interceptor. If you need more information, please call at 244-1489.

Sincerely,

Catherine Crabb
Assistant Coordinator
Industrial Pretreatment Program

cc: Trent Prall, Utility Engineer, City of Grand Junction
Marcia Rabideaux, Community Development

To: Bobbie Paulson
Cc: Kathy Portner
From: Michael Drollinger
Subject: Barnes and Noble
Date: 5/26/97 Time: 12:53PM

Bobbie:

If you get a C.O. on this while I'm gone please give it to Kathy for signature. I have inspected the site and the improvements have been installed satisfactorily.

Thanks.

mtd

Facsimile Cover Sheet

RUNYON
Architects
AND ASSOCIATES
ARCHITECTURAL DESIGN
PLANNING
PROJECT MANAGEMENT

To: Mike Drollinger
Company: City of Grand Junction Planning Dept.
Phone: 970.244.1439
Fax: 970.244.1599

From: Michael Lewis
Company: Runyon Architects
Phone: 972.233.7705
Fax: 972.387.2553

Project: Grand Junction
RA+A No.: 9642

Date: 6.4.97
Pages incl. cover: 2

Comments:

Mike,

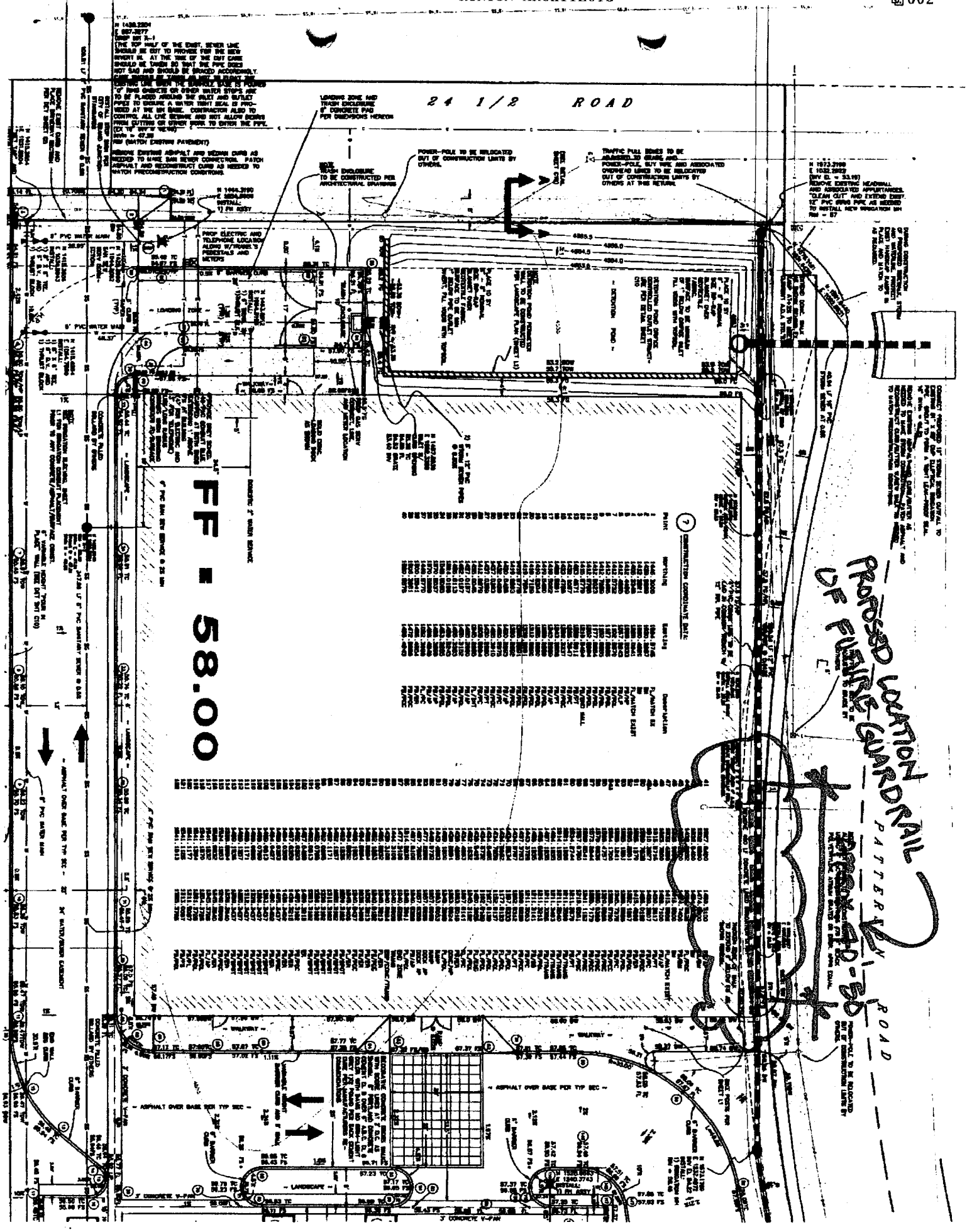
Per our discussion with you this morning, I have attached a site plan indicting the location for the proposed guardrail. The guardrail would be approx. 30" above finish grade and approx. 40' to 50' long. Please review the attached site plan and

Please contact me with questions and comments.

Respectfully,
Michael Lewis

Copies: file 9642,

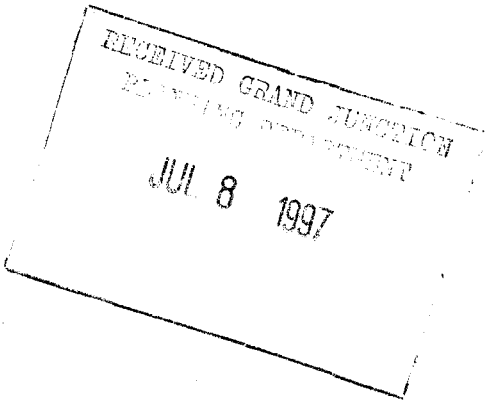
2033 CHENAULT DRIVE, SUITE 150
CARROLLTON, TEXAS 75006
Ph(214)233-7705 Fax(214)387-2553


24 1/2 ROAD
FF = 58.00
PROPOSED LOCATION OF FUTURE GUARDRAIL
PATTERN
ROAD

Facsimile Cover Sheet

RUNYON
Architects
AND ASSOCIATES
ARCHITECTURAL DESIGN
PLANNING
PROJECT MANAGEMENT

To: Mike Drollinger
Company: City of Grand Junction Planning Dept.
Phone: 970.244.1439
Fax: 970.244.1599



From: Michael Lewis
Company: Runyon Architects
Phone: 972.233.7705
Fax: 972.387.2553

Project: Grand Junction
RA+A No.: 9642

Date: 7.7.97
Pages incl. cover: 4

Comments:

Mike,

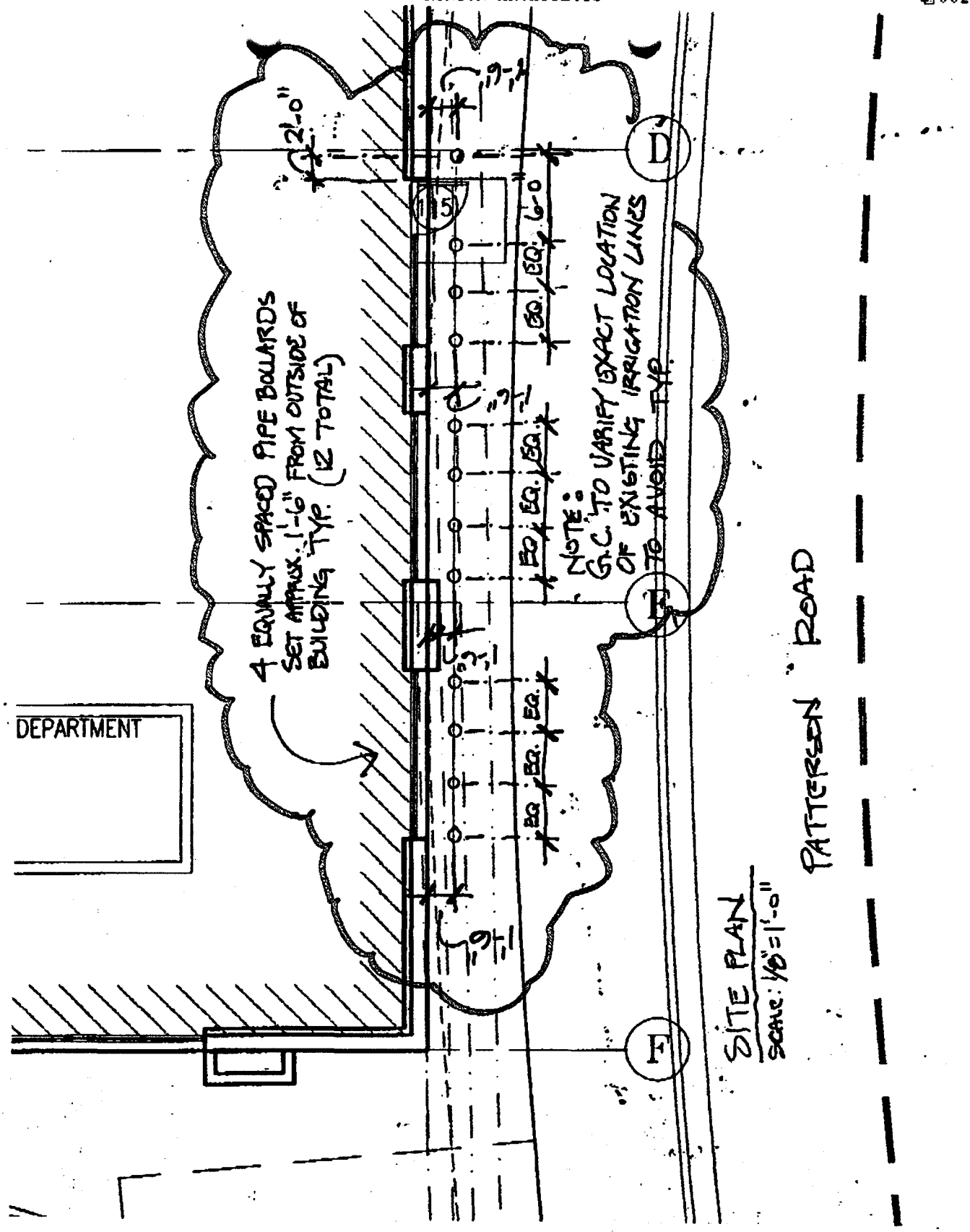
Please review the attached sketches illustrating the pipe bollards proposed for the Grand Junction Barnes & Noble. If you have do not have any comments or revisions, we would like to issue this for construction as soon as possible.

Feel free to contact me with questions or comments.

Respectfully,
Michael Lewis

Copies: file 9642, T.C. Beardslee, Tim Sittema

2033 CHENAULT DRIVE, SUITE 150
CARROLLTON, TEXAS 75006
PH(214)233-7705 FAX(214)387-2553



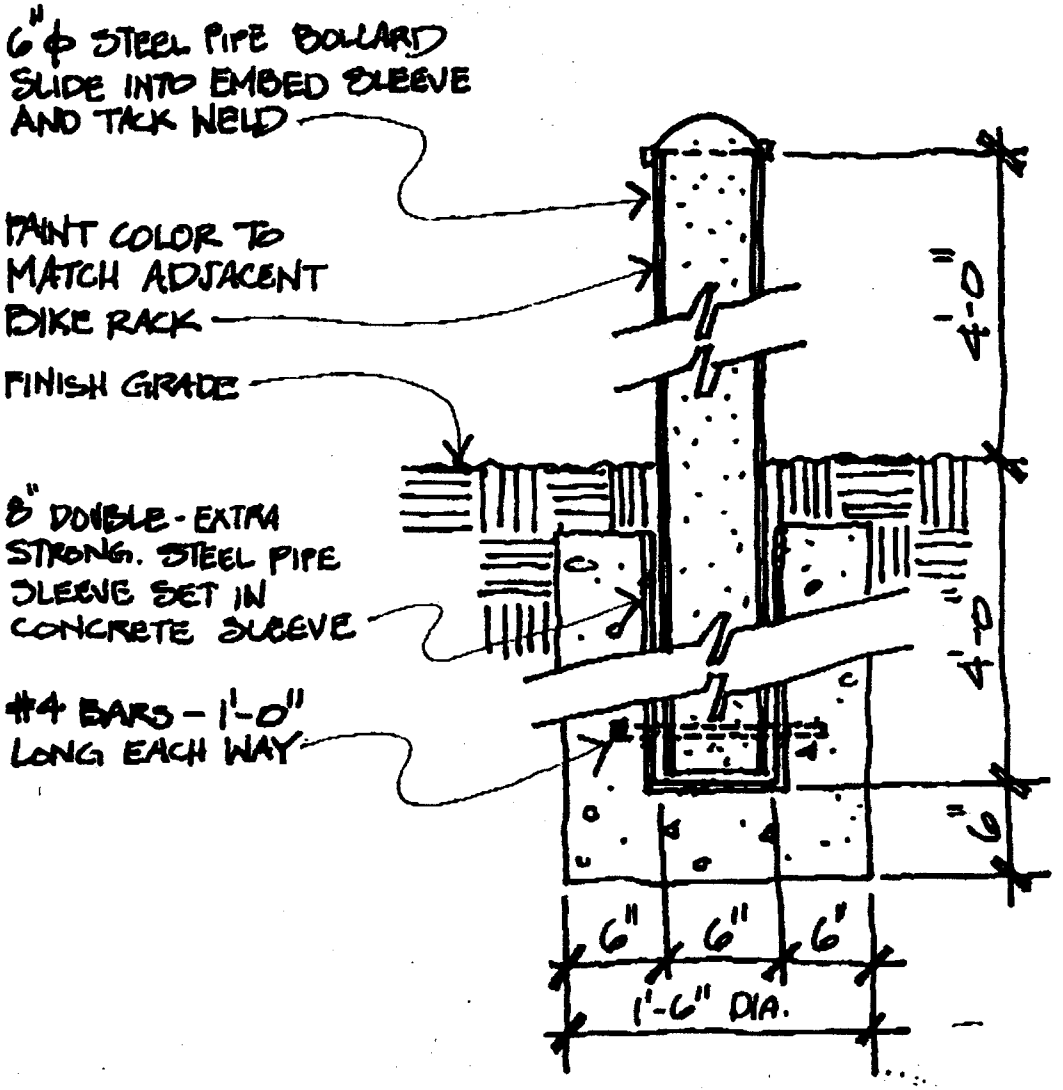
SITE PLAN
SCALE: 1/8"=1'-0"

