

W.O. 73-11030

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

31 F-67

GEOGRAPHIC No.

TO: Mr. A. G. Stermac,
Principal Foundations Engineer,
Downsview, Ontario.

FROM: Structural Planning Office,
Kingston, Ontario.

ATTENTION: Mr. M. Devata

DATE: 8 May 1973.

OUR FILE REF.

IN REPLY TO

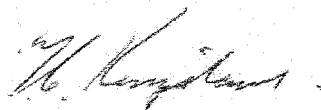
SUBJECT: W.P. 23-71-05, Highway 17, District 9 - Ottawa
Madawaska River Detour Bridge at Elgin Street-Arnprior

CONT. 73-9

This is to confirm that we should like you to carry out further investigations at the river pier at the above-mentioned structure. The purpose of the investigation is to determine the quality of the concrete beneath the masonry pier top and, if at all possible, the nature of the underlying crib contents (see description in attached copy of letter to Mr. W. D. Birch dated May 8/73). We also require to know whether or not the pier is founded on bedrock.

Please note that Structural Maintenance Section, who are preparing the bailey bridge details, are now considering supporting the bailey bridge on the old abutment seatings. We would therefore appreciate any information you may be able to obtain concerning the foundation conditions at these locations also.

A copy of Young & Forbes Divers' report will be sent to you as soon as it is available.



T. C. Kingsland
Regional Structural Planning Engineer

TCK/hl
att.

c.c. P. D. Billings
W. D. Birch - Att. F. Gormek
A. J. Percy
K. Westerby
C. S. Grebski - Att. K. Bassi

COST ESTIMATE - PIER INVESTIGATION - ARNPRIOR

1. Mobilization of Drill (Toronto - Arnprior & return) $260 \text{ mi} \times \frac{12 (\text{hours})}{100} @ .75 = 490$
2. " " Raft (" " ") " " " ≈ 400
3. Assemble - dismantle raft - total 12 hrs @ 25.00 = 300
4. Dismantle drill - reassemble on pier, dismantle - reassemble
total 20 hrs @ 25.00 = 500
5. Boat to pier with portable drill, drill and install anchors
for hoist, deck and rail, pump and diamond drill
total 6 hrs @ 25.00 = 150
6. Boat to pier, install minimum of deck and rail, 6 hrs @ 25.00 = 150
7. Fabrication of hoist (shop work), labour estimate = 150
8. Boat to pier, install hoist, 4 hrs @ 25.00 = 100
9. Unloading truck, load equip on raft, move to pier,
hoist equip. onto pier, set up equip, 6 hrs @ 25.00 = 150
10. Drill/sample 2 holes to 60 ft. average progress
2.0 ft per hour = total 60 hrs @ 25.00 = 3,000
11. Hoist equip off pier, move to shore, unload,
load truck, total 5 hrs @ 25.00 = 125
12. Dismantle hoist 2 hrs @ 25.00 = 50
13. Dismantle deck and rail 3 hrs @ 25.00 = 75
14. Raft rental 3 weeks @ 30.00 per day = 450
15. Boat and motor rental 3 weeks @ 125.00 per wk. = 375
16. Diamond and setting loss on bits, shells, shoes
estimate 5.00 per ft x 120 = 600

TOTAL ESTIMATE

\$6975

MAIL ROOM
NOTE NOT
"STRUCTURAL"

DOWN KINR 1 MAY 17 1973 1:2P PM

M DEVATA FOUNDATIONS OFFICE

RE: W P 23-71-05 SITE 29-143 ELGIN STREET

DETOUR STRUCTURE OVER MADAWASKA RIVER AT ARNPRIOR,
HWY 17, DISTRICT 9 OTTAWA.

PLEASE BE ADVISED THAT THE VERTICAL CLEARANCE BETWEEN
TOP OF EXISTING RIVER PIER AND LOWER HYDRO WIRES IS
EIGHTEEN FEET APPROX. WE UNDERSTAND THAT ANY OBJECT SHOULD
REMAIN CLEAR FROM WIRES FOR A MINIMUM OF EIGHT FEET. IF REQUIRED
THE LOWER WIRES AT THIS CROSSING COULD BE TEMPORARILY
DEACTIVATED. PLEASE CONTACT THE ARNPRIOR AREA HYDRO OFFICE
FOR DEACTIVATION OF THESE WIRES IF NECESSARY AND CONFIRM
THE REQUIRED MINIMUM CLEARANCE.

T C KINGSLAND STRUCTURAL PLANNING

VP

WEST BLDG



May 16, 1973.

Ministry of Transportation and Communications,
Supervising Foundations Engineer,
Keele and Wilson, West Bldg.,
DOWNSVIEW, Ontario.

Attn: Mr. M. Devata, P. Eng.

Re: Underwater Investigation of Bridge Pier at Elgin Street Detour.

Dear Mr. Devata;

Enclosed, please find a copy of our report regarding the above project.

I trust you will find our report informative, and should any questions arise do not hesitate to contact this office.

Yours truly,

YOUNG & FORBES DIVING & MARINE CO. LTD.


W. B. YOUNG, President.

WBV/hp
encl.



This copy for: Mr. A. G. Stermac

Att. Mr. M. Devata

Mr. W. D. Birch,
Structural Maintenance Engineer,
Downsview, Ontario.

Structural Planning Office,
Kingston, Ontario.

Mr. Frank Gormek

8 May 1973.

W.P. 23-71-05, Highway 17, District 9 - Ottawa
Madawaska River Detour Bridge at Elgin Street-Araprior

The centre pier of the old Madawaska River structure at Elgin Street, Araprior, was inspected by Young & Forbes, Diving Specialists of Toronto, on Wednesday, May 2nd. Their report will be available in a few days. In the meantime, the following is a brief summary of their findings.

The pier, which is approximately 40 ft. in height from top to bed level, consists of good quality dressed masonry blocks with some open joints for about 10 ft. above mean water level and 5 ft. below.

The masonry top with plan dimensions of approximately 20' x 6' is supported on a layer of what is possibly old tremie concrete about 1½ to 2 ft. in thickness. This material contains aggregate of approximately 3 inches in size and the outer layer of this concrete crumbled readily in the diver's hand.

The timber which must have provided formwork for this concrete no longer exists.

From the bottom of the concrete to riverbed the remaining 23 to 25 ft. height of structure consists of a close-boarded timber crib about 22' x 10½' in overall plan size. The timber is in very good condition. It is not known what the crib filling consists of but presumably it is rock fill or some such material.

The divers were unable to determine whether the pier is founded on bedrock.

It is noted that Mr. Gormek estimates the total extra vertical load to be imposed on the centre pier to be approximately 1650 tons and this will impose additional compressive stress in the concrete layer of about 125 p.s.i.

It is felt that it is important to know the quality of the interior concrete and also the bedrock elevations before coming to a final decision as to the use of the pier. Foundations Section have therefore been requested to provide the further information required as soon as possible.

