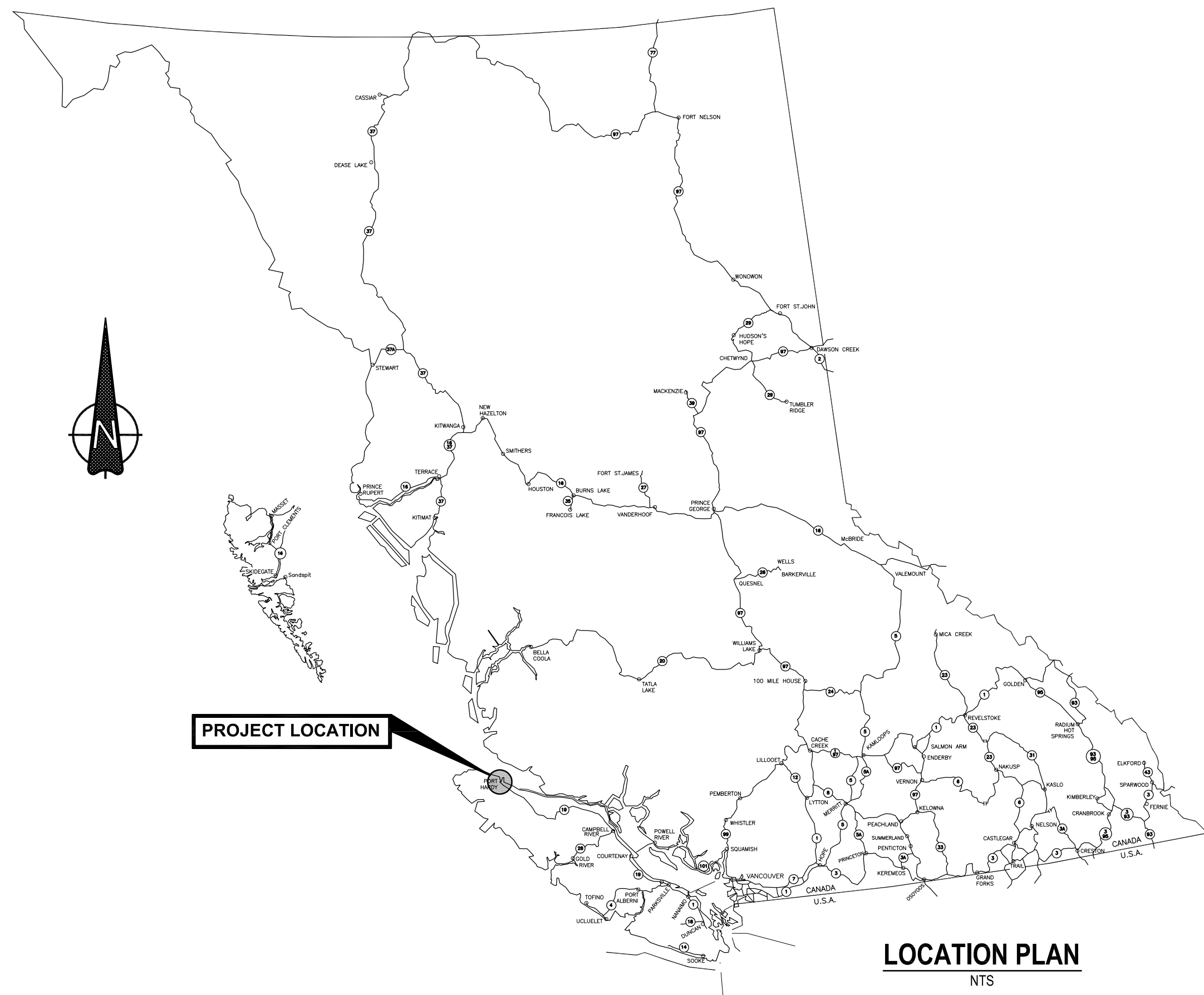


# PORT HARDY AIRPORT WATERMAIN REPLACEMENT PACKAGE PHASE 1

## GENERAL NOTES

- ALL ELEVATIONS ARE GEODETIC AND ARE REFERENCED TO EXISTING INTEGRATED SURVEY MONUMENTS.
- THE CONTRACTOR SHALL EXPOSE AND VERIFY THE LOCATION AND ELEVATION OF ALL EXISTING SERVICES IN THE FIELD PRIOR TO CONSTRUCTION AND NOTIFY THE DEPARTMENTAL REPRESENTATIVE OF ANY DISCREPANCIES, CONFLICTS OR OMISSIONS PRIOR TO CONSTRUCTION.
- FIGURED DIMENSION SHALL GOVERN OVER SCALED DIMENSIONS.
- THE CONTRACTOR SHALL REPAIR OR REPLACE ANY EXISTING PAVEMENTS, SERVICES, UTILITIES, OR ANY OTHER IMPROVEMENTS THAT MAY BE DAMAGED AS A RESULT OF CONSTRUCTION.
- THE CONTRACTOR SHALL ENSURE THAT THE WORK AREA AND ADJACENT SURFACE ARE KEPT CLEAN AND FREE OF EQUIPMENT AND MATERIALS AT ALL TIMES WHEN CONSTRUCTION ACTIVITY IS NOT UNDERWAY.
- ALL TESTING OF MATERIALS, SUBGRADE AND COMPACTION SHALL BE PERFORMED BY AN INDEPENDENT TESTING AGENCY RETAINED BY THE CONTRACTOR.
- A TRAFFIC AND SAFETY CONTROL PLAN SHALL BE SUBMITTED BY THE CONTRACTOR PRIOR TO THE PRE-CONSTRUCTION MEETING.
- GEOTECHNICAL CONSULTANT TO REVIEW AND APPROVE FILL MATERIAL PRIOR TO USE.
- COMPACT ALL EARTH FILLS AND GRANULAR MATERIAL LAYERS IN MAXIMUM 0.3 METER LIFTS TO 95% MODIFIED PROCTOR DENSITY (MPD), UNLESS OTHERWISE DIRECTED IN WRITING BY THE GEOTECHNICAL ENGINEER.
- ALL PROPOSED GRADING SHALL MEET EXISTING ADJACENT GROUND SURFACE ELEVATIONS UNLESS OTHERWISE NOTED. ANY DEFECTS SHALL BE CORRECTED IMMEDIATELY AT THE CONTRACTORS EXPENSE.
- ALL SUB-BASE ROAD AND GRANULAR BASE MATERIALS SHALL BE COMPACTED TO 95% MPD.
- ALL NEW CONCRETE PAVEMENTS SHALL BE GRADED SO THAT NO PONDING FORMS. THE MINIMUM CROSS SLOPE ON ANY NEW CONCRETE ROAD SURFACE SHALL BE 2%.
- CONTRACTOR TO RESTORE ROADSIDE NON TRAVELED SURFACES BY HYDROSEEDING WITH NATIVE GRASSES APPROVED BY DEPARTMENTAL REPRESENTATIVE IN ADVANCE. CONTRACTOR TO MAINTAIN AND REAPPLY HYDROSEED UNTIL ESTABLISHED.
- THE CONTRACTOR SHALL ENSURE THAT ALL SECTIONS OF WATER MAINS HAVE TEST POINTS AND TEMPORARY BLOW-OFFS SUITABLE TO ENSURE ADEQUATE PRESSURE TESTING, CHLORINATION, AND FLUSHING IN ACCORDANCE WITH AWWA C651-14. DISCHARGE OF CHLORINATED WATER INTO STORM SEWERS OR WATERCOURSES IS STRICTLY PROHIBITED.
- THE SITE REPRESENTATIVE SHALL BE RESPONSIBLE FOR TAKING WATER SAMPLES FOR TESTING AND PRESENTING THEM TO AN APPROVED TESTING FACILITY. ALL TEST RESULTS, WHETHER FAILED OR PASSED, SHALL BE SUBMITTED TO THE OWNER. THE CONTRACTOR SHALL PAY FOR ALL TESTS.
- ALL WATER MAINS AT TIE-IN POINTS TO BE CAPPED 1.5m FROM EXISTING WATER MAINS UNLESS OTHERWISE SPECIFIED. TIE-INS TO EXISTING WATER MAINS TO BE PERFORMED BY THE CONTRACTOR UNDER DIRECT SUPERVISION BY THE SITE REPRESENTATIVE UNLESS OTHERWISE DIRECTED. A MINIMUM NOTICE OF 72 HOURS SHALL BE GIVE FOR ANY TIE-IN.
- DELETERIOUS MATERIALS SHALL BE PREVENTED FROM ENTERING THE EXISTING DRAINAGE SYSTEM.



DRAWING INDEX		
SHEET No.	DRAWING NUMBER	DESCRIPTION
GENERAL DRAWINGS		
01	R.083359.001-001	COVER SHEET / LOCATION PLAN & DRAWING INDEX
02	R.083359.001-002	KEY PLAN
CIVIL DRAWINGS - PHASE 1		
03	R.083359.001-101	WATERMAIN - METCHOSIN ST / NEWPORT AVE STA. 1+290 TO STA. 1+580 PLAN & PROFILE
04	R.083359.001-102	WATERMAIN - NEWPORT AVENUE STA. 1+580 TO STA. 1+850 PLAN & PROFILE
05	R.083359.001-103	WATERMAIN - PINE STREET STA. 4+000 TO STA. 4+200 PLAN & PROFILE
06	R.083359.001-104	WATERMAIN - PUMPHOUSE ROAD STA. 5+000 TO STA. 5+110 PLAN & PROFILE
07	R.083359.001-105	WATERMAIN - AIRPORT LOT STA. 6+000 TO STA. 6+130 PLAN & PROFILE
08	R.083359.001-106	STANDARD DETAILS - PHASE 1

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DWG. NO.  
R.083359.001-001

PWGSC - A1 - 841X594



Revision/	Description/Description	Date/Date
6		
5		
4	ISSUED FOR TENDER	17/06/23
3	ISSUED FOR 99% REVIEW	17/05/05
2	ISSUED FOR 66% REVIEW	17/03/03
1	ISSUED FOR 33% REVIEW	16/10/13

