

55-F-55
W.P.# 126-56
HWY # 2
SHELTER CREEK
GRAFTON



Materials Laboratory - Department of Highways - Ontario
Office Report on Soil Exploration

Drill Rig # 4
Casing B.A. (Standard Samplers to fit unless noted)
Sampler Hammer WT 250 # Drop 24 inches

Job F-55-55 Grafton, Shelter Creek Hwy Boring No. 1 STA. 247+25 20' ±
Datum Geodetic
Compiled by H.S. Checked by P.A. Boring Date Feb. 29/56

Sample Condition: Disturbed, Good, Lost
Sample Types: CS - Chunk, DO - Drive Open, DF - Drive Foot Valve, TO - Thin Wall Open, WS - Washed Sample, RC - Rock Core
Abbreviations: V - Insitu Vane Shear Test, M - Mechanical Analysis, U - Unconfined Compression, Qc - Triaxial Consolidated Quick, S - Triaxial Slow, γ - Unit Weight, K - Permeability, C - Consolidation, CA - Casing, WL - Water Level in Casing, WT - Water Table in Soil

Soil Profile: Elevation 331.5 to 300.5, Description: Very mixed gravelly glacial till, Penetration Test: 388.0 to 303.5, Water Content: 100% to 100%, Samples: DO 1 to 10

Materials Laboratory - Department of Highways - Ontario
Office Report on Soil Exploration

Drill Rig # 4
Casing B.X. (Standard Samplers to fit unless noted)
Sampler Hammer WT 250 # Drop 24 inches

Job F-55-55 Grafton, Shelter Creek Hwy Boring No. 2 STA. 247+20 20' ±
Datum Geodetic
Compiled by H.S. Checked by P.A. Boring Date Feb. 29/56

Sample Condition: Disturbed, Good, Lost
Sample Types: CS - Chunk, DO - Drive Open, DF - Drive Foot Valve, TO - Thin Wall Open, WS - Washed Sample, RC - Rock Core
Abbreviations: V - Insitu Vane Shear Test, M - Mechanical Analysis, U - Unconfined Compression, Qc - Triaxial Consolidated Quick, S - Triaxial Slow, γ - Unit Weight, K - Permeability, C - Consolidation, CA - Casing, WL - Water Level in Casing, WT - Water Table in Soil