ARCHITECT:
CORTLAND MORGAN, ARCHITECT, AIA
6810 Woodland Dr.
Dallas, Texas 75225 (214) 368 3687

PROJECT COORDINATOR:
RUNYON AND ASSOCIATES
CONTACT: MICHAEL B. LEWIS

Barnes & Noble
Booksellers Since 1873
GRAND JUNCTION, CO.
24.5 & F ROAD
GRAND JUNCTION, COLORADO

PROJECT NO. 9642
REVISION NO.
DATE:



PIPE BOLLARD

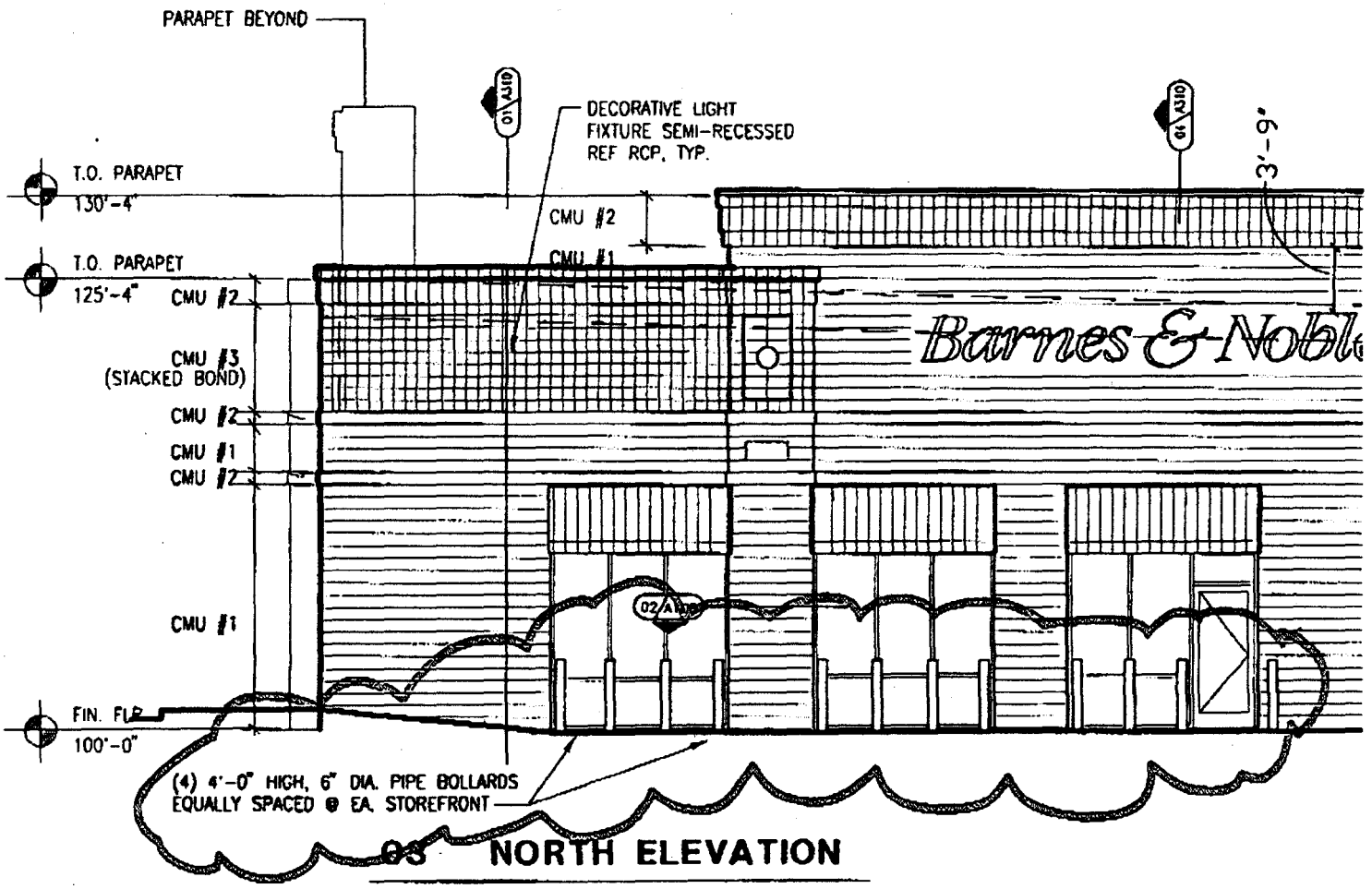
N.T.S.

ARCHITECT:
CORTLAND MORGAN, ARCHITECT, AIA
6610 Woodland Dr.
Dallas, Texas 75225 (214) 368-3667

PROJECT COORDINATOR:
RUNYON AND ASSOCIATES
CONTACT: MICHAEL R. LEWIS

Barnes & Noble Booksellers Since 1873
GRAND JUNCTION, CO.
24.5 & F ROAD
GRAND JUNCTION, COLORADO

PROJECT NO. 9642
REVISION NO.
DATE:



03 NORTH ELEVATION

SCALE 1/8"=1'-0"

ARCHITECT: CORTLAND MORGAN, ARCHITECT, AIA 6910 Woodland Dr. Dallas, Texas 75225 (214) 368-3867	PROJECT COORDINATOR: RUNYON AND ASSOCIATES 2305 Cedarelle Dr. Carrollton, TX 75006 (214) 320-7788 CONTACT: MICHAEL W. LEWIS	Barnes & Noble Booksellers Since 1873 GRAND JUNCTION, CO. 24.5 & F ROAD GRAND JUNCTION, COLORADO	PROJECT NO. 9642 REVISION NO. DATE:

CHANDLER SIGNS
3201 Manor Way
Dallas, TX 75235-5909

FAX COVER SHEET

DATE:	March 14, 1997	**TIME:**	11:01 AM
TO:	Michael Drollinger City Planning	**PHONE:** **fax**	970-244-1439 970-244-1599
FROM:	Patty Pryor	**PHONE:**	214-902-2000
	Chandler Signs	**FAX:**	214-902-2044

RE: BARNES & NOBLE BOOKSELLERS

Number of pages including cover sheet 1

MESSAGE:

Michael, I am sorry I missed you again. I got your voice mail this morning and found you will be out until Tuesday.

I Need to speak to you in regard to permitting information for

the Barnes & Noble Booksellers at 24-1/2 Road & "F" Road there in Grand Junction.

Please call me when you return.

Thanks

copy: Shannon Frost

CHANDLER SIGNS
3201 Manor Way
Dallas, TX 75235-5909

FAX COVER SHEET

DATE:	March ~~14~~ 18, 1997	**TIME:**	~~11:04 AM~~ 8:30
TO:	Michael Drollinger City Planning	**PHONE:** **fax**	970-244-1439 970-244-1599
FROM:	Patty Pryor	**PHONE:**	214-902-2000
	Chandler Signs	**FAX:**	214-902-2044

RE: BARNES & NOBLE BOOKSELLERS

Number of pages including cover sheet 1

MESSAGE:

~~Michael, I am sorry I missed you again. I got your voice mail this morning and found you will be out until Tuesday.~~

~~I Need to speak to you in regard to permitting information for~~

~~the~~ Barnes & Noble Booksellers at 24-1/2 Road & "F" Road there in Grand Junction.

Please call me when you return.

Thanks

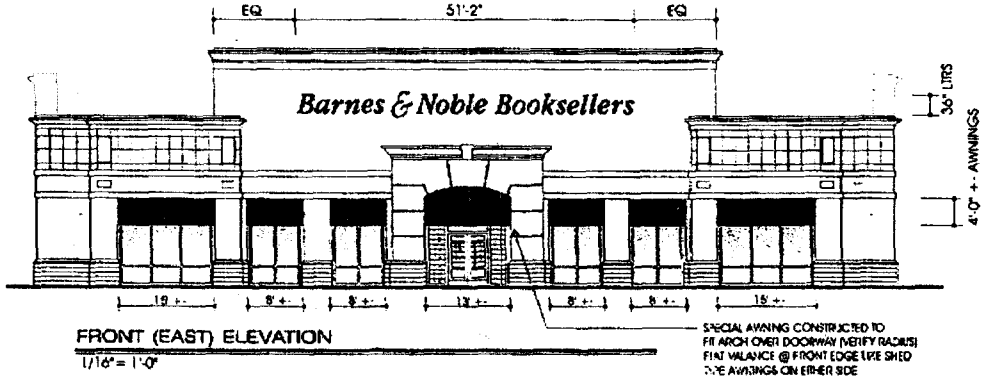
copy: Shannon Frost

RECEIVED GRAND JUNCTION PLANNING DEPARTMENT MAR 18 1997

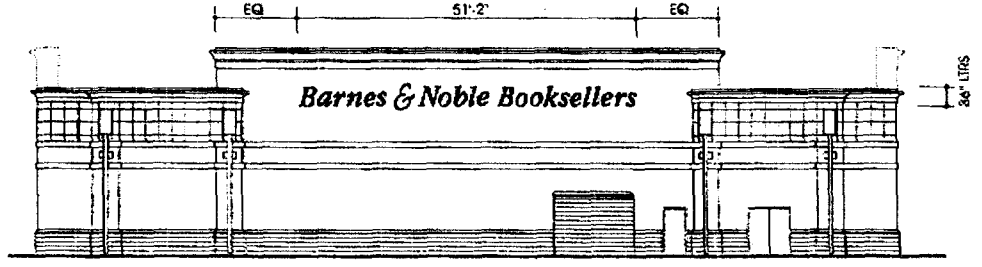
Thanks for getting back to me.

Also

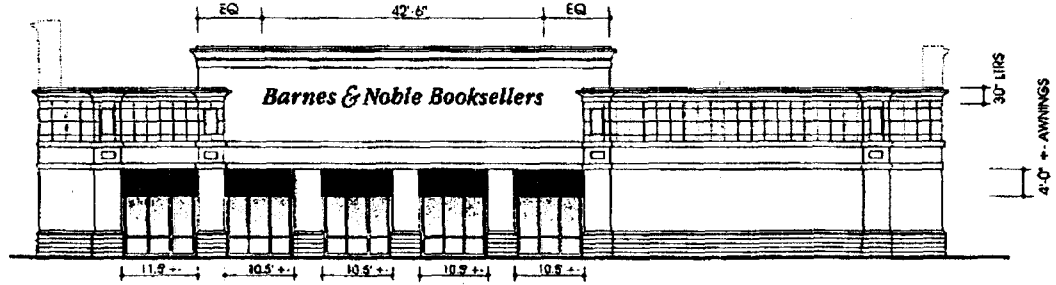
Do we need to permit awnings?



FRONT (EAST) ELEVATION
1/16" = 1'-0"



REAR (WEST) ELEVATION
1/16" = 1'-0"



SIDE (SOUTH) ELEVATION
1/16" = 1'-0"

INSTALLATION NOTES :

1. All roofs are bonded and shall not be penetrated without consent of Roof Company.
2. Plywood backing shall be provided by General Contractor behind sign area of drywit wall system.
3. It is the responsibility of Sign Installer to field verify wall materials and access before installation.
4. On drywit walls spacers shall be used and painted out to protect wall & minimize hardware distraction.