Client/client

**PUBLIC WORKS &  
GOVERNMENT SERVICES  
CANADA (PWGSC)**

Project title/Titre du projet  
**PORT HARDY AIRPORT  
PORT HARDY, BC**

**WATERMAIN  
REPLACEMENT**

Consultant Signature Only  
S. VERKAIK

Designed by/Concept par  
S. CLARK

Drawn by/Dessiné par  
S. CLARK

PWGSC Project Manager/Administrateur de Projets TPSGC  
JIMMY WONG

Regional Manager, Architectural and Engineering Services  
Gestionnaire régionale, Services d'architectural et de génie, TPSGC  
PREETIPAL PAUL

Drawing title/Titre du dessin

**COVER SHEET / LOCATION PLAN  
& DRAWING INDEX  
PHASE 1**

Project No./No. du  
projet  
**R.083359.001**

Sheet/Fauille  
**C-01**  
OF 8

Revision no./  
La Révision  
no.  
**4**

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Revision/ Révision Description/ Description Date/ Date

Client/ client  
**PUBLIC WORKS & GOVERNMENT SERVICES CANADA (PWGSC)**

Project title/ Titre du projet  
**PORT HARDY AIRPORT PORT HARDY, BC**  
**WATERMAIN REPLACEMENT**

Consultant Signature Only  
S. VERKAIK

Designed by/ Concept par  
S. CLARK

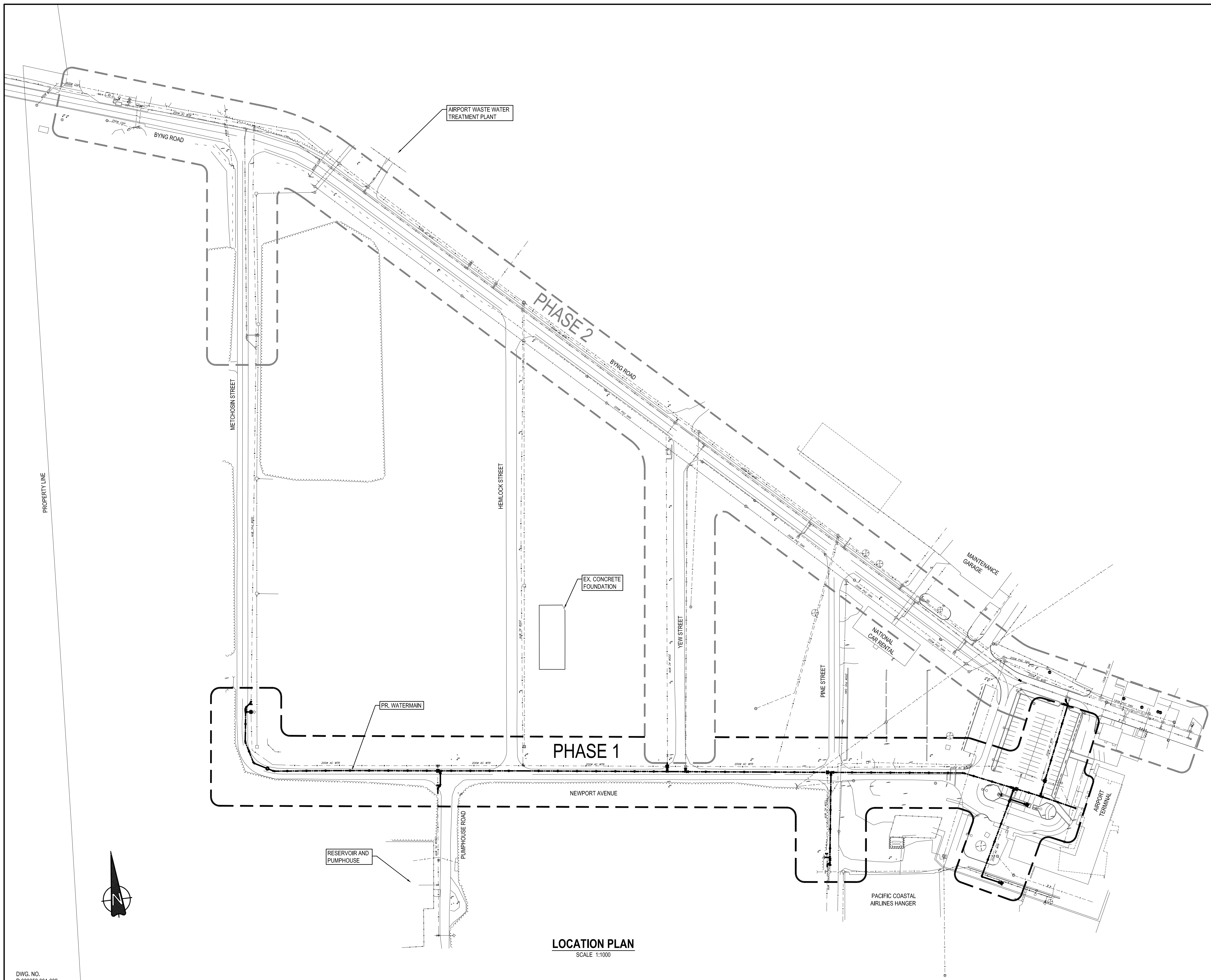
Drawn by/ Dessiné par  
S. CLARK

PWGSC Project Manager/ Administrateur de Projets TPSGC  
JIMMY WONG

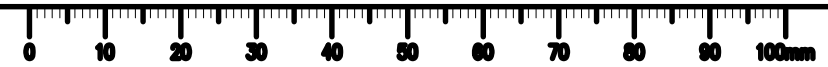
Regional Manager, Architectural and Engineering Services  
Gestionnaire régionale, Services d'architecture et de génie, TPSGC  
PREETIPAL PAUL

Drawing title/ Titre du dessin  
**KEY PLAN PHASE 1**

Project No./No. du projet <b>R.083359.001</b>	Sheet/Feuille <b>C-02</b> OF 8	Revision no./La Révision no. <b>4</b>
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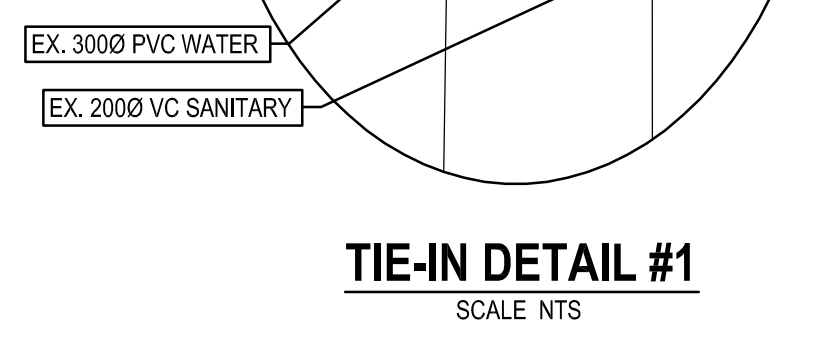
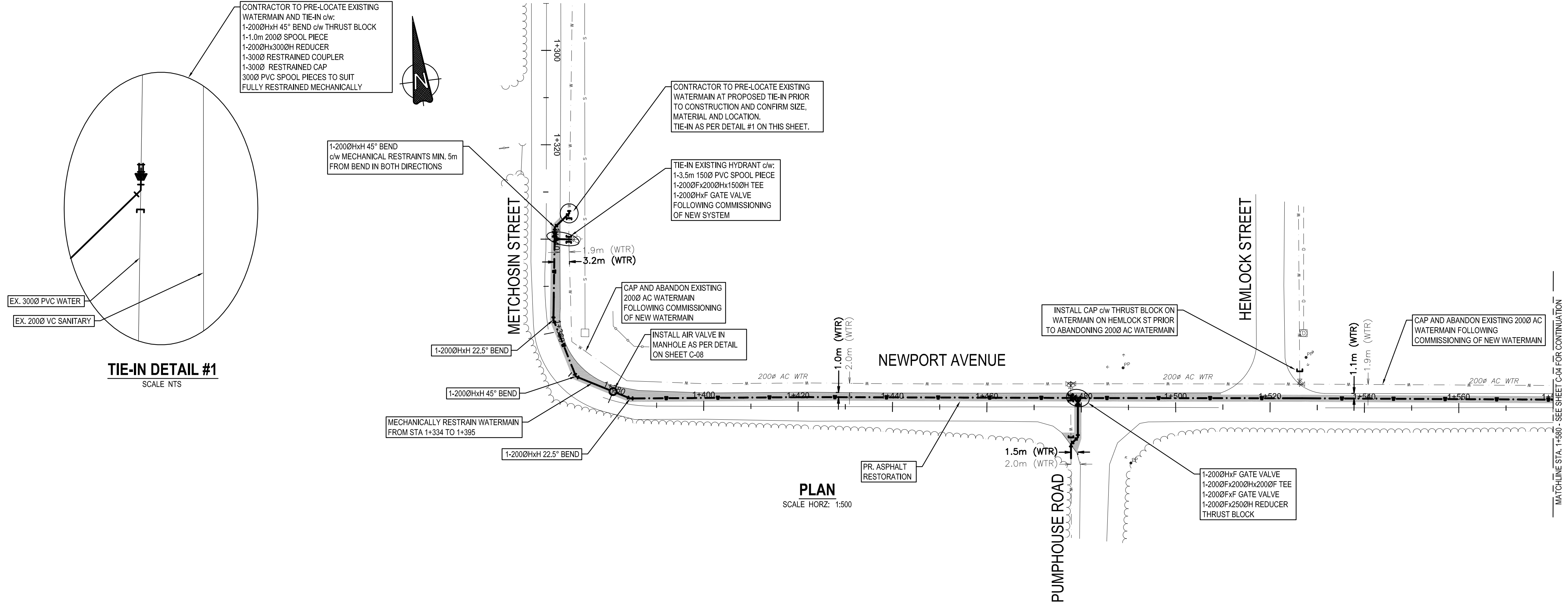


**LOCATION PLAN**  
SCALE 1:1000



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DWG. NO.  
R.083359.001-002



CONTRACTOR TO PRE-LOCATE EXISTING WATERMAIN AND TIE-IN c/w:  
 1-2000HxH 45° BEND c/w THRUST BLOCK  
 1-1.0m 2000 SPOOL PIECE  
 1-2000Hx3000H REDUCER  
 1-3000 RESTRAINED COUPLER  
 1-3000 RESTRAINED CAP  
 3000 PVC SPOOL PIECES TO SUIT FULLY RESTRAINED MECHANICALLY

CONTRACTOR TO PRE-LOCATE EXISTING WATERMAIN AT PROPOSED TIE-IN PRIOR TO CONSTRUCTION AND CONFIRM SIZE, MATERIAL AND LOCATION. TIE-IN AS PER DETAIL #1 ON THIS SHEET.

