Transport Canada Transports Canada

Navigation Protection Program
Programs Group
Transport Canada

Our file:
2019-501003

APPROVAL

APPLICANT:	BC Hydro Ste 600, Four Bentall Centre, 1055 Dunsmuir St. PO Box 49260 Vanouver, 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.

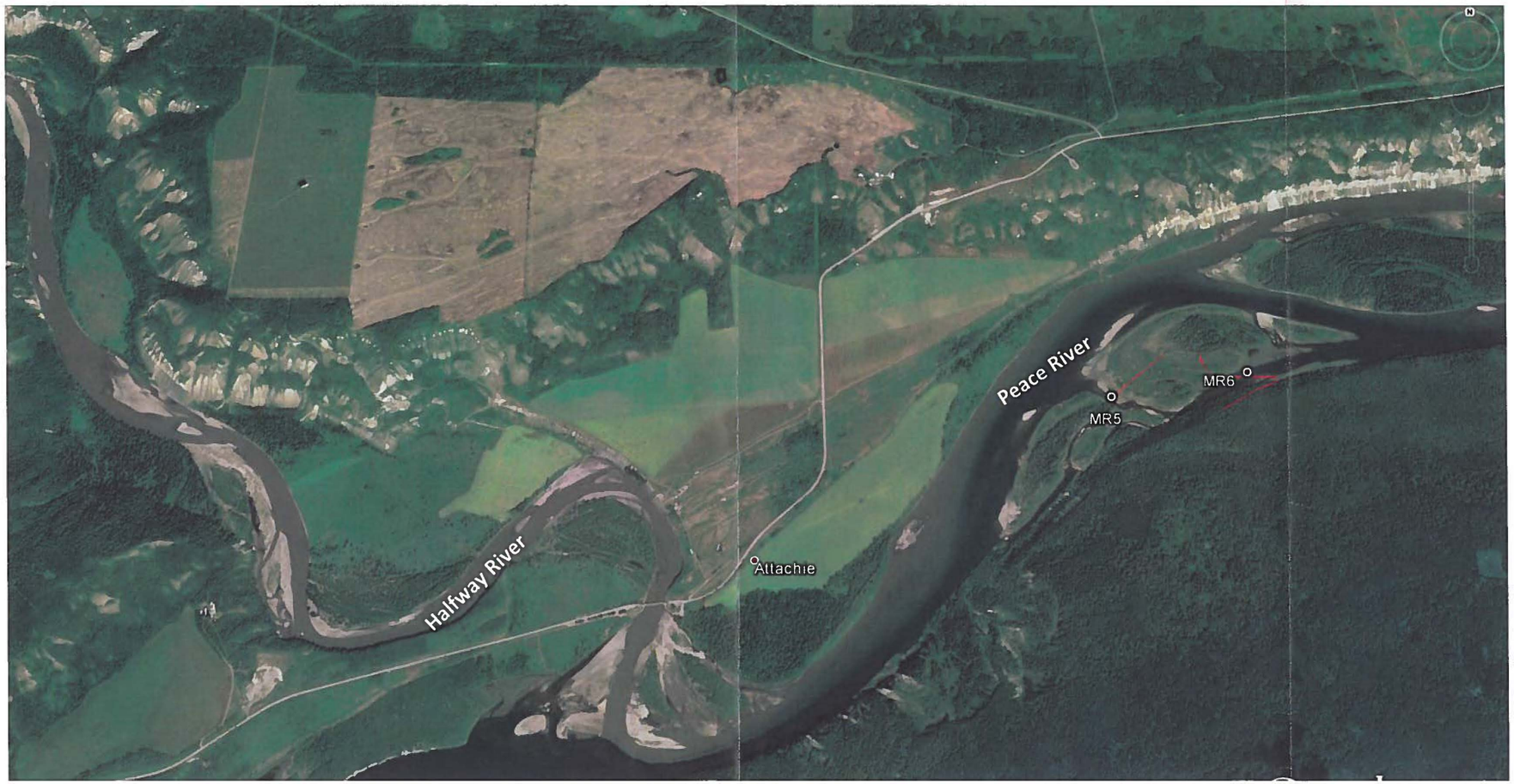
11. Upon completion of the associated vegetation clearing project, the bridge deck and associated equipment shall be completely removed without delay.

