Table of Contents

File 1980-0046
Date 6/29/01

Project Name: 723 & 733 Horizon Drive – (Airport Dollar Inn) - SPR

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, not all entries designated to be scanned are present in the file. There are also documents specific to certain files, not found on the standard list. For this reason, a checklist has been included. **Remaining items, (not selected for scanning), will be marked present on the checklist. This index can serve as a quick guide for the contents of each file.** **Files denoted with (**) are to be located using the ISYS Query System. Planning Clearance will need to be typed in full, as well as other entries such as Ordinances, Resolutions, Board of Appeals, and etc.**
X	X	***Summary Sheet – Table of Contents**
		Application form
X		Receipts for fees paid for anything
		***Submittal checklist**
		***General project report**
		Reduced copy of final plans or drawings
		Reduction of assessor's map
		Evidence of title, deeds
X	X	***Mailing list**
		Public notice cards
		Record of certified mail
X		Legal description
		Appraisal of raw land
		Reduction of any maps – final copy
		***Final reports for drainage and soils (geotechnical reports)**
		Other bound or nonbound reports
		Traffic studies
		Individual review comments from agencies
		***Consolidated review comments list**
		***Petitioner's response to comments**
		***Staff Reports**
		***Planning Commission staff report and exhibits**
		***City Council staff report and exhibits**
		***Summary sheet of final conditions**
		***Letters and correspondence dated after the date of final approval (pertaining to change in conditions or expiration date)**

DOCUMENTS SPECIFIC TO THIS DEVELOPMENT FILE:

X	X	Action Sheet	X		Letter from Larry Moore to City Planning re: format error in agreement – no date
X	X	Review Sheet Summary	X	X	Letter from Larry Moore to City Planning re: parking lot –no date
X	X	Planning Commission Minutes - ** - 5/5/82	X	X	Letter from Larry Moore to City Planning re: parking-no date
X		Letter from Louise Forster to Co. Planning re: resubmitting proposal because of changes in site plan – 3/25/82	X	X	Impact Study
X		Public notice of posting			Ute Water Conservancy District – Peak Demand – Data Sheet
X		Development Application	X		Airport Inn Agreement between Robert Rishling and Phyllis Rishling, Louise Forster and Mary Godwin
X		Letter from Larry Moore to City re: flood plain permit is not applicable-no date	X		Ground Lease with A.L. Partee and Feather Petroleum Co. – 2/28/82
X		Gamma Ray Survey Form – no mill tailings – 10/29/81	X		Deed
X	X	Geology Report	X		Treasurer's Certificate
X	X	Subsurface Soil and Foundation Investigation – 1/80	X	X	Letter from Chief Wes Painater to Bob Bright re: fire protection-8/8/80

X	X	Improvement Agreement	X		Letter form Alex Candelaria to Louise Forster re: petition approved by PC – 8/11/80
X	X	Subsurface Soil and Foundation Investigation	X		City Council to hold a hearing 8/20/80
X		Development Application	X		Letter from Louise Forster to P.C. re: removing request to resubmit later-4/19/82
X		Plumbing Fixture Calculations	X		Site Plan
			X		Landscape Plan
			X		Utility and Drainage Plan
			X		Exterior Elevation Map

Acres _____ | ACTION SHEET | File # 46-80

Units _____ | Zone H.O.

Density _____ | Tax Area Code _____

Activity DEVEL. IN H.O. AIRPORT DOLLAR INN

Phase _____ | Date Neighbors Notified _____

Date Submitted 7-1-80 | Date CIC/MCC Legal Ad Aug-

Date Mailed Out 7-2-80 | CPC Hearing Date ~~7-29~~ 7-29-80

Review Agencies | 10 Review Period - Return By July 14

Send		Send	
___	COUNTY ROAD DEPARTMENT	✓	FIRE CITY
___	COUNTY HEALTH DEPARTMENT	✓	IRRIGATION G. V.
___	COUNTY SURVEYOR	✓	DRAINAGE G.J.
___	COMTRONICS	✓	WATER (UTE) CLIFTON)
___	GRAND VALLEY RURAL POWER	___	SEWER
✓	MOUNTAIN BELL	✓	CITY ENGINEER/UTILITIES R.SH/PATTERSON
✓	PUBLIC SERVICE	___	MACK, LOMA, MESA, COLLBRAN
___	SOIL CONSERVATION SERVICE	___	FRUITA, PALISADE
___	SCHOOL DISTRICT 51	✓	PARKS & REC.
___	STATE HIGHWAY	✓	JIM BRAGDON
___	STATE GEOLOGICAL	✓	ED VANDERHOOK
___	STATE HEALTH - RADIOLOGICAL	✓	DOE
___	TRANSAMERICA TITLE	✓	TECH REVIEW

Board	Date	Comments
P.C.	7/29/80	RECOMMENDED APPROVAL SUBJECT TO STAFF COMMENTS - ONE CURB CUT if FIRE DEPT. GIVES APPROVAL
CIC	8/20/80	approved

Common Location Homestead Subdivision, lot 4

737 Horizon DR.

Staff Comments

Legal OK

Original Documents

___ Imp. Agreement $_____ Appraisal x .05 = $_____ Open Space; _____

___ Imp. Guarantee Receipt #_____ Check # _____

___ Covenants _____ Open Space Dedication

___ Power of Attorney

___ Dev. Schedule

REVIEW SHEET SUMMARY

FILE# 46-80

ITEM DEV in H.O. AIRPORT $ INN

DATE SENT TO REVIEW DEPT. 7-02-80

DATE DUE 7-14-80

PETITIONER Louise Forster

LOCATION Lot 4, Homestead Sub.- 737 Horizon Dr.

DATE REC.	AGENCY	COMMENTS
7-02-80	TECH REVIEW	None
7-10-80	CITY FIRE	One existing hydrant at N.E. corner of lot 2, additional onsite hydrants required on an 8" looped line. Hydrants to be located at N.E. corner of lot and S.W. corner of lot. Recommend installation of water lines and hydrants prior to beginning construction. Hydrants should be at least 40' away from building.
7-10-80	G.J. DRAINAGE	Out of District
7-14-80	CITY ENGR.	How close will that building be to the 48 inch storm drain and the easement therefore? It should not be allowed in either. I assume the 48 inch relocated concrete drain will be constructed prior to the building. The submittal doesn't indicate how the site grading and drainage will be.
7-14-80	UTE WATER	No objection to development. Ute Water can serve water needs from existing lines in Horizon Drive. A "Peak Demand-Data Sheet" will be necessary in order to determine proper meter and service line size.
7-16-80	TRANS. ENG.	53° angle parking is not standard. Parking stall depth and aisle width on the north side is not adequate. Two way drive by North Pl. has no dimensions. It appears to be only about 13' which is too narrow. Last parking stall on south side by trash area is not usable.
7-16-80	PARKS & REC.	Very questionable choice of trees. Quercus palustris--Pin oak native of moist bottomlands(Ohio River Valley) does not do well in the alkaline soils along Horizon Drive. Becomes chlorotic (yellowing foilage) in soils with ph above 7.0. Beautiful tree in the right place--this is not it. Possible substitues Hackberry, Shademaster Locust, or Summit or Green Ash. Incense Cedar--to my knowledge it is not hardy here. Native habitat Oregon, Northern California & Sierra Mountains that receive much more moisture than we do here. Also the elevation may be a limiting factor. Because of our extremely low humidity and hot drying winds, our evergreens are limited. Austrian & Pinyon Pines, Blue Spruce and Rocky Mt. & Eastern Red Junipers. Ajuga is not a good ground cover for exposed areas. Snow-in-Summer, Goutweed or Silver Mound are better sunloving & drought tolerant ground covers. European Mt. Ash (Sorbus aucuparia) does not like the heavy clay that occurs in this area, prefers sandy well drained soil. Either amend the soil or do not expect much success. Very messy tree for along walkways and is highly

susceptible to borers.

7-18-80 MT. BELL No comment

STAFF RECOMMENDATION
Recommend approval subject to comments.
Utilize 25' common access adjacent to north.
Inadequate distance for two curb cuts as per Horizon Drive policy--should be limited to north curb cut only in conjunction with common access.
Indicate handicapped parking.
Indicate drainage.
South parking isle-width of isle is only 23'--minimum width for 90° parking configuration is 25'.
North side parking configuration inadequate (shows 13' isle with curb on north boundry). Should design in conjunction with 25' common access on north.
Trash area is inaccessable. Should be redesigned to meet Public Works needs.
Show office location and sign location.
Give sign height, type, and size.
Landscaping adjacent to curb cut should not penetrate line of sight of egressing or ingressing vehicles--height of plantings should not exceed 2.5'
Drainage should be handled as per staff comments on Homestead Subdivision ("2. detailed construction plans for piping of Horizon channel should be submitted tothe City Engineer for review and approval prior to construction of improvements".)

7-16-80 PUBLIC SERVICE Electric: Subject to approval of Final Plat of Homestead Subdivision. Cost to relocate or underground existing overhead power lines across property to be in accordance with PSCo. Rules & Regulation on file with Colorado P.U.C.
Gas: No objection, Subject to approval of Final Homestead Subdivision Plat and necessary easements to provide service.

7-17-80 UTILITIES Consideration should be given to re-designing the trash area and the two adjacent parking spaces so that a trash truck can service the trash tank and to eliminate parking movement conflicts.

7-29-80 GJPC - FLAGER/SIMONETTI PASSED 4-0 A MOTION TO RECOMMEND APPROVAL TO THE CITY COUNCIL OF # 46-80 DEVELOPMENT IN H.O., SUBJECT TO STAFF COMMENTS AND THE FIRE DEPARTMENT RECOMMENDATIONS FOR ACCESS, REDESIGN OF THE TRASH PICK-UP AREA, SIGN LOCATION AND SIZE, AND THE ADDITION OF HANDICAPPED PARKING RAMPS.

REVIEW SHEET SUMMARY

FILE NO. 46-80 DUE DATE 3/12/82

ACTIVITY 130 Seat Restaurant in Airport Dollar Inn & 56 Room Addition to Hotel & Convenience Store

PHASE _____ ACRES _____

LOCATION 733 Horizon Drive, Grand Junction, CO 81501

PETITIONER Louise Forester

PETITIONER ADDRESS 737 Horizon Drive, Grand Junction, CO 81501

ENGINEER _____

OVERALL CONSIDERATIONS

HAS BEEN ADDRESSED	HAS NOT BEEN ADDRESSED	
☐	☐	OVERALL COMPATABILITY
☐	☐	CONSISTENCY
☐	☐	ADJACENT PROPERTY
☐	☐	CHANGE IN THE AREA
☐	☐	TRAFFIC IMPACT

DATE REC.	AGENCY	COMMENTS
3/9/82	Mountain Bell	No requests.
3/9/82	Ute Water	No objection. Existing domestic meter size should be adequate to serve expansion.
3/11/82	City Fire Dept.	This office has no objection to the proposed 130 seated restaurant. Any and all remodeling will be required to meet building and fire code standards. The new proposed 56 unit addition must have the one additional fire hydrant. Two of the required 3 fire hydrants have been provided. This hydrant to be located as to prior agreements.
3/11/82	GJ Drainage Dist.	Out of district.
3/12/82	City Engineer	Based on information given at our meeting today, it appears the buildings and parking lots are significantly physically different than shown on these plans. If so, I am not sure what we are reviewing and reserve comments until the Development staff ascertains if the submitted drawings are correct. At that time I definitely want an opportunity to reveiw this project especially as it relates to Horizon Drive. Please notify me as soon as the layout questions are resolved.
3/12/82	Trans. Engineer	There are "problems" with the existing buildings, like what set of plans were they built to etc. I will withhold comment until these "problems" are resolved.

DATE REC.	AGENCY	COMMENTS
3/17/82	Staff Comments	An on site inspection was conducted by review agencies and proved that what was submitted does not conform to what is existing. The review agencies recommend that this item be tabled and resubmitted by the petitioner. The resubmitted should show in detail: a. What is existing b. What is proposed c. Dimensions of proposed additions in relation to existing structures The review agencies felt that since it was not an accurate site plan, they would not review it. There are too many discrepancies on the site plan to review it.

3/16/82 Late - City Utilities
Late Public Service
City Parks

REVIEW SHEET SUMMARY

FILE NO. 46-80 TITLE HEADING Development in HO DUE DATE 4/12/82

ACTIVITY - PETITIONER - LOCATION - PHASE - ACRES Petitioner: Louise Forster. Location: 723 and 733 Horizon Drive (Airport Dollar Inn.). A request for a restaurant, a 56 room addition to the hotel, and a convenience store on 2.54 acres in a highway-oriented zone. Consideration of development in HO-amended final plan.

PETITIONER ADDRESS Old Homestead Realty, 737 Horizon Drive, Grand Junction, CO 81501

ENGINEER

DATE REC.	AGENCY	COMMENTS
4/9/82	City Utilities	A better arrangement needs to be made for trash service areas. Locations shown would make service awkward and difficult. The drainage easement cannot be filled in without putting pipe in the ditch. This will have to be approved by the City Engineer.
4/12/82	Transportation Dept.	Everytime we see these plans, the "existing" changes, there was suppose to be 90 degree parking with two-way traffic on the back side by the Country Club. There was not enough room (as built) for this, so now we have angle parking and one-way traffic but -- we also have one-way traffic at the front by the office, so -- if someone wants to drive from the back to the office, he would have to get out onto Horizon Dr. The same thing would apply, actually, to all parking spaces except the 10 on the N/E side. It appears that there are a few discrepancies between what is existing and what was previously approved. These should be rectified before we get too far along into additions. Again -- the traffic flow pattern, as shown, will not work.
4/13/82	City Fire Dept.	This office has no objections to the proposed restaurant. However, all remodeling necessary must meet building and fire codes. We have no objection to the 56 unit addition. The additional fire hydrant required on the first addition must be installed before construction. New addition must have fire alarm and stand pipes - meet building and fire codes. The onsite existing fire hydrant is dry and out of service. We have notified management of Motel several times. The hydrant, as of this date, has not been repaired. This hydrant must be repaired and placed into service prior to future development.
4/13/82	Planning Staff Comments	1. Horizon Drive Corridor Ave., Sec. 3-16-2, should be strongly enforced. 2. Also Sec. 3-16-3, policy statement, should be adhered to. 3. What is the percentage of open space? 4. How will the landscaping be maintained? 5. Need elevations, detailed and dimensioned. 6. Parking requirements for the 166 units and restaurant use are 210 parking spaces. The total plan only shows 178. 7. Need to address employee parking and parking for convenience store. 8. Internal traffic circulation as designed looks confusing. Adequate traffic circulation design should be approved by the appropriate agency. 9. Trash pick-up should be coordinated with Bill Reeves, Sanitation Engineer. 10. Lighting scheme should be detailed. 11. Adequate access and circulation needs to be addressed.

