Herman Adalist & Associates, Inc.
CONSTRUCTION INSPECTORS
1905 South Jackson St. • Seattle, Wash. 98144
EA 3-3900

SUBSOIL INVESTIGATION OF SITE FOR

WASHINGTON PROJECT 18-4

ABERDEEN, WASHINGTON

FOR FRANCIS E. HUGGARD, ARCHITECT

F & 5th St

RECEIVED
P.M.
MAY 4 1970
HUGGARD & ASSOCIATES
ARCHITECTS

RECEIVED
MAY 27 1970
CITY OF ABERDEEN
ENGINEER

CERTIFICATE: 2674

DATE: 15 April 1969

Herman Adalist & Associates, Inc.

CONSTRUCTION INSPECTORS

1905 South Jackson St. • Seattle, Wash. 98144

EA 3-3900

Mr. Francis E. Huggard, Architect
1012 Summit Avenue
Seattle, Washington 98104

Project: Washington 18-4, Aberdeen, Washington

Subject: Subsoil investigation

Dear Mr. Huggard:

The following is our final report of our investigation of the above site. The exploration of the sub-surface conditions at 10 locations as shown on the attached drawing were conducted by means of a power auger. Drive samples were taken as indicated on the attached report by means of a standard sampler. The soil classifications are in accordance with Soil Classification Chart - Unified Soil Classification System, a copy of which is attached.

The soft silt and clay with some fine sands is a glacially deposited sediment with moisture content from 12 to 18%, a low PI and a wt./cu.ft. from 118 to 122#. The reddish-brown silty sand is a glacially deposited cemented sediment of the Miocene-Pliocene age. The reddish brown silty sandy gravel falls in the same classification as the above material with the gravels being a heterogeneous mixture of igneous and metamorphic materials consisting of granites, cherts, porphyries and gneiss. The yellowish-brown sandstone is of the Miocene-Pliocene erea and is described as marine rocks brown-gray-coarse-grained, moderately consolidated commonly cross-bedded sandstone. Graded locally into gritstone and conglomerate lenses; includes minor shale beds; sandstone often sholy and in some areas grades into claystone. This material is in evidence in large cuts along the Chehalis and Wishkah Rivers in the area immediately surrounding the above site. An examination of the plans and specifications and construction records of the St. Joseph Hospital, a multi-storied building directly across G Street from your site, indicated the same material. A seismic shock wave investigation with a model MD-1 Engineering Seismograph indicated rock depths to elevation minus 30' (this is the limit of the seismograph).

An interview with the City Engineer and the Superintendent of the Water Department revealed the following information. There have been no slides or distrubances recorded in this area. Frost penetration has never exceeded 15". There has been no indications of movement of buildings, utilities, or streets. The water noted on the attached report is from the hillside above and was noted at the time of construction of St. Joseph Hospital and caused no construction problem.

Laboratory tests on drive samples of the sandstone-like materials and the sandstone material indicate support values between 10,000#/sq.in. and 13,000#/sq.in. An examination of the existing buildings on the site indicates no differential settlement and no water problems. This sandstone weighs from 137 to 142#/cu.ft.

It is my opinion based on the above information and the attached report that your Structural Engineer will have sufficient information to develop foundation design.

Respectfully submitted,

HERMAN ADALIST & ASSOCIATES, INC.

Herman Adalist

Herman Adalist

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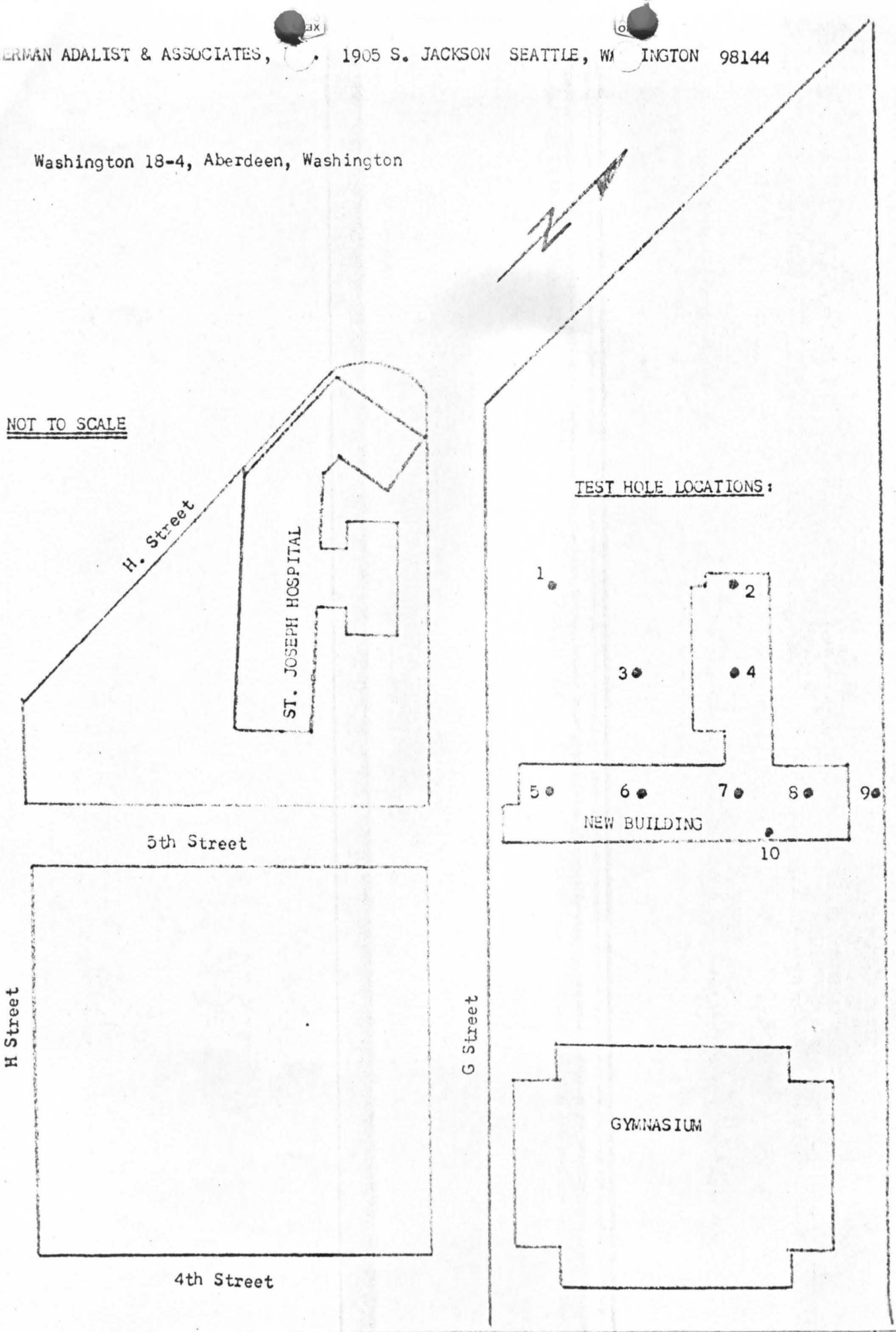
Washington 18-4, Aberdeen, Washington