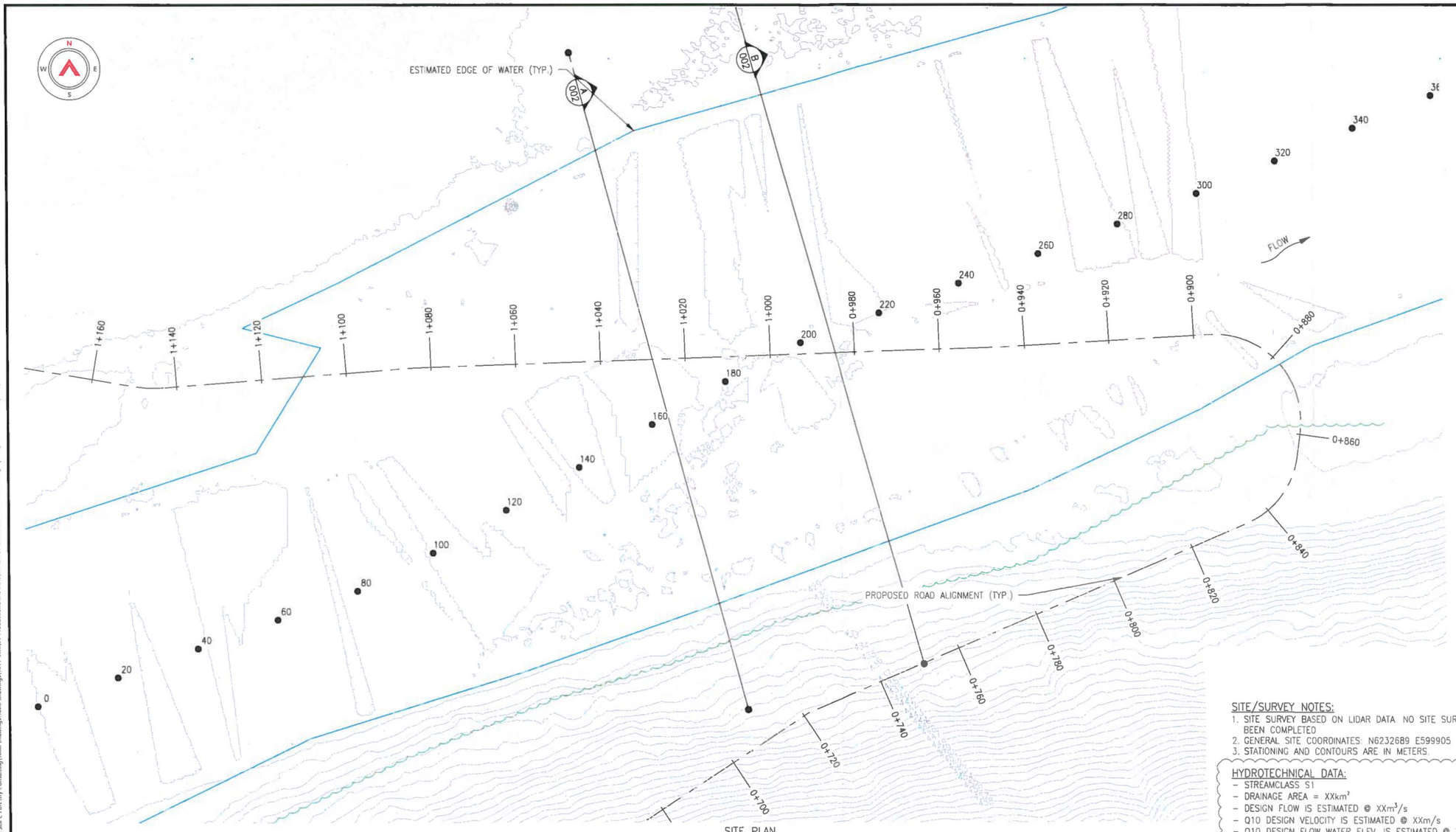
SIGNED on December 2, 2019 in Pacific

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.



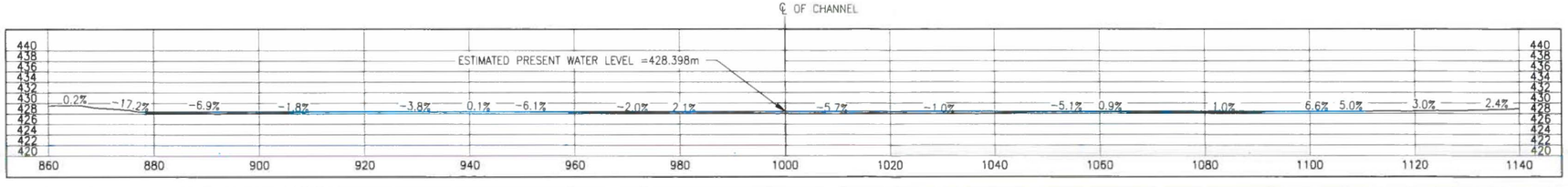


SITE PLAN
SCALE: 1:1000

SITE/SURVEY NOTES:
1. SITE SURVEY BASED ON LIDAR DATA. NO SITE SURVEY HAS BEEN COMPLETED
2. GENERAL SITE COORDINATES: N6232689 E599905
3. STATIONING AND CONTOURS ARE IN METERS.

