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File 1994-0069 Name: Falls – Filing 1 – Final Plan Amended – 28 ½ Rd. / F Road (Dinosaur Ent.)

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

DOCUMENT DESCRIPTION:

X	X	Subsurface Soils Exploration – 1/5/94	X		Utility Map – Public Service Co. of CO-Denver
X	X	Correspondence			COPIES OF AS-BUILTS DELIVERED TO GIS FOR SCANNING
X	X	The Falls – Filing 1 – Drainage Study	X	X	Local Street Standards – Exhibit "B" - **
X	X	Storm Water Management Plan	X	X	Cul De Sac Details – Exhibit "D" - **
X	X	Development Improvements Agreement - Bk 2072 / Pg 305-**-delivered to City Clerk	X	X	Standard Concrete Details – Exhibit "E" - **
X	X	Release of Improvements Agreement – Bk 2145 / Pg 678 - ** - delivered to City Clerk	X	X	Accessible Ramp and Parking Stall Details – Exhibit "G" - **
X	X	Disbursement Agreement – Bk 2072 / pg 305 - ** - delivered to City Clerk	X	X	Flowline Profiles – Road Plan - **
X		Declaration of Covenants, Conditions, Restrictions and Liens of The Falls Homeowners Association, Inc. – Bk 1281 / Pg 420	X	X	Standard Storm Drain Details - **
X	X	Joint Venture Affidavit – Bk 1866 / Pg 430	X	X	Centerline Profiles - **
X	X	Warranty Deed – Bk 2145 / Pg 679 – conveyed to the City - ** - delivered to City Clerk	X	X	Grading and Drainage Plan

X	X	Warranty Deed – scanned with file – not recorded version			
X	X	Gas Distribution Utility Map			

SUBMITTAL CHECKLIST

MAJOR SUBDIVISION: FINAL

Location: 28 1/2 Rd & F Rd   Project Name: The Falls Filing 1

#69 94

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ITEMS: DESCRIPTION	SSID REFERENCE	● City Community Development	● City Dev. Eng.	● City Utility Eng.	● City Property Agent	● City Parks/Recreation	● City Fire Department	● City Attorney	● City G.J.P.C. (8 sets)	○ City Downtown Dev. Auth.	● City Police	● County Planning	○ County Bldg. Dept.	● County Surveyor	○ Walker Field	○ School Dist. #51	● Irrigation District (G.V. Water)	○ Drainage District	● Water District (Ute)	● Sewer District (Central G.V.)	● U.S. West	● Public Service	○ GVRP	○ CDOT	○ Corps of Engineers	○ Colorado Geologic Survey	○ U.S. Postal Service	● Persigo WWTF	TOTAL REQ'D.
● ~~Application Fee~~	VII-1	1																											
● Submittal Checklist*	VII-3	1																											
● ~~Review Agency Cover Sheet*~~ Cover Sheet	VII-3	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
● ~~Application Form*~~	VII-1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
● 11"x17" Reduction of Assessor's Map	VII-1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
● ~~Evidence of Title~~	VII-2	1			1			1																					
● ~~Appraisal of Raw Land~~	VII-1	1			1	1																							
● ~~Names and Addresses*~~	VII-3	1																											
● Legal Description	VII-2	1			1																								
○ Deeds	VII-1	1			1			1																					
○ Easements	VII-2	1	1	1	1			1													1	1	1						
○ Avigation Easement	VII-1	1			1			1																					
○ ROW	VII-3	1	1	1	1			1													1	1	1						
● Covenants, Conditions, & Restrictions	VII-1	1	1					1																					
○ Common Space Agreements	VII-1	1	1					1																					
● ~~County Treasurer's Tax Cert.~~	VII-1	1																											
● Improvements Agreement/Guarantee*	VII-2	1	1	1				1																					
○ CDOT Access Permit	VII-3	1	1																										
○ 404 Permit	VII-3	1	1																										
○ Floodplain Permit*	VII-4	1	1																										
● General Project Report	X-7	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1		1	1	1	2	1	1	1	1	1	1	
● Composite Plan	IX-10	1	2	1	1																								
● 11"x17" Reduction Composite Plan	IX-10	1				1	1	1	8	1	1	1	1				1	1	1	1	1	1	1	1	1	1		1	
● ~~Final Plat~~	IX-15	1	2	1	1			1						1															
● ~~11"x17" Reduction of Final Plat~~	IX-15	1							8	1	1	1			1	1	1	1	1	1	1	1	1				1		
● Cover Sheet	IX-11	1	2																										
● Grading & Stormwater Mgmt Plan	IX-17	1	2															1							1	1			
● Storm Drainage Plan and Profile	IX-30	1	2															1			1	1	1						
● ~~Water and Sewer Plan and Profile~~	IX-34	1	2	1			1												1	1	1	1	1					1	
● Roadway Plan and Profile (as-builts)	IX-28	1	2															1											
○ Road Cross-sections	IX-27	1	2																										
○ Detail Sheet	IX-12	1	2																										
○ Landscape Plan	IX-20	2	1	1																									
● Geotechnical Report	X-8	1	1										1													1			
○ Phase I & II Environmental Report	X-10,11	1	1																										
● Final Drainage Report	X-5,6	1	2															1											
○ Stormwater Management Plan	X-14	1	2															1							1				
○ Sewer System Design Report	X-13	1	2	1																1									
○ Water System Design Report	X-16	1	2	1															1										
○ Traffic Impact Study	X-15	1	2																					1					

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

PRE-APPLICATION CONFERENCE

Date: 11/22/93
Conference Attendance: Kathy P. Don Newton Eric Eslami
Proposal: Update Report & maps for Falls Filing 1
Location: 28½ Rd & F Rd

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

Additional ROW required? _____
Adjacent road improvements required? yes
Area identified as a need in the Master Plan of Parks and Recreation? _____
Parks and Open Space fees required? _____ Estimated Amount: _____
Recording fees required? _____ Estimated Amount: _____
Half street improvement fees required? _____ Estimated Amount: _____
Revocable Permit required? _____
State Highway Access Permit required? _____

Applicable Plans, Policies and Guidelines _____

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

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

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

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

O Other _____
Related Files: _____

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

PRE-APPLICATION CONFERENCE

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

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

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

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

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

GENERAL PROJECT REPORT 8-Apr-94

FALLS FILLING # 1 HAS Been SUBDIVIDED AND APPROVED During LATE 70s and EARLY 80s IMPROVEMENTS HAS BeeN COMPLETED FOR PART of SUBDIVISION. THE Lower PART (SUBJET PROPERTY) ALSO HAS ALL IMPROVEMENTS BUILT (Sewer, WATER, ELECTRIC, GAS, CABL, PHONE LINES, STREET LIGHTS AND FIRE HYDRANTS) EXEPT ROADS (STREET PAVING, CARBS & GUDERS). DINO SAUR ENTR INC PROPOSES TO DO THE UNFINISHED IMPROVEMENTS ACCORDING TO THE CONTENTS of Cover SHeet

THANK YOU

DINOSAUR INC

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#6994

City of GRAND JUNCTION

DEAR SIR or MADAM

THE DINOSAUR ENTR. INC WOULD LIKE to COMPLET THE FOLLOWING improvement at FALLS #1 IN TWO PHASE

FIRST PHASE:

to INCLUDE 22' of PAVEMENT SIDEWALK CARB and GUDER ON THE WEST SIDE of 28½ ROAD PLUS 28' PAVEMENT SIDEWALK CARB & GUDER on Both SIDE of GRAND FALLS ~~VE~~ DRIVE ACCORDING to CITY SPECIFICATIONS AND ENGINEERING Drawing BY NICHOLS ASSOCIATES INC.

SECOND PHASE

TO INCLUDE GRAND View COURT AND GRAND CASCADE WAY (28' of PAVEMENT SIDEWALK CARB & GUDER ON BOTH SIDES).

THANK YOU

DINOSAUR ENTR. INC

EBE ESLAMI

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#69 94

REVIEW COMMENTS

FILE #69-94 **TITLE HEADING:** Final Plan - Finish Road Improvements - Falls, Filing #1

LOCATION: 28 1/2 Road & Patterson Road

PETITIONER: Dinosaur Enterprises, Inc.

PETITIONER'S ADDRESS/TELEPHONE: P.O. Box 2743
Grand Junction, CO 81502
241-2672

PETITIONER'S REPRESENTATIVE: Ebbe Eslami

STAFF REPRESENTATIVE: Kathy Portner

NOTE: WRITTEN RESPONSE BY THE PETITIONER TO THE REVIEW COMMENTS IS REQUIRED ON OR BEFORE 5:00 P.M., , 1994.

CITY UTILITY ENGINEER **4/12/94**
Bill Cheney **244-1590**

SEWER - Central Grand Valley Sanitation District
WATER - Ute Water

Contact the above referenced utility providers for information pertaining to existing water and sewer in the proposed area of construction.

GRAND JUNCTION FIRE DEPARTMENT **4/13/94**
George Bennett **244-1400**

No requirements at this time.

Ebbe Eslami

Public Service®

Public Service
Company of Colorado

Nov. 23, 1993

#69 94

Gregg L. Cranston
1401 N. 1st Street
Grand Junction, CO. 81501-2105

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Dear Gregg,

The gas and electric distribution facilities, including street lights, are installed in The Falls, Filing No. as Amended.

If I can be of further assistance, please notify me. My phone number is 244-2693.

Sincerely,

Harold Ball

Harold Ball, Associate Engineer

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 1
To Gregg Cranston	From H Ball
Co. Remax	Co. PSCo
Dept.	Phone # 244-2693
Fax # 241-4015	Fax # 244-2661

11-24-93

MEMO

ATTN: Gregg Cranston

RE: Water Lines and Fire Hydrants Filing One _The Falls

Water lines and Fire Hydrants are in place for The Falls, Filing One. These lines and hydrants are charged with water.

The water system will not be accepted by Ute Water until all improvements have been completed.
(streets)

Gary R. Mathews
Ute Water

#69 94

U S WEST COMMUNICATIONS

Grand Junction, Colorado
November 23, 1993

RE/MAX
The Grand Junction Real Estate Group, Inc.
1401 N. 1st St.
Grand Junction, Colo. 81501-2105
ATTN: Gregg Cranston

Per your request of November 22, 1993. This letter is to verify that buried telephone cable distribution presently exists in "The Falls" Subdivision in the area in question, based on the original platting, of which; I understand has not and is not changed. I hope this meets with your expectations and will allow you to continue with development plans as required.

Respectfully yours,

Leon A. Peach

Leon A. Peach
U.S. West Communications
2524 Blichmann Ave.
Grand Junction, Colo. 81505

#69 94

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Grand Junction Community Development Department
Planning • Zoning • Code Enforcement
250 North Fifth Street
Grand Junction, Colorado 81501-2668
(303) 244-1430 FAX (303) 244-1599

November 24, 1993

Ebe Eslami

RE: The Falls, Filing #1

Dear Mr. Eslami:

If on street parking is found to not be necessary (KP, PT)

The following comments are made to supplement the letter written to you on November 18, 1993 concerning the requirements for improvements to portions of the Falls, Filing #1.

1. Improvements to the entire length of 28 1/2 Road will be required, including curb, gutter and sidewalk on the west side and 22' pavement mat width. The improvements must be in place or guaranteed for your entire frontage as well as the section of 28 1/2 Road to the north that would provide access to your property from Patterson Road.

2. Curb, gutter and sidewalk will be required on <u>both</u> sides of Grand Falls Drive.

3. Sidewalks must be continuous throughout the filing, including along all open space areas and cul-de-sacs.

4. All streets must meet current City standards.

5. A cul-de-sac must be designed and built at the end of 28 1/2 Road.

6. An engineering analysis of proposed pavement thicknesses must be submitted for review.

7. All drawings and reports as indicated on the submittal checklist must be submitted for review and approval. Once approved, a new Improvements Agreement/Guarantee will be required.

I hope the above information answers all of your questions. If not, you can contact me at 244-1446.

Sincerely,

Kathy Portner

Katherine M. Portner
Planning Supervisor

December 10, 1993

RE: Real Estate Contact dated Nov. 4, 1993 Between Ebrahim Segahatoleslami (purchaser) and Ptarmigan Investments (seller).

For Property known as:

Lots 1-10 in Block Three, lots 1-7 inclusive in Block Five and Lots 3-8 inclusive in Block Four all in Filing #1 of The Falls Subdivision including and a 1/75 th. interest for each of the above lots in the The Falls Filing #1 homeowners association and its dedicated common areas.

Purpose:

This is to confirm our verbal agreement of December 7, 1993 regarding the remaining improvements for the completion of The Falls Filing #1 and the letter from the City of Grand Junction Dated November 24, 1993 relating to the same:

Agreement:

According to the City Planning Department (see attached letter), all of the streets shown on the recorded platt must be built to current road section specifications sidewalks.

The sellers agree that they will be responsible for that portion of 28.5 Road, plus a prorated share for open space, in front of their 5 lots north to F Road. Seller will escrow monies with the City for these development costs at closing. Either party may then draw on these funds (subject to City approval) for this express purpose, depending on which party commences construction first.

These funds in the amount of #15,262.56 escrowed in the Trust Account of John A. Achziger.

Dinosaur Enterprises, Inc. by John A. Agee - Attorney in Fact

Regarding Grand Falls Drive between 28.5 Rd. and Grand Cascade Way: Both parties agree that they do not wish to improve this section of road but acknowledge that they may be forced to by the City along with sidewalks on both sides. In the event that either an abandonment of this road can not be obtained or an agreement with the City to leave the right of way in place but not to improve it, then the seller agrees to credit the buyer $5,000 in the form of a principal reduction on the original promissory note for $45,000 . The completion of this section will then be the sole responsibility of the purchaser and the seller shall have no further obligation.

It is hereby mutually agreed this 10 th. day of Dec. 1993.

Ebrahim Segahatoleslami
Purchaser

Ptarmigan Investments
Seller

SUBSURFACE SOILS EXPLORATION

THE FALLS SUBDIVISION
BLOCKS 3, 4 & 5, FILING 1
GRAND JUNCTION, COLORADO

Prepared For:

Mr. Ebe Eslami
c/o Mr. John Siegfried
P.O. Box 9088
Grand Junction, CO

Prepared By:

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

January 5, 1994

TABLE OF CONTENTS

INTRODUCTION

PROJECT DESCRIPTION

This report presents the results of our geotechnical evaluation performed to determine the general subsurface conditions of the site applicable to construction of twenty three single family or duplex type residential structures. A vicinity map is included in the Appendix of this report.

To assist in our exploration, we were provided with a development plat of The Falls Subdivision, Filing 1, prepared by Paragon Engineering. The Boring Location Plan attached to this report is based on that plan provided to us.

We understand that the proposed structures will consist of a single and possibly two story, wood framed structure with the possibility of a full basement and concrete floor slab on grade. Lincoln DeVore has not seen a full set of building plans, but structures of this type typically develop wall loads on the order of 700 to 2000 plf and column loads on the order of 5 to 14 kips.

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

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

PROJECT SCOPE

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

The scope of our geotechnical exploration consisted of a surface reconnaissance, a geophoto study, subsurface exploration, obtaining representative samples, laboratory testing, analysis of field and laboratory data, and a review of geologic literature.

Specifically, the intent of this study is to:

1. Explore the subsurface conditions to the depth expected to be influenced by the proposed construction.
2. Evaluate by laboratory and field tests the general engineering properties of the various strata which could influence the development.
3. Define the general geology of the site including likely geologic hazards which could have an effect on site development.
4. Develop geotechnical criteria for site grading and earthwork.

5. Identify potential construction difficulties and provide recommendations concerning these problems.

6. Recommend an appropriate foundation system for the anticipated structure and develop criteria for foundation design.

FIELD EXPLORATION AND LABORATORY TESTING

A field evaluation was performed on December 20, 1993, and consisted of a site reconnaissance by our geotechnical personnel and the drilling of 5 shallow exploration borings. These shallow exploration borings were drilled within the proposed building pads, near the locations indicated on the Boring Location Plan. The exploration borings were located to obtain a reasonably good profile of the subsurface soil conditions. In addition, three very shallow exploration borings were placed in the proposed roadways to assist in the preparation of the final road section design. All exploration borings were drilled using a CME 45B, truck mounted drill rig with continuous flight augers to depths of approximately 14 to 22 feet. Samples were taken with a standard split spoon sampler, California lined sampler, thin wall Shelby tubes, and by bulk methods. Logs describing the subsurface conditions are presented in the attached figures.

Laboratory tests were performed on representative soil samples to determine their relative engineering properties.

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

FINDINGS

SITE DESCRIPTION

The project site is located in the Northeast Quarter of the Northwest Quarter of Section 7, Township 1 South, Range 1 East of the Ute Principal Meridian, Mesa County, Colorado. More specifically the site is located approximately 1 block South of Patterson Road and is bounded on the East by 28-1/2 Road and is South of Grand Falls Drive.

The topography of the site is that of a slight to moderate to hillside, dropping generally to the South. The slope gradient on this site is quite variable with most slopes on the order of 5% but some areas in excess of 20%. The direction of surface runoff on this site will be locally controlled by the proposed construction, but, in general, surface runoff will travel to the South, along the proposed 28-1/2 Road drainage to the Grand Valley Canal, eventually entering the Colorado River. Surface drainage is fair to good; subsurface drainage is fair to poor.

On-site erosion can be a significant problem if drainage and vegetation are not carefully controlled. Vegetation will probably be maintained in the immediate area around the building sites, but special care should be taken to introduce and maintain vegetation on the steeper slopes. We recommend that runoff from these slopes be carefully controlled to prevent erosion caused by irrigation practices, sheetwash or seepage. It may be necessary to provide culverts or drainage ways to prevent excessive erosion along steeper slopes.

GENERAL GEOLOGY AND SUBSURFACE DESCRIPTION

The geologic materials encountered under this site consist of the expansive clays of the Mancos Shale Formation, overlain in many areas by a thin man made fill. The geologic and engineering properties of the materials found in our shallow exploration borings will be discussed in the following sections.

The soils on this site consist of the sandy silty clays of the Mancos Shale Formation, which is considered to be bedrock in this area. The original ground surface has been reworked across this site as part of a mass earth cut and fill operation performed in the late 1970's. In general, the soils from the Northern part of the site and higher areas were cut and placed in the natural gullies on the site. The exact location of these original gullies is not precisely known. The site development map, prepared by Paragon Engineers, indicates several drain tile lines which have been placed on the site. These drain tile lines are believed to follow the approximate original gully alignments.

Records of the original cut and fill operation are not available to Lincoln-DeVore at the time of writing this report. It is believed the fill was not placed under controlled soils moisture and compaction conditions. It is believed that some compaction has been accomplished, however, the results of this exploration program and other information available to Lincoln-DeVore indicate the fill should not be considered a structural fill, suitable for foundation bearing.

The on site soils, as encountered in our subsurface exploration, are described in the following paragraphs. In general, Soil Type I is representative of the man made fill and Soil Type II is representative of the Mancos Shale Formation. As the Mancos Shale Formation was utilized for the fill material, Soil Types I and II have many very similar characteristics. The most significant differences between the two soil types are the in-place density, the lack of in-place swell potential of Soil Type I and the presence of significant consolidation characteristics of Soil Type I as compared to Soil Type II.

Soil Type I (man made fill) was classified as a sandy, silty clay (CL) under the Unified Classification System. This material is of low plasticity, of low to moderate permeability, and was encountered in a low density, slightly moist to moist condition. If this soil is found in a relatively dry, somewhat compact condition, it may undergo mild expansion with the entry of small amounts of moisture, but will undergo long-term consolidation upon the addition of larger amounts of moisture. For fill soils greater than 3 feet in thickness, the soil will settle significantly after being loaded. Much of the fill soils should be considered of such low density as to be unsuitable in their existing condition for support of building foundations. The finer grained portion of Soil Type I contains sulfates in detrimental quantities.

Soil Type II is representative of the Mancos Shale Formation. The Mancos Shale is described as a thinbedded, drab, light to dark gray marine shale, with thinly interbedded fine grain sandstone and siltstone layers. Some

portions of the Mancos Shale are bentonitic, and therefore, are highly expansive. The majority of the shale, however, has only a moderate expansion potential. Formational shale was encountered in all exploration borings at depths ranging from 1-1/2 to at least 6 feet in exploration Borings 2 and 3. Hard and soft strata were encountered in exploration Borings 2 and 3 to depths of approximately 13 to 14 feet, at which point very hard formational shale was encountered. It is anticipated that this formational shale will affect the construction and the performance of the foundations on this site.

The Mancos Shale Formation is often highly fractured, with fillings of soluble sulfate salts being very common. The samples obtained in this drilling program indicated virtually all fractured faces and some bedding planes in the shale contain sulfate salt deposits. Some seams of sulfate salts up to 1/8 inch thick were observed.

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

Soil Type II was classified as a very sandy, silty clay (CL) under the Unified Classification System. The Standard Penetration Tests ranged from 70 to in excess of 100 blows per foot. Penetration tests of this magnitude indicate that the soil is quite hard and of high density. The moisture content varied from 4.8% to 14.5%, indicating a relatively dry soil with some very moist areas. This soil is plastic and is sensitive to changes in moisture content. With decreased moisture, it will tend to shrink, with some cracking upon desiccation. Upon increasing moisture, it will tend to expand. Expansion tests were performed on typical samples of the soil and expansive pressures on the order of 1100 to 1800 psf were found to be typical. One remolded sample was found to exert a swell pressure of almost 3000 psf, when tested according to the FHA procedure. This value is somewhat higher than other test results of this study and previous swell testing in this subdivision. The allowable maximum bearing value was found to be on the order of 6000 psf for shallow foundation systems. A minimum dead load of 2000 psf will be required. This soil was found to contain sulfates in detrimental quantities.

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

The boring logs and related information show subsurface conditions at the date and location of this exploration. Soil conditions may differ at locations other than

those of the exploratory borings. If the structure is moved any appreciable distance from the locations of the borings, the soil conditions may not be the same as those reported here. The passage of time may also result in a change in the soil conditions at the boring locations.

GROUND WATER

No free water was encountered during drilling on this site. In our opinion the true free water surface is fairly deep in this area, and hence, should not affect construction. Seepage moisture may affect construction if surface drainage is not properly controlled.

It is believed that some free water may be encountered in the vicinity of the drain tile lines and may be indicated by the relatively high moisture contents in the Mancos Shale as encountered in exploration Boring 2.

Data presented in this report concerning ground water levels are representative of those levels at the time of our field exploration. Groundwater levels are subject to change seasonally or by changed environmental conditions. Quantitative information concerning rates of flow into excavations or pumping capacities necessary to dewater excavations is not included and is beyond the scope of this report. If this information is desired, permeability and field pumping tests will be required.

Due to the proximity of the Mancos Shale Formation across this site, there exists a possibility of a perched water table developing in the upper fractured shale and within the man made fill which overlie the Mancos Shale. This perched water would probably be the result of increased irrigation due to the presence of lawns and landscaping and roof runoff. The exploration holes indicate that the top of the Mancos Shale Formation is generally sloping to the South and that subsurface drainage would probably be quite slow in the Southerly direction. While it is believed that under the existing conditions at the time of this exploration the construction process would not be effected by any free-flow waters, it is very possible that several years after development is initiated, a troublesome perched water condition may develop which will provide construction difficulties. In addition, this potential perched water could create some problems for existing or future foundations on this tract. Therefore it is recommended that the future presence of a perched water table be considered in all design and construction of both the proposed residential structures and any subdivision improvements.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL DISCUSSION

No geologic conditions were apparent during our reconnaissance which would preclude the site development as planned, provided the recommendations contained herein are fully complied with. Based on our investigation to date and the knowledge of the proposed construction, the site condition which would have the greatest effect on the planned development is the low density man made fill placed over the expansive Mancos Shale.

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

OPEN FOUNDATION OBSERVATION

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

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

To avoid reducing the slope stability on the site, we recommend that the amount of cut and fill performed during individual site grading be held to a minimum. In addition, we recommend that excavations greater than 4 feet in depth be fully and properly braced. The lower density man made fill soils will have a tendency to slough into excavations.

No major difficulties are anticipated in the course of excavating into the surficial soils on the site. It is probable that safety provisions such as sloping or bracing the sides of excavations over 4 feet deep will be necessary. Any such safety provisions shall conform to reasonable industry safety practices and to applicable OSHA regulations. The OSHA Classification for excavation purposes on this site is Soil Class C for the man made fill and Soil Class A for the relatively unweathered, hard Mancos Shale Formation.

As shown on the attached drilling logs, an extensive layer of man-made fill was encountered on this site. It is believed that this fill was placed in an uncontrolled manner and therefore, is not judged suitable for support of the proposed shallow foundation system.

Owing to the depths to which this man-made fill was encountered and the relatively shallow excavation depths anticipated for many of the structures on this site, it is recommended that an overexcavation/replacement scheme be used on the lots with relatively thin man made fill.

The existing man-made fill should be completely removed from below the foundation level, so that the underlying native soils are exposed in all areas. Once it is felt that adequate fill removal has been achieved, it is recommended that the excavation be closely examined by a representative of Lincoln-DeVore to ensure that an adequate overexcavation depth has indeed occurred and that the exposed soils are suitable to support the proposed structural man-made fill.

Once this examination has been completed, it is recommended that a coarse-grained, non-expansive, non-free draining man-made structural fill be imported to the site. This overexcavation/replacement scheme, using granular non-expansive material is further described in the "Concrete Slabs On Grade" section as the second alternative.

This imported fill should be placed in the overexcavated portion of this site in lifts not to exceed 6 inches after compaction. A minimum of 90% of the soils maximum Modified Proctor dry density (ASTM D-1557) must be maintained during the soil placement. These soils should be placed at a moisture content conducive to the required compaction (usually Proctor optimum moisture content $\pm$ 2%). The granular material must be brought to the required density by mechanical means. No soaking, jetting or puddling techniques of any type should be

used in placement of fill on this site. To ensure adequate lateral support, we must recommend that the zone of overexcavation extend at least 3 feet around the perimeter of the proposed building. To confirm the quality of the compacted fill product, it is recommended that surface density tests be taken at maximum 2 foot vertical intervals.

If the silty clays of the existing man made fill are to be utilized for a structural fill, very careful compaction and moisture content limits must be observed. It is generally recommended that expansive soils not be used for structural fill on this site. If expansive clays are utilized, the following recommendations must be very carefully followed.

In general, we recommend that all potentially expansive structural fill in the area beneath any proposed structure be compacted to a minimum of 90% and a maximum of 96% of its maximum modified Proctor dry density (ASTM D1557). This structural fill should be placed in lifts not to exceed six (6) inches after compaction. We recommend that fill be placed and compacted between its optimum moisture content and plus 4% of the optimum moisture content as determined by ASTM D 1557. The silty clay material must be brought to the required density by mechanical means. No soaking, jetting or puddling techniques of any type should be used in placement of fill on this site. It is further recommended the structural fill be placed no more than two weeks prior to construction of individual foundations on the lots, in order to minimize soil moisture desiccation beneath the foundation or any slab portions.

DRAINAGE AND GRADIENT

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

We recommend that a perimeter drain be placed around the exterior walls of the structure at foundation level or below. A drain of this type includes a perforated pipe and an adequate gravel collector, the whole being wrapped in a geotextile filter fabric. We recommend that the discharge pipe for this drain be given a free gravity outlet to exit at ground surface. If "daylight" cannot be obtained, we recommend that a sealed sump and pump be used to discharge the seepage. Under no circumstances shall a "dry well" be used on this site.

The existing drainage on the site must either be maintained carefully or improved. We recommend that water be drained away from structures as rapidly as possible and not be allowed to stand or pond near the building. **We recommend that water removed from one building not be directed onto the backfill areas of adjacent buildings.** We recommend that a hydrologist or drainage engineer experienced in this area be retained to complete a drainage plan for this site.

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

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

FOUNDATIONS

At this time, Lincoln-DeVore has not been informed of the individual foundation/building plans and is therefore not informed as to the precise wall or column loading plan within any of the proposed buildings. Therefore, three foundation types which could be utilized for are recommended based on our experience in this area. The choice between these foundation types depends on the internal loading of the foundation members and the amount of excavation planned to achieve the finished lower elevations.

The three foundation types preliminarily recommended are as follows:

1. The voided wall on grade foundation system with a stemwall resting directly on the shale formation.

2. The isolated pad and grade beam foundation system in which the grade beam is voided and loads are transferred to the isolated pads.

3. The drilled pier and fully voided grade beam system with the loads transferred to the piers.

Recommendations given in this report are given for the Shallow Foundation Types No. 1 and 2 and the Deep Foundation Type No. 3.

SHALLOW FOUNDATIONS

MANCOS SHALE

Assuming that some amount of differential movement can be tolerated, then a conventional shallow foundation system consisting of either a voided wall on grade or an isolated pad and grade beam system, resting on the relatively unweathered expansive clays of the Mancos Shale Formation, may be designed on the basis of an allowable bearing capacity of 6000 psf maximum, and a minimum dead load of 2000 psf must be

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

STRUCTURAL FILL

A conventional shallow foundation system consisting of either a voided wall on grade or an isolated pad and grade beam system, resting on either a non-expansive granular or expansive clay structural fill, may be designed on the basis of an allowable bearing capacity of 4000 psf maximum, and a minimum dead load of 1500 psf must be maintained. These recommendations assume the bottom of the foundation is more than 3 feet from the relatively unweathered Mancos Shale Formation. Contact stresses beneath all continuous walls should be balanced to within + or - 200 psf at all points. Isolated interior column footings should be designed for contact stresses of about 200 psf more than the average used to balance continuous walls. The criteria use for balancing will depend somewhat upon the nature of the structure.

Single-story, slab on grade structures and single-story crawl-space structures may be balance on the basis of dead load only. Multi-story structures may be balanced on the basis of Dead Load plus one half live load, for up to three stories.

Stem walls for a shallow foundation system should be designed as grade beams capable of spanning at least fifteen feet. These "grade beams" should be horizontally reinforced both near the top and near the bottom. The horizontal reinforcement required should be placed continuously around the structure with no gaps or breaks. A foundation system designed in this manner should provide a rather rigid system and, therefore, be better able to tolerate differential movements associated with expansive clays on the site.

The existing man made fill soils underlying several of the proposed building sites adjacent to the drain tile lines and in the vicinity of exploration Borings 2 and 3, are in such a soft condition that placing either a thin structural fill or a building load on the site will result in excessive total and differential settlement. This presents a high risk condition for shallow foundations. We recommend that a deep foundation, consisting of drilled piers, driven piles or auger cast piles, be constructed to support the structure.

FROST PROTECTION

We recommend that the bottom of all foundation components rest a minimum of 1-1/2 feet below finished grade or as required by the local building codes. Foundation components must not be placed on frozen soils.

DEEP FOUNDATIONS

We recommend that a deep foundation system, consisting of either drilled piers, driven piles or auger cast piles be used to carry the weight of the proposed structures in the areas of thick, low density man made fill or, under many loading conditions, the lots immediately underlain by the expansive clays of the Mancos Shale Formation. Deep foundations must extend through any existing low density, man made fill materials and into the underlying Mancos Shale Formation. Each type of foundation system have advantages and disadvantages with respect to this site. Therefore, the decision as to which system is used is largely economic and will be left to the owner or his representative. For this report, only drilled pier foundation systems will be discussed.

Based upon our experience in this area and due to rather poor surface and subsurface drainage conditions of the subdivision, a drilled pier foundation system may be the preferred system. It must be noted that a drilled pier and fully voided grade beam system is quite rigid and will be quite sensitive to relative differential movements of the individual piers. The presence of subsurface water in the Mancos Shale Formation indicates that a 'Stable Strata Below The Zone of Seasonal Moisture Change' may not be adequately defined at this period of time.

We recommend that drilled piers have a minimum shaft length of 5 feet and be embedded at least 5 feet into the relatively unweathered bedrock of the Mancos Shale

Formation. At this level,these piers may be designed for a maximum end bearing capacity of 25000 psf, plus 2000 psf side support considering only the side wall area embedded in the bedrock. Due to the expansive potential of the bedrock, a minimum dead load uplift is required, consisting of a point uplift of 3000 psf and 500 psf side uplift, based on the side wall embedded in the bedrock. The overburden is soft and no supporting or uplift values are assigned to this material. The weight of the concrete in the pier may be incorporated into the required dead load.

