

Table of Contents

File FPP-1996-240

Name: The Glen at Horizon – SE Corner 7th Street and Horizon Drive

P **S** A few items are denoted with an asterisk (*), which means they are to be scanned for permanent record on the ISYS
r **c** retrieval system. In some instances, items are found on the list but are not present in the scanned electronic development
e **a** file because they are already scanned elsewhere on the system. These scanned documents are denoted with (**) and will
s **n** be found on the ISYS query system in their designated categories.
e **n** Documents specific to certain files, not found in the standard checklist materials, are listed at the bottom of the page.
n **d** Remaining items, (not selected for scanning), will be listed and marked present. This index can serve as a quick guide for
t 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
		*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		Legal description
		Appraisal of raw land
		Reduction of any maps – final copy
		*Final reports for drainage and soils (geotechnical reports)
		Other bound or non-bound reports
		Traffic studies
X	X	*Review Comments
X	X	*Petitioner's response to comments
		*Staff Reports
		*Planning Commission staff report and exhibits
		*City Council staff report and exhibits
		*Summary sheet of final conditions

DOCUMENT DESCRIPTION:

X	X	Surficial Geology Investigation – 6/28/96	X	Cul-de-sac Details
X		ALTA Commitment for Title Insurance	X	Standard Details – Exhibit E
X	X	Stormwater Management Plan – 10/31/96	X	Standard Storm Drain Details – Exhibit F
X	X	Water System Design Report – 11/6/96	X	Accessible Ramp and Parking Stall Details – Exhibit G
		Proposal / Estimate – 12/5/96	X	Standard Water Line Details – Exhibit H
		Planning Commission Minutes – 12/3/96 - **	X	Sanitary Sewer Details – Exhibit I
X		Trust Deed – Bk 251 / Pg 399	X X	Site Plan – signed, stamped - to be scanned
X		Condominium Declaration – Bk 2435 / Pg 343	X	Plan and Profile
X		Landscape Improvement Expenses by the Glen II – 6/11/99	X	Sanitary Sewer Lines A & B – Plan and Profile
X		Pre-Construction Meeting Notes	X X	Grading and Drainage Plan – 5 pages
X	X	Aerial Photograph of Site	X	Storm Sewer Plan and Profile
X		Erosion Control Plan	X	Utility Composite
X		Erosion Control Detail	X	Retaining Wall Plan and Details
X		Multi-purpose Easement Details – Exhibit C		

City of Grand Junction

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

Phone: (970) 244-1430
FAX: (970) 256-4031



June 5, 2000

Bill Engleman
City Mountain J.J. LTD., LLLP
418 E. Cooper, Suite 204
Aspen, CO 81611

RE: The Glen at Horizon—Building Modifications

Dear Mr. Engleman:

I have reviewed the building plan revisions for the Glen at Horizon submitted by Thompson-Langford and dated 5/10/00 and 5-24-00. The building footprint and overhang modifications as proposed are hereby approved. A set of stamped plans have been placed in development file #FPP-96-240.

A Development Improvements Agreement (DIA) was filed with the City for the replacement of broken curb, gutter and sidewalk and for the establishment of the landscaping on the Horizon Drive berm. I understand from Kent Marsh that the concrete has been replaced and he will be sending a letter accepting the improvements. I have also noted, through a personal inspection on June 6th and a subsequent phone conversation with Bill Story, that the berm is well vegetated. Bill Story indicated that it would continue to fill in if properly maintained. He recommends that the vegetation be "knocked down" once a year and that it continue to be watered and fertilized. I will be preparing a release for the DIA and refunding the money you deposited with the City to guarantee the improvements.

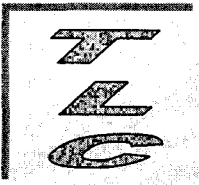
Thank you for your cooperation in completing all the improvements.

Sincerely,

A handwritten signature in black ink that reads "Katherine M. Portner".

Katherine M. Portner
Planning Manager





THOMPSON - LANGFORD CORPORATION
ENGINEERS AND LAND SURVEYORS

tlc@tlcwest.com
Facsimile (970) 241-2845
Telephone: (970) 243-6067
529 25 1/2 Rd, Grand Junction, CO 81505

May 25, 2000

Kathy Portner
Community Development Department
City of Grand Junction
250 North 5th Street
Grand Junction, CO.
81505

RE: The Glen at Horizon - Building Modifications

Dear Kathy:

Please find attached a revised copy of sheet 3 of 3 entitled Building Plan Revisions. The roof overhangs have been modified as we discussed to reflect the actual dimensions they will have once constructed.

Assuming that this will complete all outstanding issues, would you send the letter of approval to:

Bill Engleman, City Mountain G.J. LTD., LLLP.
418 E. Cooper, Suite 204
Aspen CO 81611

I would appreciate a copy as well.

Respectfully,

A handwritten signature in black ink, appearing to read "James E. Langford".

James E. Langford, PE & LS

JEL/iml

CC: Billy Engleman



THOMPSON - LANGFORD CORPORATION
ENGINEERS AND LAND SURVEYORS

tlc@tlcwest.com
Facsimile (970) 241-2845
Telephone: (970) 243-6067
529 25 1/2 Rd, Grand Junction, CO 81505

May 10, 2000

Kathy Portner
Community Development Department
City of Grand Junction
250 North 5th Street
Grand Junction, CO.
81505

RE: *The Glen at Horizon - Building Modifications*

Dear Kathy:

Please find attached a set of drawings that show the changes planned for the various buildings throughout The Glen. As we discussed back in March, only the two buildings encroach on easements. From our earlier discussions and your subsequent discussions with Paul Campbell of Kephart Architects, we understood that we could encroach on the existing easements, but only at the rate described in the literature you provided. As you will see from the notes on the exhibits and the copy of Paul Campbell's letter to me, we are trimming back the overhangs in the conflicting locations to bring the structures into compliance. We are in hopes that these documents will gain us the clearance we need to proceed with the project. If there is anything more we can or must provide, give me a call.

Respectfully,

James E. Langford, PE & LS

JEL/iml

CC: Billy Engleman



April 28, 2000

Jim Langford
Thompson Langford Corporation
5219 25 ½ Road
Grand Junction, Colorado 81505

Re: The Glen at Horizon
KA# 99076

Dear Jim:

I am in receipt of your April 21st correspondence regarding encroachment of building #5 and #6 into the multipurpose easement. A total of (5) encroachments are identified, (3) noted as "not okay" and (2) noted as "okay".

By way of this letter, I intend to respond to the "not okay" items sufficient for you to modify the footprints indicated on the site plan. We will update the construction documents subsequently with these modifications.

Building #5

Encroachment of 3.50'

The plate height at this location is 9' - 9 ¾". Based on a floor system of 2 x 10's and 6" of foundation exposed, we anticipate the clearance above grade (UBC 3204) to be 11' - 3 ¼". Conservatively an encroachment of 3.00' could be allowed here. The roof has an overhang of 12". We propose to reduce this by .75 yielding the following:

3.50' - .750' = 2.50 encroachment
3.00' allowed, therefore okay

Building #6

Encroachment of 1.83'

The plate height at this location is 9' - 1". Based on a floor system of 2 x 10's and 6" of foundation exposed, we anticipate the clearance above grade to be 10' - 6 ½". Conservatively an encroachment of 2.00' could be allowed here, therefore, 1.83 is less than 2.00'.

Encroachment of 3.04'

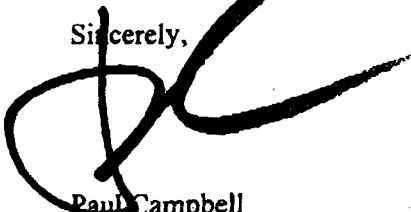
The plate height at this location is 9' - 1", again a 2.00' encroachment can be allowed. The overhang is currently 1.50'. We will reduce it by 1.25' at this location, yielding the following:

3.04' - 1.25' = 1.79' encroachment

2.00' allowed, therefore okay

Based on these modifications, I believe the site plan can be updated to indicate no remaining encroachments which cannot be allowed. Please advise our office should you require additional information regarding this matter.

Sincerely,



Paul Campbell
Kephart Architects, Inc.

cc: Billy Engleman



DEVELOPMENT APPLICATION

Community Development Department
 250 North 5th Street, Grand Junction, CO 81501
 (970) 244-1430

Receipt _____
 Date _____
 Rec'd By _____
 File No. FPD-96-240

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
<input type="checkbox"/> Subdivision Plat/Plan	<input type="checkbox"/> Minor <input type="checkbox"/> Major				
<input type="checkbox"/> Rezone				From: To:	
<input checked="" type="checkbox"/> Planned Development	<input type="checkbox"/> ODP <input type="checkbox"/> Prelim <input checked="" type="checkbox"/> Final	9.2AC	SE Corner of 7th & Horizon		Residential
<input type="checkbox"/> Conditional Use					
<input type="checkbox"/> Zone of Annex					
<input type="checkbox"/> Variance					
<input type="checkbox"/> Special Use					
<input type="checkbox"/> Vacation					<input type="checkbox"/> Right-of Way <input type="checkbox"/> Easement
<input type="checkbox"/> Revocable Permit					
<input type="checkbox"/> Site Plan Review					
<input type="checkbox"/> Property Line Adj.					

<input checked="" type="checkbox"/> Nick & Helen Mahleres	<input checked="" type="checkbox"/> Cunningham Investment Co., Inc.	<input checked="" type="checkbox"/> LANDesign, LLC
Property Owner Name	Developer Name	Representative Name
612 26$\frac{1}{2}$ Road	121 S. Galena Street, Ste 201	259 Grand Avenue
Address	Address	Address
Grand Junction, CO 81501	Aspen, CO 81611	Grand Junction, CO 81501
City/State/Zip	City/State/Zip	City/State/Zip
970/242-2464	970/925-8803	970/245-4099
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. Hays 10/28/96
 Signature of Person Completing Application Date

Nick A. Mahleres Helen Mahleres 10-29-96
 Signature of Property Owner(s) - attach additional sheets if necessary Date

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

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

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

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

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

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

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

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

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

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

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

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

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

2945-024-00-049
NICK H MAHLERES
HELEN C
612 26 1/2 RD
GRAND JUNCTION, CO 81506-1905

2945-024-19-001
S BRET GUILLORY
LORI S GUILLORY
603 26 3/4 RD
GRAND JUNCTION, CO 81506-8225

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

2945-023-00-948
CITY OF GRAND JUNCTION
250 N 5TH ST
GRAND JUNCTION, CO 81501-2628

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

2945-023-14-007
SISTERS OF CHARITY OF
LEAVENWORTH
HEALTH SERVICES CORPORATION
PO BOX 1628
GRAND JUNCTION, CO 81502-1628

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

2945-024-00-015
DEBORAH L SHOWALTER
606 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

2945-024-00-045
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

2945-024-19-004
SISTERS OF CHARITY OF
LEAVENWORTH
HEALTH SERVICES CORPORATION
2635 N 7TH ST
GRAND JUNCTION, CO 81501

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

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

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

2945-023-15-001
ROBERT B CHRISTENSEN
TRUSTEE
PO BOX 3025
GRAND JUNCTION, CO 81502-3025

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

2945-024-00-055
THOMAS C SPIEGELBERG
SANDRA L SPIEGELBERG
632 26 1/2 RD
GRAND JUNCTION, CO 81506-1932

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

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

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

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

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

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

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

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

2945-024-00-952
ST PAUL EVANGELICAL LUTHERAN
CHURCH
632 26 1/2 RD
GRAND JUNCTION, CO 81506-1932

2945-024-21-958
INTERNATIONAL CHURCH OF FOUR
SQUARE GOSP
1100 GLENDALE BLVD
LOS ANGELES, CA 90026-3200

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

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

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

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

2945-024-10-003
OLGA J HENRY
JOHN N HENRY
2711 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

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

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

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

2945-024-05-005
MAURICE BRASSETTE
C/O PHH MRTG SERV
6000 ATRIUM WY
MT LAUREL, NJ 08054

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

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

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

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

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

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

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

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

2945-024-20-034
DOROTHY E HOWARD
636 HORIZON DR APT 809
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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2945-024-20-051
TERRY LEE SOMMERFIELD

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2945-024-20-043
A J LETEY
MARGARET
636 HORIZON DR APT 502
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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Nick & Helen Mahleres
612 26 1/2 Road
Grand Junction, CO 81501

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



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

Surficial Geology Investigation, Horizon Village Subdivision

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 or 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 mineral 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 and 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.

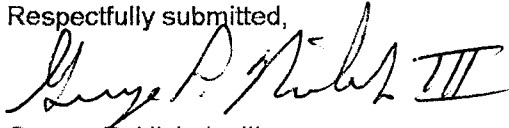
It is presumed that all relevant concerns have been addressed in this report. If any further questions arise or if I can be of additional service, please feel free to call.

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

Surficial Geology Investigation, Horizon Village Subdivision

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,

A handwritten signature in cursive script that reads "George P. Nichols, III". The signature is written in black ink and is positioned above the printed name and title.

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

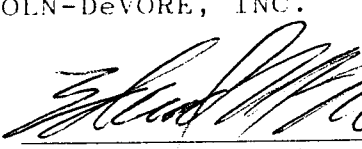
Dear Sir:

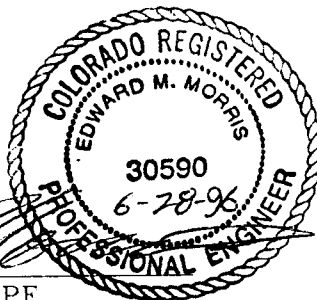
Transmitted herein are the results of a Subsurface Soils Exploration for the proposed construction of attached and possible detached single family and condominium type residential construction within the proposed Horizon Village Subdivision.

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

TABLE OF CONTENTS

	<u>Page No.</u>
INTRODUCTION	1
Project Description, Scope, Field Exploration & Laboratory Testing.	
FINDINGS	5
Site Description, General Geology and Subsurface Description, Ground Water	
CONCLUSIONS AND RECOMMENDATIONS	12
General Discussion, Open Foundation Observation, Excavation, Drainage and Gradient	
FOUNDATIONS	18
Shallow Foundations on Mancos Shale, Shallow Foundations on Compressible Soil, Subgrade Improvement, Reinforced Structural Fill, Deep Foundations, Drilled Piers, Drilled Pier Observation, Grade Beams, Driven Pile Observation, Driven Piles	
CONCRETE SLABS ON GRADE	29
EARTH RETAINING STRUCTURES	32
REACTIVE SOILS	34
PAVEMENTS	35
Calculated Pavement Sections, Proposed Pavement Sections, Subgrade Improvement, Mechanically Stabilized Fill, Section Construction	
LIMITATIONS	41

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 \pm 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 recompactd 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

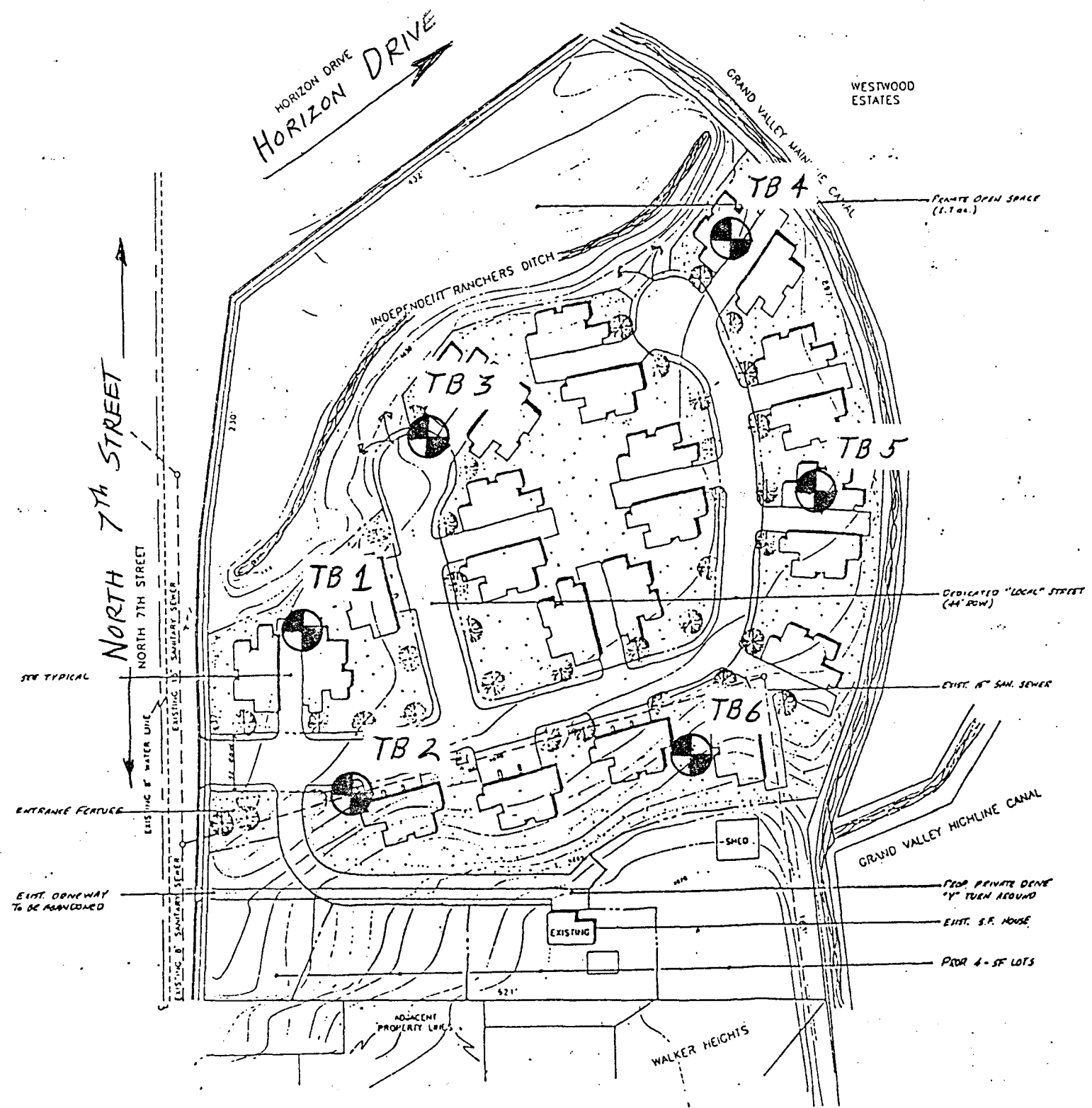
This report is issued with the understanding that it is the responsibility of the owner, or his representative to ensure that the information and recommendations contained herein are brought to the attention of the individual lot purchasers for the subdivision. In addition, it is the responsibility of 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. + 7 th ST., GRD JCT, COLO.		
	1441 MOTOR STREET GRAND JCT., COLORADO COLO. SPRINGS-PUEBLO	LD # 85329-J SHEET OF
	DRAWN BY: E. M. MORRIS	SCALE: NONE

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	
	CNEISS
	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_0	Natural Moisture Content
W_x	Weathered Material
	Free water table
γ^0	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. Lination 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.

		BORING NO. 1			BLOW	SOIL	
DEPTH	SOIL	BORING ELEVATION:			COUNT	DENSITY	WATER
(FT.)	LOG	DESCRIPTION			/inch	pcf	%
		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					
10	ML-CL	SANDY, SILTY CLAY WET			ST	99.4	24.9%
	II	SULFATES			10	01/12	
		HOLE IS SQUEEZING SHUT			SPT	02/18	25.3%
		FREE WATER VERY SOFT TO DRILL					
15	ML	SANDY SILT			SPT	01/12	26.6%
	III	VERY COMPRESSIBLE			15		
		ALLUVIAL, DEBRIS FAN DEPOSIT					
		VERY SANDY STRATA					
20		SULFATES					
		VERY LOW DENSITY VERY SOFT TO DRILL					
		VERY COMPRESSIBLE			20		
		GRAVELS OF SILTSTONE & SANDSTONE					
	MANCOS SHALE	THICK SULFATE DEPOSITS					
		INCREASING DENSITY w/DEPTH					
25	CL	SILTY CLAY EXPANSIVE			SPT	37/6	17.3%
	IV	LOW to MEDIUM PLASTICITY			25	88/12	
						147/18	
30		TD @ 25'			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

HORIZON VILLAGE SUBDIVISION

SE Corner, HORIZON Drive & 7th Street

Mr. MAC CUNNINGHAM

Date

GRAND JUNCTION, COLO.

6-20-96

LINCOLN - DeVORE, Inc.

Geotechnical Consultants
Grand Junction, Colorado

Job No.

85529-J

Drawn

EMM

		BORING NO. 2			BLOW	SOIL	
DEPTH	SOIL	BORING ELEVATION:			COUNT	DENSITY	WATER
(T.)	LOG	DESCRIPTION			/inch	pcf	%
		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			SPT	04/12	25.5%
						08/18	
		MANCOS SHALE	THICK SULFATE DEPOSITS				
	CL	SANDY, SILTY CLAY			ST	108.2	16.6%
10	IV	EXPANSIVE SULFATES			10	22/6	
		VERY FRACTURED			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

<p>LINCOLN - DeVORE, Inc. Geotechnical Consultants Grand Junction, Colorado</p>	<p>HORIZON VILLAGE SUBDIVISION</p>		
	<p>SE Corner, HORIZON Drive & 7th Street</p>		
	<p>Mr. MAC CUNNINGHAM</p>		<p>Date</p>
	<p>GRAND JUNCTION, COLO.</p>		<p>6-20-96</p>
	<p>Job No.</p>	<p>Drawn</p>	
	<p>85529-J</p>	<p>EMM</p>	

		BORING NO. 3			BLOW	SOIL	
DEPTH	SOIL	BORING ELEVATION:	DESCRIPTION		COUNT	DENSITY	WATER
(ft.)	LOG				/inch	pcf	%
			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				
10	CL		SANDY, SILTY CLAY WET	ST		101.4	22.9%
	I		COMPRESSIBLE SULFATES	10			
			VERY SOFT TO DRILL				
15	ML-CL		SANDY, SILTY CLAY	SPT	01/18		25.4%
	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				
25	CL		SILTY CLAY EXPANSIVE	SPT	22/6		18.4%
	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

<p>LINCOLN - DeVORE, Inc. Geotechnical Consultants Grand Junction, Colorado</p>	<p>HORIZON VILLAGE SUBDIVISION</p>		
	<p>SE Corner, HORIZON Drive & 7th Street</p>		
	<p>Mr. MAC CUNNINGHAM</p>		<p>Date</p>
	<p>GRAND JUNCTION, COLO.</p>		<p>6-20-96</p>
	<p>Job No.</p>	<p>Drawn</p>	
	<p>85529-J</p>	<p>EMM</p>	

BORING NO. 4

DEPTH (FT.)	SOIL LOG	BORING ELEVATION:		BLOW COUNT	SOIL DENSITY	WATER
		DESCRIPTION		/inch	pcf	%
		CL	SANDY, SILTY CLAY	SULFATES	MOIST	
		I	COMPRESSIBLE GRAVELS	of SILTSTONE		
5		ML	SANDY SILT	LOW to MEDIUM DENSITY		14.3%
		III	COMPRESSIBLE STRATA			
			ALLUVIAL, DEBRIS FAN DEPOSIT	WET		20.6%
			SOFT TO DRILL			
10		CL	SANDY, SILTY CLAY	SULFATES		23.8%
		I	COMPRESSIBLE	LOW PLASTIC	WET	
			STRATIFIED CLAYEY SILT & SILTY SAND			
15		ML-CL	SANDY, SILTY CLAY		WET	26.4%
		II	ALLUVIAL, DEBRIS FAN DEPOSIT			
			FREE WATER	✓	HOLE IS SQUEEZING SHUT	
20			MANCOS SHALE	THICK SULFATE DEPOSITS		
			INCREASING DENSITY w/DEPTH	V. MOIST		15.3%
		CL	SILTY CLAY	LOW EXPANSIVE		
		IV	LOW to MEDIUM PLASTICITY	SI. MOIST		
25			TD @ 20'			
30						

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

Free Water @ 16'

During Drilling 6-18-96

LOG OF SUBSURFACE EXPLORATION

<p>LINCOLN - DeVORE, Inc. Geotechnical Consultants Grand Junction, Colorado</p>	<p>HORIZON VILLAGE SUBDIVISION SE Corner, HORIZON Drive & 7th Street</p>	
	<p>Mr. MAC CUNNINGHAM GRAND JUNCTION, COLO.</p>	<p>Date 6-20-96</p>
	<p>Job No. 85529-J</p>	<p>Drawn EMM</p>

		BORING NO. 5			BLOW COUNT	SOIL DENSITY	WATER
DEPTH (ft)	SOIL LOG	BORING ELEVATION:	DESCRIPTION		/inch	pcf	%
			ORGANIC, SILTY CLAY SOFT WET				
			BROWN, VERY SANDY, ALLUVIAL, SILT & CLAY				
			DEBRIS FAN DEPOSIT SULFATES				
5	CL		SANDY, SILTY CLAY SOFT SATURATED	ST		94.3	27.8%
	I		COMPRESSIBLE SULFATES STRATIFIED		5		
			VERY SOFT SATURATED				
			VERY CLAYEY STRATA				
			MANCOS SHALE THICK SULFATE DEPOSITS				
10	CL		EXPANSIVE, SANDY, SILTY CLAY SI. MOIST	SPT	21/6		13.4%
	IV		SULFATES		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

<p>LINCOLN - DeVORE, Inc. Geotechnical Consultants Grand Junction, Colorado</p>	<p>HORIZON VILLAGE SUBDIVISION SE Corner, HORIZON Drive & 7th Street</p>	
	<p>Mr. MAC CUNNINGHAM</p>	<p>Date</p>
	<p>GRAND JUNCTION, COLO.</p>	
	<p>Job No. 85529-J</p>	<p>Drawn EMM</p>
		<p>6-20-96</p>

		BORING NO. 6			BLOW	SOIL	
DEPTH (ft)	SOIL LOG	BORING ELEVATION:		COUNT	DENSITY	WATER	
		DESCRIPTION		/inch	pcf	%	
		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				
10		CL	EXPANSIVE, SILTY CLAY	SPT	45/6	9.8%	
		IV	INCREASING DENSITY w/DEPTH	10	109/12		
					164/18		
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 Date

GRAND JUNCTION, COLO. 6-20-96

Job No.
85529-J

Drawn
EMM

Soil Sample: ALLUVIAL, SANDY, SILTY CLAY (CL)

Sample No. I (Typical)

4

Job Location:

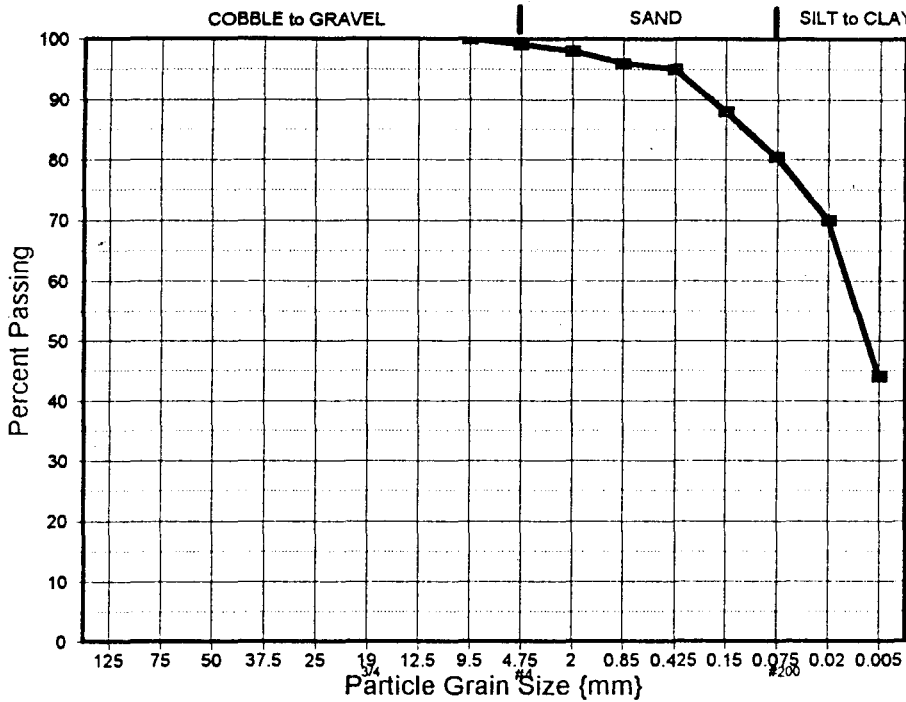
Test by: LRS

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	Date
GRAND JUNCTION, COLO.	6-20-96
Job No.	Drawn
85529-J	EMM

Soil Sample: **ALLUVIAL, SANDY, SILTY CLAY (ML-CL)**

Sample No. **II** (Typical)

Job Location:

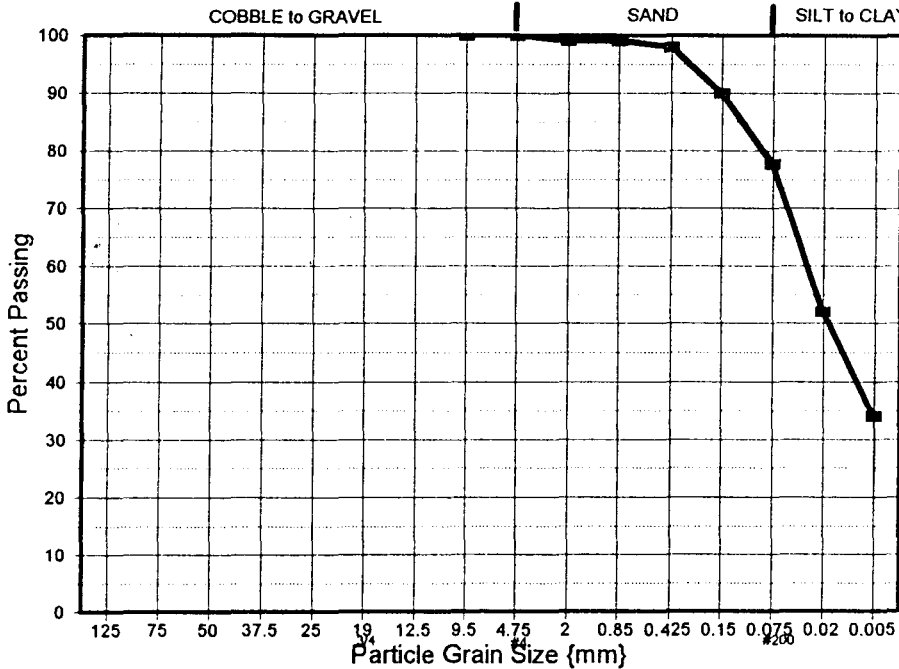
Test by: **LRS**

Natural Water Content (w) **24.9%**

Boring No.: 1 Depth: 8'

Soil Specific Gravity (Gs):

In-Place Density (pcf): **99.4**



Effective size mm
 C_u
 C_c

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.	Drawn
85529-J	EMM

Soil Sample: ALLUVIAL, SANDY SILT (ML)

Sample No. III (Typical)

Job Location:

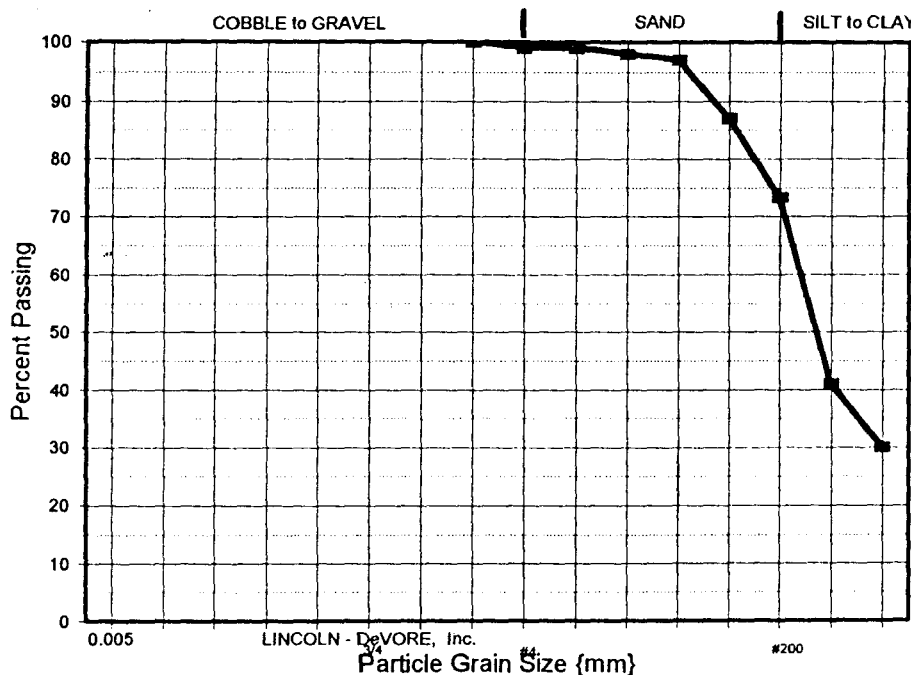
Test by: LRS

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
#4	4.75
#10	2
#20	0.85
#40	0.425
#100	0.15
#200	0.075
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)

8

Job Location:

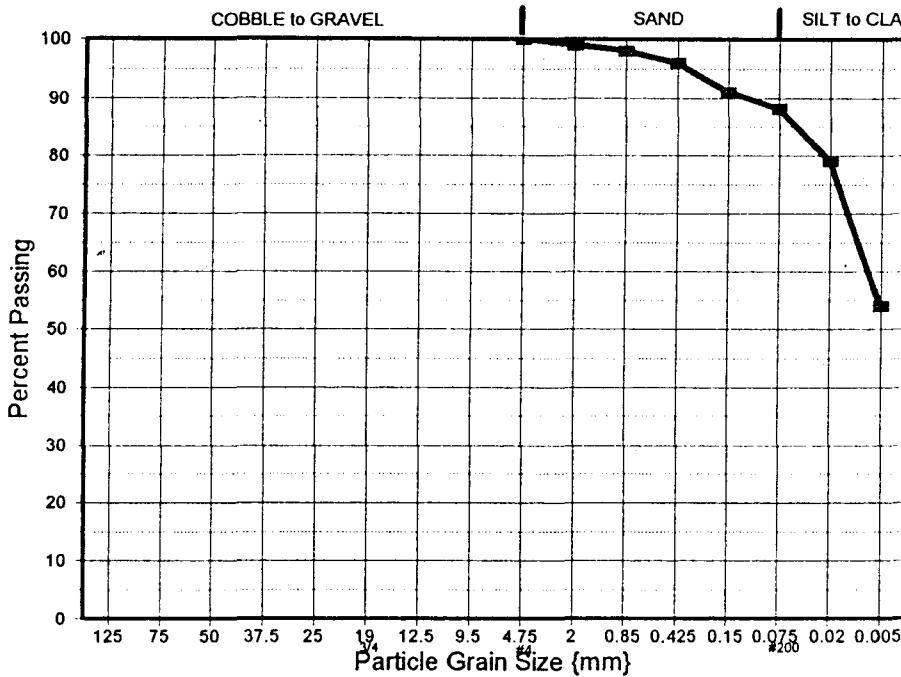
Test by: **LRS**

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

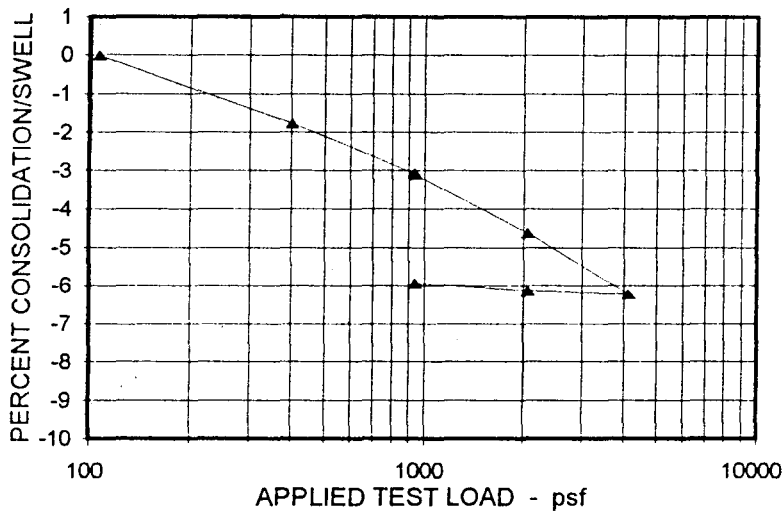
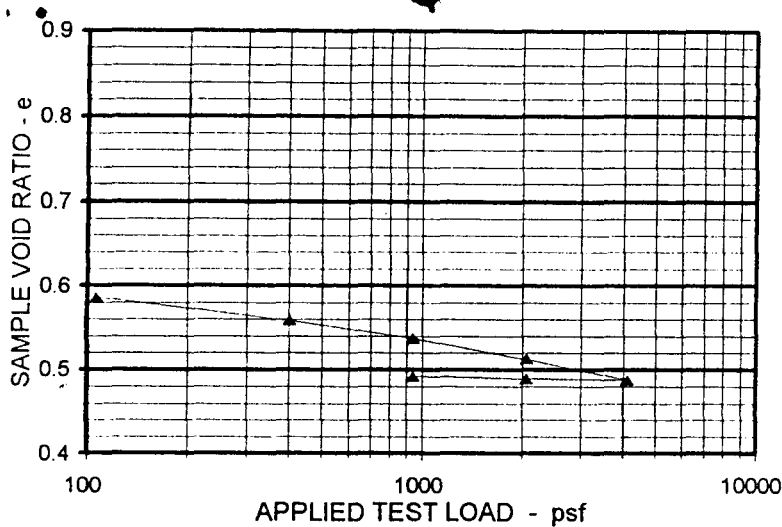
SULFATE SALTS: 2000+ ppm

PERMEABILITY:
K (20 C): Void Ratio:

SOIL ANALYSIS and SUMMARY

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.	Drawn
85529-J	EMM



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

	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

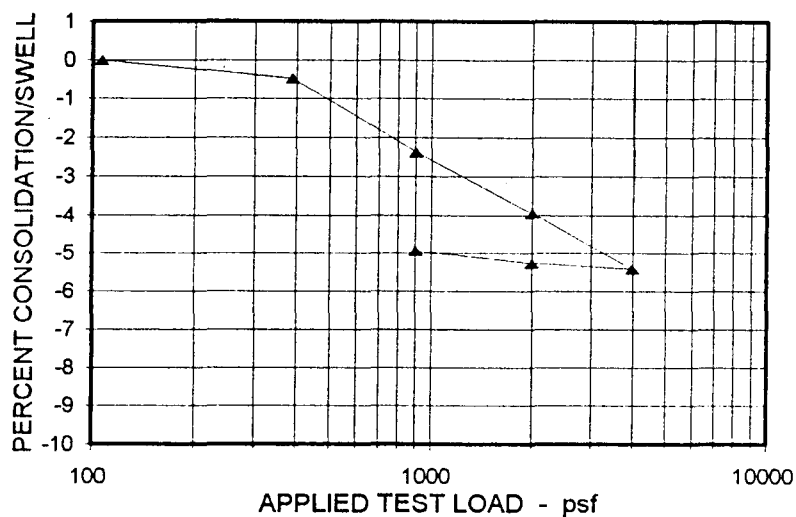
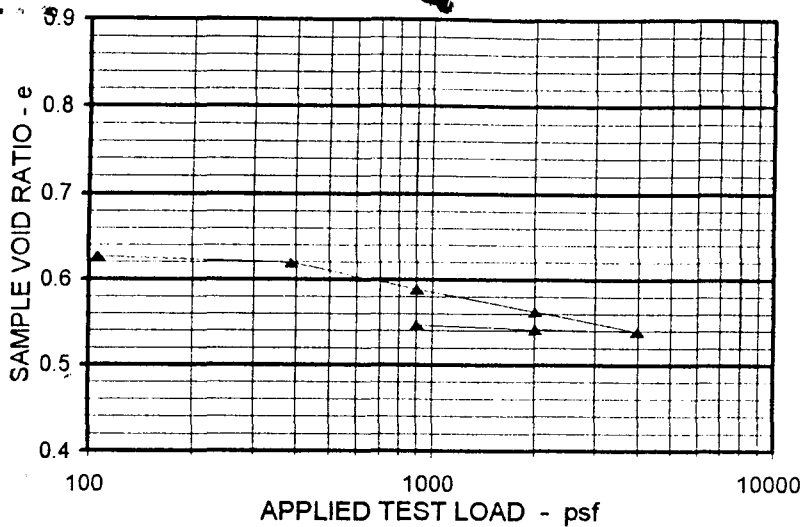
SE Corner, HORIZON Drive & 7th Street

Mr. MAC CUNNINGHAM
GRAND JUNCTION, COLO.

Date
6-20-96

Job No.
85529-J

Drawn
EMM



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
- 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 #:	1
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
GRAND JUNCTION, COLO. Date
6-20-96

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

**FINAL
TRAFFIC STUDY**

FOR

THE GLEN AT HORIZON

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**

October 15, 1996

Job No. 96045

TRAFFIC STUDY

FOR


THE GLEN AT HORIZON

October, 1996

Prepared by: *Jeffery P. Crane*
Jeffory P. Crane

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

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



A circular professional seal for Philip M. Hart, a registered professional engineer in the State of Colorado. The seal contains the text "COLORADO REGISTERED" at the top, "PHILIP M. HART" in the center, and "PROFESSIONAL ENGINEER" at the bottom. The number "19346" is stamped in the center of the seal.

TABLE OF CONTENTS

- A. INTRODUCTION**
- B. TRIP GENERATION and DESIGN HOUR VOLUMES**
- C. TRIP DISTRIBUTION and ASSIGNMENT**
- D. TRAFFIC VOLUMES**
- E. CAPACITY & GAP ANALYSIS**
- F. CONCLUSIONS and RECOMMENDATIONS**
- G. APPENDIX**

LOCATION MAP

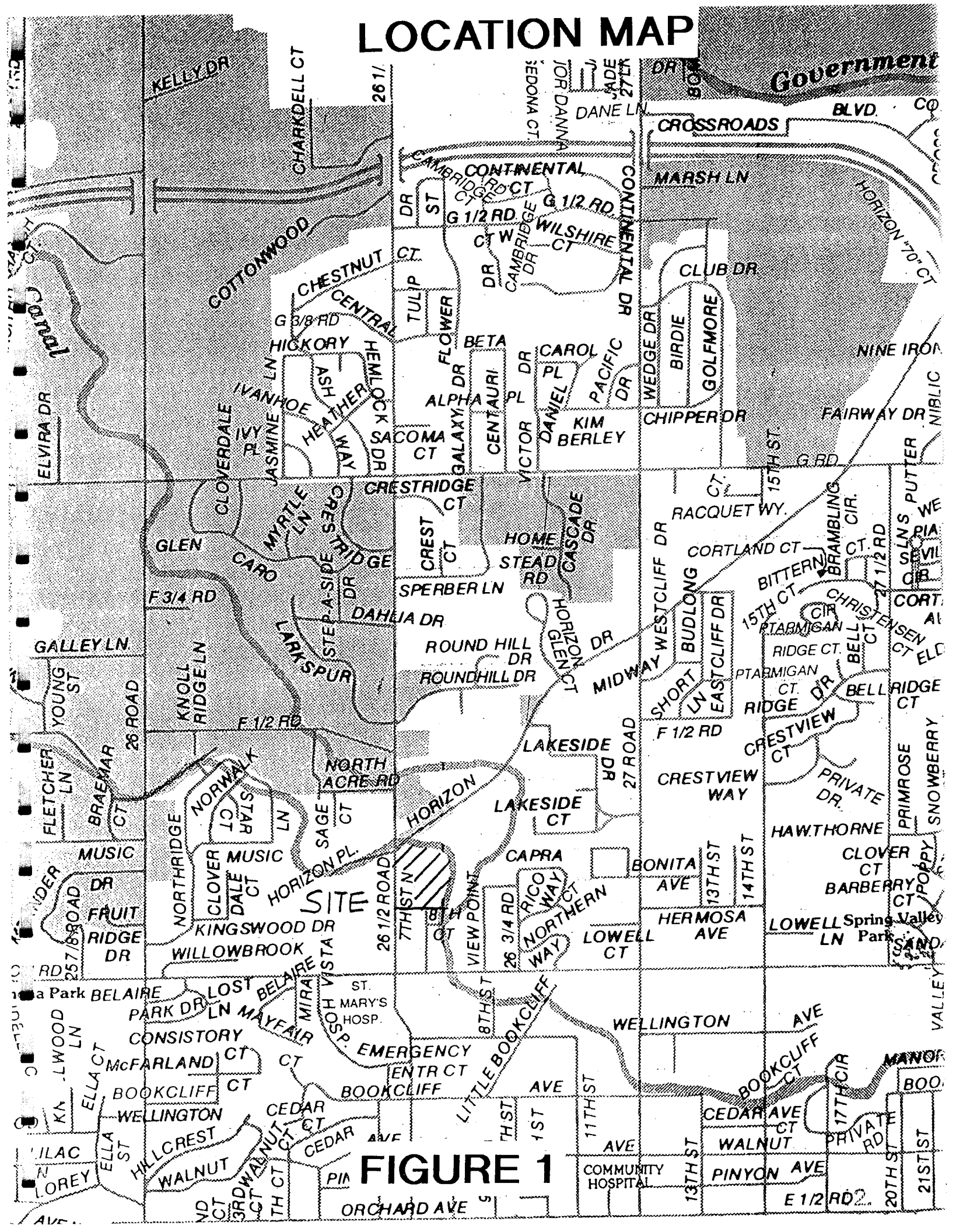


FIGURE 1

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)

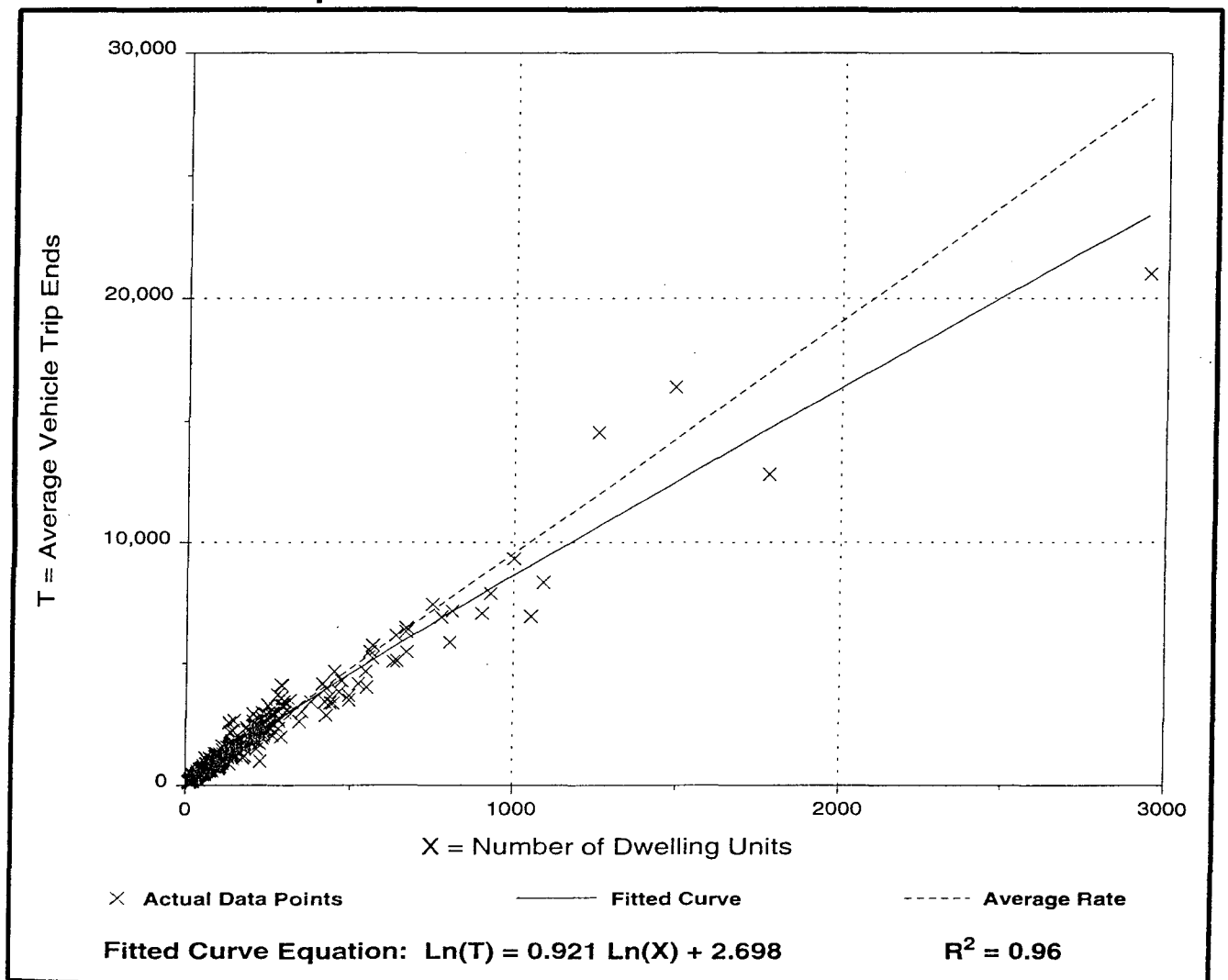
**Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday**

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



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

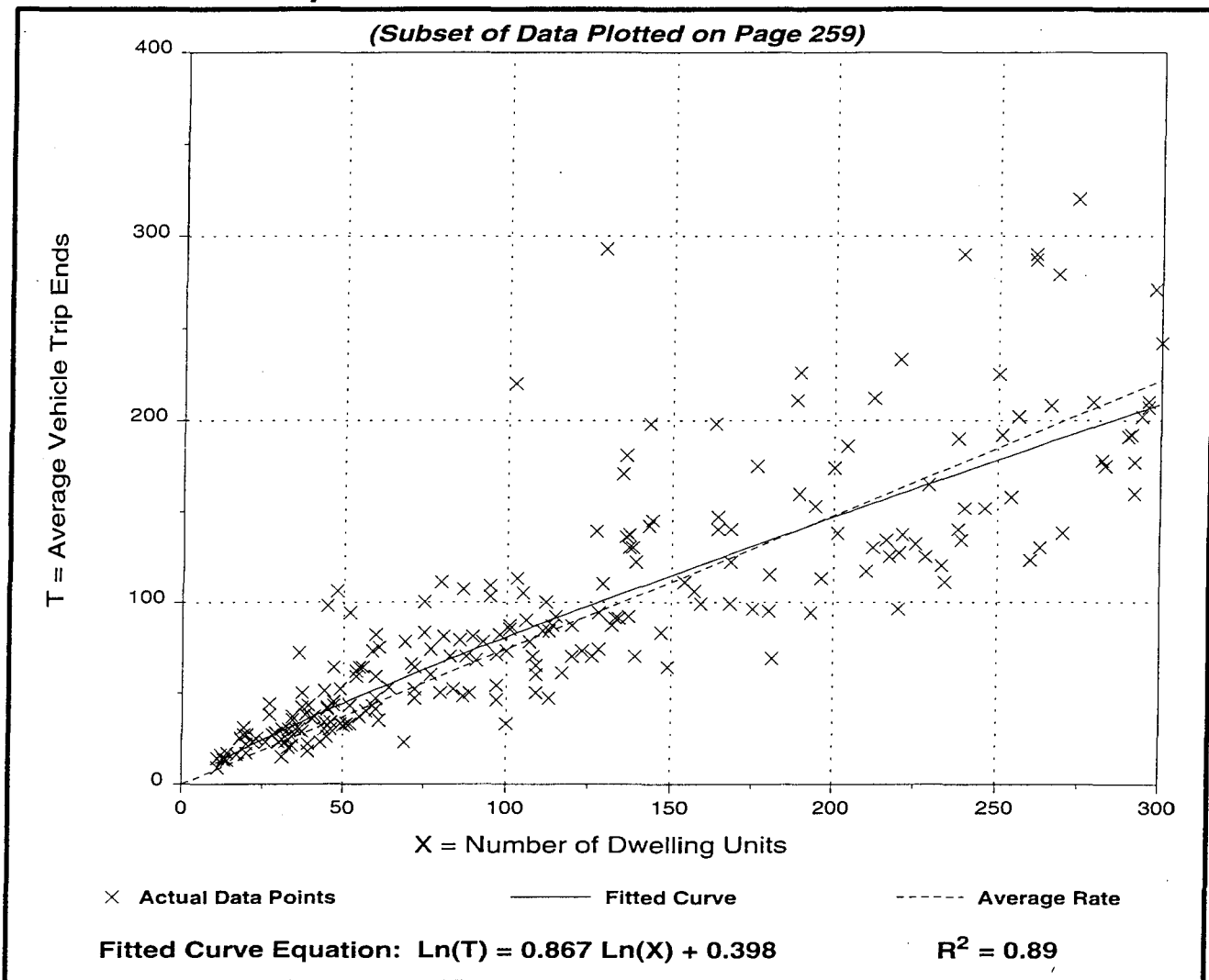
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

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



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

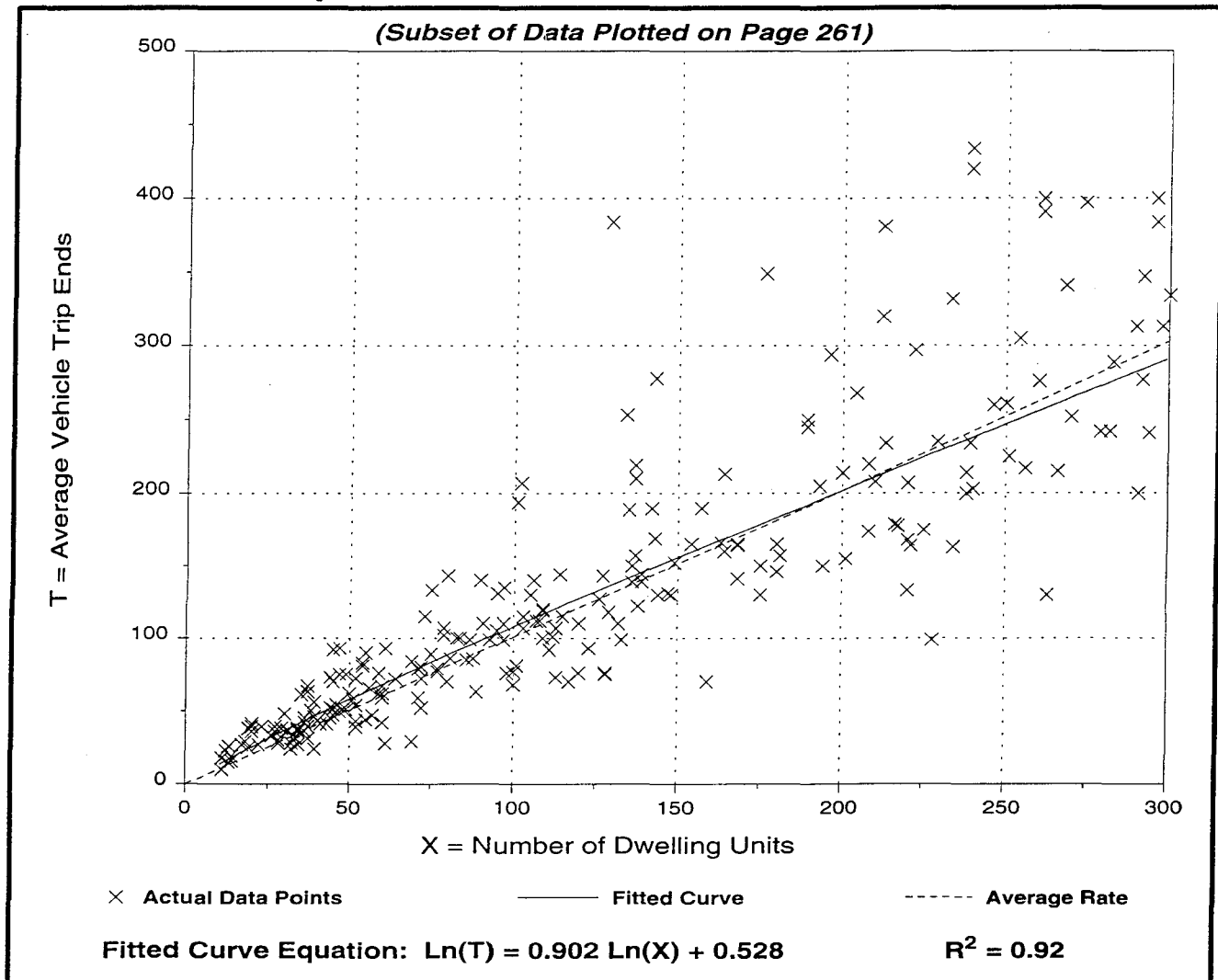
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

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



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 2016. See Figures 4 & 5 respectively.

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.

EXISTING PEAK HOUR VOLUMES PRE-DEVELOPMENT

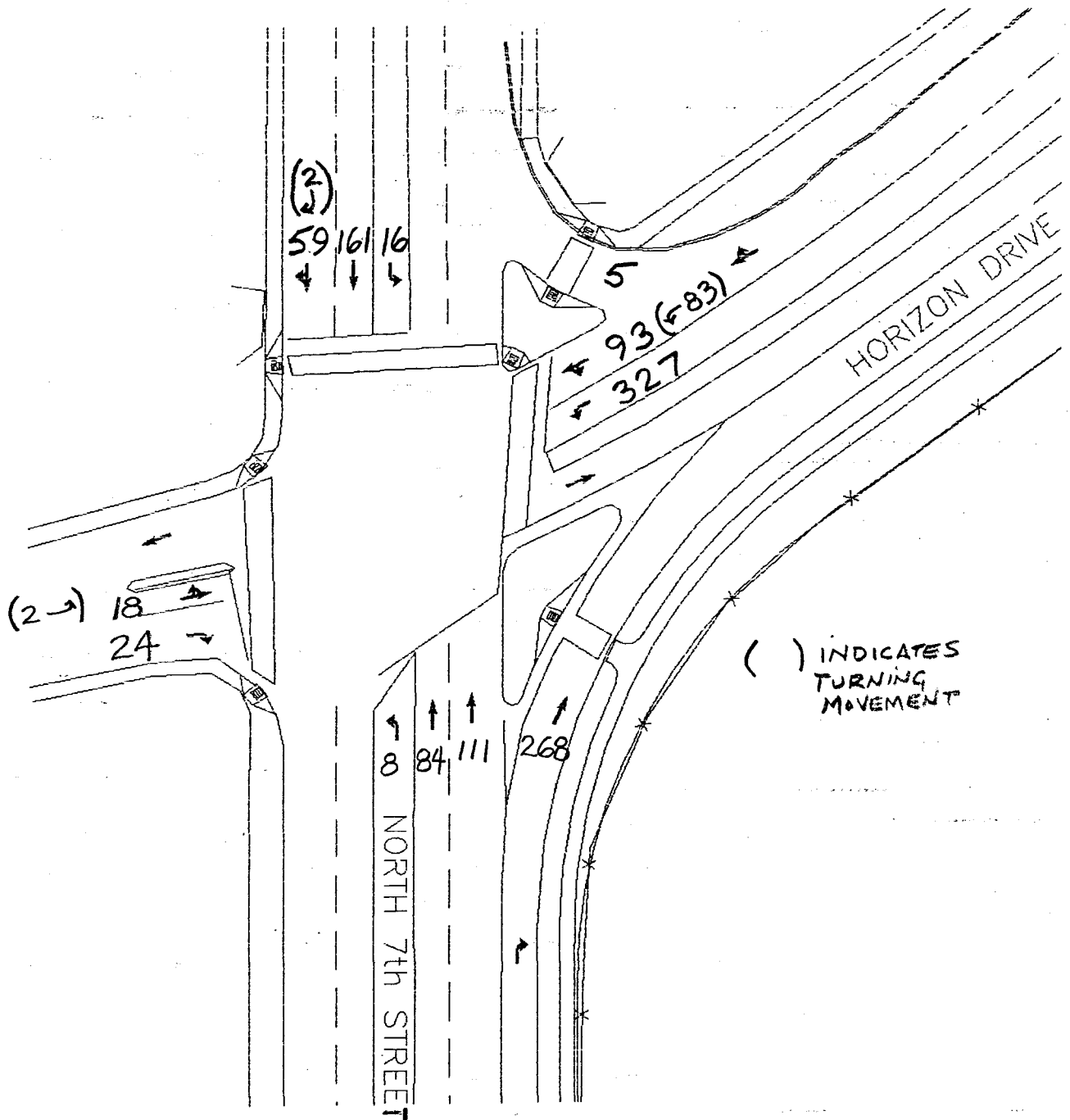


FIGURE 2

PM. PEAK HOUR
TRIP ASSIGNMENT & DISTRIBUTION

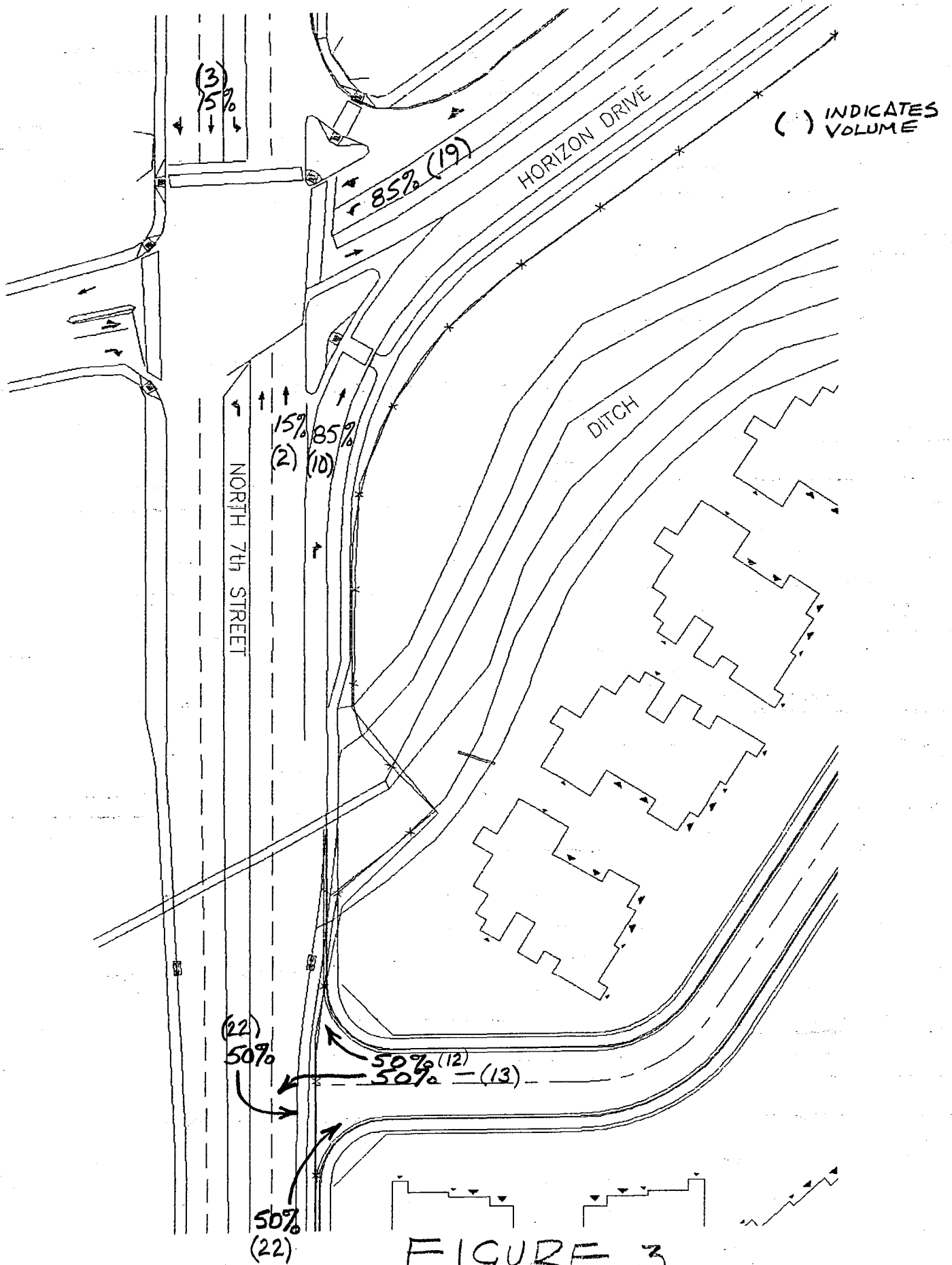


FIGURE 3

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

Streets: (E-W) Horizon Drive
 Analyst: JPC
 Area Type: Other
 Comment: 1996 volumes

(N-S) 7th Street
 File Name: EX1996.HC9
 6-27-96 PM Peak

=====

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
 Analyst: JPC
 Area Type: Other
 Comment: 1996 volumes

