

DOCUMENT MICROFILMING IDENTIFICATION

G.I.-30 SEPT. 1976

GEOCRES No. 316-217

DIST. 9 REGION

W.P. No. 102-86-01

CONT. No. 87-50

W. O. No.

STR. SITE No. 27-50

HWY. No. 17

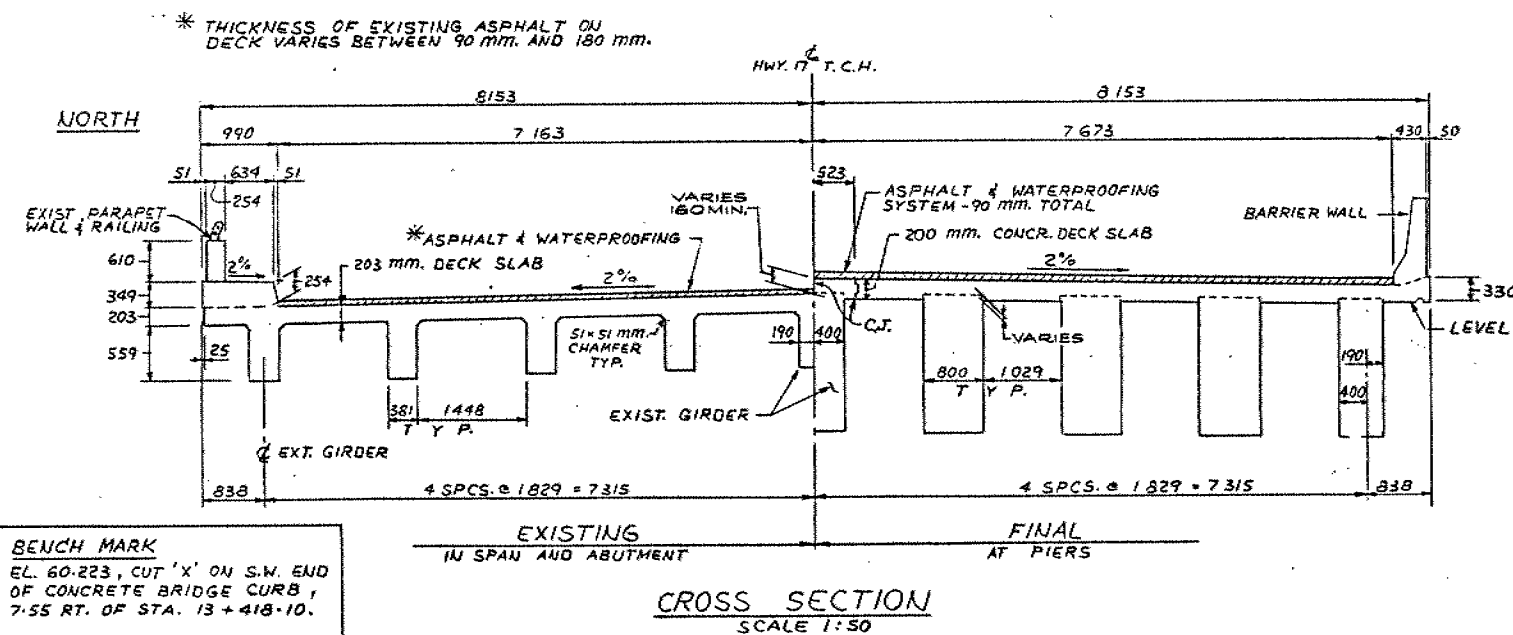
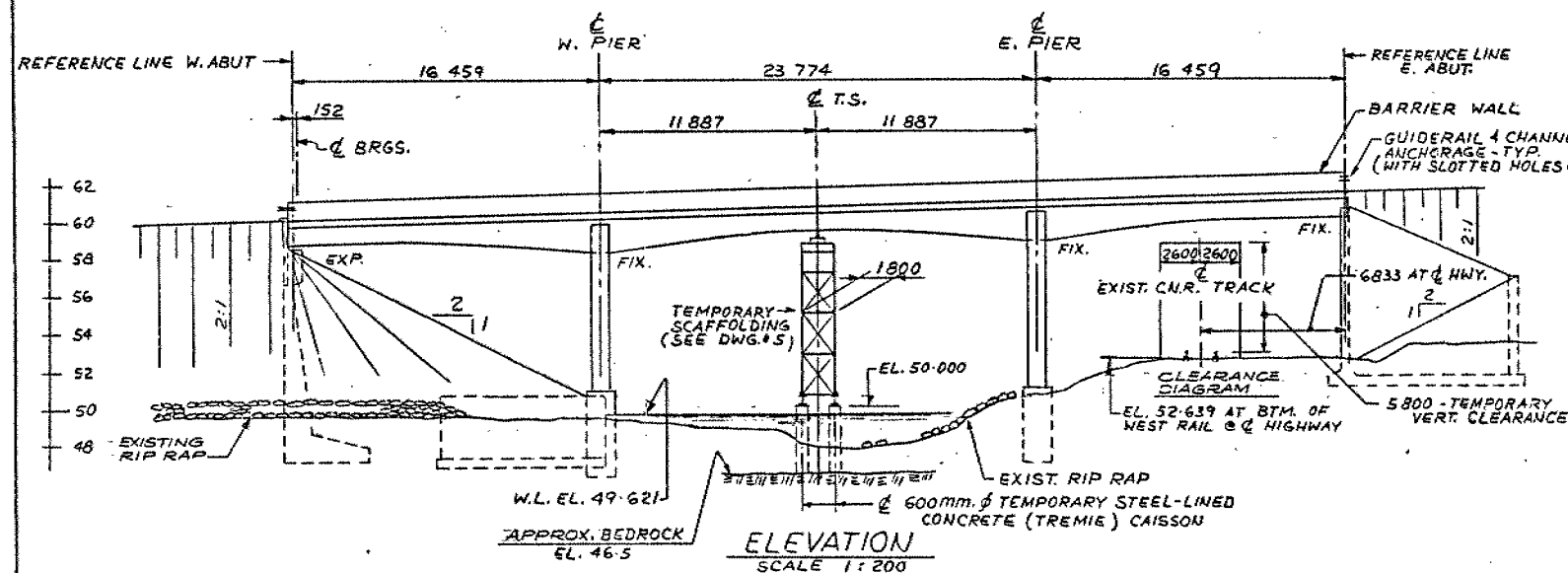
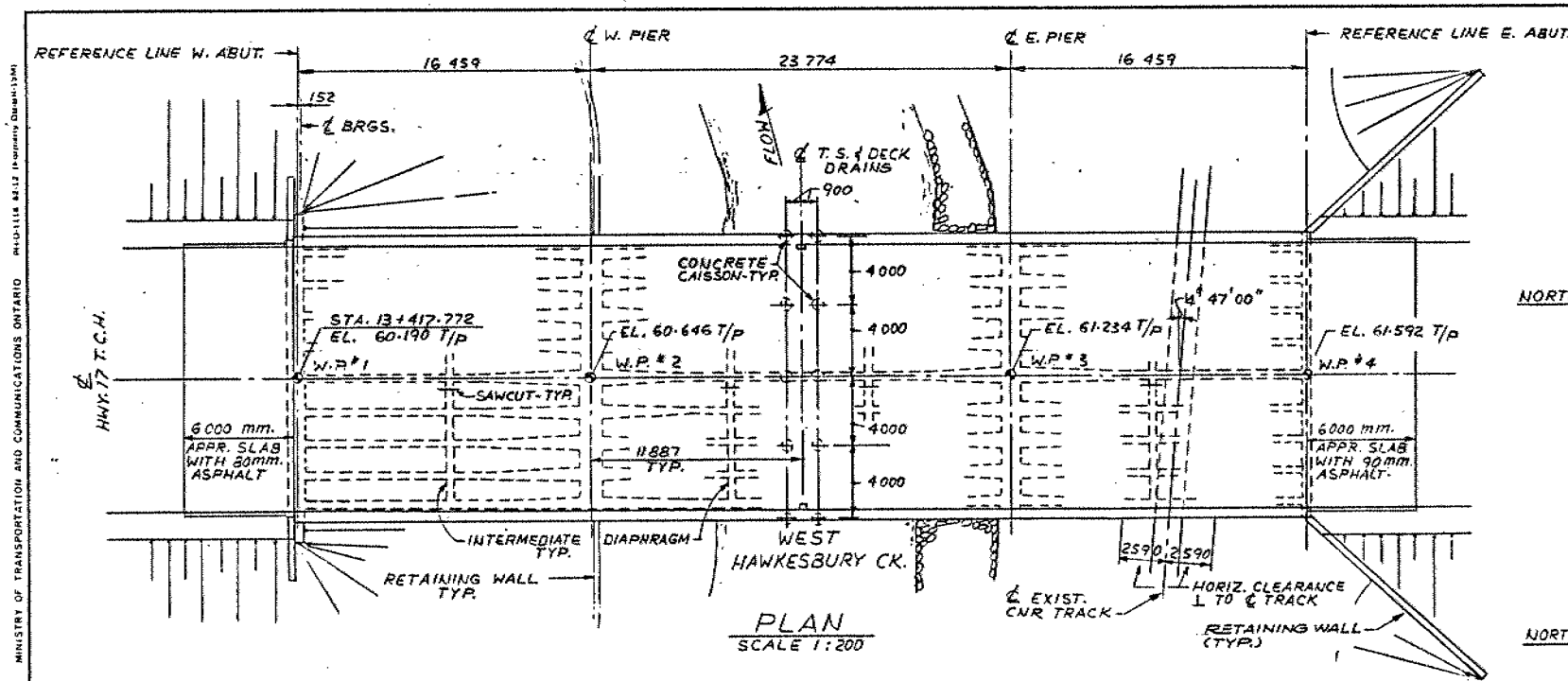
LOCATION WEST HAWKESBURY CREEK

