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: SPR-1995-058

Date 8/4/99

Present	Scanned	A few items are denoted with a (*) are to be scanned for permanent record on the ISYS retrieval system. In some instances, not all entries designated to be scanned, are present in the file. There are also documents specific to certain files, not found on the standard list. For this reason, a checklist has been included. Remaining items, (not selected for scanning), will be marked present on the checklist. This index can serve as a quick guide for the contents of each file. Files denoted with (**) are to be located using the ISYS Query System. Planning Clearance will need to be typed in full, as well as other entries such as Ordinances, Resolutions, Board of Appeals, and etc.
X	X	***Summary Sheet – Table of Contents**
		Application form
X		Receipts for fees paid for anything
X	X	***Submittal checklist – Change of Use Review**
X	X	***General project report**
		Reduced copy of final plans or drawings
x		Reduction of assessor's map
		Evidence of title, deeds
		***Mailing list**
		Public notice cards
		Record of certified mail
		Legal description
		Appraisal of raw land
		Reduction of any maps – final copy
	X	***Final reports for drainage and soils (geotechnical reports)**
		Other bound or nonbound reports
		Traffic studies
X		Individual review comments from agencies
X	X	***Consolidated review comments list**
		***Petitioner's response to comments**
X	X	***Staff Reports – Board of Appeals**
		***Planning Commission staff report and exhibits**
		***City Council staff report and exhibits**
		***Summary sheet of final conditions**
		***Letters and correspondence dated after the date of final approval (pertaining to change in conditions or expiration date)**

DOCUMENTS SPECIFIC TO THIS DEVELOPMENT FILE:

X		Dev. Imp. Agreement – 3/31/95 **	X		Letter of Transmittal from Warner -Nease –Bost Architects, Inc. to City of Grand Junction re: meeting notes– 1/9/95
X		Project Inspection Report – 8/31/95			Letter from Michael Drollinger to Darin Heyen – 1/9/94
X		Letter from Michael Drollinger to Kelly Ford – release of check 10/24/95	X	X	Meeting Notes – 1/6/95
X		Memo from Michael Drollinger to Randy booth – 9/1/95	X	X	Notes to file from Michael Drollinger – no date
X		Sign Permit - **	X		Schematic Site Plan
X		Planning Clearance - **	X		Memo from Dennis Nease to Tom Doty and Michael Drollinger – 12/15/94
X	X	Fax Letter to Michael Drollinger from Craig Sutherland	X		E-mail involving Jody Kliska, Michael Drollinger, Jim Shanks, Dan Wilson re: TCP for LaBelles Building – 12/8/94
X		Letter from Ed Morris to Ford Construction re: Pavement section analysis for accel/decel lanes	X		Loan Policy from Chicago Title Insurance
X		Memo to File from MTD re: Sutherland's Plant Investment Fee	X		Letter to Darin Heyen from Michael Drollinger saying application is complete and ready for process
X		Fax from Darin Heyen to City of Grand Junction-Prelim. Site Plan-1/13/95	X		Flood Plain Permit
		Letter from Michael Drollinger to Darin Heyen – 1/12/94			
		Letter from Michael Drollinger to Darin Heyen – 1/10/94			
X	X	Enlarged Site Plan			
X		Site Plan			
X		West Elevation – New Construction			

SUBMITTAL CHECKLIST

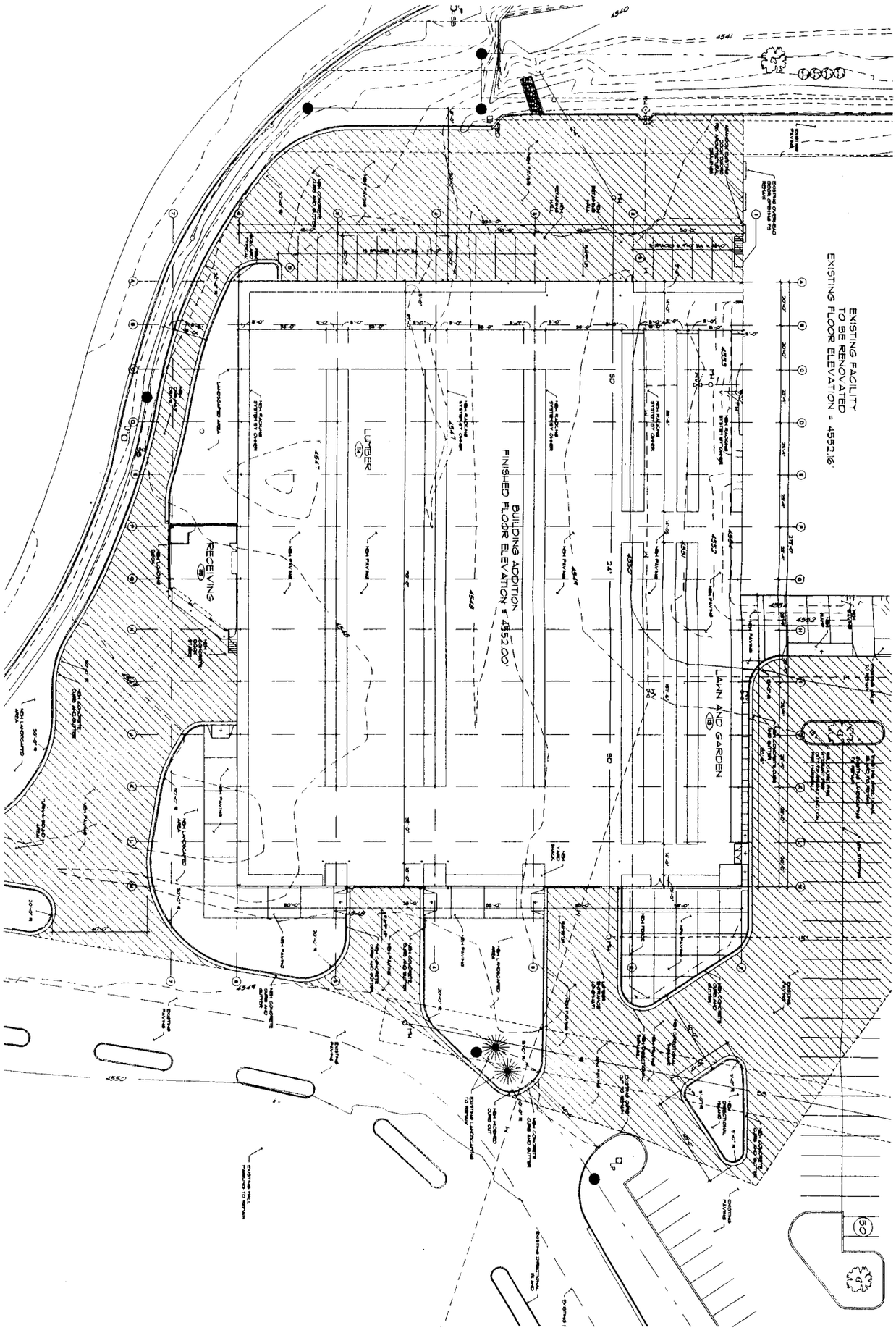
SITE PLAN REVIEW

Location: SE Corner 24 Rd & F Road   Project Name: Sutherlands

ITEMS		DISTRIBUTION																				
DESCRIPTION File # - SPR-95-58 recpt. # 2164 232.60 - SPR 125.00 - FLP	SSID REFERENCE	● City Community Development	● City Dev. Eng.	● City Utility Eng.	● City Property Agent	● City Parks/Recreation	● City Fire Department	● City Attorney	○ City Downtown Dev. Auth.	○ County Planning	● County Bldg. Dept.	○ Irrigation District	● Drainage District	● Water District (GJ Ute)	○ Sewer District	○ U.S. West	○ Public Service	○ GVRP	○ CDOT	● Corps of Engineers	○ Walker Field	TOTAL REQ'D.
● Application Fee $115 + $15/acre ✓	VII-1	1																				
● Submittal Checklist* ✓	VII-3	1																				
● Review Agency Cover Sheet* ✓	VII-3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
● 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	
● Evidence of Title ✓	VII-2	1			1			1														
○ Appraisal of Raw Land	VII-1	1			1	1																
○ Deeds	VII-1	1			1			1														
○ Easements	VII-2	1	1	1	1			1														
○ Avigation Easement	VII-1	1			1			1														
○ ROW	VII-3	1	1	1	1			1														
● Improvements Agreement/Guarantee ✓	VII-2	1	1	1				1														
○ CDOT Access Permit	VII-3	1	1																			
○ 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	
● Elevation Drawing ✓	IX-13	1	1																			
● Site Plan ✓	IX-29	2	2	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	
● Grading and Drainage Plan ✓	IX-16	1	2										1							1		
○ Storm Drainage Plan and Profile	IX-30	1	2										1			1	1	1				
○ Water and Sewer Plan and Profile	IX-34	1	2	1			1							1	1	1	1	1				
● Roadway Plan and Profile - Patterson Rd	IX-28	1	2										1									
○ Road Cross-Sections - T-turn lane	IX-27	1	2																			
○ Detail Sheet	IX-12	1	2																			
● Landscape Plan ✓	IX-20	2	1	1																		
○ Geotechnical Report	X-8	1	1								1											
● Final Drainage Report ✓	X-5,6	1	2										1									
○ Stormwater Management Plan	X-14	1	2										1							1		
○ Phase I and II Environmental Report	X-10,11	1	1																			
○ Traffic Impact Study	X-15	1	2																1			
App Form - FPP ✓																						