HYDROTECHNICAL DATA:
- STREAMCLASS S1
- DRAINAGE AREA = XXkm²
- DESIGN FLOW IS ESTIMATED @ XXm³/s
- Q10 DESIGN VELOCITY IS ESTIMATED @ XXm/s
- Q10 DESIGN FLOW WATER ELEV. IS ESTIMATED @ XXm

HOLD



GROUND PROFILE ALONG PROPOSED ROAD ALIGNMENT
SCALE: 1:1000

Reviewed / Examiné
Page 2 of/de 8
2019-501003
NOV 25 2019
By/par: JONN LEEDEN
Navigation Protection Program / Programme de protection de la navigation

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
A	19/07/30	ISSUED FOR REVIEW	BK	DDW

CLIENT
BC Hydro

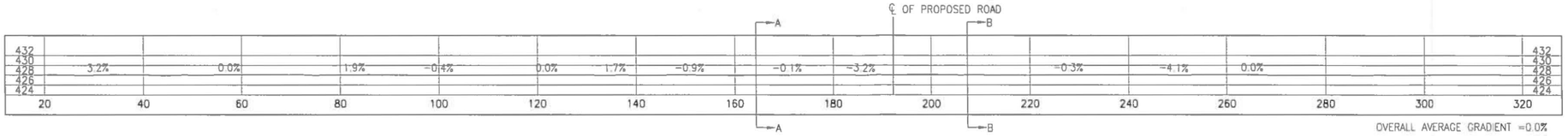
Allnorth

CLIENT NO:	-	DRWN:	BK	DATE 19/07/26
PROJECT NO:	17PG0123	DSGN:	GDF	DATE 19/07/26
DRAWING SIZE	ANSI 'B'	CHKD:	GDF	DATE 19/07/30
SCALE:	AS NOTED	APVD:	DDW	DATE 19/07/30

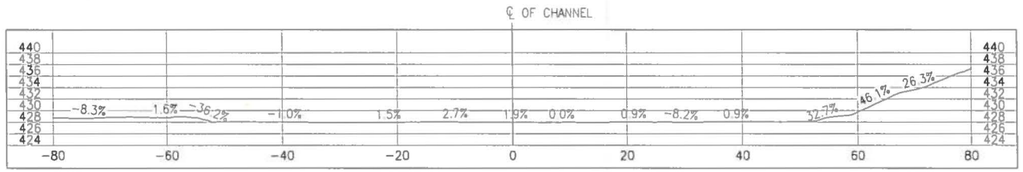
PROJECT
MR6 CROSSING

TITLE
SITE PLAN AND PROFILE

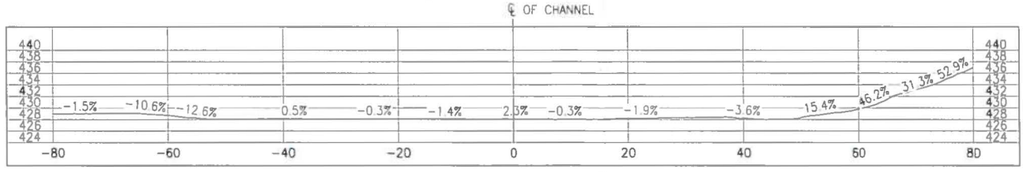
DWG NO: **17PG0123-1600-1960-001** REV **A**



CHANNEL PROFILE
SCALE: 1:1000



SECTION A
SCALE: 1:1000 001



SECTION B
SCALE: 1:1000 001

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
A	19/07/30	ISSUED FOR REVIEW	BK	DDW

