Table of Contents

File RZP-1996-157 Name: Horizon Village – SE Corner of 7th Street / Horizon Drive – Rezone/Preliminary Plan

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

DOCUMENT DESCRIPTION:

X	X	Correspondence	X		Parking Detail - Sheet 2
X	X	Preliminary Drainage Report – 6/27/96			
X	X	Photos / Brochures/Illustrations of constructed interior/exterior sites			
X	X	Surficial Geology Investigation – 6/28/96			
X	X	Subsurface Soils Exploration – 6/29/96			
X	X	Wetlands Report – 7/96			
X	X	Posting of Public Notice Signs – 7/26/96			
X	X	Planning Commission Minutes /Agenda – 9/3/96 - **			
X		Warranty Deed – Bk 1033 / Pg 246 – not conveyed to City			
X		Parking Detail			
X		Preliminary Plan			
X		Location Map			

DEVELOPMENT APPLICATION

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

Receipt _____
Date _____
Rec'd By _____

File No. _____

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

PETITION	PHASE	SIZE	LOCATION	ZONE	LAND USE
☒ Subdivision Plat/Plan	☐ Minor ☒ Major ☐ Resub	9.2 ac	SE CORNER OF 7TH & HORIZON		RESIDENTIAL
☒ Rezone				From: PR 6.2 To: PR-7.4	
☒ Planned Development	☐ ODP ☒ Prelim ☐ Final	9.2 AC	SE CORNER OF 7TH & HORIZON		RESIDENTIAL
☐ Conditional Use					
☐ Zone of Annex					
☐ Variance					
☐ Special Use					
☐ Vacation					☐ Right-of Way ☐ Easement
☐ Revocable Permit					

☐ PROPERTY OWNER	☐ DEVELOPER	☐ REPRESENTATIVE
NICK & HELEN MAHLERES	CUNNINGHAM INVESTMENT CO., INC. MAC CUNNINGHAM	LANDESIGN
Name	Name	Name
612 26½ ROAD	121 S. GALENA STREET SUITE 201	259 GRAND AVE.
Address	Address	Address
GRAND JUNCTION, CO 81501	ASPEN, CO 81611	GRAND JUNCTION, CO 81501
City/State/Zip	City/State/Zip	City/State/Zip
242-2464	(970) 925-8803	245-4099
Business Phone No.	Business Phone No.	Business Phone No.

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

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

Brian C. Hes — 6/24/96
Signature of Person Completing Application — Date

Nick M. Mahleres — 6/24/96
Helen Mahleres — 6/24/96
Signature of Property Owner(s) - attach additional sheets if necessary — Date

SUBMITTAL CHECKLIST

MAJOR SUBDIVISION: PRELIMINARY

Location: SE Corner 7th & Horizon Project Name: _____

Date Received 11-1-96

Receipt # 4250

File # RPP-96-157

ITEMS DESCRIPTION	SSID REFERENCE	● City Community Development	● City Dev. Eng.	● City Utility Eng.	● City Property Agent	O City Parks/Recreation	● City Fire Department	● City Attorney	● City G.J.P.C. (8 sets)	O City Downtown Dev. Auth.	● City Police	O County Planning	● Walker Field	● School District #51	● Irrigation District - GVIC	● Drainage District - GTDD	Water District	O Sewer District	● U.S. West	● Public Service	O GVRP	O CDOT	● Corps of Engineers	● Colorado Geological Survey	O U.S. Postal Service	O Persigo WWTF	● TCI Cable					TOTAL REQ'D.
● Application Fee $1,035	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					
● Application Form*	VII-1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
● Reduction of Assessor's Map	VII-1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
● Evidence of Title	VII-2	1			1			1																								
● Names and Addresses	VII-2	1																														
● Legal Desdription	VII-2	1			1																											
● General Project Report	X-7	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
● Location Map	IX-21	1																														
● Preliminary Plan	IX-26	1	2	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
O 11"x17" Reduction of Prelim. Plan	IX-26	1				1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
● Preliminary Drainage Report	X-12	1	2																													
● Geotechnical Report	X-08	1	1																					1								
● Wetlands Study		1	1																				1									
● Traffic Impact Study	X-15	1	1																													

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

PRE-APPLICATION CONFERENCE

Date: 6/17/96
Conference Attendance: B. Hart; M. Drollinger
Proposal: SW
Location: SE Corner 7th & Horizon

Tax Parcel Number: 2945-024-00-048
Review Fee: $1,035
(Fee is due at the time of submittal. Make check payable to the City of Grand Junction.)

Additional ROW required? As per ENS
Adjacent road improvements required?
Area identified as a need in the Master Plan of Parks and Recreation? No
Parks and Open Space fees required? YES Estimated Amount:
Recording fees required? NO Estimated Amount:
Half street improvement fees/TCP required? TCP or as per ENS. Estimated Amount:
Revocable Permit required? No
State Highway Access Permit required? No
On-site detention/retention or Drainage fee required? On-site
Applicable Plans, Policies and Guidelines Devel. Code

Located in identified floodplain? FIRM panel # YES
Located in other geohazard area?

Located in established Airport Zone? Clear Zone, Critical Zone, Area of Influence? Area of Influence
Avigation Easement required? No

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.

Signature(s) of Petitioner(s)

x Brian C. Hart
Signature(s) of Representative(s)

RZP-96-157

2945-024-10-015
THOMAS D GRAVES
PATRICIA L
2719 8TH CT
GRAND JUNCTION, CO 81506-8203

2945-024-10-016
NORMAN A CRAIG
HARRIETT V
2721 8TH CT
GRAND JUNCTION, CO 81506-8203

2945-024-10-017
WALTER H HATMAKER
ETHEL P
2656 PATTERSON RD
GRAND JUNCTION, CO 81506-8838

2945-024-20-012
WARREN LEE MCELVAIN
CAROLE A
2123 NATAHOA CT
FALLS CHURCH, VA 22043-1948

2945-024-20-009
MICHAEL R BIEBER
MARGUERITE M
4202 24TH ST #508
LUBBOCK, TX 79410

2945-024-20-028
GARY J CUCAROLA
MARY E CUCAROLA
14655 W 56TH DR
ARVADA, CO 80002

2945-024-20-057
ERIN J JOHNSON
2750 REED ST
LAKEWOOD, CO 80215-6832

2945-024-20-024
COLORADO NATIONAL BANK
CNDT2311
DORA PERLMUTTER TRUST
PO BOX 5168
DENVER, CO 80217-5168

2945-024-20-041
BEVERLY J KIRBY
PO BOX 4332
GRAND JUNCTION, CO 81502

2945-024-20-011
RONALD WILLIAM HALL
PO BOX 3949
GRAND JUNCTION, CO 81502-3949

2945-024-21-002
RONALD LYNN UNFRED
LEE ANN UNFRED
614 30 RD
GRAND JUNCTION, CO 81504-5560

2945-024-21-003
RONALD LYNN UNFRED
LEE ANN UNFRED
614 30 RD
GRAND JUNCTION, CO 81504-5560

2945-024-20-034
DOROTHY E HOWARD
636 HORIZON DR APT 809
GRAND JUNCTION, CO 81506-0901

2945-024-20-035
PHYLLIS L SAFFORD
KAWNA L
636 HORIZON DR APT 810
GRAND JUNCTION, CO 81506-0901

2945-024-20-036
HENRIETTA W HAY
636 HORIZON DR APT 811
GRAND JUNCTION, CO 81506-0901

2945-024-20-037
JOY E EISENHAUER
VIKI L SIMMONS
636 HORIZON DR APT 812
GRAND JUNCTION, CO 81506-0901

2945-024-20-050
ETHEL E ARENDSEE
636 HORIZON DR APT 901
GRAND JUNCTION, CO 81506-0902

2945-024-20-051
TERRY LEE SOMMERFIELD

ROBERTA SUE
636 HORIZON DR APT 902
GRAND JUNCTION, CO 81506-0902

2945-024-20-052
RALPH R POWERS
ELIZABETH ANNE POWERS - TRUST

636 HORIZON DR APT 903
GRAND JUNCTION, CO 81506-0902

2945-024-20-053
CHESTER J CARTER
PHYLLIS A
636 HORIZON DR APT 904
GRAND JUNCTION, CO 81506-0902

2945-024-20-054
ELIZABETH L BENTJEN
636 HORIZON DR APT 908
GRAND JUNCTION, CO 81506-0903

2945-024-20-055
JOAN NESTLER
636 HORIZON DR APT 906
GRAND JUNCTION, CO 81506-0903

2945-024-20-056
KAWNA L SAFFORD
636 HORIZON DR APT 907
GRAND JUNCTION, CO 81506-0903

2945-024-20-058
ELEANOR ANDERSON
BETH E VOKOUN - SYLVIA K CONN
636 HORIZON DR APT 909
GRAND JUNCTION, CO 81506-0904

2945-024-20-060
WAYNE W NELSON
MARIE NELSON
636 HORIZON DR APT 911
GRAND JUNCTION, CO 81506-0904

2945-024-20-061
ALLAN L WORLEY
636 HORIZON DR APT 912
GRAND JUNCTION, CO 81506-0904

2945-024-20-023
LAWRENCE D CAPPS
TRUSTEE
1111 HORIZON DR APT 606
GRAND JUNCTION, CO 81506-1454

2945-024-20-059
TERRY G BROOM
MARY JANE BROOM
2678 CONTINENTAL DR
GRAND JUNCTION, CO 81506-1801

2945-024-20-025
GERALD J ASHBY
ELIZABETH
636 HORIZON DR -UNIT 304
GRAND JUNCTION, CO 81506-1979

2945-024-20-001
NOLA A MORRISSEY
636 HORIZON DR APT 101
GRAND JUNCTION, CO 81506-1980

2945-024-20-003
RUTH A BENNETT
636 HORIZON DR APT 103
GRAND JUNCTION, CO 81506-1980

2945-024-20-004
ARTHUR HENKE
MARGERY O
636 HORIZON DR APT 104
GRAND JUNCTION, CO 81506-1980

2945-024-20-006
EARL P JONES
MARGARET G
636 HORIZON DR APT 201
GRAND JUNCTION, CO 81506-1981

2945-024-20-007
JESSE REAGAN STONE
636 HORIZON DR APT 202
GRAND JUNCTION, CO 81506-1981

2945-024-20-008
HOWARD J NESBITT
MILDRED A-TRUSTEES
636 HORIZON DR APT 203
GRAND JUNCTION, CO 81506-1981

2945-024-20-022
LILLIAN S MOORE
636 HORIZON DR APT 301
GRAND JUNCTION, CO 81506-1982

2945-024-20-038
MOLLY L STUCKER
TRUSTEE
636 HORIZON DR APT 401
GRAND JUNCTION, CO 81506-1983

2945-024-20-039
ROBERT L HOOVER
RHEA JEAN
636 HORIZON DR APT 402
GRAND JUNCTION, CO 81506-1983

2945-024-20-040
RUTH ALLINE HALL
636 HORIZON DR APT 403
GRAND JUNCTION, CO 81506-1983

2945-024-20-042
EARLE B WAGAMAN
MILDRED I
636 HORIZON DR APT 501
GRAND JUNCTION, CO 81506-1984

2945-024-20-043
A J LETEY
MARGARET
636 HORIZON DR APT 502
GRAND JUNCTION, CO 81506-1984

2945-024-20-044
ROBERT W STRAIN
MARY S
636 HORIZON DR APT 503
GRAND JUNCTION, CO 81506-1984

2945-024-20-045
JANE S QUIMBY
636 HORIZON DR APT 504
GRAND JUNCTION, CO 81506-1984

2945-024-20-046
J DAN POWELL
DOROTHY J POWELL
636 HORIZON DR APT 601
GRAND JUNCTION, CO 81506-1985

2945-024-20-047
ROBERT F LINNEMEYER
CAROLYN A
636 HORIZON DR APT 602
GRAND JUNCTION, CO 81506-1985

2945-024-20-048
K B LATHAM
636 HORIZON DR APT 603
GRAND JUNCTION, CO 81506-1985

2945-024-20-049
MARILYNN J DORN
636 HORIZON DR APT 604
GRAND JUNCTION, CO 81506-1985

2945-024-20-010
ROBIN L KENDRICK
636 HORIZON DR APT 701
GRAND JUNCTION, CO 81506-1986

2945-024-20-014
GLADYS R PHILLIPS
JOHN B
636 HORIZON DR APT 705
GRAND JUNCTION, CO 81506-1987

2945-024-20-015
MARGE RICHERT
636 HORIZON DR APT 706
GRAND JUNCTION, CO 81506-1987

2945-024-20-016
LAVINA E SUMMERS
636 HORIZON DR APT 707
GRAND JUNCTION, CO 81506-1987

2945-024-20-017
SHARON DANIELS
636 HORIZON DR APT 708
GRAND JUNCTION, CO 81506-1987

2945-024-20-019
JOHN C LAFFERTY
DONNA J
636 HORIZON DR APT 710
GRAND JUNCTION, CO 81506-1988

2945-024-20-021
NORMA F HERMAN
TRUSTEE
636 HORIZON DR APT 712
GRAND JUNCTION, CO 81506-1988

2945-024-20-026
DIANA W CHOTVACS
636 HORIZON DR APT 801
GRAND JUNCTION, CO 81506-1989

2945-024-20-027
VIVIEN M GLAZE
636 HORIZON DR APT 802
GRAND JUNCTION, CO 81506-1989

2945-024-20-030
WILLIAM PAUL CASH
GERALDINE MARIE
636 HORIZON DR APT 805
GRAND JUNCTION, CO 81506-1990

2945-024-20-032
LORELL E CHAPMAN
636 HORIZON DR APT 807
GRAND JUNCTION, CO 81506-1990

2945-024-20-033
F BING JOHNSON
ROSE W
636 HORIZON DR APT 808
GRAND JUNCTION, CO 81506-1990

2945-024-20-002
EDWARD M GARDNER
LOIS K
935 LAKESIDE CT
GRAND JUNCTION, CO 81506-2815

2945-024-20-020
MELVIN L SCOTT
DONNA M
1025 LAKESIDE DR
GRAND JUNCTION, CO 81506-2823

2945-024-20-018
ROGER C HEAD
TRUST
2713 8TH CT
GRAND JUNCTION, CO 81506-8203

2945-024-20-031
WAYNE P HARRIS
ELIZABETH J HARRIS
36 N MEADOW VIEW CT
GLENWOOD SPRINGS, CO 81601-9224

2945-024-20-013
RUDY A RODRIGUEZ
CHRISTINE A
1636 HASLAM TER
LOS ANGELES, CA 90069-1305

2945-024-20-029
RUDY A RODRIGUEZ
CHRISTINE A
1636 HASLAM TER
LOS ANGELES, CA 90069-1305

2945-023-00-001
SHIRLEY A HOWARD
ETAL - C/O CLARENCE L FILES
631 26 1/2 RD
GRAND JUNCTION, CO 81506-1961

2945-023-00-023
JOHN I GORDON
SHARON A
629 1/2 26 1/2 RD
GRAND JUNCTION, CO 81506-1903

2945-023-00-027
MERCEDES CAMERON
621 26 1/2 RD
GRAND JUNCTION, CO 81506-1904

2945-023-00-028
C W MOTTRAM
R D
609 26 1/2 RD
GRAND JUNCTION, CO 81506-1904

2945-023-00-029
MILDRED M VANDOVER
TRUSTEE
604 MEANDER DR
GRAND JUNCTION, CO 81505-1414

2945-023-00-948
CITY OF GRAND JUNCTION

250 N 5TH ST
GRAND JUNCTION, CO 81501-2628

2945-023-13-001
WDM CORPORATION
2525 N 8TH ST
GRAND JUNCTION, CO 81501-8845

2945-023-13-002
WDM CORPORATION
2525 N 8TH ST
GRAND JUNCTION, CO 81501-8845

2945-023-13-005
MICHAEL R HEUTON
JUDITH M
630 SAGE CT
GRAND JUNCTION, CO 81506-1955

2945-023-24-002
MESA VIEW RETIREMENT RESIDENCE
PO BOX 14111
SALEM, OR 97309-5026

2945-023-13-008
GORDON R GILBERT
VICTORIA L
628 SAGE CT
GRAND JUNCTION, CO 81506-1955

2945-023-14-006
WM R PATTERSON
662 26 RD
GRAND JUNCTION, CO 81506-1405

2945-023-14-007
SISTERS OF CHARITY OF LEAVENWORTH
HEALTH SERVICES CORPORATION

PO BOX 1628
GRAND JUNCTION, CO 81502-1628

GRAND JUNCTION, CO 81502-3025

2945-023-15-001
ROBERT B CHRISTENSEN
TRUSTEE
PO BOX 3025

2945-023-15-002
R M O LAND CO LLC
550 PATTERSON RD
GRAND JUNCTION, CO 8150

2945-023-15-003
R M O LAND CO LLC
550 PATTERSON RD
GRAND JUNCTION, CO 81506

Mac Cunningham
Cunningham Investments Co.,Inc
121 S Galena St., Suite 201
Aspen, CO 81611

Brian Hart
Landesign
259 Grand Ave.
Grand Junction, CO 81501

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

2945-024-00-015
DEBORAH L SHOWALTER

606 26 1/2 RD
GRAND JUNCTION, CO 81506-1905

2945-024-00-019
JOHN D HYRE
V
2674 PATTERSON RD
GRAND JUNCTION, CO 81506-8839

2945-024-00-022
RUTH C EDFAST
604 26 1/2 RD
GRAND JUNCTION, CO 81506-1905

2945-024-00-023
GENE O TAYLOR
ANNIE L MUHR
633 FLETCHER LN
GRAND JUNCTION, CO 81505-1403

2945-024-00-037
NICK H MAHLERES
HELEN C MAHLERES
612 26 1/2 RD
GRAND JUNCTION, CO 81506-1905

2945-024-00-043
KENNETH H ALLEN
ISABELLE E
603 VIEWPOINT DR
GRAND JUNCTION, CO 81506-8222

2945-024-00-044
KENNETH H ALLEN
ISABEL E
603 VIEWPOINT DR
GRAND JUNCTION, CO 81506-8222

2945-024-00-045
ROBERT ALSTATT
2670 PATTERSON RD
GRAND JUNCTION, CO 81506-8839

2945-024-00-053
GEORGE A DUNHAM
LYN DUNHAM
126 KYLE LN
BECKLEY, WV 25801-9562

2945-024-00-054
EUGENE L HANSEN
VIRGINIA M
610 26 1/2 RD
GRAND JUNCTION, CO 81506-1905

2945-024-00-010
JAMES R DANBURY
AMELIA J
620 VIEWPOINT DR
GRAND JUNCTION, CO 81506-8204

2945-024-00-011
WILLIAM G BUSH
COLLEEN M
619 VIEWPOINT DR
GRAND JUNCTION, CO 81506-8222

2945-024-03-001
STANLEY D CARLSON
CYNTHIA K
606 VIEWPOINT DR
GRAND JUNCTION, CO 81506-8223

2945-024-03-002
ROBERT C BISHOP
N S
612 VIEWPOINT DR
GRAND JUNCTION, CO 81506-8223

2945-024-03-003
JOHN I SCHUMACHER
K L
608 VIEWPOINT DR
GRAND JUNCTION, CO 81506-8223

2945-024-05-001
JAMES R DANBURY
AMELIA J
620 VIEWPOINT DR
GRAND JUNCTION, CO 81506-8204

2945-024-05-002
ALLEN J MUNRO
MARY B
617 VIEWPOINT DR
GRAND JUNCTION, CO 81506-8222

2945-024-05-003
STEPHEN R MEACHAM
2525 N 8TH ST
GRAND JUNCTION, CO 81501-8845

2945-024-05-004
RAYMOND C BECKNER
WILMA R
611 VIEWPOINT DR
GRAND JUNCTION, CO 81506-8222

2945-024-05-005
MAURICE BRASETTE
609 VIEWPOINT DR
GRAND JUNCTION, CO 81506-8222

2945-024-05-006
WILLIAM G BUSH
C C
619 VIEWPOINT DR
GRAND JUNCTION, CO 81506-8222

2945-024-10-009
ABBIE KAY MARSHNER
299 BOOKCLIFF CT
GRAND JUNCTION, CO 81501

2945-024-10-011
IBX, INC
640 S 12TH ST
GRAND JUNCTION, CO 81501-3750

2945-024-10-010
RICHARD C POND
PATRICIA M
2714 8TH CT
GRAND JUNCTION, CO 81506-8202

2945-024-10-001
STEVEN R RUTTER
TERRILL A
2705 8TH CT
GRAND JUNCTION, CO 81506-8203

2945-024-10-002
ROBERT A LUBINSKI
GRETCHEN L DAVIS
2709 8TH CT
GRAND JUNCTION, CO 81506-8203

2945-024-10-003
OLGA J HENRY
JOHN N HENRY
2711 8TH CT
GRAND JUNCTION, CO 81506-8203

2945-024-10-004
ROGER C HEAD
2713 8TH CT
GRAND JUNCTION, CO 81506-8203

2945-024-10-005
MARY A ROBINSON
2715 8TH CT
GRAND JUNCTION, CO 81506-8203

2945-024-10-006
WILLIAM R LATHAM
FAYE G & KAY BARRY LATHAM
2717 8TH CT
GRAND JUNCTION, CO 81506-8203

GENERAL PROJECT REPORT

HORIZON VILLAGE SUBDIVISION

June 27, 1996
Revised July 25, 1996

INTRODUCTION:

The accompanying narrative and maps will provide sufficient data to assess the merits of the requested Preliminary Application for a Major Subdivision. Information gained as the result of the review process will be utilized in the preparation of the Final Plans.

PROJECT DESCRIPTION:

Horizon Village Subdivision is located on the southeast corner at the intersection of Horizon Drive and North 7th Street. The subject property contains approximately 9.2 acres. The Tax Parcel Number is 2945-024-00-048.

The proposed Horizon Village Subdivision calls for the ultimate development of 17 Four-plex Multi-family buildings, creating 68 units. This will yield a density of 7.39 units per acre for the development. The accompanying preliminary plan depicts the relationship of each building to the property boundary, roadway access, waterways and neighboring developments.

The following Preliminary Land Use chart breaks down the entire subject property into specific uses under developed conditions:

PRELIMINARY LAND USE SUMMARY CHART		
USE	AREA IN ACRES	% OF TOTAL
Four-plex Units	2.1	22.8
Street R.O.W.	0.8	8.7
Open Space	1.8	19.6
Driveways	0.9	9.8
Common Area	3.6	39.1
Total	9.2	100
Resulting Density = 7.39 units per acre		
Total Number of units = 68 units		

EXISTING LAND USE:

The site is currently vacant of any structures and is being used for the production of hay. The City of Grand Junction has a 15 inch sanitary sewer line which crosses through the property from the southeast corner of the site, towards the west to North 7th Street. There are numerous mature trees located on the property. The topography of the site is considered to be "rolling" in nature, and historically drains to the northwest into the Independent Ranchmen's Ditch which ultimately conveys water to the Colorado River.

PUBLIC BENEFIT:

The proposed Horizon Village Subdivision will provide the residents of the area with a quality land development product which will be designed, constructed and maintained in accordance with the City of Grand Junction standards. This project does coincide with the City of Grand Junction overall plan for development. Horizon Village Subdivision will enhance the area and provide a multi-family subdivision which is compatible with the surrounding land use.

PROJECT COMPLIANCE, COMPATIBILITY AND IMPACT:

Zoning -- Currently the land is located within the City of Grand Junction and is zoned PR-6.2 (Planned Residential not to exceed 6.2 units per acre). The Overall Development Plan with the application was submitted to Community Development last year and was approved by City Council on October 4, 1995. The development has been revised to show a reduction of multi-family units from 72 to 68 and the elimination of the single-family lots. These revisions show that Horizon Village Subdivision is proposing a overall density of 7.39, which is a change in the density from the ODP approved. A Mesa County Zoning map is located at the end of this report for surrounding land use comparisons.

Surrounding Land Use -- The surrounding land use consists of a number of subdivisions. This includes single-family developments Walker Heights, View Point, Northern Hills and North Acres subdivisions. Westwood Estates Condominiums and a church are also located near the proposed subdivision.

Site Access and Traffic Patterns -- Primary access will be gained from North 7th Street, as shown on the a reduction of the Preliminary Plan located at the end of this report. Major intersections in the area are 7th and Horizon to the north and 7th and Patterson to the south. Assuming an average trip generation rate of 10 trips per household per day, an average of 680 trips from the 68 units would be created and routed through the primary access point. There is no secondary access proposed for the subdivision. This is due to the constraints

from the Grand Valley Canal and the Independent Ranchmen's Ditch bordering the property on the east and north sides of the site respectively.

It is proposed to install a guard house at the entry of the development. There will not be a gate installed at this guard house, nor will their need to be a turn-around area for vehicles entering the development by mistake. This in effect would require the need to propose private roads, and send the final approval for the private roads to City Council. The right-of-way for the streets will be designated as an ingress/egress easement for the maintenance of City Sanitary Sewer and Domestic Water, as well as other dry utilities. This will be reflected on the Final Plat which will be submitted during the next phase of the review process.

The cul-de-sac at the end of the street improvements is proposed as a nonstandard design. The cul-de-sac has a larger radius and an island in the center which will be used for landscaping. This design has been approved by Community Development, City Engineering and the City Fire Department for a different development in the area.

Utilities -- With major streets near to the project, all major utilities are located near the subject property.

Sanitary Sewer -- There is a 15 inch clay sanitary sewer line which crosses through the property. This line will be abandoned and reconstructed through the property with a 20 foot easement for maintenance purposes where the line is outside street right-of-way. The new line will be 15 inch RCP and will connect to the existing 15 inch line located in North 7th Street.

Domestic Water -- Water is available from the City of Grand Junction, which owns and maintains an 8 inch line located on the west side of North 7th street.

All other utilities such as, electric, gas, phone and CATV are expected to be extended from the surrounding developments.

Effects on Public Facilities -- No unusual effects are expected on public facilities such as fire, police, sanitation, roads, parks, schools, irrigation or other facilities.

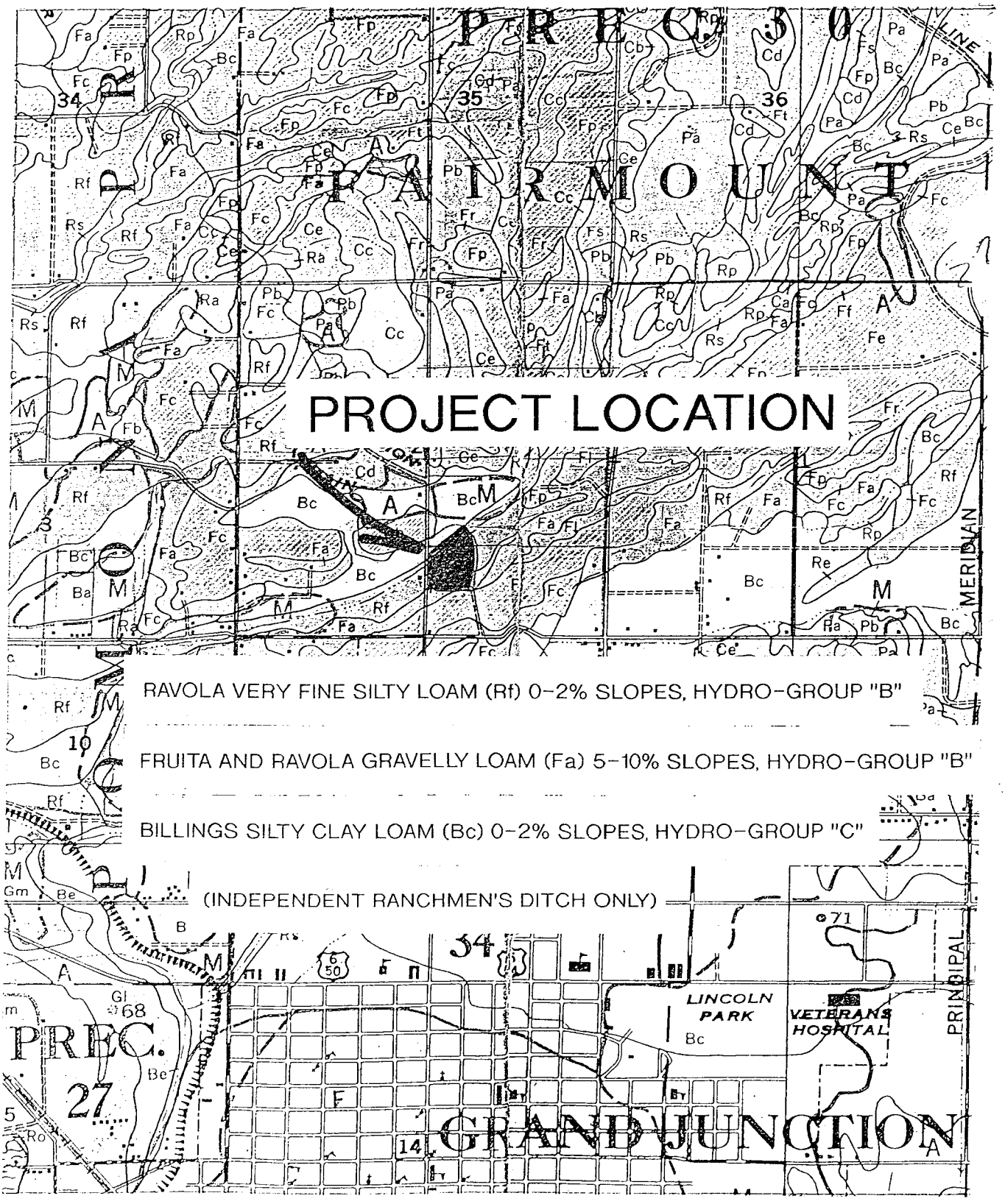
Site Soils and Geology -- A soils map is provided at the end of this report, and shows the types of soil historically found on the property. According to the U.S. Department of Agriculture Soil Survey of 1955, there are a combination of three types of soils on the site. Fruita and Ravola gravelly loams, 5 to 10 percent slopes (Fa), Billings silty clay loam, 0 to 2 percent slopes (Bc) and Ravola very fine sandy loam, 0 to 2 percent slopes (Rf). Each of these soils are common to

the Grand Junction area and are not expected to present any problems. See the attached soils map at the end of this report.

Signage Plans -- A signage plan will be provided to the City of Grand Junction during the final and construction phases of the review process.

DEVELOPMENT SCHEDULE AND PHASING:

The rate at which the development of Horizon Village will occur is dependent upon the City of Grand Junction's future growth and housing needs. It is anticipated that site development will begin once the final approval from the City has been granted. A phasing plan will be submitted during the next step in the review and application process.


PROJECT LOCATION
RAVOLA VERY FINE SILTY LOAM (Rf) 0-2% SLOPES, HYDRO-GROUP "B"
FRUITA AND RAVOLA GRAVELLY LOAM (Fa) 5-10% SLOPES, HYDRO-GROUP "B"
BILLINGS SILTY CLAY LOAM (Bc) 0-2% SLOPES, HYDRO-GROUP "C"
(INDEPENDENT RANCHMEN'S DITCH ONLY)
LINCOLN PARK
VETERANS HOSPITAL
GRAND JUNCTION
PRINCIPAL MERIDIAN

SOILS MAP

INDICATES GARAGE DOORS
INDICATES FRONT ENTRANCE

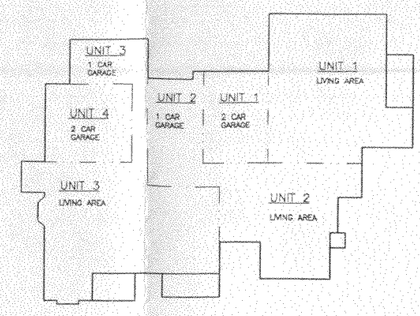
FRONT ENTRY AND GARAGE ENTRY DETAIL

PRELIMINARY LAND USE SUMMARY		
USE	ACRES	% OF TOTAL
FOUR-LEX UNITS	2.1	22.8
STREET R.O.W.	0.8	8.7
OPEN SPACE	1.8	19.6
DRIVEWAYS	0.9	9.8
COMMON AREA	3.6	39.1
TOTAL	9.2	100.0
RESULTING DENSITY = 7.39 UNITS PER ACRE		
TOTAL NO. OF UNITS = 68 UNITS		

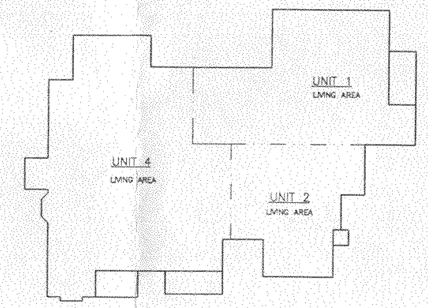
SETBACK INFORMATION	
FRONT	20 FEET
SIDE (BETWEEN BUILDINGS)	20 FEET
REAR (TO PROPERTY LINE)	10 FEET
FROM NORTH 7TH	30 FEET

NOTE: 6 GARAGE PARKING SPOTS AVAILABLE FOR EACH UNIT, WITH APPROXIMATELY 2-4 MORE EXTERNAL PARKING SPOTS AVAILABLE

ALL DRIVEWAYS ARE A MINIMUM OF 14' IN WIDTH



FIRST FLOOR



SECOND FLOOR

FOUR PLEX LIVING QUARTERS DETAIL

LEGEND

EXISTING UTILITIES

- IRRIGATION BOX
- FENCE
- MANHOLE
- POWER POLE
- SIGN
- PHONE/MH
- TRAFFIC/SIGNAL
- PULL BOX
- LIGHT POLE
- CROSS WALK SIGNAL
- W — CITY OF GJ WATER
- S — CITY OF GJ SEWER
- GAS — PUBLIC SERVICE GAS
- UGT — UNDER GROUND TELEPHONE BY US WEST
- UGE — UNDER GROUND ELECTRIC PUBLIC SERVICE

SCALE: 1" = 50'

CITY OF GRAND JUNCTION
APPROVED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE.
BY: _____ DATE: _____
ACCEPTED AS CONSTRUCTED
BY: _____ DATE: _____

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

DATE	NO.	REVISIONS:	BY
7-25-96		NEW BLDG, DRIVEWAYS AND UTILITIES	

PRELIMINARY PLAN

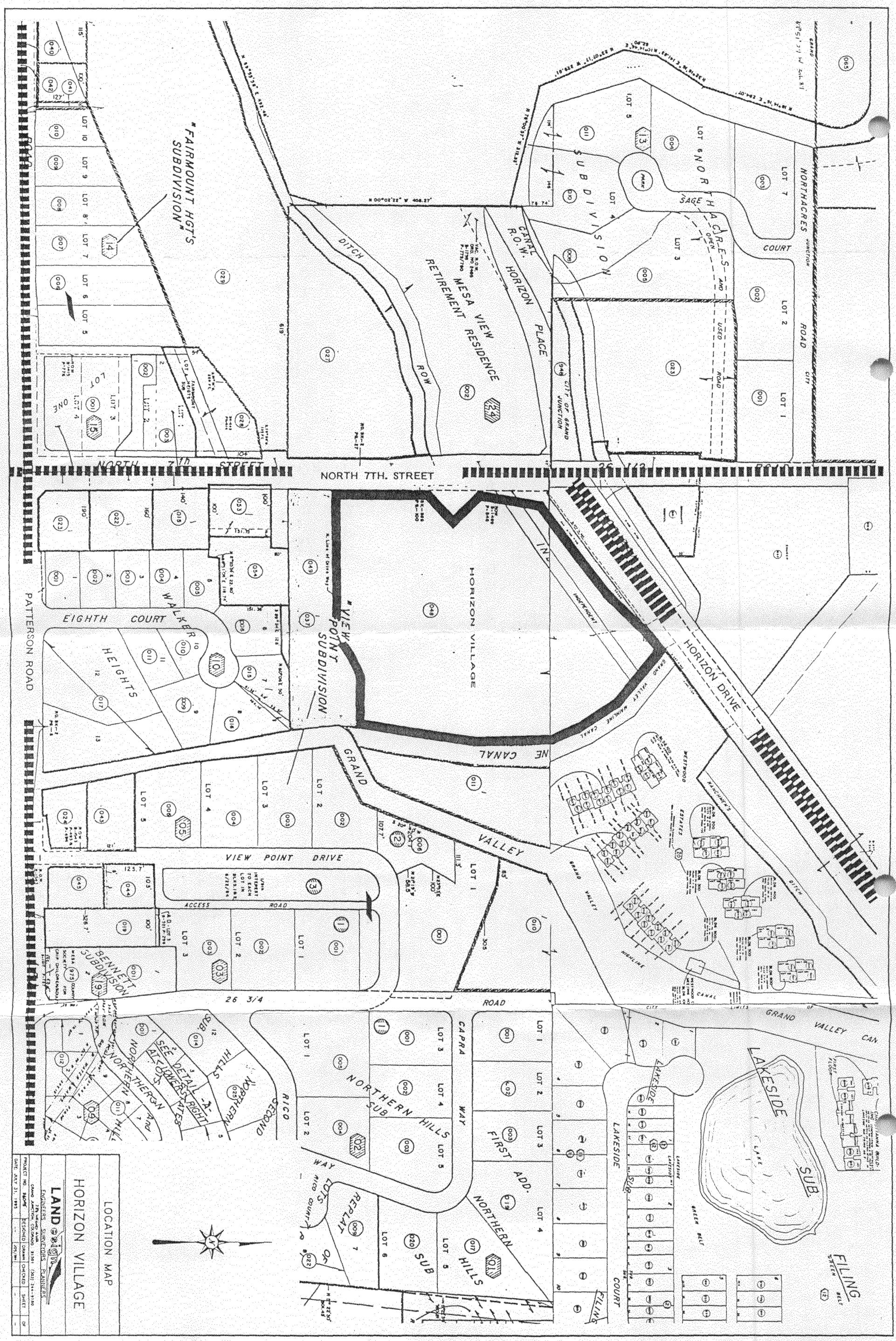
HORIZON VILLAGE SUBDIVISION

LANDesign
ENGINEERS • SURVEYORS • PLANNERS
259 GRAND AVENUE
GRAND JUNCTION, COLORADO 81501 (970) 245-4099

PROJECT NO. 96045	DESIGNED	DRAWN	CHECKED	SHEET	OF
DATE JUNE 30, 1996	BRI/PMH	BRI/JM			

C:\SC\WORK\96045\96045PR5 Fri Jul 26 15:33:31 1996 DAP

95052 Horizon Village Location Map



THE BEST SELLERS PORTFOLIO

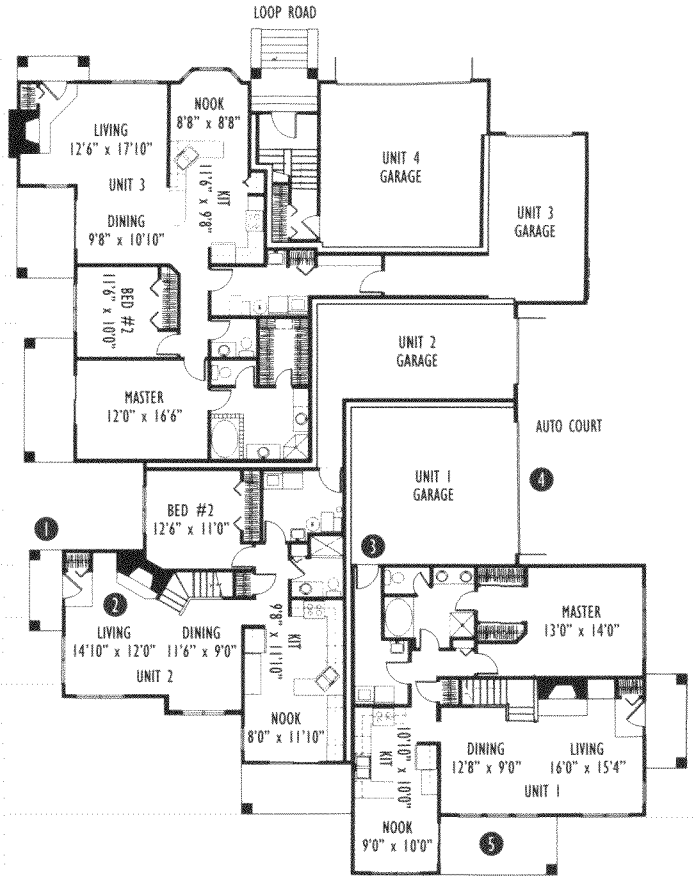
Model #91052-Four. The appeal of this manor-style, multi-family residence is its ability to blend comfortably with large, single-family designs. The unique identity of each home makes it attractive to "empty-nesters" and those seeking an active lifestyle with low home maintenance. Introduced in Chicago area in December 1992 ▪ Sales averaged 5/month for the first 12 months ▪ Entries on different sides enhance the sense of privacy and separation ▪ Manor home design maintains private home appearance and continuity in planned communities ▪ Four models provide style and price selection; 1337 sq. ft. [redacted] 1485 sq. ft. [redacted] 1612 sq. ft. [redacted] and 1637 sq. ft. [redacted]

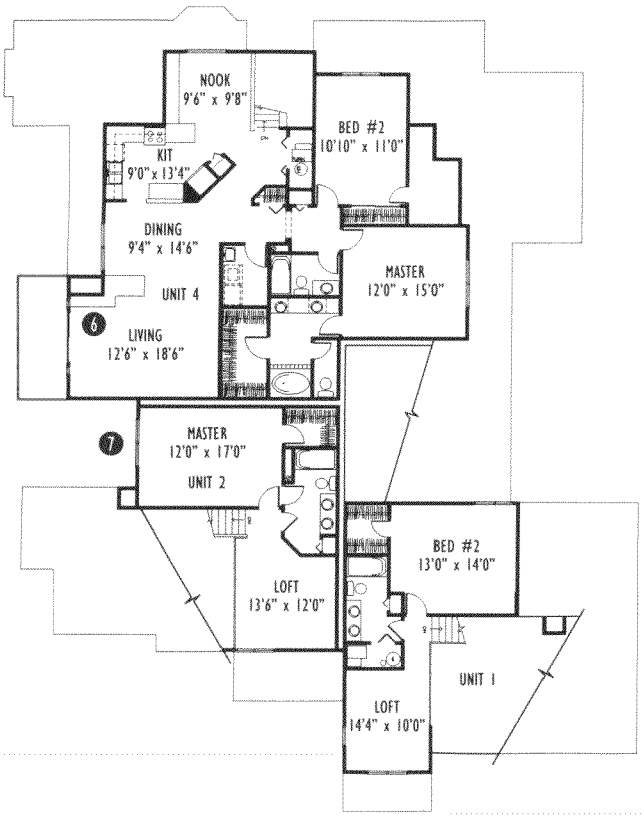
NOTES ON THE PROJECT

As an alternative to townhomes, the manor home fulfills the growing market desire for independent living and ownership combined with the cost efficiencies of multi-family construction.

This design creates the street appeal of a large, attractively landscaped home, free of the repetitive driveways, garages and entryways found in many multi-family designs.

The manor home is evolving as its popularity grows. New developments in Cleveland and Denver are further refining the proven appeal of this concept.





SPECIAL FEATURES

❶ Private first floor entry and porch for each home

❷ Vaulted living areas in most homes

❸ Private inside access to garages

❹ Side load garages eliminate garage doors from street view

❺ Option of covered patio for most homes

❻ Entertainment Center in all homes

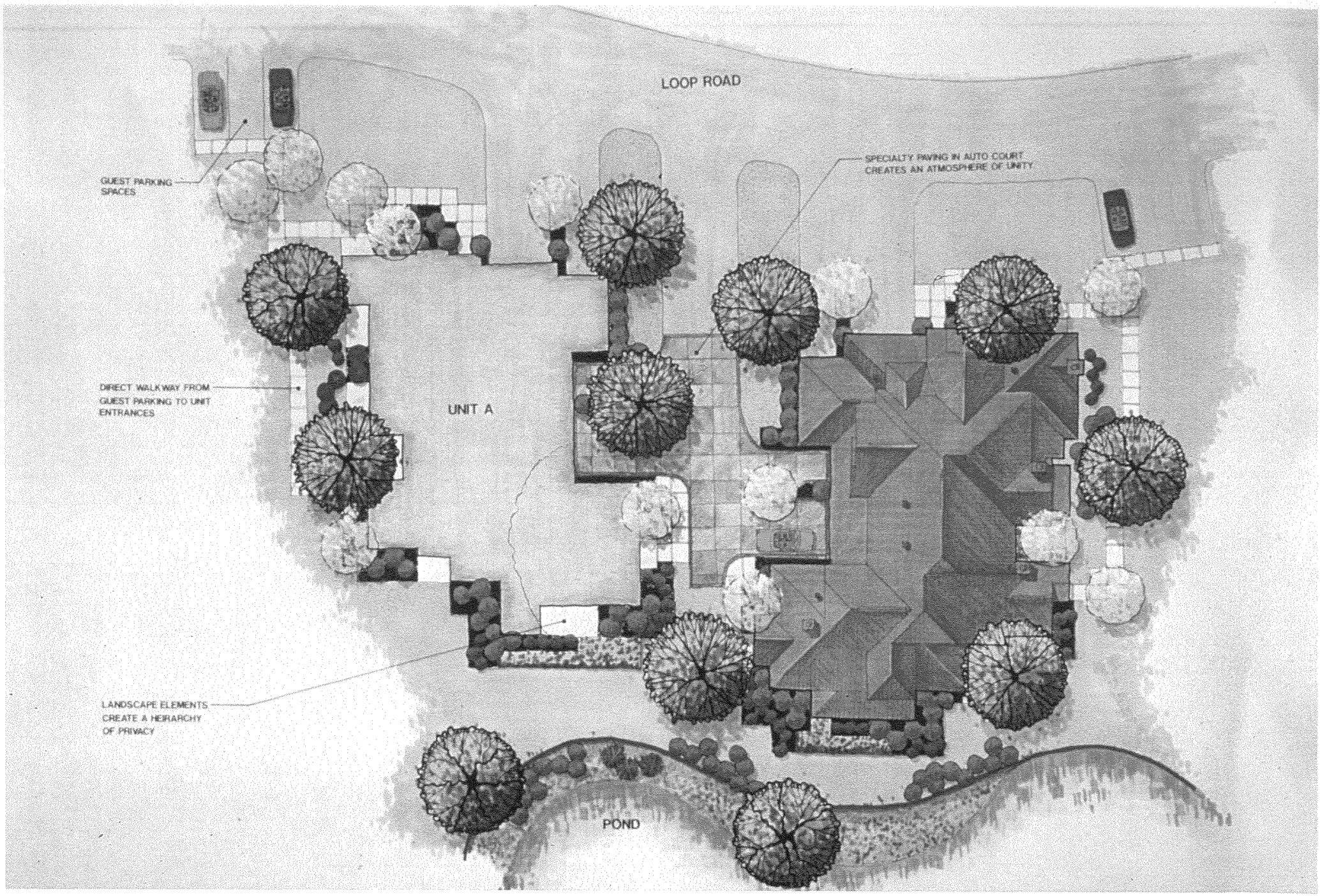
❼ Numerous windows open up interior with abundant natural light

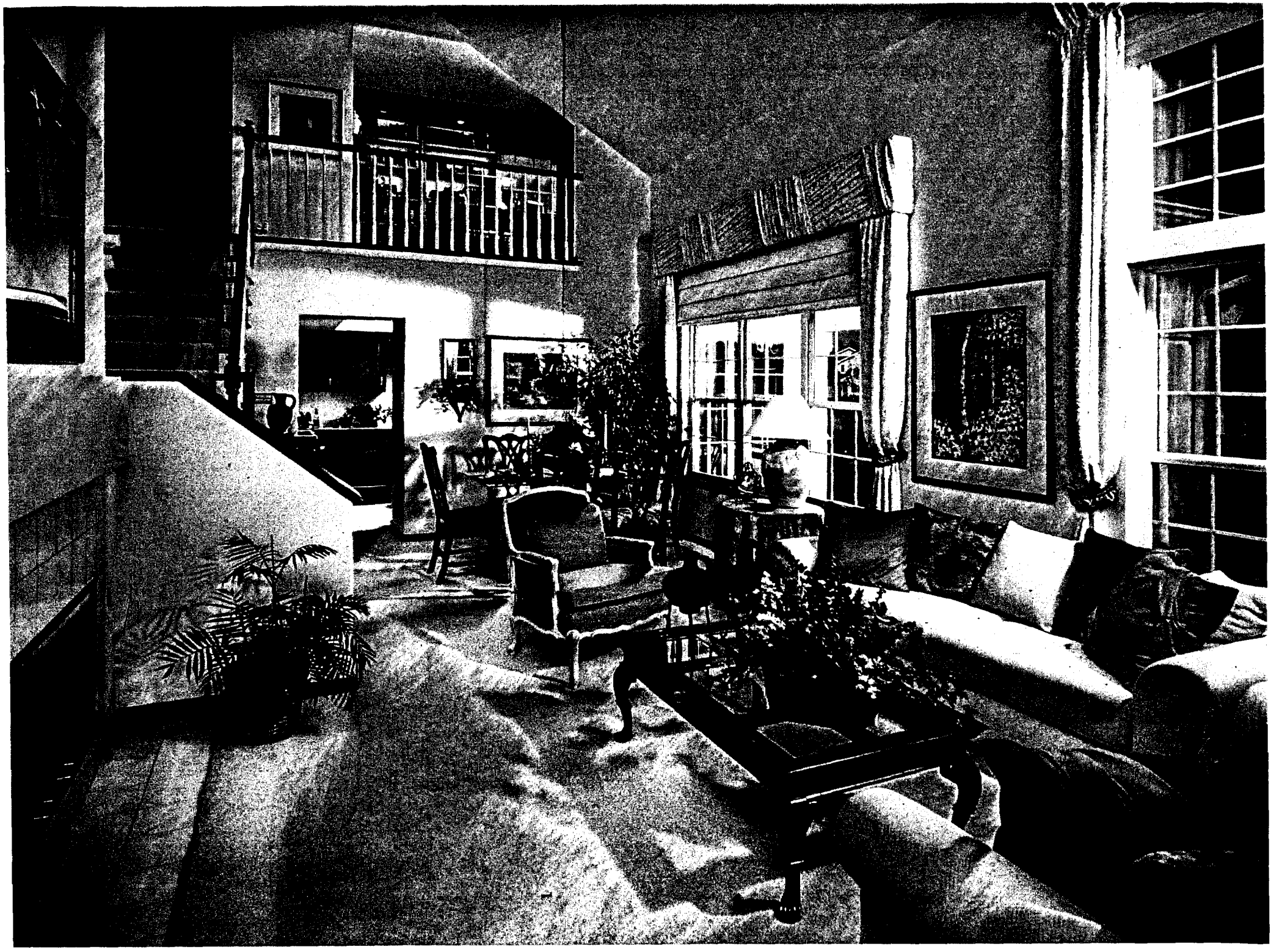
About Kephart Architects

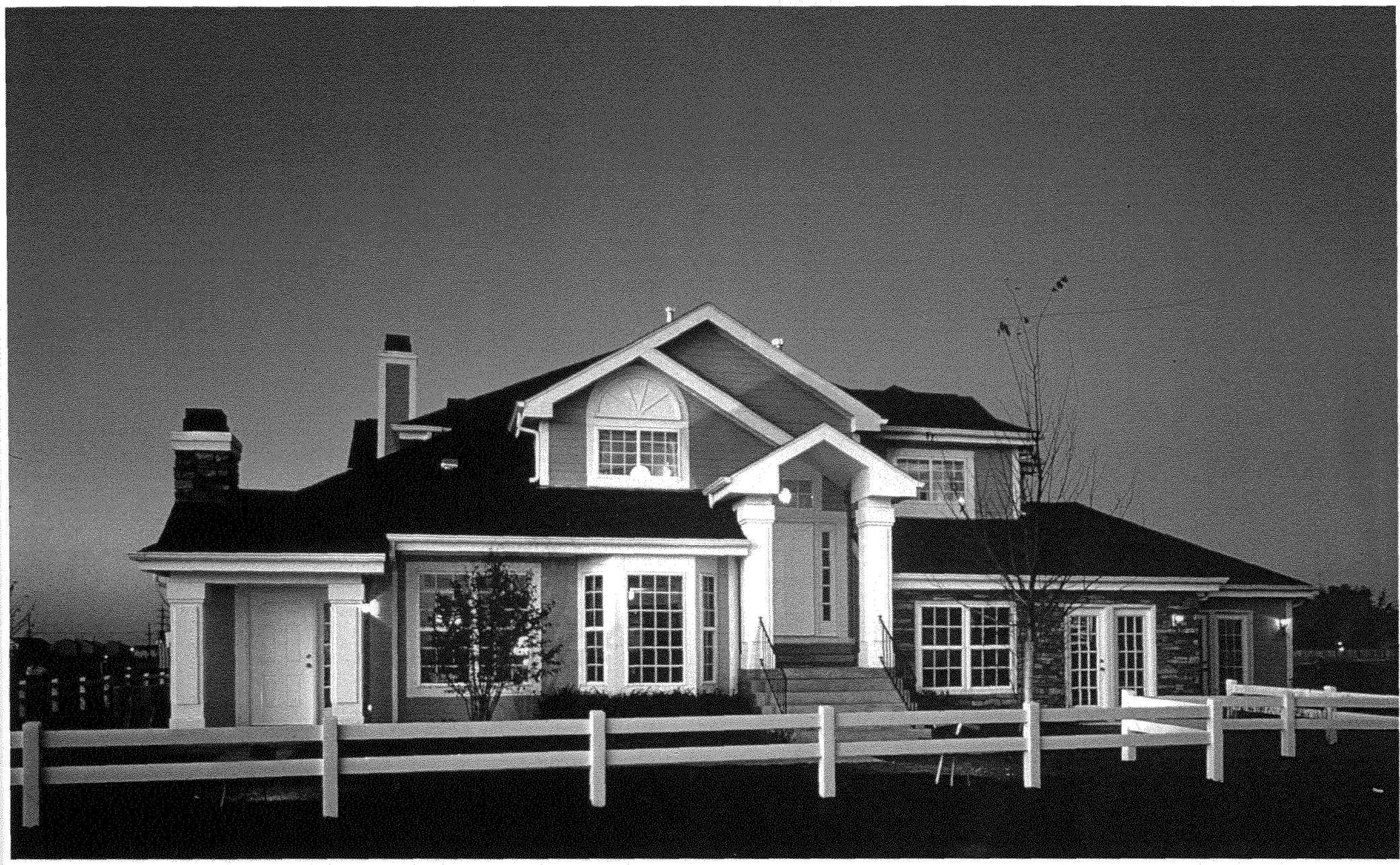
For 20 years, Kephart has been designing attractive, cost-effective homes with superior sales records. You'll find our designs in Denver, Cleveland, Palm Beach, Charlotte, Chicago, Phoenix and other locations around the country.

