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File 1993-0063 Name: Pepper Tree - Filing #4-Final Plan/Plat

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.
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		***Review Sheet Summary**
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X	X	***Review Comments**
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		***City Council staff report and exhibits**
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DOCUMENT DESCRIPTION:

X	X	Action Sheet - Approved - 6/1/93 - **			
X		Planning Comm. Notice of Public Hearing mail-out for 6/1/93			
X	X	Subdivision Summary Form			
		Utility Coordinating Committee approval - 7/14/93			
X		Display Ad - Notice - 6/1/93			
X	X	Planning Commission Meeting/Agenda - 6/1/93 - **			
X	X	Development Improvements Agrmt. - not signed or completed - will be scanned with file			
X		Exterior Elevations Maps			
X		Utility Map			
X	X	Site Plan			
X	X	Geologic Hazards Report - 3/93			
X	X	Subsurface Soils Exploration			
X	X	Plat - GIS Historical Maps - **			

DEVELOPMENT APPLICATION

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

[A] Receipt 230
Date 5-3-93
Rec'd By MP
File No. #57-93

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

PETITION	PHASE	SIZE	LOCATION	ZONE	LAND USE
[X] Subdivision Plat/Plan	[ ] Minor [X] Major [ ] Resub		29 Rd & F Rd	PR 20	Residential
[ ] Rezone				From: To:	
[ ] Planned Development	[ ] ODP [ ] Prelim [ ] Final				
[ ] Conditional Use					
[ ] Zone of Annex					
[ ] Text Amendment					
[ ] Special Use					
[ ] Vacation					[ ] Right-of-Way [ ] Easement

[X] PROPERTY OWNER [X] DEVELOPER [X] REPRESENTATIVE

PROPERTY OWNER	DEVELOPER	REPRESENTATIVE
IBX, Inc.	IBX, Inc.	ROLLAND ENGINEERING
Name	Name	Name
640 S. 12th	640 S. 12th	405 Ridges Blvd., Suite A
Address	Address	Address
Grand Junction, CO 81501	Grand Junction, CO 81501	Grand Junction, CO 81503
City/State/Zip	City/State/Zip	City/State/Zip
(303)241-0604	(303)241-0604	(303)243-8300
Business Phone No.	Business Phone No.	Business Phone No.

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

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

X _____ 4/27/93
Signature of Person Completing Application Date

X Pat Tucker President
IBX Inc

Signature of Property Owner(s) - Attach Additional Sheets if Necessary

L. B. Parkerson
2910 Orchard Avenue
Grand Junction, Colorado 81501

John P. Rothhaupt
P. O. Box 2375
Grand Junction, CO 81502

Mr. & Mrs. William Graff
581 29 Road
Grand Junction, CO 81501

Phillip M. Armour
2889 F Road
Grand Junction, CO 81506

Natasha Von Zorn
590 W. Indian Creek Dr. #1
Grand Junction, CO 81501

L. O. Griffith
590 W. Indian Creek Dr. #2
Grand Junction, CO 81501

Margaret P. Bullock
590 W. Indian Creek Dr. #3
Grand Junction, CO 81501

Pepper Tree Homeowners Assc
C/O Pat Tucker
640 S. 12th Street
Grand Junction, CO 81501

Twin Peaks Holding, Inc.
C/O Pat Tucker
640 S. 12th Street
Grand Junction, CO 81501

IBX, Inc.
640 S. 12th Street
Grand Junction, CO 81501

Alice A. Miles
588 W. Indian Creek Dr. #3
Grand Junction, CO 81501

Brent R. Uilenberg
588 W. Indian Creek Dr. #4
Grand Junction, CO 81501

Betty J. Schumann
4001 Ptarmigan Piazza
Grand Junction, CO 81506

Mr. & Mrs. Tom Rolland
2561 H 3/4 Road
Grand Junction, CO 81505

Deanna Musgrave
2700 G Road
Grand Junction, CO 81506

Robert Graham
589 W. Indian Creek Dr. #1
Grand Junction, CO 81501

Nina I. Danner
587 W. Indian Creek Dr. #2
Grand Junction, CO 81501

Clyde M. Saunders
587 W. Indian Creek Dr. #1
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Paul E. Martin
585 W. Indian Creek Dr. #2
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Louis F. Rimbert
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Michael Piontkowski
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Grand Junction, CO 81501

Carol J. Hansen
583 W. Indian Creek Dr. #2
Grand Junction, CO 81501

June L. Conn
589 W. Indian Creek Dr. #2
Grand Junction, CO 81501

ROLLAND ENGINEERING
405 Ridges Blvd., Suite A
Grand Junction, CO 81503

IBX, Inc.
640 S. 12th
Grand Junction, CO 81502

6

SUBDIVISION SUMMARY FORM

City of Grand Junction

TYPE OF SUBMISSION

Preliminary Plan ____
Final Plat/Plan X

Subdivision Name: Pepper Tree Filing 4, Phase 1

Location of Subdivision: TOWNSHIP 1S RANGE 1E SECTION 7 1/4 NE

Type of Subdivision	Number of Dwelling Units	Area (Acres)	% of Total Area
( ) SINGLE FAMILY			
( ) APARTMENTS			
(X) TOWNHOMES	5	.14	3.3
( ) MOBILE HOME			
( ) COMMERCIAL	N.A.		
( ) INDUSTRIAL	N.A.		
Street			
Walkways		.01	0.24
Dedicated School Sites			
Reserved School Sites			
Dedicated Park Sites			
Reserved Park Sites			
Private Open Areas			
Easements		.06	1.42
Other (specify) Parking		.04	0.95
Common Landscaped Areas		0.18	4.29

Estimated Water Requirements 2,414 gallons/day.

Proposed Water Source Ute Water District

Estimated Sewage Disposal Requirement 1,723 gallons/day.

Proposed Means of Sewage Disposal Central Grand Valley Sanitation District

GEOLOGIC HAZARDS REPORT
FOR
PEPPER TREE FILING NO. 4

CITY OF GRAND JUNCTION, COLORADO

MARCH, 1993

Prepared by:

Barnes Geologic Consulting, Inc.
2325 Elderberry Court
Grand Junction, CO 81506
Phone (303) 242-8655

Prepared for:

Rolland Engineering
405 Ridges Boulevard
Grand Junction, CO 81503
Phone (303) 243-8300

Client:

IBX, Incorporated
640 South 12th Street
Grand Junction, CO 81501
Phone (303) 241-0604

GEOLOGIC HAZARDS REPORT
FOR
PEPPER TREE FILING NO. 4

CITY OF GRAND JUNCTION, COLORADO

MARCH, 1993

INTRODUCTION

Pepper Tree Filing No. 4 is located in part of the $NE\frac{1}{4}$ of the $NE\frac{1}{4}$ of Section 7, Township 1 South, Range 1 East, Ute Principal Meridian. The property is in the northeast portion of the City of Grand Junction and is south of Patterson Road (F Road) and between 28 3/4 and 29 Roads. The site is at the south end of West Indian Creek Road.

The proposed development is a southward extension of the existing Pepper Tree Subdivision and would consist of several condominiums/townhouses on approximately 4.2 acres. The property is gently sloping and is presently undeveloped. The vegetation is weeds, grass, willows, and a few cottonwood trees which is mostly the result of leakage from small canals which border the property. The general nearby area consists of residences, small irrigated fields, and undeveloped land.

The purpose of this report is to identify geologic hazards, particularly hazards that might have an adverse effect on construction of large multi-family buildings. References used to supplement surface observations included USGS Professional Paper 451, USGS Map I-736, and soils mapping by the Soil Conservation Service (SCS). A soils map based on SCS classifications has been prepared and is attached to this report.

In addition, site-specific information was obtained from a report titled "Subsurface Soils Exploration - Pepper Tree Filing No. 4" dated March 24, 1993, by Lincoln-DeVore, Inc. of Grand Junction, Colorado. This firm drilled 4 holes on the property on March 15, 1993, to gather preliminary foundation data. Laboratory tests were performed on representative soil samples to determine engineering properties. Drill logs and a location map prepared by Lincoln-DeVore are attached to this report.

REGIONAL GEOLOGY

The property is located on the northeast flank of the Uncompahgre Uplift where the underlying sedimentary beds dip about 3° to the northeast into the Piceance Basin. The site is within the extensive Grand Valley which has been eroded into Mancos Shale of Cretaceous age by the Colorado River. The sedimentary layers beneath the Mancos range in age from Triassic to Cretaceous, and igneous and metamorphic rocks of Precambrian age lie beneath the sedimentaries.

Mancos Shale is a marine deposit and consequently contains soluble salts. The formation was originally about 4,000 feet in thickness, but the Mancos under the subject parcel is now about 1,200 feet thick due to erosion of the valley. The shale is dark gray, thin bedded, and composed mainly of clay and silt particles.

The Grand Valley has a history of minor seismic activity and the seismic risk is low. Recent and nearby earthquakes occurred on November 12, 1971, and January 30, 1975. The 1971 earthquake had a Richter magnitude of 4.0 and was located 13 miles southwest of Grand Junction. The 1975 earthquake had a magnitude of 4.4 and was located 14 miles northwest of Grand Junction. A mild quake of 2.5 magnitude occurred near Palisade on October 20, 1990. No damage was reported from any of these events.

SITE GEOLOGY

The Pepper Tree Filing No. 4 property is in the broad Grand Valley which has been eroded from Mancos Shale. The ground elevation on the site is about 4,670 feet and the slopes are very gentle. The general area is semiarid and receives a long term, average annual precipitation of about 8.6 inches. The croplands are irrigated by diversions from the Colorado River.

Geologic Formations and Soils

The site is in a transitional area between low Mancos Shale hills to the west and gentle alluvial slopes along Indian Wash to the east. The land to the west can be characterized as a "badlands" area with sparse vegetation, patches of alkali, and weathered Mancos Shale essentially forming the ground surface.

The soils encountered by Lincoln-DeVore in the 4 exploratory holes were silty clays and sandy silts which ranged in thickness from 7.5 to 12 feet. Weathered Mancos Shale underlies these alluvial soils and was reported to be fractured and to contain soluble salts. Deeper alluvium, up to 20 feet or more, is known to occur in many locations along Indian Wash and deep soils could be present near the southeast corner of the property. The present channel of Indian Wash is about 80 feet east of the southeast property corner.

The near-surface soils have been mapped for agricultural purposes by the Soil Conservation Service as Billings silty clay loam, Persayo-Chipeta silty clay loam, and Ravola clay loam.

Geologic Structure

The dip of the underlying bedrock is about 3° to the northeast away from the nearby Uncompahgre Uplift. The Redlands fault, a dominant structural feature, is located about 7 miles to the southwest.

Foundation Materials

The silty clays and sandy silts found in the 4 test holes are described in the March 24, 1993, Lincoln-DeVore report as being of "low plasticity, of low to moderate permeability, and encountered in a low density, wet condition. If this soil is found in a relatively dry 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. This soil will settle after being loaded."

The weathered Mancos Shale, which was also found in all 4 exploratory holes, was described as "somewhat weathered near the upper surface, but became quite stiff with increasing depth. This soil type was classified as a low plastic clay under the Unified Soil Classification System. The Standard Penetration Tests ranged from 39 blows per foot to over 100 blows per foot. Penetration tests of this magnitude indicate that the soil is very stiff and of medium to high density. The moisture content varied from 10.5 to 15.4%, indicating a relatively moist soil. This soil is plastic and is sensitive to changes in moisture content."

Additional details on the foundation materials as well as recommendations for design are presented in the Lincoln-DeVore report.

Spoil piles of waste materials about 3 to 12 feet deep are present on the middle and southeastern portions of the property; the approximate locations are marked on the attached Soils Map. This material consists of soil, broken concrete, tree limbs, waste lumber, and possibly other unknown trash. The debris would obviously be unsuitable as foundation material and should be removed from any building site or otherwise accommodated in the project plan.

The soils and bedrock at this site contain soluble salts that could cause deterioration of concrete. Sulfate resistant cement should be used to avoid this possibility.

Water Table

A perched ground water table may exist at this site due to the presence of irrigation ditches and landscape irrigation in the subdivision to the north. A small unlined canal parallels the

west and south property lines and a small concrete ditch follows the east boundary. Indian Wash, a rather large drainage heading in the Bookcliffs, is about 80 feet from the southeast property corner. The large Grand Valley Canal is about 350 feet to the south.

Ground water was not found in any of the 4 test holes by Lincoln-DeVore at the time of the drilling (March 15, 1993). However, very wet conditions were reported from each of the holes. The Lincoln-DeVore report recommends that basement or half basement foundations not be used at this site.

The depth to ground water during the various seasons of the year must be determined prior to any foundation design. The water table in the general area is usually the highest in the month of October, at the end of the irrigation season. Sewage will be conveyed from the area by municipal collector lines.

Slope Stability

No landslide or other slope stability hazards exist due to the very gentle slopes. The ground surface slopes southeast towards Indian Wash at 1 to 4 percent.

FLOOD POTENTIAL

Indian Wash, an intermittent drainage which extends northeastward towards the Bookcliffs, is located about 80 feet east and 8 feet lower in elevation from the southeast corner of this property. A floodwater-retarding structure has been constructed by the Soil Conservation Service across Indian Wash about 3 miles north of this subdivision to provide protection against 100-year floodflows (Flood Insurance Study--Mesa County, Colorado, FEMA, July 15, 1992, page 16).

RADIATION HAZARD

Uranium mill tailings were used extensively in the Grand Junction area between 1952 and 1965 for landfill and construction. No tailings were found on the subject property by a gamma radiation survey conducted by ARIX Corporation on October 11, 1979.

CONCLUSIONS

A surface reconnaissance was conducted by Barnes Geologic Consulting, Inc. on March 13, 1993, at the proposed Pepper Tree Filing No. 4 to identify geologic hazards to building construction. Additionally, 4 shallow exploration holes were drilled by Lincoln-DeVore, Inc. on March 15, 1993, to identify general subsurface conditions. The hazards and recommendations

are summarized as follows:

1. The foundation materials at this property are variable depths of silty clay and sandy silt overlying weathered Mancos Shale. The soil depths revealed by the 4 exploration holes varied from 7.5 to 12 feet. The engineering properties of the soils were described in the Lincoln-DeVore report dated March 24, 1993, as being low plasticity, low density, and low to moderate permeability. The soils were found to be wet, but a water table was not encountered at the time of the drilling (March 15, 1993). The site-specific engineering properties of each soil layer must be determined and utilized in the final design of each structure foundation.

2. The weathered Mancos Shale bedrock encountered in each of the exploration holes contained swelling clays. This potential for shrink-swell must also be evaluated prior to design and construction at locations where the shale would be a part of the foundation.

3. The soils and shale and at this site contain varying amounts of sulfate salts and sulfate resistant cement should be used in concrete.

4. Ground water was not found in any of the four exploration holes during the March 15, 1993 drilling, but wet soil was reported from each hole. The ground water table may be fairly high in the summer and fall months due to the irrigated landscaping and croplands and the numerous irrigation canals. The depth to ground water during each season of the year must be determined prior to foundation design.

5. The gentle slopes (1 to 4 percent) of this property do not present any slope stability hazard.

6. The property is near Indian Wash but an existing floodwater-retarding structure about 3 miles to the north across the wash provides protection against 100-year floodflows.

7. No gamma radiation above background was found on this site by a survey performed by ARIX Corporation on October 11, 1979.

8. Commercial mineral resources of metallic or non-metallic nature are not found in the immediate area. A small possibility for production of oil and/or natural gas from underlying formations exists.