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

Description:	Planning and Zoning Clearance Application
Date:	March 23, 1995
Reference:	General Project Report
Project:	Sutherlands Home Improvement Co., Inc.
Location:	2405 F Road Grand Junction, Colorado 81505
Owner:	Sutherlands Home Improvement Co., Inc. 4000 Main Street Kansas City, Missouri 64111 (816) 756-3000
Acreage:	7.84 acres
Proposed Use:	Retail Merchandise
Public Benefit:	Provide a wide selection of home and farm building, remodeling, and decorating products to the community at competitive prices.
Adopted Plans and/or policies:	Current zoning to remain.
Land Use in surrounding area:	Retail shopping center (Mesa Mall)
Site access and Traffic Patterns:	All existing roads to remain in service along with road improvements (widening for left turn land) along F road (refer civil engineering drawings).
Availability of utilities:	Existing fire hydrants shall remain with the exception of one which will be relocated approximately 20 feet north of the existing location (refer site plan).
Special or unusual demands on utilities:	None
Effects on public utilities:	None
Site soils and geology:	Refer civil engineering drawings and Grading and Drainage plans.
Site geology impacts/hazards:	None
Hours of Operation:	Monday-Friday: 7:30 a.m. - 8:00 p.m. Saturday: 7:30 a.m. - 6:00 p.m. Sunday: 10:00 a.m. - 5:00 p.m.
Signage Plans:	Existing signage (building sign and pylon signs) shall be renovated. Any additional signage shall be used to direct traffic flow.
Development schedule and phasing:	Renovate existing facility interior and construct building addition (south) for owner occupancy.



1 ENLARGED SITE PLAN
SCALE: 1" = 30'-0"

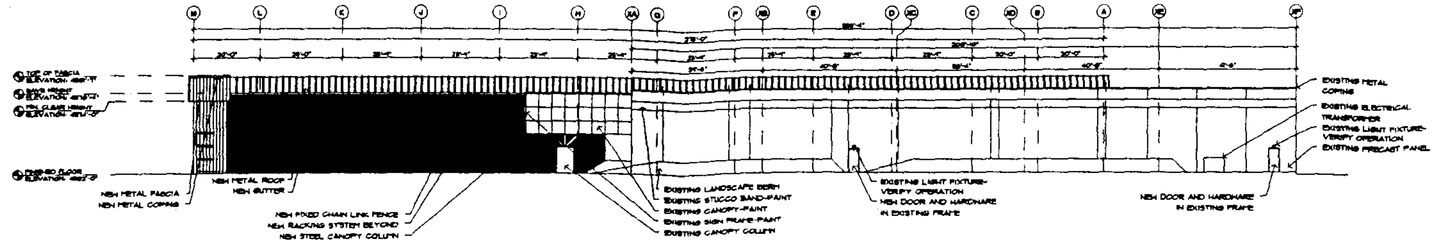
SP2

Sutherlands
MESA MALL
GRAND JUNCTION, COLORADO

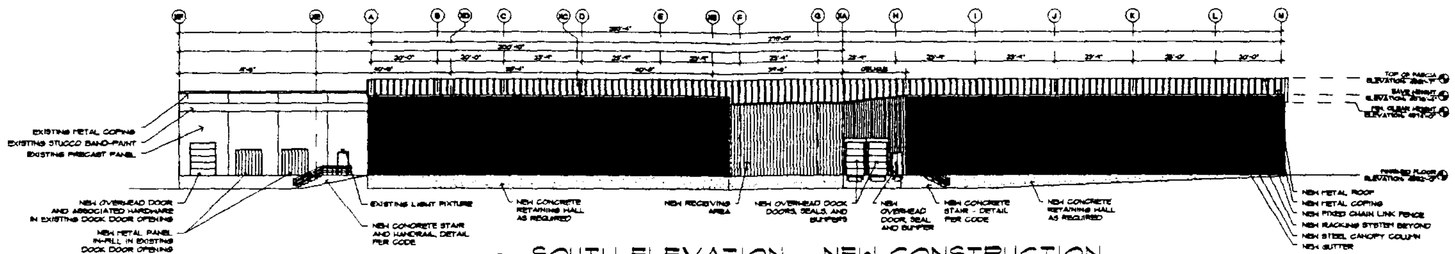
Planning and Zoning Clearance Set

WARNER • NEASE • BOST ARCHITECTS, INCORPORATED
517 DELAWARE KANSAS CITY, MISSOURI 64105 (816) 283-9731 FAX (816) 283-3080

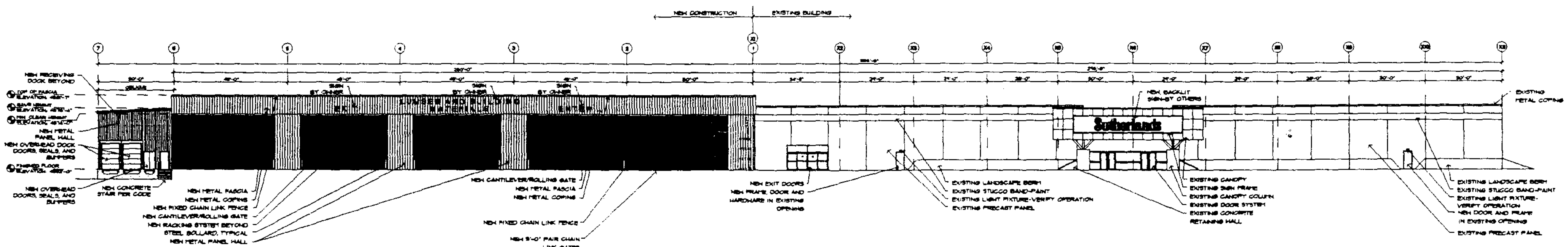
PROJECT NUMBER 94065.00
DATE January 24, 1995
DRAWN BY HNB - DSH
REVISIONS



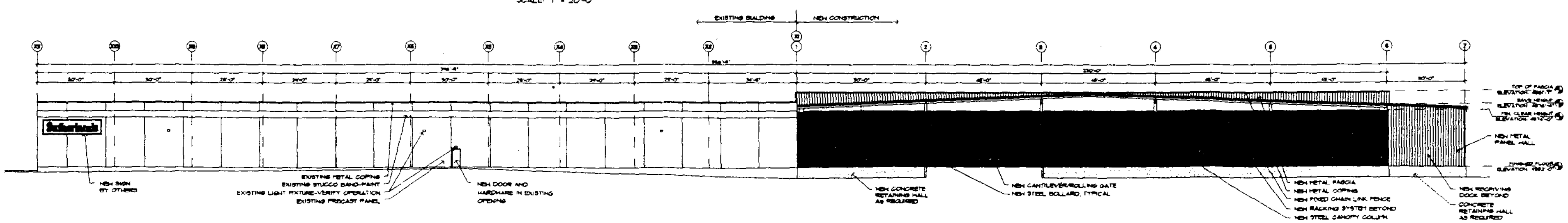
1 NORTH ELEVATION - NEW CONSTRUCTION
SCALE: 1" = 20'-0"



2 SOUTH ELEVATION - NEW CONSTRUCTION
SCALE: 1" = 20'-0"



3 EAST ELEVATION - NEW CONSTRUCTION
SCALE: 1" = 20'-0"



4 WEST ELEVATION - NEW CONSTRUCTION
SCALE: 1" = 20'-0"

PROJECT NUMBER
94065.00
DATE
March 24, 1995
DRAWN BY
WNB - DSW
REVISIONS

WNB
WARNER • NEASE • BORST ARCHITECTS, INCORPORATED
917 DELAWARE KANSAS CITY, MISSOURI 64105 (816) 283-3751 FAX (816) 283-3080

Planning and Zoning Clearance Set

Sutherlands
MESA MALL
GRAND JUNCTION, COLORADO

A1

DRAINAGE REPORT FOR:

SUTHERLAND LUMBER @ MESA MALL

March, 1995

Prepared For:

W.N.B. ARCHITECTS
for
SUTHERLAND LUMBER
517 Delaware, Kansas City, Mo. 64105
(816) 283-3731

Prepared By:

LANDesign LTD.
200 North 6th Street, Grand Junction, Colorado 81501
(303) 245-4099

Prepared By: Monty D. Stroup 03/15/95
Monty D. Stroup

"I hereby certify that this report for the drainage design of Sutherland Lumber @ Mesa Mall was prepared under my direct supervision."

Reviewed By: Philip M. Hart
Philip M. Hart, P.E.
State of Colorado, #19346

B. Site:

Approximately 60 percent of the onsite historic basin drains via roof drains and parking lot improvements to an existing slot drain and 24-inch diameter RCP storm sewer under the existing parking lot east and south of the existing building. In addition, the slot drain intercepts and conveys offsite runoff from areas east of the project site. This storm sewer discharges directly to Leach Creek southwest of the existing building structure. The remaining 40 percent of the site drains in a sheetflow fashion overland towards the west to a low point in the existing curb adjacent to Leach Creek. This flow overtops the curb and flows over the east overbank of Leach Creek.

The site is affected by offsite runoff from sub-basin OF1 (6.02 acres) to the east (Exhibit 2.0). This sub-basin is composed entirely of the east parking lot of the Sears building. Runoff from this sub-basin is routed via parking lot grading to a single low point in the existing curb and gutter along the Mall's circular access road. A curb opening was constructed at this low point (design point #1), however backfill behind the curb section has cutoff the flow path towards Leach Creek creating a ponding affect within the access roadway.