DATE REC.	AGENCY	COMMENTS
	Planning Staff Comments (Cont.)	12. Need a signage detail, if any are intended. 13. Need to resolve adequate drainage with the appropriate agency. 14. Need a POA for Horizon Drive on additional parcel. 15. Need to show on plan setback for proposed structures from property line. Also need to show utility easements. 16. Project must obtain building permit within 1 year of final approval or be scheduled for a rehearing. 17. Avigation easement will be required, because this parcel is in the area of influence (Sec. 5-11). 18. Any of the other previous review comments need to be resolved as well. 19. A Certificate of Occupancy has never been issued per UBC Sec. 307 for the present operation of the existing motel use. A C.O. should be issued prior to final approval of the new proposed plan.
4/15/82	City Engineer	Power of attorney for full street improvements on Horizon Drive should be granted. The 54 inch storm sewer north of the building has not been completed yet. Fill encroachments into the Horizon channel behind this property exist and should be removed. The channel bank adjacent to the parking lot should be smoothed. According to this plan, the parking lot is built over the 15 ft. drainage easement for Horizon channel as platted on the Homestead Subdivision. (comparing dimensions) This is totally unacceptable. A 15 ft. drainage easement should be granted for the Horizon channel portion southwest of Homestead Subdivision portion of the parcel. This layout and the existing construction seems to ignore the 15 ft. drainage easement which is supposed to be for the Horizon Drive main channel which drains all the way from Walker Field.

4/16/82 - City Parks & Rec.

Reed Miller, Inc.
P.O. Box 157
Grand Junction, Colo.
81502
#46-80

Louise Forster
737 Horizon Drive
Grand Junction, Colo.
81501
#46-80

1 2

A.L. Partee
P.O. Box 2031
Grand Junction, Colo.
81502
#46-80

Creative Equity Corp.
2 Vine Street
Aspen, Colo. 81611
#46-80

Bookcliff Country Club
2730 G Road
Grand Junction, Colo.
81502
#46-80

Super 8 Motel
700 Park St.
New Castle, Colo. 80104
#46-80

American Family Lodge
721 Horizon Dr.
Grand Junction, Colo.
81501
#46-80

Ford Builders
2820½ N. Ave
City 81501 #46-80

#46-80

F 46-80

2701-~~363~~ 364-00-032 ←
-054 ←

28-001 ←
-002 ←

00-037 —
-080 —
-096 NOF
-095 —
-085 NOF
-101 NOF

Reed Miller Inc.
P.O. Box 157
City -02

A.L. Partee
P.O. Box 2031
City -02

Jack Treece
2323 N. 7th
City -01

Horizon 170
770 Horizon Dr.
City -01

Bookcliff Country Club
2730 G Rd.
City -02

CITY OF GRAND JUNCTION IMPROVEMENTS AGREEMENT

In re: RESTAURANT IN AIRPORT DOLLAR INN, 733 HORIZON DR.
Name of subdivision or other improvement — location

Intending to be legally bound, the undersigned subdivider hereby agrees to provide throughout this subdivision and as shown on the subdivision plat of HOMESTEAD (name of subdivision) date _____ 19___, the following improvements to City of Grand Junction standards and to furnish an Improvements Guarantee in the form acceptable to the City for these improvements.

Improvements	Quantity and Unit Costs	Estimated Cost	Estimated Completion Date
PARKING ~~Street~~ grading	4086 yds @ 50¢	2043.00	12-1-81
PARKING ~~Street~~ base	681 yd - @ 12 yd	8172.00	12-1-81
PARKING ~~Street~~ paving	4086 yds @ 3.00	12258.00	12-1-81
Curbs and Gutters	1125 LF @ 5.50	6187.50	12-1-81
Sidewalks	17000 sq ft - 1.75 ft	29750.00	12-1-81
Storm Sewer facilities	210 Lt Oil -	25,000.00	7-1-81
Sanitary sewers	500' - 4.25 ft.	2125.00	7-1-81
Mains	200' - 4.50 ft.	900.00	7-1-81
Laterals or house connections	300' - 4.10 ft	1230.00	7-15-81
On-site sewage treatment	—		
Water mains	150' - 4.25	637.50	8-1-81
Fire hydrants	3 hyd.	10.500.00	12-1-81
On-site water supply	—		
Survey monuments	5 @ 35.00	175.00	6-1-81
Street lights	3 @ 1050.00	3150.00	11-15-81
Street name signs	—		
SUB TOTAL		102128.00	

Supervision of all installations (should normally not exceed 4% of subtotal) 4085.00.

TOTAL ESTIMATED COST OF IMPROVEMENTS AND SUPERVISION $ 106213.—

The above improvements will be constructed in accordance with the specifications and requirements of the City or appropriate utility agency and in accordance with detailed construction plans based on the City Council approved plan and submitted to the City Engineer for review and approval prior to start of construction. The improvements will be constructed in reasonable conformance with the time schedule shown above. An Improvements Guarantee will be furnished to the City prior to recording of the subdivision plat.

Signature of subdivider

(If corporation, to be signed by President and attested to by Secretary, together with the corporate seal.)

Date: NOV. 2 19 81.

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: _____ 19___

CITY OF GRAND JUNCTION IMPROVEMENTS AGREEMENT

In re: 56 ROOM ADDITION/ 733 HORIZON DR.
Name of subdivision or other improvement location

Intending to be legally bound, the undersigned subdivider hereby agrees to provide throughout this subdivision and as shown on the subdivision plat of HOMESTEAD date FEB, 1 19 82, the name of subdivision following improvements to City of Grand Junction standards and to furnish an Improvements Guarantee in the form acceptable to the City for these improvements.

Improvements	Quantity and Unit Costs	Estimated Cost	Estimated Completion Date
PARKING ~~Street~~ grading	3,908 sf @ .50¢	1954	
PARKING ~~Street~~ base	525 yd - 12 yd	6,300	
PARKING ~~Street~~ paving	3,908 sf @ 3¢	11,724	
Curbs and Gutters	723 lf 5.50	3,976.5	
Sidewalks			
Storm Sewer facilities	100' of	15,000	
Sanitary sewers			
Mains	250' of 4.50	1,125	
Laterals or house connections	200' of 4.10	800 =	
On-site sewage treatment	—		
Water mains	—		
Fire hydrants	1 Hyd	1650 ea	
On-site water supply	—		
Survey monuments	3 @ 35 ea	105 ea	
Street lights	6 @ 1050	6,300	
Street name signs	—		
SUB TOTAL		48,954.	

Supervision of all installations (should normally not exceed 4% of subtotal) —.

TOTAL ESTIMATED COST OF IMPROVEMENTS AND SUPERVISION $ 50,712.16

The above improvements will be constructed in accordance with the specifications and requirements of the City or appropriate utility agency and in accordance with detailed construction plans based on the City Council approv plan and submitted to the City Engineer for review and approval prior to start of construction. The improvements will be constructed in reasonable conformance with the time schedule shown above. An Improvements Guarantee will be furnished to the City prior to recording of the subdivision plat.

Signature of subdivider

(If corporation, to be signed by Presiden and attested to by Secretary, together with the corporate seal.)

Date: Feb. 1 19 82.

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: 19

THESE ARE FORMAT SAMPLES ONLY. SUBMITTED GUARANTEE MUST BE THE TYPED ORIGINAL, SIGNED BY ALL LEGAL OWNERS AND NOTARIZED.

BANK GUARANTEE FORMAT

Date November 2, 1981

City of Grand Junction
559 White Avenue - Room 60
Grand Junction, Colorado 81501

This letter is to verify that Robert and Phyllis Rishling, Louise Forster and Mary Godwin (*owner(s) name*)

have secured a loan in the amount of $600,000.00 (*loan amount*) for the

improvement of Airport Inn (*name of development*).

The $600,000.00 (*loan amount*) is to finance the construction of the improvements within the subdivision Plat or Plan which are required by the City of Grand Junction zoning and Subdivision Regulations.

The $600,000.00 (*loan amount*) is to be disbursed by the Mesa United Bank (*name of lending institution*) only for the above items upon receipt and approval of properly authorized bills.

In the event that Robert & Phyllis Rishling, Louise Forster and Mary Godwin (*owner(s) name*) should not complete the improvements, the Mesa United Bank (*name of lending institution*) agrees that all available funds not disbursed will be applied toward the completion of the project.

****

BUILDING PERMIT GUARANTEE FORMAT

Date November 2, 1981

City of Grand Junction
559 White Avenue - Room 60
Grand Junction, Colorado 81501

Guarantee of Improvements as Per Improvements Agreement as required for Airport Inn (*name of development*). The undersigned hereby guarantee not to request building permits within _____ (*name of development*) until such time as improvements are complete and a release from Improvements Agreement and Improvements Guarantee has been obtained.

Louise Forster Robert Rishling
(*owner signature*)

Phyllis L Rishling
(*owner signature*)

Mary Godwin Louise Forster
attorney-in-fact.

State of Colorado
County of Mesa

Witness their hands & seals on this 2nd day of November, 1981

My commission expires June 18, 1984. Joanna Trentine

IMPACT STUDY ON HORIZON DRIVE

PROPOSED "GOODPASTURE'S" RESTAURANT

The proposed 130 seat "Goodpastures" restaurant for the Airport Dollar Inn, 733 Horizon Drive, will lessen the traffic on Horizon Drive, if in fact, it has any impact, for the following reasons:

The restaurant will be located in the existing premises of Airport Dollar Inn. The primary clientele of the restaurant will be guests staying at Airport Dollar Inn. Having a restaurant under the same roof will encourage guests to walk to the restaurant rather than drive or cross Horizon Drive. In addition, guests at motels and employees of businesses in the adjacent area will have a medium priced restaurant they can easily walk or drive to.

The close proximity to the freeway will also allow tourists on I-70 to go only a short distance on the four-laned Horizon Drive in order to eat.

Any increased traffic on Horizon Drive created by this restaurant will be minimal compared to the traffic of the tourists and employees of those firms seeking to find a family-type restaurant offering expedient service.

The need for a medium priced family restaurant in this area is great. We feel we will fill a void now in existence, and at the same time, provide a positive impact on a crowded Horizon Drive.

The proposed Restaurant will be open for business 90 days after approval.

Respectfully submitted,

Louise Forster

Louise Forster, Managing Partner

HORIZON DRIVE IMPACT OF
56 ROOM ADDITION TO AIRPORT DOLLAR QUALITY INN

The impact on Horizon Drive should be minimal for the following reasons:

This 56 room addition is to be built onto the existing 110 room Airport Dollar Quality Inn, 733 Horizon Drive.

Grand Junction is still in need of more mid-priced motel rooms for business travelers. Since these rooms will be used primarily by businessmen, at least 50% will be arriving by plane and will be transported by vans to the motel. The majority of the remaining 50% will be driving on I-70 and will travel the shortest distance on Horizon Drive, which is also four-laned.

In addition with our proposed restaurant, we will have the ability for a traveler to leave the freeway, drive a very short distance on the four-laned portion of Horizon Drive, park their car, eat and sleep; then in the morning go the short distance on Horizon to I-70, and continue their trip.

With 166 full service rooms we will also be able to attract groups, conventions and seminars that will be destination events and will not use Horizon Drive during their stay.

For these reasons we feel that this addition will have a positive impact in a busy area.

Respectfully submitted,

Louise Forster

Louise Forster, Managing Partner

GEOLOGY REPORT

HOMESTEAD SUBDIVISION

Grand Junction, Colorado

October 1979

Client:

Louise Forster
737 Horizon Drive
Grand Junction, Colorado

Prepared by:

Western Engineers, Inc.
Grand Junction, Colorado

INTRODUCTION

The proposed Homestead Subdivision is a parcel of land of about 3.1 acres lying in the NW 1/4 SE 1/4 Section 36 Township 1 north, Range 1 west of the Ute Meridian. The property is bounded on the southeast by Horizon Drive and on the northwest by the Bookcliff Country Club golf course.

A geology map on a plat of the land is included at the end of this report. The locations of 2 auger holes, which provide subsurface data are shown.

SUMMARY

The proposed subdivision is underlain by 20 to 35 feet of fill and soil. The fill material is a heterogenous mixture of cobbles, gravel, and fragments of concrete, brick, and asphalt in a matrix of silty clay. The natural soil found beneath the fill at depths of 4 to 5 feet is a silty clay derived primarily from the Mancos shale which comprises the bedrock. The fill and soil overburden is characterized by a low shear strength when wet and a rather high dry strength. The overburden is also subject to frost heave because of its silty character.

The surface at the site drains predominantly toward the southwest corner where two drainage canals coalesce (see the included map). These drains are about 10 feet deep at the southwest corner of the site and extend roughly along the south and west sides of the site. The drainage canal along the western boundary is the remains of an old channel roughly followed by Horizon Drive. The drainage canal in the southern part of the property is a man-made excavation to provide drainage from across Horizon Drive.

No critical geologic hazards exist at the site that would preclude the proposed development.

DISCUSSION

The geologic setting of the proposed subdivision is on the northeast flank of the Uncompahgre Plateau. Here the underlying formations of late Mesozoic sedimentary rocks dip about 3° to the northeast. The bedrock is Mancos shale, a marine deposit of late Cretaceous age. The Mancos shale has been eroded from its original thickness of about 3800 feet to only about 640 feet beneath the site. Overlying this are soils which are derived primarily from the Mancos but contain materials washed down from the Mesa Verde formation, which outcrops in the Bookcliffs upslope from the site. These soils contain soluble sulfate salts due to their marine origin. As a result, a sulfate-resistant cement should be used where concrete founding structures are to be in contact with the soil.

The soil at the site is overlain by 4 - 6 feet of fill material (except beneath drainage canals) composed of gravel, cobbles, and fragments of concrete, bricks and asphalt in a matrix of silty clay. This material can be classified on the Unified Soil Classification chart as GM-ML or GC-CL. The natural soil beneath the fill is called Billings silty clay loam by the SCS and can be classified of the Unified Chart as ML-CL. Both of these materials exhibit poor internal drainage and a high water-holding capacity. The character of the overburden is such that an engineering assessment of its bearing capability will be necessary to insure the proper design of founding structures.

The water table lies from 8 to 9 feet below the surface or roughly level with the bottoms of the drainage canals, and is no doubt controlled by the water level in these drains. A small amount of seasonal variation in the depth of the water table can be expected due to seasonal watering on the adjacent golf course. Excavation in the soil will be hazardous below the water table due to its low shear strength when wet.

The site lies near the original Horizon Drive channel and the drainage canal on the west represents the altered remains of that channel. The U. S. Army Corps of Engineers 1976 report: Flood Hazard Information for Grand Junction, Colorado shows that a potential for flash flooding exists along Horizon Drive as far north as G - Road or the south boundary of Section 36. Therefore, some potential does exist for flash flooding in the channel along the west boundary. Development within the channel and drainage basin above the site has effectively minimized that potential by isolating parts of the drained area. Also, the channel, as it now exists along the western boundary, could effectively handle a discharge of approximately 1700 cfs, far above the 100-year peak flow estimated to be about 600 cfs by the U. S. Army Corps of Engineers.

Domestic water for this subdivision will be provided by a municipal source. The subdivision will also utilize existing sewage disposal facilities.

Commercial mineral resources of metallic or non-metallic nature are not found in the area. There is a possibility that production of oil and gas from underlying sandstone formations might be developed. There is production from these formations nearby.

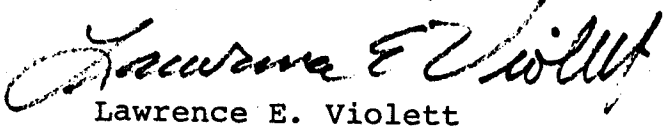
CONCLUSIONS

The proposed Homestead Subdivision is in an area that does not present any critical geologic hazards. The overburden consists of 4 to 6 feet of fill over a silty clay loam about 30 feet deep. The water table is high, and only slight seasonal variation can be expected.

The area has no record of destructive seismic activity. A minimal flash flood danger exists, but if adequate drainage is provided, the destructive potential is very slight. Drainage should be in the form of a drainage canal as now exists or buried concrete pipe capable of handling at least 1500 cfs. Erosion should not present any problems at the site.