1/4 CNR 0' HEAD, REHAB. OF STRUCTURE

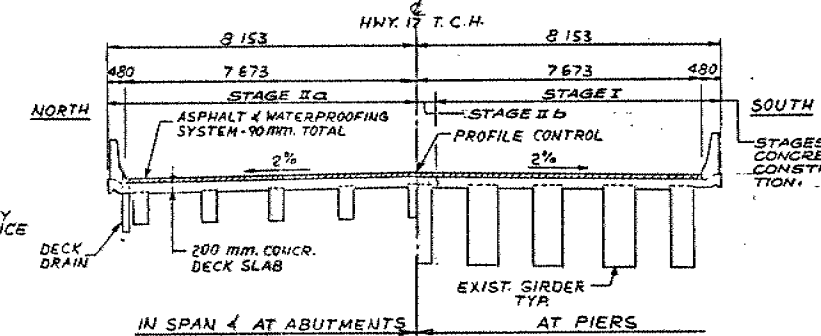
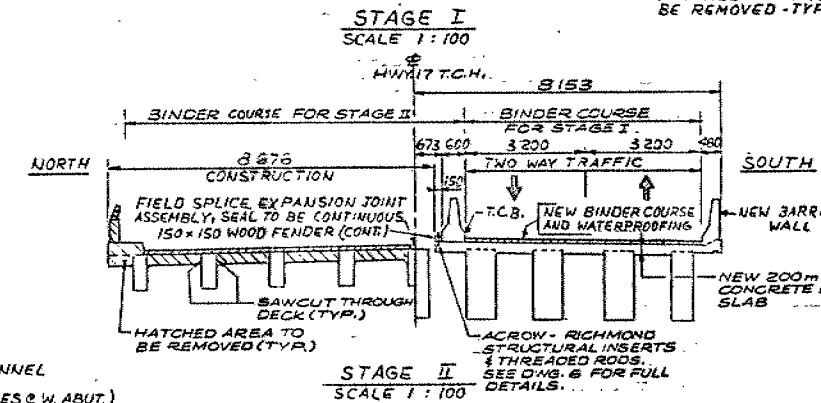
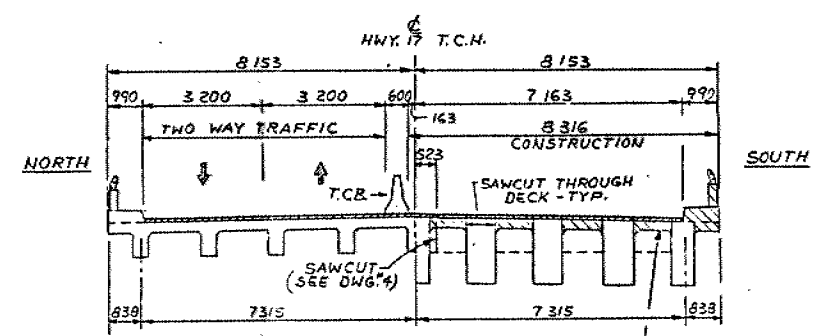
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OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT.