III. Proposed Drainage Conditions

A. Changes in Drainage Patterns:

Historic offsite and onsite drainage patterns will not be altered except to regrade and better define direct flow paths along the south boundary of the site towards Leach Creek. Onsite and offsite flows associated with the existing slot drain and storm sewer remain unchanged and are not quantified in this report.

The site is planned for a 64,218 square foot covered storage building, delivery truck ramps, parking lot and a access road along the south end of the new building. The structure will be used for the storage and handling of lumber and other building materials.

Developed runoff will be directed by roof slopes, scuppers, downspouts and roadway alignments to the proposed access road south of the new building. This runoff will combine with runoff from the Sears parking lot and is to be conveyed west along the access road to a single low point in a new curb and gutter west of the new building at Leach Creek (design point #2). The proposed improvements divides the site into 2 sub-basins A1 (2.33 Ac.) and B1 (Exhibit 3.0). Flowrates and drainage patterns within sub-basin B1 will not be altered therefore hydrologic calculations were not completed. Sub-basin A1 is made up entirely of building and parking lot improvements. For purposes of this study and due to the site's proximity to Leach Creek and the Colorado River developed runoff will not be detained. Runoff from sub-basins A1 and OF1 will be allowed to pass unabated to Leach Creek. A minimum 6-foot wide concrete v-pan is

to be installed along the center of an inverted driveway section running east to west along the south end of the new building. The capacity of this section is augmented by the installation of spill type curb and gutter sections which direct runoff to the center of the section and away from building improvements. A curb opening and grouted rip-rap section are to be installed to convey runoff from the site into Leach Creek at (design point #2).

Approximately 340-feet of curb and gutter improvements are proposed for the Mall's circular access road adjacent to the project as shown on the grading and drainage plan.

B. Maintenance Issues:

Access to and through the site shall be by private driveway.

Ownership and responsibility for maintenance of the proposed onsite curb and gutter improvements shall be that of the property owner.

IV. Design Criteria & Approach

A. Hydrology:

The "Stormwater Management Manual, City of Grand Junction, Colorado" (Reference 1) and the "Mesa County Storm Drainage Criteria Manual" (Reference 2) were used as the basis for analysis and facility design.

As the project is a commercial development containing less than 25 acres the "Rational Method" was used to calculate developed flow rates. The minor storm is the 2 year frequency rainfall event and the major storm is the 100 year frequency rainfall event. As detention requirements are considered mitigated only the developed 100 year storm event is analyzed.

Runoff Coefficients to be used in the computations are based on the most recent City of Grand Junction criteria as defined in Reference 1 and shown on Exhibit 4.0 . The Soil Conservation Service defines site soils as being (Bc), Billings silty clay loam, 0 to 2 percent slopes, hydrological soil group "C" and (Rf), Ravola very fine sandy loam, 0 to 2 percent slopes, hydrologic soils group "B" (Reference 5, Exhibit 1.0).

The Intensity Duration Frequency Curves (IDFC) tabulated and shown on Exhibit 5.0 was used for design and analysis.

Times of Concentration were calculated based on the Average Velocities For Overland Flow and the Overland Flow Curves as provided in Reference 1 and shown on Exhibit 6.0. The results of the Tc calculations are shown on Exhibit 7.0.

B. Hydraulics:

All site facilities and conveyance elements are designed in accordance with the City of Grand Junction guidelines as provided in Reference 1.

Detention pond stage-storage-discharge analysis is not required.

The inverted driveway section proposed for the area south of the new building was analyzed for sufficient capacity during the 100 year storm event. The program HEC2 was used to model the driveway section at 4 locations as shown on Exhibit 9.0. The proposed driveway section was found to have sufficient capacity to convey 29.51 cfs with no curb overtopping as presented on exhibits 9.1 thru 9.6.

V. Floodplain Considerations

As shown on exhibits 10.0 and 11.0 the Base Flood Elevation (BFE) for Leach Creek adjacent to the site is 4545. The asbuilt curb elevations along Leach Creek west of the new building structure are in excess of 4547 indicating that the 100 year flood should be confined to Leach Creek. The proposed building finish floor elevation is at 4552 indicating a freeboard of 7-feet is maintainable. The FEMA map revision dated 1992 should reflect the impact of the construction of the original LA BELLE's building structure and site improvements. Based on this information the construction of the new building structure should have no affect on the existing (BFE) adjacent to the site.

VI. Conclusions

Because the development of this project will result in the disturbance of less than five acres of land a "Construction Stormwater Discharge Permit" is not required.

As this project is a retail sales facility the Colorado Department of Health and Environment will not require a "Water Quality Control Permit" for discharge into Leach Creek. A sample of C.D.O.H.E. policy regarding retail sales facilities is presented on Exhibit 12.0.

Stormwater Management shall consist of the placement of a silt fence along the top of the east bank of Leach Creek. This structural (BMP) shall remain in place for the duration of the construction phase of the project.

This Drainage Report has been prepared to address site-specific drainage concerns in accordance with the requirements of the City of Grand Junction, Colorado. The Appendix of this report includes criteria, exhibits, tables and calculations used in the design and analysis.

VII. References

1. Stormwater Management Manual (SWMM), City of Grand Junction, Colorado, Department of Public Works, June 1994.

2. Mesa County Storm Drainage Criteria Manual, Final Draft, Mesa County, Colorado, March, 1992.

3. Flood Insurance Study, City of Grand Junction, Colorado, Mesa County, Community Number - 080117, Federal Emergency Management Agency, Revised July 15th, 1992.

4. Flood Insurance Rate Map, City Of Grand Junction, Colorado, Mesa County, Community Panel Number 080117 0001 0009, Federal Emergency Management Agency, Map Revised July 15th, 1992.

