APPLICANT: BC Hydro
Ste 600, Four Bentall Centre, 1055 Dunsmuir St. PO Box 48260
Vancouver, British Columbia V7X 1V5

WORK: Bridge

SITE LOCATION: Located at approximately 56.22860, -121.38890,
Peace River, The bed and islands of the Peace River and the Peace River
lying within Sections 27 and 34 Township 83 Range 22 West of The 6th
Meridian Peace River District lying South of The Peace River in the
province of British Columbia

As per the application (detailed above) to the Minister of Transport, submitted pursuant to the Canadian
Navigable Waters Act, for an approval of the work per the eight (8) attached plan(s), the Minister hereby
approves the work pursuant to subsection 7(6) for the construction of the above mentioned work, in accordance
with the following terms and conditions:

1. The CNWA Approval and it Terms and Conditions shall be posted at an easily accessible place at
the worksite, and be provided to the contractor conducting the work.

2. The owner shall provide information about the causeway(s) and bridge location using the Boater
Communications Protocol, and post the information on the owner website, on a page related to the
project.

3. Upon completion of the causeway(s) and or bridge construction, install and maintain warning signs,
one at the confluence of the side channel and the main channel of the Peace River approximately
1.8km upstream of the crossing, and a second approximately 100m downstream of the crossing.
Signs shall advise of the obstruction of the side channel and include an arrow indicating the direction
of the main channel. Signs shall be a minimum of 72” x 48”, a white background with black lettering,
the size of the text shall be at least 15cm tall with the word “WARNING” at 1.5 times the size of the
message text.

WARNING
OBSTRUCTION AHEAD
KEEP TO THE MAIN CHANNEL

4. During construction the outermost extent of each abutment or causeway above the surface shall be
marked with orange Hi-visibility markers on the upstream and downstream corners.

5. During construction the outermost extent of each abutment causeway above the surface shall be
marked with a flashing yellow light on the upstream and downstream corners.
6. Any construction equipment or machinery left in the water during periods of darkness or limited visibility shall be marked with a yellow flashing light visible to upstream and downstream traffic.

7. If using abutments and bridge deck, the outermost extent of each abutment above the surface shall be marked with orange Hi-visibility markers on the upstream and downstream corners once the bridge deck has been removed, until the abutments are submerged due to inundation.

8. If using abutment and bridge deck, the outermost extent of each abutment above the surface shall be marked with a flashing yellow light on the upstream and downstream corners once the bridge deck has been removed, until the abutments are submerged due to inundation.

9. If full causeway is used, the upstream and downstream edges shall be marked with orange Hi-visibility markers, evenly spaced every 20m on both the upstream and downstream sides, until the causeway is submerged due to inundation.

10. Once the causeway or abutments are submerged due to inundation, yellow buoys shall be placed and maintained at the location of the causeway or abutment. Buoys are to be no more than 20 metres apart and no less than 0.6 metres in diameter. Horizontal bands of yellow reflective tape, not less than 10 cm in width and 15 cm in length, shall be either placed at intervals around the horizontal circumference of the buoys or displayed from suitable topmarks that are visible from all directions. Buoys shall remain in place until the water elevation at the causeway or abutment location reaches 5m greater than the causeway or abutment top elevation.

11. Upon completion of the associated vegetation clearing project, the bridge deck and associated equipment shall be completely removed without delay.

SIGNED on December 2, 2019 in Pacific

[Signature]

Jonn Leeden
Navigation Protection Program
Programs Group
Transport Canada
Pacific Region
For the Minister of Transport

/sp
Figure 1. Map showing location of proposed MR6 crossing of the Peace River sidechannel.
SITE SURVEY NOTES:
1. SITE SURVEY BOUND ON LIDAR DATA NO SITE SURVEY HAS BEEN COMPLETED.
2. GENERAL SITE SURVEY INC LIDAR DRAWING.
3. STARTING AND CONTOURS ARE IN METERS.

HYDROLOGICAL DATA:
STREAM SIZE = 0.001 km²
- DESIGN FLOW IS ESTIMATED @ 100 m³/s
- Q10 DESIG FLOW IS ESTIMATED @ 400 m³/s
- Q10 DESIGN FLOW WATER LEVEL IS ESTIMATED @ 44 m

ESTIMATED EDGE OF WATER (TYP.)
ESTIMATED PRESENT WATER (ELE) = +28.3 m

GROUND PROFILE ALONG PROPOSED ROAD ALIGNMENT
SCALE 1:1000
NOTE: THESE DRAWINGS ARE CONCEPTUAL AND ARE FOR PLANNING PURPOSES ONLY. HIGH WATER LEVELS ARE BASED ON PHOTO IMAGERY AND ARE ESTIMATES ONLY. DURING WATER CONDITIONS WHICH WATER LEVELS ARE HIGH, THE ROAD SURFACE MAY BE UNDERWATER AT TIMES AND MAY REQUIRE MAINTENANCE FOLLOWING HIGH FLOW EVENTS. CULVERTS HAVE NOT BEEN DESIGNED TO HANDLE HIGH WATER FLOWS AND ARE INTENDED TO PROVIDE CHANNEL CONNECTIVITY ONLY.
SURVEY CONTROL