DRILLED PIERS

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

To minimize the possibility of voids developing in the drilled piers, concrete with a slump of 5 to 6 inches is recommended. We recommend that piers be dewatered and thoroughly cleaned of all loose material prior to placing the steel cage and concrete. The pier excavation should contain no more than 2 inches of free water unless the concrete is placed by means of a tremie extending to the bottom of the pier. A free fall in excess of 5 feet is not recommended when placing concrete in drilled piers. We recommend that casing be pulled as the

concrete is being placed and that a 5 foot head of concrete be maintained while pulling the casing. It is recommended that drilled piers be plumb with 2% of their length and that the shaft maintain a constant diameter for the full length of the pier and not allowed to "mushroom" at the top.

DRILLED PIER OBSERVATION

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

GRADE BEAMS

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

CONCRETE SLABS ON GRADE

Slabs could be placed directly on the natural soils or on a structural fill. We recommend that all slabs on grade be constructed to act independently of the other structural portions of the building. One method of allowing the slabs to float freely is to use expansion material at the slab-structure interface. If the slab is to be placed directly on the expansive soils or on a thin fill overlying these soils, the risk of slab movement is high and stringent mitigation techniques are recommended. No design method known at this time will prevent slab movement should moisture enter the expansive soils below. Therefore, to mitigate the effects of slab movement should they occur, we recommend the following:

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

2. We recommend that all slabs on grade be isolated from structural members of the building. This is generally accomplished by an expansion joint at the floor slab / foundation interface. In addition, positive separation should be maintained between the slab and all interior columns, pipes and mechanical systems extending through the slab.

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

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

The first alternative is to dispense with slab-on-grade construction and use a structural floor system. A structural floor system may be either a structural reinforced concrete slab or a structural wood floor system suspended with floor joists. Each system would utilize a crawl space. This alternative would substantially reduce a potential for post construction slab difficulties due to the expansive properties of the expansive clays of the Mancos Shale Formation.

The second alternative is to install a three foot "buffer zone" of non-expansive, granular soil beneath the slab. This would mitigate the potential for slab movement; however, some potential for movement still exists. Should this alternative be selected, we would recommend that the following be performed:

1. Non-expansive granular soils should be selected for the "buffer zone". The granular soils should contain less than 20% of the material, by dry weight, passing the U.S. No. 200 Sieve. We recommend that the geotechnical engineer be contacted to examine the soils when they are selected, to substantiate that they comply with the recommendations.

2. The perimeter drain for the structures should be located at the elevation equal to or deeper than the "buffer zone". This is to reduce the potential for a "bathtub" effect" which may cause the slab to heave. The "bathtub effect" is created when water is allowed to seep into the "buffer zone" and then becomes trapped since the underlying clay soils have a much lower permeability rate than the "buffer zone" material. Therefore, water may accumulate in the "buffer zone" and subsequently wet the clay soils and cause them to expand.

3. All the non-bearing partitions which will be located on the slabs should be constructed with a minimum 2 inches of void space at the bottom of the wall. This space would allow for the future upward movement of the floor slabs and minimize damage to walls and roof sections above the slabs. The space may require rebuilding after

a period of time, since heaving produced by the soils may exceed 2 inches.

4. We recommend that all slabs being placed on the "buffer zone" be constructed to act independently of the other structural portions of the building. One method of allowing the slabs to float freely is to use expansion material at the slab-structure interface. Control joints should be placed 20 feet on center in each direction. These control joints should control the cracking of the slab should the under-lying soils come in contact with water.

EARTH RETAINING STRUCTURES

The active soil pressure for the design of earth retaining structures may be based on an equivalent fluid pressure of 52 pounds per cubic foot. The active pressure should be used for retaining structures which are free to move at the top (unrestrained walls). For earth retaining structures which are fixed at the top, such as basement walls, an equivalent fluid pressure of 65 pounds per cubic foot may be used. It should be noted that the above values should be modified to take into account any surcharge loads, sloping backfill or other externally applied forces. The above equivalent fluid pressures should also be modified for the effect of free water, if any.

The passive pressure for resistance to lateral movement may be considered to be 253 pcf per foot of depth. The coefficient of friction for concrete to soil may be assumed to be .27 for resistance to lateral movement. When combining frictional and passive resistance, the latter must be reduced by approximately 1/3.

We recommend that the backfill behind any retaining wall be compacted to a minimum of 85% of its maximum modified Proctor dry density, ASTM D-1557. The backfill material should be approved by the Soils Engineer prior to placing and a sufficient amount of field observation and density tests should be performed during placement. Placing backfill behind retaining walls before the wall has gained sufficient strength to resist the applied lateral earth pressures is not recommended.

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

REACTIVE SOILS

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

PAVEMENTS

Samples of the surficial native soils at this property that may be required to support pavements have been evaluated using the Hveem-Carmany method (ASTM D-2844) to determine their support characteristics. The results of the laboratory testing are as follows:

R = 17
Expansion @ 300 psi = 4.4 psf
Displacement @ 300 psi = 4.6

No estimates of traffic volumes have been provided to Lincoln DeVore. However, we assume that the roads will be classified as residential. The design procedures utilized are those recognized by the Colorado Department of Highways and the 1986 AASHTO design procedure. The terminal Serviceability Index of 2.0, a Reliability of 70 and a design life of 20 years have been utilized, based on recommendations by the Highway Department. An 18 kip ESAL of 5, also recommended by the Highway Department, was used for the analysis.

Based on the soil support characteristics outlined above, the following pavement sections are recommended:

Residential Roadway:

3 inches of asphaltic concrete pavement
on 6 inches of aggregate base course
on 12 inches of recompacted native material

Full Depth Asphalt:

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

Rigid Concrete:

6 inches of portland cement pavement
on 4 inches of aggregate base course
on 12 inches of recompacted native material

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

We recommend that the rigid concrete pavement have a minimum flexural strength (F_t) of 650 psi at 28 days. This strength requirement can be met using Class P or AX or A or B Concrete as defined in Section 600 of the Standard Specifications for Road and Bridge Construction, Colorado DOT. It is recommended that field control of the concrete mix be made utilizing compressive strength criteria. Flexural Strength should only be used for the design process.

Control joints should be placed at a minimum distance of 12 feet in all directions. If it is desired to increase the spacing of control joints, then 66-66 welded wire fabric should be placed in the mid-point of the slab. If the welded wire fabric is used, the control joint spacing can be increased to 40 feet. Construction joints designed so that positive joint transfer is maintained by the use of dowels is recommended.

Concrete with a lower flexural strength may be allowed by the agency having jurisdiction however, the design section thicknesses should be confirmed. In addition, the final durability of the pavement should be carefully considered.

Control joints should be placed at a minimum distance of 12 feet along the slab/road lane length or to match curb and gutter jointing and 15 feet in width. If it is desired to increase the spacing of control joints, then 66-66 welded wire fabric should be placed in the mid-point of the slab. If the welded wire fabric is used, the control joint spacing can be increased to a maximum of 40 feet.

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

LIMITATIONS

This report is issued with the understanding that it is the responsibility of the owner, or his representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project, and are incorporated into the plans. In addition, it is his responsibility that the necessary steps are taken to see that the contractor and his sub-contractors carry out these recommendations during construction. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in acceptable or appropriate standards may occur or may result from legislation or the broadening of engineering knowledge. Accordingly, the findings of this report may be invalid, wholly or partially, by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of 3 years.

The recommendations of this report pertain only to the site investigated and are based on the assumption that the soil conditions do not deviate from those described in this report. If any variations or undesirable conditions are encountered during construction or the proposed construction will differ from that planned on the day of this report, Lincoln DeVore should be notified so that supplemental recommendations can be provided, if appropriate.

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

SOILS DESCRIPTIONS:

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

ROCK DESCRIPTIONS:

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

SYMBOLS & NOTES:

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

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

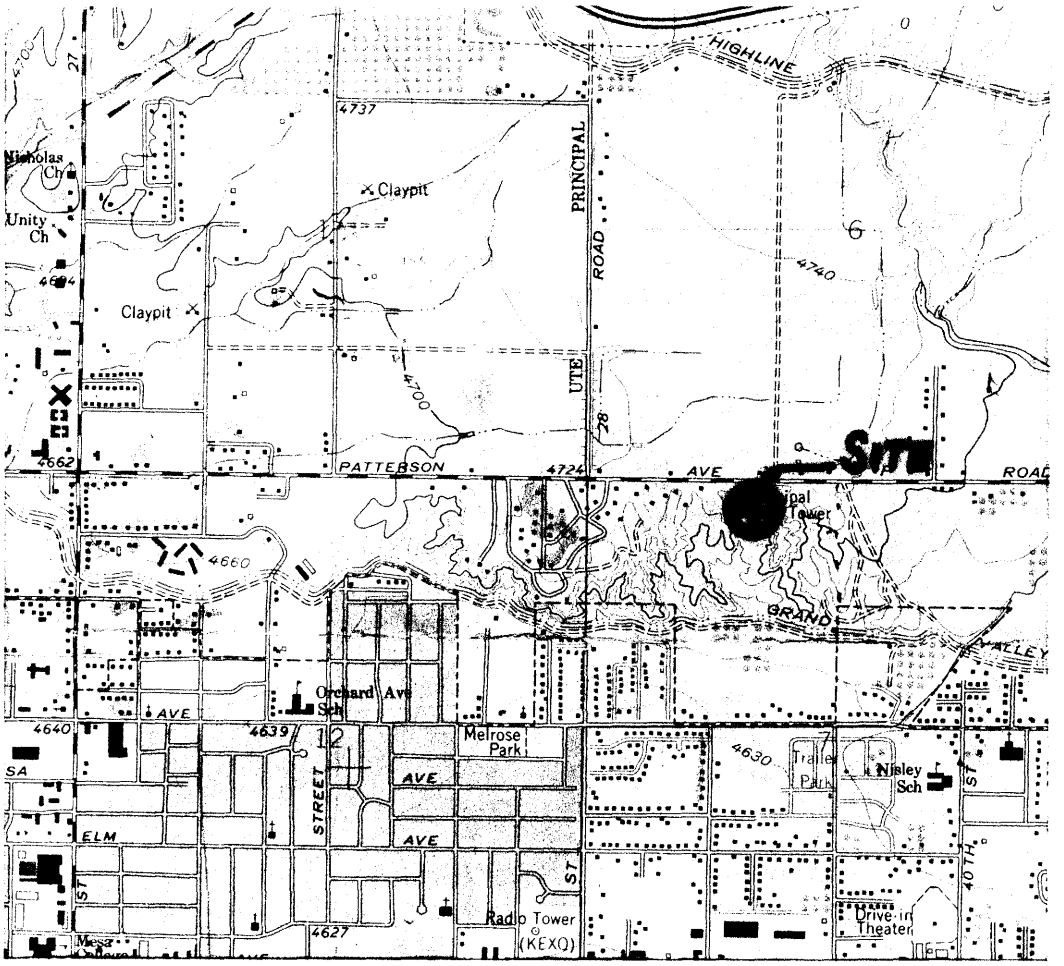
Samples may be bulk, standard split spoon (both disturbed) or 2-1/2" I.D. thin wall ("undisturbed") Shelby tube samples. See log for type.

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

LINCOLN DeVORE TESTING LABORATORY

COLORADO: Colorado Springs, Pueblo, Glenwood Springs, Montrose, Gunnison, Grand Junction. – WYO. – Rock Springs

EXPLANATION OF BOREHOLE LOGS AND LOCATION DIAGRAMS



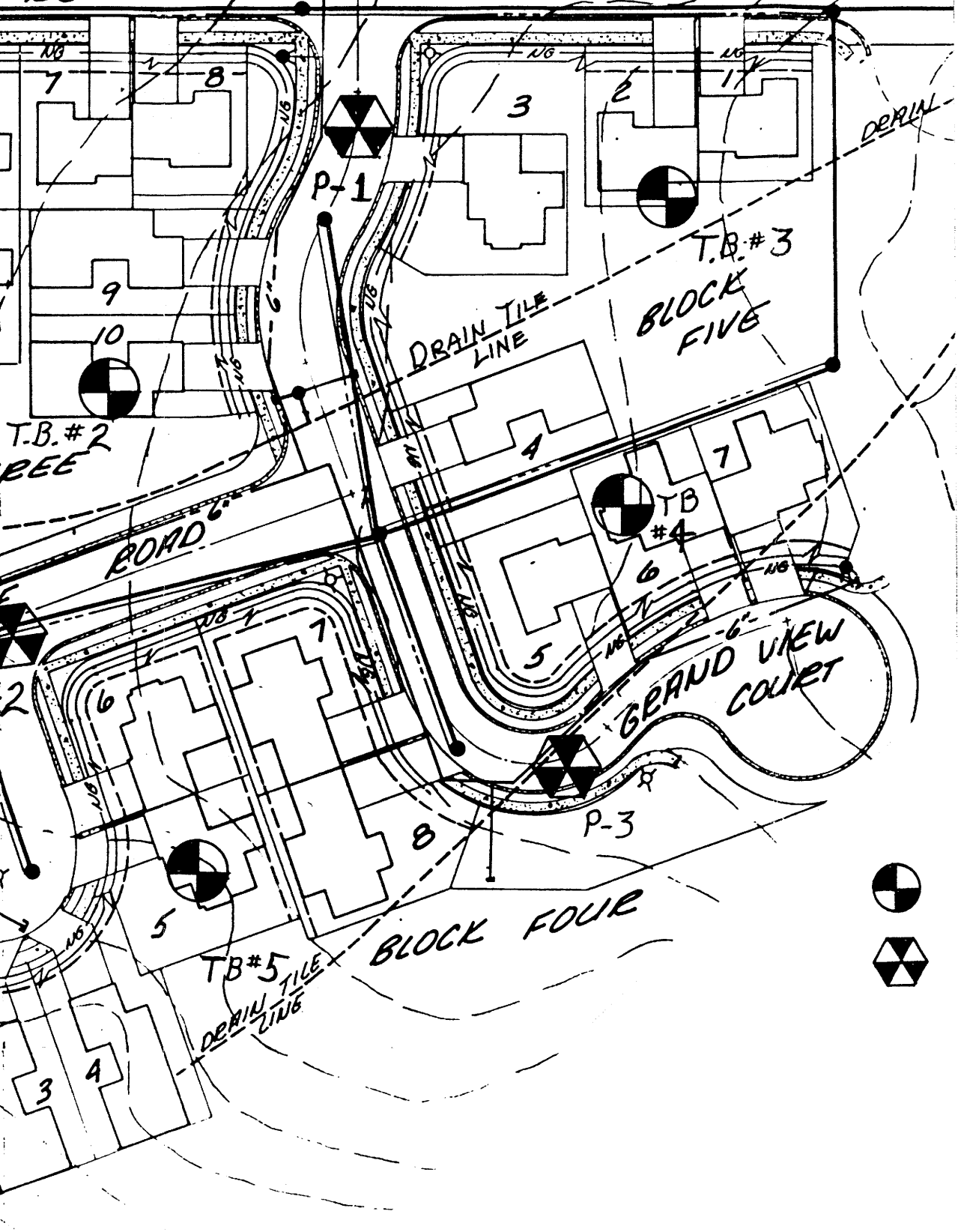
SCALE - 1" = 2000'

U.S.G.S. 7-1/2' Quadrangle Series

GENERAL SITE LOCATION DIAGRAM

Lincoln DeVore, Inc.
Geotechnical Consultants

		DATE
JOB NO.	DRAWN	



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LEGEND

TB1	TEST EXPLORATION BORING
P1	PAVEMENT SECTION BORING

Base Mapping by PARAGON ENGINEERING

BORING LOCATION DIAGRAM
THE FALLS, Fil 1, Blk 3, 4 & 5

LINCOLN DeVORE

1441 MOTOR STREET
GRAND JCT. COLORADO
COLO. SPRINGS, PUEBLO

BORING NO. 1

BORING ELEVATION:

DEPTH (FT.)	LOG	DESCRIPTION			BLOW COUNT	SOIL DENSITY pcf	WATER %
		CL Man-Made Fill	Medium Density	Shale chips			
		Very Weathered Shale					
		Mancos Shale Formation					
		Weathered, platy	Gray-brown		ST	110.1	6.7%
5		Very Sandy Silty Clay	Sl. Moist		5		
			Expansive				
		Open Fractures					
		Hard Strata of Siltstone & Sandstone					
		II CL			CS	60/6	6.0%
10		Gray-black			10		
		Increasing hard, difficult to drill					
		Very Sandy Silty Clay	Sl. Moist				
		II CL	Expansive		CS	50/2	
15		**Mancos Shale Formation**			15		
		Hard Strata of Siltstone & Sandstone					
		TD @ 14'	Sulfates				
20					20		
25					25		
30					30		

Blow Count Totals are Cumulative

No Free Water During Drilling 12/20/93

LOG OF SUBSURFACE EXPLORATION

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

THE FALLS Sub. Fil 1, Blk 3, 4 & 5
Grand Junction, Colorado

Mr. Ebe Islami

Mr. John Siegfried

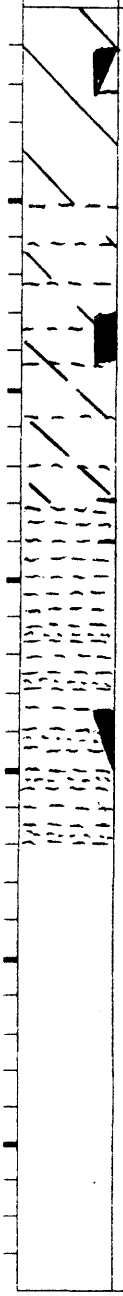
Date 1/5/93

Job No. 80089-J

Drawn EMM

BORING NO. 2

BORING ELEVATION:



DEPTH (FT.)	DESCRIPTION				BLOW COUNT	SOIL DENSITY pcf	WATER %
	CL Man-Made Fill	Medium Density	Shale chips				
	Variable Density	Gray-brown		ST		100.7	5.1%
	Fill Soil Sloughing into hole						
	I CL	Man-Made Fill					
5	Sulfates	Variable Density		5			
	Very Weathered Shale Fragments ?		Sl. Moist				
	Compacted Fill ?	Very Sandy Silty Clay					
	Variable Density	Gray-brown					
	I CL	Compressible		CS	23/6		14.1%
10	**CL Man-Made Fill**		Sl. Moist	10	35/12		
	Very Compressible	Very Sandy Silty Clay					
		Sulfates					
	Very Sandy Silty Clay						
	II CL		Gray-brown	CS	56/12		14.5%
15	**Mancos Shale Formation**	Very Firm to Drill		15			
	Gray-black	Open Fractures					
	Hard Strata of Siltstone & Sandstone						
		Weathered, platy					
	II CL	Sl. Moist	Expansive	BULK			7.2%
20	**Mancos Shale Formation**	Sulfates		20			
	TD @ 22'						
25				25			
	The zone between 5' to 13' is quite variable and may be very weathered Mancos Shale or Variably compacted, Man Made Fill, constructed with Mancos Shale fragments.						
30				30			
	Blow Count Totals are Cumulative						
	No Free Water During Drilling	12/20/93					

LOG OF SUBSURFACE EXPLORATION

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

THE FALLS Sub. Fil 1, Blk 3, 4 & 5
Grand Junction, Colorado

Mr. Ebe Islami

Mr. John Siegfried

Date **1/5/93**

Job No. **80089-J**

Drawn **EMM**

BORING NO. 3

BORING ELEVATION:

DEPTH (FT.)	LOG	DESCRIPTION				BLOW COUNT	SOIL DENSITY pcf	WATER %
		CL Man-Made Fill	Medium Density		Shale chips			
		Very Compressible		Variable Density				
		Fill Soil Sloughing into hole			Sl. Moist			
		I CL	Man-Made Fill			ST		
5		Sulfates	Gray-brown			5	102.4	5.4%
		Firm to Very Firm from 6' to 9'						
		Very Sandy Silty Clay						
		Sl. Moist		Sulfates				
		I CL	Gray-brown			CS	106.5	9.7%
10		**CL Man-Made Fill**	Variable Density			10	26/6 48/12	
		Fill Soil Sloughing into hole						
			Sulfates	Compressible				
		Very Sandy Silty Clay						
		II CL			Gray-brown	ST		7.3%
15		**Mancos Shale Formation**		Very Firm to Drill		15		
		Gray-black		Expansive				
		Hard Strata of Siltstone & Sandstone						
		Sl. Moist	Open Fractures					
		II CL	Weathered, platy			BULK		7.3%
20		**Mancos Shale Formation**		Sulfates		20		
		TD @ 19'						
		The Zone between 6' and 14' may be either						
25		variably compacted Man Made Fill or				25		
		Very Weathered Mancos Shale Formation.						
30						30		
		Blow Count Totals are Cumulative						
		No Free Water						
		During Drilling	12/20/93					

LOG OF SUBSURFACE EXPLORATION

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

THE FALLS Sub. Fil 1, Blk 3, 4 & 5
Grand Junction, Colorado

Mr. Ebe Islami

Mr. John Siegfried

Date: 1/5/93

Job No.: 80089-J

Drawn: EMM

BORING NO. 4

BORING ELEVATION:

DEPTH (FT.)	LOG	DESCRIPTION				BLOW COUNT	SOIL DENSITY pcf	WATER %
		CL Man-Made Fill	Medium Density	Shale chips				
		Very Weathered Shale		Gray-brown	ST		113.6	4.5%
		Mancos Shale Formation						
		II Weathered, platy	Sl. Moist					
5		Very Sandy Silty Clay			5			
		Increasing hard, difficult to drill						
		Open Fractures						
		Hard Strata of Siltstone & Sandstone						
		II CL			CS	75/6		5.1%
10		Gray-black			10			
		Hard Strata of Siltstone & Sandstone						
		Very Sandy Silty Clay		Sl. Moist				
		II CL	Expansive		BULK			4.8%
15		**Mancos Shale Formation**			15			
		TD @ 14'		Sulfates				
20					20			
25					25			
30					30			

Blow Count Totals are Cumulative

No Free Water During Drilling 12/20/93

LOG OF SUBSURFACE EXPLORATION

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

THE FALLS Sub. Fil 1, Blk 3, 4 & 5
Grand Junction, Colorado

Mr. Ebe Islami

Mr. John Siegfried

Date: 1/5/93

Job No.: **80089-J**

Drawn: **EMM**

BORING NO. 5

BORING ELEVATION:

DEPTH (FT.)	LOG	DESCRIPTION				BLOW COUNT	SOIL DENSITY pcf	WATER %
		CL Man-Made Fill	Medium Density	Shale chips				
		Variable Density	Gray-brown		ST		102.3	4.7%
		Fill Soil Sloughing into hole						
		II Very Weathered Shale	Sl. Moist					
5		Weathered, platy	Very Sandy Silty Clay		5			
		Mancos Shale Formation	Gray-brown					
		Open Fractures	Very Hard to Drill					
		Hard Strata of Siltstone & Sandstone						
		II CL			CS	65/6		7.4%
10		Gray-black			10			
		Hard Strata of Siltstone & Sandstone						
		Very Sandy Silty Clay						
		II CL	Sl. Moist	Expansive	BULK			5.3%
15		**Mancos Shale Formation**		Sulfates	15			
		TD @ 14'						
20					20			
25					25			
30					30			

Blow Count Totals are Cumulative

No Free Water

During Drilling 12/20/93

LOG OF SUBSURFACE EXPLORATION

THE FALLS Sub. Fil 1, Blk 3, 4 & 5
Grand Junction, Colorado

Mr. Ebe Islami

Mr. John Siegfried

Date 1/5/93

Job No. 80089-J

Drawn EMM

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

SUMMARY SHEET

Soil Sample SANDY CLAY (CL)

Test No. 80089-J

Location THE FALLS - Fil 1, Blks 3, 4 & 5

Date 12-29-93

Boring No. 3 Depth 8

Sample No. I & II

Test by LRS

Natural Water Content (w) 9.7 %

Specific Gravity (Gs)

In Place Density (γ_o) 116.5 pcf

SIEVE ANALYSIS:

Sieve No.	% Passing
1 1/2"	
1"	
3/4"	
1/2"	100
4	95
10	90
20	83
40	77
100	69
200	58

HYDROMETER ANALYSIS:

Grain size (mm)	%
.02	51
.005	34

Plastic Limit P.L. 21 %

Liquid Limit L. L. 35 %

Plasticity Index P.I. 14 %

Shrinkage Limit %

Flow Index

Shrinkage Ratio %

Volumetric Change %

Lineal Shrinkage %

MOISTURE DENSITY: ASTM METHOD

Optimum Moisture Content - w_o %

Maximum Dry Density - γ_d pcf

California Bearing Ratio (av) %

Swell: 1 Days 7.4 %

Swell against 2890 psf Wo gain 7.5 %

REMOLDED - Worse Case

BEARING:

SHALE

Housel Penetrometer (av) 6000 psf

Unconfined Compression (qu) psf

Plate Bearing: psf

Inches Settlement

Consolidation % under psf

PERMEABILITY:

K (at 20°C)

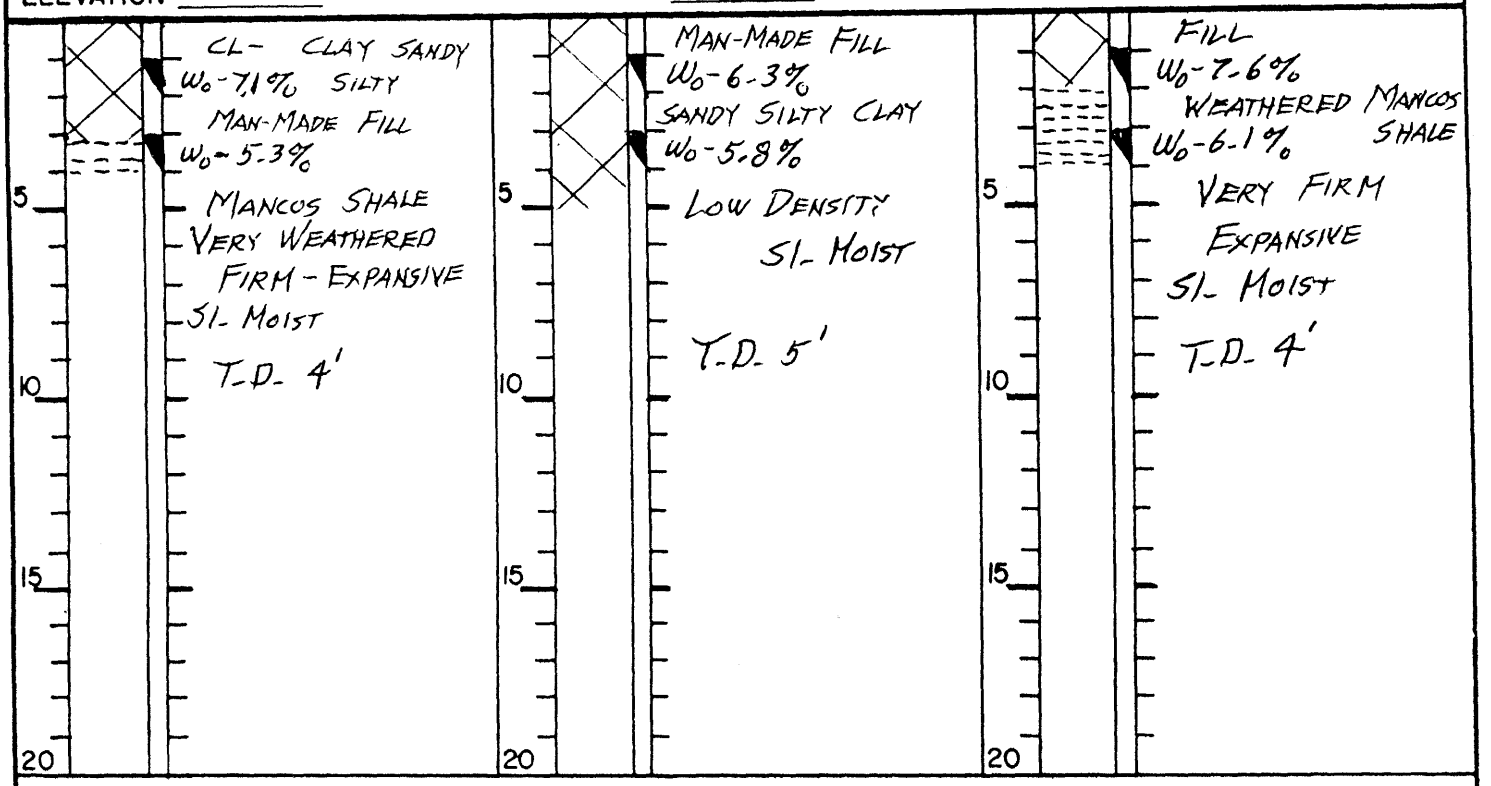
Void Ratio

Sulfates 1500 ppm.

SOIL ANALYSIS

LINCOLN-DeVORE TESTING LABORATORY
COLORADO SPRINGS, COLORADO

TEST BORING
No. P-1 | P-2 | P-3
ELEVATION



SOILS ARE LOW PLASTIC - SANDY SILTY CLAYS

FILL SOILS ARE ENTIRELY MANCOS SHALE FRAGMENTS

ROADWAYS ARE ROUGH CUT, UTILITIES ARE APPARENTLY IN-PLACE

AASHTO SOIL CLASSIFICATION A-6(6) U.S.C. - CL

LOG OF SUBSURFACE EXPLORATION

Lincoln DeVore, Inc.
Geotechnical Consultants

THE FALLS, FIL 1, BLKS 3,4+5, GRD. JCT. COLO

JOHN SIEGFRIED / ISLAMIC

DATE 1-5-94

JOB NO. 80089-J

DRAWN EMM

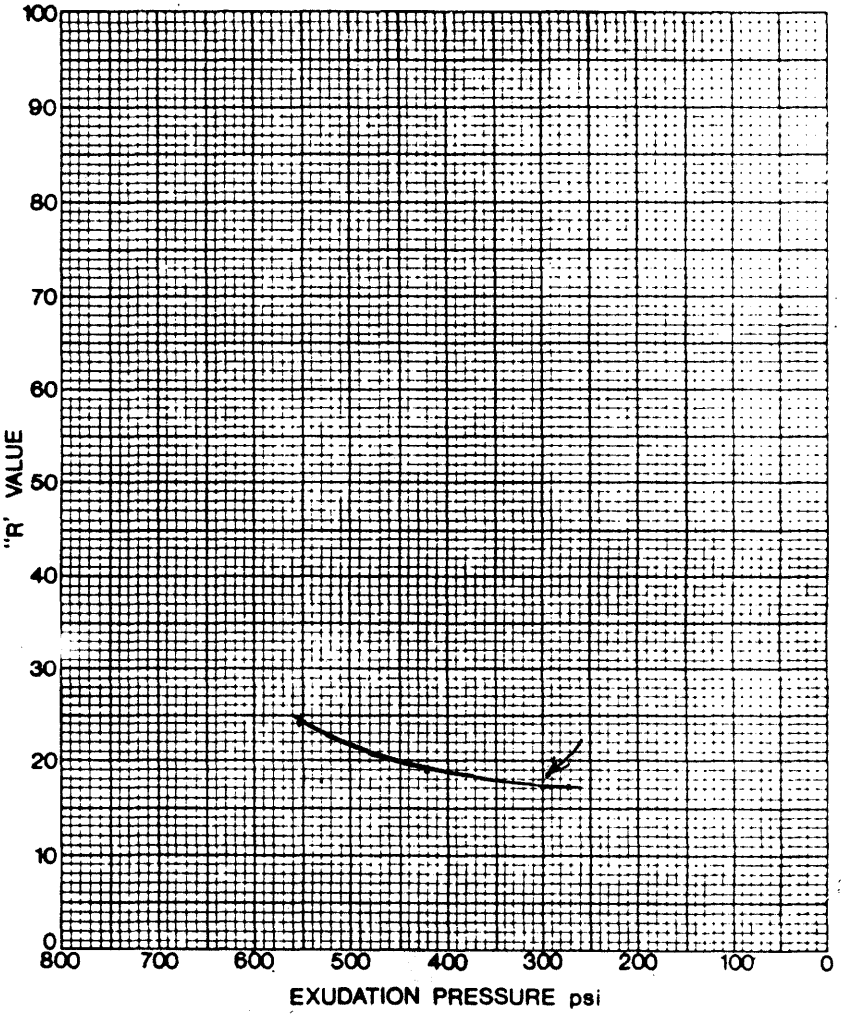
SAMPLE: AASHTO - A-6 (6) UCS - CL

			A	B	C	D	E
TEST SPECIMAN							
DATE TESTED			12-28-93	12-28-93	12-28-93		
SPECIMEN FABRICATION	Compactor Air Pressure	psi					
	Initial Moisture	%	7-1	7-1	7-1		
	Moisture at Compaction	%	16-1	17-1	15-1		
	Briquette Height	in.	2-52	2-52	2-49		
	Density	pcf	112-1	110-9	115-1		
EXUDATION PRESSURE		psi	421	270	556		
EXPANSION PRESSURE DIAL			8.	1.	23		
STABIL-OMETER	P_h at 1000 pounds	psi	40	42	36		
	P_h at 2000 pounds	psi	118	124	115		
	Displacement	turns	3-78	4.63	3-24		
	"R" Value		19	17	24		
CORRECTED "R" VALUE							

EXPANSION @ 300 PSI EXUDATION PRESSURE 4-4 psf
DISPLACEMENT @ 300 PSI EXUDATION PRESSURE 4.6
"R: VALUE @ 300 PSI EXUDATION PRESSURE 17

1½"	
1"	
3/4"	
1/2"	100
3/8"	98
4	95
10	90
20	83
40	77
100	69
200	58
.02 mm	51
.005 mm	34

LIQUID LIMIT	35
PLASTIC LIMIT	21
PLASTICITY INDEX	14
SAND EQUIVALENT	



Lincoln DeVore, Inc.
Geotechnical Consultants

THE FALLS, Fil 1, Blks 3,4&5, GRD. JCT., CO.