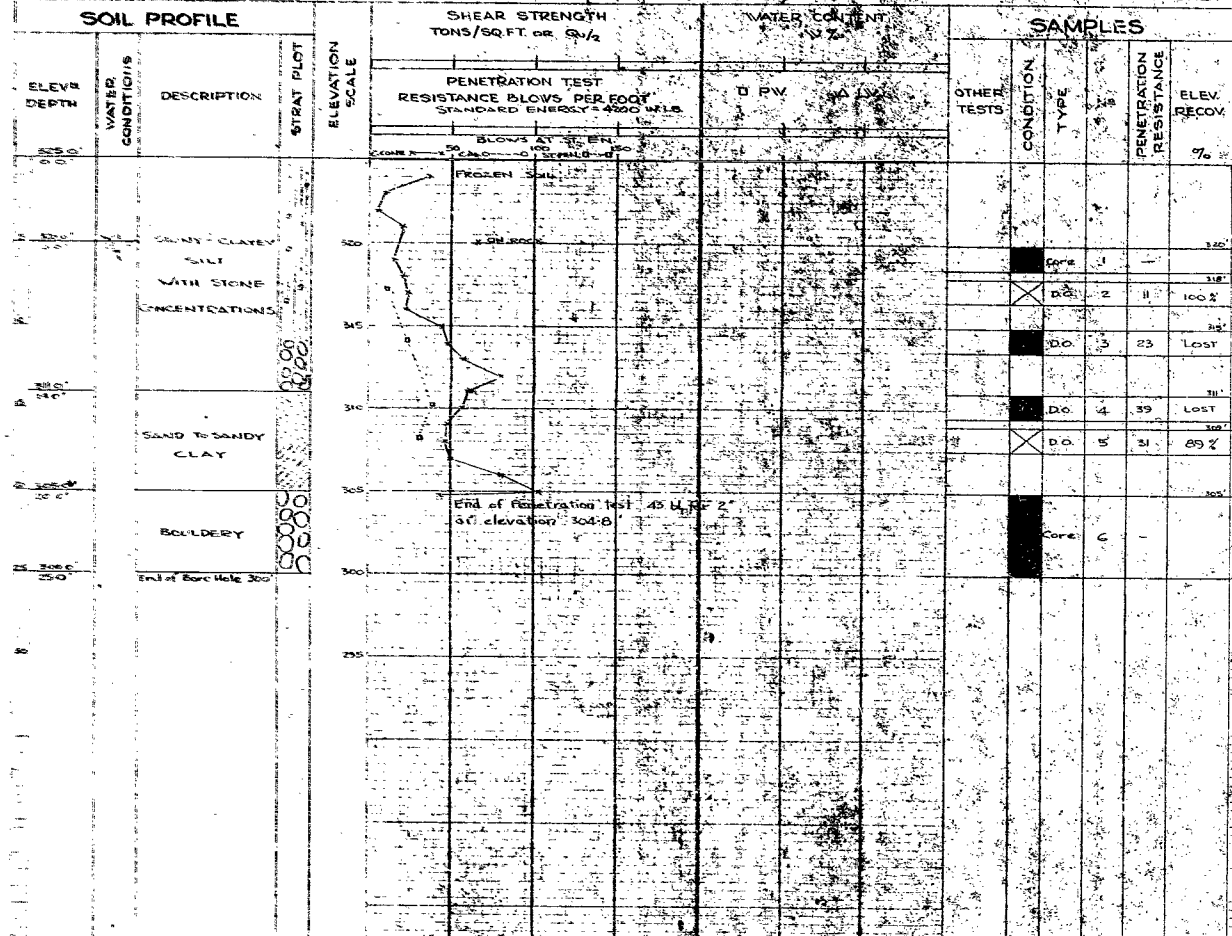
Soil Profile: Elevation 331.0 to 301.0, Description: Very mixed grained glacial till, Penetration Test: 327.0 to 303.5, Water Content: 100% to 100%, Samples: DO 1 to 10

NOTE: Bore Hole No. 3 only penetrated 9'-0" and was discontinued because of excessive difficulties in obtaining samples.

MATERIALS LABORATORY - DEPARTMENT OF HIGHWAYS - ONTARIO
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG: 1
CASING: 1 (STANDARD SAMPLERS TO FIT UNLESS NOTED)
SAMPLER HAMMER WT: 250 #
DROP: 24 INCHES
JOB: F-55-55 GRAFTON SHELLY CREEK HWY 2 BORING NO. 1 STA 245+40.10 LT
DATUM: GEODETIC
DATE REPORT: MARCH 1956
COMPILED BY: H.S. CHECKED BY: P.A. BORING DATE: 7 MARCH 1956

