REPORT OF

SUBSURFACE EXPLORATION AND GEOTECHNICAL INVESTIGATION
WASHINGTON COUNTY COURTHOUSE SQUARE
PARKING GARAGE - OFFICE BUILDING
WASHINGTON, PENNSYLVANIA

FOR

J. JAMES FILLINGHAM, ARCHITECT

BELLE VERNON, PENNSYLVANIA

BY

GEO-MECHANICS, INC.
BELLE VERNON, PENNSYLVANIA

November 18, 1977

J. James Fillingham, Architect
P. O. Box 226
Belle Vernon, Pennsylvania 15012

Re: Report of Subsurface Exploration and Geotechnical Engineering Investigation
Proposed New County Office and Garage Building
Washington, Pennsylvania
G.M.I. Project No. 7798

Gentlemen:

We are pleased to present our foundation investigation report for the above-mentioned project. This report includes the field exploration, laboratory testing, conclusions regarding the subsurface soils and foundation conditions, and our recommendations regarding the most suitable type of foundation to support the proposed building.

We appreciate this opportunity to be of service to you. Should you have any questions regarding our investigation, please contact us.

Very truly yours,

GEO-MECHANICS, INC.

JAVAID M. ALVI, Ph.D.
PRESIDENT

JMA/vjl

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I. INTRODUCTION

A. Authority

This foundation investigation has been performed in accordance with our cost estimate which was approved by Mr. James Fillingham, the architect. The authority to proceed with the investigation was given verbally by Mr. Max Morgan, the Commissioner of Washington County.

B. Purpose and Scope

The purpose of the investigation was to obtain the subsurface soils, bedrock and ground water conditions at the proposed site for the County Office/Garage Building in order to determine the most suitable type of foundation for the proposed structure under the existing site conditions.

The scope of work performed under the present investigation included the following phases:

1. drilling of nine (9) standard test borings
2. performance of laboratory soils tests
3. correlation of field exploration and laboratory test data and development of geologic cross-sections illustrating the subsurface conditions
4. interpretation of the data obtained and performance of engineering analysis based on the data
5. presentation of a soils investigation report including conclusions and recommendations for the types and depths of foundations best-suited to the proposed site and structure, allowable bearing capacities, lateral earth pressures, and special site preparation criteria.

II. SUBSURFACE EXPLORATION

The subsurface exploration program was designed to obtain the additional necessary subsurface soils, ground water and bedrock data so that it can supplement the information obtained during the preliminary site feasibility study. The site feasibility study was conducted during October, 1976 and consisted of four (4) standard test borings. It was apparent from this investigation that the bearing material at the bottom of the finished ground floor varied considerably and additional subsurface data was necessary to delineate the foundation soils and rock and develop a comprehensive and more accurate knowledge of the subsurface conditions. As a result, nine (9) additional standard test borings were proposed to be drilled in between the previous four test borings; the location of all these test borings is shown on the Test Boring Plan, Drawing No. 7798-1. The depths of test borings was based on the proposed ground floor, ground surface elevation, and anticipated subsurface conditions. The depth of test borings varied from a minimum of 17.0 feet to a maximum of 48.5 feet and the total lineal feet drilled was 268.5 feet.

Soil samples in the test borings were obtained at 3-feet center-to-center intervals. A 2-inch O.D. Split Spoon Sampler was used to obtain the soil samples. The spoon sampler was first seated for six inches to penetrate any loose soil and then was driven an additional foot with blows from a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler the final foot was recorded and is designated as "standard penetration resistance". The penetration resistance gives an indication of the in-place density of the soil. These soil samples were visually classified and their properties evaluated. The penetration resistance values at various depths along with the visual description of the samples are plotted on the Geologic Sections, Drawing No. 7798-2 and 3 and documented in the boring logs in Appendix B.

The test borings in the bedrock were advanced using a double tube NX size core barrel with diamond bit, which provides a 2-1/8 inch core sample. The use of core barrel was adopted when the resistance to penetration of six inches of spoon sampler exceeded 50 blow counts. This point is referred to as top of bedrock in our boring logs and the geologic cross-sections (Drawing No. 7798-2 and 3). The borings in bedrock were advanced using generally five foot runs. The percentage core recovery, which usually provides an indication to the strength and degree of weathering of bedrock, was calculated for each run; higher core recovery percentages indicated competent and less weathered rock such as sandstone, while lower values correspond to weathered rock containing numerous clay-filled joints or weathered, soft, incompetent rock such as claystone or badly weathered argillaceous limestone. These calculated core recovery percentages are plotted on the geologic cross-sections. In addition, Rock Quality

Designation (RQD) values were also calculated for each lithologic unit and are recorded in the boring logs. RQD represent the percentage of core samples which are greater than 4 inches in length and indicate, qualitatively, the compentency or hardness of the bedrock strata sampled.

Finally, the ground water readings were measured in each test boring immediately after the completion of the test borings and again after 24 hours provided the hole had not caved in. The purpose of these readings was to estimate the effect of ground water on the design as well as construction procedures for the foundation installation and excavation techniques.

III LABORATORY TESTING PROGRAM

The laboratory testing program was designed to classify the soils over the site in order to evaluate their shear strength, compressibility and earth pressure parameters. These parameters provide a framework for calculating allowable soil and lateral earth pressures and settlements under the loading conditions of the various parts of the building. The laboratory testing program is briefly described below:

A. Moisture Contents

Six (6) natural moisture content tests were performed on the representative samples to evaluate the in-place water content of the soils. In general, the soil samplers were damp based on the range of dry, damp, moist, and wet. The data from these tests are shown on the classification curves, Drawings No. 7798-A1 through a6.

B. Gradation Tests

Six (6) samples were selected from the jar samples to conduct sieve and hydrometer tests. The data from these tests were used in conjunction with data obtained from Atterberg Limit Tests to classify the soils according to the Unified Soil Classification System. These soil classifications are shown on Drawings No. 7798-A1 through A6.

C. Atterberg Limits Tests

Atterberg Limits Tests were performed on the same six (6) samples on which gradation and Moisture Content Tests had been performed. The data from these tests are also plotted on the Classification Curves, Drawings No. 7798-A1 through A6.

IV ANALYSIS AND DISCUSSION

The various foundation materials, which will affect and influence the design of both the building and the temporary cuts, are described below under separate catagories in an attempt to delineate their geotechnical properties:

A. Soils Conditions

The generalized subsurface soils and rock profiles are illustrated on Drawing No. 7798-2 and 3. These profiles are based on extrapolation of the data collected in the test borings which were drilled during both the initial feasibility study and the present final investigation.

It is apparent from Drawing No. 7798-2 and 3 that the site for the Garage/Office Complex is covered with a moderately thick soil zone which varies from a minimum thickness of six (6) feet in the vicinity of Test Boring 4 (southwestern corner of the building) to a maximum of about 28 feet in the vicinity of Test Boring 13 (middle of the eastern wall of the building). This variation in the thickness of the soil zone can be attributed to the cut and fill operations which had been performed over the site during the past construction periods and which are responsible for the present ground surface elevations.

Fill, which forms the near surface soils, are concentrated mostly along the middle of the site in the parking lot areas. Typically, the fill consists of silty sand and rock fragments in varying proportions. The relative composition and density of the fill would differ from place to place. Generally, the fill is in loose to medium dense shale. However, the physical properties of fill are of only academic interest because the proposed ground floor elevation will require excavation of all the fill material.

Underlying fill is a six to twelve feet thick layer of residual soils which are classified as clayey silts (ML) according to the Unified System of Soils Classification. These soils are the product of in-place weathering of the underlying limestone and claystone bedrocks and retain some of the characteristics of the parent material. Again, due to the required excavation to meet the ground floor elevation, these residual soils will be excavated under most of the building area; the only exception will be at the northwestern corner of the building. The maximum thickness of residual soils under the building area and below the floor slab would be about seven feet. The density of these soils, as indicated by the "standard penetration resistance" values varied from medium dense to dense and, therefore, an allowable bearing capacity of 3000 PSI can be utilized, if needed, to support the peripheral wall footing. However, relatively shallow

depth to good bedrock with substantially higher shear strength and lower compressibility makes it possible to bear the foundation on rock rather than soils.

B. Bedrock Conditions

The bedrock strata encountered in the test borings at the site belong to Middle and Lower Member of Washington Formation and Upper Member of Waynesburg Formation. The Washington Coal bed is the dividing bed between the Washington and underlying Waynesburg formations. Little Washington Coal which lies at bottom of the Upper Member of Waynesburg Formation was also encountered in the test borings.

The bedrock strata belonging to Washington and Upper Waynesburg Formations consist of interbedded layers of calcareous claystone, argillaceous limestone, and bony coal. The sandstone encountered at the bottom of Little Washington Coal seam belongs to Middle Member of Waynesburg Formation. The thickness of these layers vary from about 1 foot to about 10 feet. The sequence and thickness of these strata are presented graphically on Drawing No. 7798-2 and 3. It appears that the top of rock, defined on the basis of resistance to split spoon sampler, slopes from east to west at approximately the same rate as the original ground surface if the modifications done by fill placement for parking lots are ignored. The structural dip of the bedrock strata, however, is towards southeast and is approximately 2± percent. The result of the sloping top of rock and the structural dip of the bedrock is that different types of rock, varying from coal to limestone, will outcrop at the ground floor elevation. Correspondingly, the allowable rock pressures will vary from about 1/2 TSF to about 15 TSF at the elevation of spread footings.

It may be pointed out that the top of rock surface shown on the Geologic Cross Sections is simplified. Our experience in similar situations has shown that the actual top of rock surface may consist of a series of steps caused by the differential weathering of the bedrock resulting from the difference in the physical and mineralogical make-up of the rock. Therefore, small variations in the depth to the top of rock may be expected and should be taken into design consideration. Another aspect worth mentioning is that the top of rock as shown in the Geologic Sections is based on the resistance to penetration of Split Spoon Sampler. Should another method such as refusal to auger penetration be taken as a basis for defining the top of rock, the depth to top of rock will vary depending upon the size and nature of the drilling equipment. In general, the depth to top of bedrock will be greater when a large auger machine is used as in installation of caissons. This becomes especially true if the top part of the bedrock is weathered and contains clay

seams and/or the rock strata are less competent. Both of these situations occur at the northwestern side of the present site. The sandy shale layer is generally weathered and contains clay seams to an average depth of 5 feet below the top of rock. The proposed finished ground floor elevation 39 will result in cut situation under the entire building; the maximum depth of cut will be along the east side of the building. Along the north side of the building, coal will lie very close to the bottom of the floor slab. This coal seam is bony in nature and becomes almost carbonaceous shale near the top of the stratum. Such carbonaceous shales are associated with sulfuritic minerals, which when exposed to moisture and air, get oxidized and result in substantial expansion. The presence of the coal seam immediately or a few feet below the lightly loaded floor slab could result in heaving and the associated structural damage to the floor slab. Therefore, it will be desirable to remove the bony coal and backfill with compacted granular fill; the depth of the undercutting can be limited to a maximum of six feet towards the middle of the building where, due to structural dip, the coal seam becomes deeper. A cushion of six feet between the floor slab and the coal seam, even if the coal is still present under the site, should be sufficient to trap and retard the heaving action.