JOHN SIEGFRIED / ISLAMI

DATE 1-5-94

JOB NO. 80089-J

DRAWN EMH

F.

Nichols Associates, Inc.
751 Horizon Court - Suite 102
Grand Junction, Colorado 81506
Phone: 303-245-7101

22-Mar-94

THE FALLS FILING 1 - Drainage Study

CALCULATION OF INCREASE IN DISCHARGE DUE TO PROPOSED CONSTRUCTION

After Construction {Area - Intensity - Discharge}

BASIN	AREA SURFACE TYPE	AREA Ac.	RUNOFF COEF. C2	RUNOFF COEF. C2	REACH	LENGTH FEET	SLOPE (S) %	V Ft./Sec	2-Yr TIME MIN.	100-Yr TIME MIN.	INTENSITY Inches/Hour 2-Yr	INTENSITY Inches/Hour 100-Yr	DISCHARGE CFS (Q=CiA) 2-Yr	DISCHARGE CFS (Q=CiA) 100-Yr
A	Landscaped	3.78	0.25	0.4	A-1	150	2.0	0.10	14.9	12.2				
	Paved & Roofs	2.52	0.90	0.95	A-2	700	4.0	4.00	2.9	2.9				
					A-3	800	2.2	1.00	13.3	13.3				
	Total/Average	6.30	0.51	0.62					31.1	28.5	0.86	2.36	2.76	9.22
B	Landscaped	1.56	0.25	0.4	B-1	80	2.0	0.14	10.9	8.9				
	Paved & Roofs	1.04	0.90	0.95	B-2	600	5.3	4.50	2.2	2.2				
					B-3	400	4.8	4.00	1.7	1.7				
	Total/Average	2.60	0.51	0.62					14.8	12.8	1.28	3.43	1.70	5.53
C	Landscaped	5.46	0.25	0.4	A-1	100	1.0	0.15	15.3	12.6				
	Paved & Roofs	3.64	0.90	0.95	A-2	1,320	5.4	1.50	14.7	14.7				
	Total/Average	9.10	0.51	0.62					30.0	27.3	0.88	2.41	4.08	13.60
												Sub-Total:	8.54	28.34
												Off site drainage included in above basin areas:	0.00	0.00
Total Ac./weighted C		18.00	0.51	0.62				MAX. Tc	31.1	28.5		TOTAL Q:	8.54	28.34

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Historic {Area - Intensity - Discharge}

BASIN	AREA		RUNOFF	RUNOFF	REACH	LENGTH	SLOPE	VELOVITY	2-Yr	100-Yr	INTENSITY		DISCHARGE	
	SURFACE TYPE	Ac.	COEF. C2	COEF. C100		FEET	(S) %	FT./SEC.	TIME MIN.	TIME MIN.	Inches/Hour 2-Yr	100-Yr	CFS (Q=CiA) 2-Yr	100-Yr
A	Exist. Sub.	6.30	0.51	0.62					31.1	28.5	0.86	2.36	2.76	9.22
B&C	Steep & baren	11.70	0.40	0.4	A-1	150	5.0	0.06	9.0	9.0				
	shale & clay				A-2	1,200	5.0	3.00	6.7	6.7				
	Total/Average	18.00	0.26	0.26					15.7	15.7	1.24	3.15	5.80	14.74
								MAX. Tc	15.7	15.7		TOTAL Qh:	5.80	14.74
												INCREASE:	2.74	13.60

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DETENTION POND OUTLET ORIFICE CALCULATIONS

Orifice flow formula: Q=CA(2gH)^.5

Where: Q=Orifice flow in CFS
C=Coefficient
g=Gravitational constant
H=Height of water above the centroid of the orifice opening in feet
D=Orfice diameter
Qo=

Subscripts: h = Historic flow
2 = Two year storm
100 = One hundred year storm
t = Top orifice
b = Bottom orifice
T = total

Weir flow formula: Q=CLH^1.5

Where:
Q=Weir flow in CFS
C=Coefficient
L=Length of overflow
H=Depth from the weir crest to the pond water surface

Bottom orifice

The bottom orifice must pass the historic 2 Yr storm
Storage depth above centroid of lower orifice = 2.00

Q2= 5.80
C= 0.65
g= 32.20
Hb= 2.00
A= Q/C(2gH)^.5
= 0.79 **Width = 24.00 "** **Depth = 4.73 "**
Qo= 4.64 Diameter= 3.9936

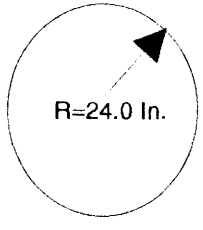
Top orifice

The bottom & top orifices must pass the historic 100 Yr storm
Storage depth above bottom of top orfice =

C= 0.65
Ht= 1.0 Hb= 2.0
Bottom orifice Q=CA(2gH)^.5 where H = Hb + Ht
Qb= 7.12

Top orifice Q= Qh100 - Q bottom orifice
Qt= 7.62 CFS QT= 14.74 CFS
L= 150.8 " **H= 11.5 In.** **= 0.96 Ft.**
Qo= 9.58

Controlled outlet is 48" Dia Manhole with a round 4" diameter orfice for the 2 Yr storm.
The 100 Yr. storm is released through the open top of the Manhole under wier conditions.



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STREET FLOW DEPTH AT THE GUTTER FOR CRITICAL SECTIONS

Flow Through Street, Curb & Gutter

Discharge quantity is calculated by the following formula:

Q=0.56*(Z/n)*S^.5*d^2.67

Where:

Q = Discharge in CFS (Cubic Feet per Second)

Z = Inverse pavement cross slope

n = Manning roughness coefficient

S = Longitudinal slope of the street or gutter

d = Depth of gutter flow in feet

Solving for maximum depth at gutter

Manning Roughness Coefficient= 0.016

Street Name	Side of street	Inverse Pave. x slope 1/ft/ft	Min. Long. Slope S ft/ft	Required 2 Year Capacity Q CFS	2 year Water Depth d Ft.	Required 100 Yr Capacity Q CFS	Water Depth d Ft.
28.5 Road	West	66.67	0.005	0.83	0.14	2.77	0.22
Grand Falls Drive	North	66.67	0.005	2.76	0.22	9.22	0.34
Grand View Court E.	North	66.67	0.005	1.70	0.18	5.53	0.28
Grand Cascade Court	West	66.67	0.005	4.08	0.25	13.60	0.39

Capacity For Pipe Storm Drainage

Storm Drain Location	Pipe Diameter Inches	Slope Feet/Feet	Rough. Coeff. n	Capacity Q CFS	Required Q CFS
From pond to canal	24	0.0300	0.015	34.0	28.3

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REQUIRED DETENTION VOLUME

2 year storm detention volume			100 year storm detention volume	
A	18.00		A	18.00
Qo	4.643		Qo	9.582
Td2	21.66		Td100	35.12
Id2	1.09		Id100	1.95
Qd	10.00		Qd	21.72
K	0.50		K	0.55
V	2,744 Cu Ft	REQUIRED STORAGE	V	19,046 Cu Ft
Irrigation Storage:	**20,813 Cu Ft**			**20,813 Cu Ft**
Total storage below 2 yr orfice:	**23,557 Cu Ft**	**TOTAL REQUIRED VOLUME:**		**39,859 Cu Ft**

#69 94

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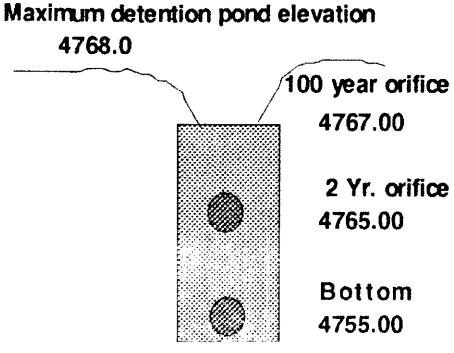
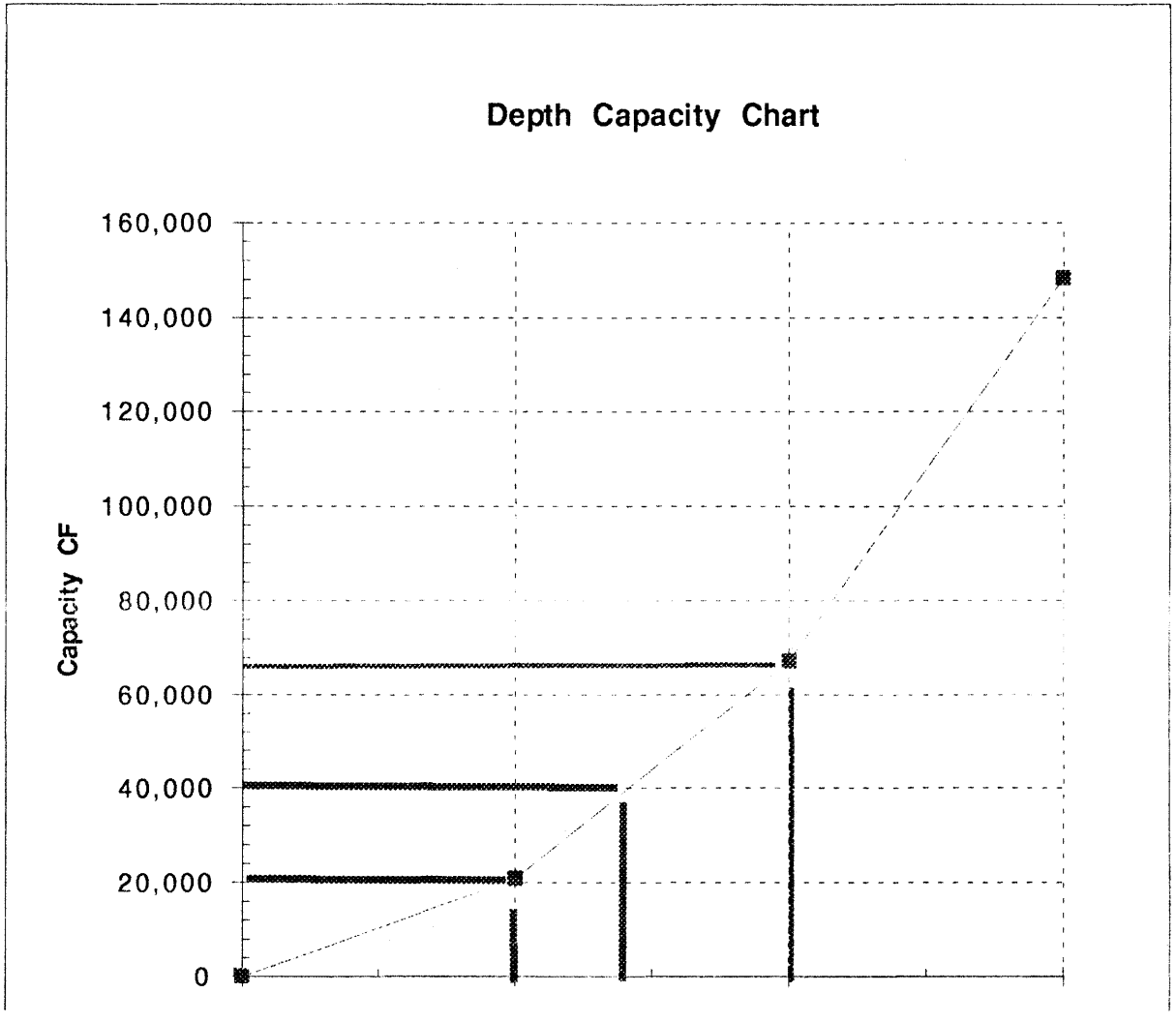
DETENTION POND DEPTH VS CAPACITY CURVE

Elevation Ft.	Area Ft. Sq.	Volume Cu. Ft.	Accum. Volume Cu. Ft.
4,760	2,000	0	0
4,765	6,800	20,813	20,813
4,770	12,000	46,389	67,202
4,775	20,800	80,998	148,200

Storage Required Below 100 Yr Orfice: **23,556.53**

TOTAL STORAGE REQUIREMENT: 39,858.59





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Legal Description

SCHEDULE A—Continued

2. Covering the Land in the State of Colorado, County of Mesa
Described as:

PARCEL NO. 1.

Lots 1 through 10, both inclusive in
Block 3;

Lots 1 through 7, both inclusive in
Block 5;

Lots 3 through 8, both inclusive in
Block 4;

ALL in THE FALLS-FILING NO ONE AS AMENDED.

PARCEL NO. 2.

Tract "B" in Block 3;

Tract "C" in Block 5;

Tracts "D" and "E" in Block 4;

ALL in the FALLS-FILING NO ONE AS AMENDED.

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NICHOLS ASSOCIATES, INC.
751 Horizon Court, Suite #102
P. O. Box 60010
Grand Junction, Colorado 81506

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THE FALLS - FILING ONE
Storm Water Management Plan

7-Apr.-94

The Falls - Filing One site consists of 18 acres including off-site drainage from Patterson Road. An existing 12 inch concrete drain pipe extends through the property to an open drain ditch along the south boundary. This drain pipe will be intercepted with a catch basin at the intersection of Grand View Court and Grand Cascade Court. This existing pipe will also be intercepted at the detention pond. The remaining runoff will flow down existing water courses during construction and along street gutters as construction is completed. All of this surface water is directed to the detention pond by the natural contours of the site.

The detention pond includes a controlled outlet structure and a 24 inch diameter discharge pipe.

The 24 inch storm drain and the detention pond should be the first items of construction so that the pond can be used for construction storm water management. Any storm drainage leaving the site during construction should be filtered through straw bails placed around the outlets to the detention pond. Also straw bails should be placed across all earth drainage channels at 100 foot intervals.

The road grading should be the second item of construction in order to provide a construction storm water channel in the road excavation to the pond.

The catch basin will not function until the road surfacing is in place and the street gutter grade is higher than the inlet grate.

This report was prepared by:

Terry Nichols PE No. 12093

MAY - 6 - 1994

We the Undersigned AUTHORISE Mr John ACHziger to Release the funds in his TRUST ACCOUNT TO ESCROW ACCOUNT at GRAND VALLEY NATIONAL BANK Designated for PAYMENT of WORKDOWN at FALLS filing # ONE

[signature]
for DINOSAUR INC.

[signature]

RE/MAX The Grand Junction Real Estate Group, Inc.
Gregg L. Cranston, GRI, CRS
Broker Associate

RE/MAX Above the Crowd!®

July 26, 1994

COPY

Bently Hamilton
P.O. Box 292
Durango, Colorado 81302

RE: Ebe Eslami and "The Falls"

Dear Bently,

Ebe has been in to see me a couple of times regarding the escrowed monies for the improvements of 28.5 Rd. He has asked me, in an effort to clarify what and how we negotiated the transaction, to memorialize the transaction to the best of my recollection. So, in an effort to be helpful to all parties involved, the following is my recollection of what transpired in the negotiation and closing.

In the process of the original negotiation, 28.5 road was discussed at length by all parties. The improvements to be made to 28.5 Rd north of Grand Cascade to F Rd. involved 4 Ptarmigan lots, 2 of Harris's lots, and one lot sold to Mr. Thompson, and some open space. A total of 7 lots.

The contract agreement directly addressed the Ptarmigan 4 lots, Mr. Thompson's lot, plus the prorata share of open space costs to be estimated and escrowed at closing. Originally we discussed escrowing these money's with the City, as $3,815.64 had already been escrowed with the City for the lot that Ptarmigan had already sold to Mr. Thompson. That left 4 more Ptarmigan lots to be escrowed for prior to or at our closing with Ebe.

The figure of $3,815.64 was used as the per lot escrow (as determined by the City of Grand Junction's engineering estimated provided by Mark Ralph and verified in a letter to Don Thompson from Kathy Portner dated 12/9/93 regarding lot 18 in Block 8 of The Falls). Mr. Ralph (for the City) calculated this number by taking the distance from the north side of Grand Falls Dr. to the south side of F Rd. which he determined to be 534.19'. He then multipled this footage by $50/foot (half street section) to come up with a total of $26,709.50. This number was divided by 7 (the total number of lots within that same distance and including prorata open space) to yield the per lot escrow estimate of $3,815.64.

1401 North 1st Street • Grand Junction, Colorado 81501-2105
Office: (303) 241-4000 Fax: (303) 241-4015 Toll Free: 1-800-777-4573

- The City held at that time $3,815.64 for 1 lot sold
- Ptarmigan escrowed an additional $15,262.56 at closing for its 4 lots still owned
- Thus, there was a total of $19,078.20 escrowed for street improvements with both the City and Ebe's attorney for the express purpose of whomever commenced construction on 28.5 Road first.

Originally the $15,262.56 was to have been escrowed with the City. However, at closing Ptarmigan and John Achzinger (attorney in fact for Ebe who was on vacation) agreed to escrow these funds with John Achzinger in his trust account.

This was done because all parties felt that a private escrow of said monies with Ebe's attorney (John Achzinger) would give which ever party commenced construction on 28.5 road first better control of those monies than if it were given to the City. Basicly, no one trusted the City.

This left the 2 lots belonging to Harris unescrowed and unaddressed in our contract. I believe the current confusion of where the money was to come from for Harris' lots stems from the fact that neither the sellers or buyer specifically addressed who would be responsible for collecting from the Harris' the money for their two lots. Ptarmigan assumed that Ebe would collect from Harris if Ebe put the street in first, and Ebe apparently assumed that the Ptarmigan would collect from the Harris either way. This was not specifically addressed by either party and looking back, it could have been made clearer.

It seems to me that if one or the other of the parties would simply go talk to the Harris' that there is a reasonable chance they would simple agree to pay their fair share and every one would probably be happy. This is an additional $7,631.28 which would bring the total of all monies available for these improvements to $26,709.48 if my math is correct.

Bently, my only purpose in involving myself in this is simple as a courtesy to both parties in an effort to resolve what I believe is probably nothing more than a misunderstanding. I hope this helps.

Ebe's phone number is 241-2672.

Very Sincerely,

Gregg Cranston

cc: File
Eslami

LETTER OF TRANSMITTAL

TO: GREGG CRANSTON/RE/MAX 4000, INC.
1401 No. 1ST ST.
G.J., CO 81501-2105

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

ATTN: _____ DATE: 8/3/94 PROJECT #: _____

DELIVERY BY: ☐ MAIL ☐ HAND-DELIVERED ☐ OTHER

WE ARE SENDING ATTACHED OR ENCLOSED THE FOLLOWING ITEMS:

☐ Copy of Letter ☐ Plans (Prints) ☐ Specifications ☐ _____

☐ Copy of Report ☐ Plans (Originals) ☐ Shop Drawings ☐ _____

# COPIES	DATED	DESCRIPTION
1		FALLS 1/2 ST. ASSESSMENT CALCULATION

THESE ARE TRANSMITTED:

☐ For information only ☐ For review and comment ☐ Approved with noted changes

☐ For your use ☐ For approval ☐ For distribution

☒ As requested ☐ Approved ☐ Revise and resubmit ___ copies

☐ _____

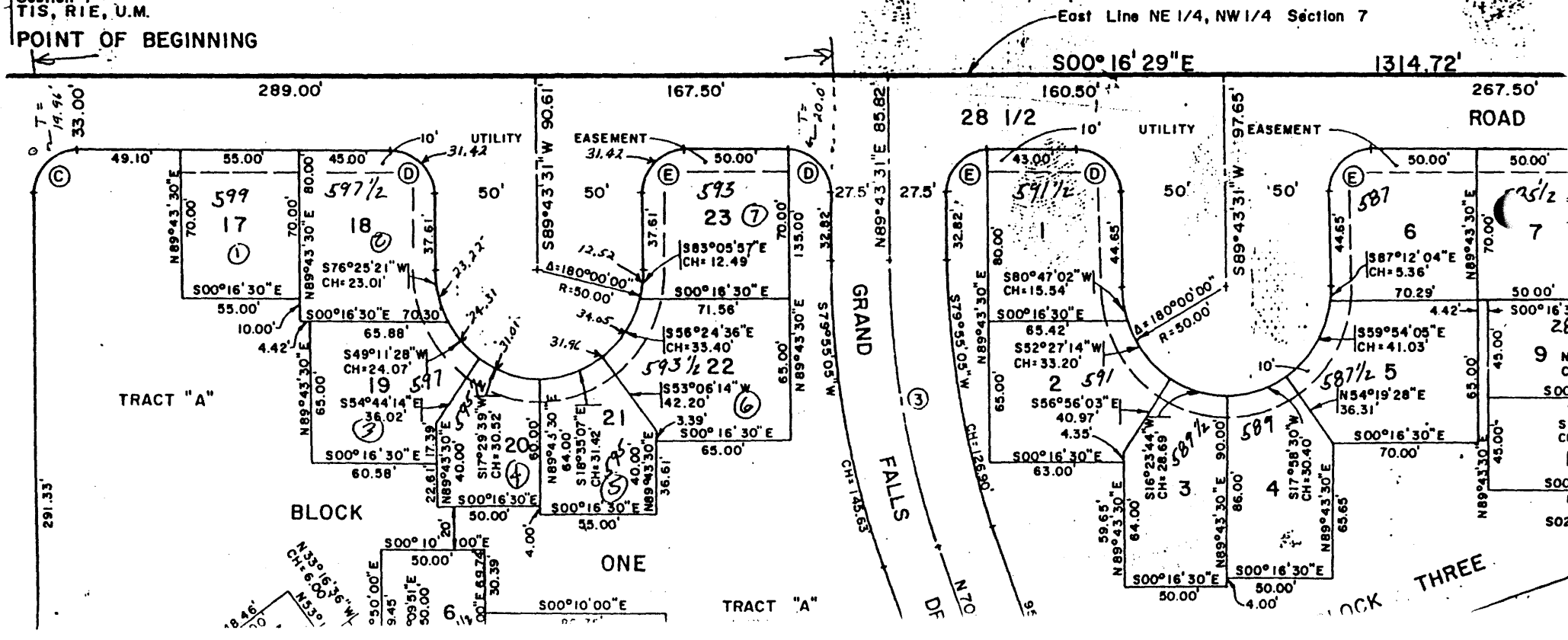
REMARKS: _____

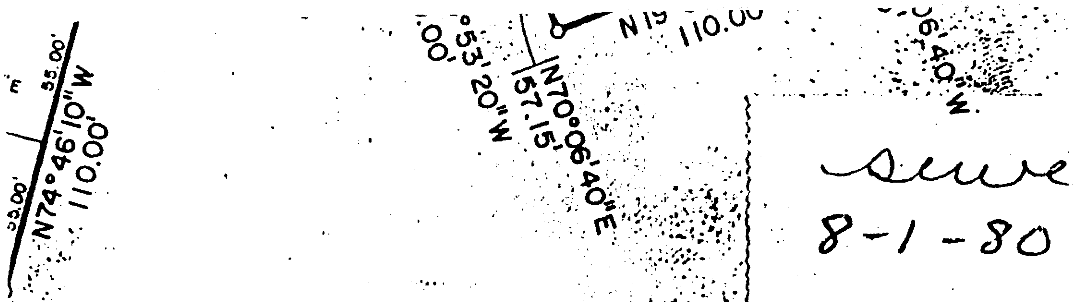
COPY TO: _____ SIGNED: MARK KRUAT

_____ TITLE: _____ PHONE: 244-1539

THE FALLS - FILING AS AMENDED

Toltal Length = 534.19' x $50/FT = $26,709.50/7 LOTS
= $3,815.64





NE1/4, NW1/4
Section 7

TRACT "G"
0.038 Ac.

sewers approved
8-1-80
R. Rish

CENTERLINE CURVE DATA						
NO.	DELTA	RADIUS	TANGENT	LENGTH	CHORD	BEARING
1	90°00'00"	52.50'	52.50'	82.47'	74.25'	S45°10'00"E
2	70°16'40"	115.90'	81.57'	142.16'	133.41'	S55°01'40"E
3	19°36'51"	400.00'	69.14'	136.93'	136.27'	N79°55'05"E
4	30°56'19"	102.50'	28.37'	55.35'	54.68'	N74°48'20"W
5	50°33'10"	77.50'	36.60'	68.38'	66.18'	N84°36'45"W
6	118°14'40"	45.00'	75.26'	92.87'	77.24'	S10°59'20"W
7	34°45'55"	150.00'	46.96'	91.02'	89.63'	S30°45'02"E
8	87°52'42"	67.76'	65.30'	103.93'	94.04'	S46°13'39"E

CURVE RETURN DATA						
NO.	DELTA	RADIUS	TANGENT	LENGTH	CHORD	BEARING
A	90°00'00"	20.00'	20.00'	31.42'	28.28'	S45°10'00"E
B	90°00'00"	20.00'	20.00'	31.42'	28.28'	S44°50'00"W
C	89°53'31"	20.00'	19.96'	31.38'	28.26'	S45°13'14"E
D	90°00'00"	20.00'	20.00'	31.42'	28.28'	N44°43'31"E
E	90°00'00"	20.00'	20.00'	31.42'	28.28'	S45°16'29"E
F	73°06'00"	20.00'	14.83'	25.52'	23.82'	N73°20'20"W
G	133°58'58"	20.00'	47.10'	46.77'	36.82'	S03°07'11"W
H	90°00'00"	20.00'	20.00'	31.42'	28.28'	S25°06'40"W
I	90°00'00"	20.00'	20.00'	31.42'	28.28'	N64°53'20"W
J	32°36'12"	20.00'	5.85'	11.38'	11.23'	N52°24'51"W
K	104°41'20"	20.00'	25.92'	36.54'	31.68'	N37°49'20"W
L	96°22'46"	20.00'	22.86'	33.64'	29.81'	S00°[illegible]

SOIL PROBLEMS

LEGEND

Indicates Mesa County Brass Cap

Indicates 5/8" Rebar And Monument Cap Set In Concrete

Indicates 5/8" Rebar And Monument Cap At All Lot Corners

Indicates 5/8" Rebar And Monument Cap Found

NOTE

Designated TRACTS "A" thru "H" are PRIVATE OPEN SPACE and UTILITY EASEMENTS.

SHEET 2 OF

THE FALLS - FIL
AS AMEN

0095-00090

ABSTRACT & TITLE COMPANY OF MESA COUNTY INC.
205 N. 4TH STREET P.O. BOX 3738
GRAND JUNCTION, CO 81502
(303) 242-8234

894345

STATEMENT OF SETTLEMENT

PROPERTY ADDRESS vacant land Grand Junction, CO 81501

SELLER Ptarmigan Investment Profit Sharing Plan

PURCHASER Dinosaur Enterprises, Inc., a Colorado corporation

SETTLEMENT DATE January 24, 1994 DATE OF PRORATION January 23, 1994

LEGAL DESCRIPTION: See Attached Warranty Deed

	SELLER		BUYER		BROKER	
	DEBIT	CREDIT	DEBIT	CREDIT	DEBIT	CREDIT
1. Selling Price		95,000.00	95,000.00			
2. Deposit, paid to Re/Max				15,000.00	15,000.00	
3. Trust Deed, payable to Seller	45,000.00			45,000.00		
4. Trust Deed						
5. Trust Deed, payoff to						
6. Interest on Loan Assumed						
7. Interest on New Loan						
8. Loan Transfer fee						
9. Loan Payment Due						
10. Title Insurance Premium	219.00		40.00			259.00
11. Abstracting:						
12. Attorney fees						
13. Recording: Warranty Deed	5.00		5.00			10.00
14. Trust Deed			20.00			20.00
15. Release	-					
16. Other Cert. of Inc./POA			10.00			10.00
17. Documentary fee			9.50			9.50
18. Certificate of taxes due			230.00			230.00
19. Taxes for preceding year(s) 1992 & 1993	1,561.47					1,561.47
20. Taxes for current year @$1.15/day from 1/1 to 1/24	26.45			26.45		
21. Tax reserve						
22. Special Taxes						
23. Personal property taxes						
24. Premium for new insurance						
25. Hazard insurance reserve						
26. Mortgage insurance						
27. Mortgage insurance reserve						
28. Loan service fee						
29. Loan discount fee						
30. Credit report						
31. Improvement Location Certificate						
32. Appraisal Fee						
33. Rents						
34. Security Deposits						
35. Pre-paid to Lender						
36. Domestic water						
37. Irrigation water						
38. Stock certificate transfer fee						
39. Sewer						
40. Broker's Fee to Re/Max Real Estate Group	8,500.00					8,500.00
41. Settlement or Closing Fee	50.00		50.00			100.00
42. Endorsements						
43. Broker loan to seller		8,500.00			8,500.00	
44. City of Grand Junction Imp. Grntee	15,262.56					15,262.56
Sub-totals	70,624.48	103,500.00	95,364.50	60,026.45	23,500.00	25,962.53
Balance due to Seller	32,875.52					32,875.52
Balance due from Purchaser				35,338.05	35,338.05	
TOTALS:	103,500.00	103,500.00	95,364.50	95,364.50	58,838.05	58,838.05

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

To Greggo	From Scott
Co.	Co.
Dept. I have not	Phone #
Fax # scheduled time	Fax # with Aehzigen yet.

I will be out of Town 1/21. Have lots of time open on Monday

ROBB, BECKNER, ACHZIGER,
MCINNIS & PALO
Attorneys at Law

James M. Robb
Larry B. Beckner
John A. Achziger
Caré McInnis Raaum
Bryce Palo

David B. Palo
(of counsel)

Miles Kara
(special counsel)

Suite 850, Alpine Bank Building
225 North Fifth Street
P.O. Box 220
Grand Junction, Colorado 81502
Telephone (303) 245-4300
Telefax (303) 243-4358

August 29, 1994

TELEFAX: 241-1593

Meridian Land Title
ATTN: Sharon
551 Grand Avenue
Grand Junction, CO 81501

RE: Dinosaur Enterprises, Inc./Ptarmigan

Dear Sharon:

I am enclosing with this transmittal a copy of the Agreemeent from the closing concerning development and road costs. I am also enclosing a copy of my letter of May 6, 1994, as well as a copy of our check showing transferral of the escrowed funds.

As I think you understand, we believe that the payment of $15,262.56 was only a partial payment by Ptarmigan and they have responsibility for their full share of these development costs.

Please contact me if there are further questions or necessary information.

Yours truly,

ROBB, BECKNER, ACHZIGER
McINNIS & PALO

By John A. Achziger

JAA:jw
Enclosure

@ 11:37 a.m.

UTE WATER COI
560 25 R
Grand Ju

Office
Phone: 303-242-7491
FAX: 303-242-9189

ient Plant
: 303-464-5563
: 303-464-5443

To be picked up by City

MEMC...ANDU...

JOB NO. _____

TO Kathy Portner - City Planning DATE 3-22-95

FROM Ralph Olsen - Ute Water TIME _____ AM ___ PM ___

PROJECT The Falls, Filing #1 PHONE ( ) 244-1446

☒ PHONE CONF WITH Kathy Portner - City Planning

☐ MEETING

☐ OTHER

SUBJECT Release of Improvements - Existing Water line East Side 28½ Rd. - - -

Future development on the east side of 28½ Rd should include:

1. Widening of street to orrginal planned width so water line remains in street R-O-W.

2. Widening of street or grade lowering to east will require lowering of the waterline, especially 200 to 300 feet on the south end.

