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

FAX TRANSMITTAL

DATE: 7-16-03

TO: Liz Wright

FAX NUMBER: 245-9538

PHONE NUMBER: 245-1600

Dakota West 2 - Disbursement Agreement
(Get amount from DIA)

FROM: Laura Lamberty

FAX NUMBER:

PHONE NUMBER: 256-4155

THIS FAX CONSISTS OF 5 **PAGES (INCLUDING COVER SHEET)**

From: John Shaver
To: Lori Bowers
Date: 7/2/03 10:47AM
Subject: Dakota West

AP 7/2/03

Lori,

I write in response to your request for an opinion on the June 27, 2003 letter from the Grand Junction Drainage District concerning the Dakota West subdivision, FP 2003-079.

It appears from that letter and the attached deed and aerial photograph that the drainage district has a legal interest in, on, along and across a portion of the property that is the subject of this application. While the District's letter does not state the width of access required for the District's facilities, the request and supporting documentation reasonably appear to be valid. I would advise that you request that the Developer meet with the District and clarify what width the district reasonably requires and that the same be memorialized on the plat as a "irrigation and drainage easement."

If you have questions or if I may otherwise be of assistance to you on this or any other matter, please let me know. Please enter this e-mail message as "review agency comments" on the development application.

From: Peter Krick
To: Lori Bowers
Date: 6/18/03 2:25PM
Subject: Dakota West Subdivision

Lori,
I have reviewed the revised Title Commitment for this project. I have no additional comments. I am forwarding the revised Commitment to John Shaver for his use.
Peter

From: Peter Krick
To: Lori Bowers
Date: 6/17/03 4:04PM
Subject: Dakota West

Lori,
I spoke with John Shaver concerning some title issues (problems) with the current Title Commitment. I had a conference with Dennis Shellhorn with Thompson Langford Corp. and he has called the Title Company. The Title Company will be issuing a new, updated and revised commitment for this project. It should take about 1 or 2 days for this to happen. When I get the new Policy, I will review it with our legal department and everything should be ready for signing of the Mylar. However, I do not know at this time if the Mylar will change between now and then. The client will be taking a chance if they get all signatures now.
Peter

To: Rob + Gina

From: John Shaver
To: Lori Bowers
Date: 6/6/03 2:02PM
Subject: Re: Dakota West Subdivision Irrigation

Lori,

As much as they want to drag you in, don't let them. Our issue pertains to the easement and the relocation/conveyance of that vis a vis developability; as you know we don't have a dog in the fight over who gets water, how much water they get (or don't get) etc. The neighbors have civil remedies that I will be pleased to explain to them/encourage them to pursue.

>>> Lori Bowers 06/05/03 09:09AM >>>
John,
I'm not sure how to handle the numerous phone calls I am receiving regarding Dakota West and the irrigation issues on this property. I sent a letter yesterday to the Cantrells asking them to give me an update as to the irrigation issues on this property, but until I hear from them I'm not sure what to do. I have received numerous phone calls and have had several people come to the counter complaining about the Cantrell's and how they have interrupted/shut-off irrigation water to neighboring properties; have crossed driveways without permission; are building headgates on other people's property without permission; and it is rumored that they are not going to provide irrigation water to the subdivision because it is so much trouble. Laura Lamberty has been fielding most of the irrigation issues but she is out of the office this week. I am aware that they were planning a blanket easement for irrigation over the property until these issues are resolved. Is this a civil matter or do I need to do something other than what I have done? Thanks for any input you can give me.
Lori

CC: Dan Wilson

appreciate it. I'm not sure how to answer some of the questions that the neighbors are asking me because I'm not really sure what has been done and what has not. Thanks for your cooperation in this matter.

Sincerely,

City of Grand Junction

Lori V. Bowers, Senior Planner
Community Development Department

THOMPSON - LANGFORD CORPORATION
ENGINEERS AND LAND SURVEYORS

tlc@tlcwest.com
Facsimile (970) 241-2645
Telephone: (970) 243-6067
529 25 1/2 Rd, Grand Junction, CO 81505

TRANSMITTAL

RECEIVED
MAY 0 6 2003
COMMUNITY DEVELOPMENT DEPT.

To: Lori Bowers

From: Jeff Mace

Date: 05/06/03

Re: Dakota West Subdivision Filing 2

We are sending you: ☒Attached ☐Under separate cover ☐ _____

Via: ☐USPS ☐ FedEx ☒ Delivery _____

☐Originals ☒Prints ☐Copies ☐ _____

Copies	Item	Description and Remarks
2	Plat for the above referenced project	

COMMENTS: _____

These are transmitted as checked below:

☐For Approval ☒For your Use ☒As Requested

☒For Review and Comment

IF ENCLOSURES ARE NOT AS NOTED, PLEASE NOTIFY US IMMEDIATELY

SUPERPAVE METHOD ASPHALTIC CONCRETE JOB MIX FORMULA GRADING "SX", 75 DESIGN GYRATIONS, PG 64-22 ASPHALT CEMENT

Elam Construction, Inc.
Mule Farm Pit
2003 House Mix

Prepared For:

Elam Construction, Inc.
1225 S. 7th Street
Grand Junction, Colorado 81501

Prepared by:

Western Colorado Testing, Inc.
529 25½ Road, Suite B-101
Grand Junction, Colorado 81505
(970) 241-7700

Date: May 8, 2003
Job No.: 102303A

WESTERN
COLORADO
TESTING,
INC.

SUPERPAVE METHOD ASPHALTIC CONCRETE JOB MIX FORMULA
GRADING "SX", 75 Design Gyrations, PG 64-22 ASPHALT CEMENT

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Elam Construction, Inc.
SUPERPAVE Method Mix Design
Grading "SX", 75 Gyrations, PG 64-22 Binder
Mule Farm Pit - 2003 House Mix
May 8, 2003; WCT #102303A

Mixture Aggregate Qualities and Moisture Susceptibility

Specific gravities and absorption properties of the individual aggregate stockpiles and composite mixture blend are:

Test (Fine Aggregate (CP-L 4102), Coarse Aggregate (CP-L 4103))	5/8" Rock	3/8" Rock	Crushed Fines	Natural Fines	Comp.
Bulk Dry Sp.G., g/cc	2.604	2.591	2.596	2.565	2.595
Bulk SSD Sp.G., g/cc	2.637	2.630	2.633	2.607	2.631
Effective Sp.G., g/cc	-	-	-	-	2.666
Apparent Sp.G., g/cc	2.694	2.696	2.696	2.676	2.693
Absorption, % Water	1.30	1.50	1.43	1.61	1.41
Absorption, % AC (Pba)	-			-	1.06

Supplemental aggregate quality tests required by the project specifications for the composite material include:

Test			Results		Spec.		Procedure
L.A. Abrasion, % Loss, (@500rev)			15		45 Max.		AASHTO T-96
Fractured Faces, % (2 or more)			95		70 Min.		CP-45
Fine Aggregate Angularity			48		45 Min.		CP-L 5113
Sand Equivalent Value			72		-		AASHTO T-176
Liquid Limit	Cr. F.	Naturals	N/V	N/V	-	-	AASHTO T-89
Pl. Index	Cr. F.	Naturals	N/P	N/P	N/P	N/P	AASHTO T-90

Moisture susceptibility testing was performed during the final phase of the mixture development. The Resistance of Compacted Bituminous Mixture to Moisture Induced Damage "Lottman" test was performed to assess the stripping potential of the mixture. The result of the testing is summarized below with complete data located in Appendix C of this report.

Test (CP-L 5109, Method B, 3 Cycles, Saturation)	Result	Specification
Dry Tensile Strength, kpa (psi)	720 (104)	205 (30) Min.
Wet Tensile Strength, kPa (psi)	599 (87)	-
Tensile Strength Retained, %	83	80 Minimum

Elam Construction, Inc.
SUPERPAVE Method Mix Design
Grading "SX", 75 Gyrations, PG 64-22 Binder
Mule Farm Pit - 2003 House Mix
May 8, 2003; WCT #102303A

Stockpile	Blend %	Sieve Size		Composite % Pass	Production Tolerances
		mm	in		
5/8" Crushed Rock	30	37.5	1 1/2	100	(100)
3/8" Crushed Rock	10	25.0	1	100	(100)
Crushed Fines	50	19.0	¾	100	(100)
Natural Fines	10	12.5	½	96	(90-100)
		9.5	3/8	84	(6)
Aggregate and Mix Data	Result	4.75	No.4	54	(5)
Comb. Agg. Bulk Sp.Gr. (Gsb)	2.595	2.36	No.8	37	(5)
Fine Agg. (-)#4 Bulk Sp.Gr.	2.593	1.18	No.16	27	(-)
Mix Effective Sp.Gr. (Gse)	2.666	0.600	No.30	21	(4)
Agg. Apparent Sp.Gr. (Gsa)	2.693	0.300	No.50	15	(-)
Asphalt Absorption, % (Pba)	1.06	0.150	No.100	9	(-)
Sp. Gr. of AC (Gb) (est.)	1.03	0.075	No.200	5.7	(2)

The recommended optimum asphalt content is 6.3 percent by total weight of mixture (based on 4.0% voids). The project specifications allow for a production asphalt content tolerance of (+/-) 0.3% of this value. The properties of the asphaltic concrete at this oil content and design gyrations (except where noted) are:

Test or Mix Property	Result	Specification	Procedure
HVEEM Stabilometer Value	32	28 Minimum	CP-L 5106
Compacted Mixture Sp.Gr., g/cc (Gmb)	2.326	-	CP-L5115, 5103
Compacted Mixture Unit Wt., pcf	144.8	-	62.24 Conv.
Maximum Theo. Sp.Gr., g/cc (Gmm)	2.423	-	CP-51
Maximum Theoretical Density, pcf	150.8	-	62.24 Conv.
Effective Voids, % N(ini)(Va)	12.6	(For Info)	CP-L 5115
Effective Voids, % N(des)(Va)	4.0	3.5-4.5	CP-L 5115
Voids in Min. Agg.,% N(des)(VMA)	16.0	14.0 Minimum	CP-48
Voids Filled, % N(des) (VFA)	75	65-80	AI, SP-2
Effective AC Content, % (Pbe)	5.3	-	AI, SP-2
Dust to Asphalt Ratio (DP)	1.1	0.8-1.6 (For Info)	CP-50

Elam Construction, Inc.
SUPERPAVE Method Mix Design
Grading "SX", 75 Gyrations, PG 64-22 Binder
Mule Farm Pit - 2003 House Mix
May 8, 2003; WCT #102303A

Limitations

The asphaltic concrete job mix formula and recommendations given herein are based upon specific materials, gradations and design procedures. Variations in test results for laboratory prepared mixes due to multi-laboratory precision, variations in materials, gradations and design procedures are to be expected. All of these factors should be considered when job mix verification of laboratory mixes are performed.

All of the physical properties of the mix should be retested and re-evaluated for hot plant produced material. It is often necessary to make adjustments to the job mix formula due to the variations between the laboratory tested and field produced material. Should the source or physical characteristics of the materials change substantially, the development of a new or revised job mix formula is recommended.

The information presented in this report is specific to the subject project only. Any re-use of the information should not be considered without the knowledge and written consent of WCT.

If there are any questions or additional information needed, please feel free to contact our office, 970-241-7700.

Respectfully Submitted,
WESTERN COLORADO TESTING, INC.

COLORADO REGISTERED JOHN E. VASEY 33557 PROFESSIONAL ENGINEER

John E. Vasey, P.E.
Construction Services Manager

JEV/mh
F:/jobs2003/1023 A Mix Design

Elam Construction, Inc.
SUPERPAVE Method Mix Design
Grading "SX", 75 Gyrations, PG 64-22 Binder
Mule Farm Pit - 2003 House Mix
May 8, 2003; WCT #102303A

Appendices

A	Superpave Summary - Varying AC Mix Properties
B	Varying AC Mixture Property Graphs
C	Detailed Lottman Test Results
D	Composite Gradation Summary Stockpile Data
E	Composite Gradation 0.45 Sieve Power Graph

Elam Construction
SUPERPAVE Method JMF
Grading "SX", 75 Design Gyrations

Mule Farm Pit - House Mix
WCT Job No. 102303A
May 8, 2003

Appendix A

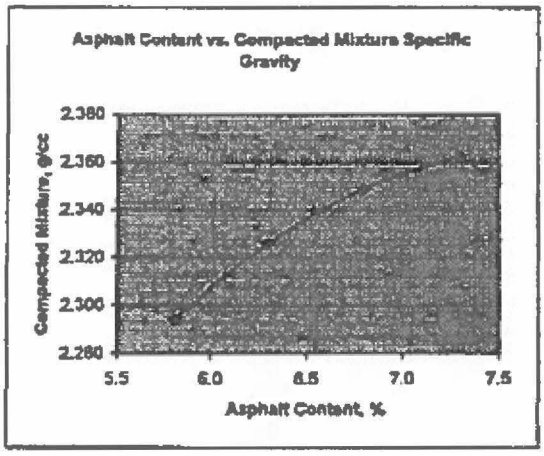
SUPERPAVE VOLUMETRIC SUMMARY				
Varying Asphalt Content Physical Properties				
Mixture Grading Type:	"SX", 1/2" Max. Nominal			
SUPERPAVE Gyration Data:	N(ini)= 7		N(des)= 75	
Measured Individual Mixture Properties	Varying AC % Results			
Asphalt Content by Total Wt. of Mix, % (Pb)	5.8	6.3	6.8	7.3
Specimen Height- N(ini), mm	71.7	70.6	68.9	67.5
Specimen Height- N(des), mm	65.2	64.3	62.8	61.4
Max. Theoretical Sp. Gr., g/cc (Gmm)	2.441	2.423	2.406	2.389
Max. Theoretical Unit Wt., pcf	151.9	150.8	149.7	148.7
Compacted Mix Bulk Sp Gr- N(des), g/cc (Gmb)	2.294	2.326	2.349	2.363
Compacted Mix Unit Wt.- N(des), pcf	142.8	144.8	146.2	147.1
Calc. Mix Bulk SpGr.- N(ini), g/cc (Gmb)	2.086	2.118	2.141	2.149
Calc. Mix Unit Wt.- N(ini), pcf	129.8	131.9	133.3	133.8
Calculated Air Voids- N(ini), % (Va)	14.5	12.6	11.0	10.0
Calculated Air Voids- N(des), % (Va)	6.0	4.0	2.4	1.1
Calc. Voids in Min. Agg.- N(des), % (VMA)	16.7	16.0	15.6	15.6
Calculated Voids Filled- N(des), % (VFA)	64	75	85	93
Effective Asphalt Content of Mix, % (Pbe)	4.8	5.3	5.8	6.3
Dust to Effective AC Proportion (DP)	0.9	0.8	0.8	0.7
Hveem Stability Index	31	32	34	35

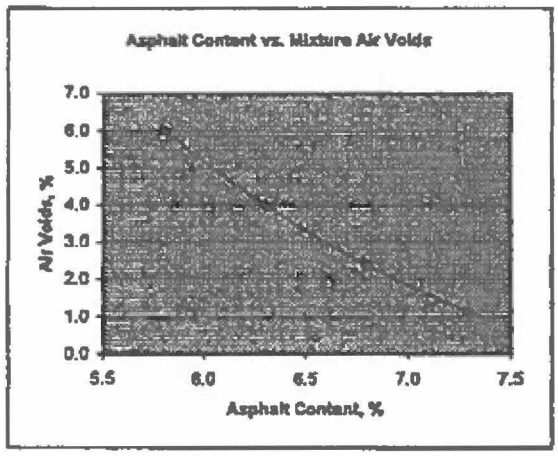
Data Used For Volumetric Calculations	
Trial Max. Theo. Sp. Gr., g/cc 2.389 AT 7.3 % AC	
Combined Aggregate Bulk Sp. Gr., g/cc (Gsb)	2.595
Fine Aggregate Bulk Specific Gravity, g/cc	2.593
Composite Aggregate Blend Pass #200 Sieve, %	5.7
Calculated Mix Effective Sp. Gr., g/cc (Gse)	2.666
Calculated Asphalt Absorption, % (Pba)	1.06
Asphalt Cement Estimated Sp. Gr., g/cc (Gb)	1.03

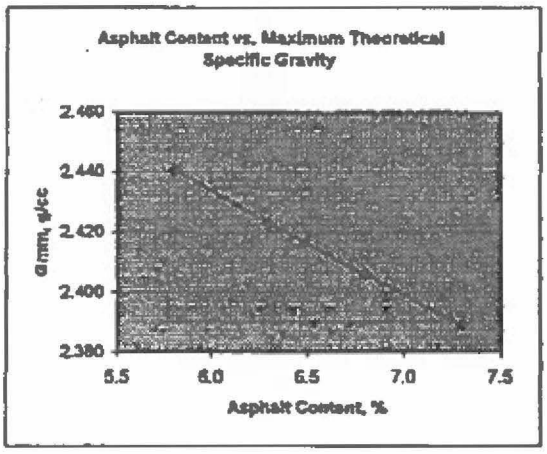
Elam Construction
SUPERPAVE Method JMF
Grading "SX", 75 Design Gyrations

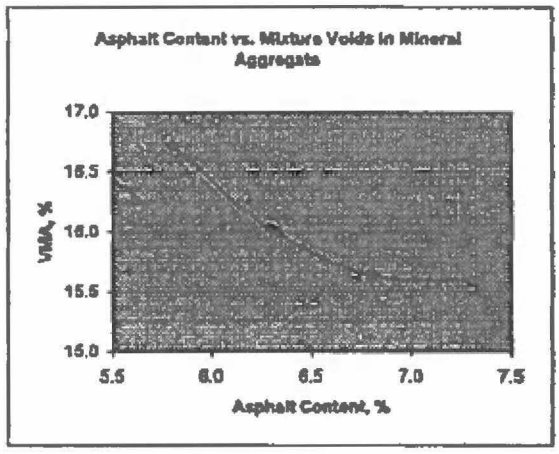
Mule Farm PR - House Mix
WCT Job No. 102303A
May 8, 2003

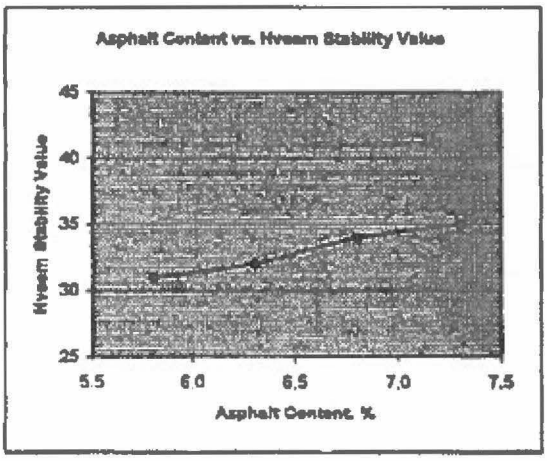
Appendix B
Varying Asphalt Content Mixture Property Graphs

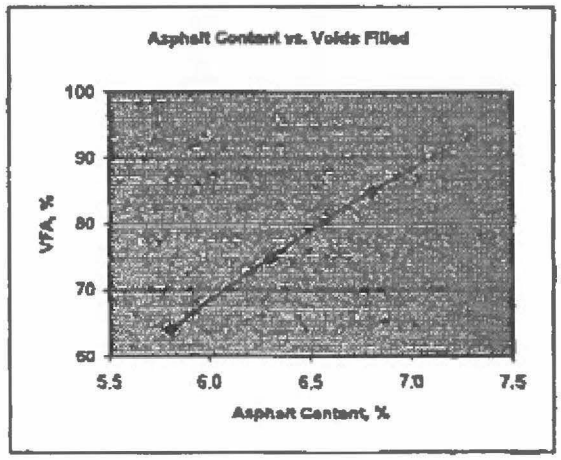












Elam Construction
SUPERPAVE Method JMF
Grading "SX", 75 Design Gyrations

Mule Farm Pit - House Mix
WCT Job No. 102303A
May 8, 2003

Appendix C

RESISTANCE OF COMPACTED BITUMINOUS MIXTURE TO MOISTURE INDUCED DAMAGE

Mixture Moisture Suseptability - Lottman Test Results

Test Procedure: CDOT CL-L 5109, Method B (5 minute saturation)

Mix Data

Mix Type: 75 Design Gyration Superpave Method (CDOT CP-L 5115)
Grading: "SX" 1/2" Maximum Nominal Mixture
Grade of Asphalt Cement Grade Used: PG 64-22
Asphalt Cement Supplier: Koch Performance Asphalt
Asphalt Mixing Temp. (C): 163 Asphalt Compaction Temp. (C): 149
Asphalt Content of Specimens by Total Wt. Of Mix, %: 6.3
Max. Theo. Sp. Gr. (Gmm) of Mix at AC Content, g/cc: 2.423
Antistripping agent Used in the Mixture: Liquid Amine (Agrigrip)

Compacted Specimen Test Data

	DRY SUBSET					WET SUBSET				
	Compacted Specimens		Total Load	Tensile Strength		Compacted Specimens		Total Load	Tensile Strength	
	Sp. Gr., g/cc	Air Voids, %	Lbs.	kPa	psi	Sp. Gr., g/cc	Air Voids, %	Lbs.	kPa	psi
1	2.270	6.3	1658	732	106	2.273	6.2	1304	574	83
2	2.269	6.4	1796	793	115	2.268	6.4	1372	605	88
3	2.254	7.0	1440	634	92	2.254	7.0	1400	617	90
Ave.	2.264	6.5	1631	720	104	2.265	6.5	1359	599	87

Specimen Compacted Height Data				
	Dry Subset		Wet Subset	
1	2.524	in	2.532	in
2	2.526	in	2.529	in
3	2.532	in	2.529	in
Ave.	2.527	in	2.530	in

Wet Subset Saturation Data	
Average Saturation, %:	74
Average Swell, %:	(-)0.3

Tensile Strength Ratio (TSR) 83

Test Specimen Obervations Noted:

Elam Construction
SUPERPAVE Method JMF
Grading "SX", 75 Gyrations

Mule Farm Pit - House Mix
WCT Job No. 102303A
May 8, 2003

Appendix D

MIXTURE GRADATION SUMMARY

Individual Stockpiles and Combined Mixture

Test Procedure Used: CDOT CP 31a and 31b

Grading Specification of Mix: CDOT "SX" Max. Nominal Particle Size: 1/2

Blend %	Individual Stockpiles								
	30.0	10.0	50.0	10.0					
Sieve Size	A	B	C	D	E	F	Composite	Job Mix Tolerances	Grading Specification
37.5mm/1 1/2"	100	100	100	100			100	100	100
31.0mm/1 1/4"	100	100	100	100			100	100	100
25.0mm/1"	100	100	100	100			100	100	100
19.0mm/3/4"	100	100	100	100			100	100	100
12.5mm/1/2"	86	100	100	100			96	90 minimum	90-100
9.5mm/3/8"	51	86	100	98			84	78-90	-
4.75mm/No.4	4	5	88	83			54	49-59	-
2.36mm/No.8	1	2	57	76			37	27-37	28-58
1.18mm/No.16	1	1	38	72			27	-	-
0.600mm/No.30	1	1	27	69			21	17-25	-
0.300mm/No.50	1	1	20	43			15	-	-
0.150mm/No.100	1	1	13	19			9	-	-
0.075mm/No.200	0.6	0.8	8.8	10.6			5.7	3.7-7.7	2-10

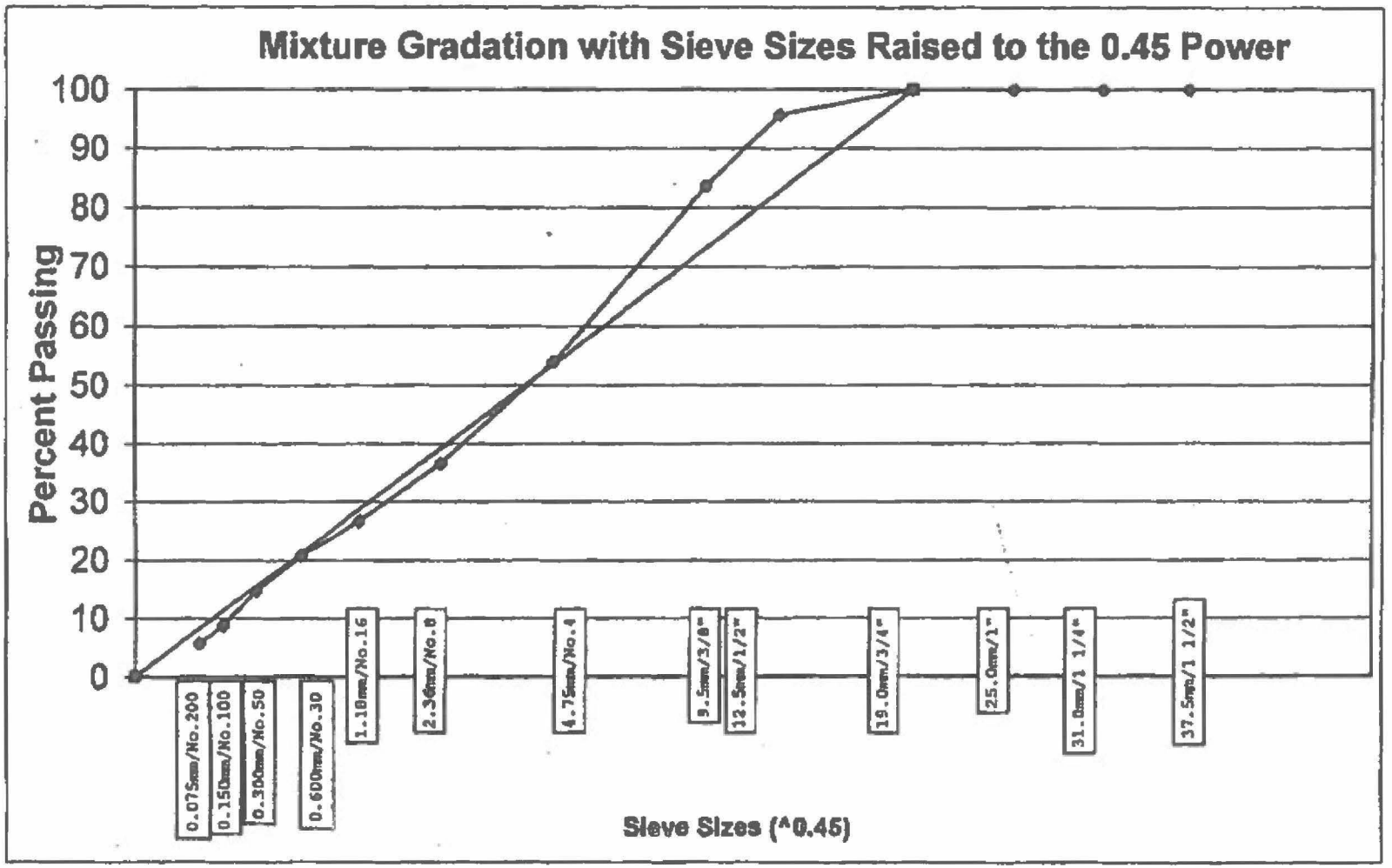
Stockpiles		Blend %
A=	5/8" Crushed Rock	30.0
B=	3/8" Crushed Rock	10.0
C=	Crushed Fines	50.0
D=	Natural Fines	10.0
E=		0.0
F=		0.0

A, B & C Ind. Stockpile results were provided by the client from crusher control data (design batched to targets).
OR
D Ind. Stockpile results tested by the mix design lab.

Elam Construction
SUPERPAVE Method JMF
Grading "SX", 75 Gyrations

Mule Farm Pit - House Mix
WCT Job No. 102303A
May 8, 2003

Appendix E



Mixture Design Type: 75 Design Gyration Superpave
Grading Specification: CDOT "SX" Maximum Nominal Particle Size: 1/2"

245-7716

CONSTRUCTION PHASE SUBMITTAL CHECKLIST

Location: 3088 D 1/2 Rd Project Name: Dakota West I + II

STEP	ACTIVITY	SUBMITTAL ITEMS	SSID REF.
1	Pre-construction	● City Approval of Construction Drawings ● Pre-construction Notice ○ Work within Public ROW Permit ○ NPDES Permit ○ Improvements Agreement/Guarantee ○ _____ ○ _____	VII-5 VII-5 VII-5 VII-5 VII-2,3
2	Grading Street Rough Cut Sanitary Sewer Water Irrigation Other Utilities Sub-grade Base Course Concrete Placement Laura Clawson 9/23/03 Sign and date OKAY FOR CONCRETE _____ Sign and date OKAY FOR PAVEMENT	○ Construction Report: Grading and Pipeline Phase ○ Construction Report: Concrete and Pavement Prep. ○ ~~Revised Asphalt Design (if necessary)~~ need ○ Request City Lamping of Sewerline ○ Complete Compaction Tests for all utilities, subgrade, and base course under concrete. All at once just prior to concrete construction. ○ Letter from water purveyor stating passage of pressure and disinfection tests ○ Sanitary sewer pressure test after wet utility installation. ○ Redlined Sanitation Sewer As-Builts ○ Redlined Storm Sewer As-Builts partial ○ Complete CompactionTests for base course under asphalt. All at once just prior to pavement. ○ _____ ○ _____	X-4 X-3 VII-6 VII-5 VII-6 VII-6 VII-6
3	Asphalt Pavement Dry Utilities Traffic Control Facilities Monumentation Permanent On-Site Benchmark (Subdivisions Only)	○ Complete QA Reports for asphalt and concrete. ○ Construction Report: Concrete and Pavement Placement ○ Complete Set of As-Built Drawings ○ Request for City Initial Inspection ○ Letter from PE stating passage of sanitary sewer pressure test after dry utility installation. ○ _____	 X-2 IX-3 to IX-7 VII-6 VII-6
4	Warranty Period	○ Request for City Final Inspection	VII-6

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 st ... approved set of reproducible drawings. A copy of this form, which has been completed for the specific pr ... to the developer at the preconstruction meeting.
2. City Engineering approval of sub ... will make every effort to provide timely approvals in orde ... in a timely manner as construction proceeds, then City
3. The "OKAY FOR CONCRETE' ... pector or the Development Engineer prior to ... signatures. **IT IS THE DEVELOPER'S RESP... ES.**

Post-it® Fax Note 7671 | Date 9/23 | # of pages ▶
To Julie P | From Laura L
Co./Dept. Elam | Co. City
Phone # | Phone #
Fax # 245-7716 | Fax #

Distribution for Signatures: Construction Inspector and Development Engineer

Final Drainage Report

Dakota West Subdivision

February 27, 2003

Prepared for:

G & R West, LLC
Mr. Rob Cantrell
2650 El Corona Dr.
Grand Junction, CO 81501

Prepared by:

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

Job No. 0543-001

TABLE OF CONTENTS

APPENDIX

Engineer's Certification

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

Jeffrey W. Mace, P.E.
Reg. No. 37343

I. GENERAL LOCATION AND DESCRIPTION:

A. Site and Major Basin Location:

The proposed Dakota West Subdivision is located east of 30 ¾ Road and north of D ½ Road. In more legal terms, it lies within the Southeast ¼ of the Northeast ¼ of Section 16, Township 1 South, Range 1 East of the Ute Meridian.