9. The area has a low probability of destructive seismic events.

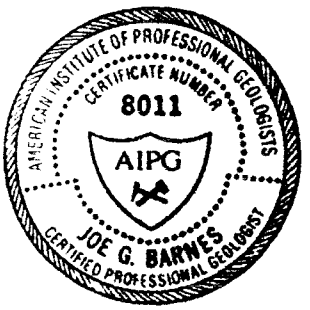
Several potential geologic hazards have been identified at this property, mainly the potential of swelling clays in the weathered shale and the possibility of a high ground water table during the irrigation season, but the conditions can be mitigated by proper engineering design of the foundations prior to construction. The geotechnical data necessary to allow adequate design can be obtained by appropriate techniques such as drilling, sampling, and laboratory testing of the various foundation materials.

Prepared by:

BARNES GEOLOGIC CONSULTING, INC.

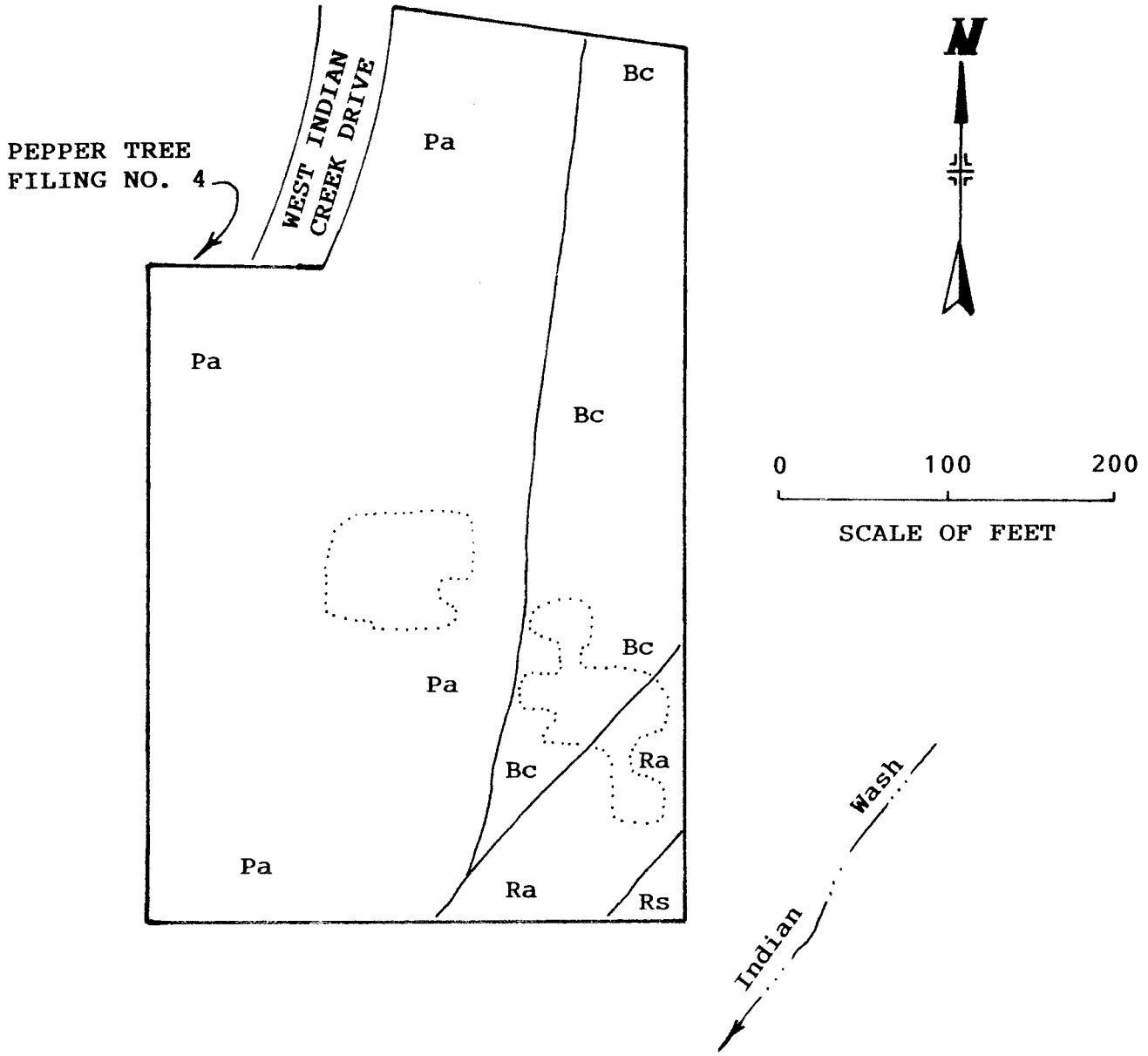
Joe G. Barnes

Joe G. Barnes, President
Engineering Geologist



PEPPER TREE FILING NO. 4 -- Panoramic view looking north at a portion of the proposed subdivision. Spoil piles of soil, broken concrete, and other debris can be seen in the right middle of the photos. The Bookcliffs are in the background.

PHOTOS BY JOE G. BARNES MARCH 18, 1993



EXPLANATION

Bc	Billings silty clay loam.
Pa	Persayo-Chipeta silty clay loam.
Ra	Ravola clay loam.
Rs	Rough gullied land.

Adapted from "Soil Map, Grand Junction Area, Colorado", SCS, surveyed 1939-40.

Spoil piles of soil, broken concrete, limbs, and waste lumber (sketched 3-13-93).

SOILS MAP

PEPPER TREE FILING NO. 4

MARCH, 1993

Barnes Geologic Consulting, Inc.

Drawn by JGB

SOIL CONSERVATION SERVICE
SOIL DATA SHEET

BILLINGS SILTY CLAY LOAM, 0 to 2 percent slopes, Class IIs Land (Bc)

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

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

Like all other soils in the area, this one has a low organic-matter content. Under natural conditions it contains a moderate concentration of salts derived from the parent rock (Mancos shale). In places, however, it contains so much salt that good yields cannot be obtained. Some large areas are so strongly saline they cannot be used for crops. Generally, this soil is without visible lime, but it is calcareous. In many places small white flecks or indistinct light-colored streaks or seams indicate that lime, gypsum, or salts are present.

Soil limitations are classified as severe for local roads and streets (poor traffic-supporting capacity, moderate to high water tables common), shallow excavations (high water tables common), and septic tank filter fields (slow permeability, poor internal drainage, seasonal high water table).

SOIL CONSERVATION SERVICE
SOIL DATA SHEET

PERSAYO-CHIPETA SILTY CLAY LOAMS, 0 to 2 percent slopes, Class IVs (Pa)

At least 80 percent of this complex consists of Persayo silty clay loam, 0 to 2 percent slopes. The other member of the complex, Chipeta silty clay loam, 0 to 2 percent slopes, occurs as small irregular bodies of light-gray to gray silty clay loam too small to separate on the map. These soils are similar in most respects, but they differ slightly in a few. Aside from their color difference - the Persayo soil is a pale yellow whereas the Chipeta is gray - the Persayo has a somewhat higher silt content, a slightly deeper surface soil, and a somewhat less compact subsoil.

The 8- to 10-inch surface soil of Persayo silty clay, 0 to 2 percent slopes, is a pale-yellow silty clay loam that contains a few scattered, pale yellow, easily crumbled, shale fragments. Below this depth the shale fragments generally are increasingly more abundant, but in places there are not many to depths of 15 to 18 inches. This material is hard and compact when it is dry. When wet, however, it is less plastic than in the Chipeta soil and therefore is slightly more permeable to plant roots. The soil is calcareous from the surface downward, although the lime is not visible. A small percentage of salts is common, but the cultivated acreage adversely affected is small. A slight scattering of pebblelike aggregates of gypsum over the surface is common. Seams of gypsum occur in the underlying shale strata. Both soils have developed in place from materials weathered from Mancos shale.

The organic-matter content in both soils is very low. Internal drainage and permeability to plant roots are slow.

Soil limitations are classified as severe for sanitary land fill (depth to rock, slope), septic tank absorption fields (depth to rock, slope), and sewage lagoons (depth to rock, slope). Limitations are moderate to severe for local roads and streets (shrink-swell, depth to rock and slope), shallow excavations (depth to rock, slope), dwellings with basements (shrink-swell, depth to rock, slope), dwellings without basements (shrink-swell, depth to rock, slope.)

SOIL CONSERVATION SERVICE
SOIL DATA SHEET

RAVOLA CLAY LOAM, 0 to 2 percent slopes, Class IIs Land (Ra)

This soil has developed in material that consists largely of reworked Mancos shale but includes an appreciable amount of sandy alluvium from the higher Mesaverde formation. The surface of these deposits is relatively level, but the depth of the deposits ranges from 5 to 30 feet. The soil is associated with the Billings silty clay loams and the Ravola fine sandy loams.

The soil is much like the Billings silty clay loams but more porous because it contains more fine sand, especially in the subsoil. Ordinarily, the 10- or 12-inch surface layer consists of light brownish-gray to very pale-brown light clay loam. The underlying layers vary from place to place in thickness and texture and become more sandy below depths of 4 to 5 feet. The range in the subsoil is from fine sandy loam to clay loam.

Small fragments of shale and sandstone are common from the surface downward and are especially noticeable in areas nearest the source of the soil material. The entire profile is calcareous and friable, so internal drainage is medium and development of plant roots is not restricted. The surface is smooth. Most areas are at slightly higher levels than the associated areas of Billings silty clay loams and therefore have better drainage and a lower content of salts. The soil, however, is slightly saline under native cover, and in places it has strongly saline spots and a high water table.

No severe limitations exist for this soil type.

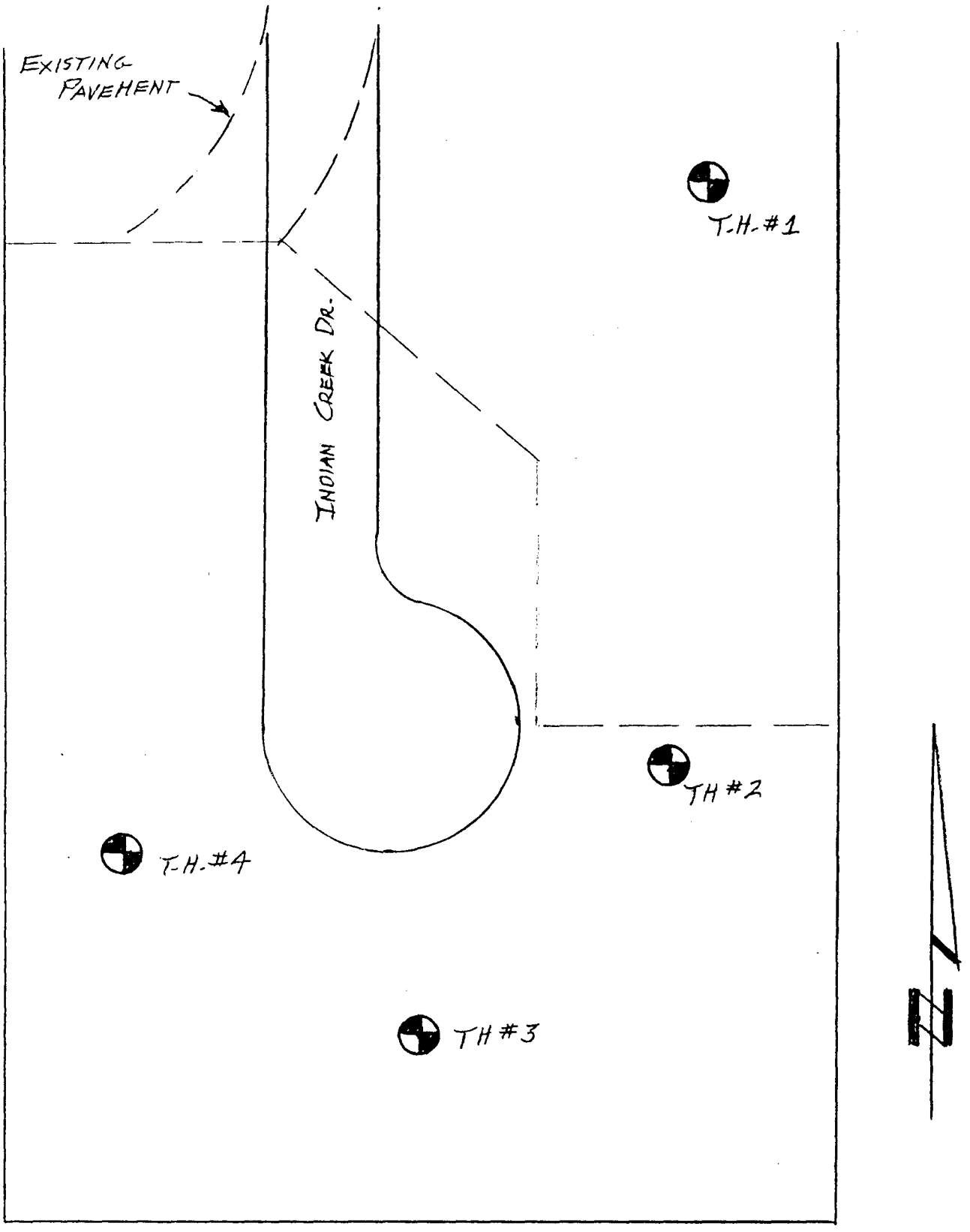
SOIL CONSERVATION SERVICE
SOIL DATA SHEET

ROUGH GULLIED LAND, Class VIIIe (Rs)

This land type is the product of erosion, gullying, and gully-bank caving of Billings soil material.

Erosion, facilitated by occasional mountain freshets and surface flow of irrigation waste water, continues until a gully has been cut down to the sandy substratum. The small continuous flow of irrigation waste water down the gully keeps the sandy substratum wet during the irrigation season. Some irrigation water applied on the fields adjoining the gully follows animal burrows or seeps down through the soil material until it reaches the sandy substratum. It then trickles out into the gully in small springlike veins and carries the saturated sandy material with it. Eventually, the high bank is undermined and topples down into the gully. The underground erosion and caving continually widen the gully. Some of the gully banks are already 50 to 400 yards apart. Unless waste water from irrigated land is disposed of through corrugated iron outlets, the cropland bordering the gullies gradually caves away.

Soil limitations are classified as severe for local roads and streets (slopes, flood hazard), shallow excavations (slopes, flood hazard), dwellings with basements (steep slopes, erosive soil materials), dwellings without basements (steep slopes, erosive soil materials), sanitary land fill (clayey textures, flooding, steep slopes), septic tank absorption fields (slopes), and sewage lagoons (slopes , flood hazard.)