(N-S) 7th Street
 File Name: EX1996.HC9
 6-27-96 PM Peak

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	

PROPOSED PEAK HOUR VOLUMES 1996

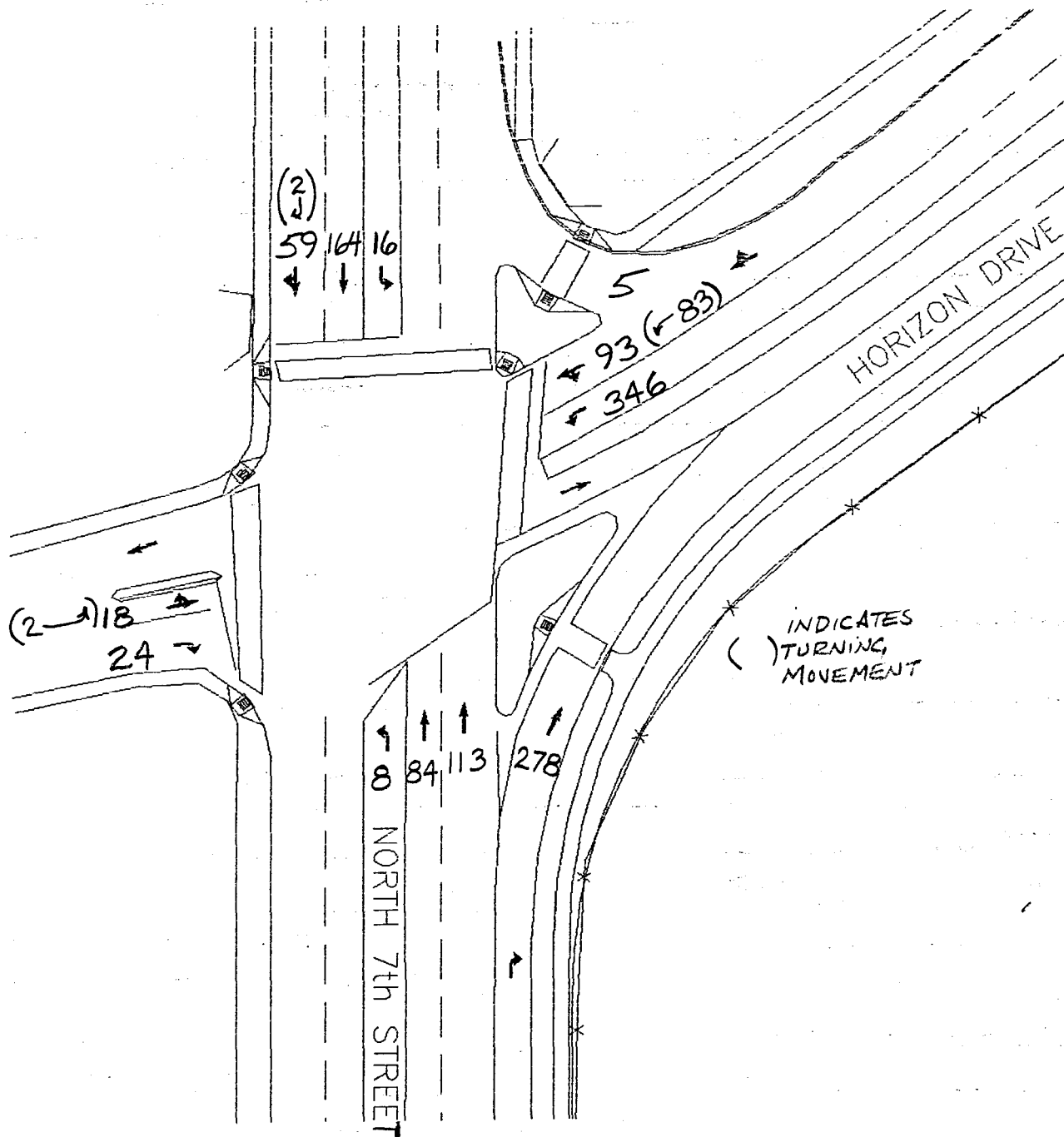


FIGURE 4

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: 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	
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
=====

```

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		

PROPOSED PEAK HOUR VOLUMES 2016

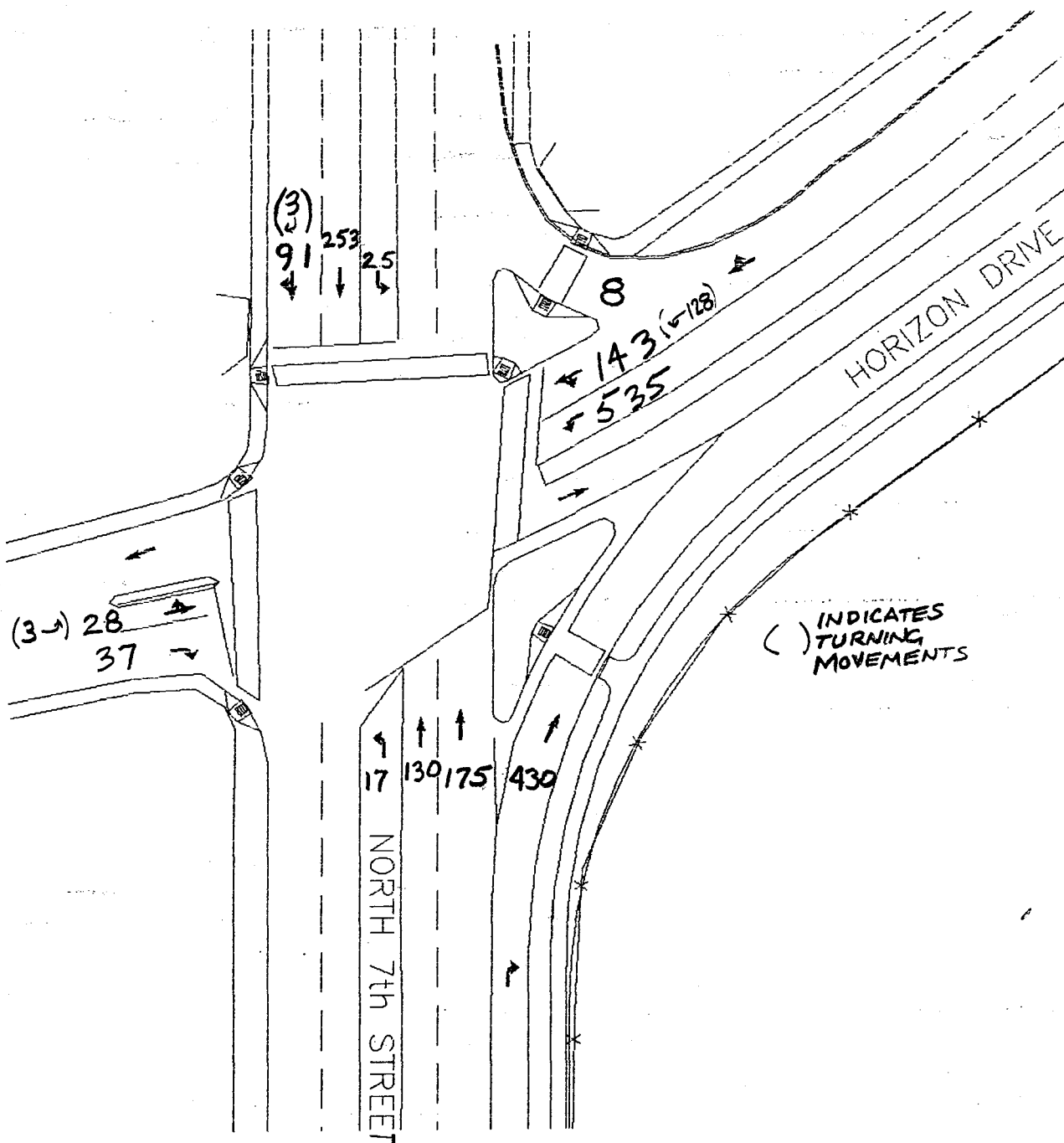


FIGURE 5

Streets: (E-W) Horizon Drive

(N-S) 7th Street

Analyst: JPC

File Name: PROP2016.HC9

Area Type: Other

6-27-96 PM Peak

Comment: 2016 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	18
Proportion of Left Turns in Lane Group, Plt	1.00
Left Turns per Cycle: LTC=Vlt*C/3600	0.45
Adjusted Opposing Flow Rate, Vo	380
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600No	4.75
Opposing Platoon Ratio, Rpo	1
Lost time per phase, tl	3
gf=Gexp(-0.882*LTC^0.717)-tl	0.00
Opposing Queue Ratio: gro=1-Rpo(go/C)	0.64
gq = Volc * gro / (.5 - Volc * (1 - gro) / go)-tl	3.84
gu=g-gq (or g-gf)	28.16
fs=(875-0.625Vo)/1000	0.64
Pl=Plt[1+{(N-1)g/(fsgu+4.5)}]	1.00
El1	2.33
fmin	0.13
fm,(min=fmin;max=1.00)	0.38
flt=[fm+0.91(N-1)]/N	0.38

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	26
Proportion of Left Turns in Lane Group, Plt	1.00
Left Turns per Cycle: LTC=Vlt*C/3600	0.65
Adjusted Opposing Flow Rate, Vo	337
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600No	4.21
Opposing Platoon Ratio, Rpo	1
Lost time per phase, tl	3
gf=Gexp(-0.882*LTC^0.717)-tl	0.00
Opposing Queue Ratio: gro=1-Rpo(go/C)	0.64
gq = Volc * gro / (.5 - Volc * (1 - gro) / go)-tl	2.99
gu=g-gq (or g-gf)	29.01
fs=(875-0.625Vo)/1000	0.66
Pl=Plt[1+{(N-1)g/(fsgu+4.5)}]	1.00
El1	2.18
fmin	0.13
fm,(min=fmin;max=1.00)	0.42

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: PROP2016.HC9
 Area Type: Other 6-27-96 PM Peak
 Comment: 2016 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	3	28	37	663	15		17	305		25	341	3
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	
RTOR Vols						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	*		
EB Thru		*			NB Thru	*		
EB Right		*			NB Right			
EB Peds					NB Peds			
WB Left		*			SB Left	*		
WB Thru		*			SB Thru	*		
WB Right					SB Right	*		
WB Peds					SB 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
 Analyst: JPC
 Area Type: Other
 Comment: 2016 volumes

(N-S) 7th Street
 File Name: PROP2016.HC9
 6-27-96 PM Peak

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	32	1854	0.017	0.189	350	0.091
R	39	1583	0.025	0.189	299	0.130 *
WB						
L	367	3539	0.104	0.356	1258	0.292
LT	358	1778	0.201	0.356	632	0.566 *
NB						
L	18	703	0.026	0.356	250	0.072
T	337	3725	0.090	0.356	1324	0.254
SB						
L	26	775	0.034	0.356	276	0.094
TR	380	3721	0.102	0.356	1323	0.287 *
			Sum (v/s) critical = 0.328			
Lost Time/Cycle, L = 9.0 sec			Critical v/c(x) = 0.365			

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	0.091	0.189	22.9	0.850	350	16	0.0	19.5	C	19.5	C
R	0.130	0.189	23.1	0.850	299	16	0.0	19.6	C		
WB											
L	0.292	0.356	15.8	0.850	1258	16	0.0	13.5	B	14.7	B
LT	0.566	0.356	17.8	0.850	632	16	0.9	16.0	C		
NB											
L	0.072	0.356	14.6	0.850	250	16	0.0	12.4	B	13.3	B
T	0.254	0.356	15.6	0.850	1324	16	0.0	13.3	B		
SB											
L	0.094	0.356	14.7	0.850	276	16	0.0	12.5	B	13.4	B
TR	0.287	0.356	15.8	0.850	1323	16	0.0	13.5	B		
			Intersection Delay = 14.3 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

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..... 2016 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		752	24	24	344					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)	396	
Potential Capacity: (pcph)	872	
Movement Capacity: (pcph)	872	
Prob. of Queue-Free State:	0.98	

Step 2: LT from Major Street	SB	NB

Conflicting Flows: (vph)	817	
Potential Capacity: (pcph)	624	
Movement Capacity: (pcph)	624	
Prob. of Queue-Free State:	0.94	

Step 4: LT from Minor Street	WB	EB

Conflicting Flows: (vph)	1180	
Potential Capacity: (pcph)	186	
Major LT, Minor TH		
Impedance Factor:	0.94	
Adjusted Impedance Factor:	0.94	
Capacity Adjustment Factor		
due to Impeding Movements	0.94	
Movement Capacity: (pcph)	176	

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	176	>				
WB R	14	872	>	14.0	0.3	C	14.0
SB L	35	624		6.1	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 2016. 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 2016 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. Typically, gaps of about 6 to 9 seconds are needed to allow the critical entry of a vehicle into the traffic stream of a major street; gaps of 9 to 13 seconds will allow two vehicles to enter; and gaps of 13 seconds or more will allow entry of 3 vehicles. During the 15 minute period studied, there were thus a total of 111 effective gaps or 444 extrapolated to 1 hour. The volume of traffic expected

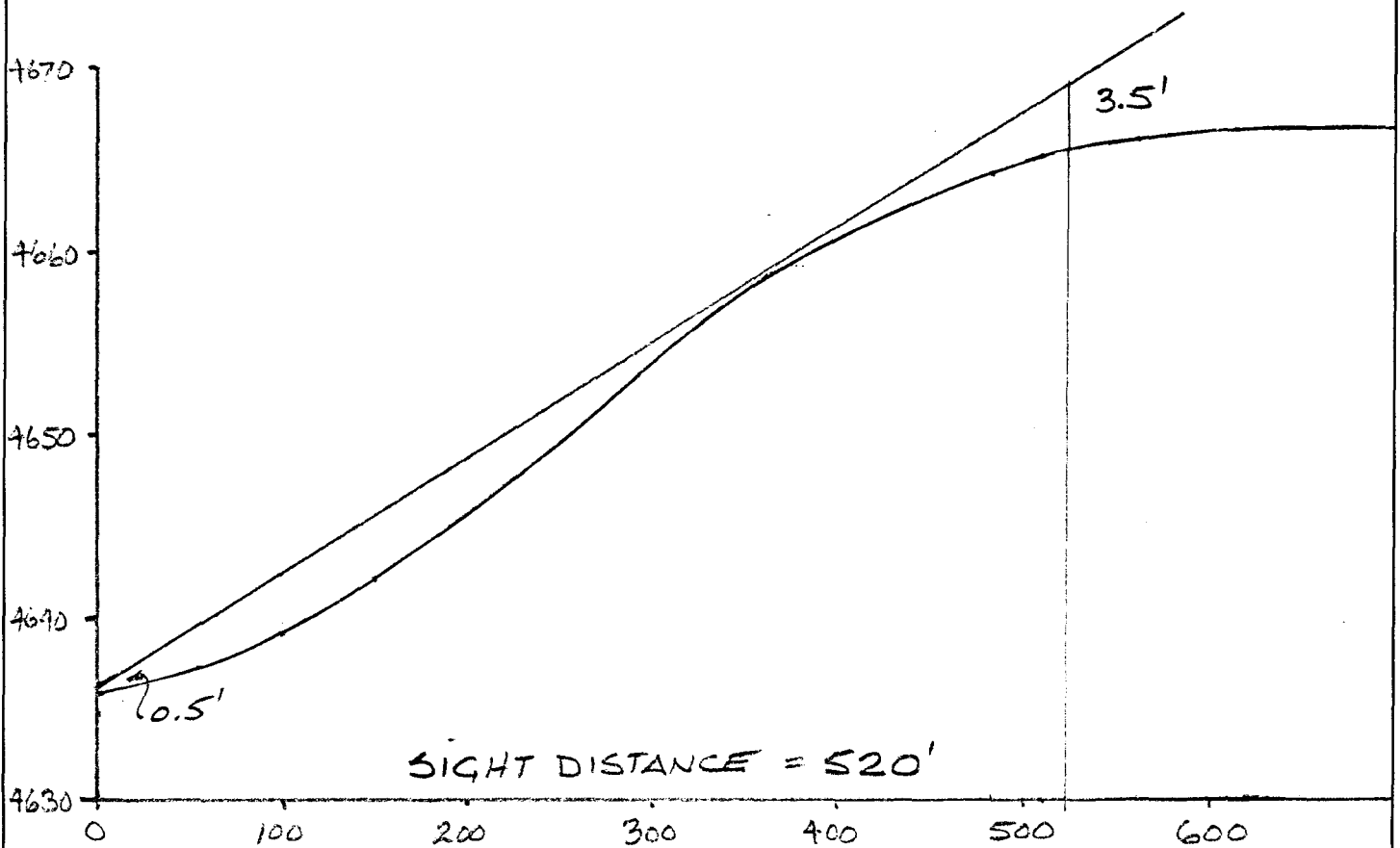
to turn left at peak-hour is 13. If the volume of traffic projected to enter from the cross street is less than $\frac{1}{2}$ of the number of gaps available, then no additional traffic control is necessary. Consequently, sufficient gaps exist and additional signal analysis will not be required.

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 JPC 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

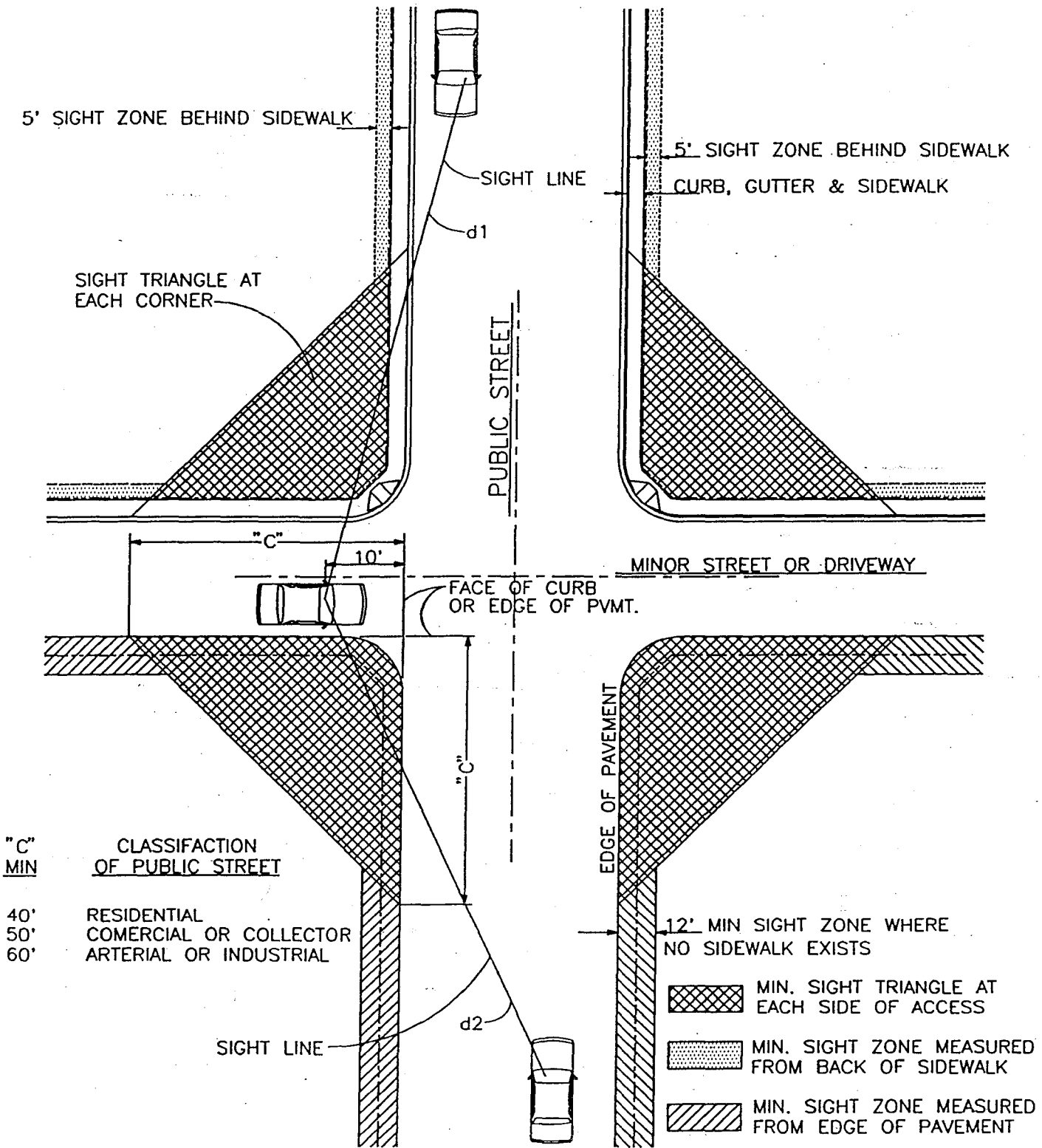
¹ Measured from the driver's eye ten feet back of the flowline or pavement edge.

* 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.

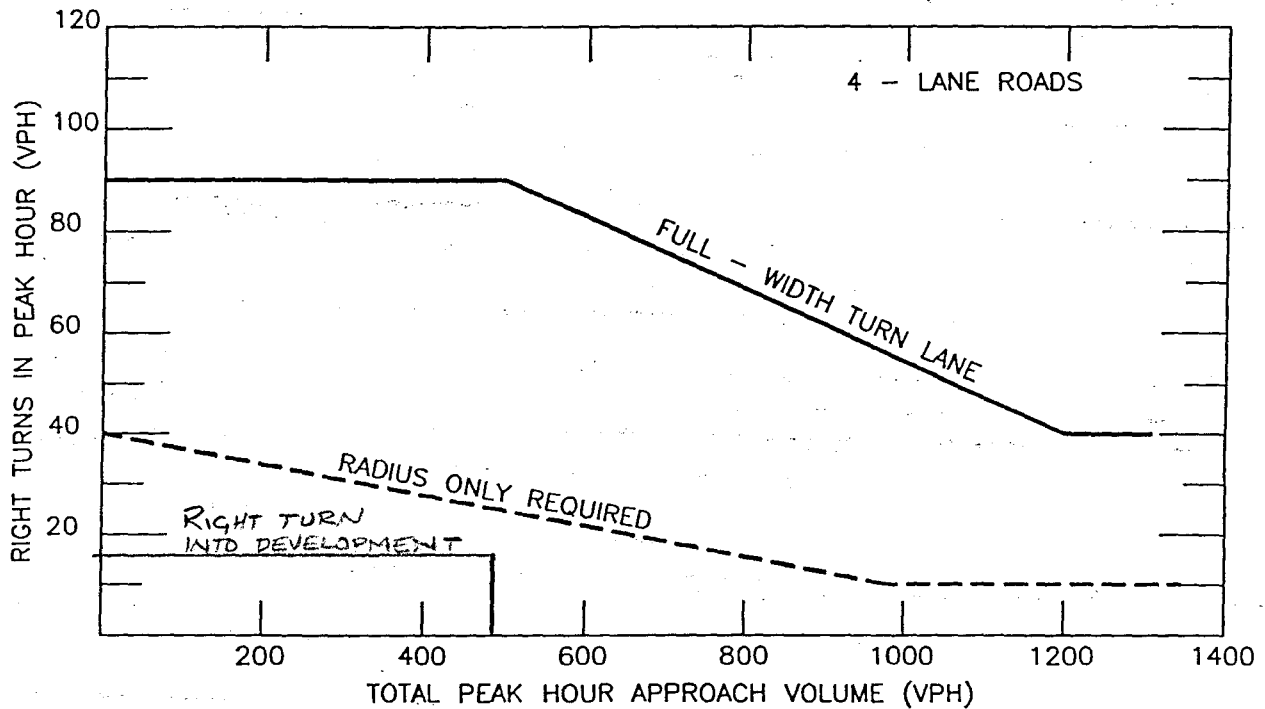
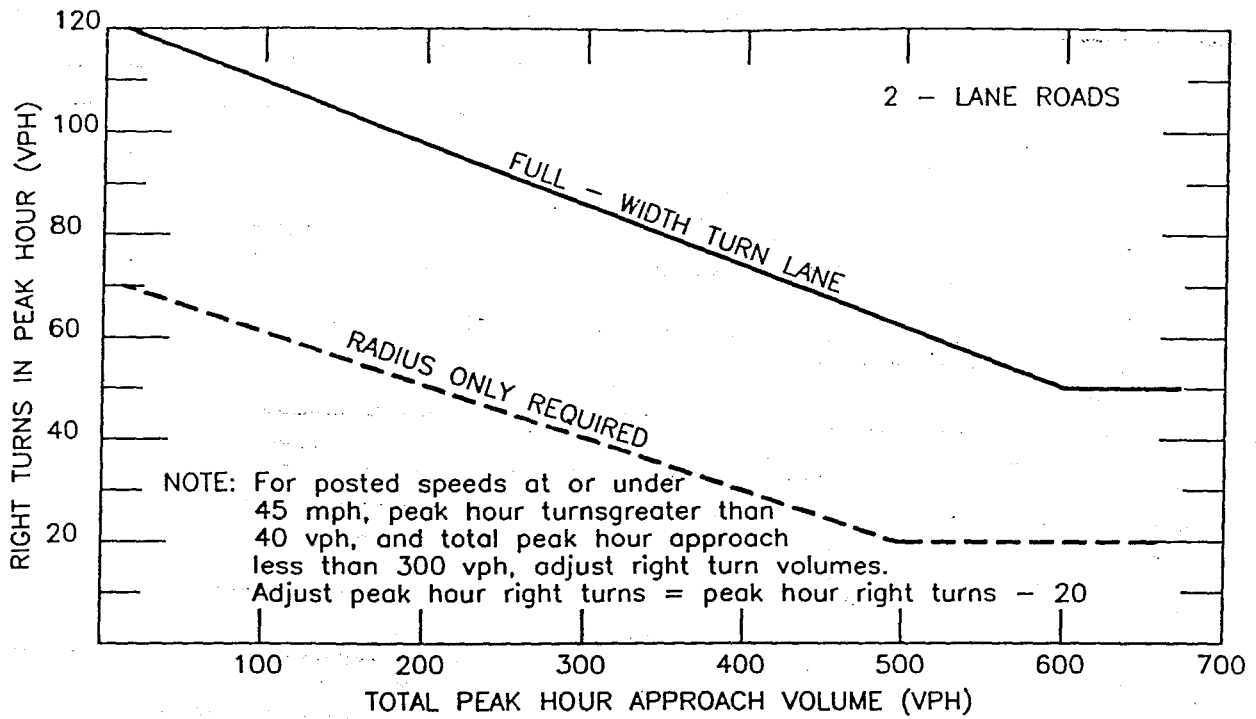


MINIMUM SIGHT ZONE DETAIL

**CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS**

MINIMUM SIGHT ZONES AND SIGHT DISTANCES REQUIREMENTS

**FIGURE
15**



CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS

VOLUME WARRANTS FOR RIGHT TURN
DECELERATION LANES ON CITY STREETS

FIGURE
2

	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 REPLACEMENT	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	0	0	0	0	
6000019 GRAND AVE RECONSTRUCTION 1ST TO 71	115,532	0	0	0	0	0	0	0	2,000,000	0	0	2,000,000	
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	115,532	
6000021 UNWAKEEP: 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 A	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 PATTERSON	81,500	792,000	0	0	0	0	0	0	0	0	0	873,500	
6000030 27 ROAD: UNWAKEEP TO HWY 50	0	0	0	0	0	0	0	0	0	0	0	0	
6000031 28 ROAD: GRAND TO BELFORD	0	0	0	0	0	0	0	625,000	0	0	0	625,000	
6000032 28 1/2 ROAD: 1-70B TO ORCHARD AVE	0	0	0	0	0	0	0	0	660,000	0	0	660,000	
6000033 BRIDGE REPLACEMENT GRJ-F.4-26.7	0	0	0	0	250,000	0	0	0	0	1,600,000	0	1,400,000	
6000034 FORESIGHT PARK: STORM SEWER IMPROV	104,310	120,000	0	0	0	0	0	0	0	0	0	250,000	
6000035 BRIDGE REPLACEMENT GRJ-D.5-27.99	0	0	0	0	0	0	0	0	0	0	0	224,310	
6000036 LAMPLITE PARK SUBSIDENCE CONTROL	0	0	0	0	0	0	0	0	0	0	0	0	235,000 1996
6000038 24 ROAD: F ROAD TO I-70	0	0	0	0	0	0	0	0	0	0	0	0	100,000
6000039 CORTLAND AVENUE: 27 1/2 ROAD TO 28	0	0	0	0	1,036,000	0	0	0	0	0	0	1,036,000	
6000042 HORIZON DRIVE: 7TH ST. TO 12TH ST	0	0	0	0	0	0	0	0	0	650,000	0	650,000	
6000044 28 ROAD: PATTERSON TO CORTLAND	0	0	0	0	0	0	1,087,000	0	0	0	0	1,087,000	
6000046 RIVERSIDE PARK/WEST AVENUE REALIGN	0	0	0	0	0	0	0	0	880,000	0	0	880,000	
6000069 STREET LIGHT INSTALLATIONS	152,400	73,000	76,000	79,000	82,000	85,000	89,000	253,000	0	0	0	386,000	1,800,000
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-COHS	0	0	27,000	0	0	0	0	0	0	0	0	27,000	
6000087 ORCHARD AVE. SCHOOL/SIGNAL RECONSTR	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	

970 244 1599 P.02

CITY OF GRAND JUNCTION

H03-13-1996 13:06

2-JAN-96
IP_PROJECT_DETAIL

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	0
Revised Budget Amount	0	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.

P.03
244
1333
CITY OF GRAND JUNCTION
15:07
H06-13-1996

Capital Improvement Project 10 Year Detail Listing

Capital Improvement Project Title

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

Project Number: 6000042

Department: Public Works Division: Projects & Engineering Submitted By: Don Newton: 10-yr. CIP
Project 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	0
Revised Budget Amount	0	0	0	0	0	0	0	0	0	0	0	0

Project Narrative:
This 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 for the this improvement.

TRAFFIC COUNTS

NORTHBOUND THRU

This is Report Line Number One
 This is Report Line Number Two
 Volume by Lane Report - D0606001.PRN

5-1996

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

5-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0606001.PRN

07:48 Pg 2

Thu - Jun 6, 1996

Lane	1	2	Total
20:15	20	23	43
20:30	22	30	52
20:45	29	25	54
21:00	27	31	58
21:15	29	42	71
21:30	32	38	70
21:45	26	28	54
22:00	27	22	49
22:15	18	23	41
22:30	16	13	29
22:45	13	21	34
23:00	7	14	21
23:15	7	8	15
23:30	10	8	18
23:45	15	16	31
24:00	7	4	11
=====	=====	=====	=====
Daily Totals	682	2986	3668
entages	18.59	81.41	

NORTHBOUND THRU

This is Report Line Number One
 This is Report Line Number Two
 Volume by Lane Report - D0607001.PRN

25-1996

07:57 Pg 1

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

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0607001.PRN

06-25-1996

07:57 Pg 2

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
14:00	8	87	95
14:15	5	95	100
14:30	0	92	92
14:45	2	93	95
15:00	6	90	96
15:15	8	76	84
15:30	1	79	80
15:45	0	96	96
16:00	8	96	104
16:15	3	105	108
16:30	9	89	98
16:45	6	110	116
17:00	5	98	103
17:15	8	110	118
17:30	17	98	115
17:45	26	94	120
18:00	33	77	110
18:15	30	68	98
18:30	27	68	95
18:45	27	47	74
19:00	36	51	87
19:15	45	37	82
19:30	32	39	71
19:45	31	31	62
20:00	27	35	62

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0607001.PRN

06-25-1996

07:57 Pg 3

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	

NORTHBOUND THRU

This is Report Line Number One
 This is Report Line Number Two
 Volume by Lane Report - D0608001.PRN

06-25-1996

08:01 Pg 1

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
03:30	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

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0608001.PRN

06-25-1996

08:01 Pg 2

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
14:00	0	46	46
14:15	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

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0608001.PRN

08:02 Pg 3

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	

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0608001.PRN

08:02 Pg 4

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
Percentages	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
 Volume by Lane Report - D0609001.PRN

25-1996

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
03:30	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

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0609001.PRN

08:07 Pg 3

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
Percentages	23.83	76.17	

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0609001.PRN

08:06 Pg 2

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
 Volume by Lane Report - D0610001.PRN

25-1996

08:11 Pg 1

Sta: 000000000001 Id: 000000000010 CId: 01 Fnt: 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
03:30	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

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0610001.PRN

08:11 Pg 2

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	

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0610001.PRN

08:11 Pg 3

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
Percentages	10.79	30.43	21.84
Pm Hour None			

WESTBOUND

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0610002.PRN

25-1996

08:11 Pg 1

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
Volume by Lane Report - D0610002.PRN

5-1996

08:12 Pg 2

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			
Hour 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

Volume by Lane Report - D0611001.PRN

25-1996

08:30 Pg 1

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
03:30	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

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0611001.PRN

25-1996

08:30 Pg 2

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

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0611001.PRN

08:30 Pg 3

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
Percentages	78.53	21.47	

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0611001.PRN

08:31 Pg 4

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
Percentages	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
Volume by Lane Report - D0612001.PRN

25-1996

08:32 Pg 1

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
03:30	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

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0612001.PRN

25-1996

08:32 Pg 2

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

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0612001.PRN

08:32 Pg 3

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
Percentages	76.63	23.37	

WESTBOUND TILL 12:00
SOUTHBOUND THEREAFTER

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0613001.PRN

25-1996

08:34 Pg 1

 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

This is Report Line Number One
 This is Report Line Number Two
 Volume by Lane Report - D0613001.PRN

25-1996

08:34 Pg 2

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
14:05	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

This is Report Line Number One
 This is Report Line Number Two
 Volume by Lane Report - D0613001.PRN

25-1996

08:34 Pg 3

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	

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0613001.PRN

08:35 Pg 4

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
Percentages	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
 Volume by Lane Report - D0614001.PRN

5-1996

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
03:30	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

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0614001.PRN

25-1996

08:39 Pg 2

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

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0614001.PRN

08:39 Pg 3

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
Percentages	20.79	79.21	

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
03:30	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

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0615001.PRN

08:42 Pg 2

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
5	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

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0615001.PRN

08:42 Pg 3

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
Percentages	15.63	84.38	

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0615001.PRN

08:42 Pg 4

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
Percentages	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
03:30	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

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0616001.PRN

08:44 Pg 2

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
14:15	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

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0616001.PRN

5-1996

08:45 Pg 3

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	

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0616001.PRN

5-1996

08:45 Pg 4

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
Percentages	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
Volume by Lane Report - D0617001.PRN

5-1996

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:
Location: County:
Ln1-North Ln2-North File: D0617001.PRN

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
03:30	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

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0617001.PRN

08:46 Pg 2

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

15-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0617001.PRN

08:46 Pg 3

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
Percentages	22.49	77.51	

SOUTHBOUND

This is Report Line Number One

This is Report Line Number Two

Volume by Lane Report - D0618001.PRN

5-1996

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
03:30	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

5-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0618001.PRN

08:48 Pg 2

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

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0618001.PRN

08:48 Pg 3

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	

SOUTHBOUND TILL 8:00
EASTBOUND THEREAFTER

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0619001.PRN

25-1996

08:50 Pg 1

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
03:30	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	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

← CHANGE LOCATION
EASTBOUND

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0619001.PRN

08:50 Pg 2

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

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0619001.PRN

08:50 Pg 3

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	

EASTBOUND

This is Report Line Number One
 This is Report Line Number Two
 Volume by Lane Report - D0620001.PRN

25-1996

08:51 Pg 1

Sta: 000000000003

Id: 000000000010

Cid: 01

Fnt: 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
03:30	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	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

5-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0620001.PRN

08:51 Pg 2

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

5-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0620001.PRN

08:52 Pg 3

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	

EASTBOUND

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0621001.PRN

25-1996

08:54 Pg 1

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
03:30	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

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0621001.PRN

5-1996

08:54 Pg 2

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

25-1996

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0621001.PRN

08:55 Pg 3

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
Percentages	43.08	56.92	

This is Report Line Number One
This is Report Line Number Two
Volume by Lane Report - D0621001.PRN

_5-1996

08:55 Pg 4

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
Percentages	25.00	21.62	23.08
Pm Hour 12-13	8	7	15
Percentages	14.29	9.46	11.54

GENERAL PROJECT REPORT

THE GLEN AT HORIZON SUBDIVISION

October 29, 1996

INTRODUCTION:

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

PROJECT DESCRIPTION:

The Glen at Horizon 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 The Glen at Horizon 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 site plan depicts the relationship of each building to the property boundary, roadway access, waterways and neighboring developments.

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

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 The Glen at Horizon 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. The Glen at Horizon 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-7.4 (Planned Residential not to exceed 7.4 units per acre). The Preliminary Plan application was submitted to Community Development and approved by City Council on October 3, 1996. 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 Site 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.

The City Council approved the private street system within the Glen at Horizon Subdivision. This was due to the irregular nature of the cul-de-sac, street cross sections, and entry. The right-of-way for the streets will be designated as a ingress/egress easement for the maintenance of sanitary sewer and domestic water, as well as other dry utilities and fire protection. This information is reflected on the Final Plat which is submitted with this application.

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 16 inch CL 905 PVC pipe 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.

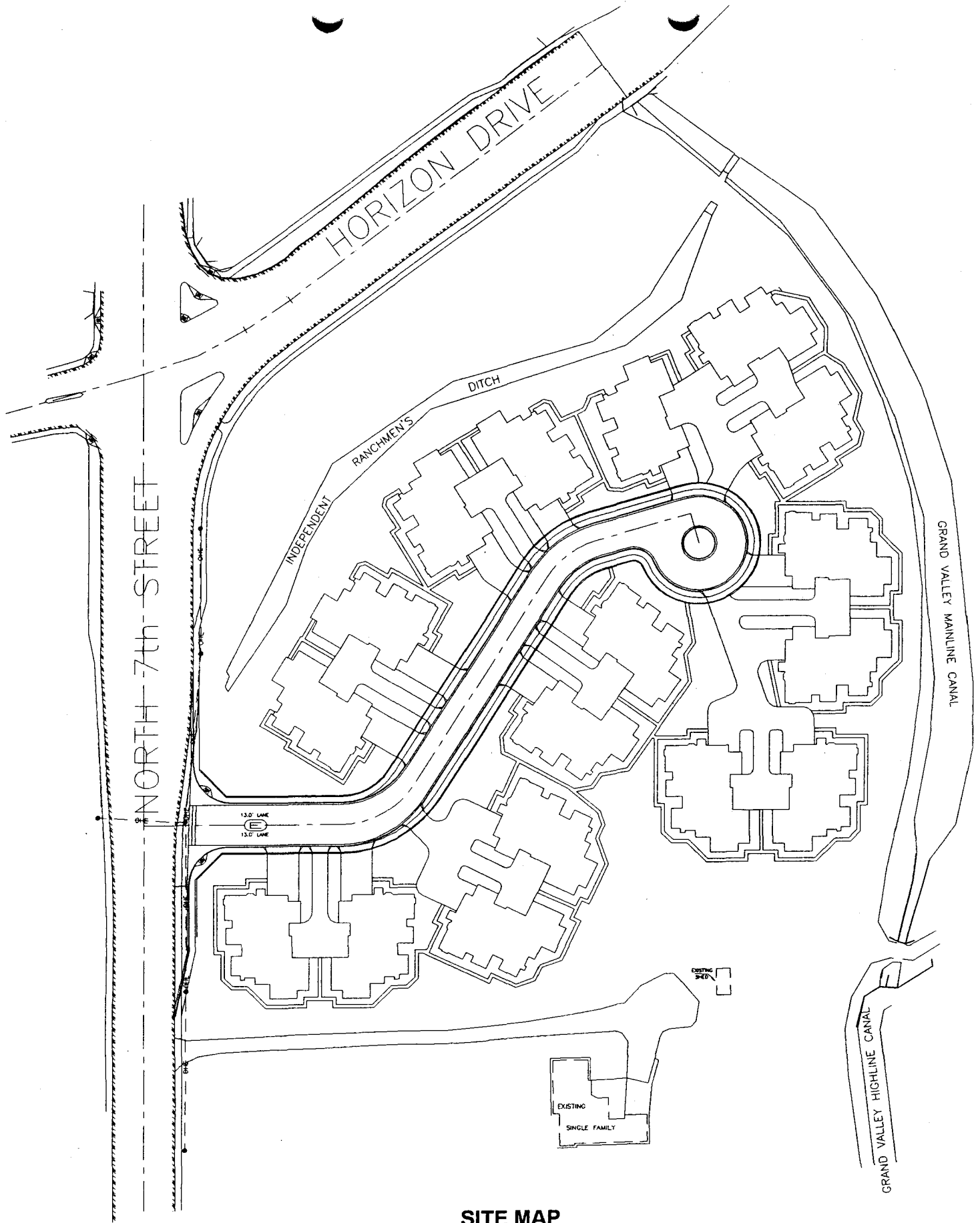
All other utilities such as, electric, gas, phone and CATV are expected to be extended from the surrounding developments.

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

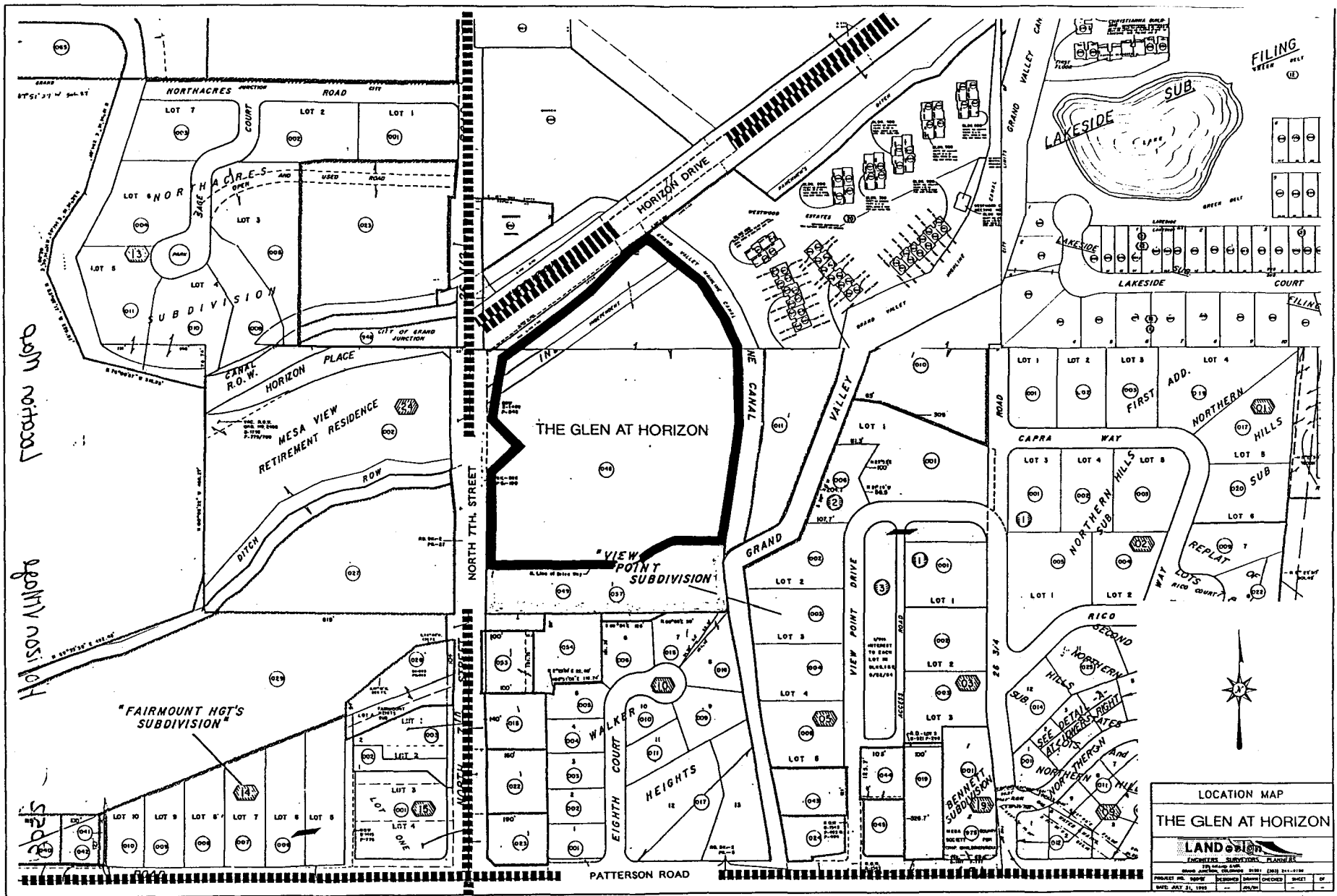
Site Soils and Geology -- A soils map is provided at the end of this report, and shows the types of soil historically found on the property. According to the U.S. Department of Agriculture Soil Survey of 1955, there are a combination of three types of soils on the site. Fruita and Ravola gravelly loams, 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.

DEVELOPMENT SCHEDULE AND PHASING:

The rate at which the development of The Glen at Horizon will occur is dependent upon the City of Grand Junction's future growth and housing needs. It is anticipated that construction will begin once the final approval from the City has been granted.



SITE MAP



canon north

point north

FILING
DEPT

LOCATION MAP
THE GLEN AT HORIZON
LAND
 ENGINEERS, SURVEYORS, PLANNERS
 1211 W. 10th Street, Suite 100, Grand Rapids, MI 49503-1111
 PHONE: (616) 971-1111 FAX: (616) 971-1112
 PROJECT NO. 10000
 SHEET 1 OF 1
 DATE: JULY 21, 1995

FINAL DRAINAGE REPORT

FOR

**THE GLEN AT HORIZON
SUBDIVISION**

Prepared for:

**Cunningham Investment Co., Inc.
c/o Mac Cunningham
121 S. Galena Street, Suite 201
Aspen, CO 81611
(970) 925-8803**

Prepared by:

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

October 30, 1996

Job No. 96045

Prepared by: Brian C. Hart

Brian C. Hart, E.I.

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

Philip M. Hart

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



I. GENERAL LOCATION AND DESCRIPTION

A. Site and Major Basin Location

The Glen at Horizon 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 N $\frac{1}{2}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ and that part of the S $\frac{1}{2}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ 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.

Developments in the area near The Glen at Horizon 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 2.0, Exhibit 3.0), there are three types of soils located on the site. Billings silty clay loam (Hydro-group "C"), Ravola very fine loam (Rf) 0-2% slopes, and Fruita and Ravola gravelly loams (Fr) 5-10% slopes. The majority of the soils on-site are of either Ravola very fine loam or Fruita and Ravola gravelly loams which are Hydro-group "B." Billing silty clay loam is a very small percentage of the site and will not be considered in the calculations.

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 3.0, Exhibit 4.0). 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 on Exhibit 5.0.

B. Project Site

Historically the property drains in a sheet flow 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 off-site runoff are sheet flow 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 its boundary. The historic basin for the site is shown on Exhibit 7.0 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 3.0. This study was revised July 15, 1992, and its purpose was to establish the Flood Insurance Rate Maps for Mesa County, Colorado, shown on Exhibit 4.0. Exhibit 5.0 shows the delineation of the 100 year storm in the Independent Ranchmen's Ditch. This information was gained from Exhibit 6.0 which shows the profile of the ditch and the 500 and 100 year flood elevations. Please note that the elevations for the flowline for the 5 feet culvert going under 7th street is approximately 4620.00. The survey datum for the project agrees with this siting a flowline of 4620.04 for the 5 feet culvert.

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

There 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 this 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 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 12.0. 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 is provided in Reference 1.0 shown on Exhibit 11.0 will be used for design and analysis.

Times of Concentration are based on the Rational Method and calculated in the hydrology module of SurvCAD, Reference 4.0. The calculations in the hydrology module of SurvCAD follow the same criteria as set forth in the SWMM the City of Grand

Junction, (Reference 1.0). Exhibits 9.0 and 10.0 show the times of concentration for the historic conditions and Exhibits 13.0 and 14.0 show the calculated peak discharge rates using the equation $Q=CIA$.

In addition, two full size maps are located at the end of this report and show the historic and developed basins. Exhibit 8.0 shows the developed basin map with basin boundaries, flow paths, areas and "C" values.

C. Hydraulics

As site facilities and conveyance elements are designed in accordance with the City of Grand Junction guidelines as provided in Reference 1.0, and shown in the appendix.

V. Results and Conclusions

A. Runoff Rates for 2 and 100 Year Storm

Exhibits 13.0 and 14.0 show the existing runoff rates for the property. The rational method was used to determine the runoff rates, as described in VI of the SWMM, section F. The equation used is as follows;

$$Q = CIA$$

where Q equals runoff estimation in cubic feet per second, C equals the rational "C" values for each basin, I equals the intensity for a given time of concentration as calculated on Exhibits 9.0 and 10.0 and A equals the area of each basin. It was calculated that basin "H1", which encompasses the majority of the project, has a historic runoff rates of 4.18 cfs for the 2 year event and 12.78 cfs for the 100 year event. Basin "H2" is located primarily on the north side of the Independent Ranchmen's Ditch. Runoff rates for "H2" were calculated as 1.01 cfs for the 2 year event and 3.03 for the 100 year event.

Because of the nature of the site and the waterways surrounding the property, there will be no discharge of runoff from or to any private properties. The only offsite runoff is from the south parcel and is small enough to consider in the overall historic basin "H1".

Exhibits 15.0 - 18.0 show the calculations for developed times of concentration. These exhibits were developed from Reference 4, and use the same criteria as in the SWMM (Reference 1). The flow routing can be described as sheet flow to shallow concentrated flow and finishing with channel flow. Using these calculated times of concentration, Exhibit 19.0 interpolates for the appropriate intensity for each basin. Exhibit 20.0 is taken from the SWMM (Reference 1) and shows the Rational "C" value table with the appropriate sections used highlighted. Exhibit 21.0 outlines each basin and the "C" value chosen for runoff rate calculations.

Runoff rate calculations are shown on Exhibits 22.0 - 25.0 for each separate developed basin, A, B, C and D. Basins A and B are considered to be the disturbed or developed basins and were used in the calculations for the detention pond sizing. Basin C is primarily the south bank of the Independent Ranchmen's Ditch. This basin will not be disturbed except for installing a retaining wall at the top of the bank for structural support. For a "worst case scenario", it was assumed that some of the roof drains will drain towards the ditch despite site grading efforts. Basin "C" will not be considered for the calculations of the detention pond. Basin "D" is going to remain undeveloped other than landscaping additions, therefore, the calculations for historic basin "H2" and basin "D" are identical.

For the 2 year and 100 year developed runoff rates, basins A and B have rates as follows; basin A has a 2 year rate of 2.77 cfs and a 100 year rate of 8.37 cfs, basin B has a 2 year rate of 1.70 cfs and a 100 year rate of 5.03 cfs. This translates into a developed 2 year runoff rate of 4.47 cfs and a 10 year developed rate of 13.40 cfs.

The controlling rates for the detention pond are the historic rates of 4.18 cfs for the minor event and 12.78 cfs for the major event. A 36" by 36" outlet structure will be used for controlling the historic rate release.

Because of the developed nature of the site and the waterways surrounding the property, there will be no discharge of runoff from or to any private properties. The only offsite runoff is from the south parcel and is small enough to consider in the developed basin "A".

B. Required Storage Volume

Exhibit 26.0 is taken from the SWMM (Reference 1) on required detention volume. It was found through this calculation sheet that the required 100 year storage volume is 2602 cubic feet. The required 2 year storage volume was found to a negative number. Therefore, for this project design, the outlet structure was sized to outlet the historic 2 year runoff through a 12 inch diameter cutout with a head of 1.18 feet. This in effect assumes an arbitrary storage volume of 252 cubic feet.

Exhibits 27.0 - 30.0 shows the calculations for the storage volume in accordance with Table N-2 from the SWMM. These equations can be found on page N-10, table N-1 in the SWMM.

Exhibits 31.0 calculates the storage for the project detention pond, with the 2 year and 100 year pond elevations. The equations for these volume calculations can be found in the SWMM on page N-12, figure N-4 under the Conic Method.

Exhibit 32.0 shows the calculations for the outlet structure as taken from the SWMM page N-8, figure N-2b, and Exhibit 33.0 shows a detail of the outlet structure.

Exhibits 34.0 - 40.0 outline the capacities of the street, inlets and storm sewer pipes.

B. Overall Compliance

This drainage report and the accompanying Grading and Drainage Plan have been designed and drawn to the City of Grand Junction Engineering standards. The Stormwater Management Manual (Reference 1) was paramount in the criteria for the calculations and ultimate drainage design of the project. There is no deviance from this manual in regards to drainage criteria, calculation or design.

VI. REFERENCES

1. Stormwater Management Manual (SWMM), City of Grand Junction, Colorado, Department of Public Works, June 1994.
2. Soil Survey Mesa County Area, Colorado, U.S. Department of Agriculture, issued November 1955.
3. Flood Insurance Rate Map, Mesa County, Colorado, (Unincorporated Areas), Community Panel Number 0801150004E, Federal Emergency Management Agency, Map revised July 15, 1992.
4. Hydrology Module, SurvCAD, AutoCAD release 13 by AutoDest, Inc., Copyright 1992-96.
5. Flow Master 1, Version 3.16, Haestad Methods, Inc., Copyright 1990.

APPENDIX

- I. General Information**
- II. Existing Runoff**
- III. Proposed Runoff**
- IV. Detention Pond Calculations**
- V. Conveyance Element Capacities**

GENERAL INFORMATION

NORTH 7th STREET

HORIZON DRIVE

INDEPENDENT RANCHMEN'S DITCH

GRAND VALLEY MAINLINE CANAL

GRAND VALLEY HIGHLINE CANAL

13'0" LANE
13'0" LANE

EXISTING
SREB

EXISTING
SINGLE FAMILY

SITE PLAN

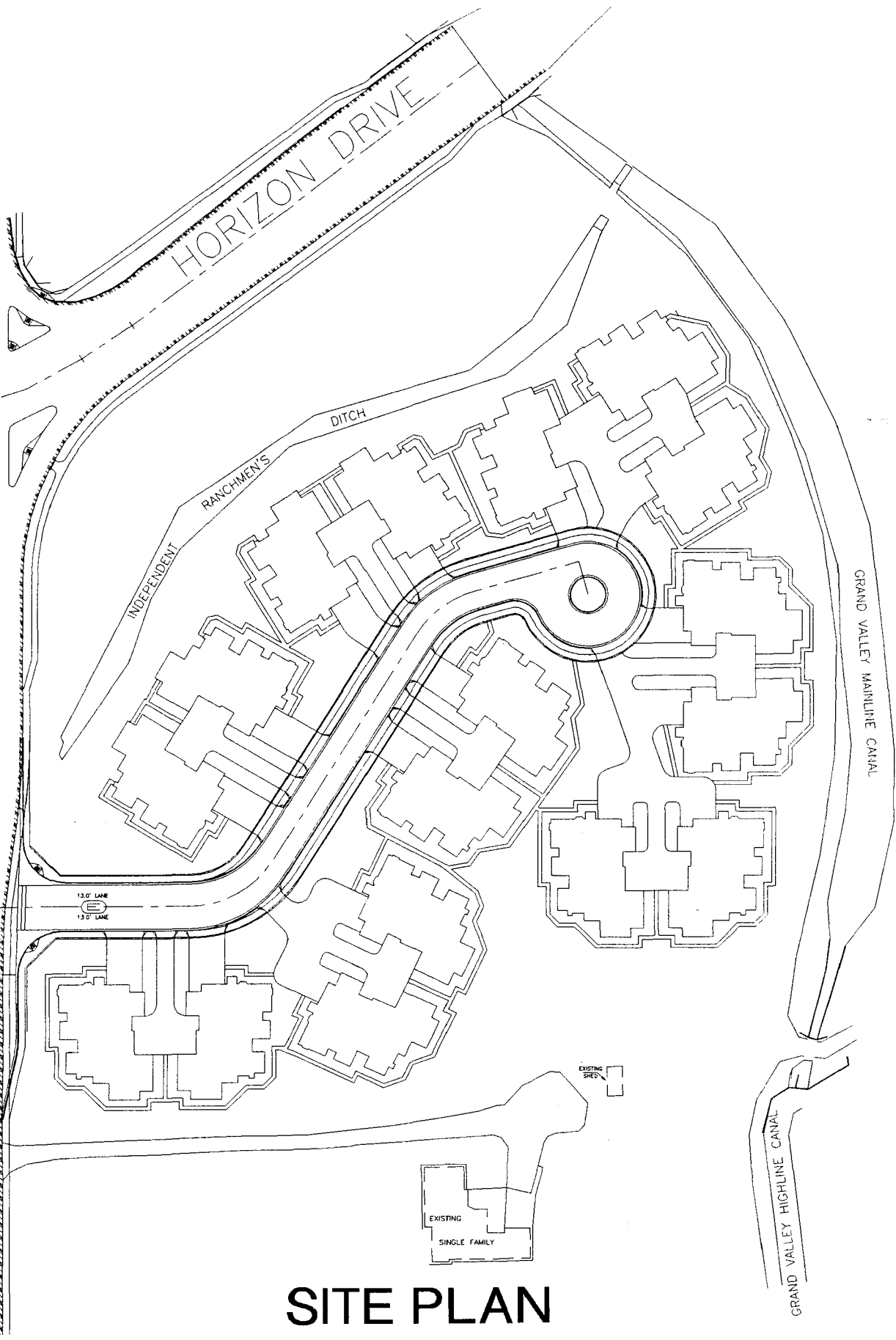
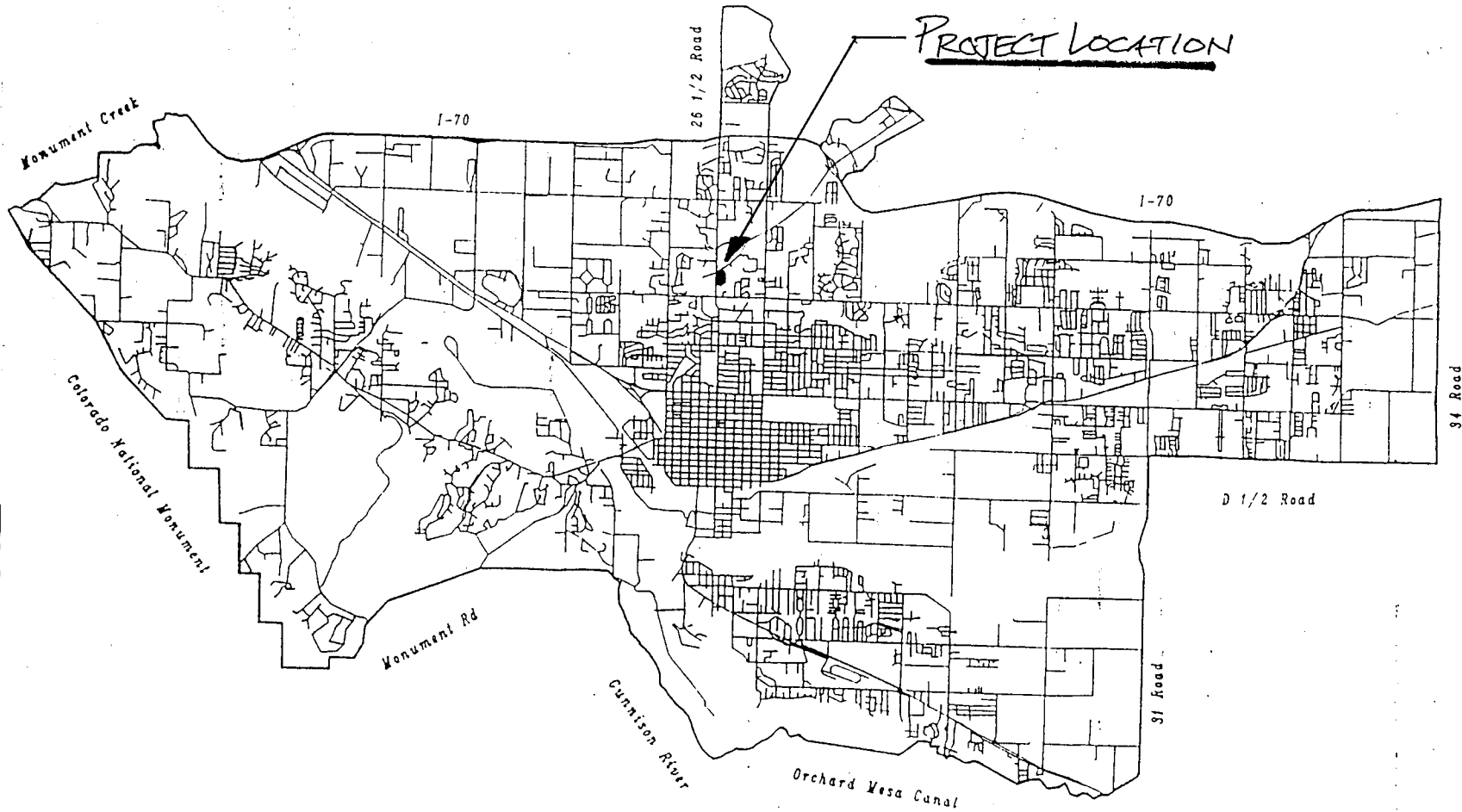


EXHIBIT 2.0



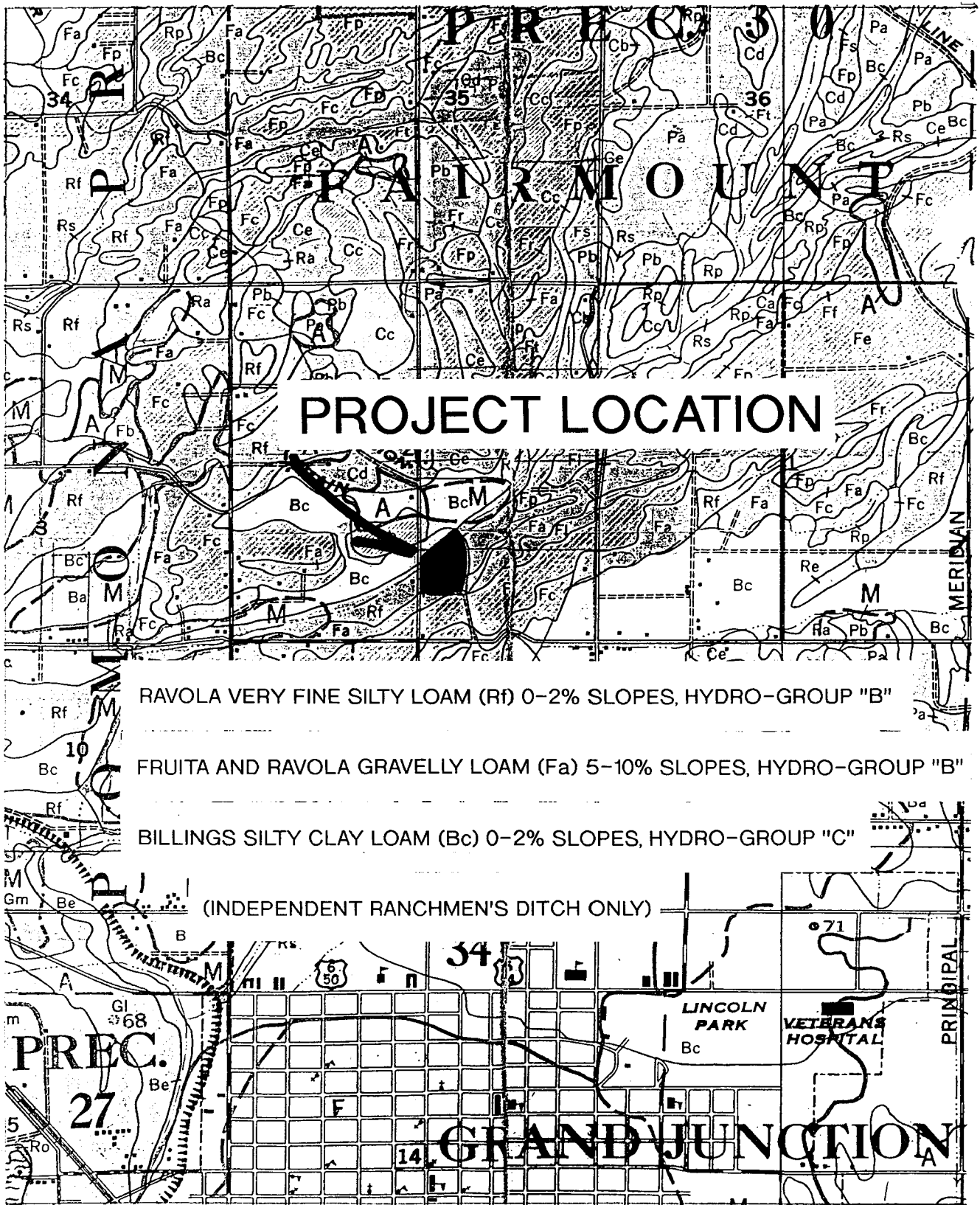
Mesa County Dept. of Public Works
Division of Engineering and Design

1992 Grand Jct - Mesa Co. MPO Boundary



MPO/GIS Project

FIG 404



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)

PROJECT LOCATION

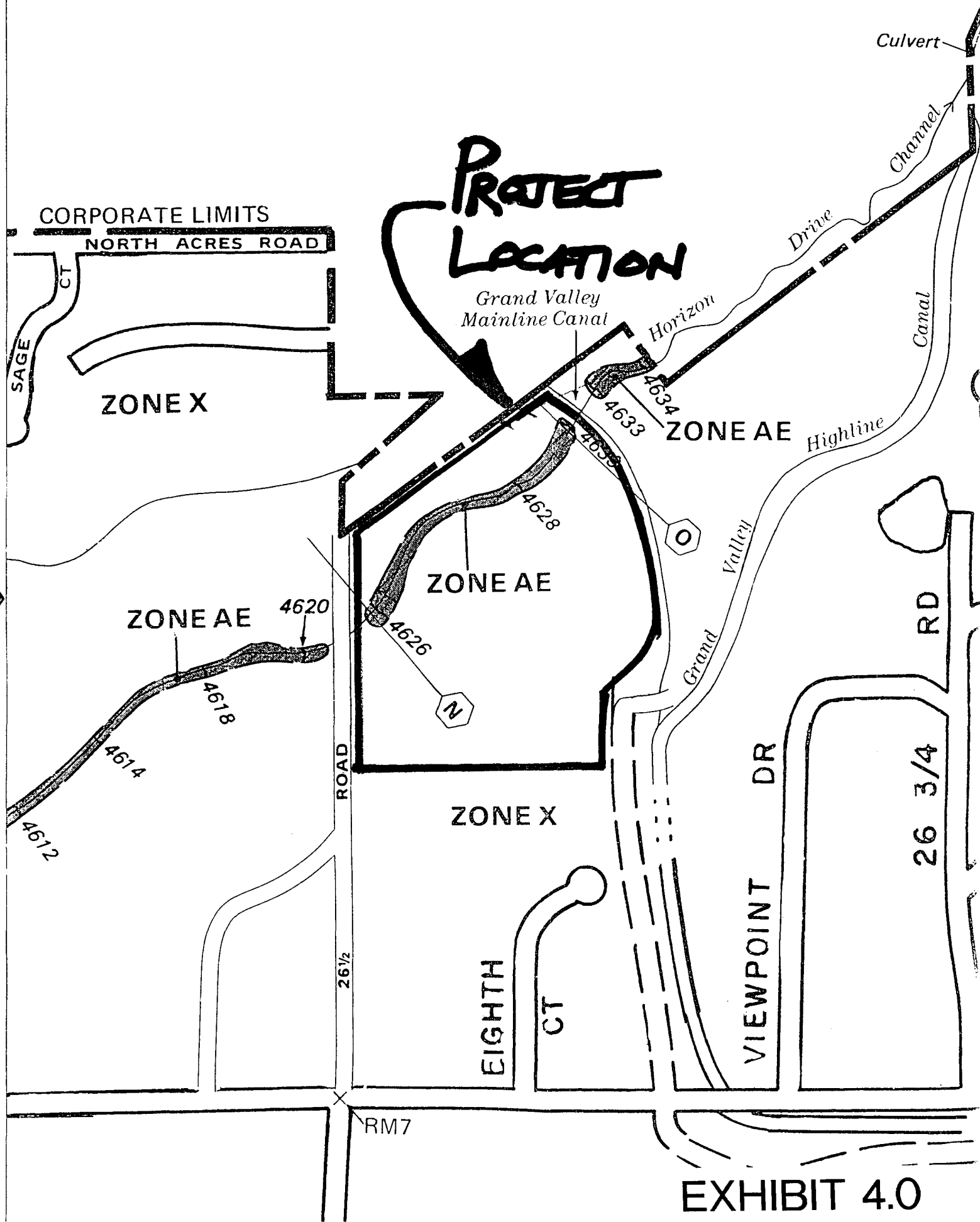
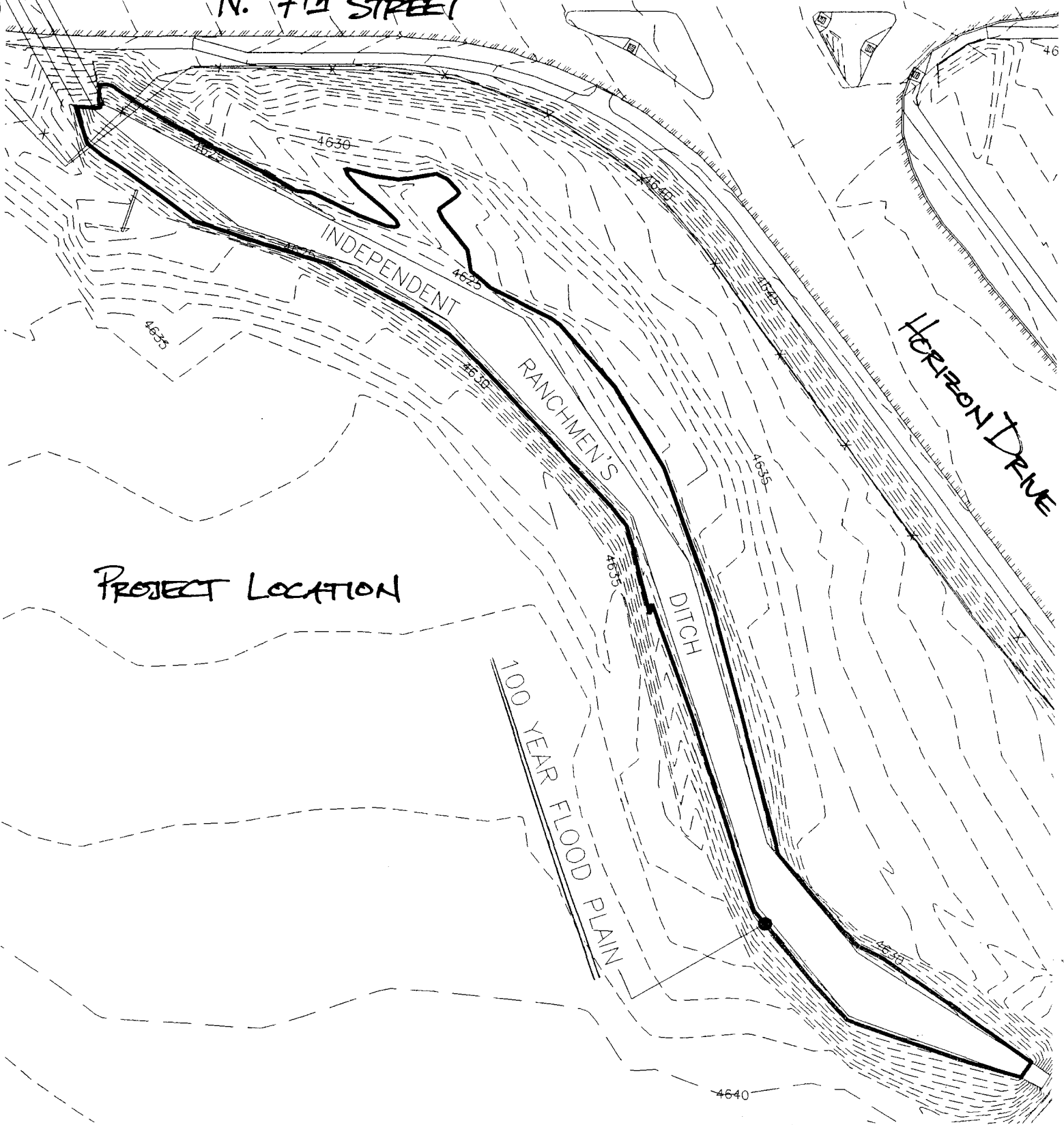


EXHIBIT 4.0

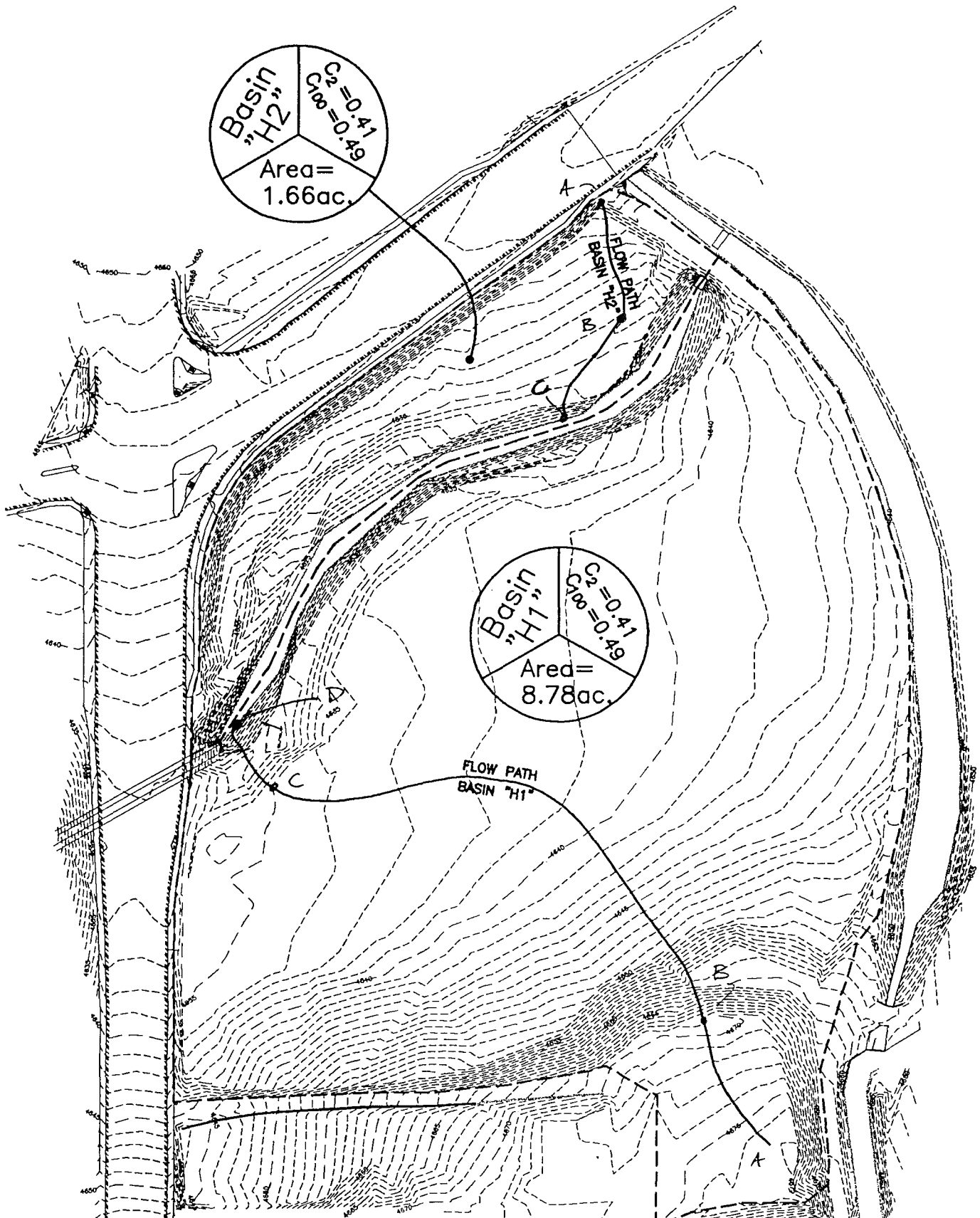
N. 7th STREET



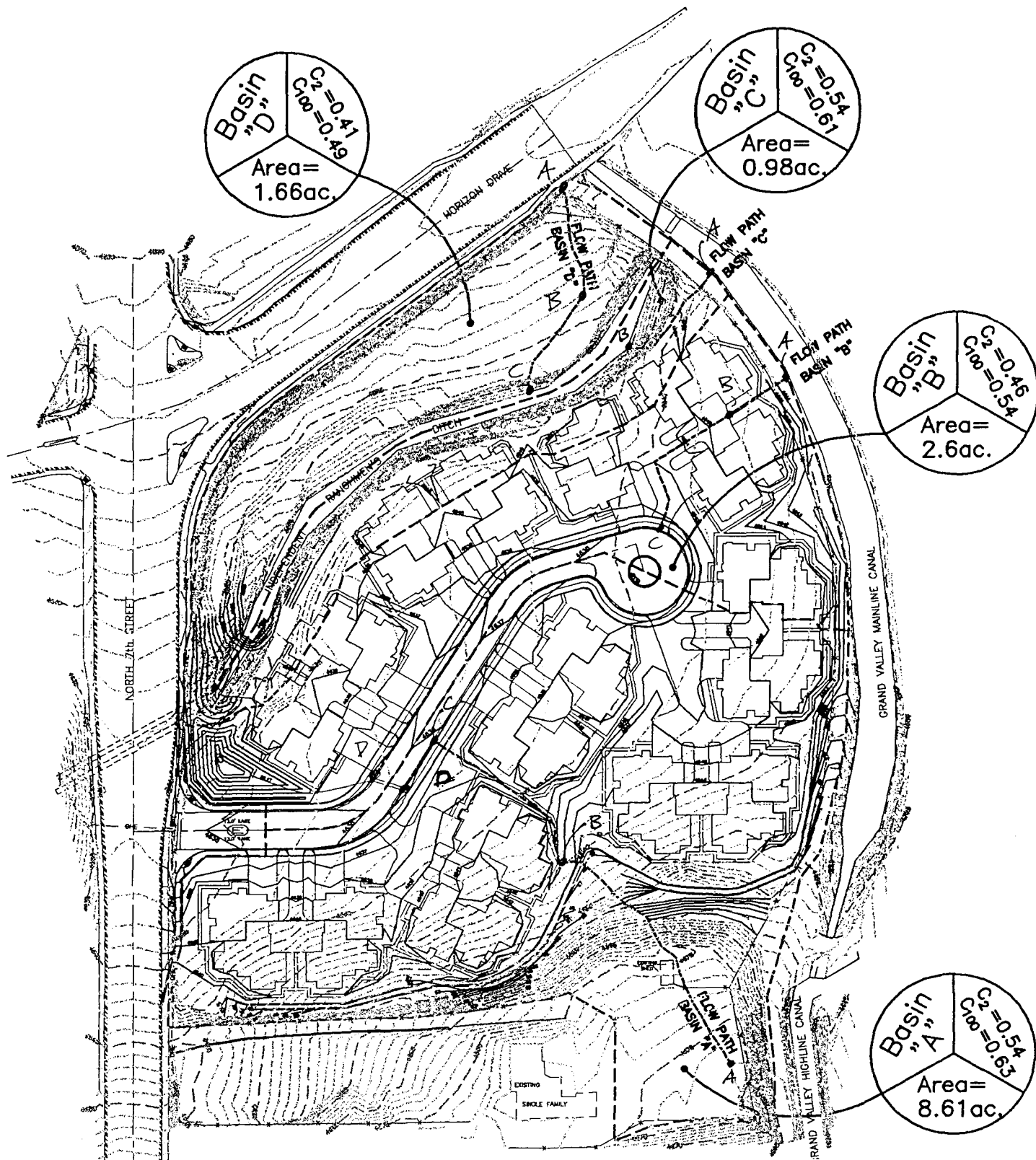
PROJECT LOCATION

100 YEAR FLOOD PLAIN

EXHIBIT 5.0



HISTORIC SITE CONDITIONS



DEVELOPED SITE CONDITIONS

**EXISTING RUNOFF
(2 & 100 YEAR)**

Time of Concentration (Tc) or Travel Time (Tt)

Project: The Glen at Horizon
Location: 7th and Horizon
Present HISTORIC CONDITIONS
Tc through subarea Basin "H1"

By: Brian Hart
Checked:
Date: 10/22/96
Date:

Sheet flow (Applicable to Tc only)

Segment ID: A to B

- 1. Surface description : Prarie/pasture
- 2. Manning's roughness coeff. (n) : 0.150
- 3. Flow length, L (total L < 300 ft) : 130.0 ft
- 4. Two-yr 24-hr rainfall, P : 0.70 in
- 5. Land slope, s : 0.062ft/ft
- 6. Tt : 0.274 hr

Shallow concentrated flow

Segment ID: B to C

- 7. Surface unpaved
- 8. Flow length, L : 475.0 ft
- 9. Watercourse slope, s : 0.079ft/ft
- 10. Average velocity, V : 4.48 ft/s
- 11. Tt : 0.029 hr

Channel flow

Segment ID: C to D

- 12. Cross sectional flow area, a : 10.00 ft²
- 13. Wetted perimeter, Pw : 10.00 ft
- 14. Hydraulic radius, r : 1.00 ft
- 15. Channel slope, s : 0.183ft/ft
- 16. Manning's roughness coeff. (n) : 0.028
- 17. Velocity, V : 22.76 ft/s
- 18. Flow length, L : 82.00 ft
- 19. Tt : 0.001 hr

- 20. Watershed or subarea Tc or Tt : 0.304 hr (18.24 MIN)

Time of Concentration (Tc) or Travel Time (Tt)

Project: The Glen at Horizon
Location: 7th and Horizon
Present HISTORIC CONDITIONS
Tc through subarea Basin "H2"

By: Brian Hart
Checked:

Date: 10/23/96
Date:

Sheet flow (Applicable to Tc only)

Segment ID: A to B

- 1. Surface description : Tall grass
- 2. Manning's roughness coeff. (n) : 0.150
- 3. Flow length, L (total L < 300 ft) : 90.0 ft
- 4. Two-yr 24-hr rainfall, P : 0.70 in
- 5. Land slope, s : 0.102ft/ft
- 6. Tt : 0.167 hr

Shallow concentrated flow

Segment ID: B to C

- 7. Surface unpaved
- 8. Flow length, L : 113.0 ft
- 9. Watercourse slope, s : 0.080ft/ft
- 10. Average velocity, V : 4.50 ft/s
- 11. Tt : 0.007 hr

Channel flow

Segment ID:

- 12. Cross sectional flow area, a : 0.00 ft²
- 13. Wetted perimeter, Pw : 0.00 ft
- 14. Hydraulic radius, r : 0.00 ft
- 15. Channel slope, s : 0.000ft/ft
- 16. Manning's roughness coeff. (n) : 0.000
- 17. Velocity, V : 0.00 ft/s
- 18. Flow length, L : 0.00 ft
- 19. Tt : 0.000 hr

- 20. Watershed or subarea Tc or Tt : 0.174 hr (10.44 min)

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

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

Source: Mesa County 1991

BASIN "H2"
10.44 MIN
2 YR = 1.49
100 YR = 3.73

BASIN "H1"
18.24 MIN
2 YR = 1.16
100 YR = 2.97

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	.16 - .26	.25 - .35	.14 - .22	.22 - .30	.30 - .38	.20 - .28	.28 - .36	.36 - .44	.24 - .32	.30 - .38	.40 - .48
	.14 - .24	.22 - .32	.30 - .40	.20 - .28	.28 - .36	.37 - .45	.26 - .34	.35 - .43	.40 - .48	.30 - .38	.40 - .48	.50 - .58
Cultivated/Agricultural	.08 - .18	.13 - .23	.16 - .26	.11 - .19	.15 - .23	.21 - .29	.14 - .22	.19 - .27	.26 - .34	.18 - .26	.23 - .31	.31 - .39
	.14 - .24	.18 - .28	.22 - .32	.16 - .24	.21 - .29	.28 - .36	.20 - .28	.25 - .33	.34 - .42	.24 - .32	.29 - .37	.41 - .49
Pasture	.12 - .22	.20 - .30	.30 - .40	.18 - .26	.28 - .36	.37 - .45	.24 - .32	.34 - .42	.44 - .52	.30 - .38	.40 - .48	.50 - .58
	.15 - .25	.25 - .35	.37 - .47	.23 - .31	.34 - .42	.45 - .53	.30 - .38	.42 - .50	.52 - .60	.37 - .45	.50 - .58	.62 - .70
Meadow	.10 - .20	.16 - .26	.25 - .35	.14 - .22	.22 - .30	.30 - .38	.20 - .28	.28 - .36	.36 - .44	.24 - .32	.30 - .38	.40 - .48
	.14 - .24	.22 - .32	.30 - .40	.20 - .28	.28 - .36	.37 - .45	.26 - .34	.35 - .43	.44 - .52	.30 - .38	.40 - .48	.50 - .58
Forest	.05 - .15	.08 - .18	.11 - .21	.08 - .16	.11 - .19	.14 - .22	.10 - .18	.13 - .21	.16 - .24	.12 - .20	.16 - .24	.20 - .28
	.08 - .18	.11 - .21	.14 - .24	.10 - .18	.14 - .22	.18 - .26	.12 - .20	.16 - .24	.20 - .28	.15 - .23	.20 - .28	.25 - .33
RESIDENTIAL AREAS 1/8 acre per unit	.40 - .50	.43 - .53	.46 - .56	.42 - .50	.45 - .53	.50 - .58	.45 - .53	.48 - .56	.53 - .61	.48 - .56	.51 - .59	.57 - .65
	.48 - .58	.52 - .62	.55 - .65	.50 - .58	.54 - .62	.59 - .67	.53 - .61	.57 - .65	.64 - .72	.56 - .64	.60 - .68	.69 - .77
1/4 acre per unit	.27 - .37	.31 - .41	.34 - .44	.29 - .37	.34 - .42	.38 - .46	.32 - .40	.36 - .44	.41 - .49	.35 - .43	.39 - .47	.45 - .53
	.35 - .45	.39 - .49	.42 - .52	.38 - .46	.42 - .50	.47 - .55	.41 - .49	.45 - .53	.52 - .60	.43 - .51	.47 - .55	.55 - .63
1/3 acre per unit	.22 - .32	.26 - .36	.29 - .39	.25 - .33	.29 - .37	.33 - .41	.28 - .36	.32 - .40	.37 - .45	.31 - .39	.35 - .43	.42 - .50
	.31 - .41	.35 - .45	.38 - .48	.33 - .41	.38 - .46	.42 - .50	.36 - .44	.41 - .49	.48 - .56	.39 - .47	.43 - .51	.53 - .61
1/2 acre per unit	.16 - .26	.20 - .30	.24 - .34	.19 - .27	.23 - .31	.28 - .36	.22 - .30	.27 - .35	.32 - .40	.26 - .34	.30 - .38	.37 - .45
	.25 - .35	.29 - .39	.32 - .42	.28 - .36	.32 - .40	.36 - .44	.31 - .39	.35 - .43	.42 - .50	.34 - .42	.38 - .46	.48 - .56
1 acre per unit	.14 - .24	.19 - .29	.22 - .32	.17 - .25	.21 - .29	.26 - .34	.20 - .28	.25 - .33	.31 - .39	.24 - .32	.29 - .37	.35 - .43
	.22 - .32	.26 - .36	.29 - .39	.24 - .32	.28 - .36	.34 - .42	.28 - .36	.32 - .40	.40 - .48	.31 - .39	.35 - .43	.46 - .54
MISC. SURFACES Pavement and roofs	.93	.94	.95	.93	.94	.95	.93	.94	.95	.93	.94	.95
	.95	.96	.97	.95	.96	.97	.95	.96	.97	.95	.96	.97
Traffic areas (soil and gravel)	.55 - .65	.60 - .70	.64 - .74	.60 - .68	.64 - .72	.67 - .75	.64 - .72	.67 - .75	.69 - .77	.72 - .80	.75 - .83	.77 - .85
	.65 - .70	.70 - .75	.74 - .79	.68 - .76	.72 - .80	.75 - .83	.72 - .80	.75 - .83	.77 - .85	.79 - .87	.82 - .90	.84 - .92
Green landscaping (lawns, parks)	.10 - .20	.16 - .26	.25 - .35	.14 - .22	.22 - .30	.30 - .38	.20 - .28	.28 - .36	.36 - .44	.24 - .32	.30 - .38	.40 - .48
	.14 - .24	.22 - .32	.30 - .40	.20 - .28	.28 - .36	.37 - .45	.26 - .34	.35 - .43	.42 - .52	.30 - .38	.40 - .48	.50 - .58
Non-green and gravel landscaping	.30 - .40	.36 - .46	.45 - .55	.45 - .55	.42 - .50	.50 - .58	.40 - .48	.48 - .56	.56 - .64	.44 - .52	.50 - .58	.60 - .68
	.34 - .44	.42 - .52	.50 - .60	.50 - .60	.48 - .56	.57 - .65	.46 - .54	.55 - .63	.64 - .72	.50 - .58	.60 - .68	.70 - .78
Cemeteries, playgrounds	.20 - .30	.26 - .36	.35 - .45	.35 - .45	.32 - .40	.40 - .48	.30 - .38	.38 - .44	.46 - .54	.34 - .42	.40 - .48	.50 - .58
	.24 - .34	.32 - .42	.40 - .50	.40 - .50	.38 - .46	.47 - .55	.36 - .44	.45 - .53	.54 - .62	.40 - .48	.50 - .58	.60 - .68
<p>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 ($T_c \leq 10$ minutes), infiltration capacity is higher, allowing use of a "C" value in the low range. Conversely, for longer duration storms ($T_c > 30$ 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.</p>												
<p>RATIONAL METHOD RUNOFF COEFFICIENTS (Modified from Table 4, UC-Davis, which appears to be a modification of work done by Rawls)</p>										<p>TABLE "B-1"</p>		

Rational Peak Discharge

Project: The Glen at Horizon

By: Brian Hart

Date: 10/22/96

Location: 7th and Horizon

Checked:

Date:

Present HISTORIC CONDITIONS BASIN "H1" 2 YEAR EVENT

1. Data:

Drainage area:.....A = 8.7800 Acres

Weighted Runoff Coefficient:.....C = 0.410

Intensity of Rainfall:.....I = 1.16 in/hr

2. Peak Discharge, qp.....cfs = 4.1758

Rational Peak Discharge

Project: The Glen at Horizon

By: Brian Hart

Date: 10/22/96

Location: 7th and Horizon

Checked:

Date:

Present HISTORIC CONDITIONS BASIN "H1" 100 YEAR EVENT

1. Data:

Drainage area:.....A = 8.7800 Acres

Weighted Runoff Coefficient:.....C = 0.490

Intensity of Rainfall:.....I = 2.97 in/hr

2. Peak Discharge, qp.....cfs = 12.7775

Rational Peak Discharge

Project: The Glen at Horizon

By: Brian Hart

Date: 10/22/96

Location: 7th and Horizon

Checked:

Date:

Present HISTORIC CONDITIONS BASIN "HZ" 2 YEAR EVENT

1. Data:

Drainage area:.....A = 1.6600 Acres

Weighted Runoff Coefficient:.....C = 0.410

Intensity of Rainfall:.....I = 1.49 in/hr

2. Peak Discharge, qp.....cfs = 1.0141

Rational Peak Discharge

Project: The Glen at Horizon

By: Brian Hart

Date: 10/22/96

Location: 7th and Horizon

Checked:

Date:

Present HISTORIC CONDITIONS BASIN "HZ" 100 YEAR EVENT

1. Data:

Drainage area:.....A = 1.6600 Acres

Weighted Runoff Coefficient:.....C = 0.490

Intensity of Rainfall:.....I = 3.73 in/hr

2. Peak Discharge, qp.....cfs = 3.0340

**PROPOSED RUNOFF
(2 & 100 YEAR)**

Time of Concentration (Tc) or Travel Time (Tt)

Project: The Glen at Horizon
Location: 7th and Horizon
Developed
Tc through subarea Basin "A"

By: Brian Hart
Checked:

Date: 10/23/96
Date:

DEVELOPED CONDITIONS

Sheet flow (Applicable to Tc only)

Segment ID: A to B

- 1. Surface description : Grass
- 2. Manning's roughness coeff. (n) : 0.140
- 3. Flow length, L (total L < 300 ft) : 277.0 ft
- 4. Two-yr 24-hr rainfall, P : 0.70 in
- 5. Land slope, s : 0.125ft/ft
- 6. Tt : 0.359 hr

Shallow concentrated flow

Segment ID: B to C

- 7. Surface paved
- 8. Flow length, L : 183.0 ft
- 9. Watercourse slope, s : 0.024ft/ft
- 10. Average velocity, V : 3.06 ft/s
- 11. Tt : 0.017 hr

Channel flow

Segment ID: C to D

- 12. Cross sectional flow area, a : 2.48 ft²
- 13. Wetted perimeter, Pw : 15.91 ft
- 14. Hydraulic radius, r : 0.16 ft
- 15. Channel slope, s : 0.008ft/ft
- 16. Manning's roughness coeff. (n) : 0.013
- 17. Velocity, V : 2.97 ft/s
- 18. Flow length, L : 56.00 ft
- 19. Tt : 0.005 hr

- 20. Watershed or subarea Tc or Tt : 0.381 hr (22.86 MIN)

Time of Concentration (Tc) or Travel Time (Tt)

Project: The Glen at Horizon
Location: 7th and Horizon
Developed

By: Brian Hart
Checked:

Date: 10/23/96
Date:

Tc through subarea Basin "B"

DEVELOPED CONDITIONS

Sheet flow (Applicable to Tc only)

Segment ID: A to B

- 1. Surface description : Grass
- 2. Manning's roughness coeff. (n) : 0.090
- 3. Flow length, L (total L < 300 ft) : 66.0 ft
- 4. Two-yr 24-hr rainfall, P : 0.70 in
- 5. Land slope, s : 0.028ft/ft
- 6. Tt : 0.145 hr

Shallow concentrated flow

Segment ID: B to C

- 7. Surface paved
- 8. Flow length, L : 156.0 ft
- 9. Watercourse slope, s : 0.028ft/ft
- 10. Average velocity, V : 3.32 ft/s
- 11. Tt : 0.013 hr