B. Site and Major Basin Description:

The proposed development is adjacent to an area wide basin known as the Lewis Wash Watershed. This basin originates in the Bookcliffs area and drains from the northeast to the southwest ultimately discharging into the Colorado River.

The site is made up of three separate parcels all of which are included within a sub basin that contributes to the Lewis Wash Watershed. There are existing features that define this sub basin. There is a topographical ridge along the northern edge separating it from the development adjacent to Gunnison Avenue. To the east, 31 Road forms the watershed boundary and 30 ¾ Road to the west. The southern boundary is formed by D ½ Road between 30 ¾ Road and 31 Road. The western portion of this sub basin drains into a storm sewer that crosses under D ½ Road, runs approximately 1,000 feet to the south and then east into Lewis Wash. A culvert under D ½ Road, at the access point of the proposed development, conveys flows from the eastern portion into an irrigation ditch that flows south and into the same storm sewer.

The project site is 11.06 acres with approximately 0.9 acres being an existing home site and the remainder previously undeveloped ground covered by natural vegetation. According to the Soil Survey, Series 1940, No. 19, performed by the U.S. Department of Agriculture's Soil Conservation Service for the Grand Junction area, the soils present at the site are a combination of Billings Silty Clay (B_A) and Billings Silty Clay Loam (B_C). Billings Silty Clay Loam is predominate throughout the Grand Valley with areas of Billings Silty Clay occurring toward the Colorado River south and southeast of Grand Junction. Both soil types are derived from alluvial deposits that came mostly from Mancos Shale with the Billings Silty Clay being harder and in most places darker. Surface runoff is slow to very slow, especially in areas with slopes less than one percent. Due to the massive subsoil and low permeability, internal drainage is also slow to very slow. A pre-development basin map has been included in the Appendix.

II. EXISTING DRAINAGE CONDITIONS:

A. Major Basin:

The predominant drainage pattern for the Lewis Wash area is characterized by overland flow sloping towards the Colorado River at varying grades. Channels and ditches intermittently cross the sloping ground surface collecting surface runoff as well as ground water and

typically flow from northeast to southwest. The construction of major arterial roads such as D Road and 31 Road also serves to intercept and collect surface water runoff. Consideration of these parameters led to the watershed boundary definitions of the major basin.

The existing drainage conditions adjacent to the project site are defined predominately by rural residential characteristics. There is a lack of drainage ways or any other formal stormwater conveyance along D ½ Road aside from the storm sewer crossing approximately 450 feet west. The only existing outfall adjacent to the proposed site is a 12" corrugated metal pipe under D ½ Road.

B. Site:

The project site is gradually sloping from northeast to southwest with approximate grades varying from zero to one percent. Currently, runoff from the western two parcels, Basin H-1, sheet flows across the site and collects in abandoned irrigation ditches. These ditches flow toward D ½ Road to a 12" CMP at the entrance to the site. The 12" CMP conveys flows under D ½ Road and into an irrigation waste ditch along the eastern boundary of the parcel south of D ½ Road. The eastern parcel, Basin H-2, and the adjacent property to the north, Basin OS-1, flow to a low point at the southern boundary where it appears to pond.

III PROPOSED DRAINAGE CONDITIONS:

A. Changes in Drainage Patterns

Historic drainage patterns will remain intact, where possible, in an effort to minimize the impact of the development of this parcel on surrounding properties. At a minimum, the fronts of the proposed lots will drain toward the street with an effort to drain as much of the lots to the street as grades will allow. Runoff from the majority of the site, Basin D-1, and the off site flows, Basin OS-1, will be collected in concrete curb and gutters and conveyed to a low point near the proposed entrance at D ½ Road and into inlets. Here storm water will be retained without release. The remaining area, Basin D-2, will be collected in curb and gutter and discharged at less than historic rates at the low point where run off currently collects.

B. Maintenance Issues:

Maintenance of the on-site collection and conveyance facilities within the right of way will be the responsibility of the City. Facilities outside of the right of way will be maintained by the Homeowners Association.

IV DESIGN CRITERIA AND APPROACH:

A. General Considerations:

Storm water runoff for the 2-year and 100-year events will be quantified using the Rational Method as detailed in Section VI "Hydrology" of the Storm water Management Manual for the City of Grand Junction and Mesa County dated May 1996.

The overall drainage patterns for the major basin are not being significantly altered. Notable differences in drainage will occur in the area of the proposed subdivision and these differences will be reflected in the runoff characteristics of the historic conditions versus those of the new development. The rate at which storm water runoff is drained from the project site will be increased due to the developed conditions. However, due to detention the cumulative effect of adding these flows to those of the other undeveloped areas in the major basin will not appreciably increase the 2-year or 100-year flows for the major drainage basin.

The 2-year and the 100-year design storms will be considered when sizing all proposed drainage features. On-site inlets, pipes, gutters, and swales will be sized to carry the 2-year storm water flows at a minimum. For events with flows greater than the 2-year storm, excess flow will be conveyed by the remainder of the street section. For areas where storm sewer pipe crosses through private property, or within easements, the storm sewer will be designed to carry the 100-year runoff volume while flowing 80% full.

The analysis and design procedures as outlined in the Storm water Management Manual for the City of Grand Junction and Mesa County (SWMM) will be adhered to during the design of all on-site collection and storm conveyance facilities proposed for the subdivision.

B. Hydrology:

According to the Soil Conservation Service soil survey for the Grand Junction Area, the dominant soil type is Billings Silty Clay (B_A) and Billings Silty Clay Loam (B_C) having a hydrologic soil group index of "B".

The maximum times of concentration used by the Modified Rational Method to determine maximum flow quantities for individual sub-basins will be a cumulative result of overland, curb and gutter, asphalt sheeting and storm sewer flow times.

For the determination of maximum flows, the total area of each sub-basin with its corresponding runoff coefficient will be used in the calculations. For the existing condition, the "natural" sub-basin will have uniform coefficients related to the hydrologic soil group. The affects of landscaping will be accounted for in the calculation of the composite "C" values for the developed area.

C. Hydraulics:

Flow capacity of concrete pans, curb and gutter, and underground conduits will be calculated using Manning's Equation with the required flow resistance coefficients taken from appendices "G" and "H" of the SWWM.

D. Retention Basin:

The total retention volume was determined per the procedure described in Section VIII.E.3 on page 13 of the SWMM. The 100-year developed runoff coefficient used in the equation for total retention volume was the same value as was used in the calculations for storm water runoff and sizing of the hydraulic features of the project and was derived from representative values given in Appendix B of the SWMM. The total precipitation value used in the equation was taken from Appendix A of the SWMM and the developed area in the equation was the total area of the watershed contributing to the retention basin.

A pumping system will be utilized to assure dissipation of the retention volume within the allowable 48 hour time period. The pump will be designed to discharge at a rate which will evacuate the pond within the 48 hours without exceeding the historic discharge.

V RESULTS AND CONCLUSIONS:

A. Retention Volume

The values used to determine the total retention volume have been reproduced in the following table.

Total Retention Volume Calculation

Developed Runoff Coefficient, C_{100d}	Area Acres (ft^2)	Precipitation, $P_{100, 24hr}$ in (ft)	Volume (ft^3)
0.39	11.55 (503,118)	2.01 (.1675)	32,866

The rate required to drain the 24 hour, 100 year storm water runoff out of the retention pond within 48 hours is approximately 85 gpm or 0.19 cfs, well below the historic rate of 3.37 cfs. The parameters used in this estimation are reproduced in the table below.

Soil Percolation Time, 24 Hour, 100 Year Storm Event

Retention Volume (ft^3)	Allowable Time (hours)	Minimum Required Pump Rate (gpm)	Minimum Required Pump Rate (cfs)
32,866	48	85.4	0.19

B. Runoff Rates for 2 and 100 Year Storms

Each step of the calculations necessary for the Rational Method – Composite Runoff Coefficients, Time of Concentration and Rainfall Intensities, and Runoff Rates - have been incorporated into spreadsheets and attached to the Appendix of this report. These results were utilized to develop storm water runoff quantities at specific locations in the project site. Conveyance values for these points were compared to these results. The drainage plan drawings for the proposed conditions attached to this report show the locations isolated and analyzed for flow quantities.

Tabulated Runoff Rates at Specific Design Points for the 100-Year Storm Event

Design Point No.	Developed Runoff (ft^3/sec)	Allowable Runoff (ft^3/sec)
1	7.2	7.2 (street capacity)
2	1.8	4.0 (Historic)
3	<3.4	3.4 (Historic)

C. Overall Compliance

In conclusion, the retention volume designed on the project drawings has sufficient volume to retain total runoff for the 24 hour, 100 year storm event. Additionally, the 100-year storm water flow quantities conveyed by the curb, gutter and inlets are within allowable values.

APPENDIX

TIME OF CONCENTRATION and RAINFALL INTENSITIES
For: Dakota West

Basin H1 Descrip. of Flow	L Length ft.	S Slope %	N or *N* * coef.	V_2 Vel. fps	V_{100} Vel. fps	Tt2 Travel Time min. Pg E-2	Tt100 Travel Time min. SWMM	Tc2 Time of Concentration min.	Tc100 min.	i_2 Intensity Grd. Jctn. Curves	i_{100}
Basin H1											
Overland Flow*	290.80	1.62%	0.120			44.78	26.43	62.5	43.2	0.33	1.69
Shallow Concentrated Flow**	669.00	0.56%	0.120	0.75	0.75	14.87	14.87				
Channel Flow***	427.50	1.15%	0.025	2.50	3.73	2.85	1.91				

* N = Mannings n for Open Channel Flow calculations, *N* = Overland Flow Resistance Factor taken from Table "E-1" page E-5 of the SWMM.
** Figure "E-3", Pg. E-9, Storm Water Management Manual was used for shallow flows.
*** Mannings Equa. was used to determine gutter and natural swale velocities. Mannings n=0.016 was used for curb and gutter, and n=0.050 was used for natural swales. For natural swales a flow of .25 cfs/AC was assumed for a 2 Year Storm and a flow of 1.25 cfs/AC was assumed for 100 Year Storm

RATIONAL CALCULATION OF DESIGN FLOWS

	C Composite Coefficient n/a	Cf Antecedent Precip. Fac. n/a	I* Rainfall Intensity in/hr	A Basin Area acres	Q Volume cfs	
Basin "H1"						
2-year	0.18	1.00	0.33	8.29	0.49	<<<<<<<<<<<<<<<<<<<<
100-year	0.24	1.00	1.69	8.29	3.37	<<<<<<<<<<<<<<<<<<<<

*The rainfall intensity is based on the formula presented on Table A-3 of the SWMM

TIME OF CONCENTRATION and RAINFALL INTENSITIES
For: Dakota West

Basin H2 Descrip. of Flow	L Length ft.	S Slope %	N or *N* * coef.	V_2 Vel. fps	V_{100} Vel. fps	Tt2 Travel Time min. Pg E-2	Tt100 Travel Time min. SWMM	Tc2 Time of Concentration min.	Tc100 min.	i_2 Intensity Grd. Jctn. Curves	i_{100}
Basin H2											
Historic overland*	300	0.85%	0.030			19.60	11.57	29.3	21.2	0.55	2.62
Shallow Concentrated Flow**	161	0.74%	0.255	0.92	0.92	2.92	2.92				
Shallow Concentrated Flow**	373	0.79%	0.255	0.92	0.92	6.76	6.76				

* N = Mannings n for Open Channel Flow calculations, *N* = Overland Flow Resistance Factor taken from Table "E-1" page E-5 of the SWMM.
** Figure "E-3", Pg. E-9, Storm Water Management Manual was used for shallow flows.
*** Mannings Equa. was used to determine gutter and natural swale velocities.
Mannings n=0.016 was used for curb and gutter, and n=0.050 was used for natural swales.
For natural swales a flow of .25 cfs/AC was assumed for a 2 Year Storm and
a flow of 1.25 cfs/AC was assumed for 100 Year Storm

RATIONAL CALCULATION OF DESIGN FLOWS

	C Composite Coefficient n/a	Cf Antecedent Precip. Fac. n/a	I* Rainfall Intensity in/hr	A Basin Area acres	Q Volume cfs	
Basin "H2"						
2-year	0.18	1.00	0.55	6.36	0.63	<<<<<<<<<<<<<<<<<<<<
100-year	0.24	1.00	2.62	6.36	4.00	<<<<<<<<<<<<<<<<<<<<

*The rainfall intensity is based on the formula presented on Table A-3 of the SWMM

TIME OF CONCENTRATION and RAINFALL INTENSITIES
For: Dakota West

Basin OS1 Descrip. of Flow	L Length ft.	S Slope %	N or N * coef.	V_2 Vel. fps	V_{100} Vel. fps	Tt2 Travel Time min. Pg E-2	Tt100 Travel Time min. SWMM	Tc2 Time of Concentration min.	Tc100 min.	i_2 Intensity Grd. Jctn. Curves	i_{100}
Basin OS1											
Historic overland*	300	0.74%	0.030			20.72	12.23	23.6	15.1	0.63	3.09
Shallow Concentrated Flow**	161	0.74%	0.255	0.92	0.92	2.92	2.92				

* N = Mannings n for Open Channel Flow calculations, N = Overland Flow Resistance Factor taken from Table "E-1" page E-5 of the SWMM.
** Figure "E-3", Pg. E-9, Storm Water Management Manual was used for shallow flows.
*** Mannings Equa. was used to determine gutter and natural swale velocities.
Mannings n=0.016 was used for curb and gutter, and n=0.050 was used for natural swales.
For natural swales a flow of .25 cfs/AC was assumed for a 2 Year Storm and
a flow of 1.25 cfs/AC was assumed for 100 Year Storm

RATIONAL CALCULATION OF DESIGN FLOWS

	C Composite Coefficient n/a	Cf Antecedent Precip. Fac. n/a	I* Rainfall Intensity in/hr	A Basin Area acres	Q Volume cfs	
Basin "OS1"						
2-year	0.18	1.00	0.63	3.69	0.42	<<<<<<<<<<<<<<<<<<<<
100-year	0.24	1.00	3.09	3.69	2.74	<<<<<<<<<<<<<<<<<<<<

*The rainfall intensity is based on the formula presented on Table A-3 of the SWMM

TIME OF CONCENTRATION and RAINFALL INTENSITIES

For: Dakota West

BASIN D1

Descrip. of Flow	L Length ft.	S Slope %	N* Mannings coef.	V_2 Vel. fps	V_{100} Vel. fps	Tt_2 Travel Time min.	Tt_{100} Travel Time min.	Tc_2 Time of Concentration min.	Tc_{100} min.	2-Year i Intensity Grd. Jctn. Curves	100-Year i Intensity Grd. Jctn. Curves
Overland*	300	0.74%	0.120			62.81	37.07	77.5	46.6	0.28	1.61
Shallow Concentrated Flow**	159	0.74%	0.255	0.92	0.92	2.88	2.88				
Curb and Gutter Flow	75.00	2.00%	0.016	2.68	4.78	0.47	0.26				
(from SDSK calculator - d=2" for 2-Yr. & d=5" for 100-Yr.)											
Curb and Gutter Flow	318.60	0.50%	0.016	1.34	2.39	3.96	2.22				
(from SDSK calculator - d=2" for 2-Yr. & d=5" for 100-Yr.)											
Curb and Gutter Flow	593.10	0.50%	0.016	1.34	2.39	7.38	4.14				
(from SDSK calculator - d=2" for 2-Yr. & d=5" for 100-Yr.)											

* T_0 based on SCS formula pg. E-2 Storm Water Management Manual

** Figure "E-3", Pg. E-9, Storm Water Management Manual was used for shallow flows.

*** Mannings Equation was used to determine gutter and concrete pan flow velocities an N value of 0.016 was used for conrete gutters and pans

RUNOFF RATES (Q)

For: Unaweep Heights

USING RATIONAL METHOD Q=CxCfxIxA

BASIN D1	Q Volume cfs	C Composite Coefficient n/a	Cf Antecedent Precip. Fac. n/a	I* Rainfall Intensity in/hr	A Basin Area acres
2-Yr	0.96	0.30	1	0.28	11.55
100-Yr	7.23	0.39	1	1.61	11.55

TIME OF CONCENTRATION and RAINFALL INTENSITIES

For: Dakota West

BASIN D2

Descrip. of Flow	L Length ft.	S Slope %	N* Mannings coef.	V_2 Vel. fps	V_{100} Vel. fps	Tt_2 Travel Time min.	Tt_{100} Travel Time min.	Tc_2 Time of Concentration min.	Tc_{100} min.	2-Year i Intensity Grd. Jctn. Curves	100-Year i Intensity Grd. Jctn. Curves
Overland*	300	0.74%	0.120			62.81	37.07	69.9	42.3	0.30	1.72
Shallow Concentrated Flow**	161.1	0.74%	0.255	0.92	0.92	2.92	2.92				
Curb and Gutter Flow	75.00	2.00%	0.016	2.68	4.78	0.47	0.26				
(from SDSK calculator - d=2" for 2-Yr. & d=5" for 100-Yr.)											
Curb and Gutter Flow	295.40	0.50%	0.016	1.34	2.39	3.67	2.06				
(from SDSK calculator - d=2" for 2-Yr. & d=5" for 100-Yr.)											

* T_0 based on SCS formula pg. E-2 Storm Water Management Manual

** Figure "E-3", Pg. E-9, Storm Water Management Manual was used for shallow flows.

*** Mannings Equation was used to determine gutter and concrete pan flow velocities an N value of 0.016 was used for conrete gutters and pans

RUNOFF RATES (Q)

For: Dakota West

USING RATIONAL METHOD Q=CxCfxIxA

BASIN D2	Q Volume cfs	C Composite Coefficient n/a	Cf Antecedent Precip. Fac. n/a	I* Rainfall Intensity in/hr	A Basin Area acres
2-Yr	0.24	0.26	1	0.30	3.12
100-Yr	1.77	0.33	1	1.72	3.12

STORMWATER RETENTION (Within Grand Valley only)
For: Dakota West
Date: 1/6/2003
Job. No. 0543-001

Total Retention (without overflow)

$V = P_{10024hr} \times A \times C_{100d}$

$P_{10024hr}$= 2.01 (See Table A-2, Pg A-4, SWM

Area= 11.55 Ac. = 503118.00 Ft^2

C_{100d} = 0.39 (See Table B-1, Pg B-3, SWM

$$V(FT^3) = \frac{P_{10024hr}\ (inches)}{12} \times AREA\ (FT^2) \times C_{100d}$$

$= 32866.18\ Ft^3$

COMPOSITE RUNOFF COEFICIENTS

For: DAKOTA WEST

USING

GRAND JUNCTION RECOMMENDED RUNOFF COEFICIENTS

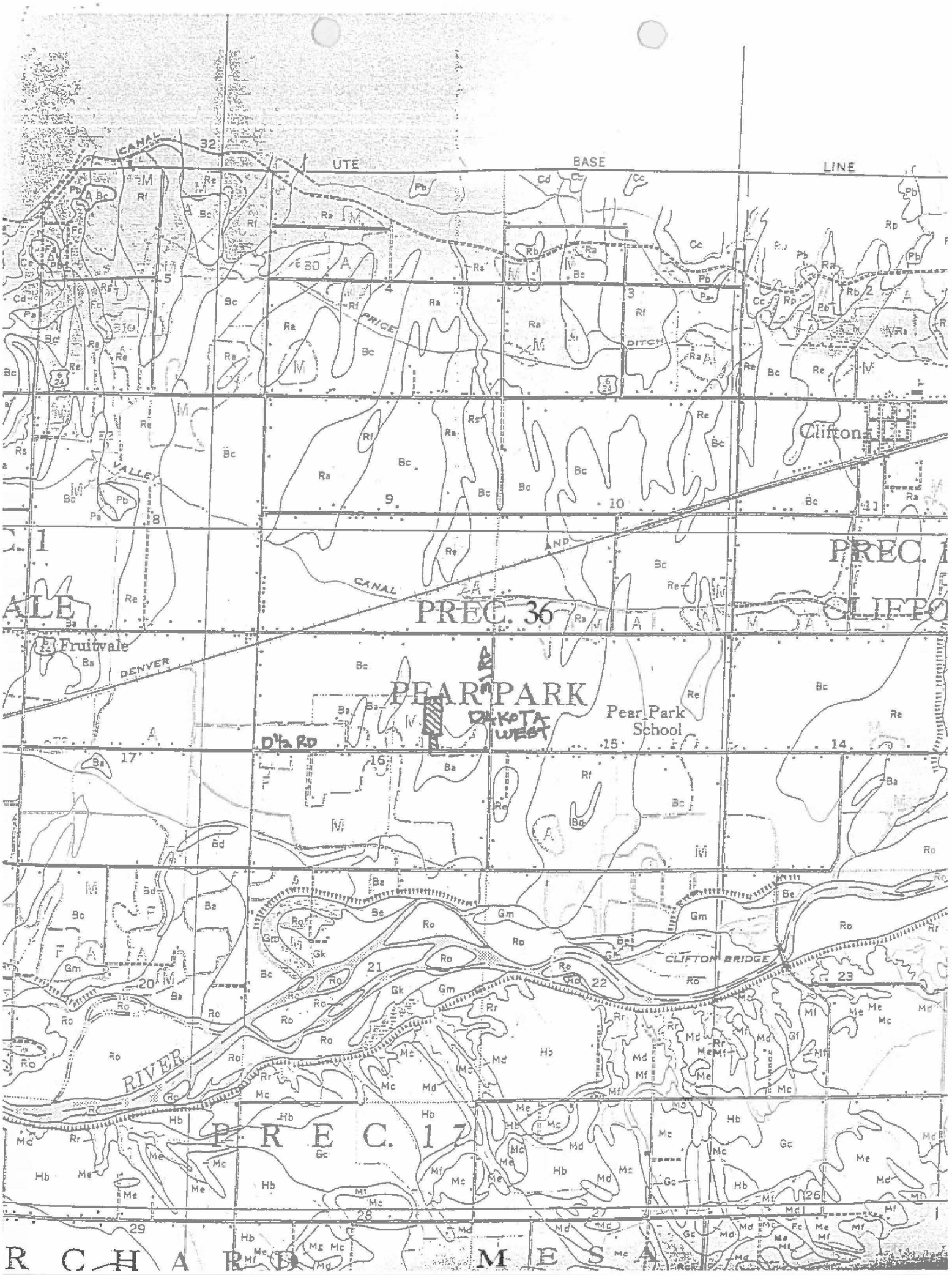
Description Surface Area	Hydro. Soils Group	Slope 2-6% Runoff Coeff.'s	Sel. Coeff.		BASIN OS Devel. Unit Area	Wt'd Value	BASIN D1 Devel. Unit Area	Wt'd Value	BASIN D2 Devel. Unit Area	Wt'd Value
Pavement and Roofs	B	0.94	0.94	2-Yr.	0.00	0.00	0.00	0.00	0.00	0.00
	B	0.96	0.96	100-Yr.	0.00	0.00	0.00	0.00	0.00	0.00
Residential Areas	B	0.29 to 0.37	0.33	2-Yr.	0.00	0.00	9.39	3.10	1.58	0.52
1/4 acre per unit	B	0.38 to 0.46	0.42	100-Yr.	0.00	0.00	9.39	3.94	1.58	0.66
Bare Ground	B	0.14 to 0.37	0.18	2-Yr.	3.69	0.66	2.16	0.39	1.54	0.28
		0.20 to 0.28	0.24	100-Yr.	3.69	0.89	2.16	0.52	1.54	0.37
Total Basin Area:					3.69		11.55		3.12	
COMPOSITE "C" VALUE (2-year)						0.18		0.30		0.26
COMPOSITE "C" VALUE (100-year)						0.24		0.39		0.33

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

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

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

TABLE "B-1"


CANAL
UTE
BASE
LINE
PRICE
DITCH
Clifton
VALLEY
CANAL
PREC. 36
Fruitvale
DENVER
PEAR PARK
Pear Park School
D½ RD
DAKOTA WEST
CLIFTON BRIDGE
RIVER
PREC. 17
MESA

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

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

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

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

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

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

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

Like all other soils in the area, this one has a low organic-matter con[illegible]

tration of salts derived from the parent rock (Mancos shale). In places, however, it contains so much salt that good yields cannot be obtained. Some large areas are so strongly saline they cannot be used for crops. Generally, this soil is without visible lime, but it is calcareous. In many places small white flecks or indistinct light-colored streaks or seams indicate that lime, gypsum, or salts are present.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PROPERTY LINE

300.0 LF OVERLAND FLOW AT 0.74%

OS1
3.69 AC. | 0.18 | 0.24

3
2.74 CFS

161.1 LF SHALLOW FLOW AT 0.74%

297 LF SHALLOW FLOW AT 0.74%

2
4.06 CFS

H2
6.36 AC. | 0.18 | 0.24

PROPERTY LINE

PROPERTY LINE

PROPERTY LINE

EXISTING IRRIGATION DITCHES

D 1/2 ROAD

EXISTING 12" CMP

EXISTING 6" CMP

427.5 LF CHANNEL FLOW AT 1.15%

TO LEWIS WASH

1
3.27 CFS

H1
8.29 AC. | 0.18 | 0.24

290.6 LF OVERLAND FLOW AT 1.62%

669.0 LF SHALLOW FLOW AT 0.66%

EXISTING IRRIGATION DITCHES

PROPERTY LINE

PROPERTY LINE

PROPERTY LINE

LEGEND

H1
8.29 AC. | 0.18 | 0.24
BASIN
ACREAGE/RUNOFF COEFFICIENTS
MINOR EVENT
MAJOR EVENT

DRAINAGE BOUNDARY

3
DESIGN POINT

OVERLAND FLOW

CONCENTRATED FLOW

EXISTING CONTOURS FROM MESA COUNTY DATABASE, 2' INTERVAL. SHOWN FOR INFORMATION ONLY.

EXISTING CONTOURS (SURVEYED), 5' INTERVAL

EXISTING CONTOURS (SURVEYED), 1' INTERVAL

N

(IN FEET)

PROJECT BENCHMARK
MESA CNTY BRASS CAP
S-1/16 CORNER, SEC 29
ELEV. 4677.22

NOTE:
THIS SITE IS NOT AFFECTED BY ANY PREVIOUSLY DETERMINED FLOODPLAIN

REVISION	DATE	DESCRIPTION	BY	CHD

CITY OF GRAND JUNCTION

G & R WEST

DAKOTA WEST
FINAL DRAINAGE PLAN
HISTORIC CONDITIONS

THOMPSON-LANGFORD CORP.
ENGINEERS AND LAND SURVEYORS
529 25 1/2 RD., SUITE B210
GRAND JUNCTION, COLORADO
PH. (970) 245-8087
FAX (970) 241-2845
tlc@lewest.com

DRAWN BY: JWM
CHECKED BY: DAT

DATE: February 18,2003
SCALE: Horiz. 1"=100'
Project No: 0543-001

g:\0543-001\dwg\final\drainage.dwg 02/21/2003 09:26:56 AM MST

PROPERTY LINE

D2
3.12 AC. | 26 & 33

500.0 LF OVERLAND FLOW AT 0.74%

161.1 LF SHALLOW FLOW AT 0.74%

500.0 LF OVERLAND FLOW AT 0.74%

159.0 LF SHALLOW FLOW AT 0.74%

75.0 LF CURB AND GUTTER FLOW AT 2.00%

75.0 LF CURB AND GUTTER FLOW AT 2.00%

295.4 LF CURB AND GUTTER FLOW AT 0.50%

2
1.17 cfs

WASHBURN STREET

PROPERTY LINE

PROPERTY LINE

PROPERTY LINE

ABERDEEN LANE

D 1/2 ROAD

PROPERTY LINE

D1
11.55 AC. | 33 & 42

MANDAN LANE

583.1 LF CURB AND GUTTER FLOW AT 0.50%

PROPOSED DETENTION/RETENTION

TO LEWIS WASH

BISMARCK STREET

BISMARCK STREET

SARAH CT

ABERDEEN LANE

PROPERTY LINE

1
7.83 cfs

SUMP W/ SUBMERSIBLE PUMP TO DRAIN POND AT LESS THAN HISTORIC RATE

PROPERTY LINE

PROPERTY LINE

PHASE 2

PHASE 1

LEGEND

D1
11.55 AC. | 33 & 42

BASIN

ACREAGE/RUNOFF COEFFICIENTS

DRAINAGE BOUNDARY

OVERLAND FLOW

CONCENTRATED FLOW

EXISTING CONTOURS FROM MESA COUNTY DATABASE, 2' INTERVAL. SHOWN FOR INFORMATION ONLY

EXISTING CONTOURS (SURVEYED), 5' INTERVAL

EXISTING CONTOURS (SURVEYED), 1' INTERVAL

PROPOSED CURB INLET

PROPOSED STORM SEWER

N

(IN FEET)
1 inch = 100 ft.