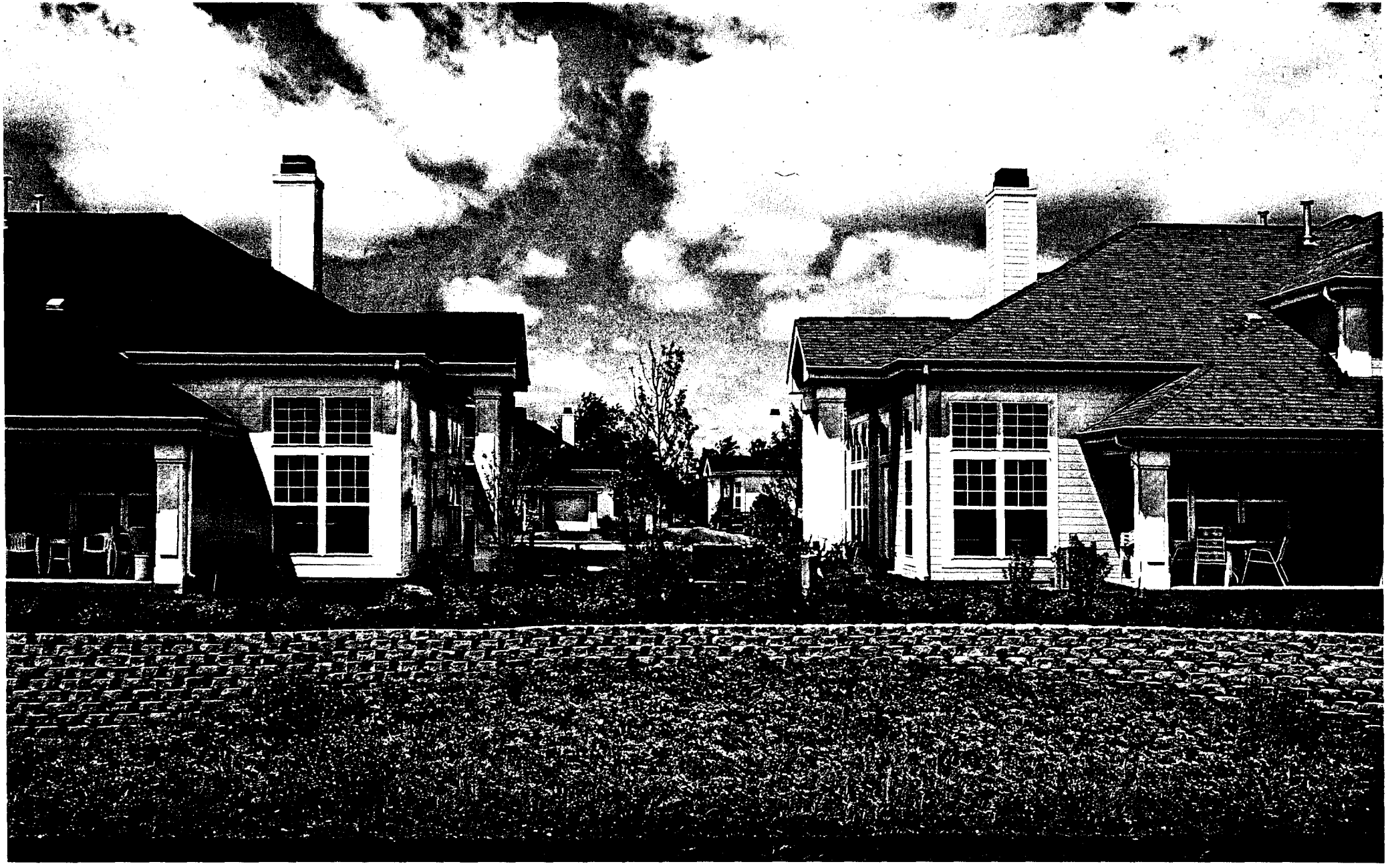
This model is just one example from a portfolio of best-selling homes. You'll be seeing several more this year. If you just can't wait, or would like to know more about our services, contact Mike Kephart at (303) 832-4474.

KEPHART
ARCHITECTS


LOOP ROAD
GUEST PARKING SPACES
SPECIALTY PAVING IN AUTO COURT CREATES AN ATMOSPHERE OF UNITY
DIRECT WALKWAY FROM GUEST PARKING TO UNIT ENTRANCES
UNIT A
LANDSCAPE ELEMENTS CREATE A HEIRARCHY OF PRIVACY
POND








The
Camden

PRELIMINARY DRAINAGE REPORT

FOR

HORIZON VILLAGE SUBDIVISION

Prepared for:

Cunningham Investment Co., Inc.
c/o Mac Cunningham
121 S. Galena Street, Suite 201
(970) 925-8803

Prepared by:

LANDesign, LLC
PLANNING ENGINEERING SURVEYING
259 Grand Avenue
Grand Junction, CO 81501
(970) 245-4099

June 27, 1996

Job No. 96045

Prepared by:_____
Brian C. Hart, E.I.

"I hereby certify that this report for the preliminary drainage design of Sunset Village was prepared under my direct supervision."

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

I. GENERAL LOCATION AND DESCRIPTION

A. Site and Major Basin Location

Horizon Village Subdivision is located at the southeast corner of the intersection at North 7th Street and Horizon Drive. The property tax parcel number is 2945-024-00-048. The property can otherwise be described as; a part of the N1/2 SW1/4 SE1/4 and that part of the S1/2 NW1/4 SE1/4 lying South and West of the main line canal of The Grand Valley Irrigation Company in Section 2, Township 1 South, Range 1 West of the Ute Meridian. The property tax parcel number is 2945-031-00-124.

Developments in the area near Horizon Village include, View Point Subdivision, Walker Heights Subdivision and Westwood Estates Condominiums.

B. Site and Major Basin Description

The subject property contains approximately 9.2 acres. The topography of the property can be described as "rolling" in nature and historically slopes to the northwest at an average rate of 8.0 percent.

The Independent Ranchmen's Ditch runs through the property from the northeast corner of the property to the northwest corner of the property. This ditch conveys a small amount of water year-round, but the majority of water is from irrigation water supplied by the Grand Valley Mainline Canal which runs during the irrigation season. The Grand Valley Mainline Canal defines the east boundary of the site.

Ground Cover can be described as tall grass and three small groves of trees. For the purposes of obtaining Rational "C" values, the land and ground cover can be described as a "pasture".

As shown in the appendix of this report (Reference 3.0, Exhibit 6.0), there are three soils types located on the site. Billings silty clay loam (Hydro-group "C") is located in the area of the ditch, which will not be developed, therefore this soil type will not be considered in any calculations for historic or developed conditions. The portion of the site which will be used for development contains both Ravola very fine loam (Rf) 0-2% slopes and Fruita and Ravola gravelly loams (Fr) 5-10% slopes. Both of these soils types are described as Hydro-group "C".

II. EXISTING DRAINAGE CONDITIONS

A. Major Basin

There are two major waterways which border or run through the property. The Grand Valley Mainline Canal defines the east boundary of the site, and flow from the southeast corner of the property to the northeast corner of the property. From this point the canal crosses Horizon Drive and continues to the east. The Independent Ranchmen's Ditch runs through the northern part of the site, flowing from the east to the west. From the northwest corner of the site, the ditch flows under North 7th Street and continues to the west. The Independent Ranchmen's Ditch is the only waterway which will be affected by the drainage from the site.

The area of the project to be disturbed with development is defined as being in Zone X and is not within the 100 year flood plain as shown on the, "Flood Insurance Rate Map, Mesa County Colorado" (Reference 4.0, Exhibit 5.0). It is shown on this map that the 100 year event is conveyed by the Independent Ranchmen's Ditch. This creates an area which is designated as "AE" which establishes a base flood elevation. This area is delineated in the appendix shown with the developed conditions of the site (Exhibit 4.0)

B. Project Site

Historically the property drains in a sheetflow fashion from the southeast to the northwest at an average of 8.0 percent, eventually discharging into the Independent Ranchmen's Ditch.

The property is bounded to the north by Horizon Drive and to the west by North 7th Street. The Grand Valley Mainline Canal and the accompanying maintenance road define the east boundary of the site. The south boundary of the property is defined by the north line of the driveway used for access by the parcel directly to the south. The inflow characteristics of offsite runoff are sheetflow in fashion, entering the property from the southeast.

The areas north, west and east of the property drain away from the site and will not contribute runoff to the site. The parcel to the south will contribute a small amount of runoff from the east portion of it's boundary. The historic basin for the site is shown on Exhibit 3.0 in the appendix.

III. PROPOSED DRAINAGE CONDITIONS

A. Changes in Drainage Patterns

Based on the proposed land use plan, significant changes in the existing drainage patterns are not anticipated, either to the site or the major basin.

B. Maintenance Issues

It is expected that the storm drainage such as inlets, piping and the roadway systems will be privately owned and maintained. The detention pond and outlet works will be owned and maintained by an established homeowners association for the development.

IV. DESIGN CRITERIA AND APPROACH

A. General Considerations

There has been a drainage study performed for area near the subject property by the Federal Emergency Management Agency, Reference 4.0. This study was revised July 15, 1992, and it's purpose was to establish the Flood Insurance Rate Maps for Mesa County, Colorado shown on Exhibit 5.0.

Because of the location of the proposed project, there is no other development expected which would be effected or contribute to the drainage at Horizon Village, either historic or developed.

Their are no apparent constraints imposed by the proposed site which would effect the historic or developed drainage patterns.

B. Hydrology

The "Stormwater Management Manual, City of Grand Junction, Colorado" (Reference 1) will be used and followed for the Final Drainage Report. As the project is a residential development encompassing approximately 9.2 acres, the "Rational Method" will be used for the final drainage report. The minor storm event is described as the 2 year storm and the major storm event is described as the 100 year event. It is expected that detention will be required for the 100 year storage value.

Runoff coefficients to be used in calculations are based on the most recent City of Grand Junction criteria as defined in Reference 1.0 and shown on Exhibit 7.0. With the historic ground cover described as "pasture", the 8.0% average slope and the Hydro-group for the on-site soils being "B", an average historic Rational

"C" values for the project are 0.41 for the 2 year event, and 0.49 for the 100 year event.

As the project is located within the Grand Junction Urbanized area, the Intensity Duration Frequency (IDF) Table as provided in Reference 1.0 shown on Exhibit 8.0 will be used for design and analysis.

Times of Concentration are calculated based on the Average Velocities For Overland Flow and Overland Flow Curves as provided in Reference 1 and shown on Exhibits 9.0 and 10.0.

C. Hydraulics

All site facilities and conveyance elements will be designed in accordance with the City of Grand Junction guidelines as provided in Reference 1.0.

VI. CONCLUSION

A Preliminary Plan has been included in this report to represent what this proposed development will entail, Exhibit 1.0. Exhibit 2.0 shows the Grand Junction Urbanized area obtained from Reference 2.0, and shows the relationship of the proposed development to the City of Grand Junction.

Upon Preliminary approval from the City of Grand Junction Planning Commission and the City of Grand Junction City Council, a final drainage report will be submitted during the next review phase. This report will address site specific drainage concerns in accordance with the requirements of the City of Grand Junction, Colorado.

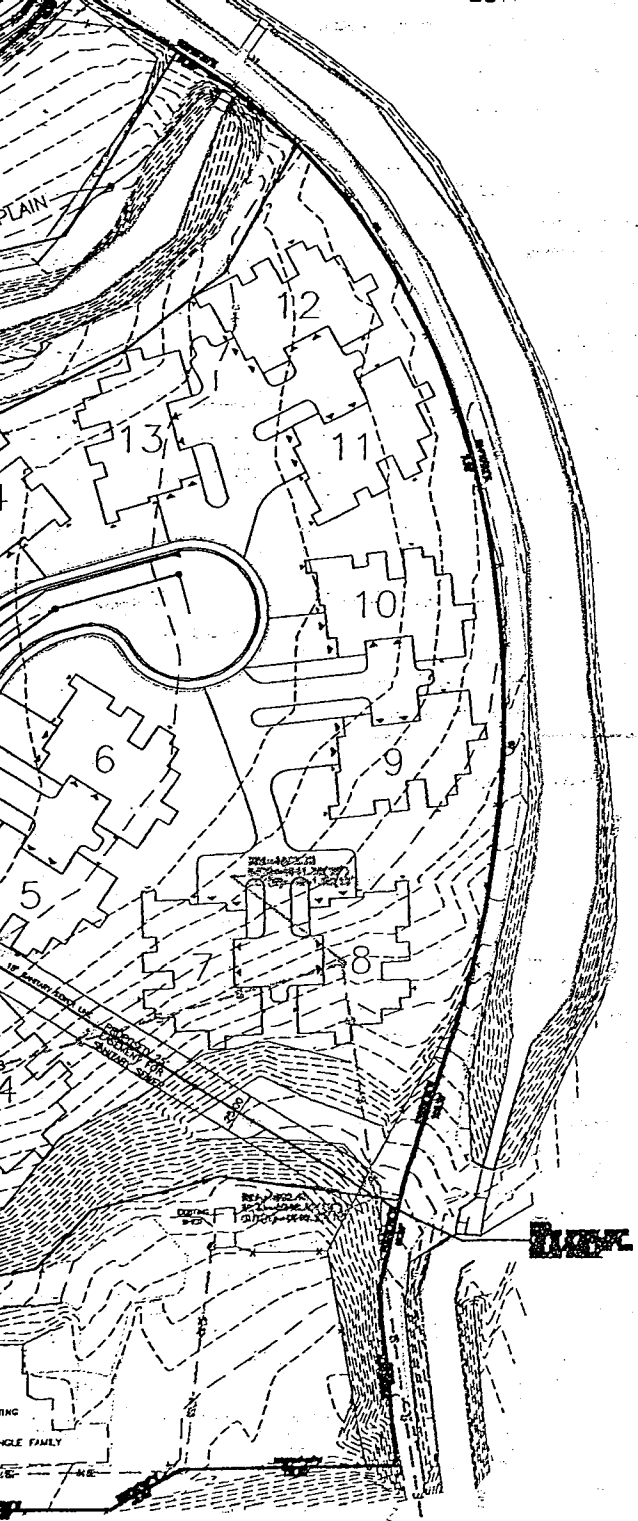
VII. REFERENCES

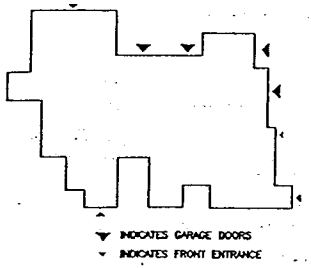
1. Stormwater Management Manual (SWMM), City of Grand Junction, Colorado, Department of Public Works, June 1994.

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

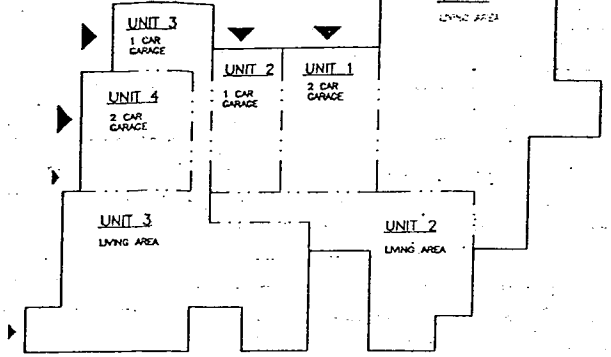
3. Soil Survey. Mesa County Area, Colorado, U.S. Department of Agriculture, issued November, 1955.

4. Flood Insurance Rate Map, Mesa County, Colorado, (Unincorporated Areas), Community Panel Number 080115 0004 E, Federal Emergency Management Agency, Map revised July 15, 1992.

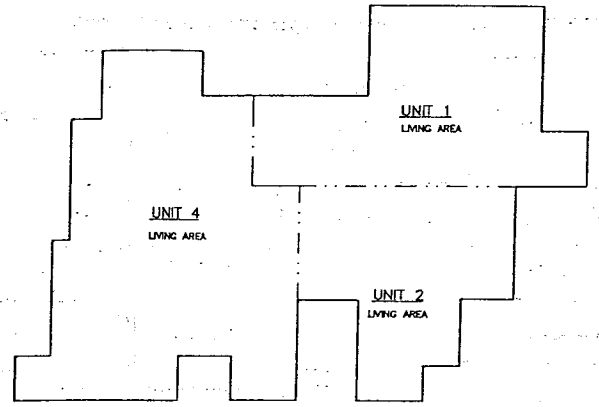




FRONT ENTRY AND GARAGE ENTRY DETAIL



FIRST FLOOR



SECOND FLOOR

FOUR PLEX LIVING QUARTERS DETAIL

PRELIMINARY LAND USE SUMMARY		
USE	ACRES	PERCENT
4-PLEX UNITS	1.8	19.6
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TOTAL	9.2	16.9%
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LEGEND

- IRRIGATION BOX
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0 25 50 100
SCALE: 1" = 50'

DATE:	NO:	REVISIONS:	By:

CITY OF GRAND JUNCTION

APPROVED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE.

BY: _____ DATE: _____

ACCEPTED AS CONSTRUCTED

BY: _____ DATE: _____

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

PRELIMINARY PLAN

HORIZON VILLAGE SUBDIVISION

LANDesign
PIONEERS • SURVEYORS • PLANNERS
250 GRAND AVENUE
GRAND JUNCTION, COLORADO 81501 (970) 245-4099

PROJECT NO. 98045	DESIGNED	DRAWN	CHECKED	SHEET	OF
DATE: JUNE 30, 1998	BRR/PMH	BRR/JM			

CITY OF GRAND JUNCTION
VIEW POINT SUB.

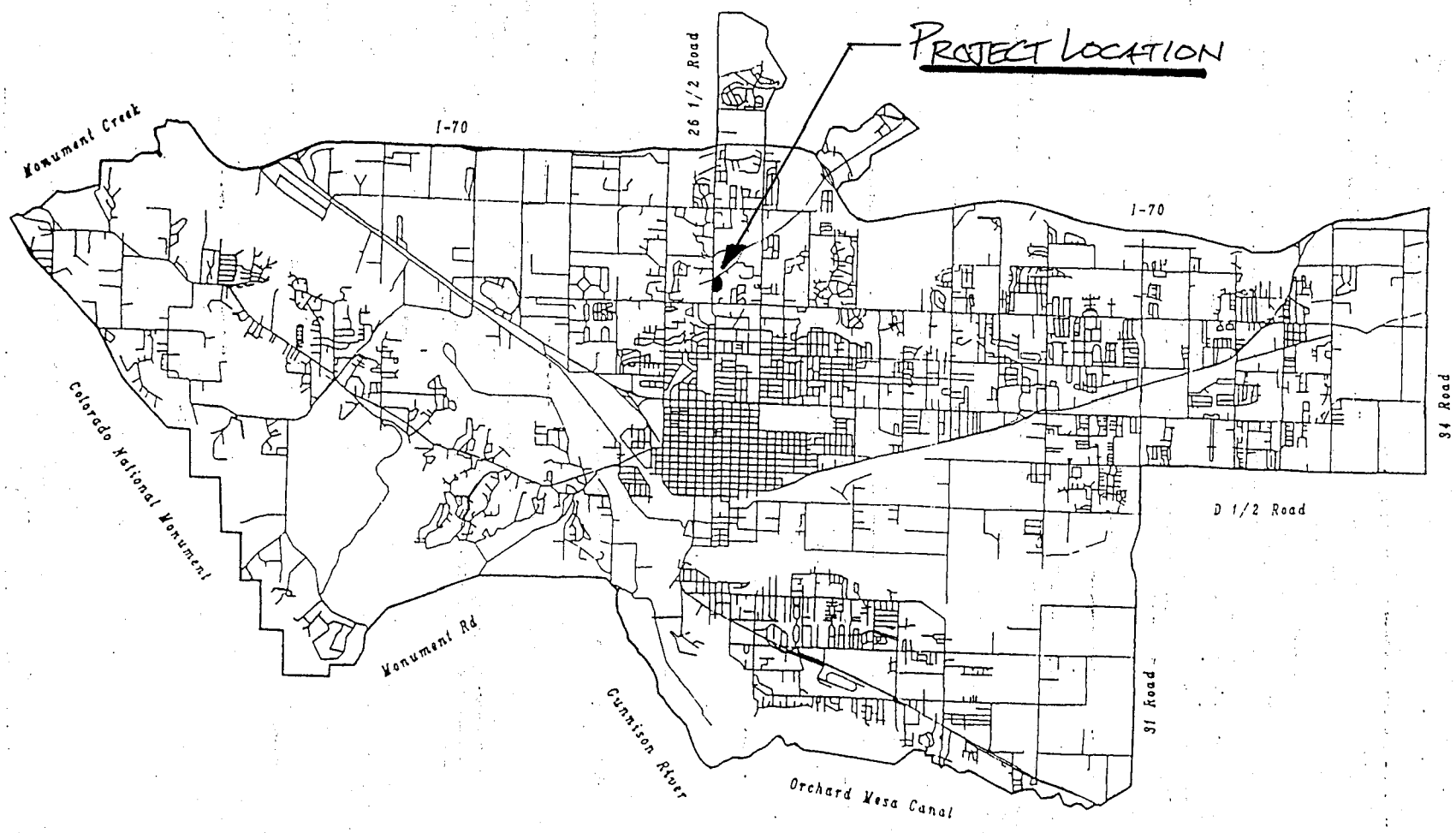
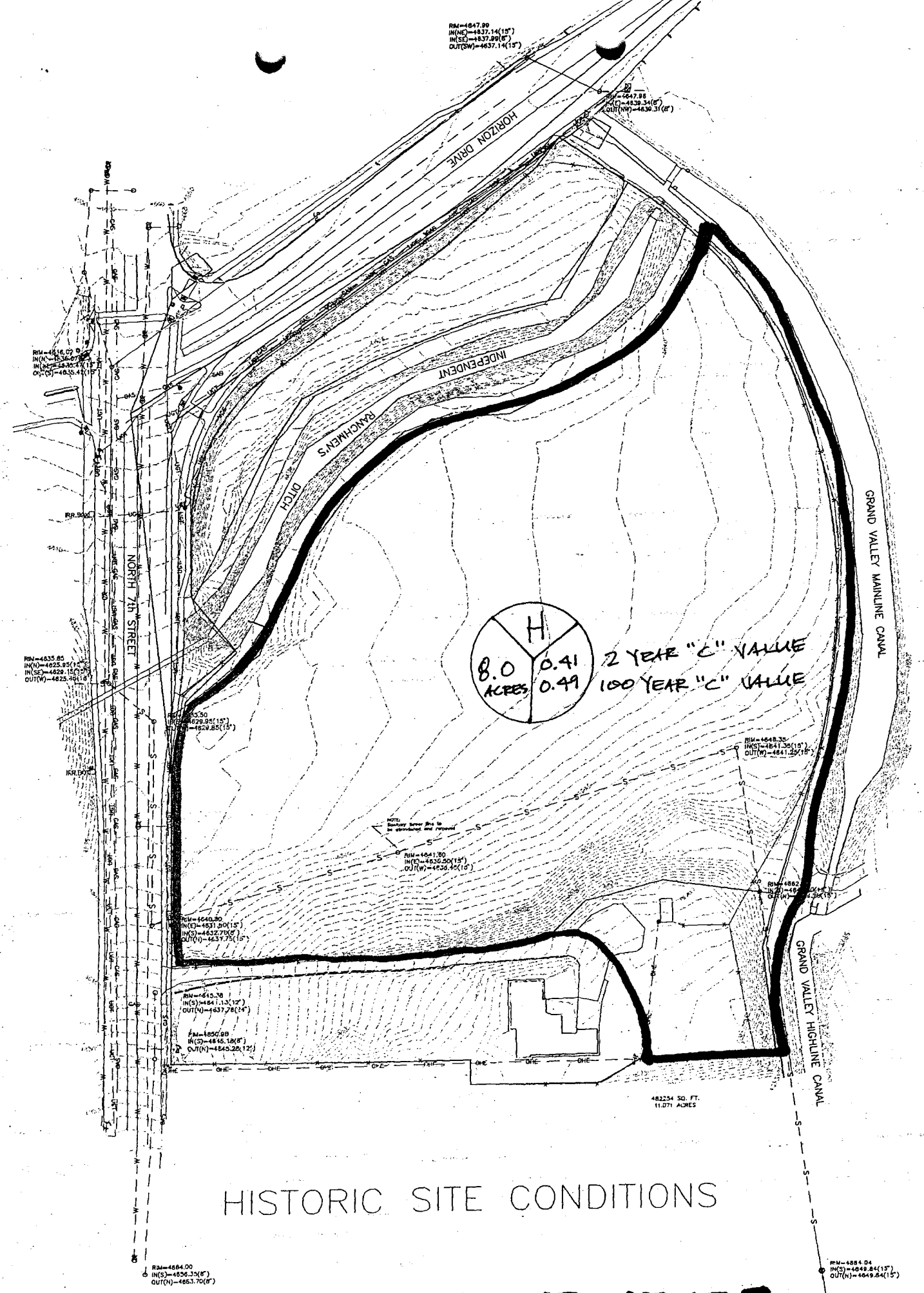


EXHIBIT 2.0

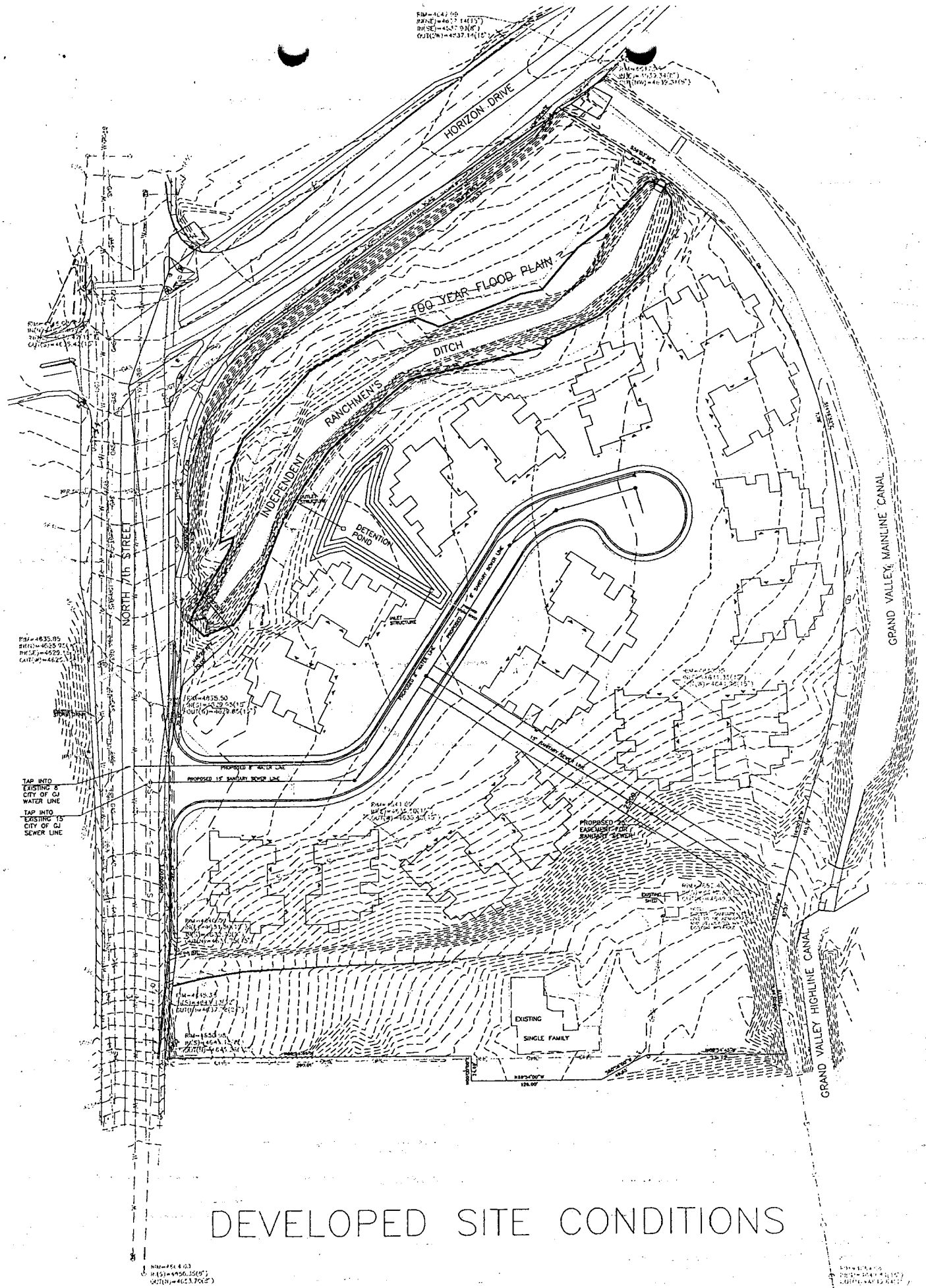
Mesa County Dept. of Public Works Division of Engineering and Design	1992 Grand Jct - Mesa Co. MPO Boundary			MPO/GIS Project

FIG 404



HISTORIC SITE CONDITIONS

EXHIBIT 3.0



DEVELOPED SITE CONDITIONS

EXHIBIT 4.0

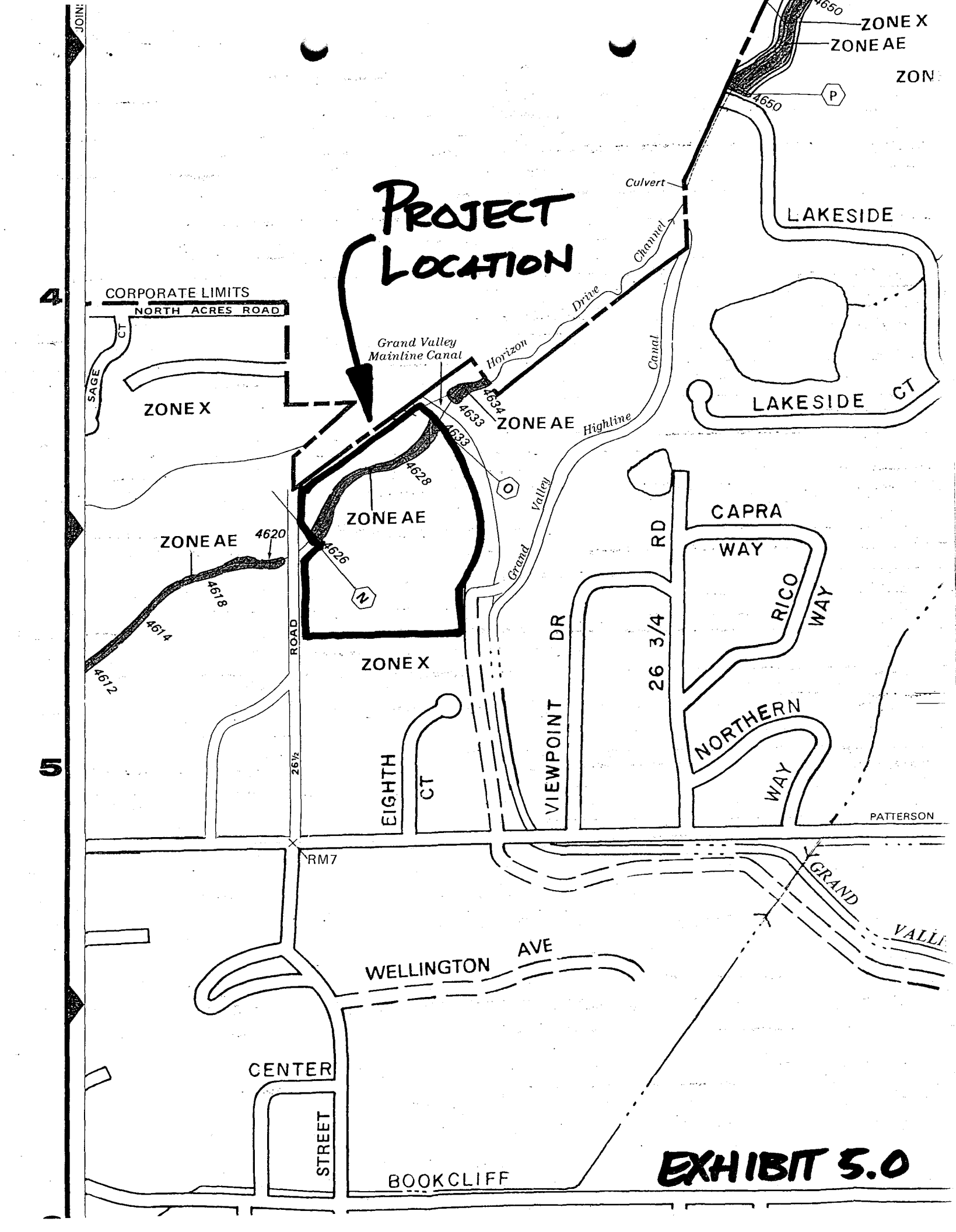

PROJECT LOCATION
ZONE X
ZONE AE
4650
Culvert
LAKESIDE
LAKESIDE CT
Horizon Drive
Channel
Canal
Highline
Grand Valley Mainline Canal
CORPORATE LIMITS
NORTH ACRES ROAD
CT
SAGE
4634
4633
4628
4626
4620
4618
4614
4612
ROAD
CAPRA WAY
RICO WAY
RD
DR
VIEWPOINT
26 3/4
NORTHERN WAY
EIGHTH CT
26½
Grand Valley
PATTERSON
RM7
GRAND VALLEY
WELLINGTON AVE
CENTER STREET
BOOKCLIFF
4
5

EXHIBIT 5.0

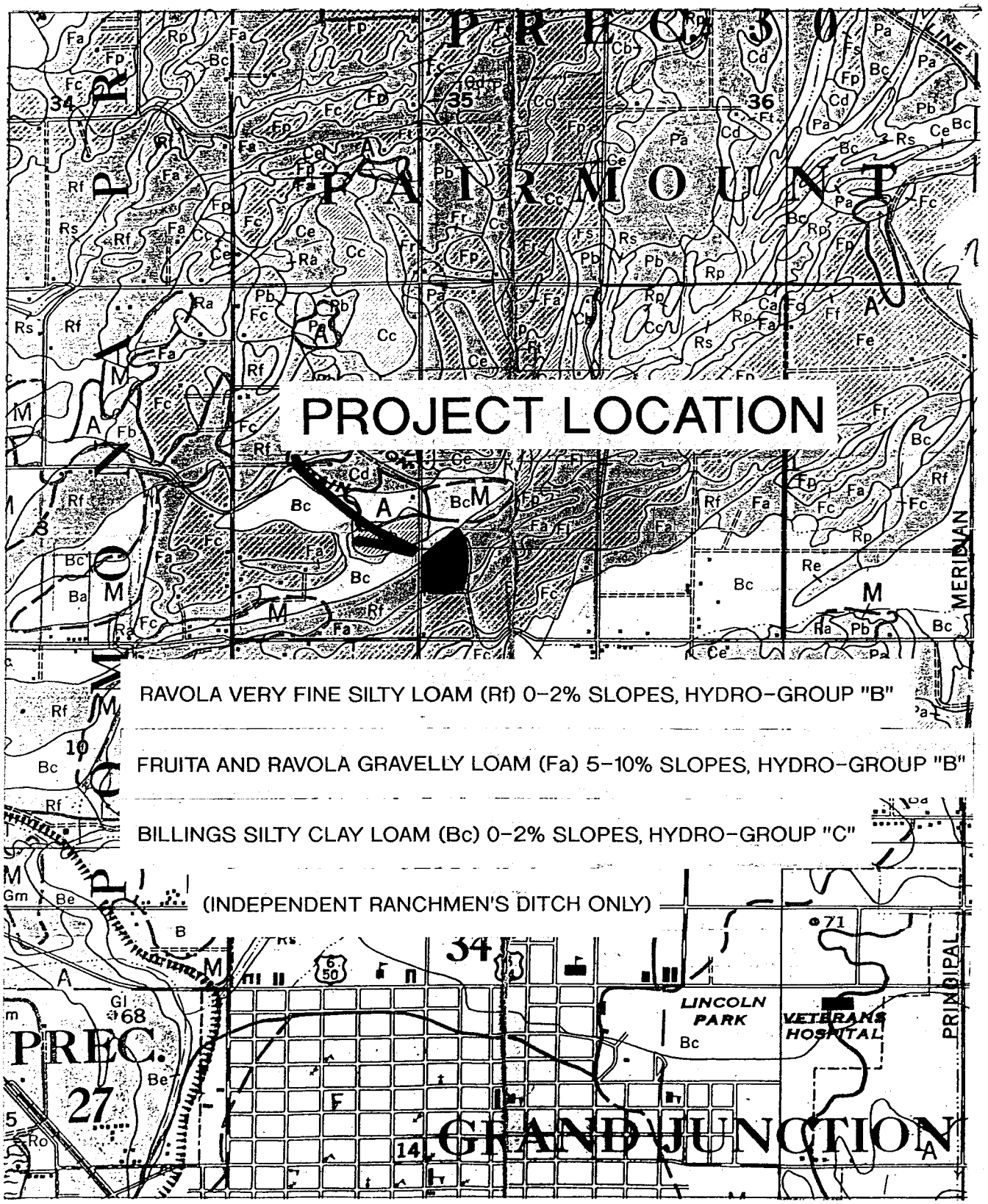

PROJECT LOCATION
RAVOLA VERY FINE SILTY LOAM (Rf) 0-2% SLOPES, HYDRO-GROUP "B"
FRUITA AND RAVOLA GRAVELLY LOAM (Fa) 5-10% SLOPES, HYDRO-GROUP "B"
BILLINGS SILTY CLAY LOAM (Bc) 0-2% SLOPES, HYDRO-GROUP "C"
(INDEPENDENT RANCHMEN'S DITCH ONLY)
PARADOX
PARMOUNT
GRAND JUNCTION
LINCOLN PARK
VETERANS HOSPITAL
PRINCIPAL
MERIDIAN
PREC. 27

EXHIBIT 6.0

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 7.0

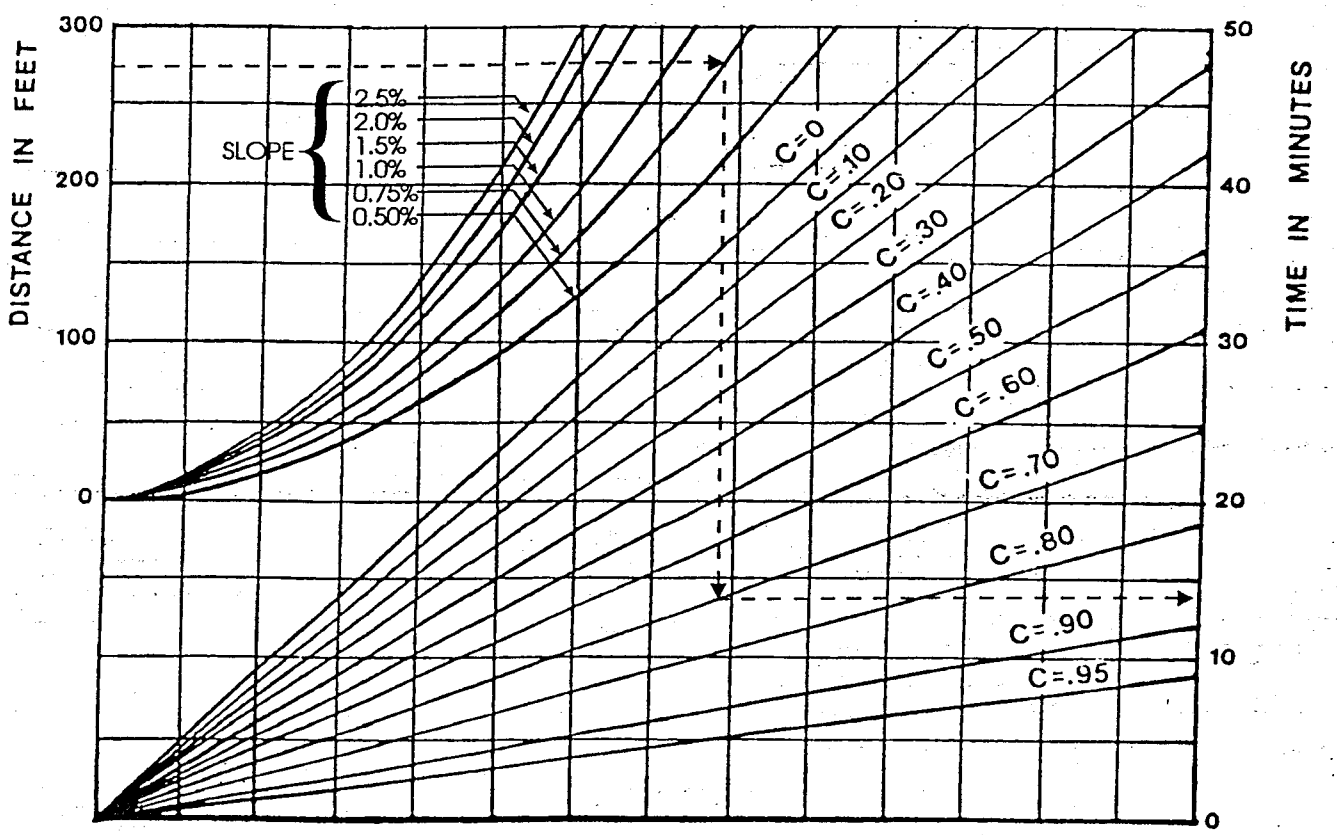
TABLE "A-1"
INTENSITY-DURATION-FREQUENCY (IDF) TABLE

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

EXHIBIT 8.0

MODIFIED FROM FIGURE 403, MESA COUNTY



THE ABOVE CURVES ARE A SOLUTION OF THE FOLLOWING EQUATION:

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

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

EXHIBIT 9.0

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

REPRODUCED FROM FIGURE 15.2, SCS 1972

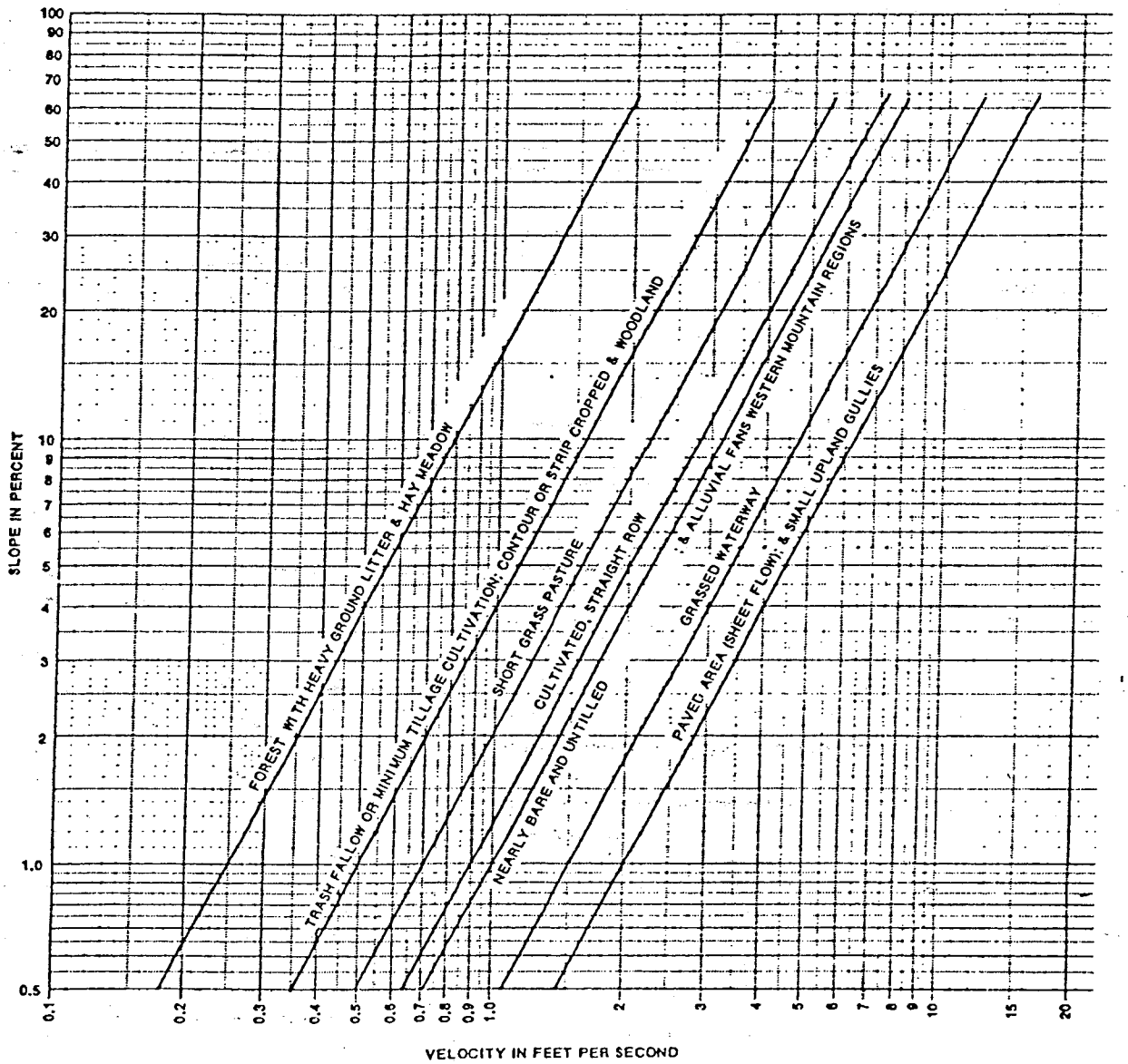


EXHIBIT 10.0

DETERMINATION OF "Ts"	FIGURE "E-3"

GPN GEO-CONSULTANTS
631 GLACIER DR.
GRAND JUNCTION, CO 81503
(970) 243-9602

Mr. Brian C. Hart E.I.
LANDesign
259 Grand Avenue
Grand Junction, CO 81501

RE: Surficial Geology Investigation- Horizon Village Subdivision

June 28, 1996

Dear Mr. Hart,

According to your request, I have completed a ground investigation of the above mentioned site to determine the general geologic condition and identify any geologic hazards. A site evaluation was conducted on June 25, 1996.

SITE LOCATION & DESCRIPTION

The site lies in the Southwest Quarter of the Southeast Quarter (SW1/4 SE1/4) of Section 2, Township 1 South, Range 1 West, of the Ute Meridian, Mesa County, Colorado. The site is bounded by the North 7th Street to the west, Walker Heights Subdivision to the south, Horizon Drive to the north, and The Grand Valley Canal to the east. The site contains 11.7 acres.

Topography of the site is predominantly flat (0-2% slope to the west) with steeper slopes (5-10%) to the north on the southern portion of the site. Average elevation is approximately 4630 feet above sea level, using the Grand Junction Quadrangle 7 1/2 minute series topographic map.

GENERAL GEOLOGY

The general geology of the area consists of thick deposits of shales, sands and silts of the Mancos Shale Formation, which gently dip in a northeasterly direction. Weathering of the Mancos is the origin of the soils that overlay the site. These soils are considered metastable and moderately low density.

Seismic events have occurred near, and possibly, in the Grand Valley area. These events occurred with no reported damage and having Richter Magnitudes up to and including 4.4. The Jacob's Ladder Fault Complex is approximately 5.5 miles to the south-southwest, and the Redlands Fault is approximately 6 miles southwest of the site.

SITE GEOLOGY

The bedrock that underlies the site is the Mancos Shale as mentioned above. The Mancos Shale consists of gray marine shales, and a few thin beds of sandstone and limestone. This shale has been known to exhibit swelling characteristics due to bentonitic layers within. The shale is light to medium gray in color.

The soil at the site is the Ravola Very Fine Sandy Loam, (0-2% slope) and is light brownish-gray to very pale-brown . The Ravola ranges from 4 to 20 feet deep and becomes sandier with depth according to the Soil Conservation Service survey. Disseminated lime may occur from the surface downward. The soil is usually slightly saline but may have a few strongly saline spots. This type of soil is commonly metastable and friable in nature and may be sensitive to changes in soil moisture content. The soil at the south portion of the site is the Ravola Gravely Loams (5-10% slope). This soil occurs on benches or mesas north of Grand Junction, and consists of very pale-brown to pale brown loam with a moderate accumulation of lime in the subsoil. The

Mancos Shale may occur at depth of 2 1/2 to 4 1/2 feet, but the alluvial mantle may be 10 to 12 feet thick in some places. This soil may contain sandstone gravel and semirounded stones. This type of soil is commonly metastable and friable in nature and may be sensitive to changes in soil moisture content. Severity of the metastable soils should be determined by Geotechnical Testing.

GROUND WATER

The Mancos shale is impermeable, and a poor source of groundwater. However, fluctuation in free water levels is greatly affected by external environmental conditions such as seepage moisture from irrigation. No free standing surface water was observed, however the Ravola soil occasionally has a high water table. The true water table can be determined through Geotechnical Investigation.

SURFACE WATER

Surface drainage is in a northwesterly direction which flows into the Independent Ranchmen's Ditch at the northern portion of the site. The Independent Ranchmen's Ditch drains to the southwest with termination at the Colorado River, located approximately 2.5 miles south of the site. The area along the ditch has been mapped by The Federal Emergency Management Agency as an area inundated by 100 year flood. Base flood elevations have been noted on the map and should be observed before any design and construction. The remainder of the site is not within a mapped flood hazard area.

The Main Line Grand Valley Canal is the eastern boundary of the site. The rapid increase of the water level due to storm runoff may cause flooding ,however the area is not mapped as a flood hazard. Water levels in the canal can be controlled.

ECONOMIC GEOLOGIC DEPOSITS

No extractable minerals, ores of deposits are believed to be present on or beneath this site. However, oil and gas fields, gravel deposits, coal deposits, uranium deposits and ornamental stone quarries exist in the surrounding areas. There may exist economic minerals deposits in this area that have not yet been investigated.