5. Soil Survey, Mesa County Area, Colorado, , U.S. Department of Agriculture, issued November, 1955.

APPENDIX

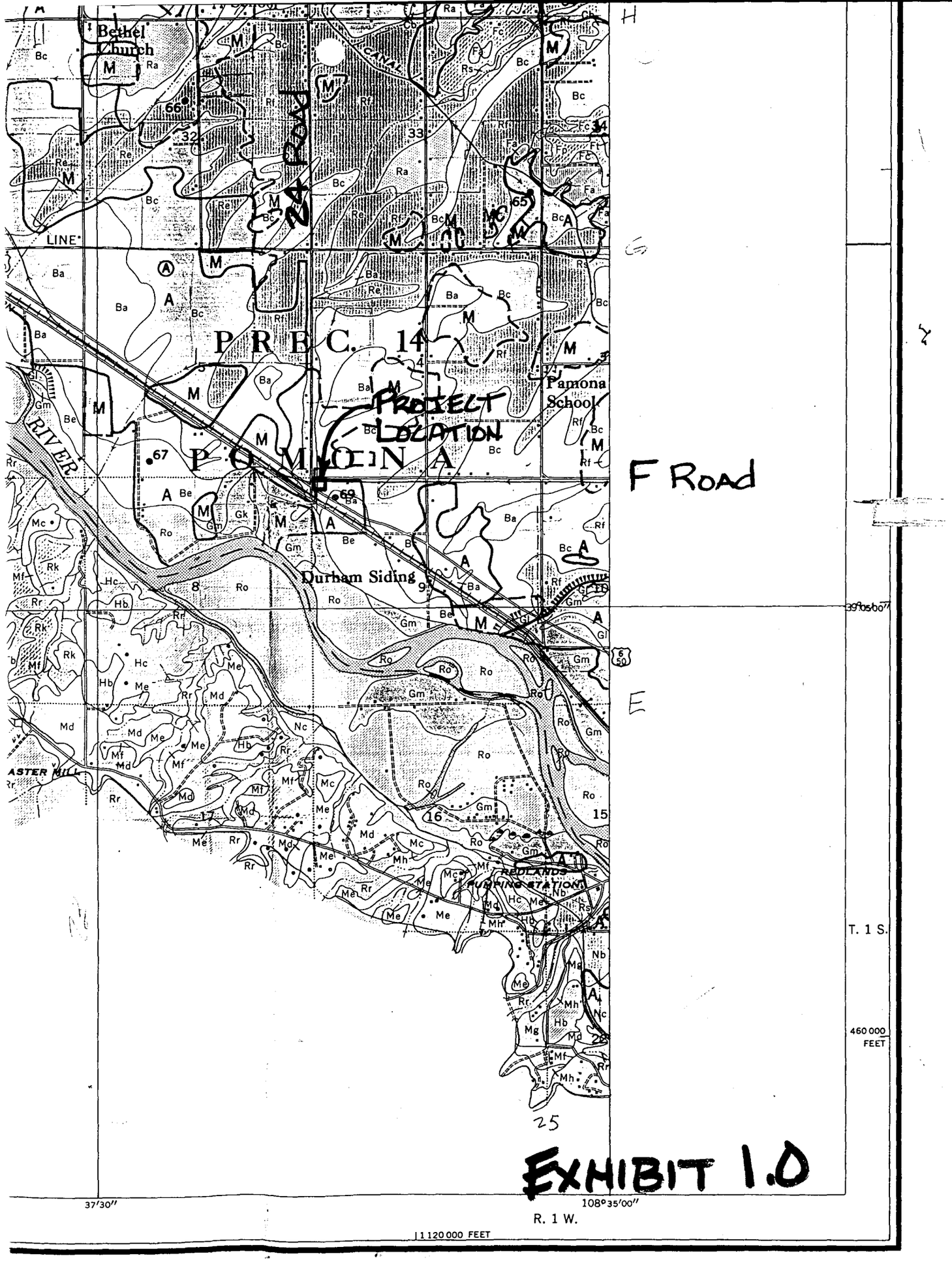
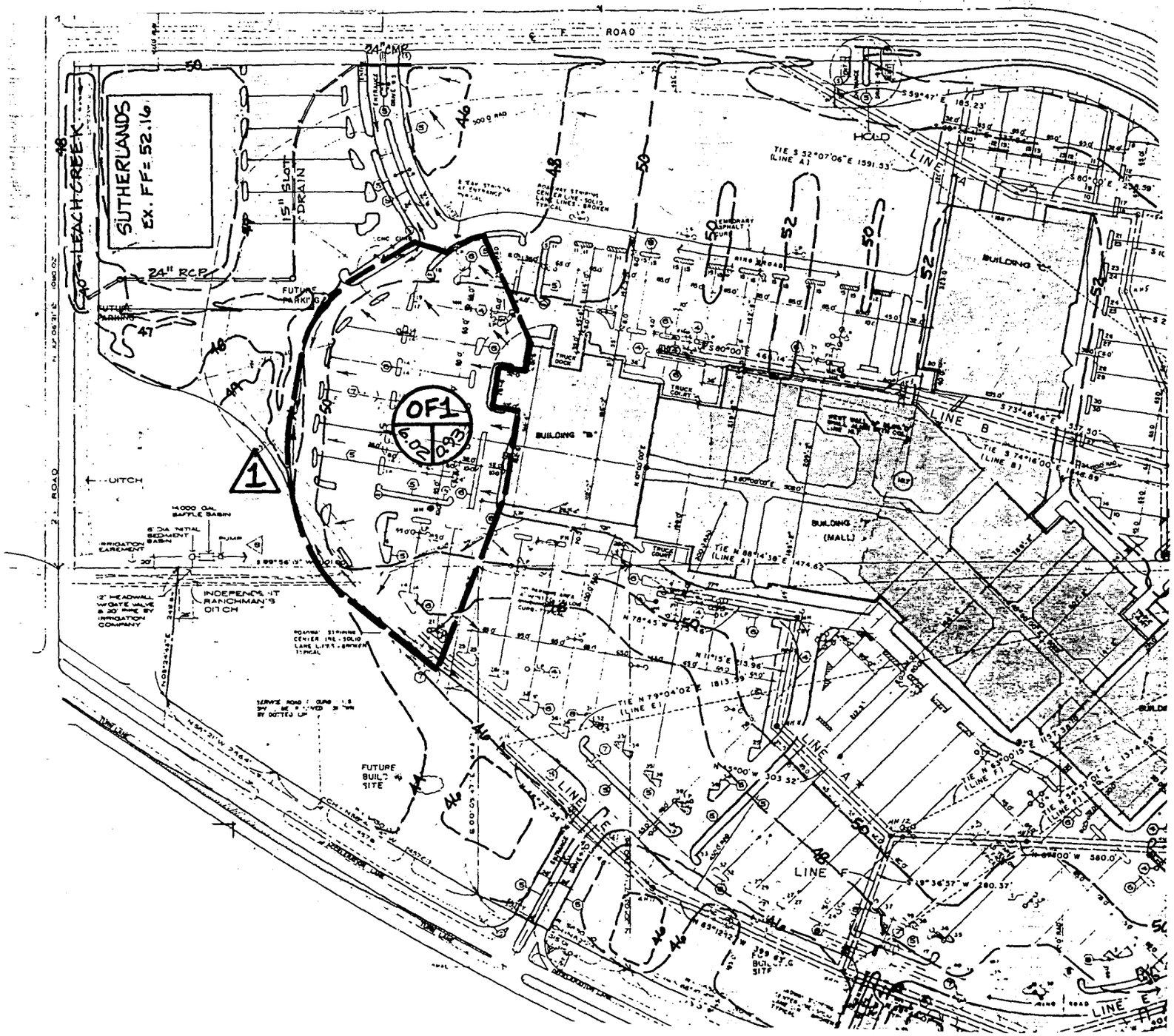

Bethel Church
LINE
PREC. 14
PROJECT LOCATION
Pamona School
POMONA
F Road
RIVER
Durham Siding
REDLANDS PUMPING STATION
39°05'00"
T. 1 S.
460 000 FEET
37°30"
108°35'00"
R. 1 W.
1 120 000 FEET

EXHIBIT 1.0



LEGEND

OF1 / 6.02 / 0.93 — SUB-BASIN I.D.

BASIN AREA AC. | 2 YEAR RUNOFF COEFFICIENT

1 — DESIGN POINT

SCALE 1" = 200'

EXHIBIT 2.0

OFF SITE BASIN MAP

SUTHERLANDS @ MESA MALL

PHILIP M. HART
REGISTERED PROFESSIONAL ENGINEER
P.E. NO. 19346

LANDesign
ENGINEERS SURVEYORS PLANNERS
200 NORTH 6TH STREET SUITE 103
GRAND JUNCTION, COLORADO 81501 (303) 244-8190

PROJECT NO. 94116	DESIGNED	DRAWN	CHECKED	SHEET	OF
DATE: FEBRUARY, 1995	MS			1	1

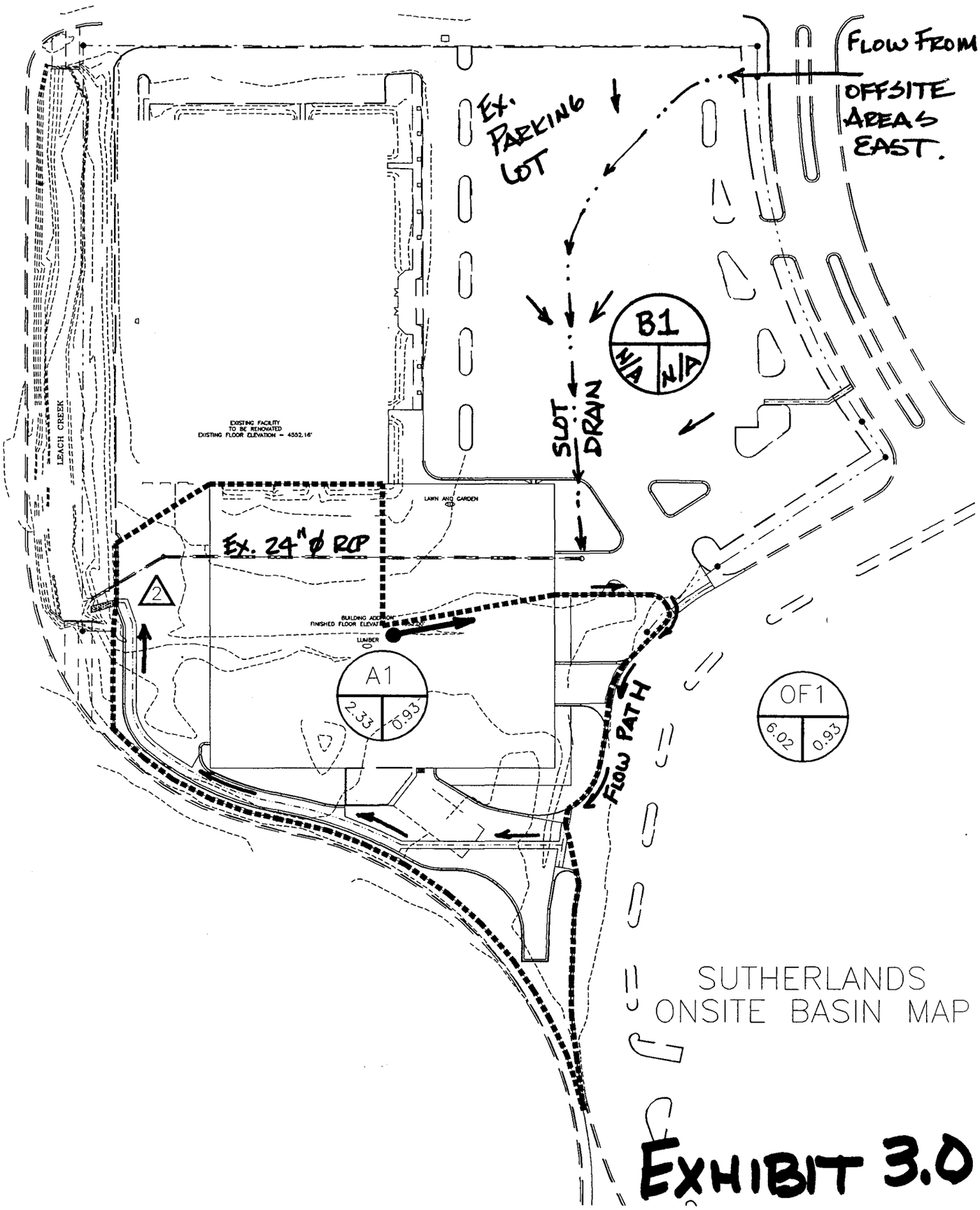

FLOW FROM
OFFSITE
AREAS
EAST.
EX.
PARKING
LOT
B1
N/A
N/A
SLOT
DRAIN
EXISTING FACILITY
TO BE RENOVATED
EXISTING FLOOR ELEVATION = 4552.16'
LEACH CREEK
LAWN AND GARDEN
EX. 24"Ø RCP
2
BUILDING ADDITION
FINISHED FLOOR ELEVATION
LUMBER
A1
2.33
0.93
FLOW PATH
OF1
6.02
0.93
SUTHERLANDS
ONSITE BASIN MAP

EXHIBIT 3.0

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"

EXHIBIT 4.0

STORM DRAINAGE SYSTEM DESIGN DATA

(100 YEAR STORM EVENT)
DEVELOPED CONDITION - CITY OF GRAND JUNCTION, COLORADO

PROJECT: SUTHERLANDS @ MESA MALL
JOB # 95017
LANDesign LTD.