PROJECT BENCHMARK
MESA CNTY BRASS CAP
S-1/16 CORNER, SEC 29
ELEV. 4677.22

NOTE:
THIS SITE IS NOT AFFECTED BY ANY PREVIOUSLY DETERMINED FLOODPLAIN

BY	CHD
DESCRIPTION	
DATE	
REVISION	

CITY OF GRAND JUNCTION

DAKOTA WEST
FINAL DRAINAGE PLAN
DEVELOPED CONDITIONS

G & R WEST

THOMPSON-LANGFORD CORP.
ENGINEERS AND LAND SURVEYORS
529 25 1/2 RD., SUITE B216
GRAND JUNCTION, COLORADO
PH. (970) 243-8067
FAX (970) 241-2846
tlc@bresnet.com

DRAWN BY: JWM
CHECKED BY: DAT

DATE: February 18, 2003
SCALE: Horiz 1"=100'
Project No: 0543-001

09:26:56 AM MST 02/21/2003 design\0543-001\dwg\final\drainage.dwg

Geotechnical Engineering Group, Inc.

GEOTECHNICAL INVESTIGATION
Dakota West Subdivision, Phases 1, 2 and 3
North and West of D ½ Road and 31 Road
Grand Junction, Colorado

Prepared For:

G & R West, LLC
2650 El Corona Drive
Grand Junction, CO 81504

Attention: Mr. Robert Cantrell

Job No. 1,288

February 17, 2003

Geotechnical, Environmental and Materials Testing Consultants

(970) 245-4078 • fax (970) 245-7115 • geotechnicalgroup.com
2308 Interstate Avenue, Grand Junction, Colorado 81505

TABLE OF CONTENTS

SCOPE

This report presents the results of a Geotechnical Investigation for the proposed Dakota West Subdivision, Phases 1, 2 and 3 to be located north and west of D ½ Road and 31 Road, in Grand Junction, Colorado. Our investigation was conducted to explore subsurface conditions, provide pavement recommendations and provide foundation recommendations for the proposed residences. The report includes descriptions of subsoil and groundwater conditions found in thirteen exploratory test pits, recommended pavement sections, recommended foundation systems and allowable design soil pressures, and design and construction criteria for details influenced by the subsurface conditions. This investigation was performed in general conformance with our Proposal No. 03-011 dated January 14, 2003.

The report was prepared from data developed during our field exploration, laboratory testing, engineering analysis and experience with similar conditions. A brief summary of our conclusions and recommendations follows. Detailed criteria are presented within the report.

SUMMARY OF CONCLUSIONS

1. Subsoils found in the thirteen exploratory test pits consisted of silty, sandy clay to the maximum depths explored of 5 to 10 feet below the ground surface. Groundwater was not encountered to the maximum depth explored the day of observation or when checked one day later.

2. We believe shallow footing foundations can perform satisfactorily for the proposed residences. A discussion, including detailed design and construction criteria are included in the text of the report.

3. We believe slab-on-grade construction supported by the soils encountered has low potential for movement. We recommend structurally supported floors in all finished living areas. Non-structural, slab-on-grade construction should be limited to flatwork and garage areas.

4. An asphalt thickness of 5.25 inches or 3.0 inches asphalt over 7.25 inches base course supported by stabilized / well compacted subgrade soils are recommended for interior residential streets, ESAL = 54,750. Additional pavement section alternatives and design and construction criteria are presented in the text of the report.

5. Surface drainage should be designed for rapid runoff of surface water away from the proposed residences and pavements.

SITE CONDITIONS

The subject site was located north and west of D ½ Road and 31 Road in Grand Junction, Colorado. A vicinity map is included as Fig. 1. The subject site was a basically flat and nearly level, grass covered pasture. We noted areas

where the vegetation was stripped. The ground surface sloped down towards the south at 1 percent or less (estimated with hand held Brunton and pacing). An abandoned / remnant, north south oriented irrigation ditch was noted in the east central portion of the site. Single family residences and a vacant parcel were north. Single family residences, fenced pasture and outbuildings were east. Single family residences were west beyond a vacant parcel. Single family residences were south beyond D ½ Road. The vicinity sloped down toward the south, towards the Colorado River at slopes of approximately 1 percent (USGS Clifton, Colorado topographical quadrangle, 1962, photorevised 1973).

PROPOSED CONSTRUCTION

We understand the subject site is proposed for development and construction of approximately 45 lots for single family residential construction. Residences will be wood framed, single story structures with no below grade construction. Shallow footing type foundations are desired. There will be no site grading changes. There will be about 2,200 lineal feet of paving for interior streets. There will be a turn lane and deceleration lane addition to D ½ Road. There will be no storm water retention/detention area soil testing required. We anticipate foundation loads may range from 1,000 to 2,000 pounds per lineal foot of foundation wall. If proposed construction is different than what is described above,

we should be notified so that we can re-evaluate the recommendations presented in this report in light of the differences.

SUBSURFACE CONDITIONS

Subsurface conditions at the site were investigated by observing and sampling thirteen (13) exploratory test pits. Locations of test pits are shown on Fig. 2. Replacement of test pit excavations as a well compacted fill should be confirmed at the time of construction. Graphic logs of the soils found in the exploratory test pits and field penetration resistance tests are presented on Figs. 3 through 7. Subsurface conditions encountered in the exploratory test pits consisted of silty, sandy clay to the maximum depths explored of 5 to 10 feet below the ground surface.

The silty, sandy clay was very soft to very stiff, dry to very moist, brown and tan with sulfates noted and a scattered porous fabric noted in the upper 3 feet. Clay samples tested had moisture contents of 5.0 percent to 22.4 percent and dry densities of 87 pcf to 103 pcf. Six samples were tested for Atterberg limits. These samples ranged from exhibiting liquid limits of 22 to 33, plasticity indices of 2 to 15 and 65 to 92 percent passing the No. 200 sieve (silt and clay sized particles). Seven clay samples were tested for one-dimensional swell / consolidation

characteristics. These samples ranged from compressing 0.5 percent to swelling 1.1 percent when wetted under a confining pressure of 500 or 1,000 psf. Groundwater was not encountered to the maximum depths explored or when checked one day later. Results of laboratory testing are included in Figs. 8 through 12 and summarized on Table I.

SITE DEVELOPMENT

We understand there will be no site grading changes. We believe utility installation in the silty, sandy clay soils may be accomplished using conventional excavation equipment to the depths investigated. Utility trenches should be sloped or shored to meet local, State and Federal safety regulations. Based on our investigation, we believe soils at this site may be classified as either Type A, Type B and / or Type C, based on OSHA standards. Excavation slopes specified by OSHA are dependent upon types of soils and groundwater conditions encountered. Contractors should identify the conditions encountered in the excavation and refer to OSHA standards to determine appropriate slopes.

Water and sewer lines will be constructed beneath pavements. Compaction of trench backfill can have a significant effect on the life and serviceability of pavements. We recommend trench backfill be placed in thin, loose lifts, moisture conditioned to within 2 percent of optimum moisture content

and compacted to at least 95 percent of standard Proctor maximum dry density (ASTM D 698). The placement and compaction of utility trench backfill should be observed and tested by a geotechnical engineer during construction.

We did not identify groundwater during this investigation to depths of 5 to 10 feet below the ground surface. We anticipate groundwater levels may rise during irrigation season. As a result, there may be groundwater concerns during construction, which were not identified by this investigation. Soft and very soft soils were identified in the central and east portions of the site at depths of 3 to 6 feet. Utility trench bottom areas may require stabilization if soft conditions are encountered at the time of excavation. Our representative should be called to observe recommendations for stabilization at that time.

RESIDENCE FOUNDATIONS

This investigation indicates subsurface conditions at anticipated foundation levels consist of soft to very stiff, silty, sandy clay soils. The soft / very soft soils identified may be due in part to recent irrigation on the subject site. These soils may become less soft over time with the discontinuation of irrigation. We recommended no further irrigation on the subject site. One method of support to help reduce settlement concerns is the use of deep foundations such as drilled or

helical piers bedded in an underlying competent stratum. This investigation did not identify an underlying competent bearing stratum. Additional investigation would be required to provide deep foundation recommendations, as requested. We understand shallow footing foundations are desired. In our experience, shallow foundations have been used in this area with satisfactory performance for conditions similar to those identified at this site. We recommend that shallow foundations bear as shallow as practical (12-inches to 24-inches maximum depth). To provide a more uniform foundation subgrade, we recommend the subgrade be well compacted. Areas of soft to very soft conditions were encountered and stabilization may be necessary across the site. We also recommend the subgrade be "proof rolled" using a heavy, pneumatic tired vehicle to identify soft areas.

We present design and construction criteria for spread footing foundations below. These criteria were developed from analysis of field and laboratory data and our experience. The additional requirements (if any) of the structural engineer and structural warrantor should also be considered.

Spread Footing Foundations

1. Spread footing foundations, bearing on well compacted native soils, can be designed for a maximum soils bearing pressure of 1,000 psf. Footings should bottom as shallow as practical and no deeper than 24-inches below the existing ground surface. Loose soils should be

completely removed from foundation bearing areas, prior to placing concrete.

2. The completed excavation, within 2 feet horizontally of bearing areas, should be scarified 10 inches, moisture conditioned to within 2 percent of optimum moisture content and compacted to at least 95 percent of standard Proctor maximum dry density (ASTM D698). Our representative should be called to test compaction of subgrade soils and observe a proof roll of entire subgrade, performed by a heavy pneumatic tired vehicle such as a 10-wheeled, loaded dump truck prior to forming. If soft or yielding conditions are encountered then stabilization may be required. Our representative should make specific stabilization recommendations depending on conditions encountered, at the time of our site visit. If porous fabric is noted up to 2 feet of soil removal beneath foundations may be required, replaced with a well compacted structural fill.

3. We recommend a minimum width of 18 inches for continuous footings. Isolated pads should be at least 30 inches by 30 inches. Foundation walls should be well reinforced top and bottom. We recommend reinforcement sufficient to span an unsupported distance of at least 12 feet. Reinforcement should be designed by the structural engineer.

4. Exterior walls must be protected from frost action. We understand 2 feet for frost cover is typically assumed in the Mesa County area.

5. The completed foundation excavation should be observed by our representative prior to placing forms, to verify the foundation bearing conditions and test compaction.

FLOOR SYSTEMS

We believe the near-surface soils which will support slab-on-grade floors exhibited low movement potential. Some movement must be assumed from an increase in moisture by residential development and associated landscaping and

irrigation. To our knowledge, the only reliable solution to control floor movement is the construction of a structurally supported floor with at least a 12-inch air space between the floor and subgrade. In our opinion, structural floors should be used in all finished living areas. Structurally supported floors are normally not used in garage areas. A slab-on-grade floor can be used in garages provided the builder and owner is aware of and accepts risk of potential movement. Driveways, sidewalks and exterior patio slabs are also constructed as slabs-on-grade.

We recommend the following precautions for construction of slabs-on-grade at this site. These precautions will not prevent movement in the event the underlying soils become wetted; they tend to reduce damage if movement occurs.

1. Slab-on-grade construction should be limited to areas such as garage and exterior flatwork.

2. Slab subgrade areas should be scarified, moisture conditioned and compacted as described earlier in the "**RESIDENCE FOUNDATION**" section of this report.

3. Slabs should be separated from exterior walls and interior bearing members with a slip joint which allows for free vertical movement of slabs.

4. The use of slab-bearing partitions should be minimized. Where such partitions are necessary, a slip joint allowing at least 1.5 inches of free vertical slab movement should be used. The home owner should be advised of potential movement and re-establish this void if it closes. Doorways and stairwells should also be designed for this movement. Sheetrock should not extend to slab-on-grade floors.

5. Underslab plumbing should be eliminated where feasible. Where such plumbing is unavoidable, it should be thoroughly pressure tested during construction for leaks and should be provided with flexible couplings. Gas and water lines leading to slab-supported appliances should be constructed with flexibility.

6. Plumbing and utilities which pass through slabs should be isolated from the slabs. Heating and air conditioning systems supported by the slabs should be provided with flexible connections capable of at least 1.5 inches of vertical movement so that slab movement is not transmitted to the duct work.

7. Frequent control joints should be provided to reduce problems associated with shrinkage and curling. The American Concrete Institute (ACI) and Portland Cement Association (PCA) recommend a maximum panel size of 8 to 15 feet depending upon concrete thickness and slump, and the maximum aggregate size. We advocate additional control joints 3 feet off and parallel to grade beams and foundation walls.

8. Exterior patio and porch slabs should be designed to function as independent units. Movement of slabs-on-grade should not be transmitted directly to the residence foundations. Stucco finish (if any) should terminate at least 6 inches above any flatwork.

BELOW-GRADE CONSTRUCTION

No below-grade construction is anticipated at this site. Typically, foundation drains are not required for construction of this type. Crawl space areas should be sloped so that potential moisture will not collect in these areas, but flow out of the crawl space. Crawl space areas (where applicable) should also be well ventilated to mitigate potential musty odors. We can provide foundation drain details if requested.

PAVEMENT

The pavement subgrade soils include stiff to very stiff, silty, sandy clay. We visually classified each sample obtained from the test pits and tested samples in our laboratory. We tested a combined sample from exploratory test pits, TP-1 through TP-6 at 0 to 5 feet for pavement design purposes. The sample was tested for Atterberg limits, gradation, standard Proctor, and California Bearing Ratio (CBR). The sample tested exhibited a maximum dry density of 111.0 pcf, optimum moisture of 15.0 percent and a California Bearing Ratio (CBR) of 9.1. We used a design CBR value of 5.0. The results of laboratory testing are shown on Table I and included in Figs. A-1 and A-2.

Our design utilized the computer program WinPAS, based on the 1993 AASHTO Guide for Design of Pavements Structures, 30 year design period, and our experience. We understand pavements will be used to for interior residential streets and acceleration / deceleration lane improvements. We used a 30 year Equivalent Single Axle Load (ESAL) of 54,750 for the interior streets (converted from an equivalent daily load application, EDLA=5) for interior streets. We obtained an average daily traffic (ADT) of 3786 for D ½ Road west of 31 Road from the City of Grand Junction. We used this ADT to calculate a 30 year ESAL for flexible and rigid pavements for the turn lane and deceleration lane addition. We calculated an ESAL of 1,204,500 for flexible pavements and an ESAL of

1,806,750 for rigid pavements for these D ½ Road improvements. A non-linear relationship developed by CDOT to relate the CBR value to the subgrade resilient modulus (Mr) was used for flexible pavement. Using this relationship, we calculated a Mr value of 6,607 psi. We converted the subgrade resilient modulus (Mr) to the modulus of subgrade reaction (k) using the relationship K = Mr / 19.4, for rigid pavements. Using this equation, we calculated a k value of 340 psi / in. We used a regional factor of 2.0 and a design serviceability index of 2.0 (interior streets) and 2.5 (D ½ Road improvements). Pavement design calculations are included in Appendix A. Table A below shows our recommendations.

TABLE A
SUMMARY OF RECOMMENDED PAVEMENT SECTIONS

Anticipated Traffic Type	Asphaltic Concrete	Asphalt and Aggregate Base Course	Asphalt, Aggregate Base Course and Aggregate Sub Base Course	Portland Cement Concrete
Interior Streets (ESAL = 54,750)	5.25"	3.0" +7.25" 4.0" + 4.0"	---	5.0"
D ½ Road Improvements ESAL=1,806,750 or ESAL=1,204,500	8.5"	3.0" + 18.25" 4.0" + 15.0"	4.0" + 6.0" + 10.75"	8.0"

The pavement subgrade should be scarified a depth of 10-inches, moisture conditioned to within 2 percent of optimum moisture content and compacted to at least 95 percent of standard Proctor (ASTM D698) maximum dry density. Soft

areas that require stabilization may be encountered. A Geotechnical Engineering Group, Inc. representative should be called to observe a "proof roll" of the completed subgrade, made by a heavy pneumatic tired vehicle. Soft subgrade conditions that require stabilization may be identified. Care should be taken to avoid excessive construction traffic.

Our experience indicates asphalt pavement in areas which will be subjected to heavy trucks stopping and turning does not perform satisfactorily. On residential interior streets, (ESAL = 54,750), we recommend placing a 5 inch thick Portland cement concrete pavement in all areas where this heavy truck traffic may occur, including access aprons and trash dumpster locations. On turn lane / deceleration lane improvements (ESAL=1,806,750), we recommend placing an 8.0-inch thick Portland cement concrete pavement in all areas where this heavy truck traffic occur.

The design of a pavement system is as much a function of paving materials as supporting characteristics of the subgrade. The quality of each construction material is reflected by the strength coefficient used in the calculations. If the pavement system is constructed of inferior material, then the life and serviceability of the pavement will be substantially reduced.

The asphalt component of the pavement was designed assuming at least 1,650 pounds Marshall stability. Normally, an asphaltic concrete should be relatively impermeable to moisture and should be designed with a well-graded sand/gravel mix. The oil content, void ratio, flow and gradation need to be considered in the design. We recommend a job mix design be performed and periodic checks are made to verify compliance with these specifications.

If construction materials cannot meet the above requirements, then the pavement design should be evaluated based upon available materials. We recommend the materials and placement methods conform to the requirements listed in the Colorado Department of Transportation "Standard Specifications for Road and Bridge Construction". All materials planned for construction should be submitted and tested to confirm their compliance with these specifications.

A primary cause of early pavement deterioration is water infiltration into the pavement system. The addition of moisture usually results in softening of untreated base course and subgrade and eventual failure of the pavement. We recommend drainage be designed for rapid removal of surface runoff. Curb and gutter should be backfilled and the backfill compacted to reduce ponding adjacent to pavements. Final grading of the subgrade should be carefully controlled so that design cross-slope is maintained and low spots in the subgrade which could trap water are eliminated. Seals should be provided between curb and pavement and

at all joints to reduce moisture infiltration. Landscaped areas and detention ponds in pavements should be avoided.

We have included construction recommendations for flexible and rigid pavement construction in Appendix B. Routine maintenance, such as sealing and repair of cracks annually and overlays at 5 to 7-year intervals, are necessary to achieve the long-term life of an asphalt pavement system. If the design and construction recommendations cannot be followed or anticipated traffic loads change considerably, we should be contacted to review our recommendations.

CONCRETE

One soil sample (TP-1 through TP-6 at 0 to 5 feet depth bulk combined) was tested in the laboratory for water soluble sulfate content. Test results indicate that the sample had a water soluble sulfate concentration of 6,500 ppm. Sulfate concentrations in this range are considered to have a severe effect on concrete which comes into contact with the soils. We recommend a Type V cement be used for concrete that comes into contact with the subsoils. We understand a locally available Type I / II modified cement is typically used for similar conditions as Type V. In addition, concrete should have a maximum water-cement ratio of 0.45.

SURFACE DRAINAGE

Performance of foundations and concrete flatwork is influenced by surface moisture conditions. Risk of wetting foundation soils can be reduced by carefully planned and maintained surface drainage. Surface drainage should be designed to provide rapid runoff of surface water away from the proposed residences. We recommend the following precautions be observed during construction and maintained at all times after the construction is completed.

1. The ground surface surrounding the exterior of the residences should be sloped to drain away from the residence in all directions. We recommend a slope of at least 12 inches in the first 10 feet around the residences, where possible. In no case should the slope be less than 6 inches in the first 5 feet. The ground surface should be sloped so that water will not pond adjacent to the residences.

2. Backfill around foundation walls should be moistened and compacted.

3. Roof downspouts and drains should discharge well beyond the limits of all backfill. Splash blocks and downspout extenders should be provided at all discharge points.

4. Landscaping should be carefully designed to minimize irrigation. Plants used close to foundation walls should be limited to those with low moisture requirements; irrigated grass should not be located within 5 feet of the foundation. Sprinklers should not discharge within 5 feet of foundations. Irrigation should be limited to the minimum amount sufficient to maintain vegetation; application of more water will increase likelihood of slab and foundation movements.

5. Impervious plastic membranes should not be used to cover the ground surface immediately surrounding the residences. These membranes tend to trap moisture and prevent normal evaporation from occurring. Geotextile fabrics can be used to limit the weed growth and allow for evaporation.

CONSTRUCTION MONITORING

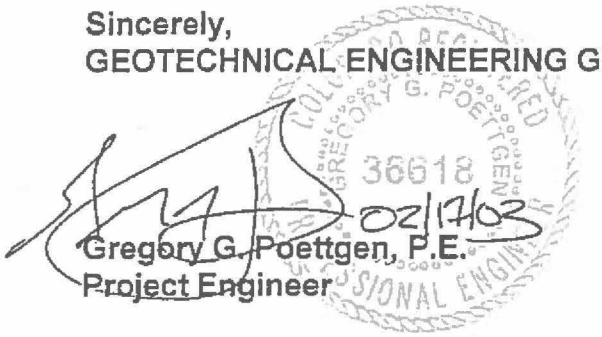
Geotechnical Engineering Group, Inc. should be retained to provide general review of construction plans for compliance with our recommendations. Geotechnical Engineering Group, Inc. should be retained to provide construction monitoring services during all earthwork and foundation construction phases of the work. This is to observe the construction with respect to the geotechnical recommendations, to enable design changes in the event that subsurface conditions differ from those anticipated prior to start of construction and to give the owner a greater degree of confidence that the proposed construction is constructed in accordance with the geotechnical recommendations.

LIMITATIONS

Thirteen exploratory test pits were observed; seven in proposed residence areas and six in proposed pavement areas. The test pits are representative of conditions encountered only at the exact test pit locations. Variations in the subsoil conditions not indicated by the exploratory test pits are always possible. Our representative should observe open foundation excavations and test subgrade and fill compaction to confirm soils are as anticipated from the test pits and foundation soils are prepared as recommended herein.

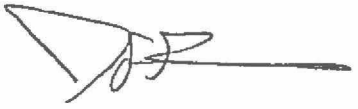
We believe this investigation was conducted in a manner consistent with that level of care and skill ordinarily used by geotechnical engineers practicing in this area at this time. No other warranty, express or implied, is made. If we can be of further service in discussing the contents of this report or the analysis of the influence of the subsurface conditions on the design of the proposed construction, please call.

Sincerely,
GEOTECHNICAL ENGINEERING GROUP, INC.



Gregory G. Poettgen, P.E.
Project Engineer

Reviewed by:



John P. Withers, P.E.
Principal Engineer

GGP:JPW:cb
(2 copies sent)

1 cc: Thompson Langford Corp.
Mr. Jeff Mace
529 25 ½ Road, Suite B210
Grand Junction, CO 81505

Geotechnical Investigation
Dakota West Subdivision,
Phase 1, 2 and 3
North and West of D 1/2 Road
and 31 Road
Grand Junction, Colorado

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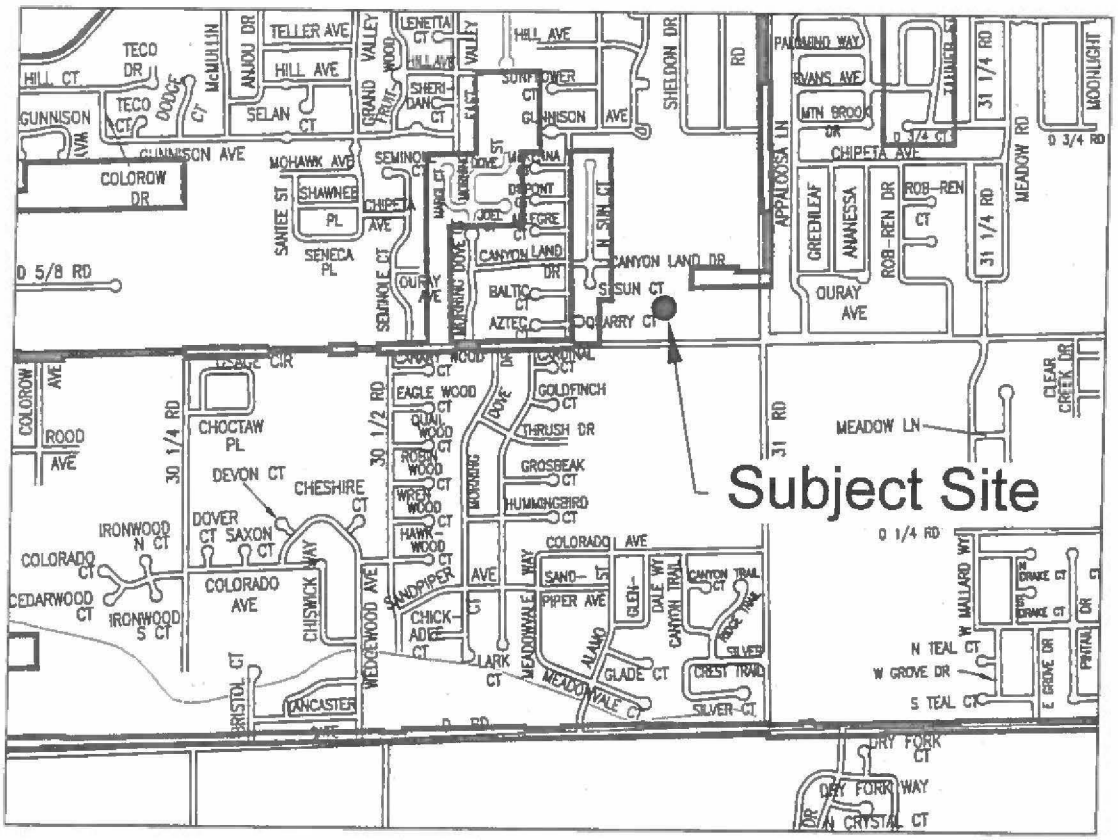
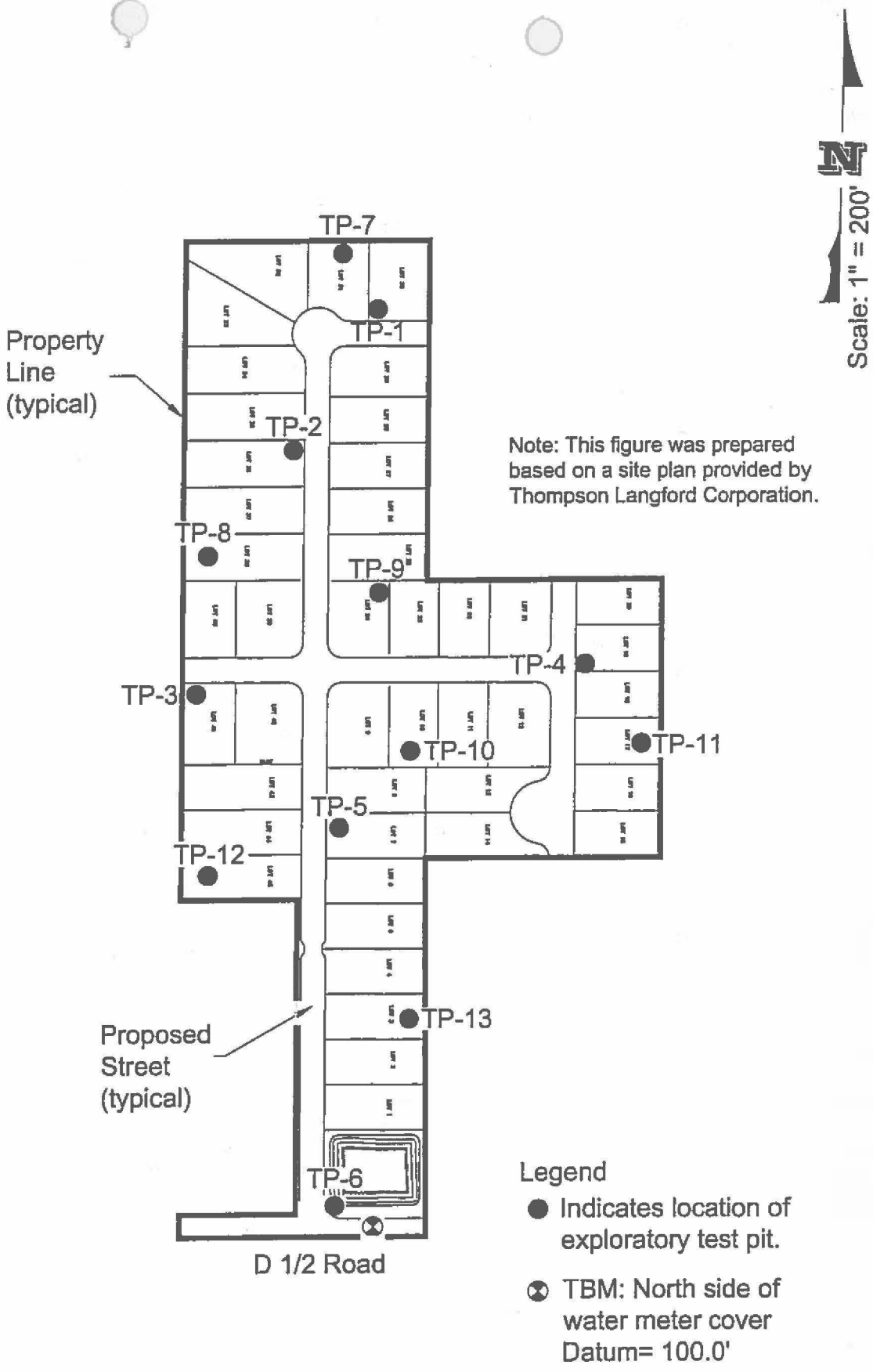
No Scale