Lincoln DeVore, Inc.
Geotechnical Consultants

PEPPERTREE SUB- FIL III G-J-

IBX, INC-

DATE 3-27-93

JOB NO. 77975-J

DRAWN EHM

NO SCALE

BORING NO. 1

ELEVATION:

DEPTH (FT)	SYMBOL	SAMPLE	DESCRIPTION		PENETRATION RESISTANCE	IN-SITU DENSITY (PCF)	MOISTURE CONTENT (%)
			ALLUVIAL LOW PLASTIC CLAY & SILTY CLAY				
			LOW DENSITY – MOIST				
			(I) STRATA of SULFATES	S.T.			13.6%
5			INCREASING MOISTURE – VERY SILTY				
			SHALE FRAGMENTS – SILTY STRATA				
			VERY MOIST – LOW TO MEDIUM DENSITY				
			WEATHERED MANCOS SHALE @ 8'				
			(II) STRATA of SULFATES MEDIUM DENSITY	SPT	14/6 39/12		12.4%
10			STRATA of SILTSTONE MOIST		85/18		
			EXPANSIVE				
			(II) INCREASING DENSITY – MOIST	SPT	28/6 76/12		11.5%
15							
			NO FREE WATER DURING DRILLING				
			3-15-93				

LOG OF SUBSURFACE EXPLORATION

Lincoln DeVore, Inc.
Geotechnical Consultants

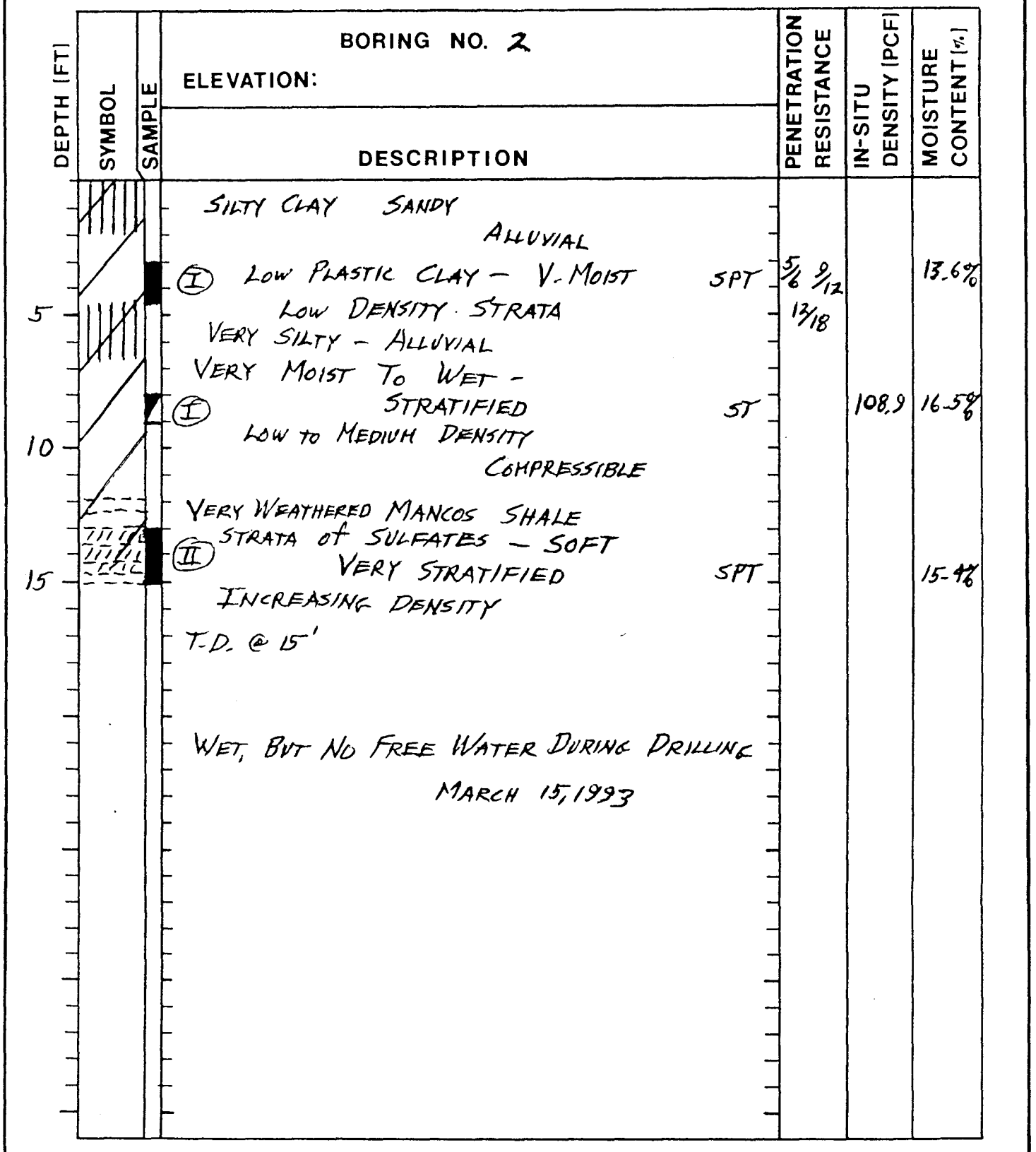
PEPPER TREE SUB. FIL III & J.

IBX, INC.

DATE 3-27-93

JOB NO. 77975-J

DRAWN EMM



LOG OF SUBSURFACE EXPLORATION

Lincoln DeVore, Inc.
Geotechnical Consultants

PEPPER TREE SUB. FIL. III G.J.		
IBX, INC.		DATE 3-27-93
JOB NO. 77975-J	DRAWN EMH	

BORING NO. 3

ELEVATION:

DEPTH (FT)	SYMBOL	SAMPLE	DESCRIPTION	PENETRATION RESISTANCE	IN-SITU DENSITY (PCF)	MOISTURE CONTENT (%)
			SILTY, SANDY CLAY VERY MOIST			
			ALLUVIAL, LOW PLASTIC – SULFATE			
		I	MEDIUM DENSITY - SOME HIGHER DENSITY STRATA S.T.		114.3	15.1%
5			VERY WEATHERED SHALE? - VERY HIGH SULFATES			
		II	MANCOS SHALE @ 7½' DENSE S.P.T.	45/6 93/12		10.8%
			EXPANSIVE MOIST			
10			VERY SILTY STRATA	143/15		
			T.D. @ 7½' VERY DENSE, NEAR DRILL REFUSAL			
15			NO FREE WATER DURING DRILLING			
			3-15-93			

LOG OF SUBSURFACE EXPLORATION

Lincoln DeVore, Inc.
Geotechnical Consultants

PEPPER TREE SUB. FIL III, G.J.

IBX, INC.

DATE 3-27-93

JOB NO. 77975-J

DRAWN EMH

BORING NO. 4

ELEVATION:

DEPTH (FT)	SYMBOL	SAMPLE	DESCRIPTION		PENETRATION RESISTANCE	IN-SITU DENSITY (PCF)	MOISTURE CONTENT (%)
			ALLUVIAL - STRATIFIED SILTY CLAY and LOW PLASTIC SILT				
		I	LOW PLASTIC SILT – VERY MOIST	SPT	14/6 29/12		12.6%
5			MEDIUM DENSITY		54/18		
			VERY STRATIFIED SULFATES				
			VERY HIGH SULFATES ABOVE SHALE				
		II	MANCOS SHALE	SPT	20/6 45/12		10.5%
10			VERY DENSE - STRATIFIED		80/18		
			SULFATES, EXPANSIVE				
			SILTSTONE STRATA				
			NO FREE WATER DURING DRILLING 3-15-93				

LOG OF SUBSURFACE EXPLORATION

Lincoln DeVore, Inc.
Geotechnical Consultants

PEPPER TREE SUB. FIL III G-J.

IBX, INC

DATE 3-27-93

JOB NO. 77975-J

DRAWN EHM

SOILS DESCRIPTIONS:

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

ROCK DESCRIPTIONS:

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

SYMBOLS & NOTES:

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

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

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

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

LINCOLN DeVORE TESTING LABORATORY

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

EXPLANATION OF BOREHOLE LOGS AND LOCATION DIAGRAMS

SUBSURFACE SOILS EXPLORATION

PEPPERTREE, FILING #3

GRAND JUNCTION, CO

Prepared For:

IBX Inc.
640 S. 12th Street
Grand Junction, CO 81501

Prepared By:

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

March 24, 1993

Lincoln DeVore, Inc.
Geotechnical Consultants
1441 Motor St.
Grand Junction, CO 81505

TEL: (303) 242-8968
FAX: (303) 242-1561

March 24, 1993

IBX Inc.
640 S. 12th St.
Grand Junction, CO 81501

Re: SUBSURFACE SOILS EXPLORATION

Peppertree, Filing #3

Grand Junction, CO

Gentlemen;

Transmitted herein are the results of a Subsurface Soils Exploration for the proposed Filing 3 of the PEPPERTREE Subdivision, for residential structures.

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

Respectfully submitted,

LINCOLN-DeVORE, INC.

By: _____
Edward M. Morris, E.I.T.
Western Slope Branch Manager
Grand Junction, Office

Reviewed by: _____ 3/24/93
George D. Morris, P.E.
Colorado Springs Office

EMM/kw

LDTL Job No. 77975-J

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INTRODUCTION

PROJECT DESCRIPTION

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

To assist in our exploration, we were provided with a site plot plan provided by Roland 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 single and possibly two story, wood framed building with no basements and either concrete floor slabs on grade or crawl spaces. Lincoln DeVore has not seen a full set of building plans, but structures of this type typically develop wall loads on the order of 900 to 1800 plf and column loads on the order of 8 to 16 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 March 15, 1993, and consisted of a site reconnaissance by our geotechnical personnel and the drilling of four shallow exploration borings. These shallow exploration borings were drilled within the proposed building envelopes near the locations indicated on the Boring Location Plan. The exploration borings were located to obtain a reasonably good profile of the subsurface soil conditions. All exploration borings were drilled using a CME 45-B, truck mounted drill rig with continuous flight auger to depths of approximately 15 feet. Samples were taken with a standard split spoon sampler, thin-walled Shelby tubes, and by bulk methods. Logs describing the subsurface conditions are presented in the attached figures.

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 West One Quarter of the Northeast Quarter of Section Seven, Township One South, Range One East of the Ute Principal Meridian,

Mesa County, Colorado. More specifically the site is located approximately two and one-half miles Northeast of the main business district of the city of Grand Junction, and is located South of Patterson Road.

The topography of the site is relatively flat, with a slight overall gradient to the South-Southeast. The exact direction of surface runoff on this site will be controlled by the proposed construction and therefore will be variable. In general, surface runoff is expected to travel to the Southeast, eventually entering the Indian Wash Drainage System. Surface and subsurface drainage on this site would be described as poor.

GENERAL GEOLOGY AND SUBSURFACE DESCRIPTION

The geologic materials encountered under the site consist of a relatively thin layer of alluvial and colluvial fine grained soils, which overlie the clays and silty clays of the Mancos Shale Formation. The Mancos Shale Formation is considered to be bedrock in this portion of Grand Junction. The geologic and engineering properties of the materials found in our four exploration borings will be discussed in the following sections.

The soils on this site consist of some mud-flow/debris-flow deposits and some colluvial (slope wash) deposits, originating on the higher ground both to the West and the Northeast. These soil materials found in the exploration borings consist of mixed soils containing silt, clay, shale

fragments, sand, and gravel sized fragments. Due to the method of deposition, these materials are mixed and of variable composition and consistency.

The on site soils, as encountered in our subsurface exploration, are described in the following paragraphs.

The alluvial soils encountered in the four exploration borings have been designated as Soil Type I. These soils are quite stratified however, the majority of these soils may be generally described as follows.

This Soil Type was classified as a silty clay (CL) with strata of sandy silt (ML) under the Unified Classification System. This material is of low plasticity, of low to moderate permeability, and was encountered in a low density, wet condition. If this soil is found in a relatively dry 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. This soil will settle after being loaded. The maximum allowable bearing capacity for this soil was found to be 1600 psf, with 450 psf minimum dead load pressure required. The finer grained portion of Soil Type I contains sulfates in detrimental quantities. Laboratory measurements of the sulfate salts indicate concentrations in excess of one percent by volume may be typical in some horizons.

Soil Type II describes the weathered Mancos Shale Formation, which was encountered in all four shallow

exploration borings. The Mancos Shale was found to be somewhat weathered near the upper surface but, became quite stiff with increasing depth.

This soil type was classified as a low plastic clay (CL) under the Unified Classification System. The Standard Penetration Tests ranged from 39 blows per foot to over 100 blows per foot. Penetration tests of this magnitude indicate that the soil is very stiff and of medium to high density. The moisture content varied from 10.5% to 15.4%, indicating a relatively moist soil. 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 3100 psf were found to be typical for remolded samples. Undisturbed samples indicated a typical swell value of 2200 psf. The allowable maximum bearing value was found to be on the order of 5500 psf. A minimum dead load of 2500 psf will be required.

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 1/16 inch thick were observed.

The boring logs and related information show subsurface conditions at the date and location of this

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

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

GROUND WATER:

No free water surface was encountered in any of the test borings to the depths drilled. However, very wet conditions were encountered in all test borings. In our opinion this wet condition is the result of seepage from irrigation ditches and from irrigation practices in the vicinity. Due to the high moisture conditions encountered, it is recommended that basement or half basement foundations not be used on this site, and that all floor slabs be constructed over a capillary break and vapor barrier.

Because of capillary rise, the soil zone within a few feet above the free water level identified in the borings will be quite wet. Pumping and rutting may occur during the excavation process, particularly if the bottom of the foundations are near the capillary fringe. Pumping is a temporary, quick condition caused by vibration of excavating equipment on

the site. If pumping occurs, it can often be stopped by removal of the equipment and greater care exercised in the excavation process. In other cases, geotextile fabric layers can be designed or cobble sized material can be introduced into the bottom of the excavation and worked into the soft soils. Such a geotextile or cobble raft is designed to stabilize the bottom of the excavation and to provide a firm base for equipment.

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, there exists a possibility of a perched water table developing in the alluvial soils which overlie the 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 relatively flat and that subsurface drainage would probably be quite slow. While it is believed that under the existing conditions at the time of this exploration the construction process would not be effected by any free-flow waters, it is very possible that several years after devel-

opment 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 expansive Mancos Shale Formation and the possibility of a very high groundwater level.

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.

SITE PREPARATION

It is recommended that site preparation begin with the removal of all vegetation, existing man-made fill and other deleterious materials. This applies both to areas to be filled and areas to be cut. The removed materials should be legally disposed of off-site or, if appropriate, stockpiled for later use in non-structural areas or landscaping. In the case of existing man-made fill, we recommend that it be removed completely. It is recommended that the exposed native soil be scarified to a depth of 12 inches, brought to near optimum moisture conditions and recompacted to a minimum of 90% of maximum dry density as determined by ASTM D 1557.

Since no site grading plan was made available at the time of writing this report, the extent of site grading and the proposed footing elevations is not known. Therefore, these grading recommendations must be considered preliminary until Lincoln DeVore has had the opportunity to review the site grading plans.

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.

We recommend that all backfill placed around the exterior of the building, and in utility trenches which are outside the perimeter of the building and not located beneath roadways or parking lots, be compacted to a minimum of 85% of its maximum Proctor dry density (ASTM D 698).

DRAINAGE AND GRADIENT:

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

If adequate surface drainage cannot be maintained, or if subsurface seepage is encountered during exca-

vation for foundation construction, a full perimeter drain is recommended for any affected building. It is recommended that this drain consist of a perforated drain pipe and a gravel collector, the whole being fully wrapped in a geotextile filter fabric. We recommend that this drain be constructed with a gravity outlet. If sufficient grade does not exist on the site for a gravity outlet, then a sealed sump and pump is recommended. Under no circumstances should a dry well be used on this site.

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

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

If a half basement-type foundation is anticipated for a given structure or if the loading conditions of a crawlspace or a concrete slab on grade type structure would require more bearing than the capacity than the medium density silty clays of Soil Type I can offer, then the low plastic clays of the Mancos Shale Formation may be utilized for foundation bearing. 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 these residential structures 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

We recommend the use of a conventional

shallow foundation system consisting of continuous spread footings beneath all bearing walls and isolated spread footings beneath all columns and other points of concentrated load. Such a shallow foundation system, resting on the resting on the upper alluvial silty clays, may be designed on the basis of an allowable bearing capacity of 1500 psf maximum. A minimum dead load of 350 psf must be maintained.

Contact stresses beneath all continuous walls should be balanced to within + or -150 psf at all points. Isolated interior column footings should be designed for contact stresses of about 150 psf more than the average used to balance the continuous walls. The criterion for balancing will depend somewhat upon the nature of the structure. Single-story structures may be balanced on the basis of dead load only. Multi-story structures may be balanced on the basis of dead load plus 1/2 live load, for up to 3 stories.

It should be noted that the term "footings" as used above includes the wall on grade or "no footing" type of foundation system. On this particular site, the use of a more conventional footing, the use of a "no footing", or the use of voids will depend entirely upon the foundation loads exerted by the structure. We would anticipate the use of no footing foundation type on this site.