*MP - Classification of the Division of Mines & Geology, Geologic Map of Washington - 1961

MIOCENE-PLIOCENE - Marine rocks brown-gray-coarse-grained, moderately consolidated commonly cross-bedded sandstone. Grades locally into gritstone and conglomerate lenses; includes minor shale beds; sandstone ofter shaly and in some areas grades into claystone.

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SOIL CLASSIFICATION CHART - UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS More than 50% of material is larger than No. 200 sieve size	GRAVEL AND GRAVELLY SOILS More than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS (little or no fines)		GW	Well-graded gravels, gravel-sand mixtures, little or no fines.
				GP	Poorly graded gravels, gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (appreciable amount of fines)		GM	Silty gravels, gravel-sand-silt mixtures.
				GC	Clayey gravels, gravel-sand-clay mixtures.
	SAND AND SANDY SOILS More than 50% of coarse fraction passing No. 4 sieve	CLEAN SAND (little or no fines)		SW	Well-graded sands, gravelly sands, little or no fines.
				SP	Poorly-graded sands, gravelly sands, little or no fines.
		SANDS WITH FINES (appreciable amount of fines)		SM	Silty sands, sand-silt mixtures
				SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS More than 50% of material is smaller than No. 200 sieve	SILTS AND CLAYS	Liquid limit less than 50		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
				CL	Inorganic clays or low to medium plasticity gravelly clays, sandy clays, silty clays, lean clays.
				OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS	Liquid limit greater than 50		MH	Inorganic silts, micaceous or diatomaceous fine sand or silty soils
				CH	Inorganic clays of high plasticity, fat clays
				OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS				PT	Peat, humus, swamp soils with high organic contents.

NOTE: Dual symbols are used to indicate borderline soil classifications.

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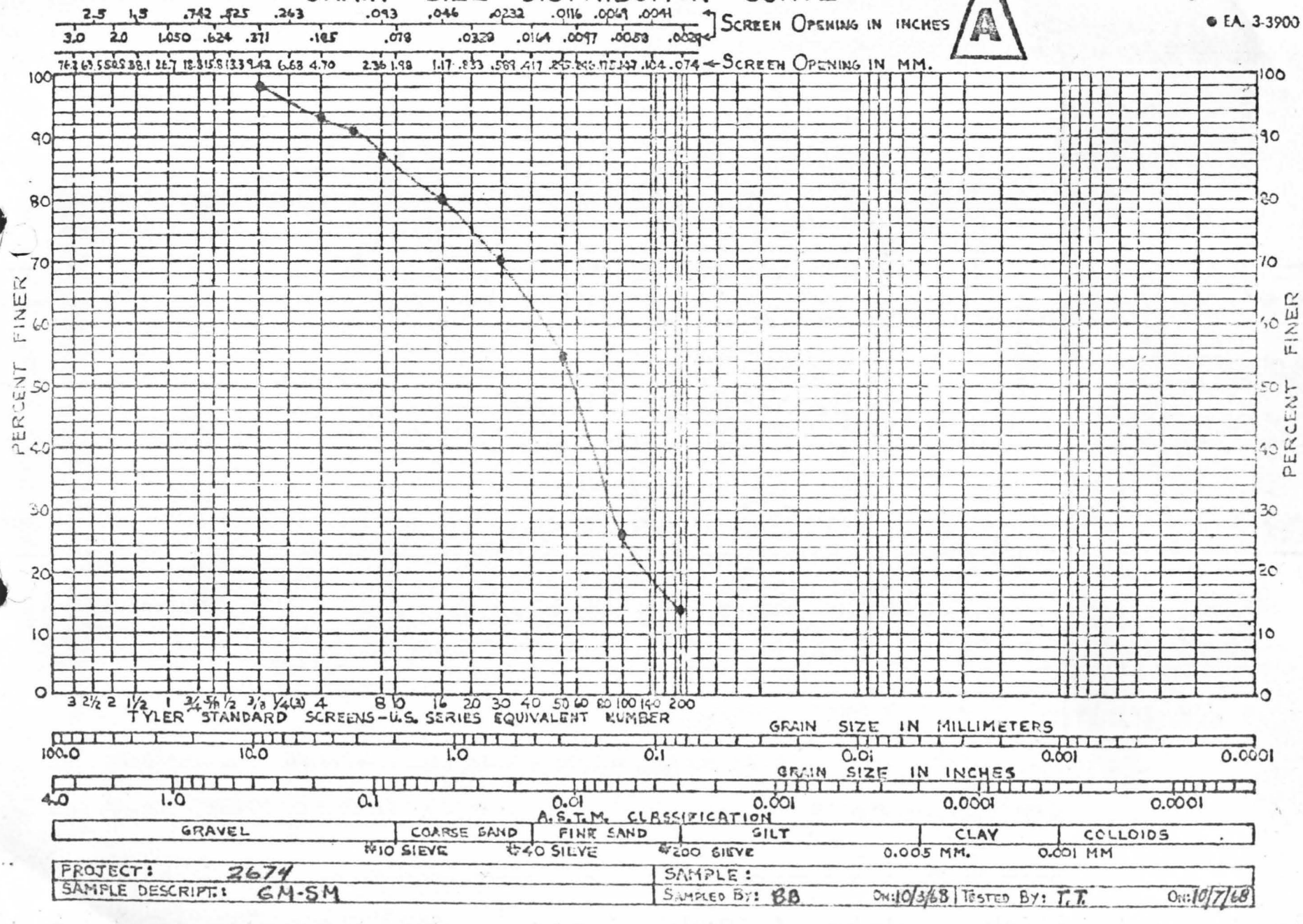
GRAIN SIZE DISTRIBUTION CURVE