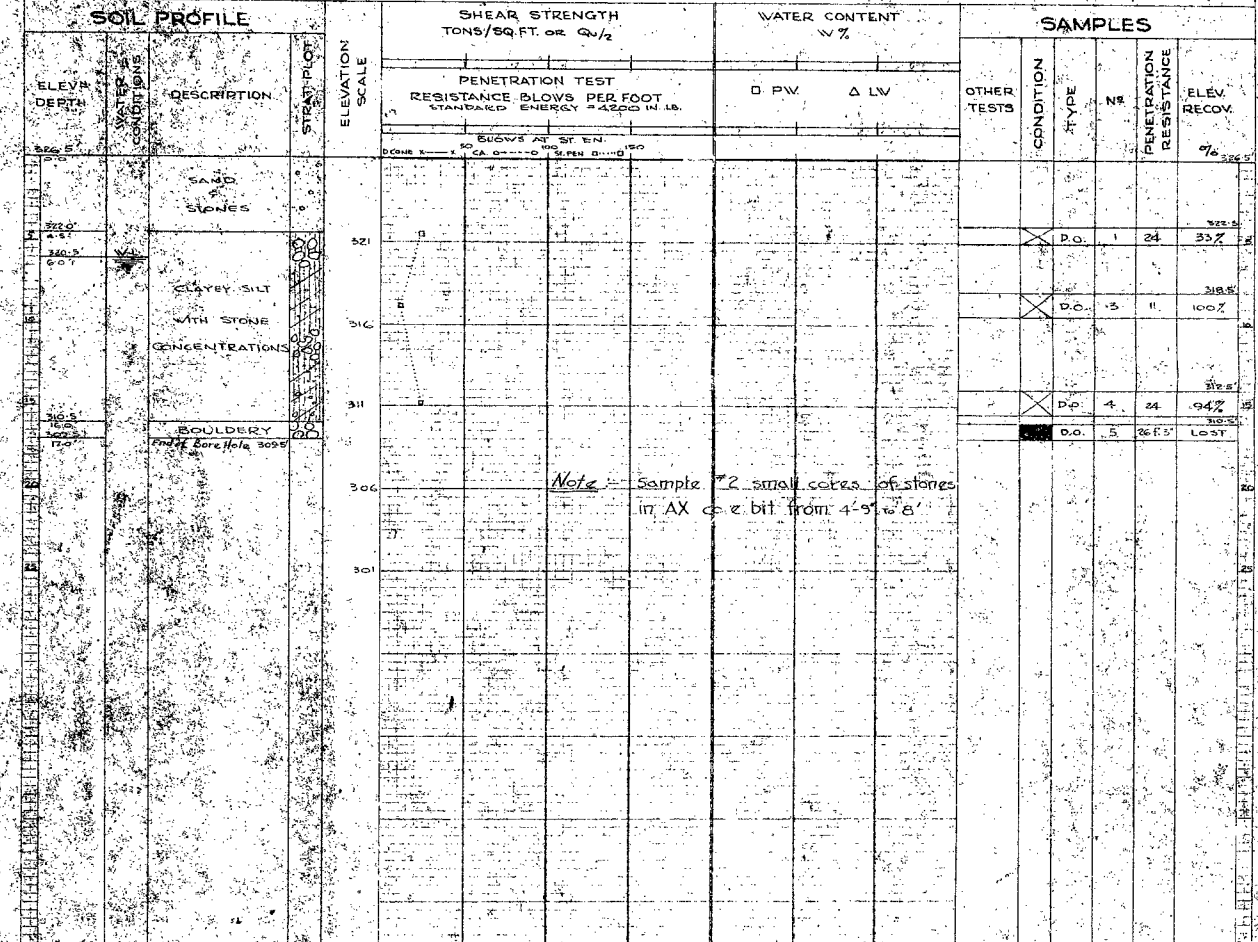
SAMPLE CONDITION		SAMPLE TYPES		ABBREVIATIONS	
	DISTURBED	C.S. - CHUNK		V - INSITU VANE SHEAR TEST	UNIT WEIGHT
	GOOD	D.O. - DRIVE OPEN		M - MECHANICAL ANALYSIS	K - PERMEABILITY
	LOST	D.F. - DRIVE FOOT VALVE		U - UNCONFINED COMPRESSION	C - CONSOLIDATION
		TO - THIN WALLED OPEN		Q - TRIAXIAL CONSOLIDATED QUICK	CA - CASING
				Q - TRIAXIAL QUICK	WL - WATER LEVEL IN CASING
				S - TRIAXIAL SLOW	WT - WATER TABLE IN SOIL
				VS - WASHED SAMPLE	
				RC - ROCK CORE	