Channel flow

Segment ID: C to D

- 12. Cross sectional flow area, a : 2.48 ft²
- 13. Wetted perimeter, Pw : 15.91 ft
- 14. Hydraulic radius, r : 0.16 ft
- 15. Channel slope, s : 0.008ft/ft
- 16. Manning's roughness coeff. (n) : 0.013
- 17. Velocity, V : 2.97 ft/s
- 18. Flow length, L : 390.00 ft
- 19. Tt : 0.036 hr

- 20. Watershed or subarea Tc or Tt : 0.195 hr (11.70 min)

Time of Concentration (Tc) or Travel Time (Tt)

Project: The Glen at Horizon
Location: 7th and Horizon
Developed

By: Brian Hart
Checked:

Date: 10/23/96
Date:

Tc through subarea Basin "C"

DEVELOPED CONDITIONS

Sheet flow (Applicable to Tc only)

Segment ID: A to B

- 1. Surface description : Tall grass
- 2. Manning's roughness coeff. (n) : 0.120
- 3. Flow length, L (total L < 300 ft) : 117.0 ft
- 4. Two-yr 24-hr rainfall, P : 0.70 in
- 5. Land slope, s : 0.128ft/ft
- 6. Tt : 0.158 hr

Shallow concentrated flow

Segment ID:

- 7. Surface unpaved
- 8. Flow length, L : 0.0 ft
- 9. Watercourse slope, s : 0.000ft/ft
- 10. Average velocity, V : 0.00 ft/s
- 11. Tt : 0.000 hr

Channel flow

Segment ID:

- 12. Cross sectional flow area, a : 0.00 ft²
- 13. Wetted perimeter, Pw : 0.00 ft
- 14. Hydraulic radius, r : 0.00 ft
- 15. Channel slope, s : 0.000ft/ft
- 16. Manning's roughness coeff. (n) : 0.000
- 17. Velocity, V : 0.00 ft/s
- 18. Flow length, L : 0.00 ft
- 19. Tt : 0.000 hr

- 20. Watershed or subarea Tc or Tt : 0.158 hr (9.48 MIN)

Time of Concentration (Tc) or Travel Time (Tt)

Project: The Glen at Horizon
Location: 7th and Horizon
Developed

By: Brian Hart
Checked:

Date: 10/23/96
Date:

Tc through subarea Basin "D" DEVELOPED CONDITIONS
(

Sheet flow (Applicable to Tc only) Segment ID: A to B
1. Surface description : Tall grass
2. Manning's roughness coeff. (n) : 0.150
3. Flow length, L (total L < 300 ft) : 90.0 ft
4. Two-yr 24-hr rainfall, P : 0.70 in
5. Land slope, s : 0.102ft/ft
6. Tt : 0.167 hr

Shallow concentrated flow Segment ID: B to C
7. Surface unpaved
8. Flow length, L : 113.0 ft
9. Watercourse slope, s : 0.080ft/ft
10. Average velocity, V : 4.50 ft/s
11. Tt : 0.007 hr

Channel flow Segment ID:
12. Cross sectional flow area, a : 0.00 ft²
13. Wetted perimeter, Pw : 0.00 ft
14. Hydraulic radius, r : 0.00 ft
15. Channel slope, s : 0.000ft/ft
16. Manning's roughness coeff. (n) : 0.000
17. Velocity, V : 0.00 ft/s
18. Flow length, L : 0.00 ft
19. Tt : 0.000 hr
20. Watershed or subarea Tc or Tt : 0.174 hr (10.44 MIN)

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

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

9.48 MIN
2YR = 1.56
100YR = 3.90

BASIN "C"

BASIN "D"

BASIN "B"

11.70 MIN

2YR = 1.42
100YR = 3.58

10.44 MIN

2YR = 1.49
100YR = 3.73

BASIN "A"

22.86 MIN

2YR = 1.02
100YR = 2.64

Source: Mesa County 1991

DEC 1994

EXHIBIT 20.0

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 ($T_c \leq 10$ minutes), infiltration capacity is higher, allowing use of a "C" value in the low range. Conversely, for longer duration storms ($T_c > 30$ 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"

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

JOB THE GLEN 96095.40
SHEET NO. _____ OF _____
CALCULATED BY BRIAN HART DATE 10/27/96
CHECKED BY _____ DATE _____
SCALE _____

Developed Basin Rational "C" Values

Basin "A": RESIDENTIAL AREA, $\frac{1}{8}$ AC. PER UNIT
SOIL GROUP "B", 6%+ 2YR = 0.51 100YR = 0.63

Basin "B": RESIDENTIAL AREA $\frac{1}{8}$ AC. PER UNIT
SOIL GROUP "B", 0-2% 2YR = 0.46 100YR = 0.54

Basin "C": $\frac{3}{4}$ PASTURE, $\frac{1}{4}$ PAVEMENT $\frac{1}{2}$ ROOFS
SOIL GROUP "B", 6%+
 $2YR = (0.75)(0.41) + (0.25)(0.95) = \underline{0.54}$ $100YR = (0.75)(0.49) + (0.25)(0.97) = \underline{0.61}$

Basin "D": PASTURE AREA
SOIL GROUP "B", 6%+ 2YR = 0.41 100YR = 0.49

EXHIBIT 21.0

Rational Peak Discharge

Project: The Glen at Horizon

By: Brian Hart

Date: 10/23/96

Location: 7th and Horizon

Checked:

Date:

Developed BASIN "A"

1. Data:

Drainage area:.....A = 5.0300 Acres

Weighted Runoff Coefficient:.....C = 0.540

Intensity of Rainfall:.....I = 1.02 in/hr

2. Peak Discharge, qp.....cfs = 2.7705

Rational Peak Discharge

Project: The Glen at Horizon

By: Brian Hart

Date: 10/23/96

Location: 7th and Horizon

Checked:

Date:

Developed

1. Data:

Drainage area:.....A = 5.0300 Acres

Weighted Runoff Coefficient:.....C = 0.630

Intensity of Rainfall:.....I = 2.64 in/hr

2. Peak Discharge, qp.....cfs = 8.3659

Rational Peak Discharge

Project: The Glen at Horizon

By: Brian Hart

Date: 10/23/96

Location: 7th and Horizon

Checked:

Date:

Developed BASIN "B"

1. Data:

Drainage area:.....A = 2.6000 Acres

Weighted Runoff Coefficient:.....C = 0.460

Intensity of Rainfall:.....I = 1.42 in/hr

2. Peak Discharge,qp.....cfs = 1.6983

Rational Peak Discharge

Project: The Glen at Horizon

By: Brian Hart

Date: 10/23/96

Location: 7th and Horizon

Checked:

Date:

Developed

1. Data:

Drainage area:.....A = 2.6000 Acres

Weighted Runoff Coefficient:.....C = 0.540

Intensity of Rainfall:.....I = 3.58 in/hr

2. Peak Discharge,qp.....cfs = 5.0263

Rational Peak Discharge

Project: The Glen at Horizon

By: Brian Hart

Date: 10/23/96

Location: 7th and Horizon

Checked:

Date:

Developed BASIN "C"

1. Data:

Drainage area:.....A = 0.9800 Acres

Weighted Runoff Coefficient:.....C = 0.540

Intensity of Rainfall:.....I = 1.56 in/hr

2. Peak Discharge, qp.....cfs = 0.8256

Rational Peak Discharge

Project: The Glen at Horizon

By: Brian Hart

Date: 10/23/96

Location: 7th and Horizon

Checked:

Date:

Developed

1. Data:

Drainage area:.....A = 0.9800 Acres

Weighted Runoff Coefficient:.....C = 0.610

Intensity of Rainfall:.....I = 3.90 in/hr

2. Peak Discharge, qp.....cfs = 2.3314

Rational Peak Discharge

Project: The Glen at Horizon

By: Brian Hart

Date: 10/23/96

Location: 7th and Horizon

Checked:

Date:

Developed BASIN "D"

1. Data:

Drainage area:.....A = 1.6600 Acres

Weighted Runoff Coefficient:.....C = 0.410

Intensity of Rainfall:.....I = 1.49 in/hr

2. Peak Discharge, qp.....cfs = 1.0141

Rational Peak Discharge

Project: The Glen at Horizon

By: Brian Hart

Date: 10/23/96

Location: 7th and Horizon

Checked:

Date:

Developed

1. Data:

Drainage area:.....A = 1.6600 Acres

Weighted Runoff Coefficient:.....C = 0.490

Intensity of Rainfall:.....I = 3.73 in/hr

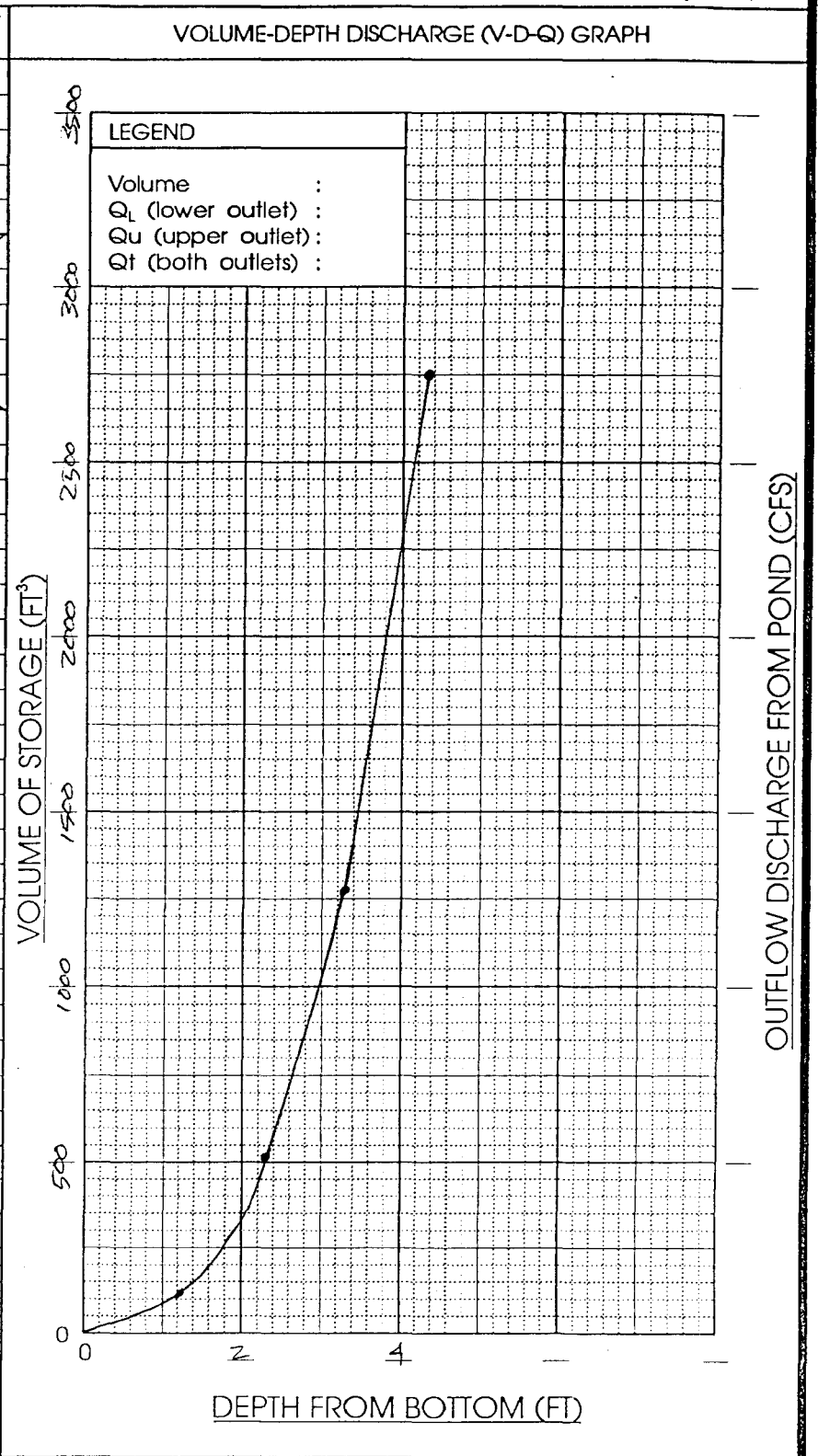
2. Peak Discharge, qp.....cfs = 3.0340

**DETENTION POND CALCULATIONS
(2 & 100 YEAR)**

Project: THE GLEN

Design by: BRUNNART Date: 10/26/96

	STEP*	PARAMETER	2-YEAR VALUE	100-YEAR VALUE
HISTORIC TOTAL SITE RUNOFF	1	A (acres)	8.78	8.78
	2	C _n	0.41	0.49
	3	T _{Cn} (min)	18.24	18.24
	4	I _n (in/hr)	1.16	2.97
	5	Q _{pn} (cfs)	4.18	12.78
DEV. BYPASS: SEE FIG. "N-1"	6	A (acres)		
	7	C _d		
	8	T _{Cd}		
	9	I _d (in/hr)		
	10	Q _b (cfs)		
Q _r : SEE FIG. "N-2"	11	Q _{max} (cfs)	4.18	12.78
	12	Q _r (cfs)	2.93	8.95
DEV. AREA ABOVE POND	13	A (acres)	8.614	8.614
	14	C _d	0.52	0.60
	15	T _{Cd} (min)	22.86	27.86
MFM PARAMETERS: SEE TABLE "N-1"	16	T _d (min)	13.84	18.67
	17	I _d (in/hr)	0.813	2.8
	18	Q _d (cfs)	3.64	14.47
	19	K	0.789	0.789
	20	V (ft ³)	-207	2600
DETENTION POND: SEE FIGURES "N-3" & "N-4"	21	A ₁ (ft ²)	265	
	22	A ₂ (ft ²)	538	
	23	A ₃ (ft ²)	1969	
	24	h ₁₋₂ (ft)	1	
	25	h ₂₋₃ (ft)	2	
	26	V ₁₋₂ (ft ³)	122	
	27	V ₂₋₃ (ft ³)	2620	
	28	V ₁₋₃ (ft ³)	2742	
OUTLET WORKS: USE GRAPH, FIG. "N-2", & APPENDIX "K"	29	d ₂ (ft)	-	
	30	H _L (ft)	1.68	
	31	Lower Outlet	12" ϕ CUTOUT	
	32	d ₁₀₀ (ft)	4.16	
	33	Q _L (cfs)	4.18	
	34	H _u (ft)	3.89	
	35	Q _u (cfs)	8.6	
	36	Upper Outlet		



OUTFALL WORKS	37	Are outfall conveyance facilities adequate to allow conditions assumed during Q _r determination?	YES
	38	Provide means of overflow for greater than 100-year water depths (spill to outlet works or over embankments).	2.10 FT OF FREEBOARD

* Steps correspond with enumerated procedures explained on pages N-5, N-6 and N-7.

**MANUAL DETENTION VOLUME
CALCULATION WORKSHEET**

TABLE "N-2"

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

JOB THE GLEN 96045.40
SHEET NO. _____ OF _____
CALCULATED BY BRIAN HART DATE 10/27/96
CHECKED BY _____ DATE _____
SCALE _____

Volume Requirements

Modified Rational Method

Equations in SWMM, Page N-10, Table N-1

2 Year Required Volume:

Developed 2 year Rational "C" Value:

$$C_d = 0.52$$

Developed Basin Area:

$$A = 8.61 \text{ ACRES}$$

Average Release rate:

$$Q_r = 0.70 Q_{MAX} = 0.7(4.18) = 2.93 \text{ CFS}$$

Time of Concentration:

$$T_{Cd} = 22.86 \text{ MIN}$$

Time of Critical Storm Duration:

$$T_{d2} = \left[\frac{507.82 C_d A}{Q_r - \frac{Q_r^2 T_{Cd}}{53.4 C_d A}} \right]^{\frac{1}{2}} - 19.0 = \left[\frac{507.82(0.52)(8.61)}{(2.93) - \frac{(2.93)^2(22.86)}{53.4(0.52)(8.61)}} \right]^{\frac{1}{2}} - 19.0$$

$$\underline{T_{d2} = 13.84 \text{ MIN}}$$

Intensity at Time of Critical Storm Duration:

$$I_{d2} = \frac{26.71}{T_{d2} + 19.01} = \frac{26.71}{13.84 + 19.01} \quad \underline{I_{d2} = 0.813 \frac{\text{IN}}{\text{HR}}}$$

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

JOB THE GLEN 96045.40
SHEET NO. _____ OF _____
CALCULATED BY BRIAN HART DATE 10/27/96
CHECKED BY _____ DATE _____
SCALE _____

Volume Requirements continued...

2 Year Required Volume:

Runoff Rate at Time of Critical Storm Duration:

$$Q_d = C_d A (I_d) = (0.52)(8.61)(0.813) = 3.64 \text{ CFS}$$

Ratio of Pre- and Post-Development Time of Concentration:

$$K = \frac{18.24}{22.86} = 0.798$$

Required Storage Volume for 2 Year Event:

$$\begin{aligned} V_z &= 60 \left[T_d (Q_d - Q_r) - Q_r T_{cd} + \frac{K Q_r T_{cd}}{2} + \frac{Q_r^2 T_{cd}}{2 Q_d} \right] \\ &= 60 \left[(13.84)(3.64 - 2.93) - (2.93)(22.86) + \frac{(0.798)(2.93)(22.86)}{2} \right. \\ &\quad \left. + \frac{(2.93)^2 (22.86)}{2(3.64)} \right] \end{aligned}$$

$$\underline{\underline{V_z = -208.26 \text{ CF}}}$$

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

JOB THE GLEN 96045.40
SHEET NO. _____ OF _____
CALCULATED BY BRIAN HART DATE 10/27/26
CHECKED BY _____ DATE _____
SCALE _____

Volume Requirements

Modified Rational Method

Equations in SWMM, Page N-10, Table N-1

100 Year Required Volume:

Developed 100 year Rational "C" Value:

$$C_d = 0.60$$

Developed Basin Area:

$$A = 8.61 \text{ ACRES}$$

Average Release rate:

$$Q_r = 0.70 Q_{MAX} = 0.7(12.78) = 8.95 \text{ CFS}$$

Time of Concentration:

$$T_{Cd} = 22.86 \text{ MIN}$$

Time of Critical Storm Duration:

$$T_{d,100} = \left[\frac{1972.9 C_d A}{Q_r - \frac{Q_r^2 T_{Cd}}{209.9 C_d A}} \right]^{\frac{1}{2}} - 18.8 = \left[\frac{1972.9 (0.60)(8.61)}{(8.95) - \frac{(8.95)^2 (22.86)}{209.9 (0.60)(8.61)}} \right]^{\frac{1}{2}} - 18.8$$

$$\underline{\underline{T_{d,100} = 18.67 \text{ MIN}}}$$

Intensity at Time of Critical Storm Duration:

$$I_{d,100} = \frac{104.94}{T_{d,100} + 18.8} = \frac{104.94}{18.67 + 18.8} \quad \underline{\underline{I_{d,100} = 2.80}}$$

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

JOB THE GLEN 96045.40
SHEET NO. _____ OF _____
CALCULATED BY BRIAN HARTZ DATE 10/27/96
CHECKED BY _____ DATE _____
SCALE _____

Volume Requirements continued...

100 Year Required Volume:

Runoff Rate at Time of Critical Storm Duration:

$$Q_d = C_d A (I_d) = (0.60)(8.61)(2.80) = \underline{\underline{14.47 \text{ CFS}}}$$

Ratio of Pre- and Post-Development Time of Concentration:

$$K = \frac{18.24}{22.86} = 0.798$$

Required Storage Volume for 100 Year Event:

$$\begin{aligned} V_{100} &= 60 \left[T_c (Q_d - Q_r) - Q_r T_{cd} + \frac{K Q_r T_{cd}}{z} + \frac{Q_r^2 T_{cd}}{2 Q_d} \right] \\ &= 60 \left[(18.67)(14.47 - 8.95) - (8.95)(22.86) + \frac{(0.798)(8.95)(22.86)}{z} \right. \\ &\quad \left. + \frac{(8.95)^2 (22.86)}{z (14.47)} \right] \end{aligned}$$

$$V_{100} = \underline{\underline{2602.16 \text{ C.F.}}}$$

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

JOB THE GLEN 96045.40
 SHEET NO. _____ OF _____
 CALCULATED BY BRYAN HART DATE 10/27/96
 CHECKED BY _____ DATE _____
 SCALE _____

Storage Volume

Conic Method Equation in SWMM, Page N-12, Figure N-4

Equation:
$$V_{n+1} - V_n = \left[A_n + A_{n+1} + (A_n A_{n+1})^{1/2} \right] \frac{h}{3}$$

<u>Elevation Difference</u>	<u>Volume (CF)</u>	<u>Sum of Volumes (CF)</u>
4630.74 to 4631.00	$V = \frac{0.26}{3} (0 + 19 + \sqrt{0}) = 2 \text{ CF}$	2 CF
4631.00 to 4632.00	$V = \frac{1}{3} (19 + 265 + \sqrt{19 \times 265}) = 120 \text{ CF}$	122 CF
4632.00 to 4633.00	$V = \frac{1}{3} (265 + 538 + \sqrt{265 \times 538}) = 394 \text{ CF}$	516 CF
4633.00 to 4634.00	$V = \frac{1}{3} (538 + 1011 + \sqrt{538 \times 1011}) = 762 \text{ CF}$	1278 CF
4634.00 to 4635.00	$V = \frac{1}{3} (1011 + 1969 + \sqrt{1011 \times 1969}) = 1464 \text{ CF}$	2742 CF

2 Year storage volume: Required -- -208 C.F.
 *NOTE: According to equation in SWMM, Page N-10, Table N-1,
 No 2 year storage volume is required.
 Provided -- 252 C.F. at elevation 4632.42

100 Yr storage volume: Required -- 2602 C.F.
 Provided -- 2602 C.F. at top of pond elevation 4634.90

2.1 feet of freeboard provided for over embankment

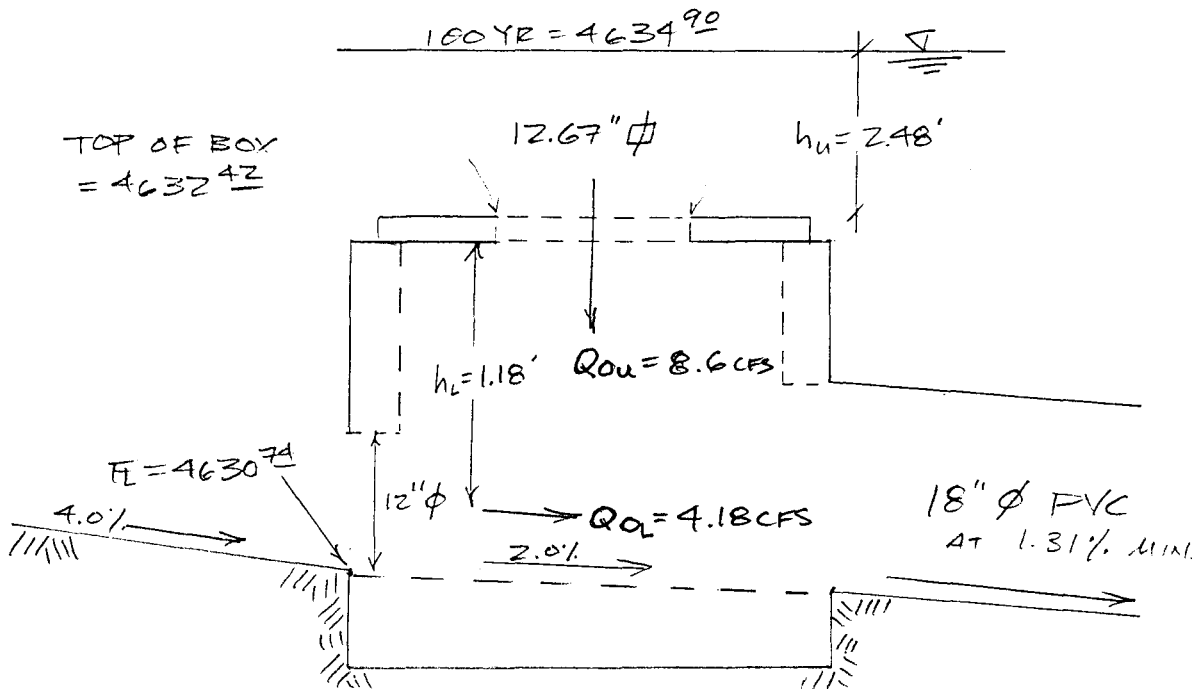
LANDESIGN
 259 Grand Avenue
 GRAND JUNCTION, CO 81501
 (970) 245-4099
 FAX (970) 245-3076

JOB THE GLEN 96045.40
 SHEET NO. _____ OF _____
 CALCULATED BY BRIAN HART DATE 10/27/96
 CHECKED BY _____ DATE _____
 SCALE _____

36" x 36" Outlet Structure

2 YEAR RELEASE = 4.18 CFS VIA 12" ϕ CUTOUT

100 YEAR RELEASE = 12.78 CFS VIA 12" ϕ CUTOUT $\frac{1}{2}$
 12.67" ϕ CUTOUT



CONVEYANCE ELEMENT CAPACITIES

STREET CARRYING CAPACITY

PROJECT: THE GLEN AT HORIZON
 LOCATION: GRAND JUNCTION, COLORADO
 DATE: October 30, 1996

Street Information: R.O.W. Width = 44.00 FT. Flow Area = 3.76 SF.
 Flowline Width = 31.00 FT.
 Classification = URBAN
 Mannings = 0.015
 Max. Depth = 0.42 FT. Above Gutter Flowline
 Str/ X-Slope = 1.00 %
 Gutter Slope = 8.33 % Drive Over Curb, Gutter and Walk
 Sidewalk Slope = 2.08 % 1/4" / FT.
 Roadside Slope = 2.08 % 1/4" / FT.

#	SLOPE OF STREET %	REDUCTION FACTOR FOR SLOPE	ALLOWABLE CAPACITY C.F.S.	VELOCITY F.P.S.
1	0.80	1.00	12.30	3.27
2	0.57	1.00	10.38	2.76
3	0.68	1.00	11.34	3.02
4				
5				
6				
7				

** MAXIMUM CAPACITY NEEDED
 = 8.37 CFS*

Formula: $Q_a = F \times (1.49/N) \times R^{2/3} \times S^{1/2} \times A$
 F = Reduction Factor For Slope
 N = Mannings Coefficient = 0.0150
 R = Hydraulic Radius = A/WP = 0.2234
 A = Cross Sectional Area Sq.Ft. = 3.760
 WP = Wetted Perimeter Ft. = 16.83
 S = Street Slope FT./FT.

ROAD TYPE	COMBINATION INLET CAPACITY (CFS)					
	SINGLE		DOUBLE		TRIPLE	
	2-YR	100-YR	2-YR	100-YR	2-YR	100-YR
Urban Residential (local)	6.4	13	9.5	22	12.7	31
Residential Collector, Commercial and Industrial Streets	3.2	13	4.9	22	6.5	31
Collector Streets (3000 - 8000 ADT)	2.7	13	4.0	22	5.3	31
Principal and Minor Arterials	6.0	13	9.0	22	12.0	31
<p>Inlet capacities shown above are based upon: 1) use of non-curved vane grates (similar to HEC-12 P-17$\frac{1}{8}$-4 grates; 2) HEC-12 procedures; 3) clogging factors per Section VI; and 4) City/County standard inlets with 2-inch radius on curb face and type C grates. Capacities shown for 2-year storms are based upon depths allowed by maximum street inundation per Figure "G-3". The 100-year capacities are based upon a ponded depth of 1.0 foot. Note that only combination inlets are allowed in sag or sump conditions.</p>						
MAXIMUM INLET CAPACITIES: SUMP OR SAG CONDITION				TABLE "G-1"		

* MAXIMUM CAPACITY
NEEDED = 8.37 CFS

FIGURE 33

HEADWATER DEPTH FOR CIRCULAR CONCRETE PIPE CULVERTS WITH INLET CONTROL

12" RCP STORM SEWER

$$\frac{HW}{D} = 2.61 \left(\begin{array}{l} 36^{19} \text{ B.O.W} \\ 1033^{58} \text{ FL} \end{array} \right)$$

$$D = 12" (1')$$

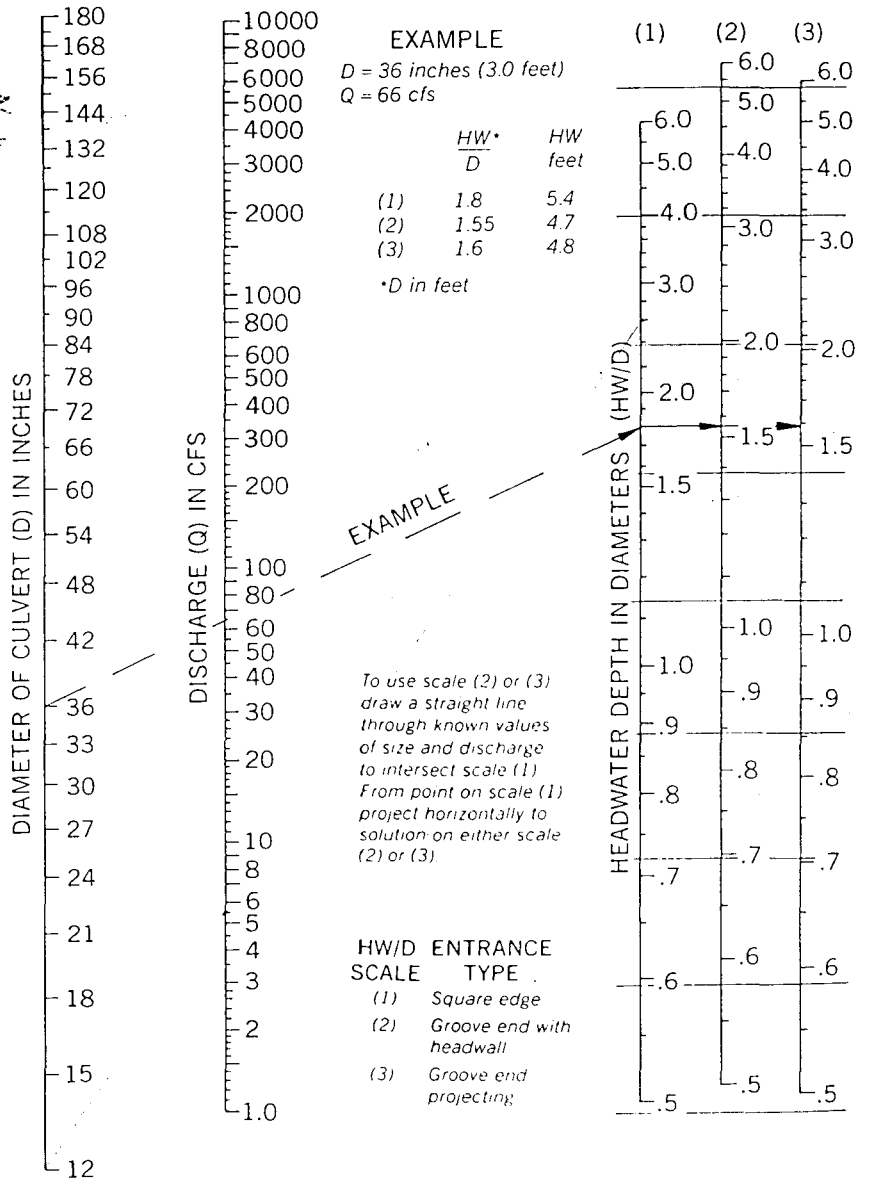
$$HW = 2.61(1) = 2.61'$$

55 CFS PER 12" RCP

TOTAL = 11.0 CFS

(REQ'D = 8.37 CFS)

FROM INLET #1 TO INLET #2



Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: The Glen at Horizon

Comment: Storm Sewer Pipe

Solve For Actual Discharge

Given Input Data:

Diameter.....	2.00 ft
Slope.....	0.0090 ft/ft
Manning's n.....	0.020
Depth.....	2.00 ft

24" ADS
CORRUGATED
POLYETHYLENE PIPE
FROM INLET #2 TO
DETENTION POND

Computed Results:

Discharge.....	13.95 cfs	← 13.4 cfs
Velocity.....	4.44 fps	REQ'D
Flow Area.....	3.14 sf	
Critical Depth....	1.35 ft	
Critical Slope....	0.0143 ft/ft	
Percent Full.....	100.00 %	
Full Capacity.....	13.95 cfs	
QMAX @.94D.....	15.01 cfs	
Froude Number.....	FULL	

Open Channel Flow Module, Version 3.16 (c) 1990
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

EXHIBIT 37.0

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: The Glen at Horizon

Comment: Storm Sewer Pipe

Solve For Actual Slope

Given Input Data:

Diameter.....	1.50 ft
Manning's n.....	0.012
Discharge.....	13.00 cfs ← $\frac{12.78 \text{ CFS}}{\text{REQ'D}}$
Depth.....	1.50 ft

Computed Results:

Channel Slope.....	0.0131 ft/ft
Velocity.....	7.36 fps
Flow Area.....	1.77 sf
Critical Depth....	1.35 ft
Critical Slope....	0.0115 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	13.00 cfs
QMAX @.94D.....	13.98 cfs
Froude Number.....	FULL

OUTLET BOX TO
MANHOLE #2

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: The Glen at Horizon

Comment: Storm Sewer Pipe

Solve For Actual Discharge

Given Input Data:

Diameter.....	1.50 ft	← EXISTING
Slope.....	0.0083 ft/ft	← EXISTING
Manning's n.....	0.012	
Depth.....	1.50 ft	

Computed Results:

Discharge.....	10.37 cfs	← EXISTING
Velocity.....	5.87 fps	
Flow Area.....	1.77 sf	
Critical Depth....	1.24 ft	
Critical Slope....	0.0082 ft/ft	
Percent Full.....	100.00 %	
Full Capacity.....	10.37 cfs	
QMAX @.94D.....	11.15 cfs	
Froude Number.....	FULL	

REPLACE EXISTING
INLET IN 7TH STREET
WITH IDENTICAL PIPE
AND SLOPE. CONNECT
TO MANHOLE #2

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: The Glen at Horizon

Comment: Storm Sewer Pipe

Solve For Actual Slope

Given Input Data:

Diameter..... 2.00 ft
Manning's n..... 0.012
Discharge..... 23.15 cfs
Depth..... 2.00 ft

REQ'D = 23.15 CFS

12.78 (FROM OUTLET BOX)
10.37 (FROM EXISTING INLET)

Computed Results:

Channel Slope..... 0.0089 ft/ft
Velocity..... 7.37 fps
Flow Area..... 3.14 sf
Critical Depth.... 1.71 ft
Critical Slope.... 0.0083 ft/ft
Percent Full..... 100.00 %
Full Capacity..... 23.15 cfs
QMAX @.94D..... 24.90 cfs
Froude Number..... FULL

STORMWATER MANAGEMENT PLAN

FOR

THE GLEN AT HORIZON SUBDIVISION

Prepared for:

**Cunningham Investment Co., Inc.
c/o Mac Cunningham
121 S. Galena Street, Suite 201
Aspen, CO 81611
(970) 925-8803**

Prepared by:

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

October 31, 1996

Job No. 96045

A. SITE AND PROPERTY DESCRIPTION

1. Site Location

The Glen at Horizon 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 north half SE ¼ SE ¼ in that part of the south half of the northwest corner southeast corner lying South and West of the Mainline Canal of the Grand Valley Irrigation Company in Section 2, Township 1 South, Range 1 West of the Ute Meridian.

Streets in the vicinity include North 7th Street which defines the west boundary of the site, Horizon Drive which defines the North boundary of the site, and Patterson Road which is approximately ¼ mile south of the project. The Grand Valley Mainline Canal defines the East boundary of the site and the Independent Ranchmen's Ditch flows through the northern extents of the property flowing east to west.

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

2. Description of the Property

The site is currently vacant of any structures and is in a fallow/pastureland, and irrigation water is available. Recent agricultural activity has not occurred on the property other than the production of hay. Topography of the property is considered to be "rolling" in nature and has a average slope across the property of 8% to the northwest. Eventual drainage discharge from the property goes into the Independent Ranchmen's Ditch which proceeds under 7th Street and ultimately to the Colorado River. The Independent Ranchmen's Ditch conveys irrigation water as supplied by the Grand Valley Mainline Canal.

Approximately 90% of the on-site historic sub basins drain from the southeast to the northwest in a sheet flow fashion towards the Independent Ranchmen's Ditch. Two small culverts convey irrigation tail water used to irrigate the property into the Independent Ranchmen's Ditch. The remaining 10% of the property is North of the Independent Ranchmen's Ditch and flows from the North to the South discharging into the Independent Ranchmen's Ditch.

This site is effected by a very small off-site area which conveys runoff onto the property. This off-site area is located to the southeast of the site and encompasses approximately one-half acre. The runoff from this area will be intercepted and conveyed through the property of the overlot grading and improved streets.

3. Description of Proposed Construction Activity

Activity shall include the construction of roadway, water, sanitary sewer, storm sewer, irrigation and dry utility infrastructures followed by the construction of 17 multi-family/four-plex units encompassing 68 dwelling units.

4. Proposed Sequence of Major Construction Activities

- Phase I Clearing and Grubbing of proposed roadway alignments and disposal of construction debris
- Phase II Construction of roadways to proposed subgrade elevations including cut and fill activities as required. Excess embankment material to be stockpiled in designated areas.
- Phase III Utility infrastructures to be installed including storm sewers and culverts, swales and permanent erosion control features.
- Phase IV Curb, gutter and sidewalks installed.
- Phase V Clearing, grubbing and overlot grading of areas designated for the placement of mobile home units.
- Phase VI Placement of units as rental demand status permits.
- Phase VII Final landscaping of areas designated.

5. Estimate of Areas Subject to Clearing, Grubbing and Excavation

The Glen at Horizon contains a total of 9.2 acres. Clearing and grubbing will be performed on approximately 80-90% of the property and excavation will occur in areas associated with proposed roadways and building pads.

6. Preconstruction and Postconstruction Runoff Coefficients

As defined in the Final Drainage Report for The Glen at Horizon (Reference 8), the historic runoff coefficients for the 10 and 100 year storm events are 0.41 and 0.49, respectively.

With the construction of the proposed roadways, runoff coefficients are expected to increase to 0.52 and 0.60 respectively.

7. Soil Erosion Potential

Based on the "Soil Survey, Grand Junction Area" (Reference 4, Exhibit 1), on-site soils are defined as being Billings silty clay loam, 0 to 2 percent slopes (Bc) , Ravola very fine loam, 0-2 % slopes (Rf), and Fruita and Ravola gravely loams 5-10% slopes (Fr). Erosion hazard for all soils described above are "none to slight."

8. Existing Vegetation

The site can be described as being a irrigated agricultural land.

9. Storage of Fuel Oils, Chemicals, Fertilizers or Other Potential Pollution Sources

The storage of fuel oils, chemicals, fertilizers or other potential pollutants is prohibited without prior written notice to the owner by the contractor, subcontractor or other persons performing work on the site. In the event it becomes necessary to store such items, storage areas shall be designated. Storage areas shall be located above and away from any drainages, waterways and other apparent conveyance elements. Appropriate measures shall be taken to protect such areas from spills or vandalism including, but not limited to spill control berms and fencing.

10. Anticipated Non-Stormwater Components of Discharge

There are no anticipated non-stormwater components of discharge.

11. Name and Location of Receiving Waters

On-site and off-site lands drain generally from the south to the north, towards the north boundary of the site. From the northern portion of the site, runoff will be conveyed in the Independent Ranchmen's Ditch which eventually discharges into the Colorado River.

The subject site is within Zone "X" as determined by the FIRM Flood Insurance rate Map (Reference 3, Exhibit 2). The 100 and 500 year flood events are conveyed through the Independent Ranchmen's Ditch creating an Zone "AE." This is not considered to be a problem in that development will be occurring south of the Independent Ranchmen's Ditch and no building, drainage structure or other proposed utility improvements will be located within this zone or be effected by this zone.

B. MANAGEMENT DURING CONSTRUCTION

1. Anticipated Problems and Corrective (BMPs) Best Management Practices

Structural Erosion Control -- The Independent Ranchmen's Ditch is the ultimate conveyor of drainage from this project and will be protected by the installation of pre fabricated silt fences and hay bails as shown on the Erosion Control Plan.

Non-Structural Erosion Control -- Disturbed areas not designated for immediate construction or permanent shall be temporarily re-vegetated. In the event construction activity ceases for a period of 60 calendar days disturbed areas including cut and fill slopes shall be re-vegetated with an annual and perennial seed mixture.

Dust Abatement -- The contractor shall be required to provide a consistent and reliable source of construction water. Watering to prevent dust shall be ongoing for the duration of the project. In the event high winds and heavy traffic loads create a situation where watering alone is insufficient, the contractor is to apply an approved dust palliative other than or in addition to water.

Soil Tracking -- Where construction traffic enters or exits unimproved areas onto asphalt public roadways, a crushed rock construction staging pad shall be installed to minimize soil tracking.

Waste Disposal -- Construction debris shall be stockpiled in a central location. Debris shall be removed from the site and disposed of at appropriate locations secured by the contractor.

Sedimentation Control -- the contractor shall be responsible for inspecting the entire site on a weekly basis to ensure compliance and identify existing or potential sedimentation problems.

C. FINAL STABILIZATION AND LONG TERM MANAGEMENT

When construction has ceased and the construction of buildings have been completed the project landscaping phase will begin. The developer will be required to install landscaping in accordance with the Landscaping Plan submitted to the City of Grand Junction. When this installation is complete and full dwelling use of the project has begun an established homeowners association will be responsible for maintaining all of the drainage and landscaping facilities.

Permanent structural BMPs include pipe outlet protect, rip-rap and grassed swales as shown on the drainage and grading plan.

D. INSPECTION AND MAINTENANCE

The contractor shall be ultimately responsible for compliance and maintenance during construction. The owner or owner's representative and contractor shall perform weekly

inspections of the site to ensure compliance and implementation of the proposed BMPs.

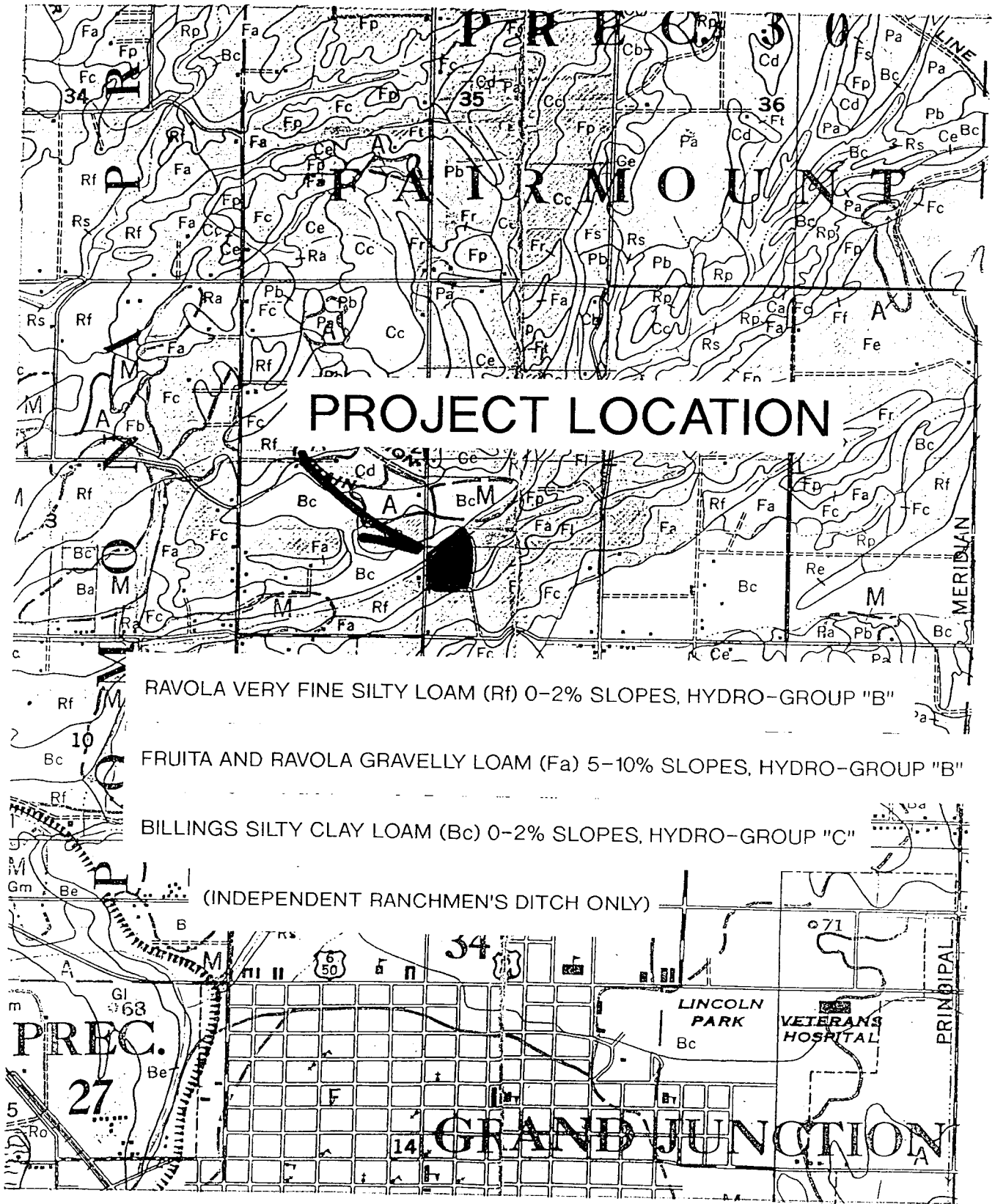
E. CONCLUSION

The information contained herein is augmented by the information, calculations and requirements as presented in the Final Drainage Study For: The Glen at Horizon (Reference 8). A copy of this report shall accompany the CDPS General Permit application for Stormwater Discharges Associated With Construction Activity.

REFERENCES

1. Mesa County Storm Drainage Criteria Manual, Final Draft, Mesa County, Colorado, March 1992.
2. Stormwater Management Manual (SWMM), City of Grand Junction, Colorado, Department of Public Works, June 1994.
3. Flood Insurance Rate Map, Mesa County, Colorado, (Unincorporated Areas), Community Panel Number 080115 0480 C, Federal Emergency Management Agency, Map Revised July 15th, 1992.
4. Soil Survey, Grand Junction Area, Colorado, Series 1940, No. 19, U.S. Department of Agriculture, issued November, 1955.
5. Urban Storm Drainage Criteria Manual, Urban Drainage and Flood Control District, prepared by Wright-McLaughlin Engineers, March 1969, Revised May, 1984.
6. Douglas County Storm Drainage Design and Technical Criteria, Addendum A, Erosion Control Criteria, prepared by HydroDynamics Incorporated, Parker, Colorado, October, 1992.
7. Colorado Department of Transportation, Erosion Control and Stormwater Quality Guide, Draft Version, November 27, 1992.
8. Final Drainage Report For: The Glen at Horizon, prepared by LANDesign LLC., First Draft, October 1996.

APPENDIX



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)

When use of fertilizers and herbicides is required, apply according to the manufacturer's recommended rates.

All seeding operations shall be performed at right angles to the slope.

When needed to improve germination of seeds, apply mulching immediately after seeding. Use soil retention blankets on steep slopes (2:1 and steeper). Some locations with 3:1 slopes facing south or west or 20 feet or more high may also require soil retention blankets.

Seeded areas shall be inspected frequently. Areas with failures shall be repaired and reseeded within the planting season.

MULCHING

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

I. Application

Used to provide temporary protection for exposed soils against erosion where temporary or permanent seeding operations are not feasible, especially during adverse growing seasons.

Used as part of seeding practices to protect newly seeded areas.

Used to protect soil stockpiles.

II. Use Limitations

Use only on disturbed areas as a temporary cover.

Hydraulic mulching with wood cellulose fibers shall be limited to slopes steeper than 3:1 or where access is limited.

III. Construction Guidelines

Material:

Hay shall consist of native grasses free of noxious weed seeds.

Straw shall consist of clean cereal grain.

Wood cellulose fiber shall consist of virgin wood cellulose processed into a uniform fibrous physical state.

Tackifiers (for anchoring) shall consist of a free flowing non-corrosive powder produced from the natural plant gum of *Plantago Insularis* (Desert Indianwheat). This material shall not contain any mineral filler, recycled cellulose fiber, clays, or other substances which may inhibit germination or growth of plants.

Spreading Procedure:

Hay and straw mulch shall be spread at a rate of two tons per acre.

At a minimum, 50% of the mulch, by weight, shall be 10 inches or more than two inches.

Applied mulch shall reach a uniform distribution so that no more than 10% of the soil surface shall be exposed.

Hay and straw mulch shall be anchored to the soil surface using Tackifiers, blankets, or nets, or with a mulch crimping machine., Mechanical anchoring is preferred and recommended for slopes flatter than 3:1. When using blankets or nets, these may need to be anchored to the soil with staples, or as required by the manufacturer's specifications.

Wood cellulose fiber mulch shall be mixed with water (maximum 50 lbs. of wood cellulose per 100 gallons of water) and a tackifying agent. Application shall be at a rate of 1500 pounds per acre with a hydraulic seeder or mulcher.

Tackifiers (for anchoring) shall be applied in a slurry with water and wood fiber (100 lbs. of powder and 150 lbs. of fiber per 700 gallons of water). Application rate of the powder shall be 100 lbs. per acre.

EROSION BALE

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

I. Application

Use as filters along the toe of fills.

Use as erosion checks in ditches.

Use for diversions and filters in unfinished drop inlets, culvert inlets, and outlets.

II. Use Limitations

Do not use if size of the drainage area is greater than 1/4 acre per 100 feet of barrier length.

Maximum slope length behind the barrier is 100 feet.

Maximum slope gradient behind the barrier is 50%.

In minor swales or ditch lines where the maximum contributing drainage area is no greater than one acre.

Where effectiveness is required for less than 3 months.

Under no circumstances should erosion bale barriers be constructed in active streams or in swales where there is the possibility of a washout.

Should be used only in areas of sheet flow or very low flow.

Not to be used where the control of sediment is critical or in high risk areas.

Not to be used where it cannot be entrenched as required and firmly anchored. Useful life of erosion bale barriers is relatively short; the barrier may have to be replaced one or more times during construction.

III. Construction Guidelines

All bales shall be either wire-bound or string-tied. Erosion bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales (in order to prevent deterioration of bindings).

The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. After the bales are staked, the excavated soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be built up to 4 inches against the uphill side of the barrier.

Each base shall be securely anchored by at least two 2"X2" stakes or #4 rebars driven toward the previously laid bale to force the bales together. Stakes or rebars shall be driven 12 inches minimum into the ground to securely anchor the bales.

The gaps between bales shall be filled by wedging with straw to prevent water from escaping between the bales. The main consideration is to obtain tight joints. Erosion bales will not filter sediment out of the water if the water is allowed to flow between, around, or under the bales. Loose straw or hay scattered over the area immediately uphill from an erosion bale barrier tends to increase barrier efficiency.

Since erosion bales deteriorate quickly, the inspection during construction shall be frequent and repair or replacement shall be made promptly as needed.

Erosion bales shall be removed when they have served their usefulness, but not before the upslope areas have been permanently stabilized.

Trenches where erosion bales were located shall be graded and stabilized.

Sheet Flow Applications:

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

Channel Flow Applications:

Bales shall be placed in a single row, lengthwise, oriented perpendicular to the contour, with ends of adjacent bales tightly abutting one another.

The barrier shall be extended to such a length that the bottoms of the end bales are higher in elevation than the top of the lowest middle bale to assure that sediment-laden runoff will flow either through or over the barrier but not around it.

SILT FENCE

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

I. Application

Used to intercept and detain small amounts of sediment from disturbed areas during construction operations to prevent sediment from leaving the site.

Used to decrease the velocity of sheet flows and low-to-moderate level channel flows.

Typically used along the toe of fills, in transition areas between cut and fills, adjacent to streams and along private property.

Also used around median and yard inlets as applicable, and behind curb and gutter to prevent silting of the pavement.

II. Use Limitations

Where the size of the drainage areas is no more than 1/4 acre per 100 feet of silt fence length; the maximum slope length behind the barrier is 100 feet; and the maximum gradient behind the barrier is 50% (2:1).

On steep slopes care should be given to placing alignment of fence perpendicular to the general direction of the flow.

Should not be used in areas where rocky soils will prevent keying in the filter fabric.

III. Construction Guidelines

Materials:

The synthetic filter fabric shall conform to the requirements described in CDOT's Standard Specifications for Road and Bridge Construction.

The Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0 to 120 degrees F.

If a burlap is used, it shall be purchased in a continuous roll and cut to the length of the barrier to avoid than use of joints and thus improve the strength and efficiency of the barrier.

Posts for silt fences shall be metal or hardwood with a minimum length of 42 inches. Pine wood shall not be used. Wood posts shall have a minimum diameter or cross section of 1.25 inches. Metal posts shall be "studded tee" or "U" type with minimum weight of 1.33 lbs/lin. ft., and they shall be protected against corrosion. Metal posts should also have projections for fastening wire to them.

Wire fence reinforcement for silt fences using standard strength filter cloth shall be a minimum of 42 inches in height, a minimum of 14 gauge and shall have a maximum mesh spacing of 6 inches.

Installation:

Silt fences must be located along a terrain contour and the area below the fence must be undisturbed or stabilized.

The posts shall be driven vertically into the ground to a minimum depth of 18 inches.

A trench shall be excavated approximately 6 inches wide and 6 inches deep along the line of posts and upslope from the barrier; the bottom one foot of the filter fabric shall be buried into this trench.

The trench shall be backfilled and the soil compacted.

The filter materials shall be fastened securely to metal or wood posts using wire ties, or to the wood posts with 3/4 inches long #9 heavy duty staples. Filter material shall not be stapled to existing trees.

If a filter barrier is to be constructed across a ditch line or swale, the barrier shall be of sufficient length to eliminate end flow, and the plan configuration shall resemble an arc or horseshoe with the ends oriented upslope.

When joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum 6-inch overlap, and securely sealed.

When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least 3/4 inch long, tie wires or hog rings. The wire shall extend into the trench a minimum of 2 inches and shall not extend more than 36 inches above the original ground surface.

When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of the above item applying.

Silt fences shall be periodically maintained to prevent sediment from passing over or under the fence. Sediments shall be removed from behind the silt fence when it accumulates to one-half the exposed fabric height.

Filter barriers shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.

Sheet Flow Applications:

The height of the silt fence shall be minimum 22 inches and shall not exceed 36 inches; higher fences may impound volumes of water sufficient to cause failure of the structure.

Posts shall be spaced a maximum of 10 feet apart. If an extra strength filter fabric without the wire support fence is used, maximum space shall not exceed 6 feet.

Channel Flow Applications:

The height of the silt fence shall be a minimum of 15 inches and shall not exceed 18 inches.

Posts shall be spaced a maximum of 3 feet apart.

SEEDING

Planting of temporary or permanent vegetation on all disturbed area.

I. Application

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

II. Site Seed Mixture

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

A minimum of 5 lbs/acre shall be used and planted using drill seeding methods and 10 lbs/acre when using a broadcast method.

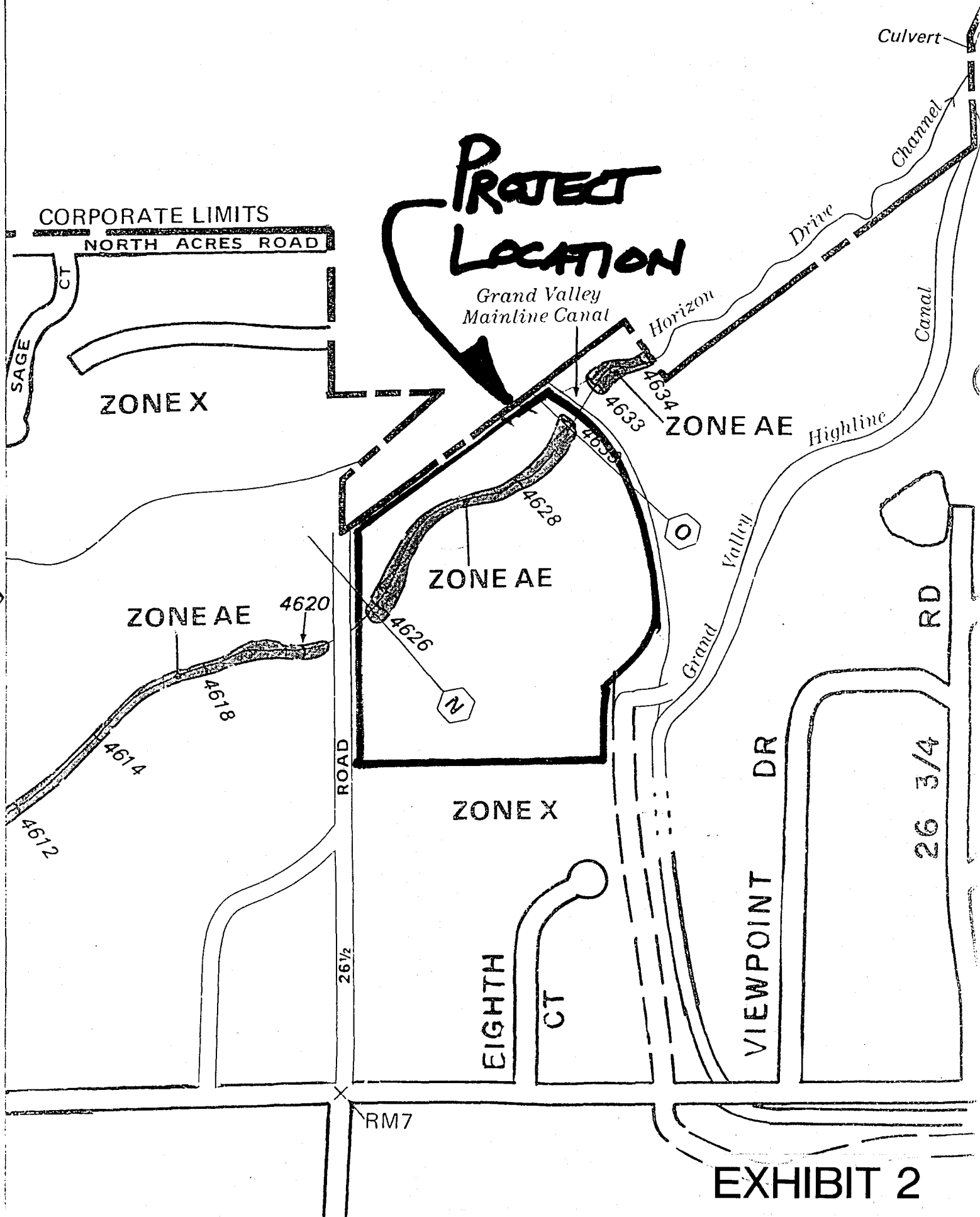
III. Construction Guidelines

Seeding in areas that are unirrigated or that are not provided with sprinkling or watering systems, shall be restricted to the seasons described in Table S-1.

Table S-1
Seeding Seasons

ZONE	SPRING SEEDING	FALL SEEDING
Below 6000'	Spring thaw - June 15th	Sept. 1st - Consistent ground freeze
6000' - 7000'	Spring thaw - July 1st	Aug. 15th - Consistent ground freeze
7000' - 8000'	Spring thaw - July 15th	Aug. 1st - Consistent ground freeze
Above 8000'	Spring thaw (starts)	Consistent ground freeze (ends)

For the purpose of Table S-1 "spring thaw" is the earliest date when seed can be buried 1/2 inch into the soil through normal drill seeding methods. "Consistent ground freeze" is that latest date when seed can no longer be buried 1/2 into the soil through normal drill seeding methods. During permanent seeding, apply topsoil prior to applying seed.



**PROJECT
LOCATION**

CORPORATE LIMITS
NORTH ACRES ROAD

ZONE X

Grand Valley
Mainline Canal

ZONE AE

ZONE AE

ZONE AE

ZONE X

Grand
Valley

Highline
Canal

ROAD
26 1/2

EIGHTH
CT

VIEWPOINT
DR

RD
26 3/4

RM7

EXHIBIT 2

WATER SYSTEM DESIGN REPORT

FOR

THE GLEN AT HORIZON SUBDIVISION

Prepared for:

**Cunningham Investment Co., Inc.
c/o Mac Cunningham
121 S. Galena Street, Suite 201
Aspen, CO 81611
(970) 925-8803**

Prepared by:

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

November 6, 1996

Job No. 96045

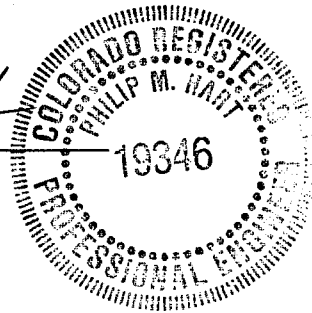
Prepared by: Brian C. Hart

Brian C. Hart, E.I.

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

Philip M. Hart

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



I. Water Supply

The proposed water system for The Glen at Horizon subdivision is designed as an 8 inch PVC water main approximately 690 feet in length. The type of pipe is designated as C900, Class 150 PVC pipe. This system will tap into the City of Grand Junction's 8 inch water main located in North 7th Street on the east side of the right-of-way. Please refer to Exhibit 1.0 in the Appendix of this report for a plan view of the proposed water system. As shown on this exhibit, lengths of pipe sections are labeled, locations of fire hydrants are shown and pipe bend types and locations are shown. In addition, a 6 inch branch line is shown to service the southeastern units.

The owner of this proposed water system will be the City of Grand Junction once the construction of the water main has passed the appropriate tests and been accepted as constructed.

II. Water Usage

There are 17 four-plex buildings planned for the development, which translates into a total of 68 dwelling units. Assuming that an average of 3 persons will occupy each unit, there will be an estimated 204 people residing within the development, creating demand on the proposed water system.

