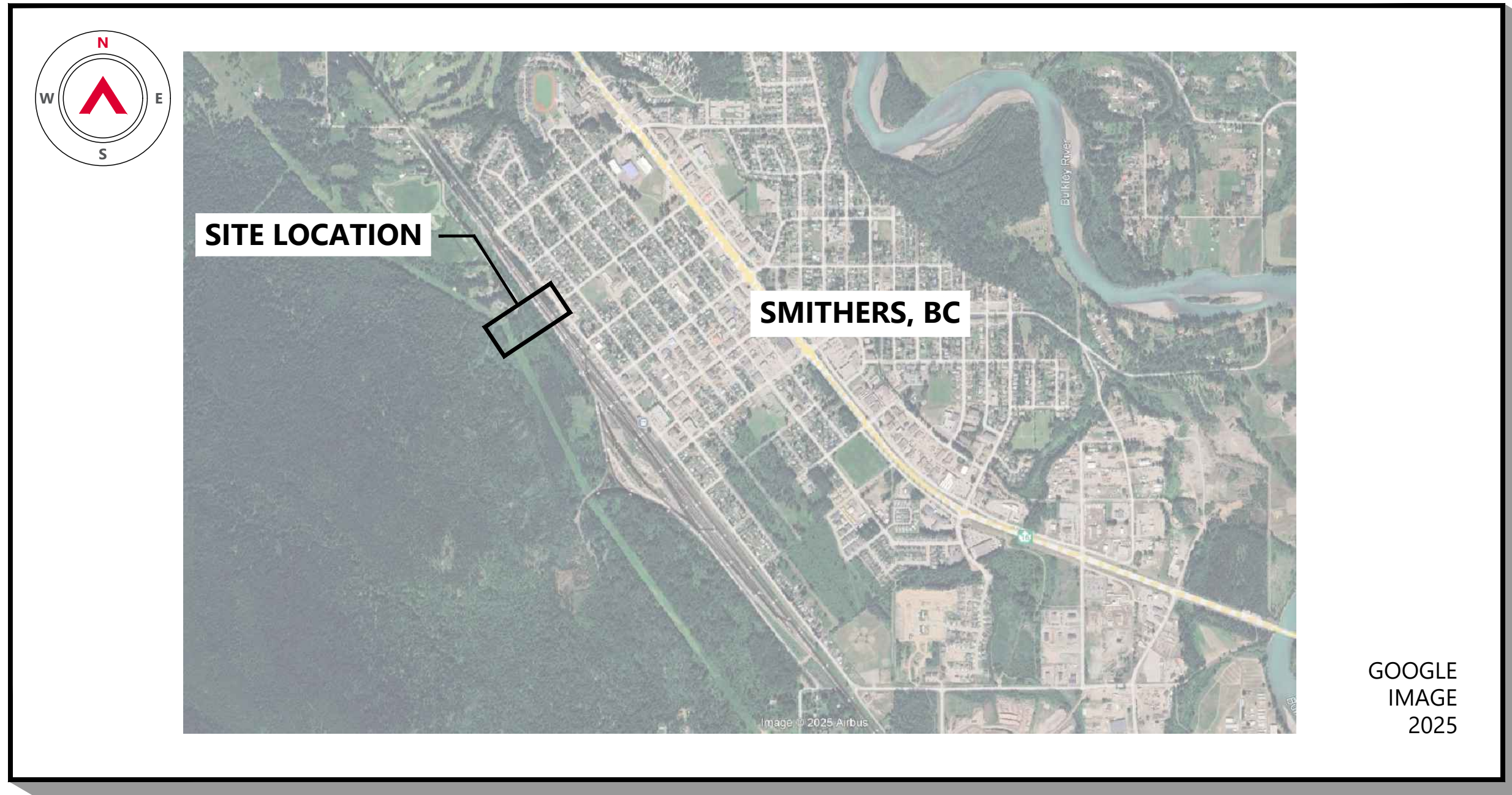


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LOCATION MAP

Scale: N.T.S.



KEY PLAN

Scale: N.T.S.

GOOGLE
IMAGE
2025



**CN WATERMAIN
REPLACEMENT PROJECT**

DRAWING LIST		
DRAWING NO	DRAWING TITLE	REVISION
2501987-000-1100-00T	COVER SHEET	1
2501987-000-1100-001	LEGEND AND NOTES	1
2501987-000-1100-100	EXISTING CONDITION SITE PLAN	1
2501987-000-1100-200	WATERMAIN PLAN & PROFILE SHEET 1 OF 2	1
2501987-000-1100-201	WATERMAIN PLAN & PROFILE SHEET 2 OF 2	1
2501987-000-1100-500	CONSTRUCTION DETAILS SHEET 1 OF 2	1
2501987-000-1100-501	CONSTRUCTION DETAILS SHEET 2 OF 2	1
2501987-000-1100-502	HDPE WATERMAIN ANCHOR BLOCK NOTES AND DETAILS	1

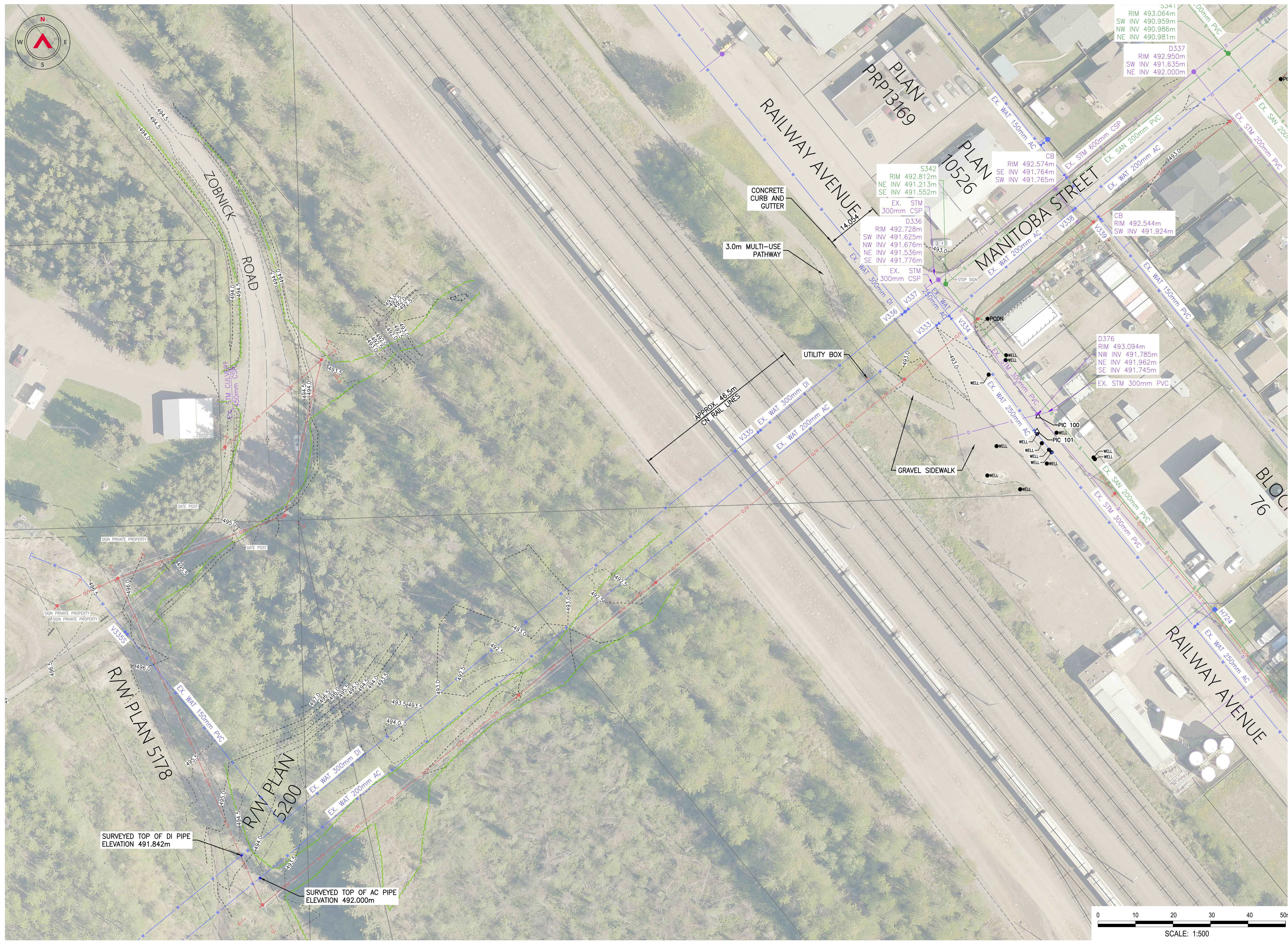
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1	26/02/20	ISSUED FOR TENDER	JG	KS	KS
0	26/01/12	ISSUED FOR PERMITTING	JG	KS	KS