Submitted by:

WESTERN ENGINEERS, INC.,



Lawrence E. Violett

Geologist

SUBSURFACE SOIL AND FOUNDATION INVESTIGATION FOR HOMESTEAD COMMERCIAL SUBDIVISION GRAND JUNCTION, COLORADO

CLIENT:

OLD HOMESTEAD REALTY

GRAND JUNCTION, COLORADO

Prepared by:

Western Engineers, Inc.
Grand Junction, Colo.
January 1980

SUMMARY

The site of the Homestead Commercial Subdivision is located south-west of the intersection of Interstate 70 and Horizon Drive near Grand Junction, Colorado. The soil profile generally consists of the following:

1.) Miscellaneous loose fill material extending to an undetermined depth. This material varies from sands and gravels to imported decomposed shales and decomposed organics.

2.) Buff brown sandy silty clay, moist at top to saturated lower in the soil profile, exhibiting low to moderate plasticity and found in a lensed state. Decomposed organics are found concentrated at certain levels. This soil was found to extend to the 13 to 38 foot depth.

3.) Dark grey to black formational Mancos Shale directly underlying the silts, sands and clays and extending to an undetermined depth. Lenses were found in the shale which vary in soundness.

The water table was found 9 to 11 feet below the existing ground surface. Some seasonal ground water fluctuations may be expected.

CONCLUSIONS AND RECOMMENDATIONS

The upper soil found at the site will not provide unyielding support for the proposed structures. The bearing characteristics of this soil were found to be quite erratic.

Footing foundations are not recommended for support of structures unless the buildings can experience some differential movement without damage. If footing type foundations are employed,

light buildings with footings placed higher than the 4 foot depth should be designed for a maximum allowable soil bearing capacity of 750 PSF, and those placed from the 4 to 8 foot depth for a maximum allowable soil bearing capacity of 900 PSF. Heavy buildings with footings above the 4 foot depth should be designed for a maximum allowable soil bearing capacity of 400 PSF, and those placed from the 4 to 8 foot depth for a maximum allowable soil bearing capacity of 600 PSF. Footings should have a minimum of 8 inches of gravel placed and compacted beneath, must be capable of free-spanning at least 10 feet, must be supported by natural soil and not unconsolidated fill, and the supporting soil must be isolated from all sources of moisture.

One alternative to footing type construction is the utilization of a rigid "floating" slab. This configuration is most effectively used in buildings where structure loads transmitted to foundations are reasonably distributed. Although differential settlements within the structure are eliminated, total settlements can still be expected.

The apparent most practical method of foundation support employs piling founded on the Mancos Shale. Adequately designed and installed piles can be used to support loads as high as 150 KIPS/pile in the shale.

Floor slabs placed near the existing ground surface should be designed using one of the following methods to compensate for the presence of the loose fill material:

1.) Floating slab configuration.

2.) Remove, replace and compact poor quality fill.

3.) Precondition and preload slab areas.

4.) Rigid independent interior slabs with interior partitions designed to allow differential movement.

5.) Structural slab or joist design integral with foundation elements.

Slabs placed below the 6 foot depth should be designed to resist or compensate for 100 PSF uplift using one of the following methods:

1.) Floating slab configuration.

2.) Subsoil stabilization with normal slab construction.

3.) Structural slabs or joist-crawl space design. Crawl spaces must be positively ventilated.

Soil instability may be encountered in deep excavations. Floors placed below the 4 foot depth should include design for positive subsurface drainage.

Pavement designs must include the following considerations:

) Design for the low saturated CBR value.

2.) Provide adequate surface drainage.

3.) Compact subgrade to minimum 95% Standard Proctor or stabilize.

4.) Provide a minimum applied load to the subgrade of 120 PSF.

Filling of the drain channels must include removal of all organic material and the use of adequate quality and compaction of the backfill.

SCOPE

The investigation summarized within this report was undertaken to determine the suitability of surface and subsurface soils to support commercial structures to be located within the Homestead Commercial Subdivision which is situated southwest of the intersection of Horizon Drive and Interstate 70 lying generally between the existing Old Homestead Real Estate building and an existing filling station to the south. The estimated location of the structures are shown on the test hole location map in the appendix. The magnitude of the building loads were not known at the time of this investigation. This investigation is supplemented by previous studies performed for nearby developments.

Through examination of field conditions, both surface and subsurface by means of test excavations, and through laboratory testing of recovered samples, it is possible to arrive at a suitable bearing value for each possible bearing material. Required lengths of piling and depths for caissons, if used, can be subsequently derived. Any existing anomalies which may be detrimental to foundation support may also be discovered. The bearing values which are derived must include a reasonable factor of safety if they are to be used in the design of reliable foundation elements. Damage due to one or more of the following must be prevented:

1.) Excessive consolidation of any base material.

2.) Shear failure of the founding material.

3.) Differential movement of the base material.

GEOLOGIC HISTORY

The bedrock, or base material, in the Grand Junction area north of the present Colorado River channel is dark gray to black Mancos Shale. The regional dip of the shale is approximately 3° to the northeast. The top surface of this shale is undulating, resulting in exposure at ground surface in places and as much as 100 feet below the surface in others. Sometimes both cases occur within a few hundred feet.

In the area of the previous Gunnison River Delta, which at times covered an extensive area in the Grand Junction vicinity, gravel, cobble and boulder outwash as been deposited by the Gunnison River. This outwash, the top elevation of which is quite erratic, varies from a few inches to as much as 25 feet in thickness.

Higher in the soil profile, the outwashes from the Colorado River basin and Bookcliff area to the northeast have deposited silts and clays over the Gunnison River gravel outwash and, in places, directly over the Mancos Shale. These deposits, ranging to seventy feet in depth, have been water borne and water-sorted, resulting in a material heterogeneous in nature varying from clayey silts to fat clays in numerous combinations. These soils are identified primarily as Billings Clays in the lower areas of the valley and range to Persayo and Chipeta classifications nearer the Bookcliffs where the soils are predominately colluvial and pedimental in origin, with some soils having been formed in place as a result of weathering of the underlying formation.

These soils were laid down in such a manner as to create lenses ranging from reasonably clean sand and small gravel to dirty silts varying in thickness from two inches to more than four feet. These lenses provide paths for water to travel through the surrounding semi-impervious silt-clay matrix. This network of permeable soils keeps the entire area wet when supplied with water from natural and irrigation sources. Organic matter is often found deposited with the silts and clays.

In the area are also found old channels in which the silt-clay material has been combined with sands and small gravels. In these locations, water also travels freely through the material. The free water table may be found at an unusually great depth due to the absence of tight clays to impede percolation.

It is evident from surface geology and the results of previous investigations that an ancient channel meandered from the Bookcliffs approximately along Horizon Drive to 12th Street. This channel was cut as much as 50 feet into the Mancos Shale and eventually was filled back in with alluvial sediments. At certain elevations in this channel, large amounts of decomposed organic materials can be found. The site under consideration lies directly over this ancient channel.

Due to the high salinity of the underlying shale beds, deposits of sulfate salts can be found intersperced with the silts and clays. The salts are leached out of areas of high concentration through irrigation or natural ground water sources, and redeposited in the material through which any ground water flows.

AREA SURFACE CONDITIONS

The site under consideration is located southwest of the intersection of Horizon Drive and Interstate 70. The building sites are bounded on the west and on the southwest by relatively deep drainage channels. Surface vegetation is scattered. There are indications over much of the site ground surface that fill has been placed. A large portion of the southern area of the site was covered with mounds of miscellaneous imported fill. The site exhibits slight surface drainage to the southwest.

SUBSURFACE CONDITIONS

The site subsurface conditions were examined by means of 7 test holes dug with a small truck mounted mobile auger rig equipped with 4 inch diameter auger stem. The test hole locations are given on Plate 1 in the Appendix and the logs of the holes are shown on Plates 2 - 8.

The soil profile generally consists of the following:

1.) Fill material apparently covers a major percentage of the site. It is very difficult to determine by use of the auger holes exactly to what extent and to what depth this material exists. Some indications were found that, in some locations, up to 7 feet of fill has been placed. This material also exhibits a wide range of classification and characteristics from imported granular stream alluvium to pulverized and decomposed imported shale, to material containing a large amount of black organic material which has been dredged from the drainage channels.

There are no indications that any compactive effort was applied when this material was placed. The fill appears to be poorly consolidated.

2.) Silty clay with lenses of silts, sands and small gravels ranging from moist at top to saturated near the water table. This soil is buff brown to tan in color and generally exhibits low to moderate plasticity (plasticity index ranging from 5 to 16) and moderate dry strength. Water soluble salts are visible in the soil, particularly when the soil is dried. The holes collapsed due to liquid flow of the soil immediately below the water table. A large amount of black decomposed organics are found concentrated primarily at distinct horizons. Also found in this soil are lenses of tight clays, well consolidated, fewer silt size particles than the above soil and ranging in thickness. This tight material was found variable in depth and location. The upper silts and clays were encountered extending from the ground surface or from below the fill to the 13 to 38 foot depth below the existing ground surface.

3.) The formational Mancos Shale is found underlying the silts and clays. The shale normally found in this area north of Grand Junction consists of lenses of sound shale between layers of softer shale and very tight clays. The lenses mostly vary in thickness from 6 inches to 2 feet. Below this partially weathered and

less competent upper horizon of the Mancos Shale formation, the shale becomes very hard and more uniform. However, the depth at which the shale becomes more competent was not reached in the drill holes. The upper 1 to 2 feet of the shale is highly weathered and decomposed. Water soluble salts are found in high concentrations in joints and bedding planes in the shale. As discussed in the Geologic History section, most of this site is located over a relatively deep ancient natural channel. The drill logs indicate that holes 1 - 5 are located over the deeper portions of the channel and that holes 6 & 7 are respectively proceeding further toward the northwest bank. Shale outcrops can be found within a short distance to the northwest and directly across Horizon Drive to the southeast. The upper surface of the shale varies from 13 to 38 feet below the existing ground surface.

The water table encountered appears to be uniform from 9 to 11 feet below the ground surface, and is approximately at the same level as the bottom of the nearby drainage channels. It would be expected that these drainage channels would have a significant effect in depressing the water table during the non-irrigation winter months. However, it would also be expected that, since the site is not bounded on all sides by these channels, a summer-time rise in the water table elevation would occur.

Often, an indication of the location of the high seasonal water table can be obtained from the depth at which the soil becomes saturated. Using this indicator, it could be expected that the water table might rise to as high as 6 or 7 feet below the existing ground surface in certain locations at this site.

LOAD SUPPORT

Two separate types of soil are available for a foundation support of buildings loads, the upper silty clay and the Mancos Shale lower in the soil profile. The upper silty clay soil will not provide totally unyielding load support. Water deposited soil such as that found in the Grand Junction area varies in load bearing characteristics depending on particle size, soil derivation, and type of water deposition. These fine grained, water borne soils are termed "moisture sensitive" due to the fact that they normally exhibit moderate to high swelling or consolidation characteristics upon soil saturation. The upper soils at the site under consideration, which would be used for load support, appear to be moderately to poorly consolidated. At the site under consideration, this is compounded by the presence of imported fill material very different in physical characteristics from the natural soil. The amount of consolidation which occurs upon loading the soil depends on the amount of previous natural consolidation the soil has undergone and the soil composition. In order to determine the soil consolidation characteristics under load, a soil sample is laboratory monitored for magnitude of volume change under various loading and moisture conditions. The graphical results of 6 such tests performed on the natural soil at the proposed subdivision are shown on Plates 9 - 14 in the APPENDIX. As can be seen, the natural soil consolidates uniformly under natural moisture content. Upon saturation

of the samples of the soil at 1,000 lbs./sq. ft., however, the volume change of the samples ranged from as much as one percent consolidation to up to one percent swell. Although the consolidation characteristics of the soil below the 6 foot depth were quite uniform, the extreme variation in consolidation patterns of the soil higher in the profile should be noted.

With typical frame or masonry structures which are not designed to withstand large permanent differential movements, the soil movement must be limited to acceptable levels to prevent structural damage. Since specific building load information was not available at the time of this investigation, the soil settlement potential was analyzed on the basis of assumed building loads for both light and moderately heavy typical commercial structures. The light building structure loads were assumed to consist of wall loads of 2000 lbs./lin. ft. or less and column loads of 10 KIPS or less. The heavier building structure loads were assumed to be wall loads of 5,000 lbs./lin. ft. or less and column loads of 30 KIPS or less. Soil bearing capacity ranges were derived based on the above assumptions and using a computer assisted settlement potential analysis to limit settlements to acceptable magnitudes. Minimum and maximum allowable soil bearing capacities which were determined by this method are presented below:

Sample Depth	Soil Moisture Conditions	Max. wall and Column Load	Soil Bearing Capacity Range (PSF)
3 - 4 feet	Natural	2000 PLF & 10 KIPS	750 - 4,000
3 - 4 feet	Saturated	2000 PLF & 10 KIPS	750 - 4,000
3 - 4 feet	Natural	5000 PLF & 10 KIPS	400 - 2,500
3 - 4 feet	Saturated	5000 PLF & 30 KIPS	400 - 2,000
6 - 8 feet	All Moisture conditions	2000 PLF & 10 KIPS	900
6 - 8 feet	All Moisture conditions	5000 PLF & 30 KIPS	600

Several items should be noted about these resulting bearing values:

1.) At the 3 to 4 foot depth, the soil bearing capacities exhibit a large range. Also, there is little difference in the extreme values between the soil containing natural moisture and the saturated soil. This indicates not only the extreme variation in soil bearing capabilities of the upper soils, but also points out that areas exist, near the ground surface, that exhibit poor natural consolidation and which will support no greater loads under natural moisture conditions than when saturated.

2.) A substantial decrease in allowable soil bearing pressures occurs with an increase in applied building load magnitudes. This is a result of an increase in the depth of substantial load influence which accompanies the wider footing necessitated by heavier wall and column loads. The increased load influence depth results in an increase in settlement potential.

3.) There is little difference in soil load bearing characteristics below the 6 foot depth between the soil with natural moisture content and saturated soil. This is most likely due to the fact that this soil was found to exist in a nearly saturated state.

It can be seen from the above discussion that in order to limit movement of foundation elements placed on the upper fine grained soils to acceptable magnitudes, unit loads applied to the soil must be limited to no more than 750 lbs./sq. ft. for foundations placed above the 4 foot depth and for buildings applying less than 2000 lbs/lin. ft. wall loads and less than 10 KIP column loads; to no more

than 400 lbs./sq. ft. for foundations placed higher than 4 feet below the existing ground surface and for buildings applying 2000 to 5000 lbs./lin. ft. wall loads and 10 to 30 KIP column loads; to no more than 900 lbs./sq. ft. for foundations placed from 4 to 8 feet below the existing ground surface and for buildings applying less than 2000 lbs./lin. ft. wall loads and less than 10 KIP column loads; and to no more than 600 lbs./sq. ft. for foundations placed 4 to 8 feet below the ground surface and for buildings applying 2000 to 5000 lbs./lin. ft. wall loads and 10 to 30 KIP column loads. The reason that the lower soil bearing values encountered are to be used as the allowable values is to provide complete certainty that all foundtions placed on this soil are adequately designed. In an investigation of this relatively small magnitude, the soil bearing characteristics at all locations can not practically be determined. The test results indicate that some areas exhibit bearing capacities in excess of the allowable values presented above. This can only be determined by testing on a much more comprehensive and encompasing basis and inspection of the foundation excavations. Since these soils are so heterogeneous, and the soil conditions at each building location and each depth can not feasibly be determined, as discussed above, any soft areas in the soil or other unusual conditions found during construction should be reported immediately to the soil engineer to be investigated.