PROJECT: 2674	SAMPLE:
SAMPLE DESCRIPT.: GM-SM	SAMPLED BY: BB ON: 10/3/68 TESTED BY: T.T. ON: 10/7/68

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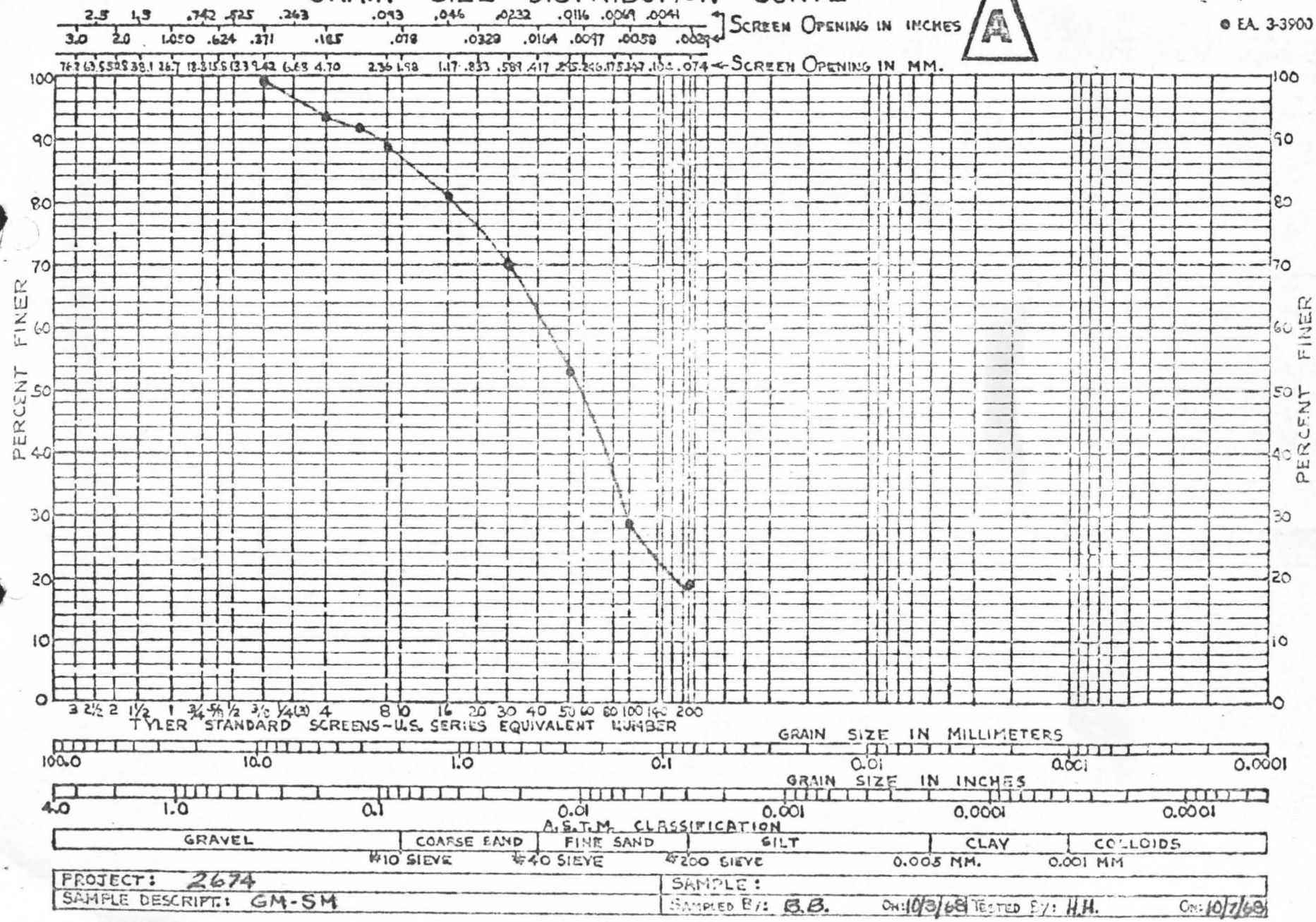

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SAMPLE DESCRIPT.: GM-SM	SAMPLED BY: B.B. ON: 10/3/68 TESTED BY: H.H. ON: 10/7/68

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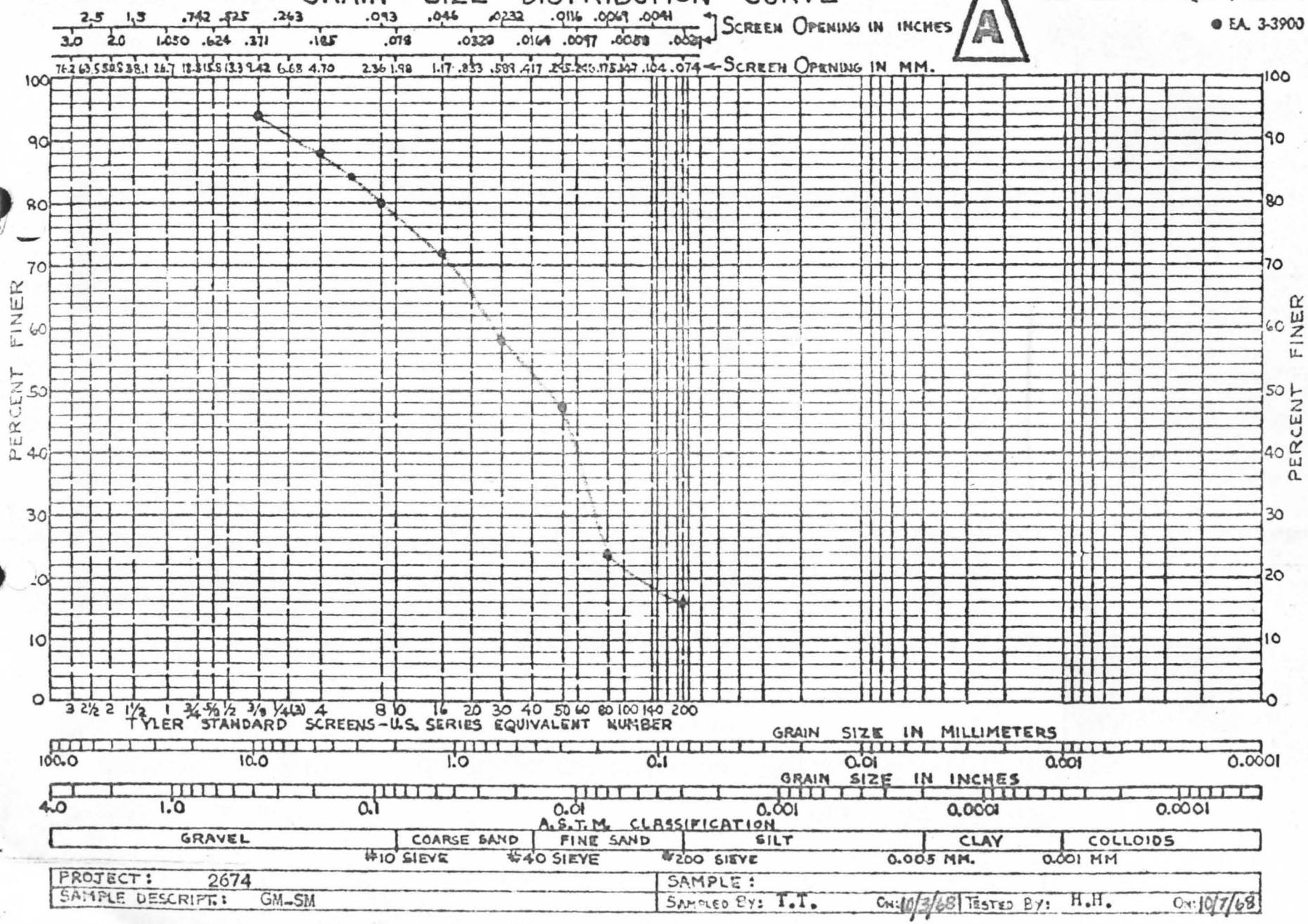