Stem walls for a shallow foundation system should be designed as grade beams capable of spanning at least thirteen 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 the low expansive pressures exerted by Soil Type I.

If the shallow foundation systems will be founded within two feet of the weathered Mancos Shale Formation, or in the upper two feet of the Mancos Shale Formation, 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 4500 psf maximum, and a minimum dead load of 2200 psf must be maintained. Contact stresses beneath all continuous walls should be balanced to within + or - 150 psf at all points. Isolated interior column footings should be designed for contact stresses of about 150 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.

Stem walls for a shallow foundation system founded very near the expansive of the Mancos Shale should be designed as grade beams capable of spanning at least fourteen 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 the expansive clays of the Mancos Shale Formation.

FROST PROTECTION

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

DEEP FOUNDATIONS

A drilled Pier Foundation Sysem may be preferred, due to the subsurface soils and water conditions. Based upon our experience in this general area, the rather poor surface and subsurface water drainage conditions of the subdivision may not allow the determination of a discreet 'upper zone of seasonal moisture change' at this time. It must be noted that a drilled pier and fully voided grade beam system is quite rigid and may reactive in an undesirable manner to differential movement of the individual piers.

DRILLED PIERS:

We recommend that drilled piers have a minimum shaft length of ten feet and be embedded at least five feet into the relatively unweathered bedrock. At this level,these

piers may be designed for a maximum end bearing capacity of 25,000 psf, plus 2,200 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 3,100 psf and 600 psf side uplift, based on the side wall embedded in the bedrock. The overburden is soft and no supporting or uplift values are assigned to this material. The weight of the concrete in the pier may be incorporated into the required dead load.

It is recommended that the bottoms of all piers be thoroughly cleaned prior to the placement of concrete. The amount of reinforcing in each pier will depend on the magnitude and nature of loads involved. As a rule of thumb, reinforcing equal to approximately 1/2 of 1% of the gross cross-sectional concrete area should be used. Additional reinforcing should be used if structural conditions warrant. We recommend that reinforcing extend through the full length of pier. To minimize the possibility of voids developing in the drilled piers, concrete with a slump of 5 to 6 inches is recommended. We recommend that piers be dewatered and thoroughly cleaned of all loose material prior to placing the steel cage and concrete. The pier excavation should contain no more than 2 inches of free water unless the concrete is placed by means of a tremie extending to the bottom of the pier. A free fall in excess of 5 feet is not recommended when placing concrete in drilled piers. We recommend that casing be pulled as the concrete is being placed and that a 5 foot head of concrete be maintained. It is recommended

that drilled piers be plumb with 2% of their length and that the shaft maintain a constant diameter for the full length of the pier and not allowed to "mushroom" at the top.

DRILLED PIER OBSERVATION:

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

GRADE BEAMS:

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

CONCRETE SLABS ON GRADE

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

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

Where floor slabs are cast on expansive clay soils, no known method of construction will prevent all future slab movement. If the builder and future owner are willing to risk the possibility of some damage due to concrete floor slab movement, the recommendations contained herein should be carefully followed and can help minimize such damage. Any subsequent owner should be advised of the soil conditions and advised to maintain the surface and subsurface drainage, framing of partitions above floor slabs, drywall and finish work above floor slabs, etc.

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 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.

It is recommended that slabs on grade be constructed over a capillary break of approximately 6 inches in thickness. We recommend that the material used to form the capillary break be free draining, granular material and not contain significant fines. A free draining outlet is also recommended for this break so that it will not trap water beneath the slab. A vapor barrier is recommended beneath the floor slab and above the capillary break. To prevent difficulty in finishing concrete, a 2 inch sand layer should be placed above the break. An alternate method of reducing finishing problems would be to place the vapor barrier beneath approximately 6 inches of a minus 3/4 inch gravel fill. This method must be very carefully accomplished to minimize excessive puncturing and tearing of the vapor barrier.

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

EARTH RETAINING STRUCTURES

The active soil pressure for the design of earth retaining structures may be based on an equivalent fluid pressure of 38 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 48 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 300 pcf per foot of depth. The coefficient of friction for concrete to soil may be assumed to be .35 for resistance to lateral movement. When combining frictional and passive resistance, the latter must be reduced by approximately 1/3.

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 to determine their support characteristics. The results of the laboratory testing are as follows:

R = 13
Expansion @ 300 psi = 1.2
Displacement @ 300 psi = 4.60

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.

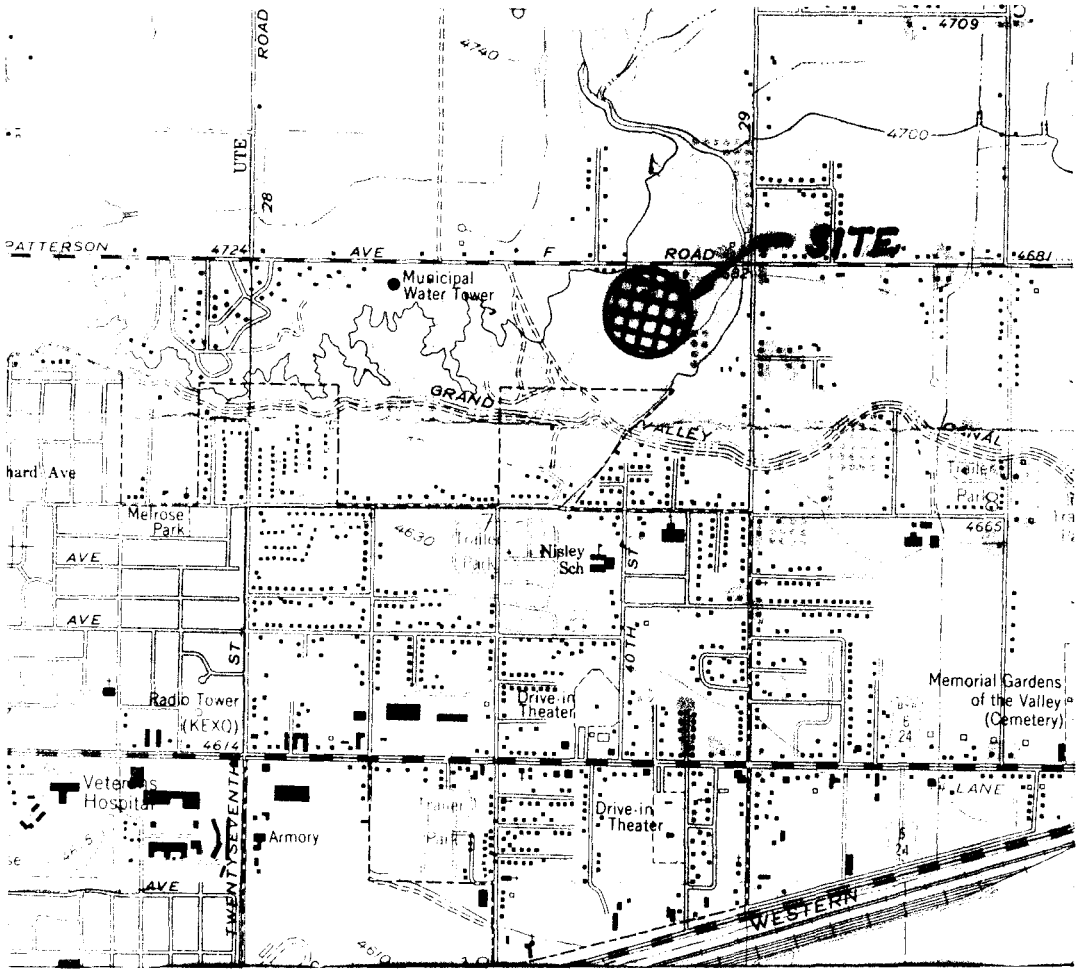
Samples may be bulk, standard split spoon (both disturbed) or 2-1/2" I.D. thin wall ("undisturbed") Shelby tube samples. See log for type.

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



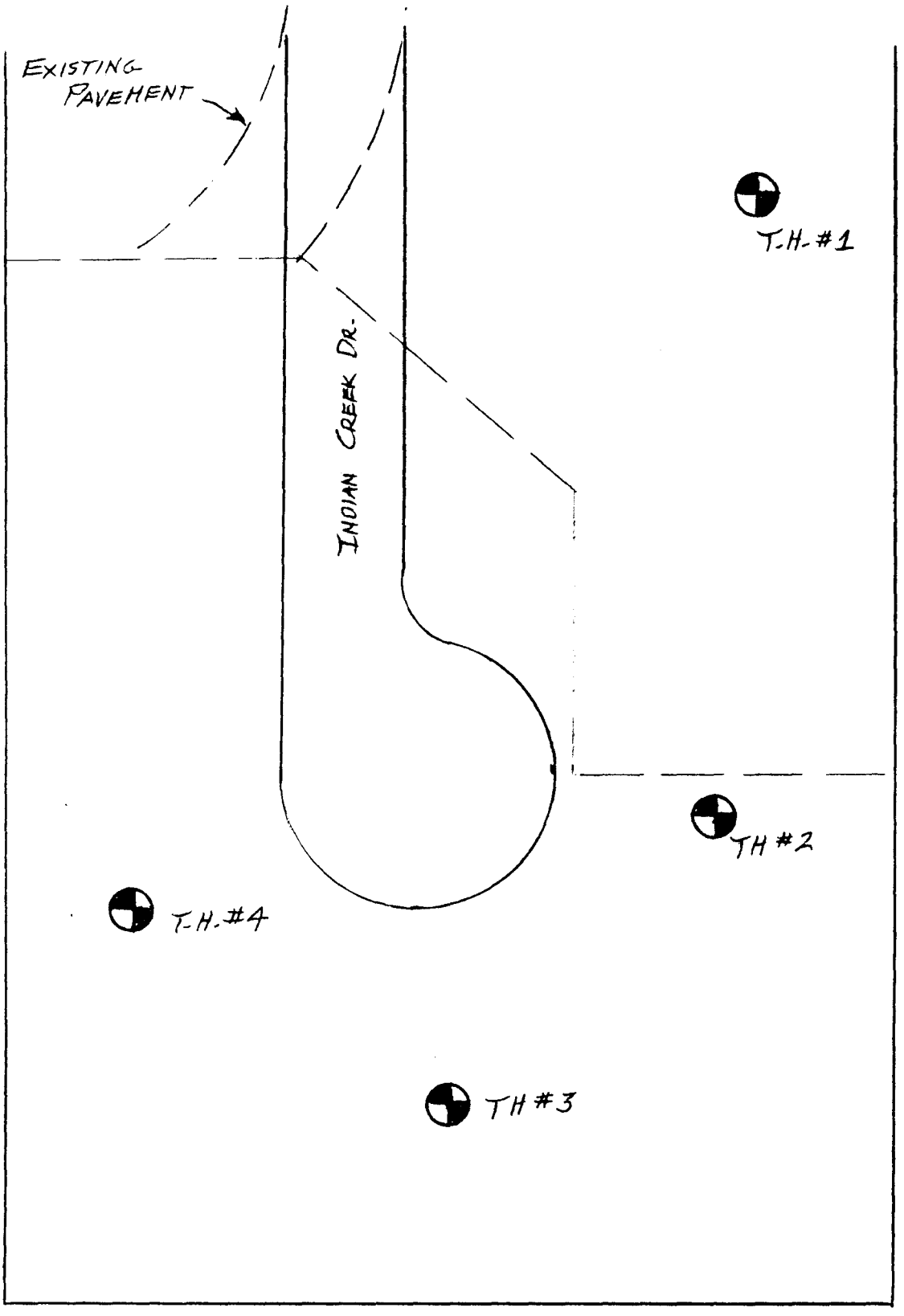
SCALE - 1" = 2000'

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

Lincoln DeVore, Inc.
Geotechnical Consultants

GENERAL SITE LOCATION DIAGRAM

		DATE
JOB NO.	DRAWN	



Lincoln DeVore, Inc.
Geotechnical Consultants

PEPPERTREE SUB. PH III G.J.		
IBX, INC.		DATE 3-27-93
JOB NO. 77975-J	DRAWN EHM	NO SCALE

BORING NO. 1

ELEVATION:

DEPTH (FT)	SYMBOL	SAMPLE	DESCRIPTION		PENETRATION RESISTANCE	IN-SITU DENSITY (PCF)	MOISTURE CONTENT (%)
			ALLUVIAL LOW PLASTIC CLAY & SILTY CLAY				
			LOW DENSITY - MOIST				
		I	STRATA of SULFATES	S.T.			13.6%
5			INCREASING MOISTURE - VERY SILTY				
			SHALE FRAGMENTS - SILTY STRATA				
			VERY MOIST - LOW TO MEDIUM DENSITY				
		II	WEATHERED MANCOS SHALE @ 8'	SPT	14/6 39/12		12.4%
10			STRATA of SULFATES MEDIUM DENSITY				
			STRATA of SILTSTONE MOIST		85/18		
			EXPANSIVE				
		II	INCREASING DENSITY - MOIST	SPT	28/6 76/12		11.5%
15							
			NO FREE WATER DURING DRILLING				
			3-15-93				

LOG OF SUBSURFACE EXPLORATION

Lincoln DeVore, Inc.
Geotechnical Consultants

PEPPER TREE SUB. FIL III G.J.

IBX, INC.

DATE 3-27-93

JOB NO. 77975-J

DRAWN EMM

BORING NO. 2

ELEVATION:

DEPTH (FT)	SYMBOL	SAMPLE	DESCRIPTION		PENETRATION RESISTANCE	IN-SITU DENSITY (PCF)	MOISTURE CONTENT (%)
			SILTY CLAY SANDY				
			ALLUVIAL				
		I	LOW PLASTIC CLAY – V. MOIST	SPT	5/6 9/12		13.6%
5			LOW DENSITY STRATA		13/18		
			VERY SILTY – ALLUVIAL				
			VERY MOIST TO WET –				
		I	STRATIFIED	ST		108.9	16.5%
10			LOW TO MEDIUM DENSITY				
			COMPRESSIBLE				
			VERY WEATHERED MANCOS SHALE				
		II	STRATA OF SULFATES – SOFT				
15			VERY STRATIFIED	SPT			15.1%
			INCREASING DENSITY				
			T.D. @ 15'				

WET, BUT NO FREE WATER DURING DRILLING

MARCH 15, 1993

LOG OF SUBSURFACE EXPLORATION

Lincoln DeVore, Inc.
Geotechnical Consultants

PEPPER TREE SUB. FIL. III G.J.		
IBX, INC.		DATE 3-27-93
JOB NO. 77975-J	DRAWN EMH	

BORING NO. 3

ELEVATION:

DEPTH (FT)	SYMBOL	SAMPLE	DESCRIPTION	PENETRATION RESISTANCE	IN-SITU DENSITY (PCF)	MOISTURE CONTENT (%)
			SILTY, SANDY CLAY VERY MOIST			
			ALLUVIAL, LOW PLASTIC – SULFATE			
		I	MEDIUM DENSITY - SOME HIGHER DENSITY STRATA S.T.		114.3	15.1%
5			VERY WEATHERED SHALE? - VERY HIGH SULFATES			
		II	MANCOS SHALE @ 7½' DENSE S.P.T.	45/6 93/12		10.8%
			EXPANSIVE MOIST			
10			VERY SILTY STRATA	143/15		
			T.D. @ 7½' VERY DENSE, NEAR DRILL REFUSAL			
15			NO FREE WATER DURING DRILLING			
			3-15-93			

LOG OF SUBSURFACE EXPLORATION

Lincoln DeVore, Inc.
Geotechnical Consultants

PEPPERTREE SUB. FIL III, G.J.

LDI, INC.