It is readily seen that the allowable soil bearing capacities of the upper material are quite low for light structures and very low for heavier buildings, requiring excessively large footings to support building loads. In addition to the low bearing values encountered in the natural soil, the analysis of soil bearing capabilities is complicated by the presence of unconsolidated fill consisting

of a wide variation of material and extending to varied depths. Soil of low natural consolidation such as that found in uncontrolled land fills often consolidates excessively under loads as low as 350 lb./sq. ft. and can consolidate considerably upon saturation under load. In any case, the fill material can be expected to consolidate at an appreciably different rate than will the natural undisturbed soil. Due to the large differential soil movements possible and the low upper soil bearing capabilities encountered, spread footings are not recommended at this site unless other options are found entirely economically impractical and some foundation movement can be experienced without damage to the structure. If footings are employed, several items must be taken into account in the foundation design:

1.) The allowable soil bearing capacities previously discussed were derived assuming that local soil shear does not occur. In order to assure that this is a true design parameter, the shear strength of the local soil (directly beneath the footing) must be enhanced by placing and compacting a minimum of 8 inches of gravel beneath all footings. This will have the additional advantage of increasing the soil bearing capacity a small amount.

2.) Since isolated soft spots are found in this material, and since soil movement potential ranges from substantial consolidation to moderate swelling, the footing-stemwall combination must be capable of free spanning at least 10 feet under full design load in order to compensate for these erratic soil conditions.

3.) A large percentage of the soil movement potential exists during addition of moisture to the soil. The soil supporting the footings must therefore be isolated from all possible sources of moisture including ground water fluctuations as well as surface and roof runoff sources.

4.) Since the bearing characteristics of the imported fill at the site is not determinable, no foundation elements should be placed on the unconsolidated fill material.

Several practical foundation alternatives to spread footings exist and will be discussed in the following paragraphs.

One satisfactory method of foundation support which has successfully been employed under nearby structures is the use of a "floating foundation." This configuration consists of integrating load-transmitting structural elements into a rigidly designed floor slab. The floor slab must be designed sufficiently strong to support the imposed building loads while acting as a unit. This sometimes involves a "waffle" type reinforced concrete construction depending on the expected loads and building areas. This design method also normally involves placing and compacting up to 2 feet of gravel beneath the structural slab to help distribute building loads and eliminate the need for very conservative design assumptions. This method does not eliminate foundation movement, but uniformly distributes it around the building. The differential foundation movements which cause most building damage are completely eliminated by this method, however. There are some drawbacks to the use of floating foundations:

1.) The floating configuration is most effectively used with structures in which building loads are distributed and transferred to the slab by wall loadings. This is due

to the fact that all building loads must be uniformly distributed across the slab and loads which are already distributed along walls require less slab strength than isolated and concentrated loads. For the same reason, narrow buildings and buildings with relatively short roof and floor spans are more easily adaptable to the floating configuration. Buildings with heavy concentrated foundation loads or with long span structural elements may require excessive slab strength and much higher foundation costs in comparison to other alternatives.

2.) Since some movement must be expected with the floating configuration, the building design must anticipate some movement relative to incoming utility lines, parking areas, and peripheral sidewalks.

The primary advantage of the floating slab is that it is reasonably independent of soil consolidation characteristics in its performance. Settlement potentials in poorly consolidated soils or unconsolidated fills are compensated for in the design.

Probably the most economically and structurally effective alternative for foundation support of all structures involves use of the Mancos Shale formation lower in the profile for support. This may be accomplished by employing either cast-in-place concrete caissons or driven piling. Caissons may be found to be impractical at this site due to the relatively high water table and the liquid properties of the soil below the water table which will require casing and dewatering caisson holes. Caissons, if used, must be drilled to a minimum of 5 feet into the bearing formation. The bearing value for caissons founded in the shale should not exceed 20,000

lb./sq. ft. since many lenses of decomposed shale were encountered. No more than 12 inches of standing water should be in the bottom of the hole when pouring caissons.

Piling may be satisfactorily used at this site to support loads as high as 150 KIPS when driven to adequate resistance in the shale. Concrete filled steel pipe piling, 8-inch diameter and 1/4 inch wall minimum have been used in the area under similar circumstances to support building loads. The pile size must be chosen on the basis of driving stress calculations as well as experience. It has been seen that the worst pile damage, during driving, has occurred as a result of driving excessively long piles, leading to buckling above ground and subsequent buckling below ground. Emphasis should be placed on driving piles which are as close to the final expected cut-off length as possible to prevent this from occurring. Although the alternate lenses of hard, dense shale and tight clays found in the formation make it impossible to accurately determine final penetration of the piling into the shale, it is expected that penetration should not exceed 2 or 3 feet. Final penetration into the shale varies with location and pile size and type, and can only be determined with some accuracy by driving test piles. In any case, provisions must be made for splicing or extending piles, should isolated spots (not encountered in the drilling program) be discovered during the pile driving operation, at which unusually high penetrations occur. Piling must be 8-inch diameter minimum or 8-inch square minimum (if solid piles are used). The lower tip must be flat and have a minimum area of 80 square inches. Flat steel shoes larger than the pile dimension are acceptable. Predrilling to set the piles in location should be minimized. Piling must be driven

to a predetermined set (number of blows/inch) as determined by an acceptable pile driving formula (such as the Engineering News Formula, or Hiley Dynamic Formula) for the specific hammer used. By this means, assurance may be obtained that each pile is capable of supporting its design load. The corrosion potential of these alkaline soils must be taken into account in the selection and design of any type of steel piling. Various pipe pile sizes larger than 8-inch are readily and economically available through local contractors, at the time of this investigation.

FLOOR SLABS

Two very different soil conditions exist at the two possible floor slab levels, near the surface and below the 6 foot depth. Two different groups of slab design considerations are therefore required for floors near the surface and floors placed lower in the soil profile.

The fill material found at various locations extending to varying depths presents problems with support of slab loads, particularly with these heterogeneous materials found. When a floor slab is placed over an area, natural paths of upward water movement and evaporation are blocked off, resulting in an increase in moisture in the upper soil. When unconsolidated fill undergoes an increase in moisture content, substantial soil movement can occur even under light loads. Several options are available to correct or compensate for this potential problem:

1.) The floating type foundation configuration previously discussed results in a structure capable of adjusting to these potential movements.

2.) The fill material may be removed and replaced or recompacted. If this is done, suitable material which is removed may be stockpiled for refilling and compacting later. Some of the existing fill, however, consists of swelling shales and soils with a high percentage of decomposed organic matter. These soils are not satisfactory for use as fill under building slabs. Any material required for fill replacement must be good quality, non-swelling and must be compacted to at least 85% Modified Proctor Density. The exact depth and lateral extent of this fill material and its suitability to support loads was not determinable in the drill holes. If more specific information on the extent of this material is desired, it can most easily and accurately be obtained by doing additional exploration with a backhoe. If the fill material is to be removed and replaced under controlled conditions, a qualified soil engineer should be present to determine that all of the problem material has been removed, and that the quality of the material placed as well as the compaction is adequate.

3.) Most of the movement potential under slabs can be eliminated by a combination of preconditioning and preloading. This method involves uniformly wetting the soil to the depth at which the fill ends and loading the slab area with a surcharge equal to 150 to 200 percent of the maximum expected floor loading. The surcharge normally consists of a granular material which can be later removed and placed in other areas on the site which require a

gravel base for adequate support. The main drawback of this method is the great amount of time required to accomplish adequate preconsolidation. The surcharge load must remain in place long enough to assure that nearly all potential soil movement has occurred, which often requires up to six months or sometimes longer. While the surcharge is in place, the soil is monitored for movement to determine when adequate stabilization has occurred.

4.) The floor slab can be placed inside of and independent from the foundation elements, but designed to act as a rigid or semi-rigid unit under differential soil movements and bearing capacities. This method involves thickening of floor slabs and the use of additional reinforcing steel and prevents deterioration of floor slabs and foundation elements and the associated problems. Major architectural design complications can be associated with this configuration since, although load carrying structural elements are not supported on the slab, non-bearing interior partition walls and other non-bearing portions of the structure which rest on the floor slab must be designed and constructed under the assumption that moderate differential movement will occur between the floor and load bearing foundation elements. If it is felt that the associated problems with this method can adequately be compensated for and this configuration is to be employed, a gravel stabilizing base should be placed and compacted under the slabs to distribute floor

loads as much as possible. In addition, the floor slab must be allowed to move completely independent of foundation elements to prevent distress in the slab due to differential movement at the slab-foundation interface.

5.) In order to eliminate the possibility of differential floor slab movement transmitted from the underlying soil, the floor can be supported by and attached to load carrying foundation elements. This can most easily be done with the piling-grade beam foundation configuration with the use of a structural slab which does not utilize the underlying soil for support or by use of joist-type construction at the ground level. Floor slabs designed under this method can be poured on grade but designed to act integrally with the foundation members.

The second group of slab design considerations is for slabs placed below the 6 foot depth for basement-type construction. The major design considerations for this type of construction are ground water protection and resisting uplift forces. Slabs placed below the 6 foot depth should be designed to resist a uniform uplift pressure of 100 lbs./sq. ft. Design options which are capable of compensating for this problem are discussed as follows:

1.) The floating type foundation configuration previously discussed is not adversely affected by soil uplift pressures.

2.) If the shear strength of the material directly beneath the slabs can be increased, the potential for uplift is substantially reduced. Therefore, if the floor slab area is overexcavated and at least 24 inches of a granular material which exhibits good bearing characteristics is placed

and compacted under slabs, normal thin slab construction will be adequate if the slabs are constructed independent of load bearing foundation elements.

3.) As discussed for higher level slabs, floor slabs below the 6 foot depth can be attached to foundation members and rigidly designed to resist the uplift pressures. As an alternative to this structural slab, joist-type construction can also be considered at these lower elevations. If joist construction is chosen, a minimum 24" crawl space must be provided under the floor to allow for some soil uplift movement. Also, positive ventilation for the crawl space must be provided to control humidity.

Deep excavations which extend near or below the soil saturation depth may involve construction problems due to instability of cut slopes and the inability of these semi-saturated to saturated soils to support equipment loads.

It was previously discussed that the high seasonal water table might rise to as close as 6 or 7 feet below the existing ground surface. Also mentioned was the effect which the nearby drainage channels has in depressing the normal phreatic surface. The water table could, therefore, conceivably rise higher than 6 feet below the ground surface if these drains are covered. It is therefore recommended that any floors placed below the four foot depth be accompanied by an adequately designed subsurface drainage system placed under the building area as well as around the periphery. The drainage system should be capable of maintaining the phreatic surface at least 18 inches below the finished floor level. It might be possible to utilize the natural drain channels (even if they are enclosed and covered) for outfalls for the subsurface drainage system.

A structural granular base under the floor slab might be combined with a filter fabric to provide both enhancement of the soil support characteristics and safe and adequate ground water drainage.

FLEXIBLE PAVEMENTS

Although flexible pavements used in the parking areas and access roads will be capable of undergoing some movement, excessive movements are possible in areas of the upper clayey silts, sands, and loose fill. Results of moisture-density and CBR tests performed on samples of the natural soil at the site are included on plates 15 and 16 in the Appendix. These tests indicated a material exhibiting poor saturated subgrade support characteristics, even when highly compacted. The soaked CBR value of 1.3 is quite low in comparison to most other soil found in the valley and is substantially lower than the CBR value determined for a non-soaked specimen of the same soil. In addition, the surcharged swell was 4.5%. The normal maximum allowable swell value is about 5%. To complicate the low subgrade support values encountered, a superficial examination of the imported fill at the site indicates the possibility of settlement in areas of loose sandy fill along with swelling in areas where the fill consists of decomposed shale. It is readily seen that a number of precautionary measures must be considered in the design of paved areas:

1.) The low saturated CBR value presented herein should be used in pavement thickness designs to assure adequate longterm servicibility of paved areas.

2.) Adequate surface drainage of paved areas is a necessity to prevent premature deterioration of pavements due to subgrade saturation and subsequent pumping and rutting.

3.) All paved areas should have subgrade compacted to at least 95% Standard Proctor (ASTM D-698). In areas where soft spots may be found during construction at which the soil cannot practically be compacted to the required density, the soil must be stabilized by over excavation and the use of a granular fill or some other acceptable method, prior to placement of the structural pavement layers.

4.) In order to resist swell pressures, the pavement thickness of all structural courses combined must be at least sufficient to apply a minimum pressure to the subgrade of 120 lbs./sq.ft.

DRAIN CHANNEL PREPARATION, PIPING AND BACKFILL

As has been previously mentioned, the existing drainage channels have been dredged a number of times over the years and an undetermined amount of organic soil is present adjacent to the channels. Organic soil is subject to continual decomposition and subsequent slow settlement. Since portions of the buildings may lie above the present channel locations, all organic soil in addition to existing growth must be removed and disposed of. The pipe, when laid, must be adequately bedded in gravel to provide uniform support along the alignment. Backfill material must consist of a good quality, non-organic soil or imported gravel material and must be compacted to 85% Minimum Modified Proctor throughout the depth and 90% Minimum Modified Proctor (ASTM D-1557) for the top 24 inches.

GENERAL

Due to the high sulfate content of the soils, sulfate resistant cement must be used in all concrete structures to be in contact with the soil or with ground water.

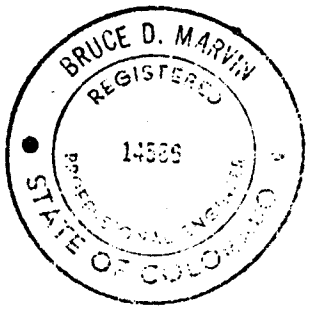
Choice of the type of foundation arrangement to be used should be based on economic comparisons and architectural and landscaping considerations beyond the scope of this report. We feel confident, however, that a satisfactory foundation design can be developed for the proposed buildings and will be pleased to work further with you in its development.