Towards the middle of the site, the bedrock exposed below the ground floor becomes claystone. This rock stratum when fresh and unweathered is capable of developing only low allowable rock pressures which may be sufficiently high to support the conventional strip footings for the moderately loaded peripheral load bearing walls. For concentrated loads, such as imposed by the column loads, the foundation may have to be carried below the claystone, coal and bear on the high strength sandstone.

The physical condition of the rock cores, the percent core recovery, RQD and lithology indicate that the following allowable rock pressures can be obtained to design the building foundations bearing in or on the bedrock.

ROCK TYPE	ALLOWABLE ROCK PRESSURE
Sandy Shale	12 TSF
Claystone	4 TSF
Argillaceous Limestone	15 TSF
Sandstone	20 TSF

V. RECOMMENDATIONS

A. Site Preparation

1. Undercut Area "A" to the bottom of bony coal or to a maximum of six (6) feet below the finished floor elevation. The criterion of six (6) feet depth becomes applicable along the southeastern limit of Area "A" where, because of the structural dip in bedorck strata, the bottom of the coal seam becomes excessively deeper for excavation of the entire thickness of coal seam.

2. Where soils form the bottom of excavation, roll the bottom of the excavation with either vibratory steel roller or pneumatic rubber tired equipment to achieve in-place density equal to 95 percent of maximum dry density as obtained from Modified Proctor Test (ASTM: D 1557-70, Method C) or to the satisfaction of the Soils Engineer.

3. Place approved granular backfill material in horizontal layers approximately nine (9) inches in loose thickness. Spread fill evenly and compact granular fill to 95 percent of maximum dry density as determined by Modified Proctor Compaction Test (ASTM: D 1557-70) or to a maximum relative density of 75%, whichever is applicable. Compaction will be confirmed by tests in the field by Soils Engineer.

4. Select granular fill must be non-plactic material, be free of all deleterious matter and meet the following gradation requirements:

U. S. Standard Sieve Size	Percent Finer By Weight
3"	100
No. 40	20-75
No. 200	0-25

5. When the moisture content is satisfactory to the Soils Engineer, compact granular fill material with a smooth steel drum vibratory-type roller with a minimum static weight of 10 tons, capable of delivering at least 35,000 pounds of dynamic force. A minimum of four (4) overlapping passes of such equipment shall be required, or until the required density is achieved as determined by the Soils Engineer.

6. If indurated gray clay (claystone) is exposed at the bottom of the excavation, place either a thin layer of lean cement or cover the exposed area by spraying a thin coating of hot bitumen. This will help in minimizing the absorption of water and the resulting flaking and softening of the claystone.

B. Type and Depth of Foundation

1. Use drilled-in, cast-in-place concrete caissons and a system of grade beams spanning the caissons to support all the column and bearing wall loads at Area "C".

2. Bear the caissons on bedrock which will consist of either silty to sandy shale at the northwestern corner of the building or fine to medium-grained sandstone below the bony coal and claystone seam. The depth to these bedrocks can be approximately determined from Drawing No. 7798-2 and 3.

3. Use an allowable pressure of 12 TSF for silty to sandy shale and 20 TSF for fine to medium-grained sandstone to design the size of the caissons. In the event this allowable soil pressure does not result in economical caisson size, socket the caissons into bedrock and use skin friction value of 30 PSF to support the additional load. However, a maximum of only 50% of the design load should be carried through skin friction. For excessively heavily loaded columns which will be located under the seven (7) story tower, use belled instead of socketed caissons and design all belled caissons as strictly end-bearing foundation.

4. If possible, use a minimum diameter of 36 inches for the caissons. This will enable us to visually observe the bottom of the caissons in order to ensure that the caissons are being placed on the desired competent rock strata capable of providing the allowable rock pressures utilized in the design. In addition, the required length of the socket, if incorporated in the design, or the diameter of the bottom of bell, could be measured accurately in each hole.

5. Use strip footings and spread footing bearing on competent bedrock to support the peripheral bearing walls and individual column loads to support the building. The only exception is the western peripheral wall which will utilize caissons.

6. Place all exterior footings bearing on bedrock at least two (2) feet below the finished outside grade to protect against frost heave. The minimum depth requirements for the footings where deep cuts are proposed may be reduced to 1 foot.

7. Where shallow foundations are used at Area "A", the footings can be installed by using either of the following two procedures.

   a. Complete the placement of the granular backfill to the desired finished floor and then excavate the footing trenches.

   b. Install the footings after excavation and then place the fill around the footings to bring the fill elevations to the desired floor elevations.

8. Use the following allowable rock pressures to design the sizes of the footings.

   Limestone.....15 TSF

   Claystone.....4 TSF

9. In the event the column loads are too large to utilize claystone for shallow footings at Area "A", incorporate caissons drilled to the top of sandstone below the coal elevation. This situation will require slight adjustment in the boundary line separating the shallow foundation and caisson foundation.

C. Floor Slab

1. Place the first floor (ground floor) slag on ground. The bearing material will vary from compacted granular fill (at Area "A") to existing soils (Most of Area "C") to bedrock (Most of Area "B"). Each one of these bearing materials has a different compressibility; the existing soils will compress most while the bedrock will compress the least. Where limestone forms the bearing rock, it will be desirable to provide a transitional zone of granular fill so that the change from soils to rock is gradual and excessive bending moments due to deflection of soils along the soil-rock contact are reduced. A typical transition bench is constructed by undercutting 2 feet or rock at the soil-rock interface and taper the undercut to 0 feet in 20 feet length.

2. Provide expansion joints between the floor slab and the caissons or load-bearing walls in order to minimize the risk of floor distress due to differential settlements under the floor slab and footings.

3. Choke the surface of the structural fill with a one-inch thick layer of sand or fine slag prior to pouring the floor slab.

D. Retaining Wall Design

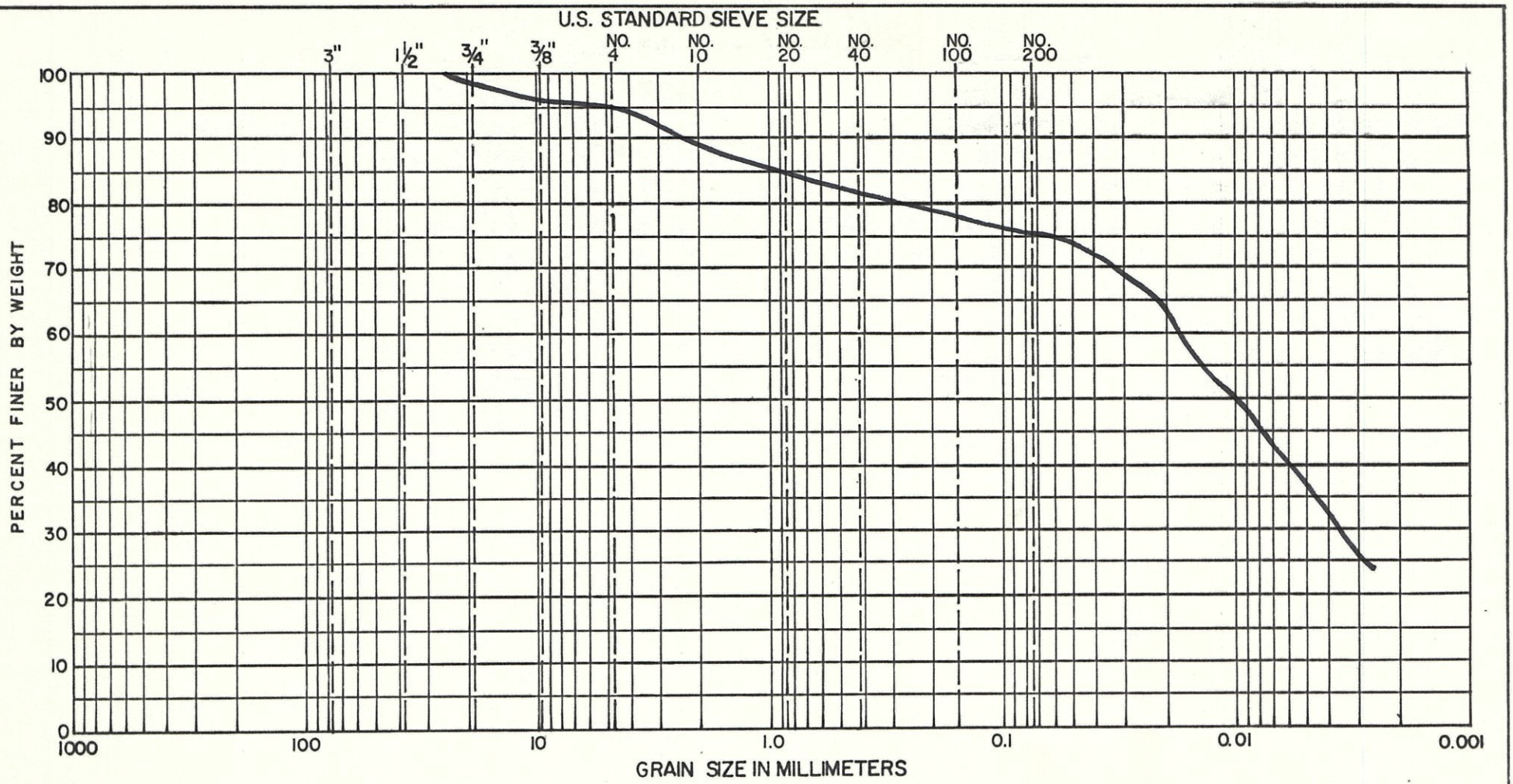
1. Design all exterior walls of the proposed units that extend below outside finished grade as rigid retaining walls capable of withstanding "at-rest" lateral earth pressures. Use an equivalent hydrostatic pressure of 60 PCF in designing the walls.

2. Backfill behind the retaining walls for a minimum horizontal distance equal to 2 feet using the same material as specified for structural fill under Area "A". However, apply only moderate compactive effort in placing the backfill material to avoid possible damage to the walls due to overstressing.