Regarding the abutments, we were originally informed that the bailey bridge seatings would be located some distance back from the face of the old abutments. Therefore the condition of the abutments would not be critical. We now understand, however, from Mr. Gormek that the old abutment seatings will be used to support the bailey structure which will impose additional loads of approximately 500 tons at each abutment. Therefore the condition of these masonry abutments needs also to be ascertained and the investigation of the foundation conditions at the abutments should be carried out by Foundations Section in addition to the pier investigation.

We have sent Mr. Devata of Foundations Section photographs showing these abutments at low water. It would appear from these that some underpinning work may be necessary if the abutments themselves are to carry the loads directly.

Regarding the responsibilities for the various portions of the work described above, it is felt by this office that, while this Section should be responsible for the coordination of action required in investigating the supports for the bailey bridge and the dissemination of the results of such investigations to yourself, nevertheless you should ultimately satisfy yourself in the light of all the available information that the supports are adequate for your design. It is obviously important for your Section to make this final decision on the adequacy of the supports and on the remedial action required if some inadequacy is apparent.

T. C. Kingsland
Regional Structural Planning Engineer

TCK/hl

c. c. P. D. Billings
✓ A. G. Stermac - Att. M. Devata
J. Percy
~~J. Callaghan~~ K. WESTERBY
C. S. Grebski - Att. K. Bassi

73-11030

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. A. G. Stermac,
Principal Foundations Engineer,
Downsview, Ontario.

FROM: Structural Planning Office,
Kingston, Ontario.

ATTENTION: Mr. M. Devata

DATE: 25 April 1973.

OUR FILE REF.

IN REPLY TO

SUBJECT: Madawaska River Detour Bridge at Elgin Street, Arnprior
W.P. 23-71-05, Highway 17, District 9 - Ottawa

Further to my letter dated April 18, 1973, Acres Limited have now informed me that Messrs. Young & Forbes, Diving Marine Specialists, Toronto, are not still retained by them to investigate the pier of the old Highway 17 bridge at Elgin Street.

I shall be glad therefore if you will arrange to issue the necessary order to them for this work to be carried out as requested in my previous letter dated April 16 and, if necessary, to follow up with further foundation investigations.

Mr. Young informed me recently that the diver's inspection would not be able to commence for at least two weeks when it is expected that flow conditions would be more favourable.



T. C. Kingsland
Regional Structural Planning Engineer

TCK/hl

c.c. P. D. Billings
A. J. Percy - Att. A. E. Irving
J. E. Callaghan
R. Forrest
C. S. Grebski - Att. K. Bassi

Structural Planning Office, Postal Bag 4000, Kingston, Ontario
K7L 5A3

25 April 1973

Young & Forbes Diving Marine Specialists,
39 Hook Street,
TORONTO, Ontario.

Attention: Mr. Young

Dear Mr. Young:

SUBJECT: Madawaska River Detour Bridge at Elgin Street - Arnprior
W.P. 23-71-05, Highway 17, District 9 - Ottawa

Further to my letter dated April 18, 1973, Mr. A. McKechnie of Acres Consulting Services Limited has informed me that your firm is not still retained by them to investigate the pier of the old Madawaska River bridge at Elgin Street, Arnprior. We should, however, be glad if you will proceed with the inspection as soon as it is practicable to do so.

An order covering this work will be issued to you by our Foundations Section in Downsview who will be carrying out any further investigations required subsequent to your diver's inspection.

Yours truly,

T. C. Kingsland
Regional Structural Planning Engineer

TCK/hl

c.c. Mr. A. McKechnie: Acres Consulting Services Ltd.

(n.i.o.o.)

P. D. Billings
✓ A. G. Stermac - Att. M. Devata
J. E. Callaghan
A. J. Percy - Att. A. E. Irving
R. Forrest
C. S. Grebski - Att. K. Bassi

MEMORANDUM

73-110 30

TO: Mr. A. G. Stermac,
Principal Foundations Engineer,
Downsview, Ontario.

FROM: Structural Planning Office,
Kingston, Ontario.

ATTENTION: Mr. M. Devata

DATE: 18 April 1973.

OUR FILE REF.

IN REPLY TO

SUBJECT: W.P. 23-71-05, Site 29-200,
Madawaska River Detour Bridge at Elgin Street, Arnprior,
Highway 17, District 9 - Ottawa

Please find attached copy of letter to Messrs. Young and Forbes, Diving Marine Specialists, Toronto. You will note that the arrangements for a diver's inspection mentioned in my letter of 16 April are already in hand and therefore it will not be necessary for you to proceed further in this respect.

I will be contacting you further in this matter in due course.

T. C. Kingsland

T. C. Kingsland
Regional Structural Planning Engineer

TCK/hl
att.

c.c. A. L. McKechnie: Acres
P. D. Billings
A. J. Percy - Att. A. E. Irving
K. Westerby
C. S. Grebski - Att. K. Bassi



DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS

Copy for the information of

Mr. A. G. Stermac - Att. Mr. M. Devata

Structural Planning Office, Postal Bag 4000, Kingston, Ontario
K7L 5A3

18 April 1973

Young & Forbes Diving Marine Specialists,
39 Hook Street,
TORONTO, Ontario.

Attention: Mr. Young

Dear Mr. Young:

SUBJECT: W.P. 23-71-05, Site 29-200
Madawaska River Detour Bridge at
Elgin Street, Arnprior
Highway 17, District 9 - Ottawa

This is to confirm our telephone conversation today relating to the Elgin Street detour for the Arnprior town bridge reconstruction project. I note that you are still retained by Acres Limited to investigate the condition of the pier of the old Highway 17 bridge at Elgin Street and that you will be continuing this investigation as soon as flow conditions permit.

We propose to use the centre pier to support two continuous 150 ft. spans of 2-lane Bailey bridging and our main requirements are to know the structural condition of the pier, its dimensions below water line and the material upon which it is founded.

We are particularly anxious to know the thickness of the pier in a span-wise direction and whether this dimension is "stepped" between the water line and the base of the pier.

If, as a result of your investigations, it is decided that further

foundation information or knowledge of the interior of the pier structure is required, our Foundations Section in Downsview, headed by Mr. A. G. Stermac, will carry out any necessary drilling. Mr. M. Devata would be incharge of any further foundation work at this location.

Yours truly,

T. C. Kingsland
Regional Structural Planning Engineer

TCK/hl

c.c. Mr. A. L. McKechnie: Acres Consulting Services Ltd.

(n.i.o.o.)

P. D. Billings
A. J. Percy - Att. A. E. Irving
✓A. G. Stermac - Att. M. Devata
K. Westerby
C. S. Grebski - Att. K. Bassi

73-11030

MEMORANDUM

TO: Mr. A. G. Stermac,
Principal Foundations Engineer,
Downsview, Ontario.

FROM: Structural Planning Office,
Kingston, Ontario.