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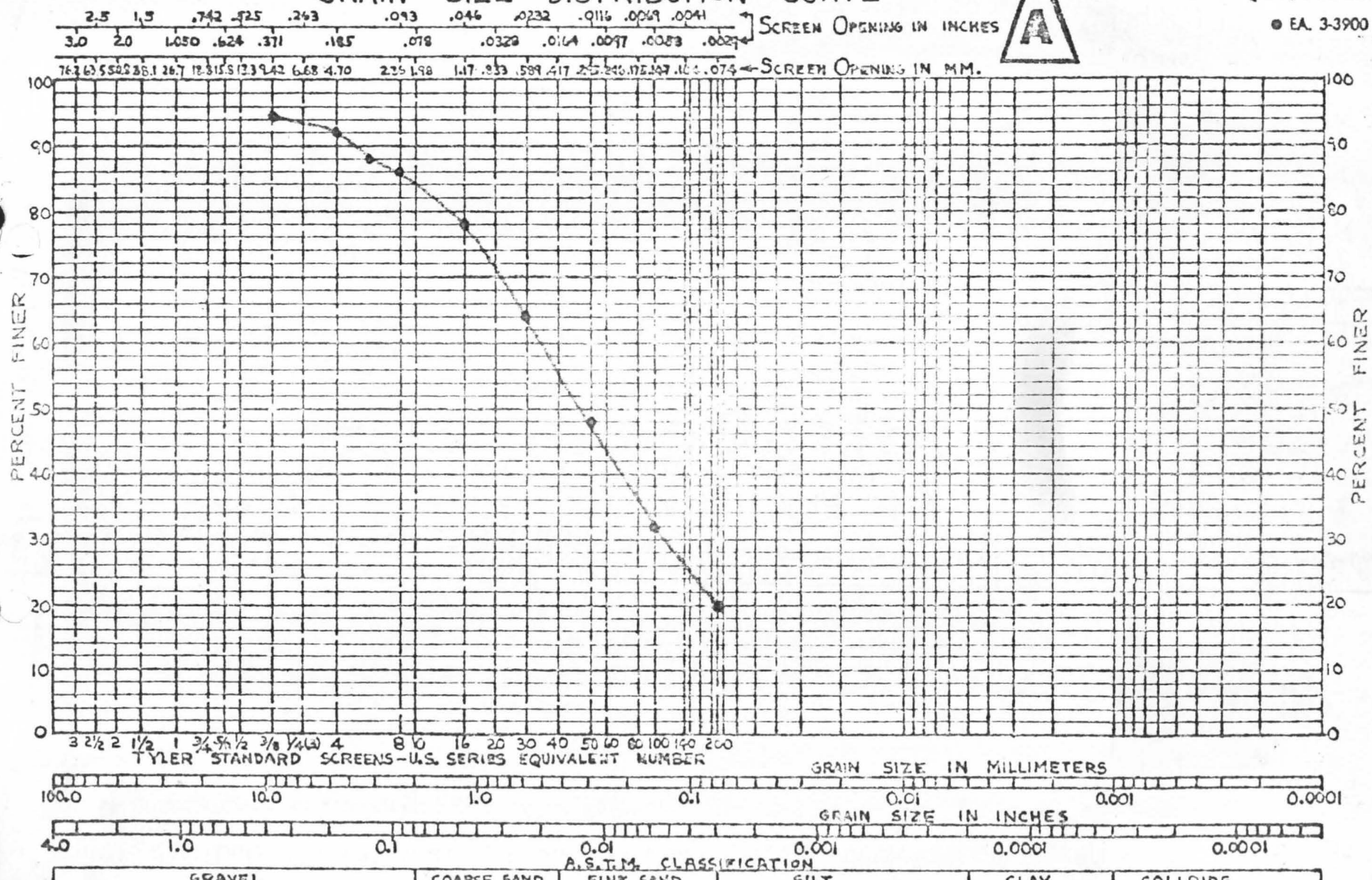