3. Provide a positive outlet for the ground water behind the retaining wall by incorporating perforated pipe at the bottom of the drainage filter, carry it around the building, and connect it with storm outlets.

VI. APPENDIX A

Laboratory Test Results



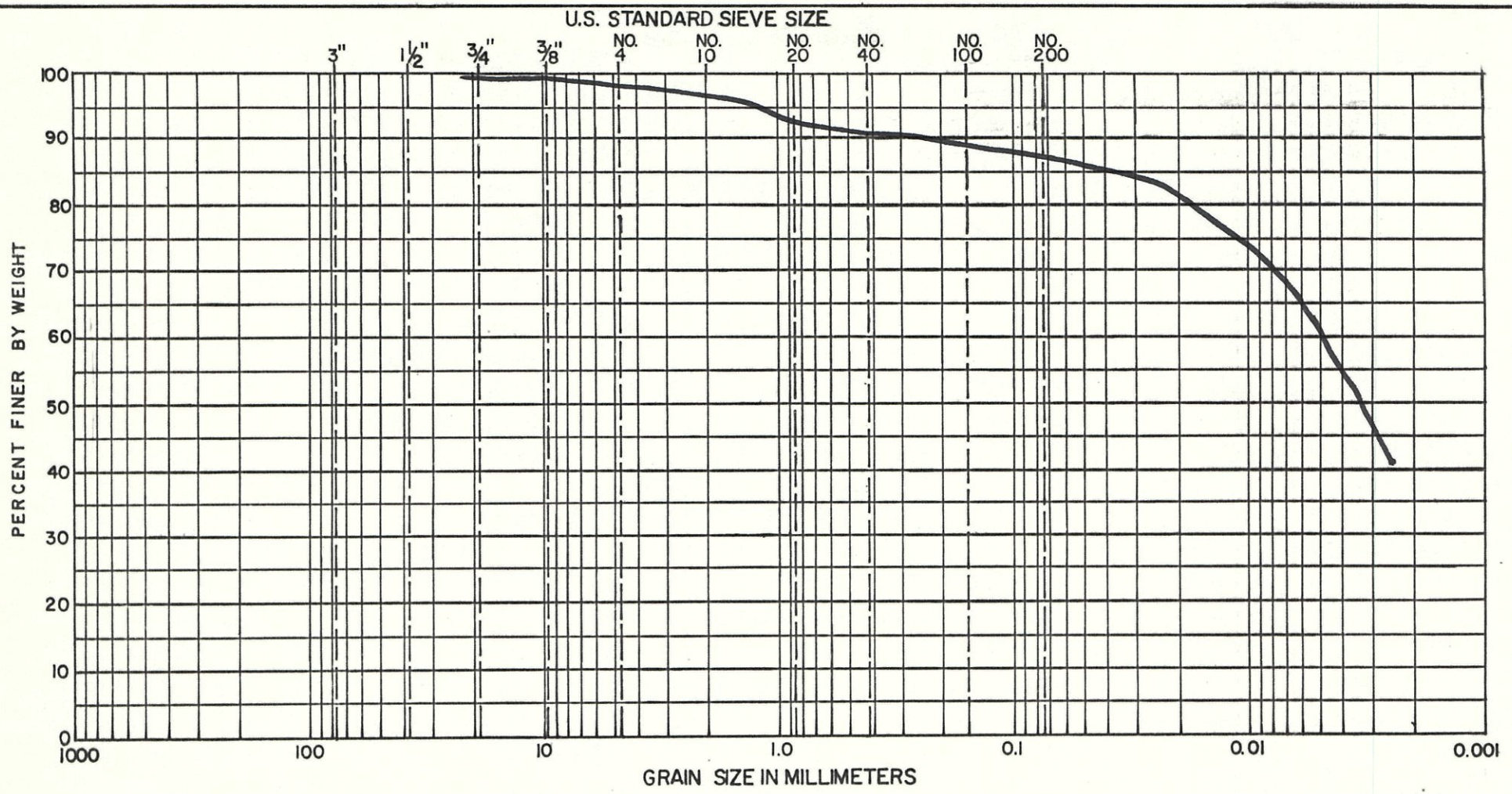
COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

Sample No.	Elev. or Depth	Classification	Nat W.C	LL	PL	PI	
	7.5–13.5	ML		39	27	12	Brown Clayey Silt, Little Sand, Trace Rock Fragments

CLASSIFICATION TEST-GRADATION CURVES

PROJECT	Parking Garage
	Washington County Courthouse Square
AREA	Washington, Pennsylvania
BORING NO.	TB-5
DATE	October, 1977
DWG. NO.	7798-A1

CML 73

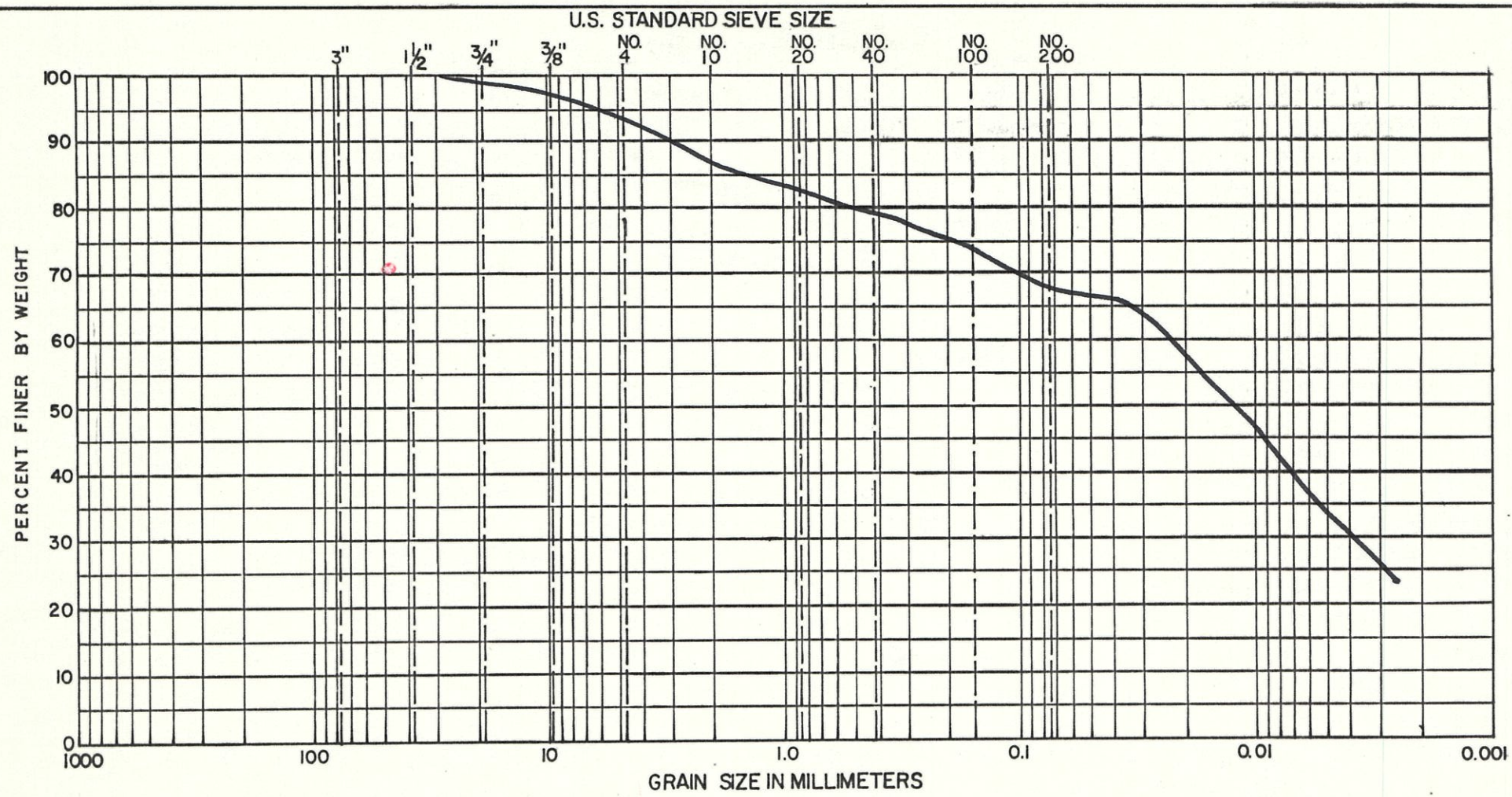


COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

Sample No.	Elev. or Depth	Classification	Nat.W.C.	LL	PL	PI	
	10.5–16.5	ML		48	31	17	Brown Clayey Silt, Little Sand

CLASSIFICATION TEST-GRADATION CURVES

PROJECT	Parking Garage
	Washington County Courthouse Square
AREA	Washington, Pennsylvania
BORING NO.	TB-6
DATE	October, 1977
DWG. NO.	7798-A2