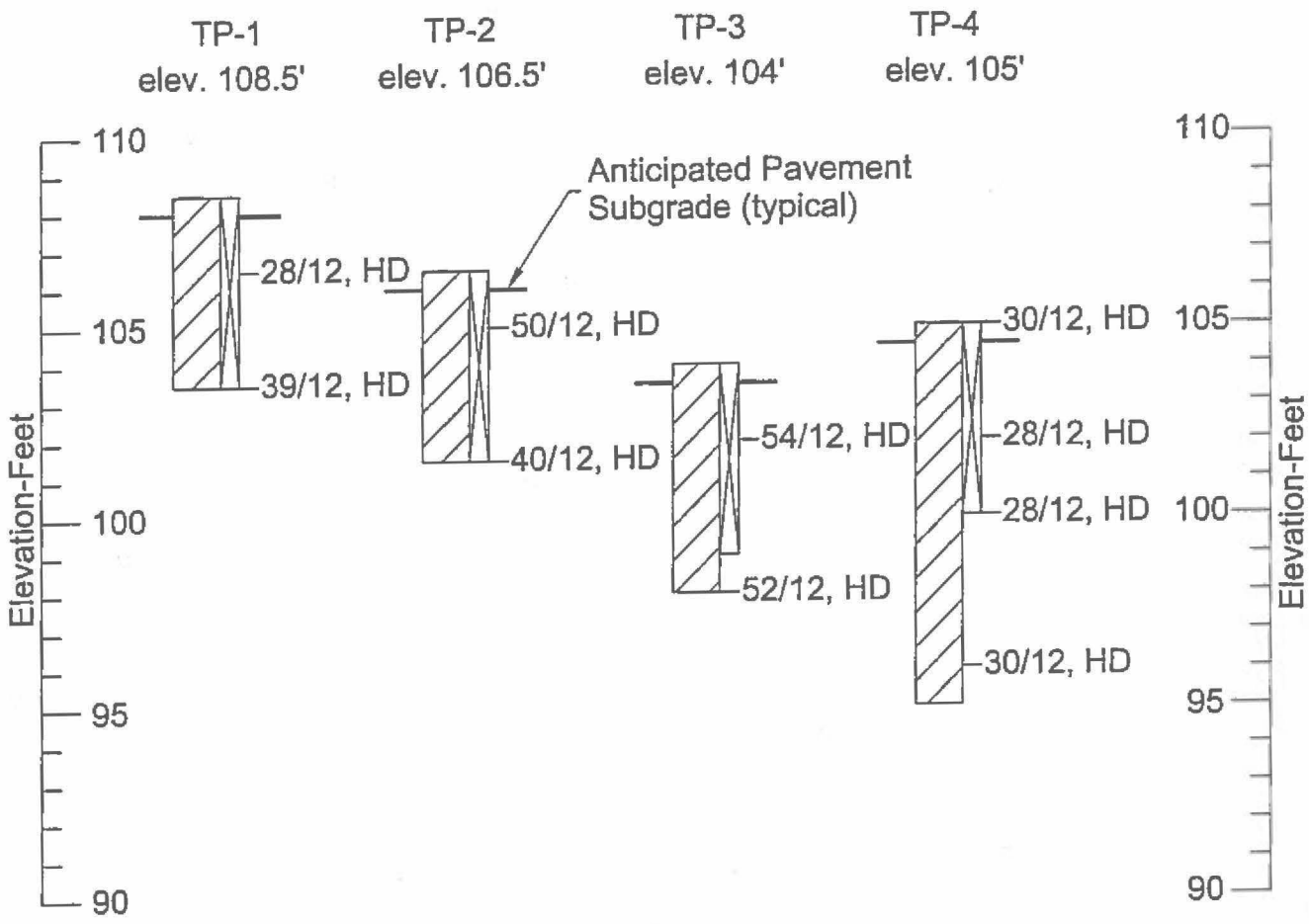
Job No. 1,288

Vicinity Map

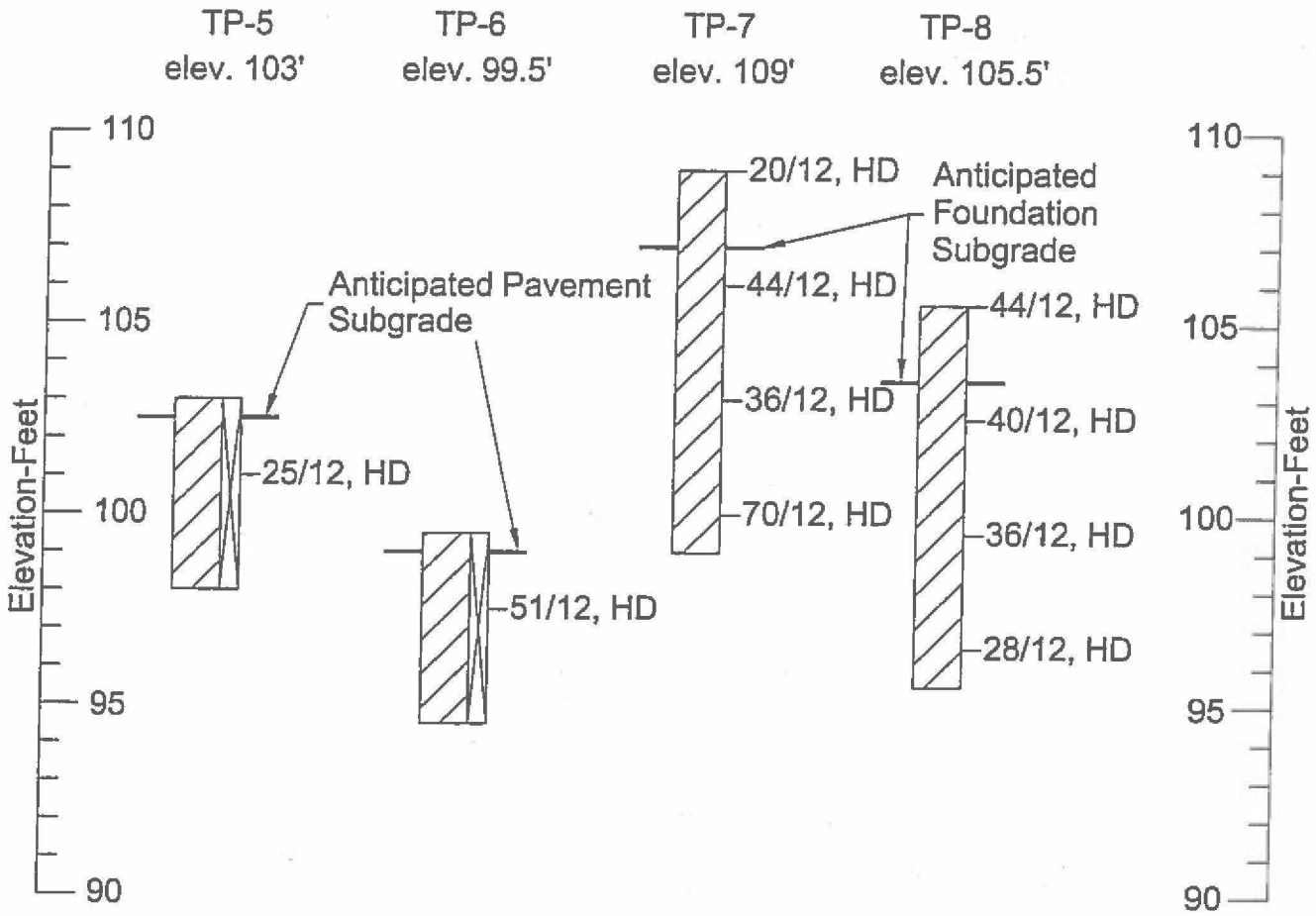
Fig. 1



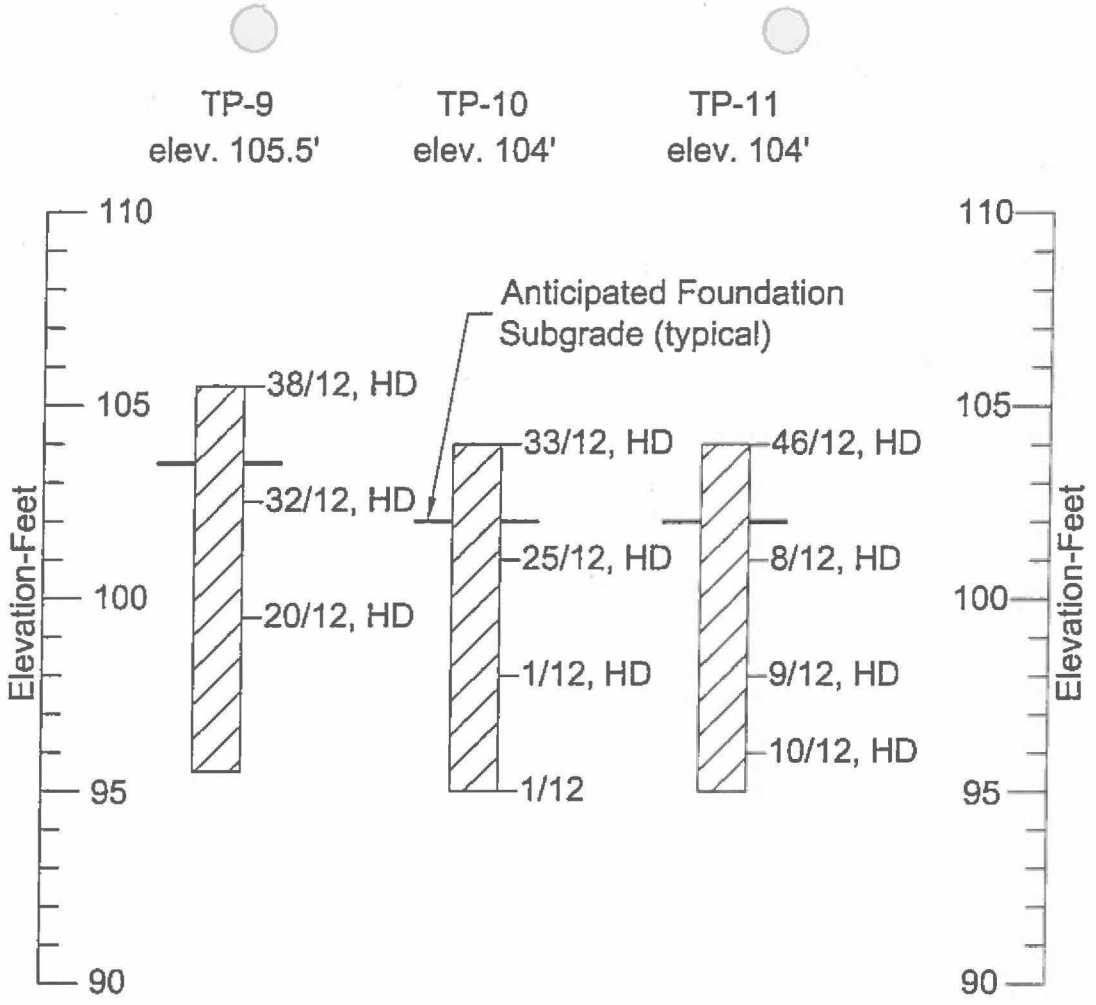
Job No. 1,288 Location of Exploratory Test Pits Fig. 2



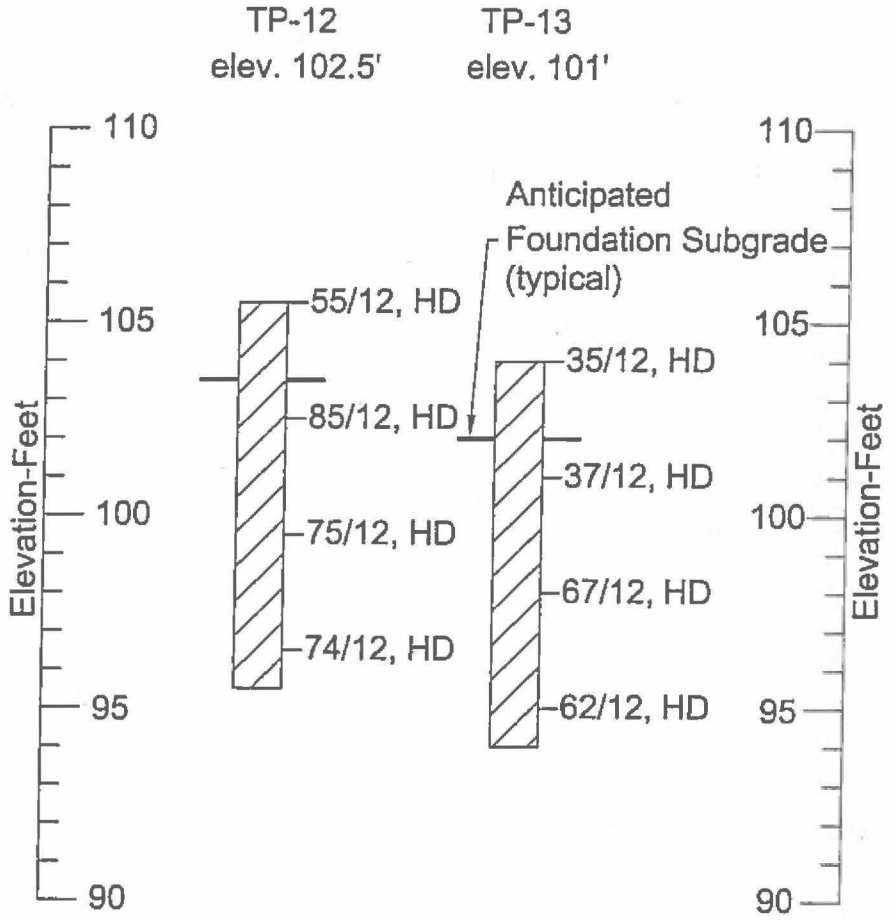
Job No. 1,288 **Logs of Exploratory Test Pits** Fig. 3



Job No. 1,288 **Logs of Exploratory Test Pits** Fig. 4



Job No. 1,288 Logs of Exploratory Test Pits Fig. 5



Job No. 1,288 **Logs of Exploratory Test Pits** Fig. 6

Legend

Clay, silty, sandy, very soft to very stiff, dry to very moist, brown, tan, scattered porous fabric in upper 3 feet, sulfates noted (CL)

Indicates location of penetration test. The symbol 28/12 indicates that 28 blows of a 15 pound hammer falling 26 inches were required to drive a 1.0 inch diameter penetrometer 12 inches. The symbol HD indicates hand drive using modified California (2.0-inch O.D.) liner.

Indicates location of bulk sample collected from test pits.

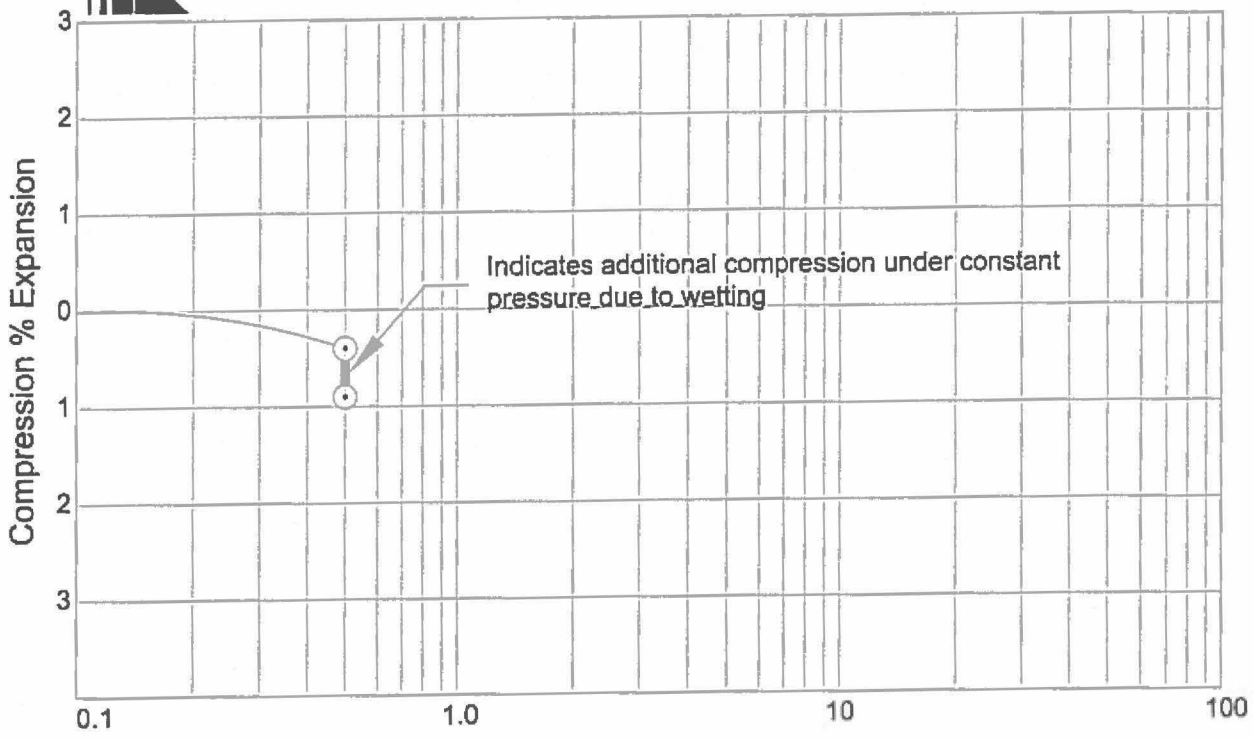
Notes

1. Test pits were observed and sampled on January 15, 2003.
2. Elevations of borings were determined using an automatic level and the temporary benchmark (TBM) shown on Fig. 2.
3. These logs are subject to the explanations, limitations and conclusions as contained in this report.

Job No. 1,288

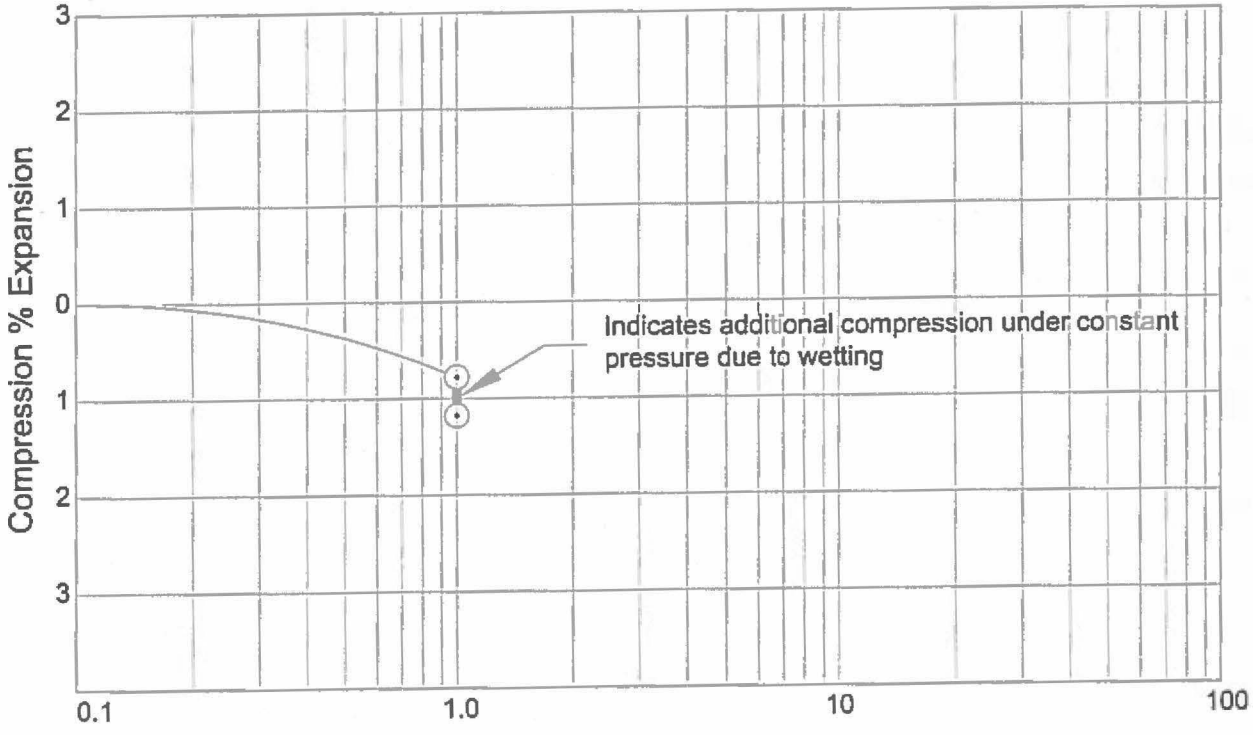
Legend of Logs of Exploratory Test Pits

Fig. 7



Sample of: Clay, silty, sandy (CL)
From: TP-7 @ 3 foot depth

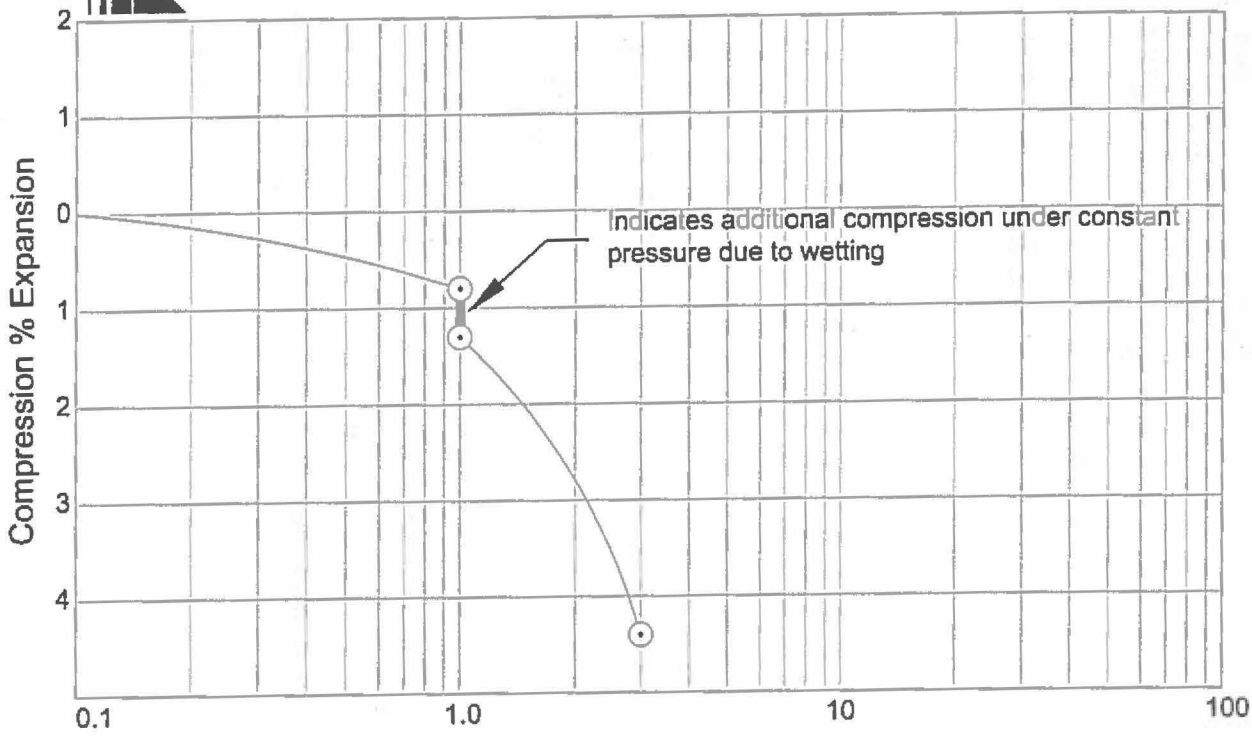
Dry Unit Weight= 87 PCF
Moisture Content= 8.4 %



Sample of: Clay, silty, sandy (CL)
From: TP-8 @ 0 foot depth

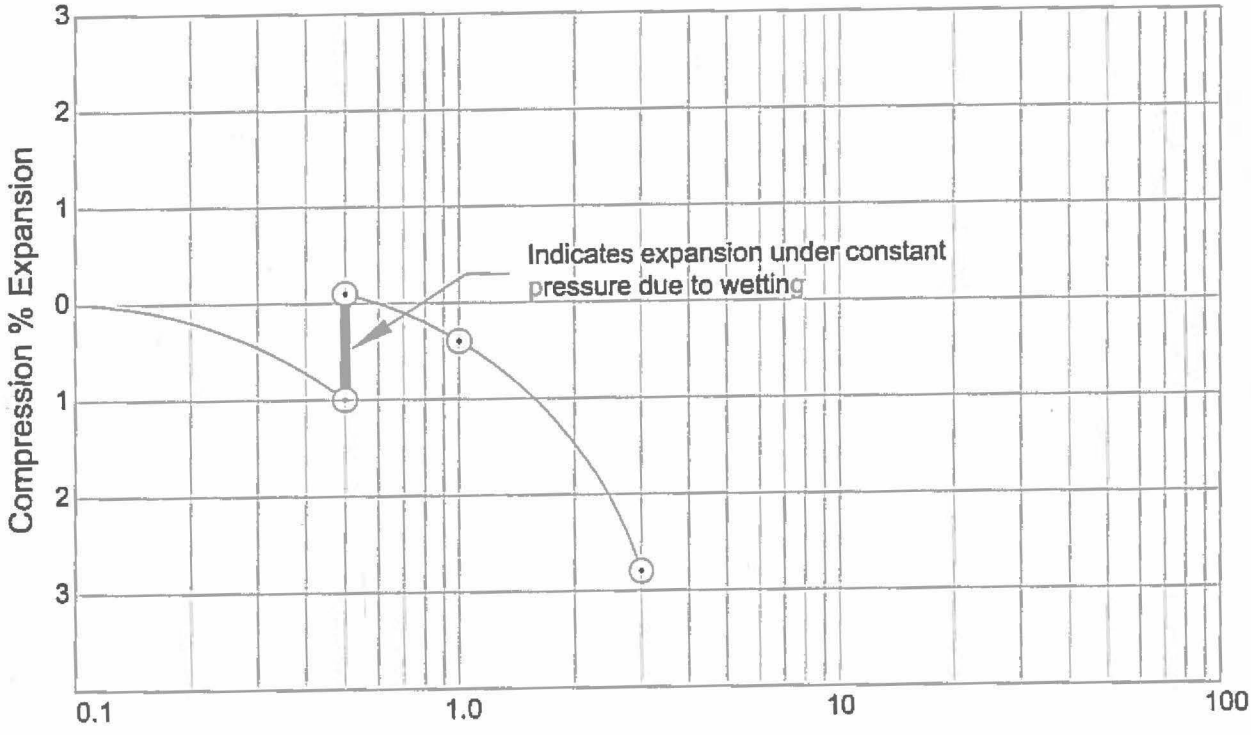
Dry Unit Weight= 92 PCF
Moisture Content= 9.7 %

Job No. 1,288 Swell Consolidation Test Results Fig. 8



Sample of: Clay, silty, sandy (CL)
From: TP-9 @ 5 foot depth

Dry Unit Weight= 96 PCF
Moisture Content= 12.0 %

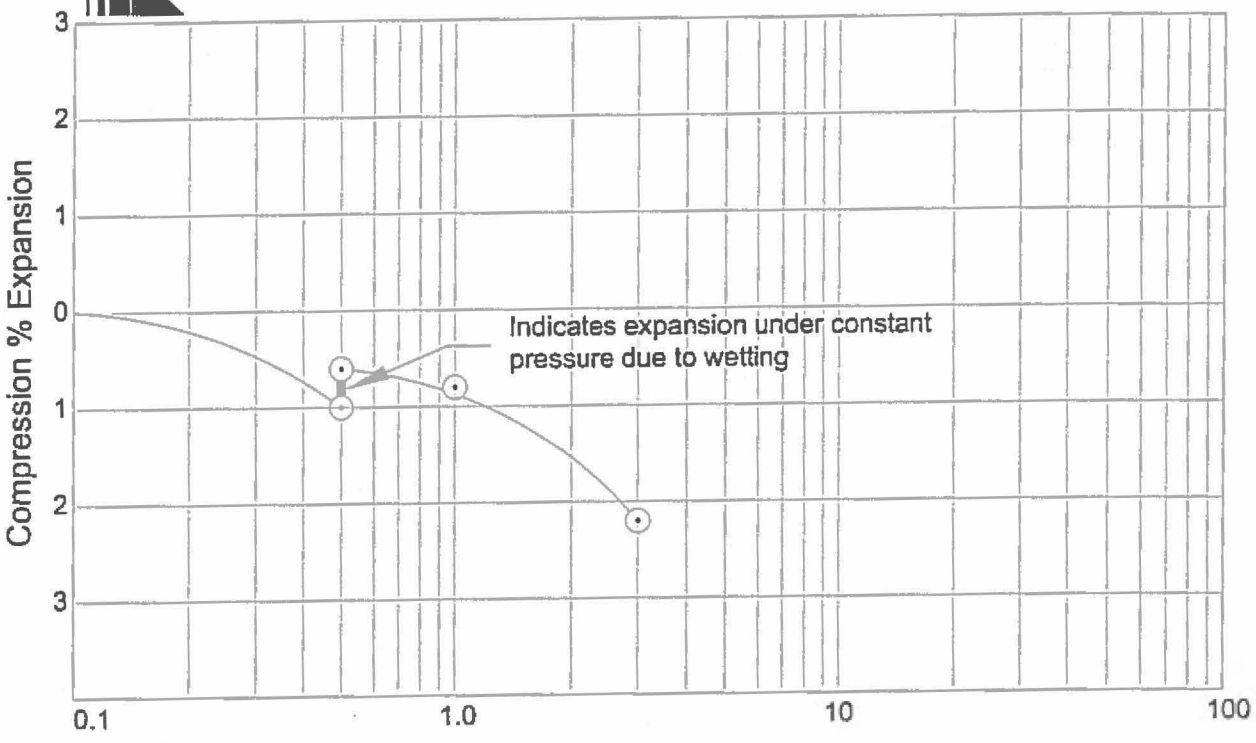


Sample of: Clay, silty, sandy (CL)
From: TP-10 @ 3 foot depth

Dry Unit Weight= 95 PCF
Moisture Content= 11.2 %

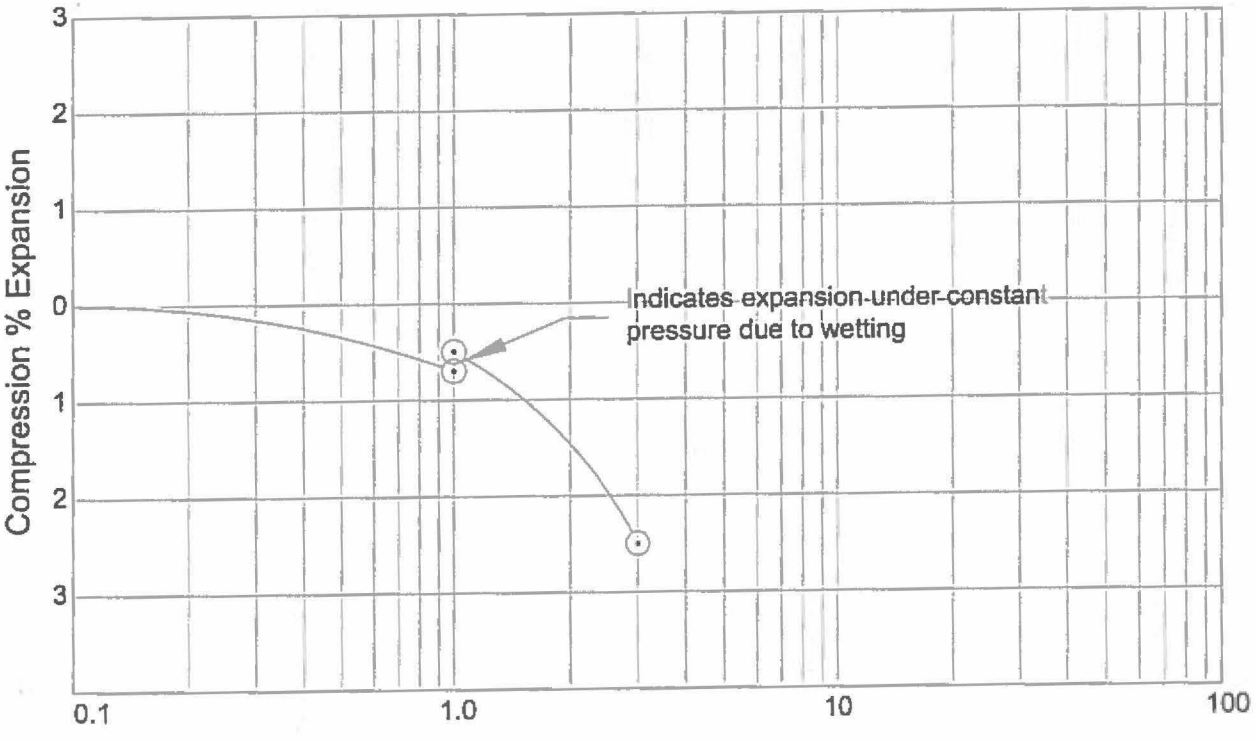
Job No. 1,288 Swell Consolidation Test Results Fig. 9

Geotechnical Engineering Group, Inc.