ATTENTION: Mr. M. Devata

DATE: 16 April 1973.

OUR FILE REF.

IN REPLY TO

SUBJECT: W.P. 23-71-05, Madawaska River Detour Bridge at
Elgin Street in Arnprior,
Highway 17, District 9 - Ottawa

Enclosed please find a diver's inspection report and a folder of photographs of the abutments and pier at the above location. Also enclosed are two copies of Drawing E-5250-1, two contour plans (scale 1" = 40') prepared by Acres Limited, and aerial photograph (scale 1" = 100') pertaining to the proposed detour structure.

We would be pleased if you will make arrangements for a foundation investigation at the pier site, including a further diver's inspection if required.

Mr. E. Van Beilen, Structural Maintenance Section, who is preparing the Bailey bridge details for the scheme, may have additional information.

On the 1" = 40' contour plans the overburden contours are shown in the form of long dashes, while the bedrock contours are shown as short dashes. The location of the existing centre pier is shown in red.

The grade of the proposed Bailey bridge is at elevation 274.0 with 0% slope.


T. C. Kingsland
Regional Structural Planning Engineer



TCK/hl
encs.

c.c. C. S. Grebski - Att. K. Bassi

A REPORT OF AN UNDERWATER INVESTIGATION

of

~~CENTER PIER, C. N. R. BRIDGE~~
~~AND~~

OLD HIGHWAY 17 BRIDGE PIER AND LOG BOOM PIERS

Prepared for

ACRES CONSULTING SERVICES LIMITED

Prepared by

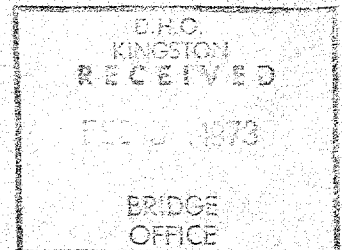
YOUNG & FORBES DIVING & MARINE CO. LTD.

39 Hook Ave.

TORONTO 9, ONTARIO

766-7396

November 27, 1972



OLD HIGHWAY 17 BRIDGE PIER

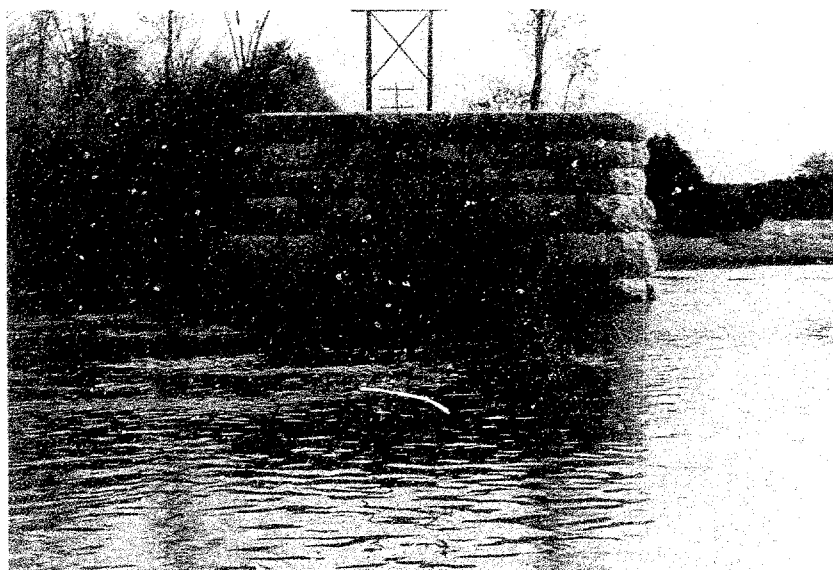
Construction of the pier is cut stone block surrounded by a stone filled crib structure "closed face type" constructed of 12" x 12" horizontal timbers in fair condition. Ice damage is evident to the stone blocks and top timbers of the crib (Note drawing No. 2 of 2). Bottom material around the pier consists mainly of sand. No bedrock was visible.