Please make notes so that when future development plans appear we can review the water line alinement and provide more carefully -

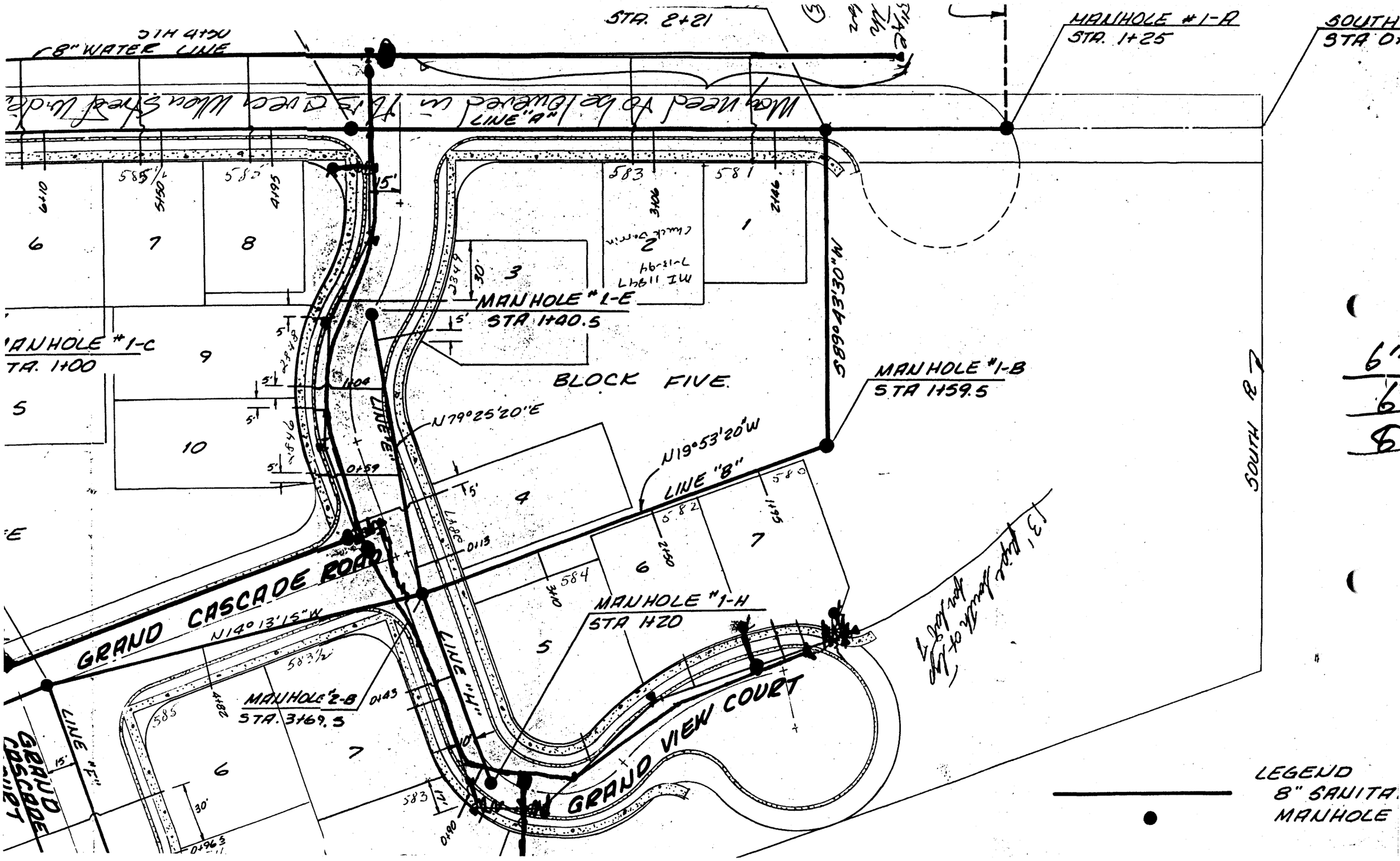
Thanks -

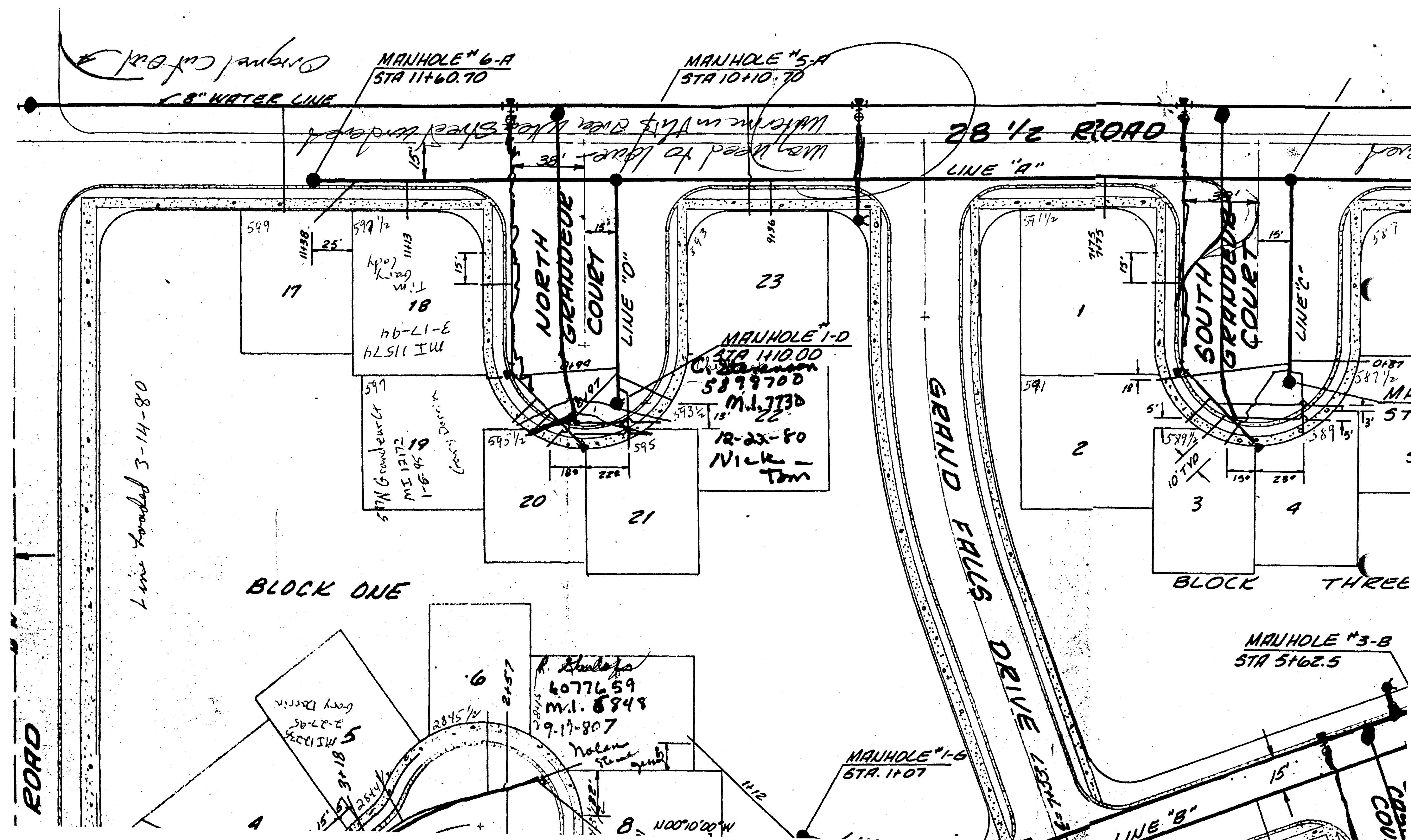
Ralph W. Olsen

NEEDS FOLLOW-UP ☐

PAGE 1 OF 1

Rev. 1/95


8" WATER LINE
STA. 2+21
MANHOLE #1-A
STA. 1+25
LINE "A"
BLOCK FIVE
MANHOLE #1-E
STA 1+40.5
MANHOLE #1-C
STA. 1+00
MANHOLE #1-B
STA 1+59.5
LINE "B"
N79°25'20"E
N19°53'20"W
S89°43'30"W
SOUTH 8
GRAND CASCADE ROAD
N14°13'15"W
MANHOLE #1-H
STA 1+20
LINE "H"
GRAND VIEW COURT
MANHOLE #2-B
STA. 3+69.5
LINE "F"
GRAND CASCADE
LEGEND
8" SANITA
MANHOLE



8" WATER LINE
MANHOLE #6-A
STA 11+60.70
MANHOLE #5-A
STA 10+10.70
28 1/2 ROAD
LINE "A"
NORTH GRANDEUR COURT
LINE "D"
SOUTH GRANDEUR COURT
LINE "C"
MANHOLE #1-D
STA 1+10.00
GRAND FALLS DRIVE
MANHOLE #3-B
STA 5+62.5
MANHOLE #1-G
STA. 1+07
LINE "B"
BLOCK ONE
BLOCK THREE
ROAD
N00°10'00"W
Line Loaded 3-14-80

March 30, 1995

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

Mr. Ebe Eslami
P.O. Box 2743
Grand Junction, CO 81502

Subject: The Falls Filing One

Dear Mr. Eslami:

A final inspection of the streets and drainage facilities in Subdivision was conducted on August 8, 1994. As a result of this inspection, a list of remaining items was given to you for completion. These items were reinspected on Januar 20, 1995 and found to be satisfactorily completed.

"As Built" record drawings and required test results for the streets and drainage facilities were received on January 20, 1995. These have been reviewed and found to be acceptable.

In light of the above, the streets and drainage improvements are accepted for future maintenance by the City of Grand Junction.

This acceptance is subject to a warranty of all materials and workmanship for a period of one year beginning January 20, 1995.

Thank you for your cooperation in the completion and acceptance of this project.

Sincerely,

Jody Kliska, P.E.
City Development Engineer

cc: Don Newton
Doug Cline
Walt Hoyt
Kathy Portner

MEMORANDUM

TO: Don Newton, City Engineer
Bill Cheney, City Utilities Engineer
Hank Masterson, Fire Inspector
Ute Water
Grand Junction Drainage

FROM: Kathy Portner, Community Development

DATE: February 27, 1995

RE: Release of Improvements Agreement, Falls Filing #1

Attached is a Release of Improvements Agreement and Guarantee for the completion of improvements along 28 1/2 Road in the Falls, Filing #1. If all infrastructure improvements are completed to your satisfaction, please sign the attached release and return to the Community Development Department, 250 N. 5th Street, G.J. 81501. If you have questions you can call me at 244-1446.

WestWater Engineering
Consulting Engineers

2516 FORESIGHT CIRCLE, #1 GRAND JUNCTION, COLORADO 81505 (970) 241-7076 FAX (970) 241-7097

April 5, 1995

Kathy Portner, Planning Supervisor
Community Development Department
250 N. 5th Street
Grand Junction, CO 81501

SUBJECT: Release of Improvement & Guarantee - The Falls, Filing #1, 28½ Road

Dear Kathy,

Pursuant to your recent request for our office to sign a Release of Improvements and Guarantee on behalf of the Central Grand Valley Sanitation District, we have researched our files for information pertaining to acceptance of the sanitary sewerline which is installed in 28 ½ Road at The Falls Filing #1. The District has also reviewed their files. Our records and those on file at the District, indicate that the City accepted the sewer outfall line from The Falls Filing #1 in a letter from Ron Rish dated August 1, 1980. A copy of the City's letter is enclosed for your reference.

No other approvals or letters of acceptance were found to indicate whether the Central Grand Valley Sanitation District had approved the work at the time construction of the sewer line was completed. Because previous acceptance of the sewerline by the District does not appear to exist, the installation along 28 ½ Road was visually inspected on March 31, 1995. Our inspection found several manholes that do not meet District standards. These include MH-TF15, MH-TF17 and MH-TF19 on 28 ½ Road, and MH-TF21 on South Grandeur Court, as shown on the attached map. Manhole TF15 has 31 inches of concrete grade rings and the cast iron ring and cover is not centered over the grade rings. The cast iron ring and cover at MH-TF17 is offset from the grade rings, MH-TF19 has 23 inches of grade rings, MH-TF21 has 24 ½ inches of grade rings, as opposed to the maximum allowed of 12 inches.

Since asphalt pavement on 28 ½ Road was completed fairly recently, it is our opinion that the current developer could be liable for correcting the two ring and covers which are not centered over grade rings. Regarding the excessive number of grade rings at the three manholes, it is not clear if the grade rings were installed as a part of the original construction which had been approved by the City, or if they were installed prior to paving the road. Because of this, it is difficult to determine who may be responsible for corrective action.

We cannot sign the Release of Improvements and Guarantee for The Falls Filing #1 until such time that the offset ring and covers are centered over the manhole openings, and only after the District Board reviews the grade ring situation. We can keep the Release form in our files, or return it unsigned until corrections are made to the offset ring and covers and for the duration of the Board's review, as you prefer.

Please let us know if you or the City has any comments in this regard.

Respectfully,

C Kellie Knowles

C. Kellie Knowles, P.E.

CKK/sc

cc: Chris Shaffer, CGVSD Manager

enclosures

City of Grand Junction, Colorado 81501
250 North Fifth St., 303 243-2633

August 1, 1980

Mr. Rex Price
Paragon Engineering, Inc.
P. O. Box 2872
Grand Junction, CO 81502

Dear Rex:

RE: The Falls Subdivision - Sanitary Sewer Outfall Line. FILE

We have received the Engineer's as-built drawings on the above referenced project indicating the sanitary sewer system has been constructed according to plans and specifications and that infiltration does not exceed 200 gallons per inch diameter per mile of length per day. The sanitary sewer system has been final-inspected by City personnel and found to be satisfactory.

This sanitary sewer system is therefore accepted for normal and reasonable operation and maintenance service as provided for in the agreement between the City of Grand Junction and the Central Grand Valley Sanitation District.

The developer remains responsible for removal of any material which is allowed into the system during roadway construction.

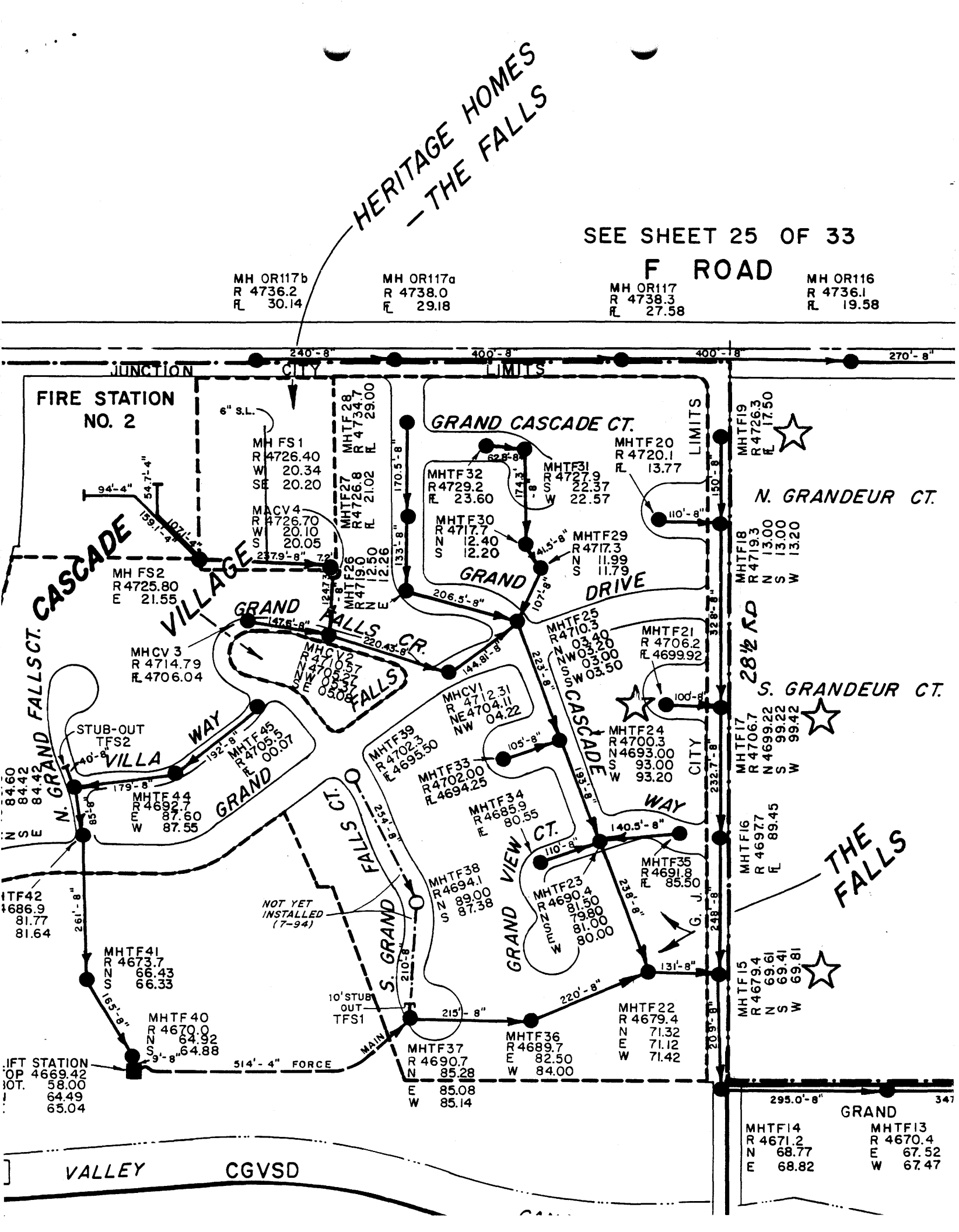
FOR THE CITY OF GRAND JUNCTION

Ronald P. Rish

Ronald P. Rish, P.E.
City Engineer

RPR/rs

cc - Central Grand Valley Sanitation District
Dick Hollinger
Mac McGregor
Ralph Sterry


HERITAGE HOMES
THE FALLS
SEE SHEET 25 OF 33
F ROAD
MH OR117b
R 4736.2
FL 30.14
MH OR117a
R 4738.0
FL 29.18
MH OR117
R 4738.3
FL 27.58
MH OR116
R 4736.1
FL 19.58
JUNCTION CITY LIMITS
FIRE STATION NO. 2
GRAND CASCADE CT.
N. GRANDEUR CT.
S. GRANDEUR CT.
28½ RD
CASCADE VILLAGE
GRAND FALLS CT.
GRAND FALLS CR.
GRAND DRIVE
GRAND VILLA WAY
GRAND CASCADE WAY
FALLS CT.
GRAND VIEW CT.
S. GRAND
THE FALLS
GRAND
VALLEY
CGVSD
MH FS1
R 4726.40
W 20.34
SE 20.20
MH FS2
R 4725.80
E 21.55
MACV4
R 4726.70
W 20.10
S 20.05
MHCV3
R 4714.79
FL 4706.04
MHCV2
R 4710.57
NW 05.37
SE 05.08
MHCV1
R 4712.31
NE 4704.11
NW 04.22
MHTF15
R 4679.4
N 69.61
S 69.41
W 69.81
MHTF16
R 4697.7
FL 89.45
MHTF17
R 4706.7
N 4699.22
S 99.42
W 99.42
MHTF18
R 4719.3
N 13.00
S 13.00
W 13.20
MHTF19
R 4726.3
FL 17.50
MHTF20
R 4720.1
FL 13.77
MHTF21
R 4706.2
FL 4699.92
MHTF22
R 4679.4
N 71.32
E 71.12
W 71.42
MHTF23
R 4690.4
81.50
79.80
81.00
80.00
MHTF24
R 4700.3
N 4693.00
S 93.00
W 93.20
MHTF25
R 4710.3
N 03.20
NW 03.00
S 03.50
MHTF26
R 4719.0
R N E
12.50
12.26
MHTF27
R 4726.8
FL 21.02
MHTF28
R 4734.7
FL 29.00
MHTF29
R 4717.3
N 11.99
S 11.79
MHTF30
R 4717.7
N 12.40
S 12.20
MHTF31
R 4727.9
S 22.37
W 22.57
MHTF32
R 4729.2
FL 23.60
MHTF33
R 4702.00
FL 4694.25
MHTF34
R 4685.9
FL 80.55
MHTF35
R 4691.8
FL 85.50
MHTF36
R 4689.7
E 82.50
W 84.00
MHTF37
R 4690.7
N 85.28
E 85.08
W 85.14
MHTF38
R 4694.1
N 89.00
S 87.38
MHTF39
R 4702.3
FL 4695.50
MHTF40
R 4670.0
N 64.92
S 64.88
MHTF41
R 4673.7
N 66.43
S 66.33
MHTF42
4686.9
81.77
81.64
MHTF44
R 4692.7
E 87.60
W 87.55
MHTF45
R 4705.5
FL 00.07
MHTF13
R 4670.4
E 67.52
W 67.47
MHTF14
R 4671.2
N 68.77
E 68.82
STUB-OUT TFS2
10' STUB OUT TFS1
NOT YET INSTALLED (7-94)
MAIN
514'-4" FORCE
LIFT STATION
TOP 4669.42
BOT. 58.00
64.49
65.04
240'-8"
400'-8"
400'-8"
270'-8"
295.0'-8"
347
6" S.L.
94'-4"
54.7'-4"
159.1'-4"
107'-4"
237.9'-8"
7.2'
247.3'-8"
133'-8"
170.5'-8"
62.8'-8"
174.3'-8"
41.5'-8"
107'-8"
206.5'-8"
147.6'-8"
220.45'-8"
144.81'-8"
223'-8"
105'-8"
193'-8"
140.5'-8"
110'-8"
238'-8"
131'-8"
220'-8"
215'-8"
210'-8"
254'-8"
261'-8"
165'-8"
85'-8"
179'-8"
192'-8"
40'-8"
105'-8"
110'-8"
150'-8"
328'-8"
232.7'-8"
248'-8"
209'-8"
9'-8"

WestWater Engineering
Consulting Engineers

2516 FORESIGHT CIRCLE, #1 GRAND JUNCTION, COLORADO 81505 (970) 241-7076 FAX (970) 241-7097

May 11, 1995

Kathy Portner, Planning Supervisor
Community Development Department
250 North 5th Street
Grand Junction, CO 81501

SUBJECT: The Falls Filing #1 - Sanitary Sewer

Dear Kathy,

The current developer of The Falls, Filing #1 has corrected manhole ring and covers that were offset from manhole cone sections during paving operations on 28 ½ Road in The Falls Filing #1. Other substandard work on the sewer system identified in our letter dated April 15, 1995, including an excessive number of concrete grade rings at three manholes was discussed by the Central Grand Valley Sanitation Board at their meeting of May 8, 1995. It was decided that since the deficiency existed in 1980 when the sewer system was initially completed, that the current developer would not be held responsible for the work of previous developers.

Central Grand Valley Sanitation District has signed the Release of Improvements Agreement and Guarantee with the understanding that the District may need to upgrade the three manholes in the future. This work would be delayed until it became necessary or until such time that 28 ½ Road is overlaid or resurfaced to avoid unnecessary asphalt patches in the recently paved road.

The signed Release is enclosed for your files. Please do not hesitate to call if you have any questions.

Respectfully,

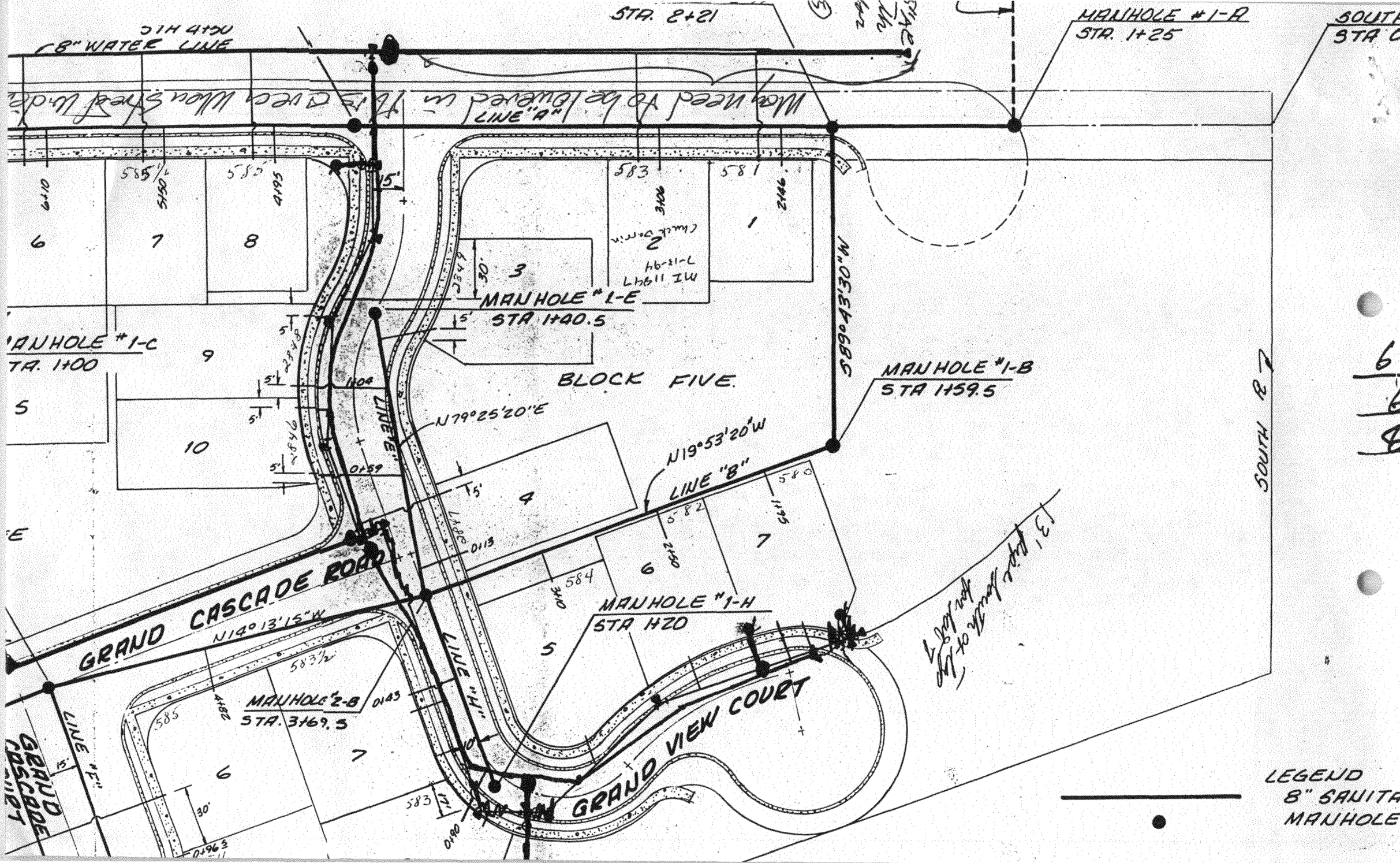
C Kellie Knowles

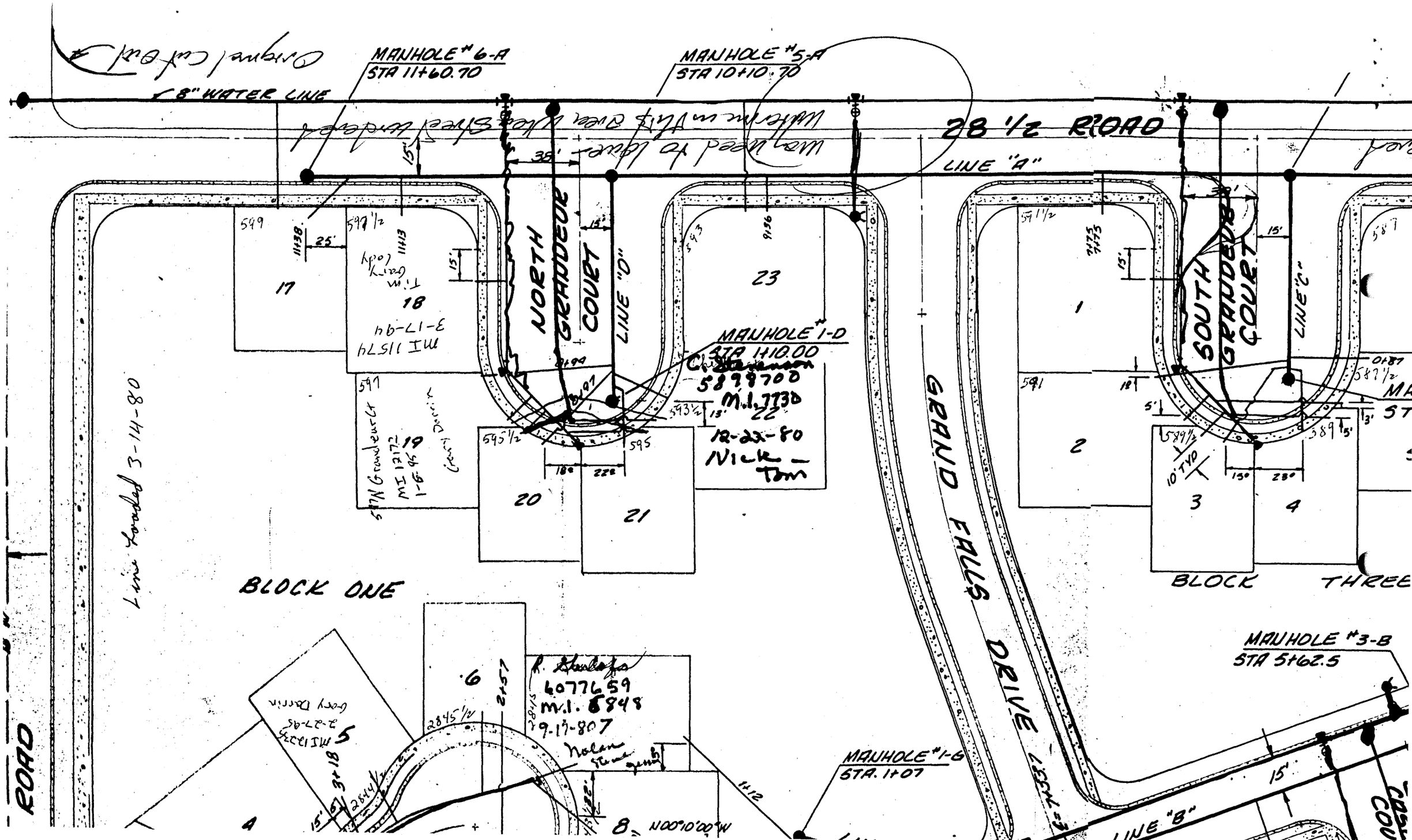
C. Kellie Knowles, P.E.