Sample of: Clay, silty, sandy (CL)
From: TP-11 @ 3 foot depth

Dry Unit Weight= 100 PCF
Moisture Content= 18.3 %

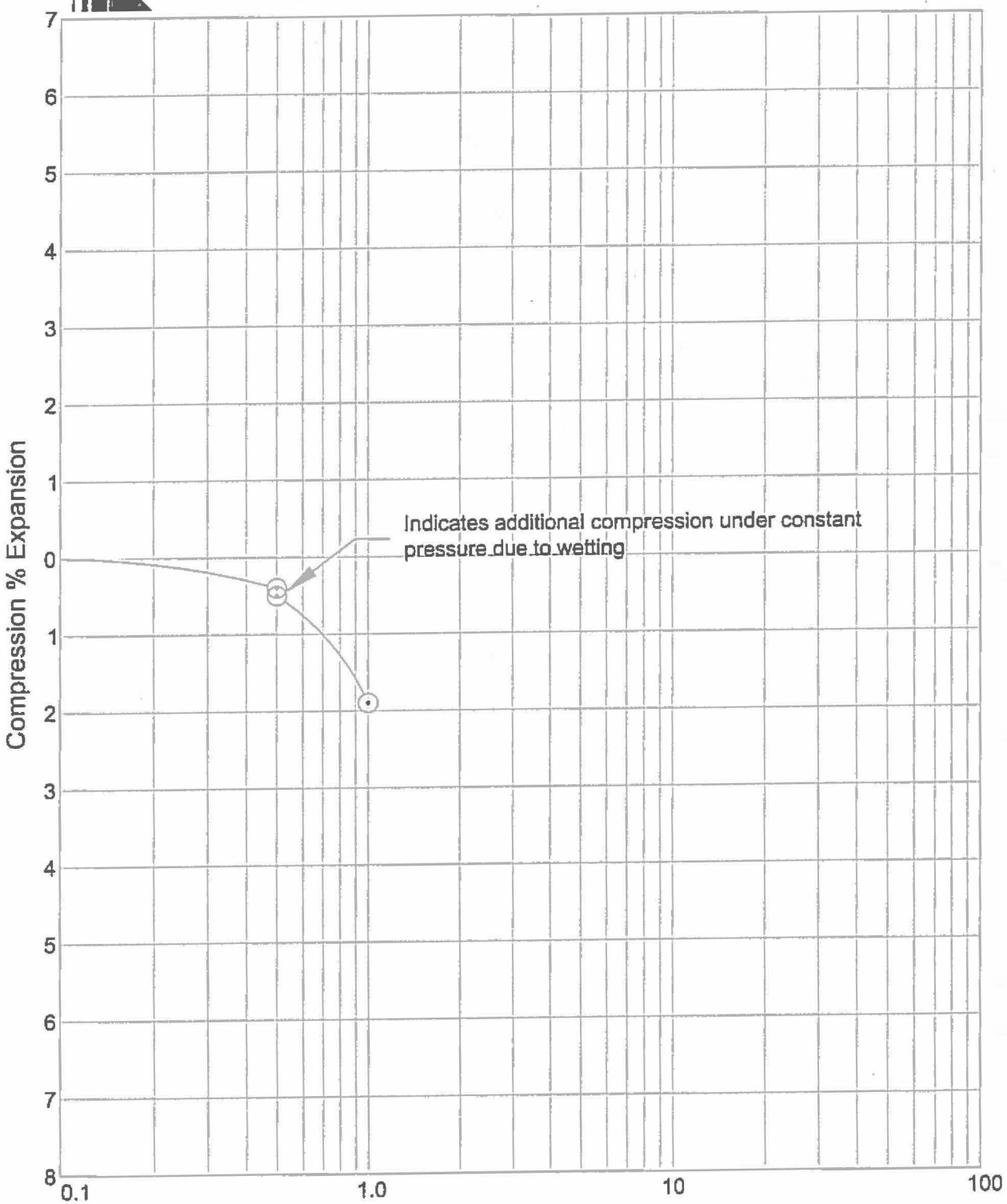


Sample of: Clay, silty, sandy (CL)
From: TP-12 @ 0 foot depth

Dry Unit Weight= 99 PCF
Moisture Content= 9.1 %

Job No. 1,288 Swell Consolidation Test Results Fig. 10

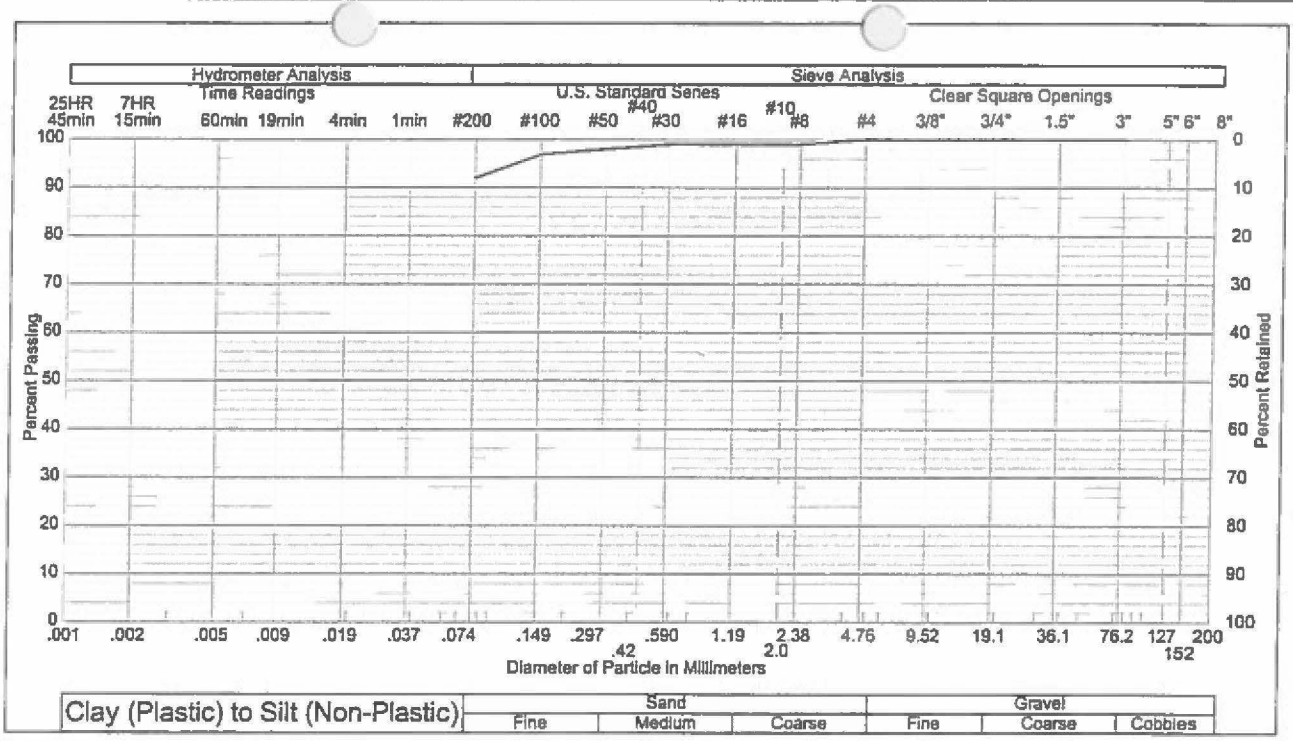
Geotechnical Engineering Group, Inc.



Sample of: Clay, silty, sandy (CL)
From: TP-13 @ 3 foot depth

Dry Unit Weight= 92 PCF
Moisture Content= 9.0 %

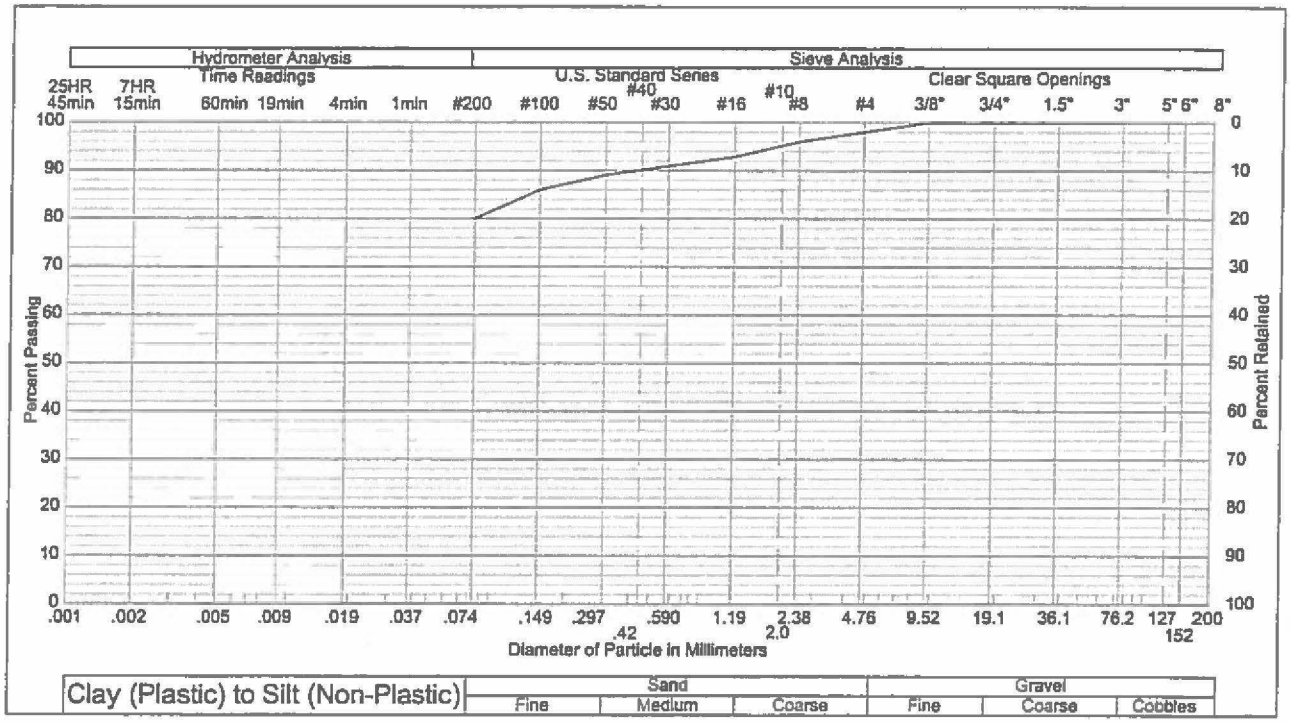
Job No. 1,288 Swell Consolidation Test Results Fig. 11



Sample of: Clay, silty, sandy (CL)
From: TP-1 through 6 @ 0 to 5 feet depth, bulk combined

Gravel: 0 %
Silt & Clay: 92 %
Plasticity Index: 9

Sand: 8 %
Liquid Limit: 29



Sample of: Clay, silty, sandy (CL)
From: TP-11 @ 0 foot depth

Gravel: 2 %
Silt & Clay: 80 %
Plasticity Index:

Sand: 18 %
Liquid Limit:

Gradation Test Results

Geotechnical Engineering Group, Inc.

Job No. 1,288

Date: February, 2003

Fig. 12

JOB NO. 1,288

Geotechnical Engineering Group, Inc.

TABLE I

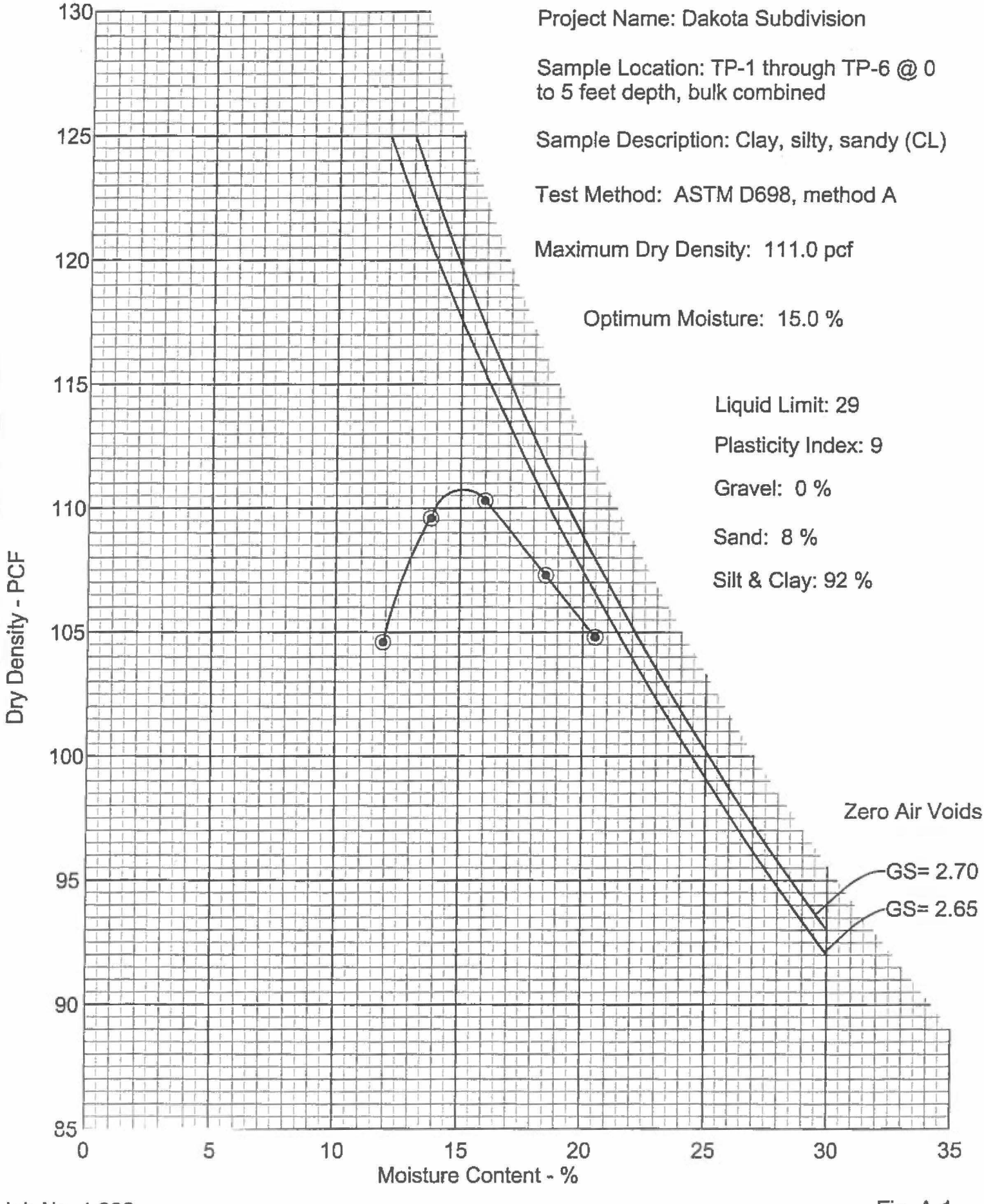
SUMMARY OF LABORATORY TEST RESULTS

HOLE	DEPTH (FEET)	NATURAL MOISTURE (%)	DRY DENSITY (PCF)	Atterberg Limits		Swell / Consolidation		PASSING NO. 200 SIEVE (%)	WATER SOLUBLE SULFATES (ppm)	SOIL TYPE
				LIQUID LIMIT (%)	PLASTICITY INDEX (%)	SWELL (%)	CONFINING PRESSURE (PSF)			
TP-1 through 6 bulk combined	0°-5°	6.1	--	29	9			92	6,500	Clay, silty, sandy (CL)
TP-7	3	8.4	87			-0.5	500			Clay, silty, sandy (CL)
	5	5.9	95	26	6			91		Clay, silty, sandy (CL)
TP-8	3	9.7	--	33	15			91		Clay, sandy (CL)
	6	9.7	92			-0.4	1,000			Clay, silty, sandy (CL)
TP-9	3	8.0	103	27	11			65		Clay, silty, sandy (CL)
	5	12.0	96			-0.5	1,000			Clay, silty, sandy (CL)
TP-10	3	11.2	95			+1.1	500			Clay, silty, sandy (CL)
TP-11	0	14.7	101					79		Clay, silty, sandy (CL)
	3	18.3	100			+0.4	500			Clay, silty, sandy (CL)
	5	16.9	97	26	8			78		Clay, silty, sandy (CL)
	8	22.4	94							Clay, silty, sandy (CL)
TP-12	3	5.0	95	22	2			84		Clay, silty, sandy (CL)
	6	9.1	99			+0.2	1,000			Clay, silty, sandy (CL)
TP-13	3	9.0	92			-0.1	500			Clay, silty, sandy (CL)

APPENDIX A

PAVEMENT DESIGN CALCULATIONS

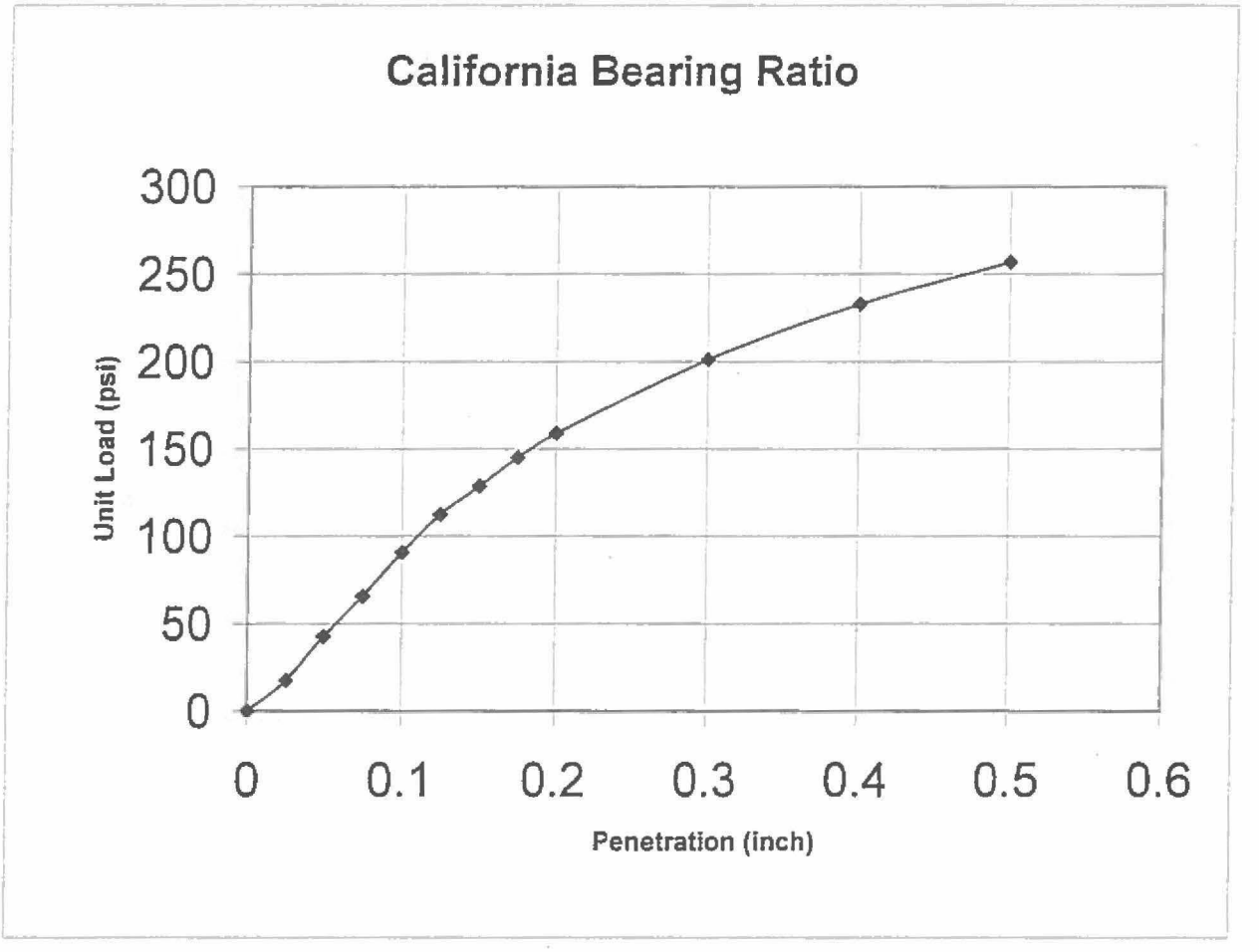
Geotechnical Engineering Group, Inc.
Moisture - Density Relationship



Job No. 1,288

Fig. A-1

Geotechnical Engineering Group, Inc.



CBR @ 0.1" Penetration	9.1
CBR @ 0.2" Penetration	10.6
Maximum Dry Density (pcf)	111.0
Optimum Moisture Content (%)	15.0
Dry Density (pcf)	109.5
Dry Density (% Maximum)	98.6
Surcharge Weight (lbs)	10.0
Swell (%)	
Before Soaking Moisture Content	15.0
After Soaking Moisture Content:	
Top Inch	20.2
Average	17.6

Job No. 1,288

Fig. A-2

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Flexible Design Inputs

Agency:
Company: GEG Job No. 1,288
Contractor:
Project Description: Dakota West Subdivision, Accel / Decel Lane
Location: N & W D ½ Road and 31 Road

Flexible Pavement Design/Evaluation

Structural Number	3.39		**Soil Resilient Modulus**	6,607.00	**psi**
Design ESALs	1,204,500.00		**Initial Serviceability**	4.50	
Reliability	80.00	**percent**	**Terminal Serviceability**	2.50	
Overall Deviation	0.45				

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Asphalt Cement Concrete	0.40	1.00	8.47	3.39
Crushed Stone Base	0.12	1.00	0.00	0.00
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
			Σ SN	3.39

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Flexible Design Inputs

Agency:	
Company:	GEG Job No. 1,288
Contractor:	
Project Description:	Dakota West Subdivision, Accel / Decel Lane
Location:	N & W of D ½ Road and 31 Road

Flexible Pavement Design/Evaluation

Structural Number	3.39		**Soil Resilient Modulus**	6,607.00	**psi**
Design ESALs	1,204,500.00		**Initial Serviceability**	4.50	
Reliability	80.00	**percent**	**Terminal Serviceability**	2.50	
Overall Deviation	0.45				

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Asphalt Cement Concrete	0.40	1.00	3.00	1.20
Crushed Stone Base	0.12	1.00	18.22	2.19
Granular Subbase	0.10	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
			Σ SN	3.39

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Flexible Design Inputs

Agency:
Company: GEG Job No. 1,288
Contractor:
Project Description: Dakota West Subdivision, Accel / Decel Lane
Location: N & W of D ½ Road and 31 Road

Flexible Pavement Design/Evaluation

Structural Number	3.39		**Soil Resilient Modulus**	6,607.00	**psi**
Design ESALs	1,204,500.00		**Initial Serviceability**	4.50	
Reliability	80.00	**percent**	**Terminal Serviceability**	2.50	
Overall Deviation	0.45				

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Asphalt Cement Concrete	0.40	1.00	4.00	1.60
Crushed Stone Base	0.12	1.00	14.89	1.79
Granular Subbase	0.10	1.00	0.00	0.00
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
			Σ SN	3.39

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Flexible Design Inputs

Agency:
Company: GEG Job No. 1,288
Contractor:
Project Description: Dakota West Subdivision, Accel / Decel Lane
Location: N & W of D ½ Road and 31 Road

Flexible Pavement Design/Evaluation

Structural Number	3.39		**Soil Resilient Modulus**	6,607.00	psi
Design ESALs	1,204,500.00		**Initial Serviceability**	4.50	
Reliability	80.00	percent	**Terminal Serviceability**	2.50	
Overall Deviation	0.45				

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Asphalt Cement Concrete	0.40	1.00	4.00	1.60
Crushed Stone Base	0.12	1.00	6.00	0.72
Granular Subbase	0.10	1.00	10.66	1.07
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
			Σ SN	3.39

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Rigid Design Inputs

Agency:
Company: Job No. 1,288
Contractor:
Project Description: Dakota West Subdivision, Accel / Decel Lane
Location: N & W of D ½ Road and 31 Road

Rigid Pavement Design/Evaluation

PCC Thickness	7.68	**inches**	**Load Transfer, J**	3.20	
Design ESALs	1,806,750.00		**Mod. Subgrade Reaction, k**	340	**psi/in**
Reliability	80.00	**percent**	**Drainage Coefficient, Cd**	1.00	
Overall Deviation	0.35		**Initial Serviceability**	4.50	
Modulus of Rupture	500	**psi**	**Terminal Serviceability**	2.50	
Modulus of Elasticity	3,375,000	**psi**			

Modulus of Subgrade Reaction (k-value) Determination

Resilient Modulus of the Subgrade	6,607.00	**psi**
Resilient Modulus of the Subbase	0.00	**psi**
Subbase Thickness	0.00	**inches**
Depth to Rigid Foundation	0.00	**feet**
Loss of Support Value (0,1,2,3)	0.00	

Modulus of Subgrade Reaction	145.00	**psi/in**

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Flexible Design Inputs

Agency:
Company: GEG Job No. 1,288
Contractor:
Project Description: Dakota West Subdivision, Interior Streets
Location: N & W of D ½ Road and 31 Road

Flexible Pavement Design/Evaluation

Structural Number	2.05		**Soil Resilient Modulus**	6,607.00	**psi**
Design ESALs	54,750.00		**Initial Serviceability**	4.50	
Reliability	80.00	**percent**	**Terminal Serviceability**	2.00	
Overall Deviation	0.45				

Layer Pavement Design/Evaluation

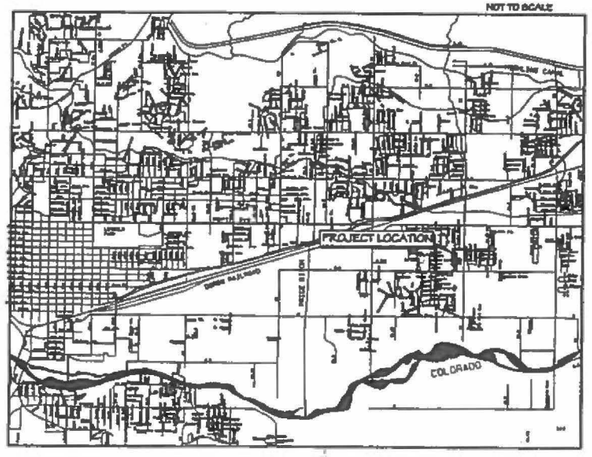
Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Asphalt Cement Concrete	0.40	1.00	5.13	2.05
Crushed Stone Base	0.12	1.00	0.00	0.00
Granular Subbase	0.10	1.00	0.00	0.00
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00
			Σ SN	2.05

DAKOTA WEST SUBDIVISION PHASE 2

A REPLAT OF LOTS 10 AND 12, BLOCK 1 OF DAKOTA WEST SUBDIVISION
CITY OF GRAND JUNCTION, MESA COUNTY, COLORADO

VICINITY MAP

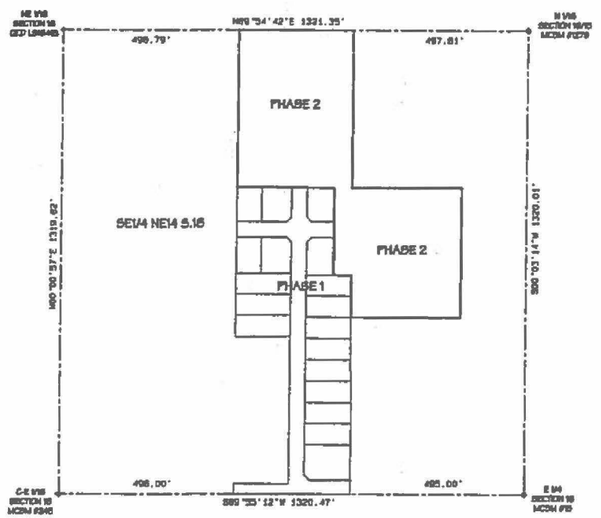
NOT TO SCALE



NOTES:

* Irrigation easement located on the north boundary of subdivision to be granted by separate instrument.