DATE: 13-Mar-95

													STREET		PIPE			STREET		PIPE	
LOCATION OR NODE	BASINS	LENGTH FEET	INLET TIME min.	FLOW STREET	TIME PIPE	Tc min.	COEFF. "C"	INTENSITY "I"	AREA "A" AC	DIRECT RUNOFF C.F.S.	OTHER RUNOFF C.F.S.	SUM RUNOFF C.F.S.	SLOPE %	CAPACITY ALLOWED C.F.S.	SLOPE %	SIZE IN.	CAPACITY ALLOWED C.F.S.	DESIGN F.P.S.	VELOC. F.P.S.	DESIGN F.P.S.	VELOC. F.P.S.	REMARKS
1	OF1					10.59	0.95	3.72	6.02	21.27		21.27										OFFSITE FLOW FROM SEARS PARKING LOT TO SITE
2	A1					8.86	0.95	4.02	2.33	8.90		8.90										ONSITE FLOW FROM PARKING AND BLDG. IMPROVEMENTS
2	OF1					10.59	0.95	3.72	6.02													
	A1						0.95		2.33													
						10.59	0.95	3.72	8.35	29.51		29.51										SUM OF FLOW IN DRIVEWAY SECTION TO LEACH CREEK

EXHIBIT 8.0

EXHIBIT 9.0

SUTHERLANDS–DRIVEWAY
HEC2 SECTION LOCATIONS

```
**********************************************
*  HEC-2 WATER SURFACE PROFILES              *
*                                            *
*  Version   4.6.2;  May 1991                *
*                                            *
*  RUN DATE    13MAR95    TIME   15:35:14    *
**********************************************
```

SUTHERLANDS
DRIVEWAY SECTION
SOUTH OF NEW BLDG.

```
X     X  XXXXXXX   XXXXX
X     X  X        X     X
X     X  X        X
XXXXXXX  XXXX     X          XXXXX
X     X  X        X
X     X  X        X     X
X     X  XXXXXXX   XXXXX
```

SUBCRITICAL RUN

100 YEAR STORM = 29.51 CFS

EXHIBIT 9.1

13MAR95 15:35:14

```
**************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
**************************************


T1  SUTHERLANDS @ MESA MALL
T2  DRIVEWAY CAPACITY CHECK-SUBCRITICAL
T3  *100 YEAR-24 HOUR STORM EVENT (GRAND JUNTION AREA D-D-F DATA)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q

      0         0         0         0        -1         0         .5     29.51

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW

      0         0        -1         0         0         0        -1


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150

NC    0.015     0.015     0.015     0.30      0.50
X1        1         6      0.04     10.5         0         0         0
GR  *47.63          0     47.13      0.04       47       1.5     46.82
GR    49.33     69.50

X1        2         7      0.04     10.5     95.53     90.00     91.43
GR  *47.95          0     47.45      0.04     47.32       1.5     47.14
GR    47.45     14.96     47.95     15.0

X1        3         7      0.04     14.96    63.09     58.92     60.00
GR  *48.16          0     47.66      0.04     47.53       1.5     47.35
GR    47.66     14.96     48.16     15.0

X1        4         7      0.04     10.5     101.33    106.25    103.76
GR  *48.52          0     48.02      0.04     47.89       1.5     47.71
GR    48.39     68.01     48.52     69.51
```

* TOP OF CURB

EXHIBIT 9.2

13MAR95 15:35:14

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY

YEAR-24 HOUR STORM EVEN

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIW	Top of Curb	
*	1.000	.00	.00	.00	46.82	29.51	47.46	47.	47.63	OK
	2.000	91.43	.00	.00	47.14	29.51	47.77	47.	47.95	OK
	3.000	60.00	.00	.00	47.35	29.51	47.99	47.	48.16	OK
*	4.000	103.76	.00	.00	47.71	29.51	48.39	48.	48.52	OK

EXHIBIT 9.4

I3MAR95 15:35:14

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

WARNING SECNO= 4.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RAN

EXHIBIT 9.6

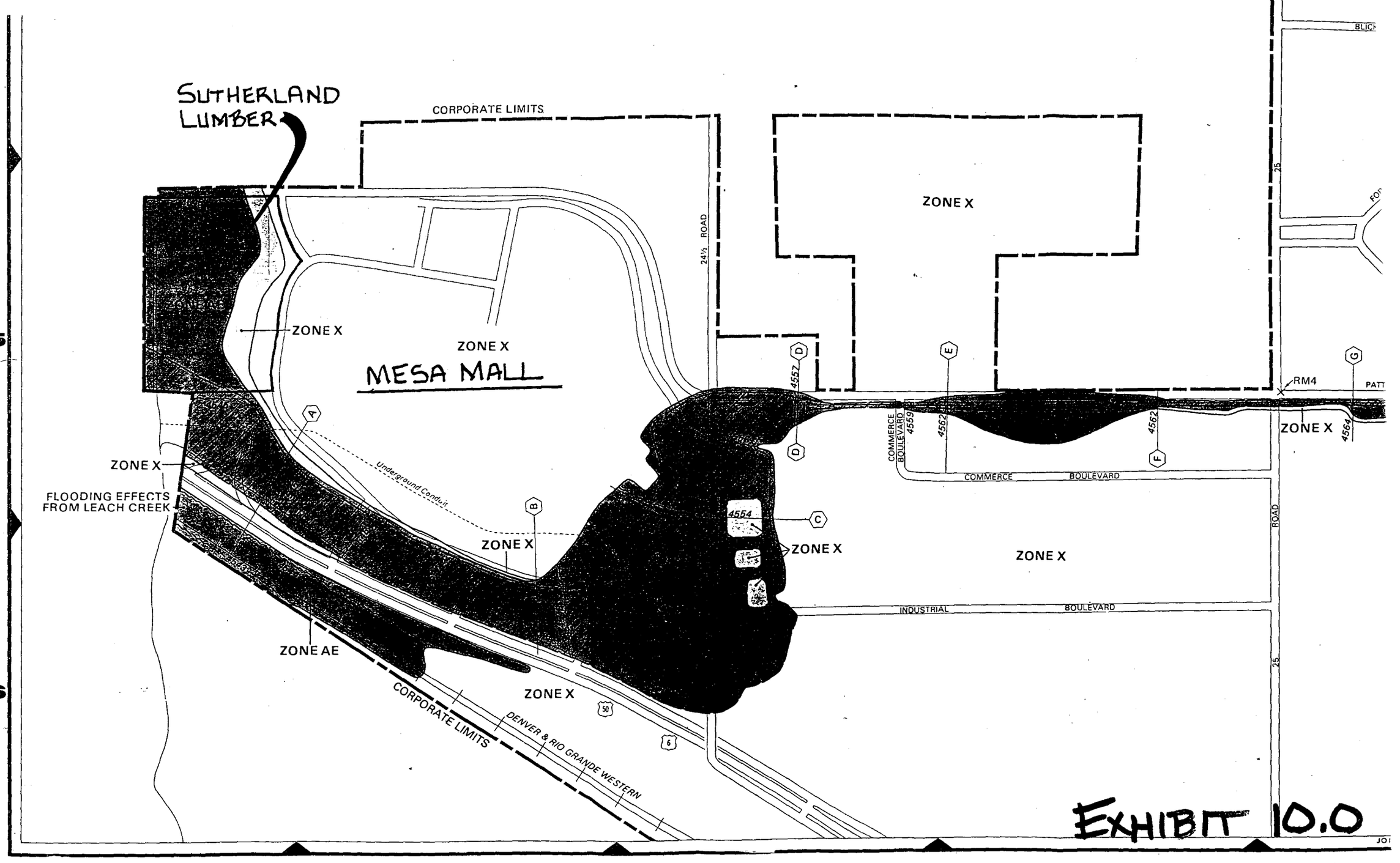

SUTHERLAND LUMBER
CORPORATE LIMITS
ZONE X
MESA MALL
ZONE X
ZONE X
ZONE X
FLOODING EFFECTS FROM LEACH CREEK
Underground Conduit
ZONE X
ZONE X
ZONE X
ZONE AE
ZONE X
CORPORATE LIMITS
DENVER & RIO GRANDE WESTERN
24½ ROAD
25 ROAD
COMMERCE BOULEVARD
INDUSTRIAL BOULEVARD
RM4
4554
4562
4559
4564
A
B
C
D
E
F
G
50
6