A.S.T.M. CLASSIFICATION

GRAVEL	COARSE SAND	FINE SAND	SILT	CLAY	COLLOIDS
	#10 SIEVE	#40 SIEVE	#200 SIEVE	0.005 MM.	0.001 MM

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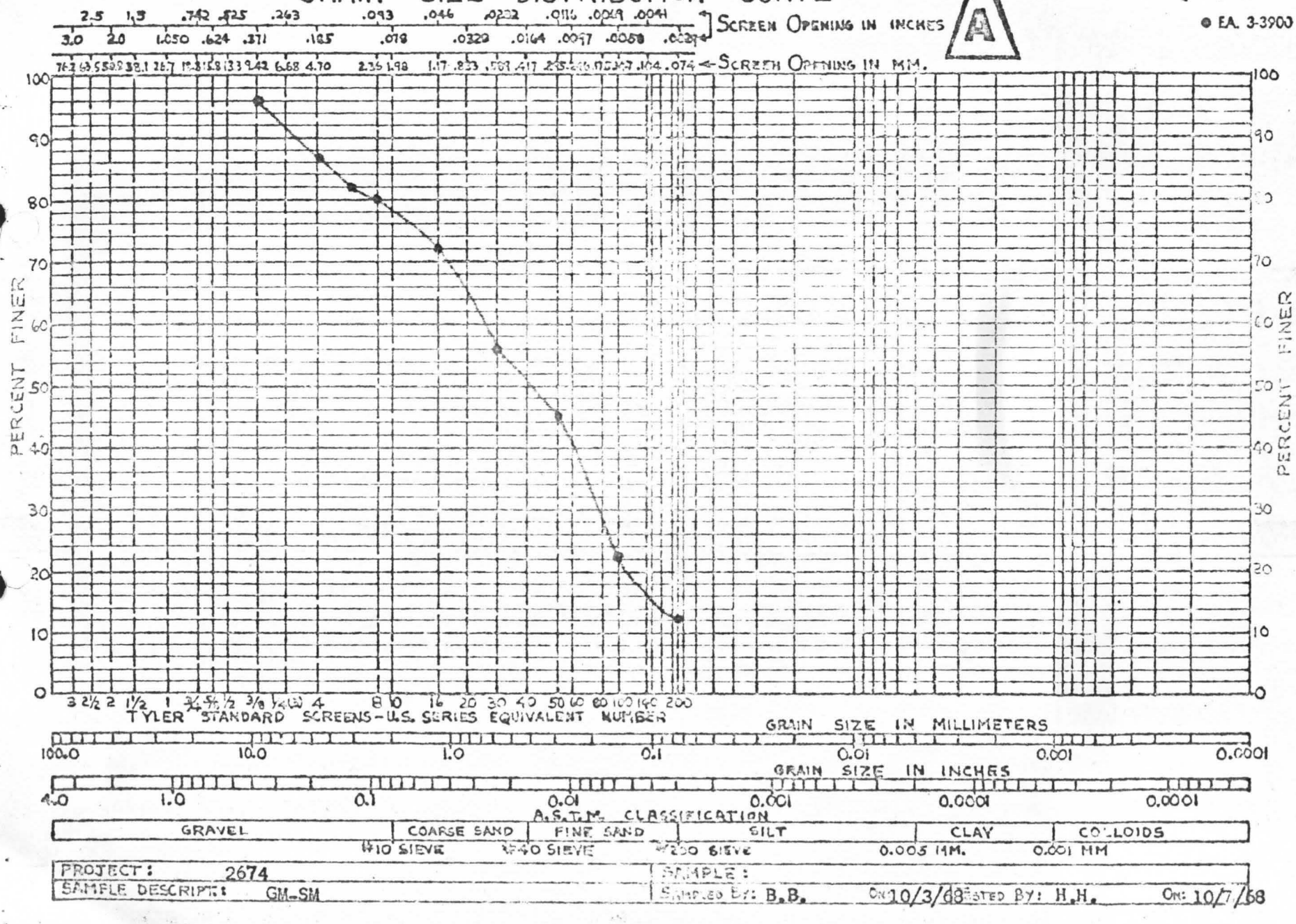

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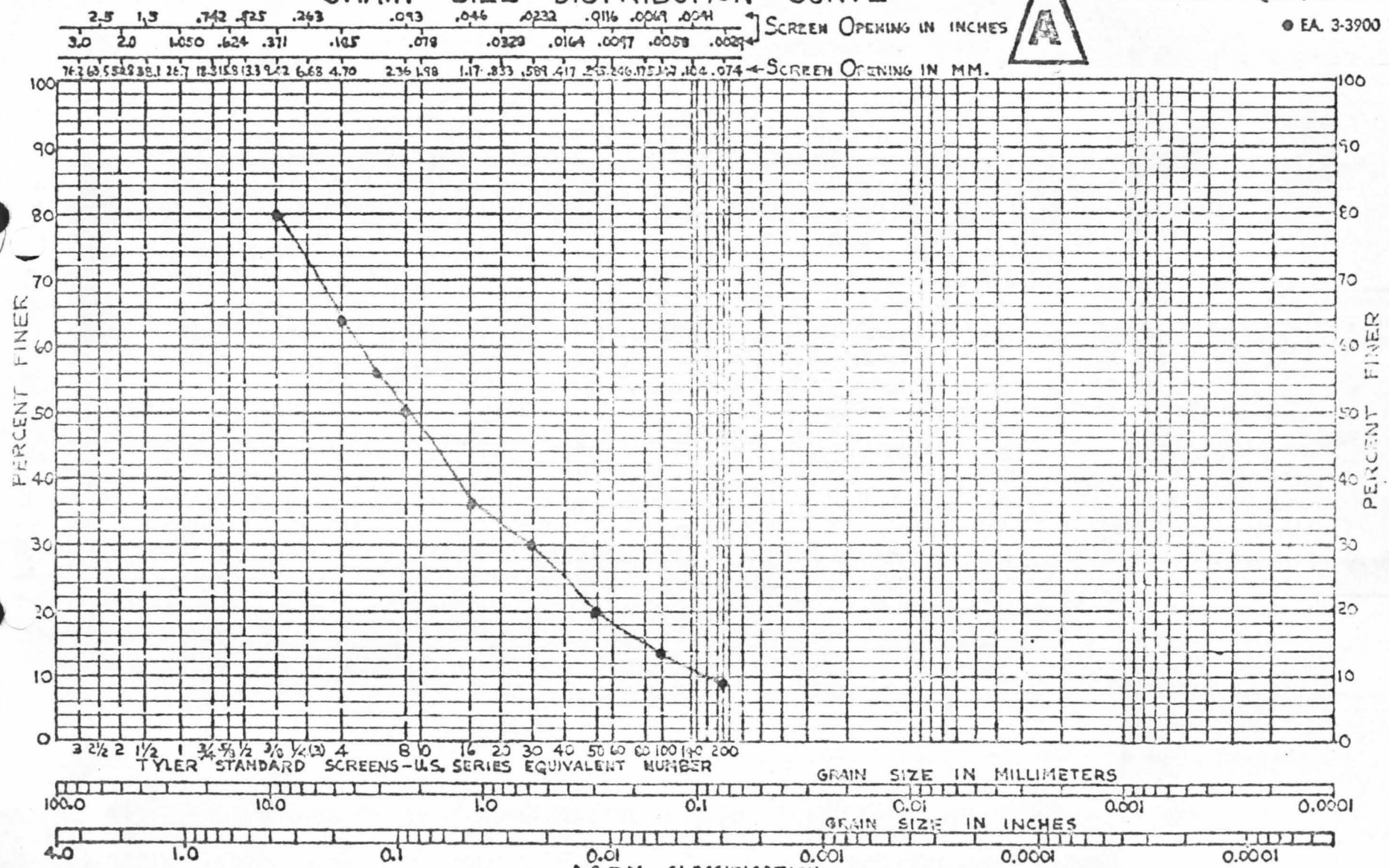