DESCRIPTION: ISSUED FOR TENDER
ISSUE DATE: 26/02/20

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PROJECT NO:	2501987	DSGN:	KS	DATE:	25/09/24
DRAWING SIZE:	ANSI "D"	CHKD:	KS	DATE:	26/02/20
SCALE:	AS NOTED	APVD:	KS	DATE:	26/02/20
DWG NO:	2501987-000-1100-00T				REV:
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PERMIT NUMBER:
1002935
 Reg No: 40504 Signature: [Signature]
 Date: 2026-02-26
 Engineers & Geoscientists British Columbia

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0	26/01/12	ISSUED FOR PERMITTING	JG	KS	KS

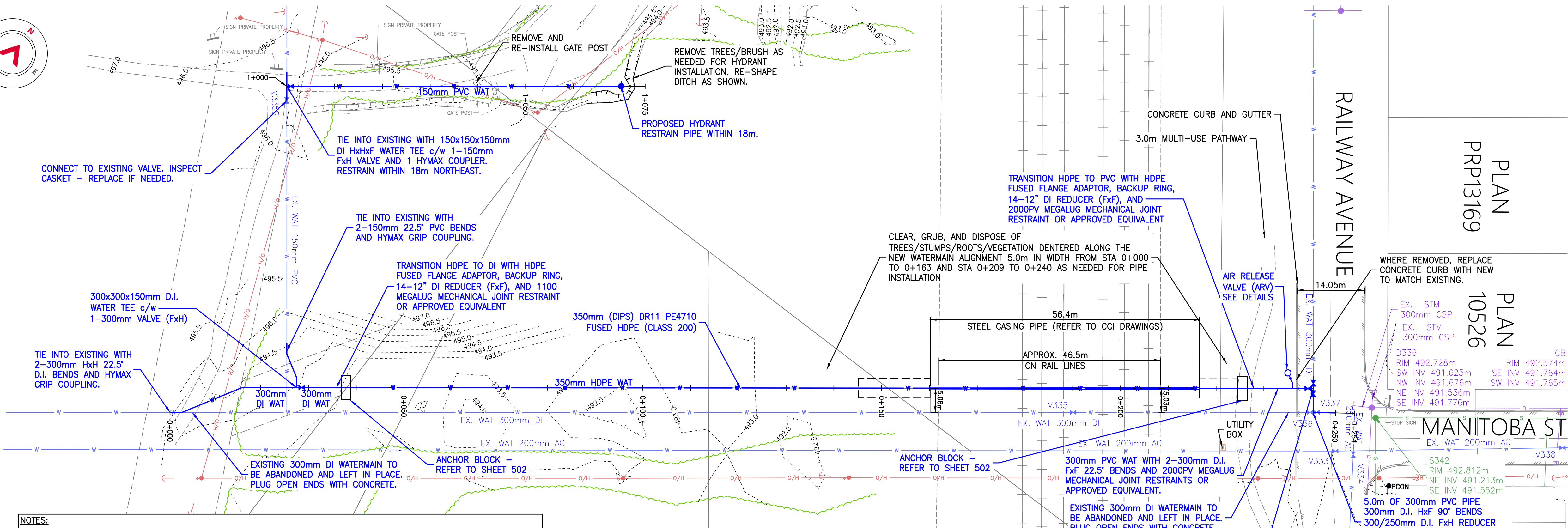


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CN WATERMAIN REPLACEMENT PROJECT

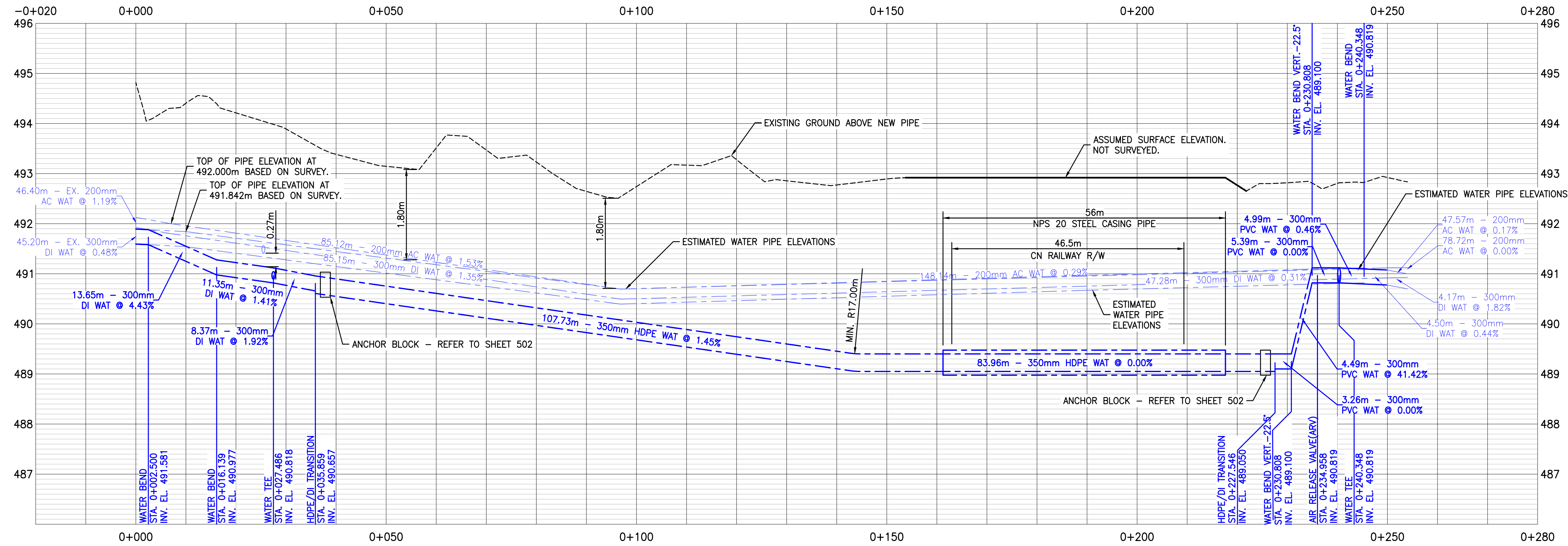
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DWG NO:	2501987-000-1100-100	REV:	1
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- NOTES:**
1. ALL NEW D.I. PIPE JOINTS TO BE RESTRAINED.
 2. ALL NEW PVC PIPE JOINTS EAST OF THE RAIL LINES TO BE RESTRAINED.
 3. THRUST BLOCKS AT RAILWAY AVE. AND ZOBNICK RD. TIE-INS TO BE PRE-CAST.