EXHIBIT 10.0

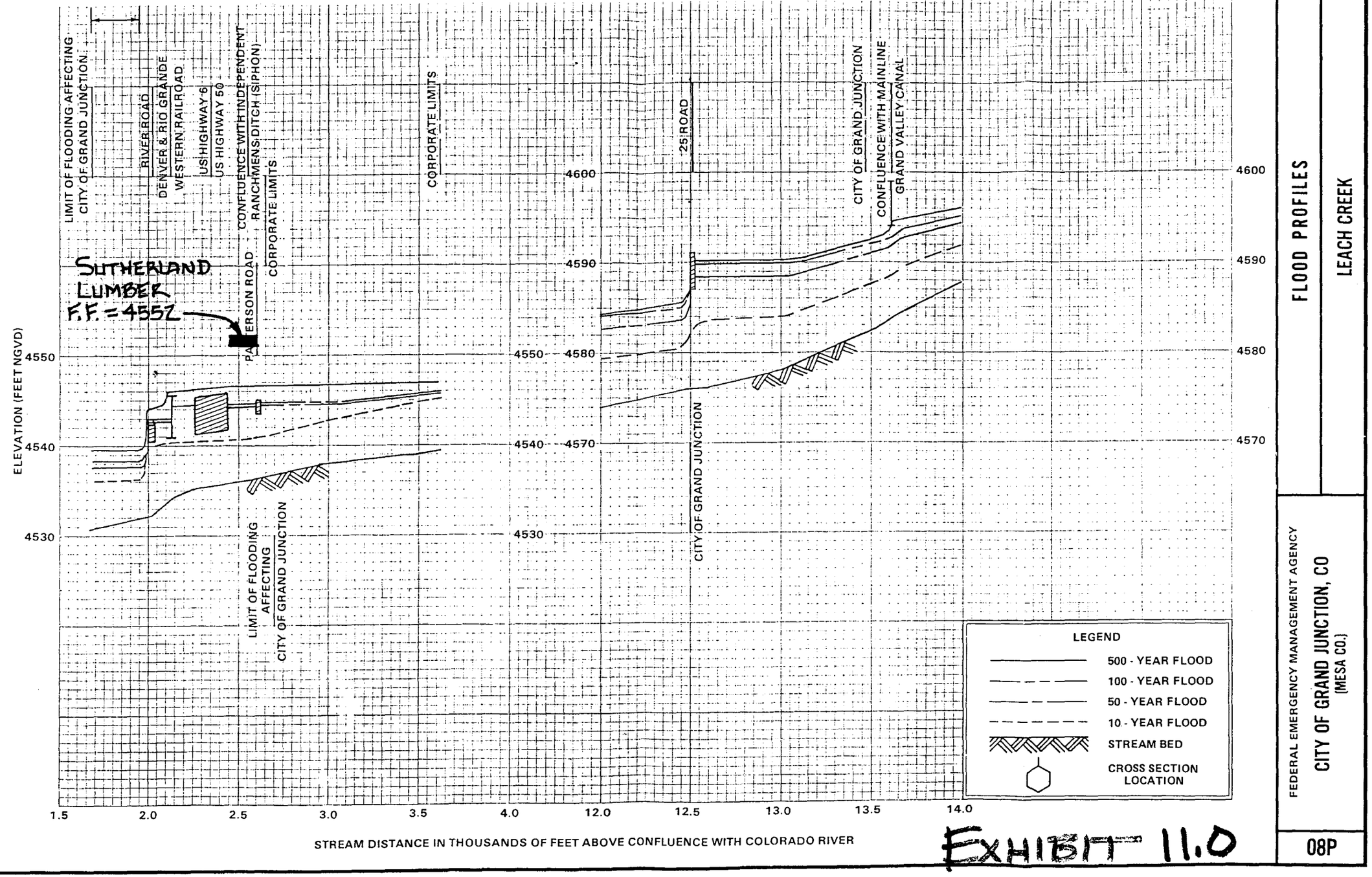


EXHIBIT 11.0

FLOOD PROFILES

LEACH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF GRAND JUNCTION, CO
(MESA CO.)

08P

STATE OF COLORADO

Roy Romer, Governor
Patti Shwayder, Acting Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80222-1530
Phone (303) 692-2000

Laboratory Building
4210 E. 11th Avenue
Denver, Colorado 80220-3716
(303) 691-4700

Colorado Department
of Public Health
and Environment

February 8, 1995

SAMPLE FOR RETAIL SALES

Mr. Monty Stroup
LANDesign, LLC
200 North 6th St., Ste. 102
Grand Junction, CO 81501

Re: Stormwater Permit Requirement
Grand Junction Shopping Center
Mesa County

Dear Mr. Stroup:

This is in response to your letter of February 2, 1995. You had asked for confirmation on the stormwater permit(s) required for the above-referenced project.

[redacted], since the project site is over five acres, a construction stormwater permit will be required during the life of the construction until the site has been finally stabilized (establishment of a uniform vegetative cover or the equivalent). Application for the construction stormwater permit should be made at least 10 days prior to breaking ground.

However, for the operational phase of the project, which will be retail sales, no stormwater permit is required, since this type of activity is not covered under the stormwater regulations.

A

I hope this answers your concerns. If you have any further questions, please give me a call at (303) 692-3596.

Sincerely,

Kathryn Dolan
Environmental Protection Specialist
Permits and Enforcement Section
WATER QUALITY CONTROL DIVISION

EXHIBIT 12.0

REVIEW COMMENTS

PRELIMINARY

FILE #SPR-95-58 **TITLE HEADING:** Site Plan Review - Flood Plain Permit - Sutherland's

LOCATION: 2405 F Road

PETITIONER: Sutherland's Home Improvement Corp.

PETITIONER'S ADDRESS/TELEPHONE: 4000 Main Street
Kansas City, MO 64111
816-756-3000

STAFF REPRESENTATIVE: Michael Drollinger

NOTE: WRITTEN RESPONSE (4 COPIES) BY THE PETITIONER TO THE REVIEW COMMENTS IS REQUIRED. A PLANNING CLEARANCE WILL NOT BE ISSUED UNTIL ALL ISSUES HAVE BEEN RESOLVED.

MESA COUNTY BUILDING DEPARTMENT **3/29/95**
Bob Lee **244-1656**

No comments. We are working with Sutherland's & Ford Construction on the plan review.

CITY UTILITY ENGINEER **3/31/95**
Bill Cheney **244-1590**

1. Based on similar operations, what is the anticipated monthly water usage?
2. Show how water lines out of existing building will be relocated and provide easement for relocated line.
3. No other comments.

GRAND JUNCTION DRAINAGE DISTRICT **4/3/95**
John L. Ballagh **242-4343**

The Grand Junction Drainage District does not have jurisdiction or authority over Leach Creek. There are no know existing or planned Grand Junction Drainage District facilities within the boundaries of the proposed Sutherland Home Improvement Co., Inc. site at 2405 F Road.

CITY DEVELOPMENT ENGINEER **4/4/95**
Jody Kliska **244-1591**

1. Transportation Capacity Payment = $19,625.02. Credit for the improvements to F Road should offset this payment.
2. The Drainage Study and Plan proposes to discharge drainage undetained. Based on information in the report the Drainage Fee is $3,254.03.

GRAND JUNCTION FIRE DEPARTMENT **4/4/95**
Hank Masterson **244-1414**

1. A fire flow survey for the new building is required. The minimum fire flow for the new and existing building is 3,000 gallons per minute. An additional fire hydrant will be necessary, to be located near the southeast corner of the new building. This hydrant should be at least 40' from the building. The site plan does not show the size of the fire lines serving the hydrants. Also, all hydrants as shown and the line serving the sprinkler system is served by a single water line. This single line is connected to the 10" looped system serving Mesa Mall. City standards require that new developments be served by 8" looped or 10" dead end lines. The existing water system as shown is a dead end system since it is over 250' from the 10" looped system serving Mesa Mall.
2. Designated Fire Lanes are required along the east side curb in front of the existing building, along the northeast side of the building addition, and along the "new service exit drive" located to the south of the new building.
3. Contact the Fire Department for more information about our requirements.

COMMUNITY DEVELOPMENT DEPARTMENT **3/31/95**
Michael Drollinger **244-1439**

See attached.

STAFF REVIEW

FILE: #SPR 95-58
DATE: March 31,1995
STAFF: Michael Drollinger
REQUEST: Site Plan Review/Flood Plain Permit
LOCATION: 2505 F Road
ZONING: HO

STAFF COMMENTS:

1. Parking requirement for new addition is calculated as follows: Lawn and Garden area = 13,750 square feet X 1space/200 sq. ft. gross sales area = 69 spaces required. Lumber sales area is not included in required parking calculation. Petitioner must provide gross sales area for existing building under renovation so that determination of the overall parking requirement can be made.

PLEASE TAKE NOTE OF THE FOLLOWING:

1. ALL SIGNS TO BE ERECTED ON THE SITE WILL REQUIRE A SIGN PERMIT PRIOR TO INSTALLATION OF THE SIGN.

2. SITE IMPROVEMENTS (INCLUDING LANDSCAPING) MUST BE CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS. ANY MODIFICATIONS MUST BE APPROVED, IN WRITING, BY THE COMMUNITY DEVELOPMENT DEPARTMENT. FAILURE TO INSTALL SITE IMPROVEMENTS AS PER THE APPROVED PLANS MAY DELAY THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

3. SITE IMPROVEMENTS (E.G. LANDSCAPING, SIDEWALK, ETC.) NOT COMPLETED PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY MUST BE GUARANTEED.

You are urged to contact the Community Development Department if you require clarification or further explanation of any items.

h:\cityfil\1995\95-582.wpd

CITY OF GRAND JUNCTION
250 NORTH 5TH STREET
GRAND JUNCTION, CO 81501-2668

DATE: April 7, 1995

TIME: _____

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

FACSIMILE TRANSMISSION COVER SHEET

To: Darin Heyen

Location: WNB Architects, Inc.

Telephone Number: (_____) _____

FAX Number: (816) 283-3080

From: Michael T. Drollinger

FAX Number: (303) 244-1599

Telephone Number: (303) 244-1439

Number of Pages 4
(Including Cover Sheet)

SPECIAL INSTRUCTIONS: I'll be back in the office next Thurs PM. — These comments include what we have received to date.

If the telecopy you received is incomplete or illegible, please call 244-1439.