TIE-IN EXISTING HYDRANT c/w:  
 1-3.5m 1500 PVC SPOOL PIECE  
 1-2000F x 2000H x 1500H TEE  
 1-2000HxH GATE VALVE FOLLOWING COMMISSIONING OF NEW SYSTEM

1-2000HxH 45° BEND c/w MECHANICAL RESTRAINTS MIN. 5m FROM BEND IN BOTH DIRECTIONS

1-2000HxH 22.5° BEND

1-2000HxH 45° BEND

MECHANICALLY RESTRAIN WATERMAIN FROM STA 1+334 TO 1+395

1-2000HxH 22.5° BEND

1.9m (WTR)  
 3.2m (WTR)

CAP AND ABANDON EXISTING 2000 AC WATERMAIN FOLLOWING COMMISSIONING OF NEW WATERMAIN

INSTALL AIR VALVE IN MANHOLE AS PER DETAIL ON SHEET C-08

1.0m (WTR)  
 2.0m (WTR)

NEWPORT AVENUE

200# AC WTR

HEMLOCK STREET

1.1m (WTR)  
 1.9m (WTR)

CAP AND ABANDON EXISTING 2000 AC WATERMAIN FOLLOWING COMMISSIONING OF NEW WATERMAIN

200# AC WTR

1.5m (WTR)  
 2.0m (WTR)

PUMPHOUSE ROAD

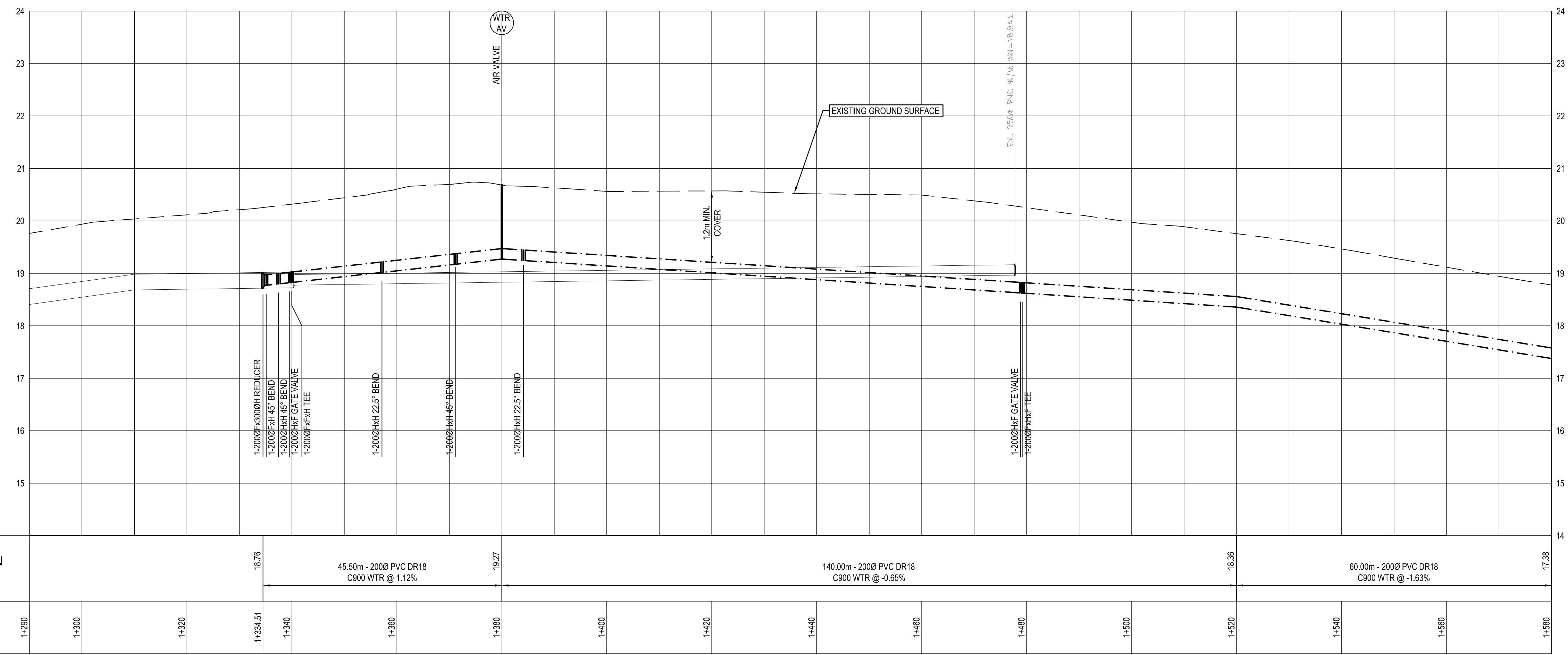
1-2000HxH GATE VALVE  
 1-2000F x 2000H x 2000F TEE  
 1-2000F x F GATE VALVE  
 1-2000F x 2500H REDUCER THRUST BLOCK

INSTALL CAP c/w THRUST BLOCK ON WATERMAIN ON HEMLOCK ST PRIOR TO ABANDONING 2000 AC WATERMAIN

200# AC WTR

MATCHLINE STA. 1+580 - SEE SHEET C-04 FOR CONTINUATION

**PLAN**  
SCALE HORZ: 1:500



**PROFILE**  
SCALE HORZ: 1:500  
SCALE VERT: 1:50

WATERMAIN DATA	1+290	1+300	1+320	1+334.51	1+340	1+350	1+380	1+400	1+420	1+440	1+460	1+480	1+500	1+520	1+540	1+550	1+580
CHAINAGE																	
				18.76			19.27							18.36			17.38
				45.50m - 2000 PVC DR18 C900 WTR @ 1.12%				140.00m - 2000 PVC DR18 C900 WTR @ -0.65%				60.00m - 2000 PVC DR18 C900 WTR @ -1.63%					

Revision/Revisão	Description/Description	Date/Date
6		
5		
4	ISSUED FOR TENDER	17/06/23
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**PUBLIC WORKS & GOVERNMENT SERVICES CANADA (PWGSC)**

Project title/Titre du projet  
**PORT HARDY AIRPORT PORT HARDY, BC**

**WATERMAIN REPLACEMENT**

Consultant Signature Only  
**S. VERKAIK**  
 Designed by/Concept par  
**S. CLARK**  
 Drawn by/Dessiné par  
**S. CLARK**  
 PWGSC Project Manager/Administrateur de Projets TPSCC  
**JIMMY WONG**  
 Regional Manager, Architectural and Engineering Services  
 Gestionnaire régionale, Services d'architectural et de génie, TPSCC  
**PREETIPAL PAUL**

Drawing title/Titre du dessin  
**WATERMAIN - METCHOSIN ST / NEWPORT AVE STA. 1+290 TO STA. 1+580 PLAN & PROFILE PHASE 1**

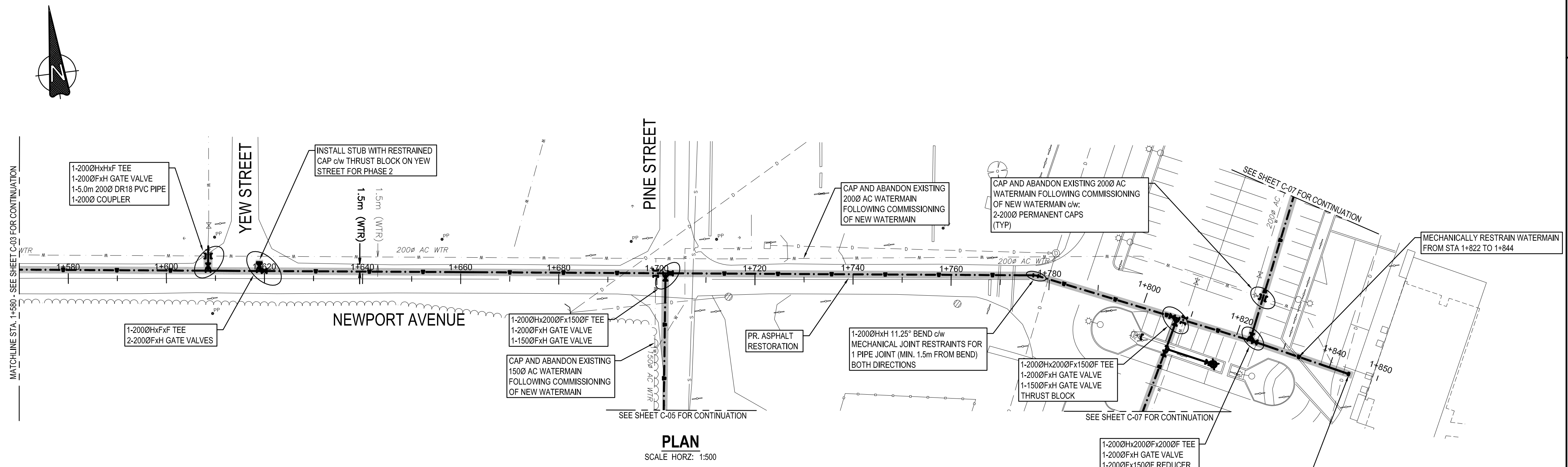
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NOTE:  
 1. CONTRACTOR TO PRE-LOCATE ALL EXISTING UTILITIES AND ADVISE DEPARTMENTAL REPRESENTATIVE OF ANY CONFLICTS A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION.