WATERMAIN PLAN
SCALE: 1:500



SOUTH WATERMAIN PROFILE



REFERENCE DRAWINGS		
DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
1		

PLAN
PRP13169
10526

PLAN
10526

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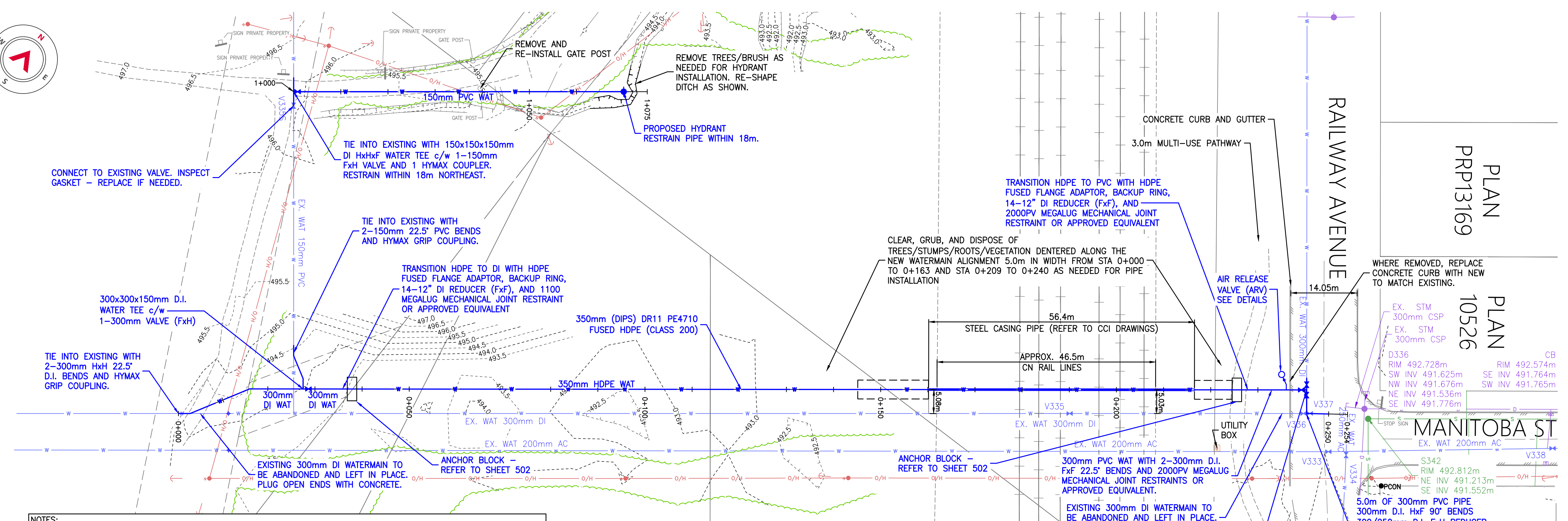
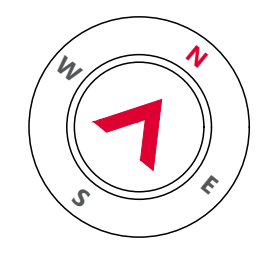
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SCALE:	AS NOTED	APVD:	KS	DATE:	26/02/20

CN WATERMAIN REPLACEMENT PROJECT

TITLE:
WATERMAIN PLAN & PROFILE SHEET 1 OF 2

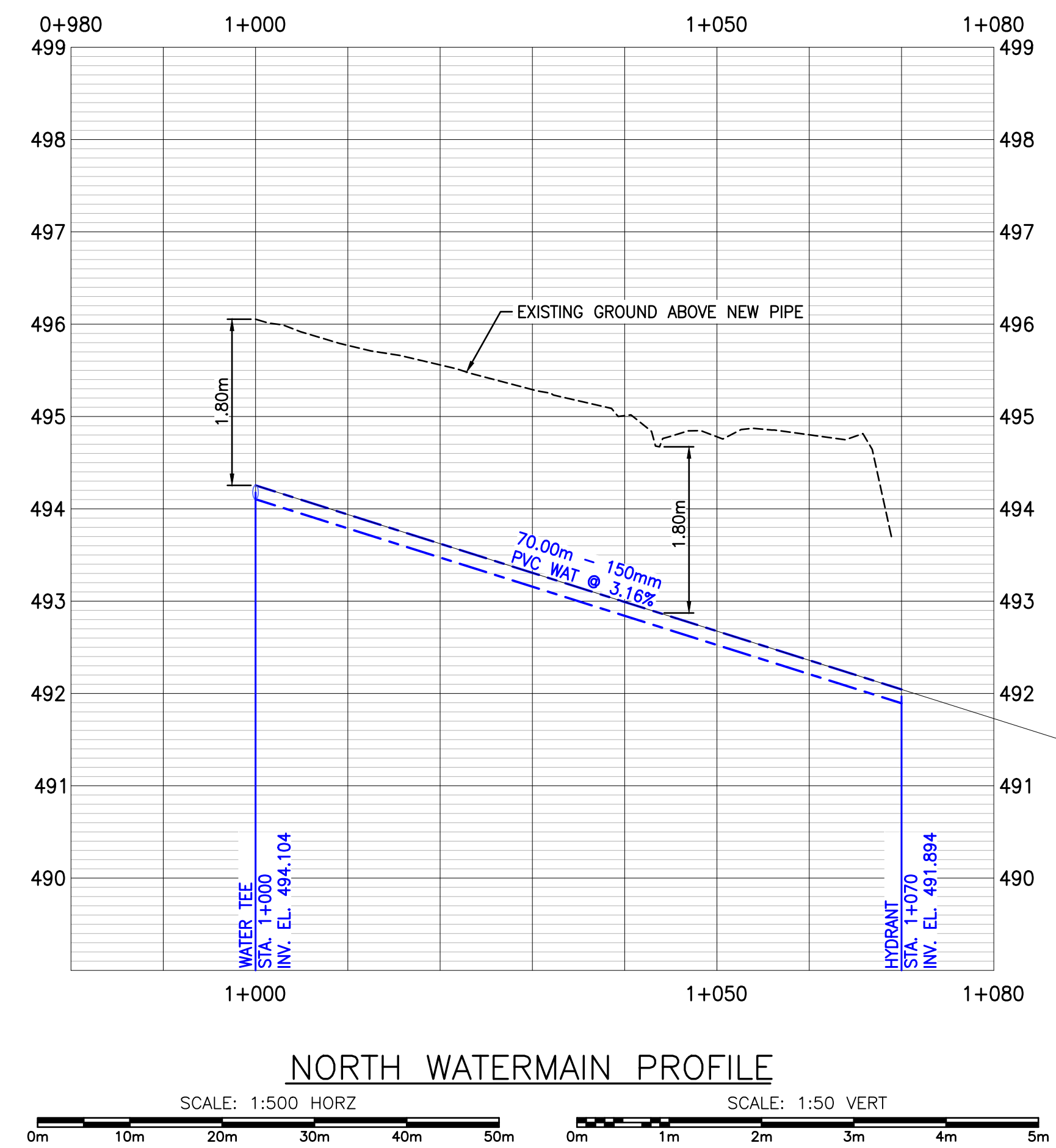
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- NOTES:**
1. ALL NEW D.I. PIPE JOINTS TO BE RESTRAINED.
 2. ALL NEW PVC PIPE JOINTS EAST OF THE RAIL LINES TO BE RESTRAINED.
 3. THRUST BLOCKS AT RAILWAY AVE. AND ZOBNICK RD. TIE-INS TO BE PRE-CAST.

WATERMAIN PLAN
SCALE: 1:500



NORTH WATERMAIN PROFILE

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

PLAN
PRP13169
10526

MANITOBA ST

EX. STM 300mm CSP	RIM 492.728m	SE INV 491.764m
EX. STM 300mm CSP	SW INV 491.625m	SE INV 491.765m
D336	NW INV 491.676m	
	NE INV 491.536m	
	SE INV 491.776m	
S342	RIM 492.812m	
	NE INV 491.213m	
	SE INV 491.552m	