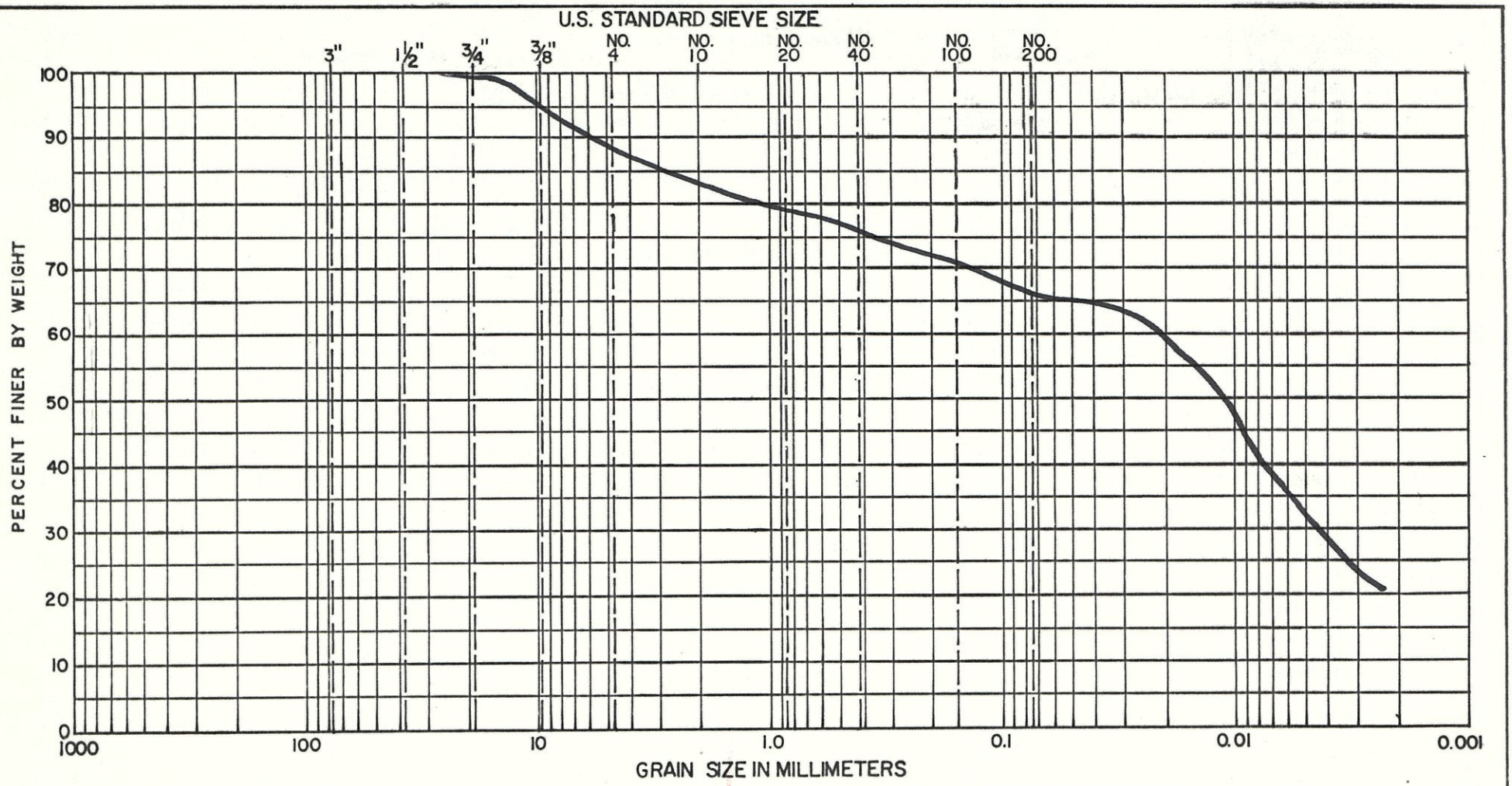


COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

Sample No.	Elev. or Depth	Classification	Nat.W.C.	LL	PL	PI	
	4.5-7.5	ML		31	24	7	Brown Clayey Silt, Some Sand, Trace Rock Fragments

CLASSIFICATION TEST-GRADATION CURVES

PROJECT	Parking Garage
	Washington County Courthouse Square
AREA	Washington, Pennsylvania
BORING NO.	TB-7
DATE	October, 1977
DWG. NO.	7798-A3

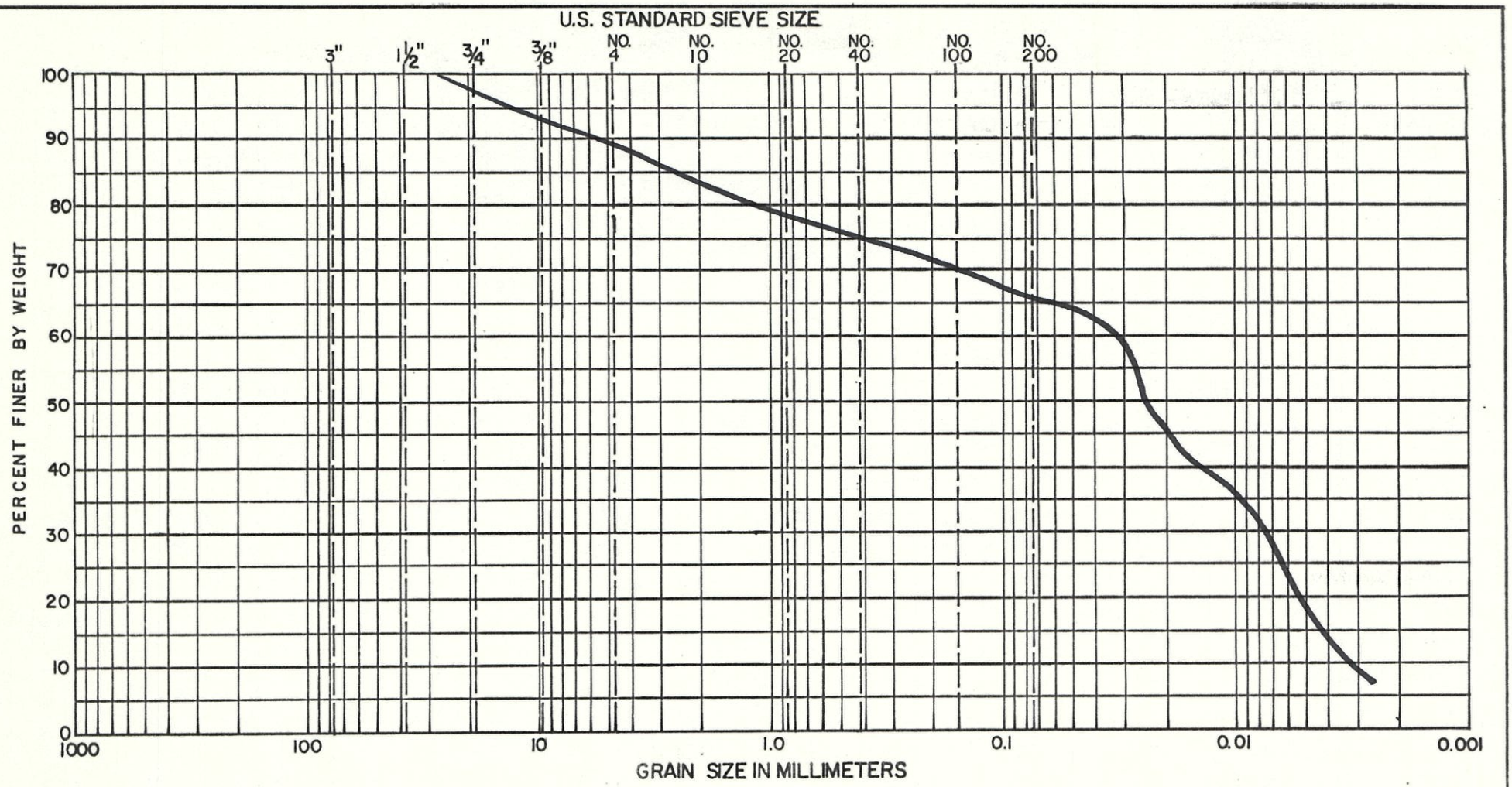


COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

Sample No.	Elev. or Depth	Classification	Nat W.C.	LL	PL	PI	
	13.5-19.5	ML		38	31	7	Brown Mottled Clayey Silt, Some Sand, Trace Rock Fragments

CLASSIFICATION TEST-GRADATION CURVES

PROJECT	Parking Garage
	Washington County Courthouse Square
AREA	Washington, Pennsylvania
BORING NO.	TB-7
DATE	October, 1977
DWG. NO.	7798-A4

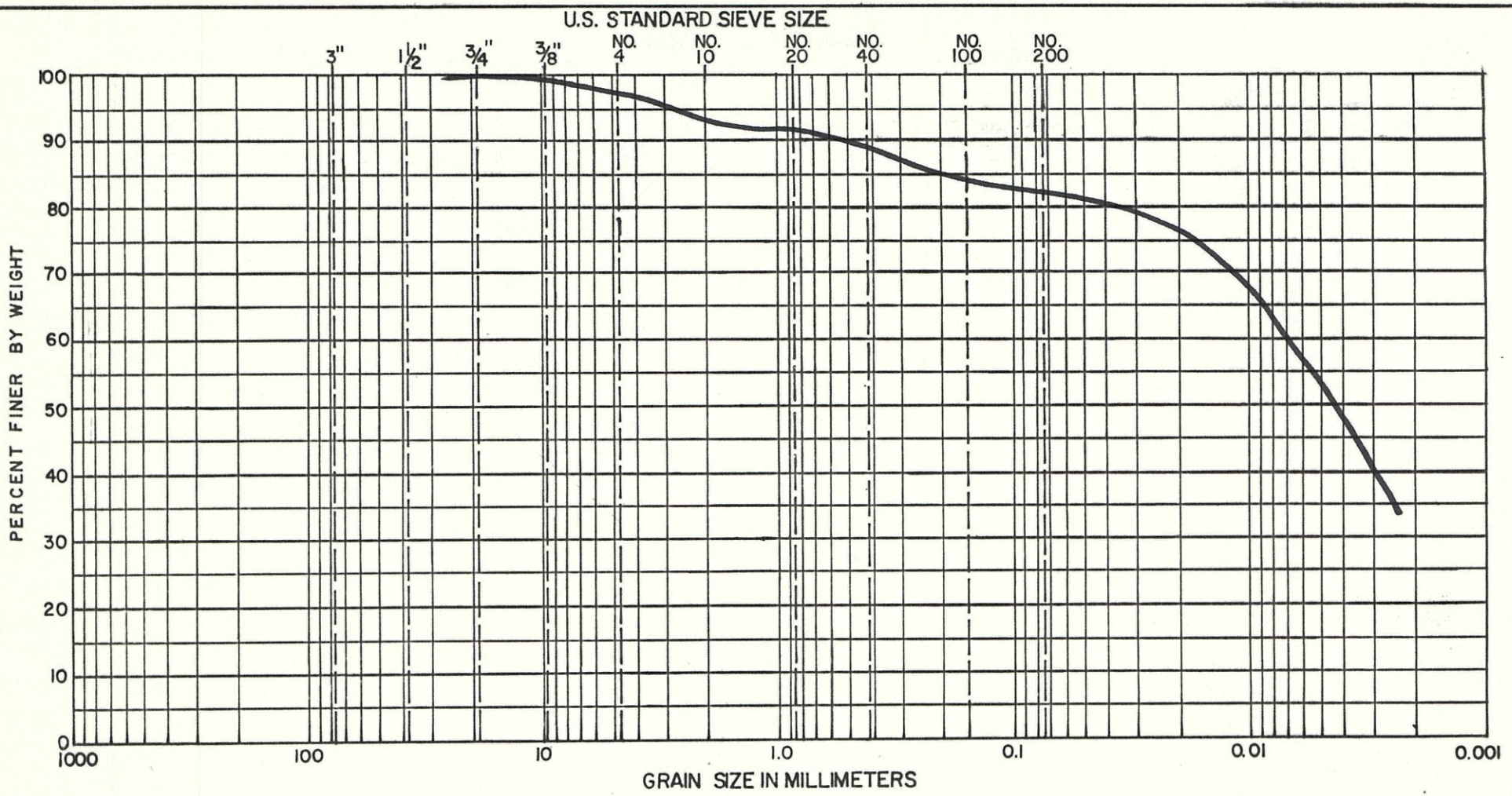


COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

Sample No.	Elev. or Depth	Classification	Nat.W.C.	LL	PL	PI	
	4.5-10.5	CL		36	21	15	Brown Silty Clay,
							Some Sand, Trace
							Rock Fragments

CLASSIFICATION TEST-GRADATION CURVES

PROJECT	Parking Garage
	Washington County Courthouse Square
AREA	Washington, Pennsylvania
BORING NO.	TB-13
DATE	October, 1977
DWG. NO.	7798-A5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

Sample No.	Elev. or Depth	Classification	Nat.W.C.	LL	PL	PI	
	19.5-25.5	ML		42	31	11	Brown Clayey Silt, Little Sand, Trace Rock Fragments

CLASSIFICATION TEST-GRADATION CURVES

PROJECT	Parking Garage
	Washington County Courthouse Square
AREA	Washington, Pennsylvania
BORING NO.	TB-13
DATE	October, 1977
DWG. NO.	7798-A6

VII. APPENDIX B

Test Boring Logs

GEO-MECHANICS, INC.

