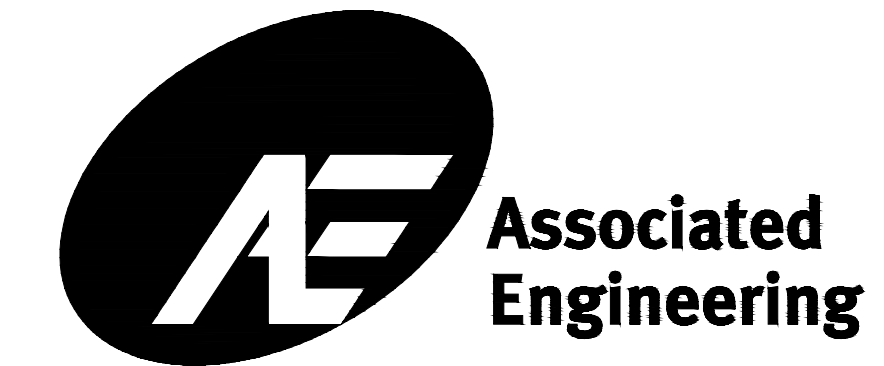
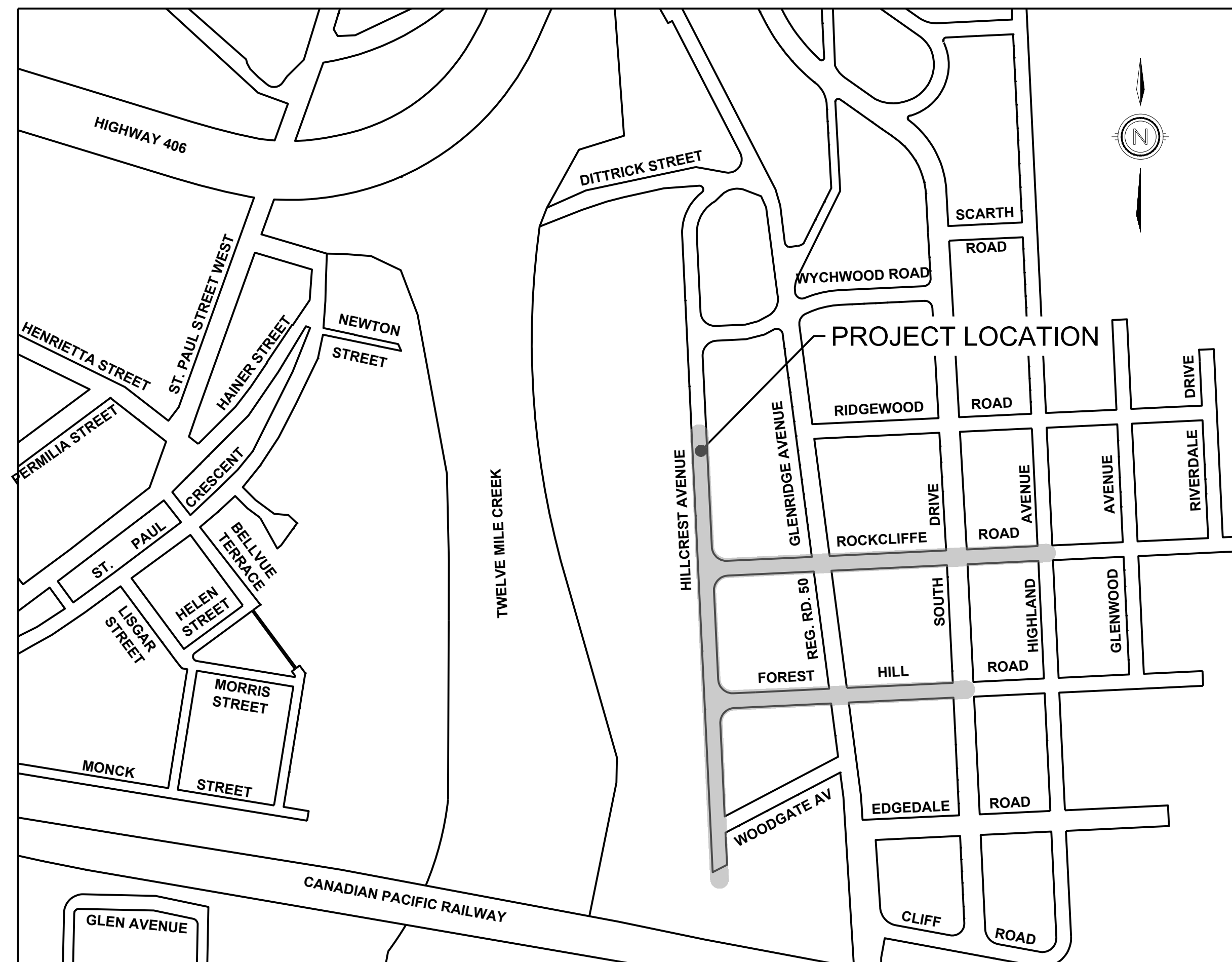


# St. Catharines



## FOREST HILL / HILLCREST / ROCKCLIFFE UNDERGROUND IMPROVEMENTS IN THE CITY OF ST. CATHARINES

**MAT SISCOE**  
MAYOR



LOCATION PLAN - (NOT TO SCALE)

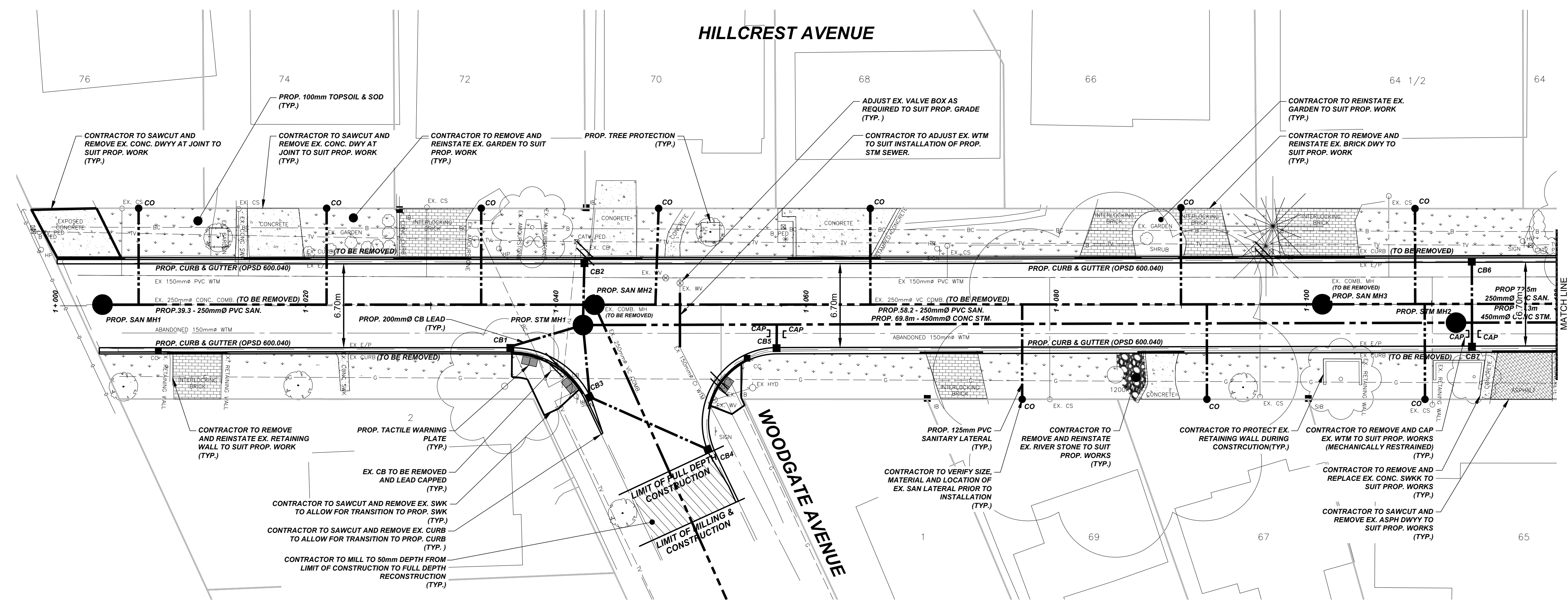
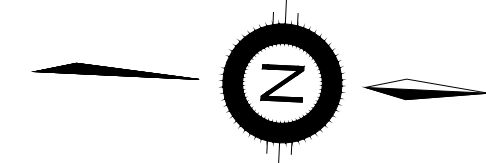
**ANTHONY MARTUCCIO**  
DIRECTOR OF ENGINEERING,  
FACILITIES & ENVIRONMENTAL  
SERVICES

**CAPITAL PROJECT**  
**No. P21-004**

**FORESTHILL / HILLCREST / ROCKCLIFFE  
UNDERGROUND IMPROVEMENTS  
IN THE CITY OF ST. CATHARINES**

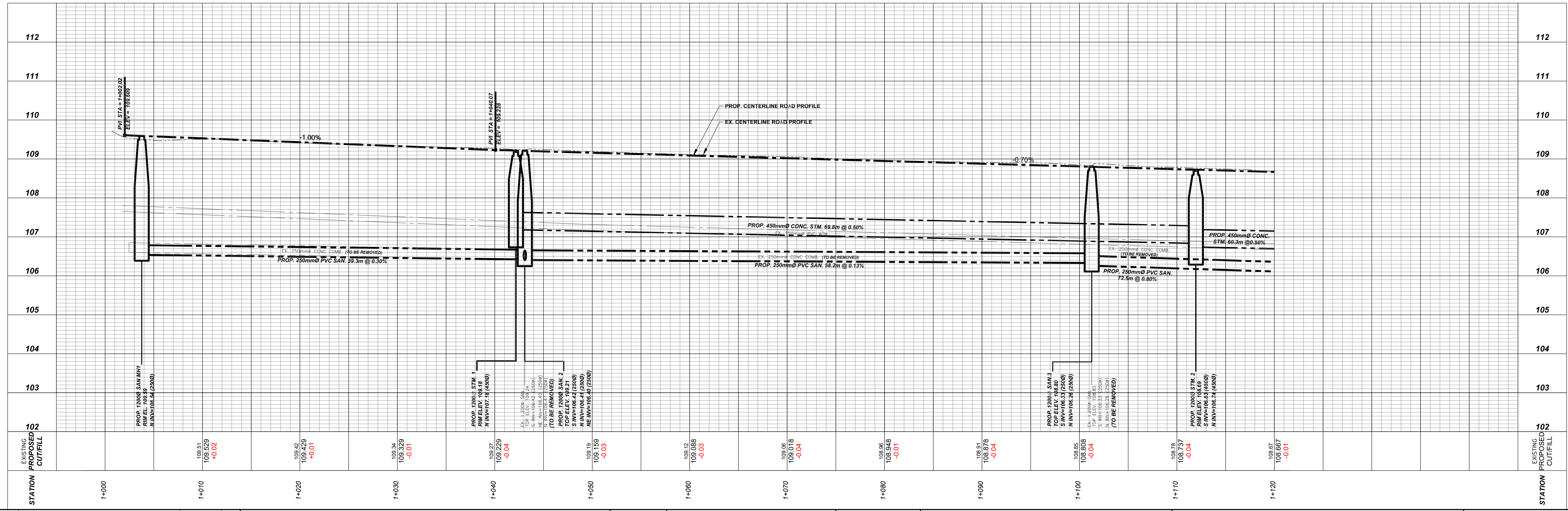
0	ISSUED FOR TENDER	2024-09-03	NR
	REVISION	DATE	INT.

HILLCREST AVENUE



MATCH LINE  
STA 1+120  
SEE 5723-00-C-102

- NOTES:
1. ALL PROP. CURB & GUTTER (OPSD 600.040) AT SIDEWALKS RAMPS SHALL HAVE THE 30mm STEP AT GUTTER LINE ELIMINATED. SEE DWG C-501 FOR DETAILS.



STATION	EXISTING	PROPOSED	CUT/FILL
1+000			
1+010	109.51	109.529	-0.02
1+020	109.42	109.429	+0.01
1+030	109.34	109.329	-0.01
1+040	109.27	109.229	-0.04
1+050	109.19	109.159	-0.03
1+060	109.12	109.088	-0.03
1+070	109.06	109.018	-0.04
1+080	108.98	108.948	-0.01
1+090	108.91	108.878	-0.04
1+100	108.85	108.808	-0.04
1+110	108.78	108.737	-0.04
1+120	108.67	108.667	-0.01

NOTES/LEGEND

0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

DRAFTING: NR  
DESIGN: FB/DH  
CHECKED BY: DH  
APPROVED BY: MM

**Professional Engineers Ontario**  
**Limited Licensee**  
Name: M. A. MASCIOLI  
Number: 100203964  
Category: CIVIL  
2024-09-03  
This licence is subject to the limitations as detailed on the certificate.  
Association of Professional Engineers of Ontario

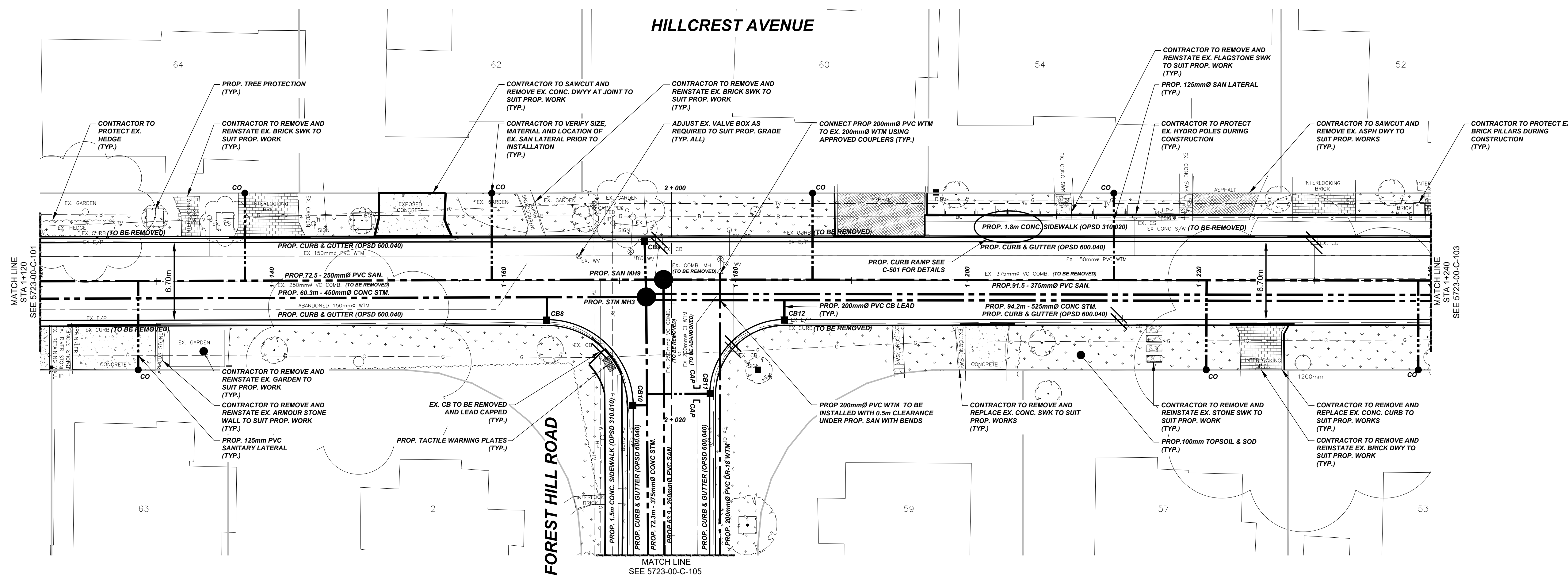
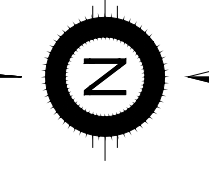
**St. Catharines**  
stcatharines.ca

**Associated Engineering**

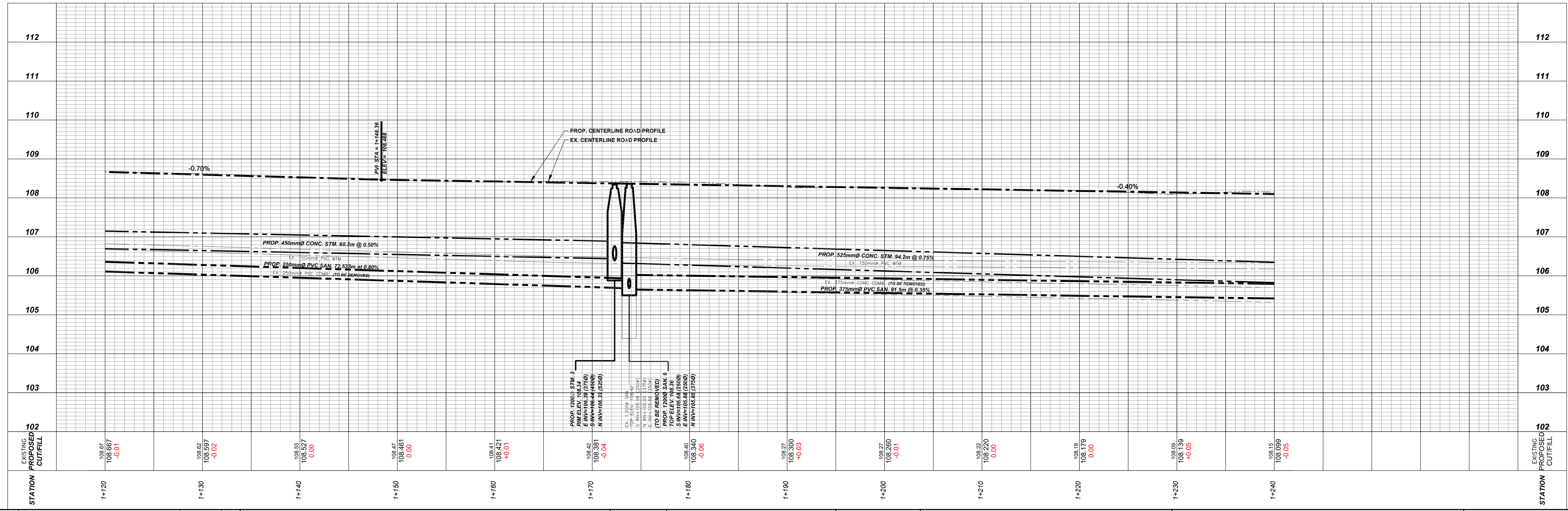
PROJECT / CONTRACT P21-004  
FOREST HILL / HILLCREST / ROCKCLIFFE  
UNDERGROUND IMPROVEMENTS  
**HILLCREST AVENUE**  
IN THE CITY OF ST. CATHARINES  
**ROAD GEOMATICS STA 1+000 - 1+120**

CONSULTANT FILE NO. 20235723	DATE SEPTEMBER 2024
SCALE Hor : 1:200 m Ver : 1:50 m	REF. No. <b>P21-004</b>
DWG No. <b>5723-00-C-101</b>	REV. <b>0</b>





NOTES:  
 1. ALL PROP. CURB & GUTTER (OPSD 600.040) AT SIDEWALKS RAMPS SHALL HAVE THE 30mm STEP AT GUTTER LINE ELIMINATED. SEE DWG C-501 FOR DETAILS.