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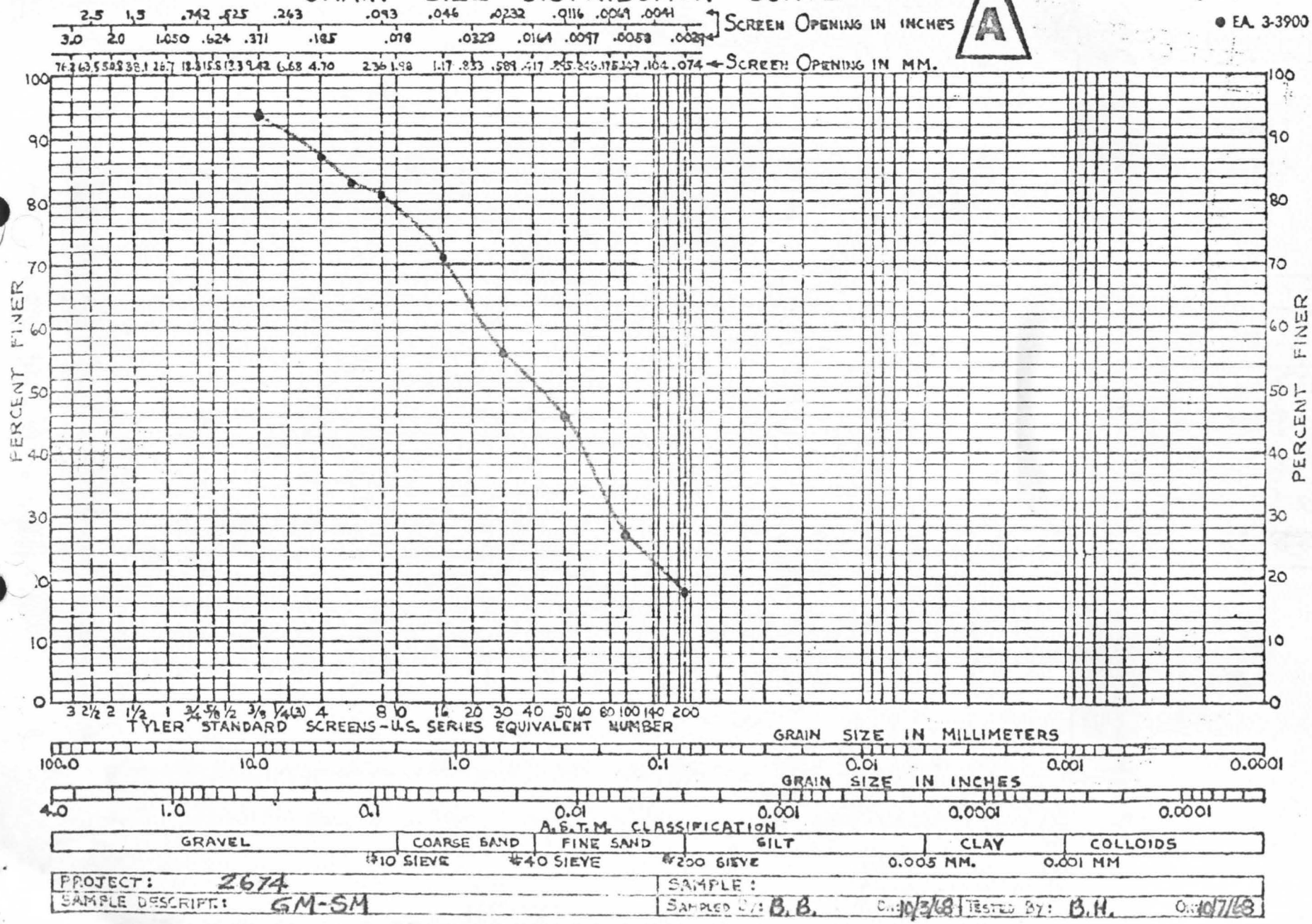