TEST BORING RECORD

Driller: Dale Martin

Water Level: 0-Hr. 33.0 24 Hrs.

Casing Hammer Wt. ____ lbs. Drop ____ in.

Sampler Hammer Wt. 140 lbs. Drop 30 in.

Sampler Size 2 in. O.D. Casing Size 4 in.

Boring No. TB-1 Surface Elevation 60 Sheet No. 1 of 1 sheets

For: J. James Fillingham

Washington County Courthouse Square

Location: Washington, Pennsylvania

Started 10-4-76 Completed 10-4-76 Job No. 7681

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☐ Geologist's Log ☒	BLOWS ON SAMPLER / INTERV.	BOTTOM DEPTH OF SAMPLE	REMARKS CORE DATA
	1.0		Blacktop and Base Course			
			Brown-Gray Silty Clay, Little Badly Weathered Claystone Fragments, Medium Stiff to Hard, Damp to Moist.	6-6		
				9	4.5	
				4-4		
				5	7.5	
	10.2		Top of Rock at 10.2 Ft.	12-14		Run-Rec.
	11.0		Brown Limestone, Badly Broken, Soft.	50/.2	10.2	Void - 13.0-14.5' 16.0-17.0'
	14.0		Gray Claystone, Badly Weathered, Soft.			
	17.0		Gray-Brown Limestone with Clay Seams, Moderately Broken, Soft Zones, Medium Hard.		15.0	4.8-2.3
	24.0		Gray Clayshale with Thin Limestone Seam at 21.5 Ft., Becomes Carbonaceous at Bottom, Moderately Broken, Soft.		20.0	5.0-2.8
	28.0		Dark Gray and Black Carbonaceous Silty Shale and Bony Coal, Soft.		25.0	5.0 4.8
	29.5		Gray Claystone, Badly Weathered, Soft.			
	35.0		Gray Medium-Grained Sandstone, Slightly Broken, Hard.		35.0	10.0-9.9
			End of Boring at 35.0 Ft.			

Depth (Ft.)	RQD (%)
10.2-14.0	0
14.0-17.0	20
17.0-24.0	0
24.0-28.0	0
28.0-29.5	0
29.5-35.0	68

GEO-MECHANICS, INC.

TEST BORING RECORD

Driller: Dale Martin

Water Level: 0-Hr. 13.0 24 Hrs.

Casing Hammer Wt. ____ lbs. Drop ____ in.

Sampler Hammer Wt. 140 lbs. Drop 30 in.

Sampler Size 2 in. O.D. Casing Size 2 in.

Boring No. TB-3 Surface Elevation 43± Sheet No. 1 of 1 sheets

For: J. James Fillingham

Washington County Courthouse Square

Location: Washington, Pennsylvania

Started 10-5-76 Completed 10-5-76 Job No. 7681

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☐ Geologist's Log ☒	BLOWS ON SAMPLER / INTERV.	BOTTOM DEPTH OF SAMPLE	REMARKS CORE DATA
			Reddog, Clay and Rock Fragments, Medium Compact. (Fill)	7-9 / 4	1.5	
	3.0					
			Brown Silty Clay, Soft to Stiff, Moist. (Residual)	4-2 / 2	4.5	
				4-4 / 6	7.5	
	8.0					
			Black Weathered Bony Coal.	6-7 / 10	10.5	
	11.0					
	12.6		Brown Sandstone Fragments and Sand. (Residual) Top of Rock at 12.6 Ft.	34-50/.1	12.6	Run-Rec.
			Gray-Brown Medium to Coarse-Grained Moderately Weathered Sandstone, Moderately Broken, Medium Hard, Water Stains.			
	19.0					
	20.0		Gray-Brown Clayshale, Badly Broken, Soft.		20.0	7.4-4.0
			End of Boring at 20.0 Ft.			

Depth (Ft.)	RQD (%)
12.6-19.0	26
19.0-20.0	0

GEO-MECHANICS, INC.

TEST BORING RECORD

Driller: Dale Martin

Water Level: 0-Hr. 34.0 24 Hrs.

Casing Hammer Wt. ____ lbs. Drop ____ in.

Sampler Hammer Wt. 140 lbs. Drop 30 in.

Sampler Size 2 in. O.D. Casing Size 4 in.

Boring No. TB-2 Surface Elevation 75.5 Sheet No. 1 of 1 sheets

For: J. James Fillingham

Washington County Courthouse Square

Location: Washington, Pennsylvania

Started 10-4-76 Completed 10-5-76 Job No. 7681

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☐ Geologist's Log ☒	BLOWS ON SAMPLER / INTERV.	BOTTOM DEPTH OF SAMPLE	REMARKS CORE DATA
	1.0		Blacktop and Base Course			
			Gray Badly Weathered Claystone, and Clay, Medium Compact Damp.	5-5		
				7	4.5	
			(Residual)	9-10		
	9.0			14	7.5	
			Brown-Gray Sandy Shale Fragments, Some Sand, Trace Silt, Very Compact, Damp.	22-21		
				31	10.5	
	13.1			22-39		Run-Rec.
	14.0		Dark Gray Carbonaceous Silty Shale, Coal Lenses.	50/.1	13.1	
			Gray-Brown Medium-Grained, Badly Weathered Sandstone with Clay Seams, Medium Soft.		15.0	1.9-1.9
	17.0					
			Brown Clayshale, Badly Broken, Weathered, Soft.			
	20.0				20.0	5.0-2.2
			Black Badly Weathered Bony Coal which Becomes Carbonaceous Shale at Bottom, Badly Broken, Soft.			100% Loss of Water @ 28.0 Ft.
	25.0				25.0	5.0-1.5
			Brown-Gray Badly Weathered Argillaceous Limestone with Clay Seams, Badly Broken to Moderately Broken, Soft Clay Zones, Medium Hard Limestone Zones.		30.0	5.0-3.5
	31.0					
			Gray Claystone, Badly Weathered and Broken, Soft.			
	34.0					
			Gray Argillaceous Limestone with Weathered Clayey Soft Zones, Moderately Broken, Medium Hard.		35.0	5.0-3.0
					39.0	4.0-2.7
	40.0					
	42.0		Gray Claystone, Badly Broken, Soft.		42.0	3.0-1.5
			End of Boring at 42.0 Ft.			

Depth (Ft.)	RQD (%)
13.1-25.0	0
25.0-31.0	25
31.0-34.0	0
34.0-40.0	50
40.0-42.0	0

GEO-MECHANICS, INC.

TEST BORING RECORD

Driller: Dale Martin

Water Level: 0-Hr. 11.0 24 Hrs.

Casing Hammer Wt. ____ lbs. Drop ____ in.

Sampler Hammer Wt. 140 lbs. Drop 30 in.

Sampler Size 2 in. O.D. Casing Size 4 in.

Boring No. TB-4 Surface Elevation 47± Sheet No. 1 of 1 sheets

For: J. James Fillingham

Washington County Courthouse Square

Location: Washington, Pennsylvania

Started 10-5-76 Completed 10-5-76 Job No. 7681

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☐ Geologist's Log ☒	BLOWS ON SAMPLER / INTERV.	BOTTOM DEPTH OF SAMPLE	REMARKS CORE DATA
				4-5		
	3.0		(Fill)	5	1.5	
			Brown Silty Clay, Little Rock Fragments,	5-7		
			Stiff, Damp. (Residual)	7	4.5	
	6.0		Top of Rock at 6.0 Ft.	50/.0	6.0	Run-Rec.
	6.6		Limestone.			
			Brown-Gray Claystone, Badly Weathered and Broken, Soft.		10.0	4.0-2.8
	15.0				15.0	5.0-3.0
			Badly Weathered Bony Coal with Shale Bands, Badly Broken, Soft to Medium Soft.			
	20.3				20.0	5.0-4.2
	21.0		Gray Clayshale, Soft.			
			Gray Medium-Grained Sandstone, Moderately Broken, Hard.			
	25.0				25.0	5.0-3.9
			End of Boring at 25.0 Ft.			

Depth (Ft.)	RQD (%)
6.0-6.6	0
6.6-15.0	0
15.0-20.3	0
20.3-21.0	0
21.0-25.0	30

GEO-MECHANICS, INC.

TEST BORING RECORD

Driller: Wayne Pritts

Water Level: 0-Hr. 10.0 24 Hrs.

Casing Hammer Wt. ____ lbs. Drop ____ in.

Sampler Hammer Wt. 140 lbs. Drop 30 in.

Sampler Size 2 in. O.D. Casing Size 4 in.

Boring No. TB-5 Surface Elevation 55.2 Sheet No. 1 of 1 sheets

For: J. James Fillingham, Architect

Washington County Courthouse Square

Location: Washington, Pennsylvania

Started 9-21-77 Completed 9-21-77 Job No. 7798

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☐ Geologist's Log ☒	BLOWS ON SAMPLER / INTERV.	BOTTOM DEPTH OF SAMPLE	REMARKS CORE DATA
	1.5		Blacktop and Base Course		1.5	
			Gray-Brown Silty Sand, Little to And Boulders, Loose, Damp.		4.5	
			(Fill)	3-3		
				3	7.5	
	10.0			2-2		
			Brown Silty Clay, to Clayey Silt, Little Sand, Medium Stiff, Moist	3	10.5	
				3-4		
	15.0			3	13.5	
			Gray Badly Decomposed Claystone Fragments and Clay, Dense, Damp.	9-18		
	18.0			21	16.5	
						Run-Rec.
				50/.3	18.3	
			Bony Coal, Weathered, Soft.			
	23.0				23.0	4.7-3.8
	24.0		Gray Claystone.			
			Gray Medium-Grained Sandstone, Water-Stained, Broken, Medium Hard to Hard.			Lost Water @ 28.0 Ft.
	30.0				30.0	7.0-5.0
			End of Boring at 30.0 Ft.			