CLIENT
BC Hydro

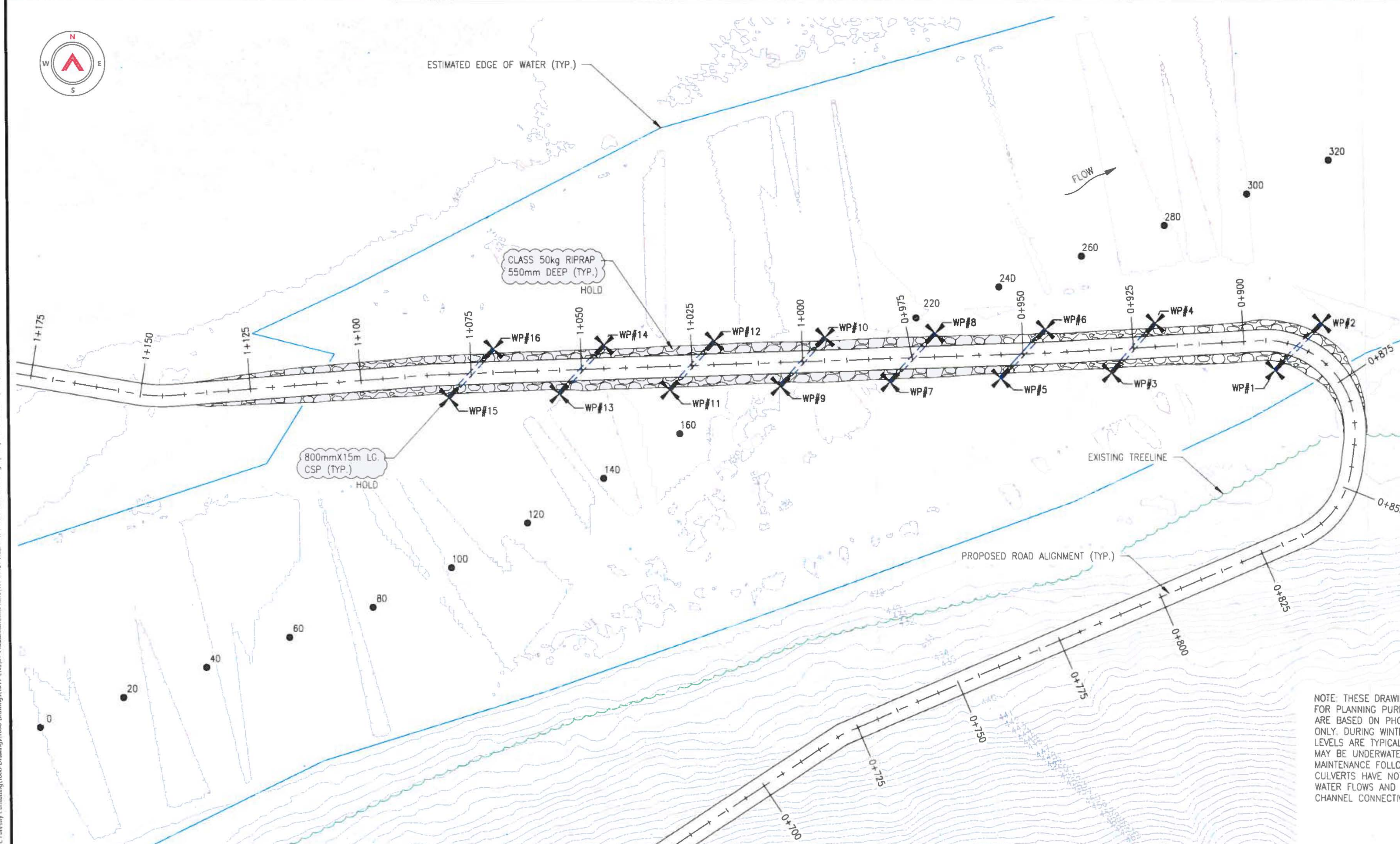
Allnorth

CLIENT NO:	-	DRWN:	BK	DATE:	19/07/26
PROJECT NO:	17PG0123	DSGN:	GDF	DATE:	19/07/26
DRAWING SIZE	ANSI "B"	CHKD:	GDF	DATE:	19/07/30
SCALE	AS NOTED	APVD:	DDW	DATE:	19/07/30

PROJECT
MR6 CROSSING

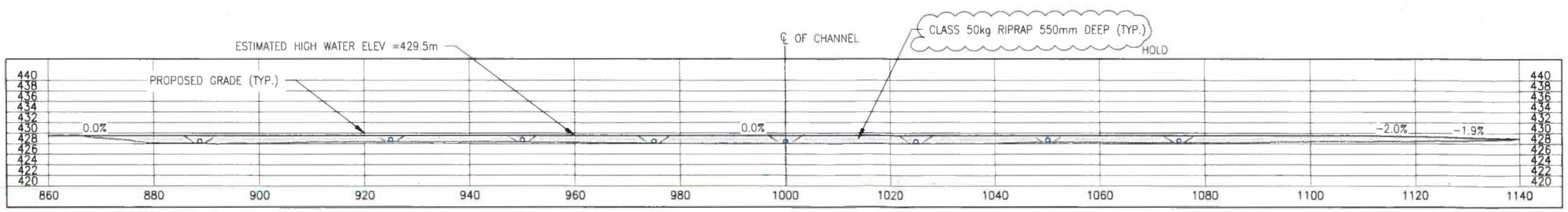
TITLE
PROFILE AND SECTIONS

DWG NO: **17PG0123-1600-1960-002** REV: **A**



GENERAL ARRANGEMENT
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 WINTER CONDITIONS WHEN WATER LEVELS ARE TYPICALLY HIGHER, 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.