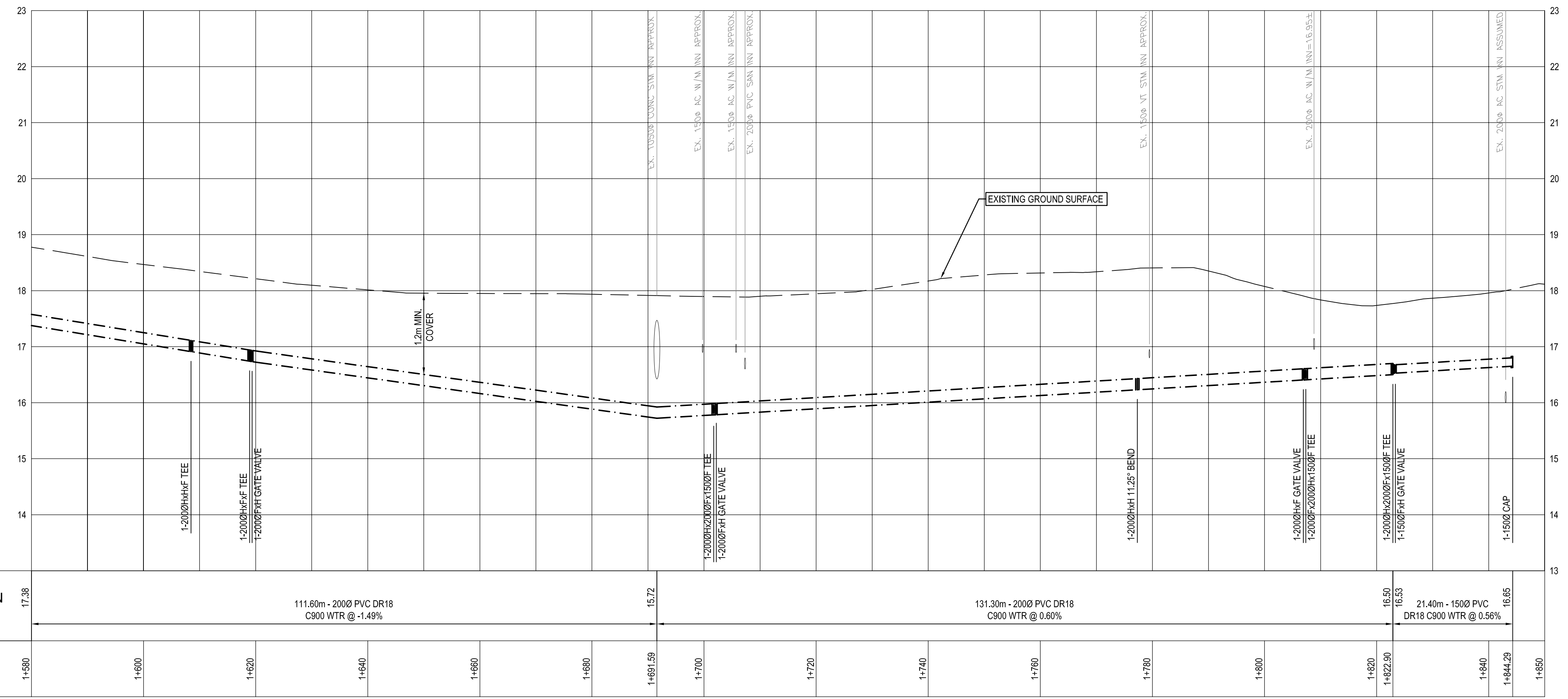
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**PLAN**  
 SCALE HORZ: 1:500



**PROFILE**  
 SCALE HORZ: 1:500  
 SCALE VERT: 1:50



Revision/	Description/Description	Date/Date
6		
5		
4	ISSUED FOR TENDER	17/06/23
3	ISSUED FOR 99% REVIEW	17/05/05
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1	ISSUED FOR 33% REVIEW	16/10/13

**PUBLIC WORKS & GOVERNMENT SERVICES CANADA (PWGSC)**

Project title/Titre du projet  
**PORT HARDY AIRPORT  
 PORT HARDY, BC**

**WATERMAIN REPLACEMENT**

Consultant Signature Only  
**S. VERKAIK**  
 Designed by/Concept par  
**S. CLARK**  
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**JIMMY WONG**  
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**PREETIPAL PAUL**

Drawing title/Titre du dessin  
**WATERMAIN - NEWPORT AVENUE  
 STA. 1+580 TO STA. 1+850  
 PLAN & PROFILE  
 PHASE 1**

Project No./No. du projet	Sheet/Feuille	Revision no./La Révision no.
R.083359.001	C-04 OF 8	4

NOTE:  
 1. CONTRACTOR TO PRE-LOCATE ALL EXISTING UTILITIES AND ADVISE DEPARTMENTAL REPRESENTATIVE OF ANY CONFLICTS A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION.

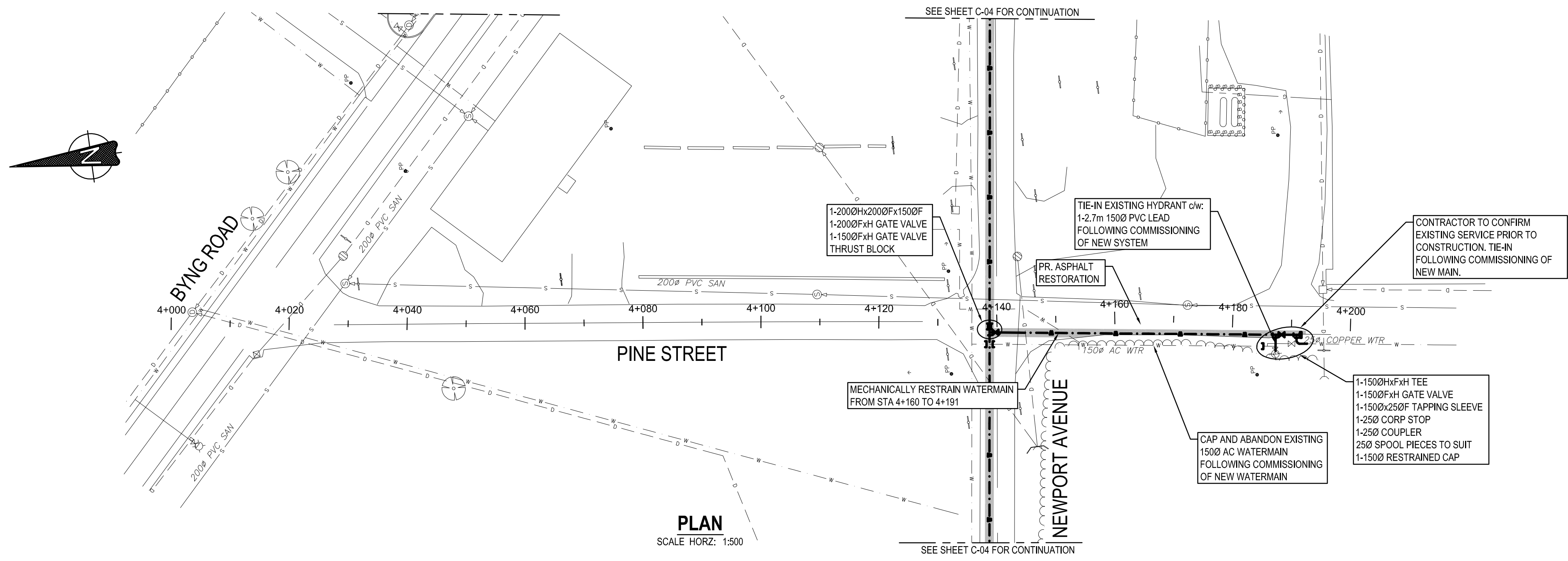
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DWG. NO.  
 R.083359.001-106

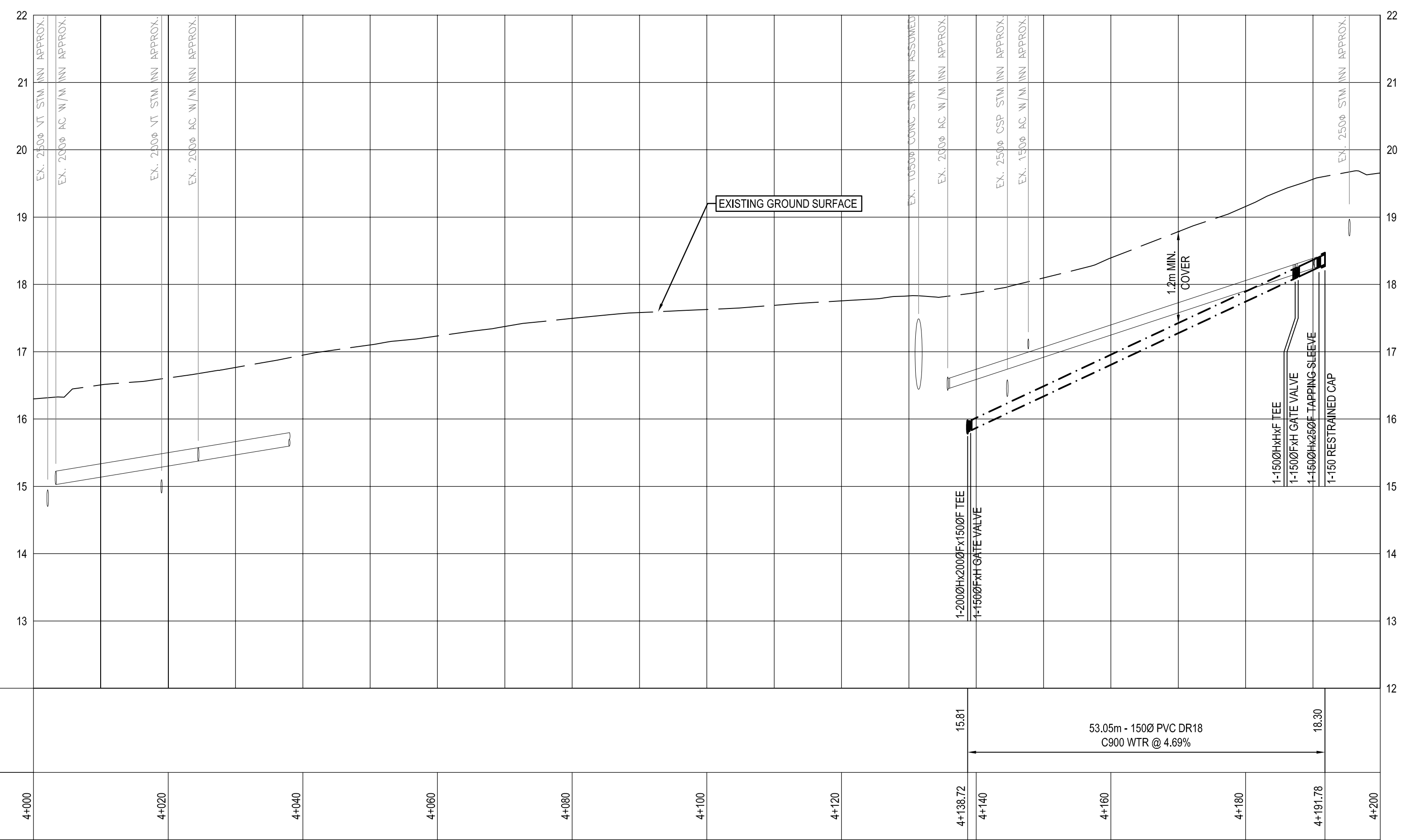
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**PLAN**  
 SCALE HORZ: 1:500