CONTROL DIAGRAM



SCALE 1"=200'

LAND USE SUMMARY

LOTS	5.086 acres	80.9%
STREETS	1.203 acres	19.1%
TOTAL	6.289 acres	100%

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 the certification shown hereon.

STATEMENT OF OWNERSHIP AND DEDICATION

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned, G&R West, LLC, a Colorado Limited Liability Company, is the owner of that real property in the County of Mesa, State of Colorado, described at Reception No's 2056190, 2080387, and 2084766 of the records of the Mesa County Clerk and Recorder, and as shown on the accompanying plat, said property being more particularly described as follows:

Lot 10 Block 1, Dakota West Subdivision
AND
Lot 12 Block 1, Dakota West Subdivision, according to the plat thereof recorded at Reception No. _____ in the office of the Mesa County Clerk and Recorder

That said Owner has by these presents laid out, platted and subdivided the above described real property as shown hereon, and designates the same as DAKOTA WEST SUBDIVISION PHASE 2, a subdivision of the City of Grand Junction, Mesa County, Colorado, and does hereby make the following dedications and grants:

* All streets and roads shown hereon, being Aberdeen Lane, Bismarck Street, and Washburn Street to the full width of their platted rights-of-way are hereby dedicated to the City of Grand Junction for the use of the public forever as public streets, and for drainage and underground utility purposes.

* All multi-purpose easements dedicated to the City of Grand Junction for the use of City approved 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, irrigation lines, drainage, and also for the installation and maintenance of traffic control facilities, street lighting, trees and grade structures.

* All drainage easements are to be granted by separate instrument to the Dakota West Homeowners Association as perpetual easements for conveyance of runoff water which originates from the property hereby platted, subject to the terms, conditions and restrictions set forth in said grant. Grant recorded in Book _____ at Page _____.

* All irrigation easements are to be granted by separate instrument to the Dakota West Homeowners Association as perpetual easements for the installation, operation, maintenance and repair of irrigation systems and to supply and drain irrigation water. Grant recorded in Book _____ at Page _____.

* All easements include the right of ingress and egress on, along, over, under, 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/ owners shall utilize the same in a reasonable and prudent manner. Furthermore, the owners of said lots hereby platted shall not burden or overburden said easements by erecting or placing any improvements thereon which may prevent reasonable ingress and egress to and from the easement.

Said owners further certify that all lienholders are represented hereon.

IN WITNESS WHEREOF said owners have caused their names to be hereunto subscribed.

G & R West, L.L.C., a Colorado Limited Liability Company.

By _____
Managing Partner

State of }
County of }ss

The foregoing Statement of Ownership and Dedication was acknowledged before me

by _____ as Managing Partner of G & R West, LLC

this _____ day of _____, 2003 for the aforementioned purposes.

_____
Notary Public

My commission expires: _____

DECLARATION OF COVENANTS

This property is subject to the terms of the covenants, conditions, and restrictions contained in an instrument recorded in Book _____ at Page _____.

TITLE CERTIFICATION

We, First American Heritage Title Company, a title insurance company, as duly licensed in the State of Colorado, hereby certify that we have examined the title to the hereon described property, that we find the title to the property is vested to G&R West, LLC, a Colorado Limited Liability Company; That the current taxes have been paid; That all mortgages not satisfied or released of record nor otherwise terminated by law are shown hereon and that there are no other encumbrances of record; That all easements, reservations and rights of way of record are shown hereon.

DATE: _____ BY: _____
NAME AND TITLE
First American Heritage Title Company

CITY APPROVAL

This plat of DAKOTA WEST SUBDIVISION PHASE 2, a subdivision of the City of Grand Junction, County of Mesa, State of Colorado, was approved this _____ day of _____, 2003.

_____ _____
City Manager Mayor

CLERK AND RECORDER'S CERTIFICATE

State of Colorado }
}ss
County of Mesa }

This plat was accepted for filing in the office of the Clerk and Recorder of Mesa County, Colorado, at ___ o'clock __ M., on this _____ day of _____, 2003, A.D., and was recorded at Reception No. _____, in Plat Book ___ at Page _____, Drawer No. _____, Fees _____.

By _____ _____
Clerk and Recorder Deputy

SURVEYOR'S STATEMENT

I, Dennis R. Shellhorn, a registered Professional Land Surveyor in the State of Colorado, do hereby state that the accompanying plat of DAKOTA WEST SUBDIVISION PHASE 2, a subdivision of a part of the City of Grand Junction, Colorado, has been prepared by me and/or 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 to the best of my knowledge and belief. This statement is only applicable to the survey data hereon, and does not represent a warranty or opinion as to ownership, lienholders, or quality of title.

Dennis R. Shellhorn,
Colorado PLS 18478

This survey does not constitute a title search by this surveyor or Thompson-Langford Corporation. All information regarding ownership, rights-of-way, easements of record, adjoiners, and other documents that may affect the quality of title to this property is from a title commitment prepared by First American Heritage Title Company, No. 0014073, dated March 25, 2002, Meridian Land Title, LLC, No. 55610, dated March 20, 2002, and Meridian Land Title, LLC, No. 56245, dated May 1, 2002.

NOTE:

A foundation observation report by a licensed Engineer is required for building construction.

DAKOTA WEST SUBDIVISION PHASE 2

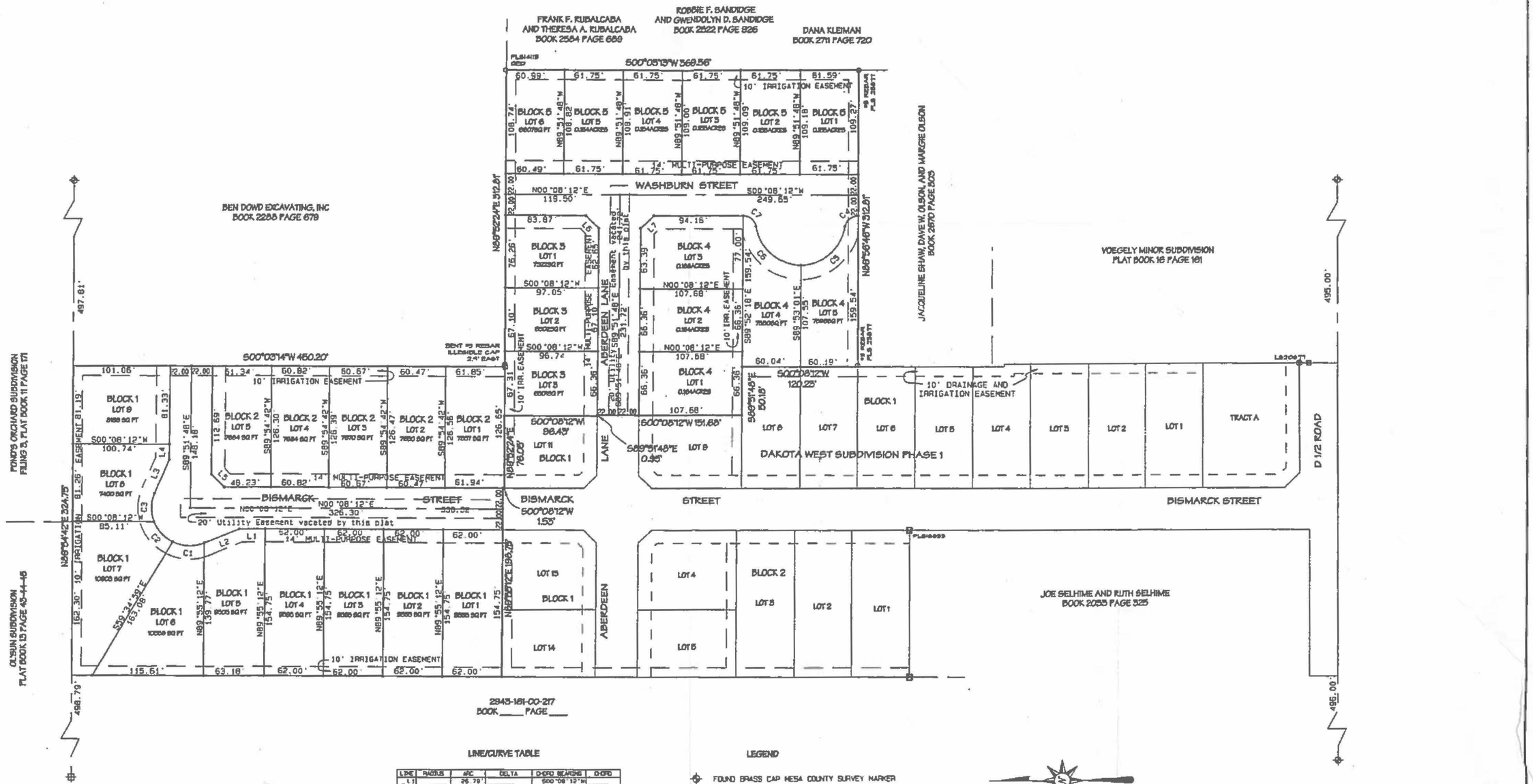
G & R WEST LLC

SECTION:E1/4 NE1/4 S.18	TWNSP: 1 South	RNGE: 1 East	MERIDIAN:

THOMPSON-LANGFORD CORPORATION
529 25 1/2 ROAD - B-210 (970) 245-8087
Grand Junction CO 81505 tlc@tlcwest.com

S:\Survey\0543 G&R West\plat\PH2.prp			Job No. 0543-002
Drawn: bkb	Checked: drs	Date: Apr 22, 2003	Sheet 1 of 2

DAKOTA WEST SUBDIVISION PHASE 2



LINE/CURVE TABLE

LINE	RADIUS	ARC	DELTA	CHORD BEARING	CHORD
L1		26.79'		S00°08'12"W	
L2		39.31'		S22°15'48"E	
L3		33.87'	48°31'08"	N01°08'32"E	32.87'
L4		29.83'	42°43'25"	N47°36'16"E	29.14'
L5		30.76'	44°03'14"	S89°00'24"E	30.00
L3		33.87'		N66°39'08"W	
L4		16.04'		N89°51'48"W	
L5		19.18'		N44°57'42"E	
L6		19.18'		S45°18'42"W	
C4	13.50	18.14'	81°15'12"	S40°21'03"E	17.58'
C5	48.00	67.18'	80°09'54"	N40°53'42"W	61.81'
C6	48.00'	55.82'	66°37'45"	N47°36'08"E	52.73'
C7	13.50'	19.11'	81°06'48"	S40°41'37"W	17.56'
L7		19.18'		S45°02'18"E	

LEGEND

- FOUND BRASS CAP MESA COUNTY SURVEY MARKER
- FOUND 3-1/4" ALUM. CAP
- SET #5 REBAR/CAP PLS 18478 IN CONCRETE
- FOUND PIN & ALUMINUM CAP AS NOTED
- FOUND PIN & PLASTIC CAP AS NOTED

GRAPHIC SCALE 1"=50'
0 50 100 150

BASIS OF BEARINGS STATEMENT: Bearings are based on grid north of the Mesa County Local Coordinate System, locally determined by GPS observations on the brass cap Mesa County survey marker at the Center-East one-sixteenth corner, and the brass cap Mesa County Survey at the East one-quarter corner of Section 16. The measured bearing of this line is N86°05'12"E.

NOTE:
A foundation observation report by a licensed Engineer is required for building construction.

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 the certification shown hereon.

SEE SHEET 1 FOR SURVEYOR'S CERTIFICATE

DAKOTA WEST SUBDIVISION PHASE 2

G & R WEST LLC

SECTION SE 1/4 NE1/4 S.16 | TWNSHP. 1 South | RANGE: 1 East | MERIDIAN: UTE

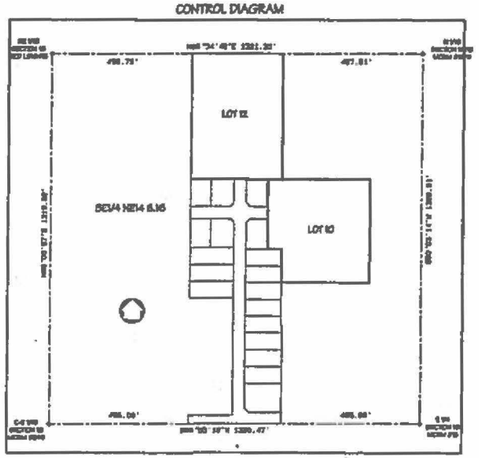
THOMPSON-LANGFORD CORPORATION
829 25 1/2 ROAD - B-210 (970) 245-8087
Grand Junction CO 81505 tlc@tlcwest.com

S:\Survey\0543 G&R West\plat\PH2.pro | Job No. 0543-002

Drawn: bkb | Checked: drs | Date: Apr 22, 2003 | Sheet 2 of 2

IMPROVEMENT SURVEY PLAT

CONTROL DIAGRAM



BEN DOWD EXCAVATING, INC
BOOK 2256 PAGE 679

FRANK F. RUBALCABA
AND THERESA A. RUBALCABA
BOOK 2584 PAGE 559

ROBBIE F. SANDIDGE
AND GWENDOLYN D. SANDIDGE
BOOK 2522 PAGE 525

DANA KLEIMAN
BOOK 2711 PAGE 720

PROPERTY DESCRIPTION

Lots 10 AND 12, Block 1, Dakota West Subdivision
(Reception # _____) recorded at the Mesa
County Clerk and Recorder.

JACQUELINE SHAW, DAVE W. OLSON, AND MARGIE OLSON
BOOK 2670 PAGE 305

VOEGELY MINOR SUBDIVISION
PLAT BOOK 16 PAGE 161

PONDS ORCHARD SUBDIVISION
FILING 3, PLAT BOOK 11 PAGE 171

OLSON SUBDIVISION
PLAT BOOK 13 PAGE 46-44-45

JOE SELHIME AND RUTH SELHIME
BOOK 2053 PAGE 525

497.81'

495.00'

498.79'

496.00'

S00°05'14"W 450.20'

N89°52'24"E 365.41'

N89°56'46"W 312.51'

N00°06'12"E 160.25'

S89°51'48"E 0.55'

S89°51'48"E 50.15'

S00°08'12"W 86.45'

N00°06'12"E 151.65'

N89°52'24"E 126.65'

S00°08'12"W 1.53'

N00°08'12"E 20' UTILITY EASEMENT 336.32

N89°54'42"E 324.75'

N89°56'12"E 198.79'

N00°08'12"E 448.74'

20' UTILITY EASEMENT 241.72'

10' IRRIGATION EASEMENT

10' DRAINAGE AND IRRIGATION EASEMENT

14' MULTI-PURPOSE EASEMENT

10' IRR. EASEMENT

EASEMENT

LANE

ABERDEEN

BISMARCK STREET

D 1/2 ROAD

BLOCK 1
LOT 10
127887 SQ FT
2.936 ACRES

BLOCK 1
LOT 11
7229 SQ FT

BLOCK 1
LOT 12
148099 SQ FT
3.399 ACRES

BLOCK 1
LOT 13
810 SQ FT

BLOCK 1
LOT 14
6881 SQ FT

BLOCK 2

LOT 1 | LOT 2 | LOT 3 | LOT 4 | LOT 5 | LOT 6 | LOT 7 | LOT 8 | LOT 9

TRACT A

2948-161-00-217
BOOK ____ PAGE ____

NOTE:
A foundation observation report by a licensed Engineer is required for building construction.

LEGEND

- FOUND PLSS BRASS MONUMENT
- FOUND PLSS ALUMINUM MONUMENT
- FOUND ALUMINUM MONUMENT AS NOTED
- FOUND REBAR & CAP AS NOTED
- SET ALUMINUM CAP PLS 18478 IN CONCRETE
- IRRIGATION VALVE

LINETYPE LEGEND

- SECTION LINES
- FENCE
- FLOW LINE DITCH
- CULVERT

SURVEYOR'S STATEMENT

I, Dennis E. Shellhorn, a registered Professional Land Surveyor in the State of Colorado, do hereby state that the survey shown hereon was prepared under my supervision; that the descriptions and plat herein are accurate representations of said survey.

Dennis E. Shellhorn P.L.S. 18478

Date

GRAPHIC SCALE 1"=50

0 50 100 150

BASIS OF BEARINGS STATEMENT: Bearings are based on grid north of the Mesa County Local Coordinate System, locally determined by GPS observations on the brass cap Mesa County survey marker at the Center-East one-sixteenth corner, and the brass cap Mesa County Survey at the East one-quarter corner of Section 16. The measured bearing of this line is N89°56'12"E.

LAND SURVEY DEPOSITS
Mesa County Surveyor's Office
Date _____
Book _____ Page _____
Reception No. _____

This survey does not constitute a title search by this surveyor or Thompson-Langford Corporation. All information regarding ownership, rights-of-way, easements of record, adjoiners, and other documents that may affect the quality of title to the property is from title commitments prepared by First American Heritage Title Company, No. 00410173, dated April 8, 2002, and March 25, 2002; and a title commitment prepared by Meridian Land Title, No. 59610, dated March 20, 2002.

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 the certification shown hereon.

IMPROVEMENT SURVEY PLAT

G & R WEST LLC

SECTION SE1/4 NE1/4 5.16	TWNSHP: 1 South	RNGE: 1 East	MERIDIAN: UTE

THOMPSON-LANGFORD CORPORATION
529 25 1/2 ROAD - B-210 (970) 245-8087
Grand Junction CO 81505 tlc@tlcwest.com

S:\Survey\0543 G&R West\isoPH2.dro	Job No. 0543-001
Drawn: bkb / Checked: dhs / Date: Apr 22, 2003	Sheet 2 of 2

LEGEND

- R.O.W. — STREET R.O.W. LINE
- P — LOT LINE
- EASEMENT LINE
- 1+00 ℄ 1+50 — CENTERLINE & STATION MARKERS
- E.G.T.C. — CENTERLINE COMMON TRENCH-ELECTRICAL, TELEPHONE, & CABLE T.V.
- T — UNDERGROUND TELEPHONE LINE AND PEDESTAL
- OHP — EXISTING OVERHEAD UTILITY LINES & POLES
- E — CONDUIT LINE, TRANSFORMER W/SERVICE TO LOT, SWITCH BOX, POLE W/DROP
- STREET LIGHT
- G — GAS LINE, 1¼" DIAMETER (UNLESS OTHERWISE NOTED)
- WAT — PROPOSED WATERLINE, TEE & THRUST BLOCK, INLINE VALVE, FIRE HYDRANT, REDUCER, WATER METER, BLOW-OFF
- 8"W — EXISTING WATERLINE, TEE & THRUST BLOCK, INLINE VALVE, FIRE HYDRANT, REDUCER, WATER METER, BLOW-OFF
- 8" SS — PROPOSED SANITARY SEWER, MANHOLE, SERVICE CONNECTION, WYE, SPECIAL PIPE & PLUG
- 8" SS — EXISTING SANITARY SEWER MANHOLE, SERVICE CONNECTION, WYE, SPECIAL PIPE & PLUG

* ALL WATER SERVICES PERPENDICULAR TO MAIN

- 8"W — VALVE, PROPOSED, RISER, AND EXISTING RISER IRRIGATION LINE, TEE & THRUST BLOCK (pressure lines only), INLINE
- TOP BACK OF CURB / EDGE OF GUTTER — CURB INLET W/DIRECTION OF FLOW
- STORM SEWER, INLET, MANHOLE, OUTFALL (SMALLER THAN 30")
- BENCHMARK LOCATION

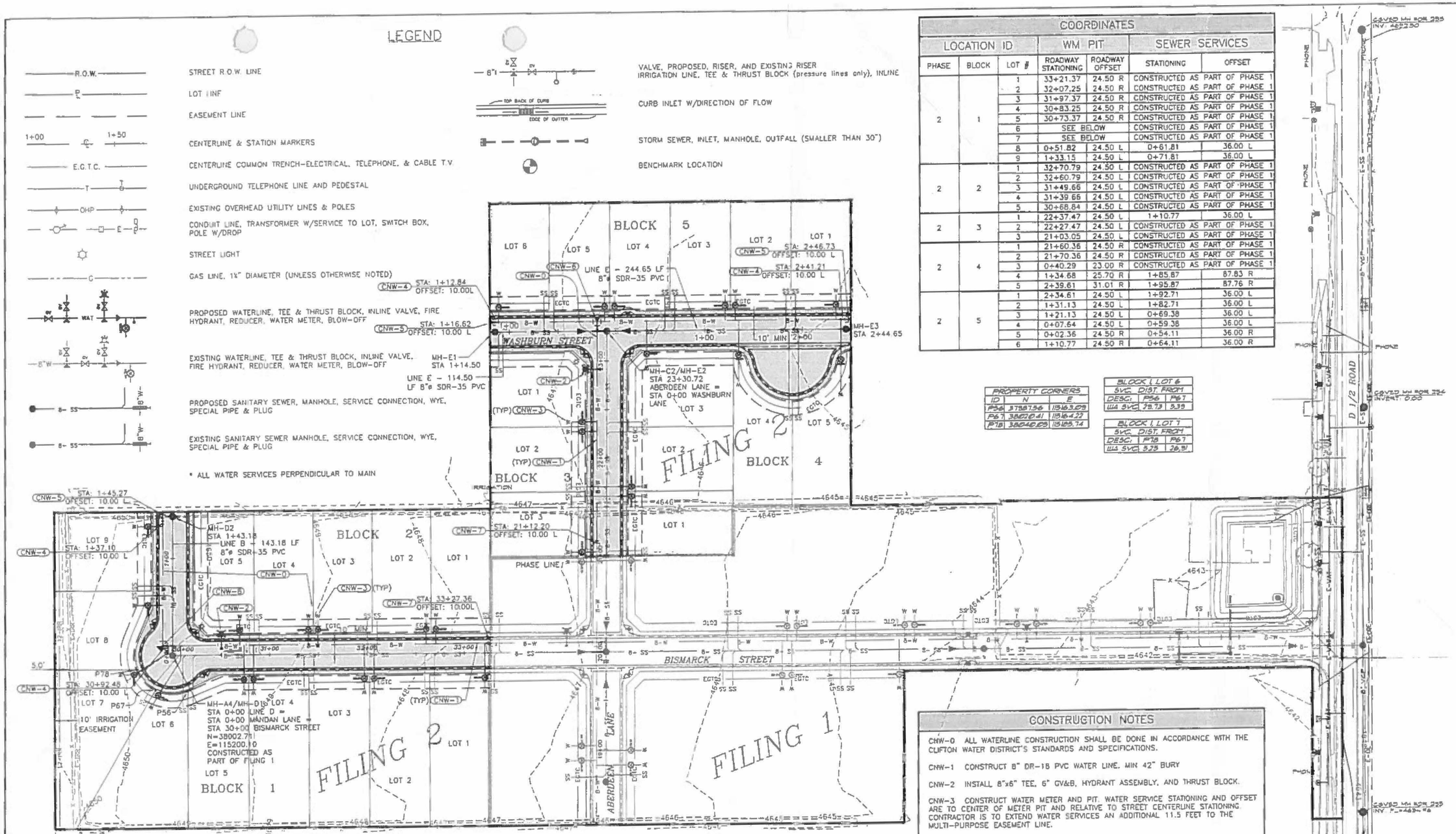
COORDINATES

LOCATION ID			WM PIT		SEWER SERVICES	
PHASE	BLOCK	LOT #	ROADWAY STATIONING	ROADWAY OFFSET	STATIONING	OFFSET
2	1	1	33+21.37	24.50 R	CONSTRUCTED AS PART OF PHASE 1	
		2	32+07.25	24.50 R	CONSTRUCTED AS PART OF PHASE 1	
		3	31+97.37	24.50 R	CONSTRUCTED AS PART OF PHASE 1	
		4	30+83.25	24.50 R	CONSTRUCTED AS PART OF PHASE 1	
		5	30+73.37	24.50 R	CONSTRUCTED AS PART OF PHASE 1	
		6	SEE BELOW		CONSTRUCTED AS PART OF PHASE 1	
		7	SEE BELOW		CONSTRUCTED AS PART OF PHASE 1	
		8	0+51.82	24.50 L	0+61.81	36.00 L
		9	1+33.15	24.50 L	0+71.81	36.00 L
2	2	1	32+70.79	24.50 L	CONSTRUCTED AS PART OF PHASE 1	
		2	32+60.79	24.50 L	CONSTRUCTED AS PART OF PHASE 1	
		3	31+49.66	24.50 L	CONSTRUCTED AS PART OF PHASE 1	
		4	31+39.66	24.50 L	CONSTRUCTED AS PART OF PHASE 1	
		5	30+68.84	24.50 L	CONSTRUCTED AS PART OF PHASE 1	
2	3	1	22+37.47	24.50 L	1+10.77	36.00 L
		2	22+27.47	24.50 L	CONSTRUCTED AS PART OF PHASE 1	
		3	21+03.05	24.50 L	CONSTRUCTED AS PART OF PHASE 1	
2	4	1	21+60.36	24.50 R	CONSTRUCTED AS PART OF PHASE 1	
		2	21+70.36	24.50 R	CONSTRUCTED AS PART OF PHASE 1	
		3	0+40.29	23.00 R	CONSTRUCTED AS PART OF PHASE 1	
		4	1+34.68	25.70 R	1+85.87	87.83 R
		5	2+39.61	31.01 R	1+95.87	87.76 R
2	5	1	24.34.61	24.50 L	1+92.71	36.00 L
		2	1+31.13	24.50 L	1+82.71	36.00 L
		3	1+21.13	24.50 L	0+69.38	36.00 L
		4	0+07.64	24.50 L	0+59.38	36.00 L
		5	0+02.36	24.50 R	0+54.11	36.00 R
		6	1+10.77	24.50 R	0+64.11	36.00 R

PROPERTY CORNERS		
ID	N	E
P56	37887.56	115163.09
P67	38007.41	115164.22
P78	38040.09	115185.74

BLOCK 1 LOT 6		
SVC. DIST. FROM		
DESC:	P56	P67
W.A SVC	79.73	9.39

BLOCK 1 LOT 7		
SVC. DIST. FROM		
DESC:	P78	P67
W.A SVC	5.25	26.91



PROJECT BENCHMARK:
INTERSECTION OF D 1/2 AND 31 ROADS
MESA CNTY BRASS CAP NE CORNER OF
NE 1/4, SE 1/4, SEC 16
N: 36806.17
E: 115844.96
ELEV. 4643.73

(IN FEET)
1 inch = 50 ft.

CONTOUR INTERVAL: 1'

CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

CONSTRUCTION NOTES

CNW-0 ALL WATERLINE CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE CLIFTON WATER DISTRICT'S STANDARDS AND SPECIFICATIONS.

CNW-1 CONSTRUCT 8" DR-18 PVC WATER LINE, MIN 42" BURY

CNW-2 INSTALL 8"x6" TEE, 6" GV&B, HYDRANT ASSEMBLY, AND THRUST BLOCK.

CNW-3 CONSTRUCT WATER METER AND PIT. WATER SERVICE STATIONING AND OFFSET ARE TO CENTER OF METER PIT AND RELATIVE TO STREET CENTERLINE STATIONING. CONTRACTOR IS TO EXTEND WATER SERVICES AN ADDITIONAL 11.5 FEET TO THE MULTI-PURPOSE EASEMENT LINE.

CNW-4 INSTALL 8" GV&B.

CNW-5 INSTALL BLOWOFF PLUG & THRUSTBLOCK

CNW-6 INSTALL 8"x8"x8" TEE, (1)-8" GV&B & THRUST BLOCK.

CNW-7 REMOVE PLUG & BLOWOFF AND CONNECT TO EXISTING WATER LINE.

CNW-8 INSTALL 90° BEND AND THRUST BLOCK.