GEOLOGIC HAZARDS

Surface soils may exhibit a slight to moderate metastable condition. It is recommended that the severity be determined by Geotechnical Laboratory testing. The hazards of water erosion are high in soils with slopes of 5 percent or higher, moderate with 2-5 percent, and slight with 0-2 percent. The majority of the site is relatively flat, soil and / or slope instability is not expected to be a concern. The higher percentage slopes at the southern part of the site will have increased soil and / or slope instabilities, therefore, the Geotechnical Report should address the instability concern an make recommendations before any excavation work. The area along the Independent Ranchmen's Ditch should be investigated further to determine the area that would be inundated by 100-year flood.

Ground water in the Grand Junction area normally contains sulfates in levels detrimental to a Type I cement. The cement type should be decided by Geotechnical Testing.

It is presumed that all relevant concerns have been addressed in this report. If any further questions arise or if I can be of additional service, please feel free to call.

In conclusion, there are no serious geologic limitations to hinder the approval of the proposed development. Again, engineering investigations should be made to determined surface and subsurface soil and rock characteristics, drainage patterns, location of water table , erosional

hazards and flood hazards prior to development and construction. All statements and conclusions made herein are to my best knowledge of the investigator.

Respectfully submitted,

George P. Nichols, III
Geologist

SUBSURFACE SOILS EXPLORATION

HORIZON VILLAGE SUBDIVISION

GRAND JUNCTION, COLORADO

Prepared For:

MAC CUNNINGHAM
C/O LANDesign
GRAND JUNCTION, COLORADO

Prepared By:

LINCOLN-DeVORE, INC.
1441 Motor Street
Grand Junction, CO 81505

JUNE 29, 1996

Lincoln DeVore, Inc.
Geotechnical Consultants
1441 Motor St.
Grand Junction, CO 81505
TEL: (970) 242-8968
FAX: (970) 242-1561

June 29, 1996

Mac Cunningham
C/O LANDesign
259 Grand Ave.
Grand Junction, CO

Re: SUBSURFACE SOILS EXPLORATION
HORIZON VILLAGE SUBDIVISION
GRAND JUNCTION, COLORADO

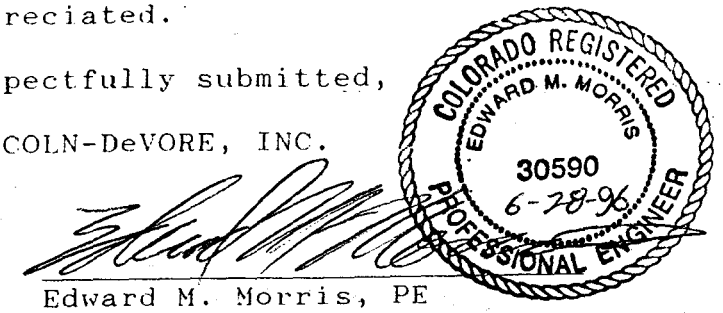
Dear Sir:

Transmitted herein are the results of a Subsurface Soils Exploration for the proposed construction of attached and possible detached single family and condominium type residential construction within the proposed Horizon Village Subdivision.

If you have any questions after reviewing this report, please feel free to contact this office at any time. This opportunity to provide Geotechnical Engineering services is sincerely appreciated.

Respectfully submitted,

LINCOLN-DeVORE, INC.



By: Edward M. Morris, PE
Western Slope Branch Manager
Grand Junction, Office

LDTL Job No. 85529-J

EMM/bl

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INTRODUCTION

PROJECT DESCRIPTION

This report presents the results of our geotechnical evaluation performed to determine the general subsurface conditions of the site applicable to construction of attached and possible detached single family and condominium type residential construction within the proposed Horizon Village Subdivision. A vicinity map is included in the Appendix of this report.

To assist in our exploration, we were provided with a concept plan, prepared by LANDesign of Grand Junction. The Boring Location Plan attached to this report is based on that plan provided to us.

We understand that the proposed structures will probably consist of two story with the possibility of single and possibly three story, wood framed structures with the possibility of half basement and concrete floor slabs on grade. Lincoln DeVore has not seen any proposed building plans, but it is anticipated that structures of this type will develop wall loads on the order of 1000-2500 plf and column loads on the order of 8-25 kips.

The characteristics of the subsurface materials encountered were evaluated with regard to the type of construction described above. Recommendations are included herein to match the described construction to the soil characteristics found. The information contained herein may or may not be

valid for other purposes. If the proposed site use is changed or types of construction proposed, other than noted herein, Lincoln DeVore should be contacted to determine if the information in this report can be used for the new construction without further field evaluations.

PROJECT SCOPE

The purpose of our exploration was to evaluate the surface and subsurface soil and geologic conditions of the site and, based on the conditions encountered, to provide recommendations pertaining to the geotechnical aspects of the site development as previously described. The conclusions and recommendations included herein are based on an analysis of the data obtained from our field explorations, laboratory testing program, and on our experience with similar soil and geologic conditions in the area.

Specifically, the intent of this study is to:

1. Explore the subsurface conditions to the depth expected to be influenced by the proposed construction.
2. Evaluate by laboratory and field tests the general engineering properties of the various strata which could influence the development.
3. Define the general geology of the site including likely geologic hazards which could have an effect on site development.
4. Develop geotechnical criteria for site grading and earthwork.
5. Identify potential construction difficulties and provide recommendations concerning these problems.
6. Recommend an appropriate foundation system for the anticipated structure and develop criteria for foundation design.

FIELD EXPLORATION AND LABORATORY TESTING

A field evaluation was performed on 6-10-96 & 6-18-96, and consisted of a site reconnaissance by our geotechnical personnel and the drilling of 6 shallow exploration borings. These 6 exploration borings were drilled within or near the proposed building pads, near the locations indicated on the Boring Location Plan. The exploration borings were located to obtain a reasonably good profile of the subsurface soil conditions. All exploration borings were drilled using a CME 45-B, truck mounted drill rig with continuous flight auger to depths of approximately 10-25 feet. Samples were taken with a standard split spoon sampler, thin walled Shelby tubes, and by bulk methods. Logs describing the subsurface conditions are presented in the attached figures.

The boring logs and related information show subsurface conditions at the date and location of this exploration. Soil conditions may differ at locations other than those of the exploratory borings. If the structure is moved any appreciable distance from the locations of the borings, the soil conditions may not be the same as those reported here. The passage of time may also result in a change in the soil conditions at the boring locations.

The lines defining the change between soil types or rock materials on the attached boring logs and soil profiles are determined by interpolation and therefore are approximations. The transition between soil types may be abrupt or may be gradual.

The following laboratory tests were performed on representative soil samples to determine their relative engineering properties.

ASTM D-2487	Soil Classification
ASTM D-2435	One Dimensional Consolidation
ASTM D-2937	In-Place Soil Density
ASTM D-2216	Moisture Content of Soil
ASTM D-2844	R-Value of Soils (Hveem-Carmany)

Tests were performed in accordance with test methods of the American Society for Testing and Materials or other accepted standards. The results of our laboratory tests are included in this report. The in-place soil density, moisture content and the standard penetration test values are presented on the attached drilling logs.

FINDINGS

SITE DESCRIPTION

The project site is located in the West half of the Southeast Quarter of Section 2, Township 1 South, Range 1 West of the Ute Principal Meridian, Mesa County, Colorado. More specifically the site is located at the Southeast corner of the intersection of North 7th Street and Horizon Drive, within the corporate limits of the City of Grand Junction. The site contains approximately 11.7 acres.

The topography of the site is the lower portion of a small, Northwest facing bluff slope, with a variable slight to moderate slope to the Northwest. The exact direction of surface runoff on this site will be controlled by the proposed construction and therefore will be variable. In general, surface runoff is expected to travel to the proposed street drainage, may be temporarily detained as required by the site specific drainage plan, eventually entering the existing unimproved Independent Ranchmen's Ditch and to the Colorado River, approximately 2 miles to the South. Surface drainage on this site would be described as fair to good and subsurface drainage as poor.

On-site erosion can be a significant problem if drainage and vegetation are not carefully controlled. Vegetation will probably be maintained in the immediate area around the building sites, but special care should be taken to maintain vegetation on the steeper slopes. We recommend that runoff from these slopes be carefully controlled to prevent

erosion caused by irrigation practices, sheetwash or seepage. It may be necessary to provide culverts or drainage ways to prevent excessive erosion along steeper slopes.

GENERAL GEOLOGY AND SUBSURFACE DESCRIPTION

The geologic materials encountered under the site consist of between 2-1/2' to over 20' of unconsolidated, alluvial/colluvial and debris fan soils which overlie the Mancos Shale Formation. The Mancos Shale is part of a very thick sequence of sedimentary rocks. The geologic and engineering properties of the materials found in our 6 exploration borings will be discussed in the following sections.

The surface soils on this site consist of some debris fan deposits originating on the higher ground of the Bookcliffs to the Northeast and some colluvial (slope wash) deposits, originating on the higher ground to the Southeast. These soil materials found in the exploration borings consist of mixed soils containing silt, clay, shale fragments, sand, gravel and cobble sized fragments. Due to the method of deposition, these materials are mixed and of variable composition and consistency.

The majority of the soils on this site are derived from debris fan activity. The colluvial soils have eroded from previously deposited debris fan features forming the hill to the South & East of the site. The surface soils are generally overlain by organic silty clays and clayey silts which range in thickness from less than 1/2' to approximately 2' and

have been partially reworked by previous agricultural activities. The majority of the soil profile have been designated as Soil Type I for purposes of this report.

This Soil Type was classified as a sandy, silty clay (CL) under the Unified Classification System. This material is of low plasticity, of low to moderate permeability, and was encountered in a low density, wet condition. This soil will undergo long-term consolidation upon the addition of moisture or applied construction loads. This soil will settle after being loaded. The maximum allowable bearing capacity for this soil was found to be approximately 750 psf, with 100 psf minimum dead load pressure required. Soil Type No. I contains sulfates in detrimental quantities.

These soils, if recompacted to a moderate to high density, will exhibit expansive characteristics. The amount of soil expansion experience will depend upon the methods and amount of soil compaction and cannot be accurately predicted.

Thin to moderately thick strata of a very sandy, silty clay and clayey silt mixture was encountered throughout the soil profile. The soils have been designated Soil Type II for this report.

This Soil Type was classified as a sandy, silty clay and clayey silt (ML-CL) under the Unified Classification System. This material is of low plasticity, of low to moderate permeability, and was encountered in a low density, wet condition. This soil will undergo long-term consolidation upon the addition of moisture or applied construction loads. This soil will settle after being loaded. The maximum allowable

bearing capacity for this soil was found to be 700 psf, with no minimum dead load pressure required. Soil Type No. II contains sulfates in detrimental quantities.

Strata of compressible sandy silt (ML) was encountered, in the exploration program. These soils are designated Soil Type III and are very similar to Soil Type II. These silts are low plastic, of moderate permeability and of low density. The maximum allowable bearing capacity for these silts was found to be 700 psf, with no minimum dead load pressure required.

The surface soils are deposited over the dense formational material of the Mancos Shale of Cretaceous Age, which is designated as Soil Type IV. The Mancos Shale is described as a thinbedded, drab, light to dark gray marine shale, with thinly interbedded fine grain sandstone and siltstone layers. The majority of the shale, has a low to moderate expansion potential. The formational shale was encountered at depths ranging from 2' to 21'. It is anticipated that this formational shale will affect the construction and the performance of the foundations on the site.

The soils of the Mancos Shale was classified as a silty clay (CL) under the Unified Classification System. The Standard Penetration Tests ranged from 36 to over 100 blows per foot. Penetration tests of this magnitude indicate that the soil is quite variable and generally of medium high to very high density. The moisture content varied from 13.4% to 18.4%, indicating a relatively moist soil. This soil is plastic

and is sensitive to changes in moisture content. With decreased moisture, it may shrink, with some cracking upon desiccation. Upon increasing moisture, it will tend to expand. Expansion tests were performed on typical samples of the soil and expansive pressures on the order of 1000-2400 psf were obtained. Due to the relatively wide range of expansion pressures, a minimum deadload of 2600 psf will be required. This soil was found to contain sulfates in detrimental quantities.

The Mancos Shale Formation is often highly fractured, with fillings of soluble sulfate salts being very common, particularly in the weathered zones. The samples obtained in this drilling program indicated many of the fractured faces and bedding planes in the shale contain sulfate salt deposits. Some seams of sulfate salts up to 1/4 inch thick were observed in the upper 2' to 3' of the weathered Mancos Shale.

Sulfate Salts exhibit variable strength, depending upon surrounding moisture conditions and their chemistry as related to water. In addition, Sulfate Salts are soluble and may be physically removed from the soil by ground moisture conditions. Such removal may leave significant amounts of void areas within the Mancos Shale, which may affect the load bearing capacity of the formation. Many of the fractures in the Mancos Shale Formation are open, allowing the rapid transmission of water to occur. Some sandstone and siltstone strata within the Mancos Shale Formation also exhibit elevated permeability.

GROUND WATER:

A free water table came to equilibrium during drilling at 13-16 feet below the present ground surface in the Northern, flatter portion of the tract adjacent to the unimproved portion of the Independent Ranchmen's Ditch. This is probably not a true phreatic surface but is an accumulation of subsurface seepage moisture (perched water). In our opinion the subsurface water conditions shown are a permanent feature on this site. The depth to free water would be subject to fluctuation, depending upon external environmental effects.

No free water was encountered in the exploration borings on the Southern part of the tract, which is somewhat higher, where the Mancos Shale was encountered at fairly shallow depths.

Due to the proximity of the Mancos Shale Formation in the Southern portion of the tract, there exists a possibility of a perched water table developing in the alluvial soils which overlie the Mancos Shale and within any excavations in the Mancos Shale. This perched water would probably be the result of increased irrigation due to the presence of lawns and landscaping and roof runoff. The exploration holes indicate that the top of the Mancos Shale Formation has only a gentle slope and that subsurface drainage would probably be quite slow.

While it is believed that under the existing conditions at the time of this exploration the construction process would not be effected by any free-flow waters, it is

very possible that several years after development is initiated, a troublesome perched water condition may develop which will provide construction difficulties. In addition, this potential perched water could create some problems for existing or future foundations on this tract. Therefore it is recommended that the future presence of a perched water table be considered in all design and construction of both the proposed residential structures and any subdivision improvements.

Because of capillary rise, the soil zone within a few feet above the free water level identified in the borings will be quite wet. Pumping and rutting may occur during the excavation process, particularly if the bottom of the foundations are near the capillary fringe. Pumping is a temporary, quick condition caused by vibration of excavating equipment on the site. If pumping occurs, it can often be stopped by removal of the equipment and greater care exercised in the excavation process. In other cases, geotextile fabric layers can be designed or cobble sized material can be introduced into the bottom of the excavation and worked into the soft soils. Such a geotextile or cobble raft is designed to stabilize the bottom of the excavation and to provide a firm base for equipment.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL DISCUSSION

No geologic conditions were apparent during our reconnaissance which would preclude the site development as planned, provided the recommendations contained herein are fully complied with. Based on our investigation to date and the knowledge of the proposed construction, the site condition which would have the greatest effect on the planned development is the very soft low bearing alluvial soils which overlie the expansive Mancos Shale Formation.

Since the exact magnitude and nature of the foundation loads are not precisely known at the present time, the following recommendations must be somewhat general in nature. Any special loads or unusual design conditions should be reported to Lincoln DeVore so that changes in these recommendations may be made, if necessary. However, based upon our analysis of the soil conditions and project characteristics previously outlined, the following recommendations are made.

OPEN FOUNDATION OBSERVATION

Since the recommendations in this report are based on information obtained through random borings, it is possible that the subsurface materials between the boring points could vary. Therefore, prior to placing forms or pouring concrete, an open excavation observation should be performed by representatives of Lincoln DeVore. The purpose of this observation is to determine if the subsurface soils directly below the

proposed foundations are similar to those encountered in our exploration borings. If the materials below the proposed foundations differ from those encountered, or in our opinion, are not capable of supporting the applied loads, additional recommendations could be provided at that time.

EXCAVATION:

Site preparation in any areas which are to receive structural fill should begin with the removal of all topsoil, vegetation, and other deleterious materials. Prior to placing any fill, the subgrade should be observed by representatives of Lincoln DeVore to determine if the existing vegetation has been adequately removed and that the subgrade is capable of supporting the proposed fills. The subgrade should then be scarified to a depth of 10 inches, brought to near optimum moisture conditions and compacted to at least 90% of its maximum modified Proctor dry density (ASTM D-1557). The moisture content of this material should be within + or - 2% of optimum moisture, as determined by ASTM D-1557.

In general, we recommend all structural fill in the area beneath any proposed structure or roadway be compacted to a minimum of 90% of its maximum modified Proctor dry density (ASTM D1557). This structural fill should be placed in lifts not to exceed six (6) inches after compaction. We recommend that fill be placed and compacted at approximately its optimum moisture content (+/-2%) as determined by ASTM D 1557. Structural fill should be a granular, non-expansive soil.

We recommend that the amount of cut and fill be kept to a minimum on this site. Specifically, we recommend that any cut or fill which reduces the stability of native slopes be avoided. This includes any cut at the toe of a slope and any fill placed at the top of a slope. We recommend that any cut or fill over 4 feet in height be analyzed for stability of the final slope prior to construction.

Allowable slope angle for cuts in the native soils is dependent on soil conditions, slope geometry, the moisture content and other factors. Should deep cuts be planned for this site, we recommend that a slope stability analysis be performed when the location and depth of the cut is known.

No major difficulties are anticipated in the course of excavating into the surficial soils on the site. It is probable that safety provisions such as sloping or bracing the sides of excavations over 4 feet deep will be necessary. Any such safety provisions shall conform to reasonable industry safety practices and to applicable OSHA regulations. The OSHA Classification for excavation purposes on this site is Soil Class C for the alluvial soils, Types I, II, III. The OSHA Classification for excavation purposes of the Weathered Mancos Shale (Soil Type IV) is Soil Class B, assuming free water is not encountered in the excavation.

DRAINAGE AND GRADIENT:

Adequate site drainage should be provided in the foundation area both during and after construction to prevent the ponding of water and the saturation of the subsurface

soils. We recommend that the ground surface around the structure be graded so that surface water will be carried quickly away from the building. The minimum gradient within 10 feet of the building will depend on surface landscaping. We recommend that paved areas maintain a minimum gradient of 2%, and that landscaped areas maintain a minimum gradient of 8%. It is further recommended that roof drain downspouts be carried across all backfilled areas and discharged at least 10 feet away from the structure. Proper discharge of roof drain downspouts may require the use of subsurface piping in some areas. Planters, if any, should be so constructed that moisture is not allowed to seep into foundation areas or beneath slabs or pavements.

If adequate surface drainage cannot be maintained, or if subsurface seepage is encountered during excavation for foundation construction, a full perimeter drain is recommended for this building. It is recommended that this drain consist of a perforated drain pipe and a gravel collector, the whole being fully wrapped in a geotextile filter fabric. We recommend that this drain be constructed with a gravity outlet. If sufficient grade does not exist on the site for a gravity outlet, then a sealed sump and pump is recommended. Under no circumstances should a dry well be used on this site.

The existing drainage on the site must either be maintained carefully or improved. We recommend that water be drained away from structures as rapidly as possible and not be allowed to stand or pond near the building. We recommend that water removed from one building not be directed onto the

backfill areas of adjacent buildings. We recommend that a hydrologist or drainage engineer experienced in this area be retained to complete a drainage plan for this site.

To give the building extra lateral stability and to aid in the rapidity of runoff, it is recommended that all backfill around the building and in utility trenches in the vicinity of the building be compacted to a minimum of 85% of its maximum Proctor dry density, ASTM D 698. The native soils on this site may be used for such backfill. We recommend that all backfill be compacted using mechanical methods. No water flooding techniques of any type may be used in placement of fill on this site.

Should an automatic lawn irrigation system be used on this site, we recommend that the sprinkler heads be installed no less than 5 feet from the building. In addition, these heads should be adjusted so that spray from the system does not fall onto the walls of the building and that such water does not excessively wet the backfill soils.

It is our understanding that the 100 year floodplain of the Independent Ranchmen's Ditch will be addressed as part of the overall drainage plan for the site. We recommend that construction be avoided in this area and that drainage ways be kept open and free from debris. During periods of high runoff, debris may cause damming at bridges and culverts, resulting in backwater effects which may be damaging. We recommend that this drainage plan be completed by a hydrologic or drainage engineer fully experienced in this area. Such a plan is beyond the scope of this report.

It is recommended that lawn and landscaping irrigation be reasonably limited, so as to prevent undesirable saturation of subsurface soils or backfilled areas. Several methods of irrigation water control are possible, to include, but not limited to:

* Metering the Irrigation water.
* Sizing the irrigation distribution service piping to limit on-site water usage.
* Encourage efficient landscaping practices.
* Enforcing reasonable limits on the size of high water usage landscaping for each lot and any park areas.

The slope areas immediately adjacent to the unimproved portion of the Independent Ranchmen's Ditch can be considered potentially unstable due to the threat of ongoing erosion. A minimum setback should be established between the proposed construction and the edge of existing slope scarps. We recommend that the setback distance be established by laboratory analysis of the shear strength and stability of specific locations along the banks. In addition, mitigation systems are recommended to control the on-going erosion caused by the creek. Such mitigation could include retaining walls, riprap, gabions or other stabilization materials.

FOUNDATIONS

The soils and weathered rock formations on this site present several difficulties for construction. The overlying soils on much of the site are very soft and will probably undergo significant amounts of long-term consolidation if building loads are applied. In addition, the Mancos Shale Formation, particularly near the ground surface on the Southern portion of this tract, exhibits rather variable expansive characteristics. Some of the samples obtained from the Mancos Shale Formation were observed to be somewhat more expansive than the average encountered in the Grand Junction area. Due to the existing site topography, and ground water conditions affecting the site, it is not believed that a shallow foundation system could be placed directly on the Mancos Shale which would not experience a relatively high risk of movement. Recommendations for shallow foundation systems are given but, we would generally recommend that a deep foundation, consisting of drilled piers in the Southern portion of the tract and driven piles in the Northern portion and possibly the Southern of the tract be constructed to support the structures.

SHALLOW FOUNDATIONS ON MANCOS SHALE

A conventional shallow foundation system consisting of either a voided wall on grade or an isolated pad and grade beam system, resting on the relatively unweathered expansive clays of the Mancos Shale Formation (penetrating the

weathered portion which contains very large amounts of soluble sulfate salts), may be designed on the basis of an allowable bearing capacity of 8000 psf maximum, and a minimum dead load of 2800 psf must be maintained. Contact stresses beneath all continuous walls should be balanced to within + or - 150 psf at all points. Isolated interior column footings should be designed for contact stresses of about 250 psf more than the average used to balance continuous walls. The criteria use for balancing will depend somewhat upon the nature of the structure. Single-story, slab on grade structures and single-story crawlspace structures may be balance on the basis of dead load only. Multi-story structures may be balanced on the basis of Dead Load plus one half live load, for up to three stories.

SHALLOW FOUNDATIONS ON COMPRESSIBLE SOILS

Assuming that some amount of differential movement can be tolerated, then a conventional shallow foundation system, underlain by a reinforced structural fill, placed in accordance with the recommendations contained within this report may be utilized. The foundation would consist of continuous spread footings beneath all bearing walls and isolated spread footings beneath all columns and other points of concentrated load. Such a shallow foundation system, resting on the properly constructed structural fill, may be designed on the basis of an allowable bearing capacity of 2000 psf maximum.

Recommendations pertaining to balancing, reinforcing, drainage, and inspection are considered extremely important and must be followed. Contact stresses beneath all

continuous walls should be balanced to within + or - 200 psf at all points. Isolated interior column footings should be designed for contact stresses of about 150 psf less than the average used to balance the continuous walls. The criteria for balancing will depend somewhat on the nature of the structure. Single-story, slab-on-grade structures may be balanced on the basis of dead load only. Multi story structures may be balanced on the basis of dead load plus one half live load, for up to three stories.

SUBGRADE IMPROVEMENT, REINFORCED STRUCTURAL FILL

We recommend the following Structural Fill Sections for areas of moderately unstable subgrade (pumping), due to permanent or seasonally high Water table. Subgrade soils are assumed to be either fine grained sand (SM), Silt (ML), or Silty Clay (ML-CL). These sections assume the Subgrade Soils have an R Value >10.

The specific areas which will require placement of either the Biaxial Geogrid or the Geotextile Fabric will depend on the actual conditions encountered during construction. The subgrade and fill section construction should be monitored by representatives of the Geotechnical Engineer.

For use Beneath Structures, Walks and Non Traffic Areas

Base of Foundations and Slabs
4" Imported Structural Fill (Hveem-Carmany R>70)
Biaxial Geogrid
16" Imported Structural Fill (Hveem-Carmany R>70)
Geotextile for separation and reinforcement

All Geosynthetics to extend a minimum of 4' beyond the limits of the slabs, pads and footings, unless shown otherwise on plans.

Geotextile Fabric for separation and minor reinforcement may be either woven with a minimum Grab Strength of 180 lb., in the weakest direction (such as Mirafi 500-X) or, if free water is encountered at the level the geotextile is to be placed, a non-woven/needle punched fabric with a minimum Grab Strength of 110 lbs., in the weakest direction (such as Mirafi 140-N).

Biaxial Geogrid for reinforcement shall have a minimum Tensile Strength @ 5% Strain of 550 lb/ft., in the weakest direction (such as Tensar BX 1100).

The Imported Structural Fill (Hveem-Carmany R>70, swell not critical) is to be Granular, Medium to Coarse Grained, Very low plastic (PI<4), Non Freedraining, Compactable and within the following Gradation:

Maximum size, by screening	6"
Passing the #4 screen	20% - 85%
Passing the #40 screen	10% - 60%
Passing the #200 screen	3% - 15%

Imported Structural Fill and Aggregate Base Course (ABC) to be compacted to 90% of its maximum Modified Proctor dry density (ASTM-D-1557) at a moisture content within ± 2% of optimum moisture. The use of light weight, tracked equipment will minimize subgrade degradation. Vibratory compaction

equipment is not recommended.

The finish 2" to 6" of the Structural Fill may be minus 3/4" Aggregate Base Course (ABC) to aid in obtaining the finish grading and an acceptable construction surface.

DEEP FOUNDATIONS:

Because of the possibility of relatively high foundations loads associated with these structures and the variable soil conditions under the site, we strongly recommend the use of a deep foundation system consisting of drilled piers in the area of shallow Mancos Shale and no ground water or driven piles in the areas of relatively high ground water levels, penetrating the Mancos Shale bedrock. Since the Southern portion of the site is generally dry and the overlying clayey soils are slightly to moderately stiff, problems with seepage and caving are not anticipated. Therefore, it is recommended that the use of drilled piers be considered for the Southern portion of this site.

The Northern portion of the site, adjacent to the Independent Ranchmen's Ditch, has in excess of 20' of low density, caving soils and a relatively high ground water table above the Mancos Shale Formation. It is recommended the use of driven piles be considered in this area. Driven piles could also be utilized in the Southern portion of the tract, for

which the drilled pier foundation system has been recommended. Following are complete recommendations for drilled piers for the Southern portion of the tract and driven piles for the Northern and possibly the entire tract.

DRILLED PIERS:

We recommend that drilled piers have a minimum shaft length of 7 feet and be embedded at least 7 feet into the relatively unweathered rock of the Mancos Shale Formation. At this level,these piers may be designed for a maximum end bearing capacity of 25000 psf, plus 1800 psf side support considering only the side wall area embedded in the bedrock. Due to the expansive potential of the bedrock, a minimum dead load uplift is required, consisting of a point uplift of 2600 psf and 375 psf side uplift, based on the side wall embedded in the bedrock. The overburden is soft and no supporting or uplift values are assigned to this material. The weight of the concrete in the pier may be incorporated into the required dead load.

It is recommended that the bottoms of all piers be thoroughly cleaned prior to the placement of concrete. The amount of reinforcing in each pier will depend on the magnitude and nature of loads involved. As a rule of thumb, reinforcing equal to approximately 1/2 of 1% of the gross cross-sectional concrete area should be used. Additional reinforcing should be used if structural conditions warrant. We recommend that reinforcing extend through the full length of pier.

To minimize the possibility of voids developing in the drilled piers, concrete with a slump of 5 to 6 inches is recommended. We recommend that piers be dewatered and thoroughly cleaned of all loose material prior to placing the steel cage and concrete. The pier excavation should contain no more than 2 inches of free water unless the concrete is placed by means of a tremie extending to the bottom of the pier. A free fall in excess of 5 feet is not recommended when placing concrete in drilled piers. We recommend that casing be pulled as the concrete is being placed and that a 5 foot head of concrete be maintained while pulling the casing. It is recommended that drilled piers be plumb with 2% of their length and that the shaft maintain a constant diameter for the full length of the pier and not allowed to "mushroom" at the top.

DRILLED PIER OBSERVATION:

The foundation installation for drilled piers should be continuously observed by a representative of Lincoln DeVore to determine that the recommended bearing material has been adequately penetrated and that soil conditions are as anticipated by the exploration. This observation will aid in attaining an adequate foundation system. In addition, abnormalities in the subsurface conditions encountered during foundation installation can be identified and corrective measures taken as required. Lincoln DeVore requires a minimum of one working day's notice, and a copy of the foundation plan, to schedule any field observation.

GRADE BEAMS:

A reinforced concrete grade beam is recommended to carry the exterior wall loads in conjunction with the deep foundation system. We recommend that this grade beam be designed to span from bearing point to bearing point and not be allowed to rest on the ground surface between these points. We recommend a void space be left between the bottom of the grade beam and the subgrade below due to the expansive nature of the subgrade soils.

DRIVEN PILES:

We recommend that driven piles bear in the competent materials of the underlying formation. We anticipate that pile driving refusal will be encountered within a few feet of penetration into the relatively unweathered Mancos Shale bedrock. Based on a static analysis, piles driven to refusal may be designed for an allowable tip bearing capacity of 70 to 100 tons. To determine the bearing area of the pile, the area including the space between the flanges may be included. For example, an HP-12 pile may be assumed to have an end area of approximately 1 square foot. A round, closed-end pipe pile bearing area would be the area of the pile end plate. Pile driving refusal should be determined by our representative in the field. Generally, pile driving refusal is taken as a maximum of 15 blows per inch. If pile groups are used, the overall capacity of the pile group should be reduced in accordance with the appropriate efficiency formula (such as the Converse-Labarre method). If

bearing capacities greater than those recommended above are necessary, we recommend that the pile bearing capacity be determined on the basis of static load tests.

It is anticipated that steel piling (either 'H' sections or concrete filled pipe) will be utilized in this construction. The following recommendations will assume the use of these materials. If wood or concrete piling are anticipated, recommendations can be readily provided.

Driving hammers should be of such size and type to consistently deliver effective dynamic energy suitable to the piles and materials into which they are to be driven. Hammers should operate at manufacturer's recommended speeds and pressures. We recommend that a pile driving hammer be used which is rated at least 19,000 feet pounds. However, driving energy should not be so large that pile damage occurs.

Piles must be used in groups to provide for eccentricities in loading. The group capacity will be less than the summation of the individual pile capacities, depending upon the relative spacing of the piles. A conservative estimate of group capacity is two-thirds of the summation of the individual pile capacities.

We recommend that minimum spacing of the piles be twice the average pile diameter or 1.75 times the diagonal dimension of the pile cross-section, but no less than 24 inches. It is recommended that the tops of the piles extend a minimum of 4 inches into the pile cap. Based on the exploration

borings no pile shorter than 24 feet is recommended unless proper pile capacity is verified by field inspection by the Geotechnical Engineer. Vertical piles should not vary more than 2% from the plumb position. We further recommend that eccentricity of reaction on a pile group with respect to the load resultant not exceed a dimension that would produce overloads of more than 10% in any one pile.

Since the underlying bedrock is moderately expansive, we recommend a minimum of permanent pressure be maintained on each pier. The minimum pressure should be designed based on a tip uplift pressure of 2600 psf. The area used to consider the uplift pressure should be width times the depth of the pile section used when considering H piles. Round pipe piles will require an end uplift pressure of 2600 psf and a side uplift of 650 psf for the portion of the side wall in contact with the expansive formation.

Based on our analyses, a standard 10-3/4inch diameter, 1/4 inch wall, pipe pile driven to refusal may be designed for an allowable capacity of 70 to 100 tons. On this site the capacity of the pile will probably govern allowable load. Pile driving refusal required to obtain the recommended capacity was taken as 6 blows per inch with a 19 foot kip hammer, utilizing the Jambu Pile Driving Equation. Driving hammers should be of such size and type to consistently deliver effective energy suitable to the piles and materials into which they are driven. Final pile driving refusal should be determined by

representatives of Lincoln DeVore in the field.

DRIVEN PILE OBSERVATION:

Continuous observation of the pile driving operations and a pile load test, if required, should be performed by Lincoln DeVore as a representative of the owner. A continuous log should be maintained on the number of blows per foot required to drive each pile. Driving should be completed without interruption (except for splicing) and without jetting or pre-drilling unless the geotechnical engineer has been contacted for further recommendations.

GRADE BEAMS:

A reinforced concrete grade beam is recommended to carry the exterior wall loads in conjunction with the deep foundation system. We recommend that this grade beam be designed to span from bearing point to bearing point and not be allowed to rest on the ground surface between these points in the portions of the tract where the Mancos Shale is within 4' of the bottom of the grade beam or pile cap. In the cases of shallow occurrences of Mancos Shale, we recommend a void space be left between the bottom of the grade beam and the subgrade below.

CONCRETE SLABS ON GRADE

Slabs could be placed directly on the natural soils or on a structural fill. We recommend that all slabs on grade be constructed to act independently of the other structural portions of the building. One method of allowing the slabs to float freely is to use expansion material at the slab-structure interface.

Any partitions which will be located on slabs on grade should be constructed with a minimum space of 1-1/2 inches at the bottom of the wall. This space should allow for any future potential upward movement of the floor slabs and minimize damage to the walls and roof sections above the slabs.

If the slab is to be placed directly on the expansive soils of the Mancos Shale Formation or on a thin fill (less than 3') overlying these soils, the risk of slab movement is high and stringent mitigation techniques are recommended. No design method known at this time will prevent slab movement should moisture enter the expansive soils below. Therefore, to mitigate the effects of slab movement should they occur, we recommend the following:

1. Control joints should be placed in such a manner that no floor area exceeding 400 square feet remains without a joint. Additional joints should be placed at columns and at inside corners. These control joints should minimize cracking associated with expansive soils by controlling location and direction of cracks.

2. We recommend that all slabs on grade be isolated from all structural members of the building. This is generally accomplished by an expansion joint at the floor slab / foundation interface. In addition, positive

separation should be maintained between the slab and all interior columns, pipes and mechanical systems extending through the slab.

3. The slab subgrade should be kept moist 3 to 4 days prior to placing the slab. This is done by periodically sprinkling the subgrade with water. However, under no circumstances should the subgrade be kept wet by the flooding or ponding water.

4. Any partitions which will rest on the slabs on grade should be constructed with a minimum void space of 1-1/2 inches at the bottom of the wall (see figure in the Appendix). This base should allow for future upward movement of the floor slabs and minimize movement and damage in walls and floors above the slabs. This void may require rebuilding after a period of time, should heave exceed 1-1/2 inches.

If a vapor barrier is desired beneath slabs, we recommend that it be overlain by at least 2 inches of sand to decrease the likelihood of curing problems. An alternate method of reducing finishing problems would be to place the vapor barrier beneath approximately 6 inches of a minus 3/4 inch gravel fill. This method must be very carefully accomplished to minimize excessive puncturing and tearing of the vapor barrier.

It is recommended that floor slabs on grade be constructed with control joints placed to divide the floor into sections not exceeding 360 to 400 square feet, maximum. Also, additional control joints are recommended at all inside corners and at all columns to control cracking in these areas.

Problems associated with slab 'curling' are usually minimized by proper curing of the placed concrete slab. This period of curing usually is most critical within the first 5 days after placement. Proper curing can be accomplished

by continuous water application to the concrete surface or, in some instances by the placement of a 'heavy' curing compound, formulated to minimize water evaporation from the concrete. Curing by continuous water application must be carefully undertaken to prevent the wetting or saturation of the subgrade soils.

EARTH RETAINING STRUCTURES

The active soil pressure for the design of earth retaining structures may be based on an equivalent fluid pressure of 50 pounds per cubic foot. The active pressure should be used for retaining structures which are free to move at the top (unrestrained walls). For earth retaining structures which are fixed at the top, such as basement walls, an equivalent fluid pressure of 65 pounds per cubic foot may be used. It should be noted that the above values should be modified to take into account any surcharge loads, sloping backfill or other externally applied forces. The above equivalent fluid pressures should also be modified for the effect of free water, if any.

The passive pressure for resistance to lateral movement may be considered to be 200 pcf per foot of depth. The coefficient of friction for concrete to soil may be assumed to be 0.24 for resistance to lateral movement. When combining frictional and passive resistance, the latter must be reduced by approximately 1/3.

The above recommendations assume that retaining walls are not bearing upon or retaining the Mancos Shale Formation. Retaining walls placed upon the Mancos Shale or retaining Mancos Shale must be specifically designed for the expansive characteristics of the shale. Recommendations for retaining walls founded upon or retaining expansive soils can be easily provided, if desired.

Drainage behind retaining walls is considered critical. If the backfill behind the wall is not well drained, hydrostatic pressures are allowed to build up and lateral earth pressures will be considerably increased. Therefore, we recommend a vertical drain be installed behind any impermeable retaining walls. Because of the difficulty in placement of a gravel drain, we recommend the use of a composite drainage mat similar to Exxon Battledrain or Tensar MD Series NS-1100. An outfall must be provided for this drain.

REACTIVE SOILS

Since groundwater in the Grand Junction area typically contains sulfates in quantities detrimental to a Type I cement, a Type II or Type I-II or Type II-V cement is recommended for all concrete which is in contact with the subsurface soils and bedrock. Calcium chloride should not be added to a Type II, Type I-II or Type II-V cement under any circumstances.

PAVEMENTS

Samples of the surficial 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(8) Unified Classification - CL
Soil Type #I

R =	13
Expansion @ 300 psi =	86.6 psf
Displacement @ 300 psi =	4.03

Displacement values higher than 4.00 generally indicate the soil is unstable and may require confinement for proper performance. The relatively high expansion value indicates that some minor swelling of the subgrade soils may be anticipated after construction. However, the swell value was not sufficiently high as to control the R Value.

Traffic Counts or volumes have not been provided to Lincoln DeVore. Information presently available to Lincoln DeVore indicates these streets will probably have a truck and passenger vehicle mix and volume which would allow a daily EAL of 5 for calculation of the pavement structure. It should be noted that if a higher EAL is determined through further traffic studies, the pavement sections recorded here may require minor modification.

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

Based upon the existing topography, the anticipated final road grades and subsurface soils conditions encountered during the drilling program, a Drainage Factor of 0.6 (1986 AASHTO procedure) and a mean average annual air temperature (MAAT) of 60° Fahrenheit (Asphalt Institute Method) has been utilized for the section analysis.

Calculated Pavement Sections

18K EAL = 5 Soil "R" Value = 13

	1986 AASHTO Drainage Coefficient = 0.6	Asphalt Institute MAAT = 60° F	
AC	3"	3"	AC
ABC	7"	6"	ABC
Subbase	0"	0"	Subbase
FULL DEPTH AC	4"	4"	

PROPOSED PAVEMENT SECTIONS

The use of full depth asphalt is generally not recommended on this site, unless significant subgrade preparation has been accomplished. In general, the Asphalt

Institute Method does not present a straight forward method of accounting for base course and subbase degradation by high ground water levels. Based on our experience in this area, it is recommended the sections obtained from the 1986 AASHTO Method be utilized for this project.

SUBGRADE IMPROVEMENT, MECHANICALLY STABILIZED FILL

Based on the soil support characteristics outlined above, We recommend the following Structural Fill Sections for areas of moderately to severely unstable subgrade (pumping), due to permanent or seasonally soil moisture. Subgrade soils are assumed to be either fine grained sand (SM), Silt (ML), or Silty Clay (ML-CL). These sections assume the Subgrade Soils have an R Value >10.

Residential Traffic, 18k EAL = 5:

3" asphaltic concrete
on 6" of aggregate base course
on Biaxial Geogrid or Geotextile for reinforcement
on 12-16" of subbase/structural fill
on Geotextile for separation and reinforcement

Full Depth Asphalt

	4"	asphaltic concrete
on	4"	of aggregate base course
on		Biaxial Geogrid or Geotextile for reinforcement
on	12"	of subbase/structural fill
on		Geotextile for separation and reinforcement

Rigid Concrete: "R" Value = 22 k = 90 psi
Undoweled, not tied to adjacent slabs/curbing

	6"	of portland cement pavement
on	4"	of aggregate base course
on		Biaxial Geogrid or Geotextile for reinforcement
on	12"	of subbase/structural fill
on		Geotextile for separation and reinforcement

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), placed beneath the Structural Section, may be required in many areas along these road alignments. The upper layer of Biaxial Geogrid or Geotextile for reinforcement, placed between the Aggregate Base Course and the subbase/structural fill, may not be required, depending on actual field conditions.

The additional materials and effort expended in subgrade stabilization is to provide a construction platform, so the actual Road Section can be placed and compacted. The specific areas which will require placement of either the Biaxial Geogrid or the Geotextile Fabric will depend on the actual conditions encountered during construction. The subgrade and road section construction should be monitored by representatives of the Geotechnical Engineer.

Recommended Geogrid, Geotextile and Imported Structural Fill may be found in the Subgrade Improvement, Reinforced Structural fill section of this report.

During the placement of any structural fill, it is recommended that a sufficient amount of field tests and observation be performed under the direction of the Geotechnical Engineer. The Geotechnical Engineer should determine the amount of observation time and field density tests required to determine substantial conformance with these recommendations.

Any areas of Fill or Subgrade instability encountered during construction are to be immediately brought to the attention of the Geotechnical Engineer, so recommendations for stabilization can be given.

The Subgrade Stabilization is normally considered effective if the imported structural fill materials are confined, if specified imported fill and specified asphalt densities are obtained and the final traffic surface is stable according to local practices. Some 'pumping and rolling' of the finish Base Course (ABC) surface is anticipated but, rutting should not occur.

SECTION CONSTRUCTION

We recommend that the asphaltic concrete pavement meet the State of Colorado DOT requirements for a Grade C or CX mix. If Laboratory Testing values are available, recycled asphalt may be factored and substituted for a portion of the new asphaltic concrete. In addition, the asphaltic concrete

pavement should be compacted to 92% minimum and 96% maximum of its maximum theoretical (Rice) density.

The aggregate base course should meet the requirements of State of Colorado DOT Class 5 or Class 6 material, and have a minimum R value of 78. We recommend that the base course 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.

LIMITATIONS

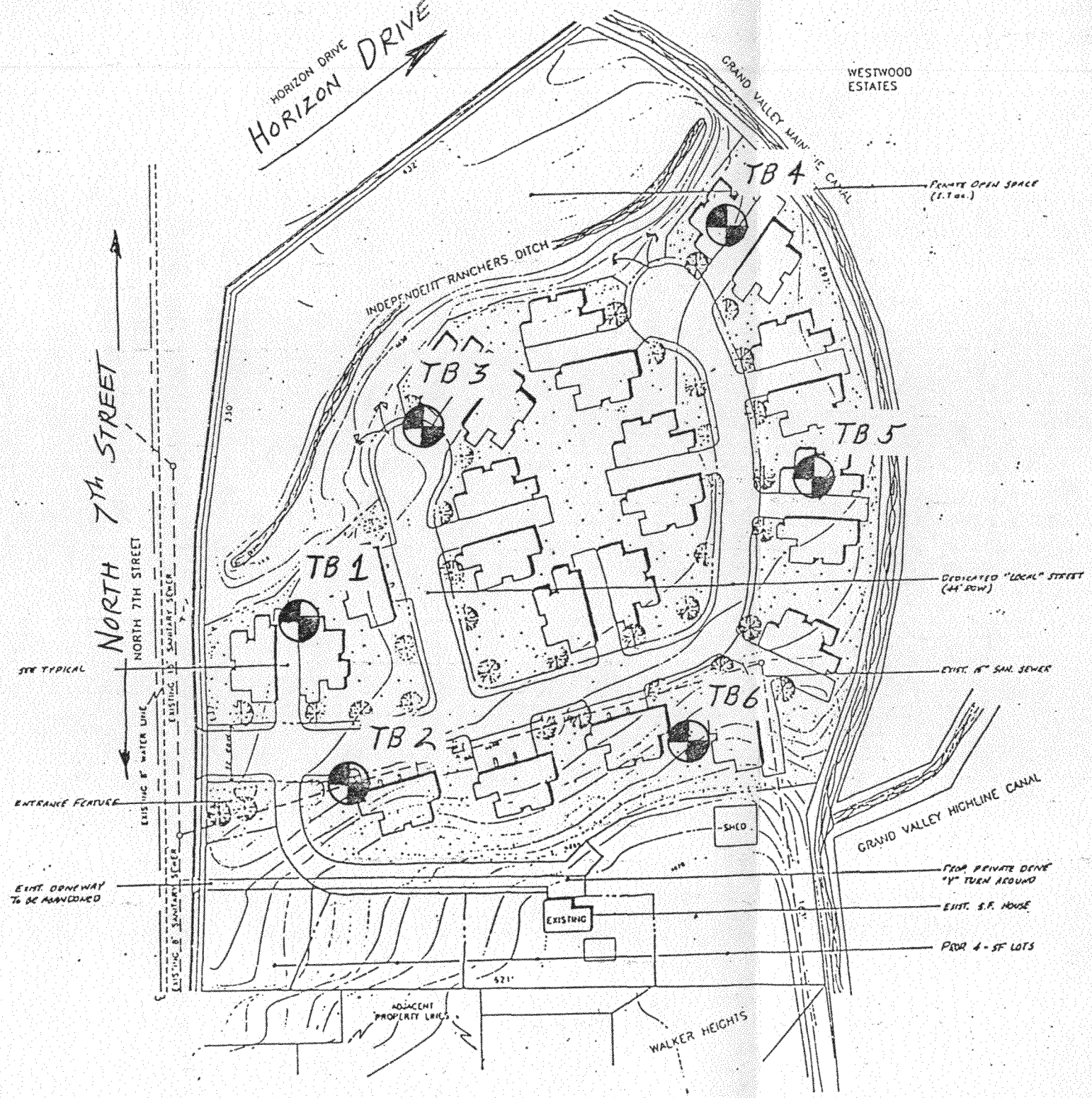
This report is issued with the understanding that it is the responsibility of the owner, or his representative to ensure that the information and recommendations contained herein are brought to the attention of the individual lot purchasers for the subdivision. In addition, it is the responsibility of the individual lot owners that the information and recommendations contained herein are brought to the attention of the architect and engineer for the individual projects and the necessary steps are taken to see that the contractor and his subcontractors carry out the appropriate recommendations during construction.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in acceptable or appropriate standards may occur or may result from legislation or the broadening of engineering knowledge. Accordingly, the findings of this report may be invalid, wholly or partially, by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of 3 years.

The recommendations of this report pertain only to the site investigated and are based on the assumption that the soil conditions do not deviate from those described in this report. If any variations or undesirable conditions are encountered during construction or the proposed

construction will differ from that planned on the day of this report, Lincoln DeVore should be notified so that supplemental recommendations can be provided, if appropriate.

Lincoln DeVore makes no warranty, either expressed or implied, as to the findings, recommendations, specifications or professional advice, except that they were prepared in accordance with generally accepted professional engineering practice in the field of geotechnical engineering.



EXPLORATION BORING

EXPLORATION BORING DIAGRAM

HORIZON VILLAGE SUBDIVISION

SE CORNER, HORIZON DR. & 7TH ST., GRD JCT, COLO.

LINCOLN DeVORE ENGINEERS · GEOLOGISTS	1441 MOTOR STREET GRAND JCT., COLORADO COLO. SPRINGS–PUEBLO	
	LD # 85329-J	SHEET OF
DRAWN BY: E. M. MORRIS	SCALE: NONE	DATE: 6-28-96

SOILS DESCRIPTIONS:

SYMBOL	USCS	DESCRIPTION
		Topsoil
		Man-made Fill
	GW	Well-graded Gravel
	GP	Poorly-graded Gravel
	GM	Silty Gravel
	GC	Clayey Gravel
	SW	Well-graded Sand
	SP	Poorly-graded Sand
	SM	Silty Sand
	SC	Clayey Sand
	ML	Low-plasticity Silt
	CL	Low-plasticity Clay
	OL	Low-plasticity Organic Silt and Clay
	MH	High-plasticity Silt
	CH	High-plasticity Clay
	OH	High-plasticity Organic Clay
	Pt	Peat
	GW/GM	Well-graded Gravel, Silty
	GW/GC	Well-graded Gravel, Clayey
	GP/GM	Poorly-graded Gravel, Silty
	GP/GC	Poorly-graded Gravel, Clayey
	GM/GC	Silty Gravel, Clayey
	GC/GM	Clayey Gravel, Silty
	SW/SM	Well-graded Sand, Silty
	SW/SC	Well-graded Sand, Clayey
	SP/SM	Poorly-graded Sand, Silty
	SP/SC	Poorly-graded Sand, Clayey
	SM/SC	Silty Sand, Clayey
	SC/SM	Clayey Sand, Silty
	CL/ML	Silty Clay

ROCK DESCRIPTIONS:

SYMBOL	DESCRIPTION
SEDIMENTARY ROCKS	
	CONGLOMERATE
	SANDSTONE
	SILTSTONE
	SHALE
	CLAYSTONE
	COAL
	LIMESTONE
	DOLOMITE
	MARLSTONE
	GYPSUM
	Other Sedimentary Rocks
IGNEOUS ROCKS	
	GRANITIC ROCKS
	DIORITIC ROCKS
	GABBRO
	RHYOLITE
	ANDESITE
	BASALT
	TUFF & ASH FLOWS
	BRECCIA & Other Volcanics
	Other Igneous Rocks
METAMORPHIC ROCKS	
	GNEISS
	SCHIST
	PHYLLITE
	SLATE
	METAQUARTZITE
	MARBLE
	HORNFELS
	SERPENTINE
	Other Metamorphic Rocks

SYMBOLS & NOTES:

SYMBOL	DESCRIPTION
	9/12 Standard penetration drive Numbers indicate 9 blows to drive the spoon 12" into ground.
	ST 2-1/2" Shelby thin wall sample
	W_o Natural Moisture Content
	W_x Weathered Material
Free water	Free water table
	γ^o Natural dry density
	T.B. – Disturbed Bulk Sample
	② Soil type related to samples in report
15' W_x Form.	Top of formation
	Test Boring Location
	Test Pit Location
	Seismic or Resistivity Station. Lineation indicates approx. length & orientation of spread (S = Seismic, R = Resistivity)

Standard Penetration Drives are made by driving a standard 1.4" split spoon sampler into the ground by dropping a 140 lb. weight 30". ASTM test des. D-1586.

Samples may be bulk, standard split spoon (both disturbed) or 2-1/2" I.D. thin wall ("undisturbed") Shelby tube samples. See log for type.

The boring logs show subsurface conditions at the dates and locations shown, and it is not warranted that they are representative of subsurface conditions at other locations and times.

LINCOLN DeVORE INC

COLORADO SPRINGS
PUEBLO – GRAND JUNCTION

EXPLANATION OF BOREHOLE LOGS AND LOCATION DIAGRAMS

BORING NO. 1

BORING ELEVATION:

DEPTH (FT.)	SOIL LOG	DESCRIPTION		BLOW COUNT /inch	SOIL DENSITY pcf	WATER %
		ORGANIC CLAYEY SILT				
		VERY LOW DENSITY DAMP				
		BROWN, SILTY, SANDY CLAY				
	CL	SANDY, SILTY CLAY SULFATES WET	ST		98.3	23.6%
5	I	COMPRESSIBLE LOW PLASTIC	5	01/06		
	ML-CL	SANDY, SILTY CLAY VERY SOFT TO DRILL	SPT	03/12		22.8%
	II	ALLUVIAL, DEBRIS FAN DEPOSIT		04/18		
		VERY COMPRESSIBLE SAND STRATA				
	ML-CL	SANDY, SILTY CLAY WET	ST		99.4	24.9%
10	II	SULFATES	10	01/12		
		HOLE IS SQUEEZING SHUT	SPT	02/18		25.3%
		FREE WATER VERY SOFT TO DRILL				
	ML	SANDY SILT	SPT	01/12		26.6%
15	III	VERY COMPRESSIBLE	15			
		ALLUVIAL, DEBRIS FAN DEPOSIT				
		VERY SANDY STRATA				
		SULFATES				
		VERY LOW DENSITY VERY SOFT TO DRILL				
20		VERY COMPRESSIBLE	20			
		GRAVELS OF SILTSTONE & SANDSTONE				
		MANCOS SHALE THICK SULFATE DEPOSITS				
		INCREASING DENSITY w/DEPTH				
	CL	SILTY CLAY EXPANSIVE	SPT	37/6		17.3%
25	IV	LOW to MEDIUM PLASTICITY	25	88/12		
				147/18		
		TD @ 25'				
30			30			

Blow Counts are cumulative for each 6 inches of sampler penetration.