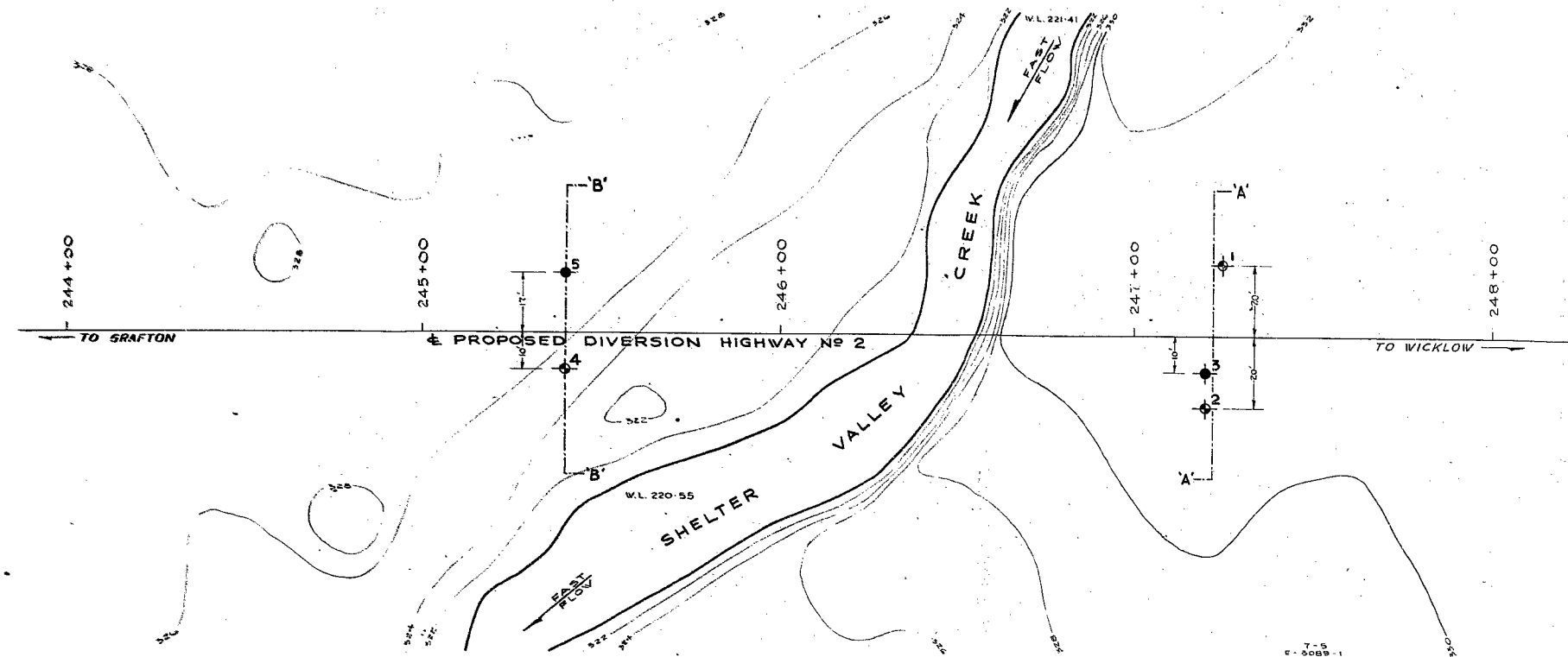


MATERIALS LABORATORY - DEPARTMENT OF HIGHWAYS - ONTARIO
OFFICE REPORT ON SOIL EXPLORATION

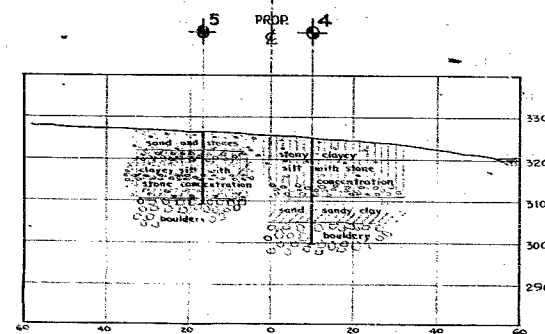
DRILL RIG: 1
CASING: 1 (STANDARD SAMPLERS TO FIT UNLESS NOTED)
SAMPLER HAMMER WT: 250 #
DROP: 24 INCHES
JOB: F-55-55 GRAFTON SHELLY CREEK HWY 2 BORING NO. 2 STA 245+40.17 LT
DATUM: GEODETIC
DATE REPORT: MARCH 1956
COMPILED BY: H.S. CHECKED BY: P.A. BORING DATE: 7 MARCH 1956