Depth (Ft.)	RQD (%)
18.3-23.0	0
23.0-24.0	0
24.0-30.0	47

GEO-MECHANICS, INC.

TEST BORING RECORD

Driller: Wayne Pritts

Water Level: 0-Hr. ..... 24 Hrs. .....

Casing Hammer Wt. ..... lbs. Drop ..... in.

Sampler Hammer Wt. 140 lbs. Drop 30 in.

Sampler Size 2 in. O.D. Casing Size 4 in.

Boring No. TB-6 Surface Elevation 62.2 Sheet No. 1 of 1 sheets

For J. James Fillingham, Architect

Washington County Courthouse Square

Location Washington, Pennsylvania

Started ..... Completed ..... Job No. 7798

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☐ Geologist's Log ☒	BLOWS ON SAMPLER / INTERV.	BOTTOM DEPTH OF SAMPLE	REMARKS CORE DATA
	2.0		Blacktop and Base Course			
				19-20		
				21	4.5	
				13-26		
			Brown Clayey Silt, Little Sand, Trace to Little Decomposed Rock Fragments, Very Stiff to Hard, Damp to Moist.	14	7.5	
				8-7		
				6	10.5	
				10-9		
				8	13.5	
				8-28		
				31	16.5	
	18.5		Top of Rock at 18.5 Ft.			Run-Rec.
	19.0		Dark Gray Carbonaceous Shale, Very Broken, Soft.		18.5	
	23.0		Gray Limestone with Clay Filled Joints, Broken to Blocky, Medium Hard to Hard.		23.0	4.5-4.3
			End of Boring at 23.0 Ft.			

Depth (Ft.)	RQD (%)
18.5-19.0	0
19.0-23.0	20

GEO-MECHANICS, INC.

TEST BORING RECORD

Driller: Wayne Pritts

Water Level: 0-Hr. 35.0 24 Hrs.

Casing Hammer Wt. ____ lbs. Drop ____ in.

Sampler Hammer Wt. 140 lbs. Drop 30 in.

Sampler Size 2 in. O.D. Casing Size 4 in.

Boring No. TB-7 Surface Elevation 66.2 Sheet No. 1 of 2 sheets

For J. James Fillingham, Architect

Washington County Courthouse Square

Location Washington, Pennsylvania

Started 9-20-77 Completed 9-21-77 Job No. 7798

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☐ Geologist's Log ☒	BLOWS ON SAMPLER / INTERV.	BOTTOM DEPTH OF SAMPLE	REMARKS CORE DATA
	1.5		Black Top and Gravel Base Course		1.5	
	5.0		Brown Mottled Silty Clay, Little Sand, Very Stiff, Moist.	3-7 9	4.5	
	13.0		Brown Clayey Silt, Some Sand, Trace Rock Fragments, Medium Dense, Moist	12-12 18 4-5 7 7-7 8	7.5 10.5 13.5	
	22.0		Brown-Gray Mottled Clayey Silt, Little Sand, Trace Decomposed Claystone at Bottom, Soft to Medium Stiff, Damp to Moist. Trace Coal at 13.5 Feet. Top of Rock at 22.0 Ft.	4-3 4 3-2 2 18-18	16.5 19.5 22.0	Run-Rec.
	24.0		Gray Weathered Carbonaceous Claystone, Soft.		23.5	1.5-1.5
	27.0					
	29.5		Brown-Gray to Gray Argillaceous Limestone with Clay Seams, Moderately Weathered, Medium Hard.		28.0	4.5-2.2
	35.0		Gray Weathered Claystone, Broken, Soft. - Limestone Seams from 24.0 to 24.2 Feet.		33.5	5.5-4.2
	37.5		Brown-Gray Weathered Carbonaceous Claystone, Soft to Medium Soft.			
	43.0		Coal (Bony), Broken and Carbonaceous Shale.			
	43.8		Underclay.		43.5	10.0-9.0
	48.5		Gray Fine to Medium-Grained Sandstone, Slightly to Moderately Broken, Medium Hard to Hard.			5.0-4.5
			End of Boring at 48.5 Ft.		48.5	

GEO-MECHANICS, INC.

TEST BORING RECORD

Driller.....

Water Level: 0-Hr. 35.0 24 Hrs.....

Casing Hammer Wt.....lbs. Drop.....in.

Sampler Hammer Wt. 140 lbs. Drop 30 in.

Sampler Size 2 in. O.D. Casing Size 4 in.

Boring No. TB-7 Surface Elevation 66.2 Sheet No. 2 of 2 sheets

For J. James Fillingham, Architect

Washington County Courthouse Square

Location Washington, Pennsylvania

Started 9-20-77 Completed 9-21-77 Job No. 7798

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☐ Geologist's Log ☒	BLOWS ON SAMPLER / INTERV.	BOTTOM DEPTH OF SAMPLE	REMARKS CORE DATA

Depth (Ft.)	RQD (%)
22.0-27.0	20
27.0-29.5	24
29.5-35.0	20
35.0-37.5	0
37.5-43.0	0
43.0-43.8	0
43.8-48.5	50

GEO-MECHANICS, INC.

TEST BORING RECORD

Driller: Wayne Pritts

Water Level: 0-Hr. 4.0 24 Hrs.

Casing Hammer Wt. ____ lbs. Drop ____ in.

Sampler Hammer Wt. 140 lbs. Drop 30 in.

Sampler Size 2 in. O.D. Casing Size 4 in.

Boring No. TB-8 Surface Elevation 45.9 Sheet No. 1 of 1 sheets

For: J. James Fillingham
Washington County Courthouse Square

Location: Washington, Pennsylvania

Started 9-20-77 Completed 9-20-77 Job No. 7798

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☐ Geologist's Log ☒	BLOWS ON SAMPLER / INTERV.	BOTTOM DEPTH OF SAMPLE	REMARKS CORE DATA
	1.5		Black Top and Base Course		1.5	
	7.0		Gray Badly Decomposed Claystone and Clay, Medium Dense, Damp.	5-8 9 15-15	4.5	
	11.5		Black Decomposed Bony Coal, Dense, Damp. Thin Seam of Underclay at Bottom.	15 15-26 22	7.5 10.5	
	17.0		Gray Medium-Grained Sandstone, Water-Stained and Leached, Broken, Medium Hard to Hard.	50/.1	12.1 17.0	Run-Rec. 4.9-4.4
			End of Boring at 17.0 Ft.			

Depth (Ft.)	RQD (%)
12.1-17.0	30

GEO-MECHANICS, INC.

TEST BORING RECORD

Driller: Wayne Pritts

Water Level: 0-Hr. 15.0 24 Hrs.

Casing Hammer Wt. ____ lbs. Drop ____ in.

Sampler Hammer Wt. 140 lbs. Drop 30 in.

Sampler Size 2 in. O.D. Casing Size 4 in.

Boring No. TB-9 Surface Elevation 53.5 Sheet No. 1 of 1 sheets

For J. James Fillingham, Architect

Washington County Courthouse Square

Location Washington, Pennsylvania

Started 9-20-77 Completed 9-20-77 Job No. 7798

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☐ Geologist's Log ☒	BLOWS ON SAMPLER / INTERV.	BOTTOM DEPTH OF SAMPLE	REMARKS CORE DATA
				5-9		
			Reddog Fill, Medium Dense.	4	1.5	
	3.0					
				4-5		
				7	4.5	
				7-9		
			Gray Silty Clay, Little Decomposed Claystone or Clayshale Fragments, Stiff to Very Stiff, Damp.	12	7.5	
				8-10		
				12	10.5	
				12-14		
				14	13.5	
	16.0			16-21		
			Black Decomposed Shale and Coal Fragments, Dense, Damp.	20	16.5	
	18.1		Top of Rock at 18.1 Ft.	50/.1	18.1	Run-Rec.
	20.0		Black Carbonaceous Clayshale, Very Broken, Soft.			
			Coal (Bony), Very Broken and Weathered.			
	22.5					
	23.5		Underclay.		23.0	4.9-3.5
			Gray Fine to Medium-Grained Sandstone, Broken to Blocky, Medium Hard to Hard.			
	27.5				27.5	4.5-4.3

End of Boring at 27.5 Ft.

Depth (Ft.)	RQD (%)
18.1-20.0	0
20.0-22.5	0
22.5-23.5	0
23.5-27.5	30

GEO-MECHANICS, INC.

TEST BORING RECORD

Driller: Wayne Pritts

Water Level: 0-Hr. 28.0 24 Hrs.

Casing Hammer Wt. ____ lbs. Drop ____ in.

Sampler Hammer Wt. 140 lbs. Drop 30 in.

Sampler Size 2 in. O.D. Casing Size 4 in.

Boring No. TB-10 Surface Elevation 55.6 Sheet No. 1 of 1 sheets

For: J. James Fillingham, Architect

Washington County Courthouse Square

Location: Washington, Pennsylvania

Started 9-9-77 Completed 9-9-77 Job No. 7798

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☐ Geologist's Log ☒	BLOWS ON SAMPLER / INTERV.	BOTTOM DEPTH OF SAMPLE	REMARKS CORE DATA
			Dark Brown to Black Silty Sand, Some Carbonaceous	15-10		
	2.0		Material, Medium Dense, Damp. (Fill)	6	1.5	
				7-8		
			Brown Silty Clay, Little Fine Sand, Trace Decomposed Rock Fragments, Very Stiff to Hard.	12	4.5	
				12-12		
				14	7.5	
	10.5		Top of Rock at 10.5 Ft.	14-14		Run-Rec.
				22	10.5	
			Gray Limestone with Clay Seams, Moderately Weathered, Broken, Hard with Soft Clayey Seams.			3.0-1.8
	16.5				14.5	
					16.5	3.0-1.2
			Gray Claystone, Broken, Moderately Weathered, Soft.			
	22.0				20.0	3.5-3.5
			Black Carbonaceous Clayshale, Very			
	24.5		Broken, Soft.		23.5	3.5-3.5
			Bony Coal, Weathered, Soft.			
	28.0					
					28.5	5.0-4.0
			Gray Medium-Grained Sandstone, Slightly Weathered, Blocky, Medium Hard to Hard, 6" Underclay at Top.			
	33.5					5.0-5.0
					33.5	
			End of Boring at 33.5 Ft.			