REMARKS:



BENCH MARK
EL. 60.223, CUT 'X' ON S.W. END
OF CONCRETE BRIDGE CURB,
7.55 RT. OF STA. 13+418.10.



LIST OF DRAWINGS

- 27-50/R2-1 GENERAL ARRANGEMENT.
- R2-2 ABUTMENTS & APPR. SLABS.
- R2-3 CONCRETE REPAIRS.
- R2-4 CONCRETE DECK REMOVAL.
- R2-5 DECK CONSTRUCTION SEQUENCE.
- R2-6 NEW DECK DETAILS.
- R2-7 NEW DECK REINFORCEMENT.
- R2-8 BARRIER WALLS.
- R2-9 JOINT ANCHORAGE AND ARMOURING.
- R2-10 STANDARD DETAILS.
- R2-11 BRIDGE DATE AND SITE NUMBER DATA.
- R2-12 AS CONSTRUCTED ELEV. & DIM.
- R2-13 QUANTITIES - STRUCTURE.
- R2-14 QUANTITIES - STRUCTURE

LEGEND -

- T.C.B. DENOTES TEMPORARY CONCRETE BARRIER.
- W.P. DENOTES WORKING POINT.
- T/P DENOTES TOP OF PAVEMENT.
- EL. T.S. DENOTES EL. TEMPORARY SUPPORT
- C.J. DENOTES CONSTRUCTION JOINT

DRAWING NOT TO BE SCALED
100 mm ON ORIGINAL DRAWING

METRIC

DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

DIST. 9
CONT No
WP No 102-86-01
W. HAWKESBURY CK. & CNR. O'HD
BRIDGE REHABILITATION
GENERAL ARRANGEMENT



GENERAL NOTES

CLASS OF CONCRETE

- DECK SLAB 35 MPa
- REMAINDER (EXCEPT AS NOTED) 30 MPa
- CLEAR COVER TO REINFORCING STEEL
- FRONT FACE OF ABUTMENT 80 ± 20
- DECK TOP 70 ± 20
- " BTM. SIDES 40 ± 20
- REMAINDER 70 ± 20

REINFORCING STEEL

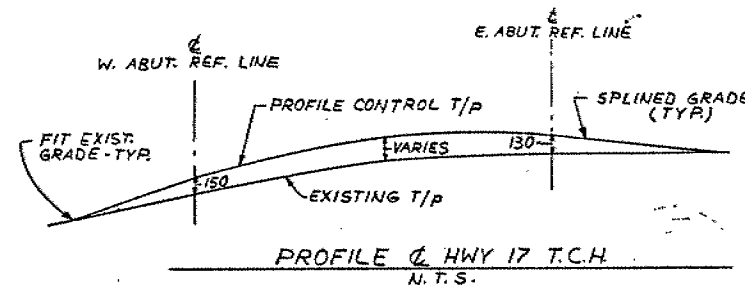
- REINFORCING STEEL SHALL BE GRADE 400 UNLESS OTHERWISE SPECIFIED. BAR MARKS WITH SUFFIX 'C' DENOTE COATED BARS.

CONSTRUCTION NOTES

- CONTRACTOR SHALL CHECK IN THE FIELD ALL RELEVANT EXISTING STRUCTURE DIMENSIONS AND ELEVATIONS SHOWN ON THESE DRAWINGS, AND ADJUST DIMS. AS REQUIRED TO MATCH THOSE OF THE EXISTING STRUCTURE AND AS APPROVED BY THE ENGINEER.