Exhibit 2.0 shows the calculations for the estimated average daily and peak hour flows. These calculations assume a usage rate of 150 gallons per day for average daily flow and 400 gallons per day for peak hour flow. Average daily flow was calculated to be 32 gallons per minute of demand, and peak hour flow was calculated to be 85 gallons per minute of demand.

Fire flow for the development was determined by the City of Grand Junction Fire Department as 2000 gallons per minute at any fire hydrant on site. For the purposes of this report, only the worst-case hydrant will be analyzed.

III. Water Distribution System

The pressures for the existing 8 inch main located in 7th Street were provided by the City of Grand Junction Public Works Department. The static pressure was read near the proposed entrance of the development from a fire hydrant on the east side of 7th Street. This pressure was measured to be 75 psi. The residual pressure was read from the same hydrant while a hydrant located at northeast corner of Horizon Drive and 7th Street was opened. The flow from the opened hydrant was approximately 1100 gallons per minute. The residual pressure was measured at 64 psi. The calculations for the water system will use this pressure.

The computer program, WaterCAD Version 1.0, by Haestad Methods Inc. was used for the calculations on the system. The Hazen-Williams equation was used for the basis of calculations in this report. Exhibit 6.0 shows a summary of the minor losses in the pipe system, including tees, gate valves and bends.

The static pressure at the location of the tap was measured as approximately 75 psi. From this tap location, the system rises above the tap location approximately 3.25 feet, which creates head loss and no increase in head. With minor losses and friction losses, the static head on the system only decreases. This shows that the system will not experience a static pressure greater than 100 psi. Exhibit 3.0 shows the calculation sheet for "J1", the designation for the furthest fire hydrant. A static pressure of 73.43 psi will occur in the water system if using the static pressure of 75 psi on the existing main in 7th Street and the average daily flow of 32 gpm.

Exhibit 4.0 shows the calculation sheet for "J1" using the residual pressure of 64 psi and the peak hour flow of 85 gpm. The residual pressure on the system during peak hour conditions was calculated to be 62.41 psi, which is in excess of the required minimum of 40 psi.

Exhibit 5.0 shows the calculation sheet of the water system using a demand of 2085 gpm which is the peak hour flow and the fire flow required for the fire hydrant. The residual pressure for the fire hydrant was calculated to be 41.48 psi, which is more than the required minimum of 20 psi.

Exhibit 6.0 outlines the pipe between the tap location and the fire hydrant. This sheet shows the pipe length, size, type, Hazen-Williams roughness coefficient and minor losses summary.

IV. Conclusion

This Water System Design Report was written to address the site specific concern of ensuring that peak hour flow and fire flow could be served by the water system as designed. It was found that all criteria were met in accordance with the City of Grand Junction SSID manual.

Appendix

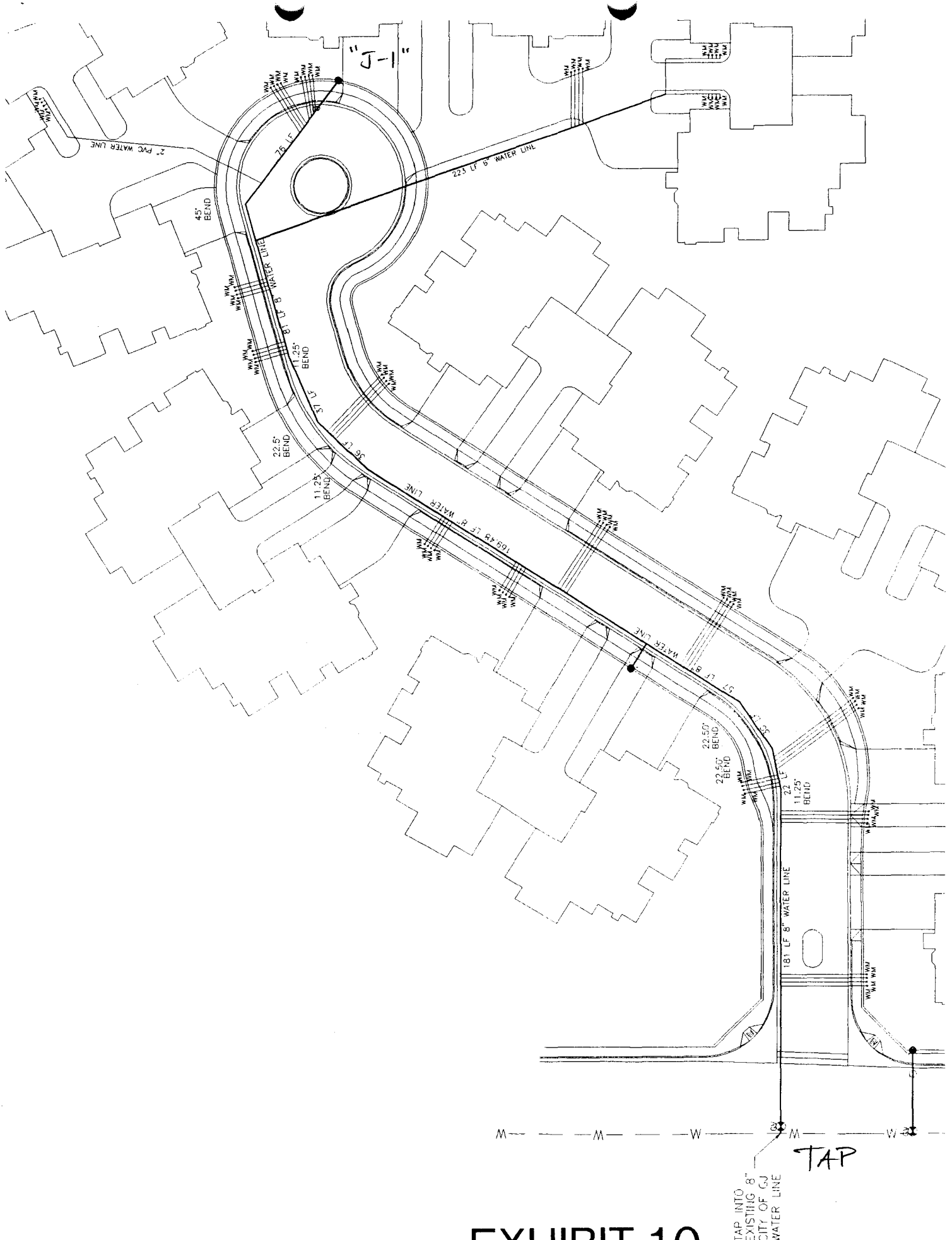


EXHIBIT 1.0

TAP INTO EXISTING 8" CITY OF GJ WATER LINE

TAP

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

JOB THE GLEN 96045.40
SHEET NO. _____ OF _____
CALCULATED BY BRIAN HART DATE 11/5/96
CHECKED BY _____ DATE _____
SCALE _____

Average and Peak Flows

General Information:

17 four plex buildings
68 units
204 residents, assuming 3 people per residence

Average Daily Flow:

(Assume 150 gal/day/person average)

$$204 [\text{PEOPLE}] \times 150 \frac{\text{GAL}}{\text{DAY}} \times \frac{1 \text{ DAY}}{16 \text{ HR}} \times \frac{1 \text{ HR}}{60 \text{ MIN}} = 31.88 \text{ GAL/MIN}$$

$$31.88 \Rightarrow \underline{\underline{32 \text{ GPM}}}$$

(ASSUME 16 HR DAY)

Peak Daily Flow:

(Assume 400 gal/day/person peak)

$$204 [\text{PEOPLE}] \times 400 \frac{\text{GAL}}{\text{DAY}} \times \frac{1 \text{ DAY}}{16 \text{ HR}} \times \frac{1 \text{ HR}}{60 \text{ MIN}} = 85.0 \text{ GAL/MIN}$$

$$\underline{\underline{85 \text{ GPM}}}$$

Detailed Report for Junction: J-1

Loading Summary			
Demand Scenario	Default-Peak Hour		
Calibration Summary			
Demand	<none> 0.0	Roughness	<none> 0.0
Geometric Summary			
X	10,024.00 ft	Elevation	3.25 ft
Y	10,011.84 ft		

Connecting Pipes
P-1

Demand Summary		
Type	Baseline Load (gpm)	Pattern
Demand	32.00	Fixed

Calculated Results Summary					
Time	Constituent (mg/l)	Hydraulic Grade (ft)	Pressure (psi)	Demand (gpm)	Pressure Head (ft)
0.00 hr	0.0	173.06	73.43	32.00	169.81

AVERAGE DAILY FLOW = 32 GPM

STATIC PRESSURE ON EXISTING LINE = 75 PSI

Detailed Report for Junction: J-1

Loading Summary			
Demand Scenario	Default-Peak Hour		
Calibration Summary			
Demand	<none> 0.0	Roughness	<none> 0.0
Geometric Summary			
X	10,024.00 ft	Elevation	3.25 ft
Y	10,011.84 ft		

Connecting Pipes
P-1

Demand Summary		
Type	Baseline Load (gpm)	Pattern
Demand	85.00	Fixed

Calculated Results Summary					
Time	Constituent (mg/l)	Hydraulic Grade (ft)	Pressure (psi)	Demand (gpm)	Pressure Head (ft)
0.00 hr	0.0	147.57	62.41	85.00	144.32

PEAK HOUR FLOW = 85 GPM

RESIDUAL PRESSURE ON EXISTING LINE = 64 PSI

EXHIBIT 4.0

Detailed Report for Junction: J-1

Loading Summary			
Demand Scenario	Default-Peak Hour		
Calibration Summary			
Demand	<none> 0.0	Roughness	<none> 0.0
Geometric Summary			
X	10,024.00 ft	Elevation	3.25 ft
Y	10,011.84 ft		

Connecting Pipes
P-1

Demand Summary		
Type	Baseline Load (gpm)	Pattern
Demand	2,085.00	Fixed

Calculated Results Summary					
Time	Constituent (mg/l)	Hydraulic Grade (ft)	Pressure (psi)	Demand (gpm)	Pressure Head (ft)
0.00 hr	0.0	99.18	41.48	2,085.00	95.93

PEAK HR + FIRE FLOW = 2085 GPM

RESIDUAL PRESSURE ON EXISTING SYSTEM = 64 PSI

Detailed Report for Pipe: P-1

Note:

The input data may have been modified since the last calculation was performed.
The calculated results may be outdated.

Loading Summary

Demand Scenario	Default-Peak Hour
-----------------	-------------------

Calibration Summary

Demand	<none> 0.0	Roughness	<none> 0.0
--------	------------	-----------	------------

Geometric Summary

From Node	R-1	Diameter	8 in
To Node	J-1	Material	PVC
Check Valve	No	Roughness	150.0
Length	690.00 ft	Minor Loss	3.86

Initial Condition Summary

Status	Open
--------	------

Minor Losses

Quantity	Minor Loss	K Each	K Total
1	Tee - Branch Flow	1.28	1.28
1	15 deg. Bend - Mitered	0.05	0.05
1	30 deg. Bend - Mitered	0.10	0.10
1	30 deg. Bend - Mitered	0.10	0.10
1	Gate Valve - Open	0.39	0.39
1	15 deg. Bend - Mitered	0.05	0.05
1	30 deg. Bend - Mitered	0.10	0.10
1	15 deg. Bend - Mitered	0.05	0.05
1	Tee - Line Flow	0.35	0.35
1	45 deg. Bend - Mitered	0.20	0.20
1	Gate Valve - Open	0.39	0.39
1	90 deg. Bend - Mitered	0.80	0.80

Calculated Results Summary

Time	Status	Constituent (mg/l)	Flow (gpm)	Velocity (ft/s)	From Grade (ft)	To Grade (ft)	Friction Loss (ft)	Minor Loss (ft)	Total Headloss (ft)	Headloss Gradient (ft/1000ft)
0.00 hr	Open	0.0	32.00	0.20	173.08	173.06	0.02	0.25e-2	0.02	0.03

REVIEW COMMENTS

Page 1 of 4

FILE #FPP-96-240

TITLE HEADING: The Glen at Horizon

LOCATION: SE corner Horizon Drive & N 7th Street

PETITIONER: Cunningham Investments

PETITIONER'S ADDRESS/TELEPHONE: 121 S Galena Street, Suite 201
Aspen, CO 81611
970-925-8803

PETITIONER'S REPRESENTATIVE: 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., NOVEMBER 22, 1996.

CITY COMMUNITY DEVELOPMENT

11/13/96

Michael Drollinger

244-1439

No comment.

CITY DEVELOPMENT ENGINEER

11/15/96

Jody Kliska

244-1591

1. The street is intended to be private, therefore the plat should dedicate it as easement.
2. Site Plan is labeled Sheet 4 of 23 - appears it should be Sheet 3. The street cross sections are incorrectly labeled as right of way and the dimensions do not match.
3. The other Sheet 4 of 23 - Glen Court Plan and Profile - The same problem as in #2 with the street profiles. Also, please provide stationing under the cross section to indicate the extents of each section.
4. Glen Court Plan - Install a street name sign and a private drive sign.
5. Glen Court Plan - Please provide a detail for the right turn deceleration lane which includes taper length, storage length, striping, sign placement and provide a cross section and structural section.
6. Please indicate the extent of filing one construction so it is clear how much of the street will be constructed, and where utility lines will end. A temporary turnaround will be required if the complete street is not constructed.
7. Sheet 5 of 23 - it appears an easement for utilities is required from the end of the cul-de-sac to buildings 7 and 8.
8. Sheet 7 of 23 - The line widths for leaders is the same as the line width for the storm drain line, making it difficult to determine which is which.
9. Sheet 7 of 23 - Please provide a reference to the outlet detail in the pond.
10. The outlet for the street storm drain into the pond is labeled as an inlet.
11. Sheet 10 of 23 - There are several inconsistencies between this sheet and sheet 7. This sheet shows erosion control at the outlet into Ranchman's Ditch, #7 does not. The manholes are labeled differently on each sheet. Elevations from one sheet to the other do not appear to match, either.

- The outlet pipe is shown as 10' on one sheet, 5' on the other sheet.
12. Sheet 10 of 23 - storm line A appears on the drawing to run into the outlet structure. The drainage report indicates sod in the bottom of the pond.
 13. On the storm line profile please label the elevations appropriately - does the outlet of the pipe really have a rim?
 14. Section 104.2a of the City Standard Specifications requires approved end sections at the exposed end of all polyethylene and PVC pipe. The outlet into Ranchman's indicates PVC pipe.
 15. Please indicate the size and type of pipe for the extension of the 60" culverts. The City's as-built plans indicate these are RCP. Also please provide a detail for the connection to the existing pipes.
 16. Is there a detail where the storm sewer goes through the retaining wall?
 17. Sheet 5 of 23 - the water line is shown connected to the sewer line in the cul-de-sac.
 18. Retaining wall sheet - no number - the landscape pond appears to have quite steep slopes for the depth of the pond compared to the width of the area between the wall and the slope.
 19. Utility Composite - sheet 11 of 23 - in order to access the 15" sanitary line, the city truck will need to drive in the easement. You will want to provide a surface capable of supporting a heavily loaded truck. If this includes the sidewalks, the concrete thickness will need to be at least 6".
 20. The improvements agreement does not reflect an adequate amount for the storm drainage improvements. I don't think \$1500 will begin to cover everything except maybe moving dirt. Pipe and structures appear to be in the \$15-\$20k range.
 21. The street structural sections show 16" of structural fill on fabric. None of this is reflected in the DIA.
 22. Please clarify the extent of the street improvements. It is not evident from the plans or DIA how much is guaranteed.

CITY UTILITY ENGINEER

11/15/96

Trent Prall

244-1590

-
1. Future residents would appreciate if the waterline W/O MH A7 and A8 could extend off of a water line rather than a sewer line.
 2. MH A-6 could be eliminated. If retained however, coordinates are needed.
 3. MHs A-5 and B-2 shall be epoxy coated.
 4. Water taps for lots 7 and 8 shall be off of the mainline rather than the configuration shown.
 5. HOA CC&R's should cover maintenance of sewer service lines.
 6. Please work with Public Service, US West and TCI to ensure extra facilities do not have to be installed due to water meter locations.
 7. Water meter pits and yokes will be supplied by City inspector for installation by Developer's contractor.
 8. If building plans permit, deepen MH B-2 so that lots 7 & 8 can sewer to 15" sewer line and then eliminate 206 LF of 8" sewer and 1 MH between MHs A-7 and A-8. Long service line would be needed for Lot 9.
 9. Plans fail to depict a sewer service line for Lot 10.
 10. MH A3 shall either be on centerline or center of drive line rather than where shown.
 11. Improvements agreement for entire subdivision or just Filing 1?????
 12. MH A5 will have to be constructed under Filing 1 in order for Lot 16 to sewer.
 13. Water system design report appears adequate.
 14. Once again, please ensure that the following notes are on the plans:

15. Please ensure sewer maintenance truck will have access to MHs B-1 and B-2. Sidewalk section should be minimum of 6" thick and highly recommend ground stabilization under proposed grass within the easement if sidewalk section is less than 10' wide.

SEWER:

- 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 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 _____.

WATER:

Contractor is responsible for installing water meter pits and yokes. City of Grand Junction will supply the pits and yokes. Water services will be extended to the multipurpose easement line, and marked with a metal or wood post painted blue. Meter pits to be located 2 feet back of curb.

CITY PROPERTY AGENT

11/11/96

Steve Pace

256-4003

-
- 1. Are the found NHPQ pins on southerly boundary of Block 1 in concrete?
 - 2. Private open space is addressed in the dedication but not shown on the plat.
 - 3. Utility, irrigation, pedestrian and drainage easements are addressed in the dedicating, but not shown on the plat.
 - 4. Building set-back lines?

CITY PARKS & RECREATION

11/14/96

Shawn Cooper

244-3869

Parks & Open Space fees = 68 units @ \$225 = \$15,300.

CITY FIRE DEPARTMENT

11/14/96

Hank Masterson

244-1414

The Fire Department has no problems with this proposal.

CITY ATTORNEY

11/13/96

Dan Wilson

244-1505

See red-lined notes on plat.

WALKER FIELD AIRPORT AUTHORITY

11/5/96

Dennis Wiss

244-9100

1. This proposed site lies approximately 2 ½ miles south-southwest of the approach end of Runway 04 at Walker Field. As such, this site is located outside of the Airport's Area of Influence. However, this site is almost directly in line with the extended centerline of Runway 04-22 and as such, may be subjected to overflight of aircraft and the noise associated with these overflights.
2. The Airport Authority recommends the installation of additional sound-proofing materials to include sound-deadening insulation, and planned landscaping features to help mitigate the noise from these overflights.
3. The Airport Authority also respectfully requests an Avigation Easement be recorded at or before final plat is filed and that a copy of this easement be forwarded to the Airport Authority.

MESA COUNTY SCHOOL DISTRICT #51

11/5/96

Lou Grasso

242-8500

SCHOOL - CURRENT ENROLLMENT / CAPACITY - IMPACT

Tope Elementary - 550 / 452 - 17

West Middle School - 541 / 500 - 8

Grand Junction High School - 1682 / 1630 - 12

GRAND VALLEY IRRIGATION

11/15/96

Phil Bertrand

242-2762

1. See attached review for Horizon Village
2. Tract A and Tract B are not surveyed and labeled correctly.
3. Dedication wordage for Tract A and B needs to be corrected.
4. No public use of canal facilities.
5. Where Tract A & B abut, it needs additional surveying and labeling required.
6. East side of Block 1 needs clarification of canal facilities, survey and right-of-way declarations.

GRAND JUNCTION DRAINAGE DISTRICT

11/13/96

John Ballagh

242-4343

The site is wholly within the drainage district. The general area is known to have historic high water table problems. Westwood has two Grand Junction Drainage District subsurface drains which only partially resolve seasonal high water table problems. Four Square Church property similarly has Grand Junction Drainage District subsurface drains. Mesa View Retirement residence has a private subsurface drain system. The materials submitted do not include an in depth subsurface soils evaluation by a competent soils engineer. Such an evaluation and report is strongly suggested before approval is granted. Once buildings are erected options to correct a problem are more limited.

CORP OF ENGINEERS

11/12/96

Randy Snyder

241-2358

I do not see any changes from preliminary to final plat that would change our decision.

RESPONSE TO REVIEW COMMENTS

DATE: November 21, 1996

FOR: The Glen @ Horizon
Northeast corner of Horizon Drive
and North Seventh Streets

PETITIONER: Cunningham Investment Co., Inc.
121 S. Galena Street, Suite 201
Aspen, Colorado 81611
(970) 925-8803

**STAFF
REPRESENTATIVE:** Michael Drollinger

1. **Grand Junction Drainage District:**

Applicant acknowledges the Drainage District's comments and refers the Drainage District to the "Subsurface Soils Exploration Report" dated June 29, 1996, prepared by Lincoln-Devore Engineers.

We specifically refer to paragraph 10;

"No free water was encountered in the exploration borings on the southern tract" ... "A free water table came to equilibrium during drilling at 13 feet to 16 feet below the present ground surface on the northern tract."

This engineering report was submitted to the City as part of the application process. If the Grand Junction Drainage District requires an additional copy of the report, we will be happy to forward one accordingly.

Other notes related to these comments are the following:

The Lincoln-Devore soils study was done during the height of the surface irrigation of the alfalfa field which currently lies on the property. Further, other than one very small area of Buildings 17 and 16, all structures are slab on grade with no sub-basements of any kind. We therefore do not anticipate any problems related to water table because of these factors.

(2)

2. Grand Valley Irrigation:

Petitioner has reviewed the comments by the respondent. In general, we feel that the respondent's issues raised on November 15, 1996, relate to conflicting views concerning use along the Grand Valley canal and ditch systems.

The petitioner's dedication language and description does not impede the ditch company's ability to operate the ditch system. The language was used to recognize the City's desire to create a future city-wide path system. Any conflict between the two parties should not involve the proponent.

The language specifically does not encourage use by the public at this time. In the City Council's approval of the project on October 3, 1996, they specifically stated that they want us to cooperate, and we will. However, we are neutral to this issue and are caught in the middle.

We have purposely not impeded the ditch company's use or running of water in either ditch, and have provided more than ample access to both the Mainline Canal and the Ranchman's Ditch for traditional maintenance and flow of water.

November 21, 1996

Mr. Michael Drollinger
City of Grand Junction
Community Development
250 N. 5th Street
Grand Junction, CO 81501

Re: The Glen at Horizon/Response to Comments
Job No. 96045.40

Dear Mr. Drollinger:

This letter is in response to comments received from your office on November 18, 1996. Each comment will be addressed specifically unless otherwise noted.

Community Development

1. There are no comments from Community Development.

City Development Engineer

1. The street is intended to be private and the final plat reflects this appropriately.
2. The site plan is labeled correctly, the street cross sections have been labeled correctly with dimensions and changing terminology from right-of-way to ingress/egress easement.
3. The street cross sections are labeled correctly with dimensions and changing terminology from right-of-way to ingress/egress easement. In addition, stationing has been provided for each type of street crossing.
4. A street name sign and private drive have been added to the plans.
5. A detail has been provided for the right turn deceleration lane which includes taper length, storage length, and striping. Sign placement and cross section of the street has been included as well as the pavement design section.
6. The plans have been revised to show a clear division between Filing 1 construction and future filings. A note has also been added to the plan after a certain centerline

station the remainder of the road will be graded to serve as a temporary gravel cul-de-sac. The sewer and water plan and utility composite do show the extent of the utility lines for the Filing 1.

7. An easement has been added to the plans to serve Buildings 7 & 8 for the water line and sewer main that extend from Glen Court up to both units.

8. Line widths for leaders and line widths for storm drain lines have been revised for clarity and neatness.

9. A reference has been provided for the outlet works of the detention pond.

10. The outlet for the storm drain into the pond has been correctly labeled as an inlet.

11. The inconsistencies between Sheet 7 of 23 and 10 of 23 have been revised to show the correct manhole labeling, types of pipe, invert elevations, and length of pipe.

12. The storm line "A" has been revised to show the correct layout. In addition, the detention pond will have a surface of sod and is labeled on Sheets 7 and 10.

13. Labeling on the profiles for all storm sewer lines have been reviewed and labeled correctly.

14. A flaired-end section has been added to the plans at the inlet into the detention pond.

15. The size and type of pipe for the extension of the 60" culvert has been clarified on the storm sewer plan and profile. These plans have also been revised to show additional detail on dimensions, pipe bedding, and connection elbows required for construction.

16. A detail has been added to the drawing for the 24" storm sewer pipe that passes through the retaining wall.

17. The water line at the end of Glen Court has been revised to show the correct connection to the 8" water main.

18. The landscape pond detail on the retaining wall sheet has been revised to show clarity of slopes and distances.

19. A note has been added to the site plan indicating that any sidewalks located within utility easements shall have a minimum thickness of 6" for protection against maintenance vehicles. The petitioner has decided against any additional final grade stabilization within the utility easements, including the suggestion of "grass-crete."

20-22. As indicated by the Community Development comments no. 20, 21, & 22 from Jody Kliska are erroneous and are not directed towards this project.

City Utility Engineer

1. The water line at the end of Glen Court has been revised to show the correct connection into the 8" water main.
2. Manhole A-6 has been eliminated and Manhole A-5 has been adjusted to ensure an appropriate distance from the edge of the curb and gutter.
3. Manhole A-4 and B-2 are noted on all appropriate plans that they shall be epoxy coated.
4. Water taps for Buildings 7 & 8 have been revised to connect into the main line.
5. The articles of incorporation for the homeowner's association and covenants, controls, and restrictions are being revised to cover maintenance of the sewer service lines.
6. This comment is advisory in nature and is appreciated.
7. This comment is a standard note from the City Utility Engineer, and this information will be passed onto the contractor at the appropriate time.
8. Unfortunately, building plans do not permit the deepening of Manhole B2. The petitioner has elected to stay with the sanitary sewer as designed because of the cost of running sewer service lines to the rear of Buildings 7 & 8, and under the retaining wall to proposed sanitary sewer line "B." The suggestion is appreciated as a design option.
9. A sanitary sewer service line has been added for Building 10.
10. The placement of Manhole A3 has been revised and is shown in the centerline of Glen Court.
11. The improvements agreement is for Filing 1 only and a revised copy noting this clarification is being submitted along with this letter.
12. Manhole A5 will be the limits of construction for Filing 1 for sanitary sewer service to Building 16.
13. No comment needed.

14. The sanitary sewer notes and domestic water notes have been added to the plans.

15. The petitioner has elected to designate that sidewalks located in any utility easement shall be a minimum of 6" thick. Access to the utility easements by sewer maintenance trucks shall be unimpeded. The petitioner has elected to not provide any additional final grades stabilization other than a thicker sidewalk sections at this time.

City Property Agent

1-4. Each of these comments have been addressed and both sheets of the Final Plat have been revised accordingly.

City Parks & Recreation

No comment needed.

City Fire Department

No comment needed.

City Attorney

Both sheets of the final plat have been addressed to answer Mr. Dan Wilson's redline notes.

Walker Field Airport Authority

1. It is noted by the petitioner that this project is outside of the airport's area of influence.

2. This comment is a recommendation and is appreciated.

3. At this time, the petitioner has elected not to grant an avigation easement for the project.

Mesa County School District #51

No comment needed.

Grand Valley Irrigation Company

All comments from the Grand Valley Irrigation Company have been addressed. Such comments from Cunningham Investment Company, Inc. are included.

Grand Junction Drainage District

All comments from the Grand Junction Drainage District have been addressed. Such comments are included herein.

Corps of Engineers

No comment needed.

Each of the comments for Pages 1-4 as received from your office Monday, November 18, 1996 have been answered by line item. If there are any other questions as to how we are addressing these comments, please feel free to contact me. If you have any questions about the project, please contact me at my office as well as Mr. Peter Carbone at 241-7379 and Cunningham Investment Company, Inc., at 970/925-8803.

Sincerely,

A handwritten signature in cursive script that reads "Brian C. Hart".

Brian C. Hart, E.I.
Project Manager



City of Grand Junction, Colorado
250 North 5th Street
81501-2668
FAX (970) 244-1456

December 6, 1996

Mr. John Howe
c/o Hoskin, Farina, Aldrich and Kampf, Attorneys At Law
P.O. Box 40
Grand Junction, Colorado 81502

Hand Deliver

Dear Mr. Howe,

I am responding to your letter of December 5, 1996, in which you appeal the approval by the Grand Junction Planning Commission of land use application FPP 96-240, *The Glen at Horizon*.

Your letter poses both factual and legal issues to which the City is unable to respond without documentation, elucidation and demonstrative aid. Specifically, please provide at your earliest convenience a copy of the current survey, title policy, deeds, recorded easements and any and all other information pertaining to and supporting the claims in your December 5, 1996, letter. That information will assist in determining whether or not your client has standing to appeal the decision and/or whether or not the claims asserted by your client are appropriate and legally within the jurisdiction and purview of the City Council.

Please also provide any citations to the *Zoning and Development Code* or Colorado case law that compels the conclusion that the Planning Commission has a legal duty to your client. It appears from the face of your letter that your client's complaints sound against the developer, in trespass and/or constitute a boundary dispute. Such claims would be amenable to resolution by a District Court action --not an appeal to City Council. Likewise, please explain how the claim pertaining to a grant of easement or conveyance of property to the City by the developer is ripe; no conveyance has occurred. Additionally, the City would appreciate an explanation as to how your client has effectively exhausted its other remedies when no comment was made by GVIC or legal counsel at any City hearing, including the Planning Commission hearing on December 3, 1996.

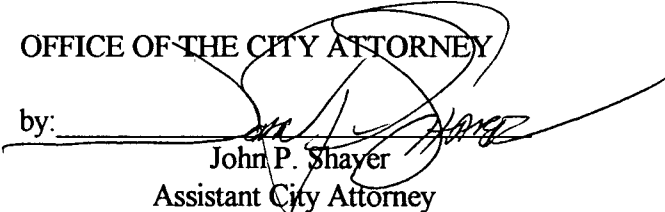
The City will carefully evaluate any and all information that is provided by your client. If it is determined that standing exists and that your client's claims are within the purview and legal providence of the City Council, every effort will be made to meaningfully and substantively resolve the concerns. Since your client now appears very interested in this application, the City anticipates your client's full cooperation in explaining and demonstrating the problems created by the application and the Planning Commission's approval of FPP 96-240. As well, the City will be expecting your client to establish how under the *Zoning and Development Code*, and/or applicable Colorado law, the Council is the proper party to resolve those problems.

Mr. John Howe
December 6, 1996
Page two

I look forward to receiving additional information from you at your earliest convenience. Should you have any questions please feel free to call Mr. Wilson or me at the number shown below.

OFFICE OF THE CITY ATTORNEY

by: _____



John P. Shayer
Assistant City Attorney
250 N. 5th Street
Grand Junction, CO 81501
(970) 244-1501

pc: Kathy Portner, Acting Community Development Director ✓
Mark Achen, City Manager

CITY OF GRAND JUNCTION

DATE: December 12, 1996

CITY COUNCIL

STAFF PRESENTATION: Michael Drollinger

AGENDA TOPIC: Appeal of Planning Commission's decision to approve Filing #1 of the Glen at Horizon.

SUMMARY: The Grand Valley Irrigation Company has appealed (see attached letter) the Planning Commission's decision of December 10, 1996 to approve Filing #1 of the Glen at Horizon, a 24 unit development on about 3 acres located at the southeast corner of 7th Street and Horizon Drive. Staff recommends approval.

ACTION REQUESTED: Decision on appeal.

BACKGROUND INFORMATION:

Location: Southeast corner of 7th Street and Horizon Drive

Applicant: Cunningham Investment Co., Inc.
121 S. Galena Street, Suite 201
Aspen CO 81611

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-7.4

Proposed Zoning: no change

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 petitioner is requesting Final Plan approval for 24 units on about 3 acres located at the southeast corner of 7th Street and Horizon Drive. At buildout the project will consist of a total of 68 units on 9.2 acres. The property is presently zoned PR-7.4.

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 private street proposal has been approved by City Council.

All previous conditions of approval regarding this proposal have been satisfied. The final plans for Filing #1 are substantially complete with the exceptions discussed below.

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.

RECOMMENDATION: Approval of the plan for Filing #1 as per Planning Commission's decision of December 3, 1996 which included the following conditions:

1. The final plans be revised to include additional pavement striping for the deceleration lane into the site on Horizon Drive as per the City Development Engineer.
2. A maintenance agreement for the private street shall be reviewed and approved by the City prior to platting.
3. In order to ensure all contractors bidding on this job are aware of the requirement the following note should be added to the plans as per the City Utility Engineer:

"Water meter pits and yokes will be supplied by City inspector for installation by the contractor. Water services will be extended to the multipurpose easement line, and marked with a metal or wood post painted blue. Meter pits to be located 2 feet back of curb."

4. It is highly recommend that grade stabilization be provided outside of sidewalk section as previously recommended by City Utility Engineer as the City will NOT be responsible for damaged irrigation facilities or landscaping.
5. Additional minor changes to the plat are required as per the City Attorney.

HOSKIN, FARINA, ALDRICH & KAMPF

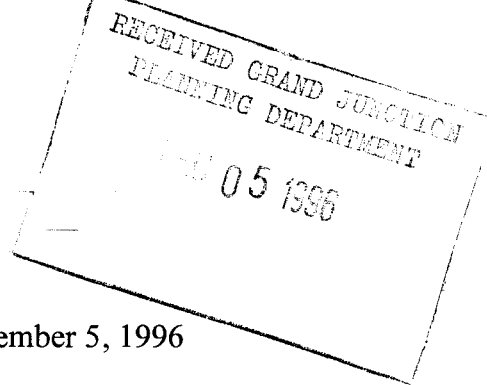
Professional Corporation

ATTORNEYS AT LAW

200 Grand Avenue, Suite 400
Post Office Box 40
Grand Junction, Colorado 81502

Telephone (970) 242-4903
Facsimile (970) 241-3760

222 West Main Street
Rangely, Colorado 81648



Gregory K. Hoskin
Terrance L. Farina
Frederick G. Aldrich
Gregg K. Kampf
Curtis G. Taylor
David A. Younger
David M. Scanga
Michael J. Russell
John T. Howe
Matthew G. Weber
John A. Siddeek
Darrel L. Moss

William H. Nelson
(1926-1992)

December 5, 1996

HAND DELIVERED

Kathy Portner, Director
Grand Junction Community Development Department
250 North Fifth Street
Grand Junction, Colorado 81501

Re: Appeal of Planning Commission Decision
File No. FPP-96-240
The Glen at Horizon Subdivision
Petitioner: Cunningham Investments
Location: Southeast corner of Horizon Drive and north 7th Street

Dear Ms. Portner:

This firm represents the Grand Valley Irrigation Company (GVIC).

GVIC hereby appeals the final decision of the Grand Junction Planning Commission dated December 3, 1996, which approved the Final Plat/Plan for the Glen at Horizon Subdivision.

The bases for GVIC's appeal are as follows:

1. The building envelopes shown on the site plan encroach on GVIC's right-of-way for the Independent Ranchmen's Ditch;
2. A non-exclusive easement was purportedly granted to the City of Grand Junction for the use of the public which interferes with GVIC's canal rights-of-way; and

Kathy Portner, Director
Page 2
Decemer 5, 1996

3. The property description as set forth in the plat goes to the centerline of GVIC's Mainline Canal, whereas the actual property line appears to be at the edge of GVIC's right-of-way for the canal.

GIVC's review comments are attached. It appears from a review of the Planning Department's file that GVIC's comments were completed ignored by Planning Department staff and the Planning Commission. Approval of this particular subdivision appears to be part of a pattern by Planning Department staff and the Planning Commission, as well as the City of Grand Junction in general, of ignoring the concerns of GVIC regarding subdivision development along GVIC's canal system. For example, GVIC's comments regarding the Valley Meadows East Subdivision and Cimarron North Subdivision were similarly ignored in the planning process.

Apart from the planning process, encroachment of the building envelopes shown on the final plan will constitute a trespass on GVIC's easements and will be subject to appropriate legal remedies.

Sincerely,

HOSKIN, FARINA, ALDRICH & KAMPF
Professional Corporation



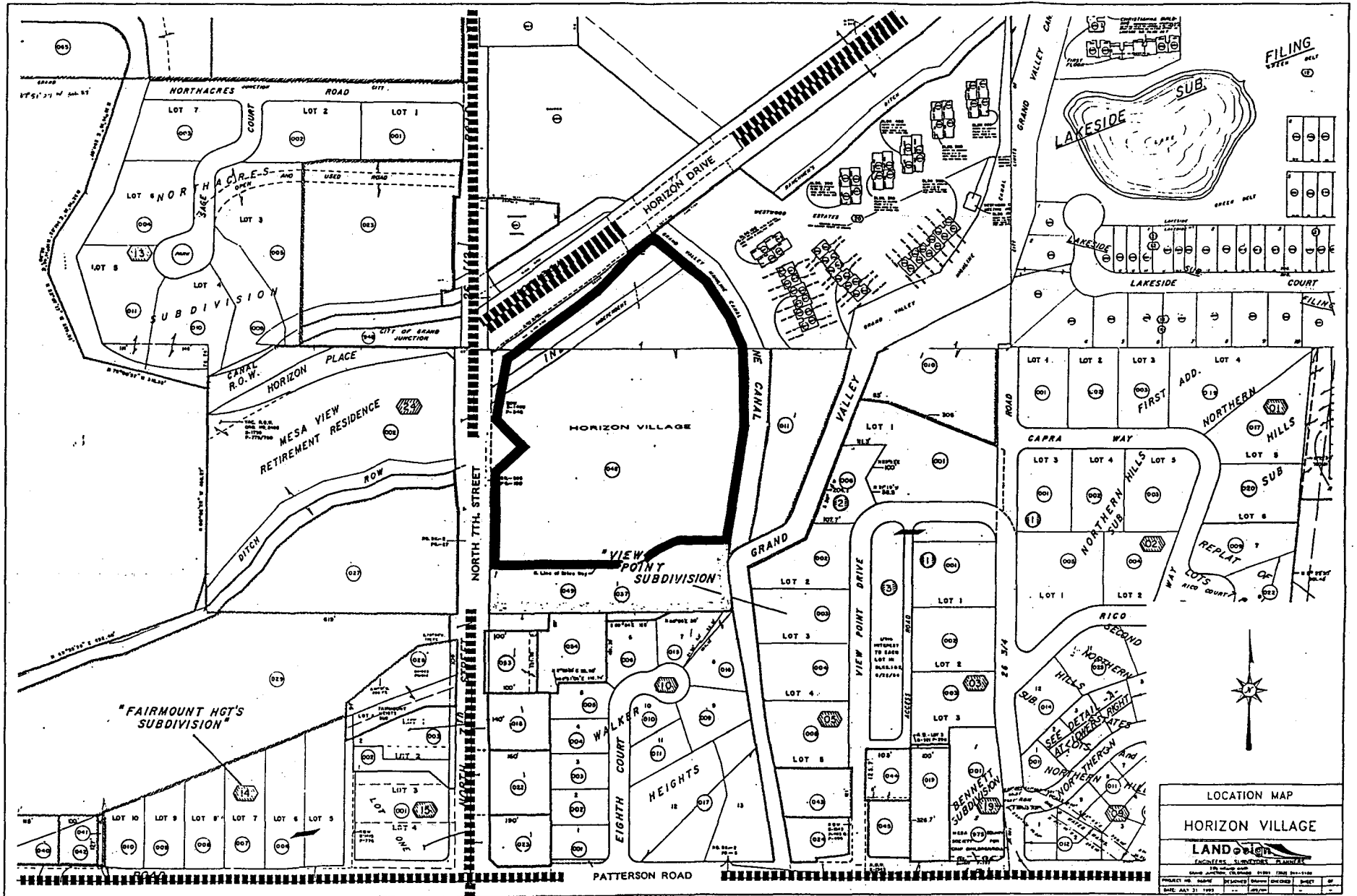
JOHN T. HOWE

JTH:ckt

cc: Grand Valley Irrigation Company
John Williams
John Shaver, Assistant City Attorney
Mark Achen, City Manager

Horizon Village Location Map

4505Z



November 21, 1996

Mr. Michael Drollinger
City of Grand Junction
Community Development
250 N. 5th Street
Grand Junction, CO 81501

Re: The Glen at Horizon/Response to Comments
Job No. 96045.40

Dear Mr. Drollinger:

This letter is in response to comments received from your office on November 18, 1996. Each comment will be addressed specifically unless otherwise noted.

Community Development

1. There are no comments from Community Development.

City Development Engineer

1. The street is intended to be private and the final plat reflects this appropriately.
2. The site plan is labeled correctly, the street cross sections have been labeled correctly with dimensions and changing terminology from right-of-way to ingress/egress easement.
3. The street cross sections are labeled correctly with dimensions and changing terminology from right-of-way to ingress/egress easement. In addition, stationing has been provided for each type of street crossing.
4. A street name sign and private drive have been added to the plans.
5. A detail has been provided for the right turn deceleration lane which includes taper length, storage length, and striping. Sign placement and cross section of the street has been included as well as the pavement design section.
6. The plans have been revised to show a clear division between Filing 1 construction and future filings. A note has also been added to the plan after a certain centerline

station the remainder of the road will be graded to serve as a temporary gravel cul-de-sac. The sewer and water plan and utility composite do show the extent of the utility lines for the Filing 1.

7. An easement has been added to the plans to serve Buildings 7 & 8 for the water line and sewer main that extend from Glen Court up to both units.
8. Line widths for leaders and line widths for storm drain lines have been revised for clarity and neatness.
9. A reference has been provided for the outlet works of the detention pond.
10. The outlet for the storm drain into the pond has been correctly labeled as an inlet.
11. The inconsistencies between Sheet 7 of 23 and 10 of 23 have been revised to show the correct manhole labeling, types of pipe, invert elevations, and length of pipe.
12. The storm line "A" has been revised to show the correct layout. In addition, the detention pond will have a surface of sod and is labeled on Sheets 7 and 10.
13. Labeling on the profiles for all storm sewer lines have been reviewed and labeled correctly.
14. A flaired-end section has been added to the plans at the inlet into the detention pond.
15. The size and type of pipe for the extension of the 60" culvert has been clarified on the storm sewer plan and profile. These plans have also been revised to show additional detail on dimensions, pipe bedding, and connection elbows required for construction.
16. A detail has been added to the drawing for the 24" storm sewer pipe that passes through the retaining wall.
17. The water line at the end of Glen Court has been revised to show the correct connection to the 8" water main.
18. The landscape pond detail on the retaining wall sheet has been revised to show clarity of slopes and distances.
19. A note has been added to the site plan indicating that any sidewalks located within utility easements shall have a minimum thickness of 6" for protection against maintenance vehicles. The petitioner has decided against any additional final grade stabilization within the utility easements, including the suggestion of "grass-crete."

20-22. As indicated by the Community Development comments no. 20, 21, & 22 from Jody Kliska are erroneous and are not directed towards this project.

City Utility Engineer

1. The water line at the end of Glen Court has been revised to show the correct connection into the 8" water main.
2. Manhole A-6 has been eliminated and Manhole A-5 has been adjusted to ensure an appropriate distance from the edge of the curb and gutter.
3. Manhole A-4 and B-2 are noted on all appropriate plans that they shall be epoxy coated.
4. Water taps for Buildings 7 & 8 have been revised to connect into the main line.
5. The articles of incorporation for the homeowner's association and covenants, controls, and restrictions are being revised to cover maintenance of the sewer service lines.
6. This comment is advisory in nature and is appreciated.
7. This comment is a standard note from the City Utility Engineer, and this information will be passed onto the contractor at the appropriate time.
8. Unfortunately, building plans do not permit the deepening of Manhole B2. The petitioner has elected to stay with the sanitary sewer as designed because of the cost of running sewer service lines to the rear of Buildings 7 & 8, and under the retaining wall to proposed sanitary sewer line "B." The suggestion is appreciated as a design option.
9. A sanitary sewer service line has been added for Building 10.
10. The placement of Manhole A3 has been revised and is shown in the centerline of Glen Court.
11. The improvements agreement is for Filing 1 only and a revised copy noting this clarification is being submitted along with this letter.
12. Manhole A5 will be the limits of construction for Filing 1 for sanitary sewer service to Building 16.
13. No comment needed.

Grand Junction Drainage District

All comments from the Grand Junction Drainage District have been addressed. Such comments are included herein.

Corps of Engineers

No comment needed.

Each of the comments for Pages 1-4 as received from your office Monday, November 18, 1996 have been answered by line item. If there are any other questions as to how we are addressing these comments, please feel free to contact me. If you have any questions about the project, please contact me at my office as well as Mr. Peter Carbone at 241-7379 and Cunningham Investment Company, Inc., at 970/925-8803.

Sincerely,

A handwritten signature in cursive script that reads "Brian C. Hart".

Brian C. Hart, E.I.
Project Manager

14. The sanitary sewer notes and domestic water notes have been added to the plans.

15. The petitioner has elected to designate that sidewalks located in any utility easement shall be a minimum of 6" thick. Access to the utility easements by sewer maintenance trucks shall be unimpeded. The petitioner has elected to not provide any additional final grades stabilization other than a thicker sidewalk sections at this time.

City Property Agent

1-4. Each of these comments have been addressed and both sheets of the Final Plat have been revised accordingly.

City Parks & Recreation

No comment needed.

City Fire Department

No comment needed.

City Attorney

Both sheets of the final plat have been addressed to answer Mr. Dan Wilson's redline notes.