Depth (Ft.)	RQD (%)
10.5-16.5	18
16.5-22.0	0
22.0-24.5	0
24.5-28.0	0
28.0-33.5	64

GEO-MECHANICS, INC.

TEST BORING RECORD

Driller: Wayne Pritts

Water Level: 0-Hr. ..... 24 Hrs. .....

Casing Hammer Wt. ..... lbs. Drop ..... in.

Sampler Hammer Wt. 140 lbs. Drop 30 in.

Sampler Size 2 in. O.D. Casing Size 4 in.

Boring No. TB-11 Surface Elevation 38.7 Sheet No. 1 of 1 sheets

For J. James Fillingham, Architect

Washington County Courthouse Square

Location Washington, Pennsylvania

Started 9-8-77 Completed 9-8-77 Job No. 7798

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☐ Geologist's Log ☒	BLOWS ON SAMPLER / INTERV.	BOTTOM DEPTH OF SAMPLE	REMARKS CORE DATA
	1.0		Slag and Rock Fragments (Fill)	4-12		
	4.0		Black Decomposed Coal, Medium Dense, Damp.	19 8-8	1.5	
	12.0		Brown-Gray Badly Decomposed Sandstone and Silty Shale Fragments, Some Sand, Trace Silt, Trace Clay, Medium Dense to Dense, Damp. (Residual) Top of Rock at 12.0 Ft.	10 14-12 15 8-12 20	4.5 7.5 10.5 12.0	Run-Rec.
	32.0		Gray Silty to Sandy Shale with Thin Badly Weathered and Soft Clayshale Seams, Very Broken to Broken, Medium Soft to Medium Hard. Thin Coal Seam at 24.0 Feet.		23.5 32.0	11.5-11.5 8.5-8.5
			End of Boring at 32.0 Ft. Depth (Ft.) RQD (%) 12.0-32.0 0			

GEO-MECHANICS, INC.

TEST BORING RECORD

Driller: Wayne Pritts

Water Level: 0-Hr. 2.5 24 Hrs.

Casing Hammer Wt. lbs. Drop in.

Sampler Hammer Wt. 140 lbs. Drop 30 in.

Sampler Size 2 in. O.D. Casing Size 4 in.

Boring No. TB-12 Surface Elevation 43.5 Sheet No. 1 of 1 sheets

For J. James Fillingham, Architect
Washington County Courthouse Square

Location Washington, Pennsylvania

Started 9-9-77 Completed 9-9-77 Job No. 7798

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☐ Geologist's Log ☒	BLOWS ON SAMPLER / INTERV.	BOTTOM DEPTH OF SAMPLE	REMARKS CORE DATA
				15-10		
	2.0		Reddog and Clay Fill, Medium Dense, Damp.	6	1.5	
				8-7		
			Brown-Gray Silty Clay, Trace Sand, Trace Decomposed Rock Fragments, Very Stiff, Damp.	8	4.5	
				12-11		
	8.0					
	9.0			12	7.5	
			Black Bony Coal, Decomposed.	5-12		
	10.5		Top of Rock at 10.5 Ft.	18	10.5	Run-Rec.
	11.0		Bony Coal, Decomposed, Soft.			
	11.5		Gray Clayshales, Soft.			
			Gray-Brown Moderately Weathered, Fine-Grained. Sandstone with Clay Seams, Broken, Medium Soft to Medium Hard.			
	17.5				17.5	7.0-4.5
			End of Boring at 17.5 Ft.			

Depth (Ft.)	RQD (%)
10.5-17.5	0

GEO-MECHANICS, INC.

TEST BORING RECORD

Driller: Wayne Pritts

Water Level: 0-Hr. ..... 24 Hrs. .....

Casing Hammer Wt. ..... lbs. Drop ..... in.

Sampler Hammer Wt. 140 lbs. Drop 30 in.

Sampler Size 2 in. O.D. Casing Size 4 in.

Boring No. TB-13 Surface Elevation 74.5 Sheet No. 1 of 1 sheets

For J. James Fillingham, Architect

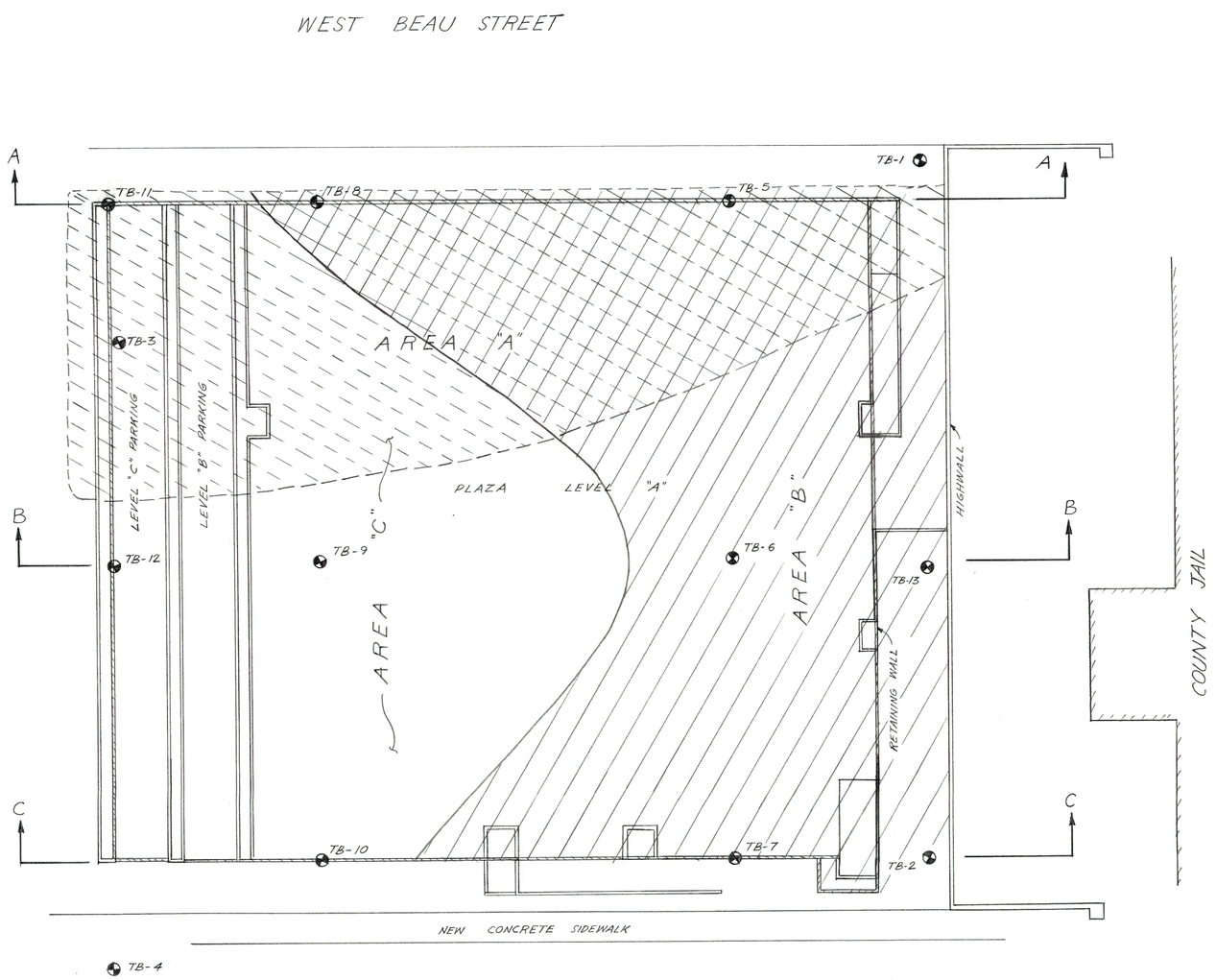
Washington County Courthouse Square

Location Washington, Pennsylvania

Started 9-22-77 Completed 9-22-77 Job No. 7798

ELEVATION	DEPTH	Casing Hammer Blows	Driller's Log ☐ Geologist's Log ☒	BLOWS ON SAMPLER / INTERV.	BOTTOM DEPTH OF SAMPLE	REMARKS CORE DATA
	2.0		Blacktop and Base Course.			
	12.0		Brown Silty Clay, Some Sand, Trace Decomposed Rock Fragments, Medium Stiff to Very Stiff, Damp.	3-3 3 5-9 12 9-10 10	4.5 7.5 10.5	
	17.0		Brown-Gray Decomposed Rock Fragments, Some Sand, Trace Clay, Medium Dense to Dense, Damp.	12-12 23 11-11 8	13.5 16.5	
	19.0		Black Decomposed Carbonaceous Shale Fragments and Clay, Medium Dense, Damp.	7-9		
	28.4		Brown Clayey Silt, Little Sand, Trace Rock Fragments, Moist to Wet.	9 1-4 1 2-3 2	19.5 22.5 25.5	
	30.5		Gray Calcareous Claystone, Very Broken, Soft, Top 3" Limestone	50/.4	28.4	Run-Rec.
	37.0		Gray Argillaceous Limestone, Broken to Blocky, Medium Soft to Hard.		33.5	5.1-5.0
	39.5		Gray Calcareous Claystone, Very Broken, Soft.		39.5	6.0-5.0
			End of Boring at 39.5 Ft.			