NO.	REVISION	DATE	INIT.
0	ISSUED FOR TENDER	2024-09-03	NR

NOTES/LEGEND	

DRAFTING: NR  
 DESIGN: FB/DH  
 CHECKED BY: DH  
 APPROVED BY: MM

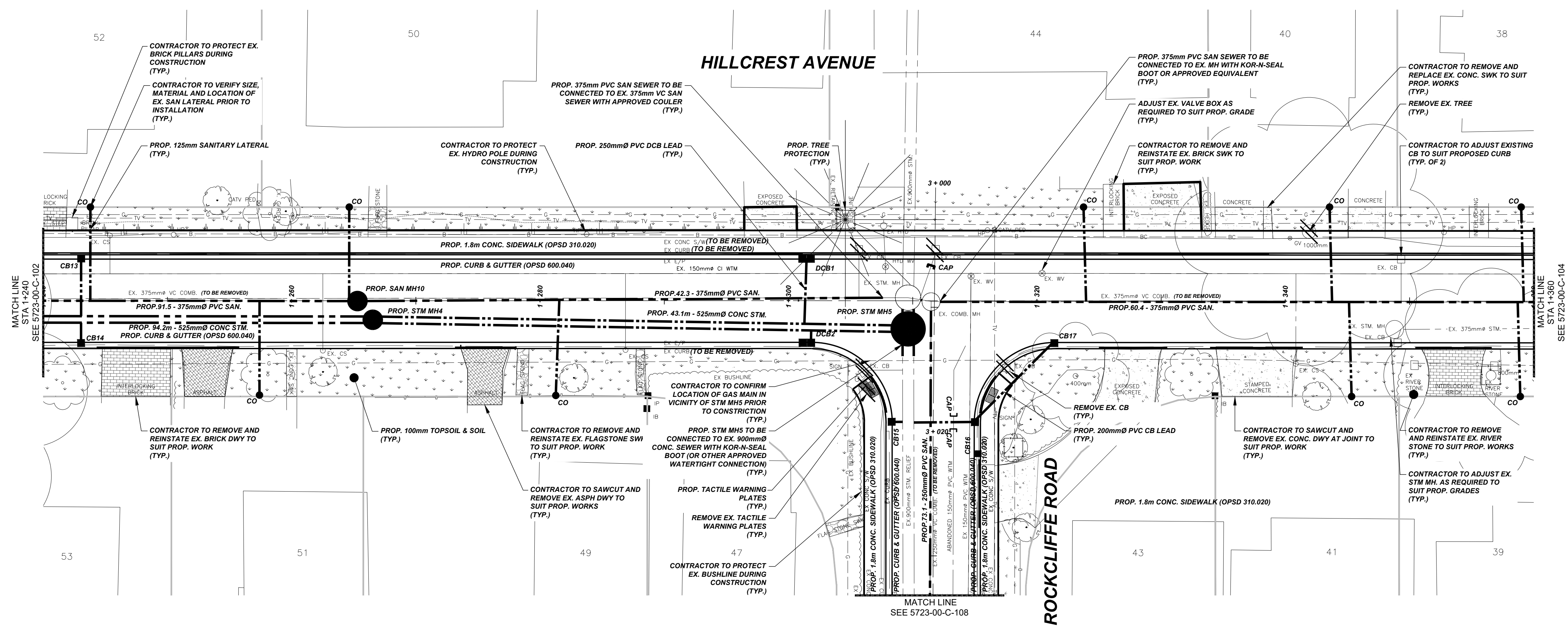
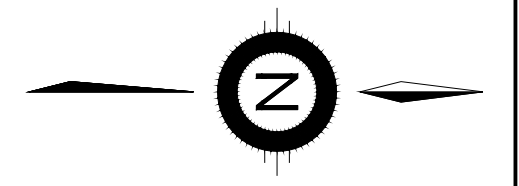
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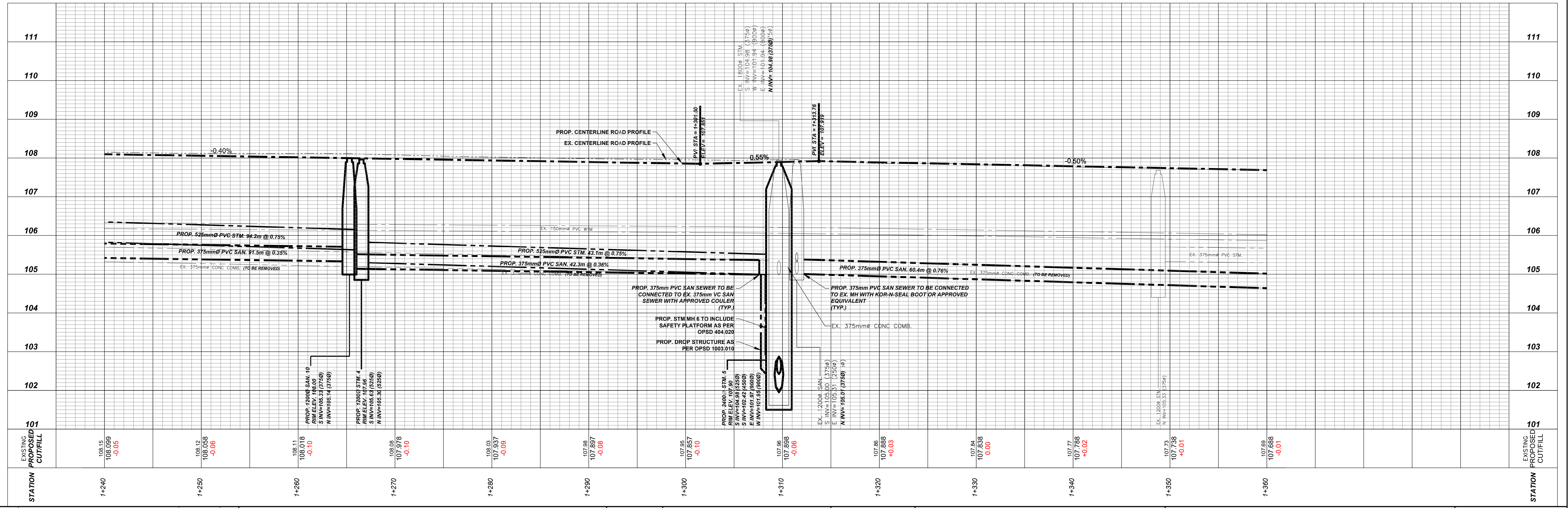
PROJECT / CONTRACT P21-004  
 FOREST HILL / HILLCREST / ROCKCLIFFE  
 UNDERGROUND IMPROVEMENTS  
**HILLCREST AVENUE**  
 IN THE CITY OF ST. CATHARINES  
**ROAD GEOMATICS STA 1+120 - STA 1+240**

CONSULTANT FILE No. 20235723	DATE SEPTEMBER 2024
SCALE Hor : 1:200 m	Ver : 1:50 m
REF. No. P21-004	DWG No. 5723-00-C-102
REV. 0	





NOTES:  
 1. ALL PROP. CURB & GUTTER (OPSD 600.040) AT SIDEWALK RAMP'S SHALL HAVE THE 30mm STEP AT GUTTER LINE ELIMINATED. SEE DWG C-301 FOR DETAILS.



STATION	EXISTING ELEVATION	PROPOSED ELEVATION	CUT/FILL
1+240	108.15	108.099	-0.05
1+250	108.12	108.058	-0.06
1+260	108.11	108.018	-0.10
1+270	108.05	107.978	-0.10
1+280	108.03	107.937	-0.09
1+290	107.98	107.897	-0.08
1+300	107.95	107.857	-0.10
1+310	107.96	107.898	-0.06
1+320	107.95	107.888	-0.03
1+330	107.84	107.838	0.00
1+340	107.77	107.788	+0.02
1+350	107.75	107.708	-0.01
1+360	107.69	107.688	-0.01

NOTES / LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

DRAFTING: NR  
 DESIGN: FB/DH  
 CHECKED BY: DH  
 APPROVED BY: MM

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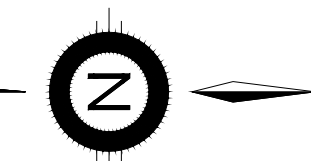
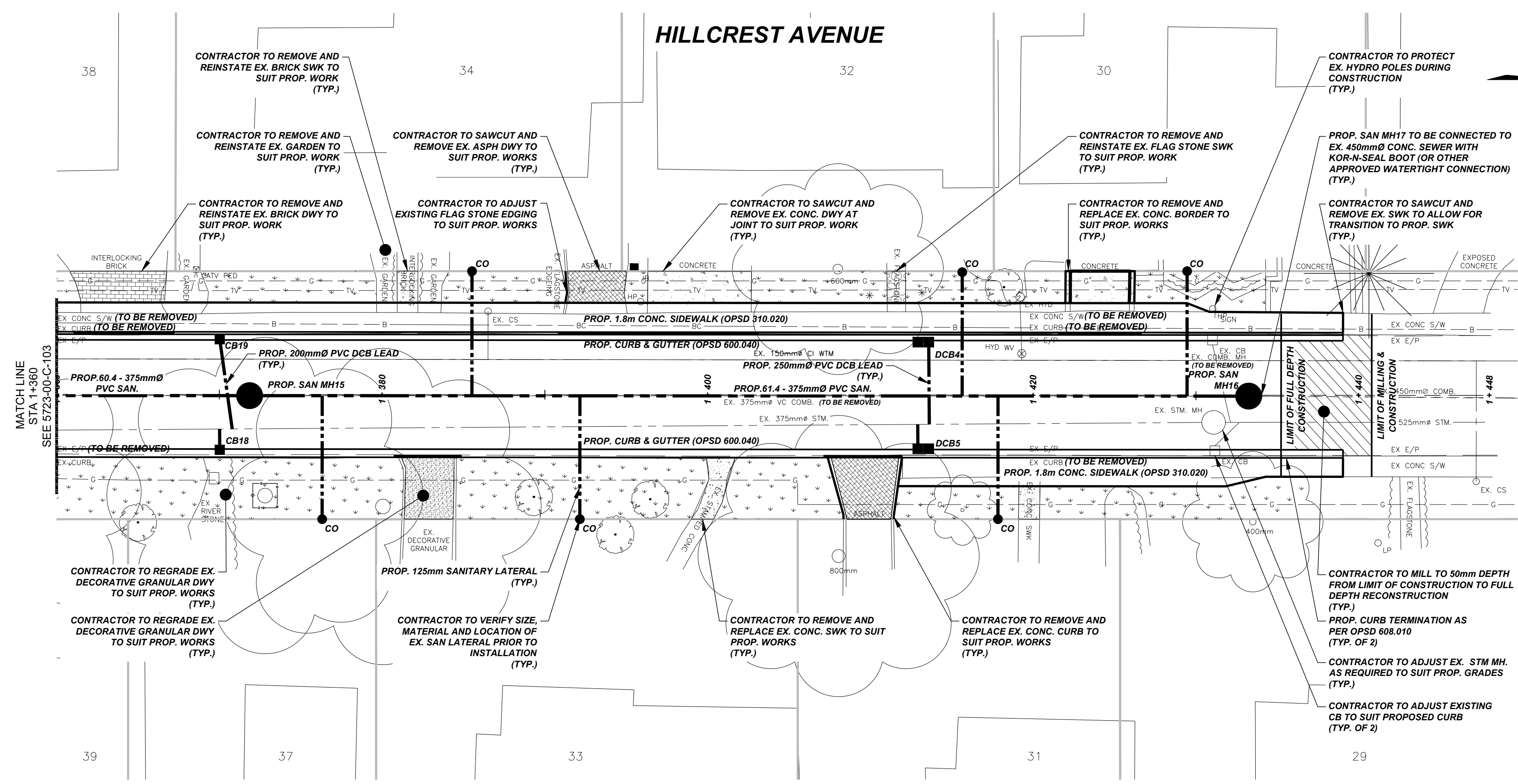
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**Associated Engineering**

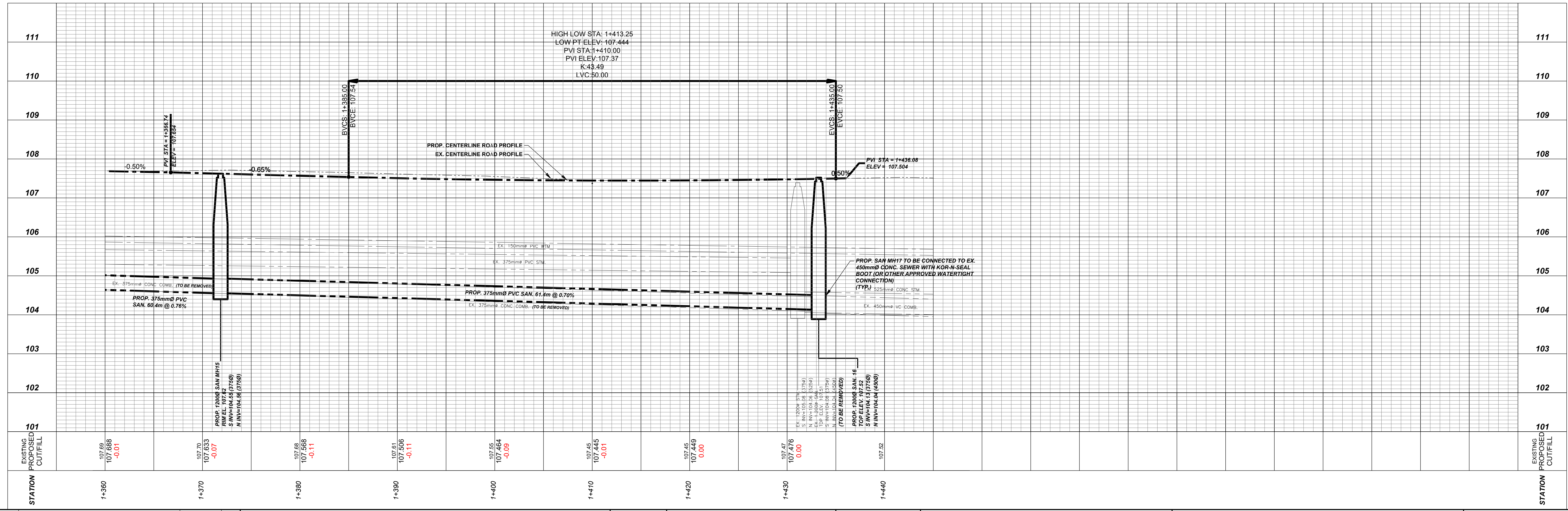
PROJECT / CONTRACT P21-004  
 FOREST HILL / HILLCREST / ROCKCLIFFE  
 UNDERGROUND IMPROVEMENTS  
**HILLCREST AVENUE**  
 IN THE CITY OF ST. CATHARINES  
**ROAD GEOMATICS 1+240 - 1+360**

CONSULTANT FILE NO. 20235723	DATE SEPTEMBER 2024
SCALE Hor : 1:200 m Ver : 1:50 m	REF. No. P21-004
DWG No. 5723-00-C-103	REV. 0





**NOTES:**  
 1. ALL PROP. CURB & GUTTER (OPSD 600.040) AT SIDEWALKS RAMP SHALL HAVE THE 30mm STEP AT GUTTER LINE ELIMINATED. SEE DWG C-301 FOR DETAILS.



STATION	EXISTING PROPOSED CUT/FILL
1+360	107.69 107.688 -0.01
1+370	107.70 107.653 -0.07
1+380	107.68 107.568 -0.11
1+390	107.61 107.506 -0.11
1+400	107.55 107.464 -0.09
1+410	107.45 107.445 -0.01
1+420	107.45 107.449 0.00
1+430	107.47 107.476 0.00
1+440	107.52 107.52 0.00

NOTES/LEGEND	
0	ISSUED FOR TENDER
1	REVISION
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99	REVISION
100	REVISION

DRAFTING: NR  
 DESIGN: FB/DH  
 CHECKED BY: DH  
 APPROVED BY: MM

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**Limited Licensee**  
 Name: M. A. MASCIOLI  
 Number: 100203964  
 Category: CIVIL  
 Limitations: 2024-09-03  
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 Association of Professional Engineers of Ontario

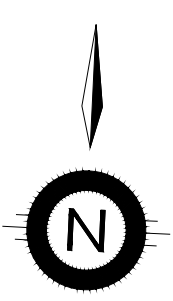
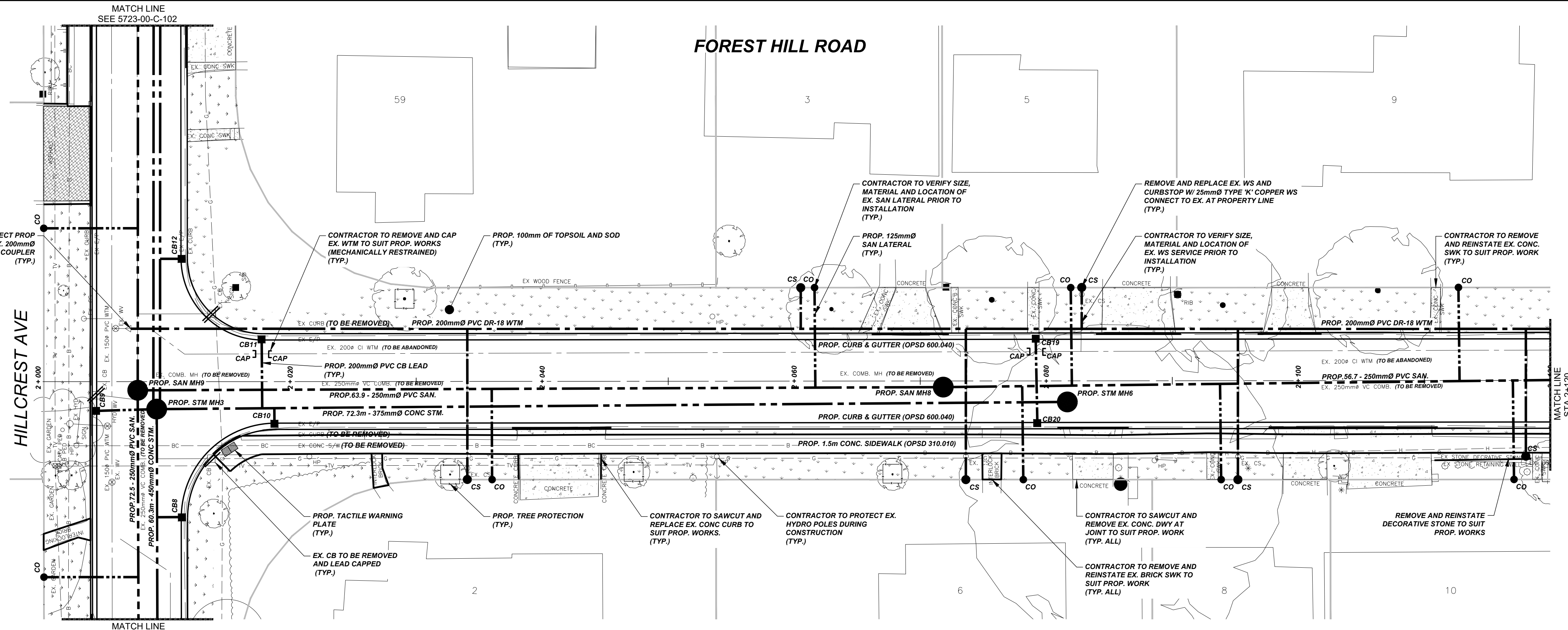
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**Associated Engineering**

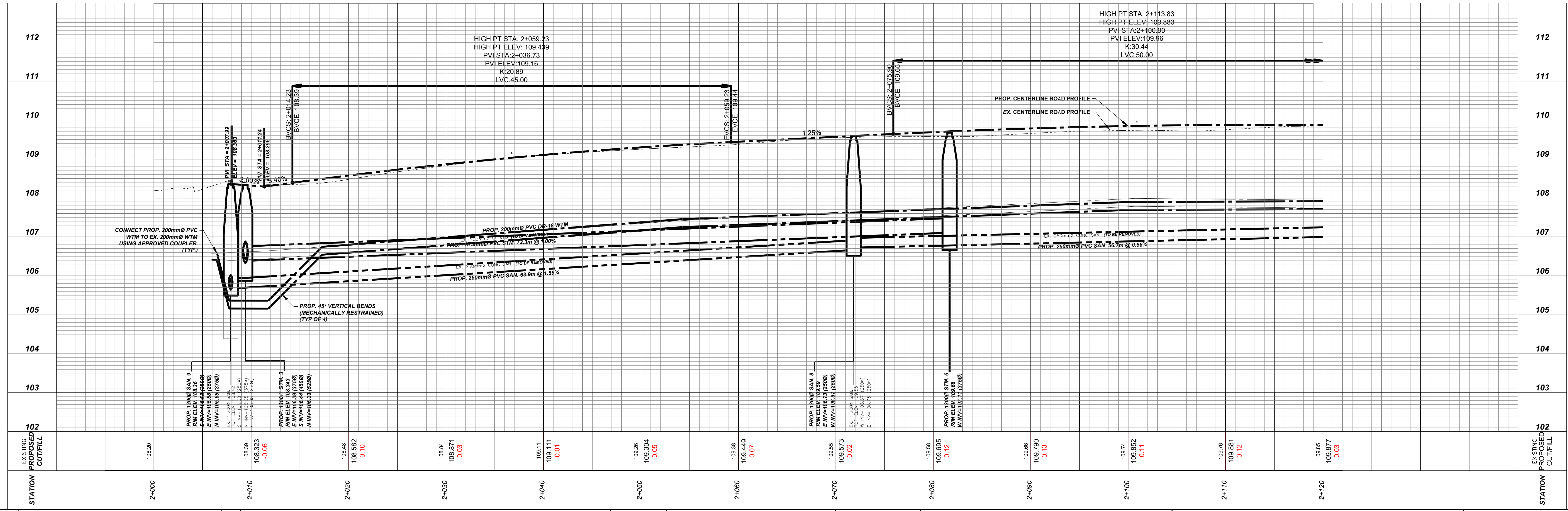
**PROJECT / CONTRACT P21-004**  
**FOREST HILL / HILLCREST / ROCKCLIFFE**  
**UNDERGROUND IMPROVEMENTS**  
**HILLCREST AVENUE**  
**IN THE CITY OF ST. CATHARINES**  
**ROAD GEOMATICS STA 1+360 - 1+440**

CONSULTANT FILE No. 20235723	DATE SEPTEMBER 2024
SCALE Hor : 1:200 m	Ver : 1:50 m
REF. No. <b>P21-004</b>	
DWG No. <b>5723-00-C-104</b>	REV. <b>0</b>





NOTES:  
 1. ALL PROP. CURB & GUTTER (OPSD 600.040) AT SIDEWALKS RAMPS SHALL HAVE THE 30mm STEP AT GUTTER LINE ELIMINATED. SEE DWG C-501 FOR DETAILS.