STAFF REVIEW

FILE: #SPR 95-58
DATE: March 31,1995
STAFF: Michael Drollinger
REQUEST: Site Plan Review/Flood Plain Permit
LOCATION: 2505 F Road
ZONING: HO

STAFF COMMENTS:

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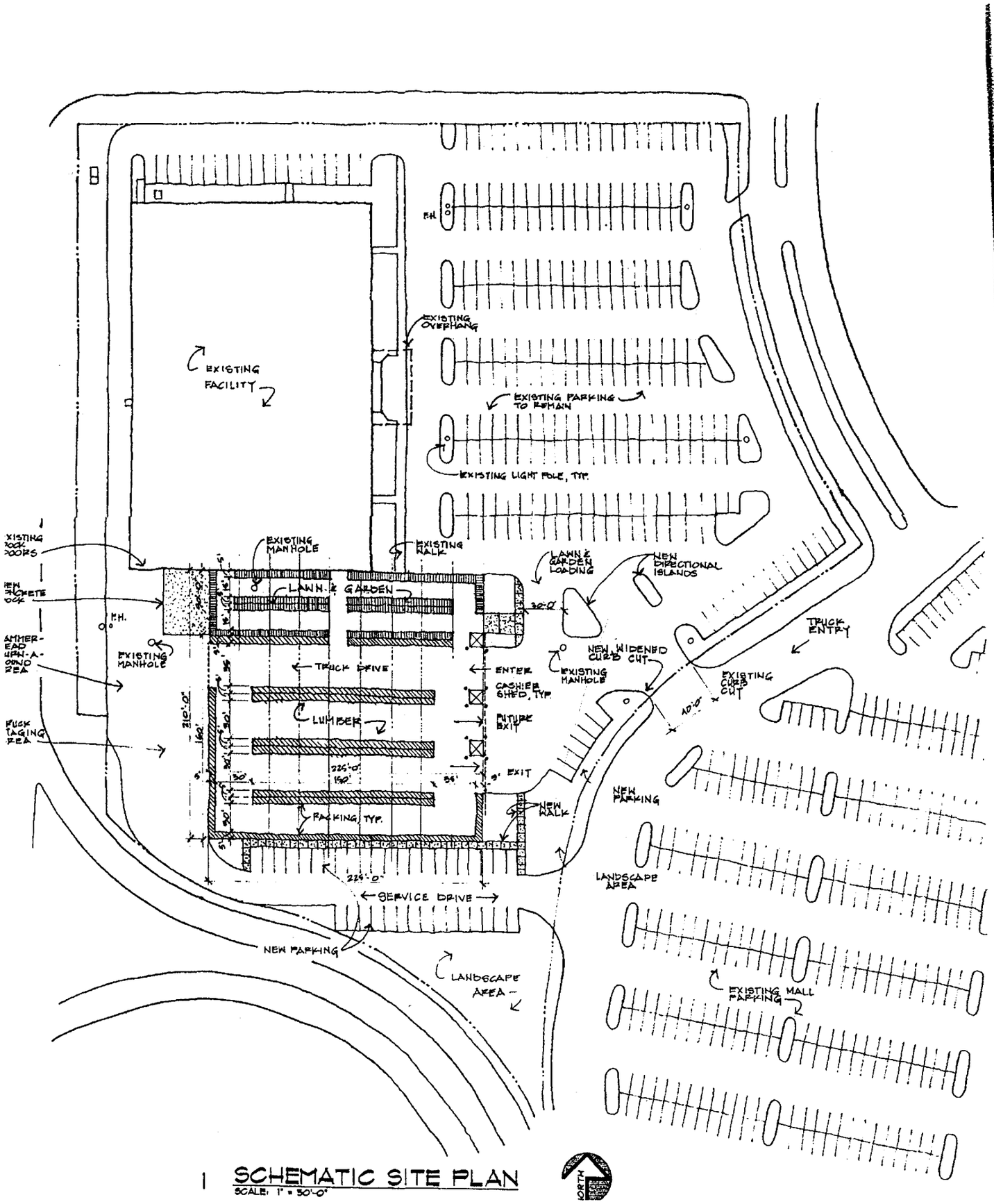

1 SCHEMATIC SITE PLAN
SCALE: 1" = 50'-0"

CITY OF GRAND JUNCTION FLOODPLAIN PERMIT

APPLICANT: Sutherlands Home Improvement Co., Inc.

MAILING ADDRESS 4000 Main St.

Kansas City, MO 64111

TELEPHONE: Home ( ) Work (816) 756-3000

OWNER (If different than applicant): _____

MAILING ADDRESS _____

_____

TELEPHONE: Home ( ) Work ( )

COMMON LOCATION OF PROJECT SITE: Southeast corner of the intersection of F Road and 24 Road.
(STREET ADDRESS)

MESA COUNTY ASSESSOR'S TAX PARCEL NO: 2945-043-02-002

BRIEF DESCRIPTION OF THE PROPOSED USE OF THE SITE: Building materials

Retail Sales

RIVER, STATION: Leach Creek Sta. 25+00 above confluence with Colorado River

ELEVATION OF THE 100 YEAR FLOOD EVENT: 4545

DETERMINED FROM: ( ) CORPS OF ENGINEERS, FLOOD HAZARD STUDY, NOVEMBER 1976
( ) HUD FLOOD INSURANCE STUDY, JANUARY 1978
(X) Flood Insurance Study, City of Grand Junction, Mesa Co., Rev 15, Jul 92

ENGINEER: Philip M. Hart

MAILING ADDRESS 200 N. 6th St., Ste. 102

Grand Junction, CO 81501

TELEPHONE: Work (303) 245-4099

TO BE COMPLETED BY STAFF:

DATE REC'D _____ RECEIPT NO. _____

FILE NO. _____ FEE _____

REQUIRED DOCUMENTS: _____ _____

_____ _____

_____ _____

WNB

January 06, 1995

MEETING NOTES

RE: Pre-Application Conference
Sutherland Lumber Company, Inc.
Grand Junction, Colorado

ATT: Mr. Tom Doty, Sutherlands
Mr. Michael Drollinger, City of Grand Junction
Ms. Jody Kliska, City of Grand Junction
Mr. Dennis Nease, Warner Nease Bost Architects, Inc.
Mr. Darin Heyen, Warner Nease Bost Architects, Inc.

TO: Mr. Tom Doty, Sutherlands
Mr. Michael Drollinger, Planning and Zoning
WNB Project file

FROM: Darin Heyen

REMARKS

The following represents a summary of our Pre-Application Conference on January 5, 1995 in Grand Junction, Colorado.

1. Tom Doty, Dennis Nease, and Darin Heyen gave a brief project description, detailing site layout, building function, site demolition, and site improvements.

2. Michael Drollinger suggested a recommended parking ratio of 1 space per each 200 square foot of retail floor area. Shelving shall be included and office area shall be excluded in the parking calculations. Michael will investigate overall mall parking ratios and whether or not the outdoor lumber area shall be included or excluded in the parking calculations.

3. Parking layout striping will be required for the final submission to the Planning and Zoning Department.

4. Proposed parking lots and drives, as indicated on preliminary site plan are in accordance with the Planning and Zoning Department officials. The existing entry curb cut may need to be relocated farther from the Mesa Mall entry drive and F Road. The Planning and Zoning Department would like WNB Architects to explore the alternate entry possibilities.

5. Widened curb cut on southwest drive to 40'-0" was strongly encouraged to provide sufficient truck entry and alleviate possible traffic congestion.

6. The City is anticipating the addition of a left hand turning lane addition on F Road based on projected increases in traffic volume and truck staging. The left hand turning lane will require that the existing street be widened and that the storage lane be a minimum of 100'-0" long. The suggested construction would consist of a returned curb, not a concrete curb and gutter. Michael will attempt to locate engineering details outlining construction standards for WNB Architects records. The additional costs incurred by the left hand turning lane construction will be deemed a credit against any Transportation Capacity Payments which would apply to the above referenced project.

7. Transportation Capacity Payments will not be required for the existing facility which is to be renovated. The addition of the outdoor lumber area may be subject to such fees and shall be determined by the City of Grand Junction. Michael will continue to research this area and forward any information to WNB Architects as soon as it becomes available.

8. The location of catch basins and detention ponds will need to be designed by a civil engineer based on flood plain requirements. The proposed project addition lies within the 100 year flood plain and will need to be designed accordingly. A Flood Plain Permit will be required and should be investigated soon. The Flood Plain Permit fee is $125.00, which includes 2 hours of review time. Additional review time beyond this will be charged an additional $25.00 per hour.

9. Final review approval of the project will hinge directly on the re-platting of lots on the northwest corner of the Mesa Mall. As currently documented, our addition falls directly on the south property line which would required minimum building setbacks, thus disrupting the current proposed site plan. Sutherlands has agreed to a lease which entitles the owner to the use of the property directly south of Tract 4 so obtaining proper clearance should not present a problem. Michael Drollinger thinks the process of re-platting has been initiated by the Mesa Mall and General Growth Management officials.

10. The proposed site layout, including parking areas and drives, shall conform with current landscaping requirements on file with the City of Grand Junction. Michael Drollinger will forward this information as soon as possible. All new landscaping shall be irrigated and must conform with current Grand Junction regulations. Landscaping requirement shall be drawn on separate landscape drawing which shall include planting schedules.

11. The outdoor lumber area shall have a continuous fascia on the east (storefront) elevation and shall conform with Mesa Mall and General Growth Management regulations and approval. The City of Grand Junction does not have any regulations governing the appearance and size of such fascias.