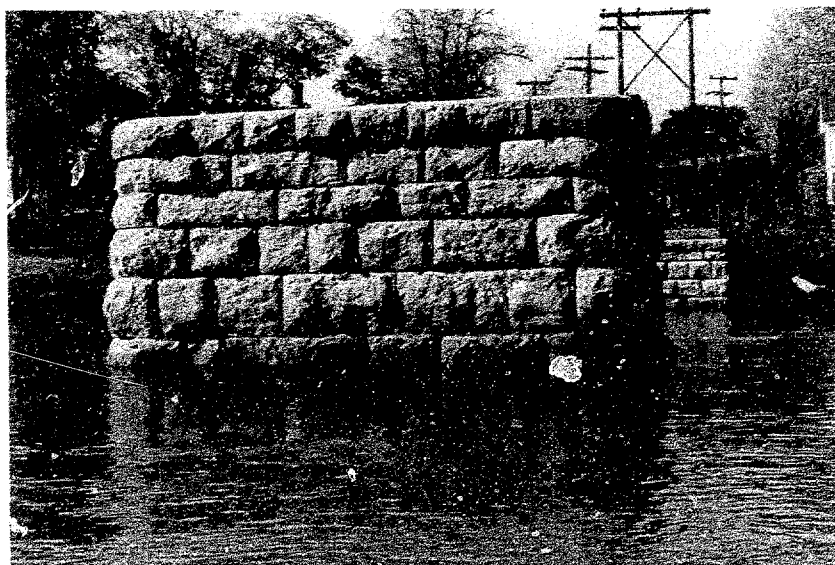
U/S OF
CENTRE PIER



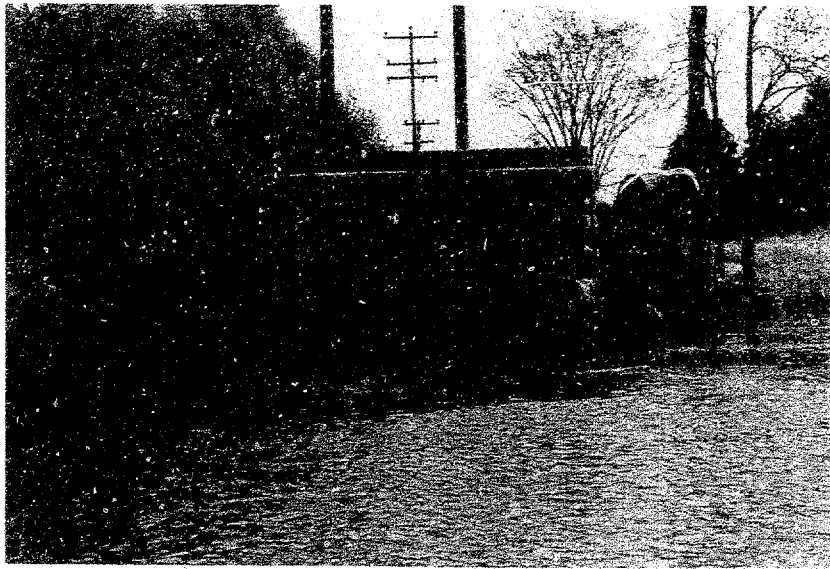
D/S FACE OF
CENTRE PIER



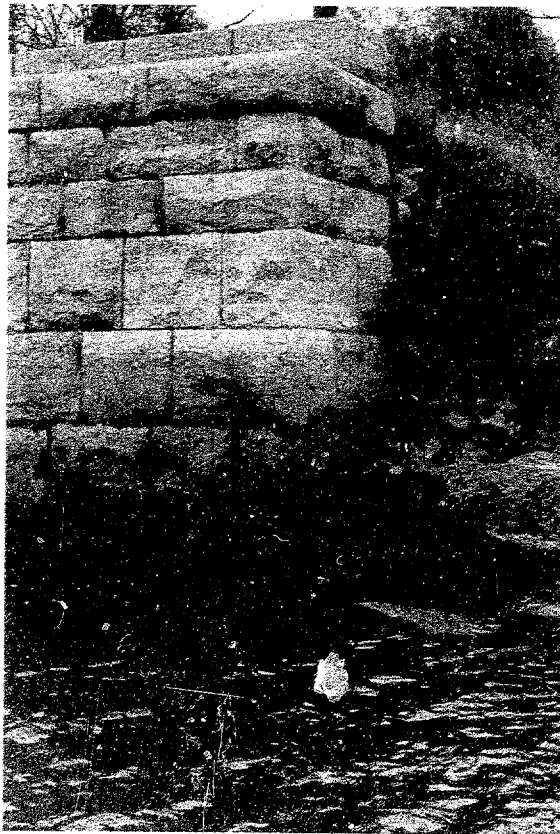
WEST SIDE
CENTRE PIER



EAST SIDE
CENTRE PIER



EAST
ABUTMENT



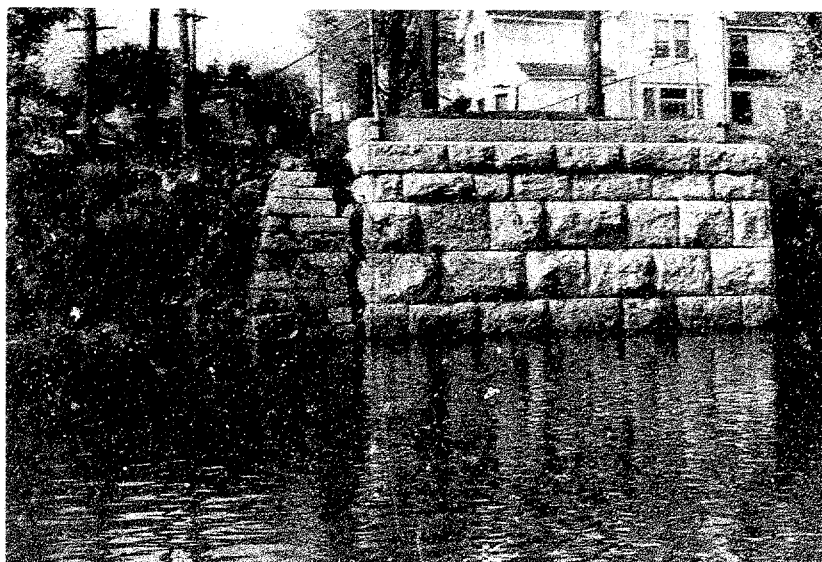
EAST ABUTMENT
FROM D/S



WEST
ABUTMENT



WEST
ABUTMENT



WEST
ABUTMENT

A REPORT ON AN UNDERWATER INVESTIGATION

of

BRIDGE PIER AT ELGIN STREET DETOUR

ARNPRIOR, ONTARIO

Prepared for

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS

Prepared by

YOUNG & FORBES DIVING AND MARINE CO. LTD.

39 Hook Ave.

TORONTO 9, ONTARIO

766-7396

May 8, 1973.

This report confirms the verbal information provided to Mr. T. C. Kingsland, P. Eng. of Ministry of Transportation and Communications on site, following our investigation.

The underwater investigation of the pier was conducted by a diver utilizing SCUBA equipment. Underwater visibility of some two to three feet was considered a less than average visibility condition and, though minimal for good underwater photographs, these were attempted. The attached photographs, however, confirm written observations. The inspection in this instance was confined to the sub-surface stone and concrete pier, timber crib and surrounding bottom conditions.

STONE AND CONCRETE PIER:

A survey of the stone and concrete surfaces from water level down to the crib, a distance of approximately six feet five inches, revealed one half to one inch gaps between the stone blocks where the mortar is missing. The stone blocks appear sound with no evidence of displacement, cracks or shears on the external surface.

The concrete below the stone blocks shows surface deterioration and is eroded on all four sides to a maximum depth of twelve inches. A sample of the concrete was given to Mr. Kingsland at the site. This area is recognized as a potential problem. (Note drawing)

TIMBER CRIB:

Customary ice damages are very apparent to the south end and upper portion of the crib. The top course of timbers are missing, exposing the concrete inside. The crib structure, constructed of ten inch by ten inch " closed face type " horizontal timbers, is in good condition. The timbers were puncture tested with a knife blade by the diver and less than one quarter of an inch penetration was achieved. A small wood sample was taken from a timber approximately ten feet below the top of the crib, on the north side. This sample was turned over to Mr. Kingsland. A slight undermine measuring five feet long by twelve inches deep by eight inches high was located at the bottom south east corner of the crib. (Note photo # 10A)

BOTTOM CONDITION:

Bottom soil around the pier on the south, east and north sides, in general, consists of small stones and sand. (Note photo # 5A) The bottom along the west side consists of wood chips. Bedrock was located approximately thirty five feet west of the pier. However, the diver was unable to determine if the pier is situated on bedrock.



PHOTO No. 1

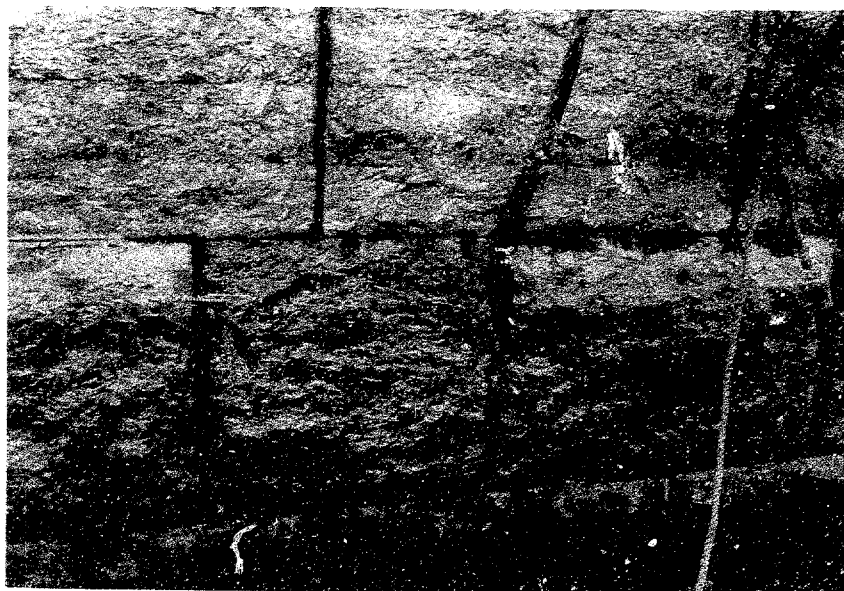


PHOTO No. 2

Surface photographs of stone blocks in pier, west side.