STATION	EXISTING	PROPOSED	CUT/FILL
2+000	108.20		
2+010	108.39	108.323	-0.06
2+020	108.48	108.582	0.10
2+030	108.84	108.871	0.03
2+040	109.11	109.111	0.01
2+050	109.26	109.504	0.24
2+060	109.38	109.449	0.07
2+070	109.55	109.573	0.02
2+080	109.58	109.695	0.12
2+090	109.66	109.790	0.13
2+100	109.74	109.852	0.11
2+110	109.76	109.881	0.12
2+120	109.85	109.877	0.03

NOTES / LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

DRAFTING: NR  
 DESIGN: FB/DH  
 CHECKED BY: DH  
 APPROVED BY: MM

**Professional Engineers Ontario**  
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 2024-09-03  
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**Associated Engineering**

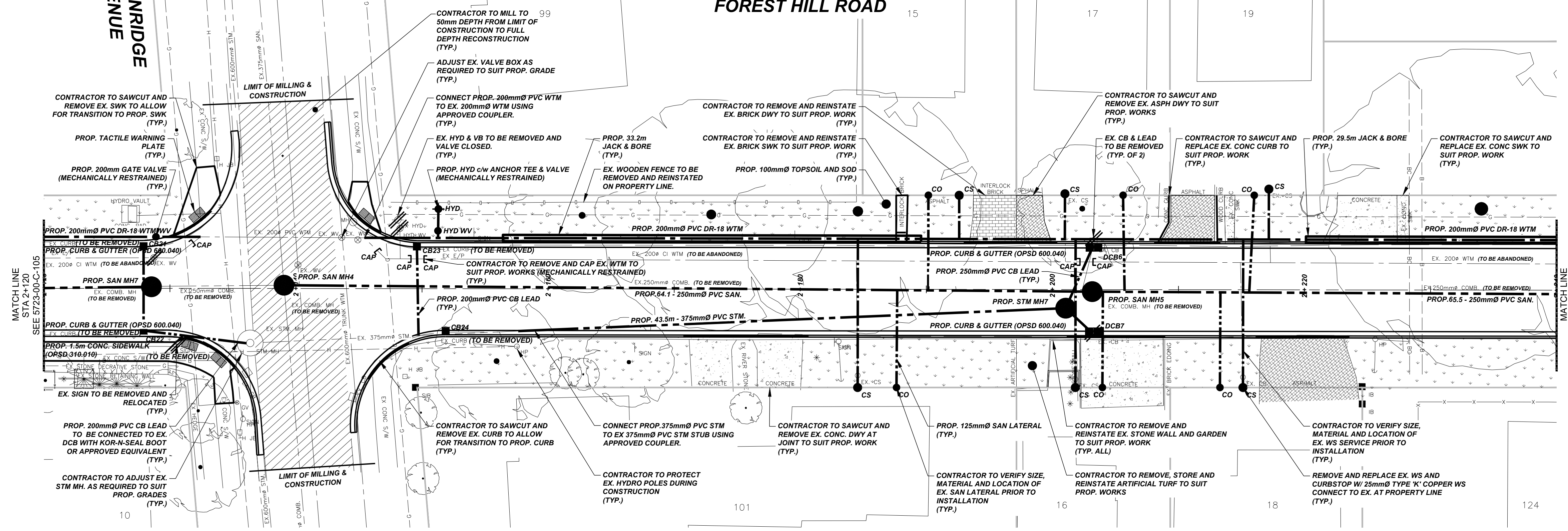
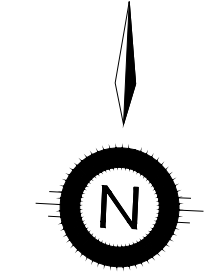
**PROJECT / CONTRACT P21-004**  
**FOREST HILL / HILLCREST / ROCKCLIFFE**  
**UNDERGROUND IMPROVEMENTS**  
**FOREST HILL ROAD**  
 IN THE CITY OF ST. CATHARINES  
**ROAD GEOMATICS STA. 2+000 - 2+120**

CONSULTANT FILE No. 20235723	DATE: SEPTEMBER 2024
SCALE: Hor: 1:200 m Ver: 1:50 m	REF. No. <b>P21-004</b>
DWG No. <b>5723-00-C-105</b>	REV. <b>0</b>

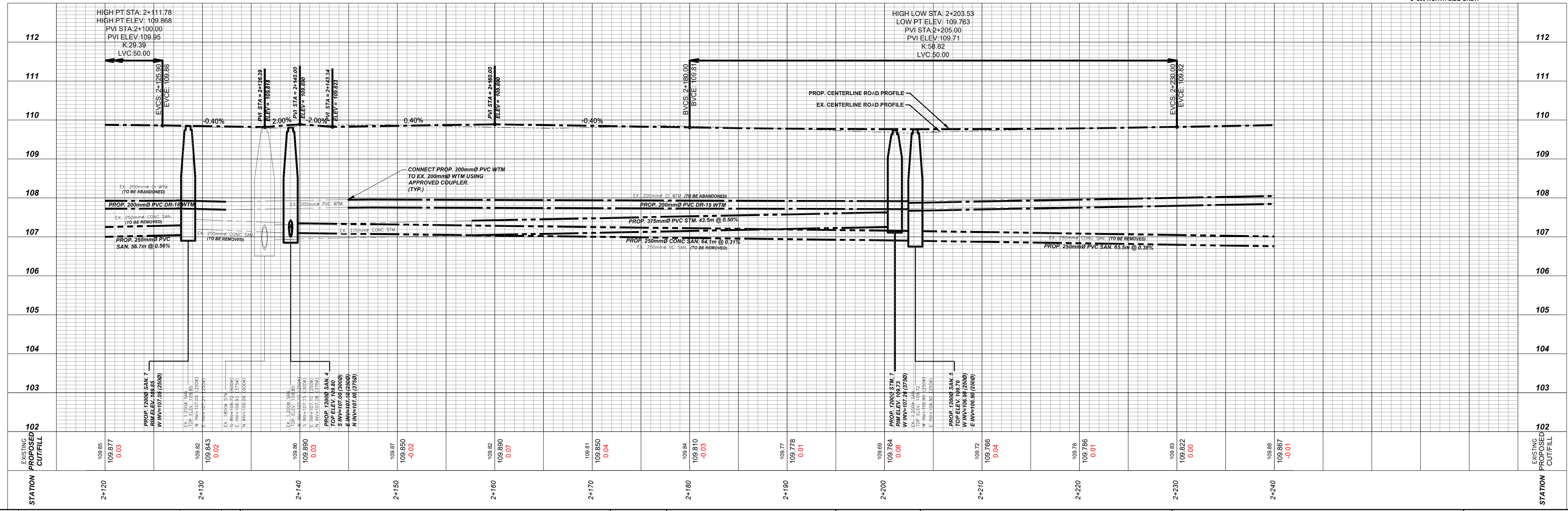


**GLENRIDGE AVENUE**

**FOREST HILL ROAD**



**NOTES:**  
 1. ALL PROP. CURB & GUTTER (OPSD 600.040) AT SIDEWALKS RAMPS SHALL HAVE THE 30mm STEP AT GUTTER LINE ELIMINATED. SEE DWG C-501 FOR DETAILS.  
 2. PROP. CONC. CURB (OPSD 600.040) TO HAVE 50mm KEY FOR FUTURE SIDEWALK. FROM STA. 2+150 TO 2+260 NORTH SIDE ONLY.



STATION	EXISTING PROPOSED CUTFILL
2+120	109.85 109.877 0.03
2+130	109.82 109.843 0.02
2+140	109.86 109.890 0.03
2+150	109.87 109.850 -0.02
2+160	109.82 109.890 0.07
2+170	109.81 109.850 0.04
2+180	109.84 109.810 -0.03
2+190	109.77 109.778 0.01
2+200	109.69 109.764 0.08
2+210	109.72 109.766 0.04
2+220	109.78 109.786 0.01
2+230	109.83 109.822 -0.01
2+240	109.88 109.867 -0.01

NOTES/LEGEND	
0	ISSUED FOR TENDER
1	REVISION
2	DATE
3	INIT.

DRAFTING: NR  
 DESIGN: FB/DH  
 CHECKED BY: DH  
 APPROVED BY: MM

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**Limited Licensee**  
 Name: M. A. MASCIOLI  
 Number: 100203964  
 Category: CIVIL  
 Limitations: 2024-09-03  
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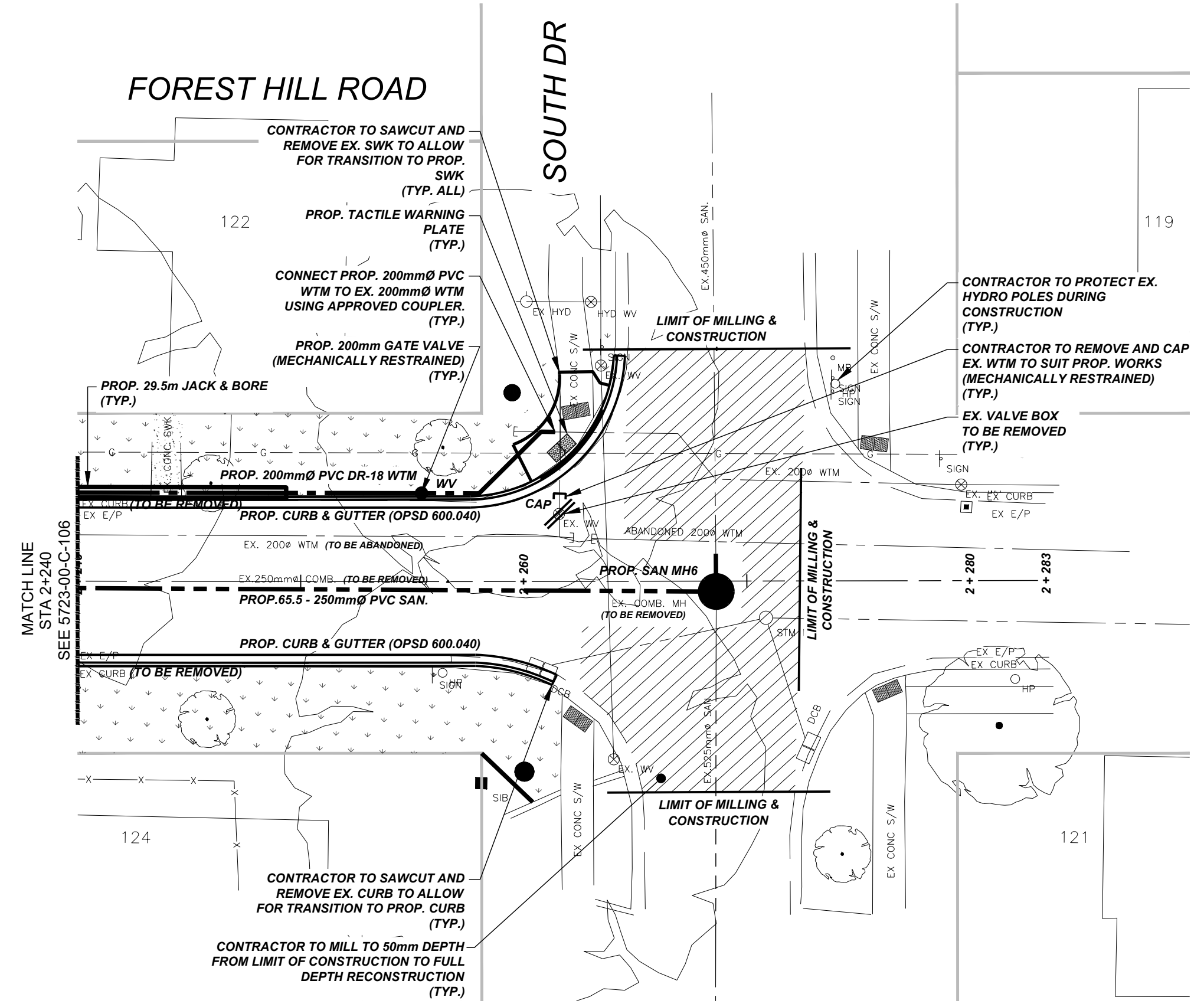
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**Associated Engineering**

**PROJECT / CONTRACT P21-004**  
**FOREST HILL / HILLCREST / ROCKCLIFFE**  
**UNDERGROUND IMPROVEMENTS**  
**FOREST HILL ROAD**  
 IN THE CITY OF ST. CATHARINES  
**ROAD GEOMATICS STA 2+120 TO STA 2+240**

CONSULTANT FILE NO. 20235723	DATE SEPTEMBER 2024
SCALE Hor : 1:200 m Ver : 1:50 m	REF. No. P21-004
DWG No. 5723-01-C-106	REV. 0





NOTES:  
1. ALL PROP. CURB & GUTTER (OPSD 600.040) AT SIDEWALKS RAMPS SHALL HAVE THE 30mm STEP AT GUTTER LINE ELIMINATED. SEE DWG C-501 FOR DETAILS.



NOTES/LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

DRAFTING	NR
DESIGN	FB/DH
CHECKED BY	DH
APPROVED BY	MM

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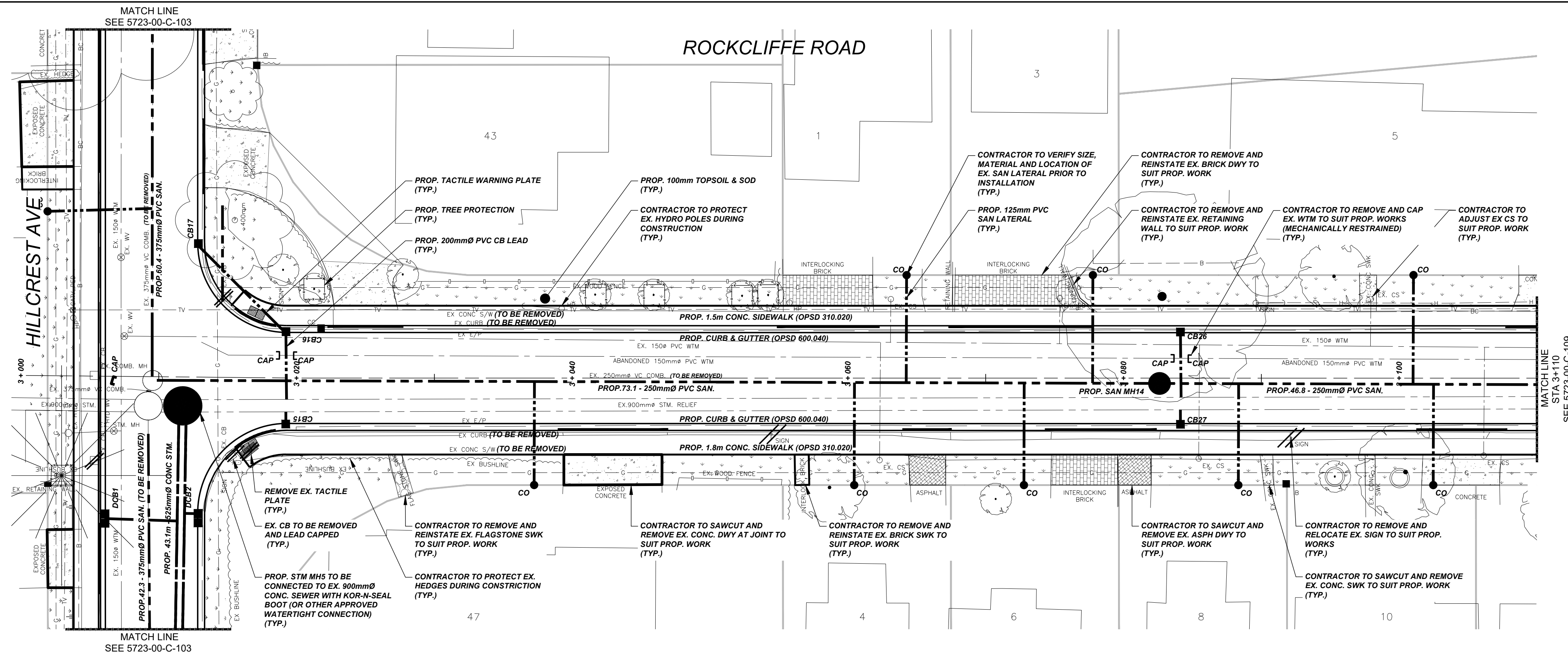
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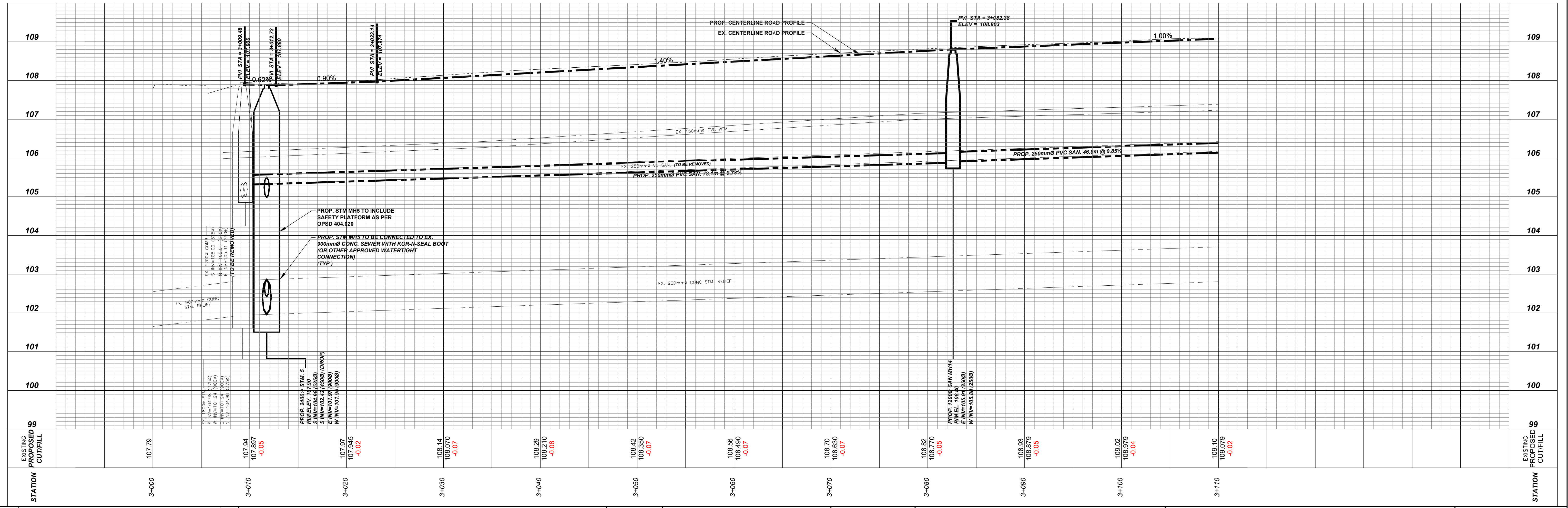
PROJECT / CONTRACT P21-004  
 FOREST HILL / HILLCREST / ROCKCLIFFE  
 UNDERGROUND IMPROVEMENTS  
**FOREST HILL ROAD**  
 IN THE CITY OF ST. CATHARINES  
**ROAD GEOMATICS STA. 2+240 - 2+283**

CONSULTANT FILE No.	20235723
DATE	SEPTEMBER 2024
SCALE	Hor : 1:200 m Ver : 1:50 m
REF. No.	<b>P21-004</b>
DWG No.	<b>5723-01-C-107</b>
REV.	0





NOTES:  
 1. ALL PROP. CURB & GUTTER (OPSD 600.040) AT SIDEWALKS RAMPS SHALL HAVE THE 30mm STEP AT GUTTER LINE ELIMINATED. SEE DWG C-501 FOR DETAILS.