Walker Field Airport Authority

1. It is noted by the petitioner that this project is outside of the airport's area of influence.

2. This comment is a recommendation and is appreciated.

3. At this time, the petitioner has elected not to grant an aviation easement for the project.

Mesa County School District #51

No comment needed.

Grand Valley Irrigation Company

All comments from the Grand Valley Irrigation Company have been addressed. Such comments from Cunningham Investment Company, Inc. are included.

RESPONSE TO REVIEW COMMENTS

DATE: November 21, 1996

FOR: The Glen @ Horizon
Northeast corner of Horizon Drive
and North Seventh Streets

PETITIONER: Cunningham Investment Co., Inc.
121 S. Galena Street, Suite 201
Aspen, Colorado 81611
(970) 925-8803

**STAFF
REPRESENTATIVE:** Michael Drollinger

1. Grand Junction Drainage District:

Applicant acknowledges the Drainage District's comments and refers the Drainage District to the "Subsurface Soils Exploration Report" dated June 29, 1996, prepared by Lincoln-Devore Engineers.

We specifically refer to paragraph 10;

"No free water was encountered in the exploration borings on the southern tract" ... "A free water table came to equilibrium during drilling at 13 feet to 16 feet below the present ground surface on the northern tract."

This engineering report was submitted to the City as part of the application process. If the Grand Junction Drainage District requires an additional copy of the report, we will be happy to forward one accordingly.

Other notes related to these comments are the following:

The Lincoln-Devore soils study was done during the height of the surface irrigation of the alfalfa field which currently lies on the property. Further, other than one very small area of Buildings 17 and 16, all structures are slab on grade with no sub-basements of any kind. We therefore do not anticipate any problems related to water table because of these factors.

(2)

2. Grand Valley Irrigation:

Petitioner has reviewed the comments by the respondent. In general, we feel that the respondent's issues raised on November 15, 1996, relate to conflicting views concerning use along the Grand Valley canal and ditch systems.

The petitioner's dedication language and description does not impede the ditch company's ability to operate the ditch system. The language was used to recognize the City's desire to create a future city-wide path system. Any conflict between the two parties should not involve the proponent.

The language specifically does not encourage use by the public at this time. In the City Council's approval of the project on October 3, 1996, they specifically stated that they want us to cooperate, and we will. However, we are neutral to this issue and are caught in the middle.

We have purposely not impeded the ditch company's use or running of water in either ditch, and have provided more than ample access to both the Mainline Canal and the Ranchman's Ditch for traditional maintenance and flow of water.

REVIEW COMMENTS

Page 1 of 5

FILE #FPP-96-240

TITLE HEADING: The Glen at Horizon

LOCATION: SE corner Horizon Drive & N 7th Street

PETITIONER: Cunningham Investments

PETITIONER'S ADDRESS/TELEPHONE: 121 S Galena Street, Suite 201
Aspen, CO 81611
970-925-8803

PETITIONER'S REPRESENTATIVE: 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., NOVEMBER 22, 1996.

CITY COMMUNITY DEVELOPMENT

11/13/96

Michael Drollinger

244-1439

No comment.

CITY DEVELOPMENT ENGINEER

11/15/96

Jody Kliska

244-1591

1. The street is intended to be private, therefore the plat should dedicate it as easement.
2. Site Plan is labeled Sheet 4 of 23 - appears it should be Sheet 3. The street cross sections are incorrectly labeled as right of way and the dimensions do not match.
3. The other Sheet 4 of 23 - Glen Court Plan and Profile - The same problem as in #2 with the street profiles. Also, please provide stationing under the cross section to indicate the extents of each section.
4. Glen Court Plan - Install a street name sign and a private drive sign.
5. Glen Court Plan - Please provide a detail for the right turn deceleration lane which includes taper length, storage length, striping, sign placement and provide a cross section and structural section.
6. Please indicate the extent of filing one construction so it is clear how much of the street will be constructed, and where utility lines will end. A temporary turnaround will be required if the complete street is not constructed.
7. Sheet 5 of 23 - it appears an easement for utilities is required from the end of the cul-de-sac to buildings 7 and 8.
8. Sheet 7 of 23 - The line widths for leaders is the same as the line width for the storm drain line, making it difficult to determine which is which.
9. Sheet 7 of 23 - Please provide a reference to the outlet detail in the pond.
10. The outlet for the street storm drain into the pond is labeled as an inlet.
11. Sheet 10 of 23 - There are several inconsistencies between this sheet and sheet 7. This sheet shows erosion control at the outlet into Ranchman's Ditch, #7 does not. The manholes are labeled differently on each sheet. Elevations from one sheet to the other do not appear to match, either.

- The outlet pipe is shown as 10' on one sheet, 5' on the other sheet.
12. Sheet 10 of 23 - storm line A appears on the drawing to run into the outlet structure. The drainage report indicates sod in the bottom of the pond.
 13. On the storm line profile please label the elevations appropriately - does the outlet of the pipe really have a rim?
 14. Section 104.2a of the City Standard Specifications requires approved end sections at the exposed end of all polyethylene and PVC pipe. The outlet into Ranchman's indicates PVC pipe.
 15. Please indicate the size and type of pipe for the extension of the 60" culverts. The City's as-built plans indicate these are RCP. Also please provide a detail for the connection to the existing pipes.
 16. Is there a detail where the storm sewer goes through the retaining wall?
 17. Sheet 5 of 23 - the water line is shown connected to the sewer line in the cul-de-sac.
 18. Retaining wall sheet - no number - the landscape pond appears to have quite steep slopes for the depth of the pond compared to the width of the area between the wall and the slope.
 19. Utility Composite - sheet 11 of 23 - in order to access the 15" sanitary line, the city truck will need to drive in the easement. You will want to provide a surface capable of supporting a heavily loaded truck. If this includes the sidewalks, the concrete thickness will need to be at least 6".
 20. The improvements agreement does not reflect an adequate amount for the storm drainage improvements. I don't think \$1500 will begin to cover everything except maybe moving dirt. Pipe and structures appear to be in the \$15-\$20k range.
 21. The street structural sections show 16" of structural fill on fabric. None of this is reflected in the DIA.
 22. Please clarify the extent of the street improvements. It is not evident from the plans or DIA how much is guaranteed.

CITY UTILITY ENGINEER

11/15/96

Trent Prall

244-1590

-
1. Future residents would appreciate if the waterline W/O MH A7 and A8 could extend off of a water line rather than a sewer line.
 2. MH A-6 could be eliminated. If retained however, coordinates are needed.
 3. MHs A-5 and B-2 shall be epoxy coated.
 4. Water taps for lots 7 and 8 shall be off of the mainline rather than the configuration shown.
 5. HOA CC&R's should cover maintenance of sewer service lines.
 6. Please work with Public Service, US West and TCI to ensure extra facilities do not have to be installed due to water meter locations.
 7. Water meter pits and yokes will be supplied by City inspector for installation by Developer's contractor.
 8. If building plans permit, deepen MH B-2 so that lots 7 & 8 can sewer to 15" sewer line and then eliminate 206 LF of 8" sewer and 1 MH between MHs A-7 and A-8. Long service line would be needed for Lot 9.
 9. Plans fail to depict a sewer service line for Lot 10.
 10. MH A3 shall either be on centerline or center of drive line rather than where shown.
 11. Improvements agreement for entire subdivision or just Filing 1?????
 12. MH A5 will have to be constructed under Filing 1 in order for Lot 16 to sewer.
 13. Water system design report appears adequate.
 14. Once again, please ensure that the following notes are on the plans:

15. Please ensure sewer maintenance truck will have access to MHs B-1 and B-2. Sidewalk section should be minimum of 6" thick and highly recommend ground stabilization under proposed grass within the easement if sidewalk section is less than 10' wide.

SEWER:

- 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 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 _____.

WATER:

Contractor is responsible for installing water meter pits and yokes. City of Grand Junction will supply the pits and yokes. Water services will be extended to the multipurpose easement line, and marked with a metal or wood post painted blue. Meter pits to be located 2 feet back of curb.

CITY PROPERTY AGENT

11/11/96

Steve Pace

256-4003

- 1. Are the found NHPQ pins on southerly boundary of Block 1 in concrete?
- 2. Private open space is addressed in the dedication but not shown on the plat.
- 3. Utility, irrigation, pedestrian and drainage easements are addressed in the dedicating, but not shown on the plat.
- 4. Building set-back lines?

CITY PARKS & RECREATION

11/14/96

Shawn Cooper

244-3869

Parks & Open Space fees = 68 units @ \$225 = \$15,300.

CITY FIRE DEPARTMENT

11/14/96

Hank Masterson

244-1414

The Fire Department has no problems with this proposal.

CITY ATTORNEY

11/13/96

Dan Wilson

244-1505

See red-lined notes on plat.

WALKER FIELD AIRPORT AUTHORITY

11/5/96

Dennis Wiss

244-9100

1. This proposed site lies approximately 2 ½ miles south-southwest of the approach end of Runway 04 at Walker Field. As such, this site is located outside of the Airport's Area of Influence. However, this site is almost directly in line with the extended centerline of Runway 04-22 and as such, may be subjected to overflight of aircraft and the noise associated with these overflights.
2. The Airport Authority recommends the installation of additional sound-proofing materials to include sound-deadening insulation, and planned landscaping features to help mitigate the noise from these overflights.
3. The Airport Authority also respectfully requests an Avigation Easement be recorded at or before final plat is filed and that a copy of this easement be forwarded to the Airport Authority.

MESA COUNTY SCHOOL DISTRICT #51

11/5/96

Lou Grasso

242-8500

SCHOOL - CURRENT ENROLLMENT / CAPACITY - IMPACT

Tope Elementary - 550 / 452 - 17

West Middle School - 541 / 500 - 8

Grand Junction High School - 1682 / 1630 - 12

GRAND VALLEY IRRIGATION

11/15/96

Phil Bertrand

242-2762

1. See attached review for Horizon Village
2. Tract A and Tract B are not surveyed and labeled correctly.
3. Dedication wordage for Tract A and B needs to be corrected.
4. No public use of canal facilities.
5. Where Tract A & B abut, it needs additional surveying and labeling required.
6. East side of Block 1 needs clarification of canal facilities, survey and right-of-way declarations.

GRAND JUNCTION DRAINAGE DISTRICT

11/13/96

John Ballagh

242-4343

The site is wholly within the drainage district. The general area is known to have historic high water table problems. Westwood has two Grand Junction Drainage District subsurface drains which only partially resolve seasonal high water table problems. Four Square Church property similarly has Grand Junction Drainage District subsurface drains. Mesa View Retirement residence has a private subsurface drain system. The materials submitted do not include an in depth subsurface soils evaluation by a competent soils engineer. Such an evaluation and report is strongly suggested before approval is granted. Once buildings are erected options to correct a problem are more limited.

CORP OF ENGINEERS

11/12/96

Randy Snyder

241-2358

I do not see any changes from preliminary to final plat that would change our decision.

LATE COMMENTS

U S WEST

11/19/96

Max Ward

244-4721

For timely telephone service, as soon as you have a plat and power drawing for your housing development, please.....

MAIL COPY TO:

AND

CALL THE TOLL-FREE NUMBER FOR:

U S West Communications

Developer Contact Group

Developer Contact Group

1-800-526-3557

P.O. Box 1720

Denver, CO 80201

We need to hear from you at least 60 days prior to trenching.

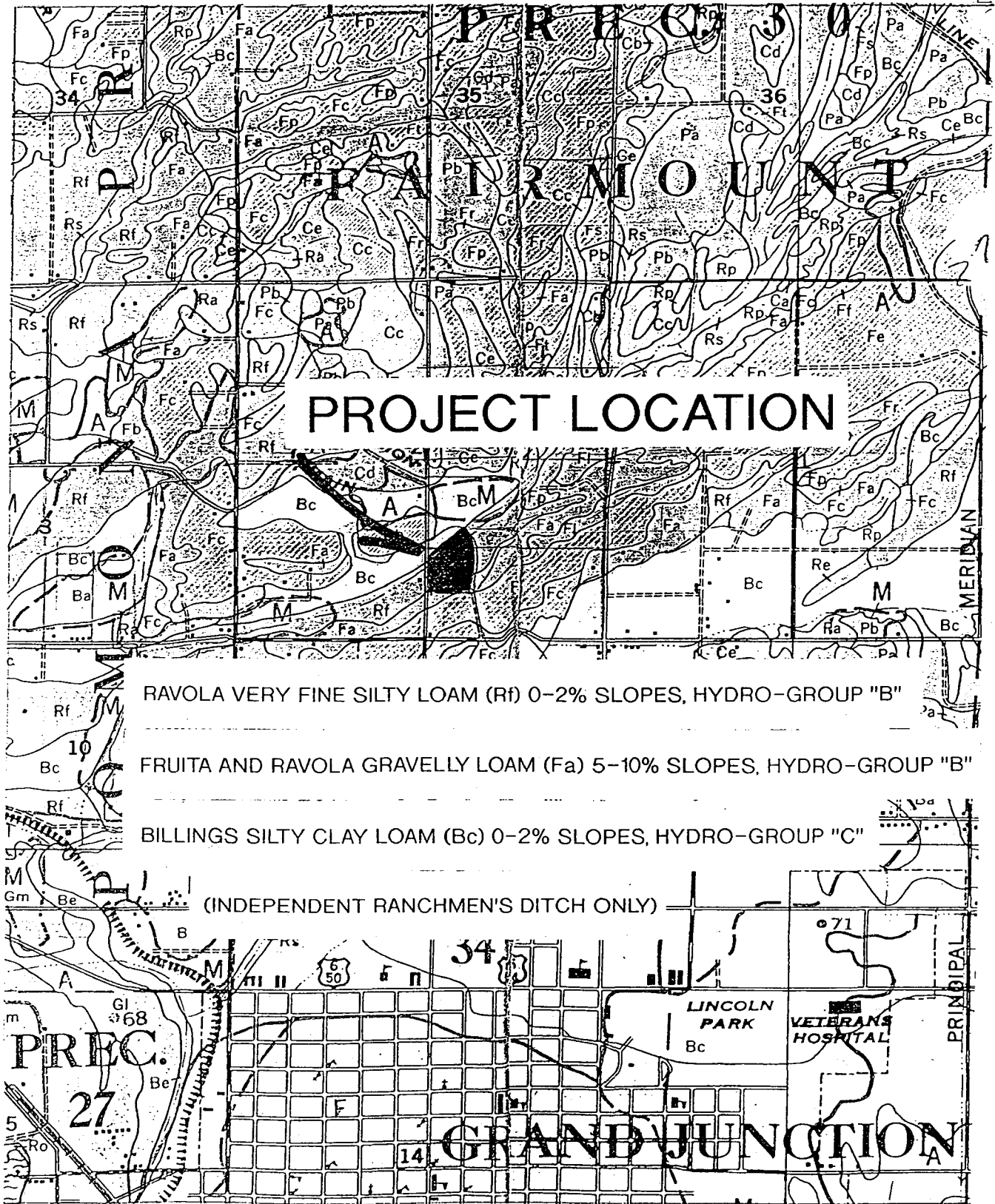
PUBLIC SERVICE COMPANY

11/22/96

Jon Price

244-2693

Additional easements may be required to serve Lots 7, 8, 9 and 12. I will coordinate these requirements with developer.



SOILS MAP



DEVELOPMENT APPLICATION

Community Development Department
 250 North 5th Street, Grand Junction, CO 81501
 (970) 244-1430

Receipt _____
 Date _____
 Rec'd By _____
 File No. FPP-96-240

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
<input type="checkbox"/> Subdivision Plat/Plan	<input type="checkbox"/> Minor <input type="checkbox"/> Major				
<input type="checkbox"/> Rezone				From: To:	
<input checked="" type="checkbox"/> Planned Development	<input type="checkbox"/> ODP <input type="checkbox"/> Prelim <input checked="" type="checkbox"/> Final	9.2AC	SE Corner of 7th & Horizon		Residential
<input type="checkbox"/> Conditional Use					
<input type="checkbox"/> Zone of Annex					
<input type="checkbox"/> Variance					
<input type="checkbox"/> Special Use					
<input type="checkbox"/> Vacation					<input type="checkbox"/> Right-of Way <input type="checkbox"/> Easement
<input type="checkbox"/> Revocable Permit					
<input type="checkbox"/> Site Plan Review					
<input type="checkbox"/> Property Line Adj.					

<input checked="" type="checkbox"/> Nick & Helen Mahleres Property Owner Name	<input checked="" type="checkbox"/> Cunningham Investment Co., Inc. Developer Name	<input checked="" type="checkbox"/> LANDesign, LLC Representative Name
<u>612 26 1/2 Road</u> Address	<u>121 S. Galena Street, Ste 201</u> Address	<u>259 Grand Avenue</u> Address
<u>Grand Junction, CO 81501</u> City/State/Zip	<u>Aspen, CO 81611</u> City/State/Zip	<u>Grand Junction, CO 81501</u> City/State/Zip
<u>970/242-2464</u> Business Phone No.	<u>970/925-8803</u> Business Phone No.	<u>970/245-4099</u> 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. Hays 10/28/96
 Signature of Person Completing Application Date

Nick A. Mahleres Helen Mahleres 10-29-96
 Signature of Property Owner(s) - attach additional sheets if necessary Date

AGENDA TOPIC: Final Plat/Plan approval - Filings #2-#4 of the Glen at Horizon.

SUMMARY: A request for final plat/plan approval of Filings #2-#4 of the Glen at Horizon consisting of 44 units located at the southeast corner of 7th Street and Horizon Drive. Planning Commission recently approved Filing #1. Staff recommends approval.

ACTION REQUESTED: Decision final plat/plan.

BACKGROUND INFORMATION:

Location: Southeast corner of 7th Street and Horizon Drive

Applicant: Cunningham Investment Co., Inc.
121 S. Galena Street, Suite 201
Aspen CO 81611

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-7.4

Proposed Zoning: no change

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 petitioner is requesting Final Plan approval for Filings #2-#4 totaling 44 units located at the southeast corner of 7th Street and Horizon Drive. At buildout the project will consist of a total of 68 units on 9.2 acres. The property is presently zoned PR-7.4.

The plans for the entire development were previously reviewed and were found acceptable to staff in conjunction with the review of Filing #1. The petitioner is dividing the remainder of the development into three additional phases for financing purposes. The final plats for each phase will involve replatting Block 4 of the original plat and filing of condominium plats for the buildings. The phasing along with the plat for the development are attached.

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.

RECOMMENDATION: Approval of the plat/plan for Filings #2-#4 as with the following condition:

1. Staff approval of the condominium plats prior to recordation.

AGENDA TOPIC: Appeal of Final Plat/Plan approval - Filings #2-#4 of the Glen at Horizon.

SUMMARY: An appeal by the Grand Valley Irrigation Company of a request for final plat/plan approval of Filings #2-#4 of the Glen at Horizon consisting of 44 units located at the southeast corner of 7th Street and Horizon Drive. The project was approved by Planning Commission at their February 4, 1997 meeting. Staff recommends approval.

ACTION REQUESTED: Decision on appeal of final plat/plan.

BACKGROUND INFORMATION:

Location: Southeast corner of 7th Street and Horizon Drive

Applicant: Cunningham Investment Co., Inc.
121 S. Galena Street, Suite 201
Aspen CO 81611

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-7.4

Proposed Zoning: no change

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 petitioner is requesting Final Plan approval for Filings #2-#4 totaling 44 units located at the southeast corner of 7th Street and Horizon Drive. At buildout the project will consist of a total of 68 units on 9.2 acres. The property is presently zoned PR-7.4.

The plans for the entire development were previously reviewed and were found acceptable to staff in conjunction with the review of Filing #1. The petitioner is dividing the remainder of the development into three additional phases for financing purposes. The final plats for each phase will involve replatting Block 4 of the original plat and filing of condominium plats for the buildings. The phasing along with the plat for the development are attached.

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. The letter of appeal is also attached.

STAFF RECOMMENDATION: Approval of the plat/plan for Filings #2-#4 as with the following condition:

1. Staff approval of the condominium plats prior to recordation.

PLANNING COMMISSION RECOMMENDATION:

At their February 4, 1997 meeting Planning Commission approved the final plat/plan for Filings #2-#4 of the Glen at Horizon by a vote of 5-0.

HORIZON DR

SITE

7th ST.



Aerial Photograph
The Glen at Horizon
FPP-96-240

HOSKIN, FARINA, ALDRICH & KAMPF

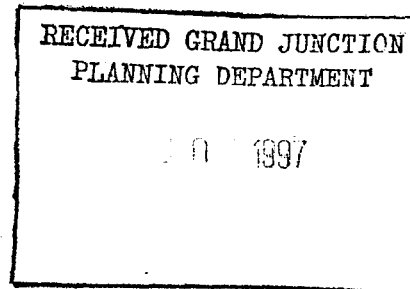
Professional Corporation

ATTORNEYS AT LAW

200 Grand Avenue, Suite 400
Post Office Box 40
Grand Junction, Colorado 81502

Telephone (970) 242-4903
Facsimile (970) 241-3760

222 West Main Street
Rangely, Colorado 81648



Gregory K. Hoskin
Terrance L. Farina
Frederick G. Aldrich
Gregg K. Kampf
Curtis G. Taylor
David A. Younger
David M. Scanga
Michael J. Russell
John T. Howe
Matthew G. Weber
John A. Siddeek
Darrel L. Moss

William H. Nelson
(1926-1992)

February 7, 1997

HAND DELIVERED

Kathy Portner, Acting Director
Grand Junction Community Development Department
250 North 5th Street
Grand Junction, Colorado 81501

Re: Glen at Horizon Subdivision
File No. FPP-96-240-2

Dear Ms. Portner:

This firm represents Grand Valley Irrigation Company (GVIC).

GVIC hereby appeals the February 4, 1997 decision of the Grand Junction Planning Commission approving the final plans for the Glen at Horizon Subdivision, Filings 2, 3 and 4. The basis for the appeal is that the final plans show encroachment of building envelopes on GVIC's easement for the Independent Ranchmen's Canal.

Please inform me as to when the matter will be scheduled for hearing before the City Council.

Sincerely,

HOSKIN, FARINA, ALDRICH & KAMPF
Professional Corporation



JOHN T. HOWE

JTH:ckc

cc: Grand Valley Irrigation Company

MATERIALS SUPPLIED BY
PETITIONER

GENERAL PROJECT REPORT
THE GLEN AT HORIZON SUBDIVISION

October 29, 1996

INTRODUCTION:

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

PROJECT DESCRIPTION:

The Glen at Horizon 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 The Glen at Horizon 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 site plan depicts the relationship of each building to the property boundary, roadway access, waterways and neighboring developments.

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

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 The Glen at Horizon 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. The Glen at Horizon 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-7.4 (Planned Residential not to exceed 7.4 units per acre). The Preliminary Plan application was submitted to Community Development and approved by City Council on October 3, 1996. 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 Site 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.

The City Council approved the private street system within the Glen at Horizon Subdivision. This was due to the irregular nature of the cul-de-sac, street cross sections, and entry. The right-of-way for the streets will be designated as a ingress/egress easement for the maintenance of sanitary sewer and domestic water, as well as other dry utilities and fire protection. This information is reflected on the Final Plat which is submitted with this application.

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 16 inch CL 905 PVC pipe 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.

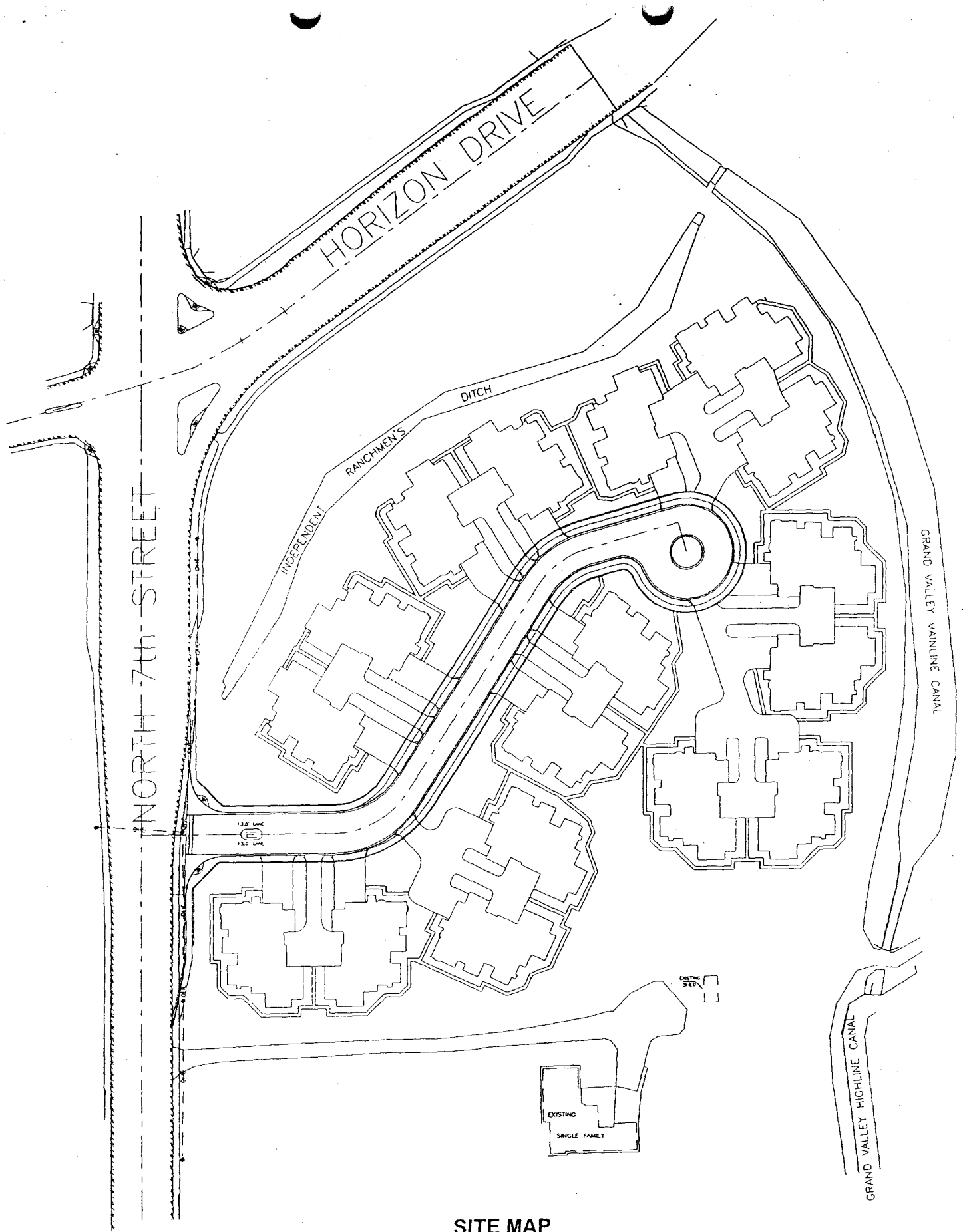
All other utilities such as, electric, gas, phone and CATV are expected to be extended from the surrounding developments.

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.

DEVELOPMENT SCHEDULE AND PHASING:

The rate at which the development of The Glen at Horizon will occur is dependent upon the City of Grand Junction's future growth and housing needs. It is anticipated that construction will begin once the final approval from the City has been granted.



SITE MAP

HOSKIN, FARINA, ALDRICH & KAMPF

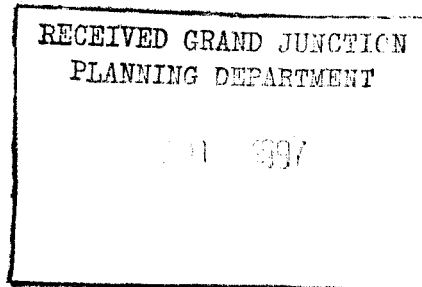
Professional Corporation

ATTORNEYS AT LAW

200 Grand Avenue, Suite 400
Post Office Box 40
Grand Junction, Colorado 81502

Telephone (970) 242-4903
Facsimile (970) 241-3760

222 West Main Street
Rangely, Colorado 81648



Gregory K. Hoskin
Terrance L. Farina
Frederick G. Aldrich
Gregg K. Kampf
Curtis G. Taylor
David A. Younger
David M. Scanga
Michael J. Russell
John T. Howe
Matthew G. Weber
John A. Siddeek
Darrel L. Moss

William H. Nelson
(1926-1992)

February 7, 1997

HAND DELIVERED

Kathy Portner, Acting Director
Grand Junction Community Development Department
250 North 5th Street
Grand Junction, Colorado 81501

Re: Glen at Horizon Subdivision
File No. FPP-96-240-2

Dear Ms. Portner:

This firm represents Grand Valley Irrigation Company (GVIC).

GVIC hereby appeals the February 4, 1997 decision of the Grand Junction Planning Commission approving the final plans for the Glen at Horizon Subdivision, Filings 2, 3 and 4. The basis for the appeal is that the final plans show encroachment of building envelopes on GVIC's easement for the Independent Ranchmen's Canal.

Please inform me as to when the matter will be scheduled for hearing before the City Council.

Sincerely,

HOSKIN, FARINA, ALDRICH & KAMPF
Professional Corporation

A handwritten signature in black ink, appearing to read "John T. Howe".

JOHN T. HOWE

JTH:ckc

cc: Grand Valley Irrigation Company



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

February 20, 1997

Mac Cunningham
Cunningham Investment Co., Inc.
121 S. Galena Street, Suite 201
Aspen, CO 81611

RE: The Glen at Horizon

Dear Mr. Cunningham:

As per your request I have prepared this letter detailing the approval dates for the Glen at Horizon. The approval dates for the various stages of the proposal are as follows:

Rezone to PR-7.4 & Preliminary Plan: Planning Commission approval - September 3, 1996
City Council final approval - October 2, 1996

Final Plat/Plan Filing #1: Planning Commission approval - December 3, 1996
City Council approval (on appeal) - December 23, 1996

Final Plat/Plan Filings #2-#4: Planning Commission approval - February 4, 1997

I hope the above information is satisfactory. Please do not hesitate to contact me should you require any additional information.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Michael T. Drollinger".

Michael T. Drollinger
Senior Planner

cc: file

h:\cityfil\1996\96-240.lt1

THE GLEN

@ Horizon Drive



*PRE-CONSTRUCTION
OFFERING*

February 24, 1997

Cunningham Investment Co., Inc.
605 West Main Street, Suite 002
Aspen, Colorado 81611
(970) 925-8803

The Glen
@ Horizon Drive

PHASE I

- LOCATION:** The corner of Horizon Drive and North Seventh Street in Grand Junction, along the Mainline and Ranchman's Ditch canals. We are two miles southwest of Interstate 70 and one block north of St. Mary's Hospital.
- PROPERTY:** This beautiful tree lined site is bordered on the east by the Grand Valley Mainline Canal, on the north and west, by the Independent Ranchman's Ditch Canal, on the west by North Seventh Street and on the south by the North Seventh Street Hill. This very private site is approximately 12 acres, of which approximately 7.2 acres will be built upon.
- TOWNHOMES:** Planned as a private access, townhome community, *The Glen* is designed in top quality, four unit, single family style townhome buildings. All townhome units have separate private entrances and direct access garages. Landscaping shall include a mature tree lined boulevard (Glen Court), meandering creeks and ponds, as well as individual building landscaping including flowering shrubs and trees, evergreens and perennial flowers.
- HOME SIZES:** Townhomes in Phase I range in size from 1,337 to 1,842 square feet, plus garages and decks.
- FLOOR PLANS AND SPECIFICATIONS:** Please see attached preliminary Sample Floor Plans. Construction Feature Specifications sheets are available upon request.
- CONSTRUCTION OF HOMES:** Weather permitting, we will break ground in April, 1997. Delivery of Building 1700 townhomes will be scheduled for August, 1997, with subsequent buildings scheduled for delivery in four week intervals.
- INFRASTRUCTURE:** Glen Court road (private) and utilities will commence with Building 1700. The paving of Phase I, Glen Court and landscaping, will take place during the Spring of 1997.

**ASSOCIATION
ASSESSMENTS:**

Each home owner will be a member of *The Glen* Condominium Association. The Association will provide for the upkeep of Glen Court road, landscaping, Horizon greenspace/trail system and gatehouse. An estimated association budget will be provided to the purchaser as part of the contract documents.

**PRICES AND
CONTRACTS:**

Please see the enclosed Price List. We will provide you with a Purchase Agreement, upon request. Contracts will begin with the 1700 Building then follow with the 1600, 0100, 0200 Buildings.

**PURCHASE
PROCEDURES:**

Contracts will be accepted on a first-come, first-serve basis beginning with the 1700 and 1600 Buildings. The contract will require a minimum 10% deposit (interest bearing for the buyer), based upon Purchaser qualifications (see Financing Summary).

**INVESTOR
PURCHASES:**

We have received inquiries from investor purchasers interested in acquiring whole buildings as well as individual units. At this time we intend to limit investor whole building sales to Phase I. We have additional materials concerning townhome rental rates and financing packages with up to 90% financing, available for investors who are coming out of trades or exchanges.

The 1700 Building townhomes will be leased back by the developer at a 12% cash on cash return upon completion. They will be furnished and maintained as the model townhomes during the project sales period, thus assuring this investor a guaranteed return for that time. Each unit will also have upgraded sample finish packages that further increase the model units value.

FINANCING:

Please see attached Purchaser Financing Summary.

DEVELOPMENT TEAM:

Our development team has received awards and recognition for residential projects throughout the Rocky Mountain Region and the East Coast. Cunningham Investment Co., Inc. has been based on the Western Slope for over 16 years. Additionally, the development team has, combined, over 60 years of quality residential construction experience. We have teamed with local contractors to assure the timely delivery and quality of the finished townhomes.

The Glen
@ Horizon Drive

PHASE I
PRICE LIST

Sample Building

April 18, 1997

<u>Townhome #</u>	<u>Townhome Size (1)</u>	<u>Purchase Price (2)</u>
1710	1,828 Square Feet Three bedroom (two bedroom with loft den), two bath, two floor townhome unit, fireplace, vaulted cathedral ceilings, dining area, breakfast nook, laundry, one ₂ car garage.	\$172,500
1720	1,600 Square Feet Three bedroom, (two bedroom with loft den) two and one-half bath, two floor townhome, fireplace, vaulted cathedral ceilings, dining area, breakfast nook, laundry, two ₁ car garage.	\$162,000
1730	1,335 Square Feet Two bedroom, two bath, ground floor townhome with 9' ceilings, fireplace, vaulted 14' cathedral livingroom ceiling, dining area, breakfast nook, laundry, one car garage.	\$139,500
1740	1,772 Square Feet Two bedroom, two bath, upper single floor townhome, fireplace, vaulted cathedral ceilings, dining area, breakfast nook, laundry, two car garage.	\$169,500

Notes:

- (1) All square footages per architect. Improvements to construction and design of units may require specifications, equipment, dimensions and design to change without notice.
- (2) Pre Construction price only.

Subject to Change Without Notice. Townhome Sizes are expressed in square feet ±.

Cunningham Brokerage Company - 605 W. Main St., Suite 002, Aspen, Colorado 81611
Phone: (970) 925-8803 - Facsimile: (970) 925-8835

The Glen *@ Horizon Drive*

PHASE I

February 24, 1997

REALTOR INFORMATION

Welcome to *The Glen @ Horizon Drive*, the most exciting, private gatehouse, townhome community ever built in Grand Junction, Colorado. In order to assist you in selling *The Glen*, the enclosed information is provided for you and your clients.

The Glen consists of 68 planned community singlefamily style townhomes to be located at the corner of Horizon Drive and North Seventh Streets in Grand Junction, Colorado. They will be constructed on a treelined, fully landscaped, private street that is surrounded by the Mainline and Ranchman's Ditch Canals. *The Glen* is two miles southwest of Interstate 70 and one block north of St. Mary's Hospital.

These townhomes are ideal for busy professionals and retirees looking for top quality, carefree living. They are also well suited investors and persons coming out of real estate trades who are looking for cash flow and appreciation.

Now for the important Realtor news:

COMMISSIONS: We are offering 3% co-operating broker commissions.

PRICES AND CONTRACTS: Please see the enclosed Price List. We will provide you with a Client Registration form and a Purchase Contract form upon request. Contracts will begin with the 1700 Building then follow with the 1600, 0100, 0200 Buildings.

PURCHASE PROCEDURES: Contracts will be accepted on a first-come, first-serve basis beginning with the 1700 and 1600 Buildings. The contract will require a 10% deposit (interest bearing for the buyer). Cunningham Mortgage, or the buyer's lender can then prequalify the purchaser.

FINANCING: Please see attached Purchaser Financing Summary.

The attached information is subject to change without notice.

Cunningham Brokerage Company - 605 W. Main St., Suite 002, Aspen, Colorado 81611
Phone: (970) 925-8803 - Facsimile: (970) 925-8835

CUNNINGHAM
MORTGAGE INVESTMENT COMPANY
605 W. MAIN STREET, SUITE 002
ASPEN, COLORADO 81611

OFFICE (970) 925-8803

FAX (970) 925-8835

February 24, 1997

THE GLEN
@
Horizon Drive

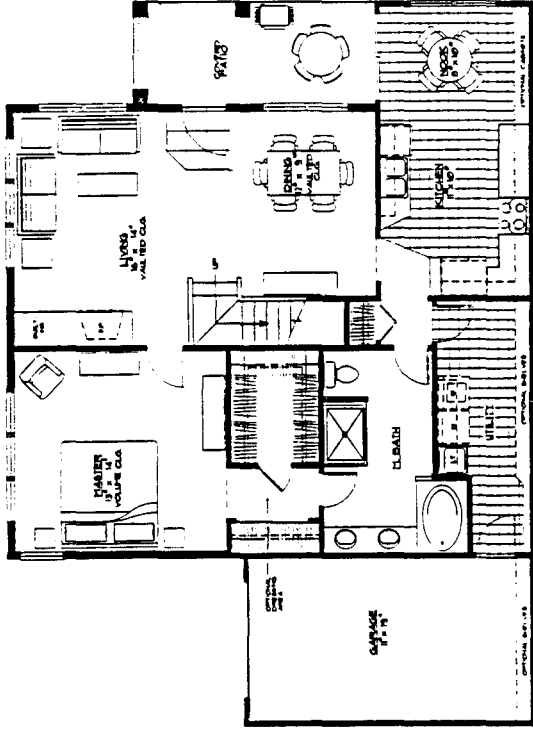
FINANCING PROGRAM SUMMARY

For qualified purchasers, Cunningham Mortgage Investment Company has arranged prequalification/purchase financing for the completed townhomes.

Owner/occupant purchasers may expect permanent loans at 7.875% fixed rate interest for a 30 year mortgage, 1% origination, (as of 2/24/97, subject to change without notice). Non-owner occupant (rental) financing is available under two programs; financing of up to 80% of the purchase price at an interest rate of 8.875% amortized over 30 years or a 90% loan at an interest rate of 9.25%, both programs have a 1.5% origination fee (as of 2/24/97, subject to change without notice).

Cunningham Mortgage Investment Company has many other loan programs including; 15 year amortization, ARM mortgages, limited documentation and no income verification programs.

All rates effective 2/24/97, subject to change without notice.



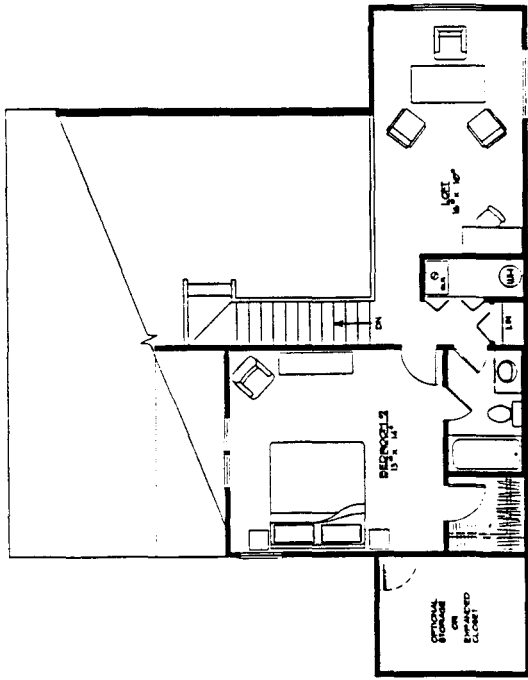
FIRST FLOOR

TOWNHOME #10

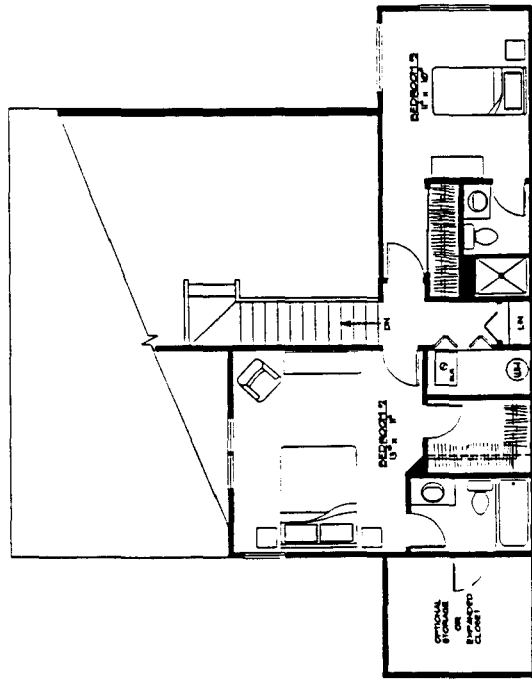
The Glen
at Horizon Drive



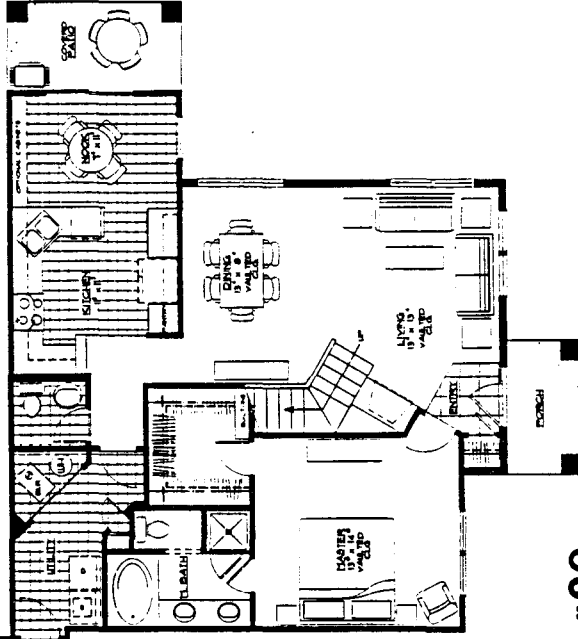
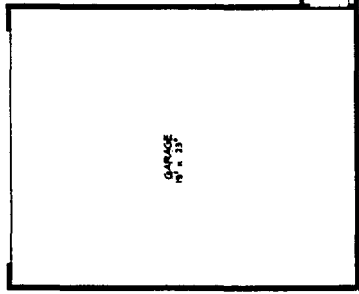
KEY PLAN



SECOND FLOOR

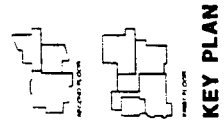


OPTIONAL SECOND FLOOR

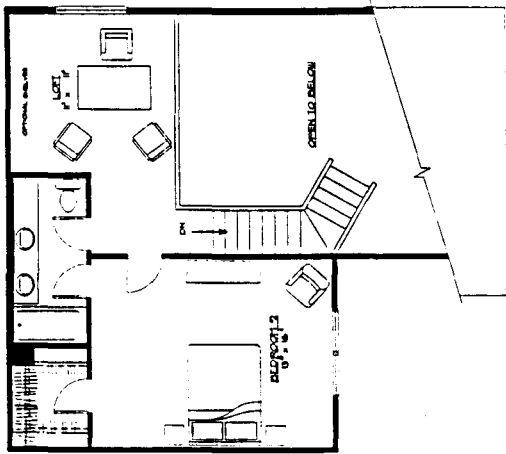


FIRST FLOOR

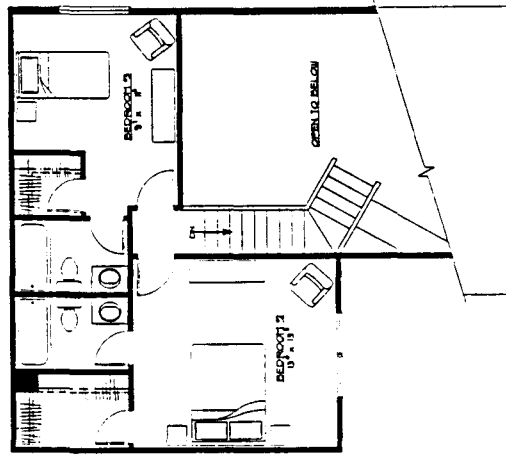
TOWNHOME #20



The Glen
at Horizon Drive

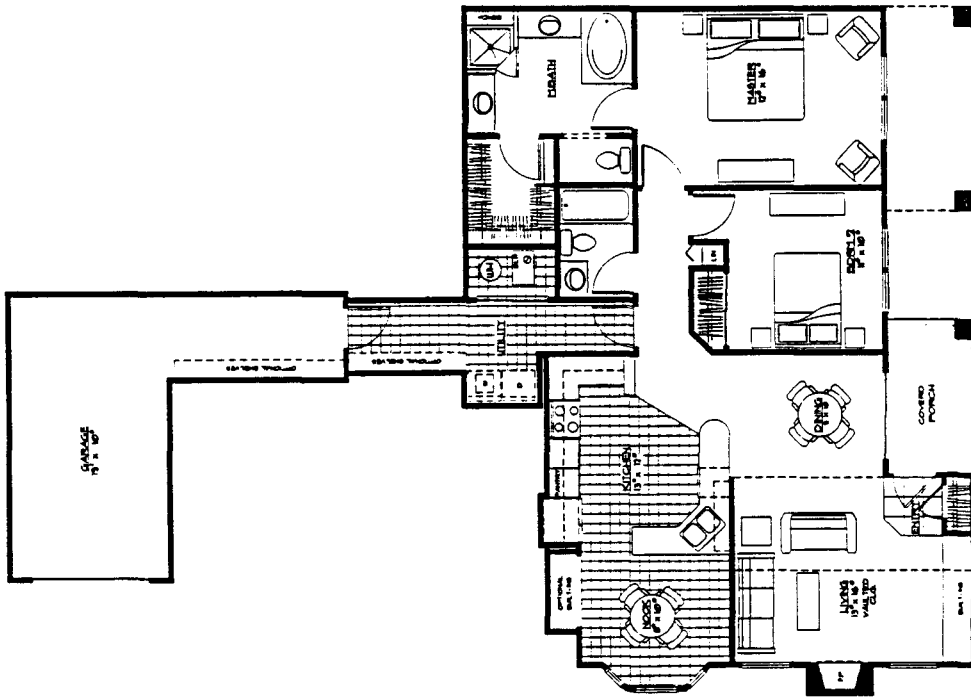


SECOND FLOOR



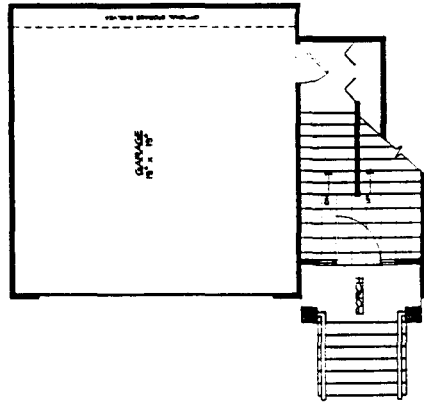
OPTIONAL SECOND FLOOR

The Glen
at Horizon Drive



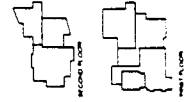
FIRST FLOOR

TOWNHOME #30

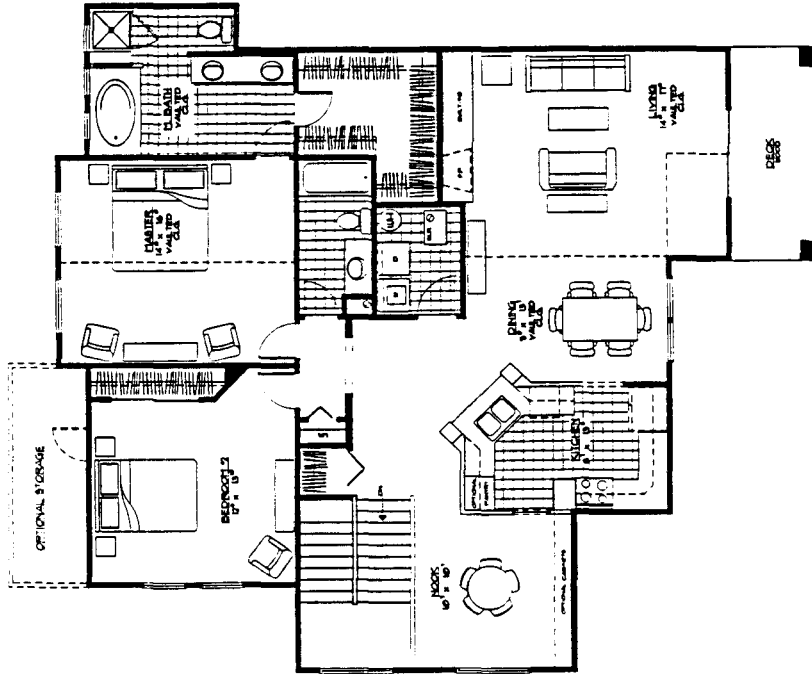


FIRST FLOOR

The Glen
at Horizon Drive

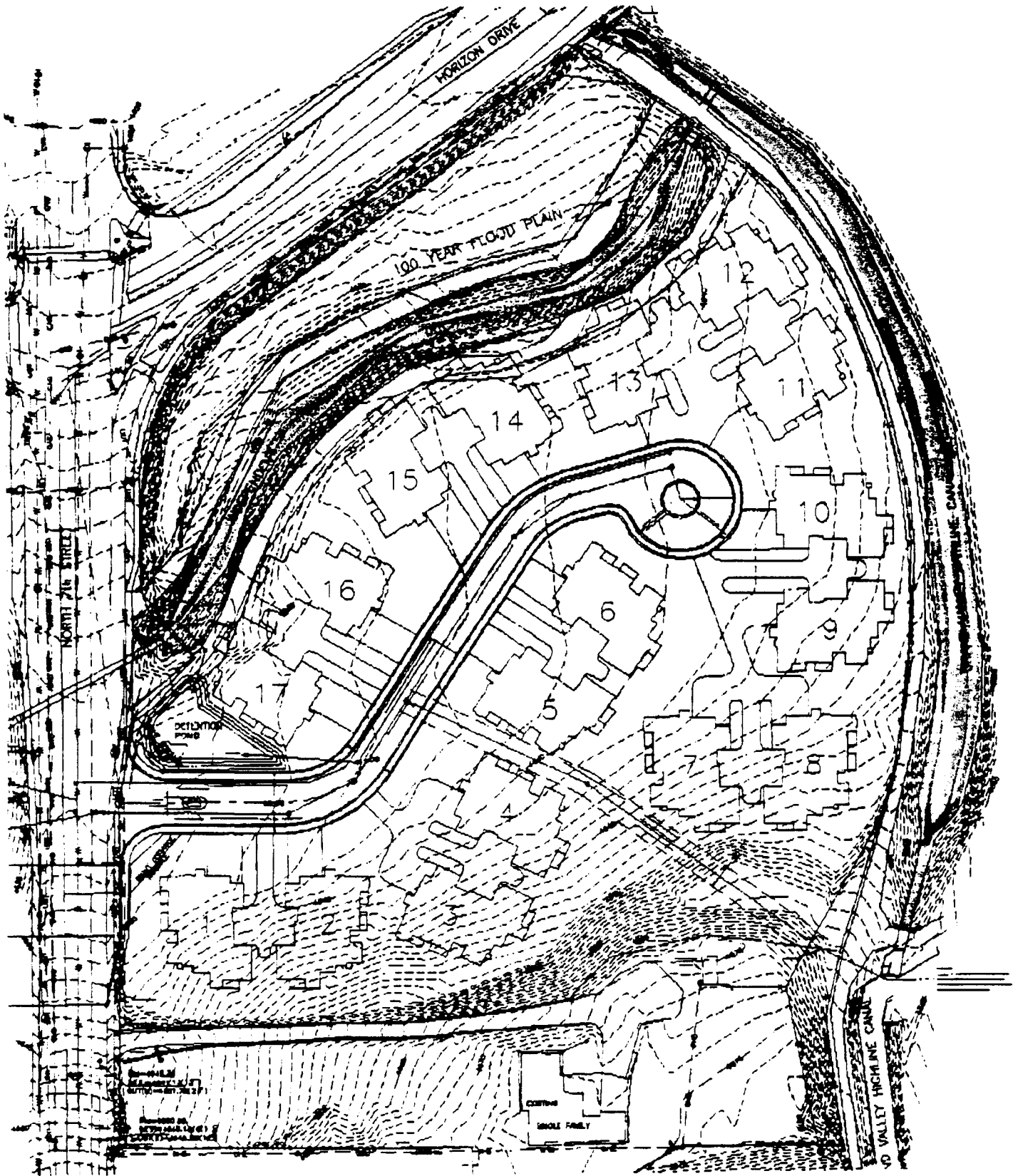


KEY PLAN



SECOND FLOOR

TOWNHOME #40



CORTI 216 STREET

HORIZON DRIVE

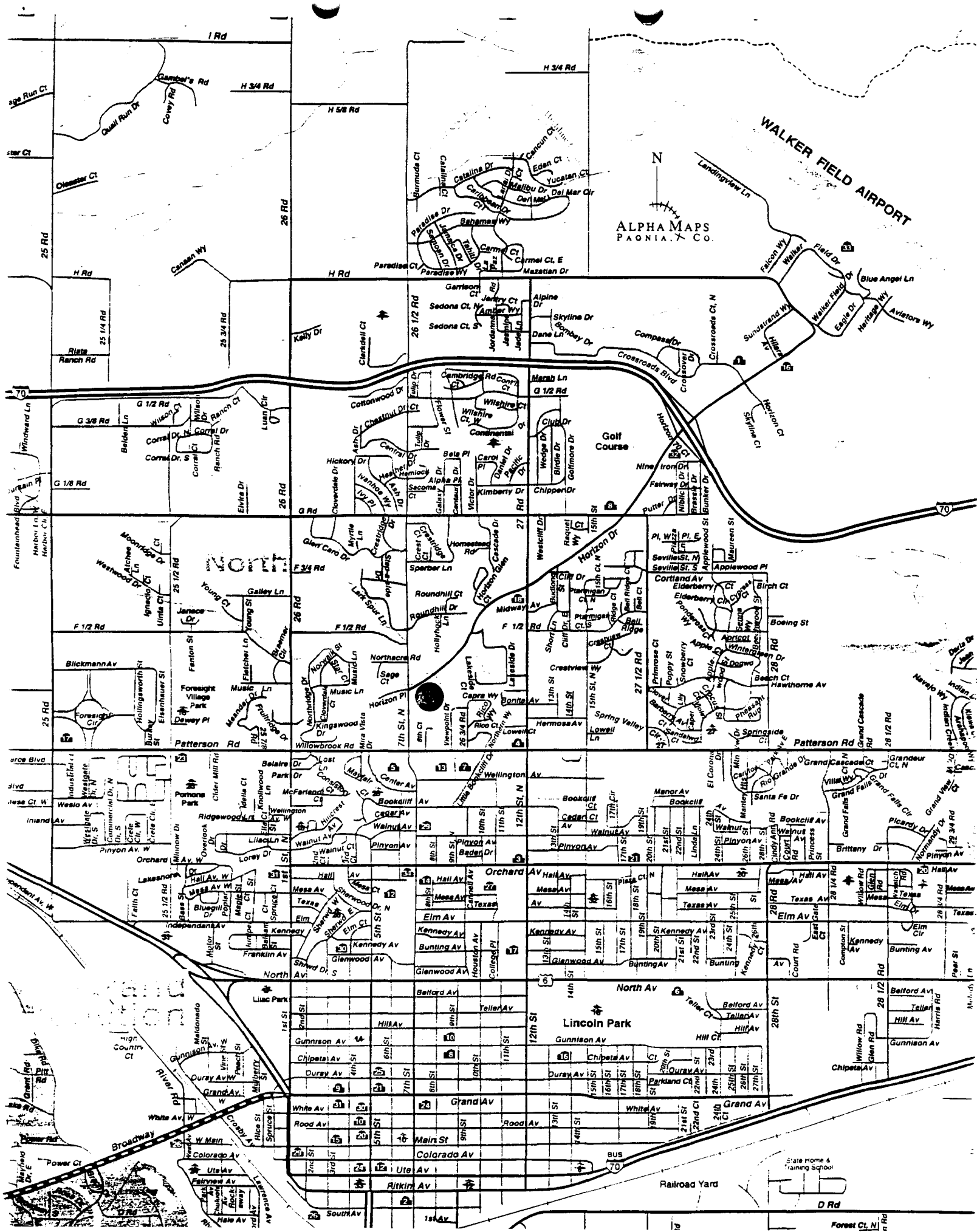
100 YEAR FLOOD PLAN

DETENTION POND

VALLEY HIGHLINE CANAL

SMALL FAMILY

SMALL FAMILY



ALPHA MAPS
PAONIA, CO.

WALKER FIELD AIRPORT

Golf Course

Lincoln Park

Railroad Yard

State Home & Training School

Forest Ct, N Rd

Property Services of Grand Junction, Inc.

P.O. Box 2868
1211 Colorado Ave.
Grand Junction, Co 81502
(303) 245-1178
FAX (303) 245-5673

July 16, 1996

Mr. I. McA. Cunningham
Cunningham Investment Co., Inc.
121 South Galena
Aspen, CO 81611

Dear Mr. Cunningham:

As per your request, below is a rental market survey that lists properties that are somewhat comparable to the project in Grand Junction that you are considering. There are no units currently in our inventory that have the exact concept and amenities you are proposing for the acreage located 7th & Horizon Drive.

Address	Size	Bedrooms	Baths	Garage	Other	Rent
4070 Anazasi	1400 sq.ft.	4	2	2	New; duplex:North	\$ 800
528 Park Ridge	1300 sq.ft.	3	2	2	New; duplex:Redlands	\$ 800
529 Park Ridge	1300 sq.ft.	3	2	2	New; duplex:Redlands	\$ 800
531 Park Ridge	1300 sq.ft.	3	2	2	New; duplex:Redlands	\$ 800
2459 Piazza	1610 sq.ft.	3	2	2	New; duplex:North	\$ 900
483 Seasons Ct	1400 sq.ft.	2	2	2	'94:condo:golf course	\$1050
2059 S Broadway	1500 sq.ft.	2	3	2	condo:golf course	\$ 900
2227 Codels Can.	3000 sq.ft.	3	4	2	executive:Redlands	\$1200
2226 Codels Can.	2300 sq.ft.	3	3	3	executive:Redlands	\$1400

Based on the uniqueness of the project location, square footage, and quality of construction, I feel that fair market rent for the units under consideration should be between \$1000 and \$1200 plus utilities. Conservatively, market time should be 4 to 6 weeks.

I appreciate you contacting us regarding this project. Please feel free to contact me should you require further information regarding rentals in our area.

Sincerely,

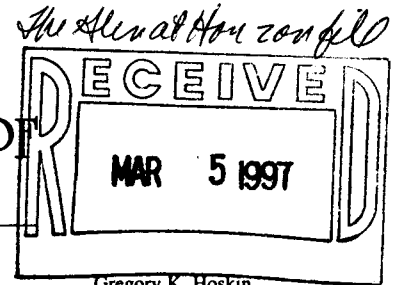


Mary Simpson
Property Manager/Broker

ms

HOSKIN, FARINA, ALDRICH & KAMPF

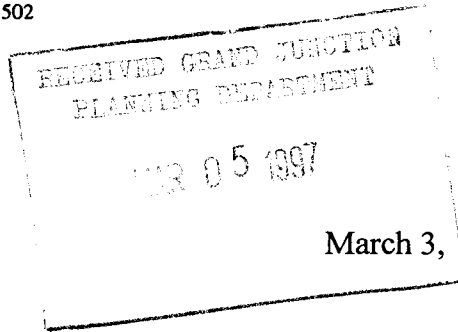
Professional Corporation
ATTORNEYS AT LAW



200 Grand Avenue, Suite 400
Post Office Box 40
Grand Junction, Colorado 81502

Telephone (970) 242-4903
Facsimile (970) 241-3760

222 West Main Street
Rangely, Colorado 81648



March 3, 1997

Gregory K. Hoskin
Terrance L. Farina
Frederick G. Aldrich
Gregg K. Kampf
Curtis G. Taylor
David A. Younger
David M. Scanga
Michael J. Russell
John T. Howe
Matthew G. Weber
John A. Siddeek
Darrel L. Moss

William H. Nelson
(1926-1992)

Dan E. Wilson
City Attorney
City of Grand Junction
250 North 5th Street
Grand Junction, Colorado 81501

Re: Grand Valley Irrigation Company v. City of Grand Junction, et al.
Glen at Horizon Subdivision
Case No. 97 CV 43

*c Stephn (all)
kathy P
circulate to John
then file/
close
file*

Dear Dan:

Please find enclosed a copy of the Notice of Dismissal and Release of Lis Pendens that we filed in the referenced case.

In addition, Grand Valley Irrigation Company hereby withdraws its appeal of the Planning Commission's decision regarding Glen at Horizon Subdivision, Filings 2 through 4, File Number FPP-96-240-2.

If you have any questions, please call me. I will forward a copy of the fully executed Settlement Agreement when I receive my copy from the County Clerk's office.

Sincerely,

HOSKIN, FARINA, ALDRICH & KAMPF
Professional Corporation


JOHN T. HOWE

JTH:ckc
Enclosure
cc: Grand Valley Irrigation Company

DISTRICT COURT, MESA COUNTY, STATE OF COLORADO

Case No. 97 CV 43

ORIGINAL FILED

FEB 24 1997

DISTRICT COURT
BY LITIGANT

NOTICE OF DISMISSAL AND RELEASE OF LIS PENDENS

GRAND VALLEY IRRIGATION COMPANY,
a Colorado nonprofit corporation,

Plaintiff,

v.

CITY OF GRAND JUNCTION, a body corporate and politic
and acting by and through its City Council,
THE CITY COUNCIL OF THE CITY OF GRAND JUNCTION,
NICK H. MAHLERES, a/k/a Nick H. Mahlerers, HELEN C. MAHLERES,
CUNNINGHAM INVESTMENT CO., INC., a Colorado corporation,
CANDACE M. DEROSE, as public trustee for Mesa County, Colorado,
VALLEY NATIONAL BANK OF ARIZONA, and
UNKNOWN PERSONS WHO CLAIM ANY INTEREST
IN THE SUBJECT MATTER OF THIS ACTION,

Defendants.

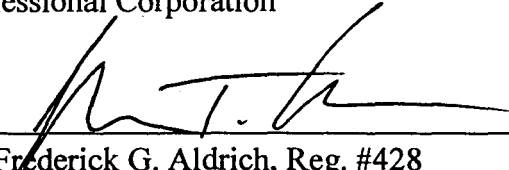
Plaintiff Grand Valley Irrigation Company (GVIC), through its attorneys, Hoskin, Farina, Aldrich & Kampf, Professional Corporation, submits this Notice of Dismissal and Release of Lis Pendens pursuant to C.R.C.P. 41(a)(1)(A):

1. No adverse party has filed or served an answer or a motion for summary judgment in this action.
2. Plaintiff hereby gives notice that this action is dismissed without prejudice.
3. The Notice of Lis Pendens recorded by GVIC on January 23, 1997, in Book 2296 at Page 36 of the records of Mesa County, Colorado is hereby released and terminated effective as of the C.R.C.P. 41(a)(1)(A) dismissal of this action.

DATED this 21st day of February, 1997.

HOSKIN, FARINA, ALDRICH & KAMPF
Professional Corporation

By


Frederick G. Aldrich, Reg. #428

John T. Howe, Reg. #18845

Attorneys for Plaintiff

Post Office Box 40

Grand Junction, Colorado 81502

(970) 242-4903

HOSKIN, FARINA, ALDRICH & KAMPF

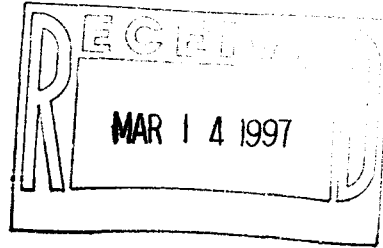
Professional Corporation

ATTORNEYS AT LAW

200 Grand Avenue, Suite 400
Post Office Box 40
Grand Junction, Colorado 81502

Telephone (970) 242-4903
Facsimile (970) 241-3760

222 West Main Street
Rangely, Colorado 81648



Gregory K. Hoskin
Terrance L. Farina
Frederick G. Aldrich
Gregg K. Kampf
Curtis G. Taylor
David A. Younger
David M. Scanga
Michael J. Russell
John T. Howe
Matthew G. Weber
John A. Siddeek
Darrel L. Moss

March 13, 1997

William H. Nelson
(1926-1992)

*C: - Planning
for the file
- our file (close file)*
sm
3/17/97

Dan E. Wilson, Esq.
City of Grand Junction
250 N. 5th Street
Grand Junction, Colorado 81501

Re: Glen at Horizon Subdivision
Grand Valley Irrigation Company v. City of Grand Junction, et al.
Case No. 97 CV 43
Mesa County District Court

Dear Dan:

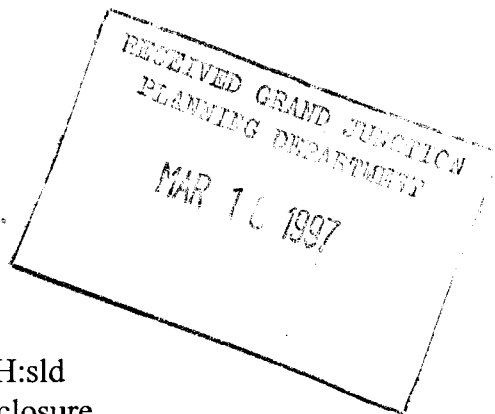
Please find enclosed a copy of the recorded Agreement regarding settlement of the referenced action.

If you have any questions, please call me.

Sincerely,

HOSKIN, FARINA, ALDRICH & KAMPF
Professional Corporation


JOHN T. HOWE



JTH:sld
Enclosure

AGREEMENT

THIS AGREEMENT (Agreement) is entered into this 21st day of February, 1997, by and between Grand Valley Irrigation Company, a Colorado nonprofit corporation (GVIC), Cunningham Investment Co., Inc., a Colorado corporation (Cunningham), and Nick H. Mahleres and Helen C. Mahleres (Mahlereses).

RECITALS

A. Mahlereses are the owners of the following described real property located in Mesa County, Colorado (Property):

See attached Exhibit A

B. GVIC claims an easement across, under and through the Property for the construction, repair, operation and maintenance of GVIC's Independent Ranchmen's Ditch, also known as the Independent Ranchmen's Canal (Ditch).

C. Cunningham or its assigns has agreed to purchase the Property from Mahlereses.

D. Cunningham proposed to subdivide the Property pursuant to the final plat/plan for the Glen at Horizon Subdivision (Subdivision).

E. On December 3, 1996, the City's Planning Commission approved the final plat/plan for the Subdivision, File No. FPP-96-240.

F. GVIC appealed the decision of the Planning Commission to the City Council.

G. On December 23, 1996, the City Council rejected GVIC's appeal and approved the final plat/plan for the Subdivision over GVIC's objections.

H. GVIC commenced Civil Action No. 97 CV 43 (Action) in the Mesa County District Court, seeking relief pursuant to C.R.C.P. 106 and C.R.C.P. 105.

I. The parties desire to enter into an agreement settling and compromising the Action under the terms and conditions set forth below.

NOW, THEREFORE, in consideration of the Recitals set forth above, and the mutual promises set forth below, the parties agree as follows:

1. Easement.

(a) The parties stipulate and agree that GVIC owns an easement across, under and through the Property for construction, repair, operation and maintenance of the Ditch,