Submitted by,

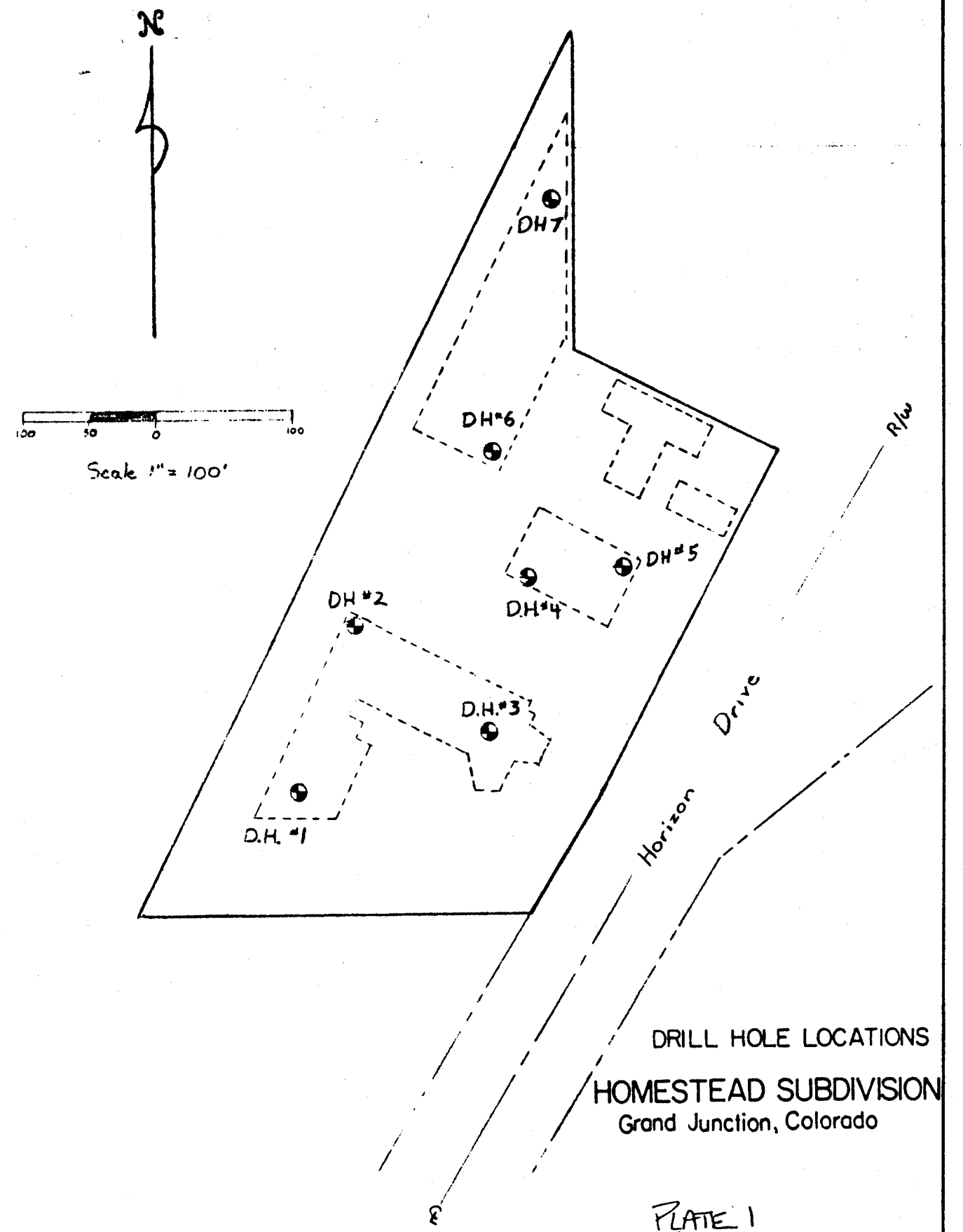
WESTERN ENGINEERS, INC.

Bruce D. Marvin, P.E.

BDM:kms



APPENDIX



DRILL HOLE LOCATIONS

HOMESTEAD SUBDIVISION

Grand Junction, Colorado

PLATE 1

WESTERN ENGINEERS INC.

WORK ORDER NUMBER _____

SUBSURFACE EXPLORATION
DRILL HOLE LOG AND PENETRATION RESISTANCE

PAGE ____ OF ____ PAGES
HOLE NO. 1

Project Homestead Subdivision _____ Ground Elev. _____
Location 737 Horizon Drive _____ Depth to Water Table(Ft) 10
Drill Contract Western Eng. Foreman _____ Date Water Table gaged 10/22/79
Hole Logged by SW Hammer Weight _____ Height of Drop _____ Date 10/22/79

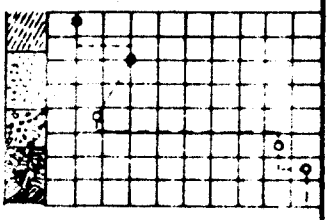
NOTES TYPE & SIZE OF HOLE TYPE OF BIT OR SPOON LOSS OF DRILLING WATER	CORE RECOVERY %	NO. BLOWS	MOISTURE %	SAMPLES FOR TESTING	DESCRIPTION AND CLASSIFICATION OF MATERIAL	DEPTH	LOG	PENETRATION RESISTANCE (BLOWS PER FOOT) ● ACTUAL ○ EXTRAPOLATED 20 40 60 80
			8.5	x	Miscellaneous loose fill material. Depth not determined in drill hole (at least 3', possibly up to 7')			
LL = 30.2 PL = 16.0 PI = 14.2			12.8	x		4		
			15.3	x				
			16.1	x	Approx Sat. Depth	8		
			23.5	x	Water table			
LL = 25.7 PL = 16.8 PI = 8.9			23.0	x	Clay, silty, some sand, buff brown, semi-saturated above to saturated below, lensed with silts, sands and some small gravels, sulfates in voids, soil flows liquidly below water table, black decomposed organics interspersed, high percentage of decomposed organics from 10' to 16'. Quite variable in grain size composition and consistency (CL to CL-ML)	12		
			22.4	x				
			21.7	x		16		
			22.6	x				
			21.8	x		20		
LL = 36.4 PL = 20.0 PI = 16.4			22.0	x		24		
			23.5	x				
			21.8	x		28		
			22.6	x				
			22.4	x		32		
			22.4	x				
						36		
Bottom of Hole at 41 Ft.			21.2	x	Mancos shale, alternating lenses of hard and soft	40		

EXPLANATION

No. OF BLOWS ..... RECORD NUMBER OF BLOWS REQUIRED FOR ONE FOOT PENETRATION IF 50 BLOWS RESULT IN LESS THAN 1 FOOT PENETRATION, RECORD DEPTH PENETRATED; THUS, 50/4 INDICATES 4 INCHS PENETRATION WITH 50 BLOWS.

DESCRIPTION AND CLASSIFICATION OF MATERIAL ..... DESCRIBE SOIL TYPE, WITH EMPHASIS ON INPLACE OR NATURAL CONDITION INCLUDE SOIL CLASSIFICATION GROUP SYMBOL. EXAMPLE: *SAND*, MEDIUM CLEAN, MOIST, FIRM, DENSE, UNCEMENTED, (SP)

PENETRATION RESISTANCE ..... PLOT AS SHOWN AT RIGHT, WITH DASHED LINES SHOWING THE MATERIALS CONSIDERED TO BE REPRESENTED BY EACH PENETRATION VALUE.



WESTERN ENGINEERS, INC.
Soil Mechanics Engineers

PLATE 2

WORK ORDER NUMBER _____

SUBSURFACE EXPLORATION
DRILL HOLE LOG AND PENETRATION RESISTANCE

PAGE ___ OF ___ PAGES
HOLE NO 2

Project Homestead Subdivision — Ground Elev. _____
Location 737 Horizon Drive — Depth to Water Table(Ft) 9.5
Drill Contract Western Eng. — Foreman _____ — Date Water Table gaged 10/22/79
Hole Logged by SW — Hammer Weight ____ Height of Drop ____ Date 10/22/79

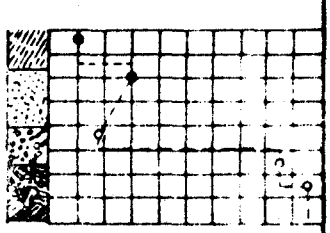
NOTES TYPE & SIZE OF HOLE TYPE OF BIT OR SPOON LOSS OF DRILLING WATER	CORE RECOVERY %	NO. BLOWS	MOISTURE %	SAMPLES FOR TESTING	DESCRIPTION AND CLASSIFICATION OF MATERIAL	DEPTH	LOG	PENETRATION RESISTANCE (BLOWS PER FOOT) ● ACTUAL ○ EXTRAPOLATED
					Miscellaneous loose fill. Depth not determined. (Up to 2 ft)			
			12.5	X				
LL = 24.4			12.6	X				
PL = 10.8			15.5	X	Clay, silty, some sand, buff brown, moist at top to saturated below lensed with silts, sands and some small gravels, sulfates in voids, soil flows liquidly into hole below water table, moderate plasticity and high dry strength, black decomposed organics intersperced, primarily concentrated at specific depths. Soil variable in grain size composition and consistency. (CL to CL-ML)	4		
PI = 13.6								
LL = 23.1								
PL = 10.8			15.2	X		8		
PI = 12.3 Water Table								
			21.3	X				
			21.5	X		12		
			22.6	X				
			22.5	X				
			23.8	X		16		
			24.4	X				
			22.9	X		20		
			22.4	X				
			20.7	X		24		
			20.8	X				
			21.5	X				
			23.0	X		28		
			21.7	X				
			23.1	X		32		
					Grey to Black Mancos shale, decomposed and weathered at top.			
					Bottom of Hole	36		

EXPLANATION

No. OF BLOWS ..... RECORD NUMBER OF BLOWS REQUIRED FOR ONE FOOT PENETRATION IF 50 BLOWS RESULT IN LESS THAN 1 FOOT PENETRATION, RECORD DEPTH PENETRATED; THUS, 50/4 INDICATES 4 INCHES PENETRATION WITH 50 BLOWS.

DESCRIPTION AND CLASSIFICATION OF MATERIAL ..... DESCRIBE SOIL TYPE, WITH EMPHASIS ON INPLACE OR NATURAL CONDITION INCLUDE SOIL CLASSIFICATION GROUP SYMBOL. EXAMPLE: *SAND*, MEDIUM, CLEAN, MOIST, FIRM, DENSE, UNCEMENTED, (SP)

PENETRATION RESISTANCE ..... PLOT AS SHOWN AT RIGHT, WITH DASHED LINES SHOWING THE MATERIALS CONSIDERED TO BE REPRESENTED BY EACH PENETRATION VALUE.



WESTERN ENGINEERS, INC
Soil Mechanics Engineers

PLATE 3

WORK ORDER NUMBER _____

SUBSURFACE EXPLORATION
DRILL HOLE LOG AND PENETRATION RESISTANCE

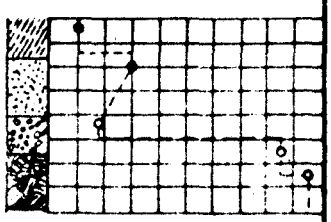
PAGE ___ OF ___ PAGES
HOLE NO. 3

Project Homestead Subdivision — Ground Elev _____
Location 737 Horizon Drive — Depth to Water Table(Ft.) 9.5
Drill Contract Western Eng. — Foreman _____ — Date Water Table gaged 1/18/80
Hole Logged by SW — Hammer Weight _____ Height of Drop _____ Date 10/22/79

NOTES TYPE & SIZE OF HOLE TYPE OF BIT OR SPOON LOSS OF DRILLING WATER	CORE RECOVERY %	NO. BLOWS	MOISTURE %	SAMPLES FOR TESTING	DESCRIPTION AND CLASSIFICATION OF MATERIAL	DEPTH	LOG	PENETRATION RESISTANCE (BLOWS PER FOOT) ● ACTUAL ○ EXTRAPOLATED 20 40 60 80
					Miscellaneous loose fill. Depth not determined (Up to 3 ft.			
			13.4	X		4		
LL = 29.6 PL = 14.5 PI = 15.1			16.3	X	Clay, silty, some sand, buff brown, moist at top to saturated below, lensed with silts, sands and some small gravels, sulfates in voids, soil flows liquidly into hole below water table, moderate plasticity, high dry strength, black decomposed organics interspersed primarily concentrated at specific depths. Soil variable in grain size composition and consistency. (CL to CL-ML)			
			19.2	X				
Water Table			23.3	X		8		
			24.3	X				
LL = 25.0 PL = 16.0 PI = 8.2			24.9	X		12		
			24.6	X				
LL = 25.0 PL = 11.5 PI = 13.5			25.7	X		16		
			25.8	X				
			25.2	X		20		
			25.7	X				
			25.9	X		24		
			26.1	X				
			20.9	X	Grey to Black Mancos shale, decomposed and weathered at top.	28		
					Bottom of Hole	32		
						36		

EXPLANATION

No. OF BLOWS	RECORD NUMBER OF BLOWS REQUIRED FOR ONE FOOT PENETRATION IF 50 BLOWS RESULT IN LESS THAN 1 FOOT PENETRATION, RECORD DEPTH PENETRATED; THUS, 50/4 INDICATES 4 INCHS PENETRATION WITH 50 BLOWS.
DESCRIPTION AND CLASSIFICATION OF MATERIAL	DESCRIBE SOIL TYPE, WITH EMPHASIS ON INPLACE OR NATURAL CONDITION. INCLUDE SOIL CLASSIFICATION GROUP SYMBOL. EXAMPLE: *SAND*, MEDIUM, CLEAN, MOIST, FIRM, DENSE, UNCEMENTED, (SP)
PENETRATION RESISTANCE	PLOT AS SHOWN AT RIGHT, WITH DASHED LINES SHOWING THE MATERIALS CONSIDERED TO BE REPRESENTED BY EACH PENETRATION VALUE.



WESTERN ENGINEERS, INC.
Soil Mechanics Engineers

PLATE 4

WORK ORDER NUMBER _____

SUBSURFACE EXPLORATION
DRILL HOLE LOG AND PENETRATION RESISTANCE

PAGE ___ OF ___ PAGES
HOLE NO 4

Project Homestead Subdivision — Ground Elev. _____
Location 737 Horizon Drive — Depth to Water Table(Ft) 9.5
Drill Contract Western Eng. — Foreman _____ — Date Water Table gaged 1/18/80
Hole Logged by SW — Hammer Weight ____ Height of Drop ____ Date 10/22/79

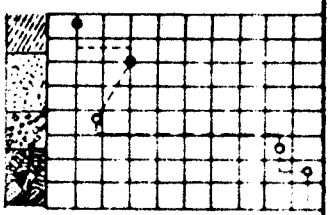
NOTES TYPE & SIZE OF HOLE TYPE OF BIT OR SPOON LOSS OF DRILLING WATER	CORE RECOVERY %	NO. BLOWS	MOISTURE %	SAMPLES FOR TESTING	DESCRIPTION AND CLASSIFICATION OF MATERIAL	DEPTH	LOG	PENETRATION RESISTANCE (BLOWS PER FOOT) ● ACTUAL ○ EXTRAPOLATED 20 40 60 80
			13.6	x	Miscellaneous loose fill. Depth not determined (Up to 3 ft)			
LL = 26.7 PL = 17.3 PI = 9.4			15.7	x	Clay, silty, some sand, buff brown, moist above to saturated below, lensed with silts, sands, and some small gravels, Sulfates in voids, soil flows liquidly into hole below water table, black decomposed organics intersperced, concentrated at certain depths. Variable in grain size composition and consistency. (CL to CL-ML)	3		
			17.0	x				
LL = 21.5 PL = 16.1 PI = 5.4 Water Table			23.6	x		6		
			24.6	x		9		
			24.7	x		12		
			23.4	x				
			21.6	x		15		
			21.1	x		18		
			22.3	x				
LL = 25.8 PL = 13.4 PI = 12.4			22.8	x		21		
			21.3	x		24		
			9.4	x				
Bottom of Hole at 28 Ft.					Grey to black Mancos shale. Decomposed and weathered at top.	27		
						30		

EXPLANATION

No. OF BLOWS ..... RECORD NUMBER OF BLOWS REQUIRED FOR ONE FOOT PENETRATION IF 50 BLOWS RESULT IN LESS THAN 1 FOOT PENETRATION, RECORD DEPTH PENETRATED; THUS, 50/4 INDICATES 4 INCHS PENETRATION WITH 50 BLOWS.