Note mortar missing from between blocks.

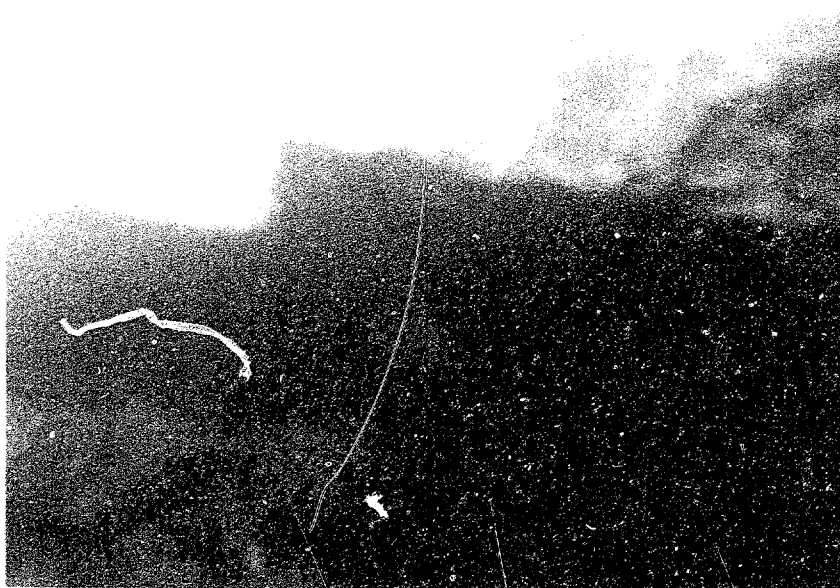


PHOTO No. 4A

View of eroded area between stone blocks and concrete.
Note aggregate in concrete.

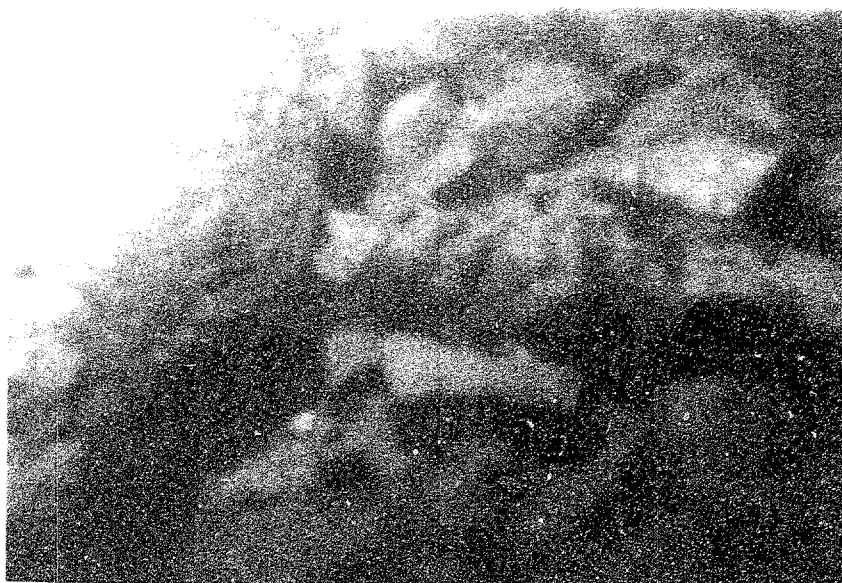


PHOTO No. 5A

View of bottom material at east side of pier.



PHOTO No. 6A

View of stone blocks & concrete.

Note mortar missing from between blocks.



PHOTO No. 10A

View of undermine at southeast corner of crib.

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"STRUCTURAL"

73-11-03 C

DOWN KINR 1 MAY 17 1973 1:2P PM

M DEVATA FOUNDATIONS OFFICE

RE: W P 23-71-05 SITE 29-143 ELGIN STREET

DETOUR STRUCTURE OVER MADAWASKA RIVER AT ARNPRIOR,
HWY 17, DISTRICT 9 OTTAWA.

PLEASE BE ADVISED THAT THE VERTICAL CLEARANCE BETWEEN
TOP OF EXISTING RIVER PIER AND LOWER HYDRO WIRES IS
EIGHTEEN FEET APPROX. WE UNDERSTAND THAT ANY OBJECT SHOULD
REMAIN CLEAR FROM WIRES FOR A MINIMUM OF EIGHT FEET. IF REQUIRED
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DEACTIVATED. PLEASE CONTACT THE ARNPRIOR AREA HYDRO OFFICE
FOR DEACTIVATION OF THESE WIRES IF NECESSARY AND CONFIRM
THE REQUIRED MINIMUM CLEARANCE.

T C KINGSLAND STRUCTURAL PLANNING
VP

— West Bldg



Mr. R. W. Didemus,
Reg. Administrative Officer,
Kingston, Ontario.

Structural Planning Office,
Kingston, Ontario.

30 April 1973.

RECEIVED
W.P. 28-71-05, Highway 17, District 9-Ottawa
Madawaska River Detour Bridge at Elgin Street
Arnprior

73-11-020

Further to our discussion today, please find below an estimate given to me by Mr. W. Young of Young & Forbes, Diving Marine Specialists, 39 Hook Street, Toronto, for a diver's inspection and report of the condition of the old Highway 17 river bridge pier at Elgin Street, Arnprior:

Estimate for Inspection of Pier at Elgin Street Detour

Diving survey (8 hr. day) (including all equipment)	\$200/day
Diving supervision (8 hr. day)	\$150/day
Boat	\$ 50/day
Living allowance (3 men)	\$ 45/day
Mileage @ 12 cents/mile (Toronto/Arnprior and return)	
Preparation of Report	\$150
Total estimated time for completion of survey, including travelling - 2 days	

The above figures are the same as those quoted to Acres Consulting Services Limited during their own Madawaska River inspections recently.

The water conditions are appropriate for the inspection to be carried out now and because of the urgency for this information, I have authorized Mr. Young to commence work immediately on the inspection. I shall be glad if you will arrange for an order to be issued to Messrs. Young & Forbes, as agreed.