WORK ORDER NUMBER
DESIGN NUMBER 96-2713-R1
SHEET 1 OF 6

CLIENT BARNES & NOBLE
ADDRESS 24 & F ROAD
CITY / STATE GRAND JUNCTION, CO
SALES S. FROST DATE
ARTIST J. BUSH 8-23-96

APPROVED BY	DATE
ACCOUNT.	
SALES	
ESTIMATING	
ENGINEERING	
CLIENT	
LAND LORD	

Chandler Signs

3204 Manor Way Dallas, TX 75235 214-902-2000 FAX 214-902-2024
3381 Cherry Ridge Dr. Suite J San Antonio, TX 78230 210-641-3801 FAX 210-340-8724

ALL DRAWINGS & THE PROPERTY OF CHANDLER SIGNS, INC. AND AS SUCH NOT TO BE USED FOR REPRODUCTION ARE RESERVED BY CHANDLER SIGNS, INC.

REVISIONS

R1	ADD DF POLE SIGN & DF MONUMENT SIGN 10/14/96

FILES OF MATERIALS

DISTRIBUTION PRINTS

MANAGE	FILE	CAD	
PRACTICAL	PERM	CAM	
SERVICE	PAINT	REAL PHOTO	
CUSTOM	VINYL	MISC. ART	
ALUMINUM	NEON	INSTALL	
Other SPS	SCREENS		
Addendum	Awnings		

FOR'S

51'-2"

36"

Barnes & Noble Booksellers

Ⓐ ELEVATION - LETTER LAYOUT BN-SL-36

3/16"= 1'-0" TWO (2) SIGNS REQUIRED

U.L. LABELS REQUIRED
INSTALL IN ACCORDANCE WITH NATIONAL ELECTRICAL CODES

ELECTRICAL HOOK-UP TO BE PERFORMED BY CUSTOMER

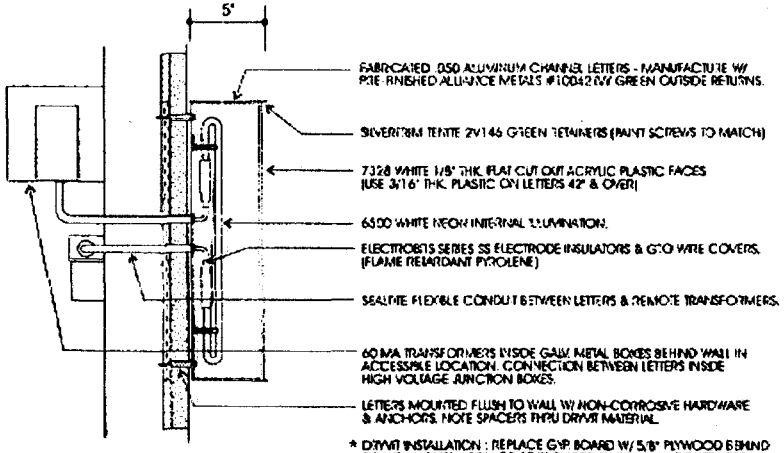
42'-6"

30"

Barnes & Noble Booksellers

Ⓑ ELEVATION - LETTER LAYOUT BN-SL-30

3/16"= 1'-0" ONE (1) SIGN REQUIRED



FACE LIT LETTER SECTION

N.T.S.

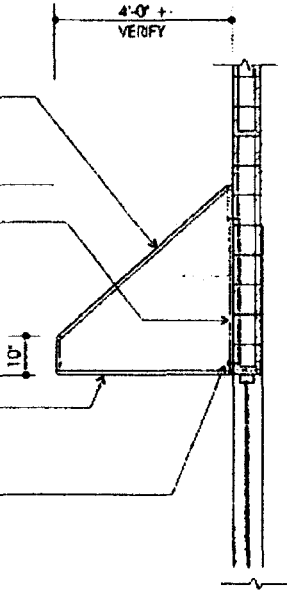
"BREAK DOWN" TYPE SYSTEM FABRICATED SUNBRELLA CANVAS AWNINGS. HEMLOCK GREEN TWEED STYLE #4605 FINISH.
NOTE: ENDS OF AWNING ENCLOSED WITH SAME MATERIAL.
SEE DETAILS & SECTIONS ON SHEET 3

1" SQUARE ALUMINUM TUBE FRAME WELDED CONSTRUCTION. WIRE BRUSH ALL WELDS TO REMOVE SMOKE. BLACK POWER COAT FINISH ON ALL EXPOSED SURFACES. ENDS MADE SEPERATELY & BOLTED ON IN FIELD BEFORE INSTALLATION

BOTTOM OF AWNING IS OPEN.

MOUNT AWNINGS FLUSH TO WALL WITH NON-CORROSIVE HARDWARE COMPATIBLE WITH WALL CONSTRUCTION. (VERIFY)

NOTE: AWNINGS ARE NON- ILLUMINATED. VERIFY ALL AWNING DIMENSIONS W/ FIELD SURVEY BEFORE FABRICATION.



SECTION THRU STOREFRONT @ AWNINGS

3/8"= 1"=0"

WORK ORDER NUMBER	
DESIGN NUMBER	96-2713-R1
SHEET	2 OF 6
CLIENT	BARNES & NOBLE
ADDRESS	24.4 ROAD & F ROAD
CITY/STATE	GRAND JUNCTION, CO
SALES	S. FROST DATE
ARTIST	J. BUSH 8-23-96

APPROVED BY	DATE
ART DEPT.	
SALES	
ESTIMATING	
ENGINEERING	
CLIENT	
LAND LORD	

Chandler Signs

3201 Maggie Way Dallas, TX 75235 214-902-2000 FAX 214-902-2044

3301 Cherry Ridge Dr. C-301 San Antonio, TX 78230 210-349-1404 FAX 210-349-4724

REVISIONS	
R1	ADD D/F POLE SIGN & D/F MONUMENT SIGN 10/14/96

BILL OF MATERIALS

DISTRIBUTE COPIES TO

MAINT'P	☐ T&S	☐ CAD	☐
ELECTRICIAN	☐ PAINT	☐ CAM	☐
SERVICE	☐ PAINT	☐ HEAT TRANS	☐
CUSTOM	☐ VINYL	☐ AWN. ASSY.	☐
ALUMINUM	☐ NEON	☐ INSTALL	☐
CHANNEL	☐ SCREEN		☐
ASSEMBLY	☐ AWNING		☐

TOTAL

CERTIFICATE O. OCCUPANCY

BUILDING DI PARTMENT
CITY OF GRAN) JUNCTION
(OR MESA OUNTY)

PERMIT # 58257 DATE 5-22-97

PERMISSION IS HEREBY GRANTED TO Barnes & Noble Bookstore TO OCCUPY THE

BUILDING SITUATED AT 2451 Patterson

LOT _____ BLOCK _____ FILING _____ SUBI IVISION _____

TAX SCHEDULE NUMBER 2945-091-00-118

FOR THE FOLLOWING PURPOSE: Bookstore with coffee shop

THIS CERTIFICATE ISSUED IN CONFORMITY TO SECTIO 307, UNIFORM BUILDING CODE

INSPECTOR Harold Oneal

City Planning Kathleen M. Portner

SPR-1996-170

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

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

August 14, 1997

Deborah Alexus
The Canada Life Assurance Company
c/o Terrix Financial Corporation
1777 South Harrison Street #507
Denver CO 80210

Dear Ms. Alexus:

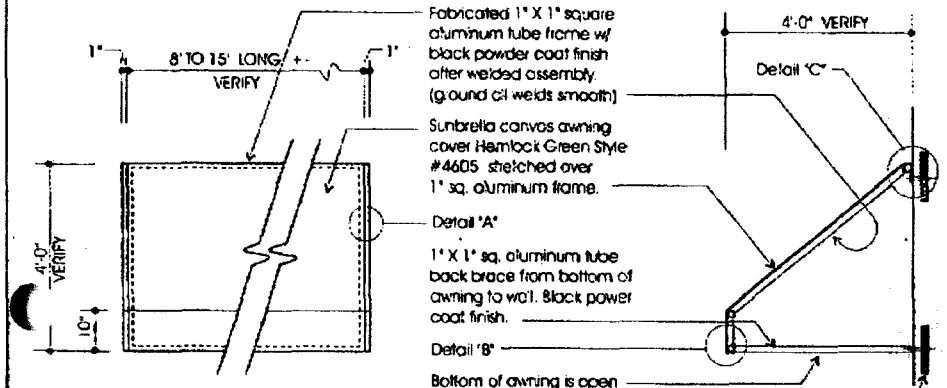
As per your request I am forwarding you this letter to confirm that the Barnes and Noble Bookstore located at 2451 Patterson Road is an allowed use in the C-2 (Heavy Commercial) zoning district, and that as of the issuance of the Certificate of Occupancy in June 1997 the store was in compliance with City zoning regulations.

I trust that this letter contains the information you requested. Please do not hesitate to contact me if you have any questions or require additional information.

Sincerely yours,

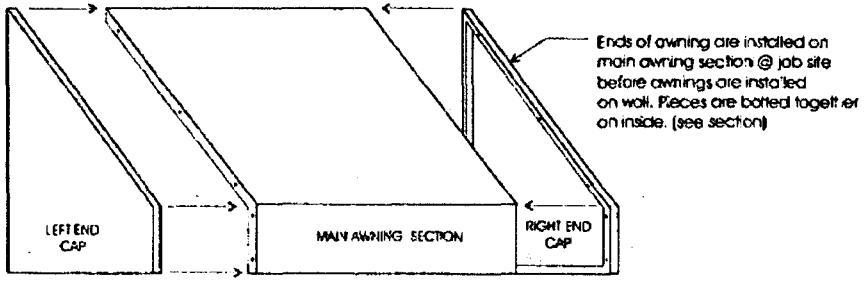
Michael T. Drollinger
Senior Planner

cc: File

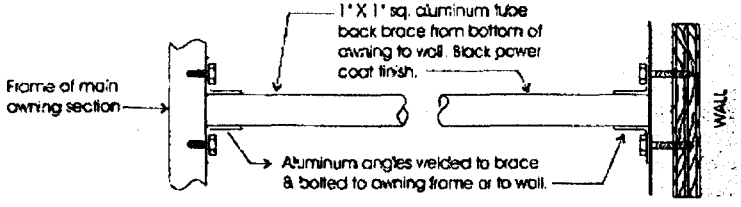


ELEVATON
3/8"= 1'-0"

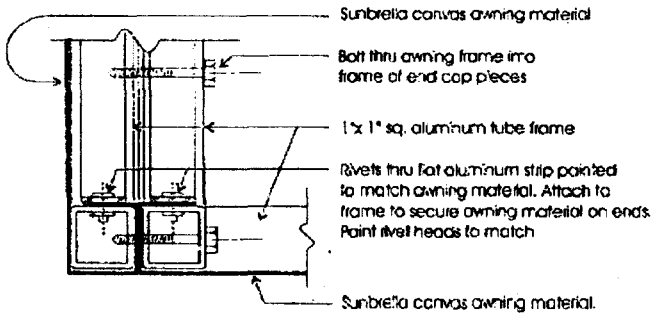
END VIEW
3/8"= 1'-0"



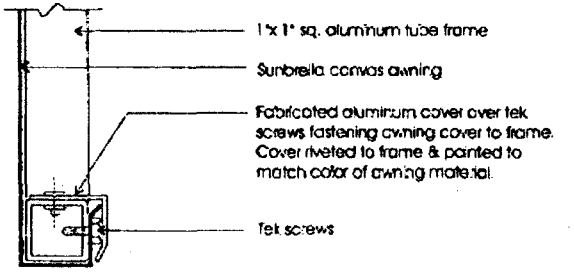
PERSPECTIVE VIEW
N.T.S



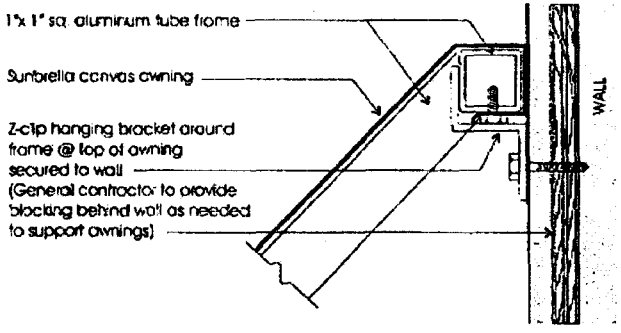
BACK BRACE DETAIL @ BOTTOM OF AWNING
3"= 1'-0"



(A) DETAIL - ENDS BOLTED TO MAIN AWNING SECTION
HALF SIZE



(B) DETAIL - ALUMINUM TEK SCREW COVERS
HALF SIZE



(C) DETAIL - TOP MOUNTING SECTION
HALF SIZE

MORE/ADDR NUMBER
DESIGN NUMBER 96-2713-R1
SHEET 3 OF 6

CLIENT BARNES & NOBLE
ADDRESS 24.4 ROAD & F ROAD
CITY/STATE GRAND JUNCTION, CO
SALES S. FROST DATE
ARTIST J. BUSH 8-23-96