February 21, 1997

including the currently existing rights-of-way for the passage of and use by vehicles, equipment and personnel on both sides of the Ditch at a width of 20 feet from the top of the Ditch banks, as shown on Exhibit B attached hereto.

(b) Subject to the provisions of paragraph 2, Cunningham or its assigns and/or Mahlereses shall not interfere with, or construct any structures which encroach on, block or interfere with, GVIC's easement for the Ditch, including, but not limited to, any structures that prevent passage of vehicles and equipment on the rights-of-way along the top bank of the south side of the Ditch, without the consent of GVIC.

2. Realignment of Ditch. (a) GVIC agrees that Cunningham or its assigns may realign the Ditch in order to accommodate both the construction of the buildings shown on the Final Plan for the Subdivision and the preservation of the easement as described in paragraph 1, so long as the following conditions are met: (1) the realignment shall be at the sole expense of Cunningham or its assigns; (2) the realignment shall conform to the proposed description of the realignment shown on Exhibit B; (3) the realignment shall be designed and constructed in accordance with the general specifications attached hereto as Exhibit C; (4) the realignment and construction of the realignment shall not disrupt water delivery to GVIC's shareholders; (5) the realignment and construction of the realignment shall not interfere with GVIC's operation and maintenance of the Ditch; and (6) the realignment shall not disrupt historic flow conditions of the Ditch.

(b) Prior to commencing any realignment of the Ditch, Cunningham or its assigns shall prepare and submit plans and specification and a work schedule meeting the criteria set forth herein and on Exhibits B and C to GVIC's Board of Directors for their approval, which approval shall not be unreasonably withheld. Construction of any realignment of the Ditch shall not commence until such plans and specifications and work schedule are approved by GVIC's Board of Directors. All construction shall be in accordance with the plans and specifications and work schedule approved by GVIC's Board of Directors.

(c) Cunningham or its assigns shall not allow any liens to attach to or encumber GVIC's easement for the Ditch or other property as a result of such realignment. Cunningham and its assigns further agrees to indemnify and hold harmless GVIC for any liens, liability, claims or expenses (including reasonable attorneys's fees) arising from or in connection with realignment of the Ditch.

3. Replat. Cunningham or its assigns shall obtain a replat of the Subdivision to accomplish or accommodate any realignment of the Ditch.

4. Dismissal of Action. Upon complete execution and recording of this Agreement, GVIC shall dismiss the Action without prejudice and withdraw the Notice of Lis Pendens placed of record in connection with the Action. GVIC shall also withdraw its appeal of the Planning Commission decision regarding Filings 2 through 4 of the Subdivision.

TAX SCHEDULE #: 2945-024-00-048

Being a tract of land situate in the Southwest Quarter of the Southeast Quarter (SW¼ SE¼) and in the Northwest Quarter of the Southeast Quarter (NW¼ SE¼) of Section 2, Township 1 South, Range 1 West, of the Ute Meridian and being further described as follows:

COMMENCING at the Southwest Corner of the Southwest Quarter of the Southeast Quarter (SW¼ SE¼) of Section 2, Township 1 South, Range 1 West, of the Ute Meridian, from whence the Northwest Corner of said SW¼ SE¼ bears North 00°00'00" East, a distance of 1314.68 feet for a basis of bearing, with all bearings contained herein relative thereto; thence North 00°00'00" East, a distance of 657.34 feet; thence South 89°54'45" East, a distance of 40.00 feet to a point on the easterly right-of-way line of North 7th Street as described in Book 885, Page 100 of Mesa County Records; thence along said right-of-way line North 00°00'00" East, a distance of 100.13 feet to the POINT OF BEGINNING; thence North 00°00'00" East, a distance of 197.66 feet; thence North 11°28'10" East, a distance of 70.37 feet; thence North 45°28'10" East, a distance of 70.00 feet; thence North 38°30'00" West, a distance of 71.32 feet; thence North 00°00'00" East, a distance of 73.35 feet; thence with a curve to the right having a delta angle of 53°56'00", a radius of 185.50 feet, with an arc length of 174.61 feet, a chord bearing of North 26°58'00" East, and a chord distance of 168.24 feet; thence North 53°56'00" East, a distance of 207.81 feet; thence North 48°36'04" East, a distance of 120.52 feet; thence North 36°32'36" East, a distance of 19.41 feet; thence North 53°56'00" East, a distance of 25.89 feet; thence South 61°04'00" East, a distance of 31.66 feet; thence North 28°56'00" East, a distance of 25.00 feet; thence South 57°21'48" East, a distance of 44.87 feet; thence with a curve to the right having a delta angle of 40°14'37", a radius of 460.00 feet, with an arc length of 323.10 feet, a chord bearing of South 36°28'53" East, and a chord distance of 316.50 feet; thence South 16°21'34" East, a distance of 51.93 feet; thence with a curve to the right having a delta angle of 20°27'39", a radius of 435.00 feet, with an arc length of 155.34 feet, a chord bearing of South 06°07'45" East, and a chord distance of 154.52 feet; thence South 04°06'05" West, a distance of 79.36 feet; thence with a curve to the right having a delta angle of 12°16'55", a radius of 385.00 feet, with an arc length of 82.53 feet, a chord bearing of South 10°14'32" West, and a chord distance of 82.37 feet; thence South 16°22'59" West, a distance of 142.05 feet; thence South 12°37'36" West, a distance of 50.25 feet; thence South 06°55'49" East, a distance of 108.46 feet; thence North 89°54'45" West, a distance of 35.26 feet; thence North 06°55'49" West, a distance of 110.19 feet; thence North 12°37'36" East, a distance of 57.43 feet; thence North 81°53'58" West, a distance of 111.62 feet; thence South 75°37'02" West, a distance of 79.19 feet; thence South 43°29'56" West, a distance of 49.75 feet; thence South 80°08'30" West, a distance of 49.10 feet; thence South 83°31'53" West, a distance of 86.77 feet; thence South 89°22'31" West, a distance of 83.88 feet; thence South 87°58'50" West, a distance of 149.43 feet to the POINT OF BEGINNING, Mesa County, Colorado.

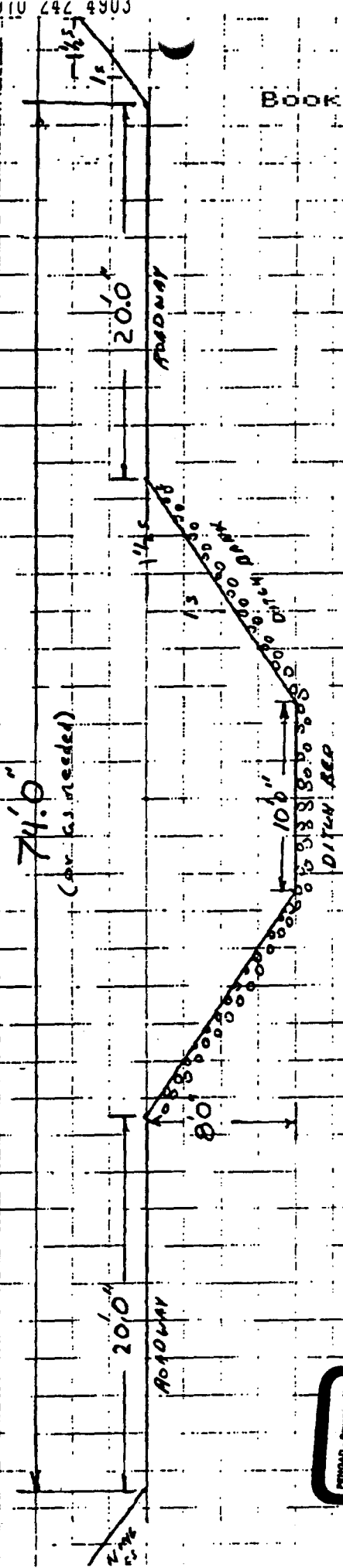
GENERAL SPECIFICATIONS

1. The Ditch bed shall be no less than ten (10) feet in width, except that the Ditch bed shall be widened up to 16 feet for approximately 60 feet from the outlet from the Main Line Canal and 60 feet from the inlet to the Seventh Street pipe in order to diffuse the energy of the water at such locations.
2. The slope of any portion of the Ditch banks that are realigned shall be no greater than 1½ to 1 on each side of the Ditch bed.
3. Rip rap (or similar material) shall be placed on any portion of the Ditch banks that are realigned or disturbed through such alignment.
4. A right of way for the passage of and use by GVIC's vehicles, equipment and personnel of at least 20 feet in width from the top of the bank shall be maintained on both sides of the Ditch. Such rights of way shall be constructed in a manner to permit safe passage and operation of GVIC's vehicles and equipment, and shall be no greater than 8 feet in vertical elevation from the ditch bed. An example cross section is attached hereto as attachment C-1.
5. Plans for any piping of the Ditch must be approved in advance of any construction by GVIC's Construction Committee.
6. Ingress and egress from Seventh Street shall be maintained and not restricted in any manner.

February 21, 1997

EXAMPLE

CROSS SECTION



Attachment
C-1

March 14, 1997



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

Pete Carboni
Horizon Builders
610 25 1/2 Road
Grand Junction, CO 81505

RE: The Glen at Horizon

Dear Pete:

I have enclosed the following forms for your information and use in the construction of The Glen at Horizon subdivision.

Construction Approval and Progress - this form outlines the procedure the City of Grand Junction follows and tracks the dates of approvals and acceptance.

Submittal Requirements for Final Acceptance of Improvements - This is a checklist of submittal items prior to acceptance of public improvements.

Traffic Control Device Specifications for Proposed Developments - This outlines the requirements for sign materials and installation specifications.

The following modifications to your construction plans are required prior to sign off by the city:

1. Add the detail for the arrow and only symbols for the right turn lane on 7th Street.
2. Add the note supplied by Trent Prall as required with the conditions of approval by the Planning Commission.
3. Show the changes to the Ranchman Ditch relocation and delete the pipe extension if the pipe is not going to be extended.

A drainage fee will not be accepted from your development, so the detention pond is required.

A signed and approved Improvements Agreement must be on file with the Community Development Department prior to beginning construction.

Please notify me to schedule a pre-construction meeting.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jody Kliska".

Jody Kliska, P.E.
City Development Engineer

cc: Michael Drollinger

CONSTRUCTION PHASE SUBMITTAL CHART

Location: Green at Horizon 7th & Horizon Project Name: _____

STEP	ACTIVITY	SUBMITTAL ITEMS	SSID REF.
1	None	<ul style="list-style-type: none"> ● City Approval of Construction Drawings ● Pre-construction Notice ● Work within Public ROW Permit ○ NPDES Permit ● Improvements Agreement/Guarantee ○ _____ 	VII-3 VII-3 VII-4 VII-4
2	Grading Street Rough Cut Sanitary Sewer Water Irrigation Other Utilities Subgrade Base Course Concrete Placement	<ul style="list-style-type: none"> ● Construction Report: Grading and Pipeline Phase ● As-built Grading Drawing ● As-built Drainage Drawing ● As-built Water & Sewer Drawing ○ _____ ● Construction Report: Concrete and Pavement Preparation ○ Flowline Grade Sheets ○ Revised Asphalt Design (if necessary) ● Request City Lamping of Sewerline 	X-4 IX-6 IX-5 IX-9 X-3 VII-4 VII-4 VII-4
3	Asphalt Pavement Traffic Control Facilities Monumentation Permanent On-Site Benchmark (Subdivisions Only)	<ul style="list-style-type: none"> ● Construction Report: Concrete and Pavement Placement ● Complete Set of As-Built Drawings ● Request for City Initial Inspection ○ _____ 	X-2 IX-5 to IX-9 VII-4
4	Warranty Period	<ul style="list-style-type: none"> ● Request for City Final Inspection 	VII-4

NOTES: 1. Only those submittal items which are preceded by a shaded-in circle are required for the project. At the time of construction drawing approval, City Engineering will submit to the developer one signed approved set of drawings and a copy of this form which has been completed for the specific project, and one completed copy of Form VI-4 and VI-5.

2. City Engineering approval of submittal items is required prior to commencement of subsequent steps. The City will make every effort to provide timely approvals in order to accommodate construction schedules. If information is submitted for Step 2 in a timely manner as construction proceeds, then City Engineering review of remaining items may be done within ½ working day.

Submittal Requirements for Final Acceptance of Improvements

GLEN AT HORIZON

The following items must be submitted prior to the acceptance of streets, drainage, and utilities by the City of Grand Junction.

As-Built Drawings (Reference SSID IX-5,6,7,8,9)

- Sealed by a Professional Engineer
- Two Blue-line copies
- One Mylar Copy
- One 3 1/2" Floppy Disk with drawing files

Report (Reference SSID X-2,3,4)

- Testing Location Map
- Inspection Diaries
- Testing Reports

Certification of Detention/Retention Basin
(Reference SSID IX-6)

- Sealed by a Professional Engineer

Note: A one-year warranty period begins once public facilities are accepted by the City of Grand Junction. Any defects or deficiencies which occur during this period must be corrected by the developer. (Reference Zoning and Development Code 5-4-12, A-4)

**City of Grand Junction
Construction Approval & Progress**

Project Name: GLEN AT HORIZON
Location: 7TH & HORIZON
Developer: _____
Engineer: _____

A Licensed Professional Engineer is required to oversee construction of public improvements.

Date Construction Plans Approved: _____

Submittal of four sets of prints is required for approval and signature. Distribution: Development Engineer, City Inspector, Community Development, Developer/Contractor.

Improvements Agreement in Place: _____

Construction Meeting: _____

1. Attendance by developer's engineer, contractor(s), testing lab, city engineering representative, city inspector is required.
2. Submit list of contractors and approximate starting dates.
3. Submit quality assurance plan for testing and inspection. A test location map will be required prior to final acceptance of work.
4. Notification of city inspector 24 hours prior to commencement of work is required.

Permit for Construction and Installation of Facilities in Public Right of Way required: _____

Date of Final Inspection : _____

Reinspections: _____

Final Acceptance: _____

Warranty Period Ends: _____

Note: City inspection of work does not relieve developer or contractor of their duties regarding inspection, monitoring, and testing.

TRAFFIC CONTROL DEVICE SPECIFICATIONS FOR PROPOSED DEVELOPMENTS

During the normal design and review phase for all developments, the developer or his representative shall prepare a detailed traffic control plan, showing the locations for all traffic control devices for review and approval. **NOTE: Infill development or subsequent development filings may change the dynamics of established traffic patterns and may require additional traffic control measures outside the development boundary.**

The following are materials and installation specifications for all traffic control devices.

MATERIALS SPECIFICATIONS:

All Signs Shall be reflectorized sheeting on .080 inch thick tempered and anodized aluminum with radius corners. **Letters and background shall faithfully reproduce their respective colors when nighttime illuminated.**

Street Name Signs

Shall be purchased from the City of Grand Junction.
Contact Rick Ripley, Traffic Services, 244-1573.

All other signs:

Shall conform to MUTCD standard sign sizes
Shall be High Intensity grade materials

Mounts:

- up
- 11' 2.5#/ft. (min.) U channel posts shall be used for:
 - a. Street name signs up to 3 sq. ft. wind loading area
 - b. Street name signs combined with warning signs to 6 sq. ft. wind loading area
 - 12' 3#/ft (min.) U channel posts shall be used for:
 - a. Single signs less than 7 sq. ft. wind loading area
 - b. Double post mounting for signs 8 sq. ft. wind loading area
 - 14' 3#/ft. (min.) U channel posts shall be used for:
 - a. Warning sign assembly (2 signs) up to 9 sq. ft. wind loading area
 - b. Single square or diamond shaped signs 9 sq. ft. wind loading area
 - c. Double post mounting for all signs 10 - 16 sq. ft. wind loading area
 - 8' 2.5#/ft. (min.) U channel posts shall be used for:
 - a. End of road markers
 - b. Object markers

Fasteners:

Street Name Signs:

bolts
5/16"

Post caps: cast aluminum with 5" slots & 5/16" set screws, attached to channel post with 1"x5/16"

90 cross piece: cast aluminum with 5" slots & set screws

All other Signs:

3/8" grade 5 bolts with nylon lock nuts and flat washers. The bolt shall protrude beyond the lock nut by a full thread after assembly.

INSTALLATION SPECIFICATIONS:

Minimum driven depth of post shall be:

24 inches for street name signs and End of Road markers.

30 inches for all other sign installation.

Mounting Height Restrictions:

The mounting height restrictions for the following listed signs represent measurements taken from the bottom of the sign to the near edge of pavement elevation:

Street Name Signs: 9 ft. min., 9.5 ft. max.

End of Road Markers: 4 ft. min., 5 ft. max.

All other signs: 7 ft. min., 7.5 ft. max.

Lateral Clearance Restriction:

the
from

The near edge of sign shall not be less than 2 feet behind the face of curb. On roads without curb, near edge of sign shall not be less than 6 feet the shoulder or 12 feet from the travel way.

To maintain sign uniformity throughout the City of Grand Junction, no substitute or "decorative" materials will be allowed. The use of concrete for mount stabilization will not be allowed. If a stable mount cannot be achieved at the minimum driven depths, greater depths must be used in conjunction with longer posts to maintain minimum sign heights.

All signs (other than street name signs) shall be mounted on the wide, or open, side of the channel post. Care should be taken when tightening the bolts so as not to create a "dimple" in the aluminum sign.

TRAFFIC CONTROL DEVICES

All traffic control devices shall conform to the latest edition of the MUTCD and any Colorado supplement.

When it is determined that markers should be placed at the end of a roadway where there is no alternate vehicular path, a marker consisting of nine red reflectors, each with a minimum dimension of 3 inches, mounted symmetrically on an 18 inch diamond black panel shall be used. More than one marker may be required. If deemed necessary by the engineer, permanent Type III Barricades may be used to mark the roadway terminus. The design criteria for the permanent Type III barricade shall be the Colorado Department of Transportation Standard Plan No. S-630-2, dated November 1, 1992.

The developer shall bear all expenses for the fabrication and installation of permanent barricades and/or signs for implementing the approved project design (i.e. one way, no parking, dead end, private drive).



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

March 20, 1997

Mac Cunningham
Cunningham Investment Co., Inc.
121 S. Galena Street, Suite 201
Aspen, CO 81611

RE: The Glen at Horizon

Dear Mr. Cunningham:

As per your request and our recent meeting I have prepared this letter summarizing the items to be completed prior to recordation of the plat for and construction of the Glen at Horizon. Jody Kliska recently sent you a letter (copy attached) detailing required modifications to the construction plans for the project. I also have previously forwarded you a checklist (copy attached) detailing additional requirements which can be summarized as follows:

1. *Development Improvements Agreement* - complete agreement and attach City-approved improvements list.
2. *Improvements Guarantee* - select form of guarantee and supply required paperwork.
3. *Final Plans* - provide us with the proper number of complete (signed and sealed) final plan sets.
4. *Articles of Incorporation of HOA* - provide use with a copy of the HOA incorporation documents which were approved by the State.
5. *CC&Rs* - supply copy to be reviewed by the City prior to recordation with the plat.
6. *Plat* - supply signed original; additional instructions to complete process to follow.
7. *Disk of Plat* - electronic copy on disk of final plat as required by SSID Manual.
8. *UCC Review* - item will be scheduled for next UCC meeting or you may seek review and sign-off from utilities on your own; we supply form for UCC signatures.
9. *TCP Credit Request* - provide a letter with attached detailed cost estimate requesting credit for 7th Street deceleration lane improvements.
10. *City Surveyor Certificate* - supplied by our City Surveyor after submittal of final plat.

Payment of required fees is also due prior to recordation of the plat. I trust that the above information is satisfactory, however, do not hesitate to contact me if you have any questions.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Michael T. Drollinger".

Michael T. Drollinger
Senior Planner

cc: File #SPR-96-240

h:\cityfil\1996\96-240.l2

March 14, 1997



City of Grand Junction, Colorado

250 North Fifth Street

81501-2668

FAX: (970)244-1599

Pete Carboni
Horizon Builders
610 25 1/2 Road
Grand Junction, CO 81505

RE: The Glen at Horizon

Dear Pete:

I have enclosed the following forms for your information and use in the construction of The Glen at Horizon subdivision.

Construction Approval and Progress - this form outlines the procedure the City of Grand Junction follows and tracks the dates of approvals and acceptance.

Submittal Requirements for Final Acceptance of Improvements - This is a checklist of submittal items prior to acceptance of public improvements.

Traffic Control Device Specifications for Proposed Developments - This outlines the requirements for sign materials and installation specifications.

The following modifications to your construction plans are required prior to sign off by the city:

1. Add the detail for the arrow and only symbols for the right turn lane on 7th Street.
2. Add the note supplied by Trent Prall as required with the conditions of approval by the Planning Commission.
3. Show the changes to the Ranchman Ditch relocation and delete the pipe extension if the pipe is not going to be extended.

A drainage fee will not be accepted from your development, so the detention pond is required.

A signed and approved Improvements Agreement must be on file with the Community Development Department prior to beginning construction.

Please notify me to schedule a pre-construction meeting.


Sincerely,

A handwritten signature in cursive script, appearing to read "Jody Kliska".

Jody Kliska, P.E.
City Development Engineer

cc: Michael Drollinger

MEMORANDUM

DATE: April 7, 1997
TO: Mac Cunningham
FROM: Michael T. Drollinger 
RE: The Glen at Horizon Filing #1
CC: Jody Kliska, City Development Engineer
Trent Prall, City Utility Engineer

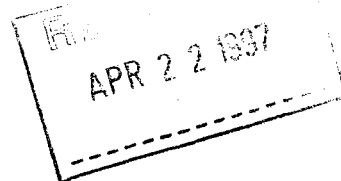
Below are listed the status of the documents received by our office and required to be completed prior to commencement of construction. The preconstruction meeting for this project has *tentatively* been scheduled for 10AM on Wednesday, April 9th. All items detailed below must be addressed prior to 5PM on Tuesday, April 8, 1997, or rescheduling of the preconstruction meeting will be required.

- ✓ • **DIA** - Incomplete. Exhibit "B" is blank and must be completed by Peter Carbone or the completed Exhibit "B" in our possession can be substituted. Please advise.
- **Disbursement Agreement** - Incomplete. Missing bank signature and signature of the project engineer. Please pick up document from Community Development and return when complete for further review.
- **Final Plans** - Incomplete. Need the landscaping plans as an attachment to the Community Development Department and your plan sets. I understand that there may be some minor modifications to the plans during the project construction which will be subject to review and approval by our office. Plans will be forwarded to Development Engineer and Utility Engineer for signature.

As a reminder, please direct all correspondence regarding this application to my attention so that I can better coordinate the final approval of the subdivision. Once the above items have been satisfied, I will advise Jody and Trent to proceed with the preconstruction meeting. I trust that the above information is useful.

April 21, 1997

Ms. Jody Kliska
City Development Engineer
City of Grand Junction
250 N. 5th Street
Grand Junction, CO 81501



Re: The Glen at Horizon Construction Observation

Dear Jody:

This letter is to inform you about the construction observation for the above-mentioned project.

Due to circumstances beyond our control, Peter Carboni and Horizon Builders have not retained our services for construction observation of this project. To our knowledge, no other engineering representative has been contacted in relation to completing this work, neither has any engineering representative contacted us to retrieve information of our surveying schedule or requested copies of electronic data.

This letter is being sent because I feel I have a professional obligation to inform your department that no representative from our office will be performing construction observation now that the project has begun. This means that we will be unable to insure the proper construction and installation of City utilities and will not sign as-built plans as we cannot assure construction is being accomplished correctly as per the approved plans.

If you have any questions in regards to this letter, please contact me at our office.

Sincerely,

Philip M. Hart, P.E.
President

cc Trent Prall
Peter Carboni
Mac Cunningham

The Glen

at Horizon Drive, L.L.C.

Site Office
614 N. Seventh Street
Grand Junction, CO 81506
Office: 970-248-9898
Fax: 970-248-9897

Administrative Office
605 W. Main Street, Suite 002
Aspen, CO 81611
Office: 970-925-8803
Fax: 970-925-8835

May 8, 1997

Ken Jacobson
Chief, Southwestern Colorado
Regulatory Office
Department Of The Army
402 Rood Avenue, Room 142
Grand Junction, Colorado 81501-2563

RE: Your Letter Dated May 1, 1997
Concerning The Glen @ Horizon Drive

Dear Ken:

We are in receipt of the aforementioned letter and accompanying documents, including a letter from the Grand Valley Irrigation Company dated May 1, 1997.

We are writing this letter to inform you that we have restored the ditch to its original alignment. As explained to you by telephone, The Glen @ Horizon Drive, LLC, had no desire to move the ditch and was only forced to do so by a lawsuit filed by the Grand Valley Irrigation Company, which lawsuit precluded our purchasing the property. Based on the Army Corp of Engineers' request for returning the waterway to the original alignment and for restoration of the area, we have voluntarily done so, which original alignment was reopened on Saturday, May 3, 1997. We continue to do restorative work in the area and look forward to working with you and/or Randy Snider regarding any additional restorative works necessary to preserve the original drainage.

Please contact Peter Carbone, Manager, Horizon Builders of Grand Junction, LLC, concerning any additional work that needs to be done. If we can directly assist you in any matter regarding this waterway, please feel free to contact me in this office.


COPY

RECEIVED GRAND JUNCTION
PLANNING DEPARTMENT
MAY 13 1997

Ken Jacobson
May 8, 1997
Page Two

Thank you for your attention to this matter.

Sincerely,



I. McA. Cunningham, President
Cunningham Investment Co., Inc., Manager
The Glen @ Horizon Drive, LLC

IMC:ljh

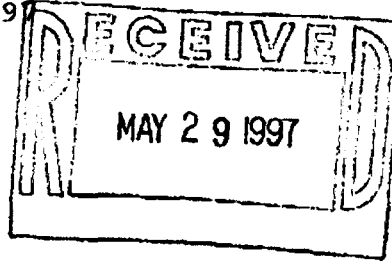
cc: Joseph Coleman, Esq.
Peter Carbone, Horizon Builders of Grand Junction, LLC
Michael Drollinger, City of Grand Junction



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

May 27, 1997



Regulatory Branch (199675310)

The Glen at Horizon Drive, L.L.C.
c/o Cunningham Investment
605 West Main
Aspen, Colorado 81611

Dear Sirs:

We are responding to your letter dated May 8, 1997, concerning restoration work on "the Ranchmans Ditch". The restoration work is located within Section 2, Township 1 South, Range 1 West, Mesa County, Colorado.

Based on a compliance inspection by Mr. Randy Snyder on May 22, 1997 we have determined that the channel has been successfully returned to its original alignment. However, revegetation of denuded banks and complete backfilling of the excavated channel must still be completed to bring the violation into compliance with the Clean Water Act. The following native species should be used to revegetate streambanks:

Above the water line: streambank wheatgrass (*Agropyron dasystachyum*), smooth brome (*bromus inermus*) salt grass (*Distichlis spicata*) wild plum (*Prunus americana*), and wood's rose (*Rosa woodsii*)

At the water line: reed canarygrass (*Phalaris arundinacea*), common reed (*Phragmites communis*), foxtail barley (*Hordeum jubatum*) and willow (*salix*).

Final restoration must be complete by September 1, 1997. You must notify this office in writing when restoration work has been completed. If you have any questions, concerning revegetation or backfilling of the excavated channel, please write to Mr. Snyder or telephone (970) 243-1199, extension 14.

Sincerely,

Ken Jacobson
Chief, Southwestern Colorado
Regulatory Office
402 Rood Avenue, Room 142
Grand Junction, Colorado 81501-2563

-2-

Copies Furnished:

Mr. Bill Clark, Colorado Division of Wildlife, 711 Independent Avenue, Grand Junction, Colorado 81501

Mr. Rick Krueger, U.S. Fish and Wildlife Service, 764 Horizon Drive, South Annex A, Grand Junction, Colorado 81506-3946

Ms. Sarah Fowler, U.S. Environmental Protection Agency, 8EPR-EP, 999 18th Street, Suite 500, Denver, Colorado 80202-2466

Mesa County, Post Office Box 20,000, Grand Junction, Colorado 81501

**GLEN @ HORIZONS
SUBDIVISION**

CLIENT: Ben Dowd Excavating
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 1
 DATE of TEST: 5-9-97
 TEST BY: RSW/RL
 LD JOB No.: 86047-2197

TEST TYPE: Nuclear Backscatter Nuclear Direct Trans.

SPECIFICATIONS: Project: _____ City: X County: _____ State: _____

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
1	Sewer main, 50' W of MH A2 @ 2' BSG	95	95	13.9	+2	113.7 @ 14.2	C
2	Sewer main, 30' W of MH A2 @ FSG	100	95	13.7	+2	113.7 @ 14.2	C
3	Sewer main, 20' NE of MH A2 @ FSG	95	95	13.9	+2	113.7 @ 14.2	C
4	Sewer main, 30' NE of MH A2 @ 2' BSG	100	95	13.8	+2	113.7 @ 14.2	C

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.

KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



CLIENT: Ben Dowd Excavating
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 2
 DATE of TEST: 5-12-97
 TEST BY: LRS
 LD JOB No.: 86047-2197


TEST TYPE: Nuclear Backscatter Nuclear Direct Trans. SPECIFICATIONS: Project: City: County: State:

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
5	SS, Lot 14 @ 1' BSG	97	95	14.1	+2	113.7 @ 14.2	C
6	Sewer main, 60' E of MH A5 @ 2' BSG	100	95	14.8	+2	113.7 @ 14.2	C
7	Sewer main, 55' E of MH A5 @ FSG	99	95	16.0	+2	113.7 @ 14.2	C
8	SS, Lot 14 @ FSG	97	95	12.4	+2	113.7 @ 14.2	C
9	Sewer main, 75' S of MH A5 @ FSG	95	95	15.3	+2	113.7 @ 14.2	C
10	SS, Lot 5 @ FSG	100	95	12.7	+2	113.7 @ 14.2	C
11	SS, Lot 15 @ FSG	100	95	14.2	+2	113.7 @ 14.2	C
12	SS, Lot 6 @ FSG	98	95	14.1	+2	113.7 @ 14.2	C
13	SS, Lot 16 @ FSG	100	95	15.8	+2	113.7 @ 14.2	C

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.

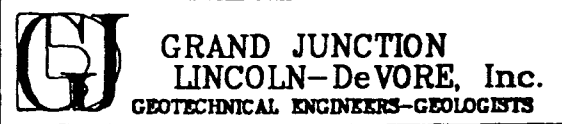
KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.




CLIENT: Ben Dowd Excavating
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 3
 DATE of TEST: 5-13-97
 TEST BY: LRS
 LD JOB No.: 86047-2197

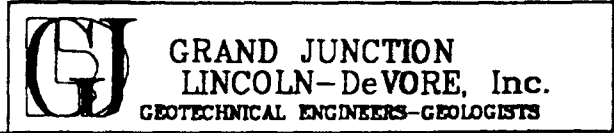
TEST TYPE: Nuclear Backscatter Nuclear Direct Trans. SPECIFICATIONS: Project: City: County: State:

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
14	Sewer main, MH A4 to B1 @ 2' BSG	96	95	13.2	+2	113.7 @ 14.2	C
15	Sewer main, MH A4 to B1 @ FG	100	95	13.7	+2	113.7 @ 14.2	C
16	Sewer MH A5 @ 2' BSG	98	95	16.2	+2	113.7 @ 14.2	C
17	Sewer MH A5 @ FG	100	95	13.5	+2	113.7 @ 14.2	C
18	SS, Lot 11 @ 2' BSG	96	95	14.1	+2	113.7 @ 14.2	C
19	SS, Lot 11 @ FSG	100	95	15.2	+2	113.7 @ 14.2	C
20	Sewer stub out @ 2' BSG	98	95	13.5	+2	113.7 @ 14.2	C
21	Sewer stub out @ FSG	99	95	15.6	+2	113.7 @ 14.2	C
22	Sewer MH A6 @ 2' BSG	100	95	12.7	+2	113.7 @ 14.2	C
23	Sewer MH A6 @ FSG	99	95	13.3	+2	113.7 @ 14.2	C
24	SS, Lot 12 @ 2' BSG	100	95	12.6	+2	113.7 @ 14.2	C
25	SS, Lot 12 @ FSG	100	95	12.8	+2	113.7 @ 14.2	C
26	SS, Lot 13 @ 2' BSG	100	95	12.2	+2	113.7 @ 14.2	C
27	SS, Lot 13 @ FSG	100	95	13.0	+2	113.7 @ 14.2	C

Distribution: 1-Client, 1-LD/CS, 1-Subdiv Env.
 KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run
 GRAND JUNCTION LINCOLN-DEVORE, Inc.
 BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-Devore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



CLIENT: Ben Dowd Excavating

REPORT No. 4

PROJECT: Glen @ Horizons

DATE of TEST: 5-14-97

LOCATION: 7th & Horizon Dr.

TEST BY: LRS

LD JOB No.: 86047-2197

TEST TYPE: Nuclear _____ Nuclear X
Backscatter _____ Direct Trans. X

SPECIFICATIONS:

Project: _____ City: X County: _____ State: _____

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
28	Sewer MH A2 @ 2' BSG	95	95	12.4	+2	113.7 @ 14.2	C
29	Sewer MH A2 @ FSG	100	95	15.0	+2	113.7 @ 14.2	C
30	SS, Lot 1 @ 2' BSG	96	95	13.2	+2	113.7 @ 14.2	C
31	SS, Lot 1 @ FSG	97	95	15.0	+2	113.7 @ 14.2	C
32	SS, Lot 2 @ 2' BSG	98	95	13.7	+2	113.7 @ 14.2	C
33	SS, Lot 2 @ FSG	98	95	14.3	+2	113.7 @ 14.2	C
34	SS, Lot 3 @ 2' BSG	100	95	13.8	+2	113.7 @ 14.2	C
35	SS, Lot 3 @ FSG	100	95	13.6	+2	113.7 @ 14.2	C
36	Sewer MH A3 @ 2' BSG	100	95	14.0	+2	113.7 @ 14.2	C
37	Sewer MH A3 @ FSG	85*	95	15.3	+2	113.7 @ 14.2	C
38	SS, Lot 4 @ 2' BSG	100	95	14.2	+2	113.7 @ 14.2	C
39	SS, Lot 4 @ FSG	97	95	12.7	+2	113.7 @ 14.2	C
40	Sewer MH A4 @ 2' BSG	100	95	14.4	+2	113.7 @ 14.2	C
41	Sewer MH A4 @ FSG	96	95	14.6	+2	113.7 @ 14.2	C
37A	RETEST - Sewer MH A3 @ FSG	100	95	14.4	+2	113.7 @ 14.2	C

Page 1 of 2

Distribution:

1-Client

1-LD/CS

1-Subdiv Env.

KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



GRAND JUNCTION
 LINCOLN-DeVORE, Inc.
 GEOTECHNICAL ENGINEERS-GEOLOGISTS

CLIENT: Ben Dowd Excavating
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 4
 DATE of TEST: 5-14-97
 TEST BY: LRS
 LD JOB No.: 86047-2197

TEST TYPE: Nuclear Backscatter Nuclear Direct Trans.

SPECIFICATIONS: Project: _____ City: X County: _____ State: _____

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
42	Sewer MH B1 @ 4' BSG	98	95	13.9	+2	113.7 @ 14.2	C
43	Sewer MH B1 @ 2' BSG	98	95	13.4	+2	113.7 @ 14.2	C
44	Sewer MH B1 @ FSG	96	95	14.6	+2	113.7 @ 14.2	C

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.


KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



**GRAND JUNCTION
 LINCOLN-DeVORE, Inc.**
 GEOTECHNICAL ENGINEERS-GEOLOGISTS

CLIENT: Ben Dowd Excavating
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 5
 DATE of TEST: 5-15-97
 TEST BY: RF
 LD JOB No.: 86047-2197

TEST TYPE: Nuclear Backscatter Nuclear Direct Trans.

SPECIFICATIONS: Project: _____ City: County: _____ State: _____

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
45	MH B2 @ 4' BSG	96	95	14.9	+2	113.7 @ 14.2	C
46	MH B2 @ 2' BSG	99	95	13.2	+2	113.7 @ 14.2	C
47	Sewer main between MH B1 & B2 @ 4' BSG	99	95	13.3	+2	113.7 @ 14.2	C
48	Sewer main between MH B1 & B2 @ 2' BSG	100	95	12.9	+2	113.7 @ 14.2	C
49	Sewer main between MH B1 & B2 @ FSG	100	95	12.6	+2	113.7 @ 14.2	C
50	Sewer main between MH B2 & B3 @ 4' BSG	98	95	14.4	+2	114.2 @ 14.2	C
51	MH B2 @ FSG	99	95	13.4	+2	114.2 @ 14.2	C
52	MH B2 6' BSG	98	95	15.9	+2	114.2 @ 14.2	C
53	Sewer main between MH B2 & B3 @ 10' BSG	98	95	13.4	+2	114.2 @ 14.2	C
54	Sewer main between MH B2 & B3 @ 8' BSG	99	95	13.5	+2	114.2 @ 14.2	C
55	Sewer main between MH B2 & B3 @ 6' BSG	99	95	13.3	+2	114.2 @ 14.2	C

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.

KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



GRAND JUNCTION
 LINCOLN-DeVORE, Inc.
 GEOTECHNICAL ENGINEERS-GEOLOGISTS

CLIENT: Ben Dowd Excavating
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 6
 DATE of TEST: 5-21-97
 TEST BY: RF
 LD JOB No.: 86047-2197

TEST TYPE: Nuclear _____ Nuclear X
 Backscatter _____ Direct Trans. X

SPECIFICATIONS: Project: _____ City: X County: _____ State: _____

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
56	Water main on 7th St., N of Bond Ln., E' E of valve @ 2' BSG	97	90M	8.4	+2	139.1 @ 6.5	PR
57	Sewer main on 7th St., N of Bond Ln. @ 2' BSG	96	90M	6.9	+2	139.1 @ 6.5	PR
58	Sewer main on 7th St., N of Bond Ln., S end @ BCG	92	90M	8.2	+2	138.0 @ 7.6	BC
59	Sewer main on 7th St., N of Bond Ln., N end @ BCG	91	90M	8.8	+2	138.0 @ 7.6	BC
60	Water main, N of Bond Ln., W end @ BCG	95	90M	7.9	+2	138.0 @ 7.6	BC
61	Water main, N of Bond Ln., E end @ BCG	92	90M	8.6	+2	138.0 @ 7.6	BC

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.

KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



GRAND JUNCTION
 LINCOLN-DeVORE, Inc.
 GEOTECHNICAL ENGINEERS-GEOLOGISTS

CLIENT: Ben Dowd Excavating
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 7
 DATE of TEST: 5-23-97
 TEST BY: RF
 LD JOB No.: 86047-2197

TEST TYPE: Nuclear Backscatter Nuclear Direct Trans.


SPECIFICATIONS: Project: City: County: State:

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
62	WS, Lot 1 @ 2' BSG	100	95	16.1	+2	113.7 @ 14.2	C
63	WS, Lot 1 @ FSG	100	95	15.9	+2	113.7 @ 14.2	C
64	Water main, sta 0+50 @ 2' BSG	96	95	15.6	+2	113.7 @ 14.2	C
65	Water main, sta 0+50 @ FSG	99	95	14.0	+2	113.7 @ 14.2	C
66	WS, Lot 2 @ 2' BSG	100	95	16.0	+2	113.7 @ 14.2	C
67	WS, Lot 2 @ FSG	100	95	13.9	+2	113.7 @ 14.2	C
68	Water main, sta 1+50 @ 2' BSG	100	95	14.0	+2	113.7 @ 14.2	C
69	Water main, sta 1+50 @ FSG	100	95	14.6	+2	113.7 @ 14.2	C
70	WS, Lot 17 @ 2' BSG	97	95	15.1	+2	113.7 @ 14.2	C
71	WS, Lot 17 @ FSG	99	95	14.2	+2	113.7 @ 14.2	C
72	WS, Lot 3 @ 2' BSG	100	95	15.2	+2	113.7 @ 14.2	C
73	WS, Lot 3 @ FSG	97	95	14.8	+2	113.7 @ 14.2	C
74	WS, Lot 4 @ 2' BSG	98	95	15.7	+2	113.7 @ 14.2	C
75	WS, Lot 4 @ FSG	99	95	15.5	+2	113.7 @ 14.2	C
76	Water main, sta 2+50 @ 2' BSG	100	95	15.1	+2	113.7 @ 14.2	C

Page 1 of 4
 Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.


KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.

 **GRAND JUNCTION
 LINCOLN-DeVORE, Inc.**
 GEOTECHNICAL ENGINEERS-GEOLOGISTS

CLIENT: Ben Dowd Excavating
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 7
 DATE of TEST: 5-23-97
 TEST BY: RF
 LD JOB No.: 86047-2197

TEST TYPE: Nuclear Backscatter Nuclear Direct Trans. X

SPECIFICATIONS: Project: City: X County: State:

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
77	Water main, sta 2+50 @ FSG	98	95	15.6	+2	113.7 @ 14.2	C
78	Fire hydrant, sta 3+00 @ 2' BSG	98	95	14.1	+2	113.7 @ 14.2	C
79	Fire hydrant, sta 3+00 @ FSG	98	95	12.3	+2	113.7 @ 14.2	C
80	WS, Lot 5 @ 2' BSG	97	95	12.4	+2	113.7 @ 14.2	C
81	WS, Lot 5 @ FSG	100	95	13.3	+2	113.7 @ 14.2	C
82	WS, Lot 16 @ 2' BSG	96	95	15.6	+2	113.7 @ 14.2	C
83	WS, Lot 16 @ FSG	100	95	14.2	+2	113.7 @ 14.2	C
84	Water main, sta 3+50 @ 2' BSG	95	95	15.8	+2	113.7 @ 14.2	C
85	Water main, sta 3+50 @ FSG	100	95	13.7	+2	113.7 @ 14.2	C
86	WS, Lot 15 @ 2' BSG	95	95	13.3	+2	113.7 @ 14.2	C
87	WS, Lot 15 @ FSG	99	95	13.0	+2	113.7 @ 14.2	C
88	Water main, sta 4+50 @ 2' BSG	96	95	13.7	+2	113.7 @ 14.2	C
89	Water main, sta 4+50 @ FSG	100	95	13.2	+2	113.7 @ 14.2	C
90	WS, Lot 6 @ 2' BSG	97	95	14.8	+2	113.7 @ 14.2	C
91	WS, Lot 6 @ FSG	100	95	14.6	+2	113.7 @ 14.2	C

Page 2 of 4
 Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.

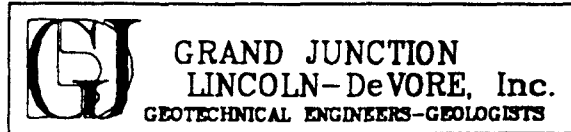
KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



CLIENT: Ben Dowd Excavating
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 7
 DATE of TEST: 5-23-97
 TEST BY: RF
 LD JOB No.: 86047-2197

TEST TYPE: Nuclear Backscatter Nuclear Direct Trans.

SPECIFICATIONS: Project: _____ City: County: _____ State: _____

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
92	WS, Lot 14 @ 2' BSG	97	95	14.1	+2	113.7 @ 14.2	C
93	WS, Lot 14 @ FSG	100	95	14.8	+2	113.7 @ 14.2	C
94	Water main, sta 5+50 @ 2' BSG	100	95	14.7	+2	113.7 @ 14.2	C
95	Water main, sta 5+50 @ FSG	100	95	14.0	+2	113.7 @ 14.2	C
96	WS, Lot 13 @ 2' BSG	96	95	13.9	+2	113.7 @ 14.2	C
97	WS, Lot 13 @ FSG	100	95	14.7	+2	113.7 @ 14.2	C
98	Water main, sta 6+50, 6" stub @ 2' BSG	99	95	14.7	+2	113.7 @ 14.2	C
99	Water main, sta 6+50, 6" stub @ FSG	99	95	14.1	+2	113.7 @ 14.2	C
100	WS, Lot 12, 2" line @ 2' BSG	100	95	13.5	+2	113.7 @ 14.2	C
101	WS, Lot 12, 2" line @ FSG	100	95	14.3	+2	113.7 @ 14.2	C
102	WS, Lot 11 @ 2' BSG	97	95	15.0	+2	113.7 @ 14.2	C
103	WS, Lot 11 @ FSG	100	95	13.5	+2	113.7 @ 14.2	C
104	WS, Lot 10 @ 2' BSG	96	95	13.6	+2	113.7 @ 14.2	C
105	WS, Lot 10 @ FSG	97	95	13.9	+2	113.7 @ 14.2	C
106	Fire hydrant, sta 7+50 @ 2' BSG	97	95	14.0	+2	113.7 @ 14.2	C

Page 3 of 4
 Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.

KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



GRAND JUNCTION
 LINCOLN-DeVORE, Inc.
 GEOTECHNICAL ENGINEERS-GEOLOGISTS

CLIENT: Ben Dowd Excavating
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 7
 DATE of TEST: 5-23-97
 TEST BY: RF
 LD JOB No.: 86047-2197


TEST TYPE: Nuclear Backscatter Nuclear Direct Trans.

SPECIFICATIONS: Project: City: County: State:

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
107	Fire hydrant, sta 7+50 @ FSG	100	95	13.4	+2	113.7 @ 14.2	C

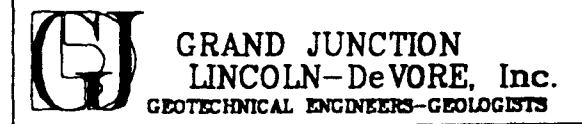
Page 4 of 4
 Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.

KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.
 BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



CLIENT: Ben Dowd Excavating
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 8
 DATE of TEST: 5-27-97
 TEST BY: RSW/RL
 LD JOB No.: 86047-2197

TEST TYPE: Nuclear _____ Nuclear X
 Backscatter _____ Direct Trans. _____

SPECIFICATIONS: Project: _____ City: X County: _____ State: _____

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
108	Sewer main between MH B2 & existing MH @ 12' BSG	100	95	15.6	+2	113.7 @ 14.2	C
109	Sewer main between MH B2 & existing MH @ 10' BSG	100	95	15.6	+2	113.7 @ 14.2	C
110	Sewer main between MH B2 & existing MH @ 8' BSG	98	95	16.2	+2	113.7 @ 14.2	C
111	Sewer main between MH B2 & existing MH @ 6' BSG	100	95	15.8	+2	113.7 @ 14.2	C
112	Sewer main between MH B2 & existing MH @ 4' BSG	98	95	16.1	+2	113.7 @ 14.2	C
113	Sewer main between MH B2 & existing MH @ 2' BSG	99	95	16.0	+2	113.7 @ 14.2	C
114	Sewer main between MH B2 & existing MH @ FSG	100	95	15.5	+2	113.7 @ 14.2	C

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.


KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.