5.0m OF 300mm PVC PIPE
300mm D.I. HxF 90° BENDS
300/250mm D.I. FxH REDUCER
3.0m OF 250mm PVC PIPE
HYMAX COUPLER

REFERENCE DRAWINGS

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-	-	1

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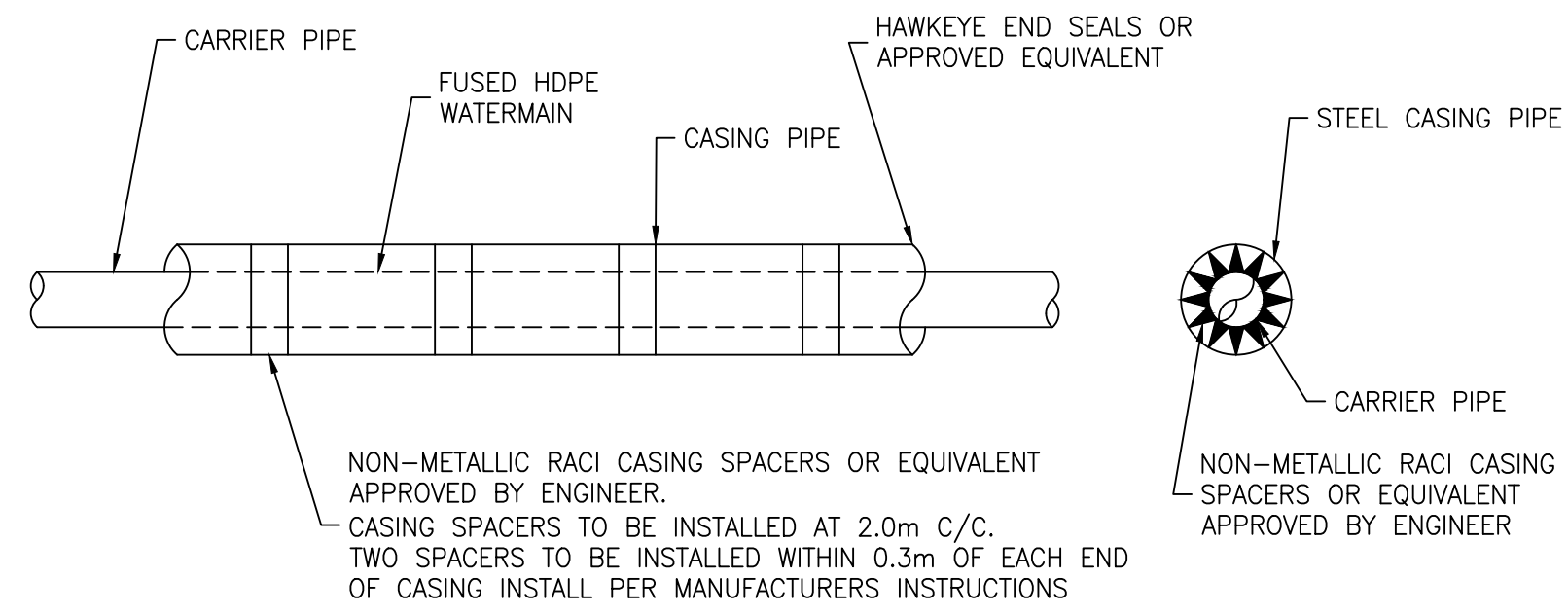


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PROJECT NO:	DSGN:	KS	DATE:	25/09/18	
DRAWING SIZE:	ANSI "D"	CHKD:	KS	DATE:	26/02/20
SCALE:	AS NOTED	APVD:	KS	DATE:	26/02/20

PROJECT:
CN WATERMAIN REPLACEMENT PROJECT

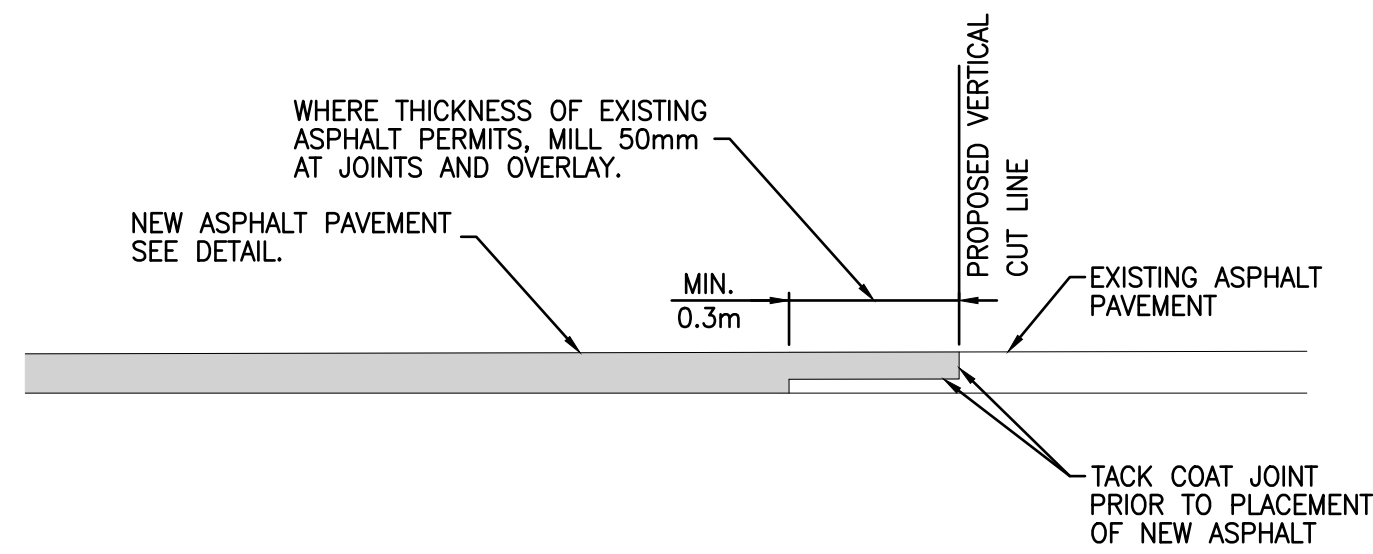
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WATERMAIN PLAN & PROFILE SHEET 2 OF 2

DWG NO: 2501987-000-1100-201	REV: 1
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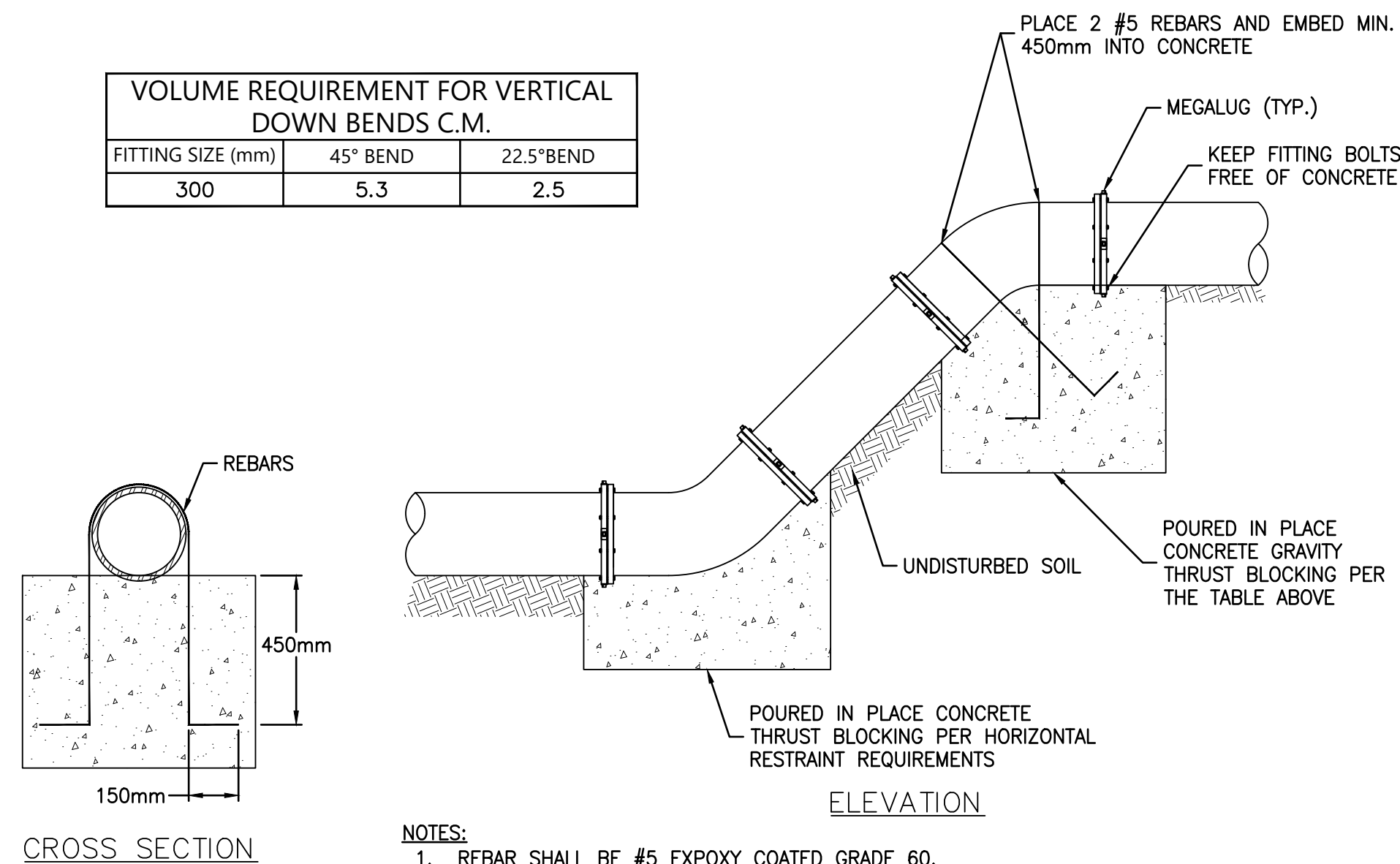
RACI SPACERS: 350mm HDPE WATERMAIN - RING TYPE M41

CARRIER PIPE SPACER DETAIL
SCALE: N.T.S.