T. C. Kingsland
Regional Structural Planning Engineer

TCK/hl

c.c. P. D. Billings

A. J. Percy

J. E. Callaghan

A. G. Stermac - Att. M. Devata

✓ C. S. Grebski - Att. K. Bassal

73-11-0302

MEMORANDUM

TO: Mr. A. J. Percy,
Regional Manager, Systems Design,
Kingston, Ontario.

FROM: Structural Planning Office,
Kingston, Ontario.

ATTENTION: Mr. I. Williams

DATE: 6 April 1973.

OUR FILE REF.

IN REPLY TO

SUBJECT: W.P. 23-71-01, Site 29-143,
Madawaska River Bridge in Arnprior,
Highway 17, District 9 - Ottawa

I enclose copy of a letter dated April 3, 1973, from Mr. A. L. McKechnie, Acres Consulting Services, in which he establishes the limits of the new town bridge.

Please note the comments regarding finished road grade in the second paragraph. In this respect the normal structural requirements for longitudinal grade is for a minimum grade of 0.5%. However, this would be impracticable at this location owing to the length of the structure and the necessity to tie in to existing elevations at each end of the structure.

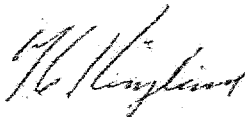
A flat vertical curve is therefore more appropriate to deal with longitudinal deck drainage. We are suggesting to Acres that vertical offsets not less than those applying to the existing structure are used.

I have informed Mr. McKechnie that our hydrological recommendations for the new structure will be passed on to them in a few days when received from the Hydrology Office who are currently reviewing their preliminary hydrology report in the light of Acres' latest proposals.

With regard to the procedures to be followed during structural design, it is envisaged that these will be based on the following:

1. Survey information including that required for the bridge site plan to be supplied by Acres, supplemented where required by M. T. C.
2. Foundation investigation to be carried out by Acres as an extension of the Geotechnical Survey for the new weir, now nearing completion.
3. Bridge Preliminary Plan to be prepared by Acres, based on criteria already supplied or to be supplied by this office. Preliminary drawings to be submitted to M. T. C. Structural Office in the normal way for approval and distribution for comments of all concerned before commencement of detailed drawings.

4. All information on which design is to be based, e.g., Acres' foundation investigation, hydrological study, etc., to be submitted to this office for approval before detailed design is commenced. If approval for the setting up of a technical committee is given, all design proposals will presumably become a function of that committee.



T. C. Kingsland
Regional Structural Planning Engineer

TCK/hl
encl.

c.c. (+ encl.)

P. D. Billings
B. R. Davis
C. S. Grebski
K. Bassi
✓ A. G. Stermac - Att. M. Devata
J. D. Harris



April 3, 1973
NAF9.00523
P3197

Ministry of Transportation
and Communications
Postal Bag 4000
Kingston, Ontario

STRUCTURE SITE NO. 59-143

K7L 5A3

Attention: Mr. T. C. Kingsland

Gentlemen:

Arnprior Generating Station
Highway 17 Bridge - Arnprior

Further to our meeting of March 20, 1973, we have established the locations of the abutments for the new Highway 17 bridge.

The face of the new west abutment has been set in the same location as the face of the existing bridge abutment and the clear distance between abutments has been set at 830 feet. The location of the longitudinal centre line of the new bridge is identical to that of the existing bridge.

We do not have any restrictions as to the finished road grade for the new bridge structure.

We trust that this information is sufficient to allow you to complete the geometric arrangement of the approaches and adjacent intersections.

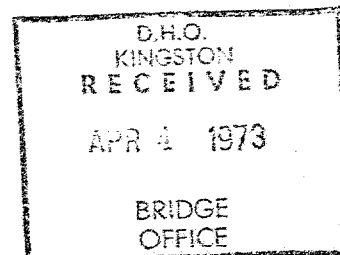
Yours very truly,

A. L. McKechnie
Executive Engineer

RWMcL:hc

cc: Mr. G. Tindale
Copies made for: (TCK: 6/4/73)
A.J. Percy P. D. Billings B. R. Davis
K. Bassi A.G. Stermac - Att. M. Devata
J. D. Harris C. S. Grebski

ACRES CONSULTING SERVICES LIMITED
5259 Dorchester Road
Niagara Falls, Canada
Telephone 416-354-3831