UTILITIES WILL BE PROVIDED TO THE SITE BY THE FOLLOWING VENDORS

GAS AND ELECTRIC:	XCEL ENERGY
WATER:	CLIFTON WATER DISTRICT
CABLE TELEVISION:	AT&T
SANITARY SEWER:	CENTRAL GRAND VALLEY SANITATION DISTRICT
TELEPHONE:	QWEST
IRRIGATION	GRAND VALLEY IRRIGATION DISTRICT
DRAINAGE	GRAND JUNCTION DRAINAGE DISTRICT

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE
CENTRAL GRAND VALLEY SANITATION DISTRICT
Date

INITIAL ACCEPTANCE
CENTRAL GRAND VALLEY SANITATION DISTRICT
Date

ACCEPTED FOR CONSTRUCTION FOR ONE YEAR FROM THIS DATE.
Acceptance of these plans does not relieve the developer, contractor, or the engineer from conformance with the City of Grand Junction Standard Specifications.
City of Grand Junction Engineering Division Representative — Date

ACCEPTED AS CONSTRUCTED
City of Grand Junction Engineering Division Representative — Date

APPROVED FOR CONSTRUCTION
CLIFTON WATER DISTRICT
Date

ACCEPTED AS CONSTRUCTED
CLIFTON WATER DISTRICT
Date

DWG	BY	DESCRIPTION	DATE	REVISION

CITY OF GRAND JUNCTION
G & R WEST, LLC

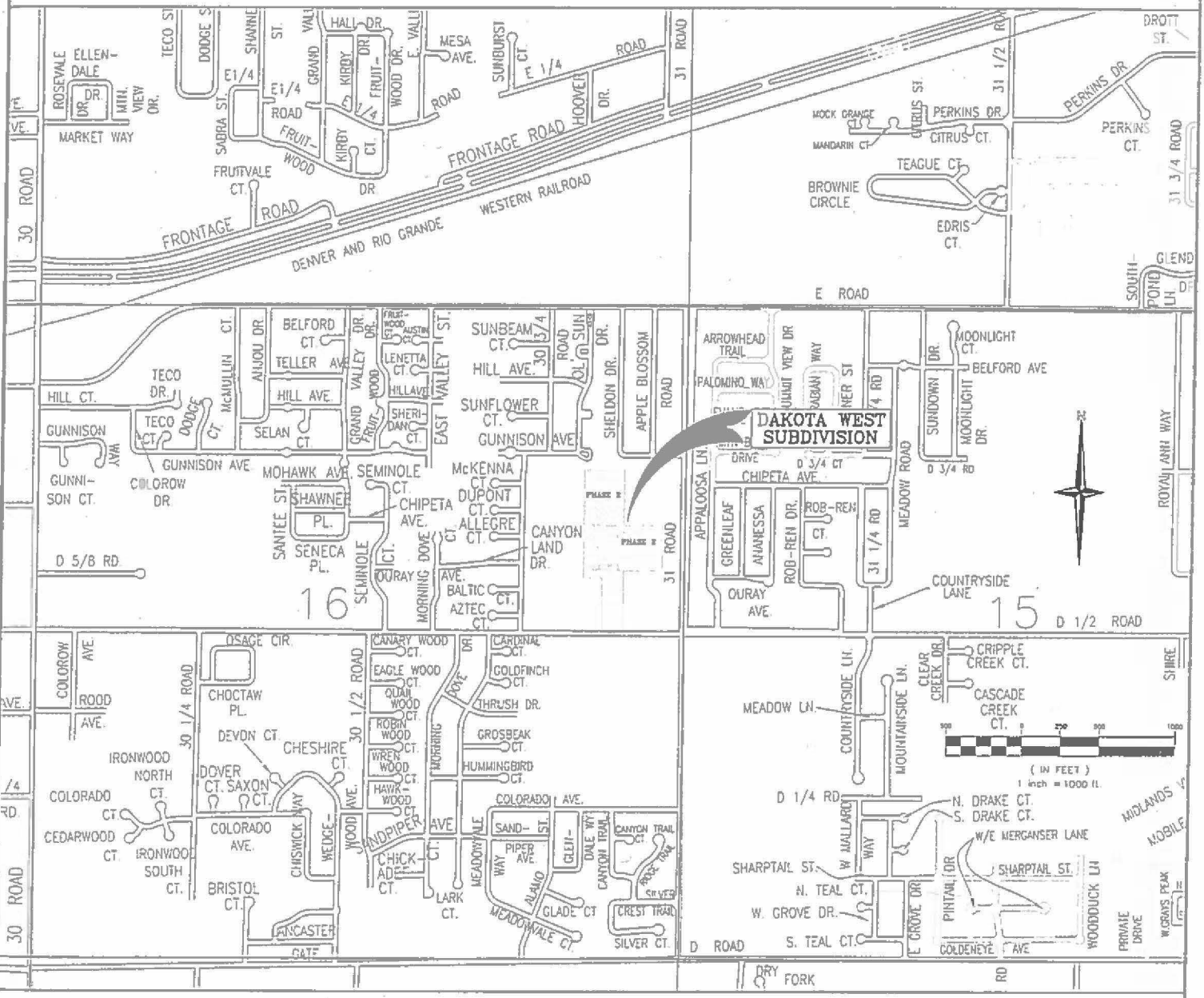
UTILITY/COMPOSITE PLAN FOR DAKOTA WEST SUBDIVISION

THOMPSON-LANGFORD CORP.
ENGINEERS AND LAND SURVEYORS
520 25 1/2 RD., SUITE B210
GRAND JUNCTION, COLORADO
PH. (970) 243-8067
FAX (970) 241-2845
tlc@tlcwest.com

DRAWN BY: MH
CHECKED BY: JWM

DATE: April 23, 2003
SCALE: Horiz. 1" = 50'
Project No: 0543-001
SHEET NO: 3 OF 12

LOCATION MAP FOR DAKOTA WEST



THOMPSON-LANGFORD CORP.
529 25 1/2 RD., SUITE B210
GRAND JUNCTION, COLORADO
PH. (970) 243-6067

DAKOTA WEST SUBDIVISION PHASE 2

BOOK 2584 PAGE 668 | BOOK 2522 PAGE 826 | BOOK 2711 PAGE 720

S00°03'13"W 568.56'

BOOK 2288 PAGE 679

WASHBURN STREET

ABERDEEN LANE

MANDAN LANE

BISMARCK STREET

BOOK 2670 PAGE 505

VOEGELY MINOR SUBDIVISION
PLAT BOOK 16 PAGE 181

PONDS ORCHARD SUBDIVISION FILING 3, PLAT BOOK 11 PAGE 171

OLSON SUBDIVISION
PLAT BOOK 13 PAGE 45-46-45

DAKOTA WEST SUBDIVISION PHASE 1

BOOK 559 PAGE 348

BOOK 1998 PAGE 185

2943-161-00-217

N00°08'12"E 448.74'

S00°08'12"W 120.23'

S00°08'12"W 151.68'

S00°08'12"W 450.20'

N00°08'12"E 119.50'

S00°08'12"W 188.88'

N00°08'12"E 285.55'

S00°08'12"W 86.45'

BISMARCK S00°08'12"W 1.53'

LINE/CURVE TABLE					
LINE	ARC	RADIUS	DELTA	CHORD BEARING	CHORD
L1	19.18'			S44°41'18"E	
L2	19.18'			N44°57'42"E	
L3	19.18'			S45°18'42"W	
C1	19.15'	13.50'	81°15'38"	S40°20'49"E	17.58'
C2	67.16'	48.00'	80°09'45"	N40°53'45"W	61.81'
C3	68.75'	48.00'	82°03'55"	N40°13'05"E	63.02'
C4	17.55'	13.50'	74°29'08"	S44°00'28"W	16.34'
C5	1.56'	13.50'	6°37'42"	S03°27'03"W	1.56'
L4	19.18'			S45°02'18"E	
L5	60.76'			S00°08'12"W	
L6	26.00'			N89°51'48"W	
L7	16.00'			N00°08'12"E	
C6	59.69'	38.00'	90°00'00"	N44°51'48"W	53.74'
C7	59.54'	38.00'	89°46'30"	N45°01'27"E	53.63'
C8	45.08'	38.00'	67°58'32"	S56°06'02"E	42.49'
C9	15.96'	13.50'	67°45'02"	S55°59'17"E	15.05'
L8	27.10'			S89°51'48"E	

LEGEND

- FOUND BRASS CAP MESA COUNTY SURVEY MARKER
- FOUND 3-1/4" ALUM. CAP
- SET #5 REBAR/CAP PLS 18478 IN CONCRETE
- SET #5 REBAR/CAP PLS 18478
- FOUND PIN & ALUMINUM CAP AS NOTED
- FOUND PIN & PLASTIC CAP AS NOTED

GRAPHIC SCALE 1"=50'
0 50 100 150

DENNIS RAY SHELLHORN PROFESSIONAL LAND SURVEYOR 18478 STATE OF COLORADO

NOTE:
A foundation observation report by a licensed Engineer is required for building construction.

BASIS OF BEARINGS STATEMENT: Bearings are based on grid north of the Mesa County Local Coordinate System, locally determined by GPS observations on the brass cap Mesa County survey marker at the Center-East one-sixteenth corner, and the brass cap Mesa County Survey at the East one-quarter corner of Section 16. The measured bearing of this line is N89°56'12"E.

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 the certification shown hereon.

SEE SHEET 1 FOR SURVEYOR'S CERTIFICATE

DAKOTA WEST SUBDIVISION PHASE 2
G & R WEST LLC

SECTION SE1/4 NE1/4 S.16 | TWNSHP: 1 South | RNGE: 1 East | MERIDIAN: UTE

THOMPSON-LANGFORD CORPORATION
529 25 1/2 ROAD - B-210 (970) 245-6087
Grand Junction CO 81505 tlo@tlowest.com
S:\Survey\0543 G&R West\plat942.pro

Not OK, Frontyard setback

No - Front yard setback

Not OK Front Yard Setback

OK - Because it's a backyard

Don't Know yet.

Driveway needs to be placed as far North as to avoid site distance problems.

Fences in R.O.W. need Revocable permit.

OK for now if revocable is granted. Once fence comes down then front yard setbacks apply

Fence in Right-of-way

Height of fence in front yard setback

question as to setback distance - but it looks OK at this point in time.

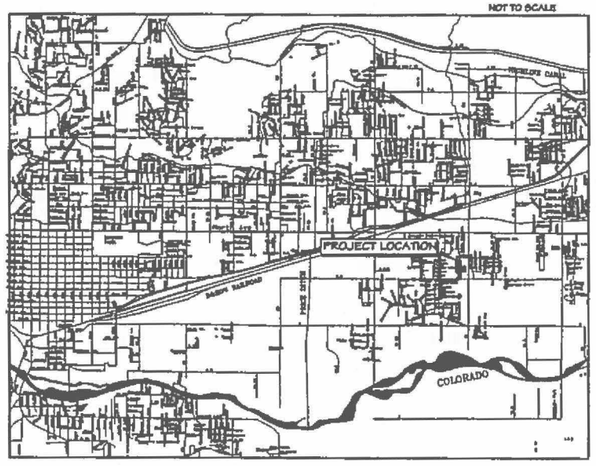
DAKOTA WEST SUBDIVISION PHASE 2

A REPLAT OF LOTS 10 AND 12, BLOCK 1 OF DAKOTA WEST SUBDIVISION
CITY OF GRAND JUNCTION, MESA COUNTY, COLORADO

FP-2003-079
RMF-5
SIF 292.00
TCP 500.00

VICINITY MAP

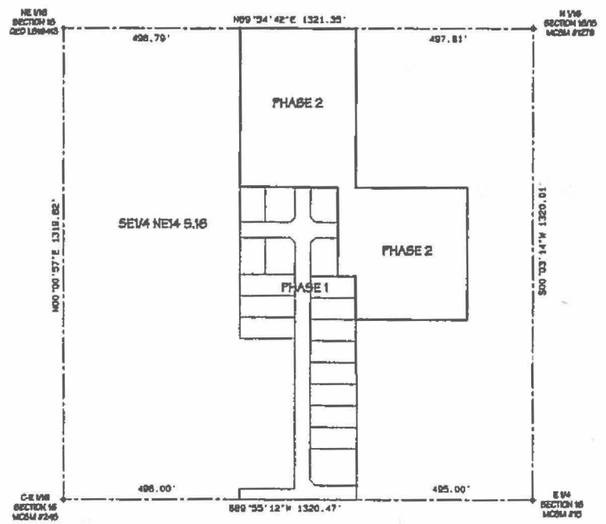
NOT TO SCALE



NOTES:

* Irrigation easement located on the north boundary of subdivision to be granted by separate instrument.

CONTROL DIAGRAM



SCALE 1"=200'

LAND USE SUMMARY

LOTS	5.001 acres	79.5%
STREETS	1.289 acres	20.5%
TOTAL	6.290 acres	100%

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 the certification shown hereon.

STATEMENT OF OWNERSHIP AND DEDICATION

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned, G&K West, LLC, a Colorado Limited Liability Company, is the owner of that real property in the County of Mesa, State of Colorado, described at Reception No's 2056192, 2060567, 2064788 and 2122545 of the records of the Mesa County Clerk and Recorder, and as shown on the accompanying plat, said property being more particularly described as follows:

Lot 10 Block 1, Dakota West Subdivision
AND
Lot 12 Block 1, Dakota West Subdivision, according to the plat thereof recorded at Reception No. 2129444 in the office of the Mesa County Clerk and Recorder

That said Owner has by these presents laid out, platted and subdivided the above described real property as shown hereon, and designates the same as DAKOTA WEST SUBDIVISION PHASE 2, a subdivision of the City of Grand Junction, Mesa County, Colorado, and does hereby make the following dedications and grants:

* All streets and roads shown hereon, being Aberdeen Lane, Bismarck Street, and Washburn Street to the full width of their platted rights-of-way are hereby dedicated to the City of Grand Junction for the use of the public forever as public streets, and for drainage and underground utility purposes.

* All multi-purpose easements dedicated to the City of Grand Junction for the use of City approved 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, irrigation lines, drainage, and also for the installation and maintenance of traffic control facilities, street lighting, trees and grade structures.

* All drainage easements are to be granted by separate instrument to the Dakota West Homeowners Association as perpetual easements for conveyance of runoff water which originates from the property hereby platted, subject to the terms, conditions and restrictions set forth in said grant. Grant recorded in Book 3395 at Page 983.

* Irrigation easement reserved by the owners for the benefit of adjoining properties.

* All easements include the right of ingress and egress on, along, over, under, 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/ owners shall utilize the same in a reasonable and prudent manner. Furthermore, the owners of said lots hereby platted shall not burden or overburden said easements by erecting or placing any improvements thereon which may prevent reasonable ingress and egress to and from the easement.

Said owners further certify that all lienholders are represented hereon.

IN WITNESS WHEREOF said owners have caused their names to be hereunto subscribed.

G & K West, LLC, a Colorado Limited Liability Company.

Robert G. Cantrell, Managing Partner

State of)
County of)

The foregoing Statement of Ownership and Dedication was acknowledged before me by Robert G. Cantrell as Managing Partner of G & K West, LLC this 23rd day of July, 2003 for the aforementioned purposes.

Notary Public

My commission expires: 02/17/06

LIENHOLDERS RATIFICATION OF PLAT

The undersigned hereby certifies that it is a holder of a security interest upon the property hereon described and does hereby join in and consent to the dedication of the land described in saiddedication by the owners thereof and agrees that its security interest which is recorded in Book 3371 at Page 854 of thepublic records of Mesa County, Colorado shall be subordinated to the dedications shown hereon.

In witness whereof, the said corporation has caused these presents to be signed by its Vice President with the authority of its Board of Directors, this 23rd day of 2003.

By: Michael Mast For: Bank of Colorado
(Title) Vice President

State of Colorado)
County of Mesa)

The foregoing Lienholder's Ratification of Plat was acknowledged before me by Michael Mast, Vice President of Bank of Colorado, a Vice President this 23rd day of July, 2003 for the aforementioned purposes.

Notary Public

My commission expires: 01-25-06

My Commission Expires January 25, 2006

DECLARATION OF COVENANTS

This property is subject to the terms of the covenants, conditions, and restrictions contained in an instrument recorded in Book 3395 at Page 970

TITLE CERTIFICATION

We, Meridian Land Title, L.L.C., a title insurance company,as duly licensed in the State of Colorado, hereby certify that we have examined the title to the hereon described property, that we find the title to the property is vested to G&K West, LLC, a Colorado Limited Liability Company; That the current taxes have been paid; That all mortgages not satisfied or released of record nor otherwise terminated by law are shown hereon and that there are no other encumbrances of record; That all easements, reservations and rights of way of record are shown hereon.

DATE: JULY 23, 2003 BY: LWV LAWRENCE D. VENT
NAME AND TITLE TITLE EXAMINER
Meridian Land Title, L.L.C.

CITY APPROVAL

This plat of DAKOTA WEST SUBDIVISION PHASE 2, a subdivision of the City of Grand Junction, County of Mesa, State of Colorado, was approved this 2nd day of July, 2003.

City Manager Harry S. Butler Mayor

CLERK AND RECORDER'S CERTIFICATE

State of Colorado)
County of Mesa)ss

This plat was accepted for filing in the office of the Clerk and Recorder of Mesa County, Colorado, at 4:15 o'clock P. M., on this 24th day of July, 2003, A.D., and was recorded at Reception No. 2136663, in Plat Book 19 at Page 375, Drawer No. OO-19 Fees $20.00+$1.00

By: _____ Clerk and Recorder _____ Deputy

SURVEYOR'S STATEMENT

I, Dennis R. Shellhorn, a registered Professional Land Surveyor in the State of Colorado, do hereby state that the accompanying plat of DAKOTA WEST SUBDIVISION PHASE 2, a subdivision of a part of the City of Grand Junction, Colorado, has been prepared by me and/or 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 to the best of my knowledge and belief. This certification is only applicable to the survey data hereon, and does not constitute any warranty or opinion as to ownership, lienholders, or quality of title.

Dennis R. Shellhorn, 7/22/03
Colorado

This survey does not constitute a title search by this surveyor or Thompson-Langford Corporation. All information regarding ownership, rights-of-way, easements of record, adjoiners, and other documents that may affect the quality of title to this property is from a title commitment prepared by First American Heritage Title Company, No. 00145173, dated March 25, 2002, Meridian Land Title, LLC, No. 85910, dated March 20, 2002, and Meridian Land Title, LLC, No. 86248, dated May 1, 2002.

NOTE:

A foundation observation report by a licensed Engineer is required for building construction.

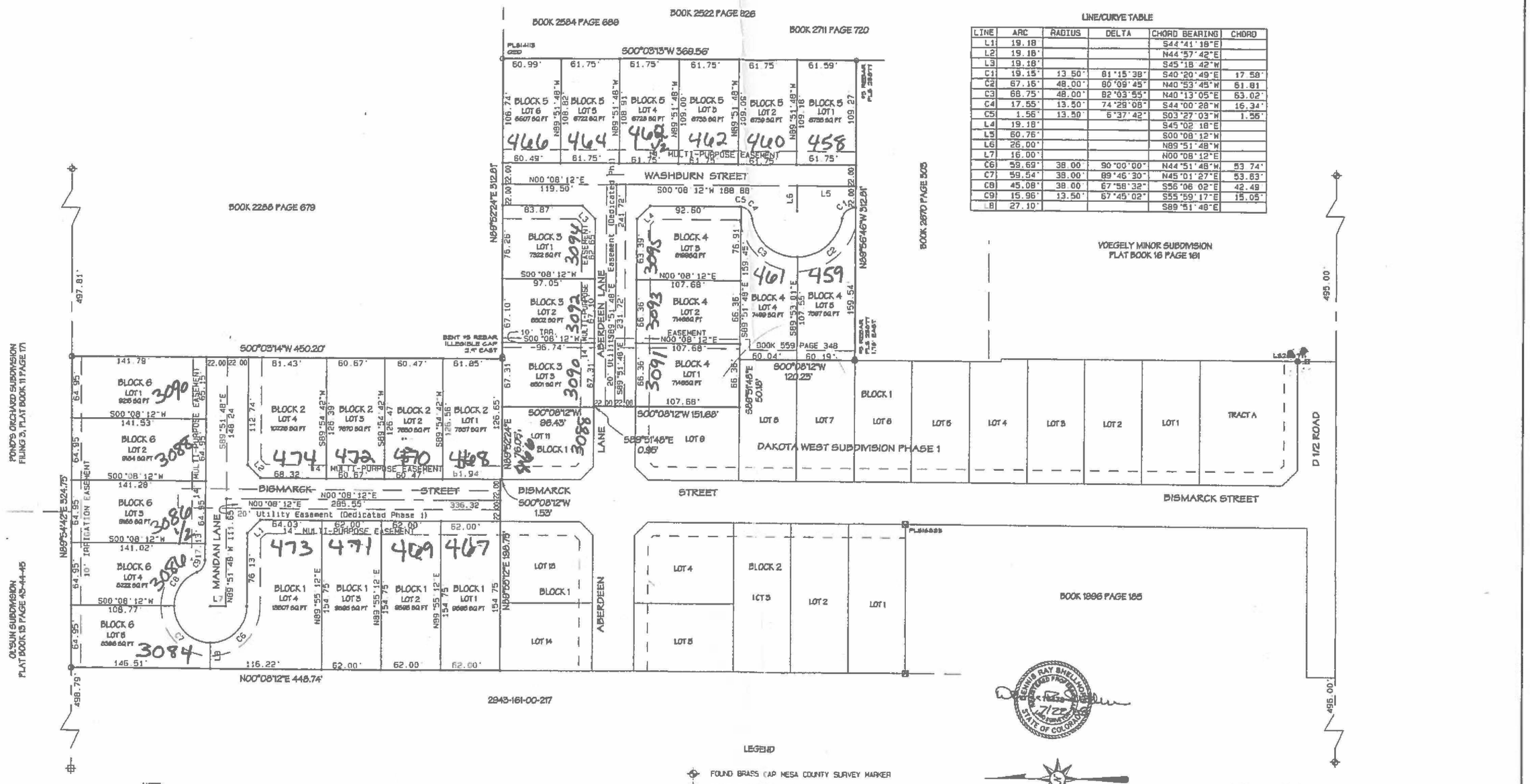
DAKOTA WEST SUBDIVISION PHASE 2
G & R WEST LLC

SECTION SE1/4 NE1/4 S 16	TWSP: 1 South	RNGE: 1 East	MERIDIAN:

THOMPSON-LANGFORD CORPORATION
529 25 1/2 ROAD - B-210 (970) 245-6067
Grand Junction CO 81505 tlc@tlcwest.com

S:\Survey\0543 G&R West\plat\PH2.pro			Job No 0543-002
Drawn: bkb	Checked: drs	Date: Jul 22, 2003	Sheet 1 of 2

DAKOTA WEST SUBDIVISION PHASE 2



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DAKOTA WEST SUBDIVISION PHASE 2

G & R WEST LLC

SECTION SE1/4 NE1/4 S 16 | TWNSHP: 1 South | RNGE: 1 East | MERIDIAN: UTE

THOMPSON-LANGFORD CORPORATION
529 25 1/2 ROAD - B-210 (970) 245-6067
Grand Junction CO 81505 tlo@tlowest.com

S:\Survey\0543 G&R West\platPH2.pro | Job No. 0543-002

Drawn: bkb | Checked: drs | Date: Jul 22, 2003 | Sheet 2 of 2

CITY OF grand junction COLORADO
serving the community together

COMMUNITY DEVELOPMENT

FP-2003-079

June 15, 2004

Rob and Gina Cantrell
G & R West, LLC

RE: Fencing in dedicated right-of-way / Fences over the allowed height in the front-yard setback

Dear Rob & Gina:

For permission to allow the current illegal fencing to remain in the Dakota West Subdivision, two permits will need to be applied for: 1) A Revocable Permit for the fencing to remain in and across dedicated rights-of-way; 2) a variance to allow over height fencing to remain in the front-yard setback until the fencing in the right-of-way is removed. I am enclosing both checklists that are required for these processes.

The first process will be the Variance, which will be reviewed by the Planning Commission. If the variance is granted, Staff will recommend that it be conditioned. When the fences in the right-of-way are to be removed, the fences in the front-yard setback will have to be removed or lowered to meet the current Code requirements for fencing in the front-yard setback.

The second process will be the Revocable Permit, which will be reviewed by the City Council. You can submit the materials for review at the same time, but they will be two separate processes.

As I mentioned to you earlier, there is no precedent for issuing a Revocable Permit for fencing across a dedicated right-of-way. If the Variance for the fence in the front-yard setback is denied by the Planning Commission, the process will stop there and the Revocable Permit will not proceed to the City Council.

Should you have any further questions regarding this process please feel free to contact me at 256-4033.

Sincerely,

Lori V. Bowers

Lori V. Bowers, Senior Planner
Community Development Department

FEE $10.00

PERMIT # 12211

FENCE PERMIT

GRAND JUNCTION COMMUNITY DEVELOPMENT DEPARTMENT

☞ THIS SECTION TO BE COMPLETED BY APPLICANT ☜

PROPERTY ADDRESS 3088 D½ Rd

TAX SCHEDULE NO 2943-161-00-187

PROPERTY OWNER G+R west Builders Gina + Rob Contrel

OWNER'S PHONE (970) 255-8164

OWNER'S ADDRESS _____

CONTRACTOR Chris's Landscaping

CONTRACTOR'S PHONE (970) 640-0244

CONTRACTOR'S ADDRESS 528 N 26th st.

FENCE MATERIAL Cedar Fence

FENCE HEIGHT 6 Ft /30" in front 20'

✍ PLOT PLAN

See attached

✍ **Plot plan must show property lines and property dimensions, all easements, all rights-of-way, all structures, all setbacks from property lines, & fence height(s). NOTE: PROPERTY LINE IS LIKELY ONE FOOT OR MORE BEHIND THE SIDEWALK.**

☞ THIS SECTION TO BE COMPLETED BY COMMUNITY DEVELOPMENT DEPARTMENT STAFF ☜

ZONE RMF-5

SPECIAL CONDITIONS front 20' will be 30" then 6' from there back.

SETBACKS: Front 20' from property line (PL) or _____ from center of ROW, whichever is greater.

Side 0' from PL Rear 0' from PL

Fences exceeding six feet in height require a separate permit from the City/County Building Department. A fence constructed on a corner lot that extends past the rear of the house along the side yard or abuts an alley requires approval from the City Engineer (Section 4.1.J of the Grand Junction Zoning and Development Code).

The owner/applicant must correctly identify all property lines, easements, and rights-of-way and ensure the fence is located within the property's boundaries. Covenants, conditions, restrictions, easements and/or rights-of-way may restrict or prohibit the placement of fence(s). The owner/applicant is responsible for compliance with covenants, conditions, and restrictions which may apply. Fences built in easements may be subject to removal at the property owner's sole and absolute expense. Any modification of design and/or material as approved in this fence permit must be approved, in writing, by the Community Development Department Director.

I hereby acknowledge that I have read this application and the information and plot plan are correct; I agree to comply with any and all codes, ordinances, laws, regulations, or restrictions which apply. I understand that failure to comply shall result in legal action, which may include but not necessarily be limited to removal of the fence(s) at the owner's cost.

Applicant's Signature Robert Lawhe MGR Date _____

Community Development's Approval Tamra Allen Date 2/12/03

City Engineer's Approval (if required) _____ Date _____

PRELIMINARY PLAN
FOR
DAKOTA WEST SUBDIVISION

G & R WEST, LLC
2650 EL CORONA DR.
GRAND JUNCTION, CO 81501

NOTE: FOR DRAINAGE FLOW PATTERNS SEE DRAINAGE MAP ATTACHED TO ACCOMPANYING "PRELIMINARY DRAINAGE STUDY".

AREA SUMMARY			
LOTS (45)	8.22	ACRES	74.32%
RIGHTS-OF-WAY	2.51	ACRES	22.70%
TRACT "A"	0.33	ACRES	2.98%
TOTAL:	11.06	ACRES	100%

UTILITIES WILL BE PROVIDED TO THE SITE BY THE FOLLOWING VENDORS

GAS AND ELECTRIC:	XCEL ENERGY
WATER:	CLIFTON WATER DISTRICT
CABLE TELEVISION:	AT&T
SANITARY SEWER:	CENTRAL GRAND VALLEY SEWER DISTRICT
TELEPHONE:	AT&T
IRRIGATION:	GRAND VALLEY IRRIGATION DISTRICT
DRAINAGE:	GRAND JUNCTION DRAINAGE DISTRICT

D 1/2 ROAD
HALF STREET IMPROVEMENTS

URBAN RESIDENTIAL STREET

PHASE 1

PHASE 2

OPEN

CITY OF GRAND JUNCTION

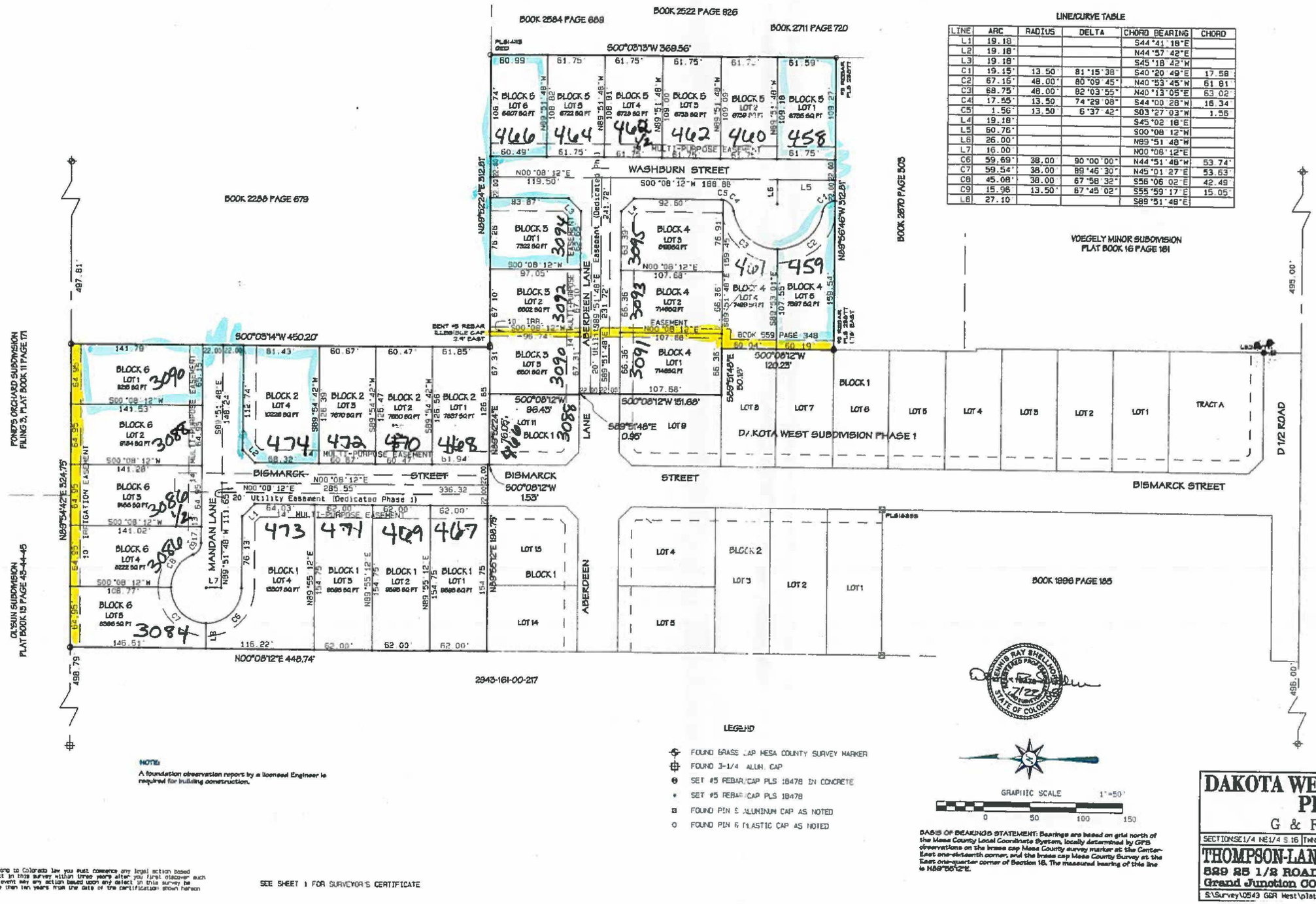
G & R WEST, LLC

PRELIMINARY PLAN FOR

THOMPSON-LANGFORD CORP.
ENGINEERING AND LAND SURVEYING

October

DAKOTA WEST SUBDIVISION PHASE 2



LINE/CURVE TABLE

LINE	ARC	RADIUS	DELTA	CHORD BEARING	CHORD
L1	19.18'			S44°41'18"E	
L2	19.18'			N44°57'42"E	
L3	19.18'			S45°18'42"W	
C1	19.15'	13.50'	81°15'38"	S40°20'49"E	17.58'
C2	67.15'	48.00'	80°09'45"	N40°53'45"W	61.81'
C3	68.75'	48.00'	82°03'55"	N40°13'05"E	63.02'
C4	17.55'	13.50'	74°29'08"	S44°00'28"W	16.34'
C5	1.56'	13.50'	6°37'42"	S03°27'03"W	1.56'
L4	19.18'			S45°02'18"E	
L5	60.76'			S00°08'12"W	
L6	26.00'			N89°51'48"W	
L7	16.00'			N00°08'12"E	
C6	59.69'	38.00'	90°00'00"	N44°51'48"W	53.74'
C7	59.54'	38.00'	89°46'30"	N45°01'27"E	53.63'
C8	45.08'	38.00'	67°58'32"	S56°06'02"E	42.49'
C9	15.96'	13.50'	67°45'02"	S55°59'17"E	15.05'
L8	27.10'			S89°51'48"E	

NOTE:
A foundation observation report by a licensed Engineer is required for building construction.