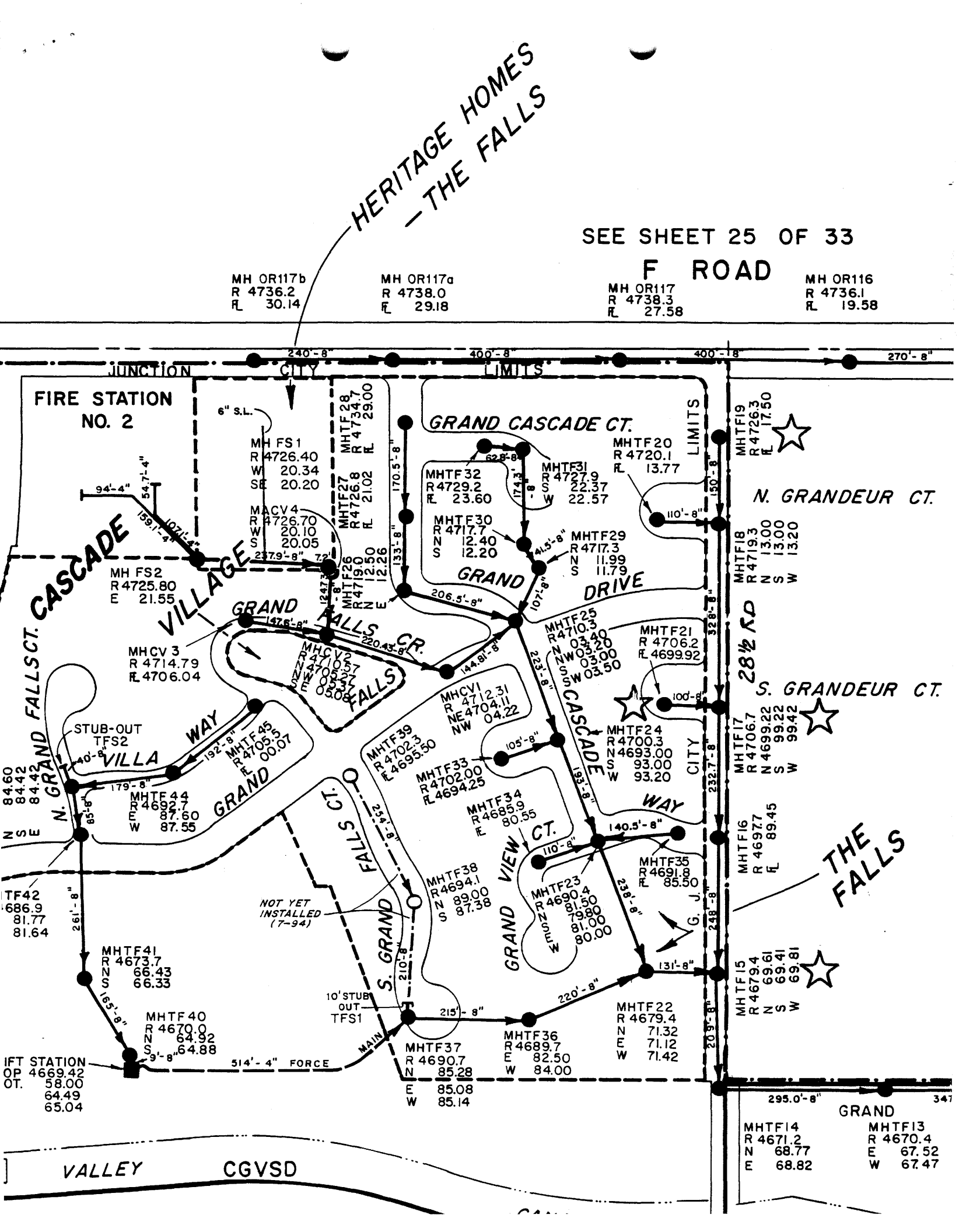
CKK/sc

cc: Chris Shaffer, CGVSD Manager

enclosure


STA. 2+21
8" WATER LINE
MANHOLE #1-A
STA. 1+25
LINE "A"
MANHOLE #1-E
STA 1+40.5
MANHOLE #1-C
STA. 1+00
BLOCK FIVE.
MANHOLE #1-B
STA 1+59.5
SOUTH 8
N79°25'20"E
N19°53'20"W
LINE "B"
LINE "E"
LINE "H"
GRAND CASCADE ROAD
N14°13'15"W
MANHOLE #1-H
STA 1+20
MANHOLE #2-B
STA. 3+69.5
GRAND VIEW COURT
GRAND CASCADE COURT
LEGEND
8" SANITA
MANHOLE


MANHOLE #6-A
STA 11+60.70
MANHOLE #5-A
STA 10+10.70
8" WATER LINE
28 1/2 ROAD
LINE "A"
NORTH GRANDVIEW COURT
LINE "D"
MANHOLE #1-D
STA 1+10.00
GRAND FALLS DRIVE
SOUTH GRANDVIEW COURT
LINE "C"
BLOCK ONE
BLOCK THREE
MANHOLE #3-B
STA 5+62.5
MANHOLE #1-G
STA. 1+07
LINE "B"
N00°10'00"W
17
18
19
20
21
22
23
1
2
3
4
5
6
8


HERITAGE HOMES – THE FALLS
SEE SHEET 25 OF 33
F ROAD
MH OR117b
R 4736.2
FL 30.14
MH OR117a
R 4738.0
FL 29.18
MH OR117
R 4738.3
FL 27.58
MH OR116
R 4736.1
FL 19.58
JUNCTION CITY LIMITS
FIRE STATION NO. 2
6" S.L.
MH FS1
R 4726.40
W 20.34
SE 20.20
MACV4
R 4726.70
W 20.10
S 20.05
MHTF28
R 4734.7
FL 29.00
MHTF27
R 4726.8
FL 21.02
MHTF26
R 4719.0
NE 12.50
12.26
MH FS2
R 4725.80
E 21.55
CASCADE VILLAGE CIR.
GRAND FALLS CT.
GRAND FALLS CR.
MHCV3
R 4714.79
FL 4706.04
MHCV2
R 4710.57
SW 05.47
E 05.08
MHCV1
R 4712.31
NE 4704.11
NW 04.22
GRAND CASCADE CT.
MHTF32
R 4729.2
FL 23.60
MHTF31
R 4727.9
S 22.37
W 22.57
MHTF30
R 4717.7
N 12.40
S 12.20
MHTF29
R 4717.3
N 11.99
S 11.79
GRAND DRIVE
MHTF20
R 4720.1
FL 13.77
MHTF19
R 4726.3
FL 17.50
N. GRANDEUR CT.
MHTF18
R 4719.3
N 13.00
S 13.00
W 13.20
28½ RD
MHTF25
R 4710.3
N 03.40
NW 03.20
S 03.00
W 03.50
MHTF21
R 4706.2
FL 4699.92
S. GRANDEUR CT.
MHTF24
R 4700.3
N 4693.00
S 93.00
W 93.20
CASCADE CIR.
MHTF17
R 4706.7
N 4699.22
S 99.22
W 99.42
CITY
MHTF39
R 4702.3
FL 4695.50
MHTF33
R 4702.00
FL 4694.25
MHTF34
R 4685.9
FL 80.55
GRAND VIEW CT.
MHTF35
R 4691.8
FL 85.50
MHTF23
R 4690.4
81.50
79.80
81.00
80.00
MHTF16
R 4697.7
FL 89.45
THE FALLS
G. J.
STUB-OUT TFS2
GRAND VILLA WAY
MHTF45
R 4705.5
FL 00.07
MHTF44
R 4692.7
E 87.60
W 87.55
N. GRAND FALLS CT.
84.60
84.42
N
S E
TF42
686.9
81.77
81.64
MHTF41
R 4673.7
N 66.43
S 66.33
MHTF40
R 4670.0
N 64.92
S 64.88
IFT STATION
OP 4669.42
OT. 58.00
64.49
65.04
514'-4" FORCE MAIN
NOT YET INSTALLED (7-94)
S. GRAND FALLS CT.
MHTF38
R 4694.1
N 89.00
S 87.38
10' STUB OUT TFS1
MHTF37
R 4690.7
N 85.28
E 85.08
W 85.14
MHTF36
R 4689.7
E 82.50
W 84.00
MHTF22
R 4679.4
N 71.32
E 71.12
W 71.42
MHTF15
R 4679.4
N 69.61
S 69.41
W 69.81
295.0'-8"
GRAND
MHTF14
R 4671.2
N 68.77
E 68.82
MHTF13
R 4670.4
E 67.52
W 67.47
VALLEY CGVSD

GAS DISTRIBUTION

NOTE: ALL EASEMENTS ARE 10 ft IN WIDTH UNLESS NOTED. TRACTS "A" THRU "I" ARE UTILITY EASEMENTS.

1" = 100'

THE FALLS
738' of 3" MW
3,685' of 1¼" PED

FOREMANS SKETCH (17" x 11")

Original Do NOT Remove From Office

#6994

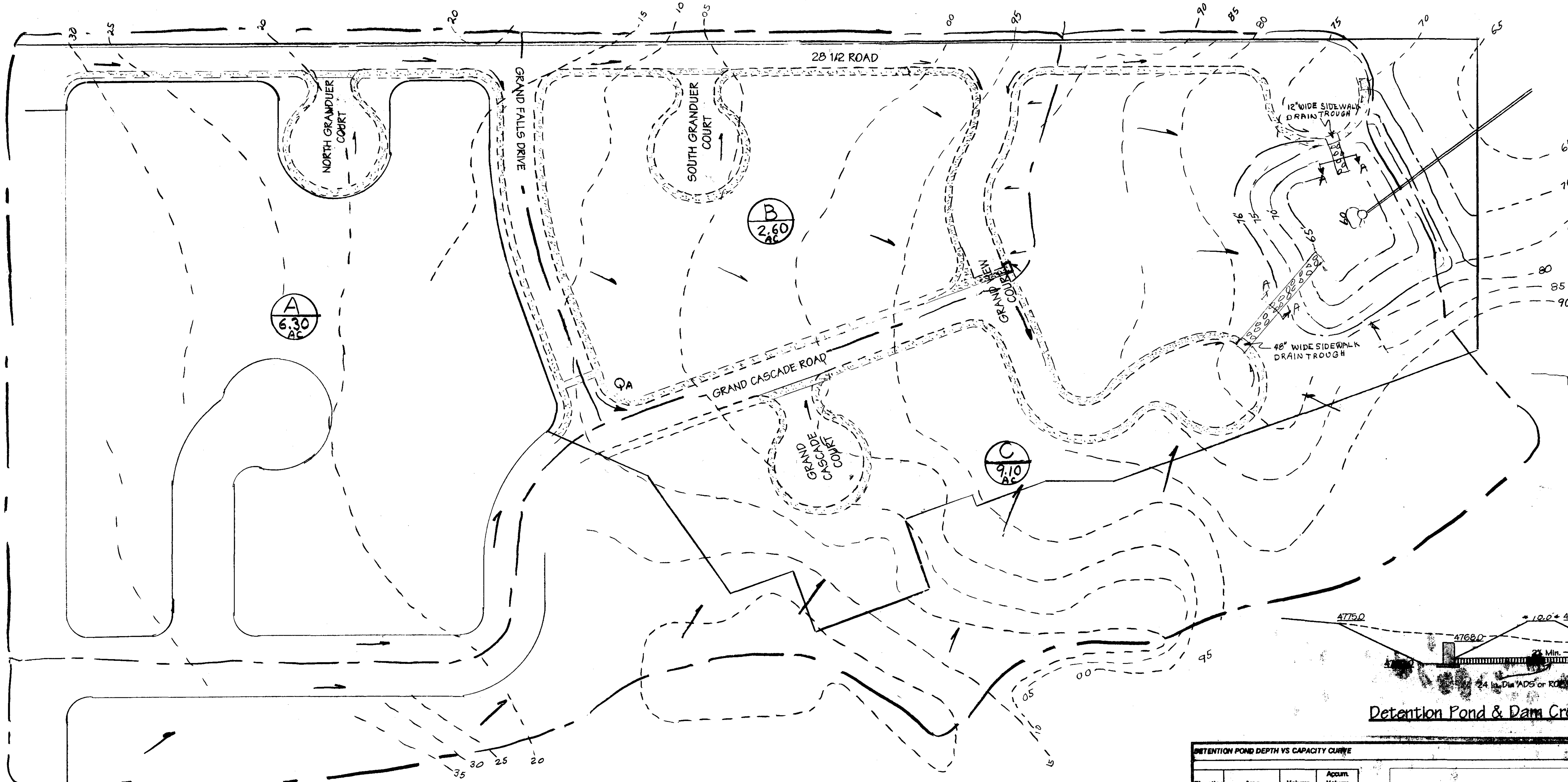
SHOW CONDITIONS OF OLD MAIN AT TIE-INS	____ END	☒ GOOD	☐ FAIR	☐ POOR			
	____ END	☒ GOOD	☐ FAIR	☐ POOR			
TEST PRESSURE: 100 #	TEST MADE WITH: AIR	DURATION OF TEST: 12 hr	FOREMAN: Miller	DATE: 5-22-80			
ORDER NO.: 3491	PLAT NO.: 835-846	DRAWN BY:	DATE:				

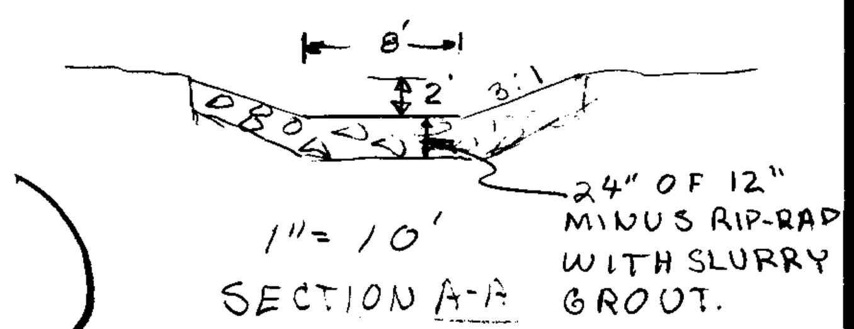
NEW MAIN
OLD MAIN
C. C.

ANODE

LEGEND
VALVE
REDUCER
CONTROL FITTING

THE FALLS - GRADING & DRAINAGE PLAN





NOTE: IF ROW IS TO CANAL IS NOT AVAILABIL THE POND BOTTOM AND DISCHARE PIPE AND CONTROL STRUCTURE SOULD BE RAISED APPROXIMAT 2 FT. TO MATCH EXISTING DRAIN DITCH INVERT.

18 Inch minimum cover

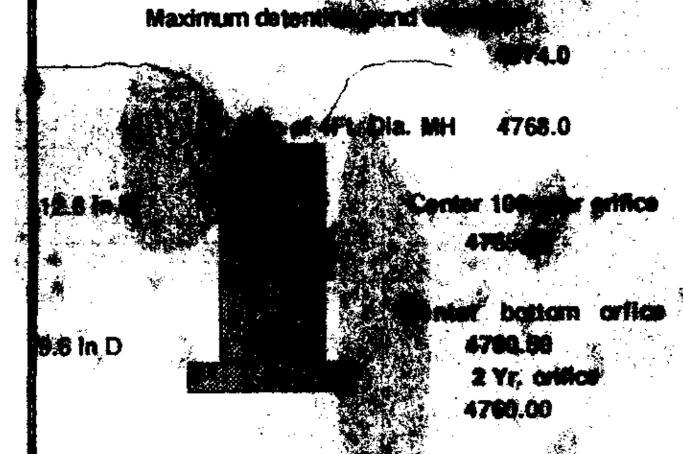
Detention Pond & Dam Cross Section

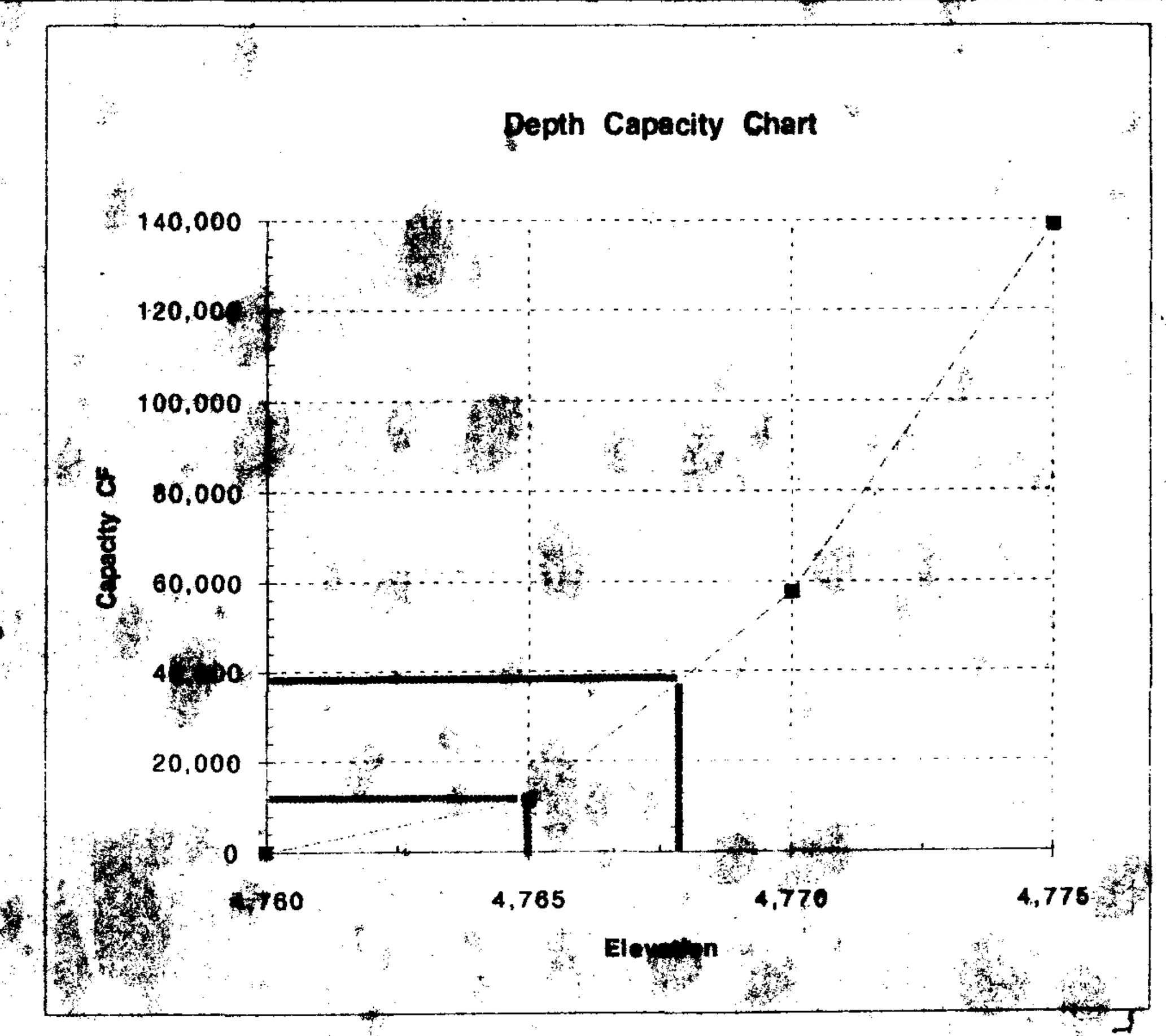
DETENTION POND DEPTH VS CAPACITY CURVE

Elevation Ft.	Area Ft. Sq.	Volume Cu. Ft.	Accum. Volume Cu. Ft.
4,760	0	0	0
4,765	6,800	11,333	11,333
4,770	12,000	46,389	57,722
4,775	20,800	80,998	138,720

Storage Required Below 100 Yr Orfice: 2,743.50

TOTAL STORAGE REQUIREMENT: [illegible]





THE FALLS FILING 1 - Drainage Study

CALCULATION OF INCREASE IN DISCHARGE DUE TO PROPOSED CONSTRUCTION

After Construction (Area - Intensity - Discharge)

BASIN	AREA SURFACE TYPE	Ac.	RUNOFF COEF. C2	RUNOFF COEF. C100	REACH	LENGTH FEET	SLOPE (S) %	V Ft/Sec	2-Yr TIME MIN.	100-Yr TIME MIN.	INTENSITY Inches/Hour 2-Yr	INTENSITY Inches/Hour 100-Yr	DISCHARGE CFS (Q=CIA) 2-Yr	DISCHARGE CFS (Q=CIA) 100-Yr
A	Landscaped	3.78	0.25	0.4	A-1	150	[illegible]	0.10	14.9	12.2				
	Paved & Roofs	2.52	0.90	0.95	A-2	700	[illegible]	4.00	2.9	2.8				
					A-3	800	2.2	1.00	13.3	13.3				
	Total/Average	6.30	0.51	0.62					31.1	28.5	0.86	2.36	2.76	9.22
B	Landscaped	1.56	0.25	0.4	B-1	80	2.0	0.14	10.9	8.9				
	Paved & Roofs	1.04	0.90	0.95	B-2	600	5.3	4.50	2.2	2.2				
					[illegible]	400	4.8	4.00	1.7	1.7				
	Total/Average	2.60	0.51	0.62					14.8	12.8	1.28	3.43	[illegible]	5.53
C	Landscaped	5.46	[illegible]	0.4	A-1	100	1.0	0.15	15.3	12.6				
	Paved & Roofs	3.64	[illegible]	0.95	A-2	1,320	5.4	1.50	14.7	[illegible]				
	Total/Average	9.10	[illegible]	0.62					30.0	[illegible]	0.88	2.41	4.08	13.60
												Sub-Total:	8.54	28.34
												Off site drainage included in above basin areas:	0.00	0.00
	Total Ac./weighted C	18.00	0.51	0.62				MAX. Tc	31.1	28.5		TOTAL Q:	8.54	28.34

Historic (Area - Intensity - Discharge)

BASIN	AREA SURFACE TYPE	Ac.	RUNOFF COEF. C2	RUNOFF COEF. C100	REACH	LENGTH FEET	SLOPE (S) %	VELOVITY FT./SEC.	2-Yr TIME MIN.	100-Yr TIME MIN.	INTENSITY Inches/Hour 2-Yr	INTENSITY Inches/Hour 100-Yr	DISCHARGE CFS (Q=CIA) 2-Yr	DISCHARGE CFS (Q=CIA) 100-Yr
A	Exist. Sub.	6.30	0.51	0.62					31.1	28.5	0.86	2.36	2.76	9.22
B&C	Steep & baren	11.70	0.40	0.4	A-1	150	[illegible]	0.06	9.0	9.0				
	shale & clay				A-2	1,200	5.0	3.00	6.7	6.7				
	Total/Average	18.00	0.26	0.26					15.7	15.7	1.24	3.15	5.80	14.74
								MAX. Tc	15.7	15.7		TOTAL Qh:	5.80	14.74
												INCREASE:	2.74	13.60

DESIGNED BY Terry Nichols

DRAWN BY Terry Nichols

SURVEY DATE

REVISIONS

NO.	DATE	REMARKS	BY

THE FALLS - GRADING & DRAINAGE PLAN

CIVIL ENGINEERING · PHOTOGRAMMETRY · SURVEYING

P.O. Box 60010 · Grand Junction · Colorado · 81506 · Phone 303 - 243-7101

NICHOLS ASSOCIATES, INC.

DATE DRAWN

SCALE 1" = 50'

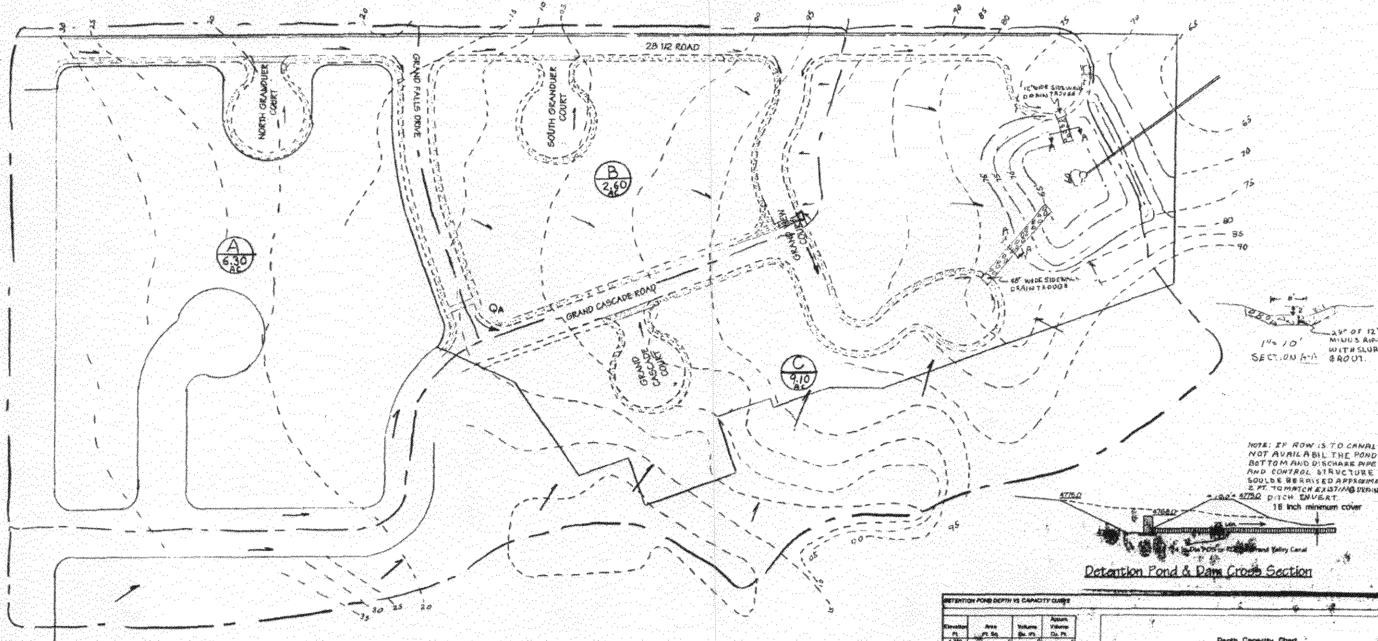
PROJECT NUMBER

SHEET NUMBER 9 OF 9

1994-0069

TELEDYNE POST N41491

THE FALLS - GRADING & DRAINAGE PLAN



NOTE: IF ROW IS TO CANAL IS NOT AVAILABLE THE POND BOTTOM AND DISCHARGE PIPE AND CONTROL STRUCTURE SOULD BE BERMED APPROXIMATELY 2 FT. TO MATCH EXISTING BERM DITCH INVERT.

Detention Pond & Dam Cross Section

THE FALLS [illegible] 1 - Drainage Study

CALCULATION OF INCREASE IN DISCHARGE DUE TO PROPOSED CONSTRUCTION

After Construction (Area - Intensity - Discharge)

BASIN	AREA: SURFACE TYPE	AREA: Ac.	RUNOFF COEF. C2	RUNOFF COEF. C100	REACH	LENGTH FEET	SLOPE (%)	V	2-Yr TIME	100-Yr TIME	INTENSITY Inches/Hour 2-Yr	INTENSITY Inches/Hour 100-Yr	DISCHARGE CFS (C×I×A) 2-Yr	DISCHARGE CFS (C×I×A) 100-Yr
A	Landscaped	3.78	0.25	0.4	A-1	150	[illegible]	0.18	14.3	12.2				
	Paved & Roofs	2.58	0.90	0.95	A-2	750	[illegible]	4.50	2.9	2.8				
					A-3	900	2.2	1.00	11.3	13.3				
	Total/Average	6.30	0.51	0.52					31.1	28.5	0.98	2.36	3.76	9.23
B	Landscaped	1.56	0.25	0.4	[illegible]	85	2.0	0.14	[illegible]	[illegible]				
	Paved & Roofs	1.04	0.90	0.95	[illegible]	550	3.1	4.50	[illegible]	[illegible]				
					[illegible]	900	4.4	4.20	[illegible]	[illegible]				
	Total/Average	2.60	0.51	0.52					14.5	12.8	1.28	3.43	[illegible]	5.03
C	Landscaped	5.48	[illegible]	0.4	A-1	135	1.0	0.16	15.3	[illegible]				
	Paved & Roofs	3.64	[illegible]	[illegible]	[illegible]	1,020	[illegible]	1.50	14.7	[illegible]				
	Total/Average	9.10	[illegible]	[illegible]					30.0	[illegible]	0.96	2.41	3.04	13.80
												Sub-Total	[illegible]	28.34
									% Off site drainage included in above basin areas:				0.00	0.00
	Total Ac. Weighted C	18.00	0.51	0.52				MAX. Tc	31.1	28.5		TOTAL Q	8.54	28.34

Existing (Area - Intensity - Discharge)

BASIN	AREA: SURFACE TYPE	AREA: Ac.	RUNOFF COEF. C2	RUNOFF COEF. C100	REACH	LENGTH FEET	SLOPE (%) %	VELOCITY FT./SEC.	2-Yr TIME MIN.	100-Yr TIME MIN.	INTENSITY Inches/Hour 2-Yr	INTENSITY Inches/Hour 100-Yr	DISCHARGE CFS (C×I×A) 2-Yr	DISCHARGE CFS (C×I×A) 100-Yr
	Exist. Sub.	18.30	0.51	0.52					31.1	28.1	0.25	2.34	3.76	9.60
	Brush & [illegible]	11.70	0.48	0.4	A-1	150	[illegible]	[illegible]	9.0	9.0				
[illegible]	[illegible]				A-2	1,200	[illegible]	3.00	6.7	6.7				
	Total/Average	18.00	0.28	0.28					15.7	15.7	1.36	3.15	5.96	14.74
								MAX. Tc	15.7	15.7		TOTAL Q	5.96	14.74
												INCREASE	2.74	13.60

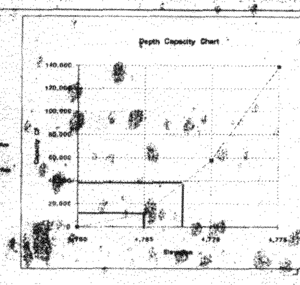
DETENTION POND DEPTH VS CAPACITY CURVE

Elevation Ft.	Area Ft. Sq.	Volume Cu. Ft.	Accum. Volume Cu. Ft.
4,780	0	0	0
4,785	6,800	11,333	11,333
4,775	12,000	46,388	57,720
4,775	20,690	80,[illegible]	138,720

Storage Required Below 100 Yr Orifice: 3,748.36

TOTAL STORAGE REQUIRED: [illegible]

Maximum [illegible]



DESIGNED BY: Terry Nichols

DRAWN BY: Terry Nichols

SURVEY DATE

REVISIONS

NO.	DATE	REMARKS	BY

THE FALLS - GRADING & DRAINAGE PLAN

NICHOLS ASSOCIATES, INC.