NO.	REVISION	DATE	INIT.
0	ISSUED FOR TENDER	2024-09-03	NR

NOTES/LEGEND	

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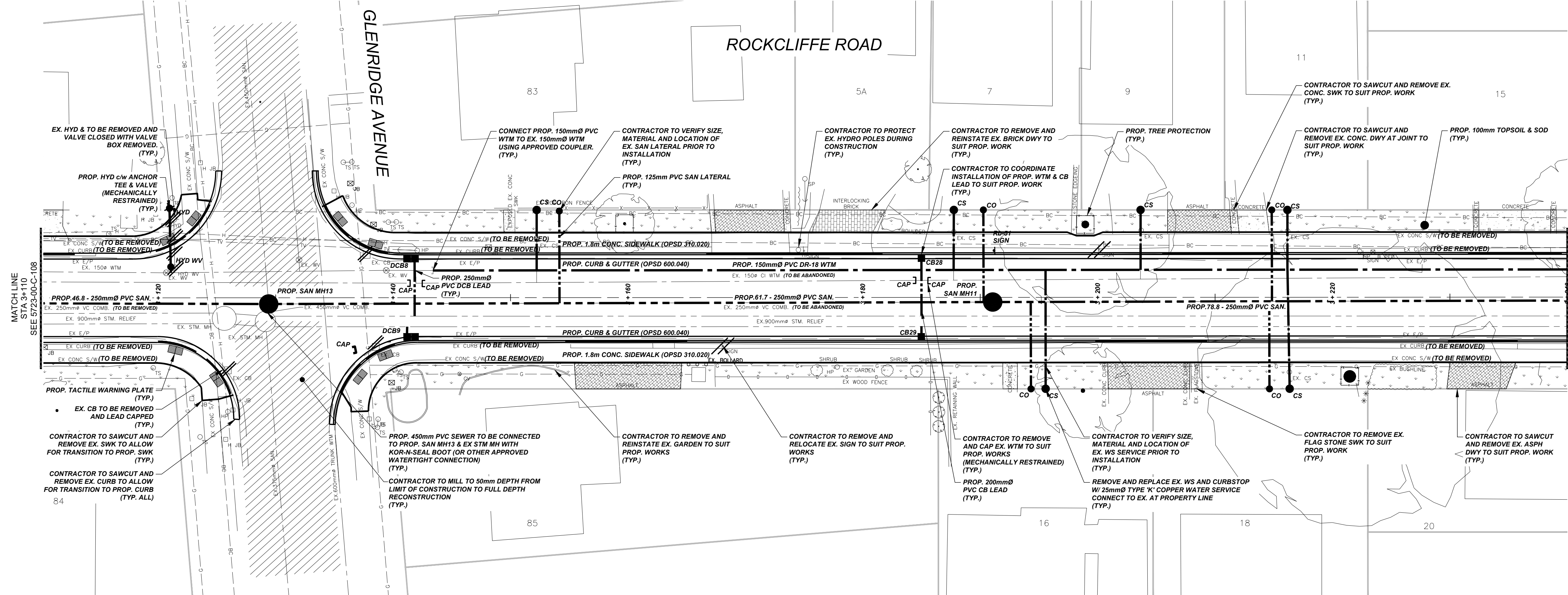
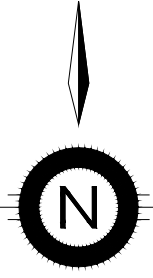
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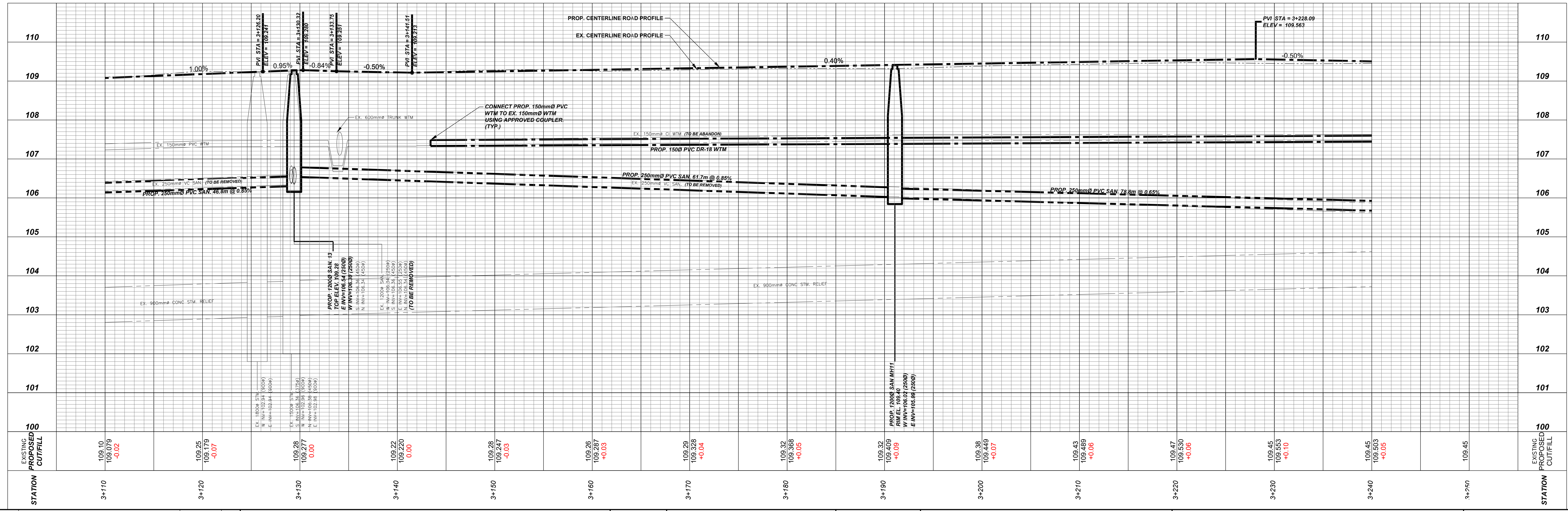
PROJECT / CONTRACT P21-004  
 FOREST HILL / HILLCREST / ROCKCLIFFE  
 UNDERGROUND IMPROVEMENTS  
**ROCKCLIFFE ROAD**  
 THE CITY OF ST. CATHARINES  
**ROAD GEOMATICS STA. 3+000 - 3+110**

CONSULTANT FILE No. 20235723	DATE: SEPTEMBER 2024
SCALE: Hor: 1:200 m Ver: 1:50 m	REF. No. <b>P21-004</b>
DWG No. <b>5723-00-C-108</b>	REV. <b>0</b>





NOTES:  
 1. ALL PROP. CURB & GUTTER (OPSD 600.040) AT SIDEWALKS RAMPS SHALL HAVE THE 30mm STEP AT GUTTER LINE ELIMINATED. SEE DWG C-501 FOR DETAILS.



STATION	EXISTING	PROPOSED	CUT/FILL
3+110	109.10	109.079	-0.02
3+120	109.25	109.179	-0.07
3+130	109.28	109.277	0.00
3+140	109.29	109.270	0.00
3+150	109.28	109.247	-0.03
3+160	109.28	109.287	+0.03
3+170	109.29	109.328	+0.04
3+180	109.32	109.368	+0.05
3+190	109.32	109.409	+0.09
3+200	109.38	109.449	+0.07
3+210	109.43	109.489	+0.06
3+220	109.47	109.500	+0.03
3+230	109.45	109.553	+0.10
3+240	109.45	109.503	+0.05
3+250	109.45		

NOTES/LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

DRAFTING: NR  
 DESIGN: FB/DH  
 CHECKED BY: DH  
 APPROVED BY: MM

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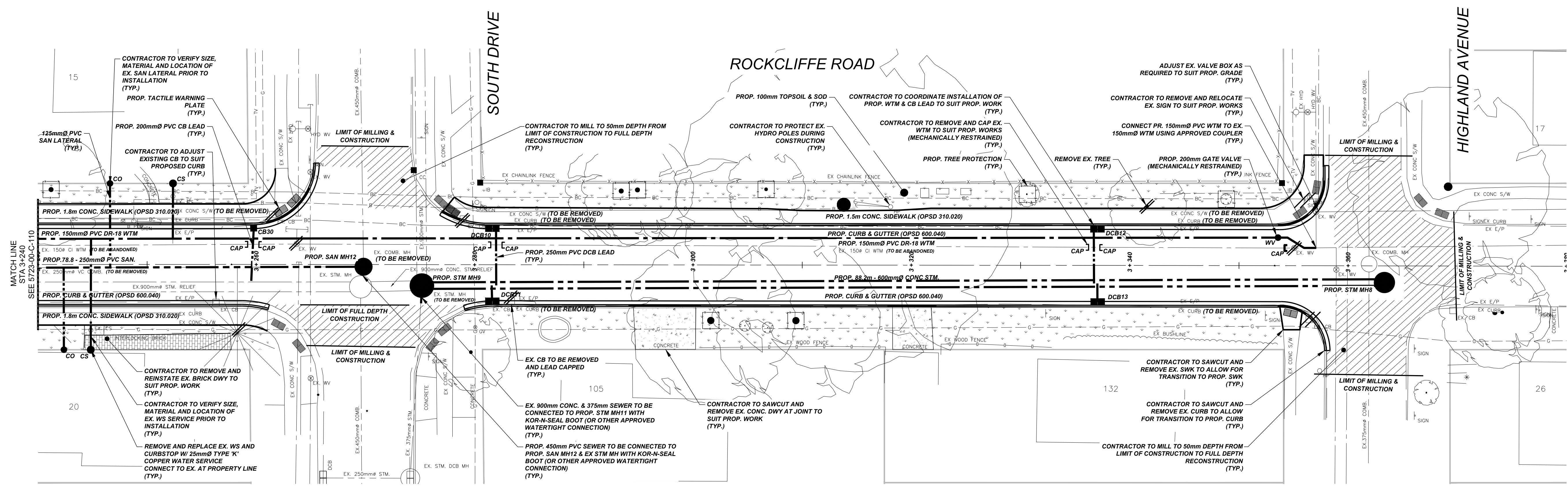
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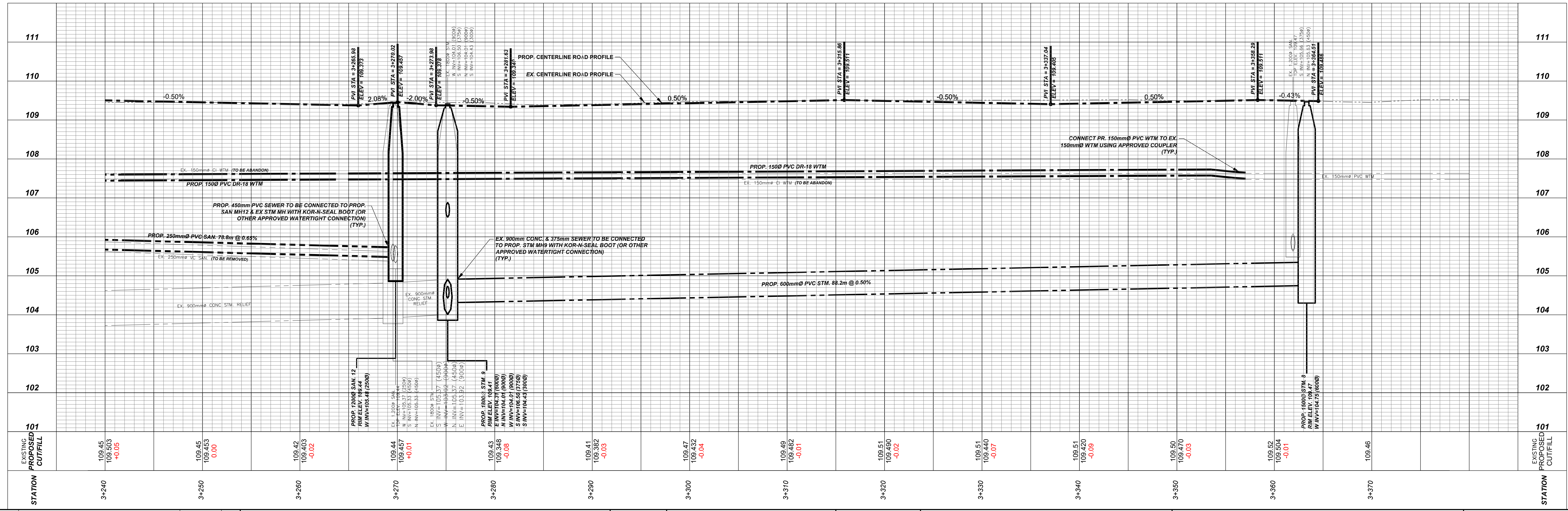
PROJECT / CONTRACT P21-004  
 FOREST HILL / HILLCREST / ROCKCLIFFE  
 UNDERGROUND IMPROVEMENTS  
**ROCKCLIFFE ROAD**  
 THE CITY OF ST. CATHARINES  
**ROAD GEOMATICS STA. 3+110 - 3+240**

CONSULTANT FILE No. 20235723	DATE: SEPTEMBER 2024
SCALE: Hor: 1:200 m Ver: 1:50 m	REF. No. <b>P21-004</b>
DWG No. <b>5723-00-C-109</b>	REV. <b>0</b>





NOTES:  
 1. ALL PROP. CURB & GUTTER (OPSD 600.040) AT SIDEWALKS RAMPS SHALL HAVE THE 30mm STEP AT GUTTER LINE ELIMINATED. SEE DWG C-501 FOR DETAILS.



STATION	EXISTING PROPOSED CUTFILL
3+240	109.45 109.503 +0.05
3+250	109.45 109.453 0.00
3+260	109.403 109.403 -0.02
3+270	109.44 109.457 +0.01
3+280	109.43 109.348 -0.08
3+290	109.41 109.382 -0.03
3+300	109.47 109.432 -0.04
3+310	109.49 109.482 -0.01
3+320	109.51 109.490 -0.02
3+330	109.51 109.440 -0.07
3+340	109.51 109.420 -0.09
3+350	109.50 109.490 -0.03
3+360	109.52 109.504 -0.01
3+370	109.46

NOTES/LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

DRAFTING: NR  
 DESIGN: FB/DH  
 CHECKED BY: DH  
 APPROVED BY: MM

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 Name: M. A. MASCIOLI  
 Number: 100203964  
 Category: CIVIL  
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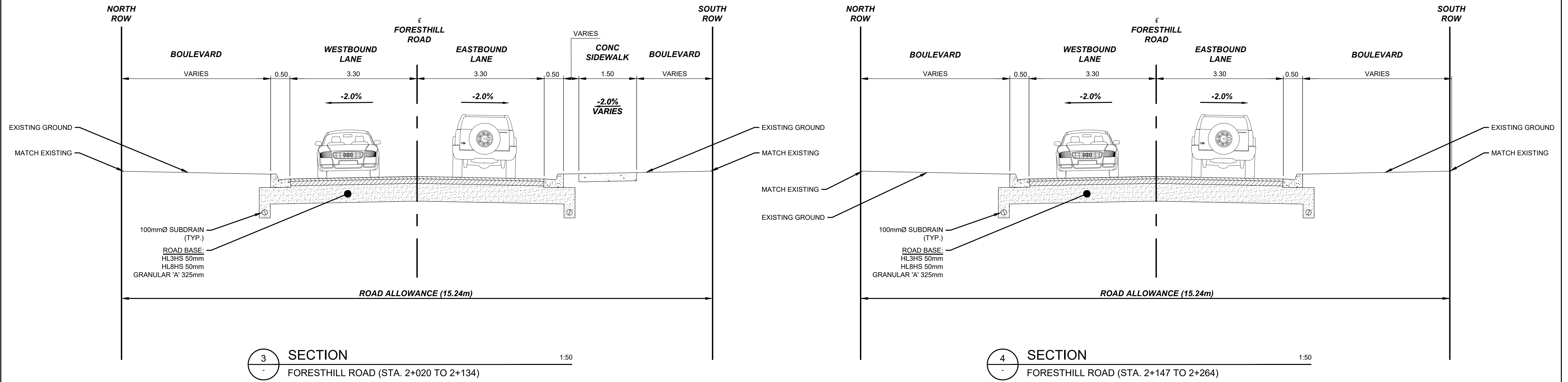
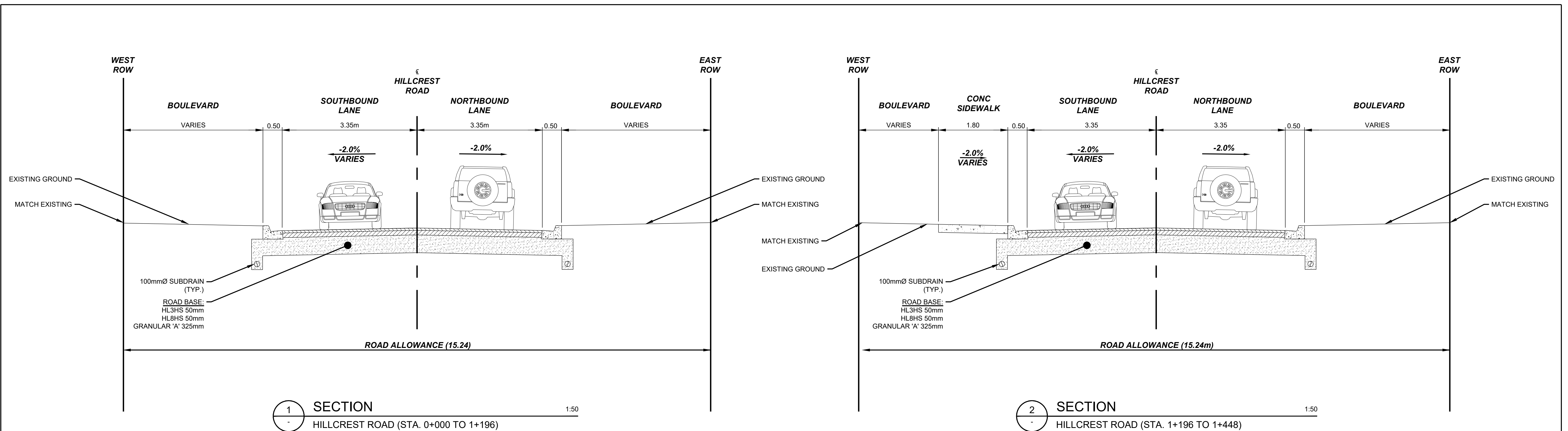
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PROJECT / CONTRACT P21-004  
 FOREST HILL / HILLCREST / ROCKCLIFFE  
 UNDERGROUND IMPROVEMENTS  
**ROCKCLIFFE ROAD**  
 THE CITY OF ST. CATHARINES  
**ROAD GEOMATICS STA. 3+240 - 3+380**

CONSULTANT FILE NO. 20235723	DATE SEPTEMBER 2024
SCALE Hor: 1:200 m Ver: 1:50 m	
REF. No. P21-004	
DWG No. 5723-00-C-110	REV. 0





NO.	REVISION	DATE	INIT.
0	ISSUED FOR TENDER	2024-09-03	NR

NOTES/LEGEND	

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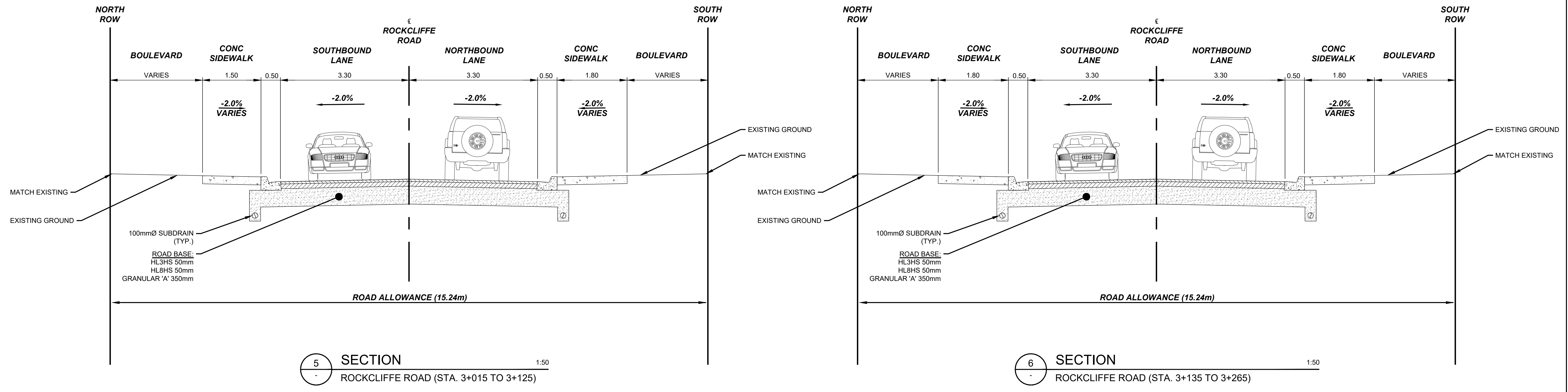
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**PROJECT / CONTRACT P21-004**  
**FOREST HILL / HILLCREST / ROCKCLIFFE**  
**UNDERGROUND IMPROVEMENTS**

THE CITY OF ST. CATHARINES  
**TYPICAL CROSS SECTIONS I**

CONSULTANT FILE No. 20235723	DATE: SEPTEMBER 2024
SCALE: AS SHOWN	REF. No. <b>P21-004</b>
DWG. No. <b>5723-00-C-131</b>	REV. <b>0</b>





5 SECTION  
ROCKCLIFFE ROAD (STA. 3+015 TO 3+125) 1:50

6 SECTION  
ROCKCLIFFE ROAD (STA. 3+135 TO 3+265) 1:50

NO.	REVISION	DATE	INIT.
0	ISSUED FOR TENDER	2024-09-03	NR

NOTES/LEGEND	

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DESIGN	FB/DH
CHECKED BY	DH
APPROVED BY	MM