**PROFILE**  
 SCALE HORZ: 1:500  
 SCALE VERT: 1:50



Revision/	Description/Description	Date/Date
6		
5		
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3	ISSUED FOR 99% REVIEW	17/05/05
2	ISSUED FOR 66% REVIEW	17/03/03
1	ISSUED FOR 33% REVIEW	16/10/13

Client/client  
**PUBLIC WORKS & GOVERNMENT SERVICES CANADA (PWGSC)**

Project title/Titre du projet  
**PORT HARDY AIRPORT  
 PORT HARDY, BC**

**WATERMAIN REPLACEMENT**

Consultant Signature Only  
**S. VERKAIK**  
 Designed by/Concept par  
**S. CLARK**  
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**S. CLARK**  
 PWGSC Project Manager/Administrateur de Projets TPSCC  
**JIMMY WONG**  
 Regional Manager, Architectural and Engineering Services  
 Gestionnaire régionale, Services d'architecture et de génie, TPSCC  
**PREETIPAL PAUL**

Drawing title/Titre du dessin  
**WATERMAIN - PINE STREET  
 STA. 4+000 TO STA. 4+200  
 PLAN & PROFILE  
 PHASE 1**

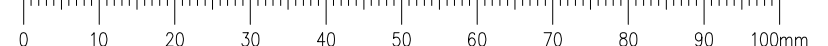
Project No./No. du projet	Sheet/Feuille	Revision no./La Révision no.
<b>R.083359.001</b>	<b>C-05</b> OF 8	<b>4</b>

NOTE:  
 1. CONTRACTOR TO PRE-LOCATE ALL EXISTING UTILITIES AND ADVISE DEPARTMENTAL REPRESENTATIVE OF ANY CONFLICTS A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION.

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DWG. NO.  
 R.083359.001-108

PWGSC - A1 - 841X594



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Revision/	Description/Description	Date/Date
6		
5		
4	ISSUED FOR TENDER	17/06/23
3	ISSUED FOR 99% REVIEW	17/05/05
2	ISSUED FOR 66% REVIEW	17/03/03
1	ISSUED FOR 33% REVIEW	16/10/13

Client/client  
**PUBLIC WORKS & GOVERNMENT SERVICES CANADA (PWGSC)**

Project title/Titre du projet  
**PORT HARDY AIRPORT  
 PORT HARDY, BC**

Consultant Signature Only  
**S. VERKAIK**  
 Designed by/Concept par  
**S. CLARK**  
 Drawn by/Dessiné par  
**S. CLARK**  
 PWGSC Project Manager/Administrateur de Projets TPSCC  
**JIMMY WONG**  
 Regional Manager, Architectural and Engineering Services  
 Gestionnaire régionale, Services d'architecture et de génie, TPSCC  
**PREETIPAL PAUL**

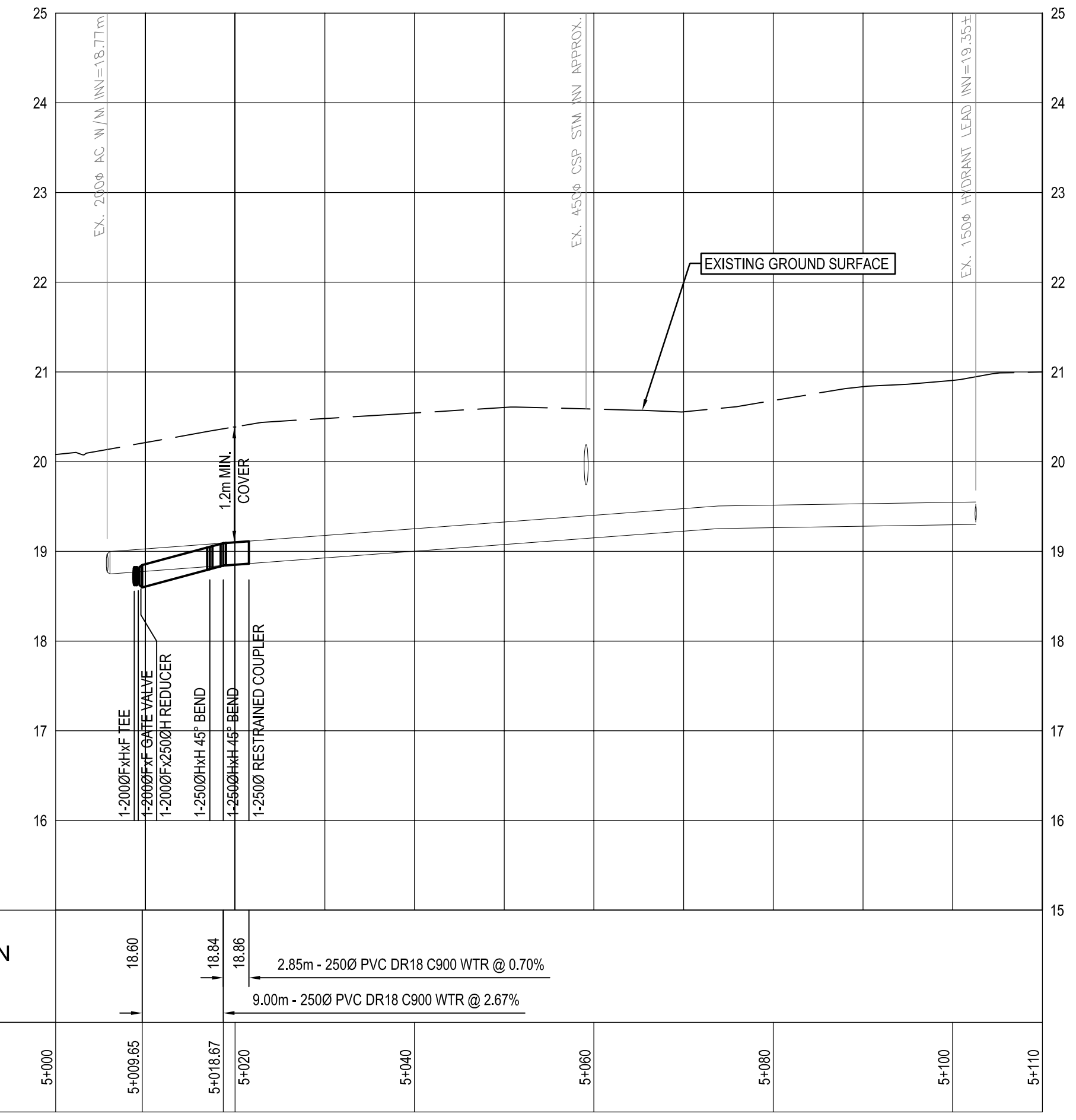
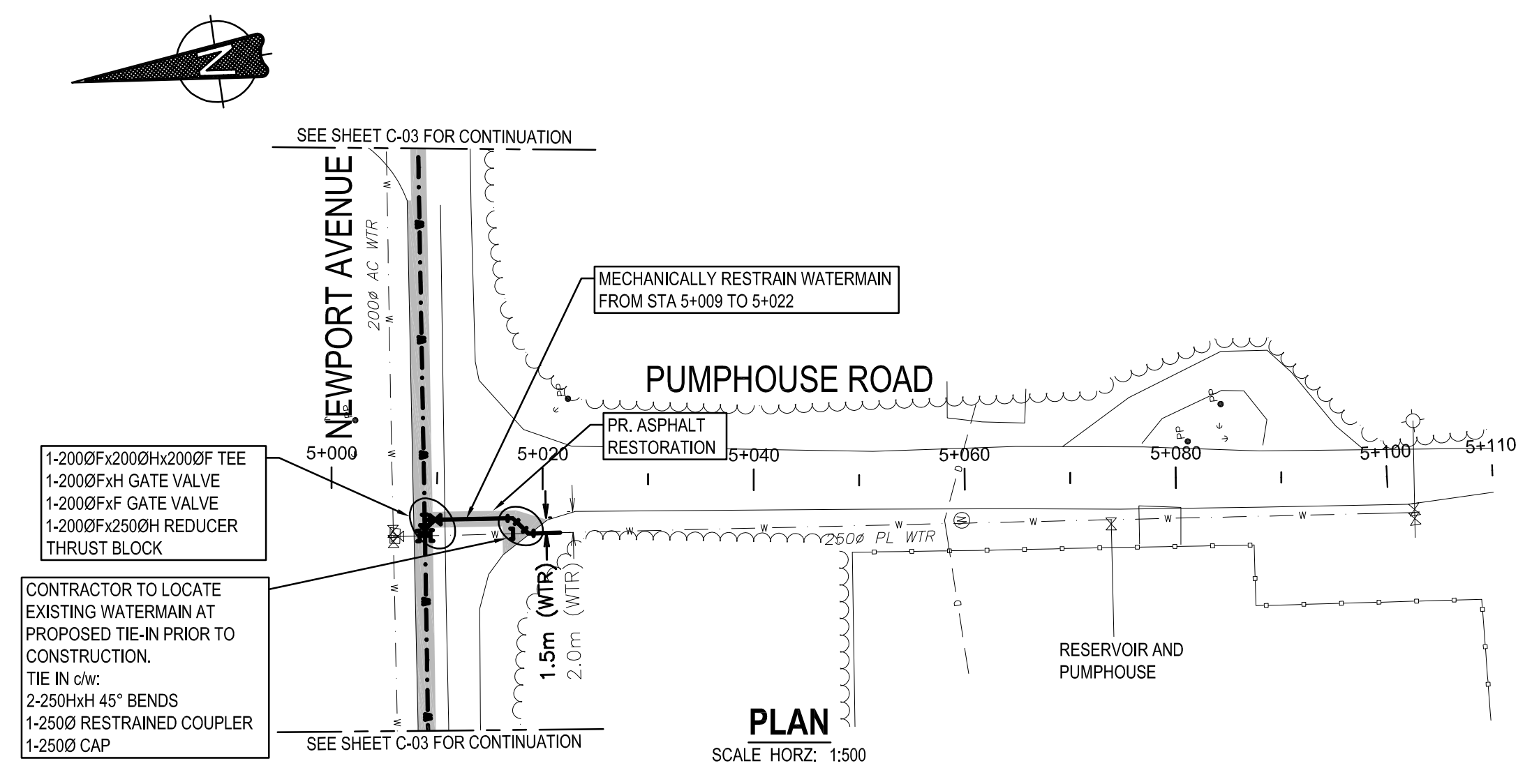
Drawing title/Titre du dessin  
**WATERMAIN - PUMPHOUSE ROAD  
 STA. 5+000 TO STA. 5+110  
 PLAN & PROFILE  
 PHASE 1**

Project No./No. du projet	Sheet/Feuille	Revision no./La Révision no.
R.083359.001	C-06 OF 8	4

NOTE:  
 1. CONTRACTOR TO PRE-LOCATE ALL EXISTING UTILITIES AND ADVISE DEPARTMENTAL REPRESENTATIVE OF ANY CONFLICTS A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION.