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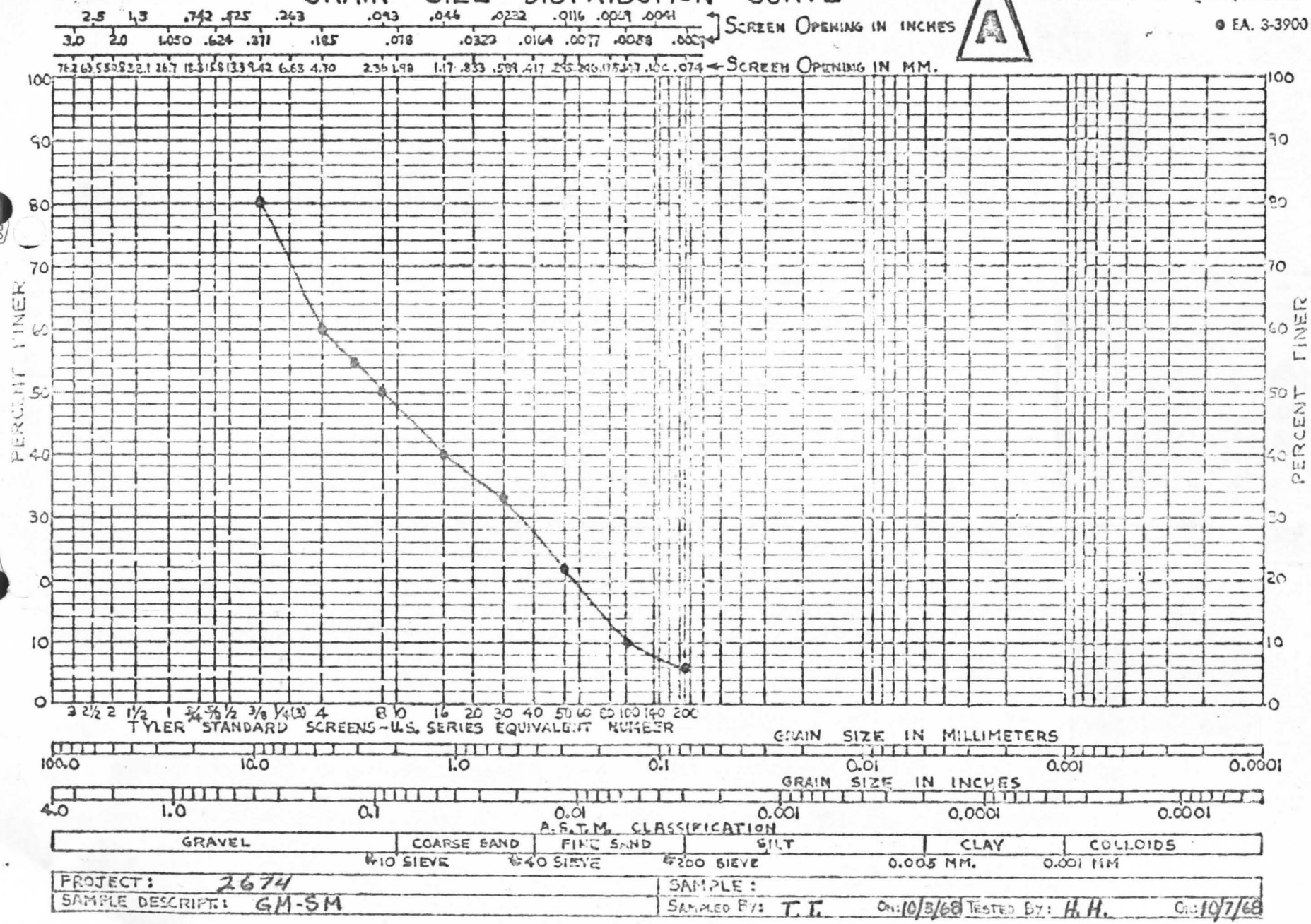

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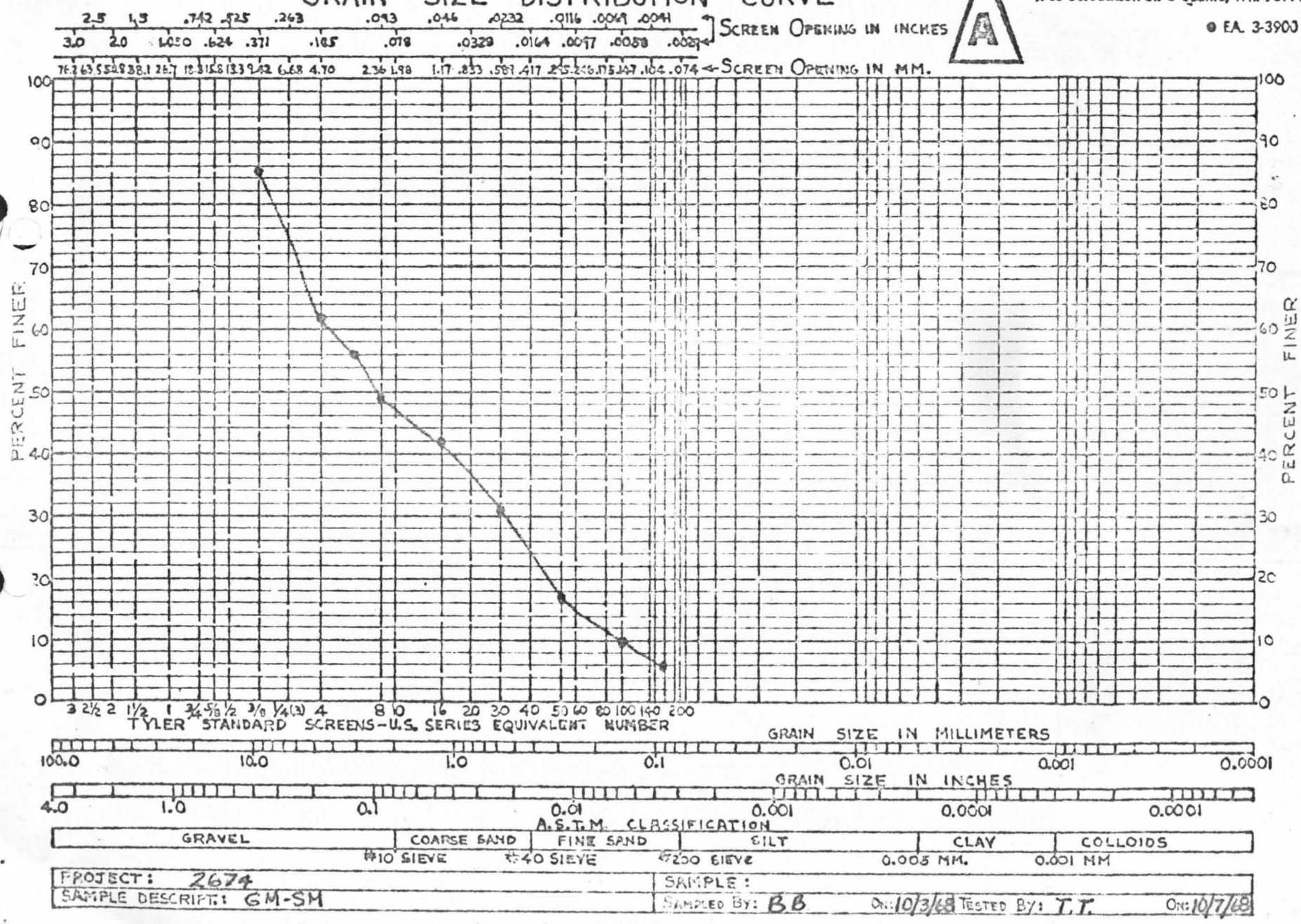

A.S.T.M. CLASSIFICATION

GRAVEL	COARSE SAND	FINE SAND	SILT	CLAY	COLLOIDS
	#10 SIEVE	#40 SIEVE	#200 SIEVE	0.005 MM.	0.001 MM

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CERTIFICATE: 2674

DATE: 14 April 1969

Stoddard & Huggard, A.I.A.
1012 Summit Avenue
Seattle, Washington 98104

Project: Washington 18-4, Aberdeen, Washington

Subject: Subsoil investigation.