DATE 3-27-93

JOB NO. 7975-J

DRAWN EMH

BORING NO. 4

ELEVATION:

DEPTH (FT)	SYMBOL	SAMPLE	DESCRIPTION		PENETRATION RESISTANCE	IN-SITU DENSITY (PCF)	MOISTURE CONTENT (%)
			ALLUVIAL - STRATIFIED SILTY CLAY and LOW PLASTIC SILT				
			(I) LOW PLASTIC SILT - VERY MOIST	SPT	14/6 29/12		12.6%
5			MEDIUM DENSITY		54/18		
			VERY STRATIFIED SULFATES				
			VERY HIGH SULFATES ABOVE SHALE				
			(II) MANCOS SHALE	SPT	20/6 45/12		10.5%
10			VERY DENSE - STRATIFIED		80/18		
			SULFATES, EXPANSIVE				
			SILTSTONE STRATA				
			NO FREE WATER DURING DRILLING 3-15-93				

LOG OF SUBSURFACE EXPLORATION

Lincoln DeVore, Inc.
Geotechnical Consultants

PEPPER TREE SUB. FIL III G-J.

IBA, INC

DATE 3-27-93

JOB NO. 7115-J

DRAWN EHM

SUMMARY SHEET

Soil Sample: Low Plastic Clay - Mancos Shale (CL)
Test No.: 77975-J

Location: Pepper Tree Fil. III G.J.
Date: 3-22-93
Boring No.: 1 Depth: 9
Sample No.: II
Test by: JLS

Natural Water Content (w): 10.8 %
Specific Gravity (Gs): _____
In Place Density (γ_o): _____ pcf

SIEVE ANALYSIS:

Sieve No.	% Passing
1 1/2"	
1"	
3/4"	
1/2"	100
4	95-9
10	87-7
20	79-0
40	71-7
100	58-5
200	49-9

HYDROMETER ANALYSIS:

Grain size (mm)	%
.02	38.0
.005	20.7

Plastic Limit P.L.: 27-1 %
Liquid Limit L. L.: 37-3 %
Plasticity Index P.I.: 10 %
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 8-1 %
Swell against 3160 psf Wo gain 12.9 %

BEARING:

Housel Penetrometer (av): _____ psf
Unconfined Compression (qu): _____ psf
Plate Bearing: _____ psf
Inches Settlement: _____
Consolidation % under psf

PERMEABILITY:

K (at 20°C): _____
Void Ratio: _____

Soluble: 10,000 ppm.
(1%)

SOIL ANALYSIS

LINCOLN-DeVORE TESTING LABORATORY
COLORADO SPRINGS, COLORADO

SUMMARY SHEET

Soil Sample Low Plastic Clay (CL) Test No. 77975-J

Location Pepper Tree Filing III, G.J. Date 3-22-93

Boring No. 3 Depth 3'

Sample No. I Test by JLS

Natural Water Content (w) 15.1 %

Specific Gravity (Gs) _____ In Place Density (γ_o) 114.3 pcf

SIEVE ANALYSIS:

Sieve No.	% Passing
1 1/2"	
1"	
3/4"	
1/2"	100
4	99.3
10	97.7
20	95.8
40	93.7
100	84.6
200	73.9

HYDROMETER ANALYSIS:

Grain size (mm)	%
.02	49.7
.005	31.4

Plastic Limit P.L. 16.8 %

Liquid Limit L. L. 25.0 %

Plasticity Index P.I. 8 %

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: _____ Days _____ %

Swell against _____ psf Wo gain _____ %

BEARING:

Housel Penetrometer (av) _____ psf

Unconfined Compression (qu) _____ psf

Plate Bearing: _____ psf

Inches Settlement _____

Consolidation % under psf

PERMEABILITY:

K (at 20°C) _____

Void Ratio _____

Sulfates 10,000+ ppm.
(+1%)

SOIL ANALYSIS

LINCOLN-DeVORE TESTING LABORATORY
COLORADO SPRINGS, COLORADO

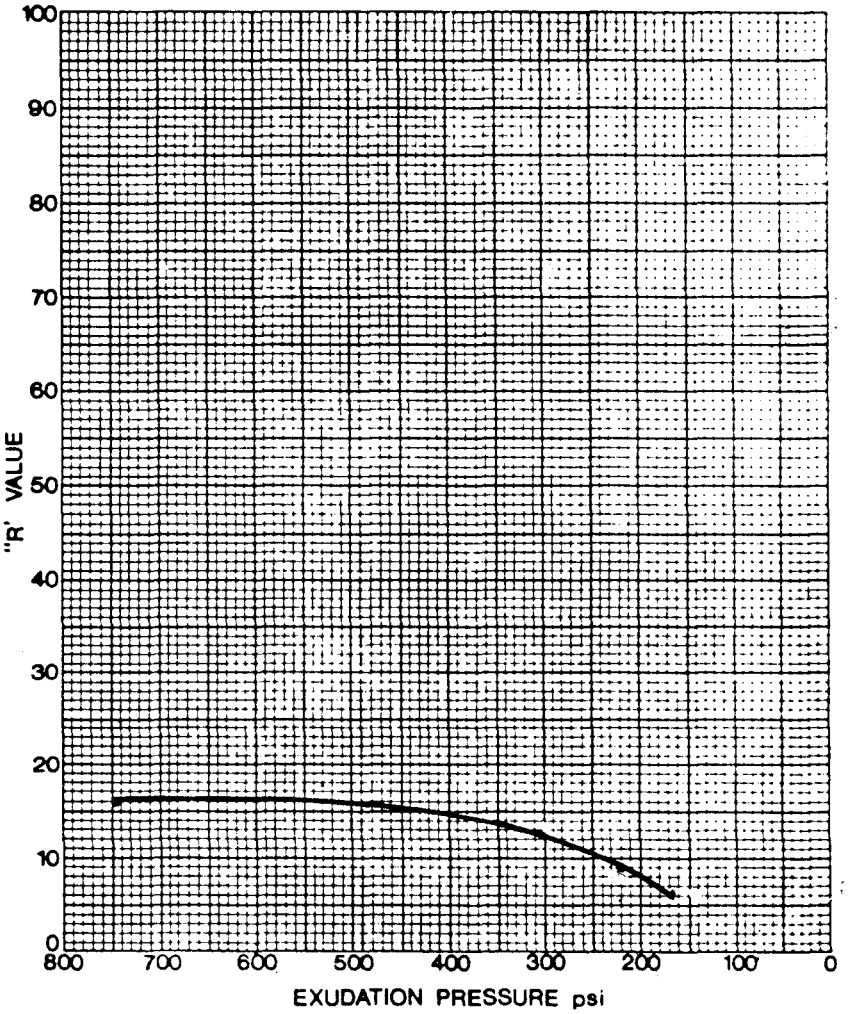
SAMPLE:

	TEST SPECIMAN		A	B	C	D	E
	DATE TESTED		3/22	3/22	3/22		
SPECIMEN FABRICATION	Compactor Air Pressure	psi					
	Initial Moisture	%	18%	18%	18%		
	Moisture at Compaction	%	19.5	21.0	22.5		
	Briquette Height	in.	2.44	2.62	2.50		
	Density	pcf	109.9	107.9	103.3		
	EXUDATION PRESSURE	psi	748	223	167		
	EXPANSION PRESSURE DIAL		1.8	1.2	0.1		
STABILOMETER	P_h at 1000 pounds	psi	51	63	67		
	P_h at 2000 pounds	psi	127	135	142		
	Displacement	turns	3.61	4.78	4.89		
	"R" Value		16	9	6		
	CORRECTED "R" VALUE		16	9	6		

EXPANSION @ 300 PSI EXUDATION PRESSURE 1.2
DISPLACEMENT @ 300 PSI EXUDATION PRESSURE 4.60
"R: VALUE @ 300 PSI EXUDATION PRESSURE 13

1½"	
1"	
3/4"	
1/2"	
3/8"	
4	100
10	98.4
20	96.6
40	94.6
100	82.2
200	73.6
.02 mm	47.3
.005 mm	34.1

LIQUID LIMIT	
PLASTIC LIMIT	16.8
PLASTICITY INDEX	8
SAND EQUIVALENT	



Lincoln DeVore, Inc.
Geotechnical Consultants

PEPPER TREE SUB FIL III G-J

IBX, INC.

DATE 3-27-93

JOB NO. 77975-J

DRAWN EHH

REVIEW COMMENTS

FILE NO. #63-93 **TITLE HEADING:** Final Plan - Pepper Tree, Filing #4, Phase I

LOCATION: F Road and 29 Road

PETITIONER: IBX, Inc.

PETITIONER'S ADDRESS/TELEPHONE: 640 South 12th Street
Grand Junction, CO
241-0604

PETITIONER'S REPRESENTATIVE: Rolland Engineering

STAFF REPRESENTATIVE: Kathy Portner

NOTE: WRITTEN RESPONSE BY THE PETITIONER TO THE REVIEW COMMENTS IS REQUIRED ON OR BEFORE 5:00 P.M., MAY 26, 1993.

U.W. WEST **5/6/93**
Leon Peach **244-4964**

New or additional telephone facilities necessitated by this project may result in a "contract" and up-front monies required from developer, prior to ordering or placing of said facilities. For more information, please call Leon Peach, 244-4964.

CITY PARKS & RECREATION DEPT. **5/10/93**
Don Hobbs **244-1542**

Open space fees based upon 5 units x $225 = $1,125.

GRAND JUNCTION FIRE DEPARTMENT **5/10/93**
George Bennett **244-1400**

A fire flow survey will need to be conducted prior to issuance of a building permit.

PUBLIC SERVICE COMPANY **5/10/93**
Dale Clawson **244-2695**

Electric & Gas: Request that common open area be dedicated also as utility easement.

CITY UTILITIES ENGINEER **5/14/93**
Bill Cheney **244-1590**

No comment.

UTE WATER **5/14/93**
Gary Mathews **242-7491**

Filing 4, Phase I can be supplied domestic service from the existing 8" main line in West Indian Creek Drive. The developer needs to contact Ute Water to discuss what method of metering is available for domestic water service. Policies and fees in effect at the time of application will apply.

CITY DEVELOPMENT ENGINEER **5/17/93**
Gerald Williams **244-1591**

See attached comments.

COMMUNITY DEVELOPMENT DEPARTMENT **5/18/93**
Kathy Portner **244-1446**

See attached comments.

CITY POLICE DEPARTMENT **5/19/93**
Mark Angelo **244-3587**

1. Recommend no on-street parking because of the width of the roadway. Signs should be posted.
2. Recommend at least one additional handicap parking space for the new phase along north side with a handicap ramp. Same as existing units.

STAFF REVIEW

FILE: #63-93

DATE: May 19, 1993

STAFF: Kathy Portner

REQUEST: Final Plat/Plan--Pepper Tree, Filing #4, Phase I

LOCATION: Southwest of F Road and 29 Road

APPLICANT: IBX Inc.

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Residential

SURROUNDING LAND USE:

NORTH:	Residential
SOUTH:	Undeveloped
EAST:	Agricultural
WEST:	Undeveloped

EXISTING ZONING: PR-20 (Planned Residential, 20 units per acre)

PROPOSED ZONING: PR-20

SURROUNDING ZONING:

NORTH:	PR-20
SOUTH:	RSF-5
EAST:	County zoning R-2
WEST:	County zoning R-2

RELATIONSHIP TO COMPREHENSIVE PLAN:

There is no Comprehensive Plan for this area. The Patterson Road Corridor Guidelines suggest that in this area, new residential development with 10 units per acre is the most compatible and appropriate density. This proposal meets that guideline with a designed density of 9.25 units per acre.

STAFF ANALYSIS:

The proposal is for a continuation of the existing Pepper Tree Subdivision which currently contains 43 townhomes on 4 acres (Filings 1, 2, and 3) developed in 1982. At that time a preliminary development plan was approved for the entire 8.3 acres for 89 attached dwelling units. The recently approved revised preliminary plan for filing 4 is a modification of that original approval in the road alignment, an increase in the size of units and a decrease in the number of units from 46 to 33. The proposal for final plat and plan for Filing 4, Phase I includes 5 attached townhome units and continues the character established in filings 1, 2, and 3. The proposed final is in accordance with the approved preliminary plan.

Comments and Issues

1. The dedication of ROW and easements should be to the City of Grand Junction for the use of the public.

2. The limit to phase I, filing #4 as shown should be a solid line and the designated common open area dedicated to the homeowners of Pepper Tree. The common open area as shown is approximately 29' wide and only 14' wide as shown on the preliminary plan.

3. A description and/or dedication of Tract G should be provided.

4. With the addition of the proposed 5 units and 5 parking spaces, there will be 14 units sharing a total of 25 parking spaces. The parking requirement is 6 spaces for the triplex (2 spaces per unit) and 19 spaces for the remaining 11 units (1.5 spaces per unit plus 1 space per each 5 spaces) for a total of 25 spaces. The parking requirement is satisfied.

5. A detailed landscaping plan is required distinguishing between existing and proposed and indicating species to be planted. The landscaping should continue the character established with the existing Pepper Tree.

6. The Surveyor's Certificate must also certify the plat conforms to all applicable requirements of the Zoning and Development Code of the City of Grand Junction (section 6-8-2.A.1.b).

7. City Planning Director should be changed to Director of Community Development on the plat.

8. An Improvements Agreement/Guarantee will be required for the additional parking and landscaping and any other public improvements that might be required if the improvements are not in place prior to recording the plat.

9. An original signed Development Application form is required for our file.

STAFF RECOMMENDATION:

ROLLAND ENGINEERING

405 RIDGES BOULEVARD, SUITE A
GRAND JUNCTION, COLORADO 81503
(303) 243-8300

May 26, 1993

Community Development
City of Grand Junction
250 No. 5th Street
Grand Junction, CO 81501

Re: Final Plan - Pepper Tree Filing No. 4, Phase 1

Dear Kathy,

This letter is in response to the Review Comments for the above referenced Project. We have examined the comments and do not take exception to any of the requests. Most of the comments do not require action at this time, however the following are appropriate responses:

1. The corrections and additions required of the Plat will be made.

2. All "Common Open Area" is specified for utility easements in the covenants.

3. The finished floor elevations are 4675.90. All grades and slopes will meet the appropriate criteria.

4. Attached is the proposed landscape plan.

If you need additional information, please contact me.

Sincerely,

Thomas D. Rolland, P.E.

ROLLAND ENGINEERING

TDR/cfo

Pepper Tree Filing #4

Final Plan - Phase I

PROJECT DESCRIPTION

Phase I of Pepper Tree Subdivision Filing #4 is a continuation of the existing Pepper Tree Subdivision. Pepper Tree is a townhome community located south of Patterson Road approximately 900 feet west of 29 Road and is located in Section 7, Township 1 South, Range 1 East. Five (5) townhome units are in Phase I out of a total of thirty-four (34) units proposed for Filing #4.

PROJECT COMPLIANCE, COMPATIBILITY, AND IMPACT

The existing covenants and homeowners association will be amended to include Phase I, Filing #4 of Pepper Tree (See Preliminary File for evidence of Title and covenants). All areas outside the platted lots are common open-space, and maintained by the Homeowners Association.

Flood potential is addressed in the geology report submitted in the preliminary package for Pepper Tree, Filing #4. The report indicates that no flood problem exists at Pepper Tree. (Geologic Hazards Report for Pepper Tree filing #4, City of Grand Junction, Colorado, March, 1993).

The land to the east and west on either side of the existing and proposed development is zoned R2 in Mesa County. The land to the east is being farmed and the land to the west is currently fallow. The area north of Patterson Road is zoned R2 in Mesa County and is developed into a single family subdivision. The land to the south is undeveloped and zoned RSF-5 in the City of Grand Junction.