FITTING TYPE	MAINLINE DIAMETER (mm)	MINIMUM BURY DEPTH (m)		RESTRAINED LENGTH HIGH SIDE (m)	RESTRAINED LENGTH LOW SIDE (m)
		HIGH SIDE	LOW SIDE		
45° BEND	200	0.60	0.90	24.00	4.00
22.5° BEND	200	0.60	0.90	15.00	2.00
11.25° BEND	200	0.60	0.90	6.00	1.00
5° BEND	200	0.60	0.90	6.00	1.00
45° BEND	200	0.90	1.20	17.00	3.50
22.5° BEND	200	0.90	1.20	8.50	2.00
11.25° BEND	200	0.90	1.20	4.00	1.00
5° BEND	200	0.90	1.20	4.00	1.00
45° BEND	150	0.60	0.76	14.50	4.00
22.5° BEND	150	0.60	0.76	7.00	2.00
11.25° BEND	150	0.60	0.76	3.50	1.00
5° BEND	150	0.60	0.76	3.50	1.00
45° BEND	150	0.76	1.20	12.00	2.50
22.5° BEND	150	0.76	1.20	6.00	1.50
11.25° BEND	150	0.76	1.20	3.00	1.00
5° BEND	150	0.76	1.20	3.00	1.00

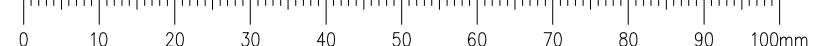
FITTING TYPE	MAINLINE DIAMETER (mm)	BRANCH DIAMETER (mm)	MINIMUM DEPTH OF BURY (m)	MINIMUM RESTRAINED LENGTH PAST FITTING (m)
CROSS AND TEE	200	200	0.75	5.50
HYDRANT TEE	200	150	0.75	1.00
90° BEND	200	-	0.75	10.00
45° BEND	200	-	0.75	4.50
22.5° BEND	200	-	0.75	2.00
11.25° BEND	200	-	0.75	1.00
5° BEND	200	-	0.75	1.00
DEAD END	200	-	0.75	60.00
REDUCER	200-150	-	0.75	17.00
CROSS AND TEE	150	150	0.76	3.00
HYDRANT TEE	150	150	0.76	3.00
90° BEND	150	-	0.76	9.50
45° BEND	150	-	0.76	4.00
22.5° BEND	150	-	0.76	2.00
11.25° BEND	150	-	0.76	1.00
DEAD END	150	-	0.76	28.50

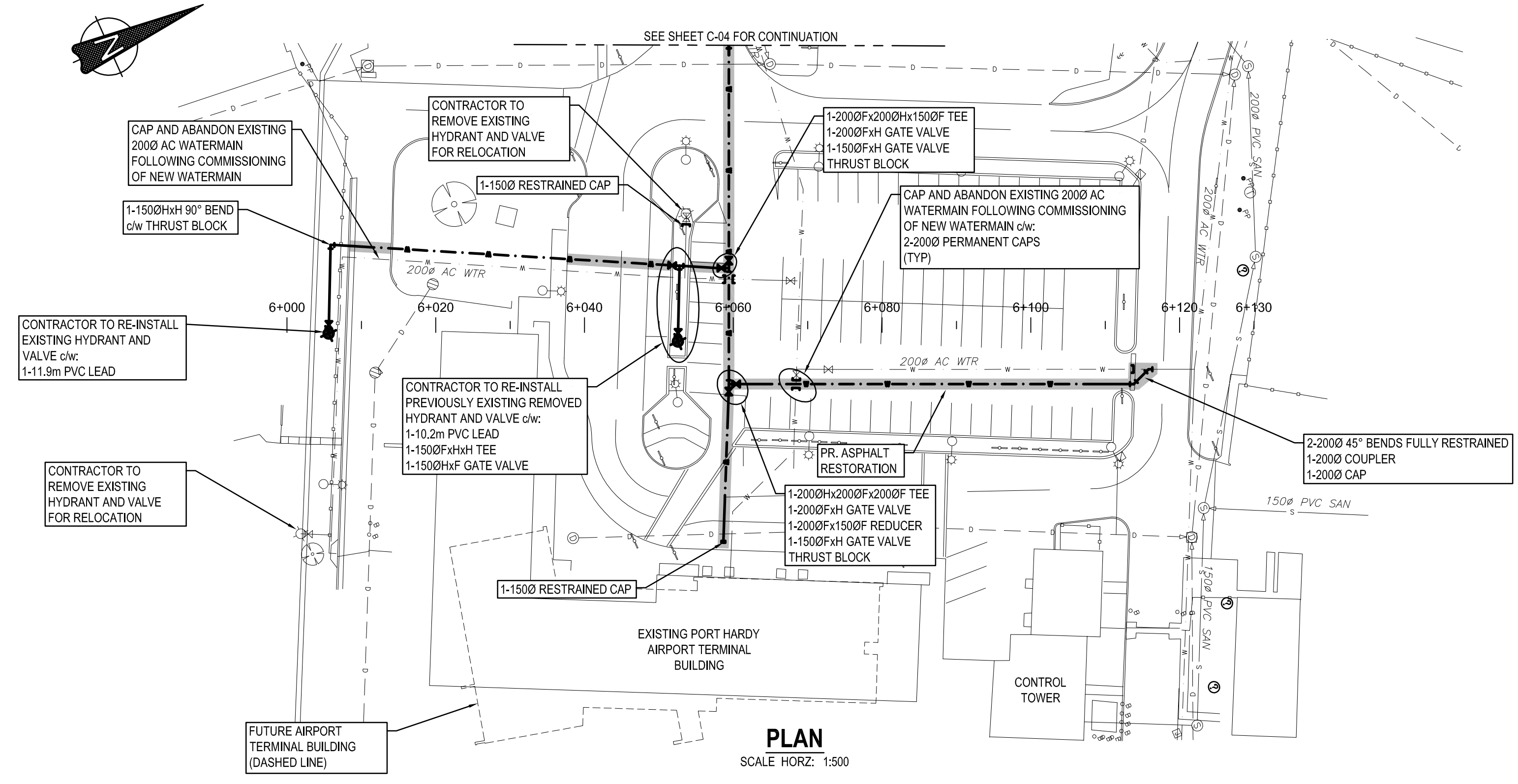


CHAINAGE	5+000	5+009.65	5+018.67	5+020	5+040	5+060	5+080	5+100	5+110
WATERMAIN DATA		18.80	18.84	18.86					

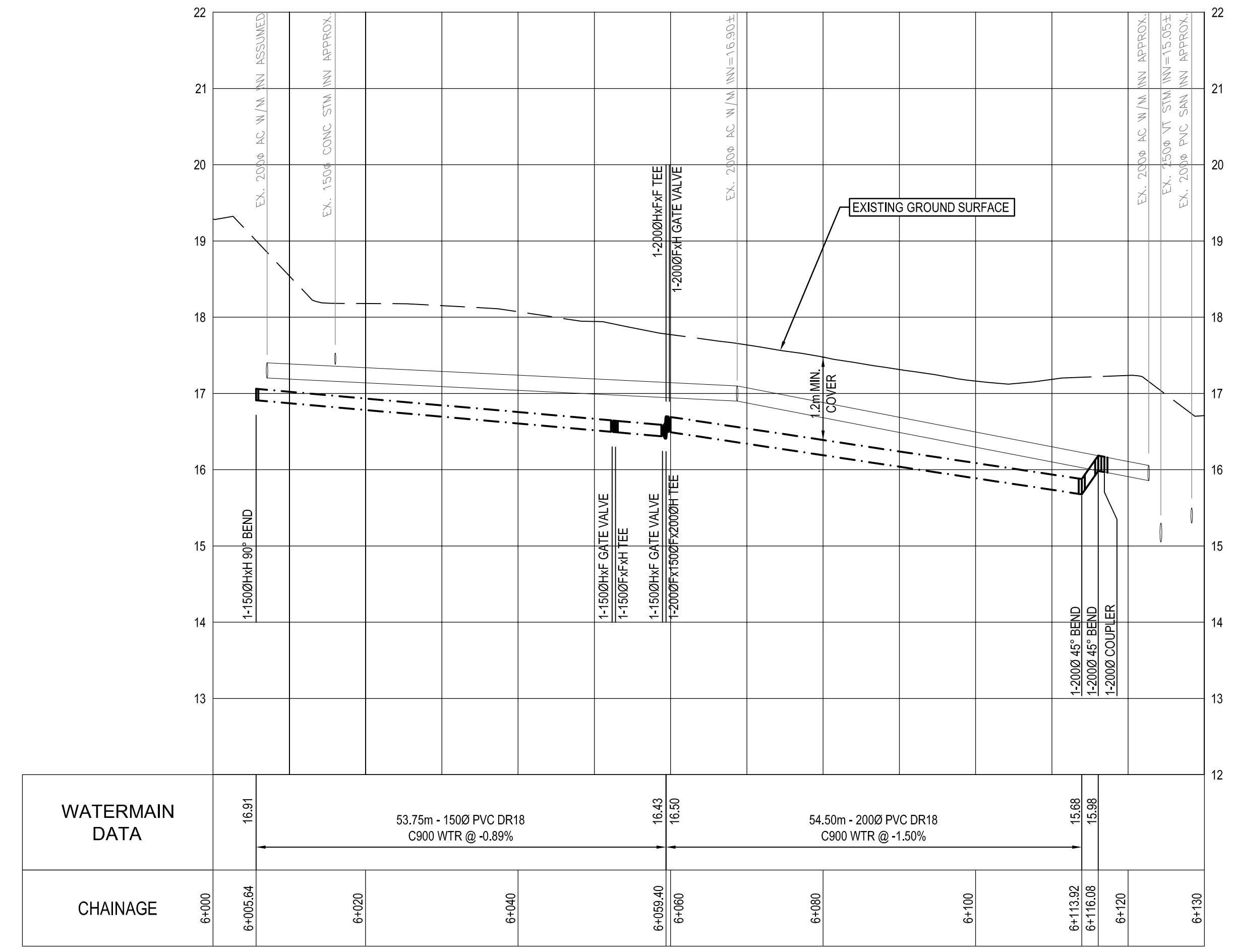
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 SCALE HORZ: 1:500  
 SCALE VERT: 1:50