 GRAND JUNCTION
 LINCOLN-DeVORE, Inc.
 GEOTECHNICAL ENGINEERS-GEOLOGISTS

CLIENT: Ben Dowd Excavating
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 9
 DATE of TEST: 5-29-97
 TEST BY: RF
 LD JOB No.: 86047-2197

TEST TYPE: Nuclear Backscatter Nuclear Direct Trans.

SPECIFICATIONS: Project: City: County: State:

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
115	Storm sewer @ Lot 17 manhole @ FSG	100	95	15.1	+2	113.7 @ 14.2	C
116	Storm sewer @ Lot 4 manhole @ FSG	95	95	13.7	+2	113.7 @ 14.2	C
117	Storm sewer line @ FSG	95	95	15.0	+2	113.7 @ 14.2	C

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.

KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



GRAND JUNCTION
 LINCOLN-DeVORE, Inc.
 GEOTECHNICAL ENGINEERS-GEOLOGISTS

CLIENT: Ben Dowd Excavating
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 10
 DATE of TEST: 5-30-97
 TEST BY: RSW
 LD JOB No.: 86047-2197

TEST TYPE: Nuclear Backscatter Nuclear Direct Trans.

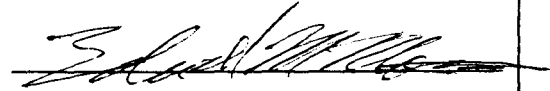
SPECIFICATIONS: Project: City: County: State:

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
118	Inlet box for storm drain on N side of Glen along 7th St., @ FSG	100	95	13.4	+2	113.7 @ 14.2	C

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.


KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



**GRAND JUNCTION
 LINCOLN-DeVORE, Inc.**
 GEOTECHNICAL ENGINEERS-GEOLOGISTS

CLIENT: Ben Dowd Excavating
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 11
 DATE of TEST: 6-4-97
 TEST BY: RF
 LD JOB No.: 86047-2197

TEST TYPE: Nuclear Backscatter Nuclear Direct Trans.

SPECIFICATIONS: Project: City: County: State:

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
119	Dry utility, sta 0+75 @ FSG	97	95	12.4	+2	113.7 @ 14.2	C

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.

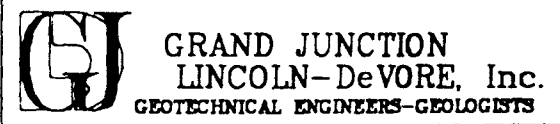
KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



SAMPLE LOCATION 7th & Horizon Dr.

TEST BY JD

SOIL TYPE Sandy silty clay

TYPE TEST ASTM D-698-A

MAX. DRY DENSITY 113.7 pcf

OPTIMUM MOISTURE 14.2 %

FRACTION USED -#4

MOLD SIZE 1/30 cu. ft.

SIEVE SIZE % PASSING

<u>1 1/2"</u>	
<u>1"</u>	
<u>3/4"</u>	
<u>1/2"</u>	
<u>3/8"</u>	
<u>4</u>	100
<u>10</u>	100
<u>20</u>	100
<u>40</u>	100
<u>100</u>	78
<u>200</u>	54.2
<u>.0200</u>	
<u>.005</u>	

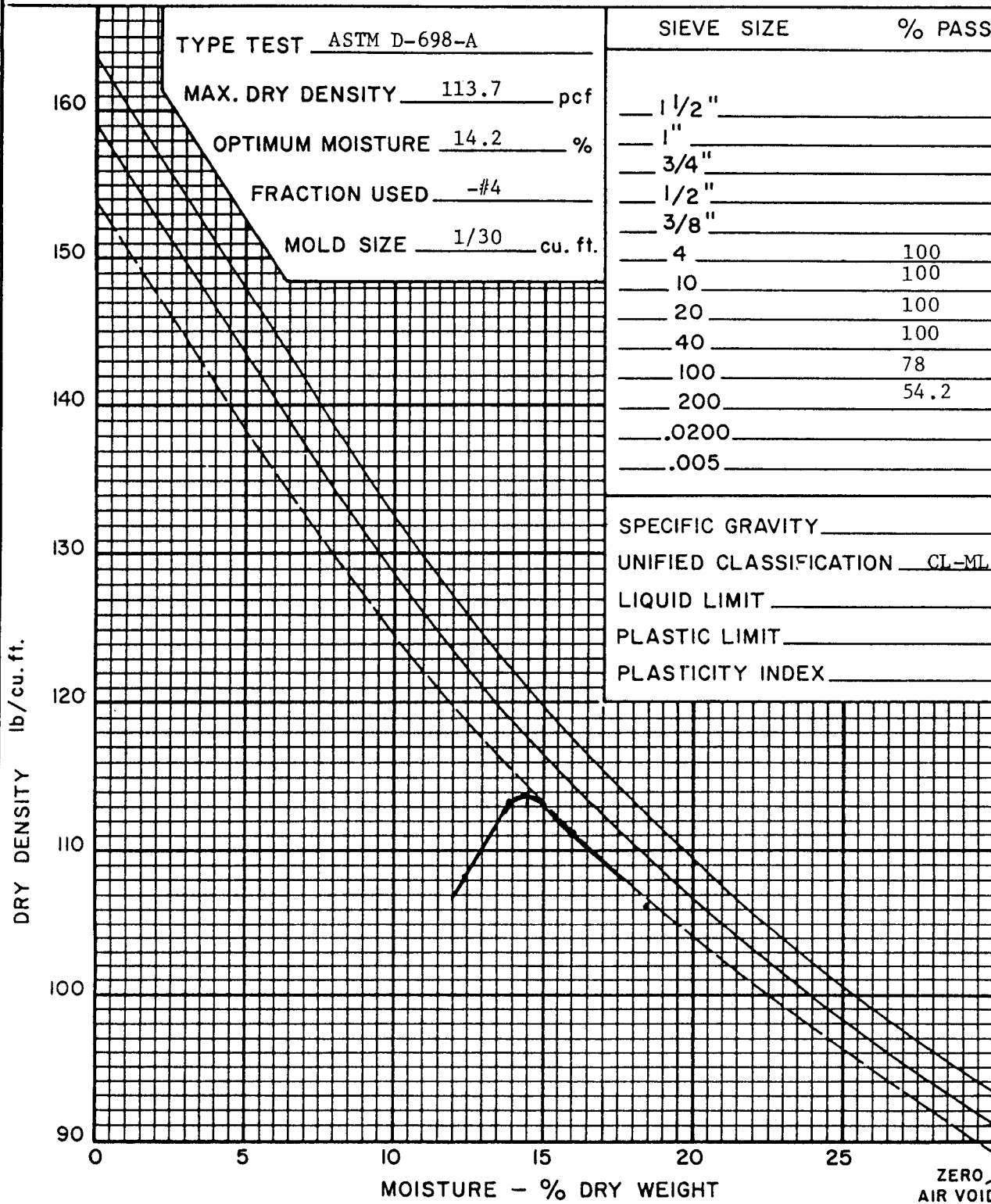
SPECIFIC GRAVITY _____

UNIFIED CLASSIFICATION CL-ML

LIQUID LIMIT _____

PLASTIC LIMIT _____

PLASTICITY INDEX _____



Lincoln DeVore, Inc.
Geotechnical Consultants

Ben Dowd Excavating

Glen @ Horizons

DATE
5-5-97

JOB NO.
86047-2197

DRAWN
EM

CLIENT: Elam Construction

REPORT No. 1

PROJECT: Glen @ Horizons

DATE of TEST: 5-9-97

LOCATION: 7th & Horizon Dr.

TEST BY: RL/LRS

LD JOB No.: 86060-2660

TEST TYPE: Nuclear Backscatter Nuclear Direct Trans.

SPECIFICATIONS:

Project: City: County: State:

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
1	Bldg pad, S pad, S end @ FSG	96	95	15.4	+2	113.7 @ 14.2	C
2	Bldg pad, S pad, N end @ FSG	98	95	12.6	+2	113.7 @ 14.2	C
3	Bldg pad, N side, S end @ FSG	100	95	13.3	+2	113.7 @ 14.2	C
4	Bldg pad, N. side, N end @ FSG	100	95	14.7	+2	113.7 @ 14.2	C

Distribution:
1-Client
1-LD/CS
1-Subdiv Env.
1-City of GJ
1-Thompson-Langford

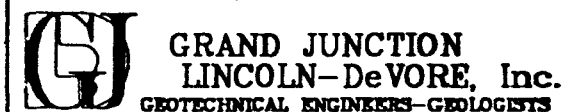
KEY: * Fails Compaction SPEC. C = Cohesive
** Fails Moisture SPEC. NC = NonCohesive
S = Standard Proctor ABC = Aggregate Base
M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY:

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



CLIENT: Elam Construction
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 2
 DATE of TEST: 5-28-97
 TEST BY: RF
 LD JOB No.: 86060-2660

TEST TYPE: Nuclear _____ Nuclear _____
 Backscatter _____ Direct Trans. X

SPECIFICATIONS: Project: _____ City: X County: _____ State: _____

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
5	Widening of 7th St. 25' from entrance to Glen @ 2' BSG	99	95	12.9	+2	113.7 @ 14.2	C
6	Widening of 7th St. 50' from entrance to Glen @ FSG	100	95	13.9	+2	113.7 @ 14.2	C

- Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Emv.
 1-City of GJ
 1-Thompson-Langford

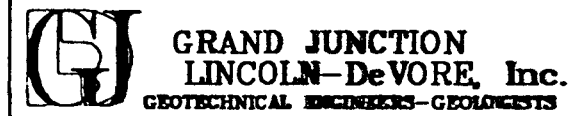
KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



CLIENT: Elam Construction
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 3
 DATE of TEST: 5-29-97
 TEST BY: RF
 LD JOB No.: 86060-2660

TEST TYPE: Nuclear _____ Nuclear _____
 Backscatterer _____ Direct Trans. X

SPECIFICATIONS: Project: _____ City: X County: _____ State: _____

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
7	Road widening, 7th St, 50' S of road @ FSG	96	95	14.4	+2	113.7 @ 14.2	C
8	Road widening, 7th St., 80' S of road @ FSG	99	95	14.4	+2	113.7 @ 14.2	C

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.
 1-City of GJ
 1-Thompson-Langford

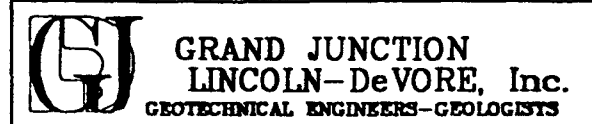
KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



CLIENT: Flam Construction
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 4
 DATE of TEST: 5-30-97
 TEST BY: RSW
 LD JOB No.: 86060-2660

TEST TYPE: Nuclear Backscatter Nuclear Direct Trans.

SPECIFICATIONS: Project: City: County: State:

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
9	Street widening along E side of 7th St., sta 1+00 @ FSG	100	95	13.7	+2	113.7 @ 14.2	C
10	Sidewalk along E side of 7th St., sta 1+00 @ FSG	100	95	13.6	+2	113.7 @ 14.2	C
11	Sidewalk, S side of Glen Ct., sta 1+00 @ FSG	100	95	16.1	+2	113.7 @ 14.2	C
12	Sidewalk, N side of Glen Ct., sta 1+00 @ FSG	100	95	15.7	+2	113.7 @ 14.2	C

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Eny.
 1-City of GJ
 1-Thompson-Langford

KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



GRAND JUNCTION
 LINCOLN-DeVORE, Inc.
 GEOTECHNICAL ENGINEERS-GEOLOGISTS

CLIENT: Elam Construction
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 5
 DATE of TEST: 6-2-97
 TEST BY: RF
 LD JOB No.: 86060-2660

TEST TYPE: Nuclear Backscatter Nuclear Direct Trans.

SPECIFICATIONS: Project: City: County: State:

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
13	Glen Ct., sta 0+75, R lane @ FSG	100	95	13.6	+2	113.7 @ 14.2	C
14	Glen Ct., sta 1+75, L lane @ FSG	98	95	15.2	+2	113.7 @ 14.2	C
15	Glen Ct., sta 2+75, R lane @ FSG	100	95	14.7	+2	113.7 @ 14.2	C
16	Sidewalk, sta 2+75, S side @ FSG	100	95	13.2	+2	113.7 @ 14.2	C
17	Sidewalk, sta 2+75, N side @ FSG	100	95	13.3	+2	113.7 @ 14.2	C
18	Glen Ct., sta 3+75, L lane @ FSG	100	95	15.6	+2	113.7 @ 14.2	C
19	Sidewalk, sta 4+75, R lane @ FSG	95	95	13.4	+2	113.7 @ 14.2	C
20	Glen Ct., sta 4+75, R lane @ FSG	100	95	12.3	+2	113.7 @ 14.2	C
21	Sidewalk, sta 4+75, L lane @ FSG	100	95	13.7	+2	113.7 @ 14.2	C

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Eny.
 1-City of GJ
 1-Thompson-Langford

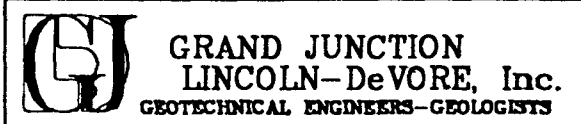
KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



CLIENT: Elam Construction
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 6
 DATE of TEST: 6-3-97
 TEST BY: RF
 LD JOB No.: 86060-2660

TEST TYPE: Nuclear _____ Nuclear _____
 Backscatter _____ Direct Trans. X

SPECIFICATIONS: Project: _____ City: X County: _____ State: _____

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
22	Glen Ct, sidewalk, sta 5+50, R lane @ FSG	96	95	15.1	+2	113.7 @ 14.2	C
23	Glen Ct., street, sta 5+50, L lane @ FSG	100	95	14.6	+2	113.7 @ 14.2	C
24	Glen Ct., sidewalk, sta 5+50, L lane @ FSG	97	95	13.6	+2	113.7 @ 14.2	C
25	Fill area, NW end @ FSG	100	95	12.6	+2	113.7 @ 14.2	C
26	Fill area, NE end @ FSG	100	95	12.9	+2	113.7 @ 14.2	C

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.
 1-City of GJ
 1-Thompson-Langford


KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY:

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



**GRAND JUNCTION
 LINCOLN-DeVORE, Inc.**
 GEOTECHNICAL ENGINEERS-GEOLOGISTS

CLIENT: Elam Construction
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 7
 DATE of TEST: 6-18-97
 TEST BY: RF
 LD JOB No.: 86060-2660

TEST TYPE: Nuclear _____ Nuclear _____
 Backscatter _____ Direct Trans. X

SPECIFICATIONS: Project: _____ City: X County: _____ State: _____

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
27	Patchfill on Glen Ct., sta 5+50, N side @ Subbase	96	95	9.8	+2	125.9 @ 8.1	BB
28	Patchfill on Glen Ct., sta 2+00, S side @ Subbase	97	95	10.0	+2	125.9 @ 8.1	BB
29	Patchfill on Glen Ct., sta 4+25, NW Side @ Subbase	96	95	8.5	+2	125.9 @ 8.1	BB
30	Patchfill on Glen Ct., sta 3+25, SW side @ Subbase	97	95	9.3	+2	125.9 @ 8.1	BB
31	Patchfill on Glen Ct., sta 2+25, N side @ Subbase	97	95	8.2	+2	125.9 @ 8.1	BB
32	Patchfill on Glen Ct., sta 1+25, S side @ Subbase	95	95	7.7	+2	125.9 @ 8.1	BB

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.
 1-City of GJ
 1-Thompson-Langford

KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run
 BB = Black Base

GRAND JUNCTION LINCOLN-DEVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



GRAND JUNCTION
 LINCOLN-DEVORE, Inc.
 GEOTECHNICAL ENGINEERS-GEOLOGISTS

CLIENT: Elam Construction
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 8
 DATE of TEST: 6-20-97
 TEST BY: JD
 LD JOB No.: 86060-2660

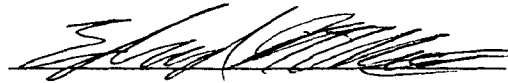
TEST TYPE: Nuclear Backscatter Nuclear Direct Trans. SPECIFICATIONS: Project: _____ City: County: _____ State: _____

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
33	Sidewalk, 7th St., sta 0+25 @ FG	97	95	5.6	+2	136.4 @ 6.9	ABC
34	Sidewalk, 7th St., sta 1+00 @ FG	99	95	5.4	+2	136.4 @ 6.9	ABC
35	Glen Ct., sta 0+75, RT @ FG	98	95	5.9	+2	136.4 @ 6.9	ABC
36	Glen Ct., sta 0+75, LT @ FG	100	95	6.4	+2	136.4 @ 6.9	ABC
37	Glen Ct., sta 2+00, RT @ FG	98	95	6.0	+2	136.4 @ 6.9	ABC
38	Glen Ct., sta 2+00, LT @ FG	97	95	6.1	+2	136.4 @ 6.9	ABC
39	Glen Ct., sta 4+00, LT @ FG	97	95	8.6	+2	136.4 @ 6.9	ABC
40	Glen Ct., sta 4+00, RT @ FG	97	95	7.2	+2	136.4 @ 6.9	ABC
41	Glen Ct., sta 5+80, RT, cul-de-sac @ FG	98	95	6.7	+2	136.4 @ 6.9	ABC
42	Glen Ct., sta 5+80, LT @ FG	100	95	6.5	+2	136.4 @ 6.9	ABC
43	Sidewalk, 7th St., 70' N of Glen Ct @ FG	100	95	5.5	+2	136.4 @ 6.9	ABC

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.
 1-City of GJ
 1-Thompson-Langford

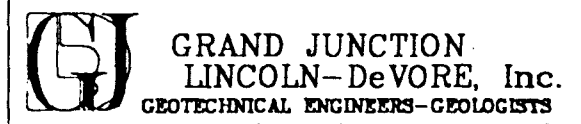
KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



CLIENT: Elam Construction
 PROJECT: Glen @ Horizons
 LOCATION: 7th & Horizon Dr.

REPORT No. 9
 DATE of TEST: 7-21-97
 TEST BY: RSW/RF
 LD JOB No.: 86060-2660

TEST TYPE: Nuclear Backscatter Nuclear Direct Trans. X


SPECIFICATIONS: Project: _____ City: X County: _____ State: _____

Test No.	Location of Test	COMPACTION %	COMPAC. SPEC. %	MOISTURE CONT %	MOISTURE SPEC. %	PROCTOR VALUE	SOIL TYPE
44	Street, sta 4+00, E lane @ FC	98	95	7.5	+2	133.0 @ 8.8	BC
45	Street, sta 3+00, W lane @ FC	96	95	7.8	+2	133.0 @ 8.8	BC
46	Street, sta 2+00, S lane @ FC	100	95	6.8	+2	133.0 @ 8.8	BC
47	Street, sta 1+00, N lane @ FC	99	95	7.0	+2	133.0 @ 8.8	BC
48	Street extension, 7th St., 100' N of S end @ FC	98	95	7.3	+2	133.0 @ 8.8	BC
49	Street extension, 7th St., 200' N of S end, E side @ FC	98	95	6.9	+2	133.0 @ 8.8	BC

Distribution:
 1-Client
 1-LD/CS
 1-Subdiv Env.
 1-City of GJ
 1-Thompson-Langford

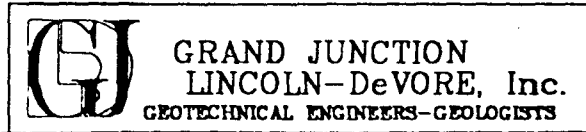
KEY: * Fails Compaction SPEC. C = Cohesive
 ** Fails Moisture SPEC. NC = NonCohesive
 S = Standard Proctor ABC = Aggregate Base
 M = Modified Proctor PR = Pit Run

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY: 

FILL DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Soil densities at the locations and depths identified above. Grand Junction Lincoln-DeVore has relied on the contractor to provide uniform mix placement and compactive effort throughout the fill area.



CLIENT: Elam Construction

REPORT No. 10

PROJECT: Glen @ Horizons

DATE of TEST: 7-23-97

LOCATION: 7th & Horizon Dr.

TEST BY: RF

LD JOB No.: 86060-2660

TEST TYPE: Nuclear Backscatter Nuclear Direct Trans.

SPECIFICATIONS:

Project: _____ City: County: _____ State: _____

Test No.	Location of Test	Mix Design Compaction %	Mix Design Max. Den. pcf	Rice Gs Compaction %	Rice Gs Max. Den. pcf	Compac. Specif.
50	Glen Ct., 300' E of entrance, S side			95	151.2	92-96
51	Glen Ct., 400' E of entrance, N side			96	151.2	92-96
52	Glen Ct., 500' E of entrance, S side			98	151.2	92-96
53	Road widening, 7th St. & entrance			94	151.2	92-96
54	Road widening, 7th St., 100' S of entrance			93	151.2	92-96
55	Street, 100' E of W end			98	151.2	92-97
56	Street, 200' E of W end			94	151.2	92-96

Distribution:

- 1-Client
- 1-LD/CS
- 1-Subdiv Env
- 1-City of GJ
- 1-Thompson-Langford

KEY: * Fails Compaction Specif.

GRAND JUNCTION LINCOLN-DeVORE, Inc.

BY:

A.C. DENSITY TEST DAILY REPORT

NOTE: Results indicate in-place Asphalt Concrete (AC) densities at the locations identified above. Lincoln-DeVore of Grand Junction has relied on the contractor to provide uniform mix placement and compactive effort throughout the pavement area.



GRAND JUNCTION
LINCOLN-DeVORE, Inc.
GEOTECHNICAL ENGINEERS-GEOLOGISTS

Client Elam Construction

Job No. 86060-2660

Project Glen @ Horizons

Test By JD
Location of Test Sidewalk & curbs
South entrance

Concrete Supplier WIBM

Cement Type Class B

Truck No. 14

Slump (ASTM C 143) 2 3/4 inches

Ticket No. 78695

Air Content (ASTM C 231) 5.2 %

Date of Test 7-11-97

Temperature (ASTM C 1064) 80 ° F.

Mix, Proportions _____

Test @ chute yds.

28-day Required Strength 4000 psi

Water Added 0 gallons

6" x 12" Cylinder No.	Avg. Cyl. Diameter (in.)	Cross-Sectional Area (in. ²)	Unit Weight (pcf)	Total Load (lbs.)	Unit Stress (psi)	Break Type	Break Date	Age (days)
1	6.03	28.56	145.5	86,500	3028	CM	7-18	7
2	6.03	28.56	145.5	125,000	4380	CM	8-8	28
3	6.03	28.56	145.5	130,500	4570	CM	8-8	28
4	6.03	28.56	145.5					Reserve

Remarks:

Specimen or cap defects:

Distribution:

- 2-Client
- 1-LD/CS
- 1-Subdiv Env
- 1-Thompson-Langford
- 1-City of GJ

* Does not meet required strength (if applicable)

Break Types:

- CM - Conical Mortar Break
- CA - Conical Aggregate Break
- V - Shear Break

Date Issued: 8-11-97

Lincoln DeVore requires a minimum of 1 working day's notice to schedule personnel for any field tests and observations. Compressive strength test performed according to ASTM C-39. Final report will include data for all cylinders, and will be sent after the 28-day break. This laboratory cannot be responsible for any interpretation of the test results by other than laboratory personnel.

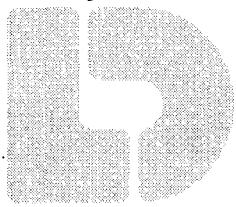
LINCOLN DeVORE, INC.

By: 

CONCRETE TEST REPORT



COLORADO: COLORADO SPRINGS
GRAND JUNCTION, PUEBLO



Lincoln DeVore, Inc.
Geotechnical Consultants

1441 Motor St.
Grand Junction, CO 81505
Elam Construction
1225 S. 7th St.
Grand Junction, CO 81501

July 24, 1997

TEL: (970) 242-8968
FAX: (970) 242-1561

Re: Asphalt Paving, Glen at Horizons, Glen Ct. & Horizon, sta 3+00

At your request personnel of Lincoln DeVore have obtained asphalt samples, supplied to the above referenced project by Elam Construction. Following are the results of our testing:

SIEVE ANALYSIS

OTHER TESTING

Sieve Size	Sample I	Job Mix Specs.		Sample I	Specs
5/8	100	100	AC% of Total	5.30	5.4±0.5
1/2	96	90-100	Location of Sample	See above	
3/8	80	74-89	Sample Date	7-22-97	
#4	53	50-78	Sample Time	0900	
#8	39	32-64	Sample Temp.	270°	275±5
#16	30	-	Air Temp.	94°	
#30	25	12-38	Gs (Rice)	2.43	2.45
#50	17	-	VMA %	15.68	>13%
#100	10	-	Air Voids %	5.35	3-5%
#200	6.5	3-7			

If any questions arise regarding these results or if we can be of any further assistance to you, please do not hesitate to contact this office at any time.

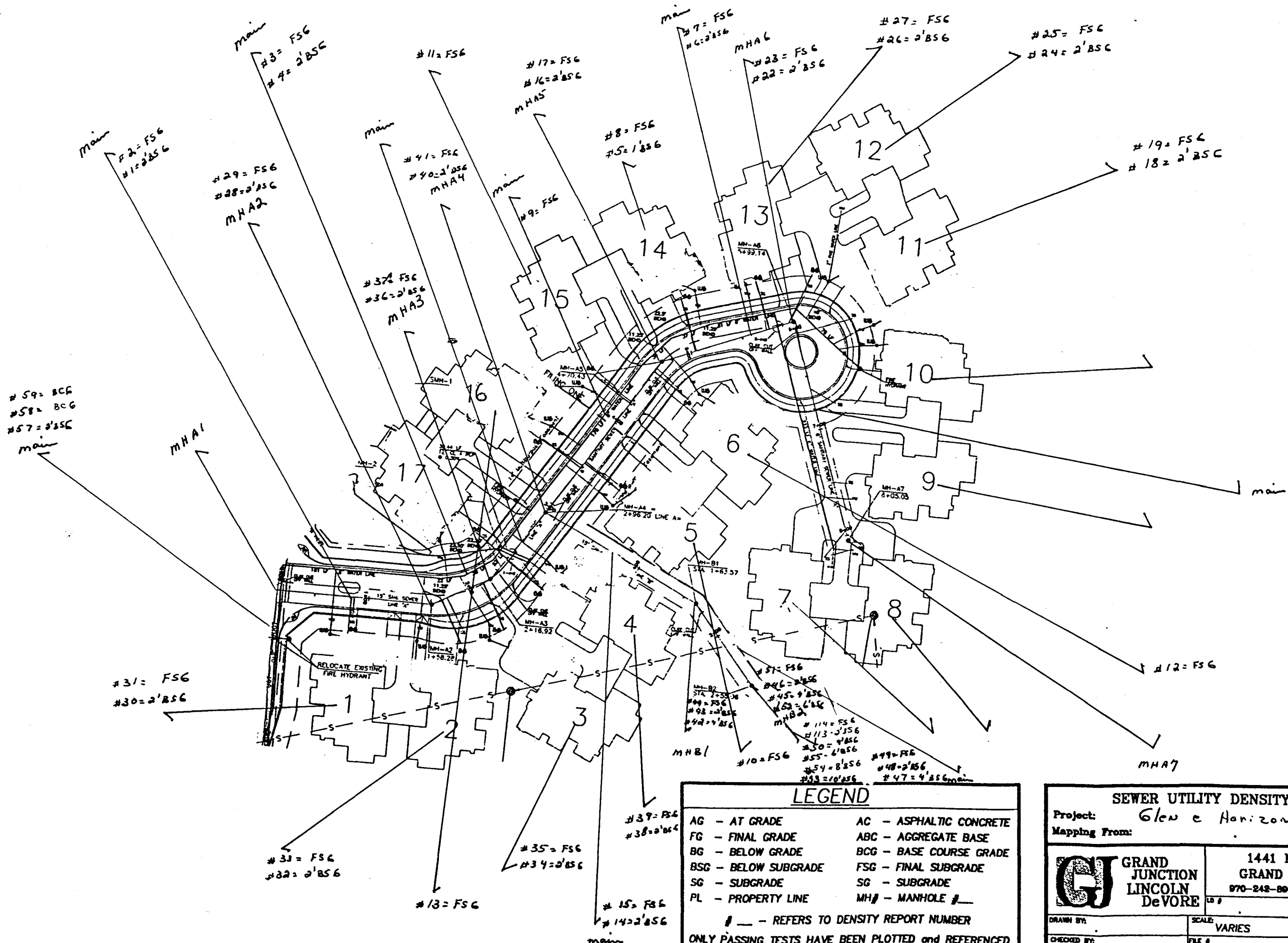
Respectfully submitted,

LINCOLN DeVore, Inc.

by: Edward M. Morris, PE
Engineer/Western Slope Manager

EM/bw

LD Job # 86060-2660-J



LEGEND


AG - AT GRADE	AC - ASPHALTIC CONCRETE
FG - FINAL GRADE	ABC - AGGREGATE BASE
BG - BELOW GRADE	BCG - BASE COURSE GRADE
BSG - BELOW SUBGRADE	FSG - FINAL SUBGRADE
SG - SUBGRADE	SG - SUBGRADE
PL - PROPERTY LINE	MH# - MANHOLE #

- REFERS TO DENSITY REPORT NUMBER
 ONLY PASSING TESTS HAVE BEEN PLOTTED and REFERENCED

SEWER UTILITY DENSITY TESTING

Project: *Glen e Horizon*

Mapping From:

 GRAND JUNCTION LINCOLN DeVORE	1441 MOTOR STREET GRAND JCT., COLORADO	
	970-242-8008 (fax 970-242-1501)	
DRWN BY:	SCALE: VARIES	DATE:
CHECKED BY:	FILE # UTILITY	REV:

FILE
FPF. 1996-240

THOMPSON-LANGFORD CORPORATION
ENGINEERING AND LAND SURVEYING

Independence Plaza
529 25 1/2 Rd., Suite B 210
Grand Junction, CO 81505
Ph. (970) 243-6067
Fax (970) 241-2845

May 14, 1998

Jody Kliska, P.E.
Development Engineer
Engineering Division
Department of Public Works
250 North 5th Street
Grand Junction, CO 81501

Re: The Glen at Horizon - Drainage

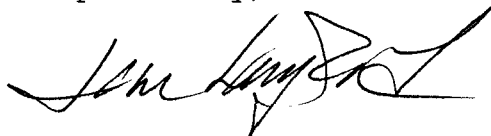
Dear Jody:

I got your message that the drawing the site people were using was different than yours. This is probably true, but not significantly different. The changes are all related to our problems with trying to satisfy the Grand Valley Irrigation Company. The ponds on the drawing I worked out with you last year (see letter dated July 10, 1997) are the same. When GVIC pushed the point about access to the headwall of the pipe leading under 7th Street, we modified the grading to put in the crossing over the ends of the pipe which then made it impossible to make a water fall directly down to the waterway. The drawing was modified to put in a standard outlet control box with a pipe leading to the pipes going under 7th Street. I have attached the modified drawing which we now have incorporated into a set of waterway drawings that will be sent to GVIC the first part of next week. We are proceeding as though Phil will accept our plan, but it is anything but a sure bet.

None of the hydraulics have changed, so the calculations I transmitted with the letter mentioned above, should be okay. You will also see that I have changed the wiers from ones that slide in to ones that are bolted on. We are having problems with Grand Junction Pipe not getting the wiers formed as precise as we have specified, so we are going to all bolted on wiers made of 1/4" plate.

If you have any questions, please give me a call

Respectfully,



James E. Langford, PE & LS

JEL/iml



Grand Junction Community Development Department
Planning • Zoning • Code Enforcement
250 North Fifth Street
Grand Junction, Colorado 81501-2668
(303) 244-1430 FAX (303) 244-1599

June 13, 1997

Phil Bertrand
Grand Valley Irrigation Company
688 26 Road
Grand Junction CO 81506

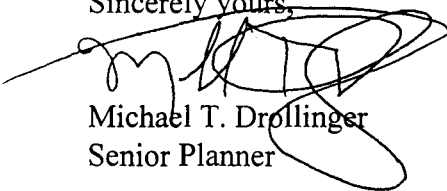
RE: The Glen at Horizon

Dear Mr. Bertrand:

I understand that you recently called to inquire about the status of the Glen at Horizon project located at the southeast corner of 7th Street and Horizon Drive. The project received final plan/plat approval for Filing #1 from the Planning Commission and City Council in December 1996, and final plan/plat approval for Filings #2-#4 from the Planning Commission in February, 1997. Construction on Filing #1 is underway and the approved construction plans are on file with our office and are available for your review during our regular business hours. If you have any questions about the relocation of the Horizon Drive channel I would suggest that you contact the local office of the Army Corps of Engineers who have been working closely with the developer on this project.

I trust that you find the above information useful. Please do not hesitate to contact me if you have any questions or if you require additional information.

Sincerely yours,



Michael T. Drollinger
Senior Planner

cc: File #FPP-96-240

FILE
FPF. 1996-240

THOMPSON-LANGFORD CORPORATION
ENGINEERING AND LAND SURVEYING

Independence Plaza
529 25 1/2 Rd., Suite B 210
Grand Junction, CO 81505
Ph. (970) 243-6067
Fax (970) 241-2845

May 14, 1998

Jody Kliska, P.E.
Development Engineer
Engineering Division
Department of Public Works
250 North 5th Street
Grand Junction, CO 81501

Re: The Glen at Horizon - Drainage

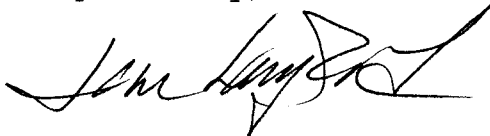
Dear Jody:

I got your message that the drawing the site people were using was different than yours. This is probably true, but not significantly different. The changes are all related to our problems with trying to satisfy the Grand Valley Irrigation Company. The ponds on the drawing I worked out with you last year (see letter dated July 10, 1997) are the same. When GVIC pushed the point about access to the headwall of the pipe leading under 7th Street, we modified the grading to put in the crossing over the ends of the pipe which then made it impossible to make a water fall directly down to the waterway. The drawing was modified to put in a standard outlet control box with a pipe leading to the pipes going under 7th Street. I have attached the modified drawing which we now have incorporated into a set of waterway drawings that will be sent to GVIC the first part of next week. We are proceeding as though Phil will accept our plan, but it is anything but a sure bet.

None of the hydraulics have changed, so the calculations I transmitted with the letter mentioned above, should be okay. You will also see that I have changed the wiers from ones that slide in to ones that are bolted on. We are having problems with Grand Junction Pipe not getting the wiers formed as precise as we have specified, so we are going to all bolted on wiers made of 1/4" plate.

If you have any questions, please give me a call

Respectfully,



James E. Langford, PE & LS

JEL/iml

FILE
FPF. 1996-240

THOMPSON-LANGFORD CORPORATION
ENGINEERING AND LAND SURVEYING

Independence Plaza
529 25 1/2 Rd., Suite B 210
Grand Junction, CO 81505
Ph. (970) 243-6067
Fax (970) 241-2845

May 14, 1998

Jody Kliska, P.E.
Development Engineer
Engineering Division
Department of Public Works
250 North 5th Street
Grand Junction, CO 81501

Re: The Glen at Horizon - Drainage

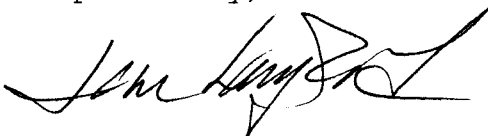
Dear Jody:

I got your message that the drawing the site people were using was different than yours. This is probably true, but not significantly different. The changes are all related to our problems with trying to satisfy the Grand Valley Irrigation Company. The ponds on the drawing I worked out with you last year (see letter dated July 10, 1997) are the same. When GVIC pushed the point about access to the headwall of the pipe leading under 7th Street, we modified the grading to put in the crossing over the ends of the pipe which then made it impossible to make a water fall directly down to the waterway. The drawing was modified to put in a standard outlet control box with a pipe leading to the pipes going under 7th Street. I have attached the modified drawing which we now have incorporated into a set of waterway drawings that will be sent to GVIC the first part of next week. We are proceeding as though Phil will accept our plan, but it is anything but a sure bet.

None of the hydraulics have changed, so the calculations I transmitted with the letter mentioned above, should be okay. You will also see that I have changed the wiers from ones that slide in to ones that are bolted on. We are having problems with Grand Junction Pipe not getting the wiers formed as precise as we have specified, so we are going to all bolted on wiers made of 1/4" plate.

If you have any questions, please give me a call

Respectfully,



James E. Langford, PE & LS

JEL/iml

City of Grand Junction

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

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



June 25, 1997

Mac Cunningham
Cunningham Investments
121 S Galena Street Suite 201
Aspen, CO 81611
(970) 925-8803

Dear Mr. Cunningham:

This letter is in regards to the addressing for The Glen at Horizon. Mr. Carbone has asked about addressing the units starting on the south side of Glen Ct. with the numbers 110-140 for the first four units in building 1 and working counter-clock-wise around the subdivision to building 17 with numbers of 1710-1740. After doing some research into the matter to see if this would work, I found that the Zoning and Development Code will not allow addressing in this manner. Section 5-3-4 STREET NAMING AND ADDRESSING SYSTEM states "A street naming system shall be maintained to facilitate the provisions of necessary public services (police, fire, mail), reduce public costs for administration, and provide more efficient movement of traffic. For consistency, this system shall be adhered to on all newly platted, dedicated or named streets and roads. The Administrator shall check all new street names for compliance to this system and issue all street addresses. Existing streets and roads not conforming to this system shall be made conforming as the opportunity occurs." Therefore, the addressing system needs to follow the current addressing system for the City. I have attached a copy of the addresses that we have established for the subdivision.

If you have any further questions, please feel free to call the Community Development Office at (970) 244-1430.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Drollinger", written over a large, stylized scribble.

Michael Drollinger
Acting Community Development Supervisor

slc



July 7, 1997

Mr. Peter Carbone
Glen at Horizon Drive LLC
605 W. Main Street Suite 002
Aspen, CO 81611

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

RE: Development Improvements Agreement

Dear Mr. Carbone:

You have requested to replace the existing disbursement agreement for the Glen at Horizon with another agreement which will guarantee the remaining work. This may be accomplished; please provide an agreement which will cover the remaining work and show that the work to date has been accomplished and has been paid for or there is agreement between you and your contractor for payment of the work.

The city inspection to date indicates the sanitary sewer has been installed and tested, the water lines have been installed, tested and in service, and the street has been constructed to subgrade.

The new agreement will need to include an new Exhibit B detailing the costs of the remaining items.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jody Kliska".

Jody Kliska
Development Engineer

cc: Michael Drollinger, Community Development

Horizon Builders
OF GRAND JUNCTION, L.L.C.

614 N. 7th Street, Grand Junction, CO 81506 • Phone (970) 248-9895 • Fax (970) 248-9894 • Mobile (970) 216-0705

July 31, 1997

Jody Kliska, P.E.
City Development Engineer
City of Grand Junction
250 North Fifth Street
Grand Junction, CO 81501-2668

RE: TCP Credit Requirements
The Glen @ Horizon Drive
Horizon & North Seventh
Grand Junction, CO


*\$42.64 TCP/
FILING 1 UNIT
J. Kliska
7-31-97*

Dear Jody,

Enclosed are the estimated costs for the Seventh St. decel lane to be credited toward the TCP costs.

ELAM CONSTRUCTION FOR: PREPARATION, BASE AND PAVING	\$5,445.00
MAYS CONCRETE FOR: CURB, GUTTER AND SIDEWALK @ \$10.95 PER FOOT	1,631.55
ELAM CONSTRUCTION FOR: REMOVAL AND DISPOSAL OF EXISTING ROAD, CURB, GUTTER AND SIDEWALK	1,500.00
TOTAL ESTIMATED COST	\$8,576.55

Respectfully submitted,


Peter R. Carbone, Manager
Horizon Builders of
Grand Junction, LLC

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

FAX LETTER

April 29, 1998

Michael T. Drollinger, AICP
City of Grand Junction
Community Development Department
250 North 5th Street
Grand Junction, CO 81501
FAX 244-1599

Re: The Glen - Detention Facility Estimate

Dear Michael:

In reference to your call concerning the cost of the detention facility at The Glen, this is how I came up with my number. The area where they want to detain the storm water is roughly 60'x80' and I expect them to have to manipulate roughly 3' of dirt. This equates to 533 CY @ 3.25/CY or \$1732.25.

The detention area as presently laid out has four small ponds, the final one controlled by a standard outlet control structure which should cost in the neighborhood or \$1,600. The other ponds will each have control wiers which I estimate will cost in the neighborhood or \$400 each or \$1,200 which totals to \$4,532.25. I rounded it to \$4,500.

There is inlet and outlet piping associated with the basins, but I assumed that this piping was covered in the original estimate for the storm sewer as prepared by LANDesign.

Respectfully,



James E. Langford, PE & LS

JEL/iml

RECEIVED CIVIL ENGINEERING
APR 29 1998

THE CUNNINGHAM COMPANIES

SUITE 002
605 WEST MAIN STREET
ASPEN, COLORADO 81611

OFFICE (970) 925-8803

FAX (970) 925-8835

MEMORANDUM

TO: Michael Drollinger
Grand Junction Community Development

FROM: Leslie J. Henderson, Office Manager
Cunningham Investment Co., Inc.,
Co-Managers The Glen @ Horizon Drive II, LLC

DATE: April 29, 1998 UPS Overnight
(970) 244-1439

RE: Fees for Detention Work
The Glen @ Horizon Drive

Per your discussion with Mr. Cunningham today, enclosed please find a check in the amount of \$3,500 for additional fees for the detention work at The Glen @ Horizon Drive.

Should you have an questions, please contact this office.

:ljh
enclosure

CITY OF GRAND JUNCTION
DEPARTMENT OF PUBLIC WORKS & UTILITIES
250 NORTH 5TH STREET
GRAND JUNCTION, CO 81501
(970) 244-4003

TO THE MESA COUNTY CLERK & RECORDER:

THIS IS TO CERTIFY that the herein named Subdivision Plat,

THE GLEN AT HORIZON

Situated in the SE 1/4 of Section 2,

Township 1 SOUTH, Range 1 WEST,

of the UTE Meridian in the City of Grand Junction, County of Mesa, State of Colorado, has been reviewed under my direction and, to the best of my knowledge, satisfies the requirements pursuant to C.R.S. 38-51-106 and the Zoning and Development Code of the City of Grand Junction for the recording of subdivision plats in the office of the Mesa County Clerk and Recorder.

This certification makes no warranties to any person for any purpose. It is prepared to establish for the County Clerk and Recorder that City review has been obtained. This certification does not warrant: 1) title or legal ownership to the land hereby platted nor the title or legal ownership of adjoining; 2) errors and/or omissions, including, but not limited to, the omission(s) of rights-of-ways and/or easements, whether or not of record; 3) liens and encumbrances, whether or not of record; 4) the qualifications, licensing status and/or any statement(s) or representation(s) made by the surveyor who prepared the above-named subdivision plat.

Dated this 20 day of April, 1998.

City of Grand Junction,
Department of Public Works & Utilities

By: James L. Shanks
James L. Shanks, P.E., P.L.S.
Director of Public Works & Utilities

1844205 05/01/98 0323PM
MONIKA TODD CLK&REC MESA COUNTY CO
REC FEE \$20.00 SURCHG \$1.00

*Recorded in Mesa County *

* * *

*Date: _____ *

* * *

*Plat Book: 16 Page: 157 + 158 *

* * *

*Drawer: FF 666 *



THOMPSON - LANGFORD CORPORATION
ENGINEERS AND LAND SURVEYORS

tlc@tlcwest.com
 Facsimile (970) 241-2845
 Telephone: (970) 243-6067
 529 25 1/2 Rd, Grand Junction, CO 81505

August 18, 1998

Kent Marsh
 City of Grand Junction
 250 North 5th Street
 Grand Junction, CO.
 81505

RE: The Glen at Horizon - Final Acceptance

Dear Kent:

In the interests of closing out this first phase of The Glen, I have attached the following:

1. Two sets of blue-line copies of the **Landesign** construction drawings with my signature and seal on the "As-built" supplementary drawings.
2. A complete set of mylars of the **Landesign** construction drawings
3. A "CD" of the "as-built" plans for The Glen at Horizon.
4. Copies of the geotechnical reports and a map showing the locations of each test .

Omitted from the above list is the "as-built" detention pond volume letter of certification. As we discussed, the as-built topography of the basins reveal that two of them are short of the volume required. Since they are all very nicely landscaped, I asked that you see if we could add another small detention facility in Phase II to make up the difference, rather than disturb the present ponds. It was my understanding that this would be acceptable. For your records, I have included an exhibit which shows the proposed as well as existing topography of the ponds. The proposed contours are shaded whereas the ones we recently surveyed are solid lines. I have also included stage storage tables for each of the ponds and a summary to better show the deficiencies.

I will be calling you to schedule a final walk through.

Respectfully,

James E. Langford, PE & LS

FAX Bill Engleman 970-925-8997

STORAGE SUMMARY

The Glen at Horizon

8/5/99

Pond Name	Design Volume CF	As-built Volume CF	Excess or Deficiency CF	%	
#1	1716.83	1193.15	-523.68	-30.50%	Short
#2	246.72	174.59	-72.13	-29.24%	Short

Ponds #3 and Feature are at the same elevation and work together by virtue of a pipe connecting one with the other, therefore their volumes are summed.

#3	167.60	122.04			
Feature	471.83	515.29	2.10	0.33%	Okay

STAGE/STORAGE RELATIONSHIP

The Glen at Horizon

ON-SITE DETENTION FACILITY (Pond # 1)
(Pond nearest Independent Ranchmen's Ditch)

8/5/99

Volume using Conical Method.

(Page N-12, SWMM)

Elev. FT	Area SF	Vol. CF	Sum.Vol. CF	
4631	20.05	792.33		
4631.5	82.34	82.02	792.33	
4632	262.69	172.23	874.35	
4632.5	433.31	252.44	1046.58	
Perm. Pool Elev. 4633.49	580	319.55	1299.01	1612.17
4633.5	700.09	384.39	1618.57	
4634	839.58	453.93	2002.96	
Adj. 100-YR WSE 4634.83	977.89	527.94	2456.88	2805.33
4635	1135.86	612.36	2984.83	
4635.5	1315.8		3597.19	
Permanent Pool Vol.		=	1612.17	CF
100-YR Storage Vol. Available		=	1193.15	CF
100-YR Storage Vol. Required		=	1716.83	CF

STAGE/STORAGE RELATIONSHIP

The Glen at Horizon

ON-SITE DETENTION FACILITY (Pond # 2)

(Central Pond)

8/5/99

Volume using Conical Method.

(Page N-12, SWMM)

	Elev.	Area	Vol.	Sum.Vol.
	FT	SF	CF	CF
	4633	0.71		
			785.62	
	4633.5	73.49		785.62
			52.51	
	4634	140.09		838.13
			84.52	
Perm. Pool Elev.	4634.5	199.76		922.65
4634.62			135.32	955.12676
Adj. 100-YR WSE	4635	348.38		1057.97
4635.18			199.28	1129.7127
	4635.5	450.93		1257.25
			253.81	
	4636	566.51		1511.06
Permanent Pool Vol. =			955.13	CF
100-YR Storage Vol. Available =			174.59	CF
100-YR Storage Vol. Required =			246.92	CF

STAGE/STORAGE RELATIONSHIP
The Glen at Horizon

ON-SITE DETENTION FACILITY (Pond # 3)
(Highest pond, nearest the street)
 8/5/99

Volume using Conical Method.
 (Page N-12, SWMM)

Elev.	Area	Vol.	Sum.Vol.
FT	SF	CF	CF
4634	2.03	788.73	
4634.5	85.21	788.73	
		58.24	
Perm. Pool Elev. 4635	150.84	846.96	
4635.13		95.04	871.67517
Adj. 100-YR WSE 4635.5	232.25	942.01	
4635.69		136.06	993.7107
4636	314.05	1078.07	
		183.18	
4636.5	421.29	1261.25	

Permanent Pool Vol. = 871.68 CF
 100-YR Storage Vol. Available = 122.04 CF
 100-YR Storage Vol. Required = 167.60 CF

STAGE/STORAGE RELATIONSHIP

The Glen at Horizon

(Pond with fountain, adjacent to 7th Street)

ON-SITE DETENTION FACILITY (Pond # Feature)

8/5/99

Volume using Conical Method.

(Page N-12, SWMM)

Elev. FT	Area SF	Vol. CF	Sum.Vol. CF
4632	15.38	790.17	
4632.5	75.05	59.81	790.17
4633	170.64	126.78	849.98
4633.5	346.77	206.54	976.76
4634	483.16	273.55	1183.30
4634.5	613.62	337.48	1456.85
Perm. Pool Elev. 4635	738.2	413.30	1794.32
4635.2			1959.6402
Adj. 100-YR WSE 4635.5	918.26	514.06	2207.62
4635.76			2474.9318
4636	1142.06		2721.68
Permanent Pool Vol.		=	1959.64 CF
100-YR Storage Vol. Available		=	515.29 CF
100-YR Storage Vol. Required		=	471.83 CF

NORTH 7th STREET

ROW

ROW

ROW

ROW

4632

F.F. = 4639.20

17

F.F. = 4637.20

GLEN COURT



FPP-1996-240

August 19, 1999



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

James E. Langford
Thompson-Langford Corp.
529 25 1/2 Road, Suite B210
Grand Junction, CO.
81505

Jim:

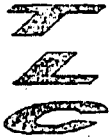
I agree that it is unnecessary to tear up the existing landscaping within this filing, if additional detention can be provided in future filings. However, I will need a letter from you stating that the existing ponds along with their outlet control structures will be adequate for this filing.

I should be free most of next week to schedule a final walk-through. The week after next will be a little more difficult since I will be in and out of the office because of bow season.

Thank you,

Kent Marsh

Cc: File



THOMPSON - LANGFORD CORPORATION
ENGINEERS AND LAND SURVEYORS

tlc@tlcwest.com
Facsimile (970) 241-2845
Telephone: (970) 243-6067
529 25 1/2 Rd, Grand Junction, CO 81505

TRANSMITTAL

September 07, 1998

Kent Marsh
City of Grand Junction
250 North 5th Street
Grand Junction, CO. 81505
Ph. 244-1451
FAX 256-4022

**RE: The Glen at Horizon - Development Improvements Agreement,
Phase II**

Dear Kent:

Per our discussion this morning, I am sending you a new Exhibit "B" for the Development Improvements Agreement for Phase II. Since the sewer line was found to be okay and the drainage detention deficiency was found to be acceptable, the only items I have included other than the items needed to complete Phase II are the costs for replacing the broken concrete and the costs for continuing the maintenance of the berm until the vegetation is established.

I have attached the estimates that we received from Eagle Construction to replace the broken concrete and the estimate we received from Deep Creek Inc. to continue the maintenance on the berm. The unit costs for the items relating to Phase II may seem high, but they are for a small quantity and are reflective of the estimate we received from Sorter for completing the project. Sorter's estimate is attached for you records as well.

Respectfully,

James E. Langford, PE & LS

Cc: Bill Engleman

EXHIBIT "B"
THE GLEN AT HORIZON
 ENGINEERS OPINION OF COST

DATE: 9/7/99
 NAME OF DEVELOPMENT: THE GLEN, FILING II
 LOCATION: SE/4 SEC.02, T 1 S., R 1 W., UTE FM
 PRINTED NAME OF PERSON PREPARING: JAMES E. LANGFORD

CONSTRUCTION COST ESTIMATE:

Water System:	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
1 6" DR-18 P V.C. Waterline	LF	223	\$14.00	\$3,122.00
2 6" Fittings (Including Thrust Blocks)	EA	2	\$200.00	\$400.00
3 6" Gate Valves and Boxes	EA	1	\$450.00	\$450.00
4 Water Service Taps	EA	3	\$150.00	\$450.00
5 3/4" Copper Service Line	LF	61	\$9.00	\$549.00
Sub-Total Potable Water:				\$4,971.00

Sanitary Sewer System:	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
1 8" P.V.C. SDR-35 Sanitary Sewer Line	LF	206	\$16.00	\$3,296.00
2 Sanitary Sewer Manholes	EA	1	\$1,500.00	\$1,500.00
3 Sanitary Sewer Service Taps	EA	4	\$150.00	\$600.00
4 4" Sanitary Sewer Service Line	LF	156	\$9.50	\$1,482.00
5 Adjust Existing MH to Grade	EA	1	\$200.00	\$200.00
6 Remove Plug & Connect to Exist. MH	EA	1	\$300.00	\$300.00
Sub-Total Sanitary Sewer:				\$7,378.00

Street Grading and Paving	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
1 Subgrade preparation	SY	1,216	\$2.60	\$3,161.60
2 6" Cl-6 Aggregate Base Course, Street	CY	224	\$20.00	\$4,480.00
3 4" Cl-6 Aggregate Base Course, Sidewalks	CY	45	\$22.00	\$990.00
4 3" Asphalt (Grading C)	SY	1,182	\$8.60	\$10,165.20
5 1.5' Median Curb and Gutter	LF	91	\$22.00	\$2,002.00
5 2.0' Vertical Curb and Gutter	LF	580	\$13.50	\$7,830.00
5 5' Detached Sidewalk	LF	605	\$15.50	\$9,377.50
Sub-Total Site Grading and Paving:				\$36,006.30

Remedial Maintenance:	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
1 Removal and Replacement of broken sidewalk and curb and gutter	LS	1	\$3,500.00	\$3,500.00
2 Berm maintenance	LS	1	\$2,500.00	\$2,500.00
Sub-Total Storm Drainage:				\$6,000.00

Site Construction Costs (Minus Miscellaneous Construction Phase Services): **\$56,355.30**

	PERCENTAGE OF TOTAL CONSTRUCTION COST:	TOTAL PRICE
Miscellaneous		
1 Construction Phase Engineering	1.00%	\$563.55
2 Construction Phase Surveying	4.00%	\$2,254.21
3 Development Inspection Costs	2.00%	\$1,127.11
4 Quality Control	4.00%	\$2,254.21
5 City Inspection	2.00%	\$1,127.11
6 As-built survey and drawing revision	LS	\$1,500.00
	Miscellaneous:	\$8,826.19
Total Site Construction and Miscellaneous Costs:		\$65,181.49

SIGNATURE OF DEVELOPER

DATE

I HAVE REVIEWED THE ESTIMATED COSTS AND TIME SCHEDULE SHOWN ABOVE AND, BASED ON THE PLAN LAYOUTS SUBMITTED TO DATE AND THE CURRENT COSTS OF CONSTRUCTION TAKE NO EXCEPTION TO THE ABOVE.

CITY ENGINEER

DATE

COMMUNITY DEVELOPMENT

DATE

Deep Creek Inc

LANDSCAPING & IRRIGATION
DESIGN • CONSTRUCTION • MAINTENANCE

August 30, 1999

Kathy Portner
Senior Planner
City of Grand Junction
250 N. 5th Street
Grand Junction, CO 81501

RE: Berm - The Glen at Horizon
712 Glen Ct.

Dear Kathy:


Our company planted the berm at The Glen in June of this year. We used a native seed which does take about a year to fully establish. The slopes of 1.5-1 to 2-1 also make the situation more difficult to work with. Establishing consistent seed growth on a berm of this nature is not an easy task, as no growth standards can be set. It will take time and patience, as well as a diligent effort on our part to ensure the satisfactory growth of the berm.

We are working closely with Billy Engelmann at Rocky Mountain Construction to maintain and establish satisfactory growth of this berm. We did a weed and feed application on August 18th. This was followed by the cutting of the tall weeds during the week of August 23rd. We have scheduled an additional weed and feed application during the week of September 6th. It is recommended that another weed and feed application take place in the spring. There is an underground irrigation system in place to sufficiently take care of the watering needs. A rough estimate of the maintenance costs for the berm is around \$2500.00.

Deep Creek guarantees that the berm will grow. We will continue to monitor this situation closely until growth establishment is satisfactory to the owner and the City of Grand Junction.

If you have any questions, please feel free to contact me. Thank you.

Sincerely,