WORK DESCRIPTION

- (A) SUPERSTRUCTURE REPAIR
 - STAGE I
 - 1. CONFINE TRAFFIC OVER THE BRIDGE TO TWO LANES, ONE IN EACH DIRECTION.
 - 2. INSTALL TEMPORARY SUPPORTS UNDER CLOSED PORTION.
 - 3. SAWCUT THROUGH EXISTING WEST APPROACH SLAB, AND REMOVE FROM CLOSED PORTION. REMOVE ADJACENT CURBS.
 - 4. REMOVE ALL EXISTING ASPHALT FROM CLOSED PORTION AND EXISTING CONCRETE DECK SLAB BETWEEN GIRDERS BY SAWCUTTING. REMOVE CURBS AND PARAPET WALLS WITH RAILINGS, AND TOP PORTION OF BALLAST WALLS.
 - 5. SAWCUT THROUGH INTERMEDIATE DIAPHRAGMS, AS SHOWN.
 - 6. JACK GIRDERS FROM MAIN SPAN TEMPORARY SUPPORTS (DWG. 5).
 - 7. CONSTRUCT NEW CONCRETE DECK, INCLUDING NEW DECK DRAINS, IN SEQUENCE SHOWN ON DWG. 5.
 - 8. RECONSTRUCT TOP PORTION OF BALLAST WALLS.
 - 9. CONSTRUCT NEW APPROACH SLABS. (SEE DWG. 2)
 - 10. CONSTRUCT NEW BARRIER WALL.
 - 11. INSTALL EXPANSION JOINT WITHOUT SEAL AT WEST ABUTMENT.
 - 12. WATERPROOF DECK, PAVE DECK AND APPROACH SLABS WITH BINDER COURSE AND CONSTRUCT RAMPS AT EXPANSION JOINT.
 - 13. REMOVE TEMPORARY SUPPORTS FROM THIS STAGE.
 - 14. RELOCATE TEMPORARY BARRIER WALL AND DIVERT TRAFFIC ONTO THE COMPLETED PORTION OF DECK.
 - STAGE II
 - 1. REPEAT STEPS 2 TO 12 INCLUSIVE EXCEPT STEP 5 OF STAGE I ON THE REMAINING PORTION OF THE BRIDGE.
 - 2. REMOVE TEMPORARY SUPPORTS INCLUDING CAISSONS.
 - 3. CONSTRUCT STAGE II B OF NEW CONCRETE DECK.
 - 4. REMOVE TEMPORARY BARRIER WALL, PLACE REMAINING BINDER COURSE AND PLACE SURFACE COURSE OVER WHOLE DECK AND APPROACH SLABS.
 - 5. INSTALL SEAL INTO W. ABUTMENT EXPANSION JOINT IN ONE CONTINUOUS PIECE.
 - 6. REMOVE DETERIORATED (SPALLED, DELAMINATED OR HONEY COMBED) CONCRETE FROM THE AFFECTED AREAS OF THE GIRDERS AND DIAPHRAGMS AND REPAIR BY SHOTCRETING AS DIRECTED BY THE ENGINEER.
- (B) SUBSTRUCTURE REPAIR
 - 1. REMOVE DELAMINATED CONCRETE FROM PIER COLUMNS AT AFFECTED AREAS, AND REPAIR BY SHOTCRETING, AS DIRECTED BY THE ENGINEER.
 - 2. REPAIR SPALLED CONCRETE ON NORTH END OF WEST PIER FOOTING BY SHOTCRETING, AS DIRECTED BY THE ENGINEER.



DATE	BY	DESCRIPTION
DESIGN A.G. CHECK	LOADING 0480C-A-83	DATE FEB. 97
DRAWING M.M. CHECK M.G.	SITE No 27-50/R2	DWG. 1

memorandum



Tel: 3731

To: M. Gergely
Sr. Project Engineer
Structural Office
4th Floor
3501 Dufferin Street

Date: 1987 05 01

Geocres No 31G-217

From: Foundation Design Section
Room 315, Central Building

RE: West Hawkesbury Creek and
C.N.R. Overhead Rehabilitation
W.P. 102-86-01, Site 27-50
Hwy. 17, District 9, Ottawa

In response to your memo dated 87 04 29:

- 1) As you will recall, your schedule did not permit a foundation investigation, and our recommendations were based on a previous (1954) investigation. However, as indicated in L. Politano's memo of 87 02 03, no subsurface information is available for the area within the creek bed. We were able to complete a site inspection, in late January, 1987, in which boulders were noted at the east river bank, but the snow cover precluded a full inspection of ground conditions. These boulders at the east bank may have been placed for erosion protection and it is difficult to predict if boulders extend across the creek channel without a field inspection that permits a clear view of the channel. We believe that this information could most economically be ascertained by your regional staff. Alternatively, if our assessment is required, please advise so that we can make the necessary arrangements.
- 2) If boulders are encountered at the caisson locations, they can be penetrated by churn drilling or simply scraped away as the depth of overburden in the creek is estimated to be less than 2 m. We are assuming that no lateral resistance from the overburden has been required in your design of these temporary supports.