Immediately north of Filing #4, are the completed Pepper Tree Filings #1, 2 and 3 which were constructed in 1982. Pepper Tree Filing #1 was a replat of Pepperidge Filing No. 1 which was platted in 1979 but never developed. Filings 1, 2 and 3 contain 45 townhome units on approximately 4 acres.

The existing units range from 760 - 1,152 square feet in size. The new single level, two bedroom unit will contain 1,024 square feet and the two level, three bedroom unit will have 1,344 square feet. The proposed plan for Filing #4 of approximately 4 acres will have a total of 34 units (21 single and 13 two story units). This is a significant reduction from the original Outlined Development Plan which called for a total of 46 units. The five (5) new townhome units will be constructed in the same style as the existing units and the landscaping will be continued to conform to the current project. The parking lot for 588 and 590 West Indian Creek Drive will be expanded to accommodate the new units in Phase I.

Access to the Pepper Tree Subdivision is from Patterson Road. The main north-south street through the subdivision is West Indian Creek Drive. Cascade Avenue is a short east-west cross street which extends between the east and west property lines of the Pepper Tree property. Left hand turns west bound onto Patterson Road are a concern because of the single access nature of Pepper Tree. A left hand turn into Pepper Tree should not pose a problem because of the center turning median on Patterson Road. We believe that the characteristics of prospective homeowners at Pepper Tree are such that their traffic flow patterns will not contribute to existing peak flow traffic patterns.

Existing utility and irrigation easements in Pepper Tree Filing #1, 2 and 3 are along the east and west boundary lines of the property. The utilities for the 5 new units in Phase I will be extended from the existing Utilities. A new 14 foot easement will be established along the new road right of way to service the balance of Filing #4. Phase I will not require any current easements to be relocated or vacated.

Utilities are provided by Public Service (electric and gas), U.S. West (phone system), Ute Water, Central Grand Valley Sewer, and TCI Cablevision. Utilities will be extended from the existing Pepper Tree subdivision and will be available from the current boundary easement. There is an existing 8" sanitary sewer (Central Grand Valley) that will service the five new units. The existing Ute Water main will service the 5 new units without any extension required.

Site soils, geology, geological hazards, and the impact on site geology are addressed in separate reports. A gamma radiation report was done for the entire Pepper Tree site during the original Pepper Tree planning stages. No radiation was found in the area of proposed construction. Radon testing will be done with each building permit.

The permanent Pepper Tree signage will not be changed and will remain at the entrance. New unit sales will require temporary signs announcing the opening of the final development of Pepper Tree. Temporary signs will remain in place until the final phase sellout is complete.

DEVELOPMENT SCHEDULE AND PHASING

Filing #4 of Pepper Tree will be developed in phases. The first Phase will consist of five attached units to be constructed immediately south of Pepper Tree Filing #3 on the east side of West Indian Creek Drive. The initial Phase does not require any new roadways, utility line extensions or major site development. Adequate parking will be provided by expanding the existing parking lot adjacent to Phase I.

Construction will begin immediately upon final acceptance of the first phase of Pepper Tree Filing #4. The balance of the property will be developed and completed in several phases with anticipated completion in 1994-1995.

FRED A. WEBER
P.O. BOX 20000.5026
GRAND JUNCTION, CO 81502
PH 244-1822, 244-1823

SEPTEMBER 30, 1993

SUBDIVISION REVIEW SB-37-93

PEPPER TREE FILING NO. 4
PHASE 1

SURVEYOR: RICHARD MASON
WESTERN ENGINEERS
2150 HWY 6 & 50
GRD JCT, CO 81505
PH 242-5202

THE FOLLOWING ISSUES NEED TO BE CLARIFIED PRIOR TO RECORDING THE PLAT:

1. County regulations require areas to be shown.
2. Show the bearing and distances of the centerline of the 20' sewer easement. Please, see attached copy of Statelaw.

PLEASE, CALL IF WE CAN BE OF ASSISTANCE.

SINCERELY,
FRED WEBER
COUNTY SURVEYOR

cc: City of Grand Junction Community Development
Rolland Engineering

FRED A. WEBER
P.O. BOX 20000-5026
GRAND JUNCTION, CO 81502
PH 244-1822, 244-1823

OCTOBER 19, 1993

ADDITIONAL REVIEW SB-37-93

PEPPER TREE FILING NO. 4
PHASE 1

SURVEYOR: RICHARD MASON
WESTERN ENGINEERS
2150 HWY 6 & 50
GRD JCT, CO 81505
PH 242-5202

THE FOLLOWING ISSUES HAVE BEEN OMITTED BY THE SURVEYOR AND SHOULD BE CLARIFIED PRIOR TO RECORDING THE PLAT:

1. The Mesa County Survey Monument shown as MSCM should be correctly abbreviated as MCSM and a description shown, such as "SE COR, NE 1/4, NE 1/4, SEC 7".
2. All parcels within the plat should have a designation. "Lot 6" might be an appropriate designation for the large area which is not included in the development of Phase 1.
3. How is the temporary turnaround to be handled at Book 1389, Page 83?
4. Show dimension lines with arrowheads so there will be no confusion with boundarylines.
5. County regulations require all adjoining property owners to be shown.
6. The name of the street and the width of the street should be shown.
7. Protective covenants exist on the original plat. Are these to be continued, changed or deleted?
8. The title and description should reflect that this is a replat of a portion of an existing subdivision.
9. The R.P.C. the boundary should be monumented according to State statute and consistent with County regulations.

PLEASE, CALL IF WE CAN BE OF ASSISTANCE.

SINCERELY,
FRED WEBER
COUNTY SURVEYOR

K.S.

cc: City of Grand Junction Community Development
Rolland Engineering
IBX, Inc

File #63-93 PepperTree Filing #4 Phase I
7/6/94

Issues that need to be resolved prior to recording the plat:

Plat

1. Open space fees paid at $225 per unit.
2. Public Service requested that the common open area be dedicated as a utility easement.
3. Dedication language revised according to "A Guide to Plat Dedications" (attached).

Site Plan

1. Show minimum finish floor elevations, sidewalk grades and slopes, all in conformance with City grading and ADA criteria.
2. Street must be signed for no parking.
3. Provide at least one handicap space for new units.

Improvements Agreement

1. Add $50.00 to item V-7 for City inspection.
2. Update all cost estimates.

STAFF REVIEW

FILE: #63-93

DATE: May 27, 1993

STAFF: Kathy Portner

REQUEST: Final Plat/Plan--Pepper Tree, Filing #4, Phase I

LOCATION: Southwest of F Road and 29 Road

APPLICANT: IBX Inc.

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Residential

SURROUNDING LAND USE:

NORTH:	Residential
SOUTH:	Undeveloped
EAST:	Agricultural
WEST:	Undeveloped

EXISTING ZONING: PR-20 (Planned Residential, 20 units per acre)

PROPOSED ZONING: PR-20

SURROUNDING ZONING:

NORTH:	PR-20
SOUTH:	RSF-5
EAST:	County zoning R-2
WEST:	County zoning R-2

RELATIONSHIP TO COMPREHENSIVE PLAN:

There is no Comprehensive Plan for this area. The Patterson Road Corridor Guidelines suggest that in this area, new residential development with 10 units per acre is the most compatible and appropriate density. This proposal meets that guideline with a designed density of 9.25 units per acre.

STAFF ANALYSIS:

The proposal is for a continuation of the existing Pepper Tree Subdivision which currently contains 43 townhomes on 4 acres (Filings 1, 2, and 3) developed in 1982. At that time a preliminary development plan was approved for the entire 8.3 acres for 89 attached dwelling units. The recently approved revised preliminary plan for filing 4 is a modification of that original approval in the road alignment, an increase in the size of units and a decrease in the number of units from 46 to 33. The proposal for final plat and plan for Filing 4, Phase I includes 5 attached townhome units and continues the character established in filings 1, 2, and 3. The proposed final is in accordance with the approved preliminary plan.

Comments and Issues

1. The dedication of ROW and easements should be to the City of Grand Junction for the use of the public.

2. The limit to phase I, filing #4 as shown should be a solid line and the designated common open area dedicated to the homeowners of Pepper Tree. The common open area as shown is approximately 29' wide and only 14' wide as shown on the preliminary plan.

3. A description and/or dedication of Tract G should be provided.

4. With the addition of the proposed 5 units and 5 parking spaces, there will be 14 units sharing a total of 25 parking spaces. The parking requirement is 6 spaces for the triplex (2 spaces per unit) and 19 spaces for the remaining 11 units (1.5 spaces per unit plus 1 space per each 5 spaces) for a total of 25 spaces. The parking requirement is satisfied.

5. The Surveyor's Certificate must also certify the plat conforms to all applicable requirements of the Zoning and Development Code of the City of Grand Junction (section 6-8-2.A.1.b).

6. City Planning Director should be changed to Director of Community Development on the plat.

7. An Improvements Agreement/Guarantee will be required for the additional parking and landscaping and any other public improvements that might be required if the improvements are not in place prior to recording the plat.

8. All other technical issues as noted in the Development Engineer's comments must be addressed.

The petitioner has responded to the review comments satisfactorily. All technical concerns of the plat and site plan will be addressed prior to recording the plat.

STAFF RECOMMENDATION:

Staff recommends approval subject to all review agency comments.

file

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

April 3, 1996

Tom Rolland
Rolland Engineering
405 Ridges Blvd., Suite A
Grand Junction, CO 81503

RE: Pepper Tree, Filing #4

Dear Tom:

It has come to our attention that the final plat for Pepper Tree, Filing #4 was never recorded. City Development File #63-93 indicates that a Preliminary Plan was approved for Filing #4 and the Final Plan for Filing #4, Phase I in 1993. Section 6-7-1.G of the Zoning and Development Code states "approval of a preliminary plan shall be valid for a period of only one year". Section 6-9-2.D of the Code states "if the applicant does not complete all steps in preparation for recording within one year, the plat shall require re-review and processing as per the final plat processing procedure".

Opportunities to continue with the recording of the plat as approved were given in 1994 and 1995, however, were not followed through on. Based on the above Code provisions and the amount of time that has elapsed, the preliminary and final approvals for Filing #4 have lapsed. Future requests will require review through the then current regulations of the Zoning and Development Code.

If you have questions please call me at 244-1446.

Sincerely,

Kathy

Katherine M. Portner
Planning Supervisor

xc: IBX, Inc.

FF

ACTION SHEET

FINAL

ACRES _____

UNITS _____

DENSITY _____

FILE NUMBER #63 93

ZONE PR 20

TAX SCHEDULE # 2943-071-17-001

ACTIVITY Final Plat & Plan - Pepper Tree - Phase I

PHASE Final

COMMON LOCATION S. of Patterson; W. of 29 Rd

DATE SUBMITTED _____ DATE MAILED OUT _____ DATE POSTED _____

_____ DAY REVIEW PERIOD RETURN BY _____

OPEN SPACE DEDICATION (acreage) _____ OPEN SPACE FEE REQUIRED $_____ PAID RECEIPT #_____

RECORDING FEE REQUIRED $_____ PAID (Date) _____ DATE RECORDED _____

REVIEW AGENCIES

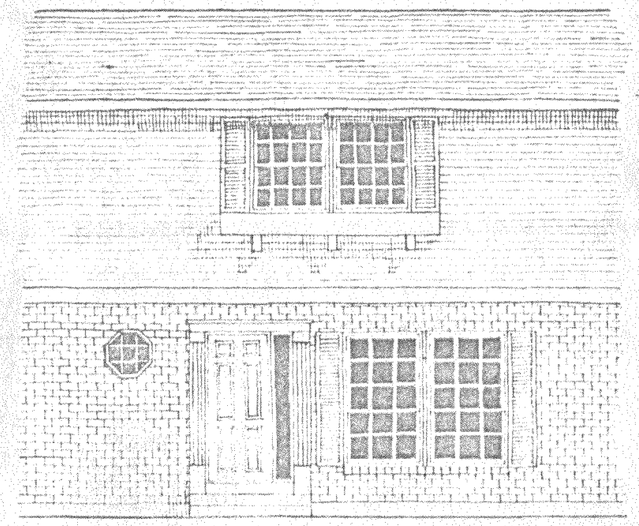
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG
Community Development	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	●	●	●	●
City Engineer (2 sets)	●	●	●						●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●				
Transportation Engineer	●	●	●										●	●	●	●	●	●	●	●	●	●	●	●	●	●			●				
City Parks/Recreation	●	●	●	●									●	●	●	●	●	●			●	●				●			●				
City Fire Department	●	●	●										●	●	●	●	●	●	●	●	●	●	●	●	●	●			●				
City Police Department	●	●	●												●	●	●	●			●	●				●			●				
County Planning	●	●	●										●	●	●	●	●	●	●	●	●	●				●			●				
County Engineer	●	●	●										●	●	●	●	●	●	●	●	●	●	●	●	●	●			●				
County Health	●	●	●							●	●		●	●	●	●	●	●			●	●				●			●				
Floodplain Administration	●	●	●						●				●	●	●	●	●	●			●	●				●			●				
G.J. Dept. of Energy	●	●	●										●	●	●	●	●	●			●	●				●			●				
Walker Field	●	●	●										●	●	●	●	●	●			●	●				●			●				
School District 51	●	●	●										●	●	●	●	●	●			●	●				●			●				
Irrigation (GV Water Users)	●	●	●										●	●	●	●	●	●	●	●	●	●				●			●				
Drainage	●	●	●										●	●	●	●	●	●	●	●	●	●				●			●				
Water (Ute, Clifton)	●	●	●										●	●	●	●	●	●	●	●	●	●				●			●				
Sewer Dist. (FV, CGV, OM)	●	●	●										●	●	●	●	●	●	●	●	●	●				●			●				
U.S. West	●	●	●										●	●	●	●	●	●	●	●	●	●				●			●				
Public Service (2 sets)	●	●	●										●	●	●	●	●	●	●	●	●	●				●			●				
State Dept. of Transportation	●	●	●										●	●	●	●	●	●			●	●				●			●				
State Geological Survey	●	●	●							●	●		●	●	●	●	●	●			●	●				●			●				
State Health Department	●	●	●										●	●	●	●	●	●			●	●				●			●				
City Property Agent	●	●	●										●	●	●	●	●	●	●		●	●				●			●				
City Utilities Engineer	●	●	●										●	●	●	●	●	●	●		●	●				●			●				
City Attorney	●	●	●		●	●							●	●	●	●	●									●			●				
Building Department	●	●	●									●			●		●	●				●				●			●	●	●		
DDA	●	●	●												●											●			●	●	●		
GJPC (7 packets)	●	●	●												●			●				●	●			●	●		●	●	●		
CIC (1 packet)	●	●	●												●			●				●	●				●		●	●	●		
County Surveyor	●						●									●																	
Other	●	●	●												●	●	●	●								●			●	●			
TOTALS																																	

BOARDS	DATE	
PC	6/1/93	Approved (5-0)

STAFF

APPLICATION FEE REQUIREMENTS

$740.00 plus $15/acre



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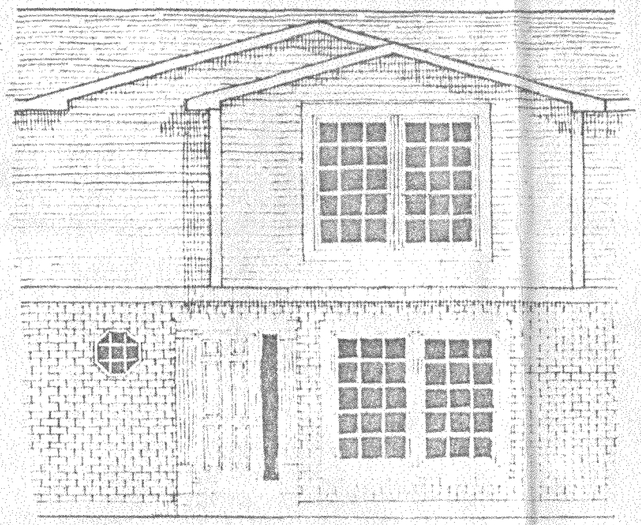
ELEVATION 1