APPROVED BY DATE
ACCT.
SALES
ESTIMATING
ENGINEERING
CLIENT
LAND LORD

Chandler Signs

3701 Marvin Valley
Dallas, TX 75233 214-902-2800 FAX 214-902-2844
3201 Cherry Ridge Dr. C-101 210-349-3804
San Antonio, TX 78230 FAX 210-349-8734

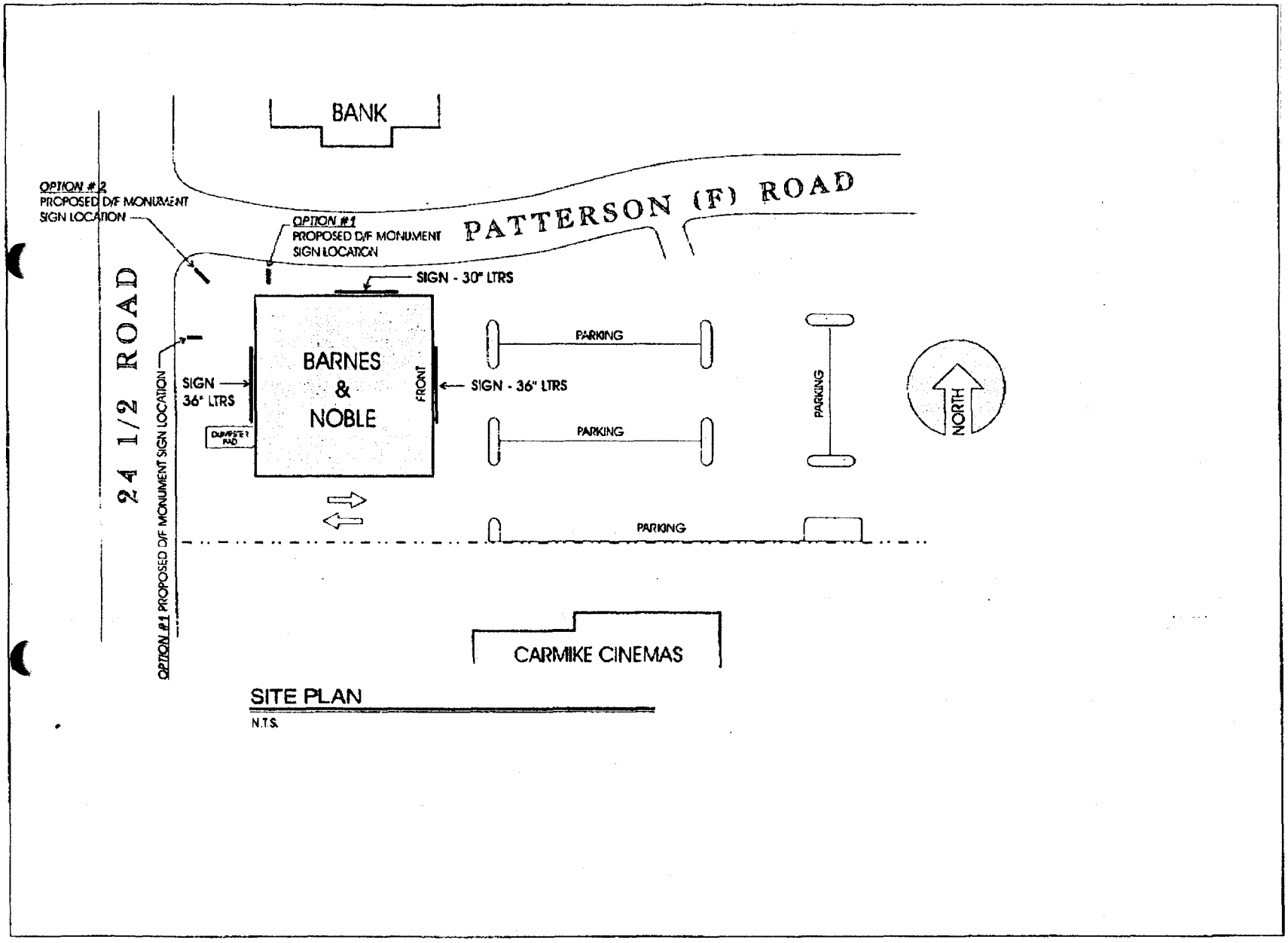
REVISIONS
R1 ADD DF POLE SIGN & DF MONUMENT SIGN 10/14/96

BILL OF MATERIALS

DISTRIBUTION OF PRINTS

MASTER	☐ PAD	☐ CAD	☐
ELECTRICAL	☐ PUSH	☐ Conn	☐
SERVICE	☐ PAINT	☐ T-TAP FRAME	☐
CUSTOM	☐ VINYL	☐ ANNE ARPT	☐
ALUMINUM	☐ NEON	☐ INSTALL	☐
CHANNEL LTR	☐ SCREEN	☐	☐
ASSEMBLY	☐ AWNING	☐	☐

TOTAL



SITE PLAN

N.T.S.

WORK ORDER NUMBER	
DESIGN NUMBER	96-2713-R1
SHEET	4 OF 6
CLIENT	BARNES & NOBLE
ADDRESS	24.4 ROAD & F ROAD
CITY/STATE	GRAND JUNCTION, CO
SALES	S. FROST
ARTIST	J. BUSH
DATE	8-23-96

APPROVED BY	DATE
ART DEPT.	
SALES	
ESTIMATING	
ENGINEERING	
CLIENT	
LAND LOAD	

Chandler Signs

2783 Regency Way
Garland, TX 75041
214-900-3080
FAX 214-900-3044

3301 Cherry Ridge Dr. #301
San Antonio, TX 78230
210-349-3888
FAX 210-349-8734

REVISIONS	
R1	ADD D/F POLE SIGN & D/F MONUMENT SIGN 10/14/96

BILL OF MATERIALS

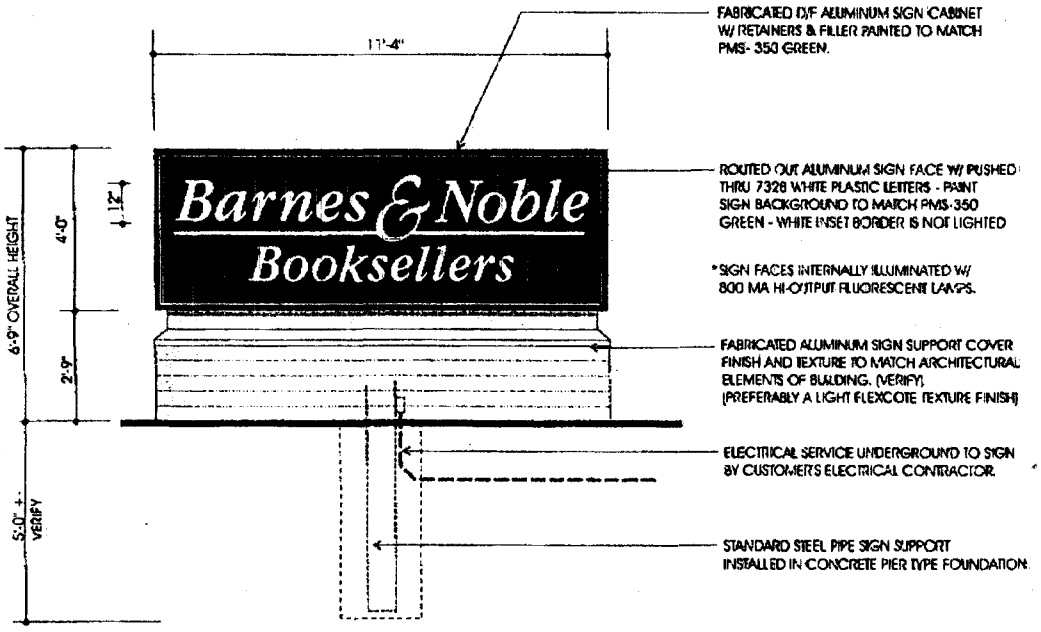
DISTRIBUTION OF PRINTS

MASTER	☐	FILE	☐	CAD	☐
ELECTRICAL	☐	PLOT	☐	CAM	☐
SPECS	☐	PAINT	☐	RELAY TRANS	☐
CUSTOMS	☐	VINYL	☐	APPR. ASSY.	☐
ALUMINUM	☐	NEON	☐	INSTALL	☐
CHNG LTS.	☐	SIGN SH.	☐		☐
ASSEMBLY	☐	ACRYLIC	☐		☐

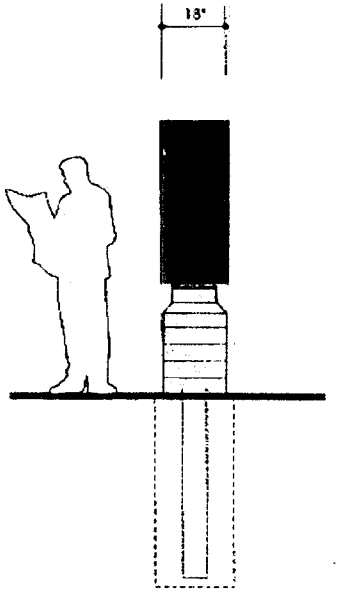
TOTAL

OPTION # 1

ONE D/F MONUMENT SIGN ON
24 1/4 ROAD & ONE D/F MONUMENT
SIGN PATTERSON ROAD.
(TWO SIGNS TOTAL)



Ⓓ DOUBLE FACE MONUMENT SIGN ELEVATION
3/8" = 1'-0"



END VIEW
3/8" = 1'-0"

WORK ORDER NUMBER
DESIGN NUMBER 96-2713-R1
SHEET 6 OF 6

CLIENT BARNES & NOBLE
ADDRESS 24.4 ROAD & F ROAD
CITY, STATE GRAND JUNCTION, CO
SALES S. FROST DATE
ARTIST J. BUSH 8-23-96

APPROVED DATE
ART DEPT.
SALES
ESTIMATING
ENGINEERING
CLIENT
LAND LORD

Chandler Signs

3305 Interstate 35W
Denton, TX 76205
214-903-3000
FAX 214-903-3044

4381 Cherry Ridge Dr. C-103
San Antonio, TX 78230
210-349-3400
Fax 210-349-8734

THE DRAWINGS ARE PROPERTY OF CHANDLER SIGNS, INC. AND ALL SIGNS TO BE BUILT FOR ORGANIZATION ARE REGISTERED BY CHANDLER SIGNS, INC.

REVISIONS
R1 ADD D/F POLE SIGN & D/F MONUMENT SIGN 10/14/96

SELL SHEET DETAILS

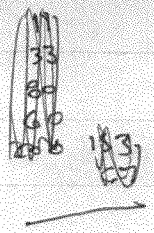
OUTSIDE STORE OF PRINTS

PAINTED	☐ P&A	☐ CAD	☐
ELECTRICAL	☐ ELEC	☐ CAM	☐
METHOD	☐ PAINT	☐ NEW FRAME	☐
CUSTOM	☐ VINYL	☐ ARPL ARTY	☐
ALUMINUM	☐ PRIOR	☐ INSTALL	☐
CHANGE	☐ SCREEN	☐	☐
ASSEMBLY	☐ AWNING	☐	☐

TOTAL _____

→ PM&A

	Bldg.	Rd.
F Rd	135 ft	504
24½ Rd	130ft	166



Allowance

F Rd	Bldg	270	MAX 756	504
	Rd	756		
24½ Rd	Bldg	260	MAX 249	
	Rd	249		

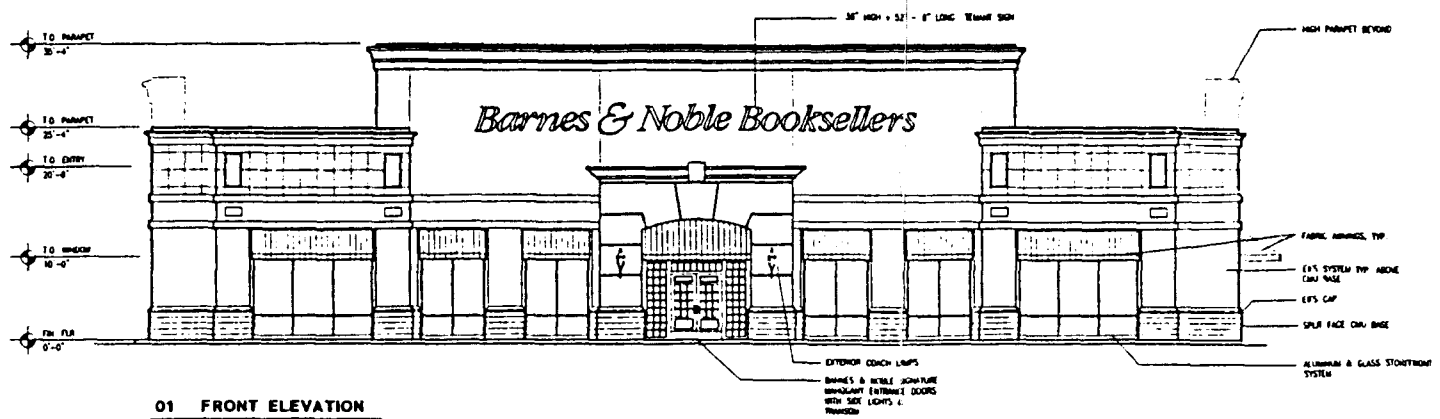
F Rd
263.4 ft² EAST & NORTH

24½ Rd
218.8 ft² WEST & SOUTH

FRONT (EAST)	154 ~~[illegible]~~	ft²
REAR (WEST)	109.4 ~~[illegible]~~	ft²
SIDE (SOUTH)	109.4 ~~[illegible]~~	ft²