If there are any questions, please contact this office.

D.H. Dundas

D.H. Dundas, P. Eng.
Sr. Foundations Engineer

DHD/mmj

cc: Q. Islam
M.J. Bernhardt

memorandum

Structural Office,
Structural Office,
4th Floor,
Downsview.

235-4959



To: Mr. M. Devata,
Head, Foundations Section,
Geotechnical Office,
3rd Floor,
Central Building.

Date: 1987 04 29



Subject: West Hawkesbury Ck. & CNR O'head, Rehab.,
W.P. 102-86-01, Site 27-50,
Hwy. 17, District 9

During the Technical Review Meeting (87-04-27) for the rehabilitation of this structure, the following questions were raised:

- Are there any boulders in the creek which would interfere with the installation of the caissons for the temporary support?
- If there might be boulders, should the Special Provisions indicate what construction method and/or payment for that work would be specified?

Please respond to these questions at your earliest convenience. The Project is scheduled for Executive Review in two weeks.

Michael Gergely

MG:ac

Michael Gergely,
Sr. Project Engineer.

cc: Q. Islam

memorandum



Tel: 3731

To: M. Gergely
Structural Office
3501 Dufferin Street

Date: 1987 02 13

From: Foundation Design Section
Room 315, Central Building

RE: W.P. 102-86-01, Site 27-50
Hwy. 17 Structure over
West Hawkesbury Creek
District 9 - Ottawa

Further to your request of 87 02 04, we have reviewed the general arrangement drawing for the above-noted project, with particular attention to the foundations of the temporary support structure. The following are our comments:

1. We are assuming that since no details have been provided on the general arrangement drawing, the caissons will be founded directly on the limestone bedrock surface, without keying. Since the overburden is relatively shallow ($1\pm$ m), the caissons can rely only on friction along the base. We believe that since no provisions have been taken to increase the lateral resistance, the lateral loads acting on the temporary support are negligible.
2. A Special Provision will have to be included in the contract documents stipulating that the caissons will have to be removed to at least the creek bed level after completion of the work.
3. If it is more desirable to pour the caissons in the 'dry', consideration could be given to pouring a tremie seal on the bottom of the steel liner. Once the seal sets, the water within the liner could be pumped out and ready-mix concrete could be poured into the liner.

A handwritten signature in dark ink, appearing to read "L. Politano", with a long horizontal line extending to the right.

L. Politano
Project Foundations Engineer

for

M. Devata
Chief Foundations Engineer
(East)

LP/MD/mmj

memorandum



Tel: 3731

To: M. Gergely
Sr. Project Engineer
Structural Office
3501 Dufferin Street

Date: 1987 02 03

Access No 31G-217

From: Foundation Design Section
Room 315, Central Building

RE: West Hawkesbury Creek and
C.N.R. Overhead, Bridge Rehabilitation
Hwy. 17, W.P. 102-86-01, Site 27-50
District 9 - Ottawa

Further to your memorandum of 87 01 22, we have reviewed the temporary support system as shown on the General Arrangement Drawing for the above-noted project, and further to our conversation of 87 01 30, we have the following comments.

We have reviewed the available subsurface information obtained from a 1954 investigation carried out at this site. In the vicinity of the west abutment, the native material consists of $1.7 \pm$ m of loose sand, underlain by $1.5 \pm$ m of compact till and in turn, underlain by limestone bedrock. In the vicinity of the east abutment, the native material consists of 3 to 4 m of very dense till, underlain by limestone bedrock. A copy of the original soil stratigraphy is attached for your information.

As indicated in the stratigraphy, no subsurface information is available for the area within the creek bed. However, it is anticipated that the bedrock surface may be found at or about Elev. 47.

Subsequent to the investigation which is summarized on the attached soil stratigraphy, 10 m of fill material was placed for the west approach. We have no information on the nature or character of the fill material used.