Free Water @ 13-1/2'

During Drilling 6-10-96

LOG OF SUBSURFACE EXPLORATION

LINCOLN - DeVORE, Inc.

Geotechnical Consultants

Grand Junction, Colorado

HORIZON VILLAGE SUBDIVISION

SE Corner, HORIZON Drive & 7th Street

Mr. MAC CUNNINGHAM

GRAND JUNCTION, COLO.

Date **6-20-96**

Job No. **85529-J**

Drawn **EMM**

BORING NO. 2

BORING ELEVATION:

DEPTH (FT.)	SOIL LOG	DESCRIPTION			BLOW COUNT /inch	SOIL DENSITY pcf	WATER %
		ORGANIC, SANDY SILT	SOFT	WET			
		BROWN, ALLUVIAL, SILT & CLAY					
		DEBRIS FAN DEPOSIT	SULFATES	V. MOIST			
	CL	SANDY, SILTY CLAY		ST		104	19.0%
5	I	COMPRESSIBLE	SULFATES	5	02/06		
		VERY SOFT	WET	SPT	04/12		25.5%
					08/18		
		MANCOS SHALE	THICK SULFATE DEPOSITS				
	CL	SANDY, SILTY CLAY	MOIST	ST		108.2	16.6%
10	IV	EXPANSIVE	SULFATES	10	22/6		
		VERY FRACTURED	FIRM to VERY FIRM	SPT	41/12		15.8%
					66/18		
15		TD @ 10'		15			
20				20			
25				25			
30				30			

Blow Counts are cumulative for each 6 inches of sampler penetration.

NO Free Water During Drilling 6-10-96

LOG OF SUBSURFACE EXPLORATION

LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

HORIZON VILLAGE SUBDIVISION
SE Corner, HORIZON Drive & 7th Street
Mr. MAC CUNNINGHAM
GRAND JUNCTION, COLO.
Date 6-20-96

Job No. 85529-J
Drawn EMM

BORING NO. 3

BORING ELEVATION:

DEPTH (FT.)	SOIL LOG	DESCRIPTION				BLOW COUNT /inch	SOIL DENSITY pcf	WATER %
		ORGANIC CLAYEY SILT						
		VERY LOW DENSITY		DAMP				
		BROWN, SILTY, SANDY CLAY						
	CL	SANDY, SILTY CLAY	SULFATES	WET	ST		100.4	15.7%
5	I	COMPRESSIBLE	LOW PLASTIC		5	01/06		
	ML-CL	SANDY, SILTY CLAY	VERY SOFT TO DRILL		SPT	03/12		21.2%
	II	ALLUVIAL, DEBRIS FAN DEPOSIT				04/18		
		VERY COMPRESSIBLE	SAND STRATA					
	CL	SANDY, SILTY CLAY		WET	ST		101.4	22.9%
10	I	COMPRESSIBLE	SULFATES		10			
		VERY SOFT TO DRILL						
	ML-CL	SANDY, SILTY CLAY			SPT	01/18		25.4%
15	II	ALLUVIAL, DEBRIS FAN DEPOSIT			15			
		HOLE IS SQUEEZING SHUT	VERY SANDY STRATA					
		FREE WATER						
		VERY LOW DENSITY	VERY SOFT TO DRILL					
		HIGHER DENSITY, VERY SANDY STRATA						
20		**MANCOS SHALE**	THICK SULFATE DEPOSITS		20			
		INCREASING DENSITY w/DEPTH						
		VERY FRACTURED						
	CL	SILTY CLAY	EXPANSIVE		SPT	22/6		18.4%
25	IV	LOW to MEDIUM PLASTICITY			25	74/12		
						148/18		
		TD @ 25'						
30					30			

Blow Counts are cumulative for each 6 inches of sampler penetration.

Free Water @ 16'

During Drilling 6-18-96

LOG OF SUBSURFACE EXPLORATION

LINCOLN - DeVORE, Inc.

Geotechnical Consultants

Grand Junction, Colorado

HORIZON VILLAGE SUBDIVISION

SE Corner, HORIZON Drive & 7th Street

Mr. MAC CUNNINGHAM

GRAND JUNCTION, COLO.

Date **6-20-96**

Job No. **85529-J**

Drawn **EMM**

BORING NO. 4

BORING ELEVATION:

DEPTH (FT.)	SOIL LOG	DESCRIPTION			BLOW COUNT /inch	SOIL DENSITY pcf	WATER %
		CL I SANDY, SILTY CLAY COMPRESSIBLE	SULFATES	MOIST			
		ML III SANDY SILT LOW to MEDIUM DENSITY COMPRESSIBLE STRATA			ST 5	01/06	116.4	14.3%
5		ALLUVIAL, DEBRIS FAN DEPOSIT SOFT TO DRILL		WET	SPT	03/12 07/18		20.6%
		CL I SANDY, SILTY CLAY COMPRESSIBLE LOW PLASTIC	SULFATES	WET	ST 10		101.6	23.8%
10		STRATIFIED CLAYEY SILT & SILTY SAND						
		ML-CL II SANDY, SILTY CLAY ALLUVIAL, DEBRIS FAN DEPOSIT		WET	SPT 15	01/18		26.4%
15		FREE WATER ▽ HOLE IS SQUEEZING SHUT						
		MANCOS SHALE INCREASING DENSITY w/DEPTH	THICK SULFATE DEPOSITS	V. MOIST	SPT	21/6		15.3%
20		CL IV SILTY CLAY LOW to MEDIUM PLASTICITY	LOW EXPANSIVE	SI. MOIST	20	73/12 144/18		
		TD @ 20'						
25					25			
30					30			

Blow Counts are cumulative for each 6 inches of sampler penetration.

Free Water @ 16'

During Drilling 6-18-96

LOG OF SUBSURFACE EXPLORATION

LINCOLN - DeVORE, Inc.

Geotechnical Consultants

Grand Junction, Colorado

HORIZON VILLAGE SUBDIVISION

SE Corner, HORIZON Drive & 7th Street

Mr. MAC CUNNINGHAM

GRAND JUNCTION, COLO.

Date **6-20-96**

Job No. **85529-J**

Drawn **EMM**

BORING NO. 5

BORING ELEVATION:

DEPTH (FT.)	SOIL LOG	DESCRIPTION		BLOW COUNT /inch	SOIL DENSITY pcf	WATER %
		ORGANIC, SILTY CLAY SOFT WET				
		BROWN, VERY SANDY, ALLUVIAL, SILT & CLAY				
		DEBRIS FAN DEPOSIT SULFATES				
	CL	SANDY, SILTY CLAY SOFT SATURATED	ST		94.3	27.8%
5	I	COMPRESSIBLE SULFATES STRATIFIED	5			
		VERY SOFT SATURATED				
		VERY CLAYEY STRATA				
		MANCOS SHALE THICK SULFATE DEPOSITS				
	CL	EXPANSIVE, SANDY, SILTY CLAY SI. MOIST	SPT	21/6		13.4%
10	IV	SULFATES	10	43/12		
		VERY FRACTURED FIRM to VERY FIRM		69/18		
15		TD @ 10'	15			
20			20			
25			25			
30			30			

Blow Counts are cumulative for each 6 inches of sampler penetration.

NO Free Water During Drilling 6-18-96

LOG OF SUBSURFACE EXPLORATION

LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

HORIZON VILLAGE SUBDIVISION
SE Corner, HORIZON Drive & 7th Street
Mr. MAC CUNNINGHAM
GRAND JUNCTION, COLO.

Job No.	Drawn	Date
85529-J	EMM	6-20-96

BORING NO. 6

BORING ELEVATION:

DEPTH (FT.)	SOIL LOG	DESCRIPTION		BLOW COUNT /inch	SOIL DENSITY pcf	WATER %
		CL SANDY, SILTY CLAY, ORGANIC				
		I COMPRESSIBLE SULFATES				
		VERY CLAYEY STRATA				
		MANCOS SHALE THICK SULFATE DEPOSITS	SPT	13/6		11.5%
5		CL EXPANSIVE, SILTY CLAY SI. MOIST	5	36/12		
		IV SULFATES		62/18		
		VERY FRACTURED FIRM to VERY FIRM				
		CL EXPANSIVE, SILTY CLAY	SPT	45/6		9.8%
10		IV INCREASING DENSITY w/DEPTH	10	109/12		
				164/18		
		TD @ 10'				
15			15			
20			20			
25			25			
30			30			

Blow Counts are cumulative for each 6 inches of sampler penetration.

NO Free Water During Drilling 6-18-96

LOG OF SUBSURFACE EXPLORATION

HORIZON VILLAGE SUBDIVISION
SE Corner, HORIZON Drive & 7th Street
Mr. MAC CUNNINGHAM
GRAND JUNCTION, COLO.
Date **6-20-96**

LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

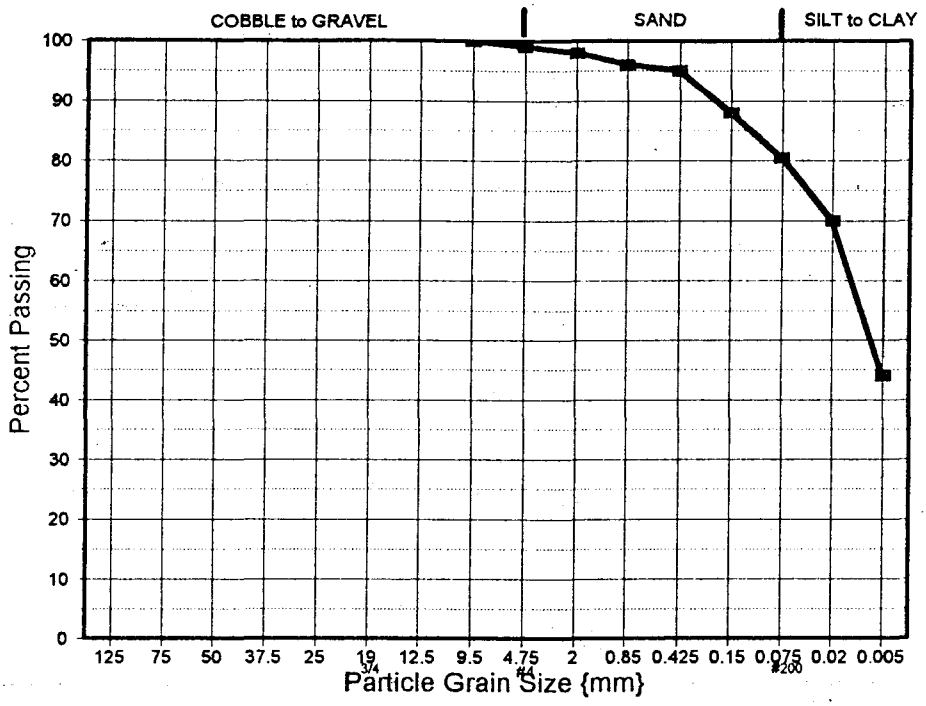
Job No. **85529-J**
Drawn **EMM**

Soil Sample: ALLUVIAL, SANDY, SILTY CLAY (CL) Sample No: I (Typical) 4

Job Location: Test by: LRS

Natural Water Content (w 19.0% Boring No.: 2 Depth: 3'

Soil Specific Gravity (Gs): In-Place Density (pcf): 104



Effective size mm

Cu

Cc

Plastic Limit (PL) 19%

Liquid Limit (LL) 27%

Plasticity Index (PI) 8%

Shrinkage Limit (SL)

Shrinkage Ratio

DIRECT SHEAR:

Shear Angle: deg.

Tan Shear Angle:

Cohesion: psf

Sieve	(mm)	% Passing
5"	125	
3"	75	
2'	50	
1-1/2"	37.5	
1"	25	
3/4"	19	
1/2"	12.5	
3/8"	9.5	100
# 4	4.75	99
#10	2	98
#20	0.85	96
#40	0.425	95
#100	0.15	88
#200	0.075	80.4
	0.02	70
	0.005	44

MOISTURE/DENSITY RELATIONSHIP:

ASTM Method:

Max. Dry Density : pcf

Optimum Moisture :

HVEEM-CARMANY:

'R' Value @ 300 psi: 13

Displacement 300 psi: 4.03

Expansion @ 300 psi: 86.6

FHA Soil Swell:

% Swell

psf

ALLOWABLE BEARING (net):

Standard Penetration (SPT): 750 psf

Unconfined Compression (qu): psf

CONSOLIDATION: 2.37% @ 901 psf

3.94% @ 2007 psf

SULFATE SALTS: ppm

PERMEABILITY:

K (20 C): Void Ratio:

SOIL ANALYSIS and SUMMARY

LINCOLN - DeVORE, Inc.

Geotechnical Consultants

Grand Junction, Colorado

HORIZON VILLAGE SUBDIVISION

SE Corner, HORIZON Drive & 7th Street

Mr. MAC CUNNINGHAM

GRAND JUNCTION, COLO.

Date 6-20-96

Job No. 85529-J

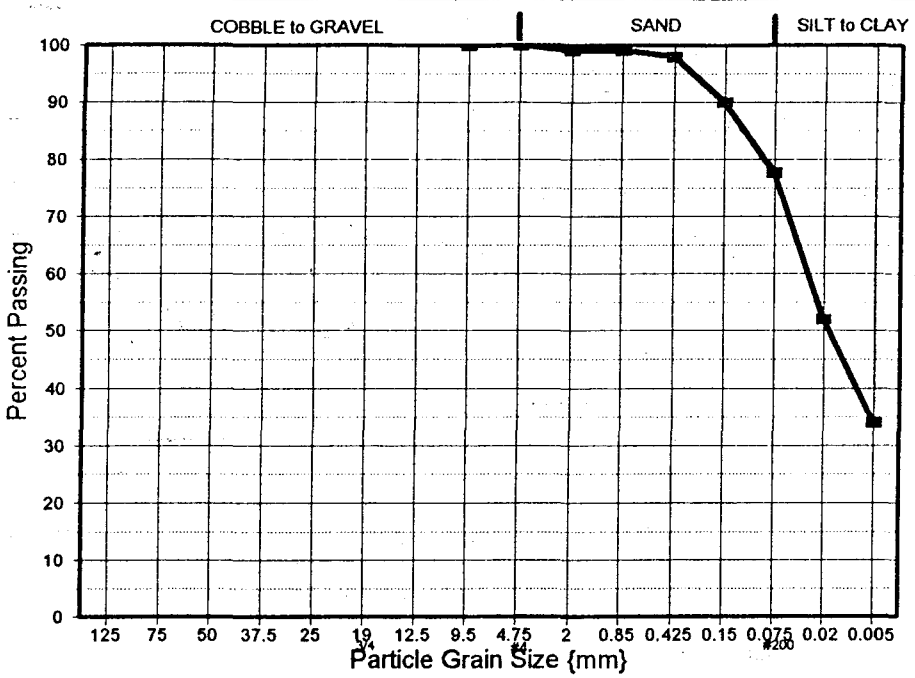
Drawn EMM

Soil Sample: ALLUVIAL, SANDY, SILTY CLAY (ML-CL) Sample No: II (Typical)

Job Location: Test by: LRS

Natural Water Content (w 24.9% Boring No.: 1 Depth: 8'

Soil Specific Gravity (Gs): In-Place Density (pcf): 99.4



Effective size mm

Cu

Cc

Plastic Limit (PL) 16%

Liquid Limit (LL) 20%

Plasticity Index (PI) 4%

Shrinkage Limit (SL)

Shrinkage Ratio

DIRECT SHEAR:

Shear Angle: deg.

Tan Shear Angle:

Cohesion: psf

Sieve	(mm)	% Passing
5"	125	
3"	75	
2'	50	
1-1/2"	37.5	
1"	25	
3/4"	19	
1/2"	12.5	
3/8"	9.5	100
# 4	4.75	100
#10	2	99
#20	0.85	99
#40	0.425	98
#100	0.15	90
#200	0.075	77.7
	0.02	52
	0.005	34

MOISTURE/DENSITY RELATIONSHIP:

ASTM Method:

Max. Dry Density : pcf

Optimum Moisture :

HVEEM-CARMANY:

'R' Value @ 300 psi:

Displacement 300 psi:

Expansion @ 300 psi:

FHA Soil Swell:

% Swell

psf

ALLOWABLE BEARING (net):

Standard Penetration (SPT): 700 psf

Unconfined Compression (qu): psf

CONSOLIDATION: 3.07% @ 936 psf

4.61% @ 2056 psf

SULFATE SALTS: 50 ppm

PERMEABILITY:

K (20 C): Void Ratio:

SOIL ANALYSIS and SUMMARY

LINCOLN - DeVORE, Inc.

Geotechnical Consultants

Grand Junction, Colorado

HORIZON VILLAGE SUBDIVISION

SE Corner, HORIZON Drive & 7th Street

Mr. MAC CUNNINGHAM Date

GRAND JUNCTION, COLO. 6-20-96

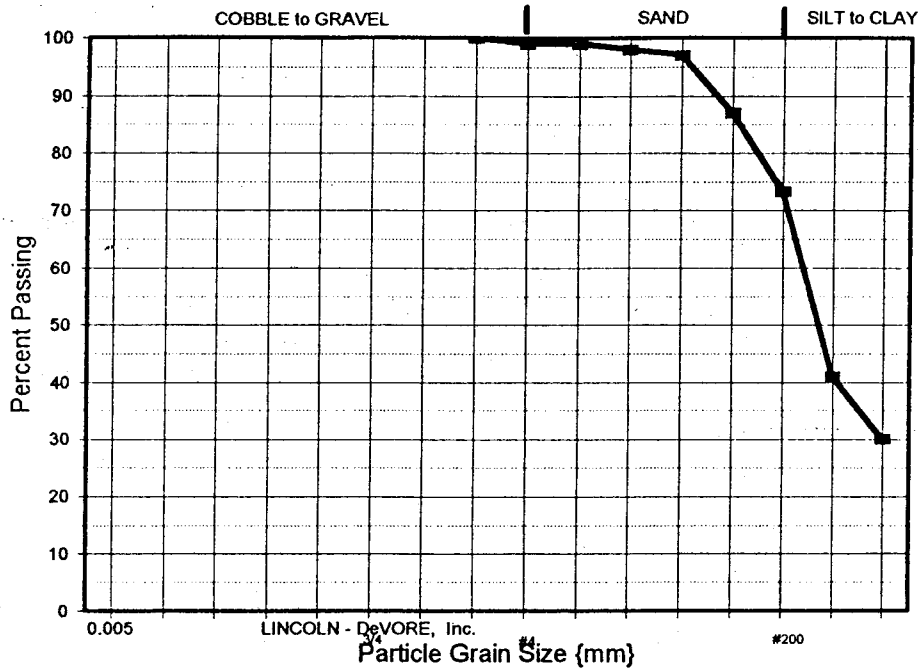
Job No. **85529-J** Drawn **EMM**

Soil Sample: ALLUVIAL, SANDY SILT (ML) Sample No.: III (Typical) 7

Job Location: Test by: LRS

Natural Water Content (w 26.6% Boring No.: 1 Depth: 13'

Soil Specific Gravity (Gs): In-Place Density (pcf):



Effective size mm

Cu

Cc

Plastic Limit (PL) 17%

Liquid Limit (LL) 20%

Plasticity Index (PI) 3%

Shrinkage Limit (SL)

Shrinkage Ratio

DIRECT SHEAR:

Shear Angle: deg.

Tan Shear Angle:

Cohesion: psf

Sieve	(mm)	% Passing
5"	125	
3"	75	
2'	50	
1-1/2"	37.5	
1"	25	
3/4"	19	
1/2"	12.5	
3/8"	9.5	100
# 4	4.75	99
#10	2	99
#20	0.85	98
#40	0.425	97
#100	0.15	87
#200	0.075	73.3
	0.02	41
	0.005	30

MOISTURE/DENSITY RELATIONSHIP:

ASTM Method:

Max. Dry Density : pcf

Optimum Moisture :

HVEEM-CARMANY:

'R' Value @ 300 psi:

Displacement 300 psi:

Expansion @ 300 psi:

FHA Soil Swell:

% Swell

psf

ALLOWABLE BEARING (net):

Standard Penetration (SPT): 750 psf

Unconfined Compression (qu): psf

CONSOLIDATION: @ psf

@ psf

SULFATE SALTS: 1000 ppm

PERMEABILITY:

K (20 C): Void Ratio:

SOIL ANALYSIS and SUMMARY

LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

HORIZON VILLAGE SUBDIVISION
SE Corner, HORIZON Drive & 7th Street

Mr. MAC CUNNINGHAM Date

GRAND JUNCTION, COLO. 6-20-96

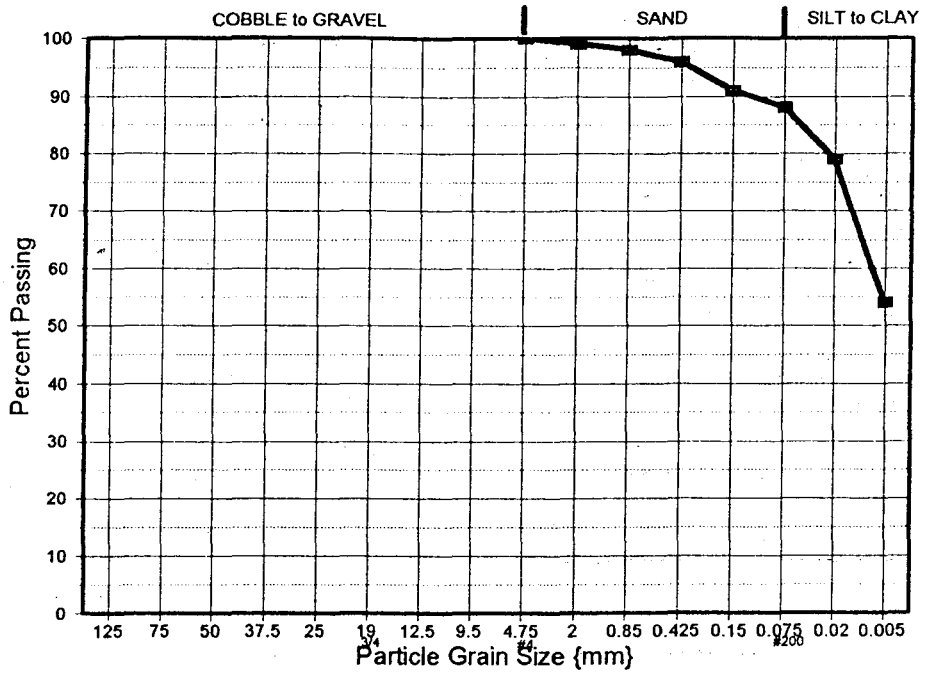
Job No. **85529-J** Drawn **EMM**

Soil Sample: MANCOS SHALE - SILTY CLAY (CL) Sample No: IV (Typical)

Job Location: Test by: LRS

Natural Water Content (w 16.6% Boring No.: 2 Depth: 9'

Soil Specific Gravity (Gs): In-Place Density (pcf): 108.2 Increasing w/Depth



Effective size mm

Cu

Cc

Plastic Limit (PL) 27%

Liquid Limit (LL) 42%

Plasticity Index (PI) 15%

Shrinkage Limit (SL)

Shrinkage Ratio

DIRECT SHEAR:

Shear Angle: deg.

Tan Shear Angle:

Cohesion: psf

Sieve	(mm)	% Passing
5"	125	
3"	75	
2'	50	
1-1/2"	37.5	
1"	25	
3/4"	19	
1/2"	12.5	
3/8"	9.5	
# 4	4.75	100
#10	2	99
#20	0.85	98
#40	0.425	96
#100	0.15	91
#200	0.075	88.1
	0.02	79
	0.005	54

MOISTURE/DENSITY RELATIONSHIP:

ASTM Method:

Max. Dry Density : pcf

Optimum Moisture :

HVEEM-CARMANY:

'R' Value @ 300 psi:

Displacement 300 psi:

Expansion @ 300 psi:

FHA Soil Swell:

7.6 % Swell

2333 psf

Sample @ TB 6 @ 4'

ALLOWABLE BEARING (net):

Standard Penetration (SPT): 10000+ psf

Unconfined Compression (qu): psf

CONSOLIDATION: @ psf

@ psf

SULFATE SALTS: 2000+ ppm

PERMEABILITY:

K (20 C): Void Ratio:

SOIL ANALYSIS and SUMMARY

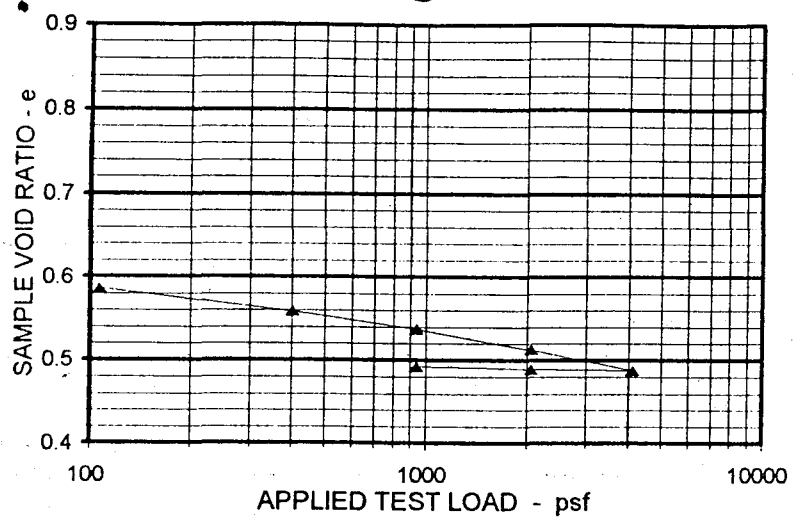
HORIZON VILLAGE SUBDIVISION
SE Corner, HORIZON Drive & 7th Street

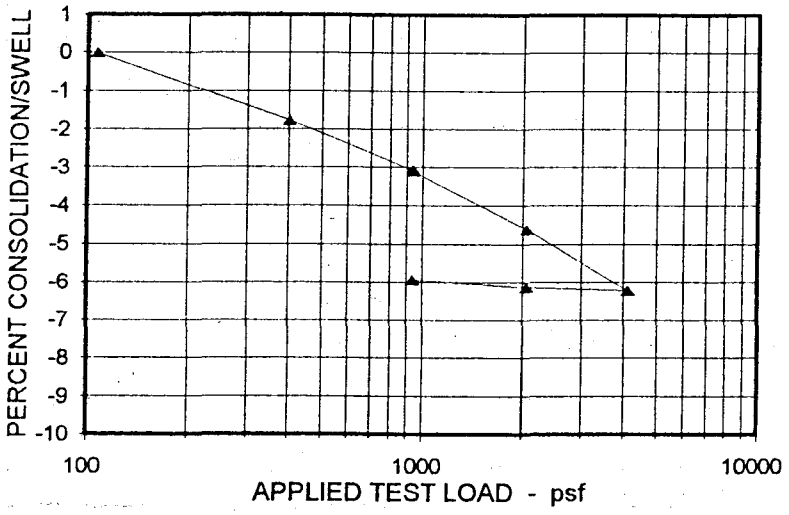
Mr. MAC CUNNINGHAM Date

GRAND JUNCTION, COLO. 6-20-96

Job No. 85529-J | Drawn EMM

LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado





The Consolidation Test (ASTM D-2435) Was Run By First Subjecting The Soil Specimen To A 'Seating' Load.

The 'Seating' Load Is To Remove Slack From The Apparatus And To Provide An Accurate Point of Beginning.

The Test Begins With The Specimen At Approximately Natural Moisture Content.

The Sample is Loaded to Approximately 900 psf And Then Saturated With Water.

Any Swell Or Collapse Of The Specimen Is Noted And The Loading Is Continued.

After The Maximum Test Load, The Soil Specimen Is Unload, To Measure Rebound And Swelling Potential, After Consolidation.

LOAD SUMMARY

106	*psf SEATING LOAD*
936	*psf SAMPLE SATURATED*
0.03	*% SOIL COLLAPSE*
0	*% SOIL EXPANSION/SWELL*
0.29	*% SAMPLE REBOUND @ UNLOAD*
6.21	*% MAXIMUM CONSOLIDATION*
4116	*psf MAXIMUM TEST LOAD*

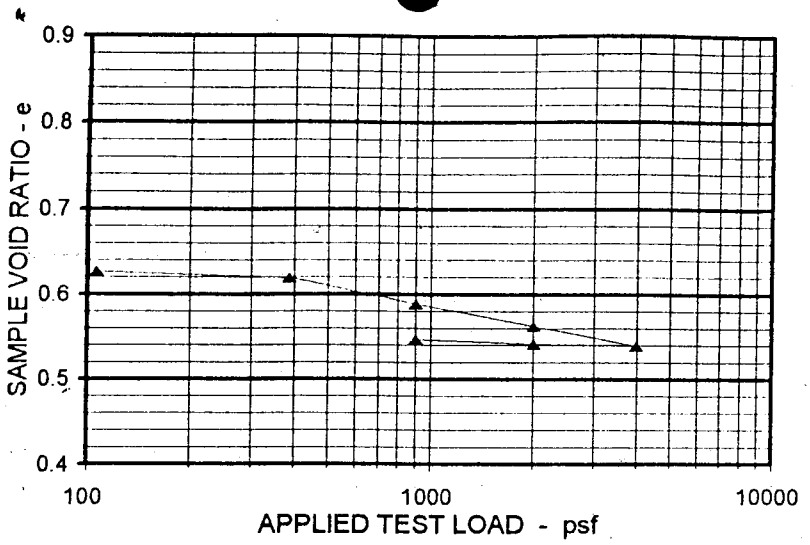
	INITIAL	MAXIMUM LOAD	FINAL LOAD
SOIL DENSITY (pcf)	104.6	111.5	111.2
SOIL MOISTURE (%)	22.7%	18.3%	18.6%
CONSOLIDATION (%)	-0-	6.21%	5.92%
VOID RATIO (e)	0.587	0.488	0.493
SATURATION (%)	103%	100%	100%

SOIL #:	II
SOIL TYPE:	ML-CL
TEST HOLE #:	1 @ 8'
SAMPLE Gs:	2.66
DIAMETER:	2.5"
AREA inchs:	.03409

SOIL CONSOLIDATION ASTM D-2435

LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

HORIZON VILLAGE SUBDIVISION
SE Corner, HORIZON Drive & 7th Street
Mr. MAC CUNNINGHAM
GRAND JUNCTION, COLO.
Date **6-20-96**
Job No. **85529-J**
Drawn **EMM**



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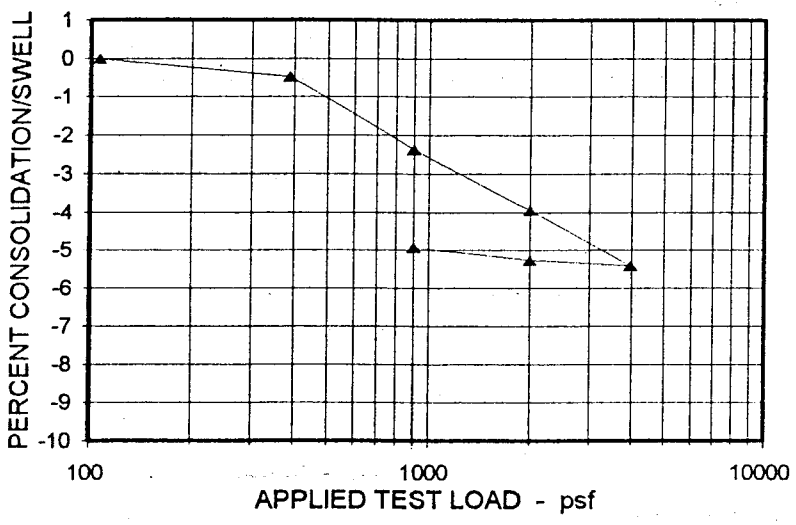
The 'Seating' Load Is To Remove Slack From The Apparatus And To Provide An Accurate Point of Beginning.

The Test Begins With The Specimen At Approximately Natural Moisture Content.

The Sample is Loaded to Approximately 900 psf And Then Saturated With Water.

Any Swell Or Collapse Of The Specimen Is Noted And The Loading Is Continued.

After The Maximum Test Load, The Soil Specimen Is Unload, To Measure Rebound And Swelling Potential, After Consolidation.



LOAD SUMMARY

106	*psf SEATING LOAD*
901	*psf SAMPLE SATURATED*
0	*% SOIL COLLAPSE*
0	*% SOIL EXPANSION/SWELL*
0.47	*% SAMPLE REBOUND @ UNLOAD*
5.4	*% MAXIMUM CONSOLIDATION*
3990	*psf MAXIMUM TEST LOAD*

	INITIAL	MAXIMUM LOAD	FINAL LOAD
SOIL DENSITY (pcf)	102.0	107.8	107.3
SOIL MOISTURE (%)	20.0%	20.3%	20.5%
CONSOLIDATION (%)	-0-	5.40%	4.93%
VOID RATIO (e)	0.627	0.539	0.547
SATURATION (%)	85%	100%	100%

SOIL #:	I
SOIL TYPE:	CL
TEST HOLE #:	2 @ 3'
SAMPLE Gs:	2.66
DIAMETER:	2.5"
AREA inchs:	.03409

SOIL CONSOLIDATION ASTM D-2435

LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

HORIZON VILLAGE SUBDIVISION
SE Corner, HORIZON Drive & 7th Street
Mr. MAC CUNNINGHAM | Date
GRAND JUNCTION, COLO. | **6-20-96**
Job No. **85529-J** | Drawn **EMM**

RESUBMITTED STUDY (2nd Rev.)

LANDesign

ENGINEERING • SURVEYING • PLANNING

PRELIMINARY TRAFFIC STUDY

FOR

HORIZON VILLAGE

Prepared for:

CUNNINGHAM INVESTMENT CO., INC.
121 South Galena Street, Suite 201
Aspen, CO 81611
(970) 925-8803

Prepared by:

LANDesign, LLC
PLANNING ENGINEERING SURVEYING
256 Grand Avenue
Grand Junction, CO 81501
(970) 245-4099

July 1, 1996
Revised August 13, 1996

Job No. 96045

LSC, INC.
LOUGH, SCOTT & CLEARY, INC.
TRANSPORTATION PLANNING
& TRAFFIC ENGINEERING CONSULTANTS

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

August 16, 1996

Mr. Phil Hart
LANDesign
P.O. Box 4506
Grand Junction, CO 81502

Re: Horizon Village
(LSC #AAA962)

Dear Phil:

At your request, we have reviewed the preliminary traffic analysis for the Horizon Village development and have the following comments:

1. Year 2010 Traffic Volumes: It is unclear how you calculated Year 2010 traffic volumes. You should indicate that background Year 2010 traffic volumes were calculated by increasing existing traffic volumes by 2.2 percent per year. Total Year 2010 traffic volumes are the sum of background 2010 traffic volumes and site-generated traffic volumes.

2. Capacity Analyses: Lane geometry used on the capacity analysis for the 7th/Horizon Drive intersection differs for the 1996 analysis from the 1996 with proposed development analysis for the westbound lanes. The former shows one left-turn lane plus a shared through lane while the latter shows two left-turn lanes plus a shared through lane. We would recommend that both analyses have one left-turn lane plus a shared through lane. We would also recommend using the traffic volumes for 1996 of 346 for the westbound left-turn lane and 93 for the shared through lane and a similar breakdown for the 1996 with the proposed development analysis. The program will prompt you for the breakdown of left/through movements and you can enter 90/10.

3. Gap Analysis: We recommend modification of the gap analysis as follows:

> "A total of 57 available gaps for left-turn movements out of the development had been counted for a 15-minute period during the PM peak-hour. Typically, gaps of about six to nine seconds are needed to allow the critical entry of a vehicle into the traffic stream of a major street; gaps of nine to thirteen seconds will allow two vehicles to enter; and gaps of 13 or more seconds will allow entry of three vehicles. During the 15-minute period studied, there were thus a total of 111 effective gaps or 444 extrapolated to one hour. The volume of traffic projected to turn left at peak-hour is 13. If the volume of traffic projected to enter from the cross street is

less than ½ of the number of gaps available, then no additional traffic control is necessary. Consequently, sufficient gaps exist and additional signal analysis will not be required."

We trust that these comments will assist you in finalizing your traffic analysis of the Horizon Village development. Please call if you have any questions.

LEIGH, SCOTT & CLEARY, INC.

By: Alex J. Armiello
Alex J. Armiello, P.E.

AJA/wd

C:\PROJECTS\AAA-96\HORIZON.REP

TRAFFIC STUDY

FOR

HORIZON VILLAGE

August, 1996

Prepared by:

Jeffory P. Crane

I certify that this study has been prepared by me or under my direct supervision.

Philip M. Hart, P.E.
State of Colorado, No. 19346

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F. CONCLUSIONS and RECOMMENDATIONS

G. APPENDIX

LOCATION MAP

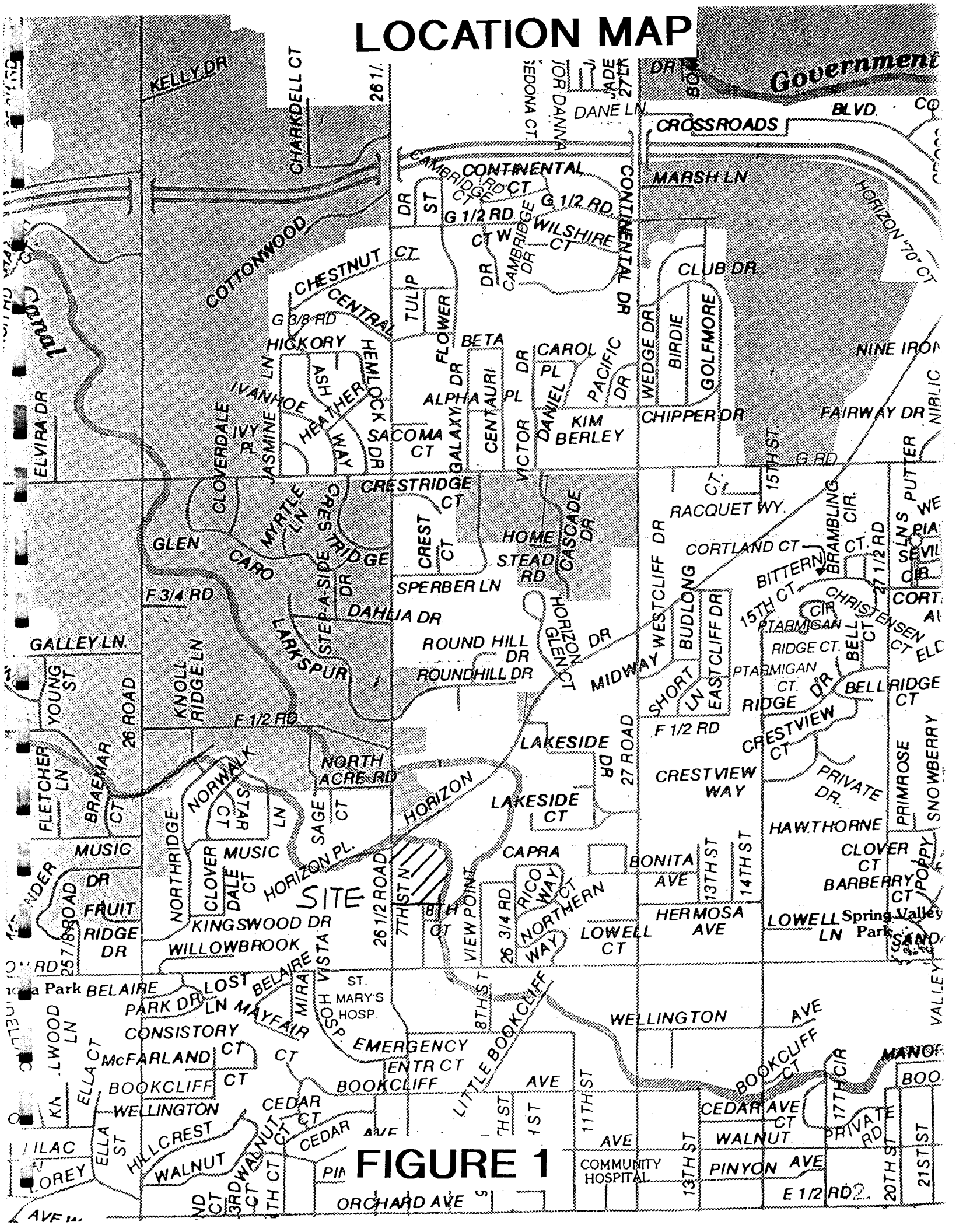


FIGURE 1

A. INTRODUCTION

1. Purpose of Report

This report considers the concepts for access and the impacts of this proposed development on the current street transportation system in the general vicinity of the development and determines what improvements should be recommended to compensate for the additional traffic generated by this proposed development. Furthermore, this report may be used to assist City of Grand Junction Planners in determining future improvements of the transportation system in the area due to anticipated growth patterns.

Conditions or combinations of events other than those stated have not been analyzed and are not the responsibility of *LANDesign* or the engineer. Maintenance and construction of facilities are the responsibility of others.

2. Location & Land Use

The subject property is located within the SW 1/4 of Section 4, Township 1 South, Range 1 West, of the Ute Principal Meridian and contains 9.2 +/- acres. More specifically the site is located on the SE corner of North 7th Street and Horizon Drive. The tax ID number is 2945-024-00-048. See Figure 1 for the Location Map.

The property is presently a vacant parcel of land used primarily for grazing and hay production. The site is irrigated from the Grand Valley Mainline Canal which forms the east property line. The Independant Ranchman's Ditch traverses the northern portion of the site from east to west and discharges under North 7th Street just north of the existing access to the site.

The property immediately surrounding the proposed development consists primarily of moderate density residential communities. The Mesa View Retirement development is located on the SW corner of 7th and Horizon. Single family residences immediately surround the site while St. Mary's Hospital, professional medical offices and retail facilities exist in the vicinity of 7th and Patterson, 1/4 mile to the south.

The site is currently zoned PUD 6.2 by the City of Grand Junction. The proposed development will consist of 68 condominium units in 17 buildings located south of the Independant Ranchman's Ditch which will serve as a buffer between Horizon Drive and the development.

Proposed capital improvement projects in the vicinity include the reconstruction and widening of Horizon Drive from 7th Street to 12th Street to 5 lanes in the year 2001.

3. Access

Access to the development will be attained from 7th Street, a minor arterial, through a proposed 52' right-of-way extending 220' from 7th Street. The proposed urban residential collector road, Horizon Village Ct., will taper down to an urban residential road with a 44' right-of-way. The access to the development will be located approximately 380' south from the intersection of 7th and Horizon. The sight distance from the centerline of Horizon Village Ct. looking south on 7th Street is 520'. The design speed of 7th Street is 35 mph.. See Figure 6.

B. TRIP GENERATION & DESIGN HOUR VOLUMES

1. Trip Generation

CONDOMINIUM DEVELOPMENT - The condominium development proposed calls for 68 units. The ITE manual specifies an average rate of between 5.86 vehicle trip ends per dwelling unit per day for condominiums, however, the City Development Engineer has indicated a preference to use the rate for single family developments.

68 Condominium Dwelling Units
Average Trip Ends vs. Single-Family Dwelling Units

Time Unit	Directional Distribution		Average Rate	Trip Ends
	in	out		
weekday ADT	50%	50%	9.55	325 in 325 out
weekday AM peak	26%	74%	0.74	13 in 37 out
weekday PM peak	64%	36%	1.01	44 in 25 out

2. Design Hour Volumes

Design hour volumes have been determined from traffic counts performed by *LANDesign* between June 6th and the 20th, 1996. This study will use the weekday peak hour volumes for analysis and design. Peak hours vary for different legs of the intersection. The northbound leg peaked between 5 and 6 PM at 7.8% of the ADT. The westbound leg of the intersection peaked between 12 and 1 PM at 8.6% of the ADT. The southbound leg peaked in the morning between 8 and 9 at 12.8% of the ADT and the eastbound leg peaked between 3 & 4 PM at 11.3% of the ADT. The northbound leg of the intersection will be the most affected leg due to the proposed development and therefore this study will assume a peak hour between 5 and 6 PM but will utilize the highest peak hour volumes at each leg for analysis of the intersection. See Figure 2 for the background peak hour volumes for each movement.

Single-Family Detached Housing
(210)

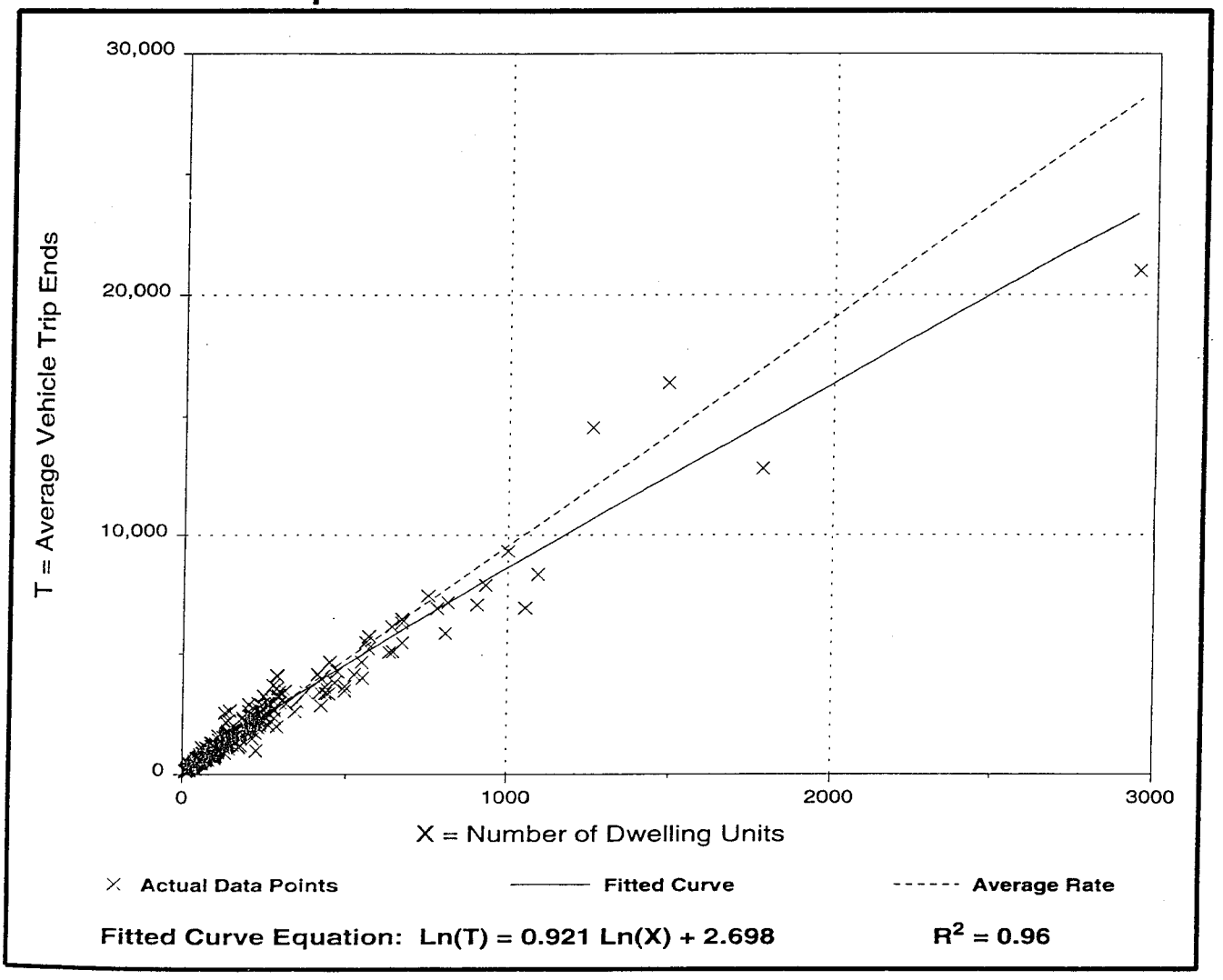
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 348
Average Number of Dwelling Units: 206
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.55	4.31 - 21.85	3.66

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.921 Ln(X) + 2.698 **R^2 = 0.96**

Single-Family Detached Housing (< 300 Units)
(210)

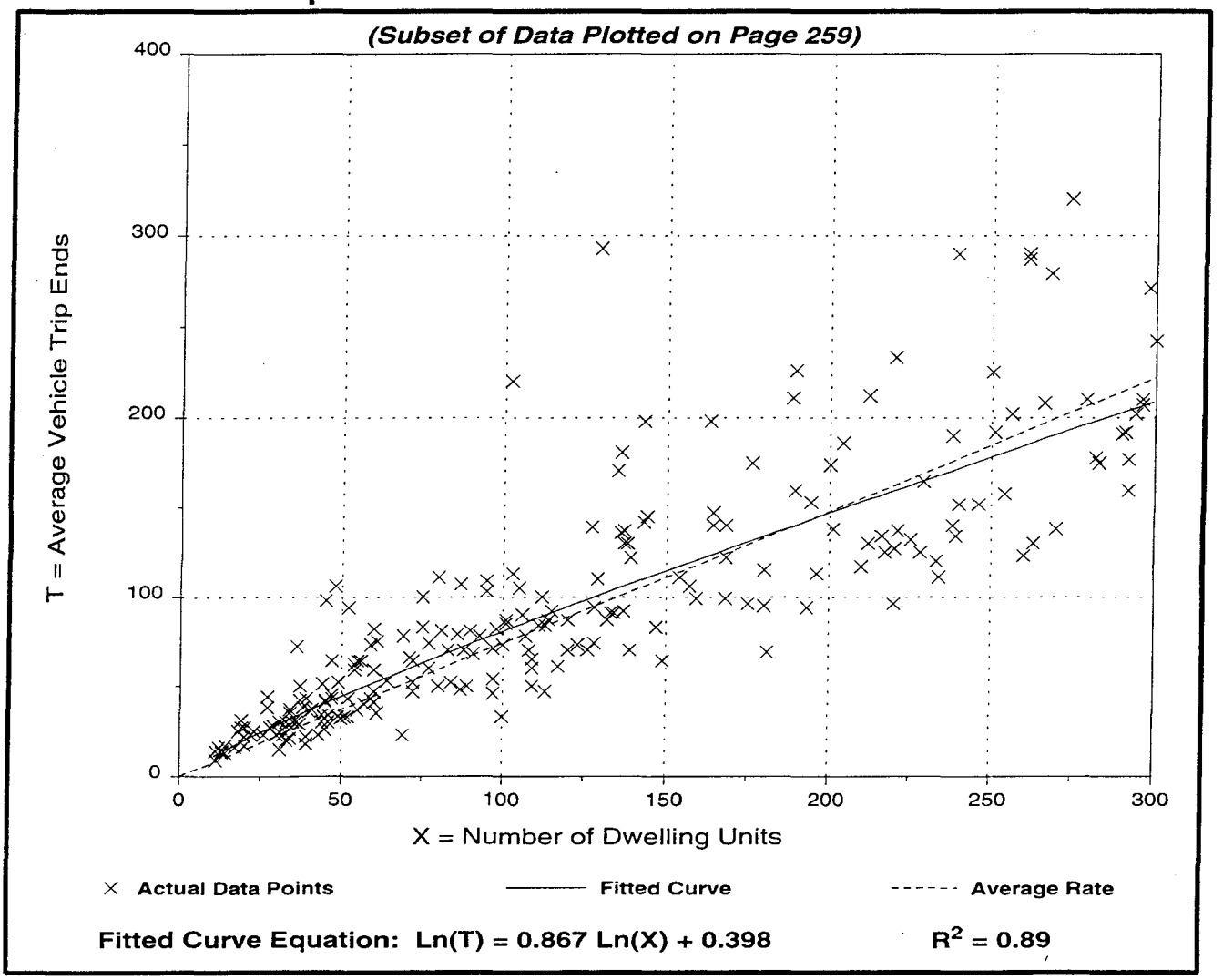
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 280
Average Number of Dwelling Units: 210
Directional Distribution: 26% entering, 74% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.90

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.867 Ln(X) + 0.398 $R^2 = 0.89$

Single-Family Detached Housing (< 300 Units)
(210)

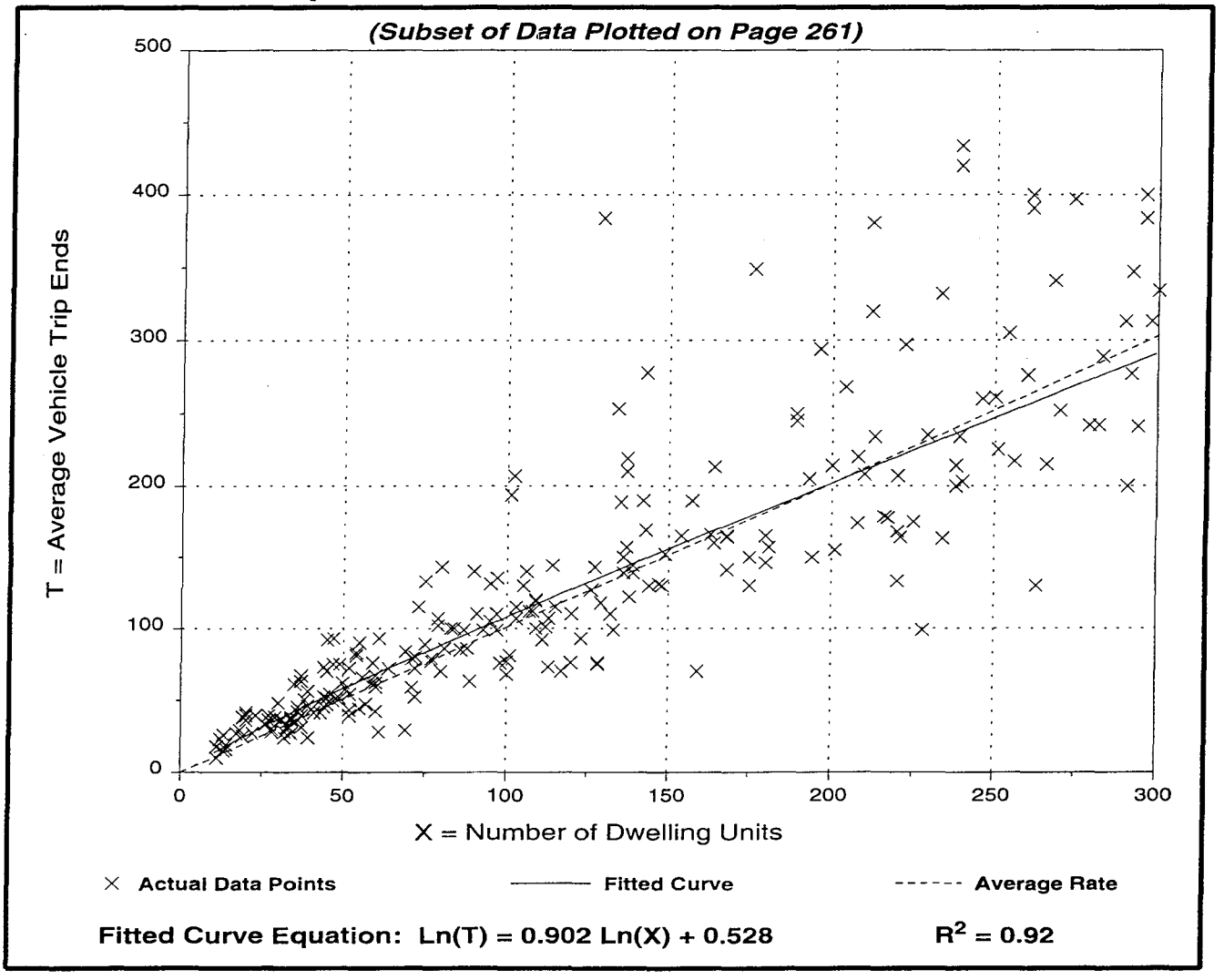
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 301
Average Number of Dwelling Units: 222
Directional Distribution: 64% entering, 36% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
1.01	0.42 - 2.98	1.05

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.902 Ln(X) + 0.528 **R^2 = 0.92**

C. TRIP DISTRIBUTION and ASSIGNMENT

Directional distribution of trip ends was estimated by considering the proximity of the site to adjacent transportation facilities and the relationship to downtown Grand Junction and other major activity centers. The general distribution of trips to and from the site at build-out during the week is estimated to be 50% north and 50% south. Of that 50% of generated traffic entering or exiting the site to or from the north, It is estimated that 85% of that traffic will either turn east onto Horizon Drive or come from Horizon Drive. The remaining 15% will come from or go to 7th Street to the north of the intersection.