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BEST MANAGED COMPANIES

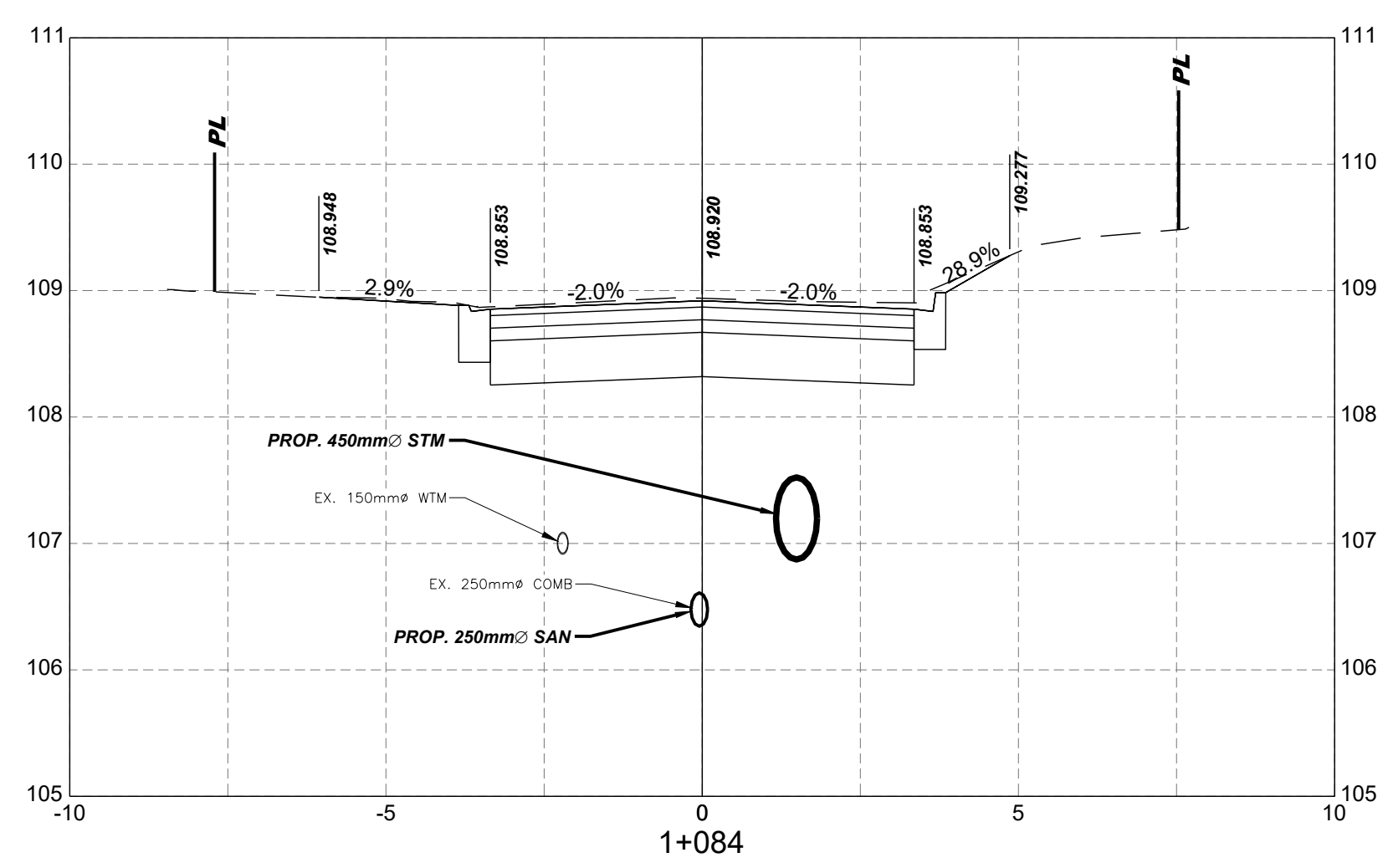
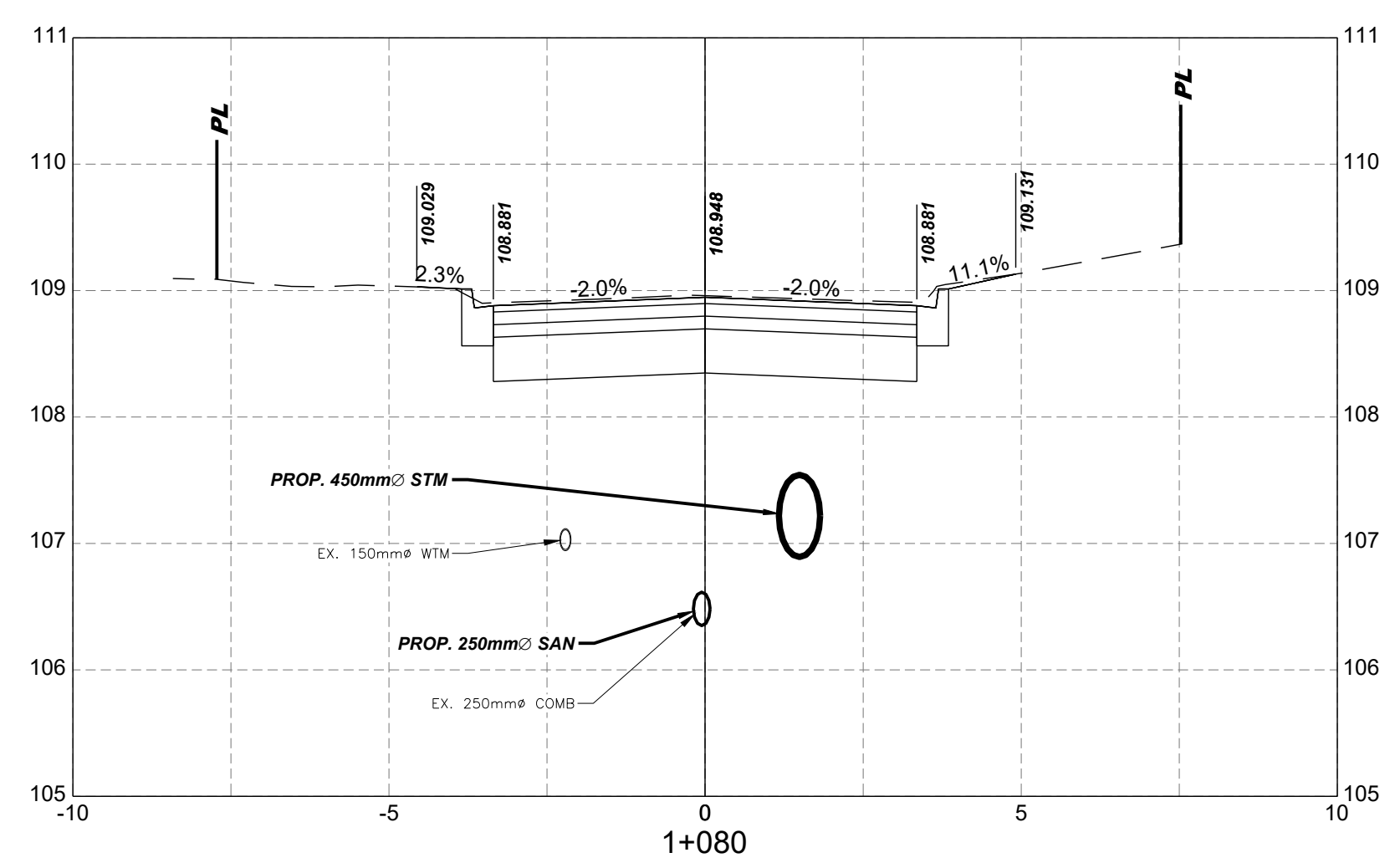
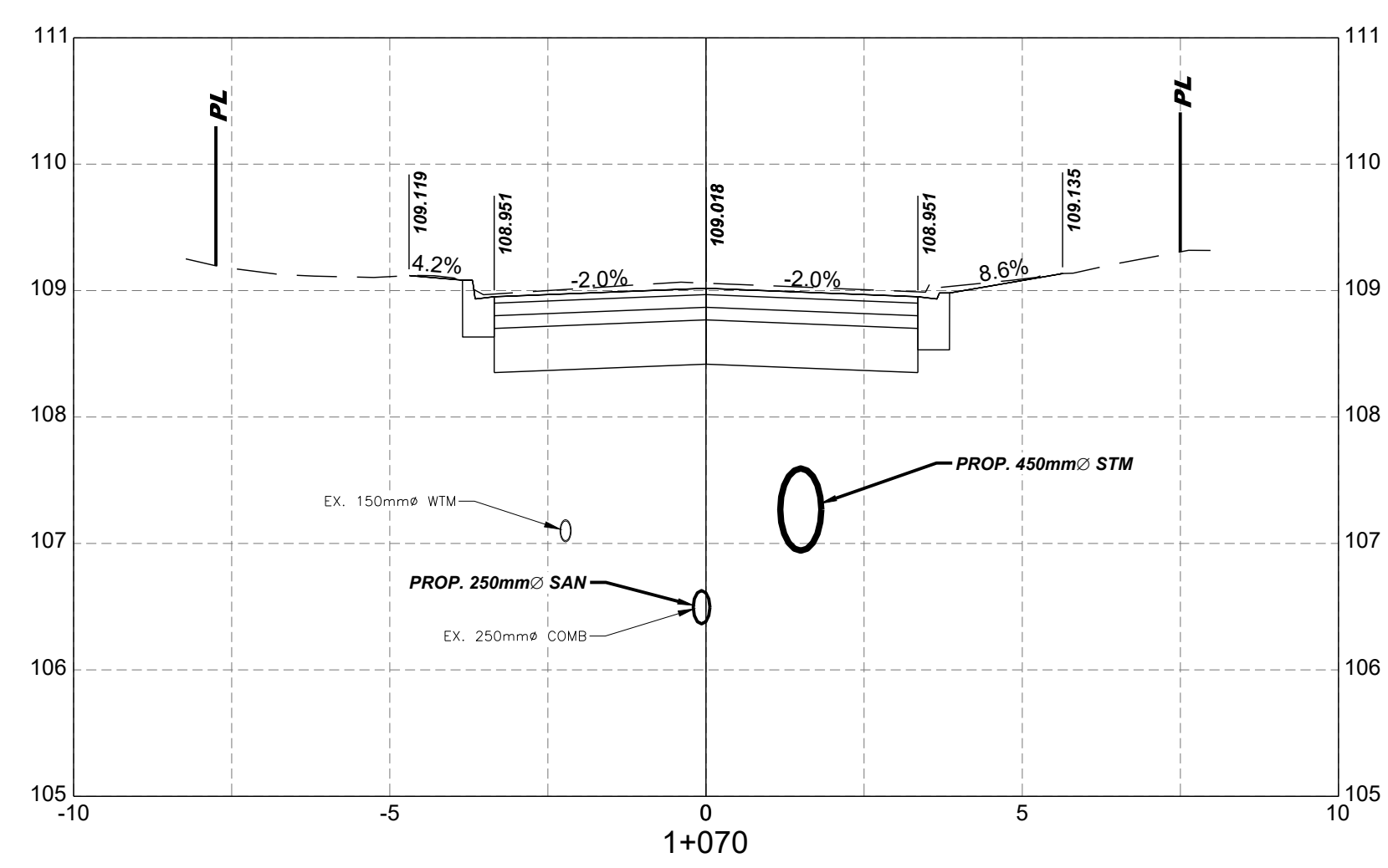
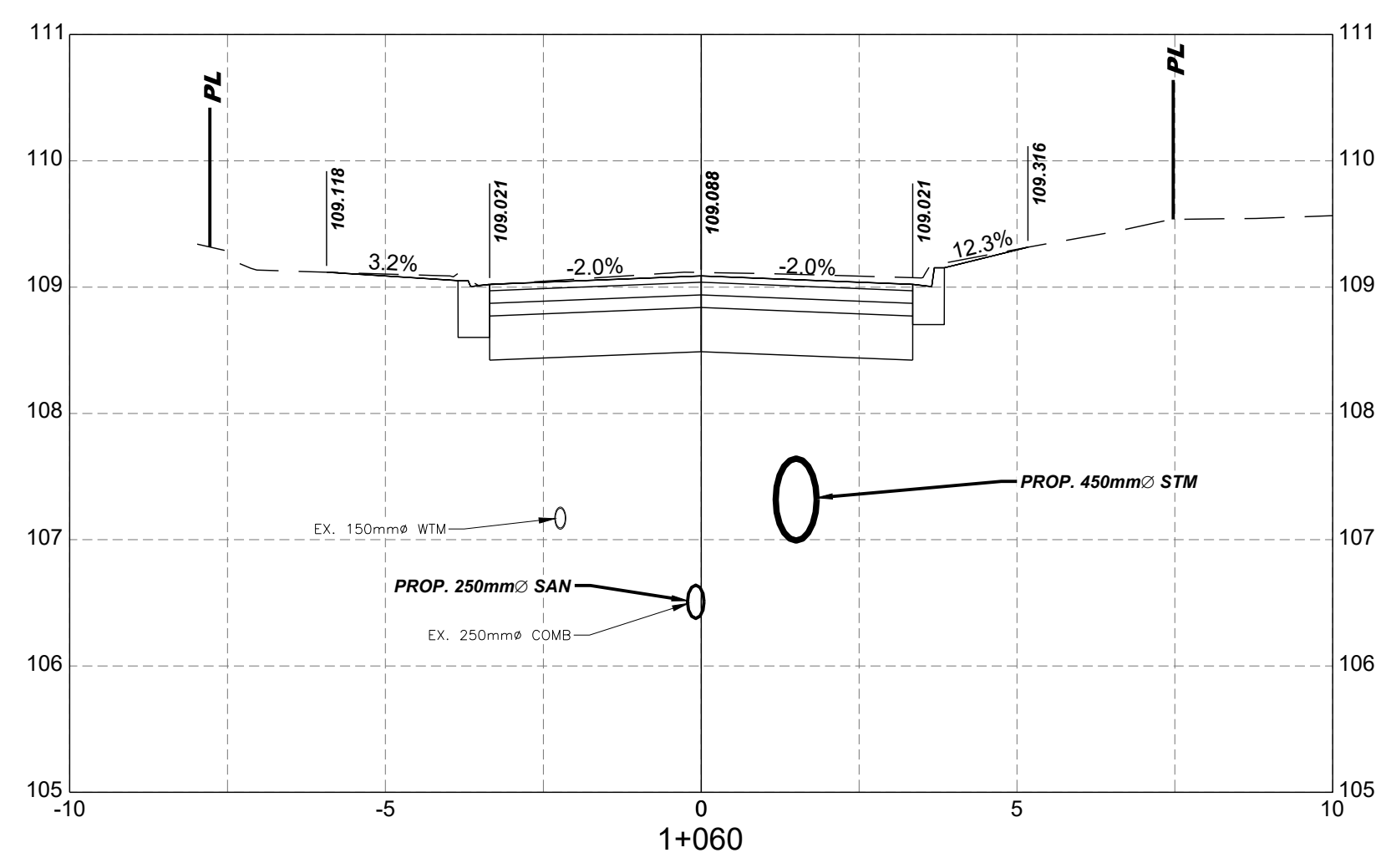
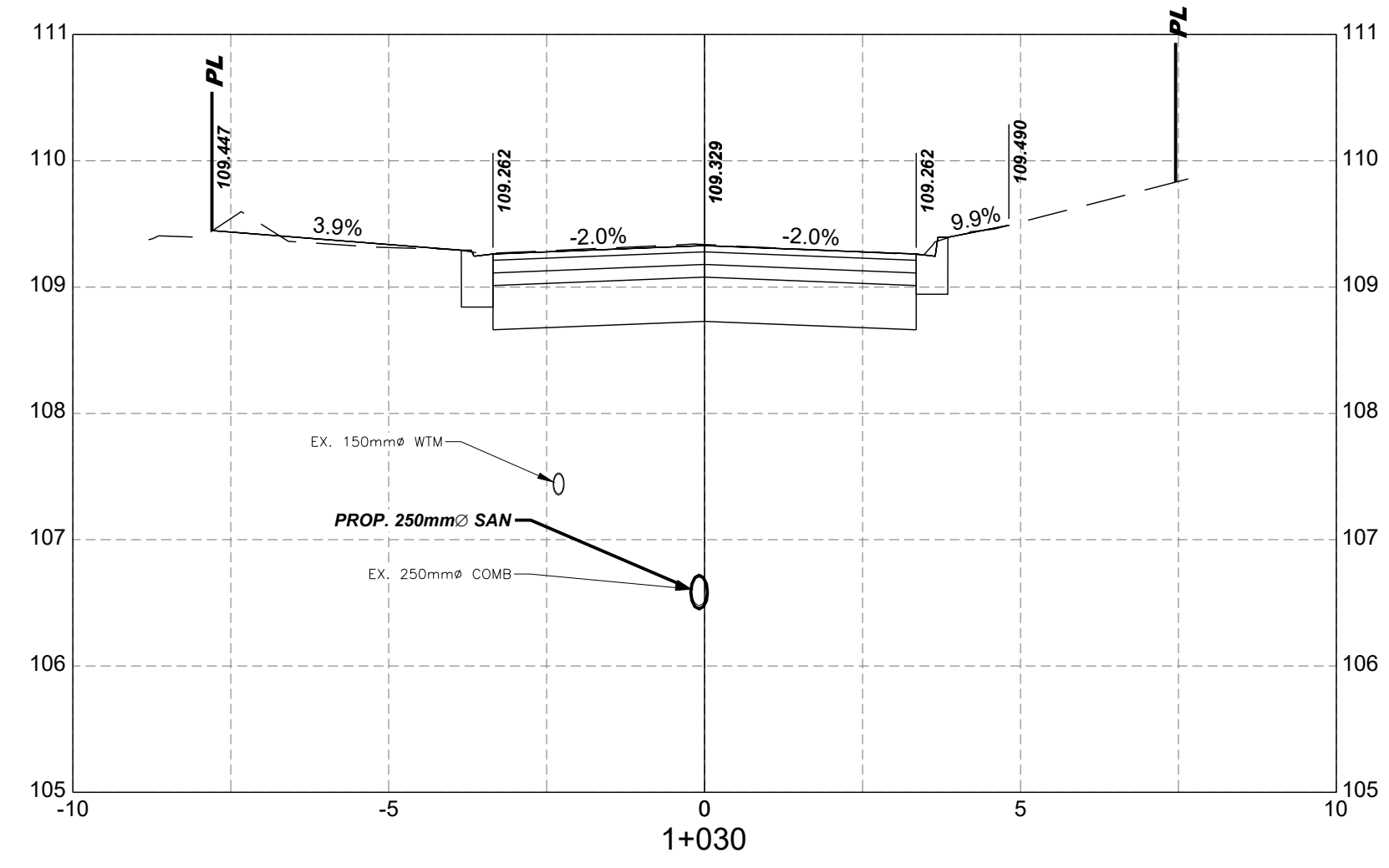
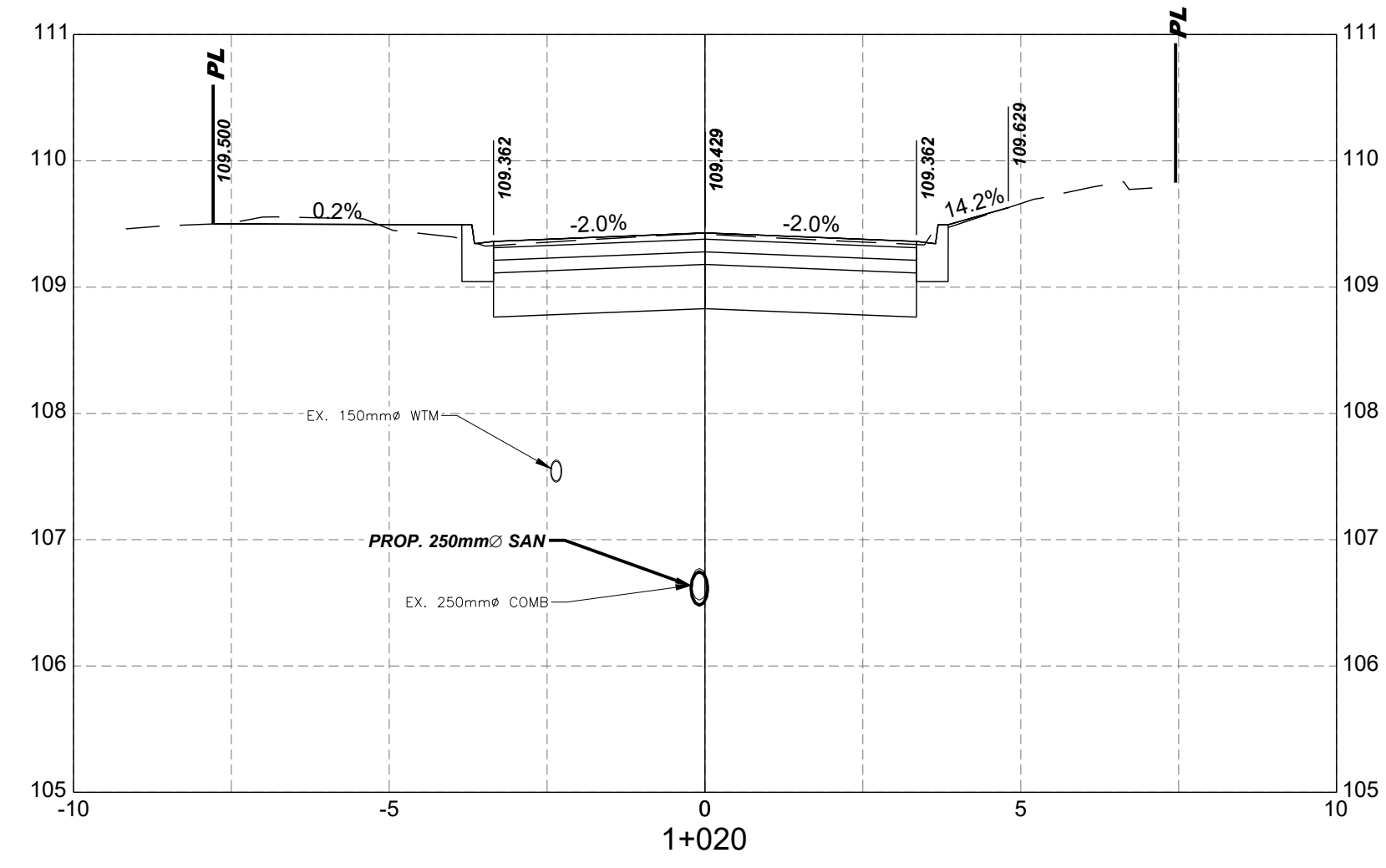
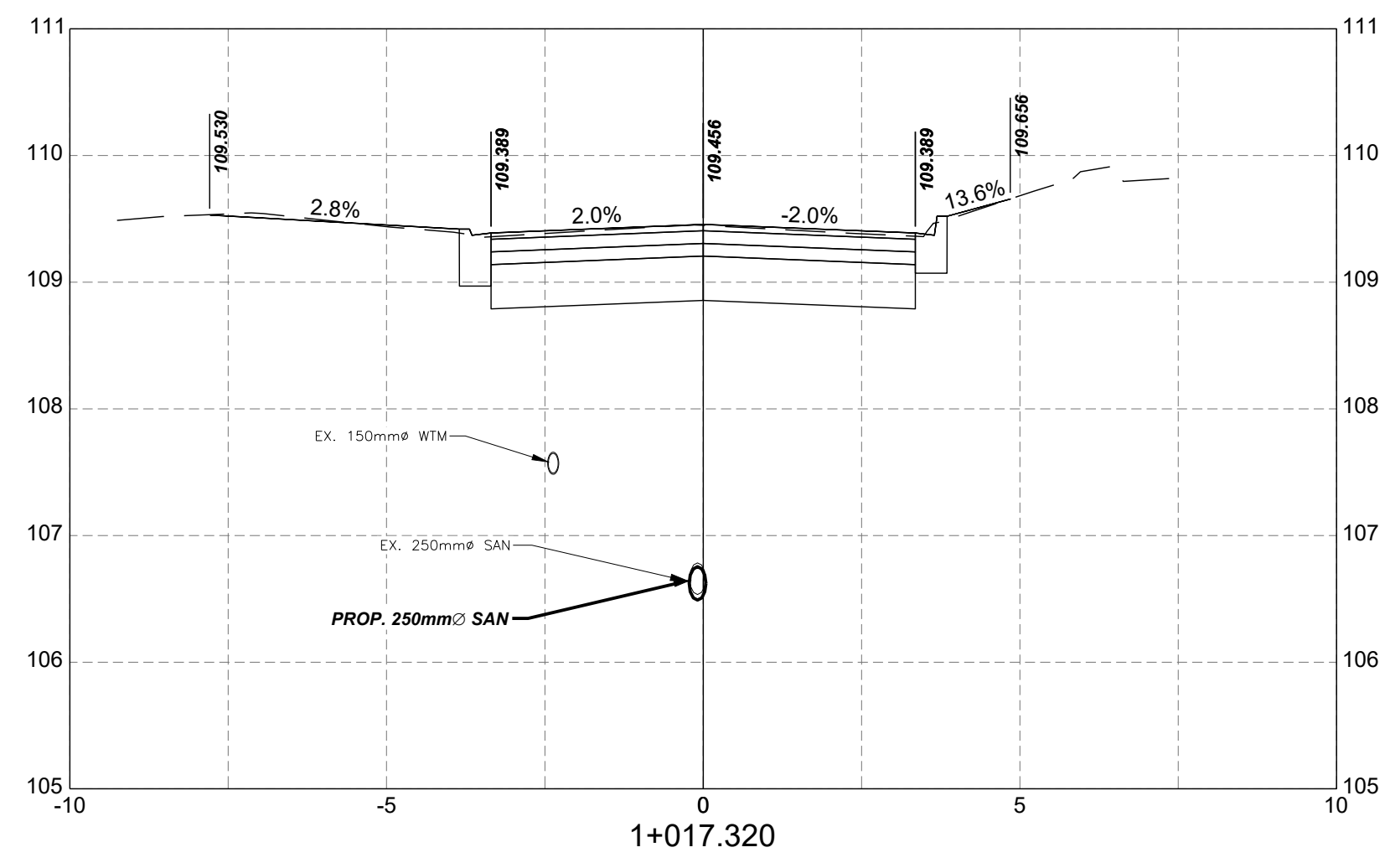
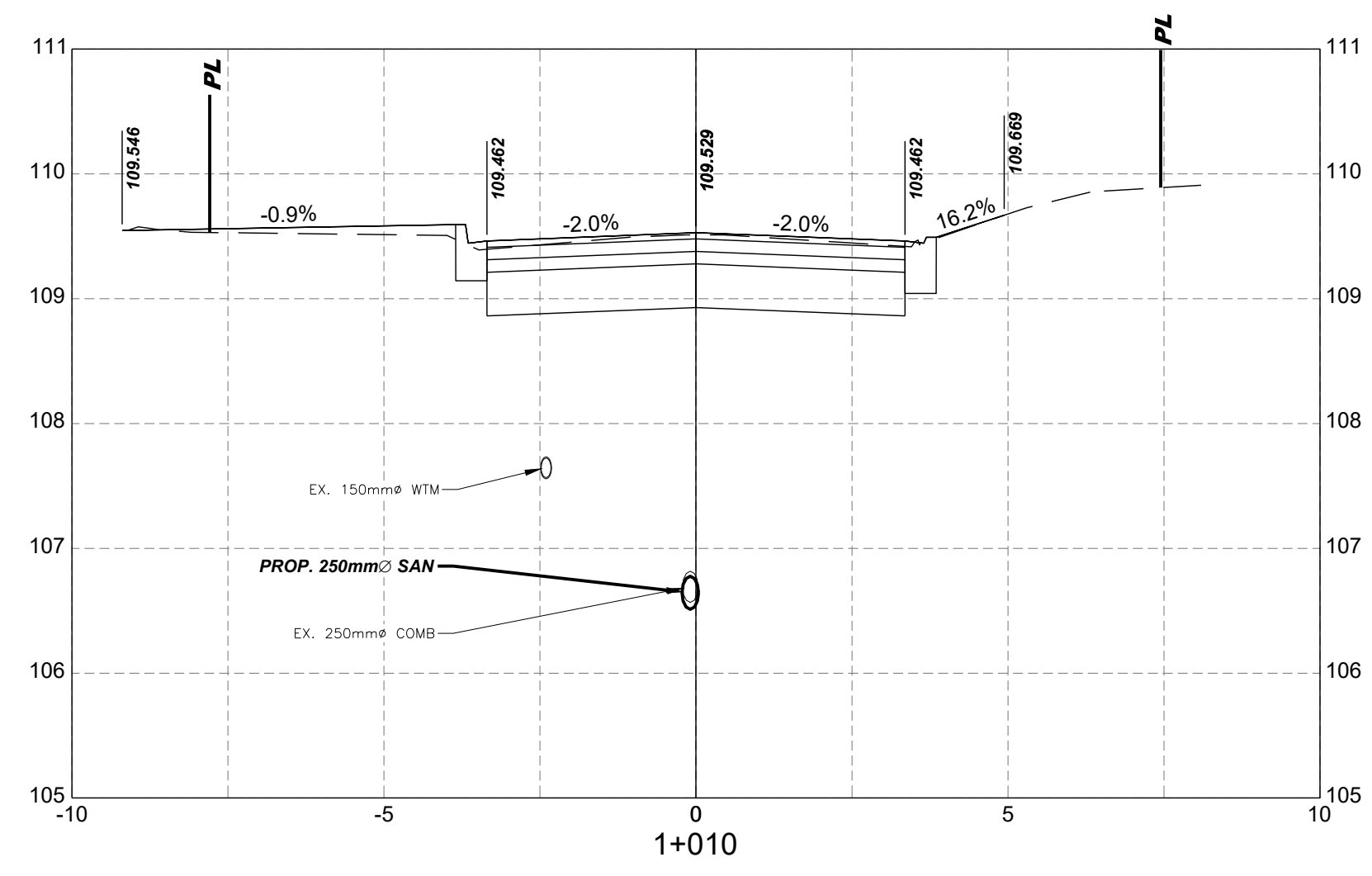
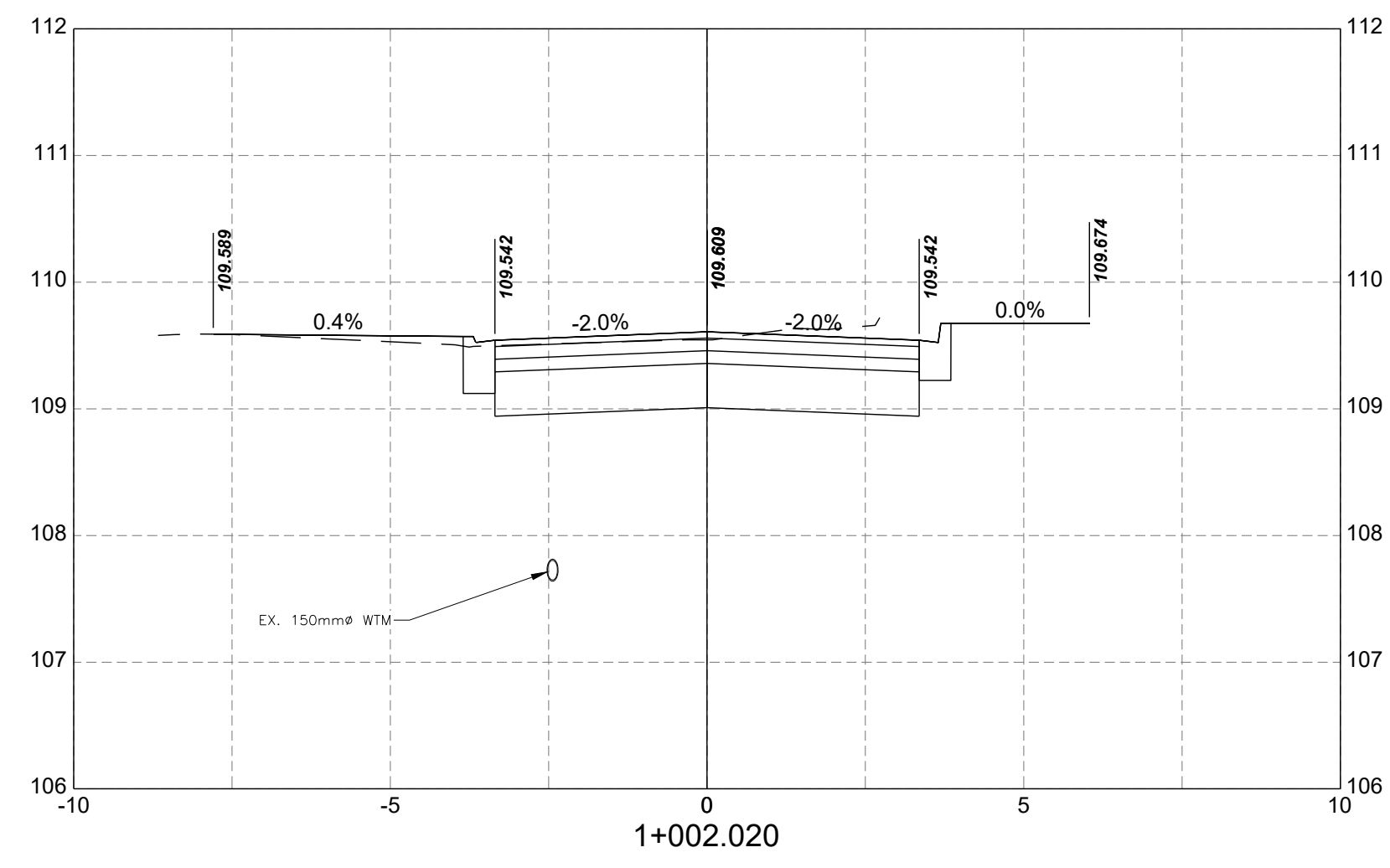
PROJECT / CONTRACT P21-004  
FOREST HILL / HILLCREST / ROCKCLIFFE  
UNDERGROUND IMPROVEMENTS