William R. Story
President

Cc: Billy Engelmann
Rocky Mountain Construction



858 Duray Avenue, Grand Junction, CO 81501
(870) 242-4389 - FAX (870) 257-1468

September 2, 1999

Rocky Mountain Construction
dba City Mountain Grand Junction, LTD., LLLP
418 E. Cooper #204
Aspen, CO 81611

**Project: City Sidewalks and Curb/Gutter Repair
The Glen At Horizon Drive**

Attn: Bill Engleman

Dear Bill,

We are pleased to propose all Labor, Equipment and Materials necessary to perform the following concrete construction repairs within the spray painted area:

- Tear out and replace 45 LF of 5' X 4" sidewalk
- Tear out and replace 10' of 5' wide monolithic sidewalk and 24" X 6" curb
- Tear out and replace 30 LF of 24" X 6" back curb and gutter
- Provide compaction, density test, slump test and permit all to City specifications
- Provide asphalt patch in curb and gutter areas
- Disposal of old concrete and asphalt

TOTAL: \$3500.00

Proposal does not include concrete pumping or conveying, winter heat other than blankets.

Respectfully Submitted:


Mark Chiono

Proposal

SORTER CONSTRUCTION, INC.



2802 HWY 50
GRAND JUNCTION, CO 81503
(970) 242-1436 FAX (970) 242-9040
WE "DIG" AMERICA

Page 1 of 1

PROPOSAL SUBMITTED TO:	Phone: 248-9895	Date: 02/10/99
Rocky Mountain Construction, Inc 418 E Cooper Aspen, Co 81611	The Glen @ Horizon Drive Phase 2 Improvements Grand Junction	

We hereby submit specifications and estimates for:

- EXTEND SEWER LINE.....TOTAL PRICE \$7,240.00**
 1. Tie into existing manhole at the end of the cul-de-sac.
 2. Furnish and install approximately 206 feet of 8" SDR-35 sewer line.
 3. Install approximately 156 feet of 4" sewer service spread out in 4 locations.
 4. Furnish and install a manhole at the end of the line.
- WATERLINE EXTENSION.....TOTAL PRICE \$4,975.00**
 1. Tie to existing water line at the end of the cul-de-sac.
 2. Furnish and install approximately 223 feet of 6" water line.
 3. Install 3 water services as shown on the plans.
- PREP AREA AND INSTALL ADDITIONAL BASE.....TOTAL PRICE \$7,250.00**
 1. Prep area for installation of base for detached sidewalk.
 2. Furnish and install additional base to sidewalk and roadway area. Provide sterilant to installed base.
- CONCRETE INSTALLATION.....TOTAL PRICE \$20,475.00**
 1. Furnish and install 2,500 sf of 5'x 4" sidewalk, 600 lf of curb and gutter, 100 feet of island curb and gutter, and approximately 1,380 sf of driveway openings at 6".
- ASPHALT.....TOTAL PRICE \$10,200.00**
 1. Furnish and install 3" of HBP covering approximately 10,300 sf.

- NOTES: 1. Scheduling to be upon the mutual agreement between the owner and Sorter Construction, Inc..
2. Prices do not include construction staking of testing.

We propose to furnish material and labor - complete in accordance with the above specifications, for the sum of Fifty Thousand One Hundred and Forty Dollars and no/100 (\$ 50,140.00).

Finance charge of 2% per month charged on all past due accounts.

All material is guaranteed to be as specified. All work to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from the above specifications involving extra cost will be executed only upon written orders, and will become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents or delays beyond our control. Owner to carry fire, tornado and other necessary insurances. Our workers are fully covered by Workmen's Compensation insurance.

Acceptance of Proposal - The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

Date Of Acceptance: _____

Authorized Signature _____
Scott J. Baumgardner - Estimator

Note: This proposal may be withdrawn by us if not accepted within _____ days

Signature _____

Signature _____

PLEASE RETURN SIGNED WHITE COPY TO SORTER CONSTRUCTION, INC.

TYPE LEGAL DESCRIPTION BELOW, USING ADDITIONAL SHEETS AS NECESSARY.
USE SINGLE SPACING WITH A ONE (1) INCH MARGIN ON EACH SIDE.

That part of the N ½ SW ¼ SE ¼ and that part of the S ½ NW ¼ SE ¼ 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 - 26 ½ 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 26 ½ 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.



SITE

7th ST.

HORIZON DR.



Aerial Photograph
The Glen at Horizon
FPP-96-240

THE GLEN AT HORIZON

DEDICATION

KNOW ALL MEN BY THESE PRESENTS:

That Nick H. Mahleres, and Helen C. Mahleres are the owners of that real property being that part of the N1/2 SW1/4 SE1/4, and that part of the S1/2 NW1/4 SE1/4, Section 2, Township 1 South, Range 1 West, of the Ute Meridian, lying South and West of the main line of the Grand Valley Irrigation Company Mainline Canal, and Parcel 2 as described in original warranty deed as recorded in book 1033 at page 246 of the Mesa County Records, said tract being more particularly described as follows:

Commencing at the Southwest corner of the SW1/4 SE1/4 of Section 2, whence the Northwest corner of the SW1/4 SE1/4 of Section 2 bears N 00°00'00" E a distance of 1314.68 feet for a basis of bearings, with all bearings contained herein relative thereto; thence N 00°00'00" E a distance of 657.34 feet along the West line of the SW1/4 SE1/4 to the South line of the N1/2 SW1/4 SE1/4; thence along said line S 89°54'45" E a distance of 40.00 feet to a point on the Easterly right of way of North 7th Street and the TRUE POINT OF BEGINNING; thence following along said right of way N 00°00'00" E a distance of 297.79 feet; thence N 11°28'10" E a distance of 70.37 feet; thence N 45°28'10" E a distance of 70.00 feet; thence N 38°30'00" W a distance of 71.32 feet; thence N 00°00'00" E a distance of 73.35 feet to the point of curvature on the Southeastly right of way of Horizon Drive; thence continuing along said right of way along a curve turning to the right having an arc length of 174.61 feet, with a radius of 185.50 feet, with a chord bearing of N 26°58'00" E, and a chord length of 168.24 feet; thence N 53°56'00" E a distance of 207.81 feet; thence N 48°36'04" E a distance of 120.52 feet; thence N 36°32'41" E a distance of 19.41 feet; thence N 53°56'00" E a distance of 25.89 feet; thence S 61°04'00" E a distance of 31.66 feet; thence N 28°56'00" E a distance of 25.00 feet to a point on the approximate centerline of the Grand Valley Mainline Canal; thence the following Nine (9) courses along the approximate centerline of said canal; (1) S 57°21'48" E a distance of 44.87 feet; (2) along a non tangent curve turning to the right with an arc length of 323.10 feet, with a radius of 460.00 feet, with a chord bearing of S 36°28'53" E, and a chord length of 316.50 feet; (3) S 16°21'34" E a distance of 51.93 feet; (4) along a curve turning to the right with an arc length of 155.34 feet, with a radius of 435.00 feet, with a chord bearing of S 06°07'45" E, and a chord length of 154.52 feet; (5) S 04°06'05" W a distance of 79.36 feet; (6) along a curve turning to the right with an arc length of 82.53 feet, with a radius of 385.00 feet, with a chord bearing of S 10°14'32" W, and a chord length of 82.37 feet; (7) S 16°22'59" W a distance of 142.05 feet; (8) S 12°37'36" W a distance of 50.25 feet; (9) S 06°55'49" E a distance of 108.46 feet to a point on the South line of the N1/2 SW1/4 SE1/4; thence along said line N 89°54'45" W a distance of 166.38 feet; thence S 60°06'00" W a distance of 49.45 feet; thence N 89°54'00" W a distance of 126.00 feet; thence N 00°00'00" E a distance of 24.69 feet to the South line of the N1/2 SW1/4 SE1/4; thence along said line N 89°54'45" W a distance of 290.01 feet to the POINT OF BEGINNING. Said tract having an area of 11.913 acres as described.

That said owners have caused the real property to be laid out and platted as THE GLEN AT HORIZON, a subdivision of a part of the City of Grand Junction, Colorado. That said owner does hereby dedicate and set apart the real property as shown and labeled as the accompanying plat of THE GLEN AT HORIZON, as follows:

All Streets as ingress/egress easements to The Glen Condominium Association for the use of the general public for ingress and egress forever;

Glen Court as a perpetual easement to the City of Grand Junction for the use of public utilities for the installation, operation, maintenance and repair of utilities and appurtenances thereto including, but not limited to electric lines, cable TV lines, natural gas pipelines, sanitary sewer lines, water lines, and telephone lines.

All Private Open Space to The Glen Condominium Association, a Colorado non-profit corporation, for the purposes of the Association, including but not limited to landscaping and signs.

All Multi-Purpose Easements to the City of Grand Junction and to the public utilities for the use of the public utilities as perpetual easements for the installation, operation, maintenance and repair of utilities and appurtenances thereto including, but not limited to electric lines, cable TV lines, natural gas pipelines, sanitary sewer lines, water lines, telephone lines, and also for the installation and maintenance of traffic control facilities, street lighting, street trees and grade structures;

Tract A as a non-exclusive easement to the City of Grand Junction for the use of the public for public uses including but not limited to walking, running, bicycling, and other non-motorized uses (except the City may use motorized vehicles for maintenance operations); and to the Grand Valley Irrigation Company its successors and assigns, for the installation and maintenance and repair of GVIC irrigation water transmission facilities.

Tract B as a non-exclusive easement to the City of Grand Junction for the use of the general public for public uses including but not limited to: walking, running, bicycling and other non-motorized uses (except the City may use motorized vehicles for maintenance and operations), and to the Grand Valley Irrigation Company its successors and assigns, for the installation and maintenance and repair of GVIC irrigation water transmission facilities.

All Utility Easements to the City of Grand Junction for the use of public utilities as perpetual easements for the installation, operation, maintenance and repair of utilities and appurtenances thereto including, but not limited to electric lines, cable TV lines, natural gas pipelines, sanitary sewer lines, water lines, and telephone lines.

All Irrigation Easements as set forth on this plat to the The Glen Condominium Association, as perpetual easements for the installation, operation, maintenance and repair of private irrigation systems;

All easements include the right of ingress and egress on, along, over, under, and through and across by the beneficiaries, their successors, or assigns, together with the right to trim or remove interfering trees and brush. Provided, however, that the beneficiaries of said easements shall utilize the same in a reasonable and prudent manner. Furthermore, the owners of lots or tracts hereby platted shall not burden nor overburden said easements by erecting or placing any improvements thereon which may prevent reasonable ingress and egress to and from the easement.

IN WITNESS WHEREOF, said owners, Nick H. Mahleres & Helen C. Mahleres, have caused their names to be hereunto subscribed this _____ day of _____ A.D. 1996.

By: Nick H. Mahleres

By: Helen C. Mahleres

LIENHOLDERS RATIFICATION OF PLAT

THE UNDERSIGNED, having property interests in or encumbrances upon the real property involved, DO HEREBY RATIFY AND AFFIRM the Plat of THE GLEN AT HORIZON. Signed this _____ day of _____, 1996.

by: _____

by: _____

NOTARY PUBLIC CERTIFICATION

STATE OF COLORADO } ss
COUNTY OF MESA

The foregoing instrument was acknowledged before me by _____ this _____ day of _____ A.D., 1996.

Witness my hand and official seal:

Notary Public

My Commission Expires _____

CLERK AND RECORDER'S CERTIFICATE

STATE OF COLORADO } ss
COUNTY OF MESA

I hereby certify that this instrument was filed in my office at _____ o'clock _____ M., _____

A.D., 1996, and was duly recorded in Plat Book No. _____ Page

No. _____ Reception No. _____, Drawer No. _____

Clerk and Recorder

CITY OF GRAND JUNCTION APPROVAL

This plat of THE GLEN AT HORIZON, a subdivision of a part of the City of Grand Junction, County of Mesa, State of Colorado, is approved and accepted this _____ day of _____ A.D., 1996.

City Manager

President of City Council

LEGEND

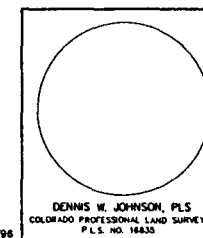
- ◆ MESA COUNTY SURVEY MARKER
 - SET CENTERLINE MONUMENT PER CODE
 - SET ALUMINUM CAP ON No. 5 REBAR, PLS 16835 IN CONCRETE PER CODE
 - (R) RECORD MEASUREMENT
 - FOUND REBAR, AS NOTED REMONUMENTED IN CONCRETE
- ALUMINUM CAP ON No. 5 REBAR TO BE SET UPON COMPLETION OF CONSTRUCTION, AT ALL LOT CORNERS TO COMPLY WITH STATE STATUTE

The Declaration of Covenants and Restrictions are recorded at Book _____, Page _____, Mesa County Records.

Basis of bearings assume the West line of the SW1/4 SE1/4 of Section 2 to bear N 00°00'00" E 1314.68 feet. Both monuments on this line are Mesa Co. Brass caps as noted on this plat.

Note: Property corners located during this survey that were within 0.25± feet of the calculated point were accepted as being "in position".

Easement and Title Information provided by Meridian Land Title Company, Policy No. 22364, dated May 9, 1996.



THE GLEN AT HORIZON
SE1/4 SECTION 2
T1S, R1W, UTE MERIDIAN
MESA COUNTY, COLORADO

LANDesign

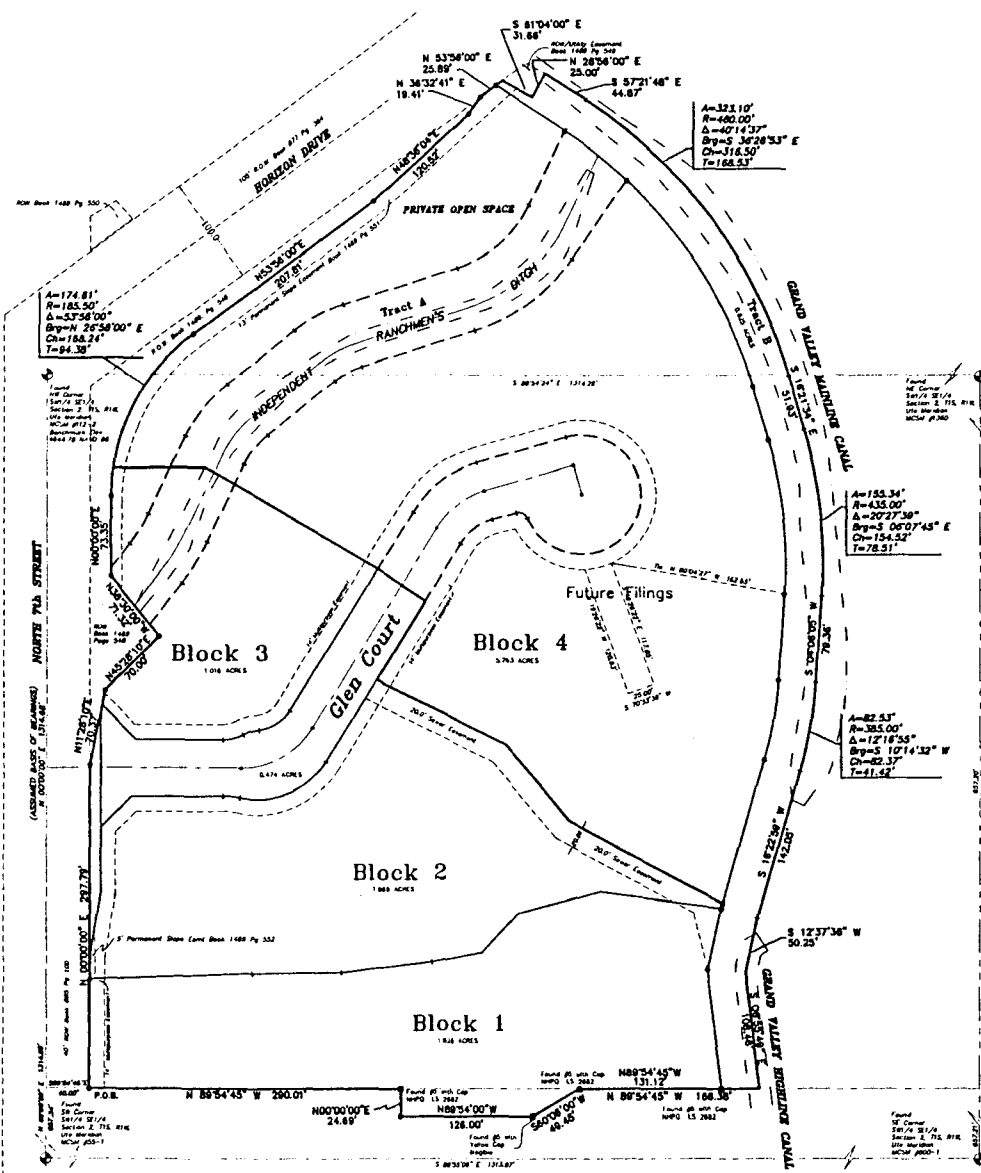
ENGINEERS • SURVEYORS • PLANNERS

259 GRAND AVENUE

GRAND JUNCTION, COLORADO 81501 (970) 245-4099

PROJECT NO 96045.10 SUR. BY. (DRAWN) CHECKED SHEET OF
DATE: OCT, 1996 DWJ 1 2

Rev 11/21/98



NOTARY PUBLIC CERTIFICATION

STATE OF COLORADO } ss
COUNTY OF MESA

The foregoing instrument was acknowledged before me by Nick H. Mahleres, and Helen C. Mahleres this _____ day of _____ A.D., 1996.

Witness my hand and official seal:

Notary Public

My Commission Expires _____

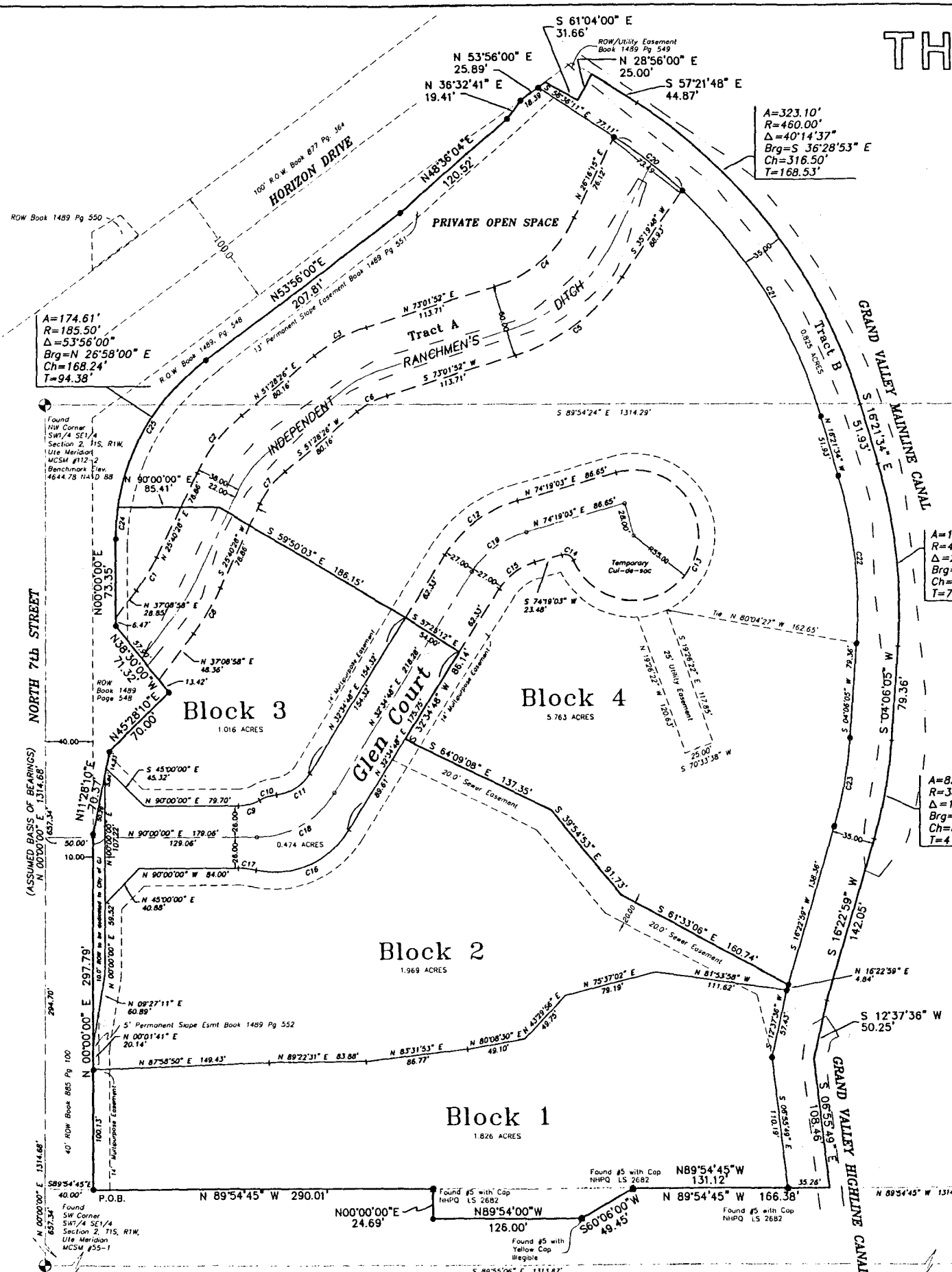
SURVEYOR'S CERTIFICATION

I, Dennis W. Johnson, do hereby certify that the accompanying plat of THE GLEN AT HORIZON, a subdivision of a part of the City of Grand Junction, Colorado, has been prepared under my direct supervision and represents a field survey of some. This plat conforms to the requirements for subdivision plat specified in the City of Grand Junction Development code and the applicable laws of the State of Colorado.

Date certified _____

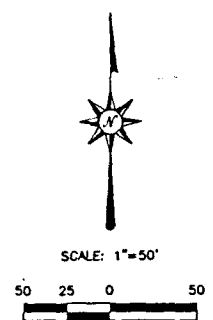
NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF CERTIFICATION SHOWN HEREON.

THE GLEN AT HORIZON



Curve Table Data

CURVE	RADIUS	ARC LENGTH	CHORD LEN	CHORD BEARING	DELTA ANGLE	TANGENT
C1	162.00'	32.45'	32.39'	S 31°24'43" V	11°28'30"	16.28'
C2	138.00'	62.14'	61.62'	N 38°34'27" E	25°47'58"	31.61'
C3	138.00'	51.98'	51.65'	N 62°15'09" E	21°33'26"	26.27'
C4	112.00'	91.41'	88.89'	S 48°39'03" V	46°45'37"	48.42'
C5	172.00'	113.18'	111.15'	S 54°10'50" V	37°42'04"	58.75'
C6	78.00'	29.35'	29.17'	N 62°15'09" E	21°33'26"	14.85'
C7	78.00'	35.12'	34.83'	N 38°34'27" E	25°47'58"	17.86'
C8	222.00'	44.46'	44.39'	S 31°24'43" V	11°28'30"	22.31'
C9	39.00'	15.08'	14.88'	N 74°19'03" E	27°55'02"	8.69'
C10	41.00'	15.55'	15.46'	N 72°56'49" E	21°43'42"	7.87'
C11	39.00'	34.87'	33.72'	N 58°11'44" E	51°13'52"	18.70'
C12	107.00'	77.94'	76.23'	N 53°26'56" E	41°44'15"	48.79'
C13	55.00'	258.67'	92.25'	S 25°55'34" V	26°12'33"	61.93'
C14	8.50'	12.38'	11.29'	S 44°04'24" E	89°12'01"	7.55'
C15	53.00'	38.61'	37.76'	N 53°26'56" E	41°44'15"	28.21'
C16	76.00'	92.30'	86.73'	N 67°22'26" E	69°35'15"	52.81'
C17	74.00'	13.71'	13.69'	S 89°54'59" E	12°18'03"	7.89'
C18	80.00'	80.17'	76.96'	N 61°17'24" E	57°25'12"	43.82'
C19	80.00'	58.28'	57.08'	N 53°26'56" E	41°44'15"	30.50'
C20	425.00'	73.58'	73.49'	S 51°38'36" E	09°55'09"	36.88'
C21	425.00'	224.94'	222.32'	S 31°31'18" E	30°19'28"	113.17'
C22	400.00'	142.84'	142.09'	S 06°07'45" E	20°27'39"	72.19'
C23	250.00'	74.07'	74.88'	S 18°14'38" V	12°16'55"	37.66'
C24	185.50'	26.25'	26.23'	N 04°03'14" E	08°06'32"	13.15'
C25	185.50'	148.36'	144.44'	N 31°01'18" E	45°49'27"	78.40'



AREA SUMMARY

Block 1	= 1.826 Acres	15.3%
Block 2	= 1.969 Acres	16.5%
Block 3	= 1.016 Acres	8.5%
Block 4	= 5.763 Acres	48.4%
Glen Ct.	= 0.474 Acres	4.0%
7 St ROW	= 0.040 Acres	0.3%
Tract B	= 0.825 Acres	7.0%
TOTAL	= 11.913 Acres	100.00%

- LEGEND**
- ⊕ MESA COUNTY SURVEY MARKER
 - SET CENTERLINE MONUMENT PER CODE
 - SET ALUMINUM CAP ON No. 5 REBAR, PLS 16835 IN CONCRETE PER CODE
 - (R) RECORD MEASUREMENT
 - FOUND REBAR, AS NOTED REMONUMENTED IN CONCRETE
- ALUMINUM CAP ON No. 5 REBAR TO BE SET UPON COMPLETION OF CONSTRUCTION, AT ALL LOT CORNERS TO COMPLY WITH CODE

The Declaration of Covenants and Restrictions are recorded at Book _____ Page _____, Mesa County Records.

Basis of bearings assume the West line of the SW1/4 SE1/4 of Section 2 to bear N 00°00'00" E 1314.68 feet. Both monuments on this line are Mesa Co. Brass caps as noted on this plat.

Note: Property corners located during this survey that were within 0.25± feet of the calculated point were accepted as being "in position".

Easement and Title Information provided by Meridian Land Title Company, Policy No. 22364, dated May 9, 1996.

SURVEYOR'S CERTIFICATION

I, Dennis W. Johnson, do hereby certify that the accompanying plat of THE GLEN AT HORIZON, a subdivision of a part of the City of Grand Junction, Colorado, has been prepared under my direct supervision and represents a field survey of the same. This plat conforms to the requirements for subdivision plats specified in the City of Grand Junction Development code and the applicable laws of the State of Colorado.

Date certified _____

THE GLEN AT HORIZON
SE1/4 SECTION 2
T1S, R1W, UTE MERIDIAN
MESA COUNTY, COLORADO

LANDesign
ENGINEERS • SURVEYORS • PLANNERS

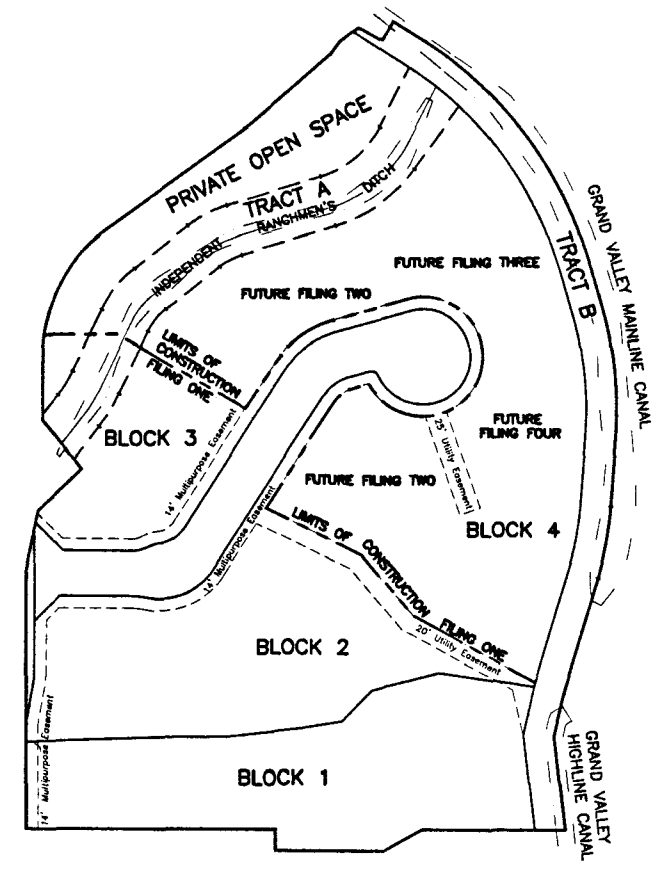
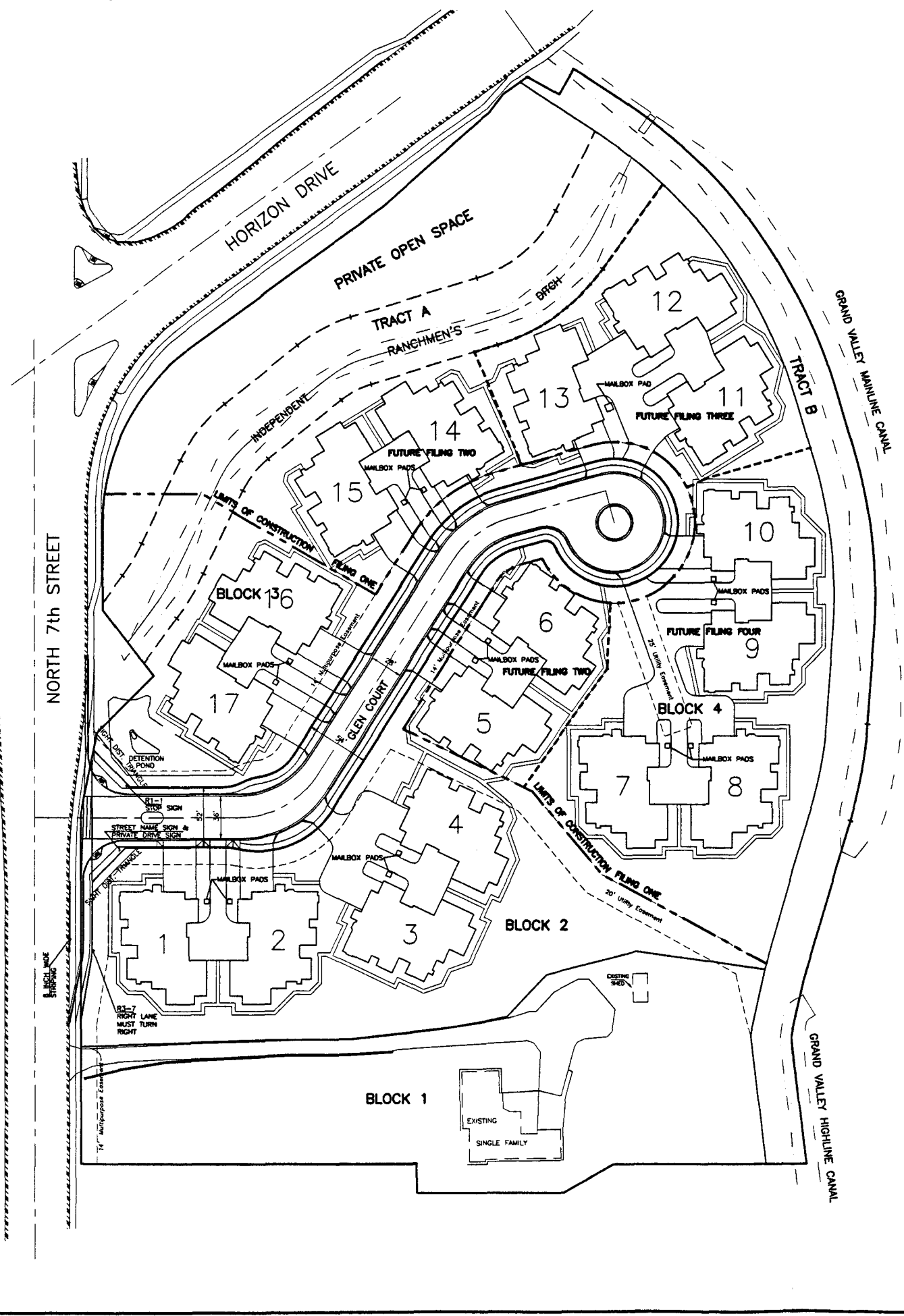
755 GRAND AVENUE
GRAND JUNCTION, COLORADO 81501 (970) 245-4099

PROJECT NO 96045.40 SUR. BY	DRAWN	CHECKED	SHEET	OF
DATE: OCT, 1996	DWJ		2	2

DENNIS W. JOHNSON, PLS
COLORADO PROFESSIONAL LAND SURVEYOR
P.L.S. NO 14635

NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IF NO DEFECT WAS ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN 11 YEARS FROM THE DATE OF CERTIFICATION SIGNATURE HEREON.

96045
 The Glen at Horizon
 Subdivision
 Modified Site Plan
 3 of 23

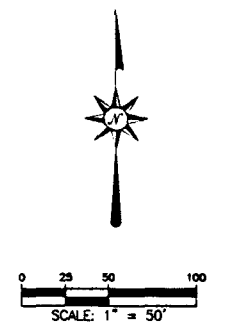


BOUNDARY DETAIL
 FILINGS, BLOCKS AND TRACTS
 (SEE FINAL PLAT FOR ADDITIONAL INFORMATION)
 1" = 100'

LAND USE SUMMARY		
USE	ACRES	PERCENT
LOTS	2.1	22.8
STREET ROW	0.8	8.7
OPEN SPACE	1.8	19.6
DITCH	0.9	9.8
TOTAL	3.6	39.1
Resulting Density = 7.39 units per acre		
Total Number of units = 68 units		
Zoning = Planned Development 7.4 units/ac.		
FILING SUMMARY		
FILING ONE	UNIT NOS. 1,2,3,4,16,17	
FILING TWO	UNIT NOS. 5,6,14,15	
FILING THREE	UNIT NOS. 11,12,13	
FILING FOUR	UNIT NOS. 7,8,9,10	

NOTE:

- SEE RETAINING WALL PLAN AND DETAIL SHEET FOR LOCATIONS OF RETAINING WALLS AND ENTRY WALLS.
- UTILITY VENDORS SERVING THE SITE ARE AS FOLLOWS:
 ELECTRIC.....PUBLIC SERVICE
 GAS.....PUBLIC SERVICE
 PHONE.....U.S. WEST
 CATV.....TCI CABLE
 DOMESTIC WATER.....CITY OF GRAND JUNCTION
 SANITARY SEWER.....CITY OF GRAND JUNCTION
- MAILBOX PADS SHALL BE 4 FEET BY 4 FEET AND BE A MINIMUM OF 6" CONCRETE TO SERVE AN 8 UNIT MAILBOX. UNITS 11, 12 & 13 SHALL HAVE A 6" THICK CONCRETE PAD 6 FEET BY 6 FEET TO SERVE A 12 UNIT MAILBOX.
- GLEN COURT IMPROVEMENTS SHALL END AS SHOWN BY LIMITS OF CONSTRUCTION LINE FOR FILING ONE. REMAINDER OF ROAD SHALL SERVE AS A TEMPORARY CUL-DE-SAC WITH GRAVEL AS SURFACE UNTIL FUTURE FILINGS ARE CONSTRUCTED.
- ANY SIDEWALKS LOCATED WITHIN AN UTILITY EASEMENT SHALL BE A MINIMUM OF 6" IN THICKNESS FOR PROTECTION FROM MAINTENANCE VEHICLES.



DATE:	NO:	REVISIONS:	By:
11-20-96	1	REVIEW COMMENTS	BRI
12-18-98	2	REVISE FILING BOUNDARIES	BRI

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

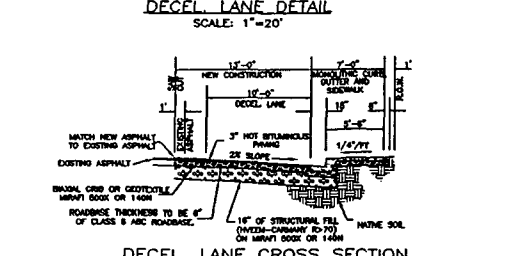
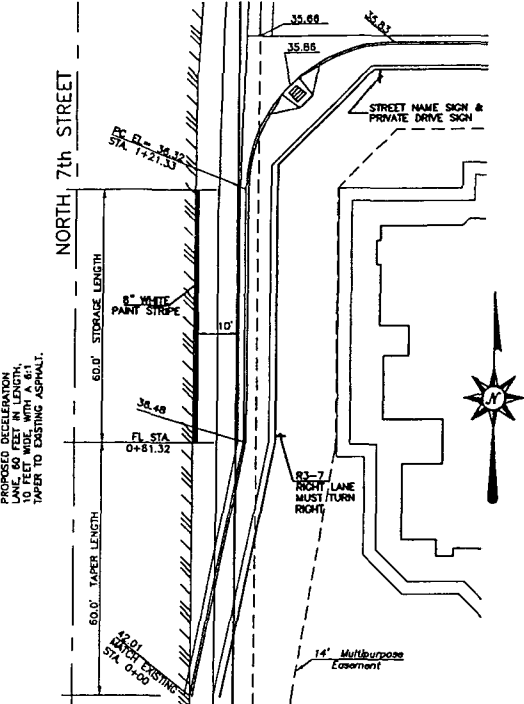
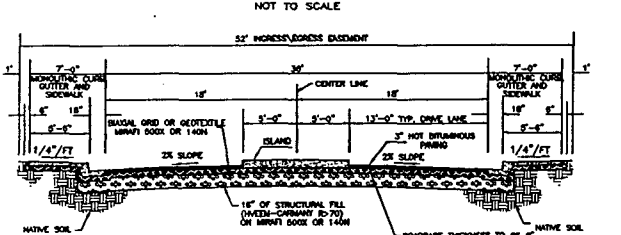
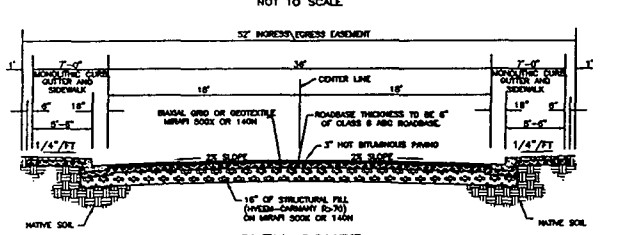
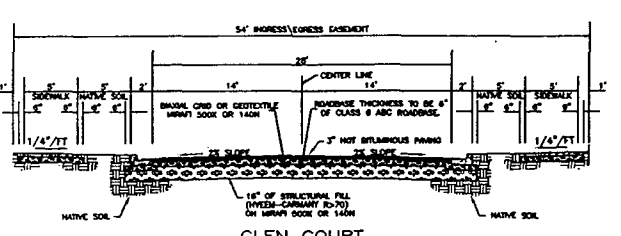
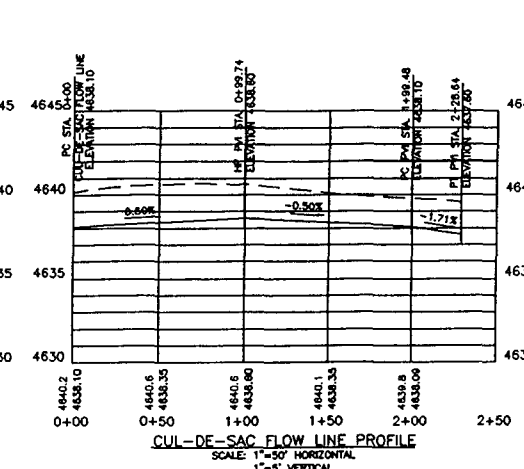
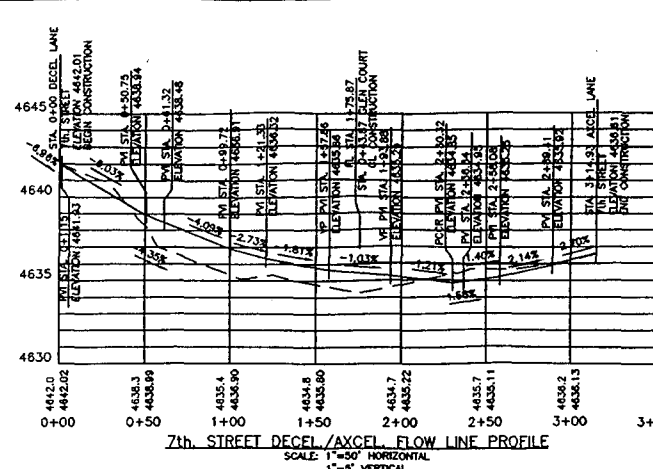
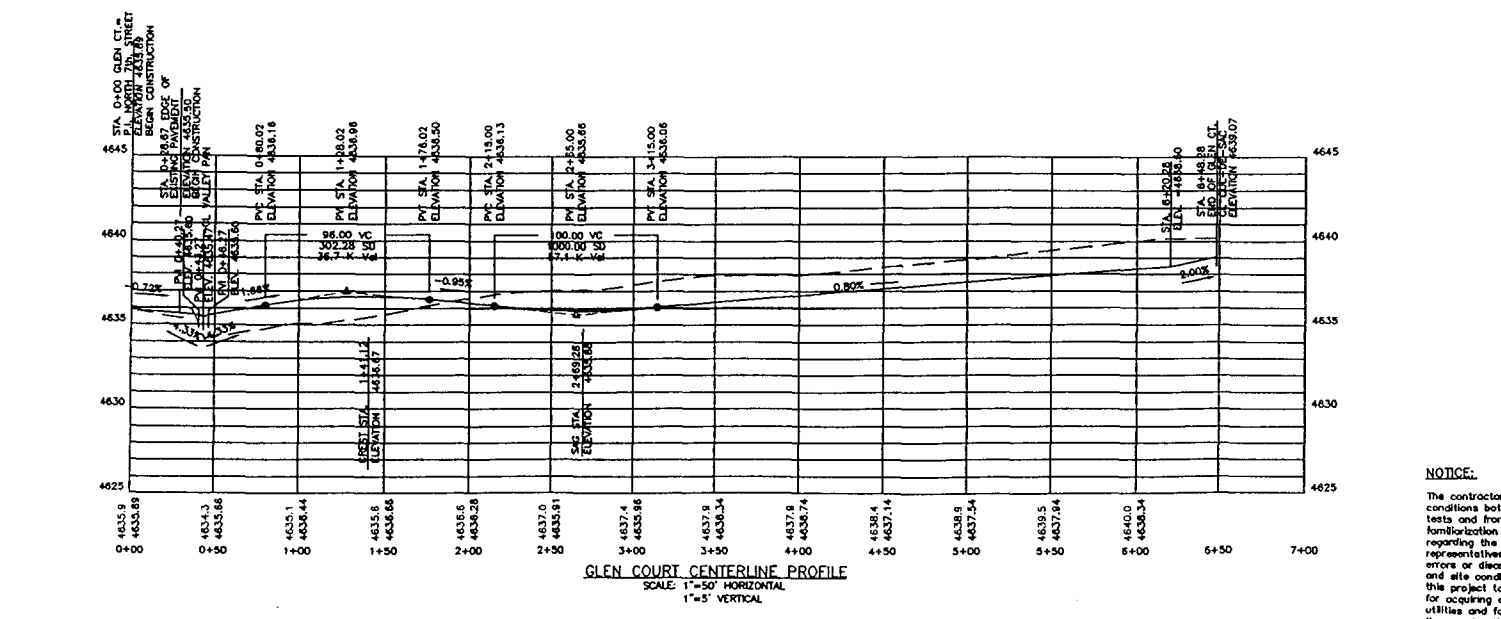
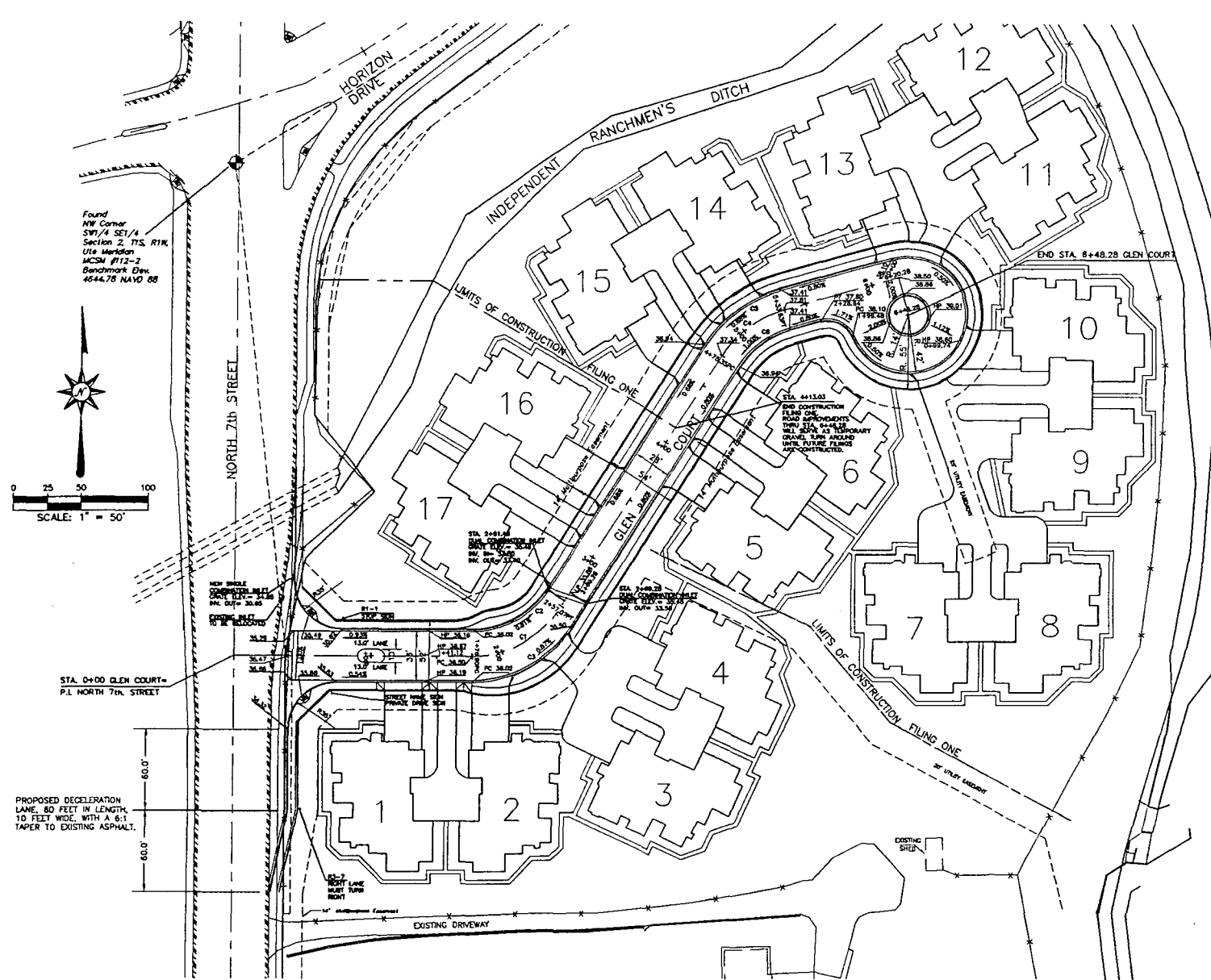
PHILIP M. HART
 REGISTERED PROFESSIONAL ENGINEER
 P.E. NO. 19346

SITE PLAN
THE GLEN AT HORIZON
SUBDIVISION

LANDesign
 ENGINEERS • SURVEYORS • PLANNERS

259 GRAND AVENUE
 GRAND JUNCTION, COLORADO 81501 (970) 245-4099

PROJECT NO. 96045 DRAWN (CHK'D) APPR'D SHEET OF
 DATE: OCT., 1996 JMM BCH BCH 3 23



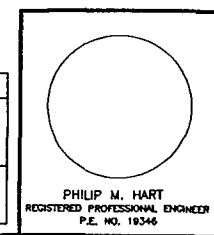
CURVE	RADIUS	ARC LENGTH	CHORD LEN	CHORD BEARING	DELTA ANGLE	TANGENT
C1	80.00'	80.17'	76.88'	N 61°17'24" E	37°25'12"	43.82'
C2	88.25'	88.40'	86.53'	N 61°17'24" E	37°25'12"	37.33'
C3	90.75'	90.89'	87.19'	N 61°17'24" E	37°25'12"	48.71'
C4	80.00'	58.28'	57.00'	N 53°28'56" E	41°44'15"	30.50'
C5	95.42'	89.51'	67.88'	N 53°28'56" E	41°44'15"	36.38'
C6	84.58'	47.04'	46.01'	N 53°28'56" E	41°44'15"	24.82'

CALL BEFORE YOU DIG 1-800-922-1987

NOTICE: FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES A MINIMUM OF 36 HOURS PRIOR TO CONSTRUCTION.

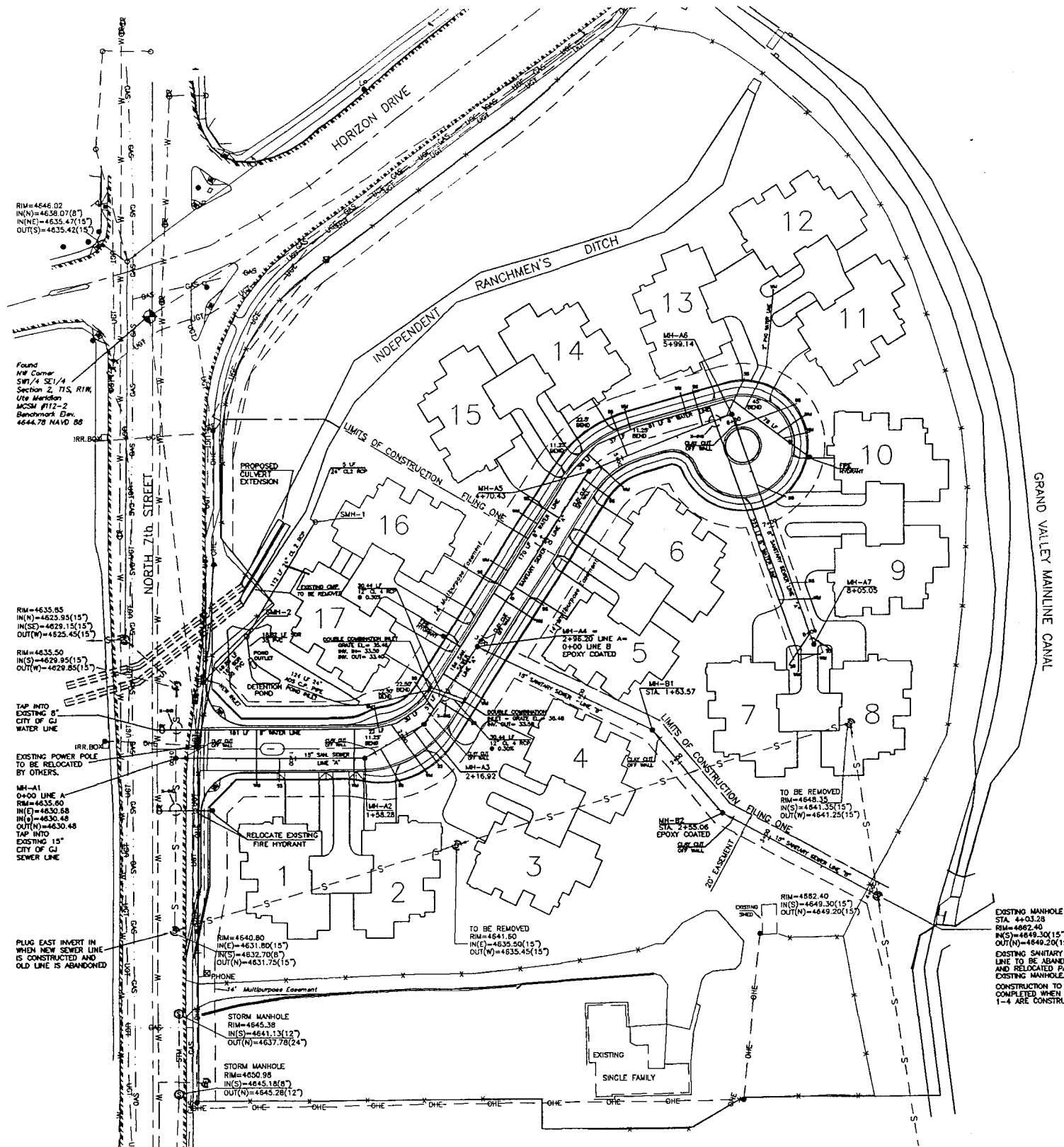
NOTICE:
The contractor is responsible for familiarizing itself with the site conditions both noted on these plans and specifications, reports, tests and from on site evaluation. It is responsible for familiarizing itself with the local laws and regulations regarding the construction of this project. It and its representatives are further responsible to report any conflicts, errors or discrepancies regarding these plans or between the plans and site conditions which may be noted during the construction of this project to the design team. The contractor is responsible for acquiring all permits, locating all existing underground utilities and facilities and performing any required tests regarding the construction of this project.

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



DATE	NO.	REVISIONS	By
11/12/98	1	REVIEW COMMENTS	JMM

GLEN COURT PLAN AND PROFILE
THE GLEN AT HORIZON SUBDIVISION
LANDesign
ENGINEERS • SURVEYORS • PLANNERS
250 GRAND AVENUE
GRAND JUNCTION, COLORADO 81501 (870) 245-4099
PROJECT NO. 98045 DRAWN BY: Jmm CHECKED BY: BCh APPR'D BY: BCh SHEET NO. 4 OF 23
DATE: OCT., 1998



RIM=4646.02
 IN(N)=4638.07(8')
 IN(E)=4635.47(15')
 OUT(S)=4635.42(15')

Found NW Corner
 SW 1/4 SE 1/4
 Section 2, T15, R1W,
 Ute Meridian
 WCSM #112-2
 Benchmark Elev.
 4644.78 NAVD 88

RIM=4635.85
 IN(N)=4623.95(15')
 IN(SE)=4629.15(15')
 OUT(W)=4625.45(15')

RIM=4635.50
 IN(S)=4629.95(15')
 OUT(W)=4628.85(15')

MH-A1
 0+00 LINE A
 RIM=4635.80
 IN(E)=4630.68
 IN(S)=4630.48
 OUT(N)=4630.48

RIM=4640.80
 IN(E)=4631.80(15')
 IN(S)=4632.70(8')
 OUT(N)=4631.75(15')

STORM MANHOLE
 RIM=4645.38
 IN(S)=4641.13(12')
 OUT(N)=4637.78(24')

STORM MANHOLE
 RIM=4650.98
 IN(S)=4645.18(8')
 OUT(N)=4645.28(12')

RIM=4652.40
 IN(S)=4649.30(15')
 OUT(W)=4649.20(15')

EXISTING MANHOLE
 STA. 4+03.28
 RIM=4662.40
 IN(S)=4649.30(15')
 OUT(N)=4649.20(15')

- SEWER NOTES:**
- 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.
 - ALL SEWER MAINS SHALL BE PVC SDR 35 (ASTM 3034) UNLESS OTHERWISE NOTED.
 - ALL SEWER MAINS SHALL BE LAID TO GRADE UTILIZING A PIPE LASER.
 - ALL SERVICE LINE CONNECTIONS TO THE NEW MAIN SHALL BE ACCOMPLISHED WITH FULL BODY WYES OR TEES. TAPPING SADDLES WILL NOT BE ALLOWED.
 - NO 4" SERVICES SHALL BE CONNECTED DIRECTLY INTO MANHOLES.
 - THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTION 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
 - 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.
 - THE CONTRACTOR SHALL OBTAIN "CITY OF GRAND JUNCTION STREET CUT PERMIT" FOR ALL WORK WITHIN EXISTING CITY RIGHT-OF-WAY PRIOR TO CONSTRUCTION.
 - 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 MANHOLES UNLESS OTHERWISE NOTED. THE CUT-OFF WALL SHALL BE 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.
 - BENCHMARK FOR THIS PROJECT IS AS SHOWN: THE NW CORNER SW 1/4 SE 1/4 SECTION 2, T15, R1W, UTE MERIDIAN, WCSM #112-2. ELEVATION 4644.78 NAVD 88.

- WATER NOTES:**
- THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING WATER METER PITS AND YOKES. CITY OF GRAND JUNCTION WILL SUPPLY THE PITS AND YOKES. WATER SERVICES WILL BE EXTENDED TO THE MULTIPURPOSE EASEMENT LINE, AND MARKED WITH A METAL OR WOOD POST PAINTED BLUE. METER PITS TO BE LOCATED 2 FEET BACK OF CURB.
- EACH WATER METER IS TO SERVE ONE BUILDING, OR 4 DWELLING UNITS. METER BOXES AND SERVICES WILL ALL BE 1-1/2"

NOTICE:

The contractor is responsible for familiarizing itself with the site conditions both noted on these plans and specifications, reports, tests and from an site evaluation. It is responsible for familiarization of itself with the local laws and regulations regarding the construction of this project. It and its representatives are further responsible to report any conflicts, errors or discrepancies regarding these plans or between the plans and site conditions which may be noted during the construction of this project to the design team. The contractor is responsible for acquiring all permits, locating all existing underground utilities and facilities and performing any required tests regarding the construction of this project.

NOTE:

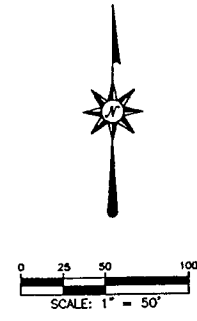
PLEASE REFER TO THE STANDARD CITY OF GRAND JUNCTION DETAIL SHEETS FOR STANDARD CONSTRUCTION PRACTICES AND METHODOLOGY.

CALL BEFORE YOU DIG 1-800-922-1987

NOTICE: FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES A MINIMUM OF 36 HOURS PRIOR TO CONSTRUCTION.

LEGEND

- STANDARD SYMBOLS FOUND ON THIS DRAWING
- = EXISTING IRRIGATION BOX
 - = EXISTING FENCE
 - ⊙ = EXISTING SANITARY SEWER MANHOLE
 - ⊕ = EXISTING STORM SEWER MANHOLE
 - ⊙ = EXISTING POWER POLE
 - ⊙ = EXISTING SIGN
 - W — = EXISTING CITY OF GJ WATER
 - S — = EXISTING CITY OF GJ SANITARY SEWER
 - STM — = EXISTING CITY OF GJ STORM SEWER
 - GAS — = EXISTING PUBLIC SERVICE GAS
 - UG — = EXISTING UNDER GROUND TELEPHONE BY US WEST
 - UGE — = EXISTING UNDER GROUND ELECTRIC PUBLIC SERVICE
 - OHE — = EXISTING OVERHEAD ELECTRIC PUBLIC SERVICE
 - ⊙ = EXISTING FIRE HYDRANT
 - ⊙ = EXISTING GATE VALVE
 - ⊙ = EXISTING WATER METER BOX
 - ⊙ = PROPOSED FIRE HYDRANT
 - ⊙ = PROPOSED GATE VALVE
 - = PROPOSED WATER SERVICE AND METER BOX
 - = PROPOSED SANITARY SEWER SERVICE
 - ⊙ = PROPOSED SANITARY SEWER MANHOLE
 - = PROPOSED SANITARY SEWER MAIN (TYPE VARIES)
 - = PROPOSED DOMESTIC WATER MAIN (C900, CLASS 200)
 - ⊙ = PROPOSED STORM SEWER MANHOLE
 - = PROPOSED STORM SEWER DROP INLET



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

DATE	NO.	REVISIONS	By
11/21/98	1	REVIEW COMMENTS	JJM

UTILITY COMPOSITE
 THE GLEN AT HORIZON
 SUBDIVISION

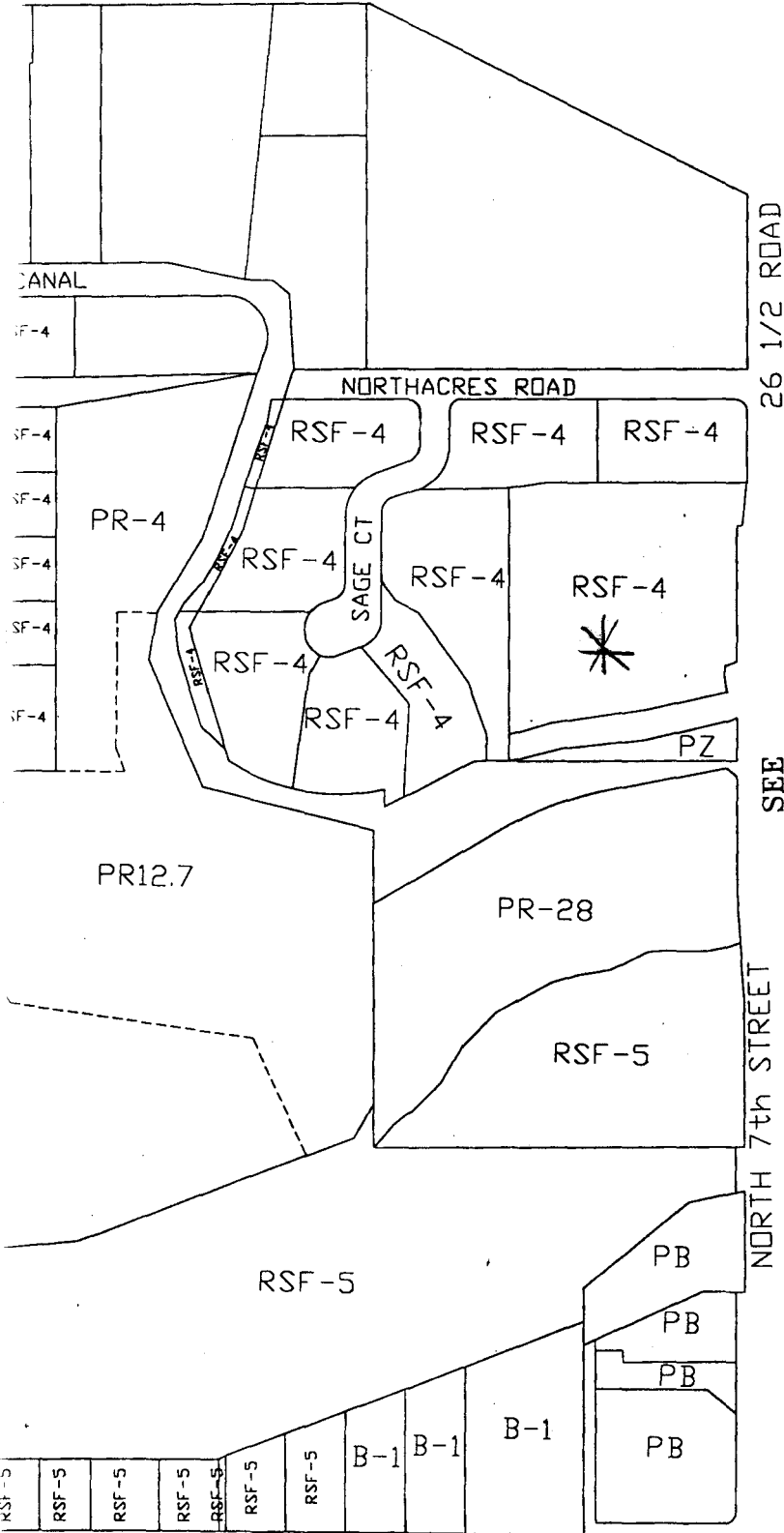
LANDesign
 ENGINEERS • SURVEYORS • PLANNERS

259 GRAND AVENUE
 GRAND JUNCTION, COLORADO 81501 (970) 245-4099

PROJECT NO. 98045 DRAWN: CHKD APPRVD: SHEET OF
 DATE: OCT., 1998 JJM BCH BCH 11 23

ING

CITY OF GRAND JUNCTION MUNICIPAL ZONING MAP

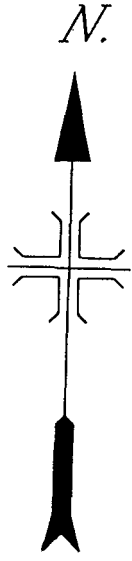


26 1/2 ROAD

SEE
2945-024

NORTH 7th STREET

SEE
2945-112



1=300

2945-022	2945-021
2945-023	2945-024

REVISED:
JULY 19, 1996

KNOLL RIDGE SUBDIVISION

Map No. T.I.S. R.I.W. 2945022

"NORTHFIELD ESTATES SUBDIVISION"

"FAIRMOUNT HG'S SUBDIVISION"

WILLOWBROOK SUBDIVISION

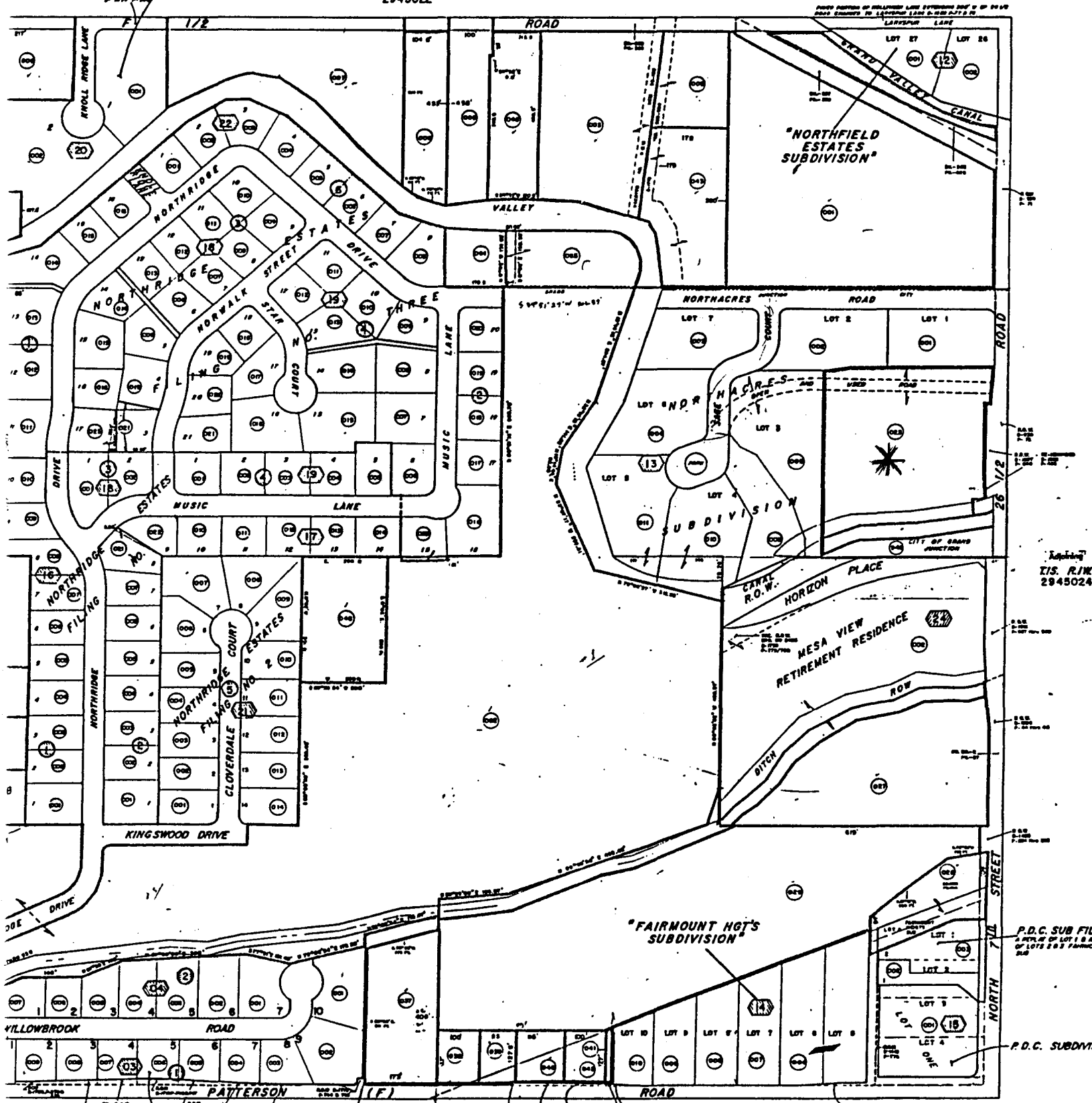
Map No. T.I.S. R.I.W. 294511

T.I.S. R.I.W. 2945023

Map No. T.I.S. R.I.W. 2945024

P.D.C. SUB. FIL. A PART OF LOT 1 & A OF LOTS 2 & 3 FAIRMOUNT HG'S

P.D.C. SUBDIVISION



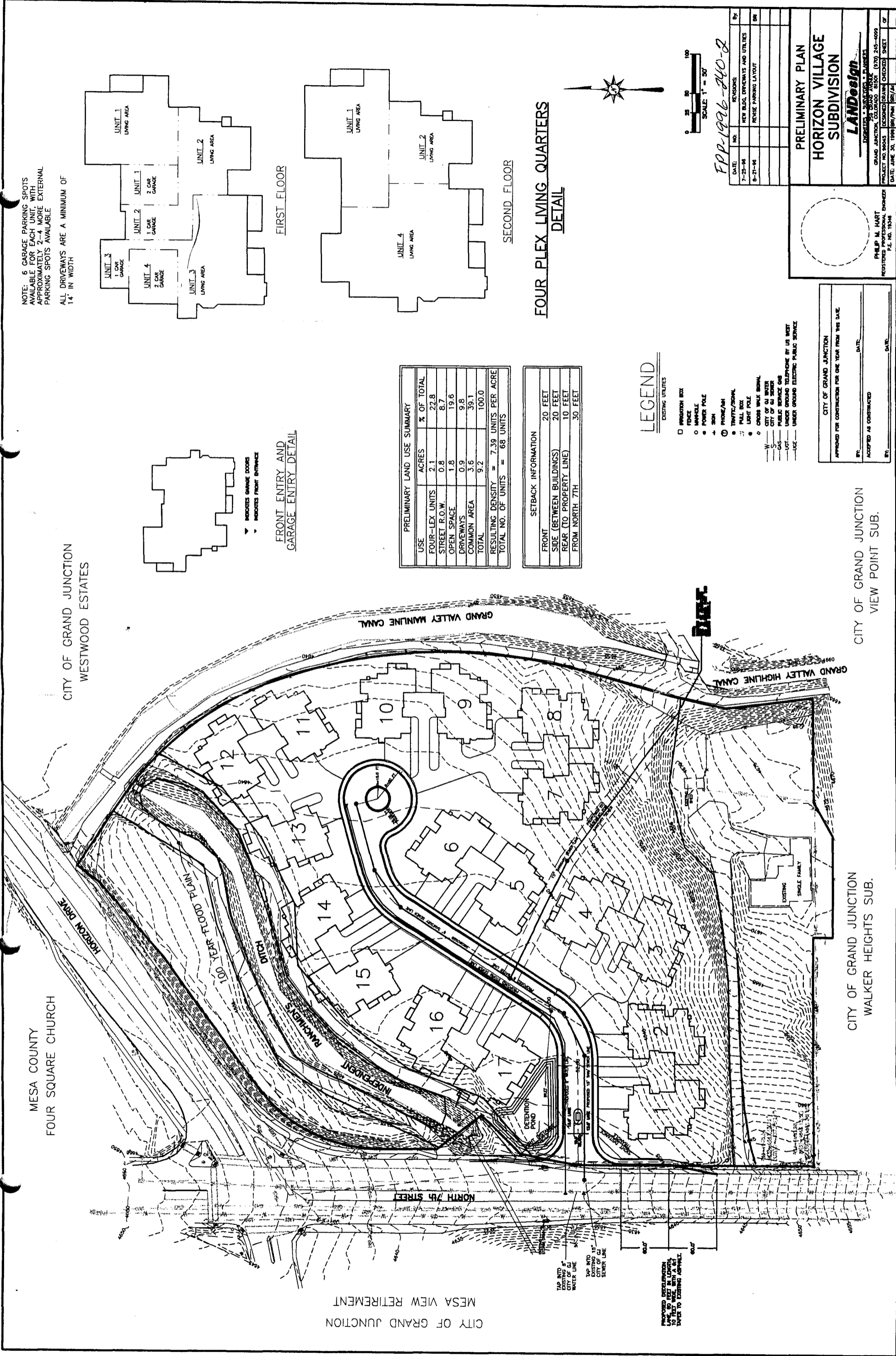
MESA COUNTY
FOUR SQUARE CHURCH

CITY OF GRAND JUNCTION
WESTWOOD ESTATES

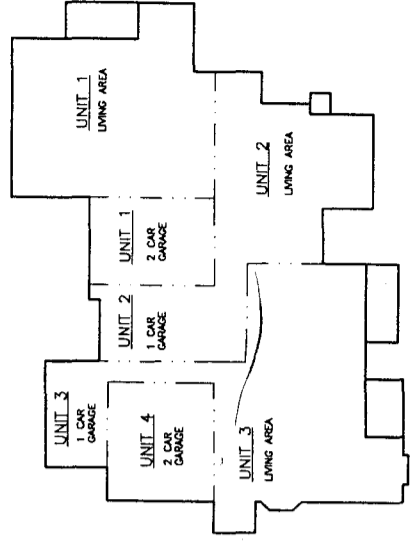
CITY OF GRAND JUNCTION
MESA VIEW RETIREMENT

CITY OF GRAND JUNCTION
WALKER HEIGHTS SUB.

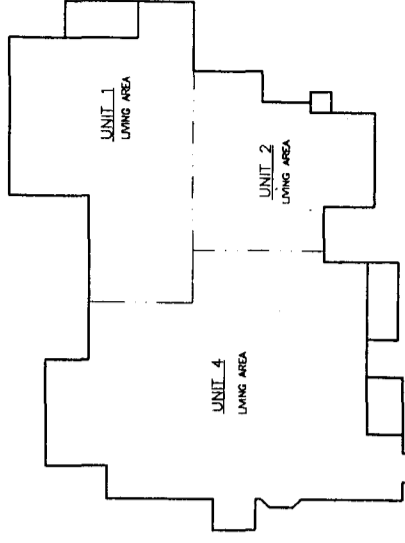
CITY OF GRAND JUNCTION
VIEW POINT SUB.



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

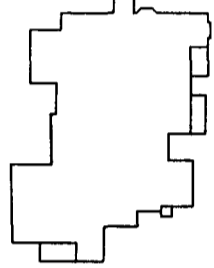


FIRST FLOOR



SECOND FLOOR

FOUR PLEX LIVING QUARTERS
DETAIL



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

LEGEND

- EXISTING UTILITIES
- PERMATION BOX
 - FENCE
 - MANHOLE
 - POWER POLE
 - SIGN
 - PHONE/AM
 - TRAFFIC/SIGNAL
 - PULL BOX
 - LIGHT POLE
 - CROSS WALK SIGNAL
 - CITY OF GJ WATER
 - CITY OF GJ SEWER
 - PUBLIC SERVICE GAS
 - LOT
 - UNDER GROUND TELEPHONE BY US WEST
 - UNDER GROUND ELECTRIC PUBLIC SERVICE

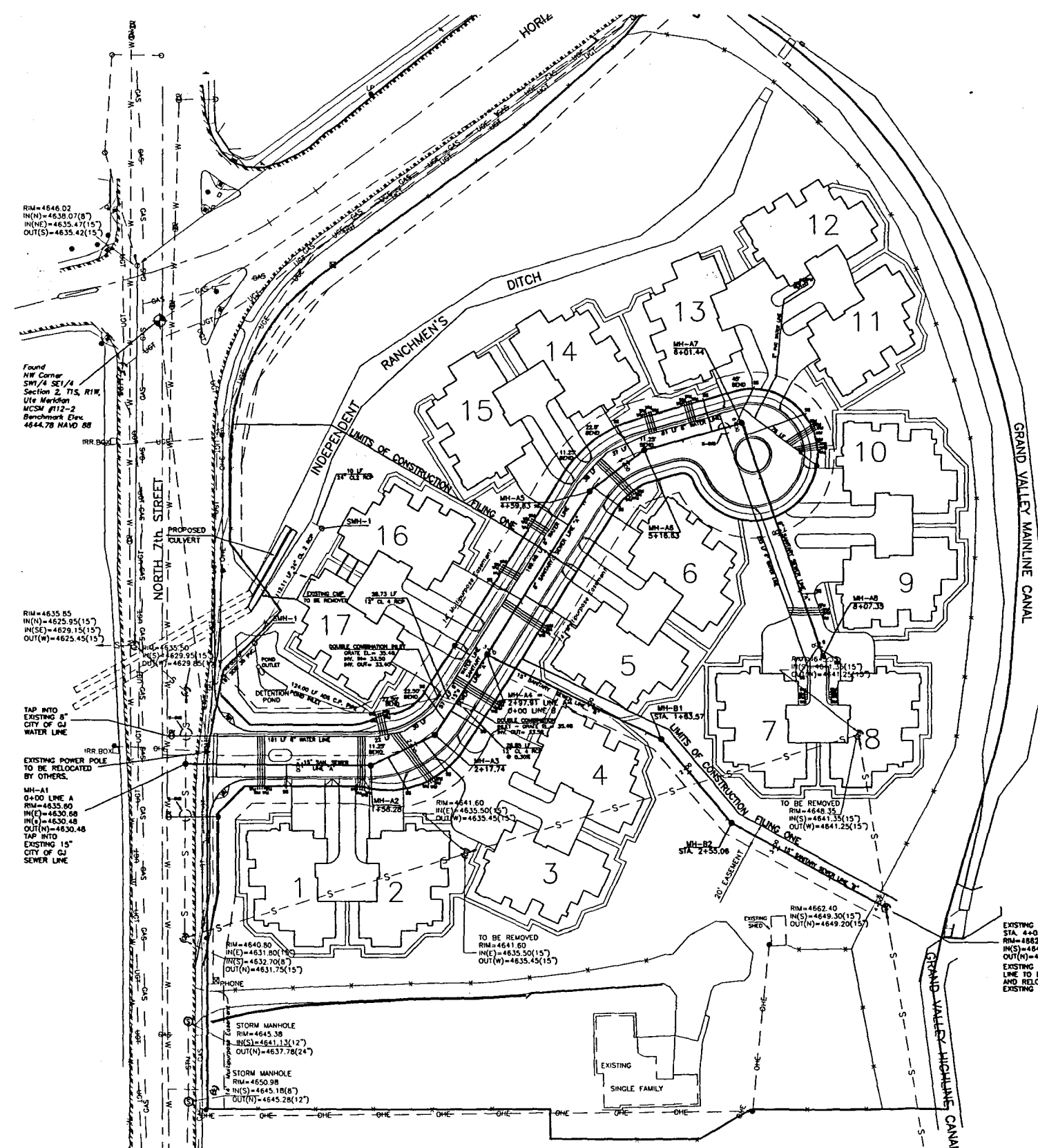
CITY OF GRAND JUNCTION
APPROVED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE.
BY: _____ DATE: _____
ACCEPTED AS CONSTRUCTED
BY: _____ DATE: _____



FPP-1996-240-2

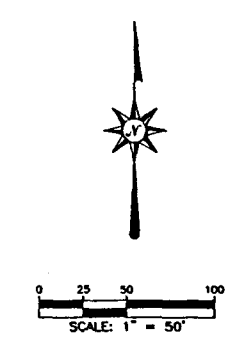
DATE	NO.	REVISIONS	BY
7-25-98		REV BLDG DRIVEWAYS AND UTILITIES	
8-27-98		REVISE PARKING LAYOUT	

PRELIMINARY PLAN
HORIZON VILLAGE
SUBDIVISION
LANDesign
ENGINEERING ARCHITECTURE PLANNERS
GRAND JUNCTION, COLORADO 81501
PROJECT NO. 90045 DESIGNED DRAWN CHECKED SHEET OF
DATE: JUNE 30, 1998 567/704 567/44
PHILIP M. HART
REGISTERED PROFESSIONAL ENGINEER
P.E. NO. 19348



LEGEND

- STANDARD SYMBOLS FOUND ON THIS DRAWING
- = EXISTING IRRIGATION BOX
 - - - = EXISTING FENCE
 - ⊕ = EXISTING SANITARY SEWER MANHOLE
 - ⊙ = EXISTING STORM SEWER MANHOLE
 - = EXISTING POWER POLE
 - ▲ = EXISTING SIGN
 - W - = EXISTING CITY OF GJ WATER
 - S - = EXISTING CITY OF GJ SANITARY SEWER
 - STM - = EXISTING CITY OF GJ STORM SEWER
 - GAS - = EXISTING PUBLIC SERVICE GAS
 - UGF - = EXISTING UNDER GROUND TELEPHONE BY US WEST
 - UGE - = EXISTING UNDER GROUND ELECTRIC PUBLIC SERVICE
 - OHE - = EXISTING OVERHEAD ELECTRIC PUBLIC SERVICE
 - ⊕ = EXISTING FIRE HYDRANT
 - ⊙ = EXISTING GATE VALVE
 - ⊕ = EXISTING WATER METER BOX
 - ⊙ = PROPOSED FIRE HYDRANT
 - ⊕ = PROPOSED GATE VALVE
 - ⊕ = PROPOSED WATER SERVICE AND METER BOX
 - ⊕ = PROPOSED SANITARY SEWER SERVICE
 - ⊕ = PROPOSED SANITARY SEWER MAN HOLE
 - ⊙ = PROPOSED STORM SEWER MAN HOLE
 - ⊕ = PROPOSED STORM SEWER DROP INLET



NOTICE:

The contractor is responsible for familiarizing itself with the site conditions both noted on these plans and specifications, reports, tests and from on site evaluation. It is responsible for familiarization of itself with the local laws and regulations regarding the construction of this project. It and its representatives are further responsible to report any conflicts, errors or discrepancies regarding these plans or between the plans and site conditions which may be noted during the construction of this project to the design team. The contractor is responsible for acquiring all permits, locating all existing underground utilities and facilities and performing any required tests regarding the construction of this project.

NOTE:

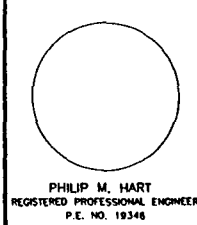
PLEASE REFER TO THE STANDARD CITY OF GRAND JUNCTION DETAIL SHEETS FOR STANDARD CONSTRUCTION PRACTICES AND METHODOLOGY.

CALL BEFORE YOU DIG 1-800-922-1987

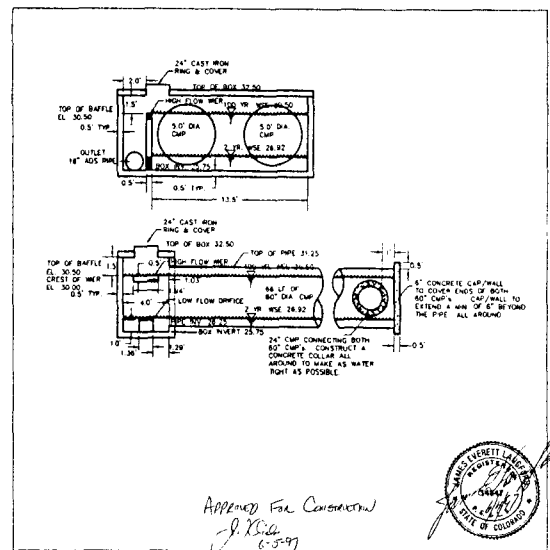
NOTICE: FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES A MINIMUM OF 36 HOURS PRIOR TO CONSTRUCTION.

DATE	NO.	REVISIONS	By

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




UTILITY COMPOSITE
THE GLEN AT HORIZON
SUBDIVISION
LANDesign
 ENGINEERS • SURVEYORS • PLANNERS
 259 GRAND AVENUE
 GRAND JUNCTION, COLORADO 81501 (970) 245-4099
 PROJECT NO. 96045 DRAWN CHK'D APPR'D SHEET OF
 DATE: OCT., 1995 JHM 11 23



APPROVED FOR CONSTRUCTION
J. K. [Signature]
 6-5-97

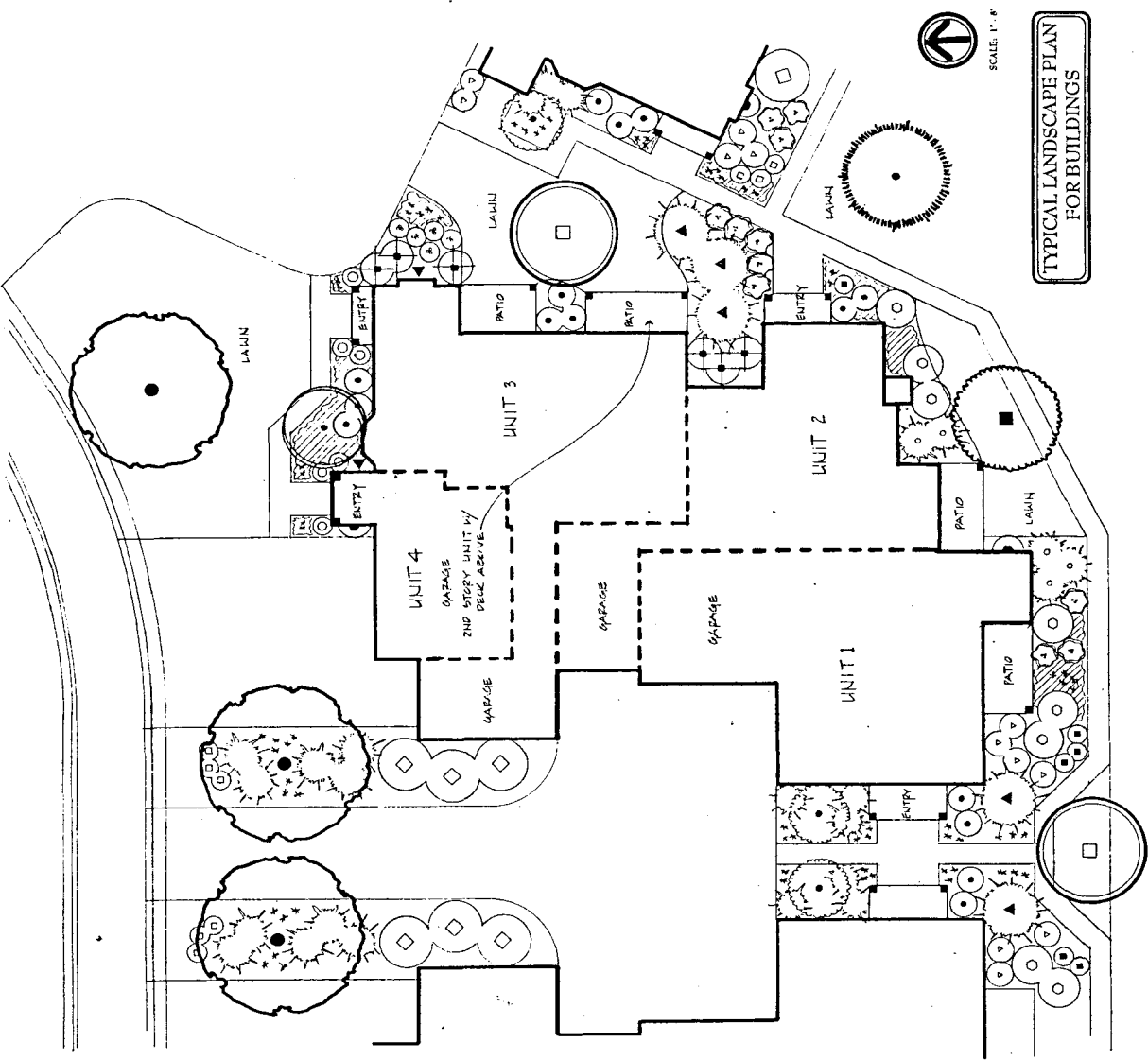


DRAWN BY JEL DESIGNED BY JEL CHECKED BY 	PREPARED UNDER THE SUPERVISION OF P.E. NO. RECEIVED DATE	 American Consulting Engineers' Council Member THOMPSON-LANGFORD CORP. 529 25 1/2 RD., SUITE B210 GRAND JUNCTION, COLORADO PH. (303) 243-8087	<table border="1"> <thead> <tr> <th>REVISION</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> <th>CHKD.</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	REVISION	DATE	DESCRIPTION	BY	CHKD.																					THE GLEN AT HORIZON GRAND JUNCTION	SCALE 1"=40' SHEET NO. 1 OF 1	JOB NO. 0378-004 DATE 6/2/97
REVISION	DATE	DESCRIPTION	BY	CHKD.																											



Plant List - HORIZON VILLAGE

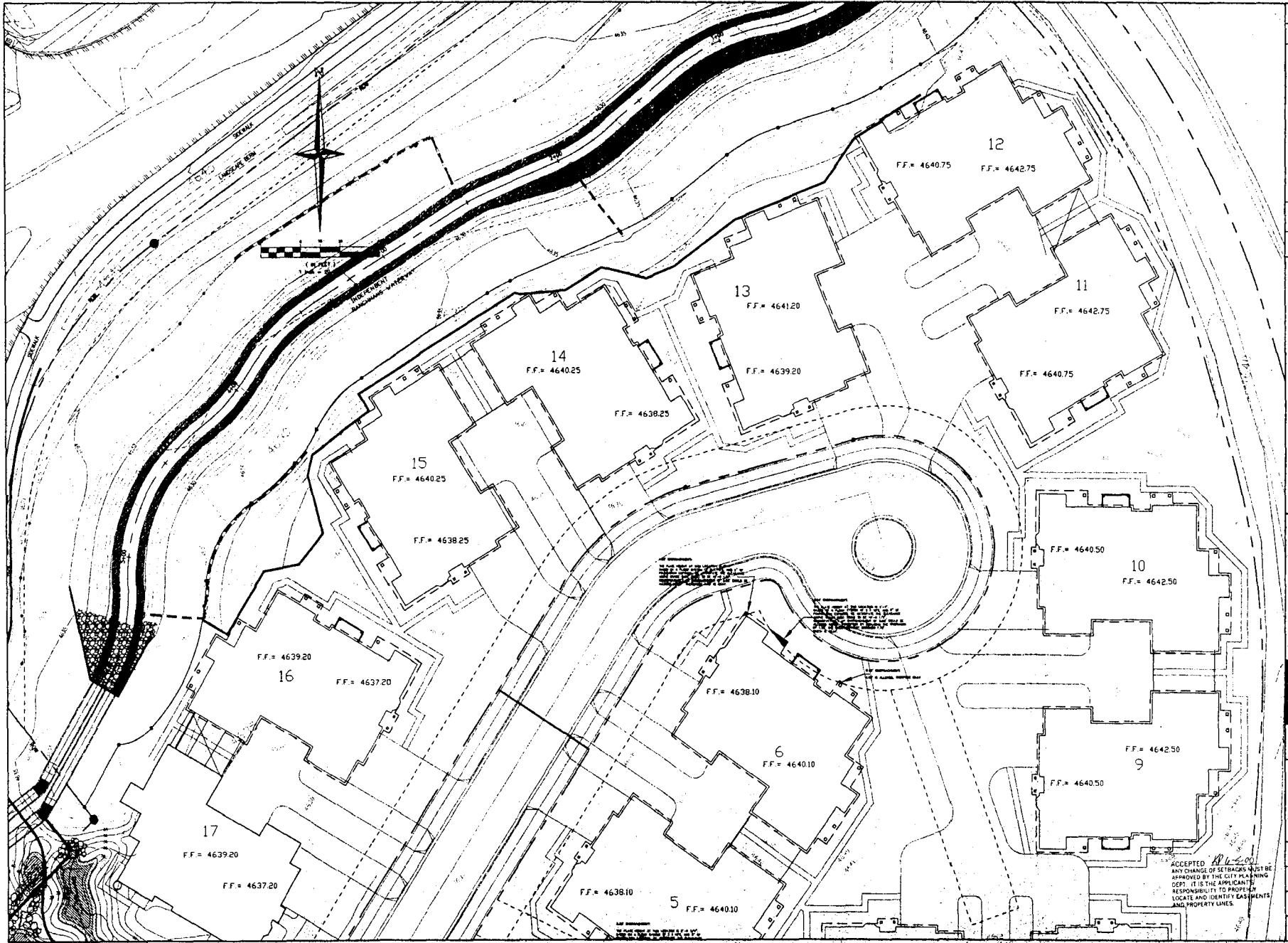
Botanical Name	Common Name	Size
<i>Baccharis salicifolia</i>	Manzanita	3' min
<i>Fraxinus pennsylvanica</i>	White Ash	6-8'
<i>Juniperus horizontalis</i>	Creeping Juniper	2' min
<i>Koeleria paniculata</i>	Golden Grass	2' min
<i>Muhlenbergia capensis</i>	Black Bluestem	2' min
<i>Penstemon</i>	Penstemon	6-8'
<i>Pyracantha coccinea</i>	Red Hawthorn	3-4'
<i>Quercus macrocarpa</i>	White Oak	5-6'
<i>Rosa rugosa</i>	Rugosa Rose	5-6'
<i>Spiraea virginiana</i>	Spirea	5-6'
<i>Yucca filamentosa</i>	Spiky Yucca	1-2'



TYPICAL LANDSCAPE PLAN
FOR BUILDINGS

*Note: Shrub beds to be bordered with 4" metal edge and covered with 2" wood mulch. Flowering plants to be planted in areas where there are many small groundcovers or perennials planted or where the soil will be cultivated, but which should remain.

5. Users of this drawing shall be responsible for any errors or omissions.



NO.	
DATE	
BY	
REVISION	
NO.	
DATE	
BY	
REVISION	

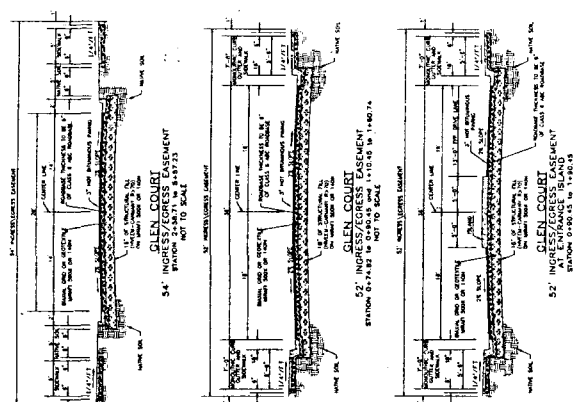
THE GLEN AT HORIZON
GRAND JUNCTION, CO

TRIMPERSON-LANGFORD CORP.
ENGINEERS AND LAND SURVEYORS
205 W. 1/2 E. 5TH ST. N.
GRAND JUNCTION, COLORADO
PHONE (970) 241-2245
FAX (970) 241-2245
Ltr#2002-001

DATE	
SCALE	
PROJECT NO.	
SHEET NO.	

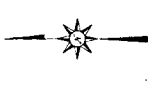
ACCEPTED *[Signature]*
ANY CHANGE OF SETBACKS MUST BE APPROVED BY THE CITY PLANNING DEPT. IT IS THE APPLICANT'S RESPONSIBILITY TO PROPERLY LOCATE AND IDENTIFY EASEMENTS AND PROPERTY LINES.

DATE: 5/10/00
SCALE: 1" = 20'
PROJECT NO: 0326-001
SHEET NO: 2 of 3



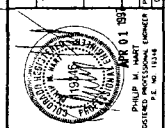
USE	ACRES	PERCENT
STREET ROW	0.8	8.3
OPEN SPACE	1.8	19.6
TOTAL	2.6	27.9
Remaining Acreage	7.39	78.1
Total Number of Units	= 68 Units	
Zoning = Planned Development 7.4 units/acre		

NOTE:
 SEE RETAINING WALL PLAN AND DETAIL FOR DIMENSIONS OF RETAINING WALLS AND ENTRY WALLS.
 ALL UTILITY ENDS SERVING THE SITE ARE AS FOLLOWS:
 ELECTRIC.....PUBLIC SERVICE
 GAS.....U.S. WEST
 PHONE.....U.S. WEST
 DOMESTIC WATER.....CITY OF GRAND JUNCTION
 SANITARY SEWER.....CITY OF GRAND JUNCTION
 AND BE A MINIMUM OF 6" CONCRETE TO SLAVE AND 4" THICK CONCRETE PAD 12 FEET BY 12 FEET TO SERVE A 12 UNIT MAJOR BOX.
 ALL UTILITY ENDS SHALL BE SHOWN BY LIMITS OF CONSTRUCTION LINE FOR ALL UTILITIES AND SHALL BE CONSIDERED AS A TEMPORARY CONSTRUCTION EASEMENT SURFACE UNTIL FUTURE FILLS ARE CONSTRUCTED.
 ALL UTILITY ENDS SHALL BE A MINIMUM OF 6" THICKNESS AND 4" THICK CONCRETE PAD 12 FEET BY 12 FEET FOR BUILDING ENVELOPES AND DRIVEWAY LOCATIONS.
 THIS PLAN IS A PRELIMINARY ARCHITECTURAL DRAWING. ALL DIMENSIONS, MATERIALS, FINISHES, ETC. SHALL BE APPROVED BY THE OWNER AND THE ENGINEER.

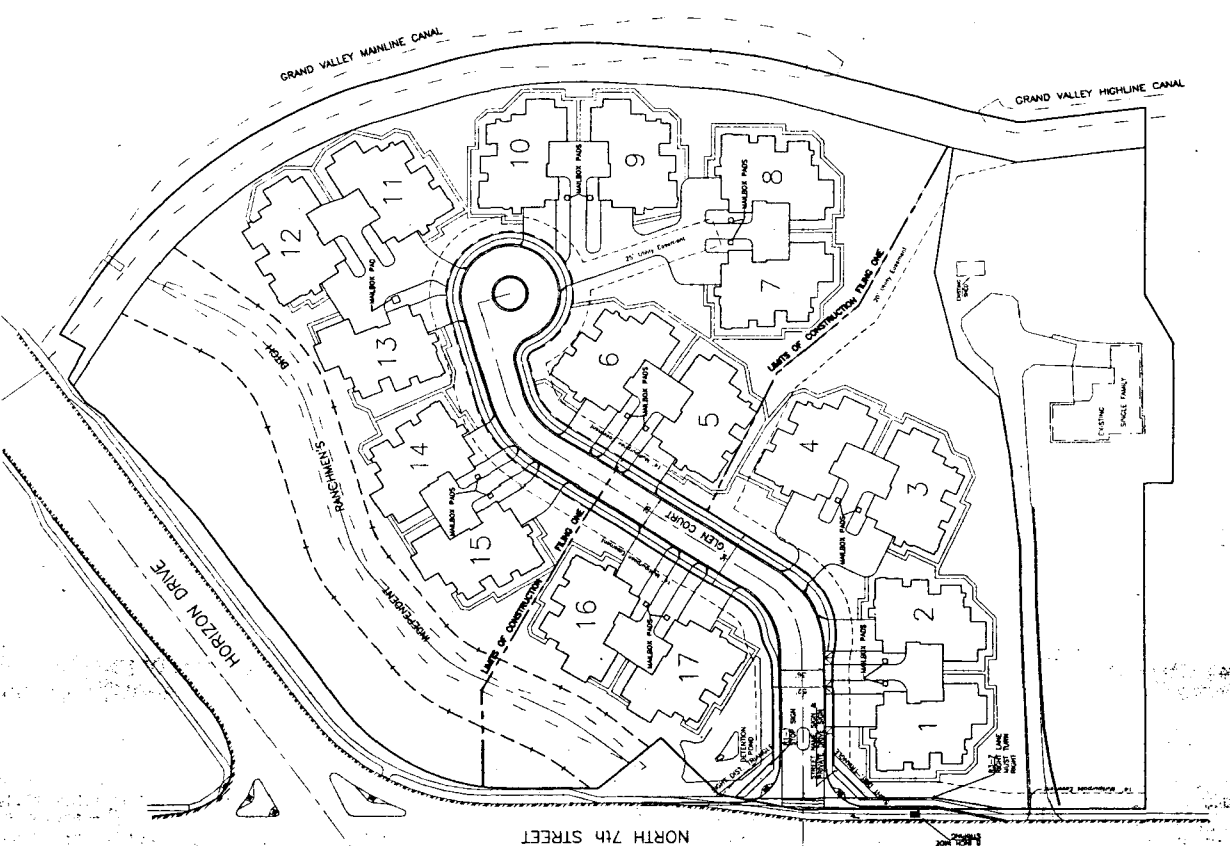


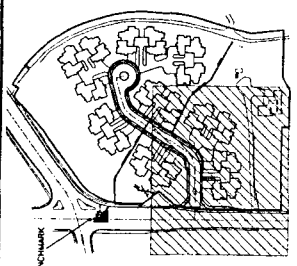
DATE	NO.	REVISIONS	BY
11-29-94	1	REVISE COMMENTS	DM
01-21-97	2	ADD NEW UNIT APPROX. 1 UNIT	DM

SITE PLAN
THE GLEN AT HORIZON
SUBDIVISION
LANDesign
 1500 S. GRAND AVENUE, SUITE 100
 GRAND JUNCTION, CO 81505
 PHONE: (970) 241-1208
 FAX: (970) 241-1214



CITY OF GRAND JUNCTION
 APPROVES FOR CONSTRUCTION FOR THE YEAR ENDING DATE: 4-30-97
 BY: [Signature]
 TITLE: [Title]

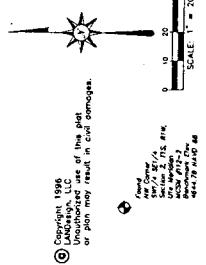




DRAWING KEY THIS SHEET 40 TO 542

NOTE:
 The engineer is responsible for determining, based on the data furnished, whether the proposed construction is in accordance with the applicable codes and ordinances. The engineer is not responsible for the accuracy of the data furnished. The engineer is not responsible for the accuracy of the data furnished. The engineer is not responsible for the accuracy of the data furnished.

CALL BEFORE YOU DIG 1-800-922-1987
 NOTICE: FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES A MINIMUM OF 36 HOURS PRIOR TO CONSTRUCTION.



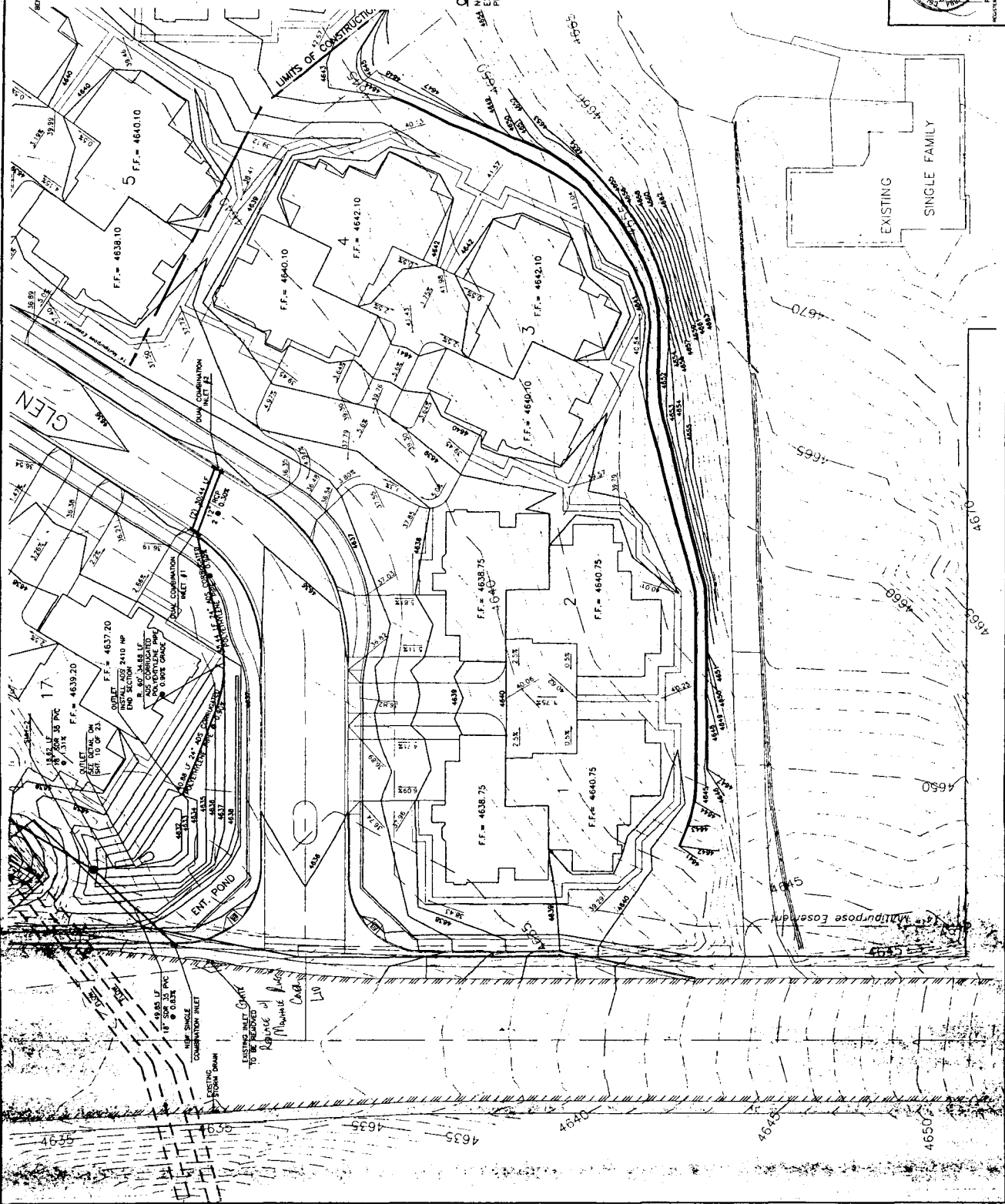
CITY OF GRAND JUNCTION
 APPROVED FOR CONSTRUCTION FOR THE YEAR FROM THE DATE
 DATE: 04-28-97
 BY: [Signature]
 ENGINEER OF CONSTRUCTION

NO.	DATE	REVISIONS
1	11/27/94	REVISED COMMENTS
2	02/27/97	REVISED COMMENTS

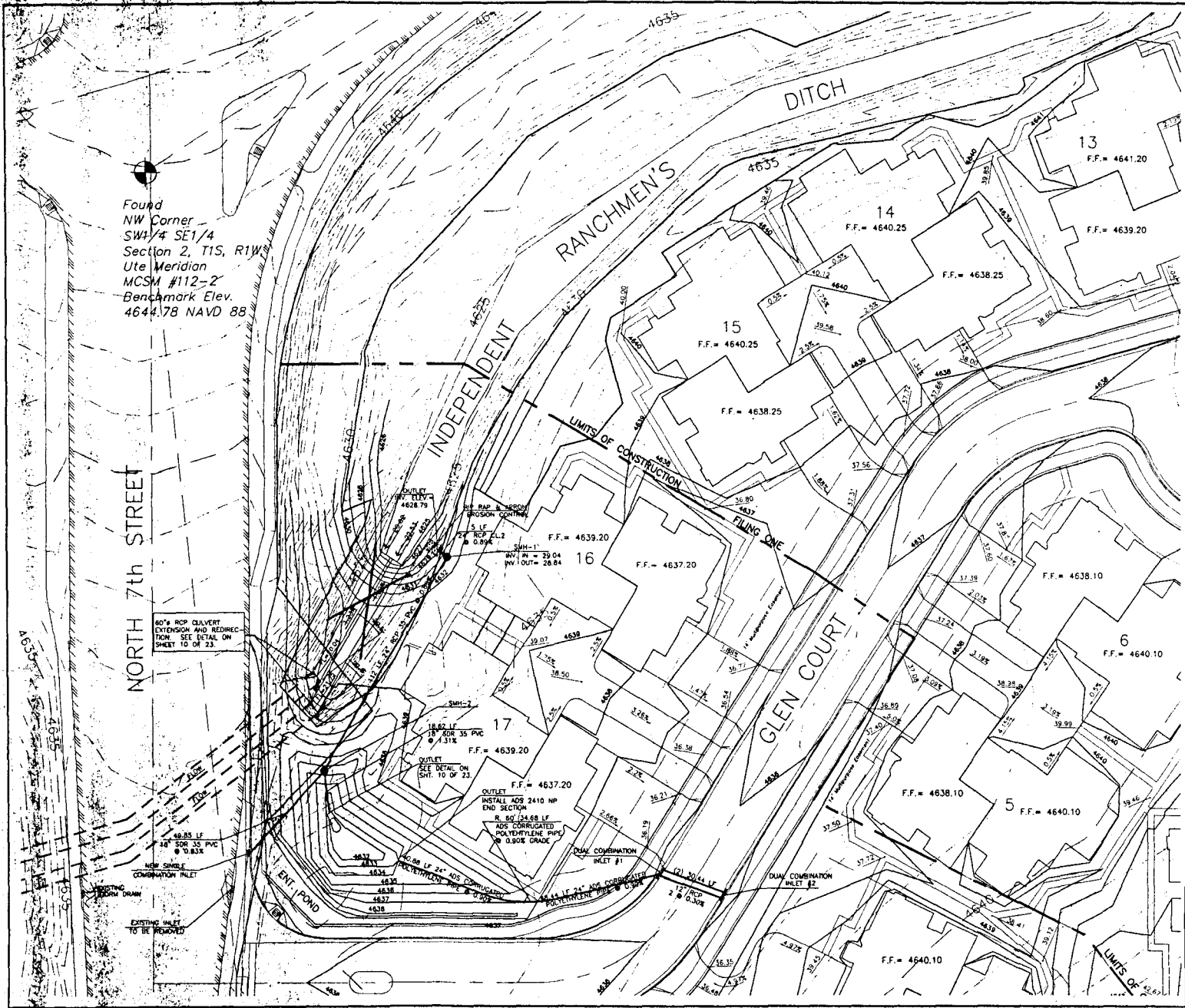


DATE	NO.	REVISIONS
11/27/94	1	REVISED COMMENTS
02/27/97	2	REVISED COMMENTS

GRADING AND DRAINAGE PLAN
THE GLEN AT HORIZON
SUBDIVISION
LANDesign
 01 98
 PROJECT NO. 10155 DRAWN: [Name] CHECKED: [Name] SHEET 3 OF 3



F



Found
NW Corner
SW 1/4 SE 1/4
Section 2, T1S, R1W
Ute Meridian
MCSM #112-2
Benchmark Elev.
4644.78 NAVD 88

NORTH 7th STREET

80" RCP CULVERT
EXTENSION AND REDIRECT
FROM - SEE DETAIL ON
SHEET 10 OF 23.

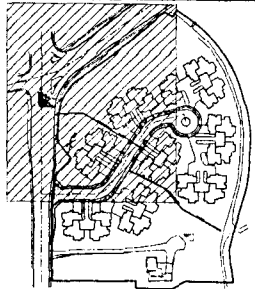
NEW SINGLE
COMBINATION INLET
EXISTING INLET
TO BE REMOVED

INDEPENDENT

RANCHMEN'S
DITCH

LIMITS OF
CONSTRUCTION

GLEN COURT



DRAWING KEY THIS SHEET
NOT TO SCALE

NOTE:
The contractor is responsible for familiarizing itself with the site conditions both noted on these plans and specifications, reports, maps and from site inspection. It is responsible for interpretation of these plans with the local laws and regulations regarding the construction of this project. It and its subcontractors are further responsible to report any conflicts, errors or discrepancies regarding these plans to the design team and site conditions which may be noted during the construction of the project to the design team. The contractor is responsible for securing all permits, including all existing underground utilities and facilities and determining any required fees regarding the construction of this project.

CALL BEFORE YOU DIG 1-800-922-1987

NOTICE: FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES A MINIMUM OF 36 HOURS PRIOR TO CONSTRUCTION.



SCALE: 1" = 20'

© Copyright 1996
LANDesign, LLC
Unauthorized use of this plan
or plan may result in civil damages.

CITY OF GRAND JUNCTION
APPROVED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE.
BY: *[Signature]* DATE: 4-8-97
REVISIONS TO BE CONSTRUCTED
DATE:

DATE	NO.	REVISIONS	BY
11/21/96	1	REVIEW COMMENTS	AMJ
03/24/97	2	REVIEW COMMENTS	AMJ



GRADING AND DRAINAGE PLAN
THE GLEN AT HORIZON
SUBDIVISION

LANDesign
ENGINEERS • SURVEYORS • PLANNERS

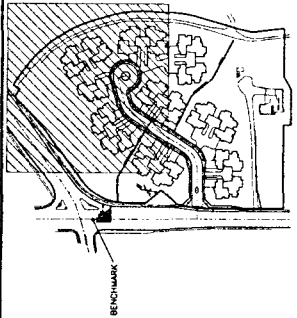
PHILIP M. HART
REGISTERED PROFESSIONAL ENGINEER
P.E. NO. 15376

250 GRAND AVENUE
COLORADO, BLDG. (970) 243-0099

PROJECT NO 91043 DRAWN: CHD APPROVED: SHEET 7 OF 7
DATE: OCT 1996 AMJ BOC MCH

FT-1990-240

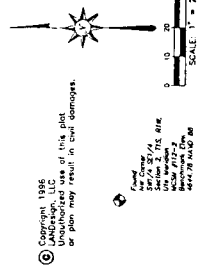
DATE: 9-8-97



DRAWING KEY THIS SHEET
NOT TO SCALE

NOTICE: The responsibility for maintaining and updating this plan rests with the contractor. The contractor shall verify the location of all existing utilities a minimum of 36 hours prior to construction. The contractor shall be responsible for obtaining any required utility records and for providing them to the engineer. The contractor shall be responsible for obtaining any required utility records and for providing them to the engineer.

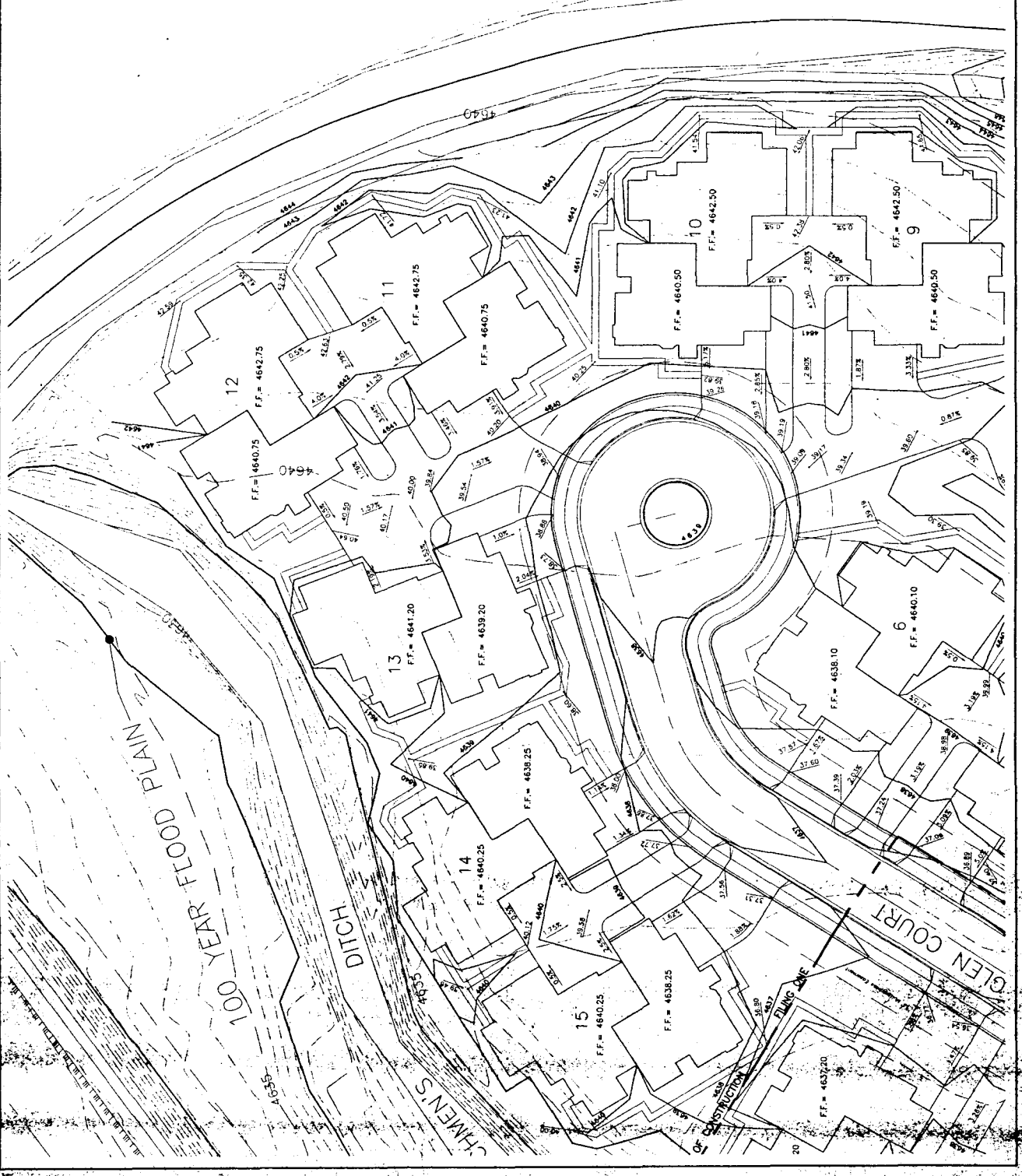
CALL BEFORE YOU DIG 1-800-922-1987
NOTICE: FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES A MINIMUM OF 36 HOURS PRIOR TO CONSTRUCTION.

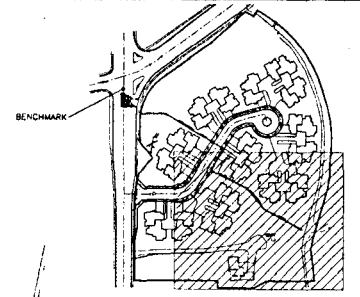
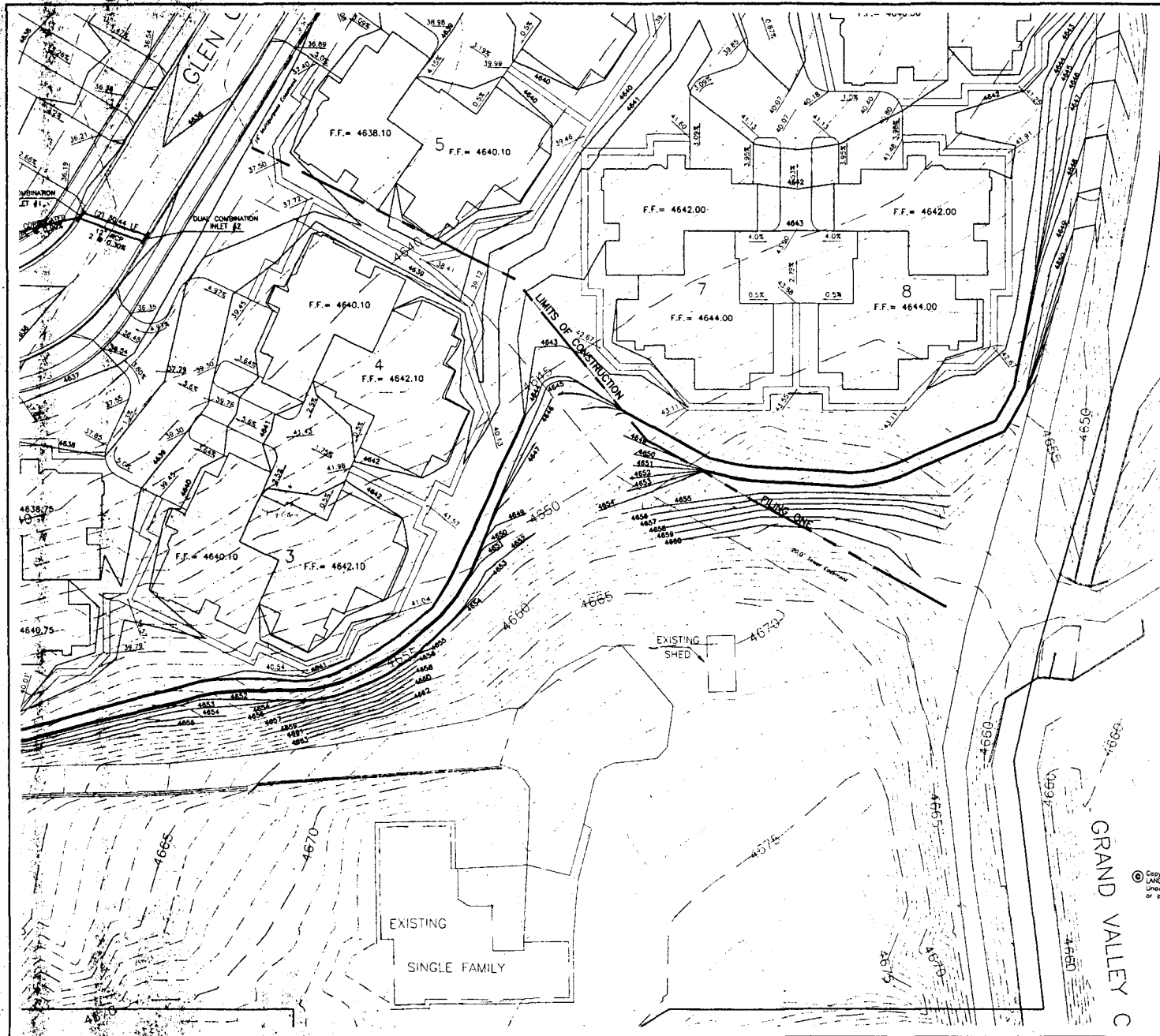


CITY OF GRAND JUNCTION
APPROVED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE
BY: [Signature] DATE: 9-8-97
FOR CONTRACTED

NO.	DATE	REVISIONS
1	11/21/96	REVIEW COMMENTS
2	02/21/97	REVIEW COMMENTS

GRADING AND DRAINAGE PLAN
THE GLEN AT HORIZON
SUBDIVISION
LANDesign
LAND DESIGN, INC.
1000 W. 10TH ST., SUITE 100
GRAND JUNCTION, CO. 81505
PHILIP M. HART
REGISTERED PROFESSIONAL ENGINEER
DATE: OCT. 1996



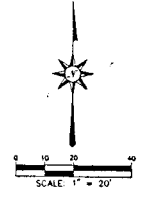


DRAWING KEY THIS SHEET
NOT TO SCALE

NOTE:
The contractor is responsible for familiarizing itself with the site conditions both noted on these plans and specifications, reports, tests and from site evaluation. It is responsible for familiarization of itself with the local laws and regulations regarding the construction of this project. It is the representative's further responsibility to report any conflicts, omissions or discrepancies regarding these plans or between the plans and site conditions which may be noted during the construction of the project to the owner. The contractor is responsible for obtaining all permits, including all existing underground utilities and facilities and performing any required tests regarding the construction of this project.

CALL BEFORE YOU DIG 1-800-922-1987

NOTICE: FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES A MINIMUM OF 36 HOURS PRIOR TO CONSTRUCTION.

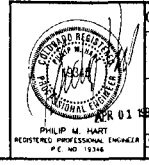


Point
at Corner
2847.5 357.74
Section 2, T15, R18K
City of Horizon
MCH #11272
Benchmark Elev
4647.78 NAD 83

CITY OF GRAND JUNCTION
APPROVED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE.
BY: *[Signature]* DATE: 4-8-97
ACCEPTED AS CONSTRUCTED
BY: _____ DATE: _____

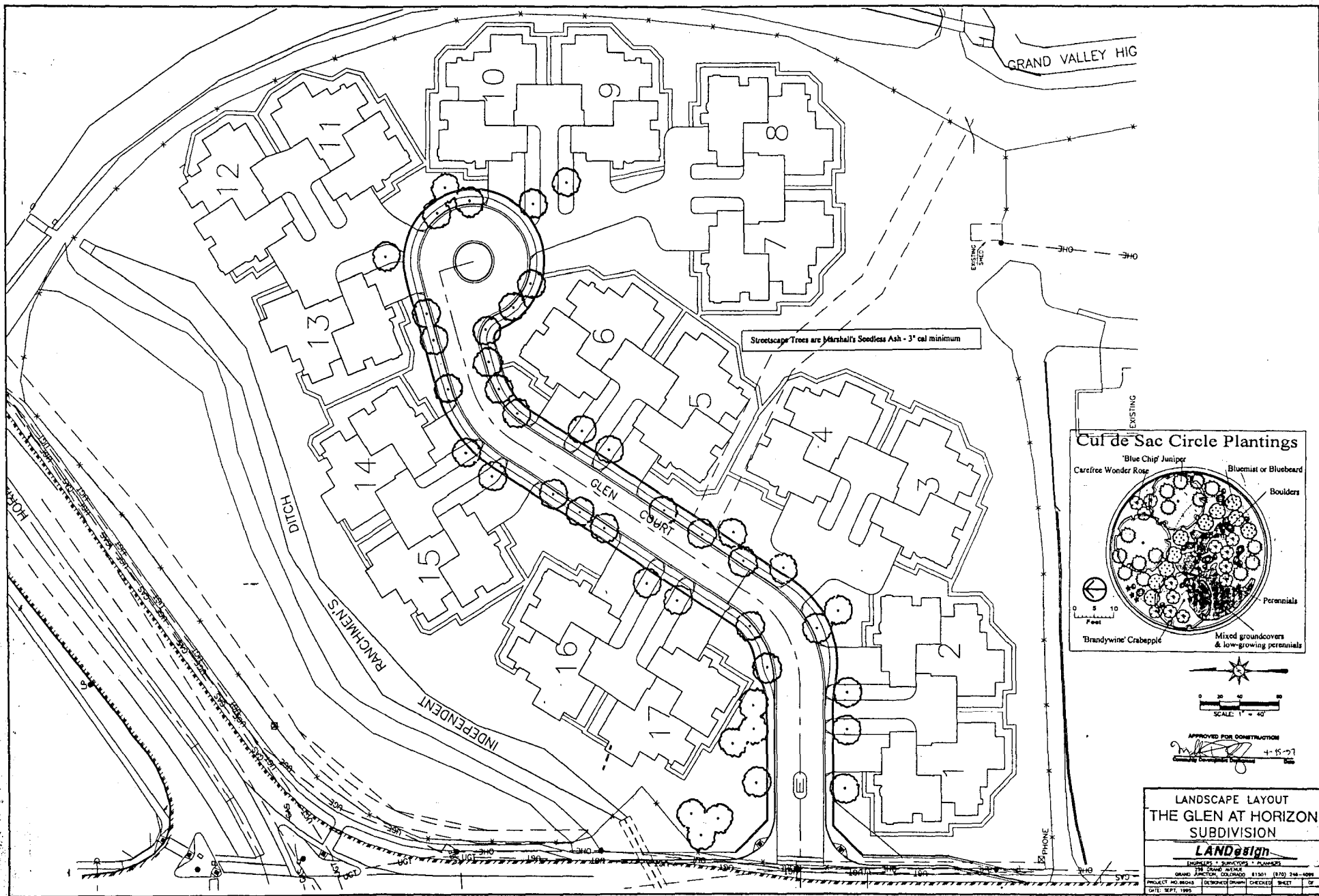
DATE	NO.	REVISIONS	BY:
11/21/96	1	REVIEW COMMENTS	JMM
03/24/97	2	REVIEW COMMENTS	JMM

Copyright 1996
LANDesign, LLC
Unauthorized use of this plot
or plan may result in civil damages.



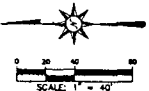
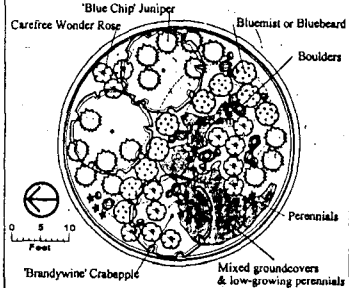
GRADING AND DRAINAGE PLAN
THE GLEN AT HORIZON
SUBDIVISION
LANDesign
ENGINEERS • SURVEYORS • PLANNERS
APR 01 1997
23 GRAND AVENUE
GRAND JUNCTION, COLORADO 81501 (970) 242-2000
PROJECT NO: 96043 DRAWN: CHW D. AMUNDY SHEET: 1 OF 23
DATE: OCT 1996

DPP 9601-240



Streetscape Trees are Marshall's Seedless Ash - 3" cal minimum

Cul de Sac Circle Plantings



APPROVED FOR CONSTRUCTION
[Signature] 4-15-21

**LANDSCAPE LAYOUT
 THE GLEN AT HORIZON
 SUBDIVISION**

LANDesign
 LANDSCAPE ARCHITECTS & PLANNERS
 2000 W. 10TH AVENUE
 DENVER, COLORADO 80202 (303) 241-4000
 PROJECT NO. 18014 | DRAWING NO. 18014-110 | SHEET 02 OF 02
 DATE: SEPT. 1995