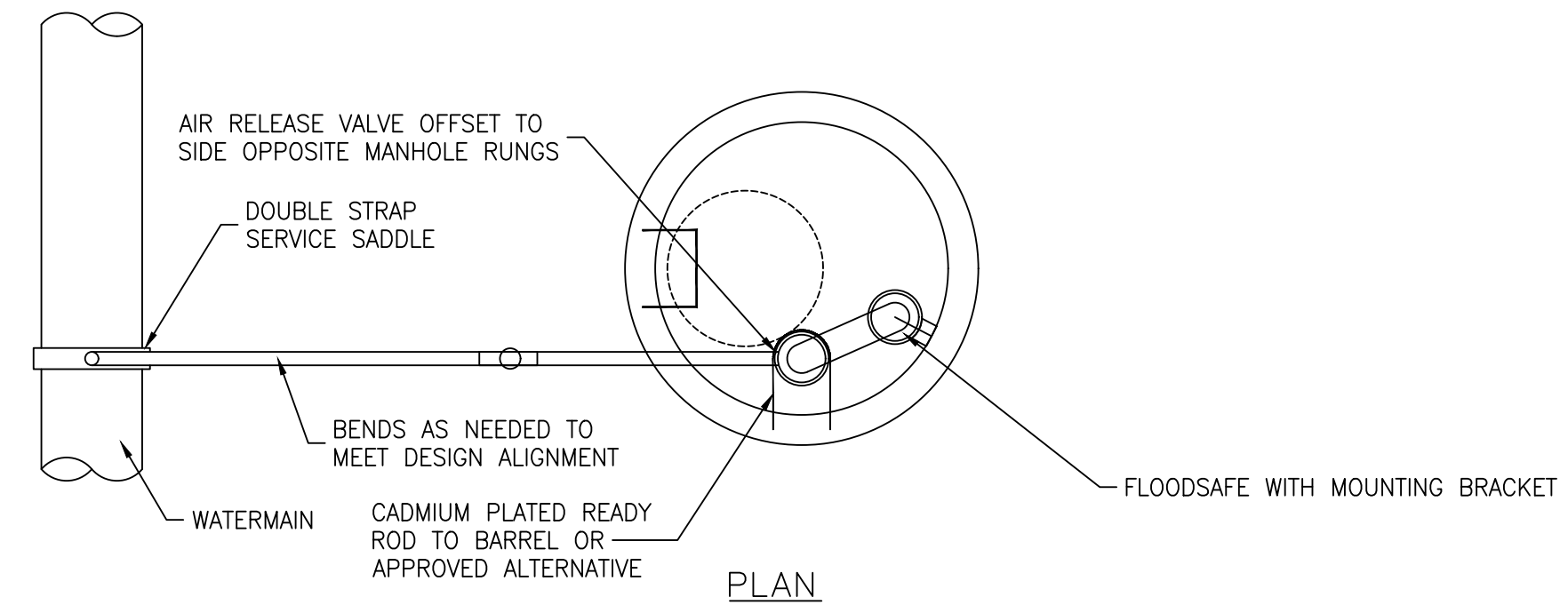
ROAD PAVEMENT JOINT DETAIL
SCALE: N.T.S.

VOLUME REQUIREMENT FOR VERTICAL DOWN BENDS C.M.		
FITTING SIZE (mm)	45° BEND	22.5° BEND
300	5.3	2.5

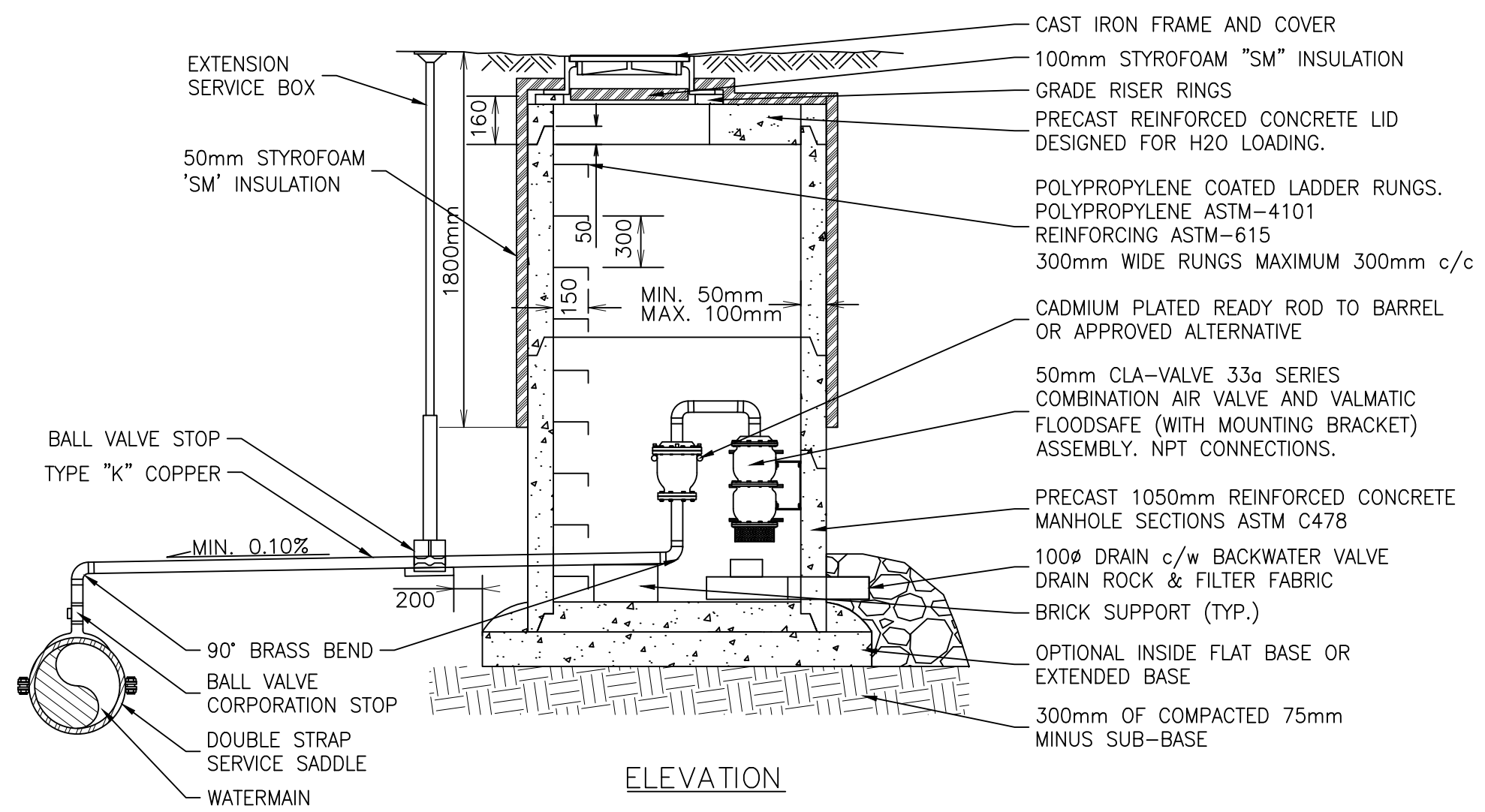


- NOTES:
- REBAR SHALL BE #5 EPOXY COATED GRADE 60.
 - CONCRETE SHALL BE MIN. 3,000 PSI COMPRESSIVE STRENGTH.
 - ABOVE VALUES ARE BASED ON 150 PSI TEST PRESSURE FOR OTHER TEST PRESSURES PROPORTION AS FOLLOWS:
BLOCK VOLUME = TEST PRESSURE/150 X TABLE VALUE.