GROUND PROFILE ALONG PROPOSED ROAD ALIGNMENT
SCALE: 1:1000

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

Reviewed / Examiné
Page 4 of/de 8
2019-50003
NOV 2 5 2019
By/par: JOHN LEEDEN
Navigation Protection Program / Programme de protection de la navigation

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
A	19/07/30	ISSUED FOR REVIEW	BK	DDW

CLIENT
BC Hydro

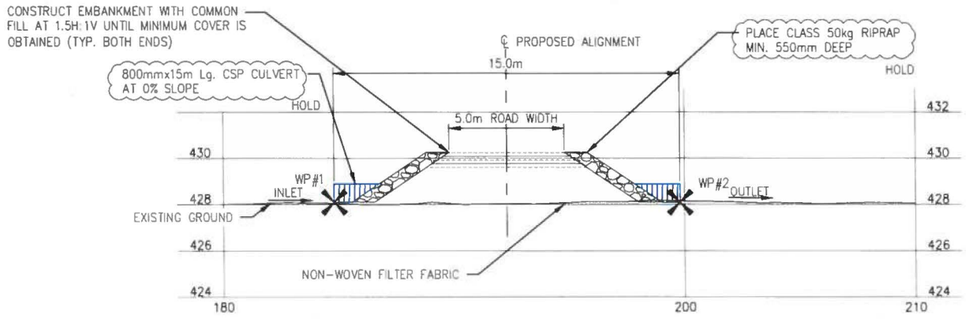
Allnorth

CLIENT NO	-	DRWN	BK	DATE	19/07/26
PROJECT NO	17PG0123	DSGN	GDF	DATE	19/07/26
DRAWING SIZE	ANSI "B"	CHKD	GDF	DATE	19/07/30
SCALE	AS NOTED	APVD	DDW	DATE	19/07/30

PROJECT
MR6 CROSSING
OPTION 1 CAUSEWAY

TITLE
GENERAL ARRANGEMENT AND PROFILE

DWG NO: 17PG0123-1600-1960-003
REV: A



HOLD

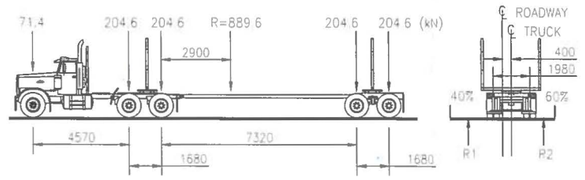
SURVEY CONTROL			
DESCRIPTION	NORTHING	EASTING	ELEVATION
WP#1	6232687.501	600012.576	428.056
WP#2	6232698.108	600023.183	428.056
WP#3	6232686.824	599975.602	428.356
WP#4	6232698.044	599985.557	428.356
WP#5	6232685.594	599950.505	428.228
WP#6	6232696.569	599960.730	428.228
WP#7	6232684.711	599925.521	428.101
WP#8	6232695.685	599935.746	428.101
WP#9	6232683.827	599900.536	428.108
WP#10	6232694.802	599910.761	428.108
WP#11	6232682.944	599875.552	428.051
WP#12	6232693.919	599885.777	428.051
WP#13	6232682.088	599850.538	428.188
WP#14	6232693.008	599860.822	428.188
WP#15	6232681.177	599825.583	428.243
WP#16	6232692.152	599835.808	428.243

NOTES:

1. BACK FILL OF APPROACHES SHALL GENERALLY CONFORM TO THE LINES SHOWN ON THE DRAWINGS AND SHALL BE PLACED IN LIFTS NOT EXCEEDING 305mm THICK, COMPACTED TO 95% STANDARD PROCTOR DENSITY USING A MINIMUM 1000lbs VIBRATORY PLATE COMPACTOR. MATERIAL SHALL BE CLEAN, FREE DRAINING, 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 MULLEN BURST STRENGTH OF 2500kPa
3. ALL EXPOSED MINERAL SOILS TO BE SEEDED USING AN APPROVED RECLAMATION GRASS 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 OTHERS. COMPLETION OF WORKS TO COMPLY WITH MITIGATION 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 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. INSTALLATIONS 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 L-100 OFF HIGHWAY G.V.W. = 90 680kg:

DESIGN IN ACCORDANCE WITH CAN/CSA-S6-14 WITH MODIFIED LOADING AS FOLLOWS:



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

Reviewed / Examiné
Page 5 of/de 8
2019-30003
NOV 25 2019
By/par: JONN LEEDEN
Navigation Protection Program / Programme de protection de la navigation

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
A	19/07/30	ISSUED FOR REVIEW	BK	DDW

CLIENT: BC Hydro

Allnorth

CLIENT NO.	-	DRWN:	BK	DATE	19/07/26
PROJECT NO.	17PG0123	DSGN:	GDF	DATE	19/07/26
DRAWING SIZE:	ANSI "B"	CHKD:	GDF	DATE	19/07/30
SCALE:	AS NOTED	APVD:	DDW	DATE	19/07/30

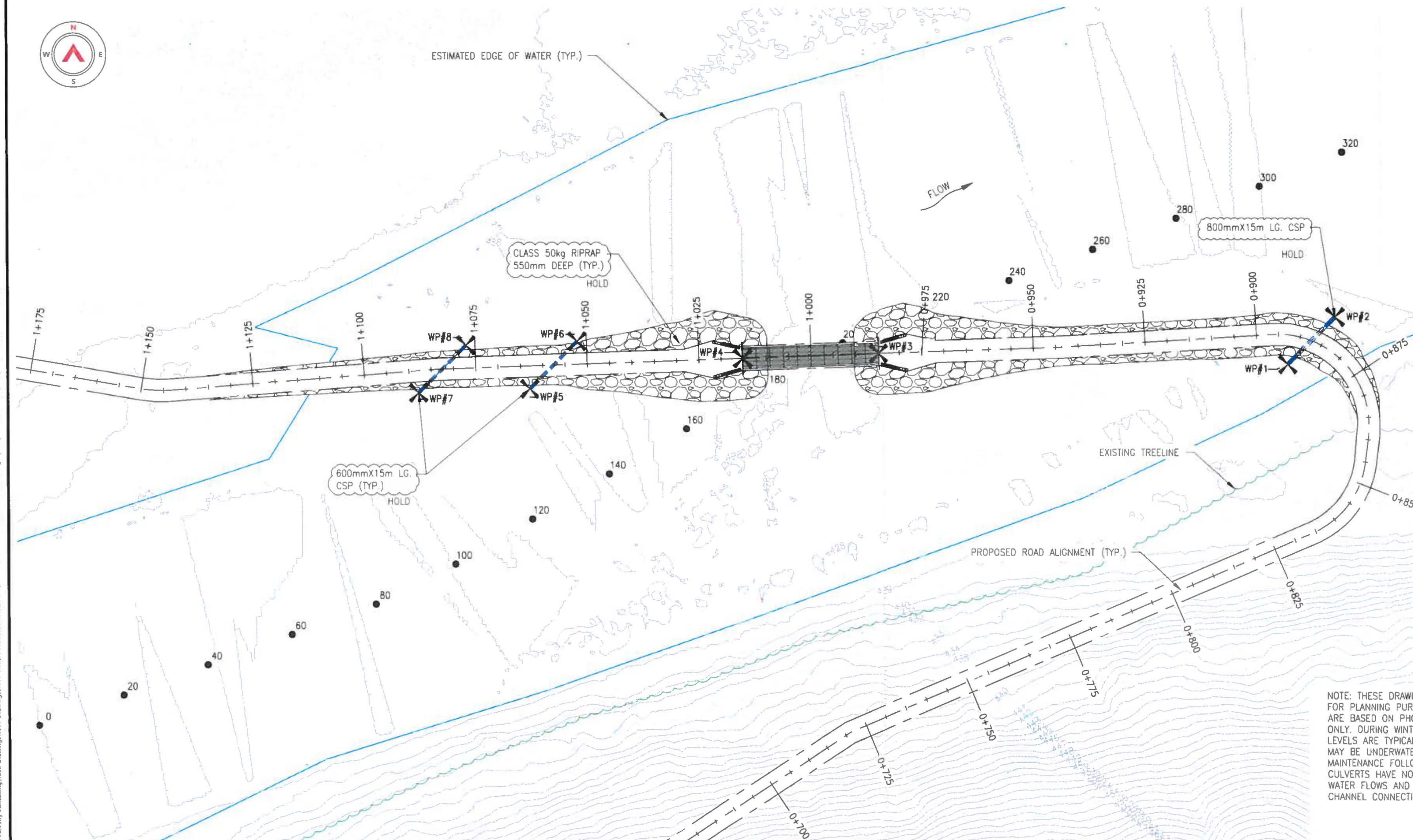
PROJECT

MR6 CROSSING
OPTION 1 CAUSEWAY

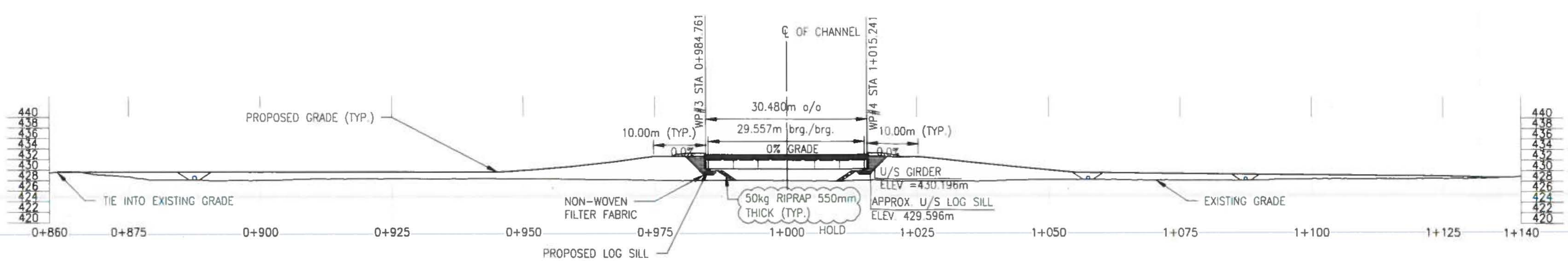
TITLE

DETAILS AND NOTES

DWG NO: **17PG0123-1600-1960-004** REV: **A**



GENERAL ARRANGEMENT
SCALE: 1:1000



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 WINTER CONDITIONS WHEN WATER LEVELS ARE TYPICALLY HIGHER, 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.

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

Reviewed / Examiné
Page 6 of/de 8
2019-501003
NOV 25 2019
By/par: JONN LEEDEN