CIVIL ENGINEERING · PHOTOGRAMMETRY · SURVEYING

DATE DRAWN

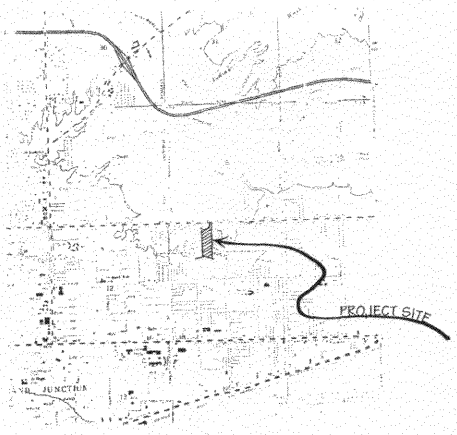
SCALE: 1"= 50

PROJECT NUMBER

SHEET NUMBER: 9 OF 9

THE FALLS - FILING ONE

VACINITY MAP



N

SHEET INDEX

Approved plans

DESIGNED BY Terry Nichols
DRAWN BY Terry Nichols
SURVEY DATE

REVISIONS
NO. DATE DESCRIPTION

THE FALLS FILING ONE
APPROVED 4-20-94

NICHOLS ASSOCIATES, INC.
CIVIL ENGINEERING · PHOTOGRAMMETRY · SURVEYING
P.O. Box 1088 • Grand Junction • Colorado 81502 • Phone 303 242-7181

DATE DRAWN

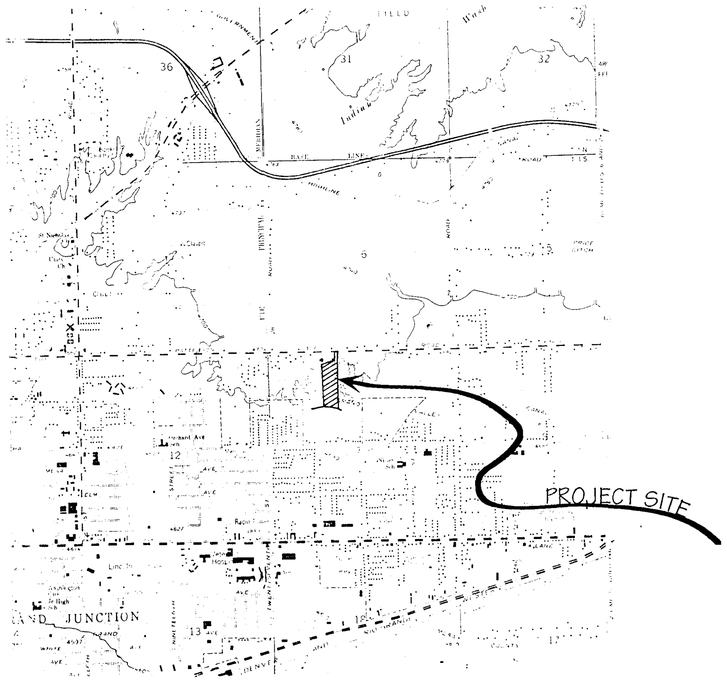
SCALE

PROJECT NUMBER

SHEET NUMBER
1 OF 1

THE FALLS - FILING ONE

VACINITY MAP



N

SHEET INDEX

Approved 4/6/15

DESIGNED BY Terry Nichols

DRAWN BY Terry Nichols

SURVEY DATE

REVISIONS

NO.	DATE	REMARKS	BY

APPROVED 4-20-94

THE FALLS FILING ONE

NICHOLS ASSOCIATES, INC.
CIVIL ENGINEERING - PHOTOGRAMMETRY - SURVEYING
P.O. Box 10006 • Grand Junction • Colorado 81506 • Phone 303-245-7101

DATE DRAWN

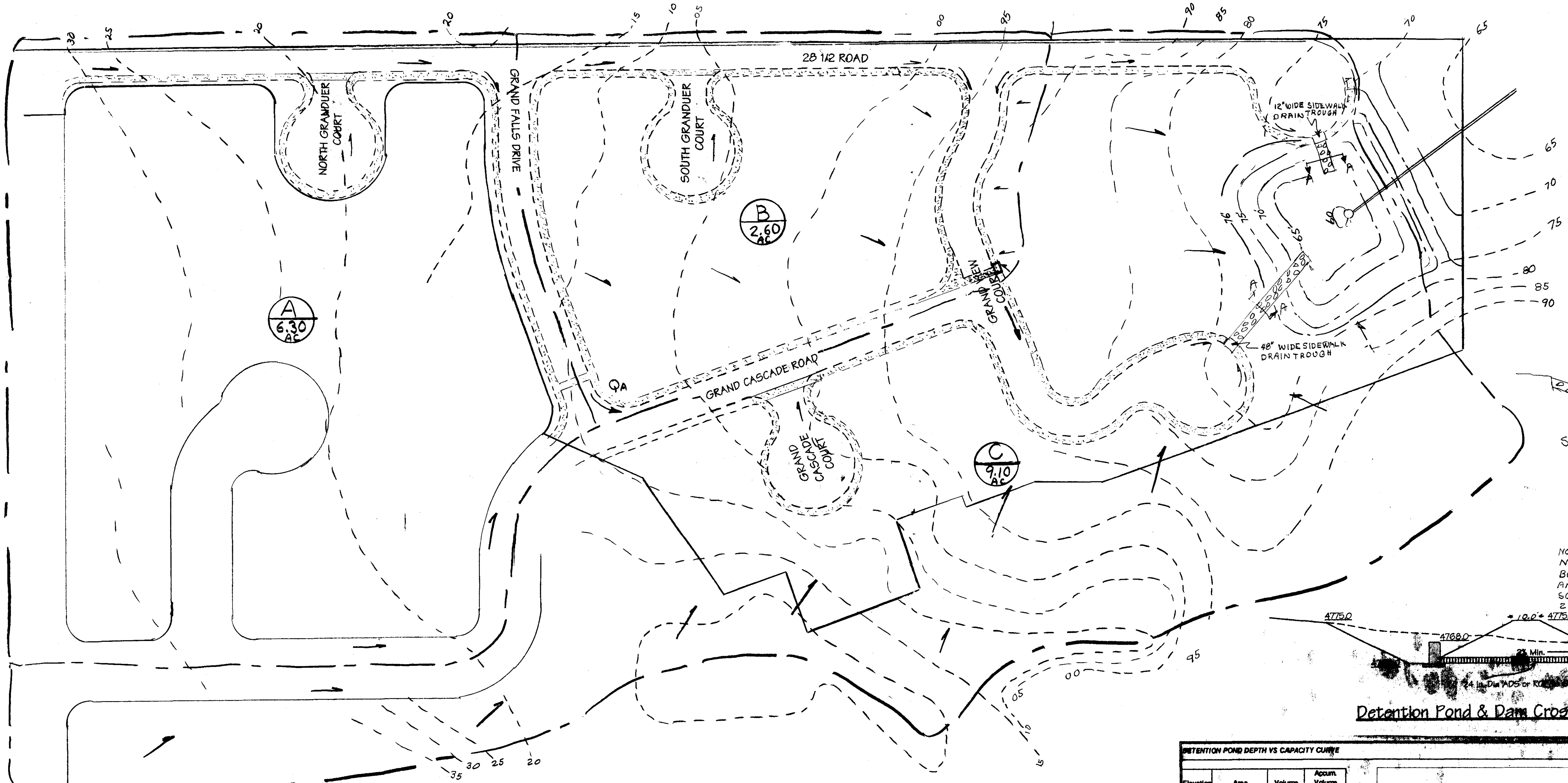
SCALE

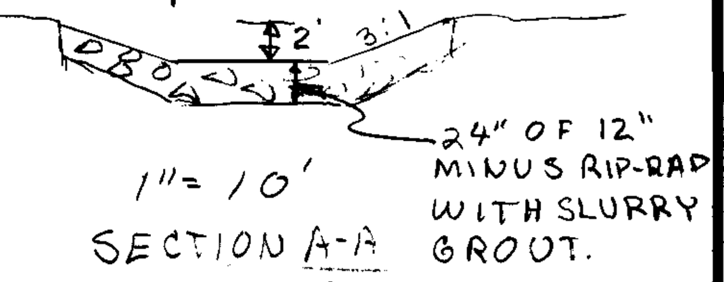
PROJECT NUMBER

SHEET NUMBER 1 OF 1

THE FALLS - FILING 1 - FP-1994-069

THE FALLS - GRADING & DRAINAGE PLAN





NOTE: IF ROW IS TO CANAL IS NOT AVAILABIL THE POND BOTTOM AND DISCHARGE PIPE AND CONTROL STRUCTURE SOULD BE RAISED APPROXIMAT 2 FT. TO MATCH EXISTING DRAIN DITCH INVERT.

Detention Pond & Dam Cross Section

THE FALLS FILING 1 - Drainage Study

CALCULATION OF INCREASE IN DISCHARGE DUE TO PROPOSED CONSTRUCTION

After Construction (Area - Intensity - Discharge)

BASIN	AREA SURFACE TYPE	Ac.	RUNOFF COEF. C2	RUNOFF COEF. C100	REACH	LENGTH FEET	SLOPE (S) %	V FT./SEC	2-Yr TIME MIN.	100-Yr TIME MIN.	INTENSITY Inches/Hour 2-Yr	INTENSITY Inches/Hour 100-Yr	DISCHARGE CFS (Q=CIA) 2-Yr	DISCHARGE CFS (Q=CIA) 100-Yr
A	Landscaped	3.78	0.25	0.4	A-1	150	[illegible]	0.10	14.9	12.2				
	Paved & Roofs	2.5[illegible]	0.90	0.95	A-2	700	[illegible].0	4.00	2.9	2.[illegible]				
					A-3	800	2.2	1.00	13.3	13.3				
	Total/Average	6.30	0.51	0.62					31.1	28.5	0.86	2.36	2.76	9.22
B	Landscaped	1.56	0.26	0.4	B-1	80	2.0	0.14	10.9	8.9				
	Paved & Roofs	1.04	0.90	0.95	B-2	600	5.3	4.50	2.2	2.2				
					B-3	400	4.8	4.00	1.7	1.7				
	Total/Average	2.60	0.51	0.62					14.8	12.8	1.28	3.[illegible]	[illegible]	5.53
C	Landscaped	5.46	[illegible]	[illegible]	A-1	100	1.0	0.16	15.3	12.6				
	Paved & Roofs	3.64	[illegible]	[illegible]	A-2	1,320	[illegible]	1.50	14.7	[illegible]				
	Total/Average	9.10	[illegible]	[illegible]					30.0	[illegible]	0.8[illegible]	2.41	[illegible].08	13.60
												Sub-Total:	[illegible]	28.34
								Off site drainage included in above basin areas:					0.00	0.00
	Total Ac./weighted C	18.00	0.51	0.62				MAX. Tc	31.1	28.5		TOTAL Q:	8.54	28.34

Historic (Area - Intensity - Discharge)

BASIN	AREA SURFACE TYPE	Ac.	RUNOFF COEF. C2	RUNOFF COEF. C100	REACH	LENGTH FEET	SLOPE (S) %	VELOVITY FT./SEC.	2-Yr TIME MIN.	100-Yr TIME MIN.	INTENSITY Inches/Hour 2-Yr	INTENSITY Inches/Hour 100-Yr	DISCHARGE CFS (Q=CIA) 2-Yr	DISCHARGE CFS (Q=CIA) 100-Yr
A	Exist. Sub.	6.30	0.51	0.62					31.1	28.5	0.86	2.36	2.76	9.22
B&C	Steep & baren	11.70	0.40	0.4	A-1	150	[illegible]	[illegible].06	9.0	9.0				
	shale & clay				A-2	1,200	5.0	3.00	6.7	6.7				
	Total/Average	18.00	0.26	0.26					15.7	15.7	1.24	3.15	5.80	14.74
								MAX. Tc	15.7	15.7		TOTAL Qh:	5.80	14.74
												INCREASE:	2.74	13.60

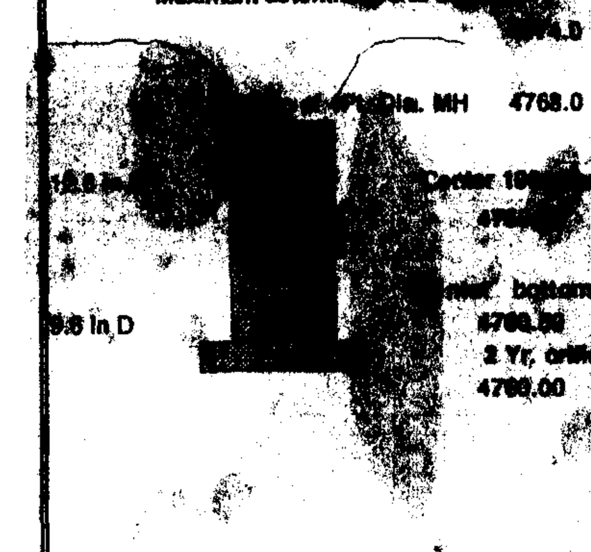
DETENTION POND DEPTH VS CAPACITY CURVE

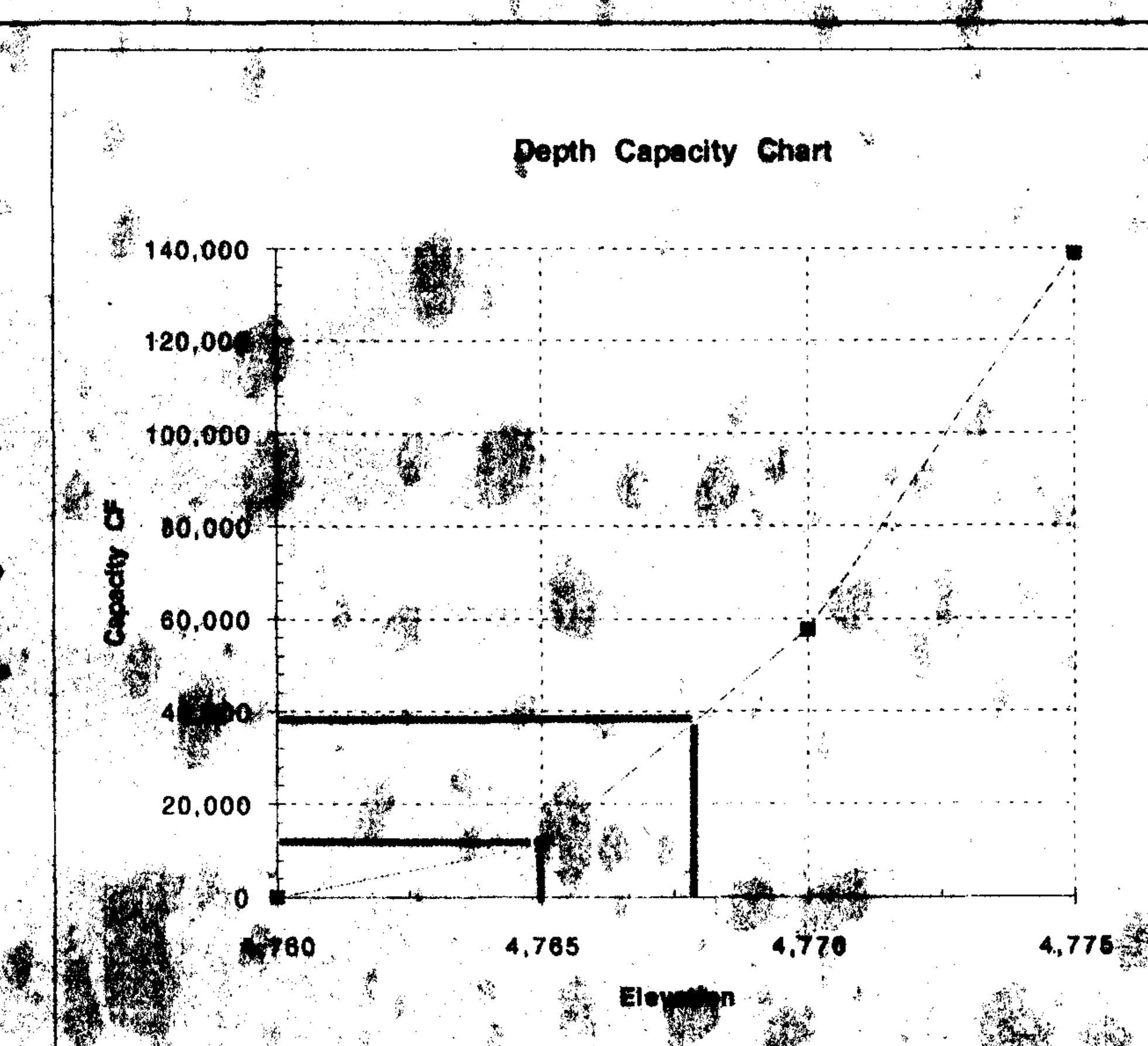
Elevation Ft.	Area Ft. Sq.	Volume Cu. Ft.	Accum. Volume Cu. Ft.
4,760	0	0	0
4,765	6,800	11,333	11,333
4,770	12,000	46,389	57,722
4,775	20,800	80,998	138,720

Storage Required Below 100 Yr Orfice: 2,743.50

TOTAL STORAGE REQUIREMENT: [illegible]5.56

Maximum detention pond [illegible]





THE FALLS - GRADING & DRAINAGE PLAN

NICHOLS ASSOCIATES, INC.

CIVIL ENGINEERING · PHOTOGRAMMETRY · SURVEYING

P.O. Box 3327 · Grand Junction · Colorado · 81502 · Phone 303-243-7101

DESIGNED BY Terry Nichols

DRAWN BY Terry Nichols

SURVEY DATE

REVISIONS

NO.	DATE	REMARKS	BY

DATE DRAWN

SCALE 1" = 50

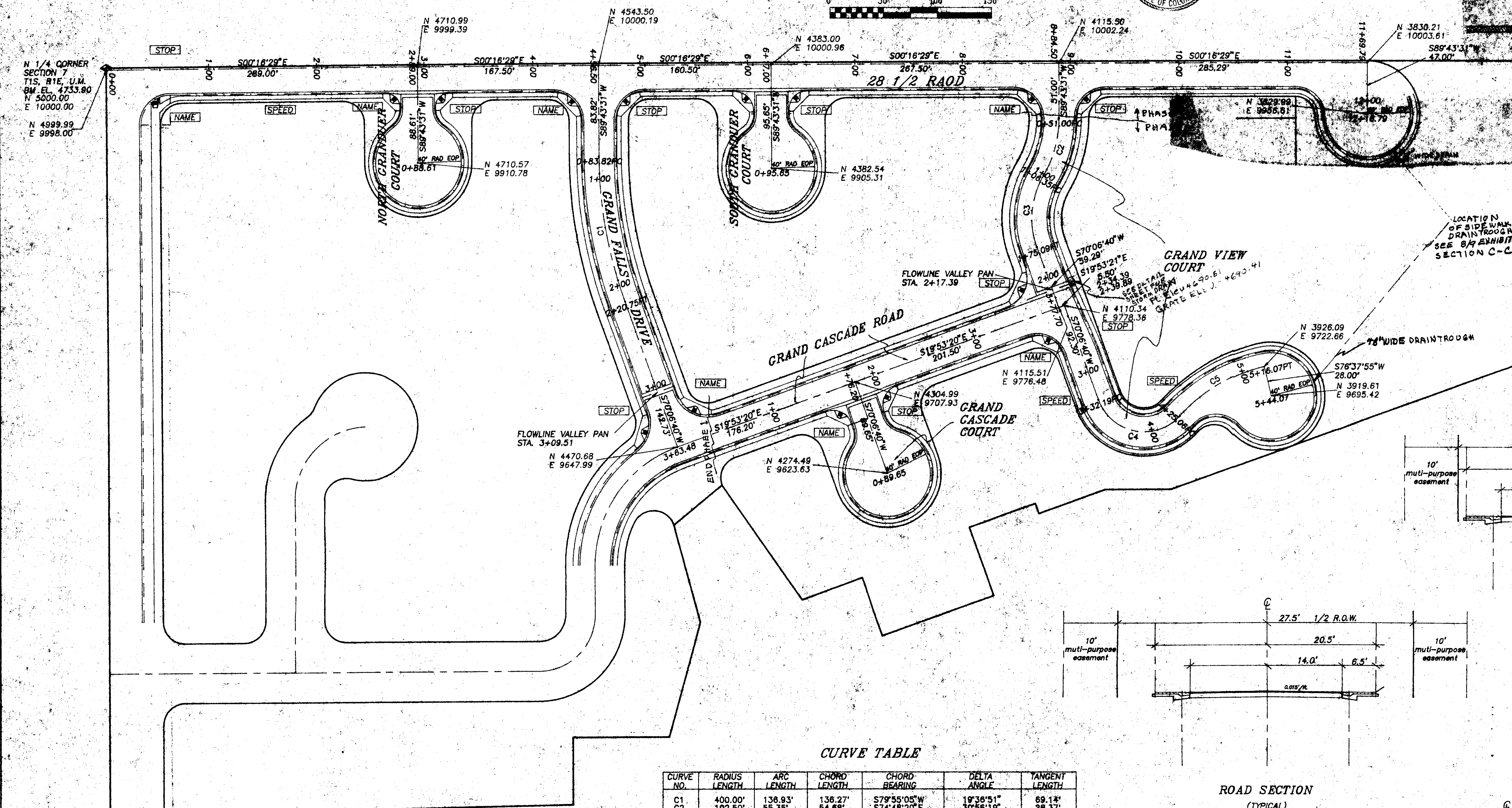
PROJECT NUMBER

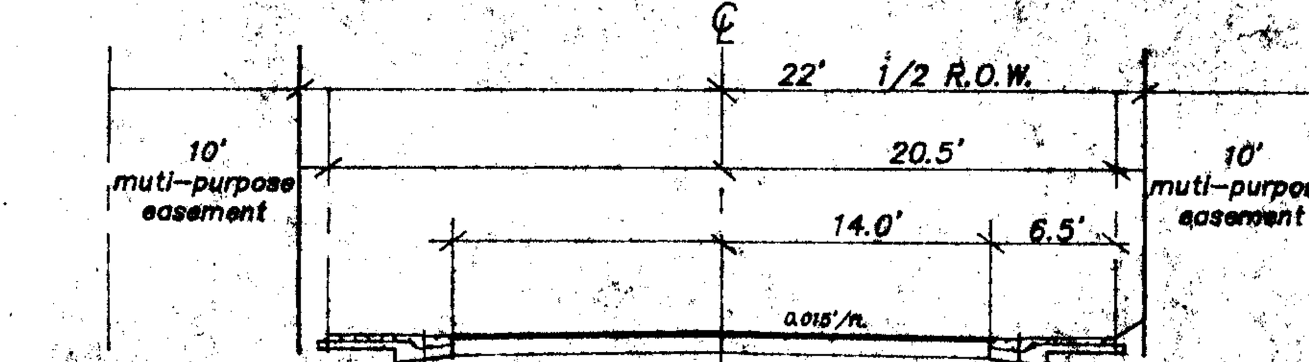
SHEET NUMBER 9 OF 9

TELEDYNE POST N41491

APPROVED FOR CONSTRUCTION
4-20-94
CITY OF GRAND JUNCTION — DATE

INITIAL ACCEPTANCE
CITY OF GRAND JUNCTION — DATE



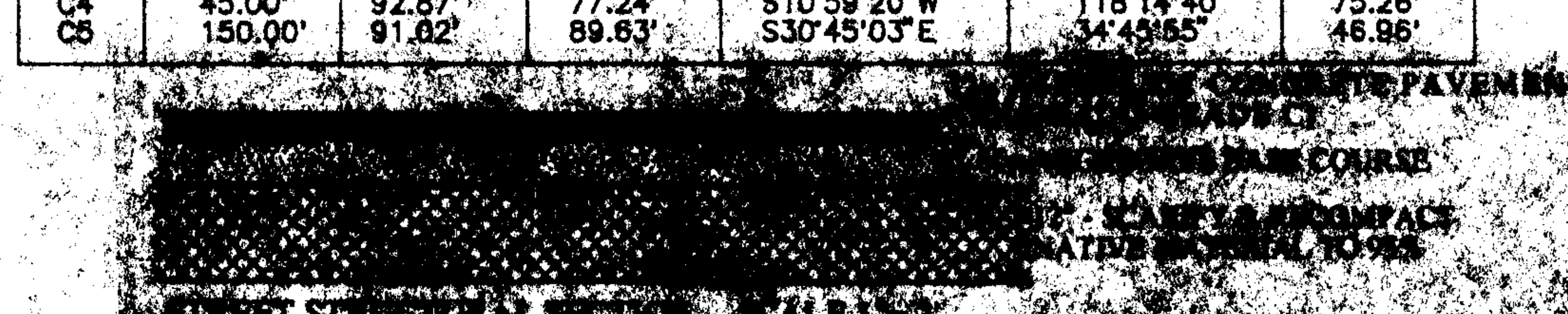


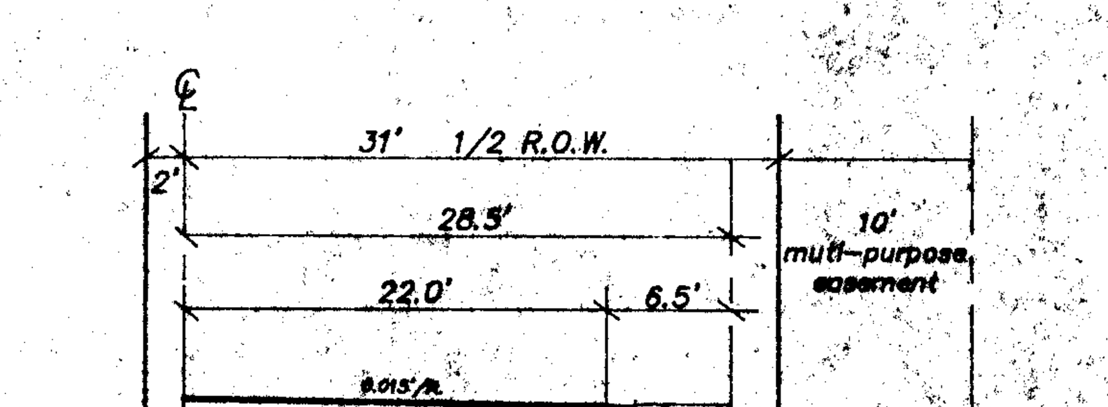
ROAD SECTION
(SW END GRAND VIEW COURT)
SCALE 1" = 10'

ROAD SECTION
(TYPICAL)
SCALE 1" = 10'

CURVE TABLE

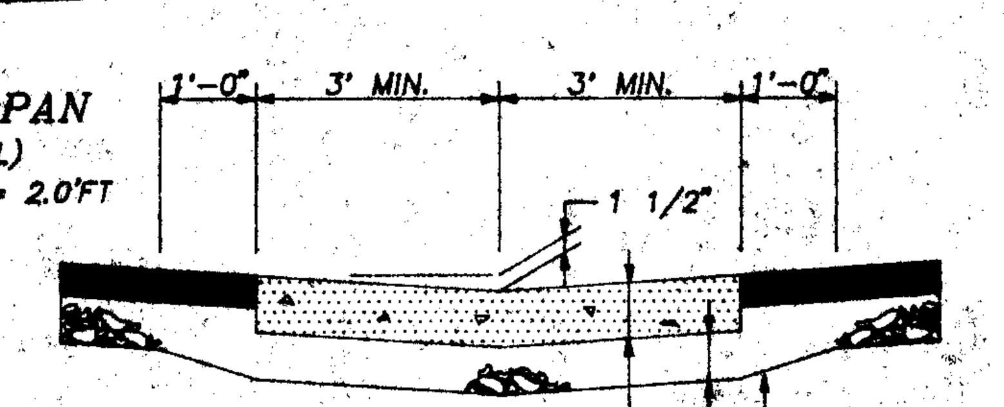
CURVE NO.	RADIUS LENGTH	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT LENGTH
C1	400.00'	136.93'	136.27'	S79°55'05"W	19°36'51"	69.14'
C2	102.50'	55.35'	54.68'	S74°48'20"E	30°56'19"	28.37'
C3	77.50'	68.75'	66.51'	S84°44'30"E	50°49'25"	36.82'
C4	45.00'	92.87'	77.24'	S10°59'20"W	118°14'40"	75.26'
C5	150.00'	91.02'	89.63'	S30°45'03"E	34°45'55"	46.96'

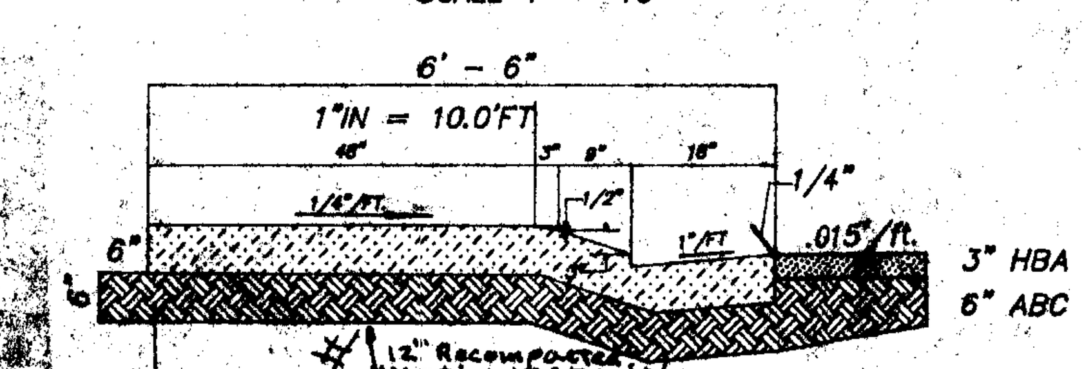




ROAD SECTION
(28 1/2 ROAD)
SCALE 1" = 10'

VALLEY PAN
(TYPICAL)
SCALE: 1"IN = 2.0'FT





DRIVE OVER CURB, GUTTER & SIDEWALK
PER CITY OF GRAND JUNCTION SPECS.
(TYPICAL)
SCALE: 1"IN = 2.0'FT

THE FALLS ROAD PLAN

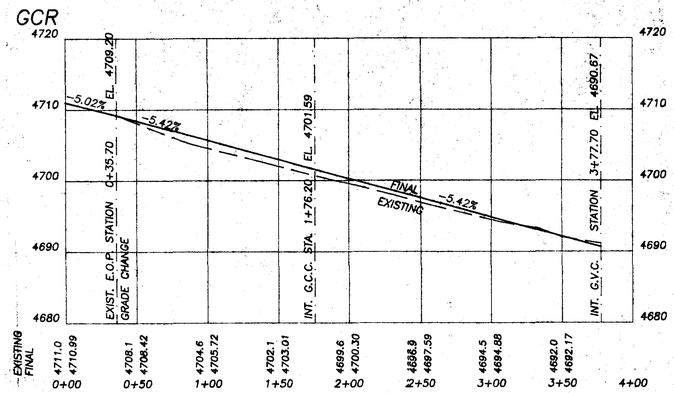
LEGEND & NOTES

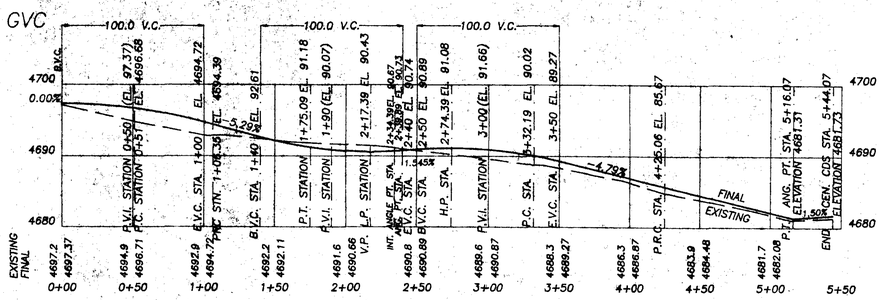
1. Elevation control bench = 4733.90 on Mesa County Brass Cap N 1/4 corner Sec. 7
2. All work within the public right-of-way shall be in accordance with the City of Grand Junction specifications and standards.
3. All materials and workmanship shall be subject to inspection by the City of Grand Junction. The City of Grand Junction reserves the right to accept or reject any materials and workmanship that does not conform to the standards and specifications of the City of Grand Junction.
4. The Contractor shall have one signed copy of the Plans, and a copy of the City of Grand Junctions standards and specifications at the job site at all times.
5. ALL CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS, DRAINAGE PANS AND OTHER CONCRETE WORK SHALL BE UNDERLAID WITH AGGREGATE BASE COURSE (CLASS 6) COMPACTED TO AT LEAST 90% OF AASHTO T-180 MAXIMUM DENSITY. SEE DETAILS FOR BASE THICKNESS. THE TOP 6 INCHES OF SUBGRADE UNDER ALL CONCRETE SHALL BE COMPACTED TO AT LEAST 90% OF AASHTO T-99 MAXIMUM DENSITY. ALL SATURATED OR UNSUITABLE SUBGRADE MATERIAL SHALL BE REMOVED AND REPLACED.

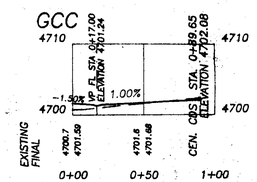
NOTE: SEE AS-BUILT DRAWINGS FOR DETAILS ON EXISTING MANHOLES. THE MANHOLE LIDS WILL BE RAISED OR LOWERED AS REQUIRED BY FIELD CONDITIONS.