THE CITY OF ST. CATHARINES  
**TYPICAL CROSS SECTIONS II**

CONSULTANT FILE No.	20235723
DATE	SEPTEMBER 2024
SCALE	AS SHOWN
REF. No.	P21-004
DWG No.	5723-00-C-132
REV.	0

DRAWING FILE: \\oe.ca\pata\working\10\2023-5723-00\piv\mode\5723-c-130.dwg PLOTTED: Sep 03, 2024 - 6:08am PLOTTED BY: randen





NOTES/LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

DRAFTING: NR  
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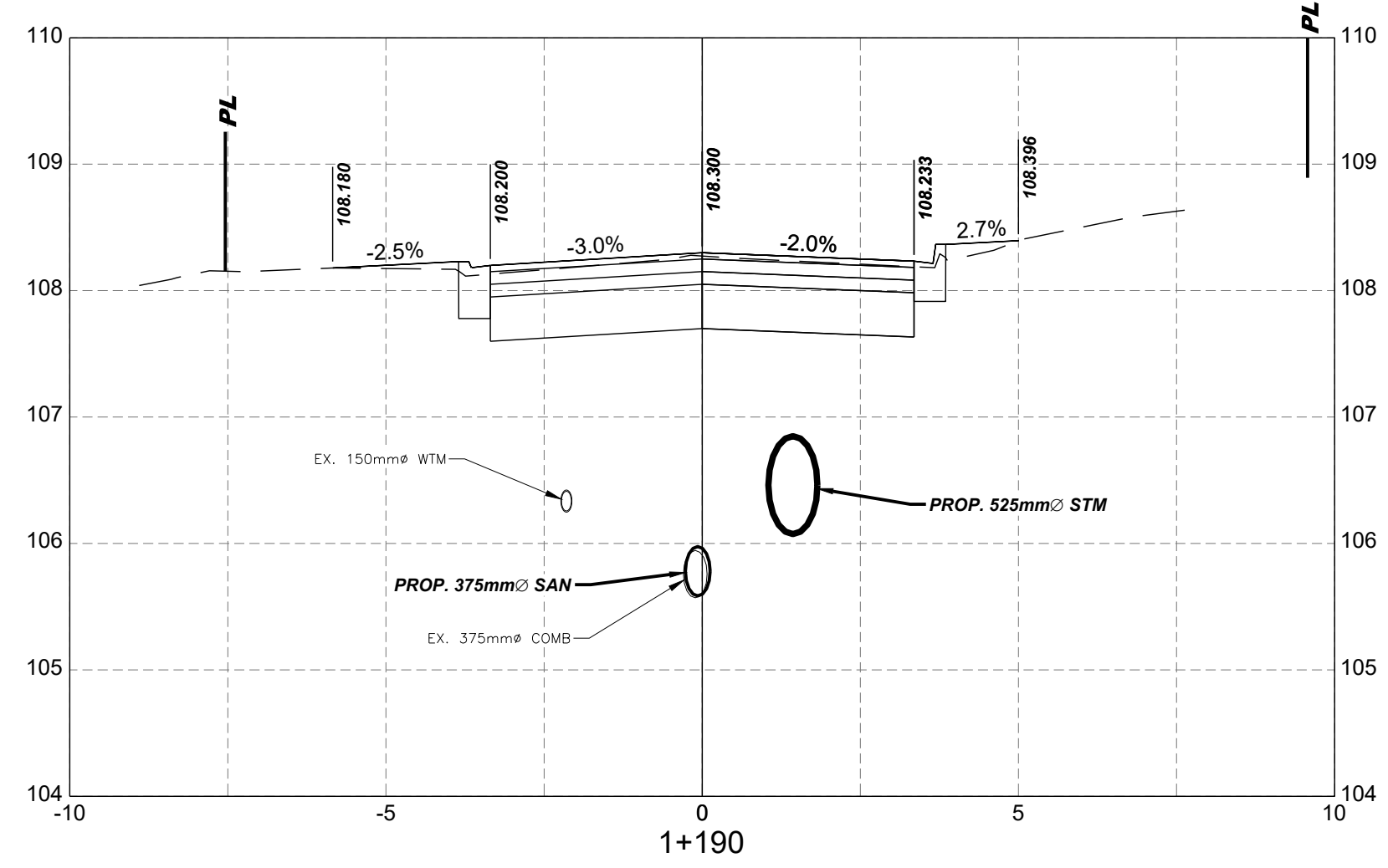
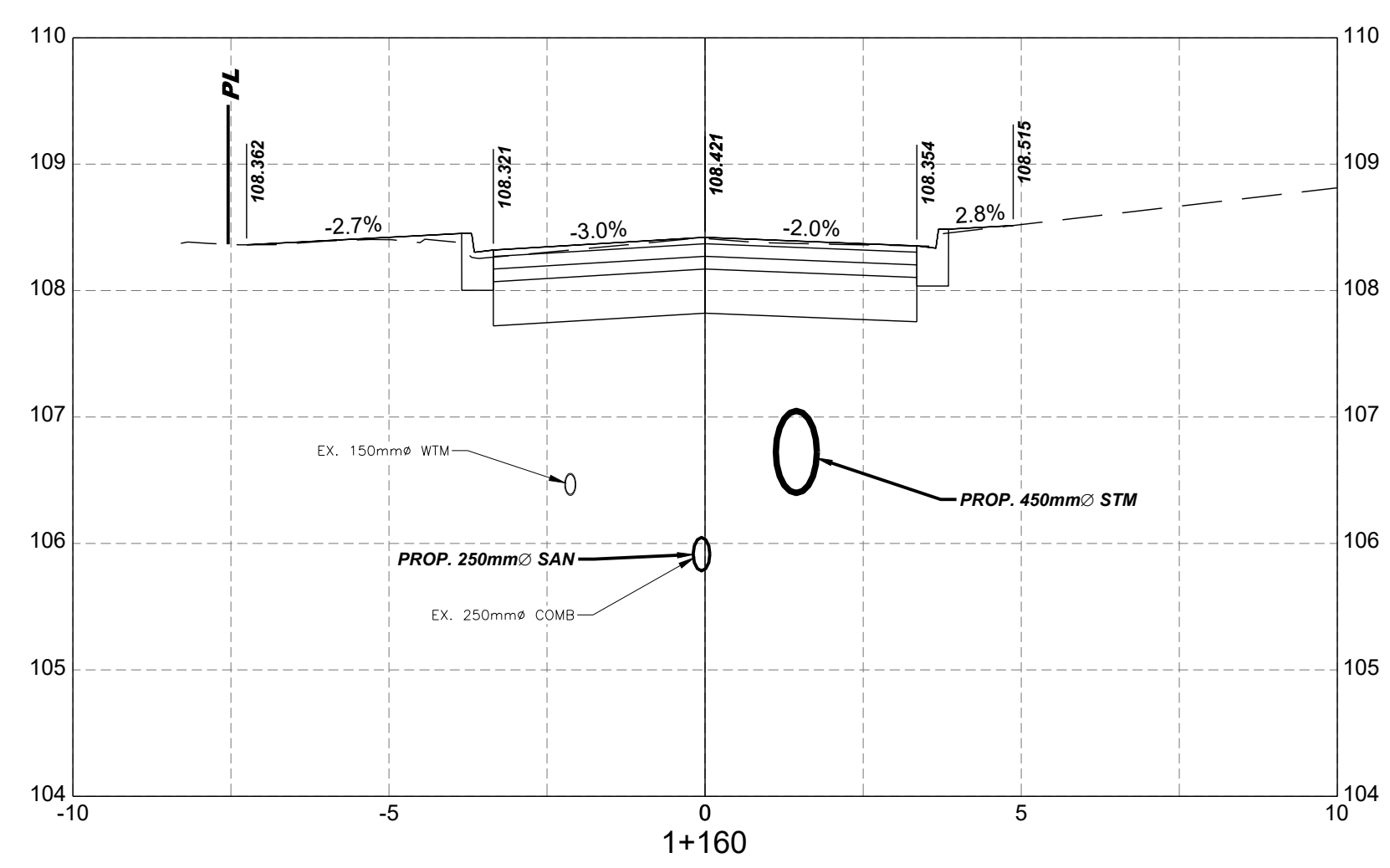