Navigation Protection Program / Programme de protection de la navigation

ISSUED FOR REVIEW
NOT FOR
CONSTRUCTION

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
A	19/07/30	ISSUED FOR REVIEW	BK	DDW

CLIENT:
BC Hydro

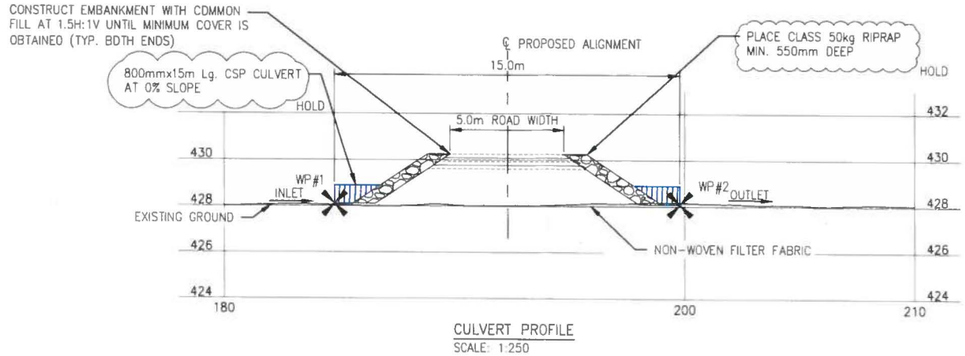
Allnorth

CLIENT NO	-	DRWN	BK	DATE	19/07/26
PROJECT NO	17PG0123	DSGN	GDF	DATE	19/07/26
DRAWING SIZE	ANSI "B"	CHKD	GDF	DATE	19/07/30
SCALE	AS NOTED	APVD	DDW	DATE	19/07/30

PROJECT
MR6 CROSSING
OPTION 2: 100' BRIDGE

TITLE
GENERAL ARRANGEMENT AND PROFILE

DWG NO: 17PG0123-1600-1960-005 REV: A



CULVERT PROFILE
SCALE: 1:250

SURVEY CONTROL			
DESCRIPTION	NORTHING	EASTING	ELEVATION
WP#1	6232687.501	600012.576	428.104
WP#2	6232698.108	600023.183	428.104
WP#3	6232689.853	599920.879	432.550
WP#4	6232688.776	599890.418	432.550
WP#5	6232681.976	599842.781	428.292
WP#6	6232692.583	599853.388	428.292
WP#7	6232681.096	599817.897	428.156
WP#8	6232691.703	599828.504	428.156

HOLD

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

Reviewed / Examiné
Page 7 of/de 8
2019-501003
NOV 25 2019
By/par: JONN LEEDEN
Navigation Protection Program /
Programme de protection de la navigation