LEGEND

- FOUND BRASS CAP MESA COUNTY SURVEY MARKER
- FOUND 3-1/4" ALUM. CAP
- SET #5 REBAR/CAP PLS 18478 IN CONCRETE
- SET #5 REBAR/CAP PLS 18478
- FOUND PIN & ALUMINUM CAP AS NOTED
- FOUND PIN & PLASTIC CAP AS NOTED

GRAPHIC SCALE 1"=50'
0 50 100 150

BASIS OF BEARINGS STATEMENT: Bearings are based on grid north of the Mesa County Local Coordinate System, locally determined by GPS observations on the brass cap Mesa County survey marker at the Center-East one-sixteenth corner, and the brass cap Mesa County Survey at the East one-quarter corner of Section 16. The measured bearing of this line is N89°56'12"E.

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 the certification shown hereon

SEE SHEET 1 FOR SURVEYOR'S CERTIFICATE

DAKOTA WEST SUBDIVISION PHASE 2

G & R WEST LLC

SECTION SE1/4 NE1/4 S.16 | TWNSHP: 1 South | RNGE: 1 East | MERIDIAN: UTE

THOMPSON-LANGFORD CORPORATION
529 25 1/2 ROAD - B-210 (970) 243-6067
Grand Junction CO 81505 tlc@tlcwest.com

S:\Survey\0543 G&R West\plat PH2.pro | Job No. 0543-002

DAKOTA WEST SUBDIVISION

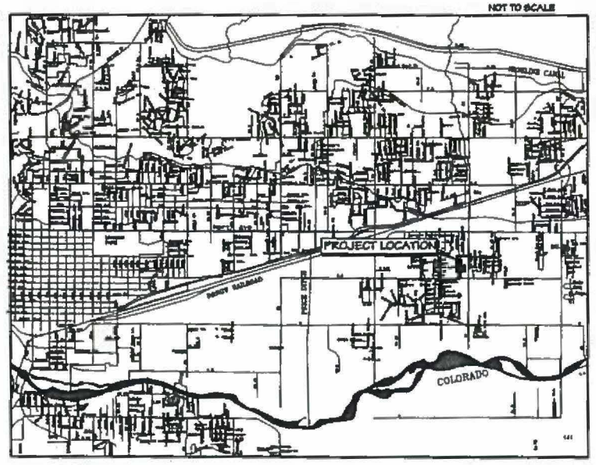
FP-2003-038 RMF-5

SIF 292.00
TCP 500.00

OF PARCELS SITUATED IN THE SE1/4 NE1/4 S.16, T.1 S., R.1 E., UTE MERIDIAN
CITY OF GRAND JUNCTION, MESA COUNTY, COLORADO

VICINITY MAP

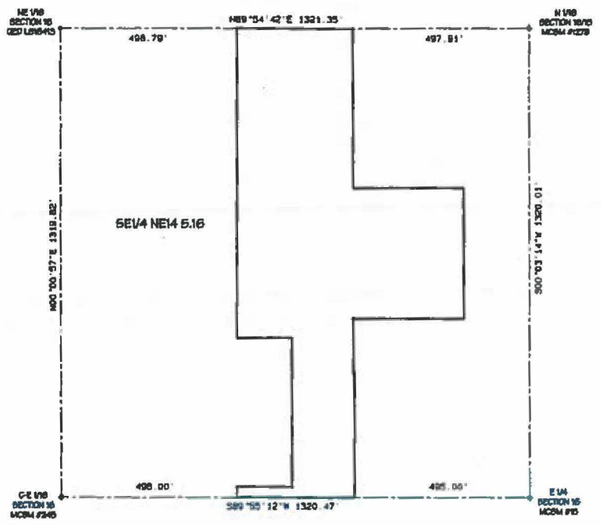
NOT TO SCALE



NOTES:

* Irrigation easement located on the north boundary of subdivision to be granted by separate instrument.

CONTROL DIAGRAM



SCALE 1"=200'

This survey does not constitute a title search by this surveyor or Thompson-Langford Corporation. All information regarding ownership, rights-of-way, easements of record, adjoiners, and other documents that may affect the quality of title to this property is from a title commitment prepared by First American Heritage Title Company, No. 64413, dated June 12, 2003.

NOTE:
A foundation observation report by a licensed Engineer is required for building construction.

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 the certification shown hereon.

LAND USE SUMMARY

LOTS	9.407 acres	85.1%
TRACTS	0.301 acres	2.7%
STREETS	1.353 acres	12.2%
TOTAL	11.061 acres	100%

STATEMENT OF OWNERSHIP AND DEDICATION

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned, G&R West, LLC, a Colorado Limited Liability Company, is the owner of that real property in the County of Mesa, State of Colorado, described at Reception No's. 2058188, 2060567, 2064765 and 2122545 of the records of the Mesa County Clerk and Recorder, and as shown on the accompanying plat, said property being more particularly described as follows:

Beginning at a point which bears West 486 feet from the East Quarter Corner of Section 16, Township 1 South, Range 1 East of the Ute Meridian;
thence West 125 feet;
thence North 348.48 feet;
thence East 121 feet;
thence South 346.48 feet to the Point of Beginning.
EXCEPT road right of way on the South.
AND
Beginning 486.0 feet East of the Southwest Corner of the SE1/4 of the NE1/4 of said Section 16;
thence North 00°19'00" East 1320.01 feet to the North line of said SE1/4 of the NE1/4 of Section 16;
thence East 324.75 feet;
thence South 971.52 feet;
thence West 125.0 feet;
thence South 348.48 feet;
thence West 204.75 feet to the Point of Beginning;
EXCEPT Beginning at the Southwest Corner of said SE1/4 of the NE1/4, whose South line bears South 90°00'00" East with all bearings contained herein to be relative thereto;
thence South 90°00'00" East 486.0 feet;
thence North 00°19'00" East 30.0 feet for the true Point of Beginning;
thence North 00°19'00" East 417.0 feet;
thence South 90°00'00" East 154.75 feet;
thence South 00°19'00" West 417.0 feet;
thence North 90°00'00" West 154.75 feet the the true Point of Beginning.
AND
Beginning at a point being 567.00 feet N00°00'00"E and 156.00 feet N90°00'00"W of the SE corner of the NE1/4, Section 16, T1S, R1E, U.M. and considering the East line of the NE1/4 Section 16, Township 1 South, Range 1 East, U.M. to bear N00°00'00"E and all bearings contained herein to be relative thereto;
thence S00°00'00"E 67.00 feet to the most northerly NEcorner og the land described in Bo'k 2322 at Page 826;
thence N90°00'00"W 310.00 feet;
thence N00°00'00"E 870.00 feet;
thence N90°00'00"E 310.00 feet;
thence S00°00'00"E 503.00 feet to the Point of Beginning.

AND Beginning at the Southwest corner of a parcel of land described in a warranty deed recorded in Book 3192 at Page 514 of the Mesa County records;
Thence along the extension of the South line of that parcel described in said Book 3192 at Page 514, North 89°56'46" West, a distance of 2.81 feet to the East line of a parcel of land described in a warranty deed recorded in Book 3216 at Pages 158/159;
Thence along the East line of that parcel described in said Book 3216 at Pages 158/159, North 00°03'14" East, a distance of 568.57 feet to the South line of a parcel of land described in a warranty deed recorded in Book 2256 at Page 678;
Thence along the South line of that parcel described in said Book 2256 at Page 678, North 89°52'24" East, a distance of 2.81 feet to the West line of that parcel described in said Book 3192 at Page 514;
Thence along said West line, South 00°03'14" West, a distance of 568.56 feet to the Point of Beginning.

That said Owner has by these presents laid out, platted and subdivided the above described real property as shown hereon, and designates the same as DAKOTA WEST SUBDIVISION, a subdivision of the City of Grand Junction, Mesa County, Colorado, and does hereby make the following dedications and grants:

* All streets and roads shown hereon, being Aberdeen Lane, Bismarck Street, and D-1/2 Road to the full width of their platted rights-of-way are hereby dedicated to the City of Grand Junction for the use of the public forever as public streets, and for drainage and underground utility purposes.

* All multi-purpose easements dedicated to the City of Grand Junction for the use of City approved 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, irrigation lines, drainage, and also for the installation and maintenance of traffic control facilities, street lighting, trees and grade structures.

* Utility easements dedicated to the City of Grand Junction for the use of City approved 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 drainage easements are to be granted by separate instrument to the Dakota West Homeowners Association as perpetual easements for conveyance of runoff water which originates from the property hereby platted, subject to the terms, conditions and restrictions set forth in said grant. Grant recorded in Book 3395 at Page 970

* Tract A is to be conveyed by separate instrument to the Dakota West Homeowners Association, for the purpose of retaining runoff water which originates from the property hereby platted, or from upstream areas, through natural or man-made facilities,and for recreational and aesthetic purposes as determined appropriate by said owners subject to terms set forth in said instrument and subject to the Covenants, Conditions and Restrictions for Dakota West. Deed of conveyance recorded in Book 3345 at Page 970.

* All easements include the right of ingress and egress on, along, over, under, 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/ owners shall utilize the same in a reasonable and prudent manner. Furthermore, the owners of said lots hereby platted shall not burden or overburden said easements by erecting or placing any improvements thereon which may prevent reasonable ingress and egress to and from the easement.

Said owners further certify that all lienholders are represented hereon.

IN WITNESS WHEREOF said owners have caused their names to be hereunto subscribed:

G & R West, L.L.C., a Colorado Limited Liability Company.

By _____
Managing Partner

State of _____ }
County of Mesa } ss

The foregoing Statement of Ownership and Dedication was acknowledged before me by Robert Cantrell as Managing Partner of G & R West, LLC this 19th day of June, 2003 for the aforementioned purposes.

Lanette K. Garnett
Notary Public

My commission expires: 02/17/2010

NOTARY PUBLIC LANETTE K. GARNETT STATE OF COLORADO

DECLARATION OF COVENANTS

This property is subject to the terms of the covenants, conditions, and restrictions contained in an instrument recorded in Book 3345 at Page 970

LIENHOLDER'S RATIFICATION OF PLAT

The undersigned hereby certifies that it is a holder of a security interest upon the property hereon described and does hereby join in and consent to the dedication of the land described in said dedication by the owners thereof and agree that its security interest which is recorded in Book 3371 at Page 854 of the public records of Mesa County, Colorado shall be subordinated to the dedications shown hereon.

In witness whereof, the said corporation has caused these presents to be signed by its [illegible], with the authority of its Board of Directors, this 19th day of June, 2003.

By: _____ For Bank of Colorado
(Title) Assistant Vice President

TITLE CERTIFICATION

We, Meridian Land Title, LLC, a title insurance company, as duly licensed in the State of Colorado, hereby certify that we have examined the title to the hereon described property, that we find the title to the property is vested to G&R West, LLC, a Colorado Limited Liability Company; That the current taxes have been paid; that all mortgages not satisfied or released of record nor otherwise terminated by law are shown hereon and that there are no other encumbrances of record; That all easements, reservations and rights of way of record are shown hereon.

DATE: June 19, 2003 BY: _____ LAWRENCE D'VENT
NAME AND TITLE TITLE EXAMINER
Meridian Land Title, LLC

CITY APPROVAL

This plat of DAKOTA WEST SUBDIVISION, a subdivision of the City of Grand Junction, County of Mesa, State of Colorado, was approved this 24th day of June, 2003.

_____ _____
City Manager Mayor Council Member

CLERK AND RECORDER'S CERTIFICATE

State of Colorado }
County of Mesa } ss

This plat was accepted for filing in the office of the Clerk and Recorder of Mesa County, Colorado, at 3:41 o'clock P.M., on this 24th day of June, 2003, A.D., and was recorded at Reception No. 2129444 in Plat Book 19 at Page 350-351 Drawer No. _____
NN-124 Fees $20.00 + $1.00

By _____ _____
Clerk and Recorder Deputy

SURVEYOR'S STATEMENT

I, Dennis R. Shellhorn, a registered Professional Land Surveyor in the State of Colorado, do hereby state that the accompanying plat of DAKOTA WEST SUBDIVISION, a subdivision of a part of the City of Grand Junction, Colorado, has been prepared by me and/or 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 to the best of my knowledge and belief. This statement is only applicable to the survey data hereon, and does not represent a warranty or opinion as to ownership, lienholders, or quantities.

_____
Dennis R. Shellhorn, PLS 18478
Colorado PLS 18478

PROFESSIONAL LAND SURVEYOR DENNIS R. SHELLHORN 18478 STATE OF COLORADO

DAKOTA WEST SUBDIVISION

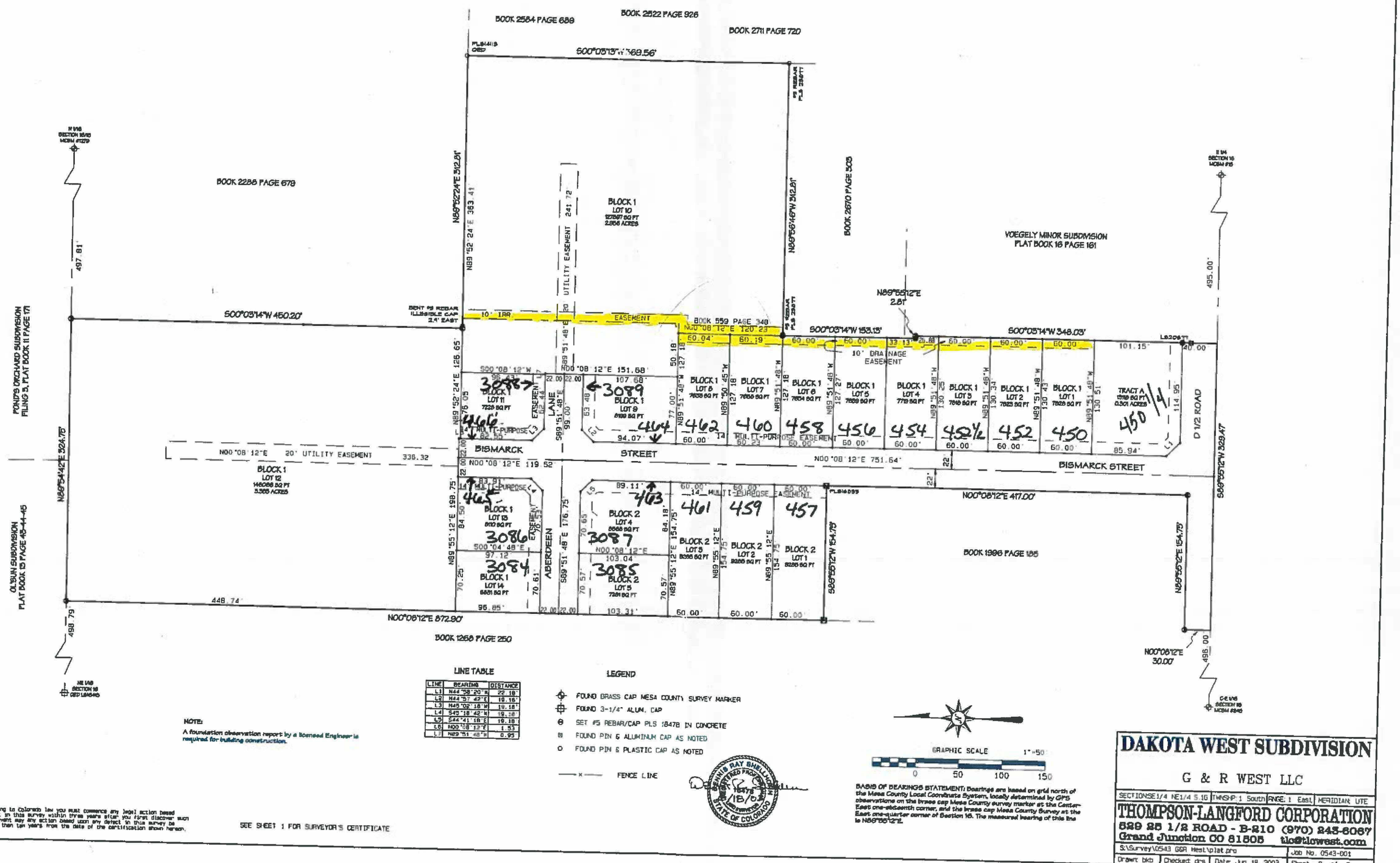
G & R WEST LLC

SECTION: SE1/4 NE1/4 S.16	TWNSHP: 1 South	RNGE: 1 East	MERIDIAN:

THOMPSON-LANGFORD CORPORATION
529 25 1/2 ROAD - B-210 (970) 243-8067
Grand Junction CO 81505 tlc@tlcwest.com

S:\Survey\0543 G&R West\plat.pro | Job No. 0543-001

DAKOTA WEST SUBDIVISION



LINE TABLE

LINE	BEARING	DISTANCE
L1	N44°58'20"W	22.18'
L2	N44°57'42"E	19.16'
L3	N45°02'18"W	19.18'
L4	S45°18'42"W	19.18'
L5	S44°41'18"E	19.18'
L6	N00°08'12"E	1.53'
L7	N89°51'48"W	0.95'

LEGEND

- FOUND BRASS CAP MESA COUNTY SURVEY MARKER
- FOUND 3-1/4" ALUM. CAP
- SET #5 REBAR/CAP PLS 18478 IN CONCRETE
- FOUND PIN & ALUMINUM CAP AS NOTED
- FOUND PIN & PLASTIC CAP AS NOTED
- —x— FENCE LINE

NOTE:
A foundation observation report by a licensed Engineer is required for building construction.

GRAPHIC SCALE 1"=50'
0 50 100 150

BASIS OF BEARINGS STATEMENT: Bearings are based on grid north of the Mesa County Local Coordinate System, locally determined by GPS observations on the brass cap Mesa County survey marker at the Center-East one-sixteenth corner, and the brass cap Mesa County Survey at the East one-quarter corner of Section 16. The measured bearing of this line is N89°56'12"E.

DENNIS RAY SHELLHORN
REGISTERED PROFESSIONAL
18478
18/03
STATE OF COLORADO

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 the certification shown hereon.

SEE SHEET 1 FOR SURVEYOR'S CERTIFICATE

DAKOTA WEST SUBDIVISION

G & R WEST LLC

SECTION SE1/4 NE1/4 S.16 | TWNSHP. 1 South | RANGE. 1 East | MERIDIAN UTE

THOMPSON-LANGFORD CORPORATION
629 25 1/2 ROAD - B-210 (970) 243-8067
Grand Junction CO 81505 tlc@tlcwest.com

S:\Survey\0543 GSR West\plat.pro			Job No. 0543-001
Drawn: bkb	Checked: dhs	Date: Jun 18, 2003	Sheet 2 of 2

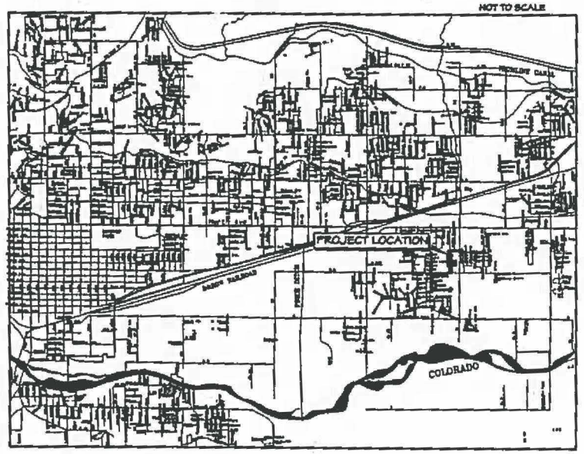
DAKOTA WEST SUBDIVISION PHASE 2

A REPLAT OF LOTS 10 AND 12, BLOCK 1 OF DAKOTA WEST SUBDIVISION
CITY OF GRAND JUNCTION, MESA COUNTY, COLORADO

FP-2003-079
RMF-5
SIF 292.00
TCP 500.00

VICINITY MAP

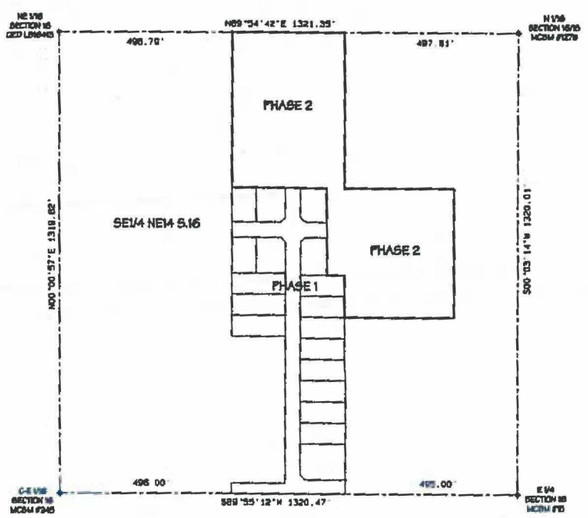
NOT TO SCALE



NOTES:

* Irrigation easement located on the north boundary of subdivision to be granted by separate instrument.

CONTROL DIAGRAM



SCALE 1"=200'

LAND USE SUMMARY

LOTS	5.001 acres	79.5%
STREETS	1.289 acres	20.5%
TOTAL	6.290 acres	100%

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 the certification shown hereon.

STATEMENT OF OWNERSHIP AND DEDICATION

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned, G&R West, LLC, a Colorado Limited Liability Company, is the owner of that real property in the County of Mesa, State of Colorado, described at Reception No's 2058195, 2390257, 2084788 and 2122545 of the records of the Mesa County Clerk and Recorder, and as shown on the accompanying plat, said property being more particularly described as follows:

Lot 10 Block 1, Dakota West Subdivision
AND
Lot 12 Block 1, Dakota West Subdivision, according to the plat thereof recorded at Reception No. 2128444 in the office of the Mesa County Clerk and Recorder

That said Owner has by these presents laid out, platted and subdivided the above described real property as shown hereon, and designates the same as DAKOTA WEST SUBDIVISION PHASE 2, a subdivision of the City of Grand Junction, Mesa County, Colorado, and does hereby make the following dedications and grants:

* All streets and roads shown hereon, being Aberdeen Lane, Bismarck Street, and Washburn Street to the full width of their platted rights-of-way are hereby dedicated to the City of Grand Junction for the use of the public forever as public streets, and for drainage and underground utility purposes.

* All multi-purpose easements dedicated to the City of Grand Junction for the use of City approved 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, irrigation lines, drainage, and also for the installation and maintenance of traffic control facilities, street lighting, trees and grade structures.

* All drainage easements are to be granted by separate instrument to the Dakota West Homeowners Association as perpetual easements for conveyance of runoff water which originates from the property hereby platted, subject to the terms, conditions and restrictions set forth in said grant. Grant recorded in Book 3395 at Page 993.

* Irrigation easements reserved by the owners for the benefit of adjoining properties.

* All easements include the right of ingress and egress on, along, over, under, 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/ owners shall utilize the same in a reasonable and prudent manner. Furthermore, the owners of said lots hereby platted shall not burden or overburden said easements by erecting or placing any improvements thereon which may prevent reasonable ingress and egress to and from the easement.

Said owners further certify that all lienholders are represented hereon.

IN WITNESS WHEREOF said owners have caused their names to be hereunto subscribed:

G & R West, L.L.C., a Colorado Limited Liability Company,

Robert G. Cantrell, Managing Partner

State of)
County of)

The foregoing Statement of Ownership and Dedication was acknowledged before me by Robert G. Cantrell as Managing Partner of G & R West, LLC this 22nd day of July, 2003 for the aforementioned purposes.

Lanette K. Garrett
Notary Public
My commission expires: 02/17/06

LIENHOLDERS RATIFICATION OF PLAT

The undersigned hereby certifies that it is a holder of a security interest upon the property hereon described and does hereby join in and consent to the dedication of the land described in said dedication by the owners thereof and agrees that its security interest which is recorded in Book 3371 at Page 854 of the public records of Mesa County, Colorado shall be subordinated to the dedications shown hereon.

In witness thereof, the said corporation has caused these presents to be signed by its Vice President, with the authority of its Board of Directors, this 23rd day of 2003.

By: Michael Nast For: Bank of Colorado
(Title) Vice President

State of Colorado)
County of Mesa) ss

The foregoing Lienholder's Ratification of Plat was acknowledged before me by Michael Nast, Vice President of Bank of Colorado, a Vice President this 23rd day of July for the aforementioned purposes.

Sharon Tibbetts
Notary Public
My commission expires: 01-25-06

DECLARATION OF COVENANTS

This property is subject to the terms of the covenants, conditions, and restrictions contained in an instrument recorded in Book 3395 at Page 970.

TITLE CERTIFICATION

We, Meridian Land Title, L.L.C., a title insurance company, as duly licensed in the State of Colorado, hereby certify that we have examined the title to the hereon described property, that we find the title to the property is vested to G&R West, LLC, a Colorado Limited Liability Company; That the current taxes have been paid; That all mortgages not satisfied or released of record nor otherwise terminated by law are shown hereon and that there are no other encumbrances of record; That all easements, reservations and rights of way of record are shown hereon.

DATE: JULY 23, 2003 BY: LAWRENCE D. VENT
NAME AND TITLE: TITLE EXAMINER
Meridian Land Title, L.L.C.

CITY APPROVAL

This plat of DAKOTA WEST SUBDIVISION PHASE 2, a subdivision of the City of Grand Junction, County of Mesa, State of Colorado, was approved this 24th day of July, 2003.

City Manager — Harry E. Butler, Mayor

CLERK AND RECORDER'S CERTIFICATE

State of Colorado)
County of Mesa) ss

This plat was accepted for filing in the office of the Clerk and Recorder of Mesa County, Colorado, at 4:15 o'clock P. M., on this 24th day of July, 2003, A.D., and was recorded at Reception No. 2136663 in Plat Book 19 at Page 375. Drawer No. OO-19 Fees $20.00+$1.00

By: _____ Clerk and Recorder _____ Deputy

SURVEYOR'S STATEMENT

I, Dennis R. Shellhorn, a registered Professional Land Surveyor in the State of Colorado, do hereby state that the accompanying plat of DAKOTA WEST SUBDIVISION PHASE 2, a subdivision of a part of the City of Grand Junction, Colorado, has been prepared by me and/or 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 to the best of my knowledge and belief. This certification is only applicable to the survey data hereon, and does not constitute any warranty or opinion as to ownership, lienholders, or quality of title.

Dennis R. Shellhorn, 7/25/03
Colorado P.L.S. #22683

This survey does not constitute a title search by this surveyor or Thompson-Langford Corporation. All information regarding ownership, rights-of-way, easements of record, adjoiners, and other documents that may affect the quality of title to this property is from a title commitment prepared by First American Heritage Title Company, No. 00145173, dated March 25, 2002, Meridian Land Title, LLC, No. 85610, dated March 20, 2002, and Meridian Land Title, LLC, No. 86245, dated May 1, 2002.

NOTE:

A foundation observation report by a licensed Engineer is required for building construction.

DAKOTA WEST SUBDIVISION PHASE 2
G & R WEST LLC
SECTION SE1/4 NE1/4 S.16 | TWNSHP 1 South | RNGE 1 East | MERIDIAN
THOMPSON-LANGFORD CORPORATION