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PLAN  
SCALE HORZ: 1:500



PROFILE  
SCALE HORZ: 1:500  
SCALE VERT: 1:50



Revision/	Description/Description	Date/Date
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**PUBLIC WORKS & GOVERNMENT SERVICES CANADA (PWGSC)**

Project title/Titre du projet  
**PORT HARDY AIRPORT  
PORT HARDY, BC**

**WATERMAIN REPLACEMENT**

Consultant Signature Only  
**S. VERKAIK**  
Designed by/Concept par  
**S. CLARK**  
Drawn by/Dessiné par  
**S. CLARK**  
PWGSC Project Manager/Administrateur de Projets TPSCC  
**JIMMY WONG**  
Regional Manager, Architectural and Engineering Services  
Gestionnaire régionale, Services d'architecture et de génie, TPSCC  
**PREETIPAL PAUL**

Drawing title/Titre du dessin  
**WATERMAIN - AIRPORT LOT  
STA. 6+000 TO STA. 6+130  
PLAN & PROFILE  
PHASE 1**

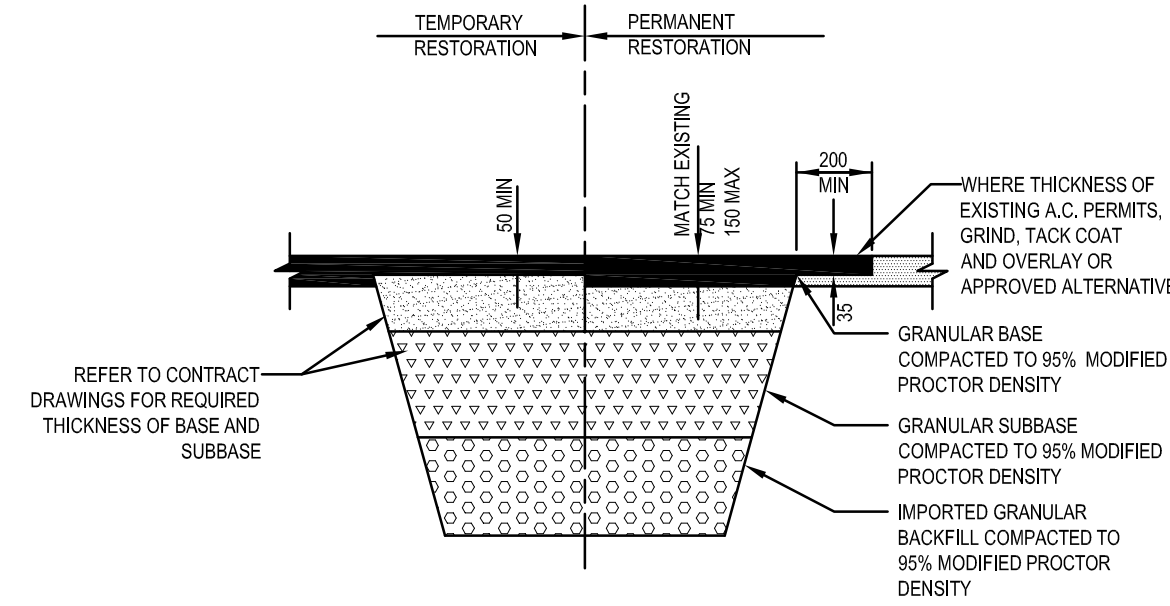
Project No./No. du projet	Sheet/Feuille	Revision no./La Révision no.
<b>R.083359.001</b>	<b>C-07</b> OF 8	<b>4</b>

NOTE:  
1. CONTRACTOR TO PRE-LOCATE ALL EXISTING UTILITIES AND ADVISE DEPARTMENTAL REPRESENTATIVE OF ANY CONFLICTS A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION.

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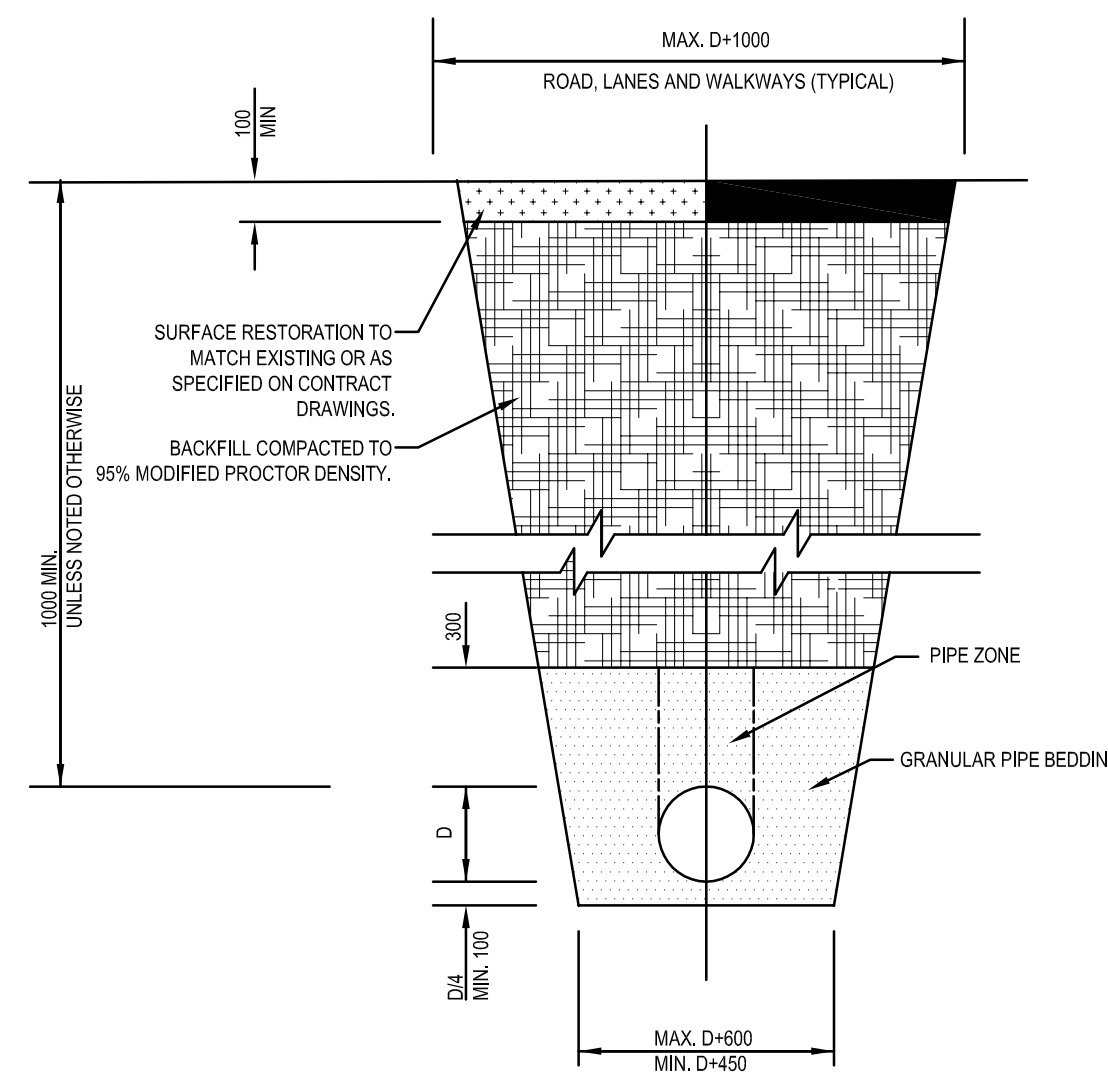




NOTE: 1. REFER TO CONTRACT DRAWINGS AND SPECIFICATIONS

**PAVEMENT RESTORATION DETAIL**

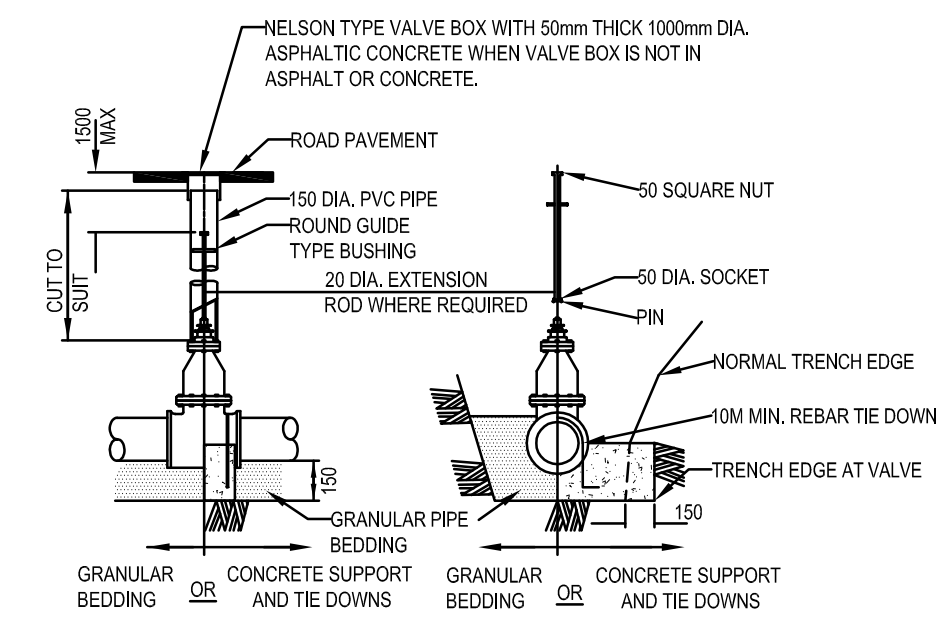
SCALE: NTS



NOTE: 1. TRENCHING TO COMPLY WITH ALL REQUIREMENTS OF THE WORKERS' COMPENSATION BOARD.