DESCRIPTION AND CLASSIFICATION OF MATERIAL ..... DESCRIBE SOIL TYPE, WITH EMPHASIS ON INPLACE OR NATURAL CONDITION INCLUDE SOIL CLASSIFICATION GROUP SYMBOL. EXAMPLE: *SAND*, MEDIUM, CLEAN, MOIST, FIRM, DENSE, UNCEMENTED, (SP)

PENETRATION RESISTANCE ..... PLOT AS SHOWN AT RIGHT, WITH DASHED LINES SHOWING THE MATERIALS CONSIDERED TO BE REPRESENTED BY EACH PENETRATION VALUE.



WESTERN ENGINEERS, INC.
Soil Mechanics Engineers

PLATE 5

WORK ORDER NUMBER _____

SUBSURFACE EXPLORATION
DRILL HOLE LOG AND PENETRATION RESISTANCE

PAGE ____ OF ____ PAGES
HOLE NO. 5

Project Homestead Subdivision — Ground Elev. _____
Location 737 Horizon Drive — Depth to Water Table(Ft.) 11
Drill Contract Western Eng. — Foreman _____ — Date Water Table gaged 10/22/79
Hole Logged by SW — Hammer Weight ____ Height of Drop ____ Date 10/22/79

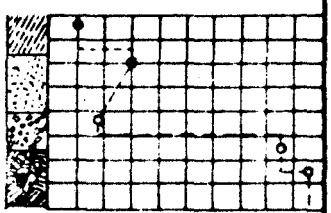
NOTES TYPE & SIZE OF HOLE TYPE OF BIT OR SPOON LOSS OF DRILLING WATER	CORE RECOVERY %	NO. BLOWS	MOISTURE %	SAMPLES FOR TESTING	DESCRIPTION AND CLASSIFICATION OF MATERIAL	DEPTH	LOG	PENETRATION RESISTANCE (BLOWS PER FOOT) ● ACTUAL ○ EXTRAPOLATED 20 40 60 80
			10.4	X	Pavement, gravel base and misc. fill matl. Depth not determined in drill hole (at least 2')	4		
LL = 26.0 PL = 16.4 PI = 9.6			16.2	X				
			13.4	X		8		
LL = 26.9 PL = 15.1 PI = 11.8			17.4	X	Water Table			
LL = 24.3 PL = 15.4 PI = 8.9			20.5	X	Clay, silty, some sand, buff brown, semi-saturated above to saturated below, lensed with silts, sands, and some small gravels, sulfates in voids, soil flows liquidly into hole below water table, black decomposed organics intersperced, quite variable in grain size composition, consolidation, and moisture content. (CL to CL-ML)	12		
			22.4	X				
			21.5	X		16		
			19.6	X				
LL = 25.7 PL = 15.2 PI = 10.5			21.0	X		20		
			19.4	X				
			23.8	X		24		
			24.2	X				
			23.9	X		28		
			23.2	X				
			21.1	X		32		
					Mancos Shale, alternating lenses of Hard and soft shale.	36		

EXPLANATION

No. OF BLOWS ..... RECORD NUMBER OF BLOWS REQUIRED FOR ONE FOOT PENETRATION IF 50 BLOWS RESULT IN LESS THAN 1 FOOT PENETRATION, RECORD DEPTH PENETRATED; THUS, 50/4 INDICATES 4 INCHS PENETRATION WITH 50 BLOWS.

DESCRIPTION AND CLASSIFICATION OF MATERIAL ..... DESCRIBE SOIL TYPE, WITH EMPHASIS ON INPLACE OR NATURAL CONDITION INCLUDE SOIL CLASSIFICATION GROUP SYMBOL. EXAMPLE: *SAND*, MEDIUM, CLEAN, MOIST, FIRM, DENSE, UNCEMENTED, (SP)

PENETRATION RESISTANCE ..... PLOT AS SHOWN AT RIGHT, WITH DASHED LINES SHOWING THE MATERIALS CONSIDERED TO BE REPRESENTED BY EACH PENETRATION VALUE.



WESTERN ENGINEERS, INC.
Soil Mechanics Engineers

PLATE 6

WORK ORDER NUMBER _____

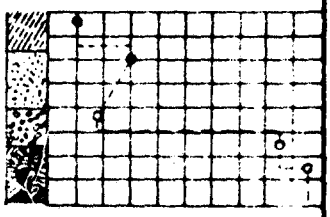
SUBSURFACE EXPLORATION
DRILL HOLE LOG AND PENETRATION RESISTANCE

PAGE ____ OF ____ PAGES
HOLE NO. 6

Project Homestead Subdivision — Ground Elev. _____
Location 737 Horizon Drive — Depth to Water Table(Ft) 9.0
Drill Contract Western Eng. — Foreman _____ — Date Water Table gaged 1/18/80
Hole Logged by SW — Hammer Weight _____ Height of Drop _____ Date 10/22/79

NOTES TYPE & SIZE OF HOLE TYPE OF BIT OR SPOON LOSS OF DRILLING WATER	CORE RECOVERY %	NO. BLOWS	MOISTURE %	SAMPLES FOR TESTING	DESCRIPTION AND CLASSIFICATION OF MATERIAL	DEPTH	LOG	PENETRATION RESISTANCE (BLOWS PER FOOT) ● ACTUAL ○ EXTRAPOLATED 20 40 60 80
					Miscellaneous loose fill material. Depth not determined in drill hole. (Up to 3 ft)			
LL = 26.4 PL = 14.9 PI = 11.6			12.1	x		3		
			11.7	x	Clay, silty, some sand, buff brown, moist above to saturated below, lensed with silts, sands and some small gravels, sulfates in voids, soil flows liquidly into hole below water table, black decomposed organics intersperced, mainly found at certain depths. Variable in grain size composition and consistency. (CL to CL-ML)	6		
			21.6	x				
LL - 23.0 PL = 14.8 PI = 8.2 Water Table			22.1	x		9		
			20.1	x		12		
LL = 22.9 PL = 18.1 PI = 4.8			22.2	x		15		
			22.2	x				
			18.7	x		18		
			22.7	x		21		
			24.6	x				
			19.7	x		24		
			19.1	x	Grey to black mancos shale. Decomposed and weathered at top grading sounder with depth.	27		
					Bottom of Hole	30		

EXPLANATION



No. OF BLOWS ..... RECORD NUMBER OF BLOWS REQUIRED FOR ONE FOOT PENETRATION IF 50 BLOWS RESULT IN LESS THAN 1 FOOT PENETRATION, RECORD DEPTH PENETRATED, THUS, 50/4 INDICATES 4 INCHS PENETRATION WITH 50 BLOWS.

DESCRIPTION AND CLASSIFICATION OF MATERIAL ..... DESCRIBE SOIL TYPE, WITH EMPHASIS ON INPLACE OR NATURAL CONDITION. INCLUDE SOIL CLASSIFICATION GROUP SYMBOL. EXAMPLE: *SAND*, MEDIUM, CLEAN, MOIST, FIRM, DENSE, UNCEMENTED, (SP)

PENETRATION RESISTANCE ..... PLOT AS SHOWN AT RIGHT, WITH DASHED LINES SHOWING THE MATERIALS CONSIDERED TO BE REPRESENTED BY EACH PENETRATION VALUE.

WESTERN ENGINEERS, INC.
Soil Mechanics Engineers

PLATE 7

WORK ORDER NUMBER _____

SUBSURFACE EXPLORATION
DRILL HOLE LOG AND PENETRATION RESISTANCE

PAGE ____ OF ____ PAGES
HOLE NO. 7

Project Homestead Subdivision — Ground Elev. _____
Location 737 Horizon Drive — Depth to Water Table(Ft.) NF
Drill Contract Western Eng. — Foreman _____ — Date Water Table gaged 10/22/79
Hole Logged by SW — Hammer Weight _____ — Height of Drop _____ — Date 10/22/79

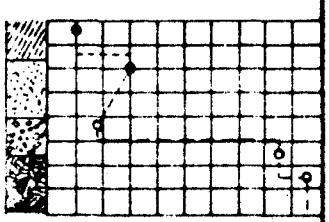
NOTES TYPE & SIZE OF HOLE TYPE OF BIT OR SPOON LOSS OF DRILLING WATER	CORE RECOVERY %	NO. BLOWS	MOISTURE %	SAMPLES FOR TESTING	DESCRIPTION AND CLASSIFICATION OF MATERIAL	DEPTH	LOG	PENETRATION RESISTANCE (BLOWS PER FOOT) ● ACTUAL ○ EXTRAPOLATED 20 40 60 80
			7.0	x	Miscellaneous loose fill material. Exact depth not determined in drill hole. (at least 18")	2		
			16.1	x	Clay, silty, some sand, buff brown, semi-saturated above to saturated below, lensed with silts sands and some small gravels, sulfates in voids soil flows liquidly into hole below sat. depth, black decomposed organics visible from 6 to 10 ft. Much tighter at 10 ft. (CL to CL-ML)	4		
Approx. Sat. - - - - - Depth			24.9	x		6		
						8		
			13.2	x		10		
			17.9	x		12		
					Mancos shale, alternating lenses of hard and soft shale.	14		
						16		
					Bottom of Hole			

EXPLANATION

No. OF BLOWS ..... RECORD NUMBER OF BLOWS REQUIRED FOR ONE FOOT PENETRATION IF 50 BLOWS RESULT IN LESS THAN 1 FOOT PENETRATION, RECORD DEPTH PENETRATED; THUS, 50/4 INDICATES 4 INCHS PENETRATION WITH 50 BLOWS.

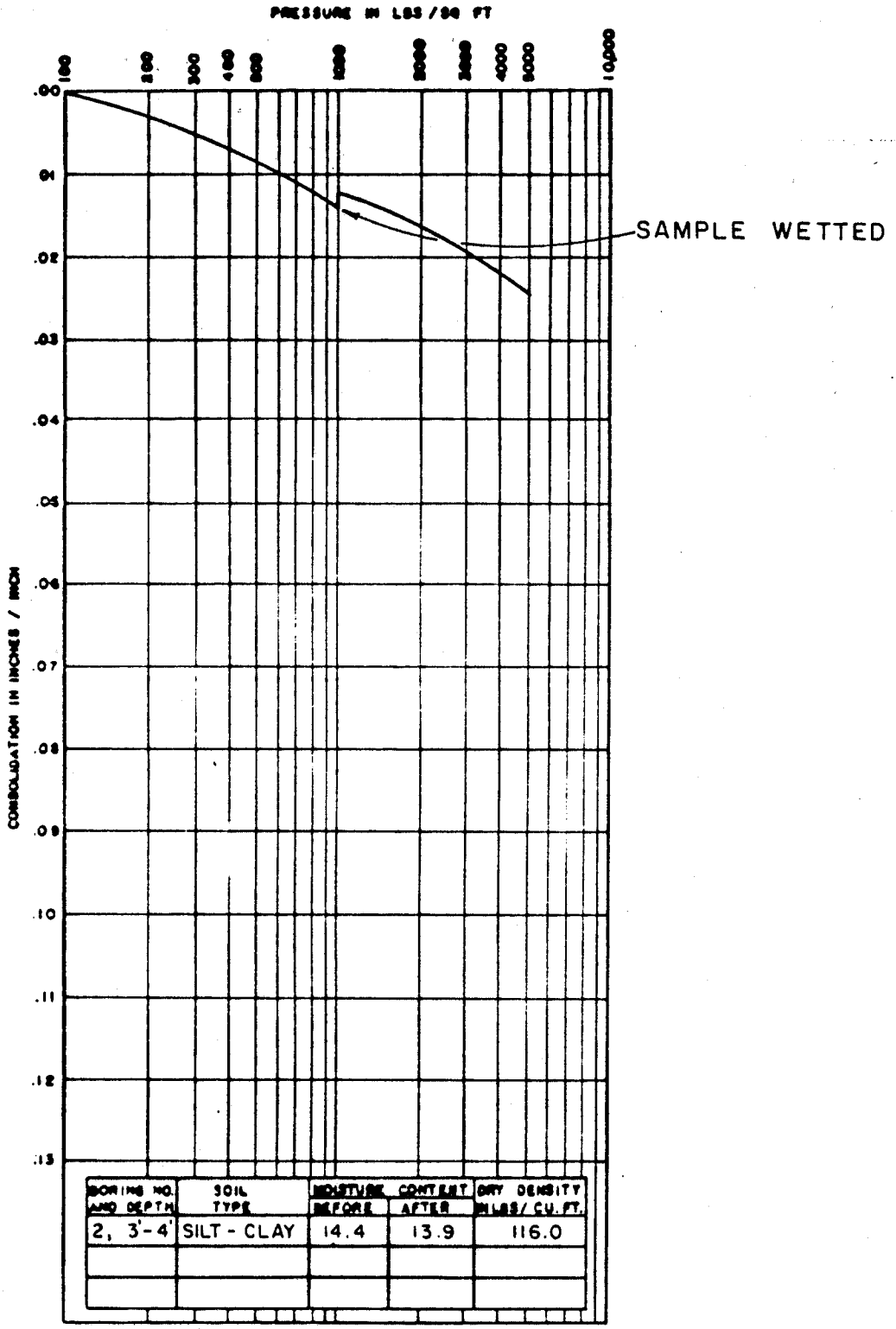
DESCRIPTION AND CLASSIFICATION OF MATERIAL ..... DESCRIBE SOIL TYPE, WITH EMPHASIS ON INPLACE OR NATURAL CONDITION. INCLUDE SOIL CLASSIFICATION GROUP SYMBOL. EXAMPLE: *SAND*, MEDIUM, CLEAN, MOIST, FIRM, DENSE, UNCEMENTED, (SP)

PENETRATION RESISTANCE ..... PLOT AS SHOWN AT RIGHT, WITH DASHED LINES SHOWING THE MATERIALS CONSIDERED TO BE REPRESENTED BY EACH PENETRATION VALUE.