GRAVITY BLOCK THRUST RESTRAINT FOR VERTICAL BENDS DETAILS
SCALE: N.T.S.



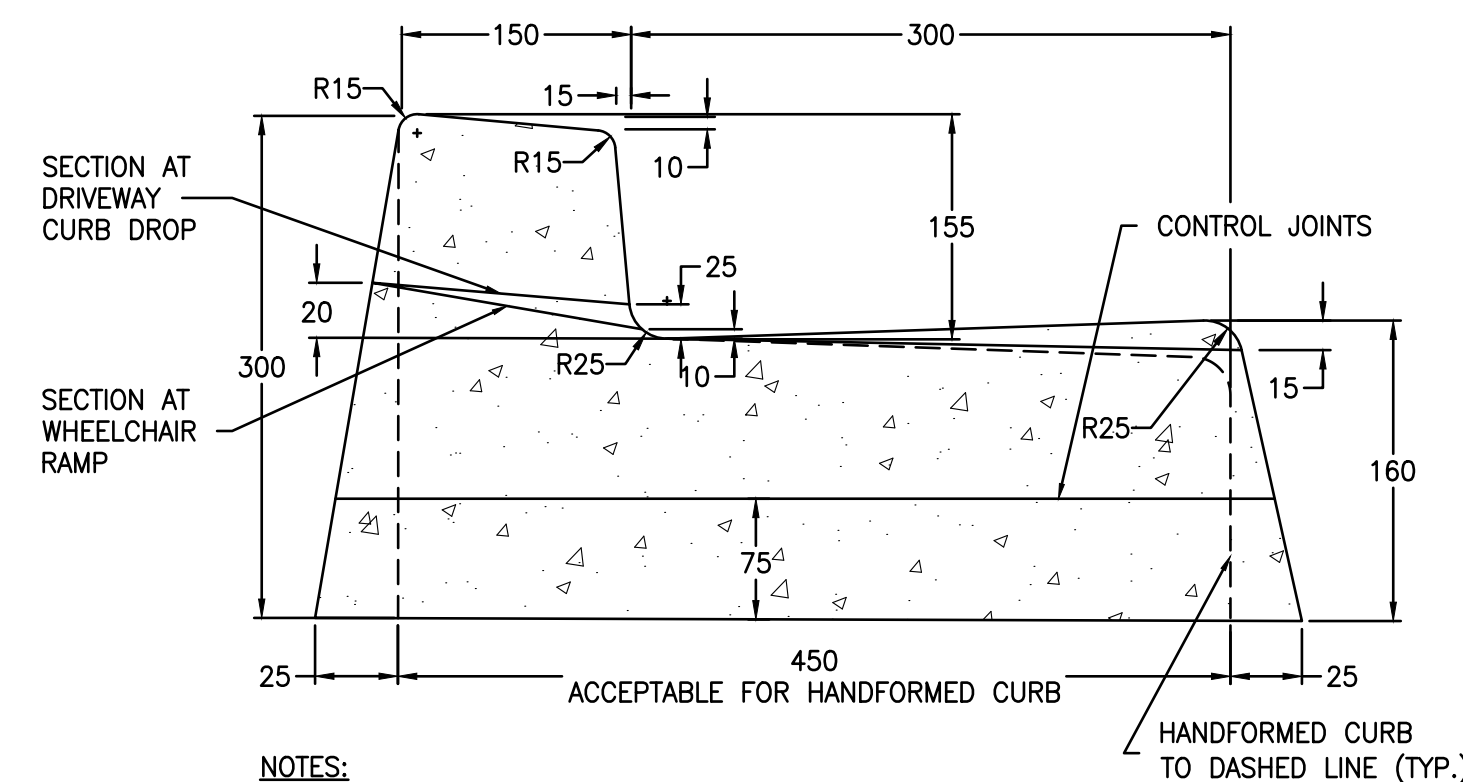
PLAN



ELEVATION

PIPE SIZE (mm)	AIR RELEASE VALVE (mm)
300	50

AIR RELEASE VALVE INSTALLATION
SCALE: N.T.S.



- NOTES:
- SECTION SHOWN ARE FOR MACHINE EXTRUDED CURBS.
 - CONCRETE: 30MPa MINIMUM STRENGTH.
 - CONTRACTION JOINTS AT 3m INTERVALS TO A MINIMUM DEPTH OF 60% OF CONCRETE THICKNESS.

CONCRETE BARRIER CURB & GUTTER
SCALE: N.T.S.

REFERENCE DRAWINGS

DRAWING NO	DRAWING DESCRIPTION/TITLE	REF
-	-	1

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Exp No: 40504 Signature: [Signature]
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CLIENT:



CLIENT NO:	DRWN:	JG	DATE:	25/09/24	
PROJECT NO:	2501987	DSGN:	KS	DATE:	25/09/24
DRAWING SIZE:	ANSI "D"	CHKD:	KS	DATE:	26/02/20
SCALE:	AS NOTED	APVD:	KS	DATE:	26/02/20

PROJECT:

CN WATERMAIN REPLACEMENT PROJECT

TITLE:

CONSTRUCTION DETAILS SHEET 2 OF 2

DWG NO:	2501987-000-1100-501	REV:	1
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ANCHOR BLOCK NOTES:

1. GENERAL NOTES

- 1.1. ALL NOTES SHALL BE READ IN CONJUNCTION WITH ALL RELEVANT DESIGN DRAWINGS, SPECIFICATIONS AND PROJECT DOCUMENTS.
- 1.2. ALL OTHER CODES, STANDARDS, AND SPECIFICATIONS REFERENCED SHALL BE THE LATEST EDITION INCLUDING ADDENDA AND SUPPLEMENTS, IF ANY CONFLICT EXISTS BETWEEN THE REFERENCED CODES, STANDARDS, DRAWINGS, OR SPECIFICATIONS, THE MORE STRINGENT SHALL APPLY.
- 1.3. THE GENERAL CONTRACTOR SHALL REVIEW ALL THE DRAWINGS AND CHECK DIMENSIONS BEFORE CONSTRUCTION. REPORT DISCREPANCIES BETWEEN STRUCTURAL AND OTHER DISCIPLINES DRAWINGS FOR CLARIFICATION.
- 1.4. DO NOT CUT OR DRILL ANY OPENINGS IN STRUCTURAL MEMBERS WITHOUT WRITTEN PERMISSION OF ALLNORTH.
- 1.5. DRAWING UNITS ARE METRIC UNLESS NOTED OTHERWISE.
- 1.6. PIPING TO BE LAYED IN TRENCH AND BURIED FOR MINIMUM 48 HOURS PRIOR TO INSTALLATION OF ANCHOR BLOCK TO ALLOW PIPE TO COME TO GROUND TEMPERATURE.
- 1.7. SITE LOCATION: SMITHERS, B.C.

2. DESIGN

- 2.2. THE COMPLETED STRUCTURE SHOWN ON THE STRUCTURAL DRAWINGS HAS BEEN DESIGNED IN SUBSTANTIAL ACCORDANCE WITH THE BRITISH COLUMBIA BUILDING CODE 2024.

3. DESIGN LOADS

- 3.1. DESIGN COMPLETED USING THE PLASTIC PIPE INSTITUTE REPORT TITLE ANCHOR BLOCKS FOR HDPE WATER PIPES (2022) FOR BELOW GROUND INSTALLATION OF 4710 HDPE PIPE.
 - 3.1.1. PIPE TO BE 350mm DR11 AWWA C906 HDPE PE4710 RATED FOR 200 psi.