12. Screen wall construction on the east elevation of the outdoor lumber area shall consist of decorative slats integrated with chain link fencing. Screen wall construction on the south and west elevations of the outdoor lumber area shall consist of metal siding or other approved screening material.

13. All project signage shall conform with sign regulations in the City of Grand Junction Planning and Zoning regulations. Michael Drollinger will assist in determining allowable east and west elevation signage, pylon signage, outdoor lumber area signage, and general directional signage.

14. Darin Heyen has initiated the Gamma Radiation Survey required by the City of Grand Junction.

15. City of Grand Junction Planning and Zoning project review process summary:

Submission of required materials may occur at any time and will require approximately two (2) weeks for internal City review. Upon reviewing the submission package (including drawings, fees, applications, and permits) review comments will be issued to WNB Architects. Response to review comments may be in written or graphic formats depending on the approval of the Planning and Zoning Department. Upon approval of the submission package, a planning clearance certificate will be issued, allowing the project team to pursue a building permit. Any transportation issues (i.e. widening of roads, etc...) must have improvements guarantees before building permits will be issued.

ACTION ITEMS

Warner Nease Bost Architects, Inc

1. Continuation of Site Plan development (with review from Planning and Zoning Department and other City officials).
2. Obtain cost estimates for Transportation Capacities improvements.

3. Prepare Application submission requirements including but not limited to:
   Required drawings
   Application fees
   Required permits

City of Grand Junction Planning and Zoning Department

1. Final parking analysis and ratio requirements for proposed project.
2. Final TCP fee for outdoor lumber area.
3. Final ruling on storage restrictions of materials in outdoor lumber area.
4. Delivery of regulations and restrictions including but not limited to:
   Planning and Zoning regulations
   Landscape requirements
   Engineering standards (drives, curbs, etc...)
   Signage regulations

*****

Sutherland Lumber Co.
LUMBER COAL AND BUILDING MATERIAL

4000 MAIN STREET
KANSAS CITY, MO. 64111
TELEPHONE (816) 756-3000

April 21, 1995

FAX LETTER
c/o Michael Drollinger 970-244-1599

Mr. Gary Mathews, Water District
Bill Chaney - Grand Junction, City Utility Engineer

Gentlemen:

Please be advised that Sutherland's Home Improvement Co., Inc. recognizes that the water line under the slab to the south of the original building located on F Road is on our property. We accept full responsibility for the line as it is presently located; therefore, UTE Water District will not be responsible for any damage to our property should the line collapse and leak

Please let me know if you desire any further information.

Very truly yours,

Craig D. Sutherland

SWS:dk

cc: Steven W. Scott
Tom Doty
Darren Heyen-Architect
Larry Maple-LUA

wp51\UTEWater

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 5

To Jody	From Phil Hart
Co.	Co.
Dept.	Phone #
Fax #	Fax #

MAY 10 1995

Lincoln DeVore, Inc.
Geotechnical Consultants
1441 Motor St.
Grand Junction, CO 81505
TEL: (303) 242-8968
FAX: (303) 242-1561

May 8, 1995

FORD CONSTRUCTION
P.O. Box 55065
Grand Junction, Colorado

Re: Pavement Section Analysis for Accel/Decel Lanes
Sutherlands', at Mesa Mall
Patterson Road, East of 24 Road
Grand Junction, Colorado

Dear Mr. Ford:

At the request of Mr. Kelly Ford, the proposed road section at the above referenced site was drilled and sampled by personnel of LINCOLN-DeVORE, INC.. Following are our findings and recommendations.

Samples were obtained next to the existing shoulders, beneath the "Outside" lanes of Patterson Road, adjacent to the areas proposed for widening. Samples of the subgrade native soils, that may be required to support pavements, have been evaluated using the Hveem-Carmany method (ASTM D-2844) to determine their support characteristics. The results of the laboratory testing are as follows:

AASHTO Classification - A-4(7) Unified Classification - ML-CL

R = 20
Expansion @ 300 psi = 65.9 psf
Displacement @ 300 psi = 4.18

Displacement values higher than 4.00 generally indicate the soil is unstable and may require confinement for proper performance.

EXISTING PAVEMENT SECTIONS

Borings P # 1 to P # 4 were placed adjacent to the south shoulder, beginning approximately 100 feet east of 24 Road and spaced at approximately 200 foot intervals. Borings P # 5 to P # 8 were placed adjacent to the north shoulder, beginning approximately 100 feet east of 24 Road and spaced at approximately 200 foot intervals.

The existing road pavement sections along the existing alignment were measured and found to be:

Boring #	Surface Course	Base Course	"Pit-Run" Sub-Base
P # 1	5" A.C.	6" of A.B.C.	12"
P # 2	7" A.C.	4" of A.B.C.	13"
P # 3	7" A.C.	6" of A.B.C.	15"
P # 4	8" A.C.	8" of A.B.C.	13"
P # 5	5" A.C.	7" of A.B.C.	10"
P # 6	6" A.C.	3" of A.B.C.	-0-"
P # 7	8" A.C.	6" of A.B.C.	13"
P # 8	9" A.C.	7" of A.B.C.	14"

The lower 2 to 4 inches of the 'Pit Run' in P # 2,3,7 & 8 was found to be soft. The lower 2 " of the Pit Run was intruded by the underlying Silty Clay Subgrade Soils. All gravel and native soil was found to be very moist. No free water was encountered in any of the borings, to the depths drilled.

Traffic Counts, provided by the Grand Junction Public Works Dept. for this portion of Patterson Road indicate 9400 vehicles per day. No breakdown regarding vehicle types was available. For purposes of this analysis, based upon information on Patterson Road near Clifton, the following percentages was used:

65% Passenger Vehicles
33% Pickup Trucks
1.2% Single Unit Trucks (max. 9-Ton/axle)
0.8% Combination Trucks (Heavy)

Total EAL, 1994-95 = 128.86

Two methods of design were utilized for this project. The design procedures utilized are first, The Asphalt Institute (MS-1) and second, those recognized by the Colorado Department of Highways and the 1986 AASHTO design procedure. A design life of 20 years and an annual traffic growth of 2% was used.

ASPHALT INSTITUTE Method (MS-1)

The Mean Annual Air Temperature (MAAT) of 60°F was chosen to characterize the environmental conditions.

PROPOSED PAVEMENT SECTIONS

Collector Roadway, -- 18k EAL = 129 (1994) :
Asphalt-Base Coarse

6.5 inches of asphaltic concrete pavement
on 6 inches of aggregate base coarse
on 8 inches of recompacted native material

OR

6 inches of asphaltic concrete pavement
on 12 inches of aggregate base coarse
on 8 inches of recompacted native material

Full Depth Asphalt:

8.5 inches of asphaltic concrete pavement
on 12 inches of recompacted native material

It should be noted the Asphalt Institute Method (MS-1) requires significant amounts of Aggregate Base Course (ABC), which does not significantly reduce the Asphalt Concrete thickness. Apparently this method assumes the ABC improves the base stability for compaction of the Full Depth Asphalt Pavement.

1986 AASHTO Method

Based upon the existing topography, the anticipated final road grades and the anticipated future irrigation practices in the local area, a Drainage Factor of 0.6 (1986 AASHTO procedure) has been utilized for the section analysis. The terminal Serviceability Index of 2.5, Reliability of 75 and a design life of 20 years have been utilized.

Due to the probability of very high soil moisture in the subgrade soils, the use of a Geotextile Fabric for separation and minor reinforcement (such as Mirafi 500-X or 140-N), placed beneath the Aggregate Base Course, is required on this site.

PROPOSED PAVEMENT SECTIONS

Collector Roadway, 18k EAL = 129 :

Asphalt-Base Coarse

5 inches of asphaltic concrete pavement
on 7 inches of aggregate base coarse
on 8 inches of recompacted native material

Full Depth Asphalt:

6
~~8~~ inches of asphaltic concrete pavement
on 12 inches of recompacted native material

RECOMMENDED PAVEMENT SECTIONS

It is recommended the Asphalt and ABC section, determined by the AASHTO Method be utilized for this project. The pavement section would include the placement of a Geotextile Fabric for separation and minor reinforcement (such as Mirafi 500-X) beneath the Aggregate Base Course.
This recommendation is based upon the obvious economies of the thinner section and the excellent performance of somewhat thicker sections supporting approximately 50% more traffic along Patterson Road near Clifton.

PAVEMENT SECTION CONSTRUCTION

We recommend that any asphaltic concrete pavement meet the State of Colorado requirements for a Grade C mix. In addition, the asphaltic concrete pavement should be compacted to a minimum of 95% of its maximum Hveem density. The aggregate base coarse should meet the requirements of State of Colorado Class 5 or Class 6 material, and have a minimum R value of 78. We recommend that the base coarse be compacted to a minimum of 95% of its maximum Modified Proctor dry density (ASTM D-1557), at a moisture content within + or -2% of optimum moisture. The native subgrade shall be scarified and recompacted to a minimum of 90% of their maximum Modified Proctor day density (ASTM D-1557) at a moisture content within + or -2% of optimum moisture.

All pavement should be protected from moisture migrating beneath the pavement structure. If surface drainage is allowed to pond behind curbs, islands or other areas of the site and allowed to seep beneath pavement, premature deterioration or possibly pavement failure could result.

It is believed that all pertinent points have been addressed. If any further questions arise regarding this project or if we can be of any further assistance, please do not hesitate to contact this office at any time.

Respectfully Submitted,

LINCOLN DeVORE, Inc.

by: Edward M. Morris EIT Reviewed By: George D. Morris, PE
Engineer/Western Slope Manager

LD Job No.: 82517-J