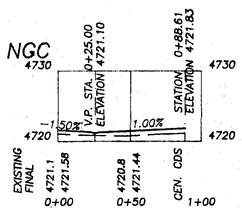
SCALE 1" = 50' OR AS NOTED DATE 4/4/94 VIEW ONE TFALLS1.DWG

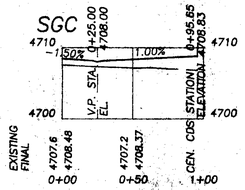
CENTERLINE PROFILES - THE FALLS ROAD PLAN

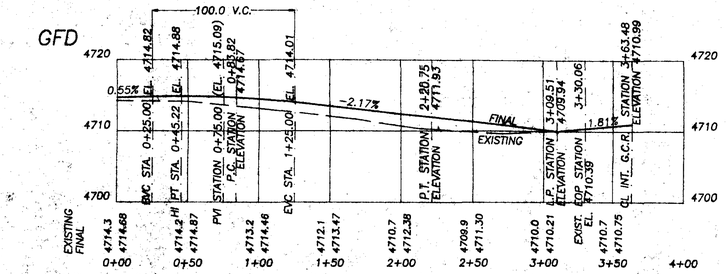


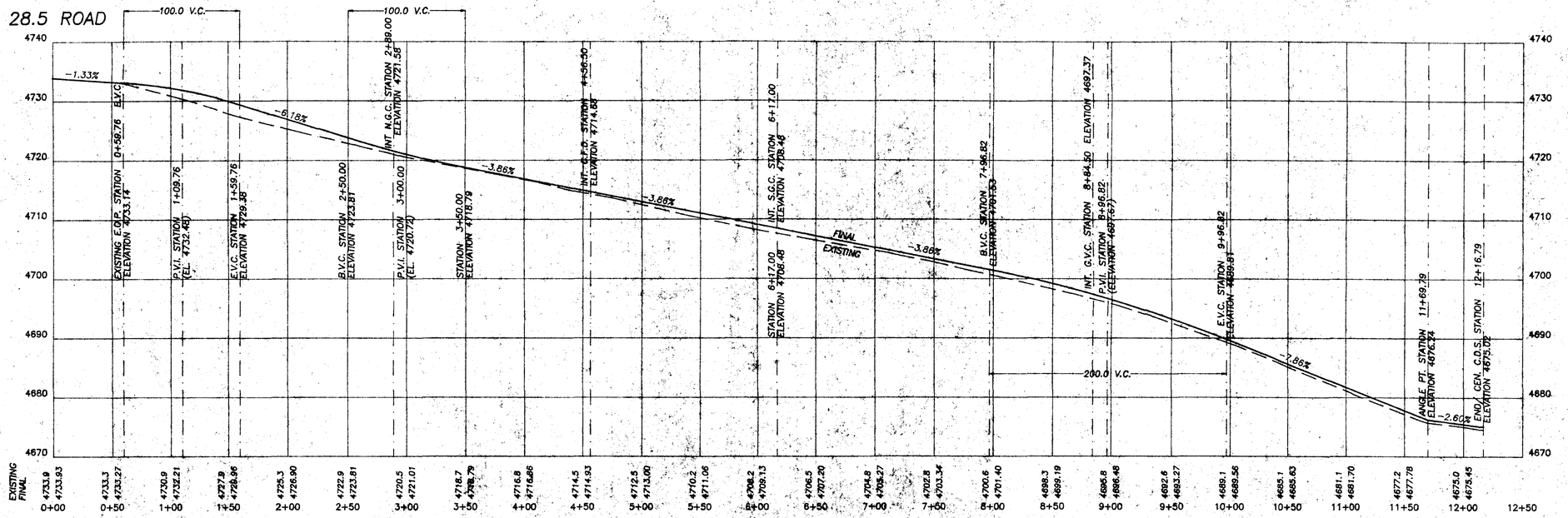






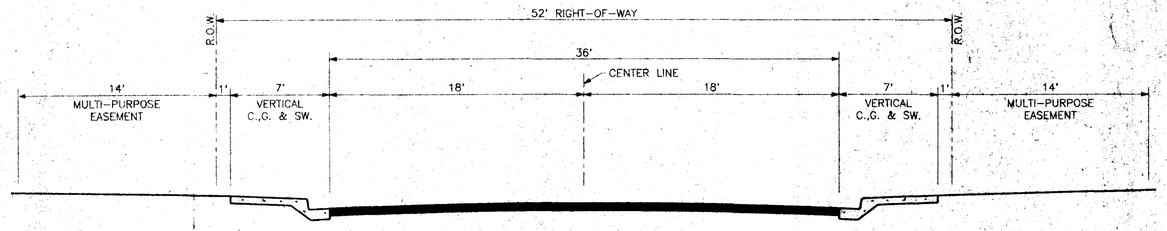






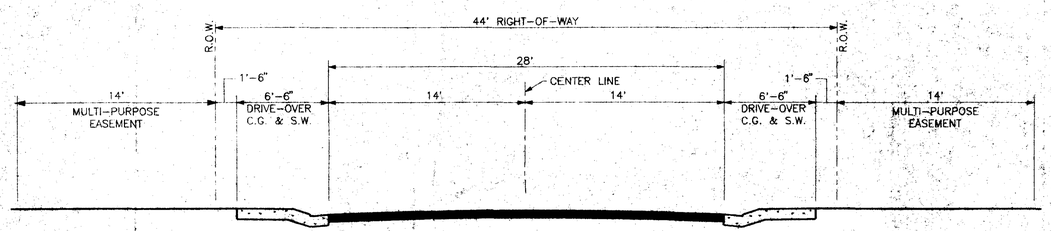
SCALE HOR. 1" = 50' VERT. 1" = 10'

DATE 4/4/94 VIEW PRO TFALLS1.DWG



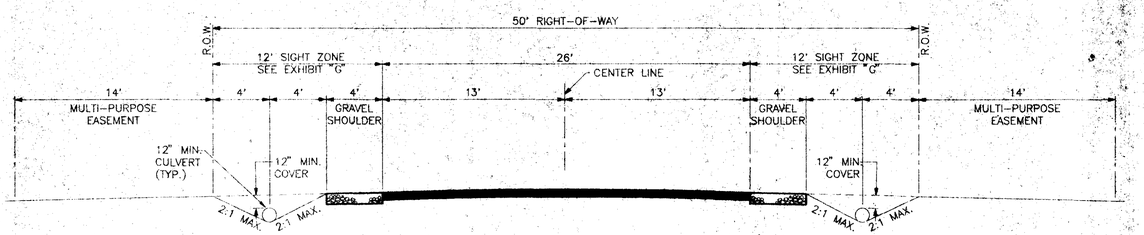
URBAN RESIDENTIAL COLLECTOR

1000 TO 3,000 A.D.T.
ON STREET PARKING ALLOWED
ONLY WHERE LEFT TURN LANE IS NOT REQUIRED



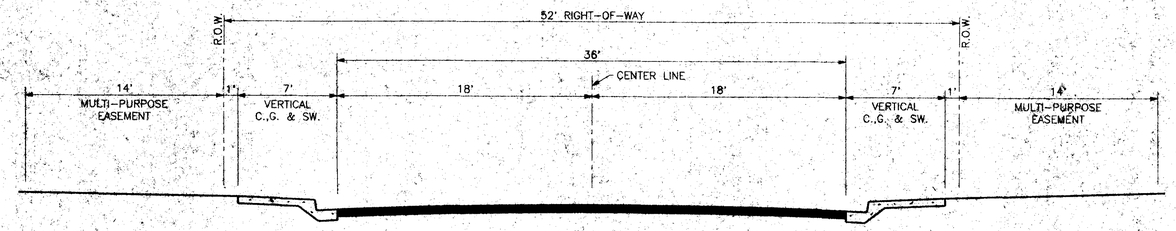
URBAN RESIDENTIAL STREET

0 to 1000 A.D.T.



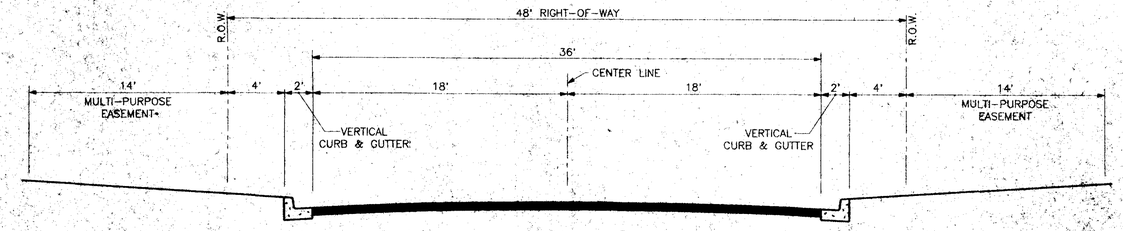
RURAL ROADWAY

LESS THAN 500 A.D.T. AND
RSF-R ZONING WITH RESIDENTIAL
DENSITIES OF NO MORE THAN ONE
DWELLING UNIT PER 2 ACRES



COMMERCIAL STREET SECTION

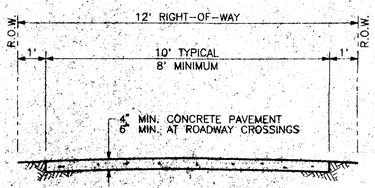
0 to 3000 ADT
NO ON-STREET PARKING



INDUSTRIAL STREET SECTION

0 to 3000 ADT
NO ON-STREET PARKING

NOTE:
STREETS IN INDUSTRIAL AREAS MAY BE CONSTRUCTED WITH 5' WIDE LONGITUDINAL "V" PANS IN LIEU OF CURBS & GUTTERS WHERE APPROVED BY THE CITY ENGINEER.



TWO-WAY OFF STREET BICYCLE PATH

RESIDENTIAL TRIP GENERATION RATES

DEVELOPMENT TYPE	VEHICLE TRIPS PER DWELLING UNIT	
	WEEKDAY	PEAK HOUR
SINGLE-FAMILY DETACHED	9.55	1.02
APARTMENT, GENERAL	6.47	0.89
CONDOMINIUMS/TOWNHOUSES	5.86	0.54
MOBILE HOME PARK	4.81	0.58
RETIREMENT COMMUNITY	3.30	0.34
PLANNED UNIT DEVELOPMENT	7.44	0.72
CHURCH - TRIPS PER 1,000 SQ. FT. FLOOR AREA	9.32	1.42

REFERENCE FOR ABOVE AND OTHER DEVELOPMENTS:
LATEST EDITIONS OF THE "TRIP GENERATION MANUAL" BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (I.T.E.)

A.D.T.=AVERAGE DAILY TRAFFIC

NOTES:

1. DRIVE OVER CURBS SHALL BE INSTALLED ONLY ON RESIDENTIAL STREETS WITH LESS THAN 1000 A.D.T.
2. ALL STREETS AND ROADWAYS SHALL BE SURFACED WITH HOT BITUMINOUS PAVEMENT (HBP) OR PORTLAND CEMENT CONCRETE (PCC). ALL PAVEMENT STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE COLORADO DIVISION OF HIGHWAYS, ROADWAY DESIGN MANUAL (LATEST EDITION), OR OTHER APPROVED METHOD. MINUMUM ASPHALT PAVEMENT THICKNESS SHALL BE 3" ON RESIDENTIAL STREETS AND 4" ON COMMERCIAL, INDUSTRIAL OR MIXED USE STREETS.
3. SEE EXHIBIT "C" FOR DETAILS OF MULTI-PURPOSE EASEMENTS ADJACENT TO ROAD RIGHT-OF-WAY.
4. DRIVEWAY CULVERTS ON RURAL ROADS SHALL BE INSTALLED AND MAINTAINED BY PROPERTY OWNERS.

DESCRIPTION	DATE
ADOPTED BY CITY COUNCIL RESOLUTION	7/1/92
REVISION	
REVISION	
REVISION	

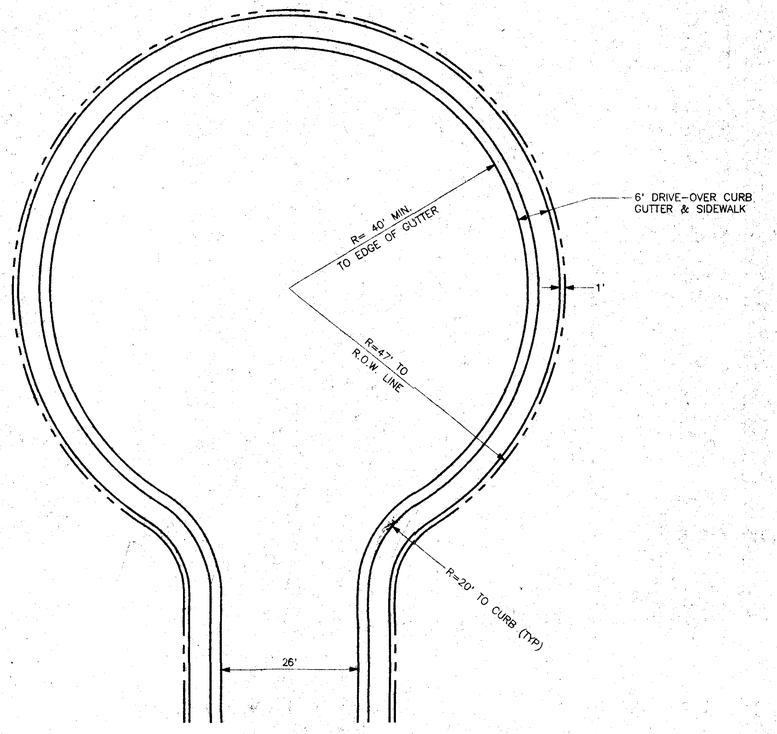
DRAWN BY	N.O.P.	DATE	6/29/92
CHECKED BY	T.A.B.	DATE	6/29/92
APPROVED BY	J.D.N.	DATE	6/29/92
FIELD BOOK NO.		PAGE	

SCALE: PLAN HORIZ. N.T.S. VERT. — PROFILE HORIZ. VERT.

DEPARTMENT OF PUBLIC WORKS AND UTILITIES
ENGINEERING DIVISION 244-1554
CITY OF GRAND JUNCTION, COLORADO

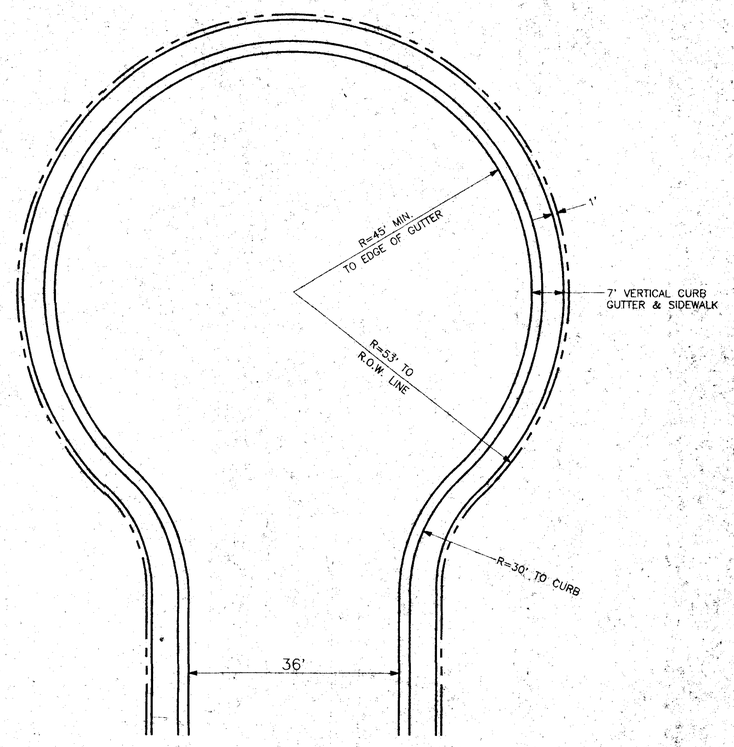
EXHIBIT "B"
LOCAL STREET STANDARDS

SHEET NO. 3
OF 6
FILE NO. EX-B-92.DWG



CUL-DE-SAC TURN AROUND
MINIMUM DIMENSIONS
RESIDENTIAL COURT

NOTES:
CENTER OF CUL-DE-SAC NEED NOT BE ON CENTER LINE OF STREET.



CUL-DE-SAC TURN AROUND
MINIMUM DIMENSIONS
COMMERCIAL / INDUSTRIAL COURT

DESCRIPTION	DATE
ADOPTED BY CITY COUNCIL RESOLUTION	7/1/92
REVISION	
REVISION	
REVISION	

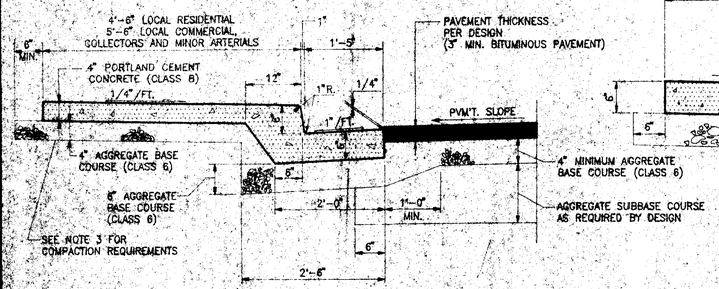
DRAWN BY N.O.P. DATE 6/29/92
CHECKED BY T.A.B. DATE 6/29/92
APPROVED BY J.D.N. DATE 6/29/92
FIELD BOOK NO. PAGE

SCALE
PLAN HORIZ. N.T.S. PROFILE HORIZ. VERT.

DEPARTMENT OF PUBLIC WORKS AND UTILITIES
ENGINEERING DIVISION 244-1554
CITY OF GRAND JUNCTION, COLORADO

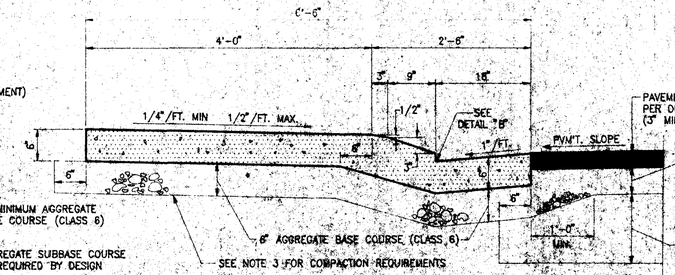
EXHIBIT "D"
CUL-DE-SAC DETAILS

SHEET NO. 4
OF 6
FILE NO. EX-D-92.DWG



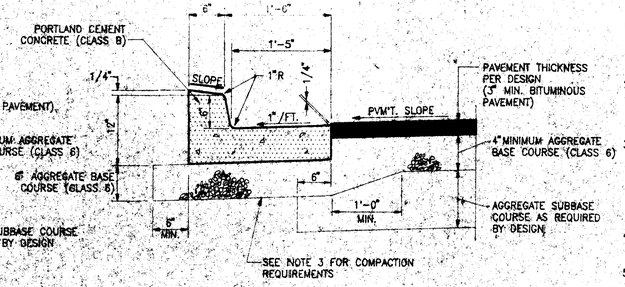
MONOLITHIC CURB, GUTTER & SIDEWALK

SECTION F–F



DRIVE OVER CURB, GUTTER & SIDEWALK

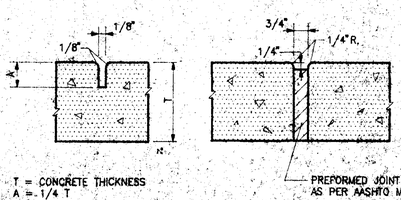
(RESIDENTIAL STREETS ONLY)



CURB & GUTTER

GENERAL NOTES

1. ALL PORTLAND CEMENT CONCRETE SHALL BE COLORADO DIVISION OF HIGHWAYS CLASS "B". ALL CONCRETE SHALL BE MIXED, PLACED, CURED AND TESTED IN ACCORDANCE WITH CITY OF GRAND JUNCTION STREET CONSTRUCTION SPECIFICATIONS.
2. ALL CONCRETE WORK WITHIN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED BY A LICENSED CURB, GUTTER & SIDEWALK CONTRACTOR. A PERMIT IS REQUIRED AT EACH LOCATION WHERE CONCRETE IS REMOVED, ALTERED OR PLACED.
3. ALL CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS, DRAINAGE PANS AND OTHER CONCRETE WORK SHALL BE UNDERLAND WITH AGGREGATE BASE COURSE (CLASS 6) COMPACTED TO AT LEAST 90% OF AASHTO T-180 MAXIMUM DENSITY. SEE DETAILS FOR BASE THICKNESS. THE TOP 6 INCHES OF SUBGRADE UNDER ALL CONCRETE SHALL BE COMPACTED TO AT LEAST 90% OF AASHTO T-99 MAXIMUM DENSITY. ALL SATURATED OR UNSUITABLE SUBGRADE MATERIAL SHALL BE REMOVED AND REPLACED.
4. ALL EXISTING PAVEMENT NOT DESIGNATED FOR REMOVAL WHICH IS DAMAGED BY CONSTRUCTION SHALL BE REPLACED IN-KIND BY CONTRACTOR.
5. ALL DRIVEWAY CONCRETE (APRON AND SIDEWALK CROSSING) SHALL BE 6 INCHES THICK (MIN.) FOR RESIDENTIAL USES AND 8" THICK (MIN.) FOR ALL OTHER USES.
6. TRANSVERSE EXPANSION JOINTS SHALL BE PROVIDED IN ALL CURBS, GUTTERS, SIDEWALKS, V-PANS, ETC., AT ENDS OF HORIZONTAL CURVES, AT EDGES OF DRIVEWAY SECTIONS AND AT MAXIMUM SPACING OF 100'. TRANSVERSE CONTRACTION JOINTS SHALL BE PROVIDED AT 10' SPACING.
7. VEHICULAR TRAFFIC SHALL BE KEPT OFF NEW CONCRETE FOR A MINIMUM OF FIVE DAYS UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
8. AN APPROVED CURING/SEALING COMPOUND SHALL BE APPLIED TO ALL EXPOSED CONCRETE IMMEDIATELY AFTER FINISHING.
9. ALL CONCRETE SHALL BE PROTECTED FROM FREEZING FOR 5 DAYS AFTER BEING PLACED. NO CONCRETE SHALL BE PLACED ON FROZEN GROUND.
10. UNDER NO CIRCUMSTANCES SHALL WATER BE ADDED TO CONCRETE SURFACES DURING FINISHING OPERATIONS.
11. HANDICAP RAMPS SHALL BE INSTALLED AT EACH CORNER OF ALL STREET INTERSECTIONS. SEE EXHIBIT "G" FOR DETAILS.

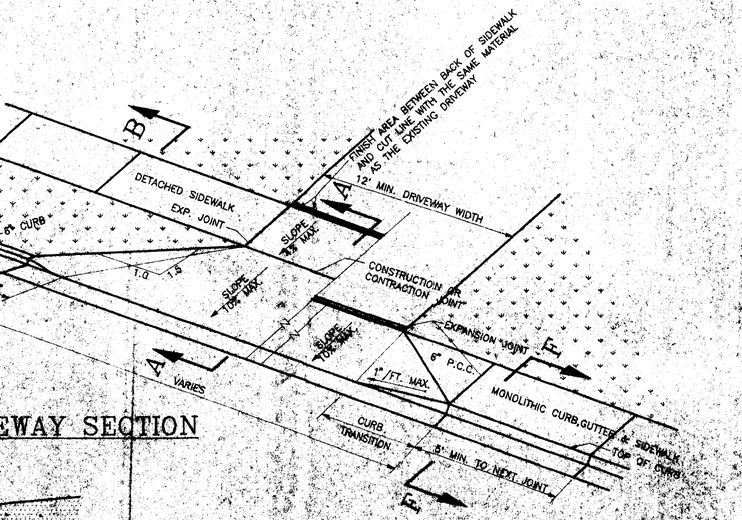


T = CONCRETE THICKNESS
A = 1/4 T

CONTRACTION JOINT
10' MAXIMUM SPACING

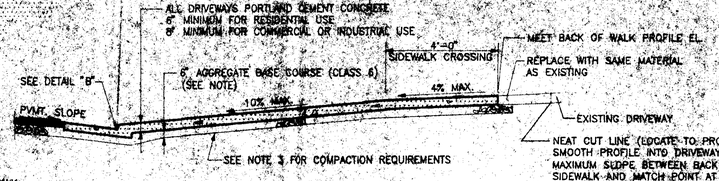
EXPANSION JOINT
100' MAXIMUM SPACING

CONCRETE JOINT DETAILS



DRIVEWAY SECTION

DETAIL "B"

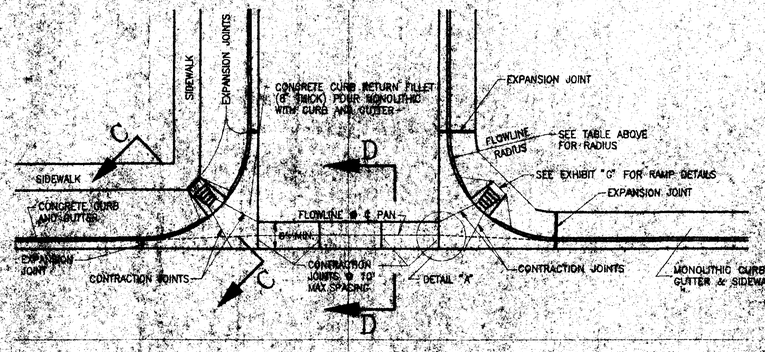


SECTION A–A

NOTE: SECTION A–A ALSO APPLIES TO MONOLITHIC CURB, GUTTER & SIDEWALK

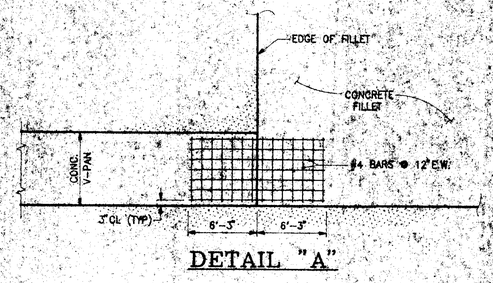
MINIMUM INTERSECTION RADII TO FLOWLINE OF GUTTER					
THROUGH STREET	INTERSECTING STREET				
	ARTERIAL	COLLECTOR	LOCAL RESIDENTIAL	LOCAL COMMERCIAL	LOCAL INDUSTRIAL
ARTERIAL	30'	30'	30'	30'	*
COLLECTOR	–	30'	25'	30'	*
LOCAL RESIDENTIAL	–	–	20'	–	–
LOCAL COMMERCIAL	–	–	20'	30'	*
LOCAL INDUSTRIAL	–	–	20'	*	*

* RADII AT INTERSECTIONS WITH INDUSTRIAL STREETS SHALL BE INDIVIDUALLY DESIGNED BASED ON TURNING REQUIREMENTS FOR WB-50 TRUCKS.

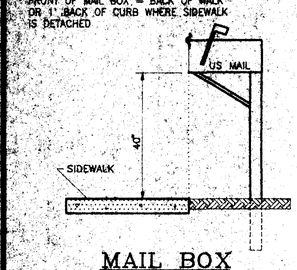


NOTE: DRAINAGE PANS ARE NOT ALLOWED ACROSS COLLECTORS OR ARTERIAL STREETS.

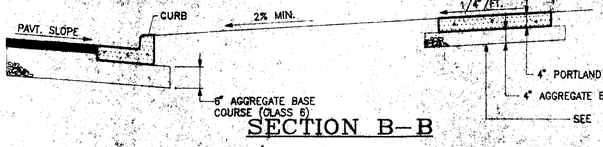
STREET INTERSECTION AND DRAINAGE PLAN DETAILS



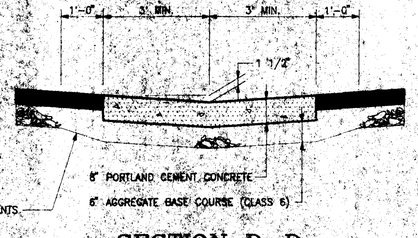
DETAIL "A"



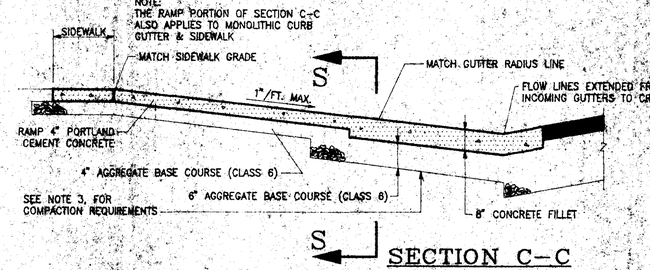
MAIL BOX INSTALLATION



SECTION B–B



SECTION D–D



SECTION C–C

SEE EXHIBIT "G" FOR SECTION S–S

DESCRIPTION	DATE
ADOPTED BY CITY COUNCIL RESOLUTION	7/1/92
REVISION EXPANSION JOINT WIDTH	2/8/93
REVISION	
REVISION	

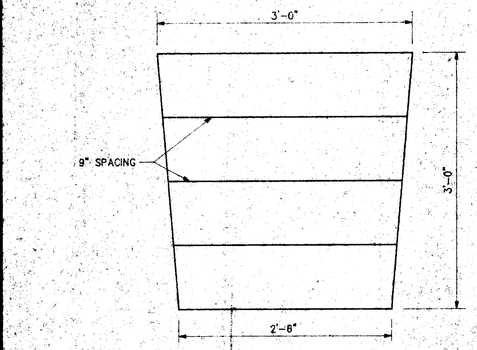
DRAWN BY	M.D.P.	DATE	6/29/92
CHECKED BY	T.A.B.	DATE	6/29/92
APPROVED BY	S.D.N.	DATE	6/29/92
FILED BOOK NO.		PAGE	

SCALE
PLAN HORIZ. N.T.S. PROFILE HORIZ. VERT.

DEPARTMENT OF PUBLIC WORKS AND UTILITIES
ENGINEERING DIVISION 244-1554
CITY OF GRAND JUNCTION, COLORADO

EXHIBIT "E"
STANDARD CONCRETE DETAILS

SHEET NO. 5 OF 6
FILE NO. EX-E-92.DWG



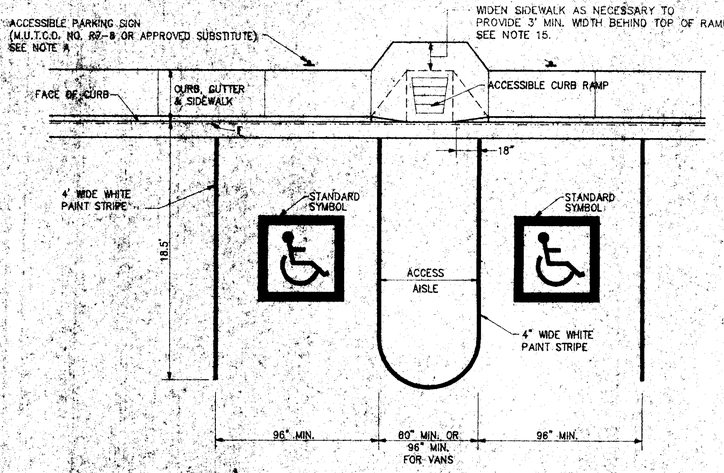
DETAIL FOR RAMP DETECTABLE WARNING

NOTE: GROOVES IN PATTERN ARE 1/4" MAX. DEPTH X 1/4" MAX. WIDTH

TOTAL PARKING IN LOT	REQUIRED MINIMUM NUMBER OF ACCESSIBLE SPACES
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2 PERCENT OF TOTAL
1001 AND OVER	20 PLUS 1 FOR EACH 100 OVER 1000

ACCESSIBLE PARKING REQUIREMENTS

PER ADA 4.1.2(5)(a)



NOTES:

A. ACCESSIBLE PARKING SPACES SHALL BE DESIGNATED AS RESERVED FOR THE DISABLED BY A SIGN SHOWING THE SYMBOL OF ACCESSIBILITY (SEE UFAS 4.30.5). SPACES COMPLYING WITH NOTE B SHALL HAVE AN ADDITIONAL SIGN "VAN ACCESSIBLE" MOUNTED BELOW THE SYMBOL OF ACCESSIBILITY. SUCH SIGNS SHALL BE MOUNTED SO THEY CANNOT BE OBSCURED BY A VEHICLE PARKED IN THE SPACE.

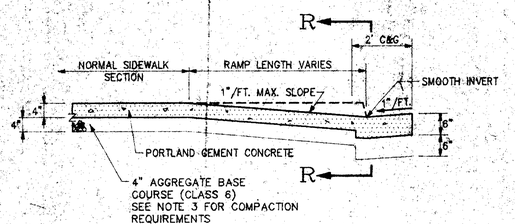
B. ONE IN EVERY EIGHT ACCESSIBLE SPACES, BUT NOT LESS THAN ONE, SHALL BE SERVED BY AN ACCESS AISLE 96" WIDE AND SHALL BE DESIGNATED "VAN ACCESSIBLE" AS SPECIFIED BY NOTE A.

C. PARKING ACCESS AISLES SHALL BE PART OF AN ACCESS ROUTE TO THE BUILDING OR FACILITY ENTRANCE. TWO ACCESSIBLE PARKING SPACES MAY SHARE A COMMON ACCESS AISLE. PARKING SPACES AND ACCESS AISLES SHALL BE LEVEL WITH SURFACE SLOPES NOT EXCEEDING 1:50 IN ALL DIRECTIONS.

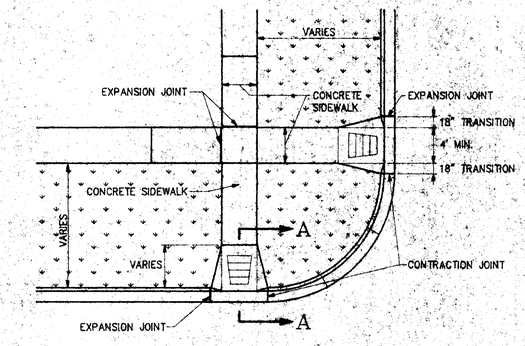
STANDARD ACCESSIBLE PARKING STALL DETAIL

GENERAL NOTES

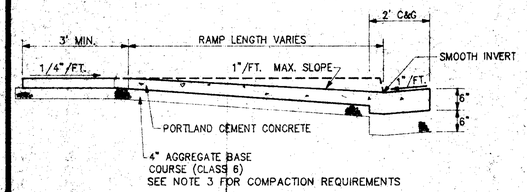
1. ALL PORTLAND CEMENT CONCRETE SHALL BE COLORADO DIVISION OF HIGHWAYS CLASS "B". ALL CONCRETE SHALL BE MIXED, PLACED, CURED AND TESTED IN ACCORDANCE WITH CITY OF GRAND JUNCTION STREET CONSTRUCTION SPECIFICATIONS.
2. ALL CONCRETE WORK WITHIN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED BY A LICENSED CURB, GUTTER & SIDEWALK CONTRACTOR. A PERMIT IS REQUIRED AT EACH LOCATION WHERE CONCRETE IS REMOVED, ALTERED OR PLACED.
3. ALL CONCRETE RAMPS, SIDEWALKS, CURBS, GUTTERS AND OTHER CONCRETE WORK SHALL BE UNDERLAID WITH AGGREGATE BASE COURSE (CLASS 6) COMPACTED TO AT LEAST 90% OF AASHTO T-180 MAXIMUM DENSITY. SEE DETAILS FOR BASE THICKNESS. THE TOP 6 INCHES OF SUBGRADE UNDER ALL CONCRETE SHALL BE COMPACTED TO AT LEAST 90% OF AASHTO T-99 MAXIMUM DENSITY. ALL SATURATED OR UNSUITABLE SUBGRADE MATERIAL SHALL BE REMOVED AND REPLACED.
4. ANY EXISTING PAVEMENT NOT DESIGNATED FOR REMOVAL WHICH IS DAMAGED BY CONSTRUCTION SHALL BE REPLACED IN-KIND BY CONTRACTOR.
5. DRAWING INDICATES TYPICAL SECTION ONLY. CONDITIONS AND/OR OBSTRUCTIONS MAY NECESSITATE VARIATIONS OR REPOSITIONING. ALL LOCATIONS SHALL BE APPROVED ON AN INDIVIDUAL BASIS BY THE CITY ENGINEER OR HIS REPRESENTATIVE.
6. IN ALL CASES, ACCESSIBLE RAMPS SHALL BE ALIGNED WITH STREET CROSSWALKS.
7. AN APPROVED CURING/SEALING COMPOUND SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACE IMMEDIATELY AFTER FINISHING.
8. ALL CONCRETE SHALL BE PROTECTED FROM FREEZING FOR 5 DAYS AFTER BEING PLACED. NO CONCRETE SHALL BE PLACED ON FROZEN GROUND.
9. MINIMUM SPACING BETWEEN JOINTS IN CURB, GUTTER & SIDEWALK IS 5 FEET.
10. MAXIMUM SPACING BETWEEN CONTRACTION JOINTS IS 10' IN ANY DIRECTION.
11. WATER SHALL NOT BE ADDED TO CONCRETE SURFACES DURING FINISHING OPERATIONS.
12. THE MAXIMUM SLOPE ALLOWED ON ANY CURB RAMP OR SIDEWALK SHALL BE 1"/FT. (8.33%).
13. THE SURFACE OF ALL ACCESSIBLE RAMPS AND FLARED SIDES SHALL BE FINISHED WITH A COURSE BROOMED TEXTURE PERPENDICULAR TO THE SLOPE OF THE RAMP.
14. ALL HANDICAP RAMPS, PARKING STALLS, LANDINGS, ETC., SHALL CONFORM TO THE UNIFORM FEDERAL ACCESSIBILITY STANDARDS (UFAS) LATEST EDITION.
15. THE ADDITIONAL 3' SIDEWALK WIDTH SHOWN BEHIND RAMPS IN MONOLITHIC CURB, GUTTER AND SIDEWALK IS NOT REQUIRED WHERE RAMPS ARE INSTALLED ON EXISTING STREETS.