**UTILITY TRENCH DETAIL**

SCALE: NTS

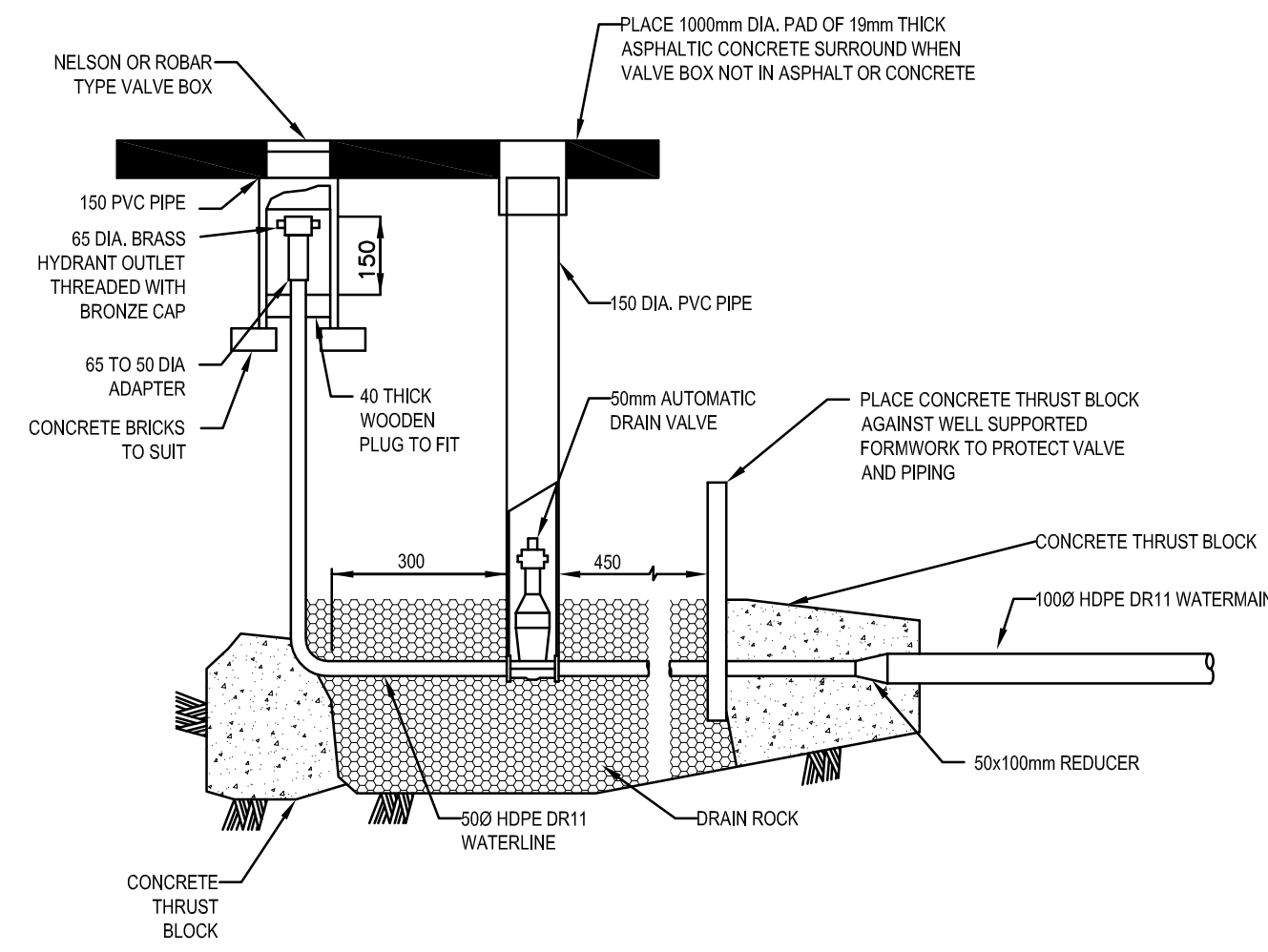


NOTE:

1. REFER TO CONTRACT DRAWINGS FOR VALVE INSTALLATION DETAILS IN AREAS OF UNSTABLE GROUND (WHERE APPLICABLE)

**GATE VALVE INSTALLATION DETAIL**

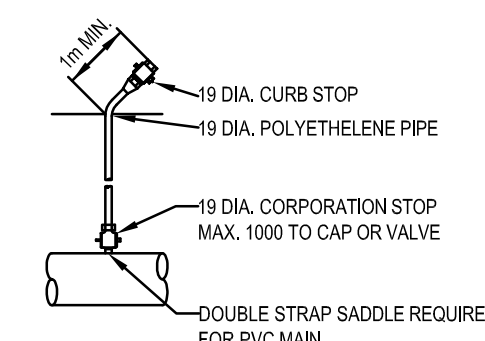
SCALE: NTS



NOTE: 1. 20 MPa CONCRETE.

**BLOWOFF ASSEMBLY**

SCALE: NTS



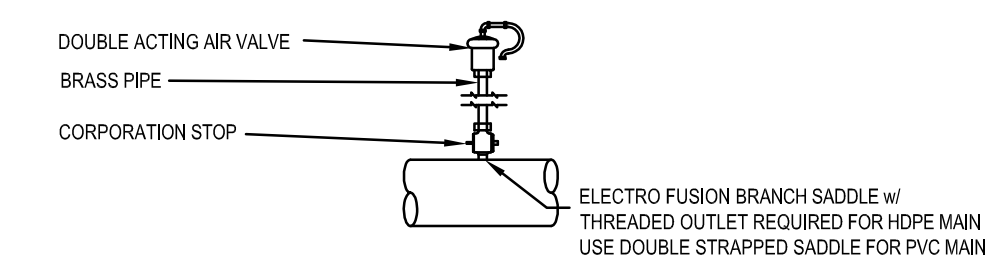
**ELEVATION**

NOTE:

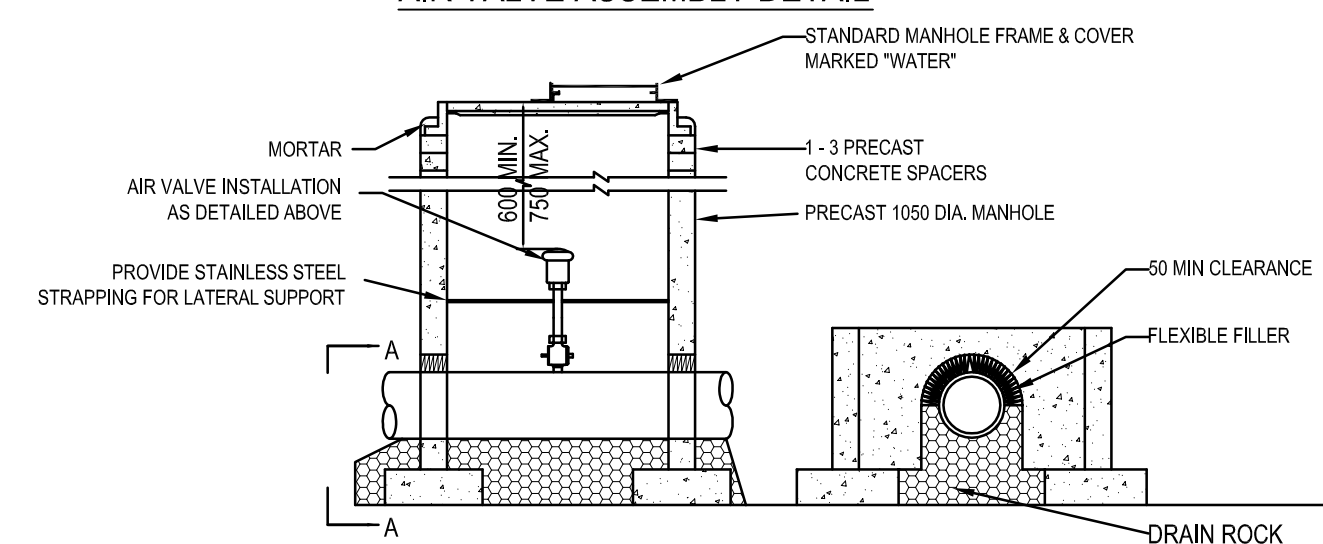
1. THIS DETAIL TO BE USED ONLY FOR TESTING DURING CONSTRUCTION NOT TO BE USED FOR FLUSHING  
2. REFER TO CONTRACT DOCUMENTS AND SECTION 33 11 16 FOR DETAILED SPECIFICATIONS

**TEST POINT INSTALLATION DETAIL**

SCALE: NTS



**AIR VALVE ASSEMBLY DETAIL**



**CHAMBER DETAIL**

**SECTION 'A-A'**

NOTE: 1. REFER TO CONTRACT DOCUMENTS AND SECTION 33 11 16 FOR DETAILED SPECIFICATIONS

**WATERMAIN AIR VALVE ASSEMBLY**

SCALE: NTS



6		
5		
4		
3	ISSUED FOR TENDER	17/06/23
2	ISSUED FOR 99% REVIEW	17/05/05
1	ISSUED FOR 66% REVIEW	17/03/03

Revision/Revision	Description/Description	Date/Date
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Client/client  
**PUBLIC WORKS & GOVERNMENT SERVICES CANADA (PWGSC)**

Project title/Titre du projet  
**PORT HARDY AIRPORT PORT HARDY, BC**

**WATERMAIN REPLACEMENT**

Consultant Signature Only  
S. VERKAIK

Designed by/Concept par  
S. CLARK

Drawn by/Dessiné par  
S. CLARK

PWGSC Project Manager/Administrateur de Projets TPSGC  
JIMMY WONG

Regional Manager, Architectural and Engineering Services  
Gestionnaire régionale, Services d'architectural et de génie, TPSGC  
PREETIPAL PAUL

Drawing title/Titre du dessin  
**STANDARD DETAILS PHASE 1**

Project No./No. du projet <b>R.083359.001</b>	Sheet/Fauille <b>C-08</b> OF 8	Revision no./La Révision no. <b>3</b>
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