In order to support the overhead structure during the rehabilitation work, it is proposed to use 4 temporary supports founded on compacted granular pads. The load applied to each temporary support will result in a stress of 110 kPa at the base of the proposed 1 m wide concrete footing.

With regards to the 2 supports within the creek channel, we suggest that consideration be given to the removal of $1 \text{ m} \pm$ of material composing the creek bed and subsequently constructing the well-compacted granular pads directly on the bedrock surface. Forward and side slopes of the compacted granular fills should be constructed not steeper than 1.75 H:1V. In view of the relatively narrow creek cross-section, this scheme would require the channelization of the creek through a pipe.

.....2

Further to discussions with Q. Islam (Eastern Region, Structural Section), it appears that any disruption of the creek flow would require prior review from M.N.R. and M.O.E. This scheme would, most likely, not be approved, and as a result, an alternate proposal may be required.

The proposed east and west temporary supports require that granular pads be constructed on existing slopes. In the case of the west support, the granular pad will be founded on fill material. In order to confirm the design loads required, a subsurface investigation will be necessary. Without a detailed investigation, nominal loads of up to 50 kPa may be used.

In addition, the east and west temporary support granular pads will have to be constructed with front and side slopes of 2H:1V in order to minimize the potential instabilities of the existing slopes. Details can be discussed if necessary.

As an alternative, all of the temporary supports may be supported on concrete caissons founded on the relatively shallow bedrock surface. If this option is utilized, a field investigation would not be required as information regarding the bedrock surface location is available from the 1954 investigation. For 600 mm dia. caissons founded on the limestone bedrock, a ULS loading of 1700 kN per caisson is acceptable. A beam could be horizontally supported on the caissons, and in turn, the temporary structure supports could be founded on the beam.

We understand that some modifications of the proposed temporary support scheme are required. Please provide us with the revised proposal at your earliest convenience so that we may expedite any fieldwork which may be necessary.



L. Politano
Project Foundations Engineer

for

M. Devata
Chief Foundations Engineer
(East)

LP/MD/mmj

c.c. - Q. Islam

memorandum



Tel: (416) 248-3516

To: Mr. Lou Politano,
Foundation Design Section,
Room 315, Central Building.

Date: 87 01 22

SUBJECT: West Hawkesbury Creek & CNR Overhead,
Bridge Rehabilitation,
W.P. 102-86-01, Site 27-50, District 9.

Further to your telephone conversation with Mr. Quazi Islam of the Structural Section, Eastern Region, this morning, we are requesting a foundation investigation for the above structure.

Since temporary supports will be required for the construction phase of this rehabilitation, we need to have an allowable soil bearing pressure at the locations indicated on the enclosed revised General Arrangement drawing.

Because you have available equipment and personnel nearby at the present time, we understand that you will be able to supply us with the required information very soon.

The load applied to the temporary supports results in a stress of 2300 psf (109.kN/m²) at the base of the proposed 1.0 m wide concrete footing. Please also supply us with your recommended granular support for the concrete footing at your earliest convenience.

Michael Gergely

MG/cf
Enc.

M. Gergely,
Senior Project Engineer,
Structural Office.

c.c. Quazi Islam



memorandum



Tel: 248-3282

To: W. Lin
Design Engineer
Structural Office
3501 Dufferin Street

Date: 1987 01 08

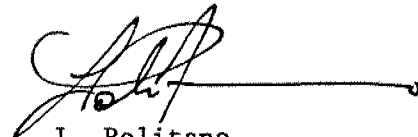
Atten: M. Gergely

RE: West Hawkesbury Creek and CNR Overhead
Bridge Rehabilitation
W.P. 102-86-01, Site 27-50
District 9 - Ottawa

We have reviewed the preliminary General Arrangement Drawing 27-50/R-P1 for the above noted structure and note that the project involves only rehabilitation of deck.

In view that the proposed work does not include any disturbance of the footings or the area surrounding them, we do not have any comments. However, if the rehabilitation increases the load on the foundation elements, this Section should be informed.

LP/mmj

A handwritten signature in black ink, appearing to read "L. Politano", followed by a horizontal line.

L. Politano
Project Foundations Engineer

for

M. Devata
Chief Foundations Engineer
(East)