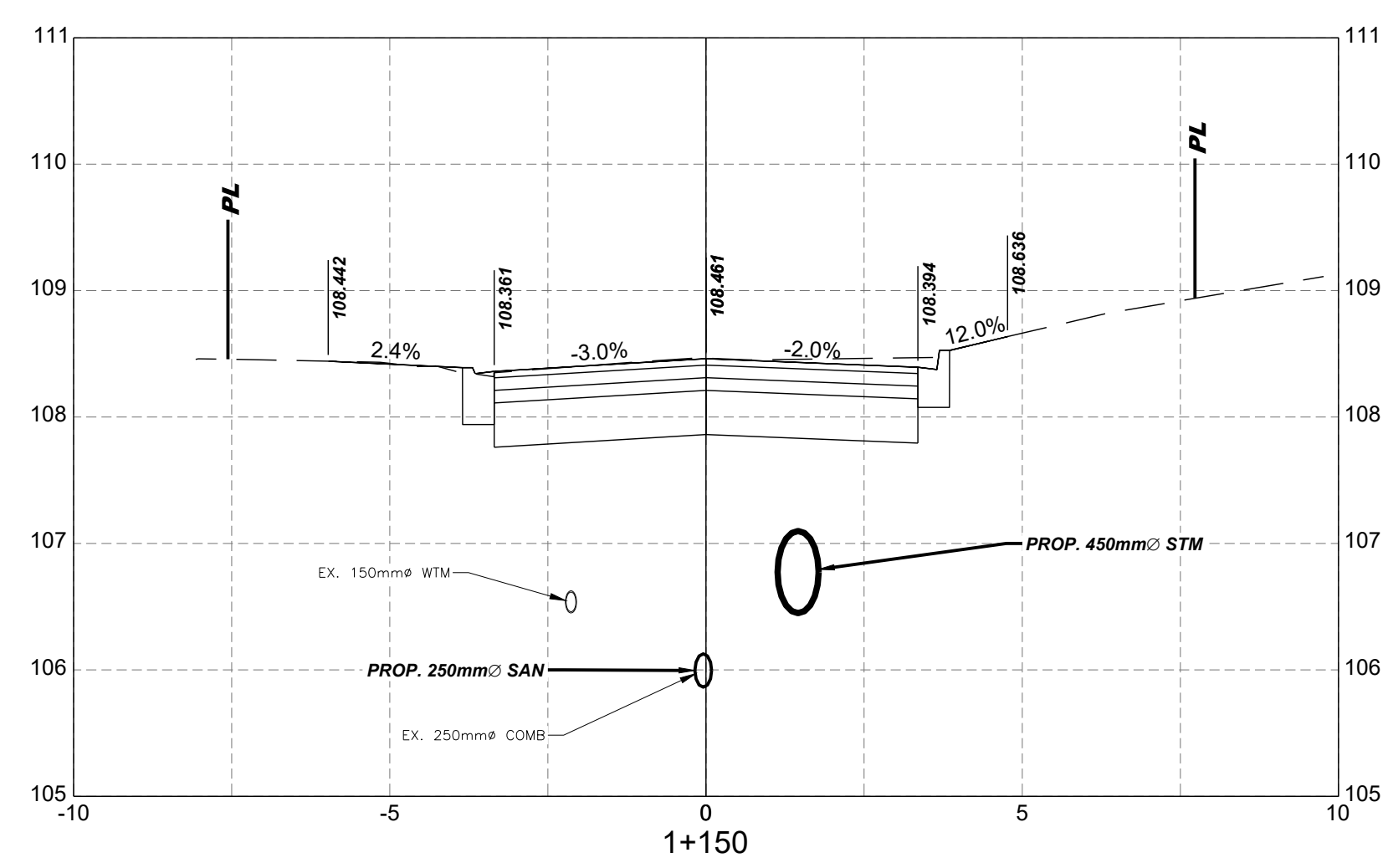
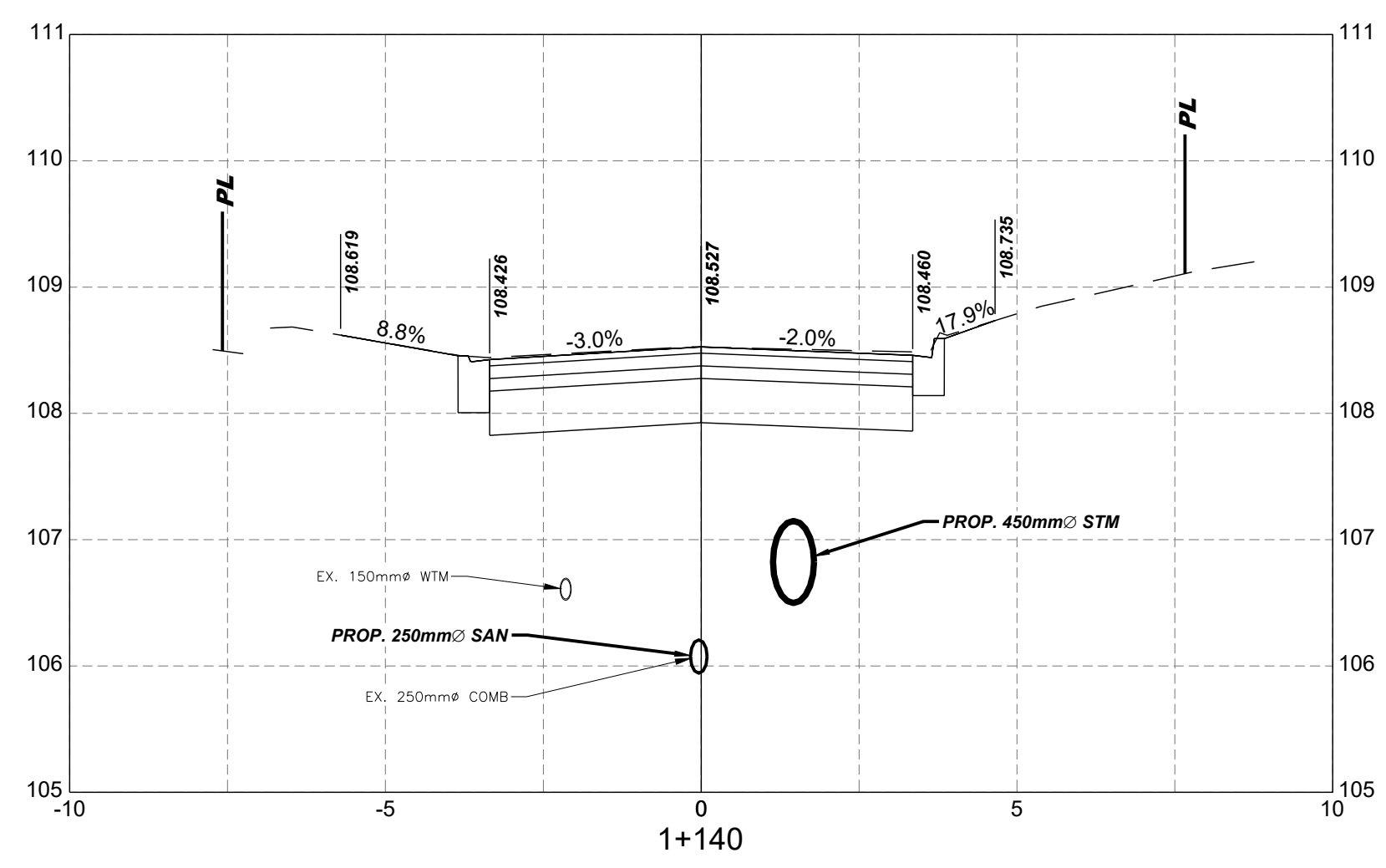
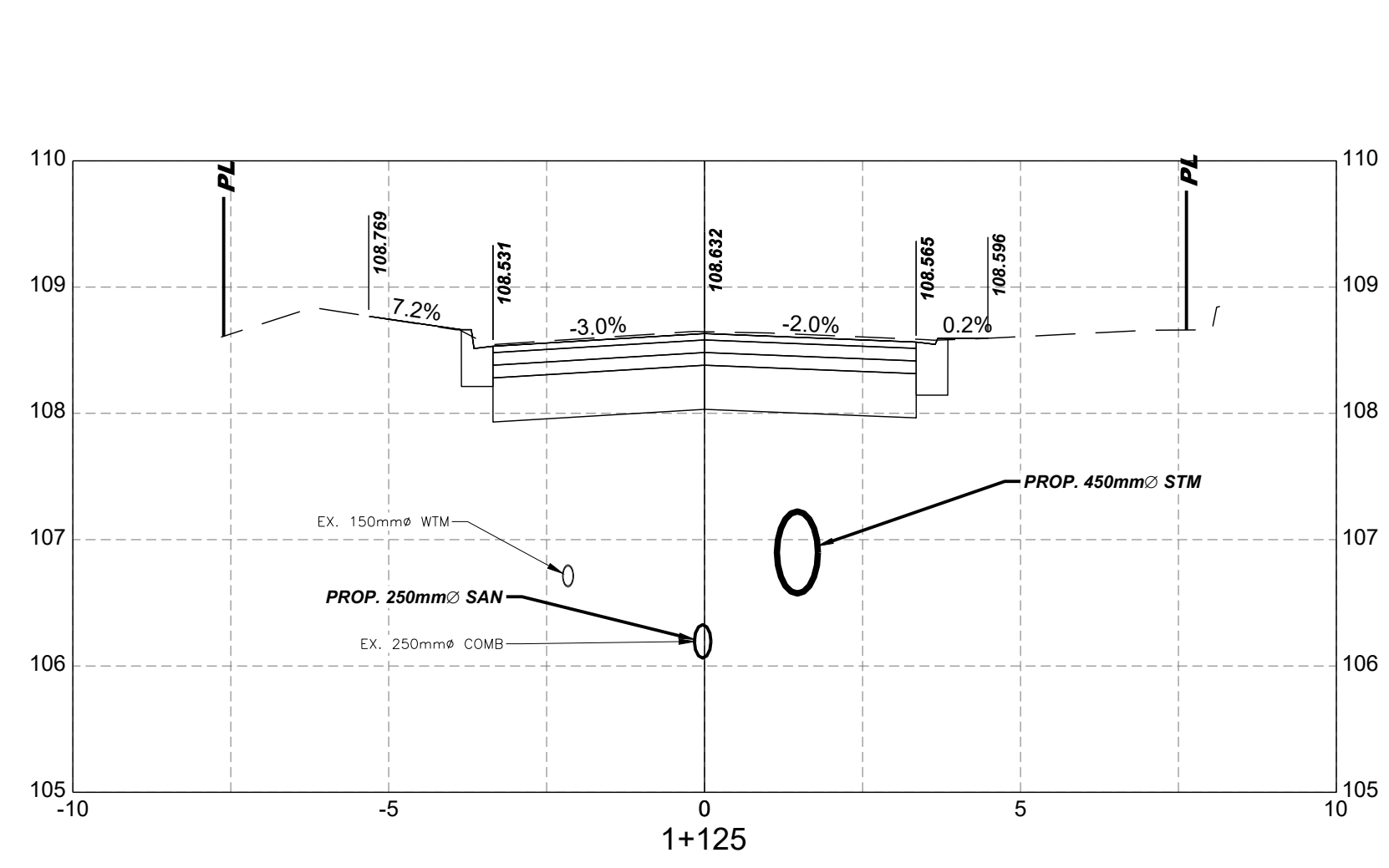
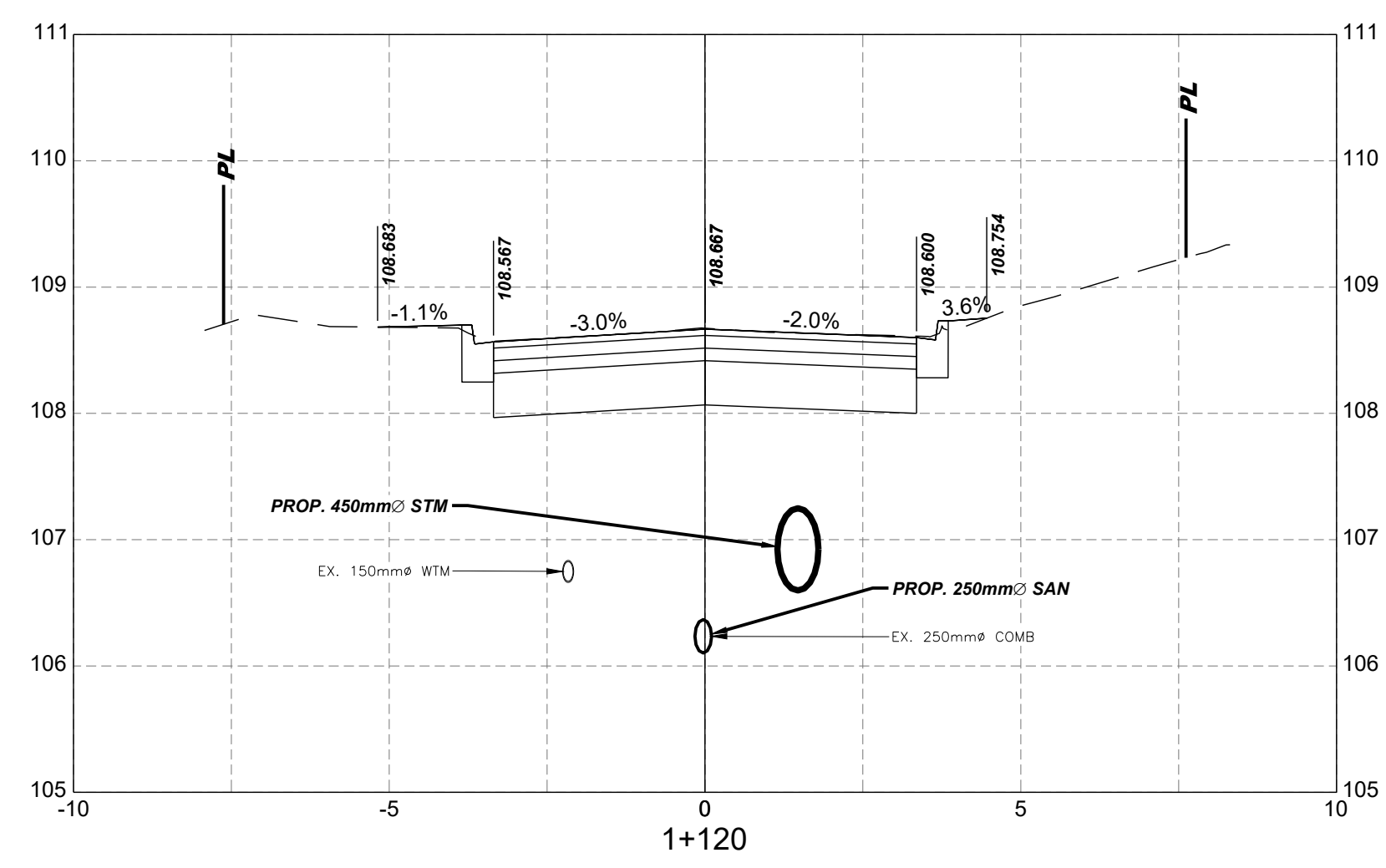
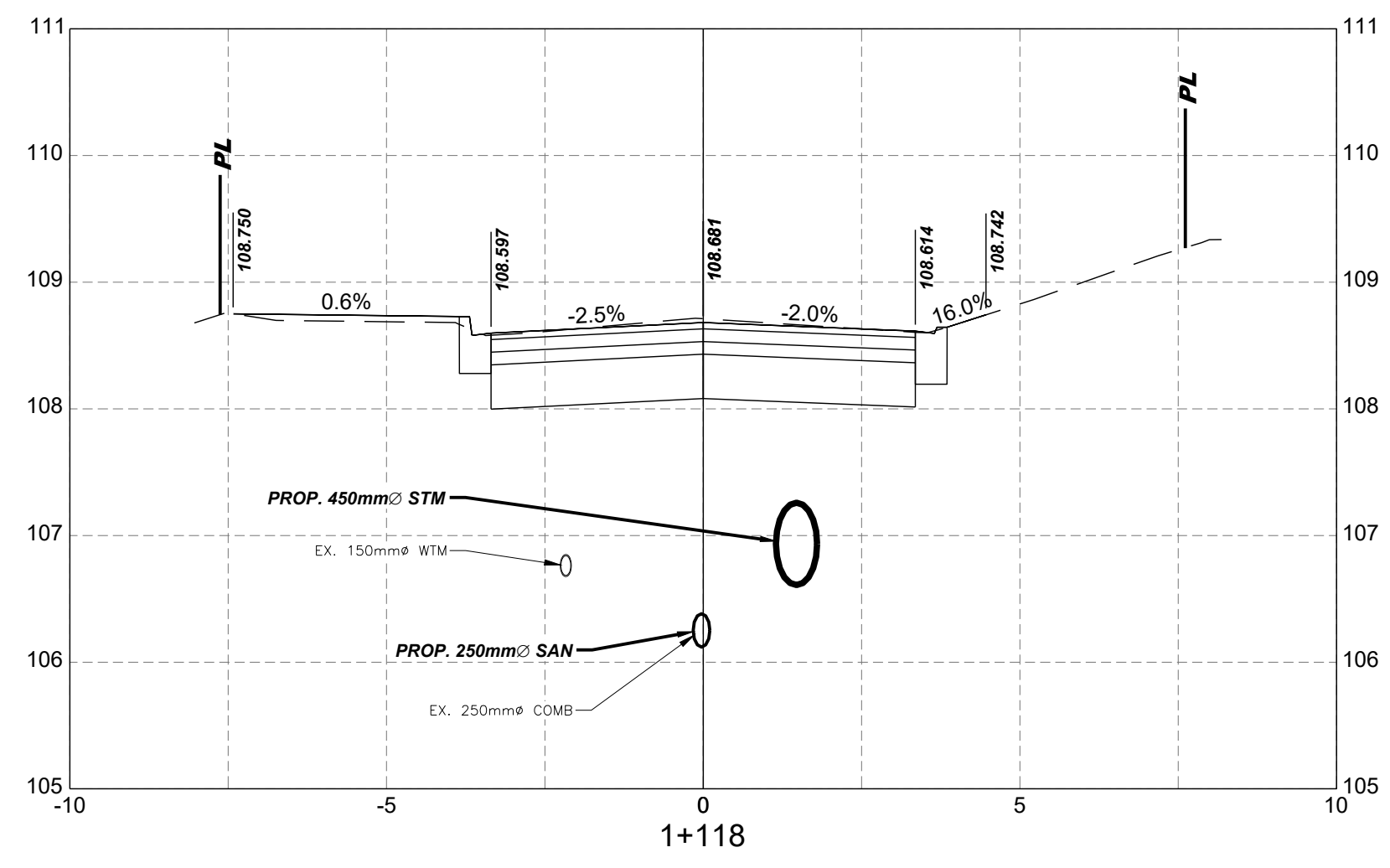
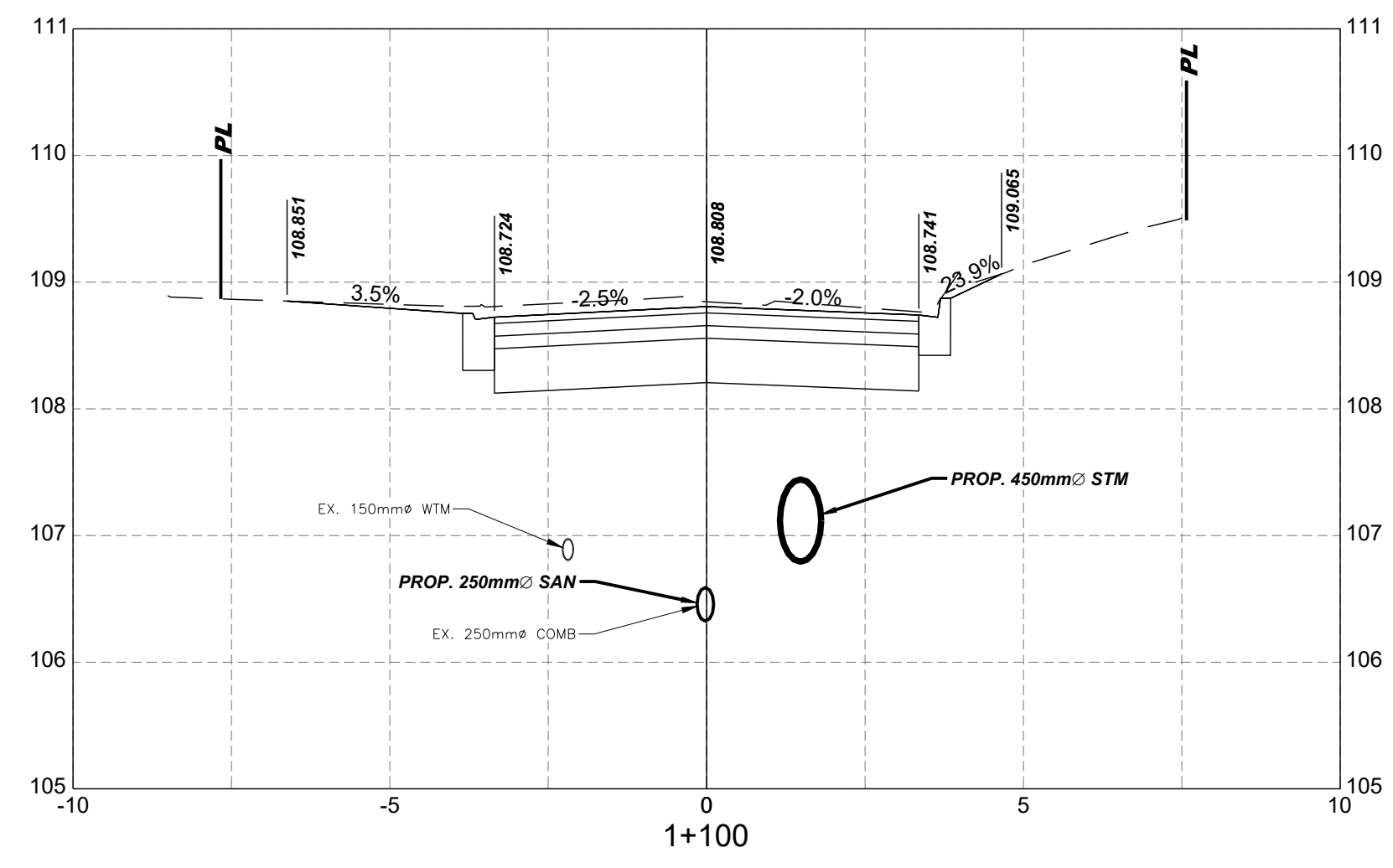
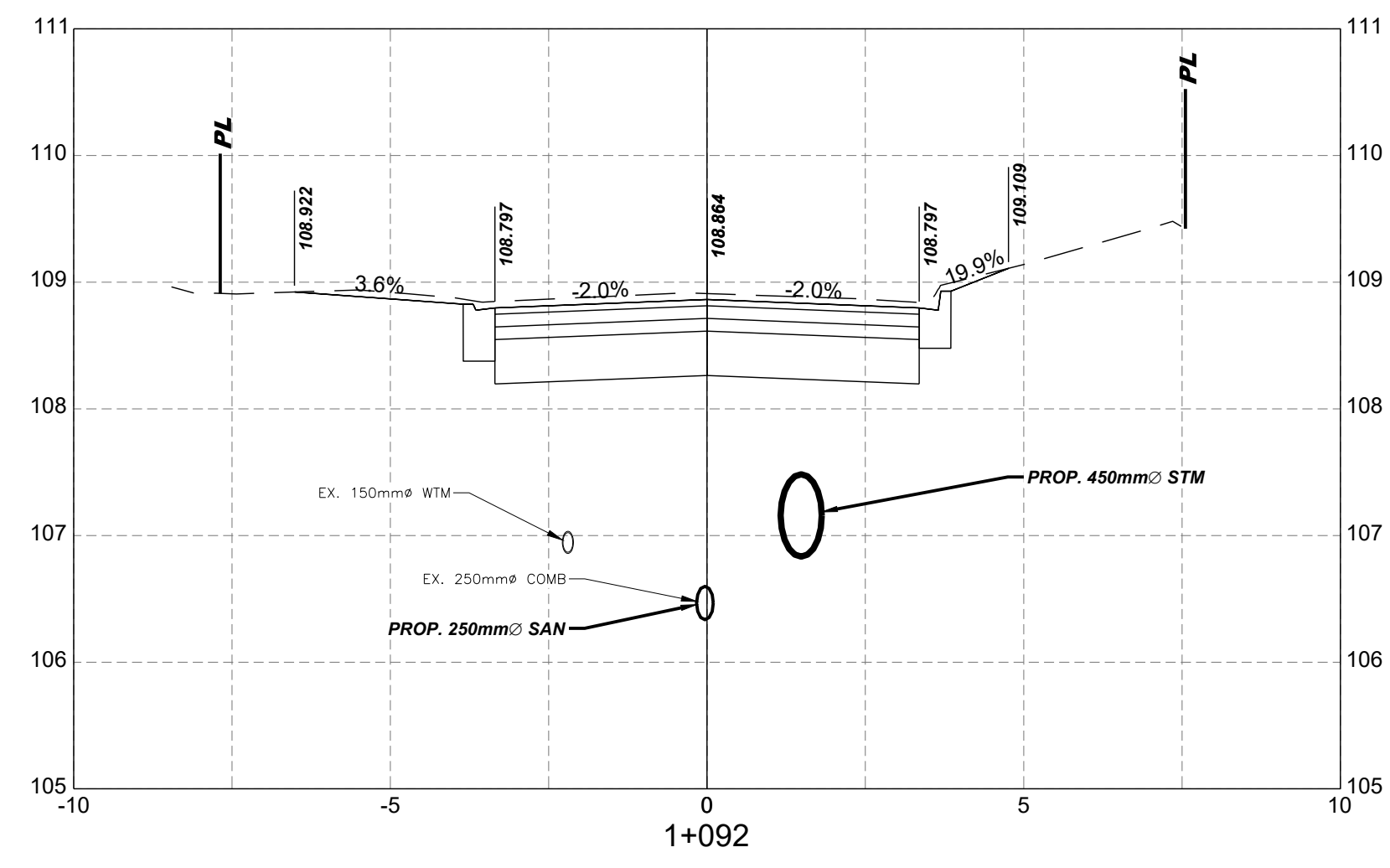
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**PROJECT / CONTRACT P21-004**  
**FOREST HILL / HILLCREST / ROCKCLIFFE**  
**UNDERGROUND IMPROVEMENTS**  
**HILLCREST AVENUE**  
**THE CITY OF ST. CATHARINES**  
**CROSS SECTIONS I**