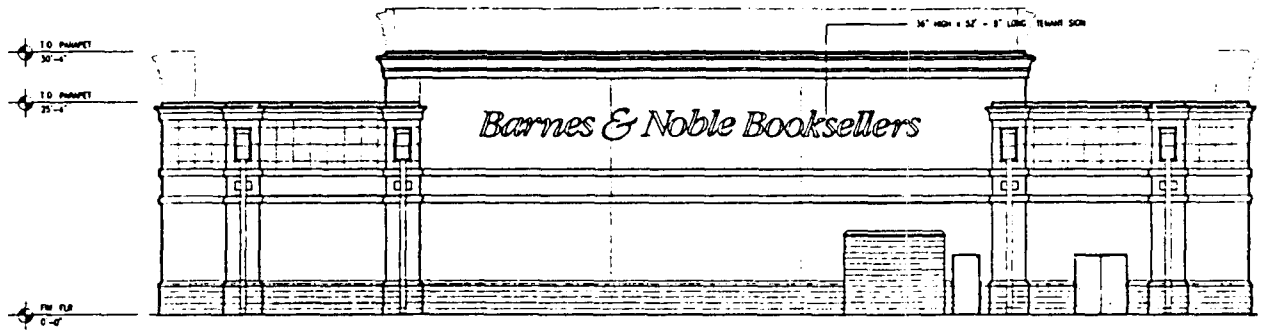
Monument signs 45.3 ft² (proposing two)

North 109.4 ft²



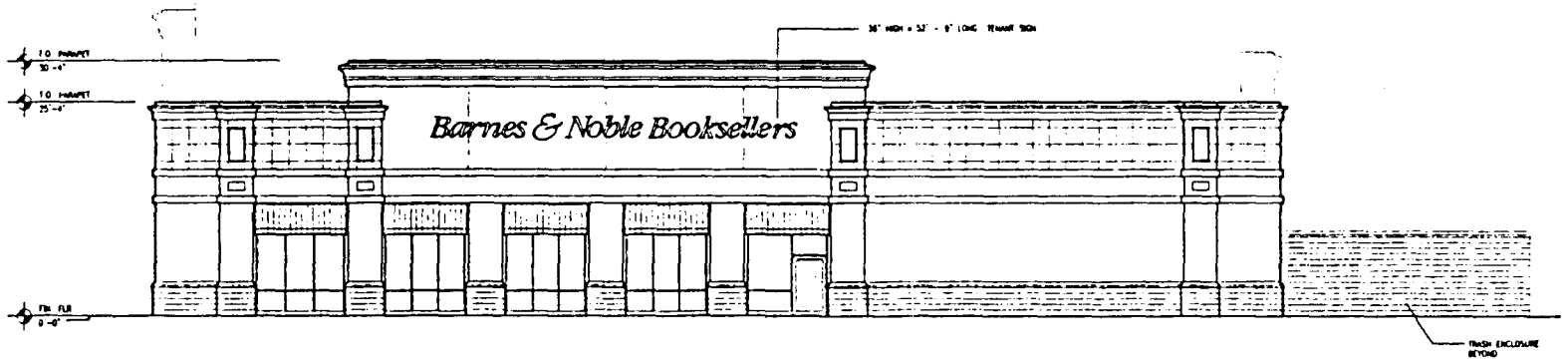
01 FRONT ELEVATION

SCALE 1/8"=1'-0"



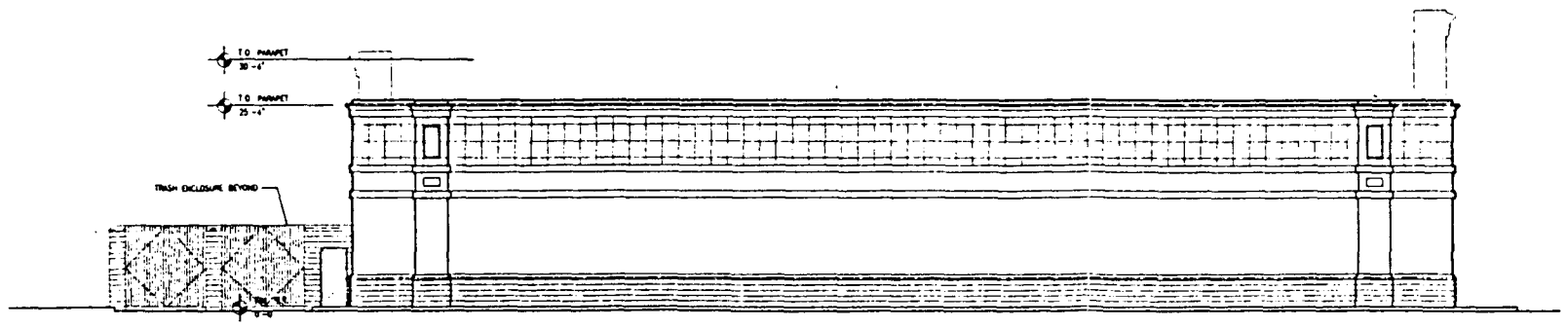
02 REAR ELEVATION

SCALE 1/8"=1'-0"



03 SIDE ELEVATION

SCALE 1/8"=1'-0"



04 SIDE ELEVATION

SCALE 1/8"=1'-0"

PROJECT NO. 9642

Store Number XXXXXX

Barnes & Noble Booksellers Since 1873

GRAND JUNCTION, CO.

RUNYON Architects ASSOCIATES
2033 CHENAULT DR. SUITE 150
CARROLLTON, TX 75006
(214) 233-7705

DATE: 07.16.98

REVISIONS

FILE NO.: 9642A300
PLOT SCALE: 1/8"=1'-0"

A300
ELEVATION

BENCHMARK

MESA COUNTY SURVEY MONUMENT FOR NORTH 1/4 CORNER SECTION 9 LOCATED AT THE INTERSECTION OF 24 1/2 ROAD AND PATTERSON ROAD.
ELEVATION = 4557.50

NOTE

1. CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION.
2. ALL CURVE DATA OR CONSTRUCTION COORDINATE DATA SHOWN HEREON IS REFLECTIVE OF EITHER FLOWLINE AT GUTTER OR FINISHED SURFACE AT CURB FACE.

PATTERSON ROAD

N 1610.8829
E 1430.4178
ELEV 4556.64
SURVEY CONTROL
N.E. PROPERTY CORNER
SET #5 REBAR & CAP
PLS-18480

N 1606.7814
E 1302.6464
INV EL 58.08
INSTALL:
1) 11 1/4° BEND

N 1595.5359
E 1324.3631
INV EL 54.71
INSTALL:
1) 11 1/4° BEND

REMOVE 400 LF CONCRETE LINED IRRIGATION DITCH

REMOVE EXIST CURB AND DRIVEWAY SECTION AND PLACE NEW DRIVEWAY SECTION AS SHOWN HEREON.

INSTALL STORM INLET PER CITY OF GRAND JUNCTION STANDARDS

100.84 LF 12" PVC IRRIGATION PIPE @ 0.515%

BACKFILL IRRIGATION PIPE TRENCH WITH SUITABLE FLOWFILL MATERIAL TO ROADWAY SUBGRADE AS SHOWN HEREON.

30 LF 12" PVC IRRIGATION PIPE @ 0.516%

BLEND GRAVEL SHOULDER INTO EXISTING GRAVEL PARK MAINT ROAD TO FORM A SMOOTH DRIVABLE TRANSITION PER GRADES HEREON.

N 1585.5141
E 1513.3247
INV EL 58.73
END IRRIGATION
REROUTE CONSTRUCTION
PLACE 45°BEND, 5 LF
12" IRRIG PIPE, HEADWALL
GRATE, AND FRAME
PER DETAIL SHT C10

N 1606.6884
E 1491.8072
INV EL 58.68
INSTALL:
1) IRRIGATION MH.
Rim = 57.8

N 1608.2827
E 1322.6801
INV EL 58.34
INSTALL:
1) 90° BEND, &
1) THRUST BLOCK

N 1429.6177
E 1444.7831
MH A-3
RIM = 57.95 FLW
INV = 49.46 48in

N 1418.8848
E 1440.2838
END WATERLINE (CAP)
INSTALL:
1) 6" PLUG, AND
1) THRUST BLOCK

CONSTRUCTION COORDINATE DATA:

Point	Northing	Easting	Description
1	1446.3006	1061.8745	FL/MATCH EX
2	1439.2949	1030.3867	SW
3	1412.3858	1080.4880	SW
4	1406.3348	1021.0041	FL/MATCH EXIST
5	1412.4499	1069.0353	FS/AP
6	1418.4460	1067.8453	FS/LP
7	1412.5732	1052.8870	FS/POL
8	1412.6098	977.8668	FS/POL
9	1412.7288	902.8860	FS/POL
10	1418.8023	877.8984	FS/POL
11	1412.8798	1202.8784	FS/POL
12	1415.6778	1288.5484	FS/END WALL
13	1423.4677	1228.908	FS/PT
14	1433.0187	1236.3847	FS/PC
15	1433.4788	1238.3837	FS/POC
16	1429.0286	1243.2888	FS/PT
17	1418.3082	1243.2888	FS/AP
18	1419.3480	1288.2888	FS/POL
19	1418.4304	1283.2888	FS/POL
20	1419.7129	1312.2888	FS/POL
21	1419.7984	1338.2881	FS/POL
22	1418.8778	1344.3881	FS/POL
23	1418.9463	1361.2882	FS/POL
24	1420.0428	1430.2883	FS/AP
25	1432.0438	1430.2879	FS/PC
26	1437.0383	1485.3090	FS/POC
27	1437.0389	1430.2880	FS/PT
28	1418.8873	1288.8884	FS/PC
29	1436.0046	1345.8895	FL/INT
30	1437.0167	1485.2880	FS/AP
31	1442.0987	1485.3282	FS/POL
32	1498.683	1485.2883	FS/AP
33	1524.0808	1481.8943	FS/POL
34	1549.8098	1483.3888	FS/POL
35	870.8037	1498.2899	FS/AP
36	870.2898	1482.4848	FS/AP
37	1449.3779	1088.2888	FL/PC
38	1600.3841	1482.2884	FS/ER
39	1604.2961	1473.2888	FS/POC
40	1620.0678	1482.4843	FS/PCC
41	627.8400	1482.2880	FS/AP
42	1638.6000	1474.6400	FS/BW
43	1638.6400	1444.9000	BW
44	1638.8832	1884.8829	FL/POC
45	1628.2000	1484.7400	FS/BW
46	1636.8900	1882.8900	BW
47	1633.4288	1481.9906	FL/MATCH EXIST
48	1623.7900	1488.7100	FS/AP
49	1616.5718	1430.3867	FS/PT
49A	1610.3827	1430.3867	FS/PC
50	1599.7828	1428.0884	FS/POC
51	1095.1370	1451.4186	FS/ER
52	1595.2961	1381.8847	FS/POL
53	1590.1918	1344.8868	FS/POL
54	1598.1241	1348.7378	FS/PC
54A	1584.1700	1338.8700	FS/POC
55	1588.4727	1320.8888	FS/POC
56	1579.0636	1890.0389	FS/POC
57	1573.2644	1295.7773	FS/POC
58	1568.8541	1274.862	FS/PRC
59	1567.0760	1291.8501	FL/POC
60	1534.2744	1283.3679	FS/PT
61	1532.9835	1291.3888	FS/TRANS
62	1541.9835	1281.3840	FS/TRANS
63	1494.9835	1281.3803	FS/TRANS
64	1487.9835	1281.3886	FS/TRANS
65	1466.8466	1281.3253	FS/POL
66	1466.9836	1281.3481	FS/SW
67	1443.3729	1281.3063	FS/PC
68	1437.3753	1208.8868	FS/POC
69	1434.8787	1202.8332	FL/PT
70	1434.8834	1197.8333	FL/POL
71	1434.8822	1177.8833	FL/POL
72	1434.7289	852.8837	FL/POL
73	1434.6498	827.8836	FL/POL
74	1434.5732	802.8836	FL/POL
75	1435.0489	1420.3056	FL/END
76	1462.1832	1245.3982	FL/POL
77	1434.4863	1067.8841	FL/PC
78	1438.4890	1063.8098	FS/ER
79	1438.2951	1063.8024	CONC/AP
80	1498.1900	1245.3268	FL/POL
81	1443.4883	1063.8063	RAMP
82	1448.9732	1057.8098	RAMP
83	1477.2982	1067.8096	DOCK AP
84	1487.7998	1067.8358	DOCK AP
85	1487.8198	1040.8358	FS/AP
86	1504.2638	1245.3961	FL/POL
87	1477.3409	1040.8295	END ZONE
88	1444.3409	1040.8059	TRANS
89	1438.3409	1040.8024	EOP/CONC/TRANS
90	1466.6632	1245.3253	FL/ER
91	1462.1683	1240.8982	FS/POC
92	1466.6684	1236.3253	FS/ER
93	1494.6684	1236.3406	FS/ER
94	1498.1683	1240.8437	FS/POC
95	1494.6632	1240.3406	FL/ER
96	1462.1536	1239.3982	FS/SPOT
97	1462.1567	1285.3982	FS/SPOT
98	1462.671	1312.3982	FS/SPOT
99	1462.0988	1338.3982	FS/SPOT
100	1462.0799	1366.3982	FS/SPOT
101	1462.0963	1393.3982	FS/SPOT
102	1467.0428	1420.3296	ER
103	1462.0363	1425.3452	FS/POC
104	1467.0308	1430.3296	FS/ER
105	1494.0308	1430.3402	FS/ER
106	1498.0383	1428.3437	FS/POC
107	1494.0427	1420.3402	FS/ER
108	1498.0983	1393.3437	FS/SPOT
109	1498.0799	1366.3437	FS/SPOT
110	1498.0988	1338.3437	FS/SPOT
111	1499.871	1302.3437	FS/SPOT
112	1499.1867	1288.3437	FS/SPOT
113	1498.1836	1278.3437	FS/SPOT
114	1828.6694	1236.3640	FS/ER
115	1828.6843	1240.8809	FS/POC
116	1828.6632	1245.3640	FL/ER
117	1841.8632	1245.3726	FL/AP
118	1841.8570	1284.3726	FS/POL
119	1841.1584	1298.3726	FS/POL
120	1841.877	1316.8097	FS/FL
121	1841.864	1313.0097	FS/FS
122	1841.1063	1336.3726	FS/POL
123	1841.0627	1362.3726	FS/POL
124	1841.0641	1388.3726	FS/POL
125	1841.0400	1416.3726	FS/AP
126	1828.0438	1416.3643	FS/ER
127	1828.8089	1417.8263	FS/POC
128	1864.0481	1481.3409	FS/ER
129	1824.0383	1428.3809	FS/ER
130	1865.8908	1428.8874	FS/POC
131	1829.0309	1430.3643	FS/ER
132	1549.8822	1430.3765	FS/POL
133	1570.2285	1430.3926	FS/ER
134	1575.1320	1420.3960	FS/POC
135	1570.1354	1420.3985	FS/ER
136	1564.1304	1420.3843	FL/AP
137	1568.1495	1389.8826	FL/POL
138	1568.1641	1378.8364	FL/AP
139	1581.7786	1349.8944	FL/POL
140	1548.8082	1323.3293	FL/POL
141	1544.0810	1314.5409	FL/AP
142	1864.8361	1321.1099	FS/ER
143	1868.0875	1309.8223	FS/POC
144	1868.5609	1305.8788	FS/ER
145	1860.2379	1293.813	FS/POC
146	1849.5822	1289.471	FS/POC
147	1545.1482	1244.8650	FS/PRC
148	1547.7823	1238.7367	FS/POC
149	1535.2686	1258.3686	FS/ER
150	1524.1632	1245.3609	FL/POC