Figure 3 shows the trip end assignment for trips generated from the proposed development during the peak PM weekday hour at build-out.

D. TRAFFIC VOLUMES

Existing traffic volumes and peak hour factors have been determined by counts performed by *LANDesign* between June 6th and the 20th, 1996. *LANDesign* has utilized Peek ADR type counters to determine counts at 15 minute intervals for each lane and calculate totals and peak hour volumes. Upon determination of peak hours for each individual leg of the intersection, turning movement counts were performed by individuals in the field during the respective peak hours. See print-out of traffic counts in the end of this report.

Existing traffic volumes at the peak hours were combined with the calculated trip ends generated by the proposed development to produce a proposed total volume for analysis of the intersection. These figures were increased by 2.2% per year for analysis of the intersection in the year 2010. See Figures 4 & 5 respectively.

EXISTING PEAK HOUR VOLUMES
PRE-DEVELOPMENT

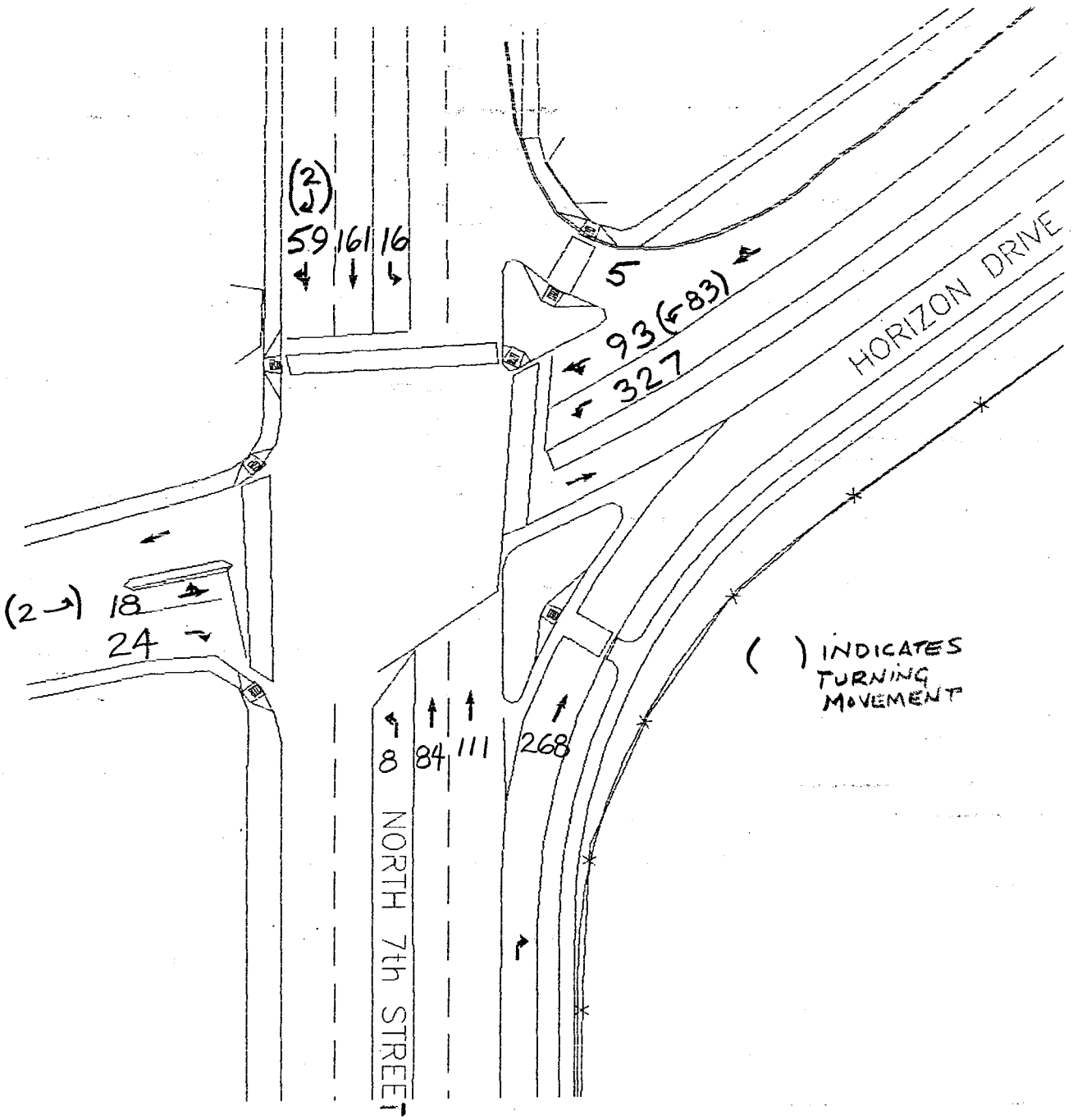


FIGURE 2

P.M. Peak Hour Trip Assignment & Distribution

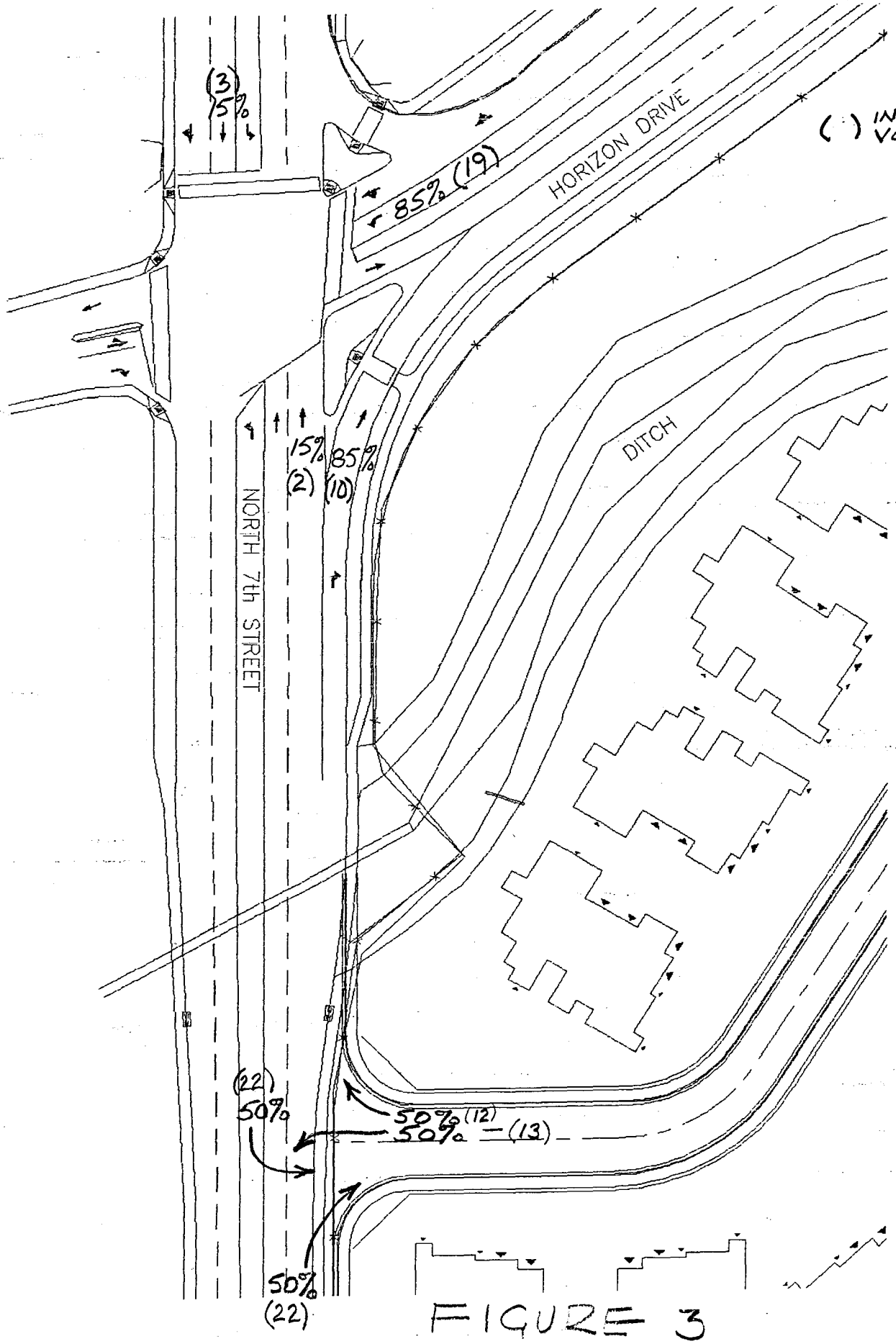


FIGURE 3

E. CAPACITY & GAP ANALYSIS

This report will investigate the impact on the existing signalized intersection at 7th and Horizon Drive due to the construction of the proposed development. The level of service of the existing intersection will be compared to the level of service attainable following full build-out of the proposed development. Furthermore, it will examine the access to the proposed development and the impact it will have on the flow of traffic on North 7th Street and delays experienced on Horizon Village Court. These analyses will look at the current conditions and the projected conditions for the year 2010.

The Highway Capacity Software (HCS) release 2.4a was utilized for analysis and determination of the level of service for the intersection of 7th Street and Horizon Drive as well as the intersection of Horizon Village Court and 7th Street. The Horizon Village Court intersection was analyzed as a simple unsignalized T-intersection while the Horizon Drive intersection was analyzed as a 3 phase isolated signalized operation.

The signalized intersection at 7th and Horizon is a fully actuated split phasing isolated operation in which the signal rests and green on 7th Street. In other words 7th Street will stay green until traffic on Horizon Drive actuates the signal. The signal operates in 3 phases. The 1st phase operates traffic on 7th Street. The 2nd phase regulates the traffic on westbound Horizon Drive while the 3rd phase operates the eastbound leg from the Mesa View Retirement Community. The cycle lengths for each leg have been measured in the field.

An analysis of the peak hour gap availability at the proposed site has been performed to determine if adequate gaps exist for left turn movements out of the development. Two directional gaps were counted in the field at peak hour in 3 categories; 6 to 9 seconds, 9-13 seconds and over 13 second gaps. A stopwatch was used to determine the length of the gaps available.

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-2083 (904) 392-0378

Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: EX1996.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 1996 volumes

Traffic and Roadway Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	1	1	> 1		1	2		1	2	<
Volumes	2	16	24	410	10		8	195		16	218	2
PHF or PK15	0.95	0.95	0.95	0.95	0.95		0.95	0.95		0.95	0.95	0.95
Lane W (ft)		12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	2	2	2	2	2		2	2		2	2	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type		3	3	3	3		3	3		3	3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00		3.00	3.00		3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		*			NB Left *			
Thru		*			Thru *			
Right		*			Right			
Peds					Peds			
WB Left	*				SB Left *			
Thru	*				Thru *			
Right					Right *			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0A	15.0A			Green 30.0P			
Yellow/AR	5.0	5.0			Yellow/AR 5.0			

Cycle Length: 90 secs Phase combination order: #1 #2 #5

PROPOSED PEAK HOUR VOLUMES
1996

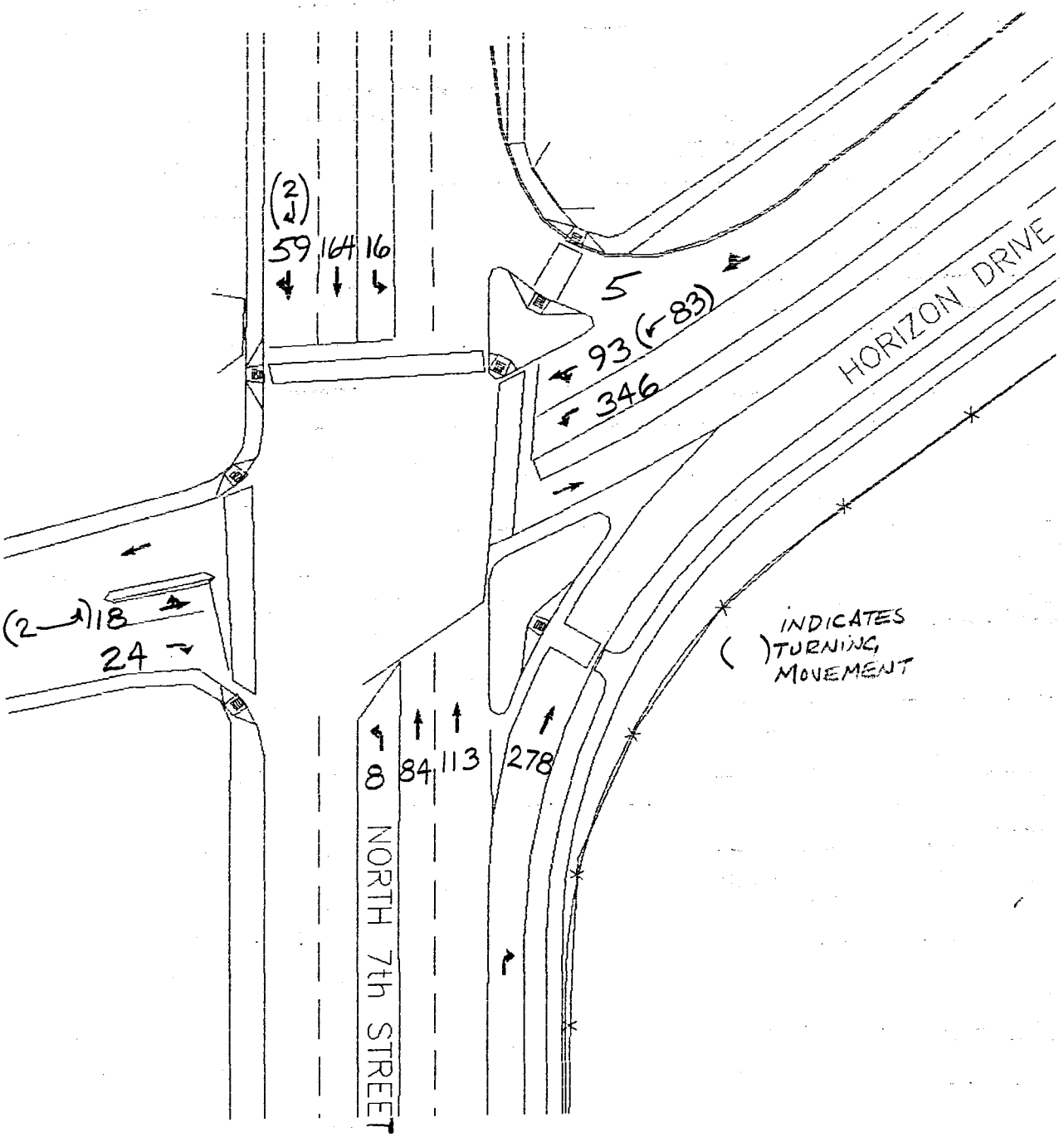


FIGURE 4

PROPOSED PEAK HOUR VOLUMES
2010

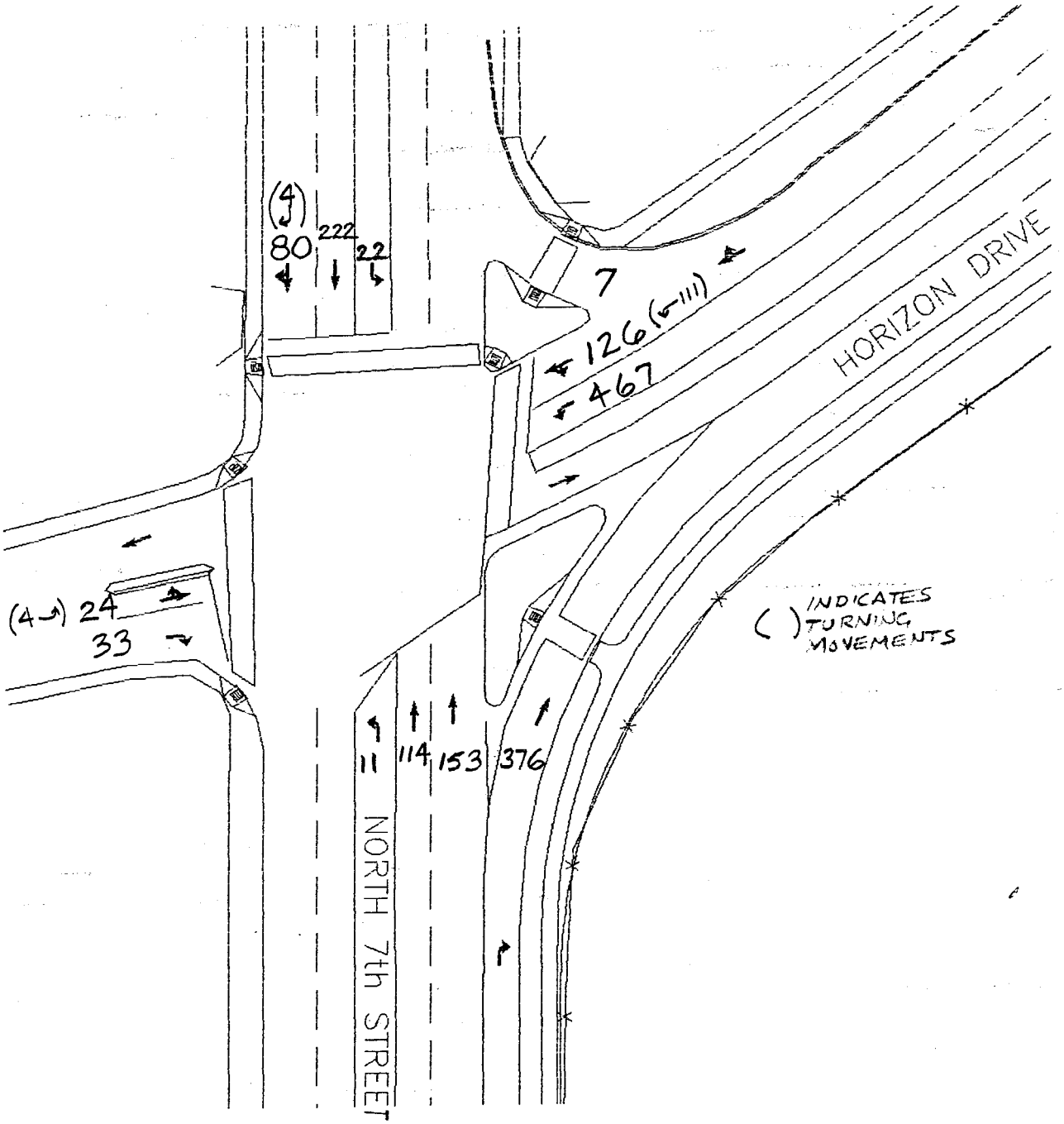


FIGURE 5

Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: EX1996.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 1996 volumes

Volume Adjustment Worksheet

Direction/ Mvt	Mvt Vol	PHF	Adj Vol	Lane Grp	Lane Grp Vol	No. Ln	Lane Util Fact	Growth Fact	Adj Grp Vol	Prop LT	Prop RT
EB											
Left	2	0.95	2								
Thru	16	0.95	17	LT	19	1	1.000	1.000	19	0.11	0.00
Right	24	0.95	25	R	25	1	1.000	1.000	25	0.00	1.00
WB											
Left	410	0.95	432	L	220	1	1.000	1.000	220	1.00	0.00
Thru	10	0.95	11	LT	223	1	1.000	1.000	223	0.95	0.00
NB											
Left	8	0.95	8	L	8	1	1.000	1.000	8	1.00	0.00
Thru	195	0.95	205	T	205	2	1.050	1.000	215	0.00	0.00
SB											
Left	16	0.95	17	L	17	1	1.000	1.000	17	1.00	0.00
Thru	218	0.95	229	TR	231	2	1.050	1.000	243	0.00	0.01
Right	2	0.95	2								

Saturation Flow Adjustment Worksheet

Direction /LnGrp	Ideal Sat Flow	No. Lns	f W	f HV	f G	f p	f BB	f A	f RT	f LT	Adj Sat Flow
EB											
LT	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99	1853
R	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	0.85	1.00	1583
WB											
L	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.95	1770
LT	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.95	1778
NB											
L	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.52	969
T	1900	2	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	3725
SB											
L	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.56	1040
TR	1900	2	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	3721

Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: EX1996.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 1996 volumes

Supplemental Permitted LT Worksheet

APPROACH	NB
Cycle Length, C	90
Actual Green Time for Lane Group, G	30
Effective Green Time for Lane Group, g	32
Opposing Effective Green Time, go	32
Number of Opposing Lanes, No	2
Number of Lanes in Lane Group, N	1
Adjusted Left-Turn Flow Rate, Vlt	8
Proportion of Left Turns in Lane Group, Plt	1.00
Left Turns per Cycle: LTC=Vlt*C/3600	0.20
Adjusted Opposing Flow Rate, Vo	243
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600No	3.04
Opposing Platoon Ratio, Rpo	1
Lost time per phase, tl	3
gf=Gexp(-0.882*LTC^0.717)-tl	0.00
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.64
gq = Volc * qro / (.5 - Volc * (1 - qro) / go)-tl	1.20
gu=g-gq (or g-gf)	30.80
fs=(875-0.625Vo)/1000	0.72
Pl=Plt[1+{(N-1)g/(fsgu+4.5)}]	1.00
El1	1.85
fmin	0.13
fm,(min=fmin;max=1.00)	0.52
flt=[fm+0.91(N-1)]/N	0.52

APPROACH	SB
Cycle Length, C	90
Actual Green Time for Lane Group, G	30
Effective Green Time for Lane Group, g	32
Opposing Effective Green Time, go	32
Number of Opposing Lanes, No	2
Number of Lanes in Lane Group, N	1
Adjusted Left-Turn Flow Rate, Vlt	17
Proportion of Left Turns in Lane Group, Plt	1.00
Left Turns per Cycle: LTC=Vlt*C/3600	0.43
Adjusted Opposing Flow Rate, Vo	215
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600No	2.69
Opposing Platoon Ratio, Rpo	1
Lost time per phase, tl	3
gf=Gexp(-0.882*LTC^0.717)-tl	0.00
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.64
gq = Volc * qro / (.5 - Volc * (1 - qro) / go)-tl	0.68
gu=g-gq (or g-gf)	31.32
fs=(875-0.625Vo)/1000	0.74
Pl=Plt[1+{(N-1)g/(fsgu+4.5)}]	1.00
El1	1.75
fmin	0.13
fm,(min=fmin;max=1.00)	0.56

Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: EX1996.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 1996 volumes

Capacity Analysis Worksheet

Direction /LnGrp	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	Lane Group Capacity (c)	v/c Ratio	
EB							
LT	19	1853	0.010	0.189	350	0.054	
R	25	1583	0.016	0.189	299	0.084	*
WB							
L	220	1770	0.124	0.356	629	0.350	
LT	223	1778	0.125	0.356	632	0.353	*
NB							
L	8	969	0.008	0.356	345	0.023	
T	215	3725	0.058	0.356	1324	0.162	
SB							
L	17	1040	0.016	0.356	370	0.046	
TR	243	3721	0.065	0.356	1323	0.184	*

Sum (v/s) critical = 0.207
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.229

Level of Service Worksheet

Direction /LnGrp	v/c Ratio	g/C Ratio	Delay d 1	Del Adj Fact	Lane Group Cap	Calib d 2	Delay d 2	Lane Grp Del	Lane Grp LOS	Delay By App	LOS By App
EB											
LT	0.054	0.189	22.7	0.850	350	16	0.0	19.3	C	19.4	C
R	0.084	0.189	22.9	0.850	299	16	0.0	19.4	C		
WB											
L	0.350	0.356	16.2	0.850	629	16	0.1	13.9	B	13.9	B
LT	0.353	0.356	16.2	0.850	632	16	0.1	14.0	B		
NB											
L	0.023	0.356	14.3	0.850	345	16	0.0	12.2	B	12.8	B
T	0.162	0.356	15.1	0.850	1324	16	0.0	12.8	B		
SB											
L	0.046	0.356	14.4	0.850	370	16	0.0	12.3	B	12.9	B
TR	0.184	0.356	15.2	0.850	1323	16	0.0	12.9	B		

Intersection Delay = 13.6 sec/veh Intersection LOS = B

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Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: PROP1996.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 1996 volumes with proposed development

Traffic and Roadway Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	1	2	> 1		1	2		1	2	<
Volumes	2	16	24	429	10		8	197		16	221	2
PHF or PK15	0.95	0.95	0.95	0.95	0.95		0.95	0.95		0.95	0.95	0.95
Lane W (ft)		12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	2	2	2	2	2		2	2		2	2	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type		3	3	3	3		3	3		3	3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00		3.00	3.00		3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		*			NB Left *			
Thru		*			Thru *			
Right		*			Right			
Peds					Peds			
WB Left	*				SB Left *			
Thru	*				Thru *			
Right					Right *			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0A	15.0A			Green 30.0P			
Yellow/AR	5.0	5.0			Yellow/AR 5.0			

Cycle Length: 90 secs Phase combination order: #1 #2 #5

Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: PROP1996.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 1996 volumes with proposed development

Volume Adjustment Worksheet

Direction/ Mvt	Mvt Vol	PHF	Adj Vol	Lane Grp	Lane Grp Vol	No. Ln	Lane Util Fact	Growth Fact	Adj Grp Vol	Prop LT	Prop RT
EB											
Left	2	0.95	2								
Thru	16	0.95	17	LT	19	1	1.000	1.000	19	0.11	0.00
Right	24	0.95	25	R	25	1	1.000	1.000	25	0.00	1.00
WB											
Left	429	0.95	452	L	231	2	1.030	1.000	238	1.00	0.00
Thru	10	0.95	11	LT	232	1	1.000	1.000	232	0.95	0.00
NB											
Left	8	0.95	8	L	8	1	1.000	1.000	8	1.00	0.00
Thru	197	0.95	207	T	207	2	1.050	1.000	217	0.00	0.00
SB											
Left	16	0.95	17	L	17	1	1.000	1.000	17	1.00	0.00
Thru	221	0.95	233	TR	235	2	1.050	1.000	247	0.00	0.01
Right	2	0.95	2								

Saturation Flow Adjustment Worksheet

Direction /LnGrp	Ideal Sat Flow	No. Lns	f W	f HV	f G	f p	f BB	f A	f RT	f LT	Adj Sat Flow
EB											
LT	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99	1853
R	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	0.85	1.00	1583
WB											
L	1900	2	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.95	3539
LT	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.95	1778
NB											
L	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.52	959
T	1900	2	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	3725
SB											
L	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.56	1035
TR	1900	2	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	3721

Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: PROP1996.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 1996 volumes with proposed development

Supplemental Permitted LT Worksheet

APPROACH	NB
Cycle Length, C	90
Actual Green Time for Lane Group, G	30
Effective Green Time for Lane Group, g	32
Opposing Effective Green Time, go	32
Number of Opposing Lanes, No	2
Number of Lanes in Lane Group, N	1
Adjusted Left-Turn Flow Rate, Vlt	8
Proportion of Left Turns in Lane Group, Plt	1.00
Left Turns per Cycle: LTC=Vlt*C/3600	0.20
Adjusted Opposing Flow Rate, Vo	247
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600No	3.09
Opposing Platoon Ratio, Rpo	1
Lost time per phase, tl	3
gf=Gexp(-0.882*LTC^0.717)-tl	0.00
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.64
gq = Volc * qro / (.5 - Volc * (1 - qro) / go)-tl	1.27
gu=g-gq (or g-gf)	30.73
fs=(875-0.625Vo)/1000	0.72
Pl=Plt[1+{(N-1)g/(fsgu+4.5)}]	1.00
El1	1.86
fmin	0.13
fm,(min=fmin;max=1.00)	0.52
flt=[fm+0.91(N-1)]/N	0.52

APPROACH	SB
Cycle Length, C	90
Actual Green Time for Lane Group, G	30
Effective Green Time for Lane Group, g	32
Opposing Effective Green Time, go	32
Number of Opposing Lanes, No	2
Number of Lanes in Lane Group, N	1
Adjusted Left-Turn Flow Rate, Vlt	17
Proportion of Left Turns in Lane Group, Plt	1.00
Left Turns per Cycle: LTC=Vlt*C/3600	0.43
Adjusted Opposing Flow Rate, Vo	217
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600No	2.71
Opposing Platoon Ratio, Rpo	1
Lost time per phase, tl	3
gf=Gexp(-0.882*LTC^0.717)-tl	0.00
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.64
gq = Volc * qro / (.5 - Volc * (1 - qro) / go)-tl	0.72
gu=g-gq (or g-gf)	31.28
fs=(875-0.625Vo)/1000	0.74
Pl=Plt[1+{(N-1)g/(fsgu+4.5)}]	1.00
El1	1.76
fmin	0.13
fm,(min=fmin;max=1.00)	0.56

Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: PROP1996.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 1996 volumes with proposed development

Capacity Analysis Worksheet

Direction /LnGrp	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	Lane Group Capacity (c)	v/c Ratio	
EB							
LT	19	1853	0.010	0.189	350	0.054	
R	25	1583	0.016	0.189	299	0.084	*
WB							
L	238	3539	0.067	0.356	1258	0.189	
LT	232	1778	0.130	0.356	632	0.367	*
NB							
L	8	959	0.008	0.356	341	0.023	
T	217	3725	0.058	0.356	1324	0.164	
SB							
L	17	1035	0.016	0.356	368	0.046	
TR	247	3721	0.066	0.356	1323	0.187	*

Sum (v/s) critical = 0.213
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.236

Level of Service Worksheet

Direction /LnGrp	v/c Ratio	g/C Ratio	Delay d 1	Del Adj Fact	Lane Group Cap	Calib d 2	Delay d 2	Lane Grp Del	Lane Grp LOS	Delay By App	LOS By App
EB											
LT	0.054	0.189	22.7	0.850	350	16	0.0	19.3	C	19.4	C
R	0.084	0.189	22.9	0.850	299	16	0.0	19.4	C		
WB											
L	0.189	0.356	15.2	0.850	1258	16	0.0	13.0	B	13.5	B
LT	0.367	0.356	16.3	0.850	632	16	0.2	14.1	B		
NB											
L	0.023	0.356	14.3	0.850	341	16	0.0	12.2	B	12.8	B
T	0.164	0.356	15.1	0.850	1324	16	0.0	12.8	B		
SB											
L	0.046	0.356	14.4	0.850	368	16	0.0	12.3	B	12.9	B
TR	0.187	0.356	15.2	0.850	1323	16	0.0	12.9	B		

Intersection Delay = 13.4 sec/veh Intersection LOS = B

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Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: PROP2010.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 2010 volumes

Traffic and Roadway Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	1	2	> 1		1	2		1	2	<
Volumes	4	20	33	578	15		11	268		22	298	4
PHF or PK15	0.95	0.95	0.95	0.95	0.95		0.95	0.95		0.95	0.95	0.95
Lane W (ft)		12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	2	2	2	2	2		2	2		2	2	2
Parking	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type		3	3	3	3		3	3		3	3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00		3.00	3.00		3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		*			NB Left	*		
Thru		*			Thru	*		
Right		*			Right			
Peds					Peds			
WB Left	*				SB Left	*		
Thru	*				Thru	*		
Right					Right	*		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0A	15.0A			Green	30.0P		
Yellow/AR	5.0	5.0			Yellow/AR	5.0		

Cycle Length: 90 secs Phase combination order: #1 #2 #5

Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: PROP2010.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 2010 volumes

Volume Adjustment Worksheet

Direction/ Mvt	Mvt Vol	PHF	Adj Vol	Lane Grp	Lane Grp Vol	No. Ln	Lane Util Fact	Growth Fact	Adj Grp Vol	Prop LT	Prop RT
EB											
Left	4	0.95	4								
Thru	20	0.95	21	LT	25	1	1.000	1.000	25	0.16	0.00
Right	33	0.95	35	R	35	1	1.000	1.000	35	0.00	1.00
WB											
Left	578	0.95	608	L	310	2	1.030	1.000	319	1.00	0.00
Thru	15	0.95	16	LT	314	1	1.000	1.000	314	0.95	0.00
NB											
Left	11	0.95	12	L	12	1	1.000	1.000	12	1.00	0.00
Thru	268	0.95	282	T	282	2	1.050	1.000	296	0.00	0.00
SB											
Left	22	0.95	23	L	23	1	1.000	1.000	23	1.00	0.00
Thru	298	0.95	314	TR	318	2	1.050	1.000	334	0.00	0.01
Right	4	0.95	4								

Saturation Flow Adjustment Worksheet

Direction /LnGrp	Ideal Sat Flow	No. Lns	f W	f HV	f G	f p	f BB	f A	f RT	f LT	Adj Sat Flow
EB											
LT	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99	1848
R	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	0.85	1.00	1583
WB											
L	1900	2	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.95	3539
LT	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.95	1778
NB											
L	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.42	780
T	1900	2	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	3725
SB											
L	1900	1	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.46	852
TR	1900	2	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	3718

Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: PROP2010.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 2010 volumes

Supplemental Permitted LT Worksheet

APPROACH	NB
Cycle Length, C	90
Actual Green Time for Lane Group, G	30
Effective Green Time for Lane Group, g	32
Opposing Effective Green Time, go	32
Number of Opposing Lanes, No	2
Number of Lanes in Lane Group, N	1
Adjusted Left-Turn Flow Rate, Vlt	12
Proportion of Left Turns in Lane Group, Plt	1.00
Left Turns per Cycle: LTC=Vlt*C/3600	0.30
Adjusted Opposing Flow Rate, Vo	334
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600No	4.18
Opposing Platoon Ratio, Rpo	1
Lost time per phase, tl	3
gf=Gexp(-0.882*LTC^0.717)-tl	0.00
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.64
gq = Volc * qro / (.5 - Volc * (1 - qro) / go)-tl	2.93
gu=g-gq (or g-gf)	29.07
fs=(875-0.625Vo)/1000	0.67
Pl=Plt[1+{(N-1)g/(fsgu+4.5)}]	1.00
El1	2.17
fmin	0.13
fm,(min=fmin;max=1.00)	0.42
flt=[fm+0.91(N-1)]/N	0.42

APPROACH	SB
Cycle Length, C	90
Actual Green Time for Lane Group, G	30
Effective Green Time for Lane Group, g	32
Opposing Effective Green Time, go	32
Number of Opposing Lanes, No	2
Number of Lanes in Lane Group, N	1
Adjusted Left-Turn Flow Rate, Vlt	23
Proportion of Left Turns in Lane Group, Plt	1.00
Left Turns per Cycle: LTC=Vlt*C/3600	0.57
Adjusted Opposing Flow Rate, Vo	296
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600No	3.70
Opposing Platoon Ratio, Rpo	1
Lost time per phase, tl	3
gf=Gexp(-0.882*LTC^0.717)-tl	0.00
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.64
gq = Volc * qro / (.5 - Volc * (1 - qro) / go)-tl	2.20
gu=g-gq (or g-gf)	29.80
fs=(875-0.625Vo)/1000	0.69
Pl=Plt[1+{(N-1)g/(fsgu+4.5)}]	1.00
El1	2.04
fmin	0.13
fm,(min=fmin;max=1.00)	0.46

Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: PROP2010.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 2010 volumes

Capacity Analysis Worksheet

Direction /LnGrp	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	Lane Group Capacity (c)	v/c Ratio	
EB							
LT	25	1848	0.014	0.189	349	0.072	
R	35	1583	0.022	0.189	299	0.117	*
WB							
L	319	3539	0.090	0.356	1258	0.254	
LT	314	1778	0.177	0.356	632	0.497	*
NB							
L	12	780	0.015	0.356	277	0.043	
T	296	3725	0.079	0.356	1324	0.223	
SB							
L	23	852	0.027	0.356	303	0.076	
TR	334	3718	0.090	0.356	1322	0.253	*

Sum (v/s) critical = 0.289
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.321

Level of Service Worksheet

Direction /LnGrp	v/c Ratio	g/C Ratio	Delay d 1	Del Adj Fact	Lane Group Cap	Calib d 2	Delay d 2	Lane Grp Del	Lane Grp LOS	Delay By App	LOS By App
EB											
LT	0.072	0.189	22.8	0.850	349	16	0.0	19.4	C	19.5	C
R	0.117	0.189	23.0	0.850	299	16	0.0	19.6	C		
WB											
L	0.254	0.356	15.6	0.850	1258	16	0.0	13.3	B	14.2	B
LT	0.497	0.356	17.2	0.850	632	16	0.5	15.2	C		
NB											
L	0.043	0.356	14.4	0.850	277	16	0.0	12.3	B	13.1	B
T	0.223	0.356	15.4	0.850	1324	16	0.0	13.1	B		
SB											
L	0.076	0.356	14.6	0.850	303	16	0.0	12.4	B	13.2	B
TR	0.253	0.356	15.6	0.850	1322	16	0.0	13.3	B		

Intersection Delay = 13.9 sec/veh Intersection LOS = B

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-2083
Ph: (904) 392-0378

Streets: (N-S) 7th Street (E-W) Horizon Village Ct.
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... JPC
Date of Analysis..... 6/27/96
Other Information.....1996 conditions
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	1	1	2	0	0	0	0	0	> 0	< 0
Stop/Yield			N			N						
Volumes		471	22	22	218					13		12
PHF		.95	.95	.95	.95					.95		.95
Grade		-4			2						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.40						1.10		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.50	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.50	3.30
Left Turn Minor Road	7.00	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	248	
Potential Capacity: (pcph)	1037	
Movement Capacity: (pcph)	1037	
Prob. of Queue-Free State:	0.99	

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)	519	
Potential Capacity: (pcph)	903	
Movement Capacity: (pcph)	903	
Prob. of Queue-Free State:	0.96	

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)	748	
Potential Capacity: (pcph)	352	
Major LT, Minor TH Impedance Factor:	0.96	
Adjusted Impedance Factor:	0.96	
Capacity Adjustment Factor due to Impeding Movements	0.96	
Movement Capacity: (pcph)	340	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
WB L	15	340 >					
			503	7.6	0.0	B	7.6
WB R	14	1037 >					
SB L	32	903		4.1	0.0	A	0.4

Intersection Delay = 0.4 sec/veh

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Ph: (904) 392-0378

Streets: (N-S) 7th Street (E-W) Horizon Village Ct.
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... JPC
Date of Analysis..... 6/27/96
Other Information.....2010 conditions
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	1	1	2	0	0	0	0	0 > 0		< 0
Stop/Yield			N			N						
Volumes		651	24	24	302					13		12
PHF		.95	.95	.95	.95					.95		.95
Grade		-4			2						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.40						1.10		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.50	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.50	3.30
Left Turn Minor Road	7.00	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	342	
Potential Capacity: (pcph)	929	
Movement Capacity: (pcph)	929	
Prob. of Queue-Free State:	0.98	

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)	710	
Potential Capacity: (pcph)	713	
Movement Capacity: (pcph)	713	
Prob. of Queue-Free State:	0.95	

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)	1028	
Potential Capacity: (pcph)	233	
Major LT, Minor TH Impedance Factor:	0.95	
Adjusted Impedance Factor:	0.95	
Capacity Adjustment Factor due to Impeding Movements	0.95	
Movement Capacity: (pcph)	222	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
WB L	15	222 >					
			351	11.2	0.2	C	11.2
WB R	14	929 >					
SB L	35	713		5.3	0.0	B	0.4

Intersection Delay = 0.4 sec/veh

HORIZON VILLAGE

Two Directional Available Gaps
for a 15-Minute Period Between 5 and 5:15 p.m.

6-9 Seconds	9-13 Seconds	Over 13 Seconds
22	16	19

Total Available Gaps 57

Calculated by Jeff Crane
July 23, 1996

F. CONCLUSIONS and RECOMMENDATIONS

The intersection of proposed Horizon Village Court and North 7th Street has been designed to provide as much sight distance as possible. A sight zone triangle at the intersection will be designed to allow a minimum of 60' along 7th Street and 50' along Horizon Village Ct. at the flowlines with no sight obscuring signs, walls, fences or foliage more than 30" high. 7th Street is classified as a minor arterial with a design speed of 35 mph. The required safe sight distance left is 300' while the required safe sight distance right is 350'. The existing sight distance left from the proposed access looking south on 7th Street is 520' and well within City requirements. The proposed access road is located 380' south of the intersection of 7th Street and Horizon Drive, however, sight distance extends considerably beyond that. Although a 52' right-of-way at the entrance is not required, it will be constructed for added safety and ease of access.

Acceleration or deceleration lanes associated with this proposed development are also not warranted by the City's Transportation Engineering Design Standards. However, due to the grade and volume of traffic heading north on 7th from Patterson toward the proposed access road, a 60' right turn deceleration lane will be constructed south of the beginning of the curb return radius into the development with a 60' taper leading into that lane. The lane width will be 10' wide. The beginning of the taper into the right turn lane at the intersection of 7th Street and Horizon Drive starts approximately 20' north of the centerline of the proposed access road. Therefore, the north curb return flowline of the access road will be constructed to line up with the east flowline of the existing right turn lane to allow for a smooth transition toward Horizon Drive and still allow plenty of distance for the very small percentage of northbound trip ends exiting the development to continue north on 7th.

Analysis of the intersection of Horizon Drive and 7th Street indicates no change in the level of service due to the impacts of the proposed development. The level of service remained at a 'B' level before and after development. By projecting the increase in volumes due to a 2.2% growth rate in the area, the level of service for the westbound left turn lanes on Horizon Drive decreased to a level of 'C' for the year 2010. The remaining lanes continued a level of service of 'B'.

Analysis of the intersection of Horizon Village Court and North 7th Street indicates a comfortable level of service of 'B' for traffic exiting and a level of service of 'A' for traffic entering the development. Projected analysis for the year 2010 suggests a decrease of one level for each direction.

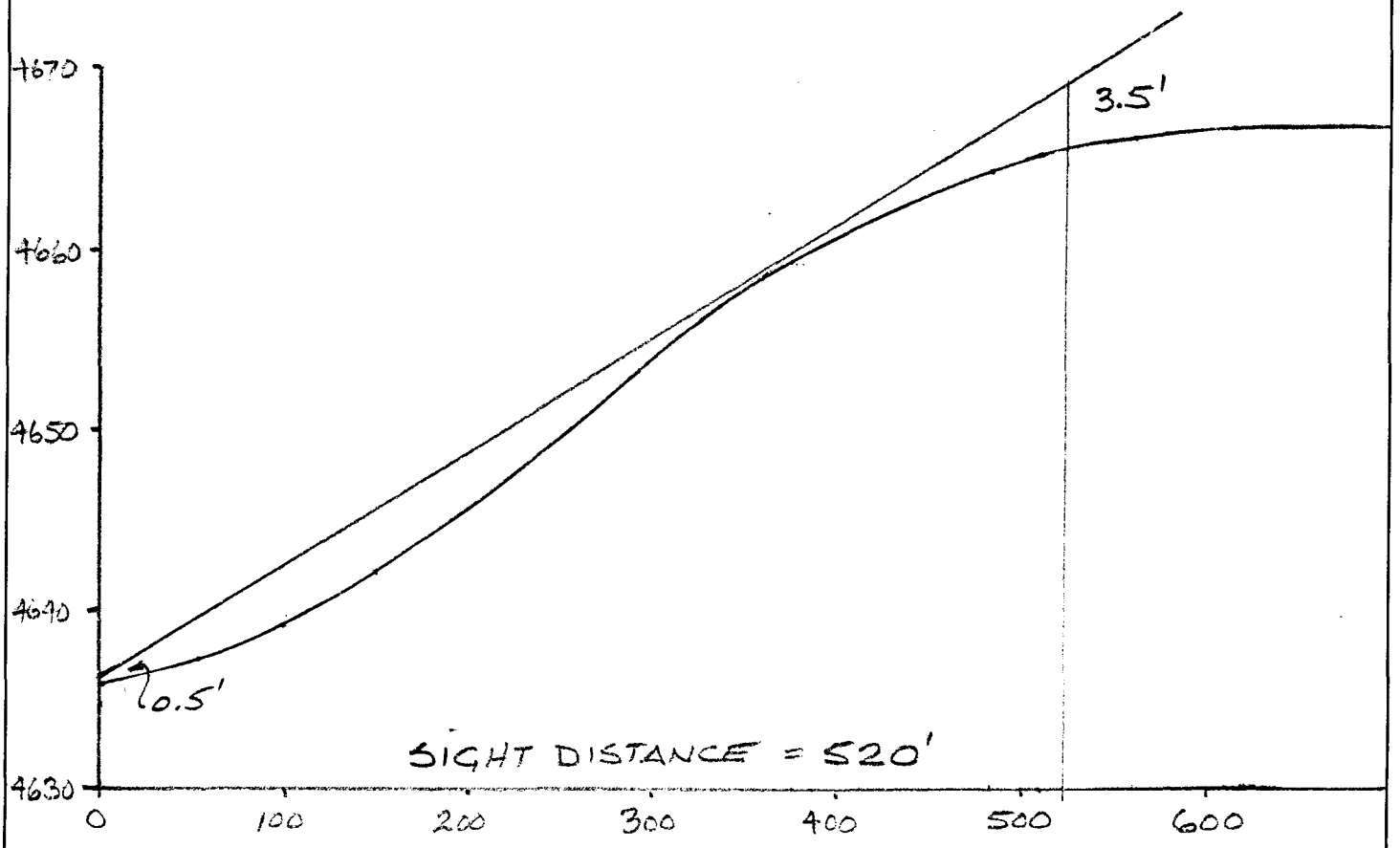
A total of 57 available gaps for left turn movements out of the development had been counted for a 15 minute period during the PM peak hour. The volume of traffic projected to turn left at peak hour is 13. If the volume of traffic projected to enter from the cross street is less than ½ of the number of gaps available than no additional traffic control is necessary. Consequently, sufficient gaps exist and additional signal analysis will not be required.