3.2. DESIGN VALUES:

- 3.2.1. WORKING PRESSURE: 100 psi
- 3.2.2. TEST PRESSURE: 150 psi (1.5x WORKING PRESSURE)
- 3.2.3. THERMAL STRESS SET AT 180 psi - COLD BEST PRACTICE
- 3.2.4. FORCE TO RESIST: 155 kN (1.25 S.F. INCLUDED) BASED ON TEST PRESSURE

4. FIELD REVIEW BY ALLNORTH CONSULTANTS LTD. (ALLNORTH)

- 4.1. ALLNORTH PROVIDES FIELD REVIEW ONLY FOR THE WORK SHOWN ON THESE STRUCTURAL DRAWINGS. THIS REVIEW IS NOT A "FULL TIME" REVIEW BUT IS CONDUCTED WITH SUCH FREQUENCY AS ALLNORTH DEEMS APPROPRIATE TO OBSERVE VARIOUS STAGES OF THE WORK AND TO ASCERTAIN THAT THE WORK IS IN GENERAL CONFORMANCE WITH THE PLANS AND SUPPORTING DOCUMENTS PREPARED BY ALLNORTH.
- 4.2. FIELD REVIEWS ARE REQUIRED TO BE PERFORMED AS PER NATIONAL ENGINEERING REQUIREMENTS.
- 4.3. THE INSPECTION REQUIREMENTS FOR THIS PROJECT ARE AS FOLLOWS:
 - 4.3.1. CONCRETE PRE-POUR INSPECTION.

5. EXCAVATION & GEOTECHNICAL INFORMATION

- 5.1. ANCHOR BLOCK DESIGN BASED ON THE GEOTECHNICAL REPORT PREPARED BY CCI GROUP OF COMPANIES TITLED CN YARD WATERMAIN REPLACEMENT PROJECT GEOTECHNICAL REPORT, DECEMBER 2025 (DOC.#: 4952-GEO-RPT-0001, PROJ.#: 4952).

- 5.2. A SOIL FRICTION ANGLE OF 27° HAS BEEN UTILIZED IN THIS DESIGN WITH A SOIL UNIT WEIGHT OF 1.602 kg/m³ BASED ON UCS SOIL CLASSIFICATION SYSTEM FOR CL - CLAYEY NATIVE SOILS. CONTRACTOR TO NOTIFY ALLNORTH FOR REVIEW IF DIFFERENT SOIL CONDITIONS ARE FOUND DURING THE EXCAVATION FOR THE ANCHOR BLOCKS.
- 5.3. ALL EXCAVATIONS, SUBGRADE, AND STRUCTURAL FILL MUST BE INSPECTED AND APPROVED BY A QUALIFIED GEOTECHNICAL ENGINEER BEFORE CONCRETE OR BACKFILL ARE PLACED.
- 5.4. PRIOR TO COMMENCING EXCAVATION, THE CONTRACTOR MUST ESTABLISH AND VERIFY THE LOCATION OF ALL BURIED SERVICES ON AND ADJACENT TO THE SITE.

6. CONCRETE AND CONCRETE REINFORCEMENT

- 6.1. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR WORKING WITH THE CONCRETE SUPPLIER TO ENSURE THAT THE PLASTIC AND HARDENED MIX PROPERTIES MEET SITE REQUIREMENTS FOR PLACING, FINISHING, AND THE OWNERS' SPECIFIED PERFORMANCE REQUIREMENTS. THE GENERAL CONTRACTOR SHALL MEET THE DOCUMENTATION AND QUALITY CONTROL REQUIREMENTS OUTLINED UNDER THE "PERFORMANCE" ALTERNATE OF TABLE 5 OF CSA A23.1.

- 6.2. THE SUPPLIER SHALL MEET ALL CERTIFICATION AND DOCUMENTATION REQUIREMENTS AS OUTLINED UNDER THE "PERFORMANCE" ALTERNATE OF CSA A23.1.

6.3. CONCRETE MINIMUM PROPERTIES:

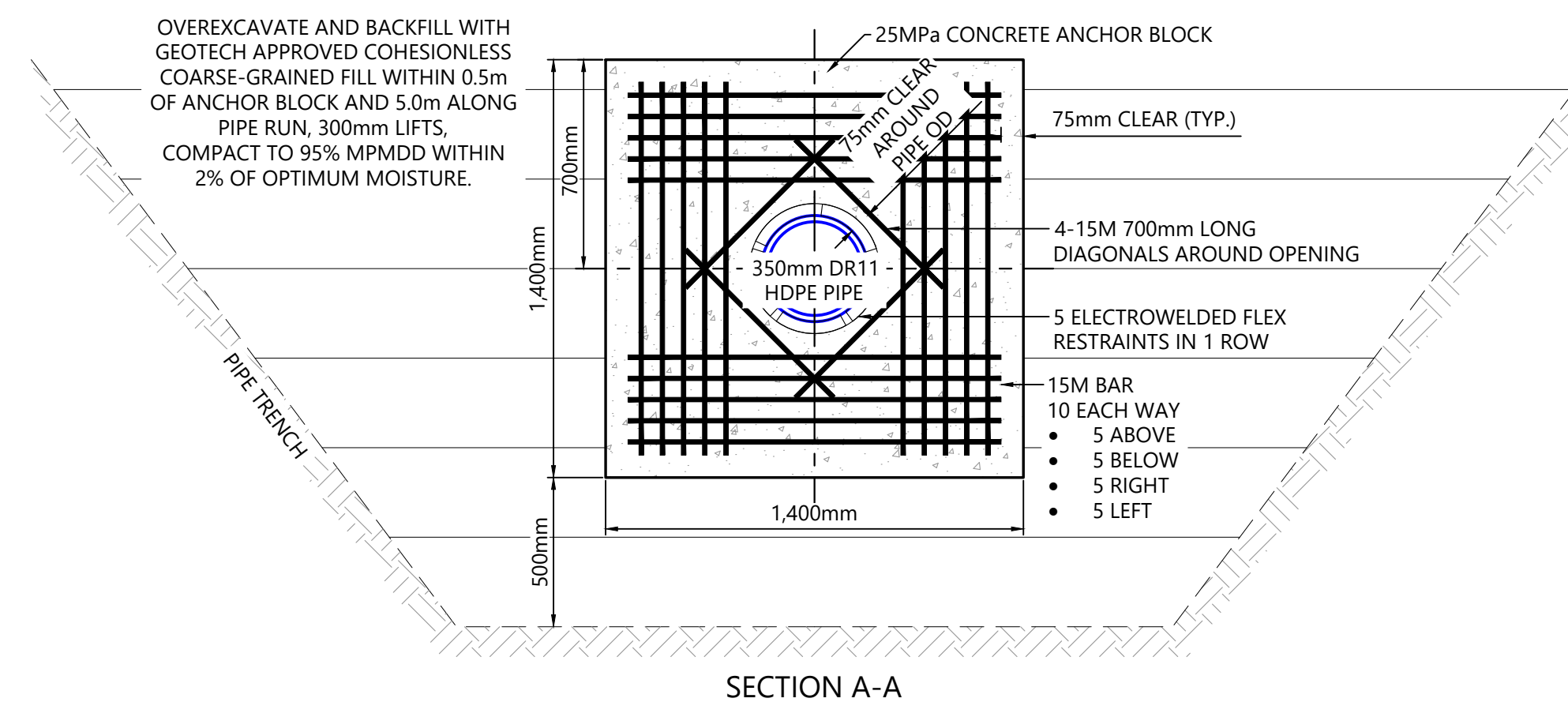
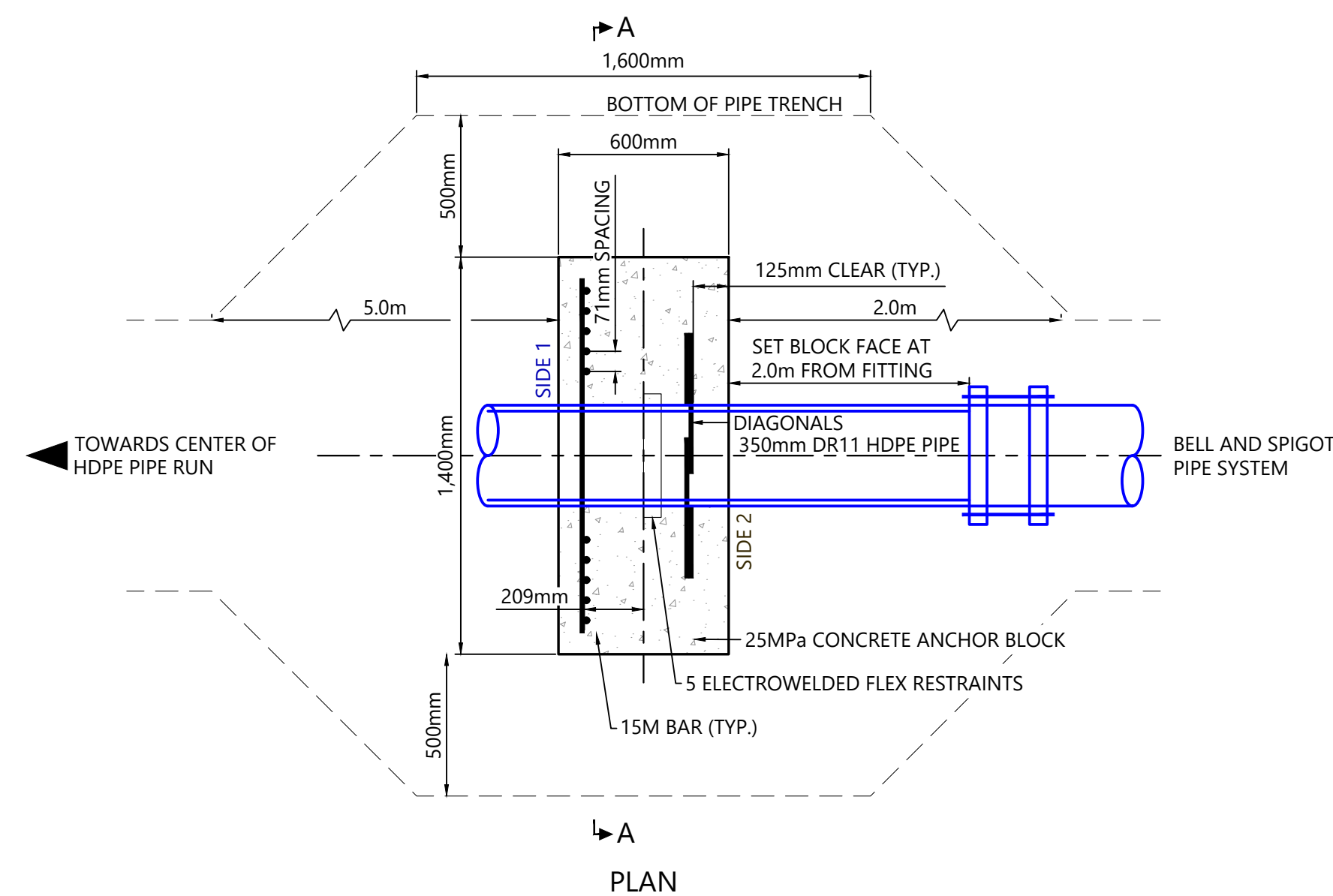
ANCHOR BLOCK		
ELEMENT	MIN. COMPRESSIVE STRNGTH 28 DAYS U.N.O. (MPa)	EXPOSURE CLASS
ANCHOR BLOCK	25	F-2
CSA A3001 PORTLAND CEMENT TYPE: GU GENERAL USE U.N.O.		