NOTE
CONTRACTOR TO COORDINATE PLACEMENT OF IRRIGATION SLEEVING WITH LANDSCAPE CONTRACTOR. SEE LANDSCAPE AND IRRIGATION PLANS SHEETS - 8 AND L1 RESPECTIVELY FOR ADDITIONAL INFORMATION.

NOTE
SEE IRRIGATION SLEEVING, SHEET L1 FOR IRRIGATION CONDUIT PLACEMENT PRIOR TO ANY CONCRETE/ASPHALT/SURFACE CONST.

American Consulting Engineers Council Member

APPROVED FOR CONSTRUCTION
CITY OF GRAND JUNCTION DATE

ACCEPTED AS CONSTRUCTED
CITY OF GRAND JUNCTION DATE

APPROVED FOR CONSTRUCTION
UTE WATER CONSERVANCY DISTRICT DATE

ACCEPTED AS CONSTRUCTED
UTE WATER CONSERVANCY DISTRICT DATE

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

BARNES AND NOBLE RETAIL STORE G.J., COLORADO

SITE IMPROVEMENT PLAN

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

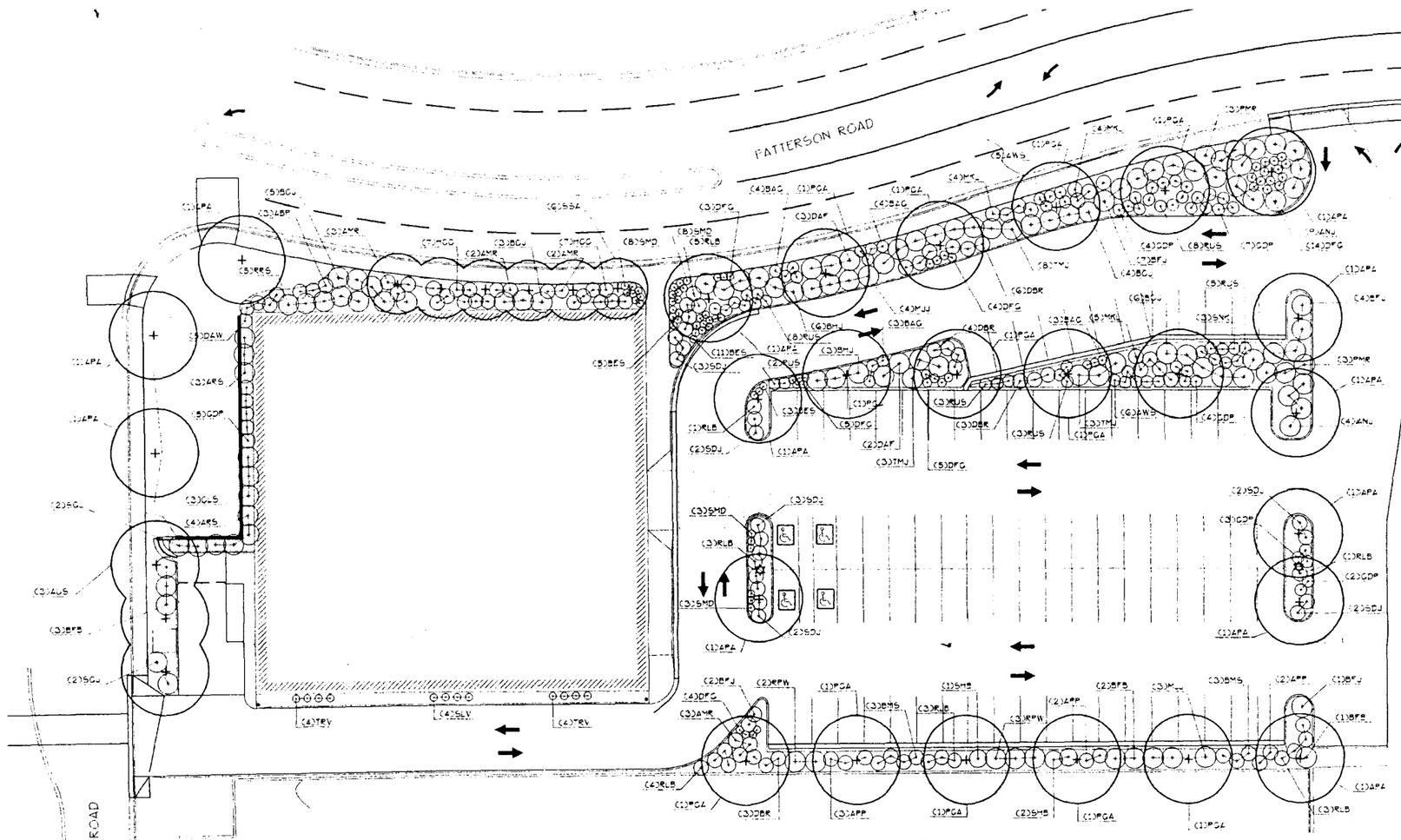
REVISION	DATE	DESCRIPTION	BY	CHK'D
1	2-25-97	REVISE TO "45-BEND" CONTENTS	JCS	JEL

Drawn: JCS | Approved:
Designed: JCS | Date: 11-12-96
Checked: JEL | Scale: 1" = 10'

C4

Project No. 0293-001

SPR-1996-190



PLANT LIST

Qty	Key	Common Name	Scientific Name	Size
Deciduous Trees				
13	APA	Autumn Purple Ash	Fraxinus americana "Autumn Purple"	2-1/2"
13	POA	Princeton Ash	Fraxinus pennsylvanica 'Princeton'	1-1/2"
6	SEA	Spring Snow Crabapple	Malus 'Spring Snow'	1-1/2"
Evergreen Trees				
3	AUB	Arborvitae Pine	Pinus nigra	7-8'
Deciduous Shrubs				
5	AEP	Abbotswood Potentilla	Potentilla fruticosa 'Abbotswood'	5 gal
10	AMB	Alba Meidiland Rose	Rosa hybrida "Alba Meidiland"	5 gal
7	APP	Apache Plume	Fallugia paradoxa	5 gal
7	ARS	Arctic Rose of Sharon	Hibiscus syriacus 'Arctic'	5 gal
11	AWS	Anthony Waterer Spirea	Spiraea bumalda Anthony Waterer	5 gal
6	BPB	Butterfly Bush	Buddleia davidii 'Black Knight'	5 gal
5	CLS	Cotoneaster	Rosa rugosa "Therese"	5 gal
5	DAF	Dwarf Arnold's Forsythia	Forsythia intermedia "Arnold's Dwarf"	5 gal
5	DAW	Dwarf Alpine Willow	Salix purpurea nana	5 gal
16	DBR	Dwarf Blue Rabbitbrush	Chrysothamnus nauseosus nauseosus	5 gal
25	GDP	Gold Drop Potentilla	Potentilla fruticosa "Gold Drop"	5 gal
15	HCS	Hancock Cranberry	Symphoricarpos chenaultii Hancock	5 gal
15	MLL	Miss Kim Lilac	Syringa velutina	5 gal
6	PMR	Pink Meidiland Rose	Rosa "Pink Meidiland"	5 gal
21	RLB	Red Leaf Barberry	Berberis thunbergii "Atropurpurea"	5 gal
5	RPW	Red Prince Weigela	Weigela florida Red Prince	5 gal
5	RRS	Red Heart Rose of Sharon	Hibiscus syriacus 'Red Heart'	5 gal
3	SHE	Sandcherry	Cotoneaster acutifolius	5 gal
Evergreen Shrubs				
17	ARJ	Andorra Juniper	Juniperus horizontalis 'Andorra'	5 gal
18	BCJ	Blue Chip Juniper	Juniperus horizontalis 'Blue Chip'	5 gal
13	BTJ	Buffalo Juniper	Juniperus sabina 'Buffalo'	5 gal
9	BSJ	Blue Shadow Juniper	Juniperus horizontalis 'Plumosa'	5 gal
4	SAJ	Sabina Juniper	Juniperus chinensis 'Sabina'	5 gal
14	SDJ	Sea Dune Juniper	Juniperus sabina 'Tamariscifolia'	5 gal
6	SGJ	Sea Green Juniper	Juniperus chinensis	5 gal
16	TMJ	Taminy Juniper	Juniperus sabina 'Tamariscifolia'	5 gal
Perennials/Ornamentals				
14	BAG	Blue Avena Grass	Helictotrichon sempervirens	1 gal
18	BBS	Black-eyed Susan	Rudbeckia fulgida "Goldsturm"	1 gal
35	DPG	Dwarf Fountain Grass	Pennisetum alopecuroides "Hamelin"	1 gal
29	RUS	Russian Sage	Perovskia artriplicifolia	1 gal
4	SLV	Silver Lace Vine	Polygonum aubertii	1 gal
22	SMO	Silver Mound	Artemisia schmidtiana	1 gal
8	TRV	Trumpet Vine	Campsis radicans	1 gal

LANDSCAPE REQUIREMENTS

PARKING LOT LANDSCAPING

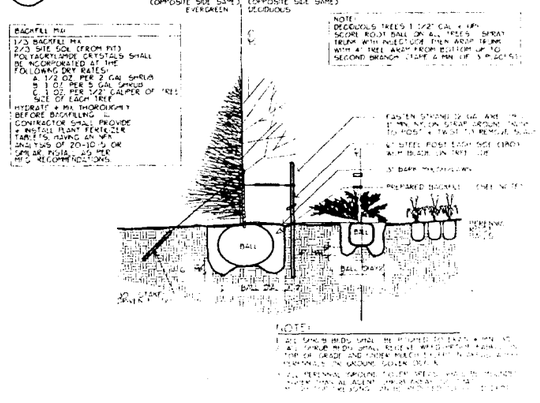
INTERIOR PAVED PARKING AREA
28,871.35 S.F.
REQUIRED INTERIOR LANDSCAPE (5%)
1,444 S.F.
PROPOSED INTERIOR LANDSCAPE S.F.
TOTAL = 3,418.68 S.F.
NO TREES REQUIRED (1/100 S.F.)
16 TREES PROPOSED

SITE LANDSCAPING

REQUIRED LANDSCAPE (OF 15' SETBACK)
(580 L.F. X 5' X .75) = 2,175 S.F.
REQUIRED TREES
1/500 S.F. OF REQUIRED LANDSCAPE
5 REQUIRED
18 PROPOSED
SHRUB BED (TOTAL)
11,133.46 S.F.
TURF
3,518.93 S.F.
TOTAL LANDSCAPE S.F
14,652.39 S.F.