SAMPLE CONDITION		SAMPLE TYPES		ABBREVIATIONS	
	DISTURBED	C.S. - CHUNK		V - INSITU VANE SHEAR TEST	UNIT WEIGHT
	GOOD	D.O. - DRIVE OPEN		M - MECHANICAL ANALYSIS	K - PERMEABILITY
	LOST	D.F. - DRIVE FOOT VALVE		U - UNCONFINED COMPRESSION	C - CONSOLIDATION
		TO - THIN WALLED OPEN		Q - TRIAXIAL CONSOLIDATED QUICK	CA - CASING
				Q - TRIAXIAL QUICK	WL - WATER LEVEL IN CASING
				S - TRIAXIAL SLOW	WT - WATER TABLE IN SOIL
				VS - WASHED SAMPLE	
				RC - ROCK CORE	

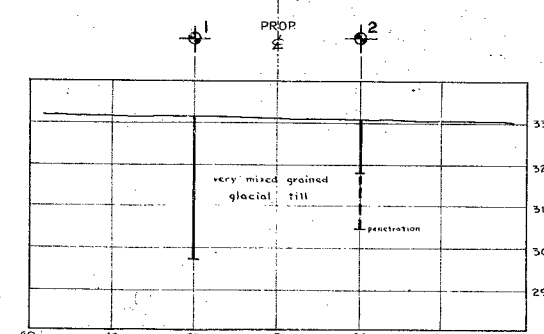




PLAN
SCALE - 1 in. = 20 ft.



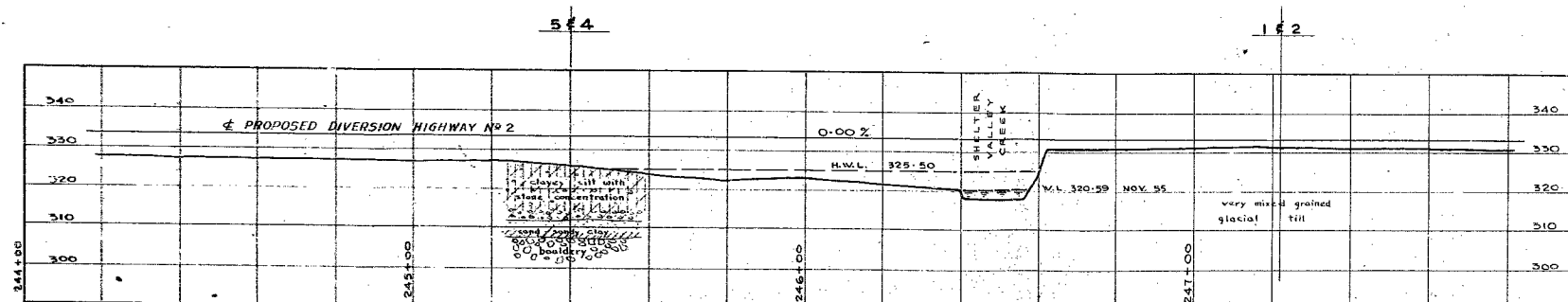
B'-B'
SCALE - 1 in. = 20 ft.



A'-A'
SCALE - 1 in. = 20 ft.

LEGEND		
Bore Hole	•	
Penetration Hole	○	
Bore & Penetration Hole	⊙	
Power Auger Hole	✱	
HOLE NO.	ELEVATION	STATION
1	331.5	247+25
2	331.0	247+20
3	331.0	247+20
4	325.0	245+40
5	326.5	245+40

- NOTE -
The boundaries between soil strata have been established only at bore hole locations. Between bore holes the boundaries are assumed from geological evidence and may be subject to quite considerable error.



PROFILE
SCALE - 1 in. = 20 ft.