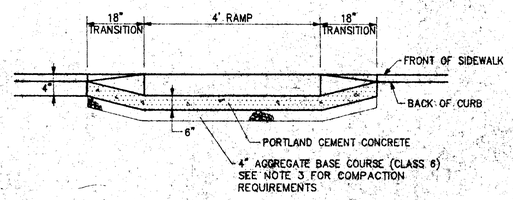
SECTION A-A



CURB RAMP(S) AT INTERSECTING SIDEWALK



SECTION B-B



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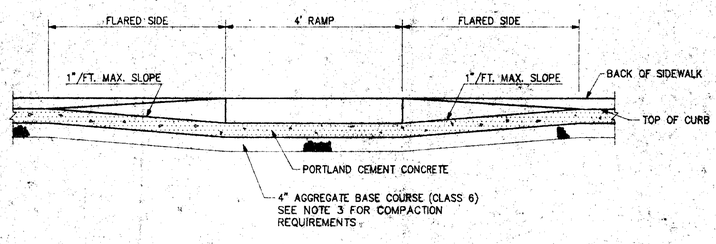
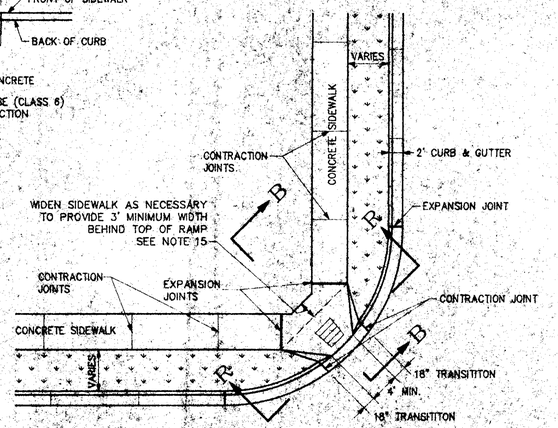
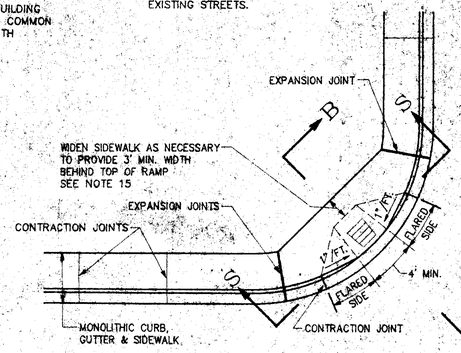


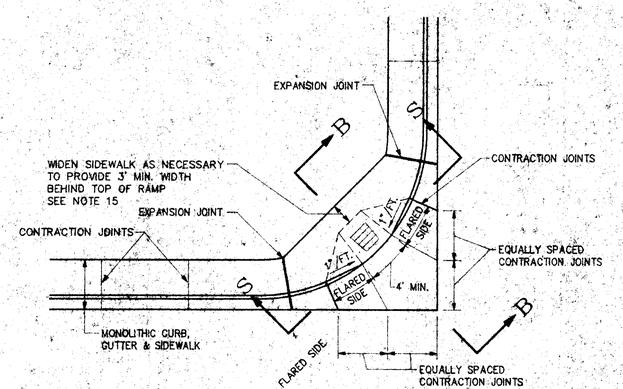
SECTION S-S



CURB RAMP AT INTERSECTING SIDEWALKS



RAMP IN MONOLITHIC CURB, GUTTER AND SIDEWALK



RAMP IN MONOLITHIC CURB, GUTTER AND SIDEWALK WITH CONCRETE FILLET

DESCRIPTION	DATE
ADOPTED BY CITY COUNCIL RESOLUTION	7/1/92
REVISION	
REVISION	
REVISION	

DRAWN BY N.D.P. DATE 6/29/92
CHECKED BY T.A.B. DATE 6/29/92
APPROVED BY J.D.N. DATE 6/29/92
FIELD BOOK NO. PAGE

SCALE — PLAN — HORIZ. N.T.S. — PROFILE — HORIZ. — VERT.

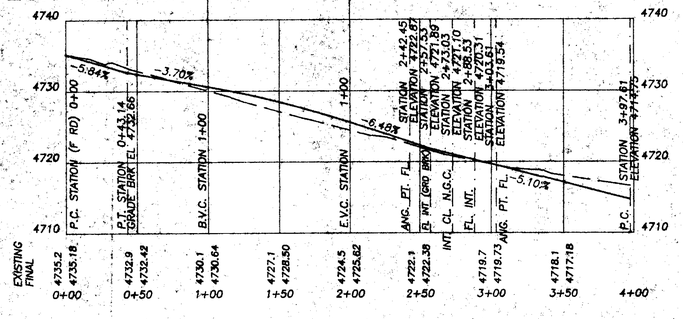
DEPARTMENT OF PUBLIC WORKS AND UTILITIES
ENGINEERING DIVISION 244-1554
CITY OF GRAND JUNCTION, COLORADO

EXHIBIT "G"
ACCESSIBLE RAMP AND PARKING STALL DETAILS

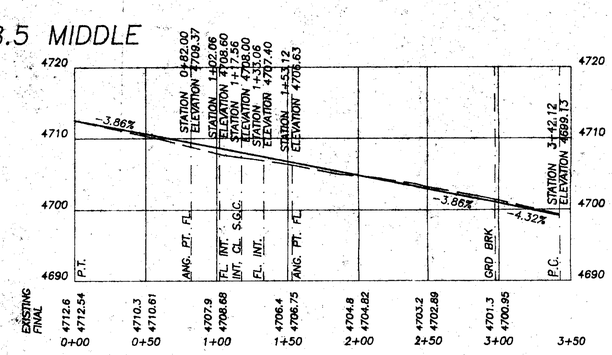
SHEET NO. 6 OF 6
FILE NO. EX-G-92.DWG

FLOWLINE PROFILES – THE FALLS ROAD PLAN

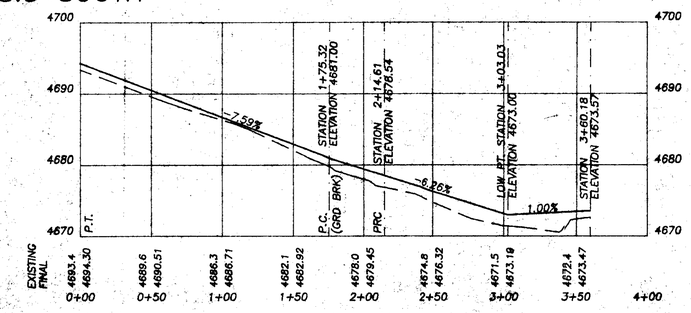
R 28.5 NORTH



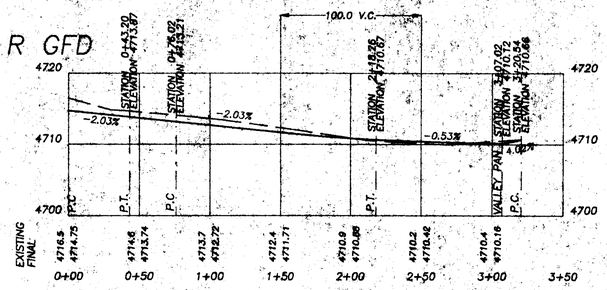
R 28.5 MIDDLE



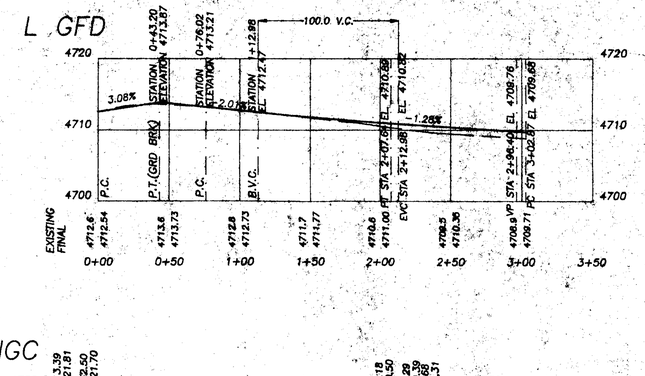
R 28.5 SOUTH



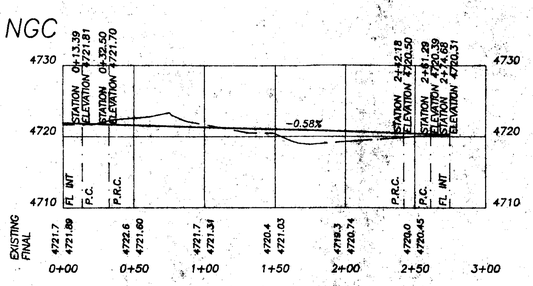
R GFD



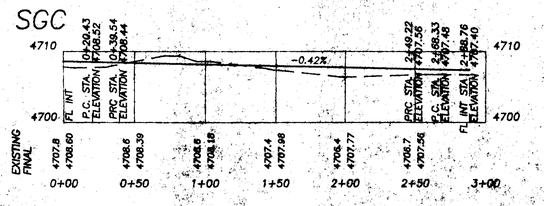
L GFD



NGC



SGC



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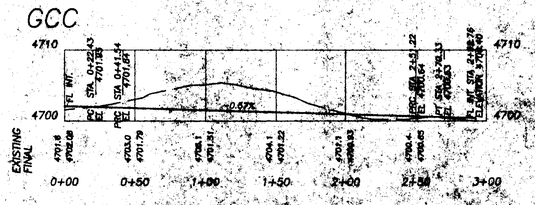
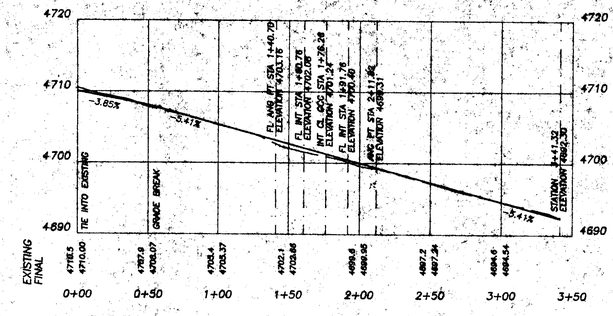
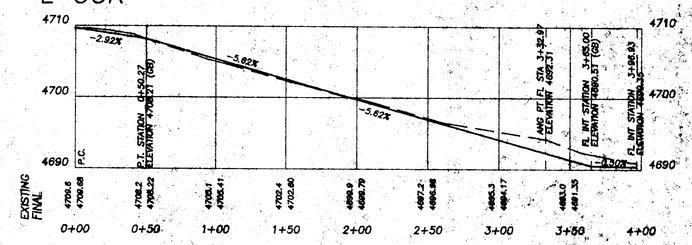


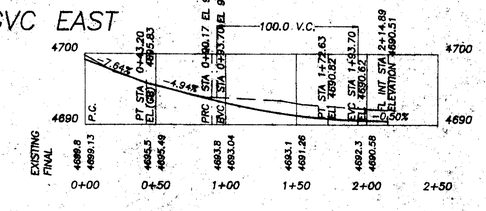
R GCR



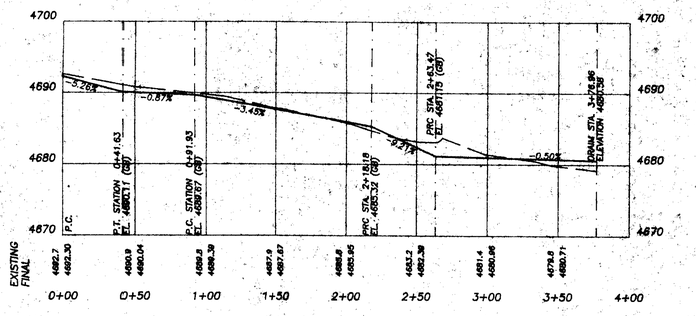
L GCR



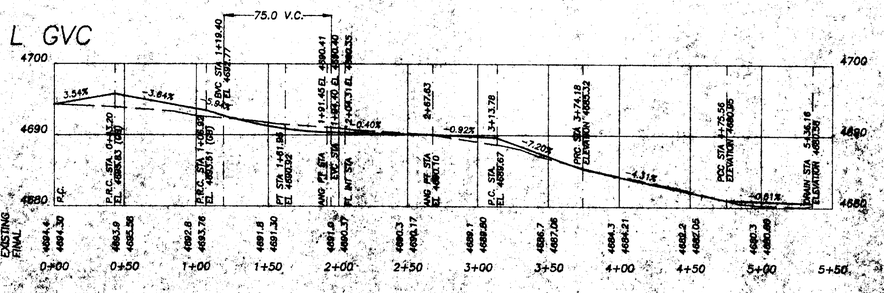
R GVC EAST



R GVC WEST



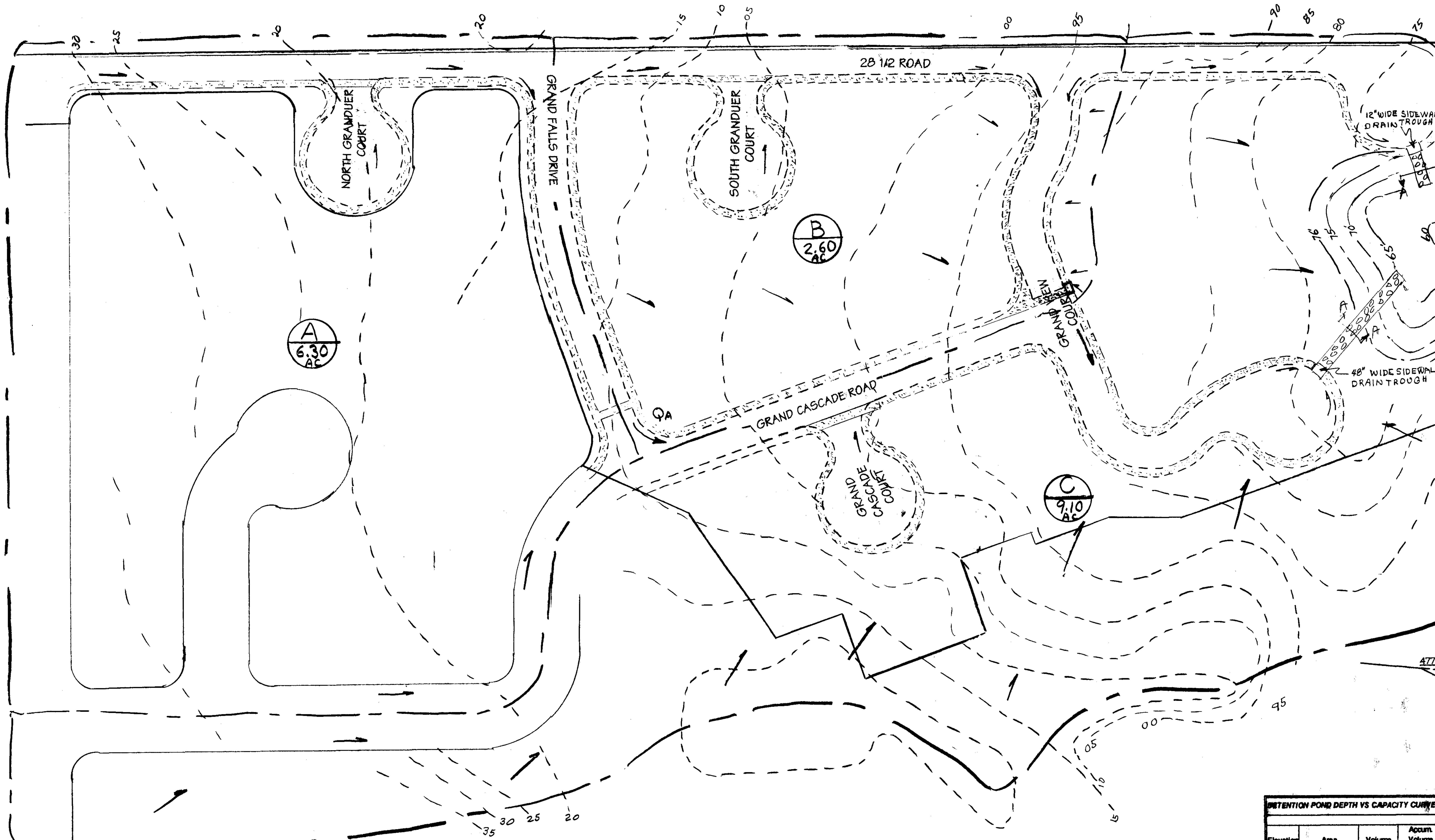
L GVC

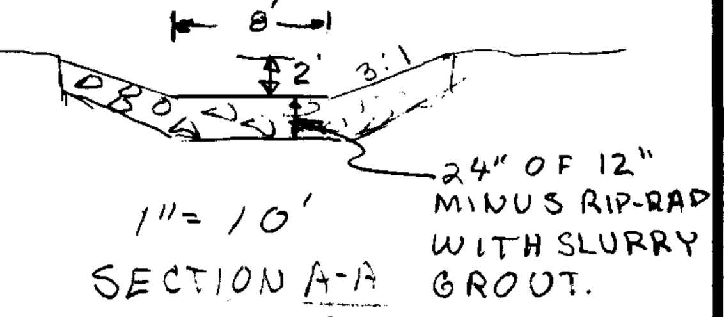


SCALE HOR. 1" = 50' VERT. 1" = 10'

DATE 4/4/94 VIEW FL TFALLSI.DWG

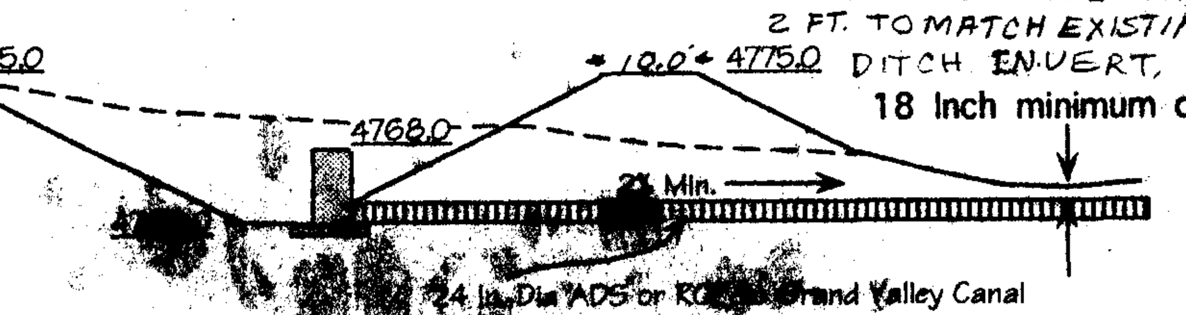
THE FALLS - GRADING & DRAINAGE PLAN





1" = 10'
SECTION A-A

NOTE: IF ROW IS TO CANAL IS NOT AVAILABIL THE POND BOTTOM AND DISCHARGE PIPE AND CONTROL STRUCTURE SOULD BE RAISED APPROXIMAT 2 FT. TO MATCH EXISTING DRAIN DITCH INVERT.



Detention Pond & Dam Cross Section

THE FALLS [illegible] 1 - Drainage Study

CALCULATION OF INCREASE IN DISCHARGE DUE TO PROPOSED CONSTRUCTION

After Construction (Area - Intensity - Discharge)

BASIN	AREA SURFACE TYPE	Ac.	RUNOFF COEF. C2	RUNOFF COEF. C100	REACH	LENGTH FEET	SLOPE (S) %	V FT./SEC.	2-Yr TIME MIN.	100-Yr TIME MIN.	INTENSITY Inches/Hour 2-Yr	INTENSITY Inches/Hour 100-Yr	DISCHARGE CFS (Q=CIA) 2-Yr	DISCHARGE CFS (Q=CIA) 100-Yr
A	Landscaped	3.78	0.25	0.4	A-1	150	[illegible]	0.10	14.9	12.2				
	Paved & Roofs	2.5[illegible]	0.90	0.95	A-2	700	[illegible]	4.00	2.9	[illegible]				
					A-3	800	2.2	1.00	13.3	13.3				
	Total/Average	6.30	0.51	0.62					31.1	28.5	0.86	2.36	2.76	9.22
B	Landscaped	1.56	0.26	0.4	B-1	80	2.0	0.14	10.9	8.9				
	Paved & Roofs	1.04	0.90	0.95	B-2	600	5.3	4.50	[illegible]	[illegible]				
					[illegible]	400	4.8	4.00	[illegible]	[illegible]				
	Total/Average	2.60	0.51	0.62					14.8	12.8	1.28	[illegible]	[illegible]	5.53
C	Landscaped	5.46	[illegible]	[illegible]	A-1	100	1.0	0.16	15.3	12.6				
	Paved & Roofs	3.64	[illegible]	[illegible]	[illegible]	1,320	[illegible]	1.50	14.7	[illegible]				
	Total/Average	9.10	[illegible]	[illegible]					30.0	[illegible]	0.86	2.41	[illegible]	13.60
												Sub-Total:	[illegible]	28.34
												Off site drainage included in above basin areas:	0.00	0.00
	Total Ac./weighted C	18.00	0.51	0.62				MAX. Tc	31.1	28.5		TOTAL Q:	8.54	28.34

Historic (Area - Intensity - Discharge)

BASIN	AREA SURFACE TYPE	Ac.	RUNOFF COEF. C2	RUNOFF COEF. C100	REACH	LENGTH FEET	SLOPE (S) %	VELOVITY FT./SEC.	2-Yr TIME MIN.	100-Yr TIME MIN.	INTENSITY Inches/Hour 2-Yr	INTENSITY Inches/Hour 100-Yr	DISCHARGE CFS (Q=CIA) 2-Yr	DISCHARGE CFS (Q=CIA) 100-Yr
[illegible]	Exist. Sub.	6.30	0.51	0.62					31.1	28.5	0.86	2.36	2.76	9.22
B&C	Steep & baren	11.70	0.40	0.4	A-1	150	[illegible]	[illegible]	9.0	9.0				
	shale & clay				A-2	1,200	5.0	9.00	6.7	6.7				
	Total/Average	18.00	0.26	0.26					15.7	15.7	1.24	3.15	5.80	14.74
								MAX. Tc	15.7	15.7		TOTAL Qh:	5.80	14.74
												INCREASE:	2.74	13.60

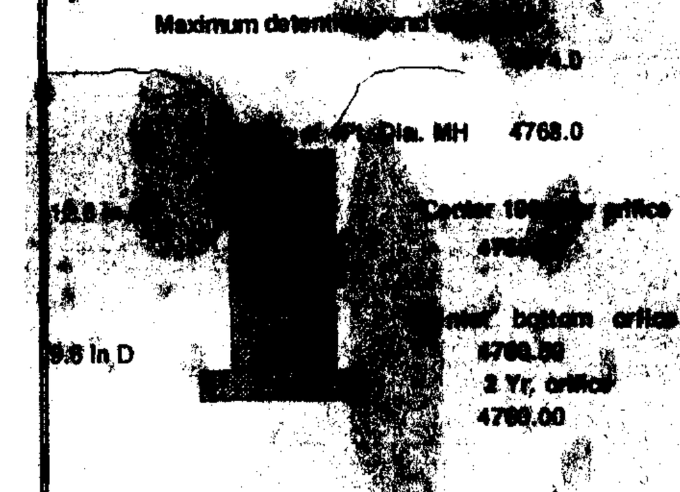
DETENTION POND DEPTH VS CAPACITY CURVE

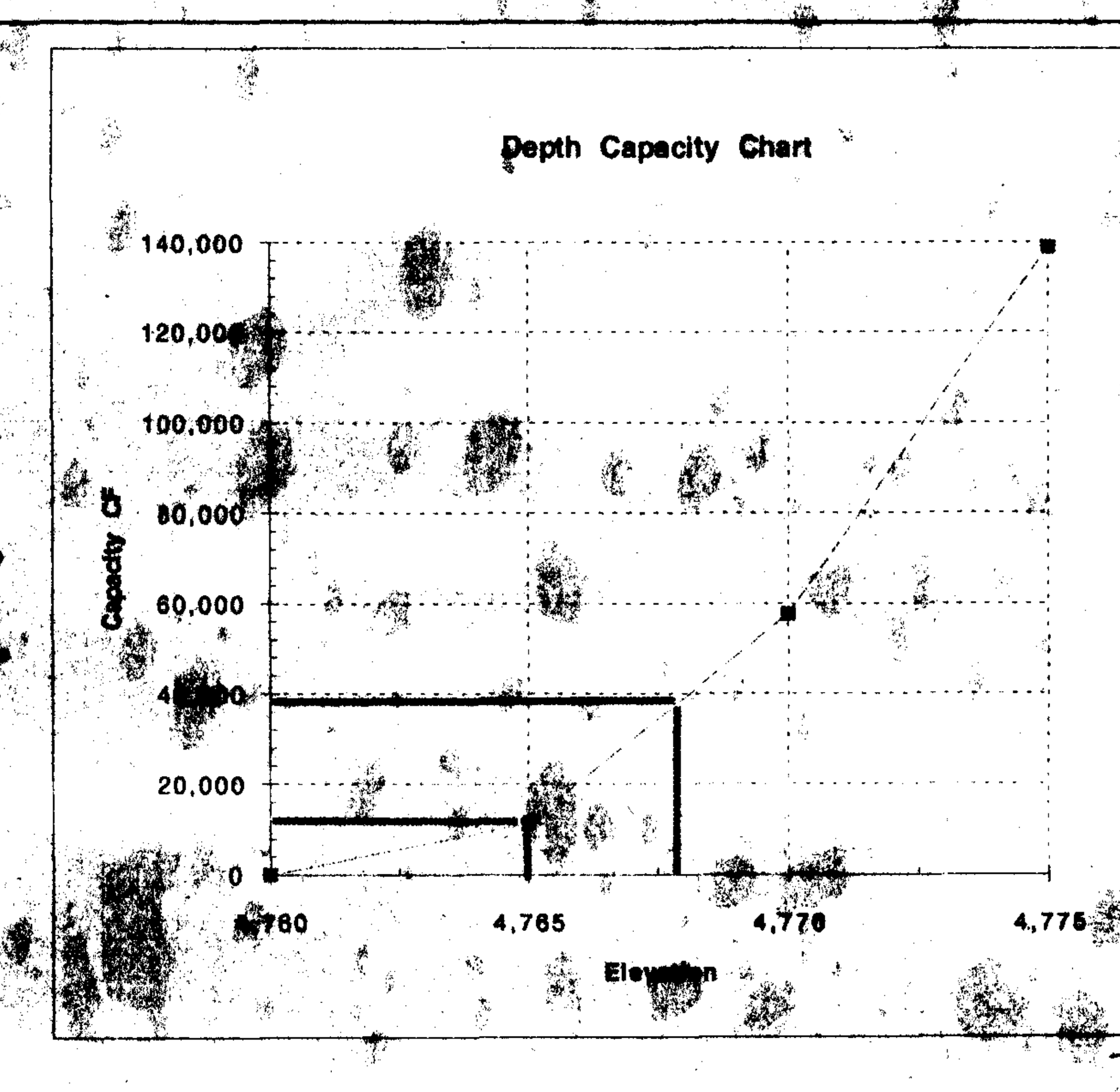
Elevation Ft.	Area Ft. Sq.	Volume Cu. Ft.	Accum. Volume Cu. Ft.
4,760	0	0	0
4,765	6,800	11,333	11,333
4,770	12,000	46,389	57,722
4,775	20,800	80,998	138,720

Storage Required Below 100 Yr Orifice: 2,743.50

TOTAL STORAGE REQ[illegible] [illegible]5.56

Maximum detent[illegible] [illegible]





DESIGNED BY Terry Nichols
DRAWN BY Terry Nichols
SURVEY DATE

REVISIONS

NO.	DATE	REMARKS	BY

THE FALLS - GRADING & DRAINAGE PLAN

CIVIL ENGINEERING · PHOTOGRAMMETRY · SURVEYING
P.O. Box 3327 · Grand Junction · Colorado · 81502 · Phone 303-243-7101

NICHOLS ASSOCIATES, INC.

DATE DRAWN

SCALE 1" = 50

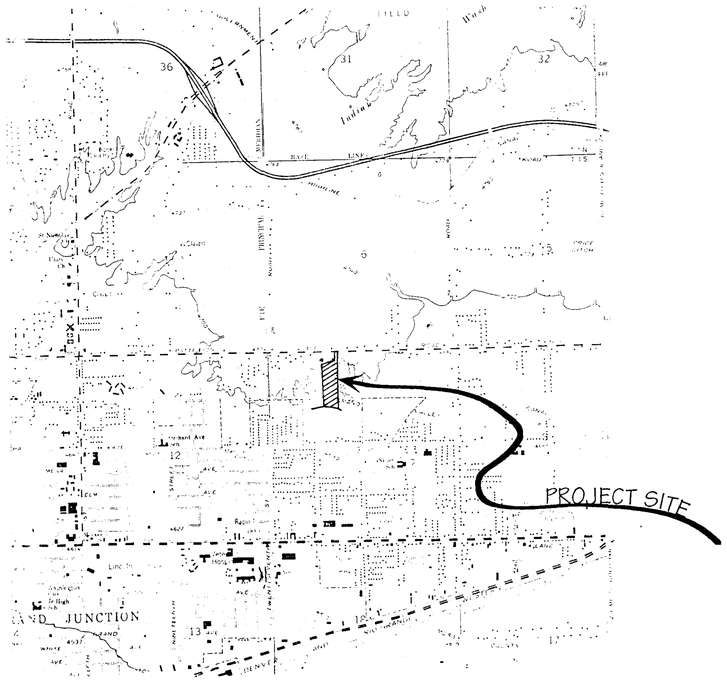
PROJECT NUMBER

SHEET NUMBER 9 OF 9

TELEDYNE POST N41491

THE FALLS - FILING ONE

VACINITY MAP



N

SHEET INDEX

Approved 4/6/15

DESIGNED BY Terry Nichols

DRAWN BY Terry Nichols

SURVEY DATE

REVISIONS

NO.	DATE	REMARKS	BY

APPROVED 4-20-94

THE FALLS FILING ONE

NICHOLS ASSOCIATES, INC.
CIVIL ENGINEERING - PHOTOGRAMMETRY - SURVEYING
P.O. Box 10006 • Grand Junction • Colorado 81506 • Phone 303-245-7101

DATE DRAWN

SCALE

PROJECT NUMBER

SHEET NUMBER 1 OF 1

THE FALLS - FILING 1 - FP-1994-069