24'-0"
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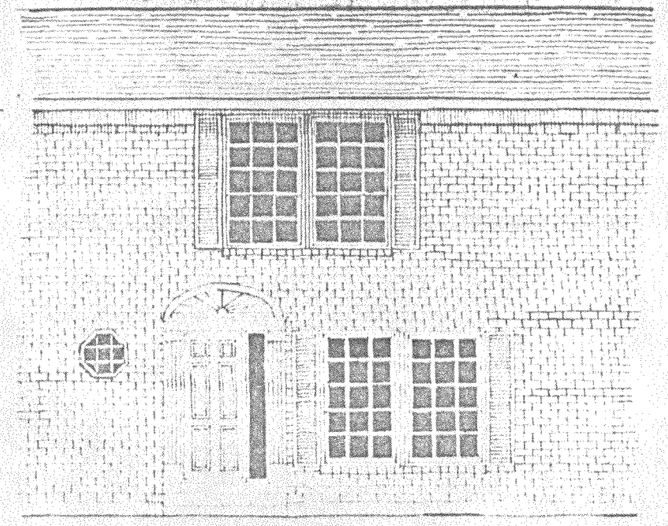
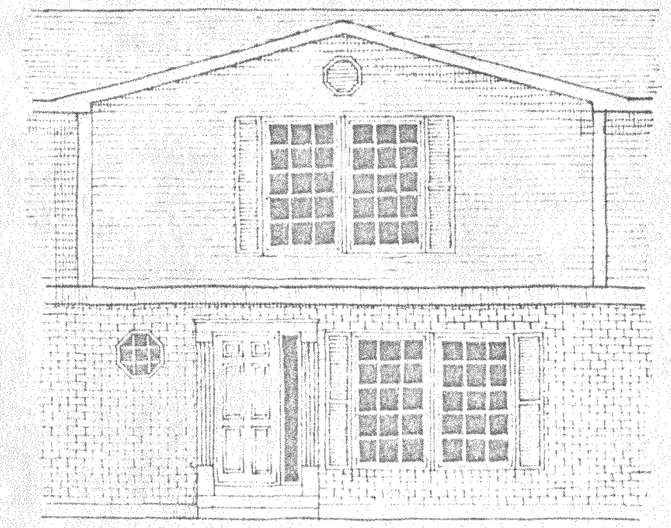


24'-0"
ELEVATION 3

FRONT ELEVATIONS



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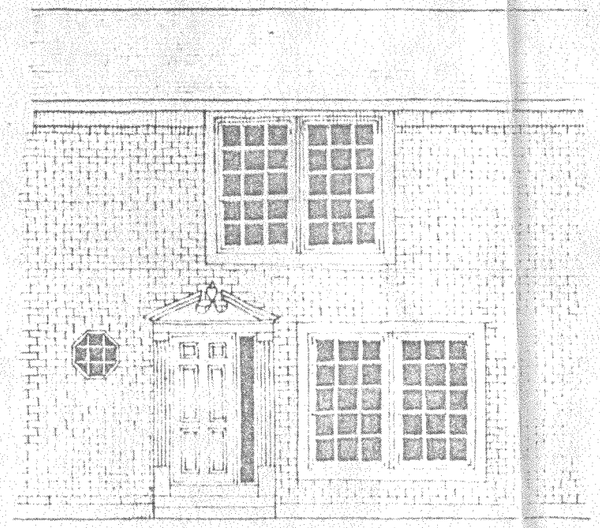

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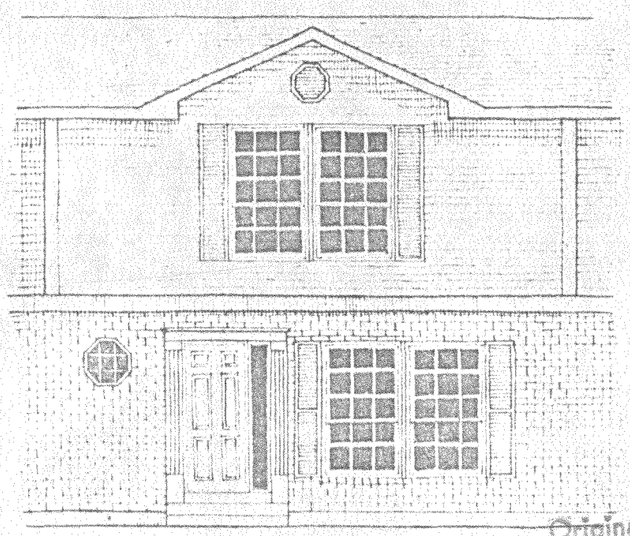

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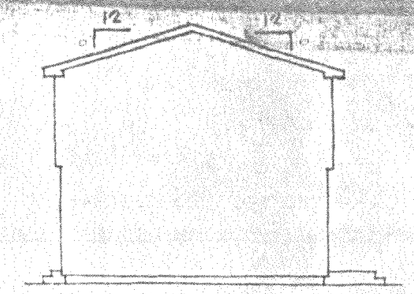
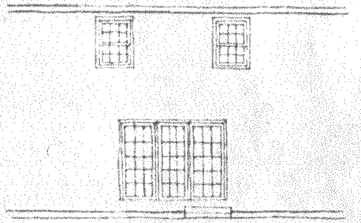
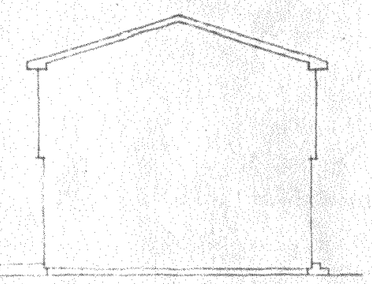
ELEVATION 6



LEFT ELEVATION



24'-0"
REAR ELEVATION



RIGHT ELEVATION

RIDGE VENT
240# ASPHALT SHINGLES
PRE-FINISHED FASCIA
VINYL SHUTTERS
7'-7½" CEIL'G HGT-1ST FL.
7'-6" CEILG HGT-2ND FL.

FUNCTIONAL VENTED SOFFIT (SEE CROSS SECTIONS)
DBL. 4 HOR. ALUM. SIDING,
BRICK VENEER (BY BUILDER
FIELD INST.)

VINDALE CORPORATION

#		#	OPTION				

A	KK	11/6/8	ROOF PITCH				
LTR	NAME	DATE	CHANGE				NOTICE

63 93

Po

Benchmark Homes

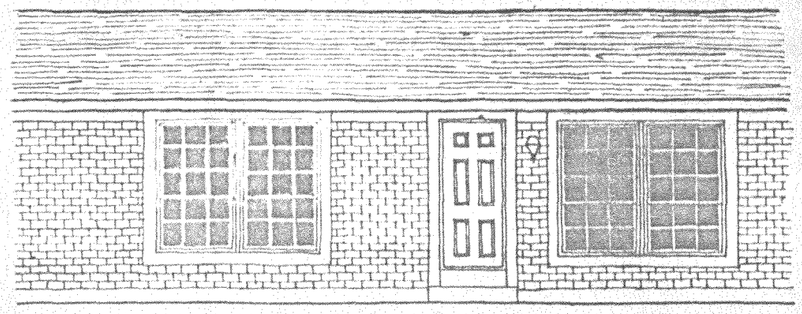
DRAWING NUMBER WHITFIELD A

DRAWING EXTERIOR ELEVATIONS

SCALE ¼" = 1'-0" | DRAWN BY LS | CHECKED BY | DATE 8/28/81

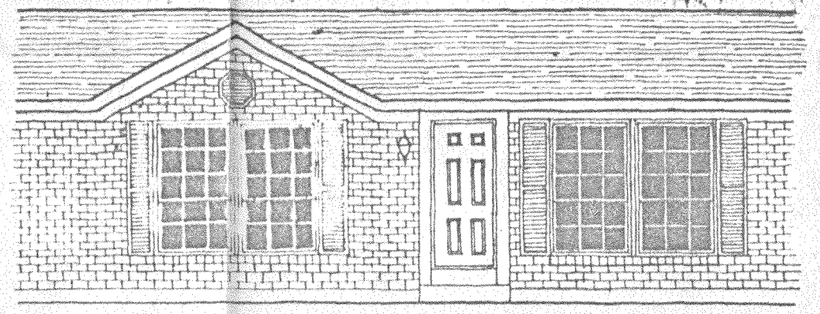
HOUSE NUMBER | SHEET 1 OF 10

Reproduction Co



32'-0"

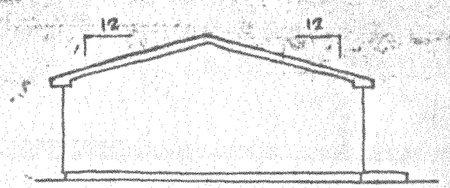
ELEVATION 1



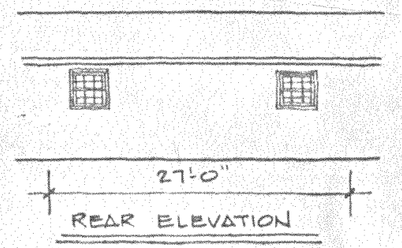
32'-0"

ELEVATION 2

FRONT ELEVATIONS

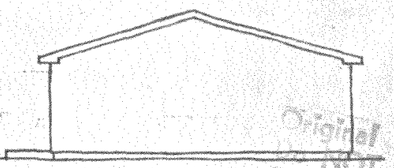


LEFT ELEVATION



27'-0"

REAR ELEVATION



RIGHT ELEVATION

RIDGE VENT
240# ASPHALT SHINGLES
PRE-FINISHED FASCIA
VINYL SHUTTERS
7'-6 CEIL'G HGT

*FUNCTIONAL VENTED SOFFIT
BRICK VENEER (BY BUILDER FIELD INST.)

*SEE CROSS SECTIONS

VINYL EDGE COMPANIES

#	OPTIONS	#	OPTIONS	LTR	NAME	DATE	CHANGE	NOTICE
				*		1-6-81	ROOF PITCH	

©1981 Benchmark Homes

DRAWING NUMBER NORMANDY II

DRAWING EXTERIOR ELEVATIONS

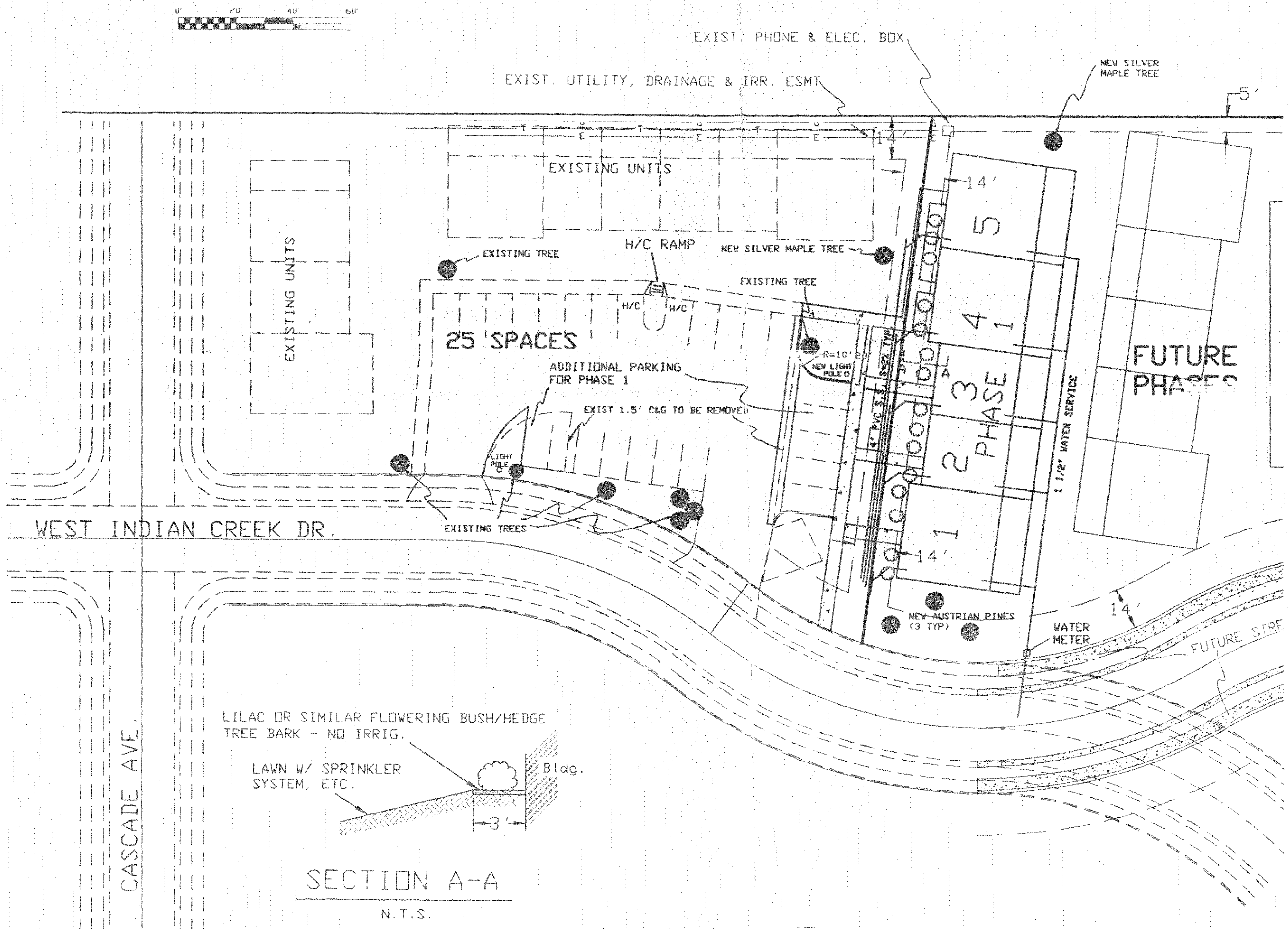
SCALE 1/4"=1'-0" | DRAWN BY S | CHECKED BY | DATE 9/25/81

HOUSE NUMBER

SHEET 1 OF 9

#63 93

Original ... NOT Remove ... Office



0' 20' 40' 60'
EXIST. PHONE & ELEC. BOX
EXIST. UTILITY, DRAINAGE & IRR. ESMT
NEW SILVER MAPLE TREE
5'
14'
EXISTING UNITS
EXISTING UNITS
EXISTING TREE
H/C RAMP
NEW SILVER MAPLE TREE
EXISTING TREE
H/C
H/C
25 SPACES
ADDITIONAL PARKING FOR PHASE 1
R=10'
NEW LIGHT POLE
4" PVC S.S. S=2% TYP.
EXIST 1.5' C&G TO BE REMOVED
LIGHT POLE
EXISTING TREES
5
4
3
2
1
PHASE 1
A
1 1/2" WATER SERVICE
FUTURE PHASES
NEW AUSTRIAN PINES (3 TYP)
WATER METER
FUTURE STRE
WEST INDIAN CREEK DR.
CASCADE AVE.
LILAC OR SIMILAR FLOWERING BUSH/HEDGE
TREE BARK - NO IRRIG.
LAWN W/ SPRINKLER SYSTEM, ETC.
Bldg.
3'
SECTION A-A
N.T.S.

DEVELOPMENT IMPROVEMENTS AGREEMENT

1. **Parties:** The parties to this Development Improvements Agreement ("the Agreement") are IBX, INC. ("the Developer") and **THE CITY OF GRAND JUNCTION,** Colorado ("the City").