DESCRIPTION

W/P1 623887.501 60001.576 428.056
W/P2 623975.109 60002.183 428.056
W/P3 622366.824 59997.602 428.056
W/P4 622365.941 59995.557 428.056
W/P5 622364.934 59990.505 428.056
W/P6 622362.560 59990.730 428.056
W/P7 622360.711 59992.521 428.056
W/P8 622354.985 59983.746 428.056
W/P9 622353.017 59993.536 428.028
W/P10 622354.802 59991.761 428.108
W/P11 622361.914 59987.552 428.051
W/P12 622363.910 59988.777 428.051
W/P13 622362.088 59980.530 428.186
W/P14 622363.059 59990.522 428.186
W/P15 622361.177 59992.583 428.243
W/P16 622361.552 59985.808 428.243

NOTES:

1. Backfill of approach shall generally conform to the line shown on the drawings and shall be placed in lifts not exceeding 900mm thick, compacted to 95% standard proctor density using a minimum 1500Kgs vibratory plate compactor. Material shall be clean, fine, non-cohesive, well-graded granular fill of 75mm maximum size. Lifts shall alternate both ways at each end of the bridge to ensure minimal movement.

2. Non-woven filter fabric to be placed over excavation to have a minimum full thickness of 250mm.

3. All exposed materials shall be seeded using an approved erosion control grass seed mixture and treated with an approved erosion control blanket.

4. The Contractor is to contact the Engineer prior to placing foundations. Foundations shall be supervised by the Engineer to confirm grading requirements.

5. All permits and regulatory approvals are to be in place prior to commencing work.

6. Environmental management plan to be prepared for project by others. Completion of works to comply with mitigation recommendations outlined in environmental study.

7. No site specific geotechnical investigation has been completed as part of Allnorth Consultants limited scope of work. Therefore, this design has been prepared without the benefit of a site specific geotechnical field investigation or soil samples. The Contractor is responsible for ensuring adherence to all geotechnical requirements and bridge concepts may need to be modified to accommodate actual site conditions. Allnorth Consultants limits liability for additional costs or delays that may result if the ground conditions vary from those assumed in the design. The design engineer shall be contacted if field conditions vary from the design assumptions shown on the drawings or in the construction specifications. Installation of foundations shall be supervised by the design engineer or their representative.

8. Where excavation specifications on these drawings conflict with WorkSafe BC (WSBC) regulations, WSBC regulations are to govern.

LOADING DIAGRAM: 1-100 DPP HIGHWAY G-VARR = 90 BDS

Design in accordance with CAN/CSA-S6-14 with modified loading as follows:

- 20k (W)
- 20k (H)
- 20k (L)
- 20k (M)
- 20k (N)
- 20k (O)
- 20k (P)
- 20k (Q)
- 20k (R)
- 20k (S)
- 20k (T)
- 20k (U)
- 20k (V)
- 20k (W)
- 20k (X)
- 20k (Y)
- 20k (Z)
- 20k (AA)
- 20k (AB)
- 20k (AC)
- 20k (AD)
- 20k (AE)
- 20k (AF)
- 20k (AG)
- 20k (AH)
- 20k (AI)
- 20k (AJ)
- 20k (AK)
- 20k (AL)
- 20k (AM)
- 20k (AN)
- 20k (AO)
- 20k (AP)
- 20k (AQ)
- 20k (AR)
- 20k (AS)
- 20k (AT)
- 20k (AU)
- 20k (AV)
- 20k (AW)
- 20k (AX)
- 20k (AY)
- 20k (AZ)
- 20k (BA)
- 20k (BB)
- 20k (BC)
- 20k (BD)
- 20k (BE)
- 20k (BF)
- 20k (BG)
- 20k (BH)
- 20k (BI)
- 20k (BJ)
- 20k (BK)
- 20k (BL)
- 20k (BM)
- 20k (BN)
- 20k (BO)
- 20k (BP)
- 20k (BQ)
- 20k (BR)
- 20k (BS)
- 20k (BT)
- 20k (BU)
- 20k (BV)
- 20k (BW)
- 20k (BX)
- 20k (BY)
- 20k (BZ)
NOTE: THESE DRAWINGS ARE CONCEPTUAL AND ARE FOR PLANNING PURPOSES ONLY. HIGH WATER LEVELS ARE BASED ON PHOTO IMAGERY AND ARE ESTIMATES ONLY. DURING WINTER CONDITIONS WHEN WATER LEVELS ARE RELATIVELY LOW, THE ROAD SURFACE MAY BE UNDERWATER AT TIMES AND MAY REQUIRE MAINTENANCE FOLLOWING HIGH FLOW EVENTS. CULVERTS HAVE NOT BEEN DESIGNED TO HANDLE HIGH WATER FLOWS AND ARE INTENDED TO PROVIDE CHANNEL CONNECTIVITY ONLY.
CONSTRUCT ENHANCEMENT WITH COMMON FILL AT 1.5m UNTIL MINIMUM COVER IS OBTAINED (TYP BOTH ENDS)