WESTERN ENGINEERS, INC.
Soil Mechanics Engineers

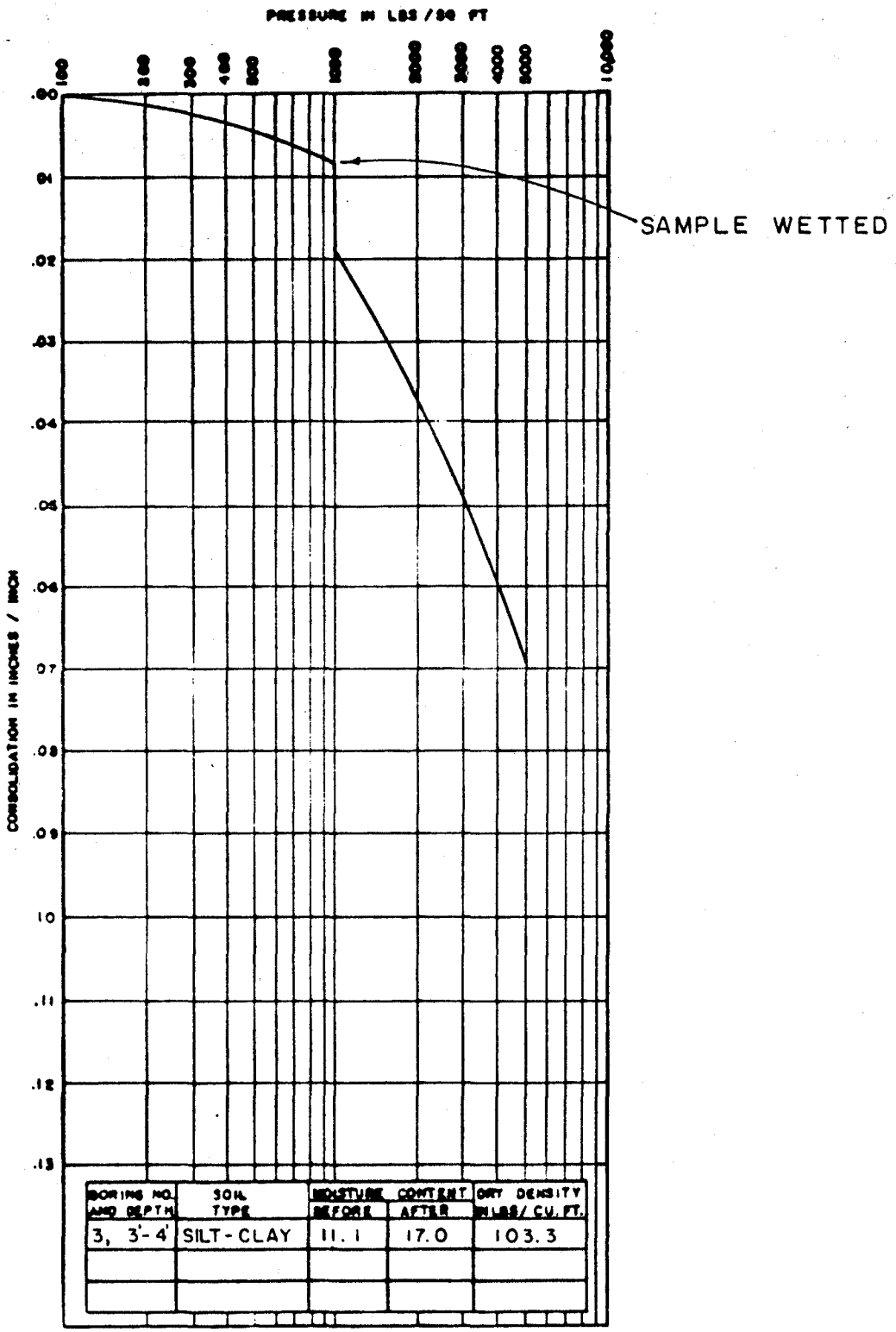
PLATE 8



BORING NO. AND DEPTH	SOIL TYPE	MOISTURE CONTENT BEFORE	MOISTURE CONTENT AFTER	DRY DENSITY IN LBS/CU.FT.
2, 3'-4'	SILT - CLAY	14.4	13.9	116.0

HOMESTEAD SUBDIVISION
CONSOLIDATION DATA

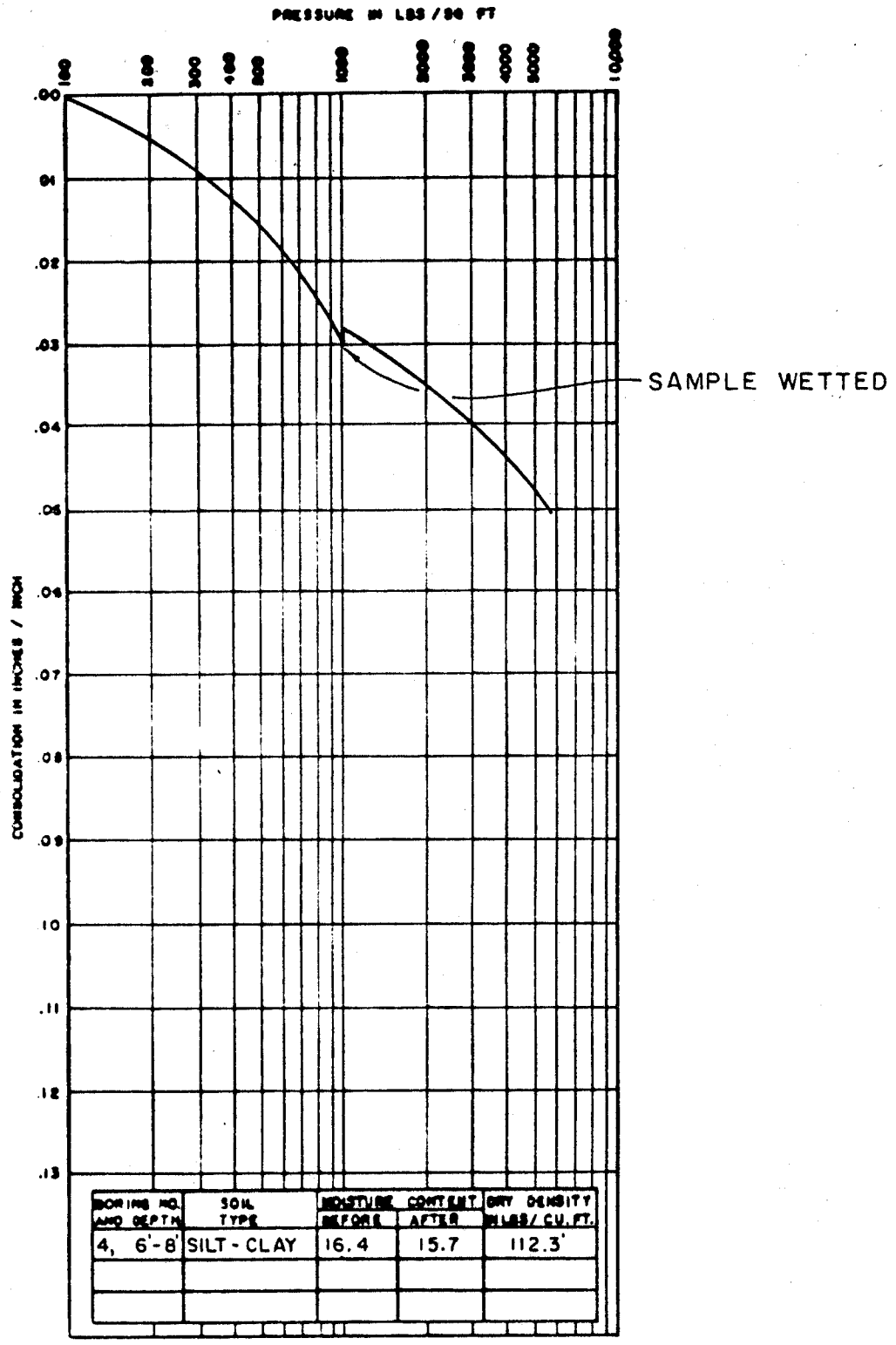
PLATE 9
WESTERN ENGINGEERS INC.
GRAND JUNCTION COLORADO



BORING NO. AND DEPTH	SOIL TYPE	MOISTURE CONTENT BEFORE	MOISTURE CONTENT AFTER	DRY DENSITY IN LBS/CU. FT.
3, 3'-4'	SILT-CLAY	11.1	17.0	103.3

HOMESTEAD SUBDIVISION
CONSOLIDATION DATA

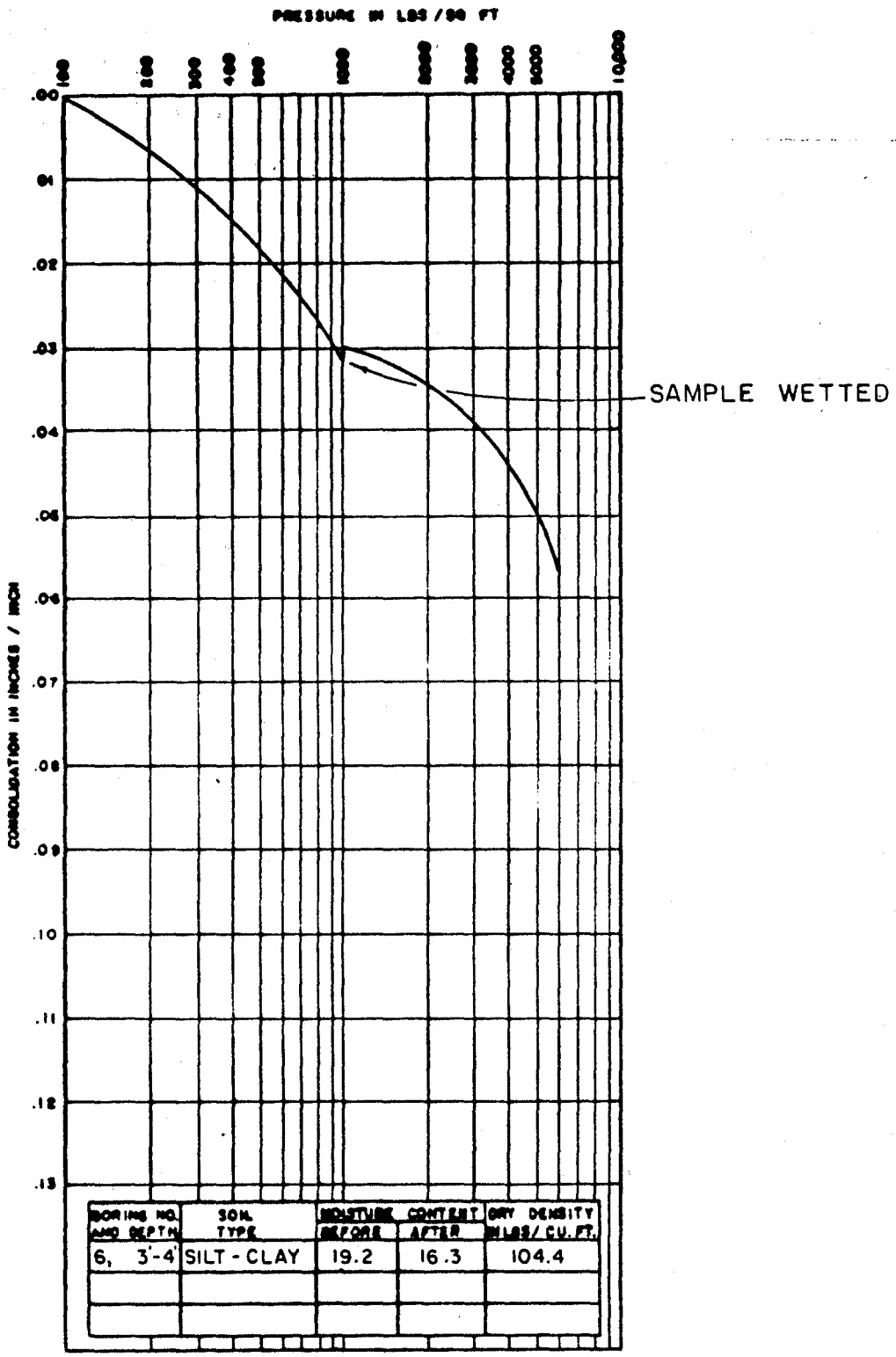
PLATE 10
WESTERN ENGINEERS INC.
GRAND JUNCTION COLORADO



BORING NO. AND DEPTH	SOIL TYPE	MOISTURE CONTENT BEFORE	MOISTURE CONTENT AFTER	DRY DENSITY IN LBS/ CU. FT.
4, 6'-8'	SILT - CLAY	16.4	15.7	112.3'

HOMESTEAD SUBDIVISION
CONSOLIDATION DATA

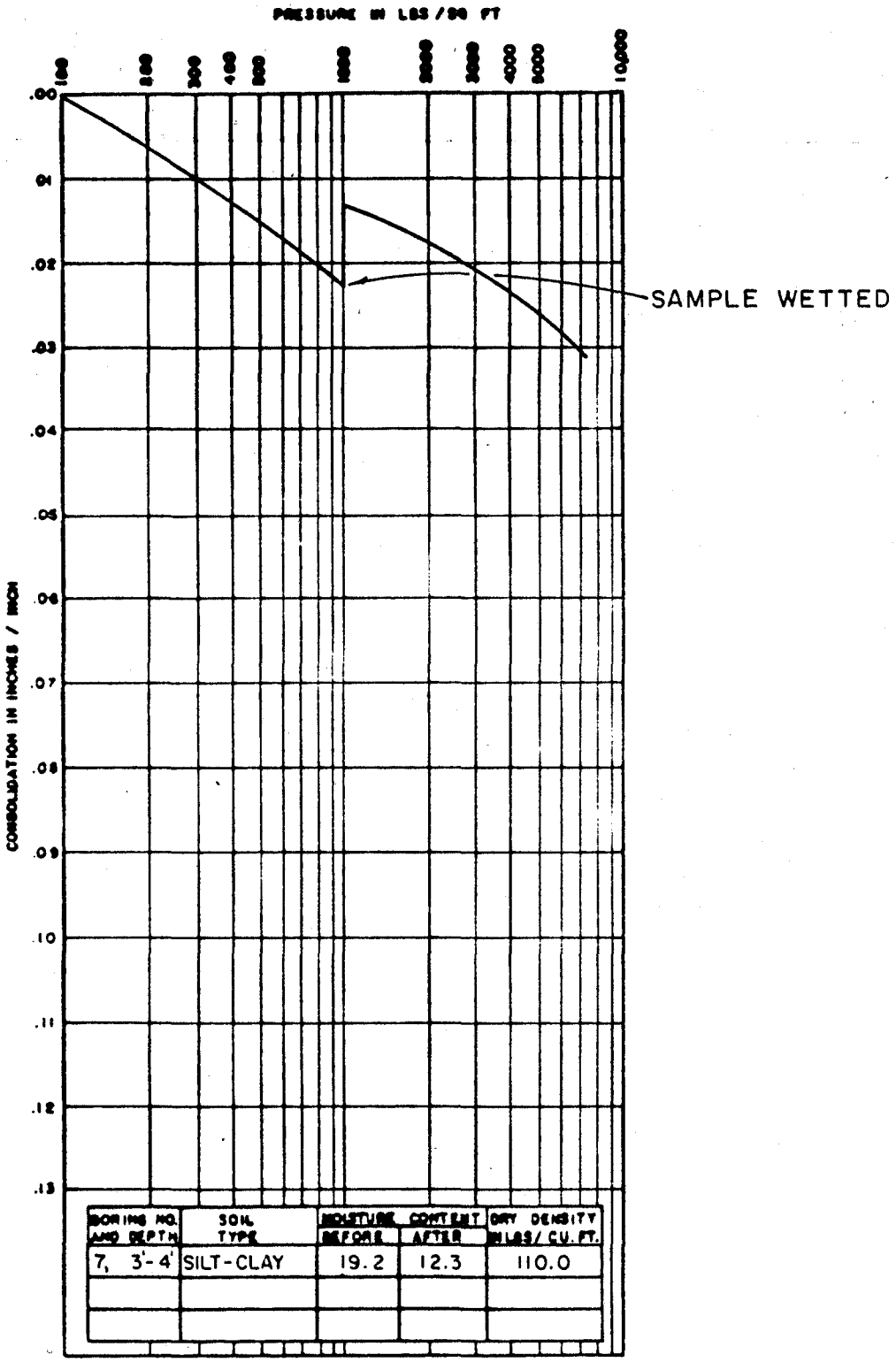
PLATE II
WESTERN ENGINGEERS INC.
GRAND JUNCTION COLORADO



BORING NO. AND DEPTH	SOIL TYPE	MOISTURE CONTENT BEFORE	MOISTURE CONTENT AFTER	DRY DENSITY IN LBS/CU.FT.
6, 3'-4'	SILT - CLAY	19.2	16.3	104.4