NOTES:
1. ALIGN CRABAPPLES (SSA) WITH BUILDING COLUMNS.
2. ALL LANDSCAPED AREAS TO BE WATERED WITH PRESSURIZED IRRIGATION SYSTEM.

PLANTING DETAIL
NOT TO SCALE



LANDSCAPE PLAN

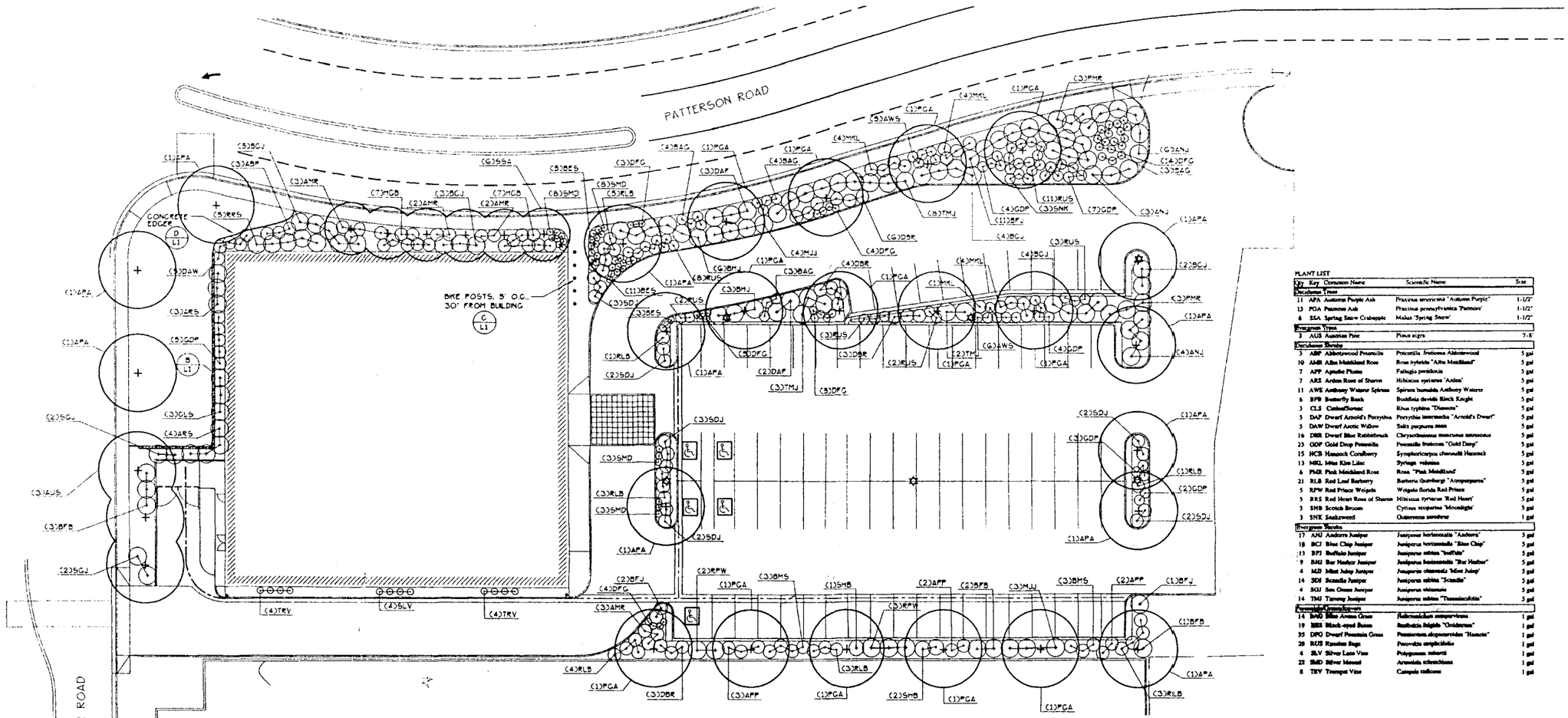
BARNES & NOBLE BOOKSTORES
GRAND JUNCTION RETAIL OUTLET

DRAWN BY MH
CHECKED BY CR
JOB NO. 9626
DATE 8-20-96
REVISIONS

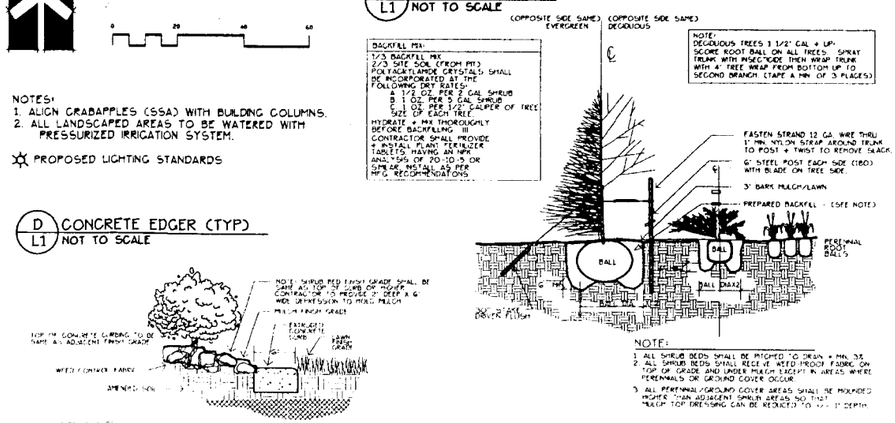
9626-8-20-96-1

SHEET NO. 1/1

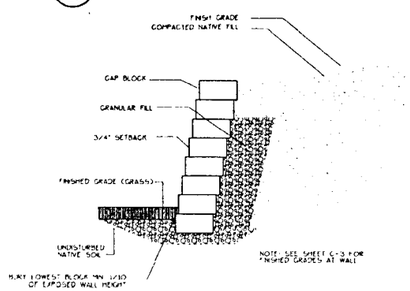
CIAVONNE & ASSOCIATES, INC.
LANDSCAPE AND PLANNING ARCHITECTS
524 ORAND AVE. #1
GRAND JUNCTION, CO
970-241-0745
FAX 970-241-0765



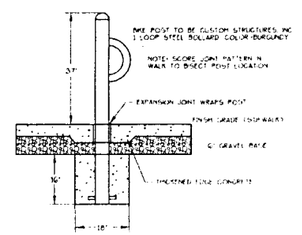
A L1 PLANTING DETAIL
NOT TO SCALE



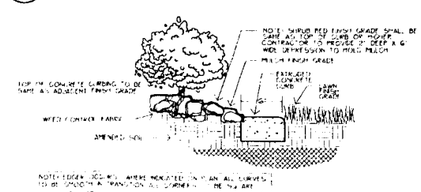
B L1 MODULAR RETAINING WALL
NOT TO SCALE



C L1 BIKE POST
NOT TO SCALE



D L1 CONCRETE EDGER (TYP)
NOT TO SCALE



PLANT LIST

Qty	Key	Common Name	Scientific Name	Size
Deciduous Trees				
11	APA	Autumn Purple Ash	Fraxinus americana "Autumn Purple"	1-1/2"
13	PGA	Patmore Ash	Fraxinus pennsylvanica "Patmore"	1-1/2"
4	SSA	Spring Snow Crabapple	Malus "Spring Snow"	1-1/2"
Evergreen Trees				
3	AUS	Austrian Pine	Pinus nigra	7-8'
Deciduous Shrubs				
3	ABP	Abbotswood Potentilla	Potentilla fruticosa Abbotswood	5 gal
10	AMR	Alba Meidiland Rose	Rosa hybrida "Alba Meidiland"	5 gal
7	APP	Aptenia Plants	Fallugia paradoxa	5 gal
7	ARS	Arden Rose of Sharon	Hibiscus syriacus "Arden"	5 gal
11	AWE	Anthony Waterer Spirea	Spiraea bumalda Anthony Waterer	5 gal
6	BFB	Butterfly Bush	Buddleia davidii Black Knight	5 gal
3	CLS	Cutleaf Sumac	Rhus typhina "Dissecta"	5 gal
5	DAF	Dwarf Arnold's Forsythia	Forsythia intermedia "Arnold's Dwarf"	5 gal
5	DAW	Dwarf Arctic Willow	Salix purpurea nana	5 gal
16	DBR	Dwarf Blue Rabbitbrush	Chrysothamnus nauseosus nauseosus	5 gal
25	GDP	Gold Drop Potentilla	Potentilla fruticosa "Gold Drop"	5 gal
15	HCB	Hancock Coralberry	Symphoricarpos chenaultii Hancock	5 gal
13	MKL	Miss Kim Lilac	Syringa velutina	5 gal
6	PMR	Pink Meidiland Rose	Rosa "Pink Meidiland"	5 gal
21	RLB	Red Leaf Barberry	Berberis thunbergii 'Atropurpurea'	5 gal
5	RPW	Red Prince Weigela	Weigela florida Red Prince	5 gal
5	RRS	Red Heart Rose of Sharon	Hibiscus syriacus 'Red Heart'	5 gal
3	SHB	Scotch Broom	Cytisus scoparius 'Moonlight'	5 gal
3	SNK	Snakeweed	Gutierrezia sarothrae	1 gal
Evergreen Shrubs				
17	ANJ	Andorra Juniper	Juniperus horizontalis "Andorra"	5 gal
18	BCJ	Blue Chip Juniper	Juniperus horizontalis "Blue Chip"	5 gal
13	BFJ	Buffalo Juniper	Juniperus sabina "buffalo"	5 gal
9	BHJ	Bar Harbor Juniper	Juniperus horizontalis "Bar Harbor"	5 gal
4	MJJ	Mint Julep Juniper	Juniperus chinensis 'Mint Julep'	5 gal
14	SDJ	Scandia Juniper	Juniperus sabina "Scandia"	5 gal
4	SOJ	Sea Green Juniper	Juniperus chinensis	5 gal
14	TMJ	Tamrisy Juniper	Juniperus sabina "Tamariscifolia"	5 gal
Ornamental Grasses				
14	BMG	Blue Avena Grass	Helictotrichon sempervirens	1 gal
19	BBS	Black-eyed Susan	Rudbeckia hirtaia "Goldsturm"	1 gal
35	DPG	Dwarf Pennisetum Grass	Pennisetum alopecuroides "Hamelin"	1 gal
29	RUS	Russian Sage	Perovskia atriplicifolia	1 gal
4	SLV	Silver Lace Vine	Polygonum aubertii	1 gal
23	SMD	Silver Mound	Artemisia schmidtiana	1 gal
8	TRV	Trumpet Vine	Campsis radicans	1 gal