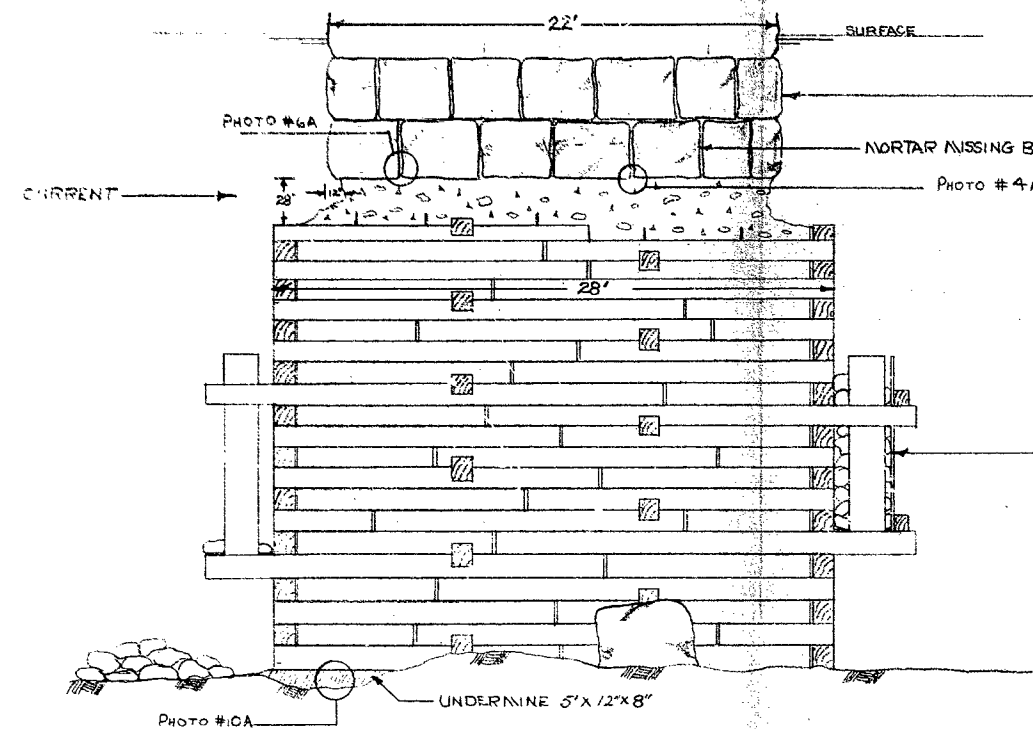
CONT. 73-94

HWY. 17

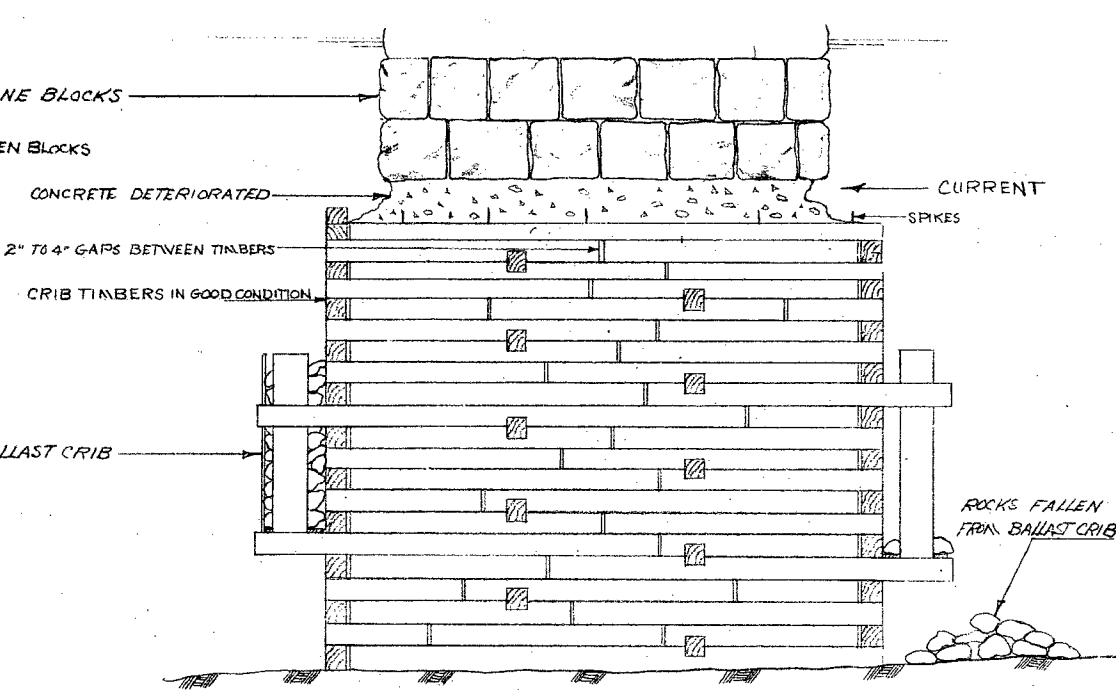
OTTAWA

31F-67

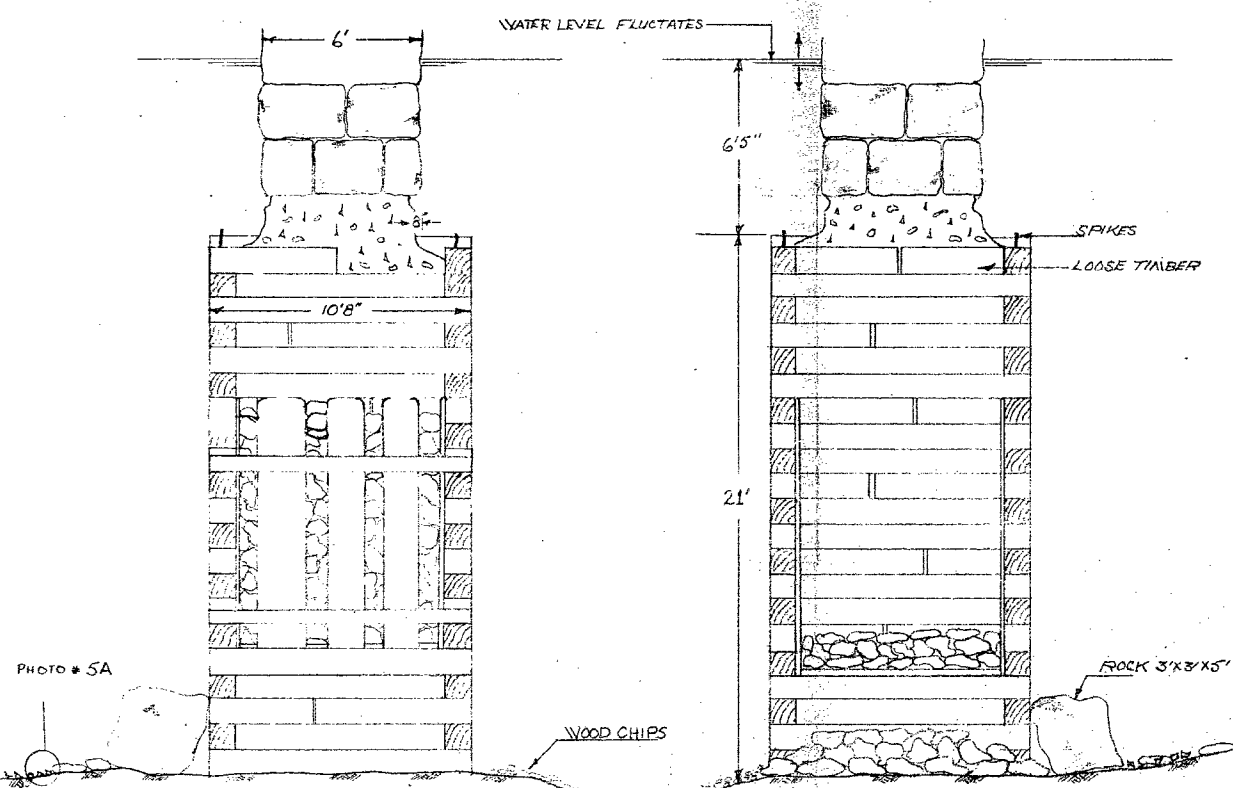




EAST ELEVATION

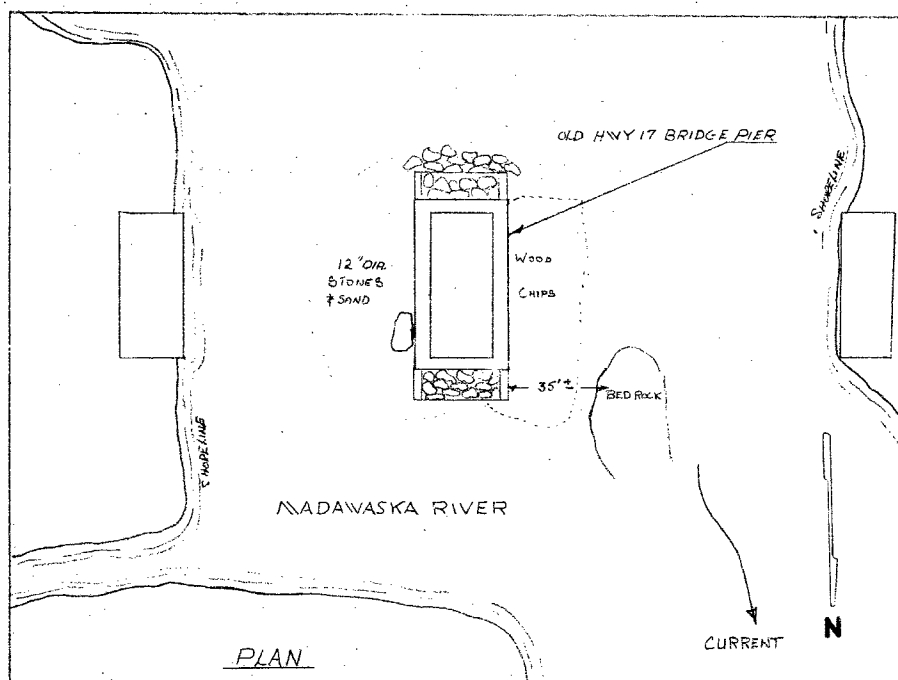


WEST ELEVATION




NORTH ELE.