HOMESTEAD SUBDIVISION
CONSOLIDATION DATA

PLATE 12
WESTERN ENGINGEERS INC.
GRAND JUNCTION COLORADO

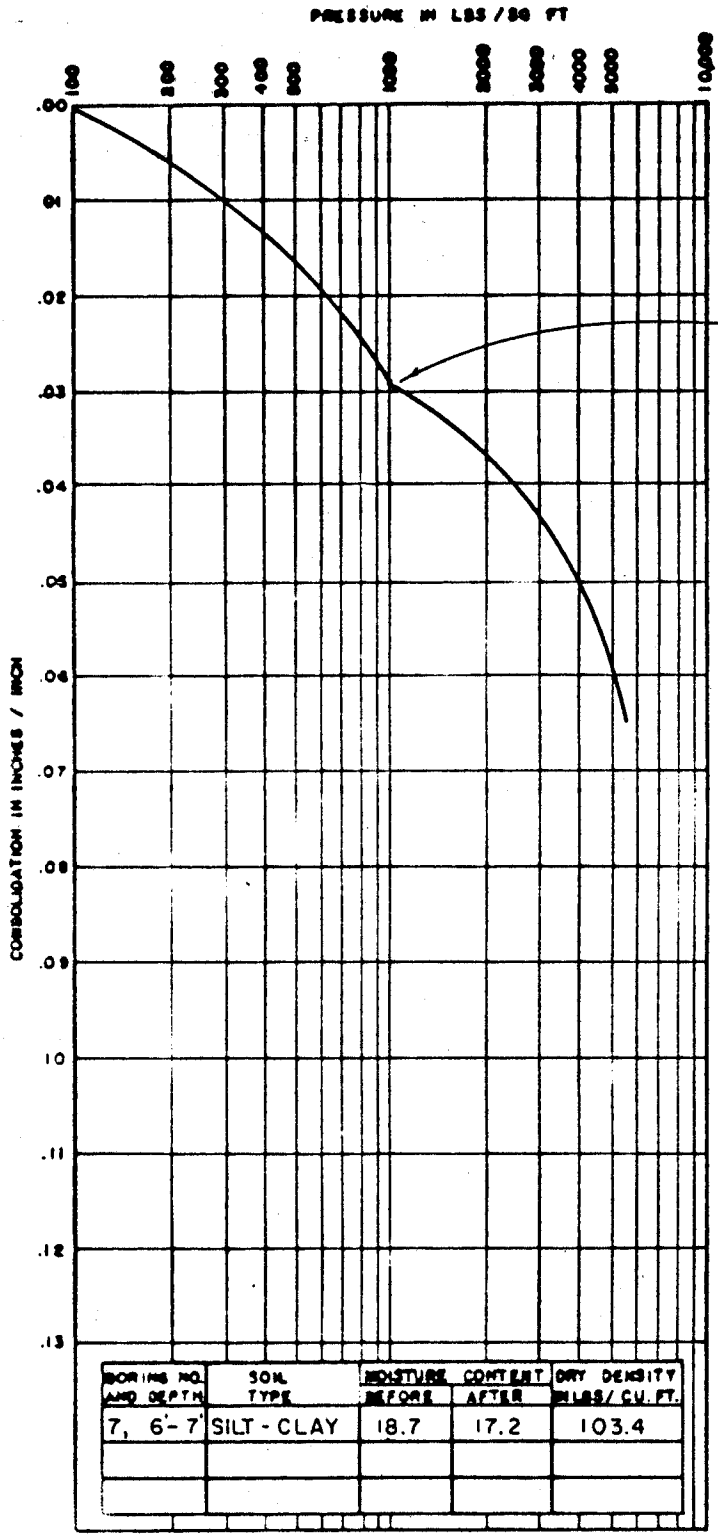


BORING NO. AND DEPTH	SOIL TYPE	MOISTURE CONTENT BEFORE	MOISTURE CONTENT AFTER	DRY DENSITY IN LBS/ CU. FT.
7, 3'-4'	SILT-CLAY	19.2	12.3	110.0

HOMESTEAD SUBDIVISION
CONSOLIDATION DATA

PLATE 13

WESTERN ENGINEERS INC.
GRAND JUNCTION COLORADO



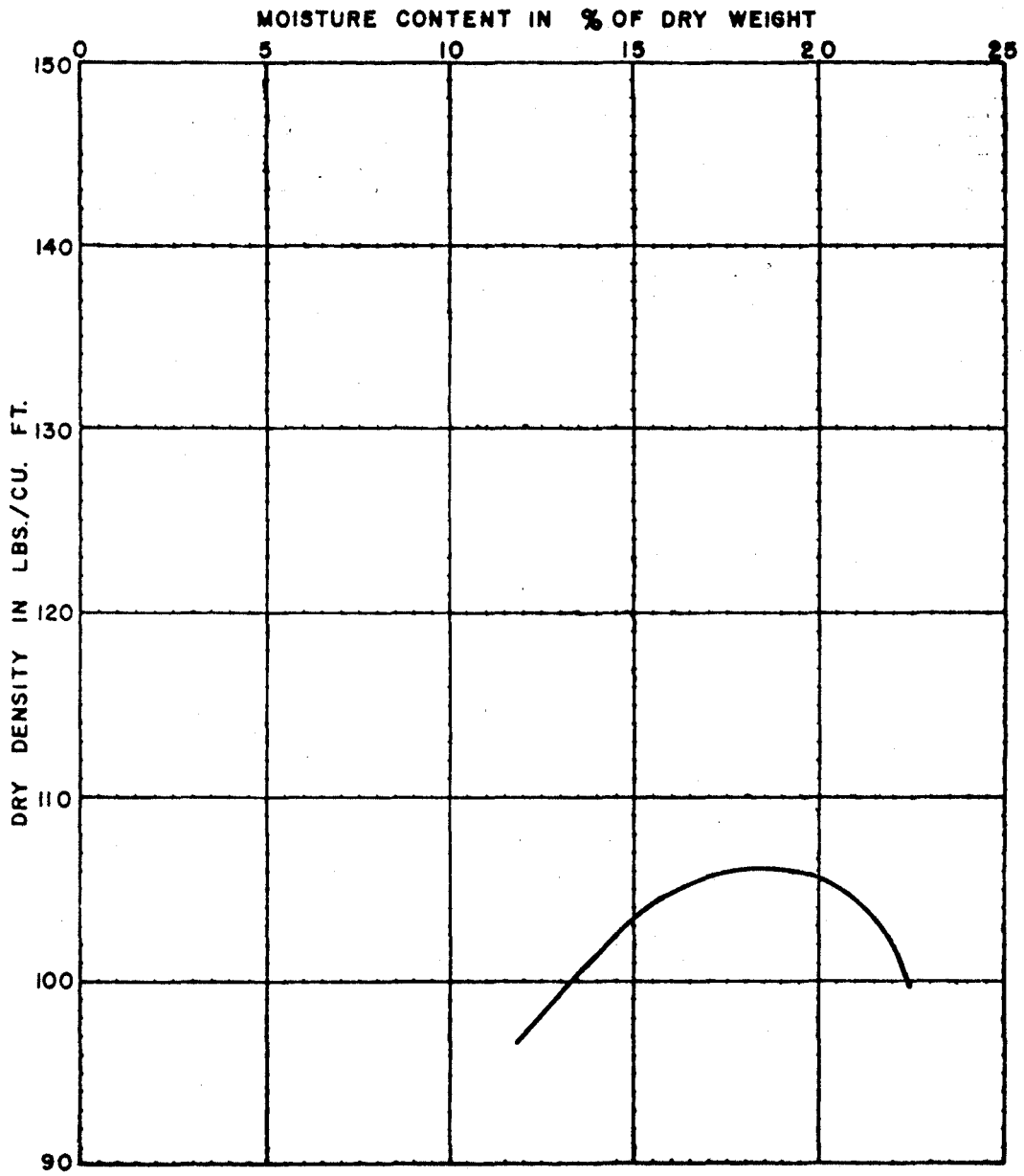
BORING NO. AND DEPTH	SOIL TYPE	MOISTURE CONTENT BEFORE	MOISTURE CONTENT AFTER	DRY DENSITY IN LBS / CU. FT.
7, 6'-7'	SILT - CLAY	18.7	17.2	103.4

HOMESTEAD SUBDIVISION
CONSOLIDATION DATA

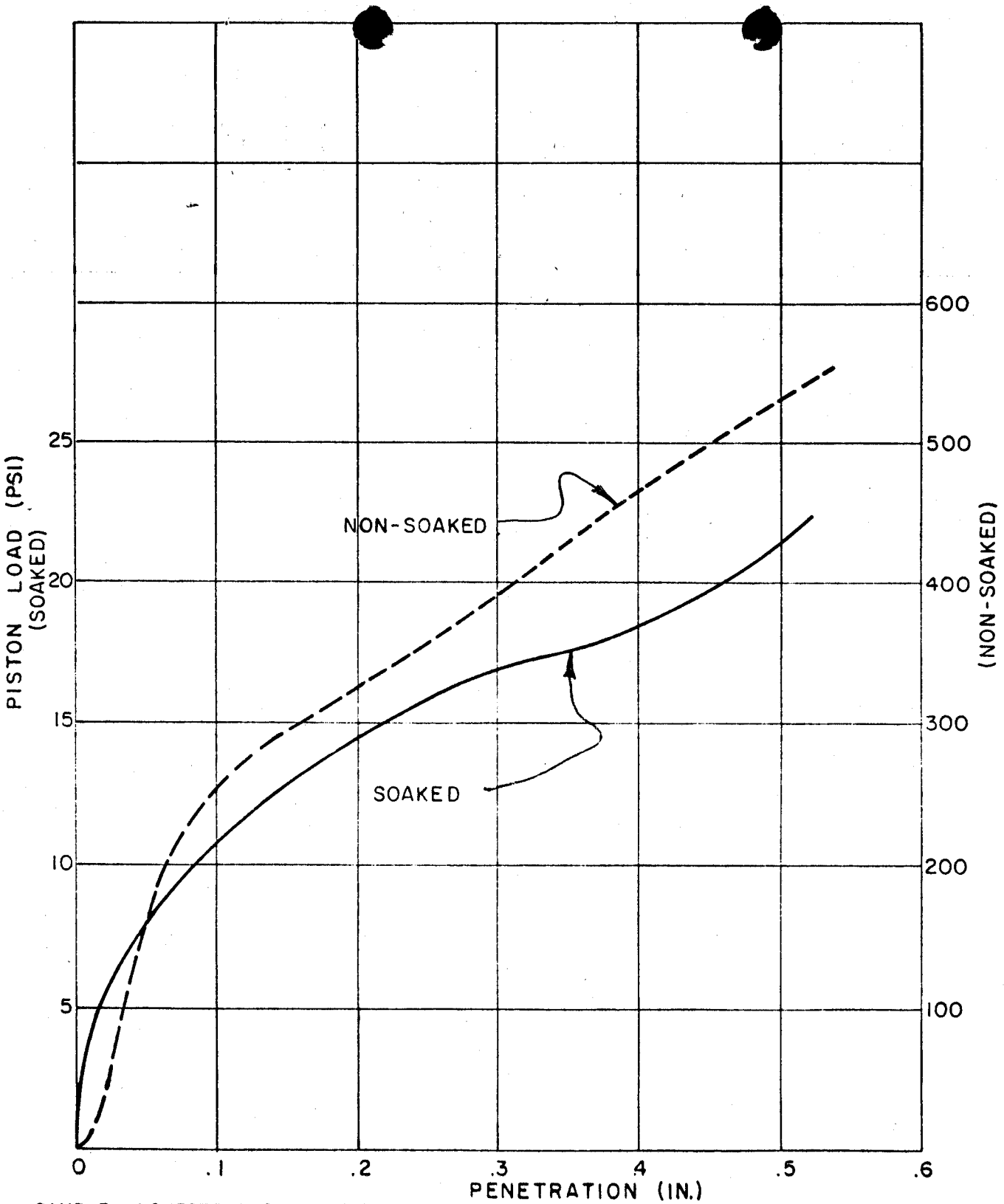
PLATE 14

WESTERN ENGINEERS INC.
GRAND JUNCTION COLORADO

SAMPLE NO._____ DEPTH_____ ELEVATION_____
SOIL SILTY CLAY
LOCATION HOMESTEAD SUBDIVISION
OPTIMUM MOISTURE CONTENT 18.2
MAXIMUM DRY DENSITY 106.1
METHOD OF COMPACTION ASTM D 698



COMPACTION TEST DATA



SAMPLE: HOMESTEAD SUBDIVISION
DENSITY: 98% ASTM D 698
CBR .1" PEN. = 1.3 (SOAKED) 26.2 (NON-SOAKED)
CBR .2" PEN. = 1.0 (SOAKED) 22.1 (NON-SOAKED)
BEFORE SOAKING:
MOISTURE CONTENT: 13.5%
DRY UNIT WEIGHT: 104.4 PCF
AFTER SOAKING:
MOISTURE CONTENT, TOP 1": 26.8%
AVG. MOISTURE CONTENT:
SWELL: 4.5%
SURCHARGE WEIGHT: 20 lb. (102 PSF)

PLATE 16
CALIFORNIA BEARING RATIO
(ASTM D-1883)

FORD BUILDERS INC.

City of Grand Junction
Grand Junction, Colorado

To whom it may concern,

Application being applied for as follows:

56 room addition to the existing Airport Quality Inn. The parking needed to accommodate the addition will be added in the lot adjacent (south) to the hotel. The lease on this property is enclosed.

Respectfully,

Larry Moore

Larry Moore
Respresentative

P.O. Box 1802 GRAND JUNCTION, COLORADO 81502

(303) 245-5798

FORD BUILDERS INC.

City of Grand Junction
Grand Junction, Colorado

To whom it may concern,

Application being applied for as follows:

3600 sq. ft. of the existing Airport Dollar Inn to be utilized into a 130 seat family restaurant. This area would be located in the area presently used as lobby and gift shop. Entrance of the restaurant would be located in the main lobby area. Menu to consist of medium priced meals with excellent family atmosphere.

The parking needed to accommodate the restaurant will be added onto the existing lot and also additional parking to be acquired in the lot adjacent (south) to the hotel. Arrangements and negotiations for a long term lease on this property are being finalized at the present. The additional parking will be easily accessable from anywhere around the hotel.

A signed long term lease will be provided before final approval. Your reviewal on this matter is appreciated.

Respectfully,

Ford Builders Inc.

Larry Moore

Larry Moore
Respresentative

P.O. Box 1802 GRAND JUNCTION, COLORADO 81502

(303) 245-5798

BRADEN
Metal Building Systems
Authorized Builder

CITY OF GRAND JUNCTION, COLORADO

MEMORANDUM

Reply Requested
Yes ☐ No ☐

Date
August 8, 1980

To: (From:) Bob Bright, City Planner
Development Dept.

From: (To:) Btn. Chief Wes Painter
Fire Prevention Officer

SUBJECT: Airport Dollar Inn

I have been contacted by Nick Tomashowski, Valley Construction Inc., in regards to the northwest driveway off of Horizon Drive, for the Airport Dollar Inn, which the Planning Department suggests being eliminated.

When we reviewed the addition to the Old Homestead Realty and the Airport Dollar Inn, fire protection (fire hydrants) were placed with the understanding that the northwest driveway would be provided. If the driveway were to be eliminated, the hydrant in front of Old Homestead Realty would not be accessable for protection to the northwest side of the motel. The driveway also allows the Fire Department to set up a two position attack quickly and prevents fire pumpers from having to use one driveway and driving over hoses etc.

The Fire Departments position is that the Northwest driveway must be provided. Thank you.

Btn Chief Wes Painter

Btn. Chief Wes Painter
Fire Prevention Officer

WP/hc