- 6.4. CONCRETE SHALL HAVE A UNIT WEIGHT OF 23±1 kN/m³ (145±5 PCF) UNLESS NOTED OTHERWISE.
- 6.5. THE CONCRETE PROPERTIES USED IN DESIGN ARE BASED ON 20 mm AGGREGATE. UNLESS NOTED OTHERWISE. ALL LOCATIONS FOR CONCRETE MIX DESIGNS WITH AGGREGATE SIZE SMALLER THAN 20 mm PROPOSED BY THE CONTRACTOR SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL. ANY INCREASE IN REQUIRED CONCRETE STRENGTH OR INCREASE IN QUANTITY OF REINFORCEMENT DUE TO PROPOSED USE OF CONCRETE MIX WITH AGGREGATE SIZE SMALLER THAN 20 mm TO BE PAID FOR BY THE CONTRACTOR.
- 6.6. RECYCLED AGGREGATE IS NOT TO BE USED WITHOUT WRITTEN APPROVAL BY THE ENGINEER.
- 6.7. SLUMP AND AGGREGATE SIZE TO BE DETERMINED BY THE GENERAL CONTRACTOR AND SUPPLIER TO MEET PLACEMENT, AND FINISHING REQUIREMENTS WITHOUT SEGREGATIONS WHILE MEETING ALL OWNER SPECIFICATIONS.
- 6.8. MAXIMUM WATER/CEMENT RATIO AND AIR CONTENT TO MEET THE REQUIREMENTS FOR THE EXPOSURE CLASS AS OUTLINED IN CSA A23.1.
- 6.9. NO CALCIUM CHLORIDE IS PERMITTED, IN ANY FORM, IN ANY CONCRETE MIX WITHOUT EXPRESS WRITTEN CONSENT OF ALLNORTH CONSULTANTS LIMITED.
- 6.10. CURING AND PROTECTION OF CONCRETE FOR HOT, COLD OR DRY WEATHER IS TO BE AS PER CSA A23.1 AS A MINIMUM. SEE ALSO "CONCRETE COLD WEATHER REQUIREMENTS" IN THE STRUCTURAL DRAWINGS.
- 6.11. GENERAL CONTRACTOR TO PROVIDE CONCRETE BREAK TEST RESULTS TO ALLNORTH FOR 7 DAYS, 14 DAYS, AND TWO AT 28 DAY.

- 6.12. REINFORCEMENT SHALL CONFORM TO THE FOLLOWING STANDARDS:
 - 6.12.1. 10M AND LARGER (U.N.O.): CSA G30.18R, GRADE 400W
- 6.13. UNLESS OTHERWISE NOTED CONCRETE COVER TO REINFORCEMENT SHALL BE:
 - 6.13.1. CAST AGAINST EARTH OR GROUND - 75mm
- 6.14. DO NOT SUBSTITUTE DEFORMED WIRE FOR REINFORCING BARS WITHOUT PRIOR APPROVAL FROM ALLNORTH.
- 6.15. PROVIDE SUFFICIENT SUPPORTS TO MAINTAIN CONCRETE COVER AS SPECIFIED. ALL SUPPORTS AND BARS MUST BE TIED TOGETHER TO MAINTAIN REINFORCING STEEL SECURELY IN PLACE DURING CONCRETE PLACEMENT.
- 6.16. LAP SPICE LENGTHS:

LAP SPICE LENGTHS	
REBAR SIZE	CONCRETE STRENGTH
15M	25MPa & GREATER
	710 mm
- 6.17. ALL PERMANENTLY EXPOSED CONCRETE CORNERS TO HAVE 19mm x 19mm CHAMFERS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- 6.18. CARRY OUT ALL HOT AND COLD WEATHER CONCRETE WORK IN ACCORDANCE WITH CSA A23.1.

ANCHOR BLOCK LOCATIONS AND ORIENTATIONS		
BLOCK STATION	SIDE 2 DIRECTION	SIDE 1 DIRECTION
0+038	0+000 DECREASING	0+100 INCREASING
0+226	0+250 INCREASING	0+200 DECREASING

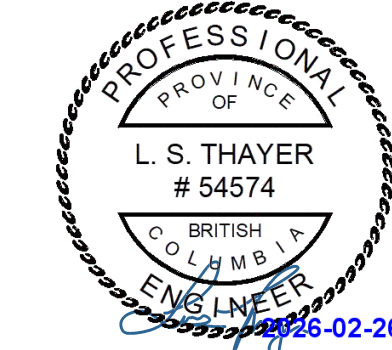


REFERENCE DRAWINGS		
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0	26/01/12	ISSUED FOR PERMITTING	LT	TC	KS

CLIENT:



CLIENT NO:	-	DRWN:	LT	DATE:	26/01/05
PROJECT NO:	2501987	DSGN:	LT	DATE:	26/01/05
DRAWING SIZE:	ANSI "D"	CHKD:	TC	DATE:	26/02/20
SCALE:	1:20	APVD:	KS	DATE:	26/02/20

PROJECT:

CN WATERMAIN REPLACEMENT PROJECT

TITLE:

HDPE WATERMAIN ANCHOR BLOCK NOTES AND DETAILS

DWG NO:	2501987-000-1100-502	REV:	1
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