Depth (Ft.)	RQD (%)
28.4-30.5	0
30.5-37.0	11



TEST BORING SCHEDULE

BORING No.	SURFACE ELEV.	DEPTH	REMARKS
TB-1.	60.0	35.0'	Previously drilled
TB-2.	75.5	42.0'	" "
TB-3.	43.0	20.0'	" "
TB-4.	49.4	25.0'	" "
TB-5.	55.2	30.0'	
TB-6.	62.2	23.0'	
TB-7.	66.2	48.5'	
TB-8	45.9	17.0'	
TB-9.	53.5	27.5'	
TB-10	55.6	33.5'	
TB-11	38.9	32.0'	
TB-12.	43.5	17.5'	
TB-13.	74.5	39.5'	

LEGEND

AREA "A" = ESTIMATED LIMITS OF UNDERCUT AND BACKFILL

AREA "B" = SHALLOW FOUNDATION

AREA "C" = CAISSONS

WASHINGTON COUNTY COURTHOUSE SQUARE PARKING GARAGE

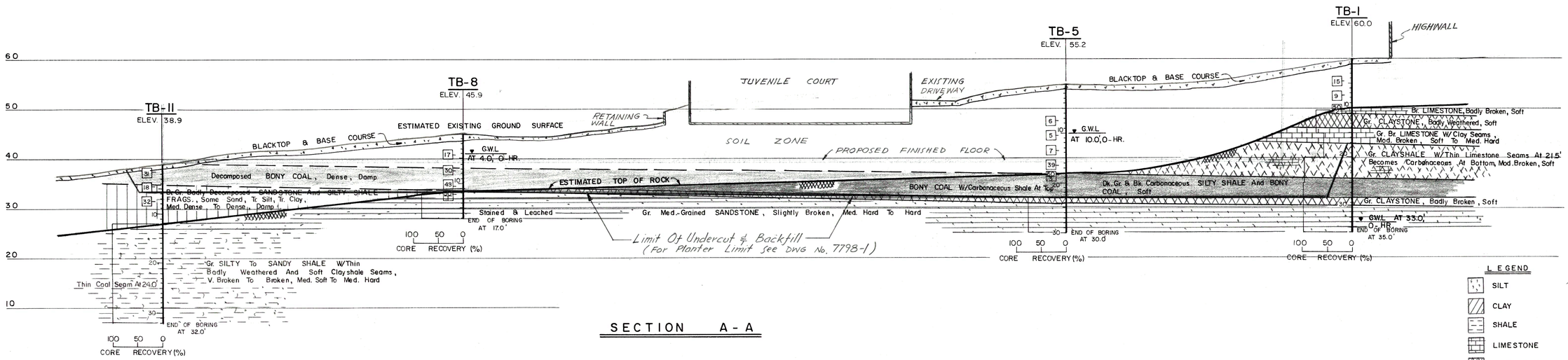
WASHINGTON , PENNSYLVANIA

TEST BORING LOCATION PLAN

Revision	Date	Scale	Drawn By	Checked By	Job No.	Sheet No.
	Oct.,	1 " = 20'	S. K	W. L	7798	1 Of 3

GEO-MECHANICS , INC.

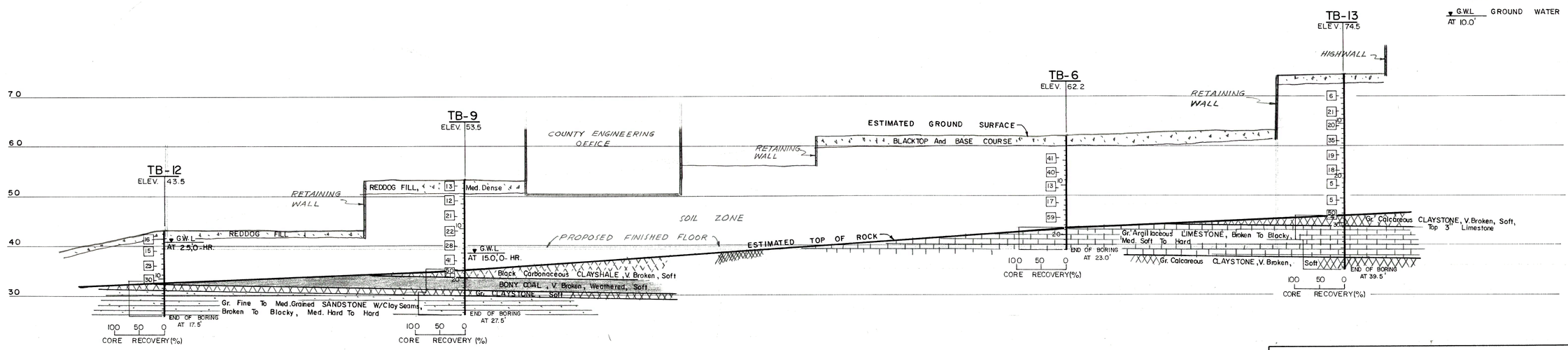
GEOTECHNICAL CONSULTANTS BELLE VERNON, PENNSYLVANIA



SECTION A - A

LEGEND

- SILT
- CLAY
- SHALE
- LIMESTONE
- CLAYSTONE
- CLAYSHALE
- SANDSTONE
- COAL
- 0 — PENETRATION RESISTANCE
- ▼ G.W.L AT 10.0' — GROUND WATER LEVEL



SECTION B - B

The depths and thicknesses of the soil and rock strata indicated on these geologic sections are generalized from and interpolated between the test borings. Information on actual subsurface conditions exist only at the location of the test borings. It is possible that surface conditions between the test borings may vary from those shown.

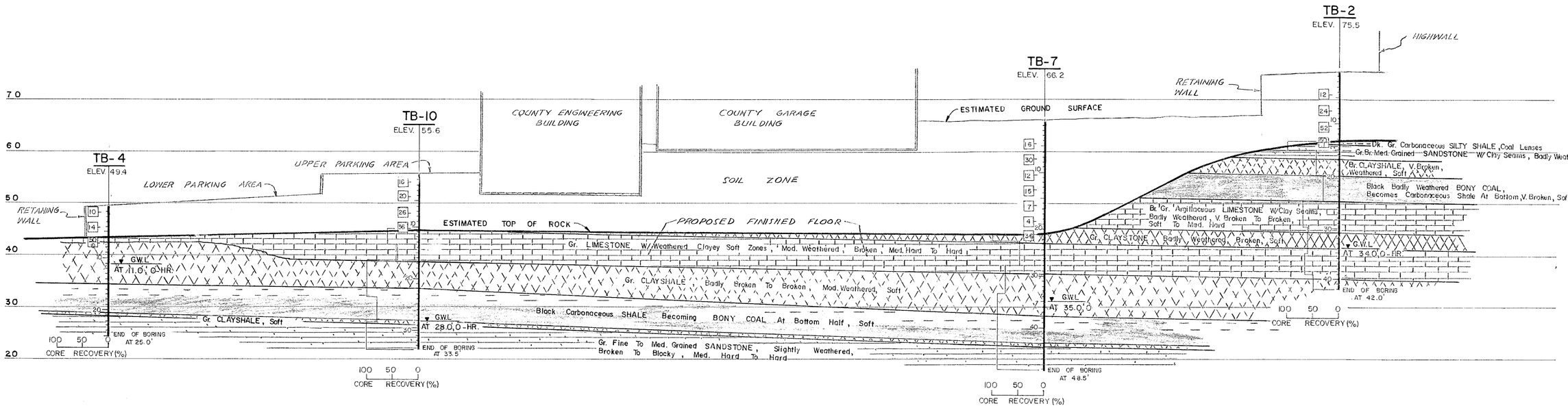
WASHINGTON COUNTY COURTHOUSE SQUARE PARKING GARAGE

WASHINGTON, PENNSYLVANIA

GEOLOGIC CROSS SECTIONS A-A & B-B

Revision No.	Date	Scale	Drawn By	Checked By	Job No.	Sheet No.
	Oct., 1977	Ver. 1"= 10' Hor. 1"= 10'	S.K	W.L	7798	2 OF 3

GEO - MECHANICS, INC.
GEOTECHNICAL CONSULTANTS BELLE VERNON, PENNSYLVANIA



SECTION C-C

LEGEND

- SILT
- CLAY
- ROCK FRAGS.
- SHALE
- SANDSTONE
- CLAYSTONE
- CLAYSHALE
- LIMESTONE
- COAL
- PENETRATION RESISTANCE
- GWL GROUND WATER LEVEL AT 10.0'

The depths and thicknesses of the soil and rock strata indicated on these geologic sections are generalized from and interpolated between the test borings. Information on actual subsurface conditions exist only at the location of the test borings. It is possible that surface conditions between the test borings may vary from those shown.

WASHINGTON COUNTY COURTHOUSE SQUARE PARKING GARAGE

WASHINGTON, PENNSYLVANIA

GEOLOGIC CROSS SECTION C - C

Revision No.	Date	Scale	Drawn By	Checked By	Job No.	Sheet No.
	Oct., 1977	Ver. 1"=10' Hor. 1"=10'	S. K	W.L	7798	3 OF 3

GEO - MECHANICS, INC.

GEOTECHNICAL CONSULTANTS BELLE VERNON, PENNSYLVANIA

CONT. FTG. DETAIL

FOUNDATION PLAN - LEVEL D

SCALE: 1/8"=1'-0"

PILASTER FROM CAISSON TO LEVEL B

PILASTER FROM LEVEL B TO LEVEL A

TYP. PILASTER REINFORCEMENT

CAISSON LOCATIONS

TYPICAL FOUNDATION DETAILS

COLUMN REINFORCEMENT SCHEDULE

GRADE BEAM SCHEDULE

MARK	SIZE WIDTH	SIZE DEPTH	REINFORCING TOP	REINFORCING BOTT.	STIRRUPS
GB1	12	36	2-#9	2-#9	#4@12
GB2	12	36	2-#9	2-#9	#4@12
GB3	15	36	5-#9	3-#9	
GB4	13	36	3-#9	3-#9	
GB5	13	36	9-#9	3-#9	
GB6	18	36	5-#9	4-#9	#4@12
GB7	18	39	2-#9	2-#9	

TYP. GRADE BEAM SECTION

CAISSON SCHEDULE

LOCATION	DIAMETER SHAFT	DIAMETER BELL	ELEVATION TOP CAISSON	ELEVATION BOTT. CAISSON	REMARKS
① LINE ⑤ LINE ⑤ LINE ⑥ LINE ⑥ LINE DELETE	30	STRAIGHT	38.83	SEE PLAN	
B-2, B-3	30	STRAIGHT	38.83		FURNISH 4-#9 DOWELS EA. CAISSON UNLESS OTHERWISE NOTED
C-1	30	STRAIGHT	34.0		
② LINE ③ LINE D-E	36	STRAIGHT	38.83		
DELETE	30	STRAIGHT	38.83		
B-1, B-4	36	STRAIGHT	38.83		
ELEVATOR CAISSONS (4 REQ'D)	30	STRAIGHT	38.25		
③ LINE B-C & F-H, D-4	42		38.50		
③ LINE B-C & F-H	48		38.50		
⑤ LINE 5-6.7 ⑤ LINE 5-6.7	48	STRAIGHT	38.50		
⑥ LINE 5-6.7 ⑤ LINE 5-6.7	30	60	38.50		
C-4	48	78	38.50		
B-4, F-4	54	84	38.50		
H-4, K-5, K-6	42	78	38.50		
C-5, C-6, H-5, H-6	48	90	38.50	SEE PLAN	

NOTE: SEE STAIR & MECH. SHAFT DETAILS FOR ADDITIONAL CAISSONS

TYP. GRADE BEAM & HAUNCH

WASHINGTON COUNTY COURTHOUSE SQUARE PARKING GARAGE

PLAN OF FOUNDATION

DATE OCT. 31, 77
BY WEIDE
APPROVED STATE ENGR.

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