APPENDIX

LANDESIGN
259 Grand Avenue
GRAND JUNCTION, CO 81501
(970) 245-4099
FAX (970) 245-3076

JOB 96045.40
SHEET NO. 1 OF 1
CALCULATED BY GPC DATE 6/28/96
CHECKED BY _____ DATE _____
~~SCALE~~ CENTERLINE PROFILE 7TH STREET

HEIGHT OF OBJECT = 0.5'
HEIGHT OF DRIVERS EYE = 3.5'



STATION 0+00 = CENTERLINE OF HORIZON VILLAGE COURT

SCALE: HORIZONTAL - 1" = 100'
VERTICAL - 1" = 10'

FIGURE 6

Table 16: Sight Distance (ft.) for Passenger Cars Exiting from Private Accesses or Public Streets onto Two-Lane Roads

Speed (MPH)	Safe Sight Distance Left[1] (d^1) *	Safe Sight Distance Right[1] (d^2) *
20	150	130
25	240	200
30	350	260
35	430	350
40	530	440
45	610	570
50	740	700
55	830	860
60	950	1050

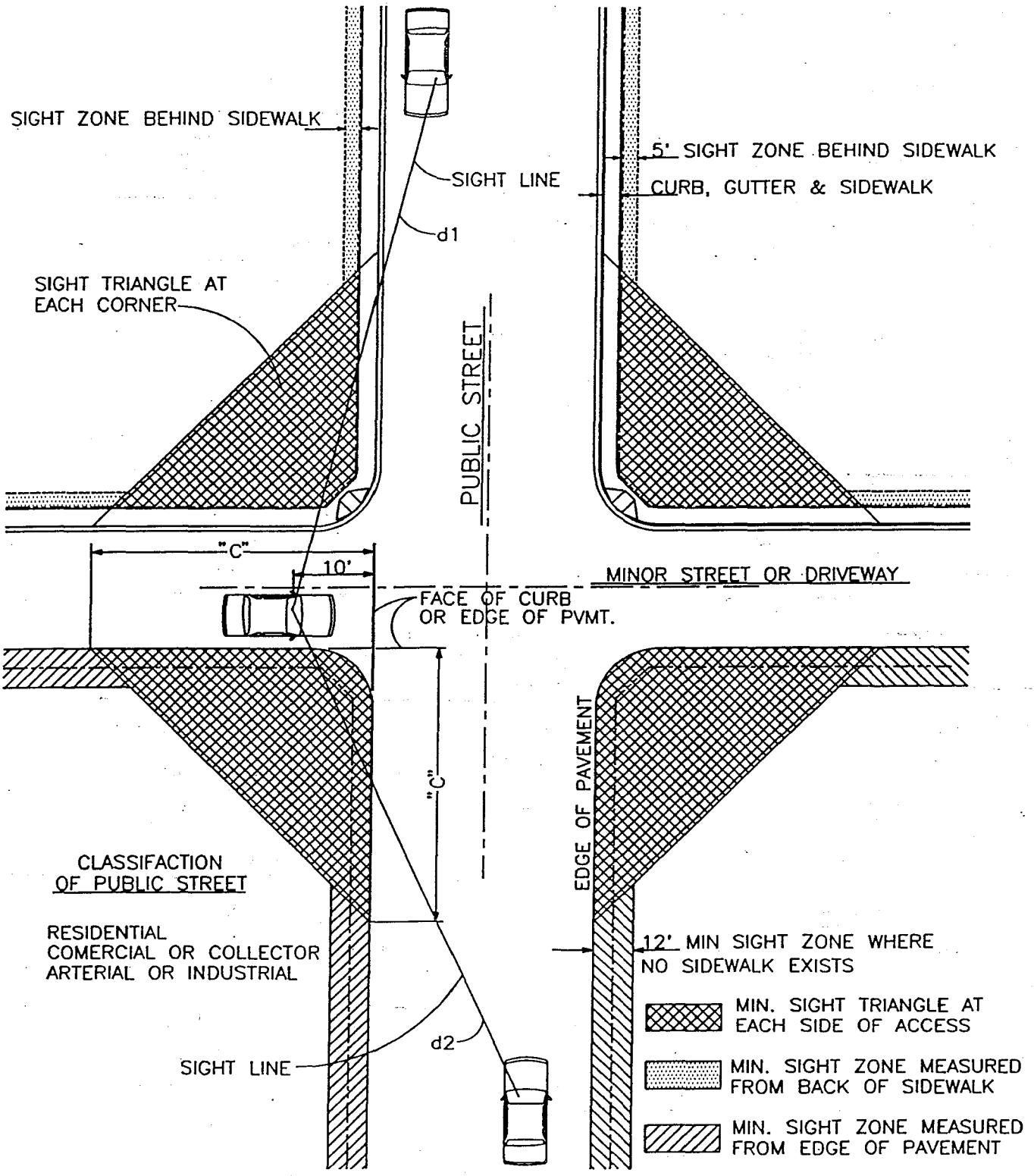
[1] Measured from the driver's eye ten feet back of the flowline or pavement edge.

* See **Figure 15** in **Appendix 11.7**, Design Aids.

Table 17: Sight Distance (Ft.) for Passenger Cars Exiting From Private Accesses or Public Streets onto Four and Six Lane Roads

Speed (MPH)	Safe Sight Distance Left[1] (d^1) *	Safe Sight Distance Right[1] (d^2) *
20	130	130
25	180	200
30	220	260
35	300	350
40	380	440
45	500	570
50	620	700
55	760	860
60	950	1050

[1] Measured from the driver's eye ten feet back of the flowline or pavement edge to a vehicle in the outside lane.



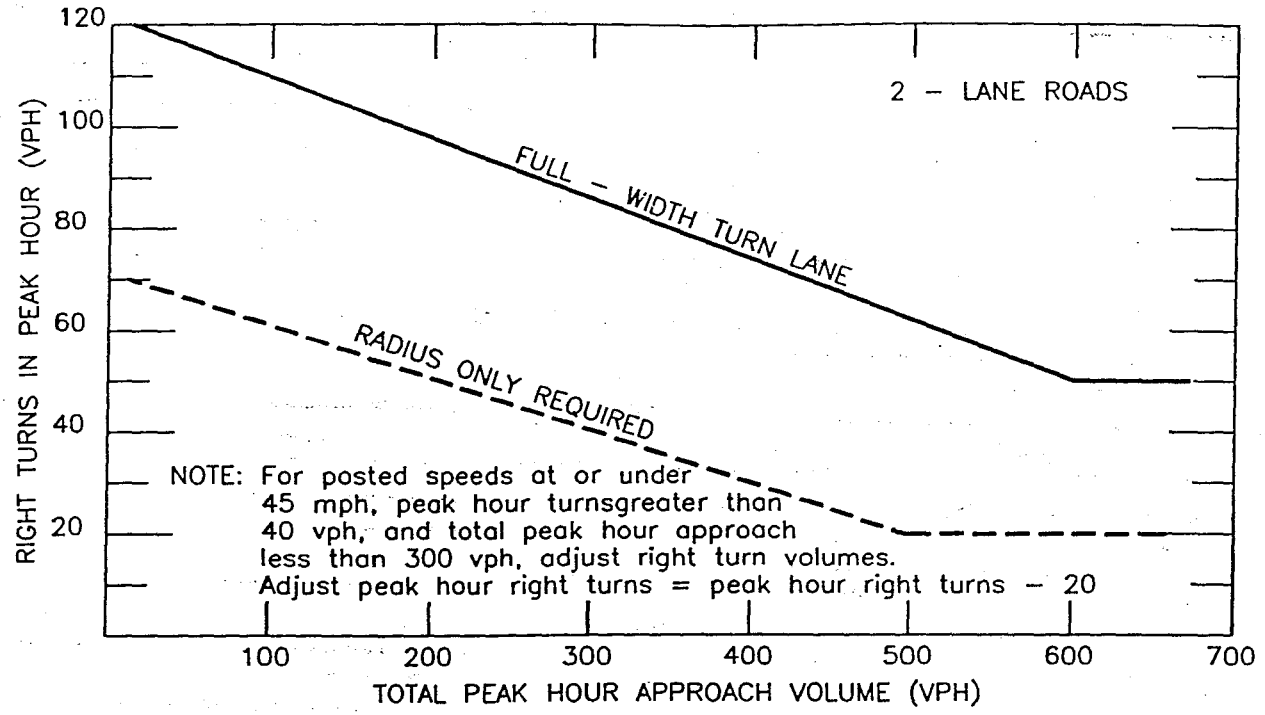
MINIMUM SIGHT ZONE DETAIL

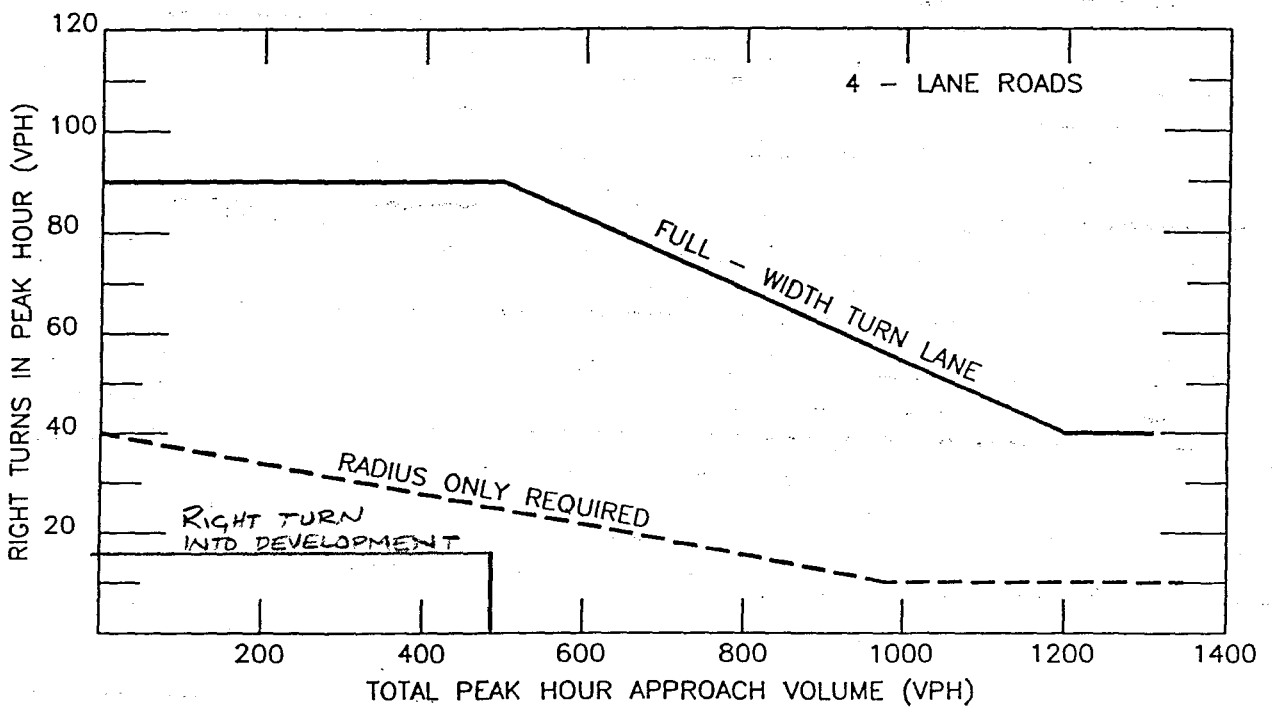
CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS

MINIMUM SIGHT ZONES AND SIGHT DISTANCES REQUIREMENTS

FIGURE 15

DN121294





CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS

VOLUME WARRANTS FOR RIGHT TURN DECELERATION LANES ON CITY STREETS

FIGURE 2

DN122794

Capital Improvement Project 10 Year Detail Listing

Capital Improvement Project Title

****

HORIZON DRIVE: 7TH ST. TO 12TH ST.

****

Project Number: 6000042

epartment: Public Works | Division: Projects & Engineering | Submitted By: Don Newton: 10-yr. CIP

roject Type: Streets, Traffic & Drain | Project Need: Expansion | Begin Date: 1/2000 | End Date: 12/9999

Yearly Expenditures	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	TOTAL
Original Budget Amount	0	0	0	0	0	1,087,000	0	0	0	0	0	1,087,000
Adjusted Budget Amount	0	0	0	0	0	0	0	0	0	0	0	
Revised Budget Amount	0	0	0	0	0	0	0	0	0	0	0	

roject Narrative:

his project is the reconstruction and widening of Horizon Drive to minor arterial urban standard (5 lanes) from 7th Street to 12th Street. Adequate right-of-way exists or the this improvement.

TRAFFIC COUNTS

NORTHBOUND THRU

This is Report Line Number One
This is Report Line Number Two

5-1996 Volume by Lane Report - D0606001.PRN 07:48 Pg 1

Sta: 000000000001 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Thu - Jun 06, 1996 at 10:45 End: Thu - Jun 06, 1996 at 24:00
City/Town: County:
Location: File: D0606001.PRN
Ln1-North Ln2-North

Thu - Jun 6, 1996

Lane	1	2	Total
11:00	0	55	55
11:15	1	62	63
11:30	0	77	77
11:45	0	97	97
12:00	0	88	88
12:15	35	99	134
12:30	18	73	91
12:45	15	78	93
13:00	6	63	69
13:15	9	80	89
13:30	10	64	74
13:45	9	73	82
14:00	4	68	72
14:15	3	55	58
0	3	70	73
14.45	6	62	68
15:00	3	67	70
15:15	11	82	93
15:30	3	70	73
15:45	1	78	79
16:00	0	82	82
16:15	0	87	87
16:30	0	97	97
16:45	0	76	76
17:00	0	86	86
17:15	0	110	110
17:30 ←	1	117	118 ←
17:45	1	106	107
18:00	2	92	94
18:15	24	63	87
18:30	36	48	84
18:45	29	53	82
19:00	25	29	54
19:15	29	38	67
19:30	33	34	67
19:45	27	26	53
20:00	33	35	68

Thu - Jun 6, 1996

I e	1	2	Total
20:15	20	23	43
2 30	22	30	52
2 45	29	25	54
21:00	27	31	58
21:15	29	42	71
2 30	32	38	70
2 45	26	28	54
22:00	27	22	49
2 15	18	23	41
2 30	16	13	29
22:45	13	21	34
23:00	7	14	21
2 15	7	8	15
23:30	10	8	18
23:45	15	16	31
2 00	7	4	11
Daily Totals	682	2986	3668
entages	18.59	81.41	

Sta: 000000000001 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Thu - Jun 06, 1996 at 10:45 End: Thu - Jun 06, 1996 at 24:00
City/Town: County:
Location: File: D0606001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	682	2986	3668
Percentages	18.59	81.41	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 11-12	1	324	325
entages	0.15	10.85	8.86
Pm Hour 17-18	4	425	429
Percentages	0.59	14.23	11.70

NORTHBOUND THRU

This is Report Line Number One
This is Report Line Number Two

Sta: 000000000001 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Fri - Jun 07, 1996 at 00:00 End: Fri - Jun 07, 1996 at 24:00
City/Town: County:
Location: File: D0607001.PRN
Ln1-North Ln2-North

Fri - Jun 7, 1996

Lane	1	2	Total
00:15	8	9	17
00:30	1	3	4
00:45	4	7	11
01:00	1	2	3
01:15	3	4	7
01:30	3	4	7
01:45	1	3	4
02:00	0	3	3
02:15	3	2	5
02:30	1	2	3
02:45	3	4	7
03:00	1	0	1
03:15	1	2	3
03:30	1	0	1
03:45	0	1	1
04:00	0	1	1
04:15	4	0	4
04:30	3	0	3
04:45	2	0	2
05:00	6	3	9
05:15	2	1	3
05:30	7	3	10
05:45	12	7	19
06:00	14	6	20
06:15	12	10	22
06:30	17	13	30
06:45	16	11	27
07:00	29	15	44
07:15	18	14	32
07:30	31	19	50
07:45	54	33	87
08:00	91	35	126
08:15	51	26	77
08:30	52	17	69
08:45	44	28	72
09:00	62	32	94
09:15	48	32	80

Fri - Jun 7, 1996

Lane	1	2	Total
09:30	34	29	63
09:45	50	40	90
10:00	32	35	67
10:15	29	48	77
10:30	43	57	100
10:45	29	68	97
11:00	28	72	100
11:15	12	67	79
11:30	16	72	88
11:45	11	107	118
12:00	11	127	138
12:15	11	124	135
12:30	7	110	117
12:45	16	95	111
13:00	11	79	90
13:15	14	95	109
13:30	7	91	98
13:45	11	96	107
:00	8	87	95
.5	5	95	100
14:30	0	92	92
14:45	2	93	95
5:00	6	90	96
15:15	8	76	84
15:30	1	79	80
5:45	0	96	96
6:00	8	96	104
16:15	3	105	108
6:30	9	89	98
6:45	6	110	116
17:00	5	98	103
17:15	8	110	118
7:30	17	98	115
7:45	26	94	120
18:00	33	77	110
3:15	30	68	98
3:30	27	68	95
18:45	27	47	74
19:00	36	51	87
:15	45	37	82
:30	32	39	71
19:45	31	31	62
:00	27	35	62

Fri - Jun 7, 1996

Lane	1	2	Total
20:15	32	35	67
20:30	28	31	59
20:45	22	25	47
21:00	32	36	68
21:15	48	39	87
21:30	31	42	73
21:45	31	35	66
22:00	18	19	37
22:15	33	29	62
22:30	24	20	44
22:45	25	26	51
23:00	19	13	32
23:15	15	23	38
23:30	15	16	31
23:45	15	15	30
24:00	9	7	16
Daily Totals	1775	4136	5911
Percentages	30.03	69.97	

Sta: 000000000001 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Fri - Jun 07, 1996 at 00:00 End: Fri - Jun 07, 1996 at 24:00
City/Town: County:
Location: File: D0607001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	1775	4136	5911
Percentages	30.03	69.97	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 11-12	50	373	423
Percentages	2.82	9.02	7.16
Pm Hour 17-18	84	379	463
Percentages	4.73	9.16	7.83

NorthBound Thru

This is Report Line Number One
This is Report Line Number Two

Sta: 000000000001 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Sat - Jun 08, 1996 at 00:00 End: Sat - Jun 08, 1996 at 24:00
City/Town: County:
Location: File: D0608001.PRN
Ln1-North Ln2-North

Sat - Jun 8, 1996

Lane	1	2	Total
00:15	7	7	14
00:30	10	12	22
00:45	7	4	11
01:00	2	5	7
01:15	4	9	13
01:30	6	3	9
01:45	5	6	11
02:00	4	4	8
02:15	1	3	4
02:30	1	1	2
02:45	2	2	4
03:00	2	0	2
03:15	0	2	2
0	2	4	6
03:45	0	0	0
04:00	4	4	8
04:15	2	1	3
04:30	1	0	1
04:45	0	1	1
05:00	0	3	3
05:15	3	2	5
05:30	3	3	6
05:45	11	3	14
06:00	12	5	17
06:15	7	5	12
06:30	12	12	24
06:45	7	10	17
07:00	17	11	28
07:15	19	7	26
07:30	13	16	29
07:45	25	20	45
08:00	30	19	49
08:15	28	16	44
08:30	34	22	56
08:45	24	17	41
09:00	30	27	57
09:15	26	24	50

Sat - Jun 8, 1996

Lane	1	2	Total
09:30	27	20	47
09:45	26	41	67
10:00	32	32	64
10:15	32	41	73
10:30	14	35	49
10:45	23	43	66
11:00	14	58	72
11:15	19	50	69
11:30	11	49	60
11:45	10	60	70
12:00	9	71	80
12:15	14	68	82
12:30	10	69	79
12:45	2	67	69
13:00	1	60	61
13:15	1	67	68
13:30	0	48	48
13:45	3	60	63
[illegible]00	0	46	46
[illegible]5	0	65	65
14:30	1	57	58
14:45	1	55	56
15:00	2	70	72
15:15	0	55	55
15:30	0	64	64
15:45	0	62	62
16:00	5	102	107
16:15	13	59	72
16:30	5	63	68
16:45	3	70	73
17:00	28	50	78
17:15	33	33	66
17:30	22	49	71
17:45	17	35	52
18:00	23	42	65
18:15	21	41	62
18:30	22	44	66
18:45	32	54	86
19:00	18	38	56
19:15	29	36	65
19:30	38	32	70
19:45	31	37	68
20:00	23	14	37

Sat - Jun 8, 1996

Lane	1	2	Total
20:15	28	23	51
20:30	32	27	59
20:45	23	16	39
21:00	23	28	51
21:15	21	33	54
21:30	39	33	72
21:45	31	37	68
22:00	23	24	47
22:15	23	27	50
22:30	22	22	44
22:45	13	18	31
23:00	17	25	42
23:15	21	19	40
23:30	11	11	22
23:45	15	12	27
24:00	8	9	17
Daily Totals	1326	2866	4192
entages	31.63	68.37	

Sta: 000000000001 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Sat - Jun 08, 1996 at 00:00 End: Sat - Jun 08, 1996 at 24:00
City/Town: County:
Location: File: D0608001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	1326	2866	4192
Percentages	31.63	68.37	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 11-12	49	230	279
entages	3.70	8.03	6.66
Pm Hour 12-13	27	264	291
Percentages	2.04	9.21	6.94

NORTHBOUND THRU

This is Report Line Number One
This is Report Line Number Two

25-1996 Volume by Lane Report - D0609001.PRN 08:06 Pg 1

Sta: 000000000001 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Sun - Jun 09, 1996 at 00:00 End: Sun - Jun 09, 1996 at 24:00
City/Town: County:
Location: File: D0609001.PRN
Ln1-North Ln2-North

Sun - Jun 9, 1996

Lane	1	2	Total
00:15	4	12	16
00:30	9	9	18
00:45	8	10	18
01:00	11	7	18
01:15	2	10	12
01:30	0	3	3
01:45	2	8	10
02:00	5	4	9
02:15	3	4	7
02:30	2	2	4
02:45	0	2	2
03:00	0	0	0
03:15	1	2	3
`0	0	1	1
03:45	0	2	2
04:00	0	2	2
04:15	0	0	0
04:30	1	0	1
04:45	0	0	0
05:00	2	2	4
05:15	4	2	6
05:30	3	2	5
05:45	4	0	4
06:00	12	4	16
06:15	8	4	12
06:30	5	6	11
06:45	5	6	11
07:00	9	6	15
07:15	8	3	11
07:30	6	5	11
07:45	10	7	17
08:00	13	10	23
08:15	19	6	25
08:30	31	10	41
08:45	26	27	53
09:00	17	21	38
09:15	22	27	49

Sun - Jun 9, 1996

Lane	1	2	Total
20:15	20	20	40
20:30	16	32	48
20:45	13	21	34
21:00	23	29	52
21:15	23	22	45
21:30	21	29	50
21:45	13	24	37
22:00	10	18	28
22:15	14	18	32
22:30	7	7	14
22:45	10	10	20
23:00	7	13	20
23:15	6	4	10
23:30	12	9	21
23:45	3	7	10
24:00	7	10	17
Daily Totals	747	2388	3135
:entages	23.83	76.17	

Sta: 000000000001 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Sun - Jun 09, 1996 at 00:00 End: Sun - Jun 09, 1996 at 24:00
City/Town: County:
Location: File: D0609001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	747	2388	3135
Percentages	23.83	76.17	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 10-11	44	229	273
entages	5.89	9.59	8.71
Pm Hour 12-13	0	250	250
Percentages	0.00	10.47	7.97

Sun - Jun 9, 1996

Lane	1	2	Total
09:30	33	23	56
09:45	18	28	46
10:00	10	25	35
10:15	10	31	41
10:30	21	57	78
10:45	12	83	95
11:00	1	58	59
11:15	2	46	48
11:30	2	46	48
11:45	1	54	55
12:00	0	55	55
12:15	0	71	71
12:30	0	79	79
12:45	0	64	64
13:00	0	36	36
13:15	1	54	55
13:30	0	39	39
13:45	0	42	42
14:00	0	48	48
5	0	35	35
14:30	1	60	61
14:45	0	43	43
15:00	0	50	50
15:15	0	33	33
15:30	2	50	52
15:45	3	38	41
16:00	0	41	41
16:15	0	50	50
16:30	0	41	41
16:45	5	49	54
17:00	11	60	71
17:15	3	37	40
17:30	10	27	37
17:45	7	38	45
18:00	8	45	53
18:15	14	40	54
18:30	20	36	56
18:45	10	30	40
19:00	16	35	51
19:15	9	35	44
19:30	22	25	47
19:45	18	24	42
20:00	20	28	48

NORTHBOUND THRU

This is Report Line Number One
This is Report Line Number Two

25-1996 Volume by Lane Report - D0610001.PRN 08:11 Pg 1

Sta: 000000000001 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Mon - Jun 10, 1996 at 00:00 End: Mon - Jun 10, 1996 at 11:15
City/Town: County:
Location: File: D0610001.PRN
Ln1-North Ln2-North

Mon - Jun 10, 1996

Lane	1	2	Total
00:15	1	3	4
00:30	6	5	11
00:45	4	9	13
01:00	2	3	5
01:15	1	3	4
01:30	1	2	3
01:45	0	3	3
02:00	0	2	2
02:15	1	0	1
02:30	1	1	2
02:45	0	2	2
03:00	2	2	4
03:15	1	0	1
0	0	0	0
03:45	2	3	5
04:00	1	1	2
04:15	1	1	2
04:30	0	0	0
04:45	4	2	6
05:00	3	1	4
05:15	8	5	13
05:30	6	5	11
05:45	13	7	20
06:00	12	8	20
06:15	17	5	22
06:30	17	19	36
06:45	23	12	35
07:00	27	18	45
07:15	30	12	42
07:30	18	17	35
07:45	52	26	78
08:00	70	32	102
08:15	47	28	75
08:30	52	31	83
08:45	45	27	72
09:00	60	45	105
09:15	30	43	73

Mon - Jun 10, 1996

Lane	1	2	Total
09:30	25	31	56
09:45	8	61	69
10:00	23	65	88
10:15	25	69	94
10:30	22	61	83
10:45	15	67	82
11:00	13	75	88
11:15	6	82	88
Daily Totals	695	894	1589
Percentages	43.74	56.26	

This is Report Line Number One
This is Report Line Number Two

Sta: 000000000001 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Mon - Jun 10, 1996 at 00:00 End: Mon - Jun 10, 1996 at 11:15
City/Town: County:
Location: File: D0610001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	695	894	1589
Percentages	43.74	56.26	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 10-11	75	272	347
entages	10.79	30.43	21.84
Pm Hour None			

WESTBOUND

This is Report Line Number One
This is Report Line Number Two

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Mon - Jun 10, 1996 at 16:00 End: Mon - Jun 10, 1996 at 24:00
City/Town: County:
Location: File: D0610002.PRN
Ln1-North Ln2-North

Mon - Jun 10, 1996

Lane	1	2	Total
16:15	52	15	67
16:30	65	15	80
16:45	85	26	111
17:00	70	18	88
17:15	91	30	121
17:30	59	21	80
17:45	75	18	93
18:00	59	18	77
18:15	58	15	73
18:30	50	11	61
18:45	67	15	82
19:00	74	12	86
19:15	46	11	57
19:30	47	10	57
19:45	39	10	49
20:00	32	4	36
20:15	36	8	44
20:30	27	4	31
20:45	18	5	23
21:00	20	4	24
21:15	19	6	25
21:30	19	6	25
21:45	24	7	31
22:00	12	3	15
22:15	20	6	26
22:30	8	1	9
22:45	12	2	14
23:00	11	3	14
23:15	18	6	24
23:30	8	2	10
23:45	16	6	22
24:00	6	1	7
Daily Totals	1243	319	1562
Percentages	79.58	20.42	

This is Report Line Number One
This is Report Line Number Two

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Mon - Jun 10, 1996 at 16:00 End: Mon - Jun 10, 1996 at 24:00
City/Town: County:
Location: File: D0610002.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	1243	319	1562
Percentages	79.58	20.42	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour None			
our 17-18	284	87	371
Percentages	22.85	27.27	23.75

WESTBOUND

This is Report Line Number One
This is Report Line Number Two

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Tue - Jun 11, 1996 at 00:00 End: Tue - Jun 11, 1996 at 24:00
City/Town: County:
Location: File: D0611001.PRN
Ln1-North Ln2-North

Tue - Jun 11, 1996

Lane	1	2	Total
00:15	3	0	3
00:30	4	2	6
00:45	5	1	6
01:00	6	2	8
01:15	5	1	6
01:30	4	0	4
01:45	3	0	3
02:00	9	3	12
02:15	2	0	2
02:30	6	1	7
02:45	1	0	1
03:00	3	1	4
03:15	0	0	0
:0	0	0	0
03:45	3	1	4
04:00	1	0	1
04:15	0	0	0
04:30	0	0	0
04:45	1	0	1
05:00	3	1	4
05:15	3	1	4
05:30	3	1	4
05:45	6	2	8
06:00	9	3	12
06:15	13	5	18
06:30	19	6	25
06:45	16	6	22
07:00	40	16	56
07:15	38	14	52
07:30	45	16	61
07:45	58	14	72
08:00	65	20	85
08:15	42	16	58
08:30	52	17	69
08:45	57	14	71
09:00	75	17	92
09:15	71	22	93

Tue - Jun 11, 1996

Lane	1	2	Total
09:30	60	14	74
09:45	62	14	76
10:00	58	11	69
10:15	65	19	84
10:30	77	24	101
10:45	59	15	74
11:00	86	26	112
11:15	56	14	70
11:30	75	21	96
11:45	79	21	100
12:00	87	21	108
12:15	91	26	117
12:30	64	18	82
12:45	69	15	84
13:00	97	23	120
13:15	80	14	94
13:30	76	20	96
13:45	73	22	95
14:00	62	20	82
5	65	16	81
14:30	69	24	93
14:45	55	11	66
15:00	63	17	80
15:15	61	20	81
15:30	63	19	82
15:45	64	16	80
16:00	84	25	109
16:15	76	25	101
16:30	86	23	109
16:45	74	25	99
17:00	58	16	74
17:15	76	23	99
17:30	65	22	87
17:45	55	16	71
18:00	46	14	60
18:15	57	13	70
18:30	49	13	62
18:45	39	11	50
19:00	55	16	71
19:15	40	9	49
19:30	25	8	33
19:45	39	10	49
20:00	39	7	46

Tue - Jun 11, 1996

Lane	1	2	Total
20:15	40	9	49
20:30	34	4	38
20:45	35	5	40
21:00	27	6	33
21:15	31	8	39
21:30	26	7	33
21:45	18	4	22
22:00	9	2	11
22:15	14	3	17
22:30	18	5	23
22:45	5	1	6
23:00	12	4	16
23:15	11	4	15
23:30	12	2	14
23:45	6	2	8
24:00	4	0	4
Daily Totals	3752	1026	4778
centages	78.53	21.47	

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Tue - Jun 11, 1996 at 00:00 End: Tue - Jun 11, 1996 at 24:00
City/Town: County:
Location: File: D0611001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	3752	1026	4778
Percentages	78.53	21.47	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 11-12	297	77	374
:entages	7.92	7.50	7.83
Pm Hour 12-13	321	82	403
Percentages	8.56	7.99	8.43

WESTBOUND

This is Report Line Number One
This is Report Line Number Two

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Wed - Jun 12, 1996 at 00:00 End: Wed - Jun 12, 1996 at 24:00
City/Town: County:
Location: File: D0612001.PRN
Ln1-North Ln2-North

Wed - Jun 12, 1996

Lane	1	2	Total
00:15	4	2	6
00:30	1	0	1
00:45	5	1	6
01:00	4	0	4
01:15	4	0	4
01:30	4	2	6
01:45	4	0	4
02:00	10	1	11
02:15	5	3	8
02:30	5	2	7
02:45	5	2	7
03:00	3	1	4
03:15	2	1	3
0	3	0	3
03:45	1	0	1
04:00	2	0	2
04:15	1	0	1
04:30	2	0	2
04:45	2	0	2
05:00	4	1	5
05:15	1	0	1
05:30	2	0	2
05:45	4	1	5
06:00	8	3	11
06:15	5	1	6
06:30	22	11	33
06:45	24	7	31
07:00	28	8	36
07:15	37	18	55
07:30	40	12	52
07:45	62	21	83
08:00	75	26	101
08:15	53	15	68
08:30	54	21	75
08:45	67	23	90
09:00	79	21	100
09:15	72	21	93

Wed - Jun 12, 1996

Lane	1	2	Total
09:30	58	17	75
09:45	43	14	57
10:00	69	22	91
10:15	76	18	94
10:30	67	16	83
10:45	62	17	79
11:00	78	15	93
11:15	61	18	79
11:30	69	17	86
11:45	64	16	80
12:00	75	20	95
12:15	87	29	116
12:30	85	26	111
12:45	80	21	101
13:00	75	22	97
13:15	76	19	95
13:30	71	23	94
13:45	69	20	89
14:00	80	19	99
5	74	24	98
14:30	78	43	121
14:45	60	42	102
15:00	61	28	89
15:15	76	22	98
15:30	72	19	91
15:45	58	17	75
16:00	56	13	69
16:15	70	22	92
16:30	61	21	82
16:45	71	27	98
17:00	84	26	110
17:15	67	21	88
17:30	57	19	76
17:45	49	14	63
18:00	54	15	69
18:15	58	18	76
18:30	49	10	59
18:45	43	10	53
19:00	56	16	72
19:15	51	13	64
19:30	51	12	63
19:45	33	7	40
20:00	25	6	31

Wed - Jun 12, 1996

Lane	1	2	Total
20:15	32	9	41
20:30	28	6	34
20:45	44	17	61
21:00	30	11	41
21:15	38	11	49
21:30	25	7	32
21:45	19	5	24
22:00	25	7	32
22:15	10	1	11
22:30	10	3	13
22:45	13	2	15
23:00	14	3	17
23:15	14	6	20
23:30	10	2	12
23:45	10	4	14
24:00	6	3	9
Daily Totals	3791	1156	4947
centages	76.63	23.37	

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Wed - Jun 12, 1996 at 00:00 End: Wed - Jun 12, 1996 at 24:00
City/Town: County:
Location: File: D0612001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	3791	1156	4947
Percentages	76.63	23.37	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 10-11	283	66	349
entages	7.47	5.71	7.05
Pm Hour 12-13	327	98	425
Percentages	8.63	8.48	8.59

WESTBOUND TILL 12:00
SOUTHBOUND THEREAFTER

This is Report Line Number One
This is Report Line Number Two

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Thu - Jun 13, 1996 at 00:00 End: Thu - Jun 13, 1996 at 24:00
City/Town: County:
Location: File: D0613001.PRN
Ln1-North Ln2-North

Thu - Jun 13, 1996

Lane	1	2	Total
00:15	5	1	6
00:30	3	0	3
00:45	6	1	7
01:00	3	0	3
01:15	6	1	7
01:30	1	0	1
01:45	1	0	1
02:00	4	1	5
02:15	2	0	2
02:30	1	1	2
02:45	2	0	2
03:00	2	0	2
03:15	5	4	9
03:30	2	0	2
03:45	0	0	0
04:00	2	0	2
04:15	0	0	0
04:30	4	0	4
04:45	1	0	1
05:00	3	1	4
05:15	3	1	4
05:30	6	1	7
05:45	3	0	3
06:00	8	4	12
06:15	7	3	10
06:30	18	4	22
06:45	26	8	34
07:00	38	11	49
07:15	38	15	53
07:30	43	18	61
07:45	69	19	88
08:00	76	18	94
08:15	65	17	82
08:30	57	15	72
08:45	58	11	69
09:00	80	21	101
09:15	64	19	83

Thu - Jun 13, 1996

Lane	1	2	Total
09:30	67	22	89
09:45	63	16	79
10:00	71	21	92
10:15	69	19	88
10:30	66	20	86
10:45	64	18	82
11:00	64	15	79
11:15	65	18	83
11:30	64	24	88
11:45	67	23	90
12:00	46	13	59
12:15	11	30	41
12:30	8	27	35
12:45	12	37	49
13:00	17	62	79
13:15	17	43	60
13:30	14	35	49
13:45	12	34	46
14:00	7	31	38
14:15	9	25	34
14:30	11	36	47
14:45	9	25	34
15:00	11	41	52
15:15	6	34	40
15:30	5	22	27
15:45	8	28	36
16:00	7	29	36
16:15	11	40	51
16:30	6	36	42
16:45	3	24	27
17:00	7	33	40
17:15	11	34	45
17:30	10	35	45
17:45	8	22	30
18:00	10	29	39
18:15	6	31	37
18:30	6	26	32
18:45	3	28	31
19:00	5	29	34
19:15	9	20	29
19:30	4	14	18
19:45	4	15	19
20:00	2	12	14

← CHANGE LOCATION SOUTHBOUND

Thu - Jun 13, 1996

Lane	1	2	Total
20:15	0	13	13
20:30	1	14	15
20:45	2	11	13
21:00	2	12	14
21:15	0	12	12
21:30	0	11	11
21:45	2	11	13
22:00	2	11	13
22:15	2	11	13
22:30	2	8	10
22:45	0	8	8
23:00	2	5	7
23:15	0	1	1
23:30	0	4	4
23:45	0	4	4
24:00	0	4	4
Daily Totals	1702	1511	3213
entages	52.97	47.03	

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Thu - Jun 13, 1996 at 00:00 End: Thu - Jun 13, 1996 at 24:00
City/Town: County:
Location: File: D0613001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	1702	1511	3213
Percentages	52.97	47.03	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 9-10	265	78	343
:entages	15.57	5.16	10.68
Pm Hour 12-13	48	156	204
Percentages	2.82	10.32	6.35

SOUTHBOUND

This is Report Line Number One
This is Report Line Number Two

_5-1996 Volume by Lane Report - D0614001.PRN 08:39 Pg 1

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Fri - Jun 14, 1996 at 00:00 End: Fri - Jun 14, 1996 at 24:00
City/Town: County:
Location: File: D0614001.PRN
Ln1-North Ln2-North

Fri - Jun 14, 1996

Lane	1	2	Total
00:15	0	3	3
00:30	0	0	0
00:45	0	0	0
01:00	0	0	0
01:15	0	1	1
01:30	0	2	2
01:45	0	0	0
02:00	0	1	1
02:15	0	0	0
02:30	0	1	1
02:45	0	1	1
03:00	0	1	1
03:15	0	0	0
0	0	0	0
03:45	0	0	0
04:00	0	0	0
04:15	0	1	1
04:30	0	0	0
04:45	0	0	0
05:00	0	6	6
05:15	0	1	1
05:30	0	3	3
05:45	1	3	4
06:00	0	5	5
06:15	1	5	6
06:30	3	20	23
06:45	4	21	25
07:00	5	27	32
07:15	9	25	34
07:30	13	30	43
07:45	20	47	67
08:00	18	56	74
08:15	12	47	59
08:30	10	39	49
08:45	16	49	65
09:00	18	44	62
09:15	6	29	35

Fri - Jun 14, 1996

Lane	1	2	Total
09:30	10	33	43
09:45	7	29	36
10:00	11	34	45
10:15	13	30	43
10:30	4	25	29
10:45	13	37	50
11:00	8	30	38
11:15	8	27	35
11:30	11	29	40
11:45	3	36	39
12:00	6	32	38
12:15	9	23	32
12:30	4	24	28
12:45	11	38	49
13:00	16	50	66
13:15	9	34	43
13:30	8	22	30
13:45	10	30	40
14:00	16	40	56
5	13	37	50
14:30	10	26	36
14:45	9	37	46
15:00	8	31	39
15:15	9	26	35
15:30	10	35	45
15:45	8	35	43
16:00	6	32	38
16:15	4	26	30
16:30	14	23	37
16:45	8	25	33
17:00	8	32	40
17:15	7	20	27
17:30	7	31	38
17:45	9	27	36
18:00	2	23	25
18:15	3	21	24
18:30	4	25	29
18:45	3	33	36
19:00	4	20	24
19:15	3	19	22
19:30	1	20	21
19:45	2	14	16
20:00	0	10	10

Fri - Jun 14, 1996

Lane	1	2	Total
20:15	3	17	20
20:30	2	13	15
20:45	0	16	16
21:00	0	9	9
21:15	2	13	15
21:30	2	9	11
21:45	0	6	6
22:00	2	10	12
22:15	1	8	9
22:30	2	6	8
22:45	0	8	8
23:00	0	5	5
23:15	0	3	3
23:30	0	2	2
23:45	1	5	6
24:00	2	7	9
Daily Totals	482	1836	2318
:entages	20.79	79.21	

This is Report Line Number One
This is Report Line Number Two

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Fri - Jun 14, 1996 at 00:00 End: Fri - Jun 14, 1996 at 24:00
City/Town: County:
Location: File: D0614001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	482	1836	2318
Percentages	20.79	79.21	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 8-9	56	179	235
:entages	11.62	9.75	10.14
Pm Hour 12-13	40	135	175
Percentages	8.30	7.35	7.55

SOUTHBOUND

This is Report Line Number One
This is Report Line Number Two

25-1996 Volume by Lane Report - D0615001.PRN 08:42 Pg 1

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Sat - Jun 15, 1996 at 00:00 End: Sat - Jun 15, 1996 at 24:00
City/Town: County:
Location: File: D0615001.PRN
Ln1-North Ln2-North

Sat - Jun 15, 1996

Lane	1	2	Total
00:15	0	2	2
00:30	0	4	4
00:45	1	5	6
01:00	0	2	2
01:15	0	0	0
01:30	1	3	4
01:45	0	1	1
02:00	0	1	1
02:15	0	0	0
02:30	0	0	0
02:45	0	1	1
03:00	0	0	0
03:15	0	0	0
:0	0	0	0
03:45	0	0	0
04:00	0	0	0
04:15	0	0	0
04:30	0	0	0
04:45	0	0	0
05:00	0	2	2
05:15	0	0	0
05:30	0	1	1
05:45	0	1	1
06:00	1	3	4
06:15	0	5	5
06:30	1	5	6
06:45	1	11	12
07:00	1	10	11
07:15	0	6	6
07:30	2	11	13
07:45	3	9	12
08:00	3	14	17
08:15	8	21	29
08:30	3	9	12
08:45	4	23	27
09:00	7	27	34
09:15	4	22	26

Sat - Jun 15, 1996

Lane	1	2	Total
09:30	7	24	31
09:45	1	17	18
10:00	7	24	31
10:15	5	21	26
10:30	3	23	26
10:45	8	27	35
11:00	8	34	42
11:15	7	27	34
11:30	6	27	33
11:45	4	22	26
12:00	6	23	29
12:15	4	20	24
12:30	3	24	27
12:45	7	20	27
13:00	4	31	35
13:15	4	17	21
13:30	4	24	28
13:45	6	20	26
14:00	9	26	35
14:15	6	22	28
14:30	1	28	29
14:45	5	24	29
15:00	5	25	30
15:15	5	22	27
15:30	2	23	25
15:45	7	20	27
16:00	3	16	19
16:15	2	20	22
16:30	1	19	20
16:45	0	14	14
17:00	3	10	13
17:15	5	20	25
17:30	6	21	27
17:45	3	23	26
18:00	1	14	15
18:15	2	16	18
18:30	3	19	22
18:45	9	15	24
19:00	5	20	25
19:15	0	15	15
19:30	1	15	16
19:45	0	15	15
20:00	2	11	13

Sat - Jun 15, 1996

Lane	1	2	Total
20:15	1	11	12
20:30	1	21	22
20:45	0	12	12
21:00	4	18	22
21:15	1	8	9
21:30	0	11	11
21:45	1	14	15
22:00	0	9	9
22:15	2	9	11
22:30	2	15	17
22:45	0	9	9
23:00	1	5	6
23:15	1	9	10
23:30	1	7	8
23:45	0	7	7
24:00	0	7	7
Daily Totals	235	1269	1504
:entages	15.63	84.38	

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Sat - Jun 15, 1996 at 00:00 End: Sat - Jun 15, 1996 at 24:00
City/Town: County:
Location: File: D0615001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	235	1269	1504
Percentages	15.63	84.38	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 10-11	24	105	129
:entages	10.21	8.27	8.58
Pm Hour 14-15	17	99	116
Percentages	7.23	7.80	7.71

SOUTHBOUND

This is Report Line Number One
This is Report Line Number Two

25-1996 Volume by Lane Report - D0616001.PRN 08:44 Pg 1

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Sun - Jun 16, 1996 at 00:00 End: Sun - Jun 16, 1996 at 24:00
City/Town: County:
Location: File: D0616001.PRN
Ln1-North Ln2-North

Sun - Jun 16, 1996

Lane	1	2	Total
00:15	0	5	5
00:30	0	8	8
00:45	0	1	1
01:00	1	0	1
01:15	0	4	4
01:30	0	3	3
01:45	0	1	1
02:00	0	1	1
02:15	0	1	1
02:30	0	0	0
02:45	0	0	0
03:00	0	0	0
03:15	0	0	0
:0	0	0	0
03:45	0	1	1
04:00	0	1	1
04:15	1	6	7
04:30	0	1	1
04:45	0	0	0
05:00	0	0	0
05:15	0	0	0
05:30	0	0	0
05:45	0	1	1
06:00	0	0	0
06:15	1	0	1
06:30	1	1	2
06:45	1	3	4
07:00	1	5	6
07:15	2	8	10
07:30	2	17	19
07:45	1	13	14
08:00	0	7	7
08:15	4	4	8
08:30	4	13	17
08:45	3	14	17
09:00	3	25	28
09:15	7	27	34

Sun - Jun 16, 1996

Lane	1	2	Total
09:30	3	25	28
09:45	7	19	26
10:00	3	23	26
10:15	5	20	25
10:30	2	20	22
10:45	3	30	33
11:00	7	24	31
11:15	7	19	26
11:30	3	24	27
11:45	4	20	24
12:00	3	20	23
12:15	3	20	23
12:30	2	21	23
12:45	1	13	14
13:00	4	21	25
13:15	4	15	19
13:30	7	17	24
13:45	7	19	26
14:00	3	18	21
:5	8	28	36
14:30	2	25	27
14:45	6	21	27
15:00	3	20	23
15:15	1	20	21
15:30	5	14	19
15:45	2	14	16
16:00	5	18	23
16:15	1	15	16
16:30	5	15	20
16:45	6	18	24
17:00	4	19	23
17:15	3	19	22
17:30	6	17	23
17:45	5	20	25
18:00	7	30	37
18:15	2	22	24
18:30	3	15	18
18:45	2	18	20
19:00	3	12	15
19:15	0	17	17
19:30	1	15	16
19:45	2	12	14
20:00	0	18	18

Sun - Jun 16, 1996

Lane	1	2	Total
20:15	1	14	15
20:30	5	16	21
20:45	3	20	23
21:00	5	23	28
21:15	6	20	26
21:30	3	17	20
21:45	0	6	6
22:00	0	6	6
22:15	1	8	9
22:30	0	3	3
22:45	0	0	0
23:00	0	3	3
23:15	0	1	1
23:30	0	0	0
23:45	0	3	3
24:00	0	4	4
Daily Totals	216	1145	1361
entages	15.87	84.13	

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Sun - Jun 16, 1996 at 00:00 End: Sun - Jun 16, 1996 at 24:00
City/Town: County:
Location: File: D0616001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	216	1145	1361
Percentages	15.87	84.13	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 9-10	20	94	114
entages	9.26	8.21	8.38
Pm Hour 14-15	19	94	113
Percentages	8.80	8.21	8.30

SOUTHBOUND

This is Report Line Number One
This is Report Line Number Two

_5-1996 Volume by Lane Report - D0617001.PRN 08:46 Pg 1

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Mon - Jun 17, 1996 at 00:00 End: Mon - Jun 17, 1996 at 24:00
City/Town: County:
Location: File: D0617001.PRN
Ln1-North Ln2-North

Mon - Jun 17, 1996

Lane	1	2	Total
00:15	0	1	1
00:30	1	1	2
00:45	0	0	0
01:00	0	0	0
01:15	0	0	0
01:30	0	1	1
01:45	0	0	0
02:00	0	2	2
02:15	0	3	3
02:30	0	0	0
02:45	0	0	0
03:00	0	0	0
03:15	0	1	1
0	0	0	0
03:45	0	0	0
04:00	0	1	1
04:15	0	0	0
04:30	0	1	1
04:45	0	2	2
05:00	0	3	3
05:15	0	1	1
05:30	0	0	0
05:45	0	3	3
06:00	0	8	8
06:15	2	16	18
06:30	4	22	26
06:45	3	13	16
07:00	8	30	38
07:15	9	30	39
07:30	14	41	55
07:45	10	43	53
08:00	21	56	77
08:15	11	40	51
08:30	12	28	40
08:45	11	39	50
09:00	11	49	60
09:15	13	41	54

Mon - Jun 17, 1996

Lane	1	2	Total
09:30	12	34	46
09:45	7	23	30
10:00	11	31	42
10:15	10	33	43
10:30	7	26	33
10:45	5	18	23
11:00	13	41	54
11:15	14	29	43
11:30	10	35	45
11:45	9	17	26
12:00	16	33	49
12:15	12	30	42
12:30	10	29	39
12:45	4	29	33
13:00	21	40	61
13:15	14	42	56
13:30	14	35	49
13:45	14	42	56
14:00	13	37	50
5	13	25	38
14:30	6	29	35
14:45	6	29	35
15:00	11	28	39
15:15	9	27	36
15:30	7	23	30
15:45	5	27	32
16:00	8	28	36
16:15	12	25	37
16:30	11	36	47
16:45	6	24	30
17:00	13	33	46
17:15	9	36	45
17:30	12	36	48
17:45	9	30	39
18:00	4	25	29
18:15	4	25	29
18:30	4	18	22
18:45	2	18	20
19:00	4	26	30
19:15	9	21	30
19:30	5	23	28
19:45	2	13	15
20:00	3	22	25

Mon - Jun 17, 1996

Lane	1	2	Total
20:15	0	17	17
20:30	8	21	29
20:45	3	28	31
21:00	0	13	13
21:15	1	12	13
21:30	4	10	14
21:45	2	10	12
22:00	0	10	10
22:15	1	8	9
22:30	2	8	10
22:45	0	5	5
23:00	0	5	5
23:15	1	6	7
23:30	1	5	6
23:45	0	2	2
24:00	0	4	4
Daily Totals	543	1871	2414
entages	22.49	77.51	

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Mon - Jun 17, 1996 at 00:00 End: Mon - Jun 17, 1996 at 24:00
City/Town: County:
Location: File: D0617001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	543	1871	2414
Percentages	22.49	77.51	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 7-8	54	170	224
entages	9.94	9.09	9.28
Pm Hour 13-14	55	156	211
Percentages	10.13	8.34	8.74

SOUTHBOUND

This is Report Line Number One
This is Report Line Number Two

_5-1996 Volume by Lane Report - D0618001.PRN 08:48 Pg 1

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Tue - Jun 18, 1996 at 00:00 End: Tue - Jun 18, 1996 at 24:00
City/Town: County:
Location: File: D0618001.PRN
Ln1-North Ln2-North

Tue - Jun 18, 1996

Lane	1	2	Total
00:15	0	1	1
00:30	0	1	1
00:45	0	1	1
01:00	0	3	3
01:15	0	5	5
01:30	0	1	1
01:45	0	0	0
02:00	0	0	0
02:15	0	0	0
02:30	0	0	0
02:45	0	0	0
03:00	0	0	0
03:15	0	0	0
9	0	0	0
03:45	0	0	0
04:00	0	0	0
04:15	0	0	0
04:30	0	3	3
04:45	0	0	0
05:00	0	1	1
05:15	0	3	3
05:30	0	0	0
05:45	0	6	6
06:00	1	9	10
06:15	1	8	9
06:30	3	18	21
06:45	4	18	22
07:00	9	29	38
07:15	13	33	46
07:30	11	43	54
07:45	8	41	49
08:00	20	50	70
08:15	22	60	82
08:30	17	47	64
08:45	7	30	37
09:00	13	40	53
09:15	9	35	44

Tue - Jun 18, 1996

Lane	1	2	Total
09:30	8	36	44
09:45	12	46	58
10:00	12	37	49
10:15	11	33	44
10:30	8	24	32
10:45	7	21	28
11:00	12	36	48
11:15	6	28	34
11:30	7	34	41
11:45	12	25	37
12:00	9	41	50
12:15	5	32	37
12:30	10	18	28
12:45	15	8	23
13:00	15	7	22
13:15	14	11	25
13:30	5	7	12
13:45	13	7	20
14:00	11	9	20
5	11	7	18
14:30	14	9	23
14:45	5	4	9
15:00	10	5	15
15:15	3	2	5
15:30	12	9	21
15:45	8	3	11
16:00	7	4	11
16:15	6	4	10
16:30	11	4	15
16:45	9	7	16
17:00	9	8	17
17:15	10	6	16
17:30	6	4	10
17:45	11	10	21
18:00	16	7	23
18:15	9	13	22
18:30	3	12	15
18:45	5	17	22
19:00	6	14	20
19:15	4	11	15
19:30	6	18	24
19:45	5	16	21
20:00	2	12	14

Tue - Jun 18, 1996

Lane	1	2	Total
20:15	3	16	19
20:30	12	9	21
20:45	10	25	35
21:00	2	9	11
21:15	0	11	11
21:30	2	16	18
21:45	2	9	11
22:00	1	9	10
22:15	1	7	8
22:30	1	4	5
22:45	0	5	5
23:00	0	0	0
23:15	1	4	5
23:30	0	4	4
23:45	1	4	5
24:00	0	1	1
Daily Totals	554	1285	1839
entages	30.13	69.87	

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Tue - Jun 18, 1996 at 00:00 End: Tue - Jun 18, 1996 at 24:00
City/Town: County:
Location: File: D0618001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	554	1285	1839
Percentages	30.13	69.87	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 8-9	59	177	236
entages	10.65	13.77	12.83
Hour 12-13	45	65	110
Percentages	8.12	5.06	5.98

SOUTHBOUND TILL 8:00
EASTBOUND THEREAFTER

This is Report Line Number One
This is Report Line Number Two

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Wed - Jun 19, 1996 at 00:00 End: Wed - Jun 19, 1996 at 24:00
City/Town: County:
Location: File: D0619001.PRN
Ln1-North Ln2-North