DATE	BY	REVISION

DEPARTMENT OF HIGHWAYS, ONTARIO			
MATERIALS & RESEARCH BRANCH - DOWNSVIEW			
PROPOSED SHELTER VALLEY CREEK CROSSING AT GRAFTON			
THE KING'S HIGHWAY No. HWY. 2 DIVERSION		DIV. No. 7	
CO. NORTHUMBERLAND			
TWP. HALDIMAND	LOT 18	CON. A	
POSITIONS and ELEVATIONS of HOLES			
APPROVED			
ENGINEER		CHIEF ENGINEER	
DESIGN	CHECK	CONTRACT NUMBER	126-56
DRAWING	CHECK	DATE	25 APRIL 1956
TRACING	CHECK	DATE	
DATE		DESCRIPTION	
DATE		DESCRIPTION	

Mr. A. Toye,

Bridge Engineer.

Materials & Research Section.

April 27, 1956.

Re: Foundation Report,
U.S. 126-56, Hwy. #2, Shelter
Creek Diversion, #55-55.

We are forwarding herewith 2 copies of the
above mentioned report.

In view of the dense bouldery nature of the soil
in the vicinity of the proposed structure, spread footings are
recommended with a bearing value of not more than 3 tons per
square foot. If you consider scouring a problem sheet piling
of the footing would be advisable, even though it is expected
that it will be difficult to place in view of the dense and
bouldery nature of the soil.

The above data was given verbally to Mr. Luck's
office on April 24, 1956, in order that the design of the struc-
ture could commence.

F. C. Brownridge,
Materials & Research Engineer.

Per:


(A. Lucka)

AR/fh

c.c. Mr. Toye,
Mr. Trepaskes,
Mr. J. Alter,
Mr. M. P. Duff,
File ✓
Foundation Section

REPORT ON FOUNDATION INVESTIGATION

SHELTER CREEK GRAFTON

HWY. NO. 2

DISPERCMENT

Mr. A. Tove Chief Bridge Engineer.	(2)
Mr. J. Walter Design Engineer.	(1)
Mr. H. Tregaskes Construction Engineer.	(1)
Mr. H.D. Duff District Engineer, Port Hope.	(1)
File	(1)
Foundation Section	(1)

PROJECT F - 55 - 55

W.P. 126 - 56

INTRODUCTION

The following is a report on the foundation investigation carried out where the proposed diversion of # 2 Hwy. crossed Shelter Creek East of Grafton, Ontario.

Spread footings transmitting a load of 3 tons/sq.ft. are recommended.

No problem is anticipated in constructing the small amount of approach fill.

PROCEDURE

A mobile core drill unit was maintained at this site from 29 February to 12 March, 1956. During that period five boreholes and three dynamic cone penetration tests were carried out. The results of these tests and plans of the site are attached under appendix I.

SOIL CONDITIONS AND TESTING

Boreholes were driven to about 15'-30' below ground level where possible and fine silty loam till was found. This material was very stoney and had local concentrations of boulders.

The depths at which no further penetration was possible are as follows:

B.H. 1	29' - 0"
B.H. 2	12' - 0"
B.H. 3	6' - 0"
B.H. 4	20' - 0"
B.H. 5	16' - 0"

The variety of final depths serves to emphasise the boulder concentrations and the erratic nature of the deposits.

The stratum was found during driving to be dense and difficult to penetrate.

No laboratory testing was carried out on the samples as it was not considered of any assistance in estimating the properties of the material.

WATER CONDITIONS

Ground water level was not observed during the investigation but it is assumed to be at approx. the same level as the water in the Creek.

Although the material at this site is largely clay it is recommended that sheet piling should be driven to about ten feet below the bottom of the Creek to eliminate any possibility of scour undermining the foundation.

ANALYSIS OF RESULTS

The material is typical of glacial deposits in this area and is in a dense condition as has been mentioned above. It is anticipated that it can support loads of the order of 3 tons/sq.ft.

RECOMMENDATIONS

From the above considerations it is recommended that spread footings developing a load of 3 tons per square foot be used for this structure.

Fill can be placed on this base with a satisfactory factor of safety.

John Brown

John Brown
Foundation Engineer.

APPENDIX I