Description of soil in accordance with the Unified Soil Classification System.

TEST HOLE #1	DESCRIPTION	CLASSIFICATION
0' - 1'	Topsoil.	PT
1' - 8'	Silt and clay with some fine sand, soft.	ML
	Blow count at 6' - 35 blows/foot.	
8' - 15'	Reddish-brown silty sand, compact (semi-sandstone).	SM
	Blow count at 13' - 150 blows/foot.	
15' - 20'	Reddish-brown silty sandy gravel, semi-cemented (sandstone-like material as above).	GM-SM
	Blow count at 19' - 153 blows/foot.	
	Some water seeping in at the 8' to 9' level.	
20' - 42'	Yellowish-brown sandstone, extremely compact. Could only drive sampler 6" and obtained refusal.	MP*

CERTIFICATE: 2674

Stoddard & Huggard, A.I.A.

TEST HOLE #2	DESCRIPTION	CLASSIFICATION
0' - 1'	Topsoil.	PT
1' - 8'	Silt and clay with some fine sand, soft.	ML
	Blow count at 6' - 35 blows/foot.	
8' - 15'	Reddish-brown silty sand, compact (semi-sandstone).	SM
	Blow count at 13' - 150 blows/foot.	
15' - 20'	Reddish-brown silty sandy gravel, semi-cemented (sandstone-like material as above).	GM-SM
	Blow count at 19' - 135 blows/foot.	
	Some water seeping in at the 8' to 9' level.	
20' - 42'	Yellowish-brown sandstone, extremely compact. Could only drive sampler 6" and obtained refusal.	MP*

TEST HOLE #3		
0' - 1'	Topsoil.	PT
1' - 8'	Silt and clay with some fine sand, soft.	ML
	Blow count at 6' - 35 blows/foot.	
8' - 15'	Reddish-brown silty sand, compact (semi-sandstone).	SM
	Blow count at 13' - 150 blows/foot.	
15' - 20'	Reddish-brown silty sandy gravel, semi-cemented (sandstone-like material as above).	GM-SM
	Blow count at 19' - 153 blows/foot.	
	Some water seeping in at the 8' to 9' level.	
20' - 42'	Yellowish-brown sandstone, extremely compact. Could only drive sampler 6" and obtained refusal.	MP*

CERTIFICATE: 2674

Stoddard & Huggard, A.I.A.

TEST HOLE #4	DESCRIPTION	CLASSIFICATION
0' - 1'	Topsoil.	PT
1' - 8'	Silt and clay with some fine sand, soft.	ML
	Blow count at 6' - 35 blows/foot.	
8' - 15'	Reddish-brown silty sand, compact (semi-sandstone).	SM
	Blow count at 13' - 150 blows/foot.	
15' - 20'	Reddish-brown silty sandy gravel, semi-cemented (sandstone-like material as above).	GM-SM
	Blow count at 19' - 153 blows/foot.	
	Some water seeping in at the 8' to 9' level.	
20' - 42'	Yellowish-brown sandstone, extremely compact. Could only drive sampler 6" and obtained refusal	MP*

TEST HOLE #5		
0' - 1'	Topsoil.	PT
1' - 6'	Silt and clay with some fine sand, soft.	ML
	Blow count at 4' - 35 blows/foot.	
6' - 13'	Reddish-brown silty sand, compact (semi-sandstone).	SM
	Blow count at 11' - 150 blows/foot.	
13' - 18'	Reddish-brown silty sandy gravel, semi-cemented (sandstone-like material as above).	GM-SM
	Blow count at 17' - 153 blows/foot.	
	Some water seeping in at the 6' to 7' level	
18' - 42'	Yellowish-brown sandstone, extremely compact.	MP*

CERTIFICATE: 2674

Stoddard & Huggard, A.I.A.

TEST HOLE #6	DESCRIPTION	CLASSIFICATION
0' - 1'	Topsoil.	PT
1' - 6'	Silt and clay with some fine sand, soft.	ML
	Blow count at 4' - 35 blows/foot.	
6' - 13'	Reddish-brown silty sand, compact (semi-sandstone).	SM
	Blow count at 11' - 150 blows/foot.	
13' - 18'	Reddish-brown silty sandy gravel, semi-cemented (sandstone-like material as above).	GM-SM
	Blow count at 17' - 153 blows/foot.	
	Some water seeping in at the 6' to 7' level	
18' - 42'	Yellowish-brown sandstone, extremely compact.	MP*

TEST HOLE #7		
0' -- 1'	Topsoil.	PT
1' - 6'	Silt and clay with some fine sand, soft.	ML
	Blow count at 4' - 35 blows/foot.	
6' - 13'	Reddish-brown silty sand, compact (semi-sandstone).	SM
	Blow count at 11' - 150 blows/foot.	
13' - 18'	Reddish-brown silty sandy gravel, semi-cemented (sandstone-like material as above).	GM-SM
	Blow count at 17' - 153 blows/foot.	
	Some water seeping in at the 6' to 7' level.	
18' - 42'	Yellowish-brown sandstone, extremely compact.	MP*

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CERTIFICATE: 2674

Stoddard & Huggard, A.I.A.

TEST HOLE #8	DESCRIPTION	CLASSIFICATION
0' - 13'	Reddish-brown, silty sand, compact (semi-sandstone). Extremely firm. Sampler met refusal in less than 6".	SM
13' - 32'	Yellowish-brown sandstone, extremely compact. Samplet met refusal in less than 6".	MP*

TEST HOLE #9

0' - 7'	Silvery-blue fine silty sand, firm.	SM
	Blow count at 7' - 150 blows per foot.	
7' - 23'	Blue-green compact silty sand. Some small gravel.	SM-GM
	Blow count at 22' - 150 blows per foot.	

TEST HOLE #10

0' - 13'	Reddish-brown, silty sand, compact (semi-sandstone). Extremely firm. Sampler met refusal in less than 6".	SM
13' - 32'	Yellowish-brown sandstone, extremely compact. Sampler met refusal in less than 6".	MP*

GENERAL DESCRIPTION:

The site is a promontory rising sharply from south to north with an extremely steep bank on the south and east sides. The exposed banks reveal the typical rusty sandstone or sandstone-like materials standing almost vertically.

The softer material encountered to depths from 6' to 8' up on the level area has apparently been softened over the years by surface water infiltration. Immediately below this material is good bearing.

Respectfully,

HERMAN ADALIST & ASSOCIATES, INC.

Herman Adalist