PROPOSED ALIGNMENT

PLACE CLASS 50 KG RIP RAP MIN. 550MM DEEP

EXISTING GROUND

NON-WOVEN FILTER FABRIC

SURVEY CONTROL

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CULVERT PROFILE

SCALE: 1:250

MR6 CROSSING

OPTION 2: 100’ BRIDGE

BC Hydro

Allnorth
NOTES:

1. BACK FILL OF APPROACHES SHALL GENERALLY CONFORM TO THE LINES SHOWN ON THE DRAWINGS AND SHALL BE PLACED IN LIFTS NOT EXCEEDING 300mm THICK COMPACTED TO A 98% STANDARD PROCTOR DENSITY USING A MINIMUM 1000mm VIBRATORY PLATE COMPACTOR. LIFTS SHALL NOT EXCEED 200mm IN DEPTH AND LIFTS WITHIN 2M OF THE FABRIC MATERIAL SHOWN ON THE DRAWINGS SHALL BE PLACED IN LIFTS NOT EXCEEDING 150mm THICK COMPACTED TO A 98% STANDARD PROCTOR DENSITY USING A MINIMUM 1000mm VIBRATORY PLATE COMPACTOR. LIFTS SHALL ALTERNATE BOTH WAYS AT EACH END OF THE BRIDGE TO ENSURE MINIMAL MOVEMENT.

2. NON-WOVEN FILTER FABRIC TO BE PLACED OVER EXCAVATION TO HAVE A MINIMUM KULLEN BURST STRENGTH OF 2500kPa.

3. ALL EXPOSED MORTAR SURFACES TO BE ZEROED USING AN APPROVED RECLAMATION DRAINS SEED Mixture AND COVERED WITH AN APPROVED EROSION CONTROL BLANKET.

4. THE CONTRACTOR IS TO CONTACT THE ENGINEER PRIOR TO PLACING FOUNDATIONS. FOUNDATIONS PLACEMENT SHALL BE SUPERVISED BY THE ENGINEER TO CONFIRM BEARING REQUIREMENTS.

5. ALL PERMITS AND REGULATORY APPROVALS TO BE IN PLACE PRIOR TO COMMENCING WORK.

6. ENVIRONMENTAL MANAGEMENT PLAN TO BE PREPARED FOR PROJECT BY CONSULTANTS. COMPLETION OF WORKS TO COMPLY WITH ATTRACTION RECOMMENDATIONS OUTLINED IN ENVIRONMENTAL MANAGEMENT PLAN.

7. NO SITE SPECIFIC GEOTECHNICAL INVESTIGATION HAS BEEN COMPLETED AS PART OF ALLNORTH CONSULTANTS LIMITED SCOPE OF WORK. THEREFORE, THIS DESIGN HAS BEEN PREPARED WITHOUT THE BENEFIT OF A SITE SPECIFIC GEOTECHNICAL FIELD INVESTIGATION OR GEOTECHNICAL ADVICE. GROUND CONDITIONS MAY VARY AND THE FOUNDATION REQUIREMENTS AND BRIDGE CONCEPT MAY NEED TO BE MODIFIED TO ACCOMMODATE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION. ALLNORTH CONSULTANTS LIMITED ACCEPTS NO RESPONSIBILITY FOR ADDITIONAL COSTS OR DELAYS THAT MAY RESULT IF THE GROUND CONDITIONS DIFFER FROM THOSE ASSUMED IN THE DESIGN. THE DESIGN ENGINEER SHALL BE NOTIFIED OF ANY MODIFICATIONS TO THE DRAWINGS OR IN THE CONSTRUCTION SPECIFICATIONS. INSTALLATIONS OF FOUNDATIONS SHALL BE SUPERVISED BY THE DESIGN ENGINEER OR THEIR REPRESENTATIVE.

5. WHERE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFLICT WITH WORKSAFE BC (WSBC) REGULATIONS, WSBC REGULATIONS ARE TO BE GIVEN PRIORITY.