Wed - Jun 19, 1996

Lane	1	2	Total
00:15	0	2	2
00:30	0	0	0
00:45	1	5	6
01:00	0	3	3
01:15	0	2	2
01:30	1	1	2
01:45	0	0	0
02:00	0	0	0
02:15	0	0	0
02:30	0	1	1
02:45	0	0	0
03:00	0	0	0
03:15	0	1	1
0	0	0	0
03:45	0	0	0
04:00	0	0	0
04:15	0	0	0
04:30	0	0	0
04:45	0	0	0
05:00	0	3	3
05:15	0	3	3
05:30	1	1	2
05:45	2	5	7
06:00	3	4	7
06:15	0	8	8
06:30	2	17	19
06:45	5	21	26
07:00	17	31	48
07:15	12	21	33
07:30	20	26	46
07:45	13	31	44
08:00 ← CHANGE LOCATION EASTBOUND	27	56	83
08:15	6	18	24
08:30	1	1	2
08:45	2	2	4
09:00	0	0	0
09:15	1	3	4

Wed - Jun 19, 1996

Lane	1	2	Total
09:30	1	2	3
09:45	6	7	13
10:00	0	0	0
10:15	1	3	4
10:30	5	5	10
10:45	6	7	13
11:00	3	5	8
11:15	5	6	11
11:30	6	5	11
11:45	2	4	6
12:00	2	2	4
12:15	1	3	4
12:30	2	3	5
12:45	2	2	4
13:00	0	0	0
13:15	3	5	8
13:30	2	2	4
13:45	8	10	18
14:00	2	5	7
5	4	3	7
14:30	7	10	17
14:45	3	3	6
15:00	2	6	8
15:15	3	4	7
15:30	2	2	4
15:45	2	2	4
16:00	2	3	5
16:15	3	4	7
16:30	5	6	11
16:45	0	4	4
17:00	2	5	7
17:15	3	3	6
17:30	1	2	3
17:45	1	3	4
18:00	2	4	6
18:15	0	0	0
18:30	2	2	4
18:45	3	4	7
19:00	3	3	6
19:15	0	0	0
19:30	2	1	3
19:45	2	3	5
20:00	2	4	6

Wed - Jun 19, 1996

Lane	1	2	Total
20:15	0	0	0
20:30	2	2	4
20:45	4	6	10
21:00	0	1	1
21:15	3	2	5
21:30	0	2	2
21:45	0	1	1
22:00	1	3	4
22:15	0	1	1
22:30	1	1	2
22:45	0	1	1
23:00	0	0	0
23:15	0	0	0
23:30	0	0	0
23:45	0	0	0
24:00	0	0	0
Daily Totals	238	443	681
entages	34.95	65.05	

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Wed - Jun 19, 1996 at 00:00 End: Wed - Jun 19, 1996 at 24:00
City/Town: County:
Location: File: D0619001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	238	443	681
Percentages	34.95	65.05	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 7-8	72	134	206
:entages	30.25	30.25	30.25
Pm Hour 14-15	16	22	38
Percentages	6.72	4.97	5.58

EASTBOUND

This is Report Line Number One
This is Report Line Number Two

25-1996 Volume by Lane Report - D0620001.PRN 08:51 Pg 1

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Thu - Jun 20, 1996 at 00:00 End: Thu - Jun 20, 1996 at 24:00
City/Town: County:
Location: File: D0620001.PRN
Ln1-North Ln2-North

Thu - Jun 20, 1996

Lane	1	2	Total
00:15	0	0	0
00:30	0	0	0
00:45	0	0	0
01:00	0	0	0
01:15	0	0	0
01:30	0	0	0
01:45	0	0	0
02:00	0	0	0
02:15	0	0	0
02:30	0	0	0
02:45	1	1	2
03:00	0	0	0
03:15	0	0	0
[illegible]0	0	0	0
[illegible]45	0	0	0
04:00	0	0	0
04:15	0	0	0
04:30	0	0	0
04:45	0	0	0
05:00	0	0	0
05:15	0	0	0
05:30	1	1	2
05:45	0	0	0
06:00	0	0	0
06:15	1	3	4
06:30	0	0	0
06:45	0	0	0
07:00	0	0	0
07:15	2	3	5
07:30	0	1	1
07:45	5	6	11
08:00	3	2	5
08:15	0	0	0
08:30	1	4	5
08:45	1	2	3
09:00	3	5	8
09:15	2	3	5

Thu - Jun 20, 1996

Lane	1	2	Total
09:30	3	4	7
09:45	1	2	3
10:00	1	2	3
10:15	3	6	9
10:30	6	10	16
10:45	2	4	6
11:00	3	5	8
11:15	4	8	12
11:30	3	6	9
11:45	5	4	9
12:00	3	5	8
12:15	3	4	7
12:30	3	4	7
12:45	1	1	2
13:00	2	1	3
13:15	0	1	1
13:30	2	1	3
13:45	2	3	5
14:00	3	2	5
5	6	10	16
14.30	1	3	4
14:45	3	4	7
15:00	5	7	12
15:15	4	5	9
15:30	7	11	18
15:45	2	4	6
16:00	5	4	9
16:15	3	3	6
16:30	5	5	10
16:45	3	4	7
17:00	2	5	7
17:15	2	4	6
17:30	1	0	1
17:45	1	2	3
18:00	0	2	2
18:15	0	1	1
18:30	3	2	5
18:45	3	3	6
19:00	3	5	8
19:15	1	1	2
19:30	0	1	1
19:45	5	5	10
20:00	3	4	7

Thu - Jun 20, 1996

Lane	1	2	Total
20:15	3	3	6
20:30	0	0	0
20:45	1	4	5
21:00	1	1	2
21:15	2	1	3
21:30	1	2	3
21:45	2	3	5
22:00	3	5	8
22:15	1	1	2
22:30	0	1	1
22:45	0	0	0
23:00	0	0	0
23:15	0	0	0
23:30	0	0	0
23:45	0	0	0
24:00	0	0	0
Daily Totals	152	220	372
entages	40.86	59.14	

This is Report Line Number One
This is Report Line Number Two

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Thu - Jun 20, 1996 at 00:00 End: Thu - Jun 20, 1996 at 24:00
City/Town: County:
Location: File: D0620001.PRN
Ln1-North Ln2-North

Station Data Summary

ane	1	2	Total
Grand Totals	152	220	372
ercentages	40.86	59.14	

Am/Pm Peak Hour Totals

ane	1	2	Total
Am Hour 10-11	14	25	39
entages	9.21	11.36	10.48
Hour 15-16	18	24	42
Percentages	11.84	10.91	11.29

EASTBOUND

This is Report Line Number One
This is Report Line Number Two

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Fri - Jun 21, 1996 at 00:00 End: Fri - Jun 21, 1996 at 24:00
City/Town: County:
Location: File: D0621001.PRN
Ln1-North Ln2-North

Fri - Jun 21, 1996

Lane	1	2	Total
00:15	0	0	0
00:30	0	0	0
00:45	0	0	0
01:00	0	0	0
01:15	0	0	0
01:30	0	0	0
01:45	0	0	0
02:00	0	0	0
02:15	0	0	0
02:30	0	0	0
02:45	0	0	0
03:00	0	0	0
03:15	0	0	0
0	0	0	0
03:45	0	0	0
04:00	0	0	0
04:15	0	0	0
04:30	0	0	0
04:45	0	0	0
05:00	0	0	0
05:15	0	0	0
05:30	0	0	0
05:45	1	1	2
06:00	0	0	0
06:15	1	1	2
06:30	0	0	0
06:45	2	4	6
07:00	1	1	2
07:15	0	0	0
07:30	1	1	2
07:45	1	2	3
08:00	2	2	4
08:15	0	0	0
08:30	1	1	2
08:45	1	3	4
09:00	5	5	10
09:15	0	0	0

Fri - Jun 21, 1996

Lane	1	2	Total
09:30	1	2	3
09:45	2	7	9
10:00	3	5	8
10:15	4	4	8
10:30	3	4	7
10:45	3	3	6
11:00	4	5	9
11:15	3	3	6
11:30	2	3	5
11:45	4	6	10
12:00	3	4	7
12:15	3	3	6
12:30	3	3	6
12:45	2	1	3
13:00	0	0	0
13:15	0	0	0
13:30	0	0	0
13:45	0	0	0
14:00	0	0	0
5	0	0	0
14:30	0	0	0
14:45	0	0	0
15:00	0	0	0
15:15	0	0	0
15:30	0	0	0
15:45	0	0	0
16:00	0	0	0
16:15	0	0	0
16:30	0	0	0
16:45	0	0	0
17:00	0	0	0
17:15	0	0	0
17:30	0	0	0
17:45	0	0	0
18:00	0	0	0
18:15	0	0	0
18:30	0	0	0
18:45	0	0	0
19:00	0	0	0
19:15	0	0	0
19:30	0	0	0
19:45	0	0	0
20:00	0	0	0

Fri - Jun 21, 1996

Lane	1	2	Total
20:15	0	0	0
20:30	0	0	0
20:45	0	0	0
21:00	0	0	0
21:15	0	0	0
21:30	0	0	0
21:45	0	0	0
22:00	0	0	0
22:15	0	0	0
22:30	0	0	0
22:45	0	0	0
23:00	0	0	0
23:15	0	0	0
23:30	0	0	0
23:45	0	0	0
24:00	0	0	0
Daily Totals	56	74	130
entages	43.08	56.92	

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Fri - Jun 21, 1996 at 00:00 End: Fri - Jun 21, 1996 at 24:00
City/Town: County:
Location: File: D0621001.PRN
Ln1-North Ln2-North

Station Data Summary

Lane	1	2	Total
Grand Totals	56	74	130
Percentages	43.08	56.92	

Am/Pm Peak Hour Totals

Lane	1	2	Total
Am Hour 10-11	14	16	30
entages	25.00	21.62	23.08
Pm Hour 12-13	8	7	15
Percentages	14.29	9.46	11.54

LANDESIGN
259 Grand Avenue
GRAND JUNCTION, CO 81501
(970) 245-4099
FAX (970) 245-3076

JOB HORIZON VILLAGE

SHEET NO. _____ OF _____

CALCULATED BY JPC DATE 7/23/96

CHECKED BY _____ DATE _____

SCALE _____

TWO DIRECTIONAL AVAILABLE GAPS
FOR 15 MIN PERIOD BETWEEN 5 AND 5:15 PM

6-9 SEC.	9-13 SEC	OVER 13 SEC.
22	16	19

TOTAL AVAILABLE GAPS = 57

TRAFFIC STUDY

FOR

HORIZON VILLAGE

Prepared for:

CUNNINGHAM INVESTMENT CO., INC.
121 South Galena Street, Suite 201
Aspen, CO 81611
(970) 925-8803

Prepared by:

LANDesign, LLC
PLANNING ENGINEERING SURVEYING
256 Grand Avenue
Grand Junction, CO 81501
(970) 245-4099

July 1, 1996

Job No. 95131

TRAFFIC STUDY

FOR

HORIZON VILLAGE

July, 1996

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A. INTRODUCTION

1. Purpose of Report

This report considers the concepts for access and the impacts of this proposed development on the current street transportation system in the general vicinity of the development and determines what improvements should be recommended to compensate for the additional traffic generated by this proposed development. Furthermore, this report may be used to assist Mesa County or City of Grand Junction Planners in determining future improvements of the transportation system in the area due to anticipated growth patterns.

Conditions or combinations of events other than those stated have not been analyzed and are not the responsibility of *LANDesign* or the engineer. Maintenance and construction of facilities are the responsibility of others.

2. Location & Land Use

The subject property is located within the SW 1/4 of Section 4, Township 1 South, Range 1 West, of the Ute Principal Meridian and contains 9.2 +/- acres. More specifically the site is located on the SE corner of North 7th Street and Horizon Drive. The tax ID number is 2945-024-00-048. See Figure 1 for the Location Map.

The property is presently a vacant parcel of land used primarily for grazing and hay production. The site is irrigated from the Grand Valley Mainline Canal which forms the east property line. The Independant Ranchman's Ditch traverses the northern portion of the site from east to west and discharges under North 7th Street just north of the existing access to the site.

The property immediately surrounding the proposed development consists primarily of moderate density residential communities. The Mesa View Retirement development is located on the SW corner of 7th and Horizon. Single family residences immediately surround the site while St. Mary's Hospital, professional medical offices and retail facilities exist in the vicinity of 7th and Patterson, 1/4 mile to the south.

The site is currently zoned PUD 6.2 by the City of Grand Junction. The proposed development will consist of 68 condominium units in 17 buildings located south of the Independant Ranchman's Ditch which will serve as a buffer between Horizon Drive and the development.

3. Access

Access to the development will be attained from 7th Street, a minor arterial, through a proposed 52' right-of-way extending 220' from 7th Street. The proposed urban residential collector road, Horizon Village Ct., will taper down to an urban residential road with a 44' right-of-way. The access to the development will be located approximately 380' south from the intersection of 7th and Horizon. The sight distance from the centerline of Horizon Village Ct. looking south on 7th Street is 520'. See Figure 6.

B. TRIP GENERATION & DESIGN HOUR VOLUMES

1. Trip Generation

MULTI-FAMILY DEVELOPMENT - The multi-family development proposed calls for a density of 7.4 units per acre on 9.2 acres or 68 units. The ITE manual calls for an average rate of between 6 and 7 vehicle trip ends per dwelling unit per day, however, site specific studies within the Grand Valley performed by Mesa County Traffic Services indicate an average rate of 9 trips/unit/day. The average rate for average vehicle trip ends vs. dwelling units on a weekday during the PM peak hour is 0.79.

PARCEL 3
68 Multi-Family Dwelling Units
Average Trip Ends vs. Dwelling Units

Time Unit	Directional Distribution		Average Rate	Trip Ends
	in	out		
weekday ADT	50%	50%	9	306 in 306 out
weekday PM peak	65%	35%	0.79	35 in 19 out

2. Design Hour Volumes

Design hour volumes have been determined from traffic counts performed by *LANDesign* between June 6th and the 20th, 1996. This study will use the weekday peak hour volumes for analysis and design. Peak hours vary for different legs of the intersection. The northbound leg peaked between 5 and 6 PM at 7.8% of the ADT. The westbound leg of the intersection peaked between 12 and 1 PM at 8.6% of the ADT. The southbound leg peaked in the morning between 8 and 9 at 12.8% of the ADT and the eastbound leg peaked between 3 & 4 PM at 11.3% of the ADT. The northbound leg of the intersection will be the most affected leg due to the proposed development and therefore this study will assume a peak hour between 5 and 6 PM but will utilize the highest peak hour volumes at each leg for analysis of the intersection. See Figure 2 for the predeveloped peak hour volumes for each movement.

C. TRIP DISTRIBUTION and ASSIGNMENT

Directional distribution of trip ends was estimated by considering the proximity of the site to adjacent transportation facilities and the relationship to downtown Grand Junction and other major activity centers. The general distribution of trips to and from the site at build-out during the week is estimated to be 50% north and 50% south. Of that 50% of generated traffic entering or exiting the site to or from the north, It is estimated that 85% of that traffic will either turn east onto Horizon Drive or come from Horizon Drive. The remaining 15% will come from or go to 7th Street to the north of the intersection.

Figure 3 shows the trip end assignment for trips generated from the proposed development during the peak PM weekday hour at build-out.

D. TRAFFIC VOLUMES

Existing traffic volumes and peak hour factors have been determined by counts performed by *LANDesign* between June 6th and the 20th, 1996. *LANDesign* has utilized Peek ADR type counters to determine counts at 15 minute intervals for each lane and calculate totals and peak hour volumes. Upon determination of peak hours for each individual leg of the intersection, turning movement counts were performed by individuals in the field during the respective peak hours. See print-out of traffic counts in the end of this report.

Existing traffic volumes at the peak hours were combined with the calculated trip ends generated by the proposed development to produce a proposed total volume for analysis of the intersection. These figures were increased by 2.2% per year for analysis of the intersection in the year 2010. See Figures 4 & 5 respectively.

E. CAPACITY ANALYSIS

The analysis of this study is divided into 2 parts. The first part will investigate the impact on the proposed intersection due to the construction of the proposed development. The second stage will examine the access to the proposed development and the impact it will have on the flow of traffic on North 7th Street and delays experienced on Horizon Village Court. These analyses will look at the current conditions and the projected conditions for the year 2010.

The Highway Capacity Software (HCS) release 2 was utilized for analysis and determination of the level of service for the intersection of 7th Street and Horizon Drive as well as the intersection of Horizon Village Court and 7th Street. The Horizon Village Court intersection was analyzed as a simple unsignalized T-intersection while the Horizon Drive intersection was analyzed as a 3 phase isolated signalized operation.

The signalized intersection at 7th and Horizon is a fully actuated split phasing isolated operation in which the signal rests and green on 7th Street. In other words 7th Street will stay green until traffic on Horizon Drive actuates the signal. The signal operates in 3 phases. The 1st phase operates traffic on 7th Street. The 2nd phase regulates the traffic on westbound Horizon Drive while the 3rd phase operates the eastbound leg from the Mesa View Retirement Community. The cycle lengths for each leg have been measured in the field.

F. CONCLUSIONS and RECOMMENDATIONS

The intersection of proposed Horizon Village Court and North 7th Street has been designed to provide as much sight distance as possible. A sight zone triangle at the intersection will be designed to allow a minimum of 60' along 7th Street and 50' along Horizon Village Ct. at the flowlines with no sight obscuring signs, walls, fences or foliage more than 30" high. 7th Street is classified as a minor arterial with a design speed of 35 mph. The required safe sight distance left is 300' while the required safe sight distance right is 350'. The existing sight distance left from the proposed access looking south on 7th Street is 520' and well within City requirements. The proposed access road is located 380' south of the intersection of 7th Street and Horizon Drive, however, sight distance extends considerably beyond that.

Accereration or deceleration lanes associated with this proposed development are not warranted by the City's Transportation Engineering Design Standards. However, due to the grade and volume of traffic heading north on 7th from Patterson toward the proposed access road, a 60' right turn deceleration lane will be constructed south of the beginning of the curb return radius into the development with a 60' taper leading into that lane. The lane width will be 10' wide. The beginning of the taper into the right turn lane at the intersection of 7th Street and Horizon Drive starts approximately 20' north of the centerline of the proposed access road. Therefore, the north curb return flowline of the access road will be constructed to line up with the east flowline of the existing right turn lane to allow for a smooth transition toward Horizon Drive and still allow plenty of distance for the very small percentage of northbound trip ends exiting the development to continue north on 7th.

Analysis of the intersection of Horizon Drive and 7th Street indicates no change in the level of service due to the impacts of the proposed development. The level of service remained at a 'B' level before and after development. By projecting the increase in volumes due to a 2.2% growth rate in the area, the level of service for the westbound left turn lanes on Horizon Drive decreased to a level of 'C' for the year 2010. The remaining lanes continued a level of service of 'B'.

Analysis of the intersection of Horizon Village Court and North 7th Street indicates a comfortable level of service of 'B' for traffic exiting and a level of service of 'A' for traffic entering the development. Projected analysis for the year 2010 suggests a decrease of one level for each direction.

. SIGNALIZED INTERSECTION SUMMARY Version 2.4a 06-27-1996
Center For Microcomputers In Transportation

Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: EX1996.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 1996 volumes

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	1	1	> 1		1	2		1	2	<
Volumes	2	16	24	410	10		8	195		16	218	2
Lane Width		12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00		3.00	3.00		3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		*			NB Left *			
Thru		*			Thru *			
Right		*			Right			
Peds					Peds			
WB Left	*				SB Left *			
Thru	*				Thru *			
Right					Right *			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	9.0A	15.0A			Green 14.0P			
Yellow/AR	5.0	5.0			Yellow/AR 5.0			

Cycle Length: 53 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LT	594	1853	0.032	0.321	8.0	B	8.0	B
	R	508	1583	0.049	0.321	8.0	B		
WB	L	367	1770	0.599	0.208	14.2	B	14.3	B
	LT	369	1778	0.604	0.208	14.3	B		
NB	L	304	1007	0.026	0.302	8.4	B	8.8	B
	T	1125	3725	0.191	0.302	8.9	B		
SB	L	321	1063	0.053	0.302	8.5	B	8.9	B
	TR	1123	3721	0.216	0.302	8.9	B		

Intersection Delay = 11.3 sec/veh Intersection LOS = B

Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.249

SIGNALIZED INTERSECTION SUMMARY Version 2.4a 06-27-1996
Center For Microcomputers In Transportation

Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: PROP1996.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 1996 volumes

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	1	1	> 1		1	2		1	2	<
Volumes	2	16	24	424	10		8	196		16	221	2
Lane Width		12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00		3.00	3.00		3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		*			NB Left *			
Thru		*			Thru *			
Right		*			Right			
Peds					Peds			
WB Left	*				SB Left *			
Thru	*				Thru *			
Right					Right *			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	9.0A	15.0A			Green 14.0P			
Yellow/AR	5.0	5.0			Yellow/AR 5.0			

Cycle Length: 53 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LT	594	1853	0.032	0.321	8.0	B	8.0	B
	R	508	1583	0.049	0.321	8.0	B		
WB	L	367	1770	0.618	0.208	14.6	B	14.6	B
	LT	369	1778	0.623	0.208	14.7	B		
NB	L	302	999	0.027	0.302	8.4	B	8.9	B
	T	1125	3725	0.192	0.302	8.9	B		
SB	L	320	1061	0.053	0.302	8.5	B	8.9	B
	TR	1123	3721	0.220	0.302	9.0	B		

Intersection Delay = 11.5 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.255

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4a 06-27-1996
Center For Microcomputers In Transportation

Streets: (E-W) Horizon Drive (N-S) 7th Street
Analyst: JPC File Name: PROP2010.HC9
Area Type: Other 6-27-96 PM Peak
Comment: 2010 volumes

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 1	1	1	> 1		1	2		1	2	<
Volumes	4	20	33	573	15		11	266		22	298	4
Lane Width		12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00		3.00	3.00		3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		*			NB Left *			
Thru		*			Thru *			
Right		*			Right			
Peds					Peds			
WB Left	*				SB Left *			
Thru	*				Thru *			
Right					Right *			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	9.0A	15.0A			Green 14.0P			
Yellow/AR	5.0	5.0			Yellow/AR 5.0			

Cycle Length: 53 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LT	593	1848	0.042	0.321	8.0	B	8.0	B
	R	508	1583	0.069	0.321	8.1	B		
WB	L	367	1770	0.838	0.208	23.8	C	24.0	C
	LT	369	1778	0.843	0.208	24.1	C		
NB	L	247	817	0.049	0.302	8.5	B	9.1	B
	T	1125	3725	0.261	0.302	9.1	B		
SB	L	272	901	0.085	0.302	8.6	B	9.2	B
	TR	1122	3718	0.298	0.302	9.2	B		

Intersection Delay = 15.9 sec/veh Intersection LOS = C

Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.346

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-2083
Ph: (904) 392-0378

Streets: (N-S) 7th Street (E-W) Horizon Village Ct.
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... JPC
Date of Analysis..... 6/27/96
Other Information.....1996 conditions
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	1	1	2	0	0	0	0	0	> 0	< 0
Stop/Yield			N			N						
Volumes		480	18	17	223					10		9
PHF		.95	.95	.95	.95					.95		.95
Grade		-4			2						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.40						1.10		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.50	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.50	3.30
Left Turn Minor Road	7.00	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	252	
Potential Capacity: (pcph)	1032	
Movement Capacity: (pcph)	1032	
Prob. of Queue-Free State:	0.99	
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)	524	
Potential Capacity: (pcph)	897	
Movement Capacity: (pcph)	897	
Prob. of Queue-Free State:	0.97	
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)	758	
Potential Capacity: (pcph)	347	
Major LT, Minor TH Impedance Factor:	0.97	
Adjusted Impedance Factor:	0.97	
Capacity Adjustment Factor due to Impeding Movements	0.97	
Movement Capacity: (pcph)	337	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
WB L	12	337 >					
			486	7.8	0.0	B	7.8
WB R	10	1032 >					
SB L	25	897		4.1	0.0	A	0.3

Intersection Delay = 0.3 sec/veh

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-2083
Ph: (904) 392-0378

Streets: (N-S) 7th Street (E-W) Horizon Village Ct.
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... JPC
Date of Analysis..... 6/27/96
Other Information.....1996 conditions
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	1	1	2	0	0	0	0	0	> 0	< 0
Stop/Yield			N			N						
Volumes		651	24	24	302					14		13
PHF		.95	.95	.95	.95					.95		.95
Grade		-4			2						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.40						1.10		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.50	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.50	3.30
Left Turn Minor Road	7.00	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	342	
Potential Capacity: (pcph)	929	
Movement Capacity: (pcph)	929	
Prob. of Queue-Free State:	0.98	

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)	710	
Potential Capacity: (pcph)	713	
Movement Capacity: (pcph)	713	
Prob. of Queue-Free State:	0.95	

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)	1028	
Potential Capacity: (pcph)	233	
Major LT, Minor TH Impedance Factor:	0.95	
Adjusted Impedance Factor:	0.95	
Capacity Adjustment Factor due to Impeding Movements	0.95	
Movement Capacity: (pcph)	222	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
WB L	17	222 >					
			345	11.5	0.3	C	11.5
WB R	15	929 >					
SB L	35	713		5.3	0.0	B	0.4

Intersection Delay = 0.4 sec/veh

This is Report Line Number One
This is Report Line Number Two

[illegible] 07-1996 Volume by Gap Report - D0807001.PRN 12:00 Pg 1

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Wed - Aug 07, 1996 at 00:00 End: Wed - Aug 07, 1996 at 11:45
City/Town: County:
Location: File: D0807001.PRN
Ln1-North Ln2-North

Wed - Aug 7, 1996

Gap(sec)	1-6	7-9	10-13	14-16	17-66	Total
00:15	0	0	0	0	21	21
00:30	0	0	0	0	22	22
00:45	0	0	0	0	20	20
01:00	0	0	0	0	9	9
01:15	0	0	0	0	12	12
01:30	0	0	0	0	9	9
01:45	0	0	0	0	17	17
02:00	0	0	0	0	8	8
02:15	0	0	0	0	10	10
02:30	0	0	0	0	9	9
02:45	0	0	0	0	3	3
03:00	0	0	0	0	1	1
03:15	0	0	0	0	3	3
03:30	0	0	0	0	1	1
[illegible]5	0	0	0	0	2	2
[illegible]00	0	0	0	0	4	4
04:15	0	0	0	0	3	3
04:30	0	0	0	0	8	8
04:45	0	0	0	0	2	2
05:00	0	0	0	0	18	18
05:15	0	0	0	0	11	11
[illegible]:30	0	0	0	0	11	11
[illegible]:45	0	0	0	0	17	17
06:00	0	0	0	0	26	26
[illegible]:15	0	0	0	0	29	29
[illegible]:30	0	0	0	0	48	48
06:45	0	0	0	0	50	50
07:00	0	0	0	0	108	108
[illegible]:15	0	0	0	0	87	87
07:30	0	0	0	0	100	100
07:45	0	0	0	0	123	123
[illegible]:00	0	0	0	0	172	172
[illegible]15	0	0	0	0	140	140
08:30	0	0	0	0	145	145
08:45	0	0	0	0	130	130
[illegible]:00	0	0	0	0	146	146
09:15	0	0	0	0	126	126

Wed - Aug 7, 1996

Gap(sec)	1-6	7-9	10-13	14-16	17-66	Total
09:30	0	0	0	0	72	72
09:45	0	0	0	0	14	14
10:00	0	0	0	0	0	0
10:15	0	0	0	0	0	0
10:30	0	0	0	0	0	0
10:45	0	0	0	0	0	0
11:00	0	0	0	0	0	0
11:15	0	0	0	0	0	0
11:30	0	0	0	0	0	0
11:45	0	0	0	0	0	0
Daily Totals	0	0	0	0	1737	1737
Percentages	0.00	0.00	0.00	0.00	100.00	

Sta: 000000000003 Id: 000000000010 CId: 01 Fmt: 300 - Imperial Int: 15 Min.
Start: Wed - Aug 07, 1996 at 00:00 End: Wed - Aug 07, 1996 at 11:45
City/Town: County:
Location: File: D0807001.PRN
Ln1-North Ln2-North

Station Data Summary

Gap(sec)	1-6	7-9	10-13	14-16	17-66	Total
Grand Totals	0	0	0	0	1737	1737
Percentages	0.00	0.00	0.00	0.00	100.00	

Am/Pm Peak Hour Totals

Gap(sec)	1-6	7-9	10-13	14-16	17-66	Total
Am Hour 8-9	0	0	0	0	561	561
ercentages	0.00	0.00	0.00	0.00	32.30	32.30
Pm Hour None						

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005		
Total Expenses for Department 500		0	0	0	0	52,000	0	0	0	0	0	0	52,000	2,267,800
6000004	CONTRACT STREET MAINTENANCE	1,420,000	1,325,000	1,463,000	1,451,000	1,509,000	1,569,000	1,632,000	1,697,000	1,765,000	1,836,000	1,910,000	17,577,000	
6000007	ALLEY IMPROVEMENT DISTRICT	280,000	274,000	285,000	296,000	308,000	321,000	333,000	347,000	361,000	375,000	390,000	3,570,000	
6000008	FLOOD CONTROL LEVEE	58,676	0	0	0	0	0	0	0	0	0	0	58,676	
6000009	CURB, GUTTER & SIDEWALK REPLACEMEN	183,772	275,000	286,000	297,000	309,000	322,000	334,000	348,000	362,000	376,000	390,000	3,482,772	
6000012	DRAINAGE IMPROVEMENTS (EL POSO)	0	0	0	0	0	0	0	0	0	0	0	0	
6000013	SIDEWALK IMPROVEMENTS	127,863	133,000	138,000	144,000	150,000	156,000	162,000	168,000	175,000	182,000	189,000	1,724,863	
6000016	DRAINAGE MASTER PLAN	29,854	0	0	0	0	0	0	0	0	0	0	29,854	
6000017	27 1/2 RD, F RD. TO G RD. RECONSTR	0	0	0	0	0	0	0	0	2,000,000	0	0	2,000,000	
6000019	GRAND AVE RECONSTRUCTION 1ST TO 7T	115,532	0	0	0	0	0	0	0	0	0	0	115,532	
6000020	ACCESSIBILITY IMPROVEMENTS	195,531	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	695,531	
6000021	UNAWEEP: HWY 50 TO 28 1/2 Road	159,000	980,000	2,629,000	0	0	0	0	0	0	0	0	3,768,000	
6000022	NORTH - SOUTH MAJOR CORRIDOR	0	35,000	0	0	0	0	0	1,715,000	0	0	0	1,750,000	14,160,000
6000023	HORIZON DRIVE: 12TH STREET TO G R	0	0	0	0	0	0	1,300,000	0	0	0	0	1,300,000	
6000024	28 1/4 ROAD: NORTH AVE. TO ORCHAR	965,076	0	0	0	0	0	0	0	0	0	0	965,076	
6000025	25 1/2 ROAD: INDEPENDENT TO F ROA	0	0	0	0	0	1,035,000	0	0	0	0	0	1,035,000	
6000026	25 ROAD: HWY 6 & 50 TO F ROAD	0	0	0	0	0	0	800,000	0	0	0	0	800,000	
6000027	12TH ST BONITA TO HORIZON & TRAFF	0	0	0	950,000	0	0	0	0	0	0	0	950,000	
6000029	NORTH 1ST ST. ORCHARD TO PATTERSO	81,500	792,000	0	0	0	0	0	0	0	0	0	873,500	
6000030	27 ROAD: UNAWEEP TO HWY 50	0	0	0	0	0	0	0	625,000	0	0	0	625,000	
6000031	28 ROAD: GRAND TO BELFORD	0	0	0	0	0	0	0	0	660,000	0	0	660,000	
6000032	28 1/2 ROAD: I-70B TO ORCHARD AVE	0	0	0	0	0	0	0	0	0	1,600,000	0	1,600,000	
6000033	BRIDGE REPLACEMENT GRJ-F.4-26.7	0	0	0	0	250,000	0	0	0	0	0	0	250,000	
6000034	FORESIGHT PARK: STORM SEWER IMPROV	104,310	120,000	0	0	0	0	0	0	0	0	0	224,310	
6000035	BRIDGE REPLACEMENT GRJ-D.5-27.99	0	0	0	0	0	0	0	0	0	0	0	0	235,000 1996 100,000
6000036	LAMPLITE PARK SUBSIDENCE CONTROL	0	0	0	0	0	0	0	0	0	0	0	0	
6000038	24 ROAD: F ROAD TO I-70	0	0	0	0	1,036,000	0	0	0	0	0	0	1,036,000	
6000039	CORTLAND AVENUE: 27 1/2 ROAD TO 28	0	0	0	0	0	0	0	0	0	650,000	0	650,000	
6000042	HORIZON DRIVE: 7TH ST. TO 12TH ST	0	0	0	0	0	0	1,087,000	0	0	0	0	1,087,000	
6000044	28 ROAD: PATTERSON TO CORTLAND	0	0	0	0	0	0	0	0	880,000	0	0	880,000	
6000046	RIVERSIDE PARK/WEST AVENUE REALIGN	0	0	0	0	0	0	133,000	253,000	0	0	0	386,000	1,600,000
6000069	STREET LIGHT INSTALLATIONS	152,400	73,000	76,000	79,000	82,000	85,000	89,000	92,000	96,000	100,000	104,000	1,028,400	
6000070	TRAFFIC SIGNAL CONTROLLERS - UPGRA	24,230	16,000	17,000	18,000	19,000	20,000	21,000	22,000	23,000	24,000	25,000	229,230	
6000072	TOURIST DIRECTIONAL SIGNS	7,975	0	0	0	0	0	0	0	0	0	0	7,975	
6000086	COLUMBUS SCHOOL/SIGNAL RE-CONST	0	0	27,000	0	0	0	0	0	0	0	0	27,000	
6000087	ORCHARD AVE. SCHOOL/SIGNAL RECONST	24,185	0	0	0	0	0	0	0	0	0	0	24,185	
6000104	Bookcliff Ave Reconstruction 9th t	0	0	0	0	0	377,000	0	0	0	0	0	377,000	
6000107	1st St.& North Ave right turn lane	40,000	0	0	0	0	0	0	0	0	0	0	40,000	

Capital Improvement Project 10 Year Detail Listing

Capital Improvement Project Title

****

HORIZON DRIVE: 12TH STREET TO G ROAD

****

Project Number: 6000023

Department: Public Works | Division: Projects & Engineering | Submitted By: Don Newton: 10-yr CIP

Project Type: Streets, Traffic & Drain | Project Need: Expansion | Begin Date: 1/1999 | End Date: 12/9999

Yearly Expenditures	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	TOTAL
Original Budget Amount	0	0	0	0	0	1,300,000	0	0	0	0	0	1,300,000
Adjusted Budget Amount	0	0	0	0	0	0	0	0	0	0	0	
Revised Budget Amount	0	0	0	0	0	0	0	0	0	0	0	

Project Narrative:

This project is the reconstruction of Horizon Drive from 12th Street to G Road. The Principal Arterial street section would include four (4) traffic Lanes, left turn pockets, curb and gutters, sidewalks , landscaped medians and lighting. This street is a major entrance to the City from the Airport and I-70.

HORIZON VILLAGE

WETLANDS REPORT

July, 1996

Introduction

In order for an area to be classified as a wetland it must posess three essential characteristics: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology, which is the driving force creating all wetlands. These three technical criteria are mandatory and all must be met for an area to be identified as a wetland by the Unified Federal Method established by the Army Corps of Engineers, the EPA, the Natural Resources Conservation Service and the U.S. Fish & Wildlife Service.

Location & Land Use

The subject property is located within the SW ¼ of Section 4, Township 1 South, Range 1 West of the Ute Principal Meridian and contains 9.2 acres +/-. More specifically the site is located on the SE corner of Horizon Drive and North 7th Street in Grand Junction, Mesa County, Colorado.The tax ID number is 2945-024-00-048.

The property is presently an irrigated vacant parcel of land used primarily for grazing and hay production. The site slopes moderately to the northwest at grades ranging from 35% in the southeast corner of the property to 1.5% in the northwest. The site is irrigated from the Grand Valley Highline Canal which forms the east boundary of the property. The Independent Ranchmen's Ditch traverses the northern portion of the site from east to west. The irrigated portion of the property consists of the area south of the Independent Ranchmen's Ditch and north of the steep slopes along the southern boundary. Irrigation water is ditched from a headgate on the Highline Canal along the south and west boundaries of the irrigated field and is eventually discharged into the Ranchmen's Ditch.

The proposed development will consist of 68 condominium units in 17 buildings located south of the Ranchmen's Ditch within the existing irrigated pasture land.

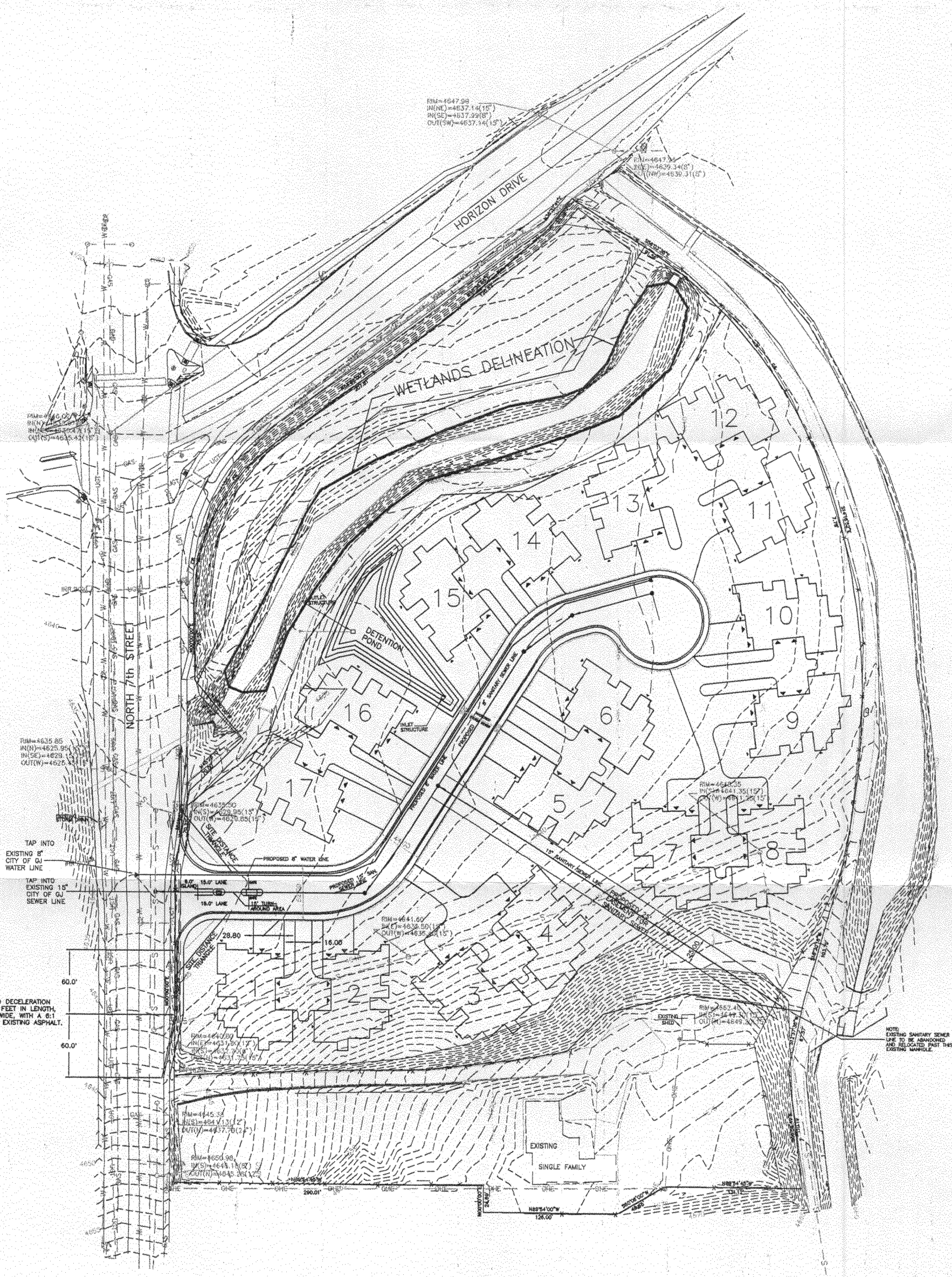
Wetland Findings

Russian olives, cottonwoods, willows and tamerisks line the irrigation ditches surrounding the property. Reeds and wild asparagus are also found along the banks of the Ranchmen's Ditch, in the northeast corner of the property at the confluence of the Ranchmen's Ditch and the Grand Valley Canal, and in some isolated areas along the east property line. These are primarily facultative and facultative wetland plant species and are predominant only in the areas described.

With the exception of the banks of the Ranchmen's Ditch, the soils are generally well drained mineral soils. The saturation level of the soil is occasionally raised to within 1' of the surface during irrigation but decreases relatively fast upon suspension of the irrigation water. The Natural Resources Conservation Service classifies the soils in the area of development as Ravola very fine silty loam (Rf) 0-2%.

Conclusions

The only area on the site that meets all the criteria for a wetland is the area along the banks of the Independent Ranchmen's Ditch. Generally this consists of the area 10' from either bank of the ditch along its entire length. In the other areas where the predominant wetland vegetation is present, the wetland hydrology was not and therefore not determined as a wetland.


HORIZON DRIVE
WETLANDS DELINEATION
NORTH 7th STREET
DETENTION POND
INLET STRUCTURE
PROPOSED 8" WATER LINE
PROPOSED 8" SANITARY SEWER LINE
15" SANITARY SEWER LINE
PROPOSED 20' EASEMENT FOR SANITARY SEWER
SITE DISTANCE TRIANGLE
TAP INTO EXISTING 8" CITY OF GJ WATER LINE
TAP INTO EXISTING 15" CITY OF GJ SEWER LINE
PROPOSED DECELERATION LANE, 60 FEET IN LENGTH, 10 FEET WIDE, WITH A 6:1 TAPER TO EXISTING ASPHALT.
60.0'
60.0'
28.80
16.06
15.0' LANE
9.0' (SLANT)
15' TURN-AROUND AREA
EXISTING SINGLE FAMILY
EXISTING SHED
290.01'
N89°54'00"W
126.00'
NOTE: EXISTING SANITARY SEWER LINE TO BE ABANDONED AND RELOCATED PAST THIS EXISTING MANHOLE.
1
2
3
4
5
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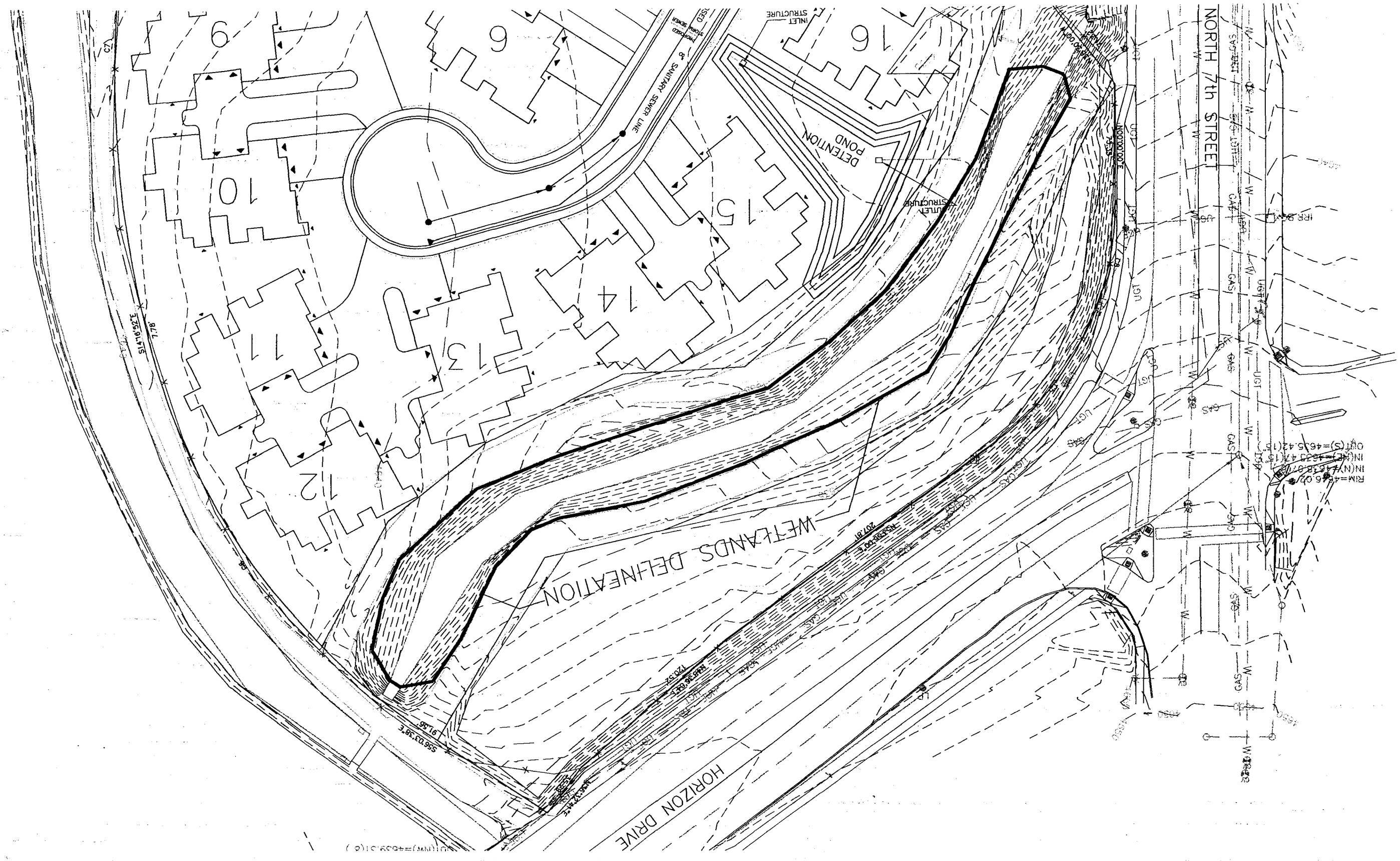

NORTH 7th STREET
HORIZON DRIVE
WETLANDS DELINEATION
DETENTION POND
INLET STRUCTURE
SANITARY SEWER LINE
6
7
9
10
11
12
13
14
15
16
S56°03'38"E
91.56
S56°03'38"E
720 SF
N33°56'22"E
207.81'
N33°56'22"E
S56°03'38"E
278.78'
IRF
GAS
UGT
W
S
OHP
OUT(S)=4653.42(15")
IN(E)=4653.47(15")
IN(N)=4653.87(15")
RIM=4656.07

We're taking television into tomorrow.

TCI Cablevision of Western Colorado, Inc.

July 3, 1996

Horizon Village
Cunningham Investment Co.
% Community Development Department
250 North 5th Street
Grand Junction, CO 81501

Ref. No. CON19627

Dear Sir or Madame;

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

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

1. We require the developers to provide, at no charge to TCI Cablevision, an open trench for cable service where underground service is needed and when a roadbore is required, that too must be provided by the developer. The trench and/or roadbore may be the same one used by other utilities so long as there is enough room to accommodate all necessary lines.

2. We require developers to provide, at no charge to TCI Cablevision, fill-in of the trench once cable has been installed in the trench.

3. We require developers to provide, at no charge to TCI Cablevision, a 4" PVC conduit at all utility road crossings where cable TV will be installed. This 4" conduit will be for the sole use of cable TV.

4. Should your subdivision contain cul-de-sac's the driveways and property lines (pins) must be clearly marked prior to the installation of underground cable. If this is not done, any need to relocate pedestals or lines will be billed directly back to your company.

5. TCI Cablevision will provide service to your subdivision so long as it is within the normal cable TV service area. Any subdivision that is out of the existing cable TV area may require a construction assist charge, paid by the developer, to TCI Cablevision in order to extend the cable TV service to that subdivision.

6. TCI will normally not activate cable service in a new subdivision until it is approximately 30% developed. Should you wish cable TV service to be available for the first home in your subdivision it will, in most cases, be necessary to have you provide a construction assist payment to cover the necessary electronics for that subdivision.

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

Sincerely,

Glen Vancil

Glen Vancil,
Construction Supervisor 245-8777

PP-96-157

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

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

REPLY TO
ATTENTION OF

July 16, 1996

Regulatory Branch (199675310)

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

Dear Sirs:

We are responding to your written request for a jurisdictional determination at the proposed Horizon Village Subdivision. The proposed subdivision is located within Section 2, Township 1 South, Range 1 West, Mesa County, Colorado.

Based on a site inspection by Randy Snyder of this office on July 15, 1996, we have determined that the proposed subdivision as shown on the preliminary plan "Horizon Village Subdivision, Dated June 30, 1996, will not require a Department of the Army permit.

We have assigned number 199675310 to this determination. Please contact Mr. Snyder and refer to this number if you have any questions regarding this matter and for permit requirements at (970) 243-1199 or the address below.

Sincerely,

Ken Jacobson
Chief, Southwestern Colorado
Regulatory Office
402 Rood Avenue, Room 142
Grand Junction, Colorado 81501-2563

REVIEW COMMENTS

FILE #RZP-96-157 **TITLE HEADING:** Horizon Village

LOCATION: SE corner 7th Street & Horizon Drive

PETITIONER: Cunningham Investments

PETITIONER'S ADDRESS/TELEPHONE: 121 S Galena Street
Suite 201
Aspen, CO 81611
925-8803

PETITIONER'S REPRESENTATIVE: Brian Hart, LANDesign

STAFF REPRESENTATIVE: Michael Drollinger

NOTE: THE PETITIONER IS REQUIRED TO SUBMIT FOUR (4) COPIES OF WRITTEN RESPONSE AND REVISED DRAWINGS ADDRESSING ALL REVIEW COMMENTS ON OR BEFORE 5:00 P.M., JULY 26, 1996.

CITY COMMUNITY DEVELOPMENT **7/19/96**
Michael Drollinger **244-1439**

1. If single family residence at north end of property is no longer part of this application, the property should be rezoned back to RSF-4 as part of this process.
2. Please indicate location & quantity of parking spaces provided for each unit and compare with the Zoning and Development Code requirement; we are unable to determine compliance with the present drawing.
3. The spelling of "sight" distance triangle at the entrance drive shall be corrected.
4. Is there a private common recreation area to be constructed with this development; if so, where and with what amenities?

CITY DEVELOPMENT ENGINEER **7/18/96**
Jody Kliska **244-1591**

1. Please provide a drawing at a 20 scale showing the dwelling units and proposed driveways so that we can look at vehicle turning templates and see if it is possible for vehicles to get in and out of the driveways. At the 50 scale, it appears there is insufficient maneuvering room if all parking spaces are occupied.
2. The Wetlands Report did not indicate an author. Please sign and stamp all engineering reports.
3. The drainage report submitted was not signed or stamped as required by section X-1 SSID.
4. The Preliminary Drainage Report checklist requires a Preliminary Major Drainage Basin Map. The report included several maps as well as narrative which, taken together, include all of the information. For future reports, however, please prepare a map in accordance with checklist IX-25 so the required information is available on one drawing.
5. The traffic study was not stamped as required in SSID section X-1.
6. The specific planning commission approval of the ODP was subject to the condition the traffic study include an analysis of the peak hour gap availability at the proposed site entry to assure adequate

gaps exist for left turns exiting the site. If the gap analysis indicates insufficient gaps, then a signal analysis of the two signals will be required to determine if gaps can be created by revising the signal timing while still providing adequate LOS for the intersection traffic at the signals. The report did not include the gap analysis.

7. Enclosed is some information on gap studies for your information.
8. A redlined Traffic Study Checklist is enclosed. City CIP information was provided but not included in the report. Upcoming street improvements in the area need to be included in the information provided in the study.
9. What is the purpose of the urban residential collector section mentioned in part A.3 of the traffic study? It does not appear there is sufficient traffic to warrant this street section.
10. For the trip generation, using the single family rates is preferable based on Mesa County's findings. Please adjust the table to use the single family residential rates from ITE, which will increase the weekday rate to 9.55 and the pm peak rate to 1.01. Also include the am peak, as required by the checklist.
11. On Figure 2, please indicate the turning movement breakdown for the shared lanes. If the turning movement count data is available, please include in the appendix.
12. On Figure 3, please include a legend. A separate figure for trip assignment and trip distribution is preferable.
13. Please label Figure 4 so it is clear that it is existing plus site traffic and indicate the hour. The same comment for figure 5. Same comment about breaking out the turning movements in the shared lanes as in comment 11.
14. The sight distance analysis is good.
15. Enclosed is the existing signal timing for the traffic signal. The HCS timing information in the report does not appear to be correct. Please include a copy of the full printout of signal analyses.
16. A summary of the count data in the appendix would be helpful.