THEREFORE, for valuable consideration, the receipt and adequacy of which is acknowledged, the Parties agree as follows:

2. **Effective Date:** The Effective Date of the Agreement will be the date that this agreement is recorded which is not sooner than recordation of the FINAL PLAT FOR PEPPER TREE FILING No. 4.

RECITALS

The Developer seeks permission to develop property within the City to be known as PEPPER TREE, FILING No. 4, which property is more particularly described on Exhibit "A" attached and incorporated by this reference (the "Property"). The City seeks to protect the health, safety and general welfare of the community by requiring the completion of various improvements in the development and limiting the harmful effects of substandard developments. The purpose of this Agreement is to protect the City from the cost of completing necessary improvements itself and is not executed for the benefit of materialmen, laborers, or others providing work, services or material to the development or for the benefit of the purchasers or users of the development. The mutual promises, covenants, and obligations contained in this Agreement are authorized by state law, the Colorado Constitution and the City's land development ordinances.

DEVELOPER'S OBLIGATION

3. **Improvements:** The Developer will design, construct and install, at its own expense, those on-site and off-site improvements listed on Exhibit "B" attached and incorporated by this reference. The Developer agrees to pay the City for inspection services performed by the City, in addition to amounts shown on Exhibit B. The Developer's obligation to complete the improvements is and will be independent of any obligations of the City contained herein.

4. **Security:** To secure the performance of its obligations under this Agreement (except its obligations for warranty under paragraph 6), the Developer will enter into an agreement which complies with either option identified in paragraph 28, or other written agreement between the City and the Developer.

5. **Standards:** The Developer shall construct the Improvements according to the standards and specifications required by the City Engineer or as adopted by the City.

6. **Warranty:** The Developer warrants that the Improvements, each and every one of them, will be free from defects for a period of twelve (12) months from the date that the City Engineer accepts or approves the improvements completed by the Developer.

7. **Commencement and Completion Periods:** The improvements, each and every one of them, will be completed within ONE (1) YEAR from the Effective Date of this Agreement (the "Completion Period").

8. **Compliance with Law:** The developer shall comply with all relevant federal, state and local laws, ordinances, and regulations in effect at the time of final approval when fulfilling its obligations under this Agreement.

9. **Notice of Defect:** The Developer's Engineer shall provide timely notice to the Developer, contractor, issuer of security and the City Engineer whenever inspection reveals, or the Developer's Engineer otherwise has knowledge, that an improvement does not conform to City standards and any specifications approved in the development application or is otherwise defective. The developer will have thirty (30) days from the issuance of such notice to correct the defect.

10. **Acceptance of Improvements:** The City's final acceptance and/or approval of improvements will not be given or obtained until the Developer presents a document or documents, for the benefit of the City, showing that the Developer owns the improvements in fee simple and that there are no liens, encumbrances, or other restrictions on the improvements. Approval and/or acceptance of any improvements does not constitute a waiver by the City of any rights it may have on account of any defect in or failure of the improvement that is detected or which occurs after approval and/or acceptance.

11. **Use of Proceeds:** The City will use funds deposited with it or drawn pursuant to any written disbursement agreement entered into between the parties only for the purpose of completing the Improvements or correcting defects in or failure of the Improvements.

12. **Events of Default:** The following conditions, occurrences or actions will constitute a default by the Developer during the Completion Period:

a. Developers failure to complete each portion of the Improvements in conformance with the agreed upon time schedule; the City may not declare a default until a fourteen (14) calendar day notice has been given to the Developer;

b. Developer's failure to demonstrate reasonable intent to correct defective construction of any improvement within the applicable correction period; the City may not declare a default until a fourteen (14) calendar day notice has been given to the Developer;

c. Developer's insolvency, the appointment of a receiver for the Developer or the filing of a voluntary or involuntary petition in bankruptcy respecting the Developer; in such event the City may immediately declare a default without prior notification to the Developer;

d. Notification to the City, by any lender with a lien on the property, of a default on an obligation; the City may immediately declare a default without prior notification to the Developer;

e. Initiation of any foreclosure action of any lien or initiation of mechanics lien(s) procedure(s) against the Property or a portion of the Property or assignment or conveyance of the Property in lieu of foreclosure; the City may immediately declare a default without prior notification to the Developer.

13. **Measure of Damages:** The measure of damages for breach of this Agreement by the Developer will be the reasonable cost of satisfactorily completing the Improvements plus reasonable City administrative expenses. For improvements upon which construction has not begun, the estimated costs of the Improvements as shown on Exhibit "B" will be prima facie evidence of the minimum cost of completion; however, neither that amount or the amount of a letter of credit, the subdivision improvements disbursement agreement or cash escrow establish the maximum amount of the Developer's liability.

14. **City's Rights Upon Default:** When any event of default occurs, the City may draw on the letter of credit, escrowed collateral, or proceed to collect any other security to the extent of the face amount of the credit or full amount of escrowed collateral, cash, or security less ninety percent (90%) of the estimated cost (as shown on Exhibit "B") of all improvements previously accepted by the City or may exercise its rights to disbursement of loan proceeds or other funds under the improvements disbursement agreement. The City will have the right to complete improvements itself or it may contract with a third party for completion, and the Developer grants to the City, its successors, assigns, agents, contractors, and employees, a nonexclusive right and easement to enter the Property for the purposes of constructing, reconstructing, maintaining, and repairing such improvements. Alternatively, the City may assign the proceeds of the letter of credit, the improvements disbursement agreement, the escrowed collateral, cash, or other funds or assets to a subsequent developer (or a lender) who has acquired the development by purchase, foreclosure or otherwise who will then have the same rights of completion as the City if and only if the subsequent developer (or lender) agrees in writing to complete the unfinished improvements and provides reasonable security for the obligation. In addition, the City may also enjoin the sale, transfer, or conveyance of lots within the development, until the improvements are completed or accepted. These remedies are cumulative in nature and are in addition to any other remedies the City has at law or in equity.

15. **Indemnification:** The Developer expressly agrees to indemnify and hold the City, its officers, employees and assigns harmless from and against all claims, costs and liabilities of every kind and nature, for injury or damage received or sustained by any person or entity

in connection with, or on account of the performance of work at the development or the Property pursuant to this Agreement. The Developer further agrees to aid and defend the City in the event that the City is named as a defendant in an action concerning the performance of work pursuant to this Agreement. The Developer further agrees to aid and defend the City in the event that the City is named as a defendant in an action concerning the performance of work pursuant to this Agreement except where such suit is brought by the Developer against the City. The Developer is not an agent or employee of the City.

16. **No Waiver:** No waiver of any provision of this Agreement by the City will be deemed or constitute a waiver of any other provision, nor will it be deemed or constitute a continuing waiver unless expressly provided for by a written amendment to this Agreement signed by both City and Developer; nor will the waiver of any default under this Agreement be deemed a waiver of any subsequent default or defaults of the same type. The City's failure to exercise any right under this Agreement will not constitute the approval of any wrongful act by the Developer or the acceptance of any improvement.

17. **Amendment or Modification:** The parties to this Agreement may amend or modify this Agreement only by written instrument executed on behalf of the City by the City Manager or his designee and by the Developer or his authorized officer. Such amendment or modification shall be properly notarized before it may be deemed effective.

18. **Attorney's Fees:** Should either party be required to resort to litigation to enforce the terms of this Agreement, the prevailing party, plaintiff or defendant, will be entitled to costs, including reasonable attorney's fees and expert witness fees, from the opposing party. If the court awards relief to both parties, the attorney's fees may be equitably divided between the parties by the decision maker.

19. **Vested Rights:** The City does not warrant by this Agreement that the Developer is entitled to any other approval(s) required by the City, if any, before the Developer is entitled to commence development or to transfer ownership of property in the development.

20. **Third Party Rights:** No person or entity who or which is not a party to this Agreement will have any right of action under this Agreement.

21. **Time:** For the purpose of computing the Abandonment and Completion Periods, and time periods for City action, such times in which war, civil disasters, or acts of God occur or exist will not be included if such times prevent the Developer or City from performing its obligations under the Agreement.

22. **Severability:** If any part, term, or provision of this Agreement is held by a court or courts of competent jurisdiction to be illegal or otherwise unenforceable, such illegality or unenforceability will not affect the validity of any other part, term, or provision and the rights of the parties will be construed as if the part, term, or provision was never part of the Agreement.

23. **Benefits:** The benefits of this Agreement to the Developer are personal and may not be assigned without the express written approval of the City. Such approval may not be unreasonably withheld, but any unapproved assignment is void. Notwithstanding the foregoing, the burdens of this Agreement are personal obligations of the Developer and also will be binding on the heirs, successors, and assigns of the Developer, and shall be a covenant(s) running with the Property. There is no prohibition on the right of the City to assign its rights under this Agreement. The City will expressly release the original Developer's guarantee or obligations under the improvements disbursement agreement if it accepts new security from any developer or lender who obtains the Property. However, no other act of the City will constitute a release of the original Developer from his liability under this Agreement.

24. **Notice:** Any notice required or permitted by this Agreement will be deemed effective when personally delivered in writing or three (3) days after notice is deposited with the U.S. Postal Service, postage prepaid, certified, and return receipt requested, and addressed as follows:

If to Developer: IBX, INC.
640 S. 12th ST.
GRAND JUNCTION, CO 81501

If to City: City of Grand Junction
Community Development Director
250 N. 5th Street
Grand Junction, Colorado 81501

25. **Recordation:** Developer will pay for all costs to record a copy of this Agreement in the Clerk and Recorder's Office of Mesa County, Colorado.

26. **Immunity:** Nothing contained in this Agreement constitutes a waiver of the City's sovereign immunity under any applicable law.

27. **Personal Jurisdiction and Venue:** Personal jurisdiction and venue for any civil action commenced by either party to this Agreement whether arising out of or relating to the Agreement, letter of credit, improvements disbursements agreement, or cash escrow agreement or any action to collect security will be deemed to be proper only if such action is commenced in Mesa County, Colorado. The Developer expressly waives his right to bring such action in or to remove such action to any other court whether state or federal.

28. The **improvements guarantee** required by the City Code to ensure that the improvements described in the improvements agreement are constructed to City standards may be in one of the following forms:

_____ (I) disbursement agreement between a bank doing business in Mesa County and the City, or

_____ (II) a good and sufficient letter of credit acceptable to the City, or

_____ (III) depositing with the City cash equivalent to the estimated cost of construction of the improvements.

_____ (IV) other; see attached.

The Finance Department of the City may act as disbursing agent for disbursements to Developer's contractor(s) as required improvements are completed and accepted if agreed to in writing pursuant to a disbursement agreement.

The Finance Department of the City will disburse any deposit or any portion thereof, with no more than three checks, at no charge. If disbursements are made in excess of three checks, the developer will be charged $100 per transaction for every transaction in excess of three.

Exhibit C, attached hereto and incorporated herein by this reference as if fully set forth, is the City approved and accepted guarantee for this project.

29. a. Conditions of Acceptance: The City shall have no responsibility or liability with respect to any street, or other improvement(s), notwithstanding the use of the same by the public, unless the street or other improvements shall have been accepted by the City.

Prior to requesting final acceptance of streets, storm drainage facilities, or other required improvements, the Developer shall furnish to the City Engineer as-built drawings in reproducible form, blueline stamped and sealed by a professional engineer and in computer disk form and copies of results of all construction control tests required by City specifications.

b. Phased Development: If the City allows a street to be constructed in stages, the Developer of the first one-half street opened for traffic shall construct the adjacent curb, gutter and sidewalk in the standard location and shall construct the required width of pavement from the edge of gutter on his side of the street to enable an initial two-way traffic operation without on-street parking. That Developer is also responsible for end-transitions, intersection paving, drainage facilities, and adjustments to existing utilities necessary to open the street to traffic.

Attest:

Stephanie Nye Date
City Clerk

Director of Community Development Date

City of Grand Junction
250 North 5th Street
Grand Junction, CO 81501

Developer Date

(If Corporation, to be signed by President and attested to by Secretary together with the Corporate seals)

TYPE LEGAL DESCRIPTION BELOW, USING ADDITIONAL SHEETS AS NECESSARY. USE SINGLE SPACING WITH A ONE INCH MARGIN ON EACH SIDE.

****

EXHIBIT A

LOTS 1 THRU 5, BLOCK 1, PEPPER TREE, FILING No. 4, PHASE 1.

EXHIBIT "B"

IMPROVEMENTS LIST/DETAIL

DATE: MAY 17, 1995
NAME OF DEVELOPMENT: PEPPER TREE, FILING No. 4
LOCATION: SOUTH OF PATTERSON, WEST OF 29 ROAD.
PRINTED NAME OF PERSON PREPARING: TREVOR BROWN

	UNITS	TOTAL QTY.	UNIT PRICE	TOTAL AMOUNT
I. SANITARY SEWER				
1. Clearing and grubbing				
2. Cut and remove asphalt				
3. PVC sanitary sewer main (incl. trenching, bedding & backfill)				
4. Sewer Services (incl. trenching, bedding, & backfill)	L.F.	350	$11.00	$3,850.00
5. Sanitary sewer manhole(s)				
6. Connection to existing manhole(s)				
7. Aggregate Base Course				
8. Pavement replacement				
9. Driveway restoration				
10. Utility adjustments				
II. DOMESTIC WATER				
1. Clearing and grubbing				
2. Cut and remove asphalt	S.F.	50	$2.20	$110.00
3. Water Main (incl. excavation, bedding, backfill, valves and appurtenances)				
4. Water services (incl. excavation, bedding, backfill, valves, and appurtenances)	L.F.	235	$11.00	$2,585.00
5. Connect to existing water line				
6. Aggregate Base Course	S.F.	50	$1.00	$50.00
7. Pavement Replacement	S.F.	50	$2.00	$100.00
8. Utility adjustments				
III. STREETS				
1. Clearing and grubbing				
2. Earthwork, including excavation and embankment construction				
3. Utility relocations				
4. Aggregate sub-base course (square yard)				

5. Aggregate base course (square yard)				
6. Sub-grade stabilization				
7. Asphalt or concrete pavement (square yard)				
8. Curb, gutter & sidewalk (linear feet)				
9. Driveway sections (square yard)				
10. Crosspans & fillets				
11. Retaining walls/structures				
12. Storm drainage system				
13. Signs and other traffic control devices				
14. Construction staking				
15. Dust control				
16. Street lights (each)				
IV. LANDSCAPING				
1. Design/Architecture				
2. Earthwork (includes top soil, fine grading, & berming	L.S.	1	$2,500.00	$2,500.00
3. Hardscape features (includes walls, fencing, and paving)				
4. Plant material and planting	L.S.	1	$1,000.00	$1,000.00
5. Irrigation system	L.S.	1	$1,500.00	$1,500.00
6. Other features (incl. statues, water displays, park equipment, and outdoor furniture)				
7. Curbing				
8. Retaining walls and structures				
9. One year maintenance agreement				
V. MISCELLANEOUS				
1. Design/Engineering				
2. Surveying	L.S.	1	$400.00	$400.00
3. Developer's inspection costs				
4. Quality control testing				
5. Construction traffic control				
6. Rights-of-way/Easements				
7. City inspection fees	L.S.	1	50.00	50.00
8. Permit fees				
9. Recording costs				
10. Bonds				

11. Newsletters				
12. General Construction Supervision				
13. Other PARKING LOT AREA	L.S.	1	$6,850.00	$6,850.00
14. Other				

TOTAL ESTIMATED COST OF IMPROVEMENTS: $ 18,995.00

SIGNATURE OF DEVELOPER DATE
(If corporation, to be signed by President and attested to by Secretary together with the corporate seals.)

I have reviewed the estimated costs and time schedule shown above and, based on the plan layouts submitted to date and the current costs of construction, I take no exception to the above.

CITY ENGINEER DATE

COMMUNITY DEVELOPMENT DATE

PEPPER TREE FILING NO.4
PHASE 1