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
A	19/07/30	ISSUED FOR REVIEW	BK	DDW

CLIENT: BC Hydro

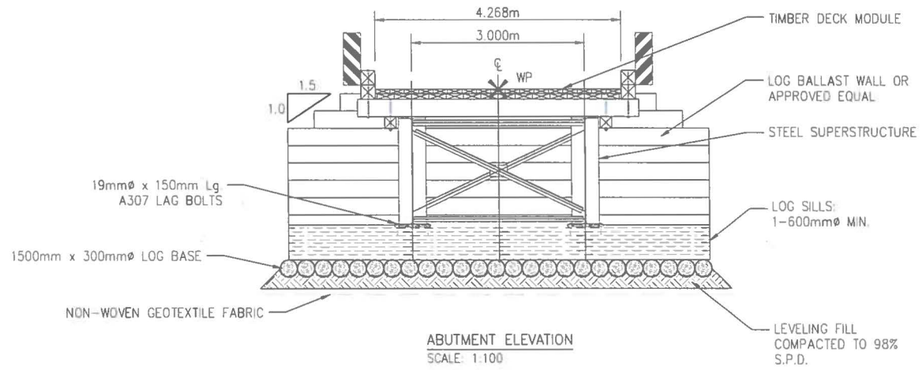
Allnorth

CLIENT NO:	-	DRWN	BK	DATE: 19/07/26
PROJECT NO:	17PG0123	DSGN	GDF	DATE: 19/07/26
DRAWING SIZE:	ANSI "B"	CHKD	GDF	DATE: 19/07/30
SCALE:	AS NOTED	APVD	DDW	DATE: 19/07/30

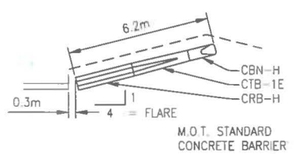
PROJECT:
MR6 CROSSING
OPTION 2: 100' BRIDGE

TITLE:
CULVERT PROFILE

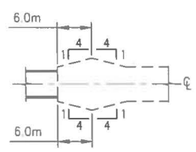
DWG NO: **17PG0123-1600-1960-006**
REV: **A**



ABUTMENT ELEVATION
SCALE: 1:100



PRECAST CONCRETE BARRIER DETAIL
SCALE: 1:250

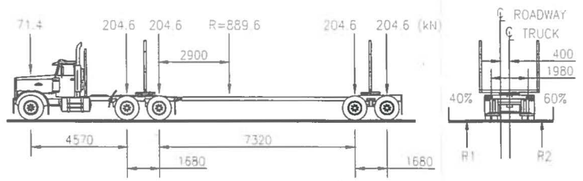


FLARE DETAIL
SCALE: 1:1000

NOTES:

1. BACK FILL OF APPROACHES SHALL GENERALLY CONFORM TO THE LINES SHOWN ON THE DRAWINGS AND SHALL BE PLACED IN LIFTS NOT EXCEEDING 305mm THICK, COMPACTED TO 95% STANDARD PROCTOR DENSITY USING A MINIMUM 1000lbs VIBRATORY PLATE COMPACTOR. MATERIAL SHALL BE CLEAN, FREE DRAINING, 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 MULLEN BURST STRENGTH OF 2500kPa
3. ALL EXPOSED MINERAL SOILS TO BE SEEDED USING AN APPROVED RECLAMATION GRASS 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 OTHERS.COMPLETION OF WORKS TO COMPLY WITH MITIGATION 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 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. INSTALLATIONS 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 L-100 OFF HIGHWAY G.V.W. = 90 680kg:
DESIGN IN ACCORDANCE WITH CAN/CSA-S6-14 WITH MODIFIED LOADING AS FOLLOWS:



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

Reviewed / Examiné
Page 8 of/de 8
2014-501003
NOV 25 2019
By/par: JONN LEEDEN
Navigation Protection Program / Programme de protection de la navigation

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION

REV	YY/MM/DD	DESCRIPTION	DRWN	APVD
A	19/07/30	ISSUED FOR REVIEW	BK	DDW

CLIENT: BC Hydro

Allnorth

CLIENT NO:	-	DRWN: BK	DATE:	19/07/26
PROJECT NO:	17PG0123	DSGN: GDF	DATE:	19/07/26
DRAWING SIZE:	ANSI "B"	CHKD: GDF	DATE:	19/07/30
SCALE:	AS NOTED	APVD: DDW	DATE:	19/07/30

PROJECT:
MR6 CROSSING
OPTION 2: 100' BRIDGE

TITLE:
DETAILS AND NOTES

DWG NO: **17PG0123-1600-1960-007** REV: **A**