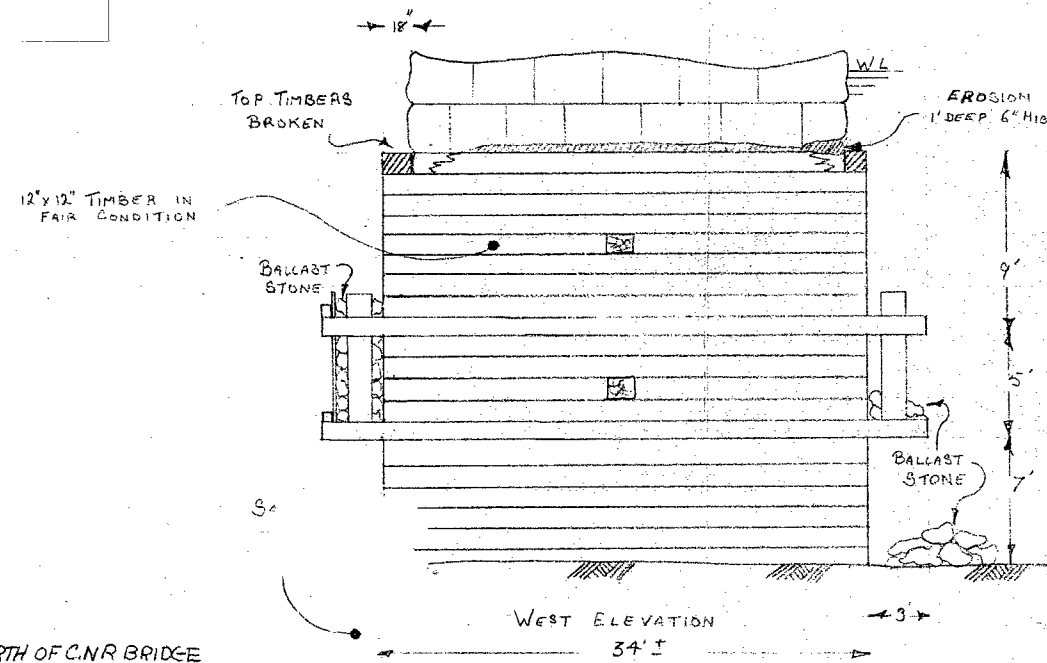
SOUTH ELE.



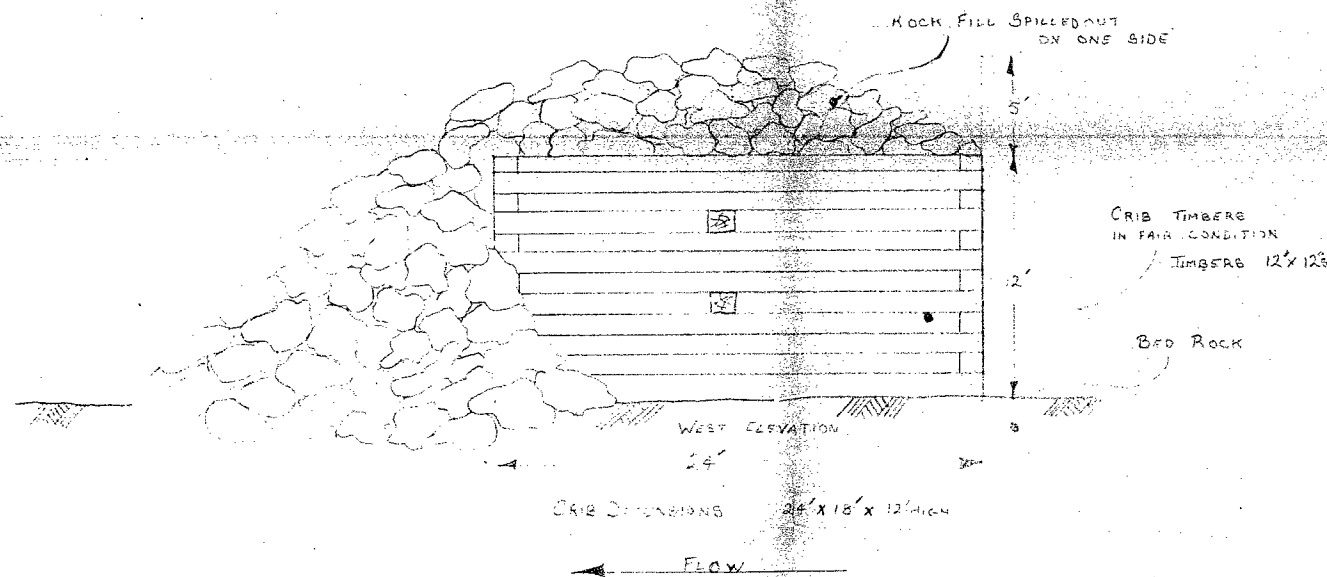
PLAN


 Young & Forbes <small>Living and Marine Company Limited / 20 North Avenue, Toronto 8, Ont.</small>	REVISIONS			MIN. OF TRAN. AND COMM.	
	NO.	DATE	BY	U/W INVESTIGATION OF OLD PIER AT ELGIN ST. DETOUR, ARNPRIOR, ONT	
	1			DRAWN BY	SCALE
	2			WY	N.T.S.
	3			CHEK'D	DATE
	4			TRACED	APR'D
	5				
					MATERIAL
					DRAWING NO.
					5-2-73

OLD H.V.Y. 17 BRIDGE PIER



ABANDONED LOG BOOM CRIB-30' NORTH OF C.N.R. BRIDGE



 Young & Forbes <small>Diving and Marine Company Limited / 39 Hook Avenue, Toronto 9, Ont.</small>		
REVISIONS		
NO.	DATE	BY
1		
2		
3		
4		
5		
U/I/N INVESTIGATION OF OLD H.V.Y. 17 BRIDGE PIER & ABANDONED LOG BOOM CRIB		
DRAWN BY M.D.B.		SCALE N.T.S.
CHECKED BY W.Y.		DATE NOV. 29/72
TRACED		APP'D 2 OF 2