CITY UTILITY ENGINEER **7/16/96**

Trent Prall **244-1590**

PLEASE NOTE: 1996 City of Grand Junction Standard Specifications shall apply for this proposed development. Copies are available for $10 in the Public Works and Utilities office.

1. Please ensure the final plans have the following water notes.
   A. Water meter pits and setters will be provided by City inspector for installation by contractor.
2. Please ensure the final plans have the following sewer notes.
   A. Contractor shall have one signed copy of plans and a copy of the City of Grand Junction's Standard Specifications at the job site at all times.
   B. All sewer mains shall be PVC SDR 35 (ASTM 3034) unless otherwise noted.
   C. All sewer mains shall be laid to grade utilizing a pipe laser.
   D. All service line connections to the new main shall be accomplished with full body wyes or tees. Tapping saddles will not be allowed.
   E. No 4" services shall be connected directly into manholes.
   F. The contractor shall notify the City inspection 48 hours prior to commencement of construction.
   G. The Contractor is responsible for all required sewer line testing to be completed in the presence of the City Inspector. Pressure testing will be performed after all compaction of street subgrade and prior to street paving. Final lamping will also be accomplished after paving is completed. These tests shall be the basis of acceptance of the sewer line extension.
   H. The Contractor shall obtain City of Grand Junction Street Cut Permit for all work within

existing City road right-of-way prior to construction.

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

J. Benchmark _____.

CITY PROPERTY AGENT **7/11/96**
Steve Pace **256-4003**

No final plat to review.

CITY FIRE DEPARTMENT **7/15/96**
Hank Masterson **244-1414**

1. Driveways serving buildings 3&4 and 7&8 must be 20' wide for Fire Department access.
2. Submit complete utility composite with final plan. Hydrants must be spaced no more than 300' apart. One hydrant must be located at entrance to project. Minimum water line size is 8" and must provide required fire flow. Submit complete building plans to Fire Department for our plan review and to determine required fire flow.

CITY POLICE DEPARTMENT **7/15/96**
Dave Stassen **244-3587**

1. The plan shows a gate at the entrance, but nothing is said about it in the narrative. Is there truly a gate?
2. All buildings should have lights connected to photo cells installed at all pedestrian entrances and at the entrance to each garage. This will discourage both crimes against residents and cars.

WALKER FIELD AIRPORT **7/5/96**
Dennis Wiss **244-9100**

The proposed building site lies outside the Airport's Area of Influence (AOI). As such, the airport has no objections to this proposal.

However, the site lies directly south of runway 4-22. It may be subject to overflight of aircraft and the noise associated with these overflights. It is our recommendation that due to this residential development's proximity to aircraft flight paths and the airport proper, additional soundproofing insulation - as well as planned landscape features - be designed into each residence and site to help mitigate potential sound-level perceptions.

MESA COUNTY SCHOOL DISTRICT #51 **7/15/96**
Lou Grasso **242-8500**

SCHOOL - CURRENT ENROLLMENT / CAPACITY - IMPACT
Tope Elementary - 556 / 452 - 18
West Middle School - 531 / 500 - 8
Grand Junction High School - 1674 / 1630 - 11

PUBLIC SERVICE COMPANY **7/10/96**
Jon Price **244-2693**

1. Public Service Company would like some utility easements - 14' front lot line.

2. Public Service Company will require one point of service for both electric and gas meters at each building.

GRAND VALLEY IRRIGATION **7/18/96**
Phil Bertrand **242-2762**

The proposed subdivision abuts our Mainline Canal and our Independent Ranchman Canal crosses through the subdivision (see proposed plat).

NO encroachment of our Mainline Canal will be allowed (25 feet from water's edge on both sides). Canal structures at the northeast (Rupp); the southeast (Dividers); and possible the West (7th Street) of this subdivision may need additional right-of-way for the repair, replacement and/or maintenance of these structures. This can be detailed out with the developer or engineer.

The Independent Ranchman Canal, on the northern part of the property, that flows water east to west, must be looked at closely because of its unique flows and embankment characteristics. 20 feet from top of slope, on both sides must be honored, respected and not encroached upon. More details and an understanding of how the developer plans to use this area is needed.

This is an unusual property and development. Look forward to working with the developer and design personnel.

GRAND JUNCTION DRAINAGE **7/11/96**
John Ballagh **242-4343**

Horizon Village is wholly within the boundaries of the Grand Junction Drainage District. There are presently no known or planned drains within the site of the proposed development. The area is surrounded by sites where there are known high water table problems. The church across Horizon Drive has an extensive GJDD subsurface drain through the site. The Westwood development has two subsurface drains which cover the perimeter of the site with the exception of the property line along Independent Ranchmen's Ditch. The Mesa View Retirement Residence site had a private subsurface drain installed about the time the site was developed. The other "side" is bordered by lands that are significantly higher in elevation. It is strongly recommended that a full subsurface soils evaluation including depth to water table be required prior to construction. It is strongly recommended that the field work of the soils and water table be done during the irrigating season. Corrective measures may be designed into the plan before any other improvements are made to the site.

U S WEST COMMUNICATIONS **7/12/96**
Max Ward **244-4721**

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

MAIL COPY TO:
U S West Communications
ATTN: Max Ward
P.O. Box 2688
Grand Junction, CO 81505

We need to hear from you at least 60 days prior to trenching.

TCI CABLEVISION **7/3/96**
Glen Vancil **245-8777**

1. We require the developers to provide, at no charge to TCI Cablevision, an open trench for cable service where underground service is needed and when a roadbore is required, that too must be provided by the developer. The trench and/or roadbore may be the same one used by other utilities so long as there is enough room to accommodate all necessary lines.
2. We require developers to provide, at no charge to TCI Cablevision, fill-in of the trench once cable has been installed in the trench.
3. We require developer to provide, at no charge to TCI Cablevision, a 4" PVC conduit at all utility road crossings where cable TV will be installed. This 4" conduit will be for the sole use of cable TV.
4. Should your subdivision contain cul-de-sacs the driveways and property lines (pins) must be clearly marked prior to the installation of underground cable. If this is not done, any need to relocate pedestals or lines will be billed directly back to your company.
5. TCI Cablevision will provide service to your subdivision so long as it is within the normal cable TV service area. Any subdivision that is out of the existing cable TV area may require a construction assist charge, paid by the developer, to TCI Cablevision in order to extend the cable TV service to that subdivision.
6. TCI will normally not activate cable service in a new subdivision until it is approximately 30% developed. Should you wish cable TV service to be available for the first home in your subdivision it will, in most cases, be necessary to have you provide a construction assist payment to cover the necessary electronics for that subdivision.

LATE COMMENTS

COLORADO GEOLOGICAL SURVEY **8/21/96**
James M. Soule **303-866-2611**

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

1. The original geologic conditions of this site consisted of natural residual clayey soils which were interbedded and/or admixed with stream alluvium derived from the drainage of the ancestral Colorado River. The bedrock in the area is the Mancos Shale. However, most of this site was subsequently regraded for agriculture and the contiguous roads and canals and, as a result, most of the site is now immediately underlain by man-placed fills whose composition is probably highly variable and, in that sense, uncertain. Because of irrigation in the vicinity, it is highly likely that there is a shallow perched water table in the area as well.

2. Before any construction takes place on this site, we recommend that a thorough geotechnical investigation, including drilling and trenching, be undertaken to determine its subsurface soils, fills, bedrock, and ground-water conditions. Data from this investigation will be absolutely critical for proper foundation designs as well as for developing methods for controlling surface and subsurface drainage across the site. Because of the possibly adverse effects of the nearby road fills and canal

embankments on surface drainage as well as the likely shallow ground-water conditions, a comprehensive drainage plan should be developed by a qualified drainage engineer as well. This will be especially important considering the proximity of the sit to "live" drainage channels, the effect of runoff from Horizon Drive and North 7th Street, and the amount of new impervious area which will be created by both pavements and building construction on the site.

3. Conceptually, we have no problem with the proposed building layout as shown on the site plan, and if recommendations made above are followed and made conditions of approval of this proposed project, then we have no geology-related objection to it.

TO DATE, NO COMMENTS RECEIVED FROM:
City Attorney
Ute Water
Corp of Engineers

POSTING OF PUBLIC NOTICE SIGNS

The posting of the Public Notice Sign is to make the public aware of development proposals. The requirement and procedure for public notice sign posting are required by the City of Grand Junction Zoning and Development Code.

To expedite the posting of public notice signs the following procedure list has been prepared to help the petitioner in posting the required signs on their properties.

1. All petitioners/representatives will receive a copy of the Development Review Schedule for the month advising them of the date by which the sign needs to be posted. **IF THE SIGN HAS NOT BEEN PICKED UP AND POSTED BY THE REQUIRED DATE, THE PROJECT WILL NOT BE SCHEDULED FOR THE PUBLIC HEARING.**
2. A deposit of $50.00 per sign is required at the time the sign is picked up.
3. You must call for utility locates before posting the sign. Mark the location where you wish to place the sign and call 1-800-922-1987. You must allow two (2) full working days after the call is placed for the locates to be performed.
4. Sign(s) shall be posted in a location, position and direction so that:
   a. It is accessible and readable, and
   b. It may be easily seen by passing motorists and pedestrians.
5. Sign(s) MUST be posted at least **10 days** before the Planning Commission hearing date and, if applicable, shall stay posted until after the City Council Hearing(s).
6. **After the Public Hearing(s) the sign(s) must be taken down and returned to the Community Development Department within FIVE (5) working days to receive a full refund of the sign deposit.** For each working day thereafter the petitioner will be charged a $5.00 late fee. After eight working days Community Development Department staff will retrieve the sign and the sign deposit will be forfeited in its' entirety.

The Community Development Department staff will field check the property to ensure proper posting of the sign. If the sign is not posted, or is not in an appropriate place, the item will be pulled from the public hearing agenda.

I have read the above information and agree to its terms and conditions.

Brian C Hays 7/22/96

SIGNATURE DATE

FILE #/NAME RZP-96-157 Horizon Village RECEIPT # 4330

PETITIONER/REPRESENTATIVE: LANDESIGN PHONE # 245-4099

DATE OF HEARING: 8/6/96 POST SIGN(S) BY: 7/26/96

DATE SIGN(S) PICKED-UP 7/22/96 RETURN SIGN(S) BY:

DATE SIGN(S) RETURNED RECEIVED BY:

GENERAL PROJECT REPORT

HORIZON VILLAGE SUBDIVISION

June 27, 1996
Revised July 25, 1996

INTRODUCTION:

The accompanying narrative and maps will provide sufficient data to assess the merits of the requested Preliminary Application for a Major Subdivision. Information gained as the result of the review process will be utilized in the preparation of the Final Plans.

PROJECT DESCRIPTION:

Horizon Village Subdivision is located on the southeast corner at the intersection of Horizon Drive and North 7th Street. The subject property contains approximately 9.2 acres. The Tax Parcel Number is 2945-024-00-048.

The proposed Horizon Village Subdivision calls for the ultimate development of 17 Four-plex Multi-family buildings, creating 68 units. This will yield a density of 7.39 units per acre for the development. The accompanying preliminary plan depicts the relationship of each building to the property boundary, roadway access, waterways and neighboring developments.

The following Preliminary Land Use chart breaks down the entire subject property into specific uses under developed conditions:

PRELIMINARY LAND USE SUMMARY CHART		
USE	AREA IN ACRES	% OF TOTAL
Four-plex Units	2.1	22.8
Street R.O.W.	0.8	8.7
Open Space	1.8	19.6
Driveways	0.9	9.8
Common Area	3.6	39.1
Total	9.2	100
Resulting Density = 7.39 units per acre		
Total Number of units = 68 units		

EXISTING LAND USE:

The site is currently vacant of any structures and is being used for the production of hay. The City of Grand Junction has a 15 inch sanitary sewer line which crosses through the property from the southeast corner of the site, towards the west to North 7th Street. There are numerous mature trees located on the property. The topography of the site is considered to be "rolling" in nature, and historically drains to the northwest into the Independent Ranchmen's Ditch which ultimately conveys water to the Colorado River.

PUBLIC BENEFIT:

The proposed Horizon Village Subdivision will provide the residents of the area with a quality land development product which will be designed, constructed and maintained in accordance with the City of Grand Junction standards. This project does coincide with the City of Grand Junction overall plan for development. Horizon Village Subdivision will enhance the area and provide a multi-family subdivision which is compatible with the surrounding land use.

PROJECT COMPLIANCE, COMPATIBILITY AND IMPACT:

Zoning -- Currently the land is located within the City of Grand Junction and is zoned PR-6.2 (Planned Residential not to exceed 6.2 units per acre). The Overall Development Plan with the application was submitted to Community Development last year and was approved by City Council on October 4, 1995. The development has been revised to show a reduction of multi-family units from 72 to 68 and the elimination of the single-family lots. These revisions show that Horizon Village Subdivision is proposing a overall density of 7.39, which is a change in the density from the ODP approved. A Mesa County Zoning map is located at the end of this report for surrounding land use comparisons.

Surrounding Land Use -- The surrounding land use consists of a number of subdivisions. This includes single-family developments Walker Heights, View Point, Northern Hills and North Acres subdivisions. Westwood Estates Condominiums and a church are also located near the proposed subdivision.

Site Access and Traffic Patterns -- Primary access will be gained from North 7th Street, as shown on the a reduction of the Preliminary Plan located at the end of this report. Major intersections in the area are 7th and Horizon to the north and 7th and Patterson to the south. Assuming an average trip generation rate of 10 trips per household per day, an average of 680 trips from the 68 units would be created and routed through the primary access point. There is no secondary access proposed for the subdivision. This is due to the constraints

from the Grand Valley Canal and the Independent Ranchmen's Ditch bordering the property on the east and north sides of the site respectively.

It is proposed to install a guard house at the entry of the development. There will not be a gate installed at this guard house, nor will their need to be a turn-around area for vehicles entering the development by mistake. This in effect would require the need to propose private roads, and send the final approval for the private roads to City Council. The right-of-way for the streets will be designated as an ingress/egress easement for the maintenance of City Sanitary Sewer and Domestic Water, as well as other dry utilities. This will be reflected on the Final Plat which will be submitted during the next phase of the review process.

The cul-de-sac at the end of the street improvements is proposed as a nonstandard design. The cul-de-sac has a larger radius and an island in the center which will be used for landscaping. This design has been approved by Community Development, City Engineering and the City Fire Department for a different development in the area.

Utilities -- With major streets near to the project, all major utilities are located near the subject property.

Sanitary Sewer -- There is a 15 inch clay sanitary sewer line which crosses through the property. This line will be abandoned and reconstructed through the property with a 20 foot easement for maintenance purposes where the line is outside street right-of-way. The new line will be 15 inch RCP and will connect to the existing 15 inch line located in North 7th Street.

Domestic Water -- Water is available from the City of Grand Junction, which owns and maintains an 8 inch line located on the west side of North 7th street.

All other utilities such as, electric, gas, phone and CATV are expected to be extended from the surrounding developments.

Effects on Public Facilities -- No unusual effects are expected on public facilities such as fire, police, sanitation, roads, parks, schools, irrigation or other facilities.

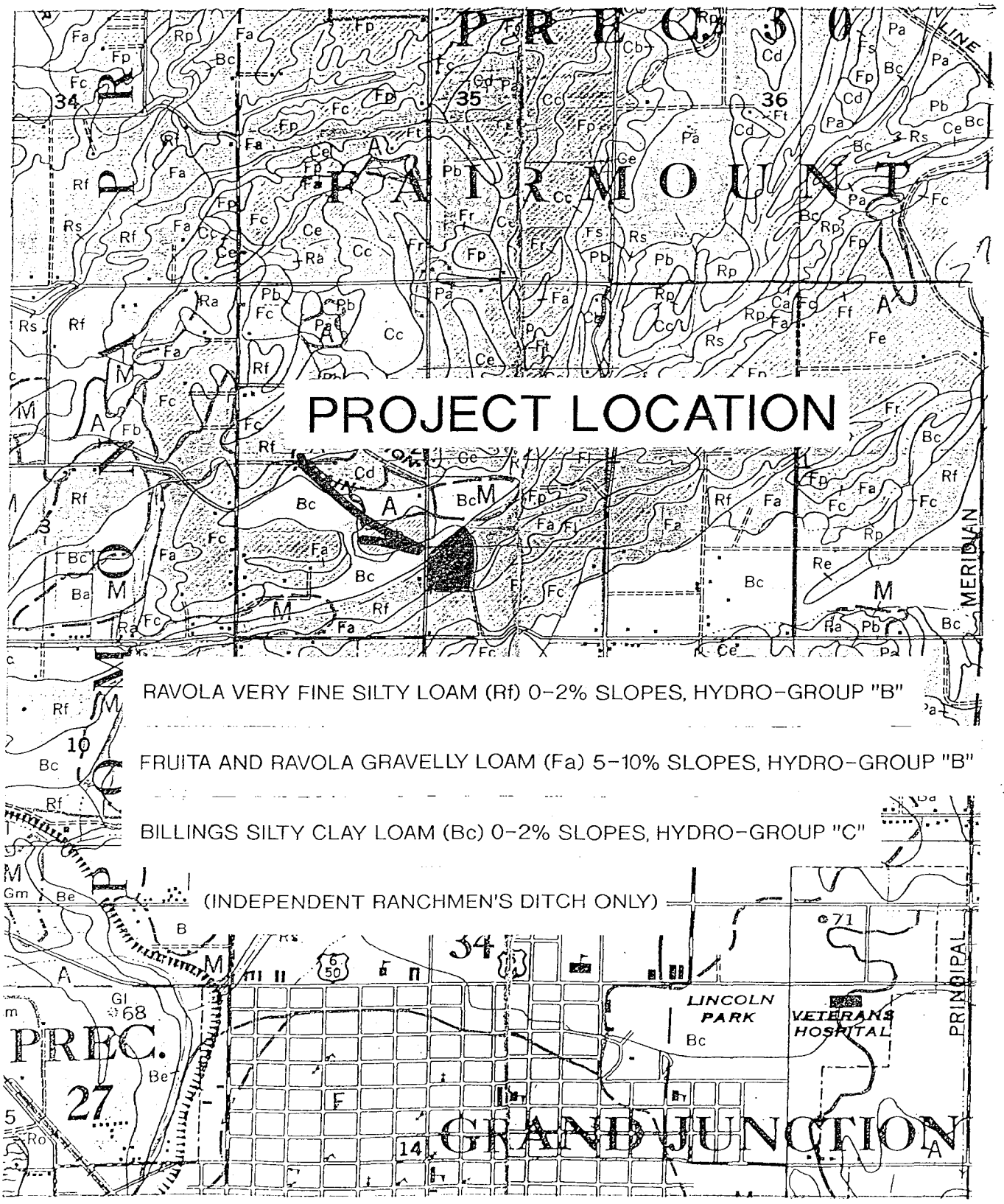
Site Soils and Geology -- A soils map is provided at the end of this report, and shows the types of soil historically found on the property. According to the U.S. Department of Agriculture Soil Survey of 1955, there are a combination of three types of soils on the site. Fruita and Ravola gravelly loams, 5 to 10 percent slopes (Fa), Billings silty clay loam, 0 to 2 percent slopes (Bc) and Ravola very fine sandy loam, 0 to 2 percent slopes (Rf). Each of these soils are common to

the Grand Junction area and are not expected to present any problems. See the attached soils map at the end of this report.

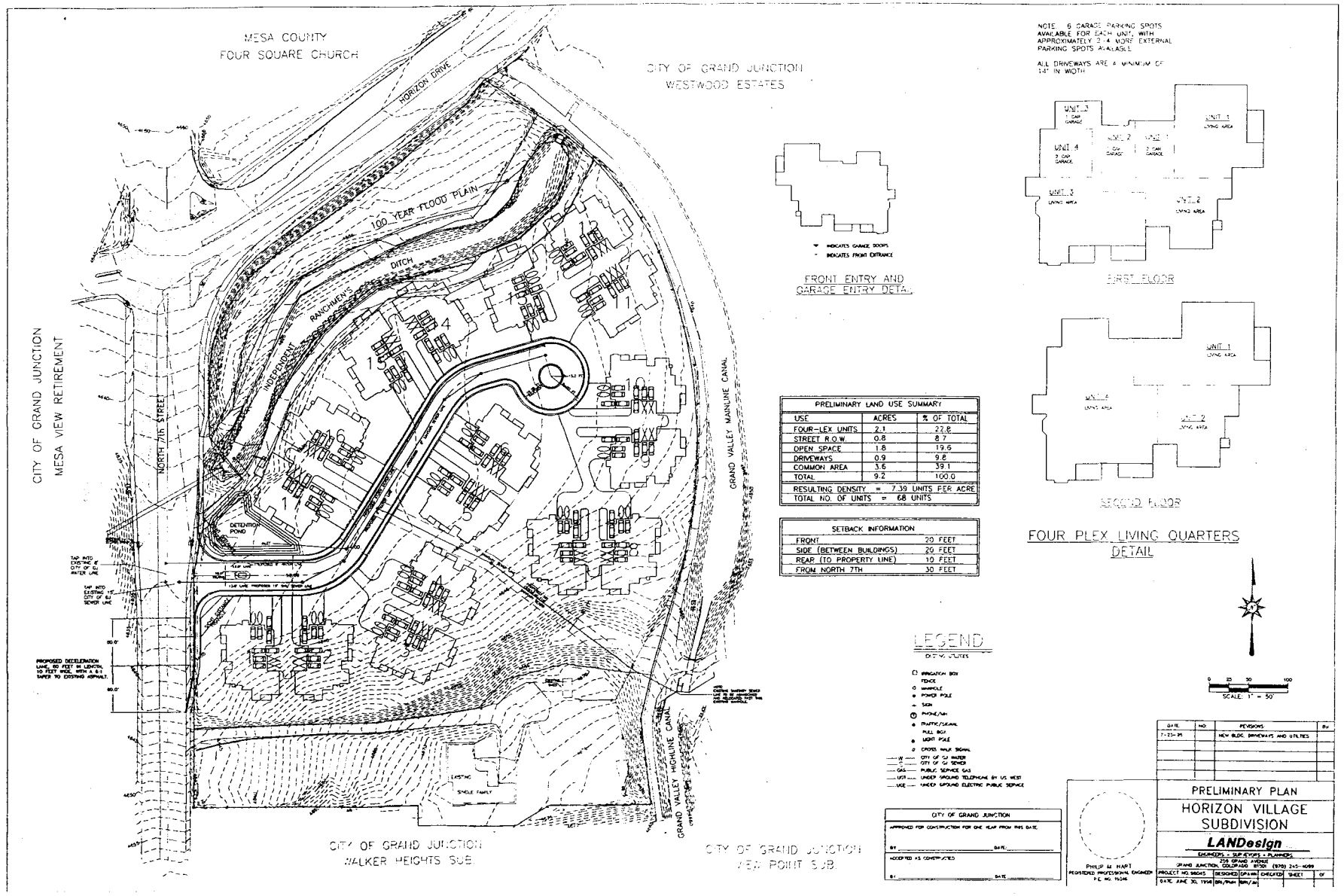
Signage Plans -- A signage plan will be provided to the City of Grand Junction during the final and construction phases of the review process.

DEVELOPMENT SCHEDULE AND PHASING:

The rate at which the development of Horizon Village will occur is dependent upon the City of Grand Junction's future growth and housing needs. It is anticipated that site development will begin once the final approval from the City has been granted. A phasing plan will be submitted during the next step in the review and application process.


PROJECT LOCATION
RAVOLA VERY FINE SILTY LOAM (Rf) 0-2% SLOPES, HYDRO-GROUP "B"
FRUITA AND RAVOLA GRAVELLY LOAM (Fa) 5-10% SLOPES, HYDRO-GROUP "B"
BILLINGS SILTY CLAY LOAM (Bc) 0-2% SLOPES, HYDRO-GROUP "C"
(INDEPENDENT RANCHMEN'S DITCH ONLY)
PREC. 30
PARADISE MOUNT
PREC. 27
GRAND JUNCTION
LINCOLN PARK
VETERANS HOSPITAL
PRINCIPAL
MERIDIAN

SOILS MAP



INDICATES GARAGE DOORS
INDICATES FRONT ENTRANCE

FRONT ENTRY AND GARAGE ENTRY DETAIL

NOTE: 6 GARAGE PARKING SPOTS AVAILABLE FOR EACH UNIT, WITH APPROXIMATELY 2-4 MORE EXTERNAL PARKING SPOTS AVAILABLE.

ALL DRIVEWAYS ARE A MINIMUM OF 14' IN WIDTH

FIRST FLOOR

SECOND FLOOR

FOUR PLEX LIVING QUARTERS DETAIL

PRELIMINARY LAND USE SUMMARY		
USE	ACRES	% OF TOTAL
FOUR-LEX UNITS	2.1	22.8
STREET R.O.W.	0.8	8.7
OPEN SPACE	1.8	19.6
DRIVEWAYS	0.9	9.8
COMMON AREA	3.6	39.1
TOTAL	9.2	100.0
RESULTING DENSITY = 7.39 UNITS PER ACRE		
TOTAL NO. OF UNITS = 68 UNITS		

SETBACK INFORMATION	
FRONT	20 FEET
SIDE (BETWEEN BUILDINGS)	20 FEET
REAR (TO PROPERTY LINE)	10 FEET
FROM NORTH 7TH	30 FEET

LEGEND

EXISTING UTILITIES

- IRRIGATION BOX
- FENCE
- MANHOLE
- POWER POLE
- SIGN
- PHONE/MH
- TRAFFIC/SIGNAL PULL BOX
- LIGHT POLE
- CROSS WALK SIGNAL
- W — CITY OF GJ WATER
- S — CITY OF GJ SEWER
- GAS — PUBLIC SERVICE GAS
- UGT — UNDER GROUND TELEPHONE BY US WEST
- UGE — UNDER GROUND ELECTRIC PUBLIC SERVICE

SCALE: 1" = 50'

DATE	NO.	REVISIONS	BY
7-25-95		NEW BLDG. DRIVEWAYS AND UTILITIES	

CITY OF GRAND JUNCTION

APPROVED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE.

BY _____ DATE _____

ACCEPTED AS CONSTRUCTED

BY _____ DATE _____

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

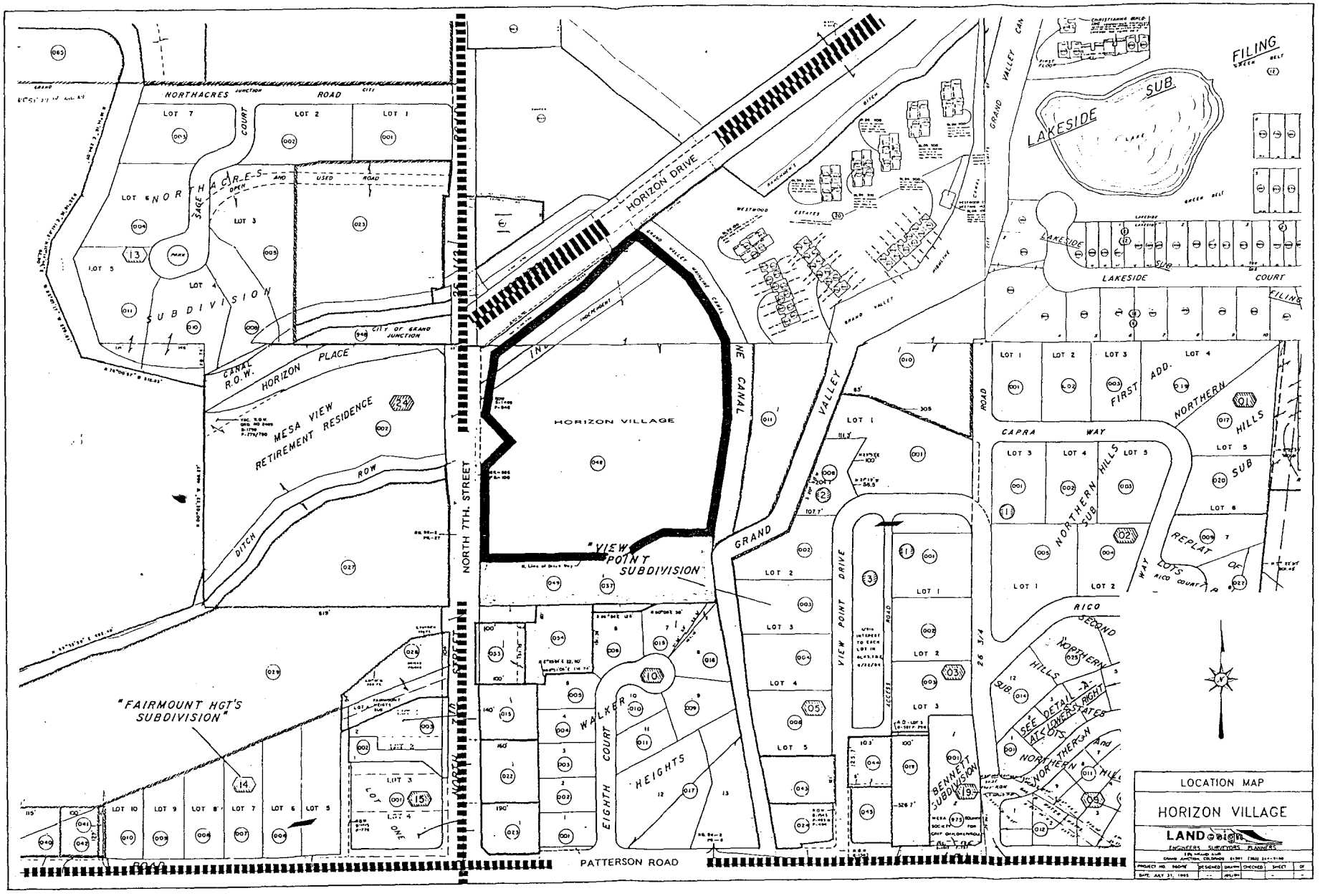
PRELIMINARY PLAN
HORIZON VILLAGE SUBDIVISION

LANDesign
ENGINEERS • SURVEYORS • PLANNERS
559 GRAND AVENUE
GRAND JUNCTION, COLORADO 81501 (970) 245-4099

PROJECT NO. 96045 | DESIGNED | DRAWN | CHECKED | SHEET | OF

DATE JUNE 30, 1996 | BM/RMH | BM/JH

95052 Horizon Village Location Map



Canal Trail? - Public access along Ranchman's?
where is Agyzan Trail?
suggest quit claiming any interest
Airport concerns?

State Biological Survey comments - need to address prior to Final

Canal Plan - 1/2" easement written

Advance Legal - W of centerline of maintenance canal

Motion: Approval w/ following conditions
1. Maintenance agreement
2. Quit claim to City to center of canal
Easement to west bank
~~[illegible]~~
3. Revised traffic study

LANDesign
ENGINEERING • SURVEYING • PLANNING

July 25, 1996

Michael Drollinger
City of Grand Junction
City Community Development
250 North 5th Street
Grand Junction, CO 81501

Re: Horizon Village Subdivision Preliminary Plan, File #RZP-96-157
Job # 96045.40

Dear Mr. Drollinger:

This letter is in response to comments received by our office July 19, 1996 on the above mentioned subdivision. The following items are answers to specific comments. Some comments are not answered because they are considered advisory and are taken under consideration for the Final Plan submittal.

City Community Development

1. The developer for this project has no ownership or contractual rights to the south property originally included with the plan. Therefore, we cannot initiate a rezone on the property.

2. According to the Zoning and Development Code (section 5-5-1, page 5.36), the requirement for parking is 2 spaces per unit. Two 20 scale Parking Plan drawings have been included with this correspondence. These drawings show the parking areas available for each unit. It is important to note that the four-plex unit chosen for this development has two double space garages and two single space garages. This accounts for 6 of the 8 spaces per building. The remaining two required spaces are shown and allocated on the enclosed plans.

3. The spelling error mentioned has been corrected.

4. The area north of the Independent Ranchmen's Ditch will be designated as Private Open Space. This area is currently a barren eyesore and includes the bank side under soils from the road and sidewalk improvements made to Horizon Drive. The developer's plan includes significant landscape improvements to this area, including fertile topsoil, plantings and irrigation while allowing access for the ditch company.

259 GRAND AVE. • GRAND JUNCTION, CO 81501 • (970) 245-4099 • FAX (970) 245-3076

City Development Engineer

1. The two 20 scale drawings have been provided as requested. Please note that representative passenger cars have been placed in the parking spaces for the Engineer's benefit. We are currently working with the City Engineer to clarify any questions related to parking.

2. The Wetlands Report has been revised to reflect the author. The report has not been signed because it is not an engineering report, nor is any reference made to a signed and stamped Wetlands report in the City's SSID manual.

3. A signed and stamped copy of the Preliminary Drainage Report has been included.

4. We appreciate the comment and will work toward providing the necessary information.

5. The Traffic Study has been signed and stamped as requested.

6. A Peak Hour Gap study has been included with this correspondence as requested.

7-16. All remaining comments apply to the traffic study. These comments will be resolved with the City Development Engineer before the Planning Commission Hearing August 6th.

City Utility Engineer

A-J. All comments from the City Utility Engineer relate to the Final Plans and are taken under advisement.

City Fire Department

1. It was understood by both our office and City Staff that any buildings that set back from the street would have to have a driveway width of 14 feet. Because Mr. Masterson is unavailable, City Staff And our office agreed to keep the driveways at 14 feet until the issue can be resolved with the Fire Department.

2. This particular comment is related to the Final Plans and is taken under advisement.

City Police Department

1. The narrative has been revised to reflect a guard house. There will not be a physical gate as earlier shown.

2. This comment is related to the building plans and is taken under consideration.

Public Service

1&2. Both comments from Public Service are considered to be typical. The details of easements and utility meter locations will be worked out with Public Service at the appropriate time.

Grand Valley Irrigation

The comment from Grand Valley Irrigation Company is appreciated. Because of the unique characteristics of the property and the fact that irrigation waterways border the north and east sides of the project, the developer and the engineer look forward to working closely with the irrigation company to resolve any issues which may arise.

Grand Junction Drainage District

The comment from the district is appreciated. The Subsurface Soils Report submitted to the study did mention the water table on the project site. However, the report revealed that the water table was reached at approximately 13-16 feet. It is worth noting that the soils logs were taken during the peak of irrigation season. We therefore expect no problem in dealing with the water table, or its effects on drainage, foundations or general construction of the project.

US West

The comment from US West is typical for any development and is taken under advisement.

TCI Cable

The comment from TCI Cable is typical for any development and is taken under advisement.

I hope this letter has served to answer any comments mentioned, and if any other issues arise, please feel free to contact me at our office.

Sincerely,

Brian C. Hart

Brian C. Hart, E.I.
Project Manager

FILE

M E M O R A N D U M

DATE: August 10, 1996

TO: Jody Kliska

FROM: Michael T. Drollinger

RE: Horizon Village

Please review the attached driveway and parking design drawings with particular attention to turning radii and parking requirements and advise in writing (e-mail OK) if the design conforms with Code requirements. I need a response no later than August 16, 1996 so that I may forward your comments to the petitioner.

Feel free to call of you have any questions.

FILE

M E M O R A N D U M

DATE: August 10, 1996

TO: Hank Masterson

FROM: Michael T. Drollinger

RE: Horizon Village

Attached please find plans for the above project which detail the parking and circulation design for the development. Earlier in the design phase you had discussed permitting the petitioner to design entrance drives to the units with a width less than 20 feet (in the 12 to 14 foot range). In your review comments you stated that you will require 20 foot wide drives. Please review the attached drawings and send to me an e-mail or memo with a "final" decision on this issue (w/Code citations if appropriate) so that I may forward this on to the petitioner.

I would appreciate if you could complete your review of this issue by Friday, August 16th. This project will likely be going to Planning Commission in September. Please call if you have any questions.

Memorandum

DATE: August 14, 1996

TO: Michael T. Drollinger

FROM: Hank Masterson HM

RE: Horizon Village

The requirement for fire department access to structures is specified in Section 902 of the 1994 Uniform Fire Code:

Section 902.2.1 states: "fire apparatus access roads shall be provided ... for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction when any portion of the facility or any portion of an exterior wall of the first story of the building is located more than 150' from fire apparatus access as measured by an approved route around the exterior of the building or facility.

Exceptions: 1. When buildings are completely protected with an approved automatic fire sprinkler system, the provisions of Sections 902.2.1 and 902.2.2 may be modified by the chief.

2. When access roads cannot be installed due to location on property, topography, waterways, nonnegotiable grades, or other similar conditions, the chief is authorized to require additional fire protection as specified in Section 1001.9

3. When there are not more than two Group R, Division 3, or Group U Occupancies, the requirements of Sections 902.2.1 and 902.2.2 may be modified by the chief."

Section 902.2.2.1 states: "Fire apparatus access roads shall have an unobstructed width of not less than 20' ..."

Exception 3 of 902.2.1 applies to residential garages and single family residences. This allows us to modify access requirements for detached single family residences and duplexes. The fire department has always used this exception to exempt single family and duplex residences from access requirements for driveways or ingress/egress easements serving up to two single family lots. This exception cannot apply to Horizon Village because the buildings are four plexes.

To determine the need for a fire department access road, I measure from the most distant portion of a proposed building along the most direct path of pedestrian travel to the nearest approved access road. This distance represents the length of an attack line taken from a fire truck to the fire for an exterior attack. The fire code specifies that this distance not exceed 150' to avoid lengthy hose lays. In the case of Horizon Village, all units except 3, 4, 7, 8 and 9 are within 150' of the public street. Units 7 and 8 are about 300' from the public street at the most remote wall. Units 3, 4 and 9 are about 220' from the street. So, the entrance drives to these units need to be used by the Fire Department to park a fire apparatus within the 150' distance. These drives need to be 20' wide to accommodate fireground operations.

I apologize if I stated that all units in this subdivision were acceptable as shown. When I completed my detailed plan review I noticed the problems with access and noted them in my review comments. I generally try not to commit myself before completing a detailed review.

Also, in case fire department access policy appears inconsistent, we have an unwritten policy of not requiring access standards for single family residential houses and duplexes using exception 3 noted above. So, on plans such as Daughter's Cove, with 15' wide flag lot frontages, we do not require 20' access or turn arounds. The revised preliminary plan for Canyon View Subdivision shows a private drive easement serving two single family lots and another serving one large lot. We will not apply access standards for either easement. If we were to apply fire code standards, we would get into questions such as requiring driveways to homes be able to support the weight of our trucks, provided with 40' diameter cul-de-sacs if over 150' long, and signed no parking to ensure they are not blocked. Also, flag lots with 15' frontages could not be allowed. Another issue with single family residential having long driveways is on-site hydrants. Our general rule for commercial property is to require on-site hydrants if we need to lay a supply line longer than 250' from the hydrant to the farthest apparatus access point. If we did this on single family residential property, property owners with large lots, flag lots, or using ingress/egress easements would be restricted to locating their houses on their lots so that on-site hydrants would not be required, unless they were willing to pay the considerable cost for their very own hydrant. All this strikes me as a bit extreme for a single family residences!

Anyway, again I apologize if I put you in a difficult position with the petitioner on the Horizon Village project. Let me know if you have any questions.

STATE OF COLORADO

COLORADO GEOLOGICAL SURVEY
Division of Minerals and Geology
Department of Natural Resources
1313 Sherman Street, Room 715
Denver, Colorado 80203
Phone (303) 866-2611
FAX (303) 866-2461

DEPARTMENT OF NATURAL RESOURCES

August 21, 1996 MA-97-0003

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

Re: Proposed Horizon Village Townhome Project -- Southeast of the Intersection of Horizon Drive and North 7th Street, Grand Junction

Gentlemen:

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

(1) The original geologic conditions of this site consisted of natural residual clayey soils which were interbedded and/or admixed with stream alluvium derived from the drainage of the ancestral Colorado River. The bedrock in the area is the Mancos Shale. However, most of this site was subsequently regraded for agriculture and the contiguous roads and canals and, as a result, most of the site is now immediately underlain by man-placed fills whose composition is probably highly variable and, in that sense, uncertain. Because of irrigation in the vicinity, it is highly likely that there is a shallow perched water table in the area as well.

(2) Before any construction takes place on this site, we recommend that a thorough geotechnical investigation, including drilling and trenching, be undertaken to determine its subsurface soils, fills, bedrock, and ground-water conditions. Data from this investigation will be absolutely critical for proper foundation designs as well as for developing methods for controlling surface and subsurface drainage across the site. Because of the possibly adverse effects of the nearby road fills and canal embankments on surface drainage as well as the likely shallow ground- water conditions, a comprehensive drainage plan should be developed by as qualified drainage engineer as well. This will be especially important considering the proximity of the site to "live" drainage channels, the effects of runoff from Horizon Drive and North 7th Street, and the amount of new impervious area which will be created by both pavments and building construction on the site.

(3) Conceptually, we have no problem with the proposed building layout as shown on the

site plan, and if the recommendations made above are followed and made conditions of approval of this proposed project, then we have no geology-related objection to it.

Sincerely,

James M. Soule

James M. Soule
Engineering Geologist

LANDesign
ENGINEERING • SURVEYING • PLANNING

August 22, 1996

Jody Kliska, P.E.
City Development Engineer
City of Grand Junction
Grand Junction, CO 81501

Re: Horizon Village Subdivision Preliminary Plan, File #RZP-96-157
Job # 96045.40

Dear Mrs. Kliska:

Enclosed with this letter is a copy of the Parking Detail Sheets which have been revised by our office to reflect the changes mentioned in our August 21 meeting. Also enclosed is a copy of the Preliminary Plan which has also been revised to reflect the changes made to the driveways.

The most important changes made to the plan are as follows: 1) The "back-in" area for automobiles in the courtyard areas have all been removed, as they are not useable, 2) Parking in the area between units 8 & 9 has been revised to show a "No Parking" area. This option was chosen over moving units 7 & 8 to the south to avoid installing any retaining walls, 3) Parking for the double garage on Unit 12 between units 12 & 13 has been designated as "No Parking", 4) The driveways for the double garages on units 3, 4 & 7 which face the road have been revised to allow a larger area for automobile traffic, 5) The combined driveways for units 3 & 4 as well as 7 & 8 have been widened to 20 feet from 14 feet as required by Hank Masterson at the City Fire Department.

These changes were made due to the conversation with you and Michael Drollinger on August 21. If there are any other items which you or Mr. Drollinger would like to see revised, or if I am mistaken in any respect with any revisions required, please contact me so the drawings can be revised as soon as possible. Thank you for meeting with me yesterday to discuss the project.

Sincerely,

Brian C. Hart, E.I.
Project Manager

cc: Mac Cunningham, Cunningham Investment Co., Inc.
Michael Drollinger, City Senior Planner

259 GRAND AVE. • GRAND JUNCTION, CO 81501 • (970) 245-4099 • FAX (970) 245-3076

PLANNING COMMISSION STAFF REPORT

FILE: #RZP-96-157

DATE: August 28, 1996

STAFF: Michael T. Drollinger

REQUEST: Rezone/Preliminary Plan
HORIZON VILLAGE

LOCATION: SE Corner 7th Street & Horizon Drive

APPLICANT: Cunningham Investment Co., Inc.
121 S. Galena Street, Suite 201
Aspen CO 81611

EXECUTIVE SUMMARY:

A request to (1) rezone the property at the southeast corner of 7th Street and Horizon Drive from PR-6.15 (Planned Residential - 6.15 units per acre) to PR- 7.4 (Planned Residential - 7.4 units per acre) and RSF-4 (Residential Single Family - 4 units per acre) and (2) for Preliminary Plan approval for 68 units on 9.2 acres. Staff recommends approval of the application with conditions.

EXISTING LAND USE: Vacant

PROPOSED LAND USE: Multifamily Residential (Fourplex)

SURROUNDING LAND USE:

NORTH:	Undeveloped
SOUTH:	Single Family Residential
EAST:	Multifamily Residential - 12 units per acre
WEST:	Mesa View Retirement Center

EXISTING ZONING: PR-6.15

PROPOSED ZONING: PR-7.4 & RSF-4

SURROUNDING ZONING:

NORTH:	RSF-4 (Residential Single Family - 4 units per acre)
SOUTH:	RSF-4
EAST:	PR-12 (Planned Residential - 12 units per acre)

WEST: PR-28 (Planned Residential - 28 units per acre)

RELATIONSHIP TO COMPREHENSIVE PLAN:

The Grand Junction Growth Plan identifies the subject parcel in the "Residential Medium (4-7.9 units per acre)" land use category. The proposed density falls within the recommended density for the site.

STAFF ANALYSIS:

The staff analysis is divided into two sections: (1) a review of the development proposal and (2) analysis of the rezone criteria.

The Development Proposal

The petitioner is requesting a rezone and preliminary plan approval for 68 units on about 9.2 acres located at the southeast corner of 7th Street and Horizon Drive. The property is presently zoned PR-6.15 and was the subject of an Outline Development Plan (ODP) approval for 72 condominium units and 4 single family lots in October 1995.

The revised proposal is for 68 units in 17 fourplex buildings; the proposal also calls for the existing single family residence (referred to as the Mahleris property) adjoining the site to the south to be rezoned back to RSF-4 from PR-6.15 since the previous single family lots on the Mahleris property are no longer part of this proposal. While the density request for the 9.2 acres on which the multifamily units are proposed is higher than the present zoning, the increase is due to the Mahleris property no longer being part of the proposal; the number of multifamily units has actually been reduced from 72 to 68.

The petitioner is also requesting that the street be private rather than a public street although the proposed street design would meet City standards. The request would permit the petitioner to create a gate or similar type of security feature at the entrance to the development. The private street request is subject to City Council approval and a proposal for a gate would require review and approval by staff with the final plan request. Given that the proposed street is a cul-de-sac and that there are no vehicular or non-vehicular linkages which would be adversely effected by the creation of a private street, staff is supportive of the proposal. The private street request will be scheduled for a City Council hearing in conjunction with the rezone request.

A traffic study was required with the preliminary plan which addressed the conditions of the ODP approval which are as follows:

a) a peak hour gap analysis on 7th Street at the proposed location of entry,
b) a signal timing analysis of there are insufficient gaps to allow left turns from the site,
c) A measurement of sight distance on 7th Street from the proposed entry,
d) An evaluation of the need for a right turn lane from the site.

A right turn lane into the site has been provided. Adequate sight distance was found to exist at the proposed street intersection. Sufficient gaps were found to exist to permit traffic exiting the site to turn left onto 7th Street. The City Development Engineer has identified a few remaining items which need to be in the traffic study although staff recommends that the petitioner be able to submit a revised final traffic study with the final plan.

Please refer to the project narrative and supplementary information supplied by the petitioner and attached to this staff report for additional details regarding the proposal.

Analysis of Rezone Criteria

Section 4-4-4 of the Zoning and Development Code contains criteria which must be considered in the review of a rezone request. To minimize repetition, references are made to the previous section where applicable.

A. **Was the existing zone an error at the time of adoption?**
There is no evidence that the existing zone was an error at the time of adoption.

B. **Has there been a change of character in the area due to installation of public facilities, other zone changes, new growth trends, deterioration, development transitions, etc.?**
The subject property is in close proximity to services and major roadways and other existing infrastructure. The proposal represents an attempt to concentrate growth close to existing infrastructure.

C. **Is there an area of community need for the proposed rezone?**
The project is a response to an anticipated market demand for the proposed unit types.

D. **Is the proposed rezone compatible with the surrounding area or will there be adverse impacts?**
The petitioner has attempted to minimize conflicts with adjoining neighbors by proposing a unit type which closely resembles and is compatible with single family residential development.

E. **Will there be benefits derived by the community, or area, by granting the proposed rezone?**
The proposal addresses an identified community need for multifamily housing.

F. **Is the proposal in conformance with the policies, intents and requirements of this Code, with the City Master Plan, and other adopted plans and policies?**
The proposed project density is within the density range recommended in the Grand Junction Growth Plan. The proposal is in general conformance with the intent and requirements of the Zoning and Development Code and the Horizon Drive Corridor guidelines.

G. **Are adequate facilities available to serve development for the type and scope suggested for the proposed zone?**
Adequate facilities are available to serve the proposed development.

Staff feels that the rezone request is supported by the rezone criteria.

STAFF RECOMMENDATION:

Staff recommends approval of the rezone request and preliminary plan for Horizon Village with the following condition:

1. the petitioner shall submit a revised traffic study with the final plan/plat request which addresses the remaining concerns identified by the City Development Engineer.
2. Private Street - entering into a maintenance agreement acceptable to the City

SUGGESTED PLANNING COMMISSION MOTION:

Mr. Chairman, on item #RZP-96-157, a request for rezone from PR- 6.15 to PR- 7.4 and RSF-4, I move that we forward the rezone request to City Council with a recommendation of approval (STAFF RECOMMENDS APPROVAL).

Mr. Chairman, on item #RZP-96-157, a request for preliminary plan approval for Horizon Village, I move that we approve the application with the condition in the staff report dated August 28, 1996 (STAFF RECOMMENDS APPROVAL).

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CUNNINGHAM INVESTMENT CO., INC.
SUITE 201
121 SOUTH GALENA STREET
ASPEN, COLORADO 81611
OFFICE (303) 925-8803 FAX (303) 925-8835

September 9, 1996

Michael T. Drollinger
City of Grand Junction
Community Development Department
250 N. 5th Street
Grand Junction, CO 81501

UPS
(970) 244-1439

RE: The Glen at Horizon Drive
Horizon & North Seventh Streets
Grand Junction, Colorado

Dear Mr. Drollinger:

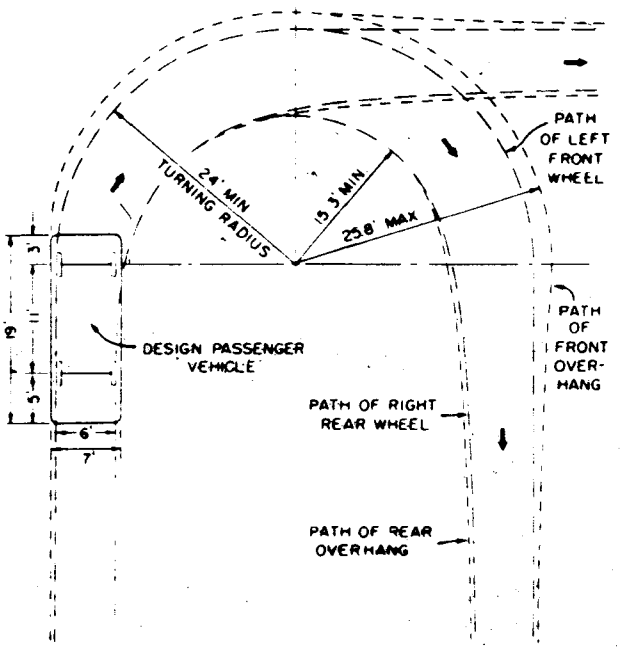
Enclosed please find 10 sets of the photo images of proposed townhomes for The Glen at Horizon.

If you have any questions, please let us know.

Sincerely,

Leslie J. Henderson
Office Manager
Cunningham Investment Co., Inc.

:ljh
enclosures



P DESIGN VEHICLE

1" = 20'

TYPE LEGAL DESCRIPTION(S) BELOW, USING ADDITIONAL SHEETS AS NECESSARY. USE SINGLE SPACING WITH A ONE INCH MARGIN ON EACH SIDE.

****

That part of the N½ SW¼ SE¼ and that part of the S½ NW¼ SE¼ lying South and West of the main line of the canal of The Grand Valley Irrigation Company in Section 2, Township 1 South, Range 1 West of the Ute Meridian, in the City of Grand Junction, EXCEPT the residence located at 612 - 26½ Road and that portion of the real property located South of the North line of the driveway (as extended to the east and west property lines) leading from 26½ Road to such residence, such exception to be more particularly described by survey; AND EXCEPT portion of subject property as granted to County of Mesa, State of Colorado in deed recorded in Book 877 at Page 364; AND EXCEPT portion of subject property as granted to County of Mesa, State of Colorado in deed recorded in Book 885 at Page 100; AND EXCEPT portion of subject property as granted to The City of Grand Junction in deed recorded in Book 1489 at Page 547, AND EXCEPT portion of subject property dedicated as road and utility Right Of Way in instrument recorded in Book 1489 at Page 739, Mesa County, Colorado.