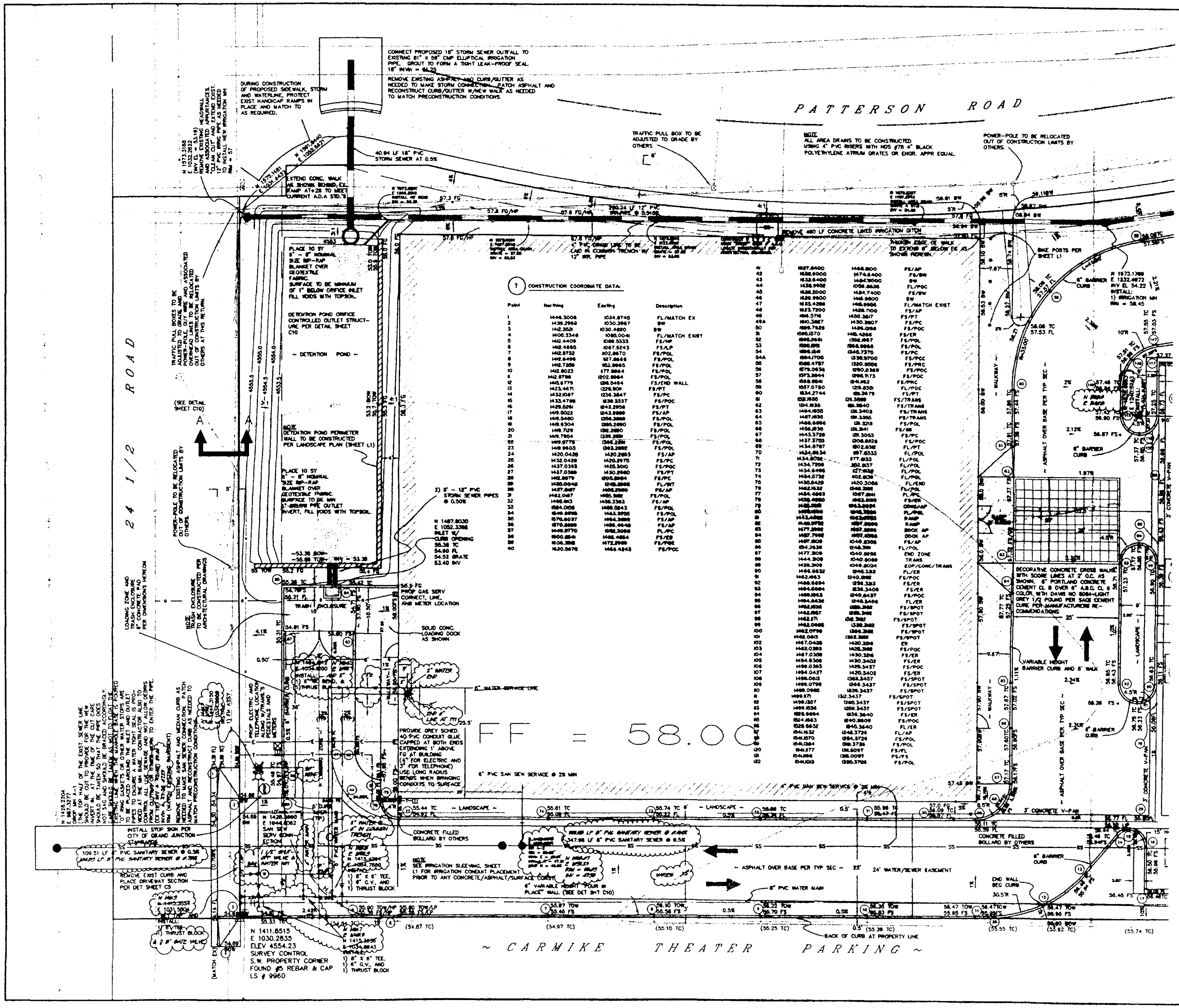
PLANTING PLAN

BARNES AND NOBLE
GRAND JUNCTION RETAIL OUTLET

DRAWN BY MH
CHECKED BY CR
JOB NO. 9626
DATE 08-20-96
REVISIONS 09-20-96
DWG NO. 9626-08-20-96-L1
SHEET NO. L-1

CIAVONNE & ASSOCIATES, INC.
LANDSCAPE AND PLANNING ARCHITECTS
844 GRAND AVE. #1
GRAND JUNCTION, CO
970-241-0745
FAX 970-241-0765
81501

SPR-1996-190



CONSTRUCTION COORDINATE DATA:

Point	Northing	Easting	Description
1	1446.3006	1024.8745	FL/MATCH EX
2	1439.2969	1030.3967	BW
3	1412.3521	1030.4820	BW
4	1406.3348	1096.0041	FL/MATCH EXIST
5	1412.4409	1066.5333	FS/HP
6	1412.4465	1067.9243	FS/LP
7	1412.8732	1102.8670	FS/POL
8	1412.6496	1127.8648	FS/POL
9	1412.7269	1152.8866	FS/POL
10	1412.8023	1177.8864	FS/POL
11	1412.8788	1202.8864	FS/POL
12	1416.6779	1216.5494	FS/END WALL
13	1423.4671	1226.9011	FS/PT
14	1432.1087	1234.3847	FS/PC
15	1433.4788	1238.3337	FS/POC
16	1429.5261	1243.2958	FS/PT
17	1419.5022	1243.2869	FS/AP
18	1419.5480	1268.2869	FS/POL
19	1419.6304	1286.2890	FS/POL
20	1419.7129	1312.2890	FS/POL
21	1419.7954	1339.2891	FS/POL
22	1419.8778	1366.2891	FS/POL
23	1419.9603	1393.2892	FS/POL
24	1420.0428	1420.2893	FS/AP
25	1432.0428	1420.2976	FS/PC
26	1437.0393	1425.3010	FS/POC
27	1437.0360	1430.2960	FS/PT
28	1442.8679	1298.8864	FS/PC
29	1480.0046	1249.8865	FL/INT
30	1437.0467	1406.2980	FS/AP
31	1462.0467	1405.3182	FS/POL
32	1486.613	1456.3363	FS/AP
33	1584.0108	1460.0243	FS/POL
34	1549.9978	1443.3266	FS/POL
35	1570.6037	1464.3689	FS/AP
36	1570.8699	1486.4649	FS/AP
37	1440.9770	1082.3064	FL/PC
38	1600.8841	1466.4664	FS/ER
39	1606.3188	1472.2969	FS/POC
40	1620.3678	1464.4243	FS/POC
41	1627.8400	1466.8100	FS/AP
42	1632.6000	1474.6400	FS/BW
43	1632.6400	1494.8000	BW
44	1438.9902	1059.8626	FL/POC
45	1628.2000	1494.7400	FS/BW
46	1628.9800	1416.9600	BW
47	1633.4288	1446.9966	FL/MATCH EXIST
48	1623.7200	1428.7100	FS/AP
49	1616.5716	1450.3617	FS/PT
49A	1610.3827	1430.3807	FS/PC
50	1609.7628	1426.0198	FS/POC
51	1606.1370	1415.4266	FS/ER
52	1606.2641	1392.1867	FS/POL
53	1606.1781	1366.9984	FS/POL
54	1606.1241	1346.7376	FS/PC
54A	1604.1700	1338.9700	FS/PCC
55	1588.4787	1320.8066	FS/PRC
56	1579.0636	1290.0369	FS/POC
57	1573.2844	1266.7173	FS/POC
58	1548.6541	1241.1162	FS/PRC
59	1537.0760	1219.8351	FL/POC
60	1534.2744	1211.3679	FS/PT
61	1521.1936	1211.3660	FS/TRANS
62	1514.1036	1211.3640	FS/TRANS
63	1494.1636	1211.3403	FS/TRANS
64	1487.1036	1211.3306	FS/TRANS
65	1468.6086	1211.3215	FS/POL
66	1456.1036	1211.3141	FS/[illegible]
67	1443.3728	1211.3063	FS/PC
68	1437.3703	1206.8828	FS/POC
69	1434.8767	1202.8312	FL/PT
70	1434.8634	1197.6333	FL/POL
71	1434.8028	1177.8833	FL/POL
72	1434.7268	1152.8837	FL/POL
73	1434.6496	1127.8838	FL/POL
74	1434.5732	1102.8838	FL/POL
75	1436.6429	1420.3066	FL/END
76	1442.1632	1246.3188	FL/POL
77	1484.4063	1067.8841	FL/PC
78	1438.4060	1063.8019	FS/ER
79	[illegible]	1063.8034	CONC/AP
80	[illegible]	1046.3666	FL/POL
81	1443.4685	1040.8883	RAMP
82	1446.9782	1067.8000	RAMP
83	1477.2062	1067.8286	DOCK AP
84	1467.7962	1097.6366	DOCK AP
85	1467.8108	1040.6366	FS/AP
86	1514.2638	1246.318	FL/POL
87	1477.3109	1040.8286	END ZONE
88	1444.3108	1040.8080	TRANS
89	1439.3109	1040.8024	EOP/CONC/TRANS
90	1466.6632	1246.3213	FL/ER
91	1442.1663	1240.8182	FS/POC
92	1466.6694	1256.3213	FS/ER
93	1464.6664	1236.3406	FS/ER
94	1466.1063	1240.8437	FS/POC
95	1494.6632	1240.3406	FL/ER
96	1462.1636	1286.3162	FS/SPOT
97	1462.1667	1286.3182	FS/SPOT
98	1462.171	1312.3162	FS/SPOT
99	1462.0686	1339.3162	FS/SPOT
100	1462.0798	1366.3162	FS/SPOT
101	1462.0613	1393.3162	FS/SPOT
102	1467.0428	1420.3216	ER
103	1462.0393	1425.3162	FS/POC
104	1467.0360	1430.3216	FS/ER
105	1494.9360	1430.3402	FS/ER
106	1499.0365	1425.3437	FS/POC
107	1494.0427	1420.3402	FS/ER
108	1499.0613	1393.3437	FS/SPOT
109	1499.0798	1366.3437	FS/SPOT
110	1499.0966	1339.3437	FS/SPOT
111	1499.1171	1312.3437	FS/SPOT
112	1499.1357	1286.3437	FS/SPOT
113	1499.1536	1259.3437	FS/SPOT
114	1528.6694	1236.3640	FS/ER
115	1524.1663	1240.8609	FS/POC
116	1528.6632	1246.3640	FL/ER
117	1541.1632	1246.3726	FL/AP
118	1541.1670	1264.3726	FS/POL
119	1541.1364	1288.3726	FS/POL
120	1541.1277	1316.8097	FS/FL
121	1541.1186	1316.0097	FS/FS
122	1541.1013	1336.3726	FS/POL
123	1541.0627	1342.3726	FS/POL
124	1541.0641	1368.3726	FS/POL
125	1541.0455	1416.3726	FS/AP
126	1529.0456	1416.3643	FS/ER
127	1525.5089	1417.8263	FS/POC
128	1524.0421	1421.3609	FS/ER
129	1524.0393	1425.3609	FS/ER
130	1525.5013	1428.8874	FS/POC
131	1529.0359	1430.3643	FS/ER
132	1549.5622	1430.3786	FS/POL
133	1565.1300	1430.3926	FS/ER
134	1570.1320	1425.3960	FS/POC
135	1565.1354	1420.3826	FS/ER
136	1563.1354	1420.3843	FL/AP
137	1563.1496	1397.8300	FL/POL
138	1553.1664	1375.2900	FL/AP
139	1549.3800	1360.2100	FL/POL
140	1548.3500	1323.8100	FL/POL
141	1546.5200	1314.3800	FL/AP
142	1664.7300	1312.9900	FS/ER
143	1668.2000	1310.7400	FS/POC
144	1568.7800	1306.6500	FS/ER
145	1666.2379	1293.8131	FS/POC
146	1648.8582	1269.4711	FS/POC
147	1545.1468	1244.8660	FS/PRC
148	1541.7823	1238.7987	FS/POC
149	1530.2566	1236.3686	FS/ER
150	1524.1632	1245.3609	FL/POC

N

(IN FEET)
1 inch = 10 ft.

BENCHMARK

MESA COUNTY SURVEY MONUMENT FOR NORTH 1/4 CORNER SECTION 9 LOCATED AT THE INTERSECTION OF 24 1/2 ROAD AND PATTERSON ROAD.
ELEVATION = 4557.50

NOTE

1. CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION.
2. ALL CURVE DATA OR CONSTRUCTION COORDINATE DATA SHOWN HEREON IS REFLECTIVE OF EITHER FLOWLINE AT GUTTER OR FINISHED SURFACE AT CURB FACE.

NOTE
CONTRACTOR TO COORDINATE PLACEMENT OF IRRIGATION SLEEVING WITH LANDSCAPE CONTRACTOR. SEE LANDSCAPE AND IRRIGATION PLANS SHEETS -4 AND L1 RESPECTIVELY FOR ADDITIONAL INFORMATION.

APPROVED FOR CONSTRUCTION
CITY OF GRAND JUNCTION ____ DATE

ACCEPTED AS CONSTRUCTED
CITY OF GRAND JUNCTION ____ DATE

APPROVED FOR CONSTRUCTION
UTE WATER CONSERVANCY DISTRICT ____ DATE

ACCEPTED AS CONSTRUCTED
UTE WATER CONSERVANCY DISTRICT ____ DATE

American Consulting Engineers Council
Member

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

BARNES AND NOBLE RETAIL STORE G.J., COLORADO

SITE IMPROVEMENT PLAN

14847
2/25/97

PREPARED UNDER THE SUPERVISION OF
JAMES E. LANGFORD PE NO. 14847

REVIEWED ____
DATE ____

REVISION	DATE	DESCRIPTION	BY	CH'D
1	2-25-97	REVISE TO "AS-BUILT" CONDITIONS	JCS	JEL

Drawn:	JCS	Approved:		C3
Designed:	JCS	Date:	12-12-96	
Checked:	JEL	Scale:	1" = 10'	Project No. 0293-001

SPR-1996-190

SPR-96-190 AS-BUILTS BARNES+NOBLE