CONSULTANT FILE No. 20235723	
DATE	SEPTEMBER 2024
SCALE	Hor : 1:100 m Ver : 1:50 m
REF. No.	P21-004
DWG No.	5723-00-C-301
REV.	0





NOTES/LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

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 APPROVED BY: MM

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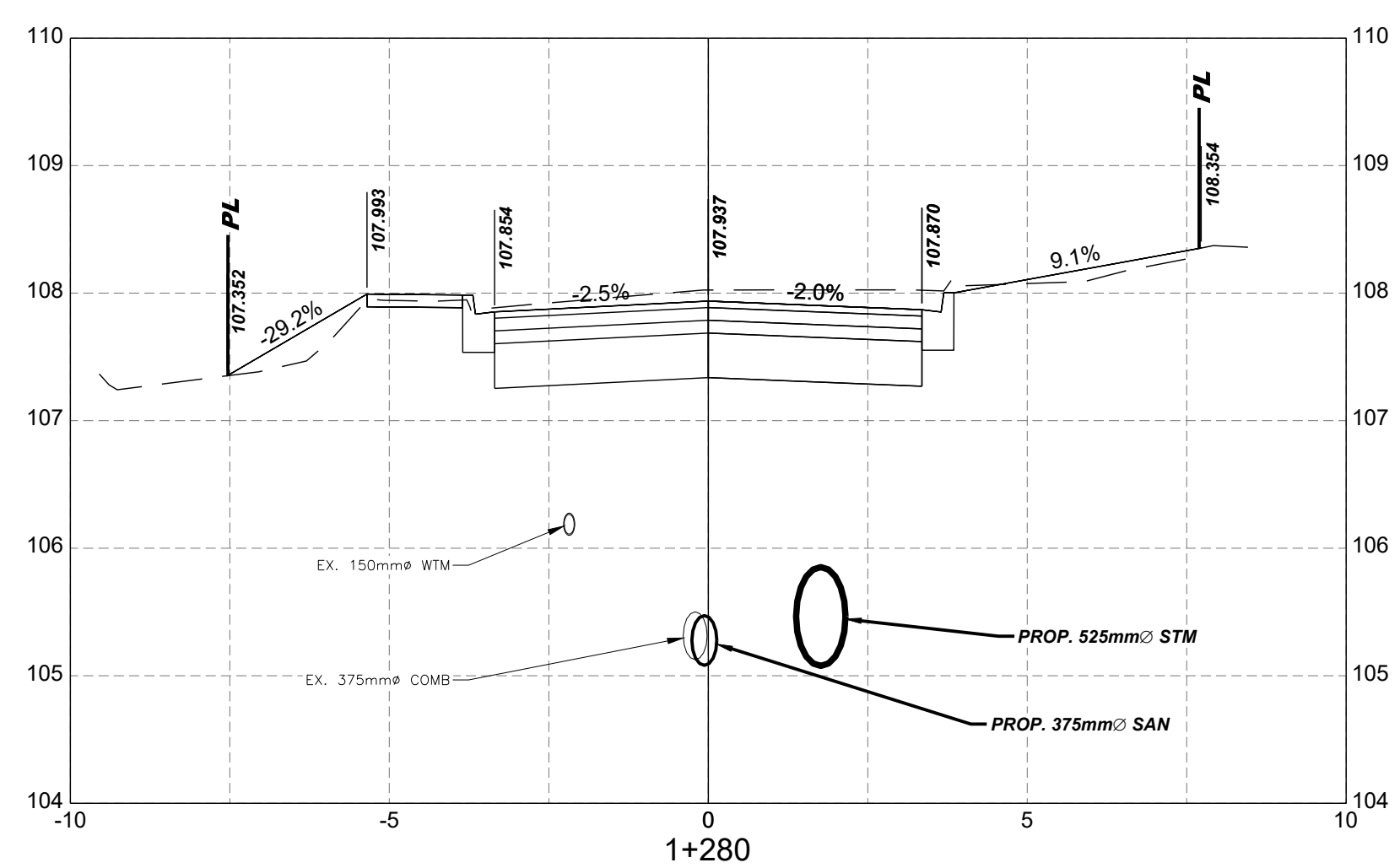
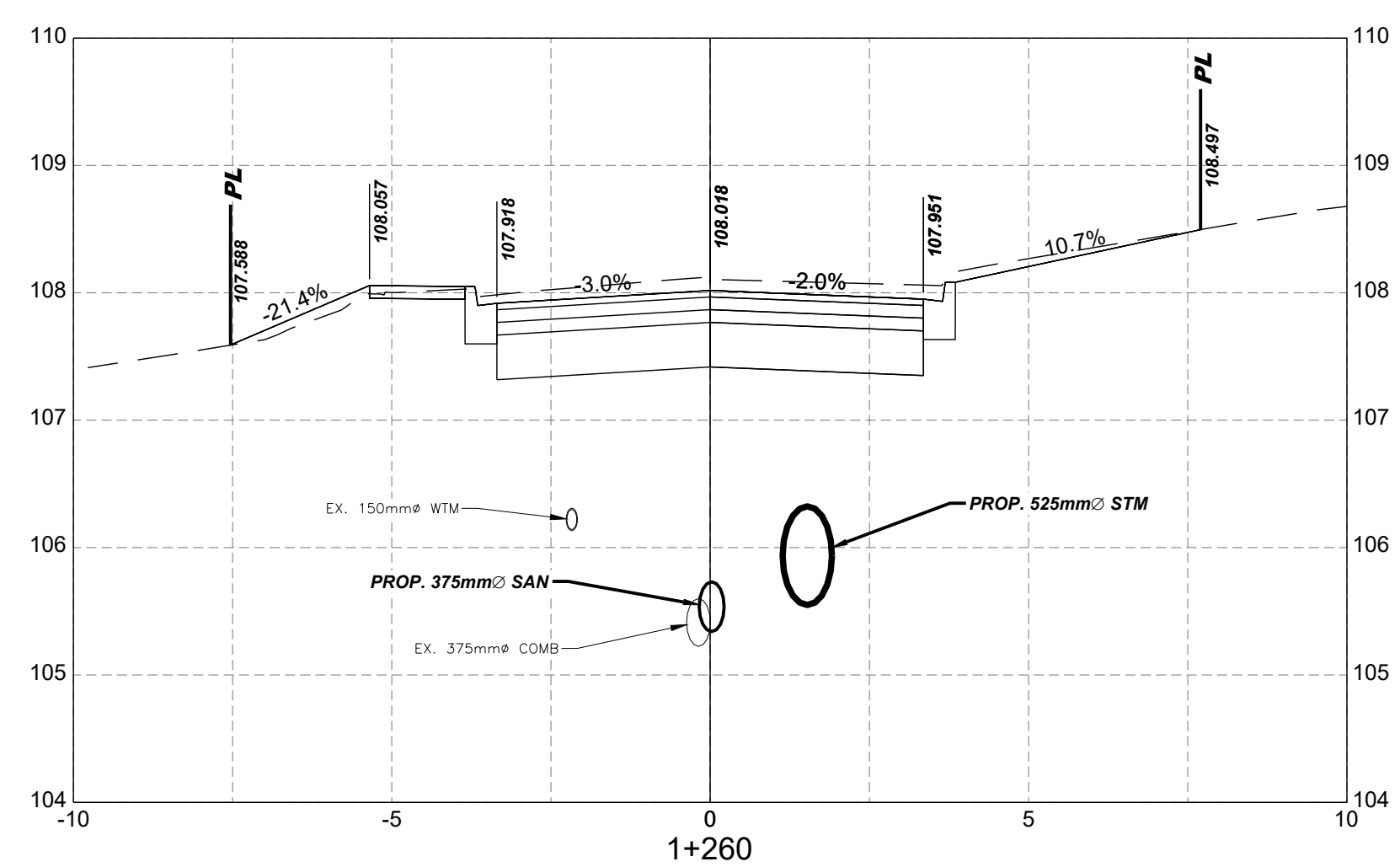
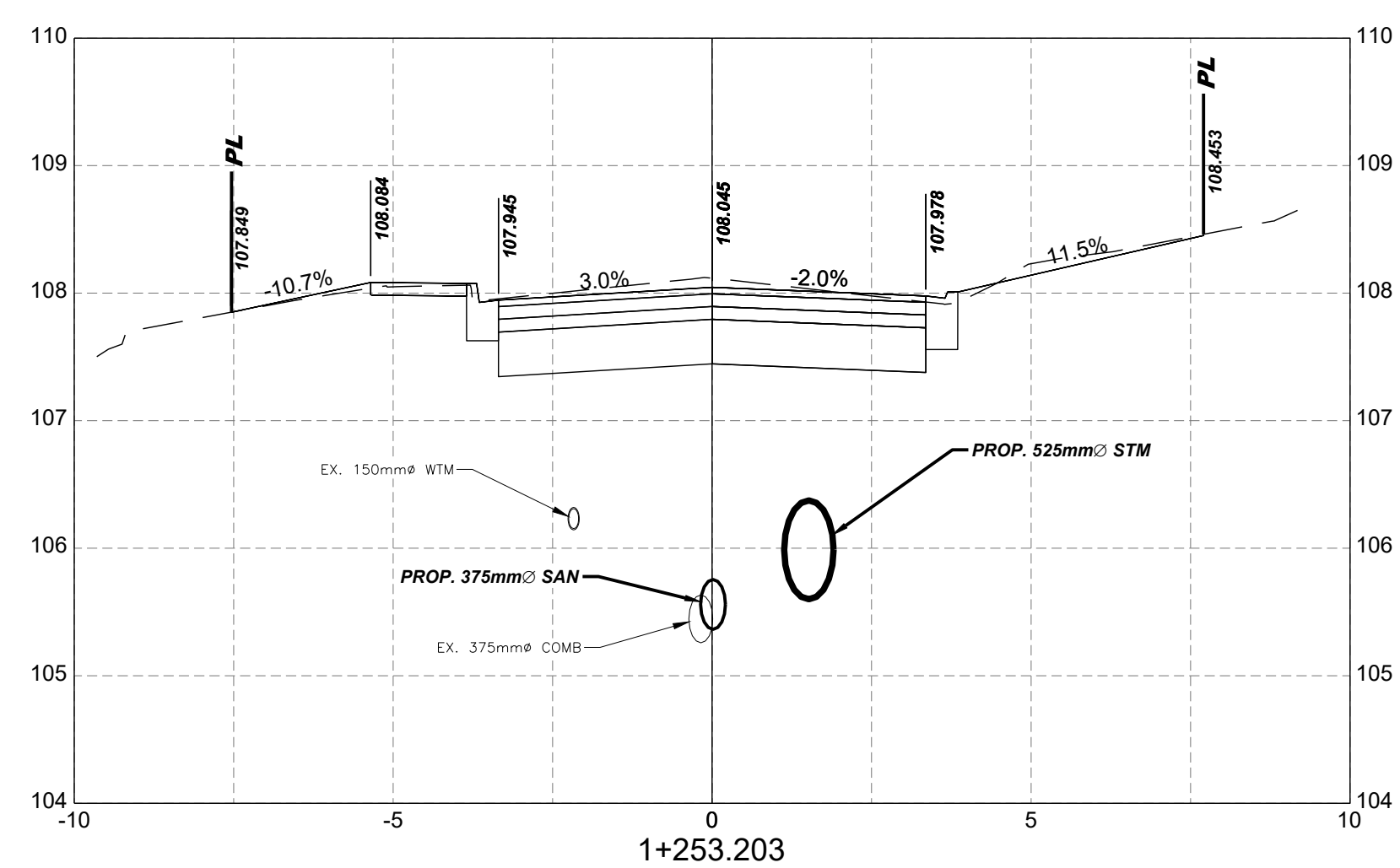
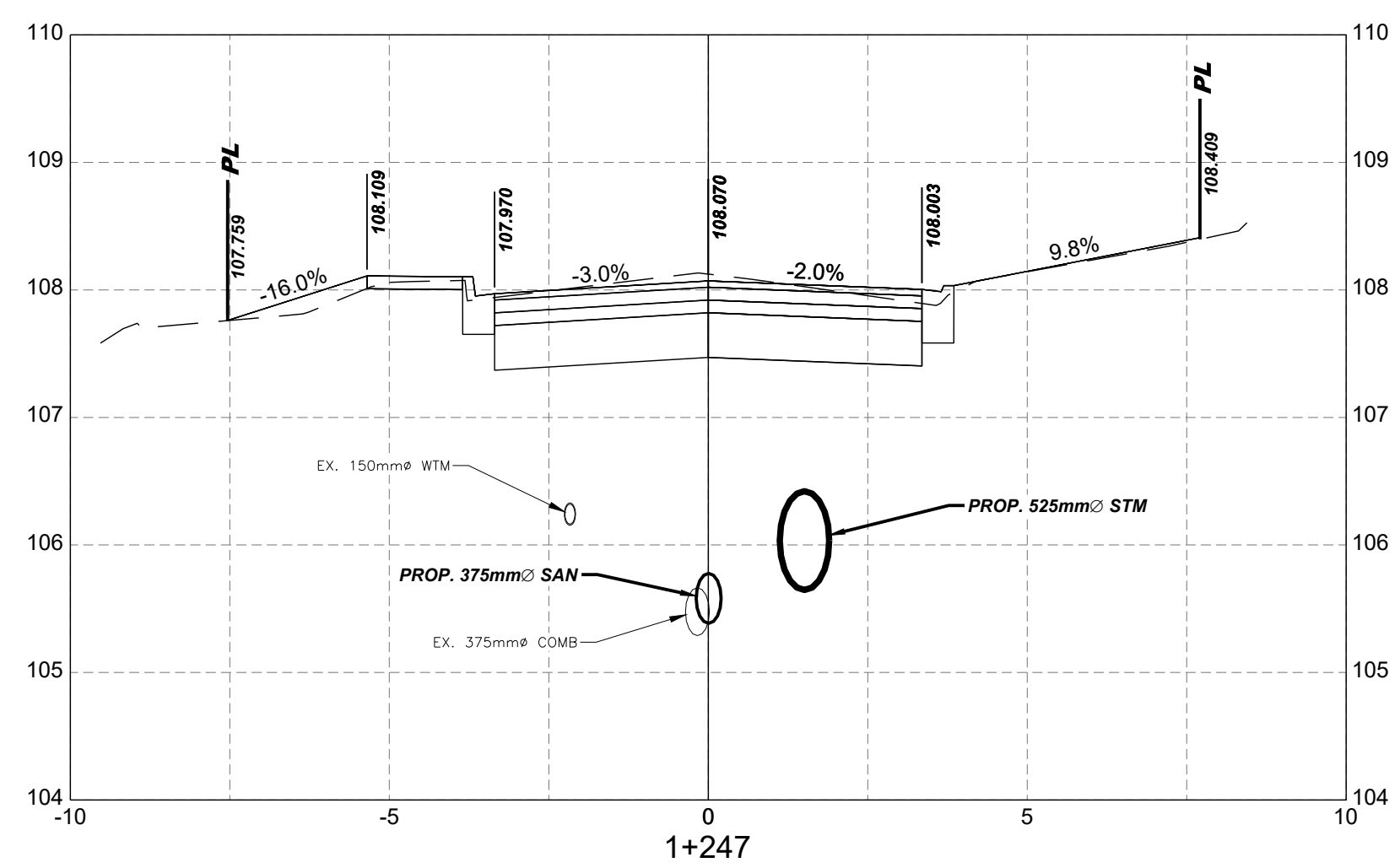
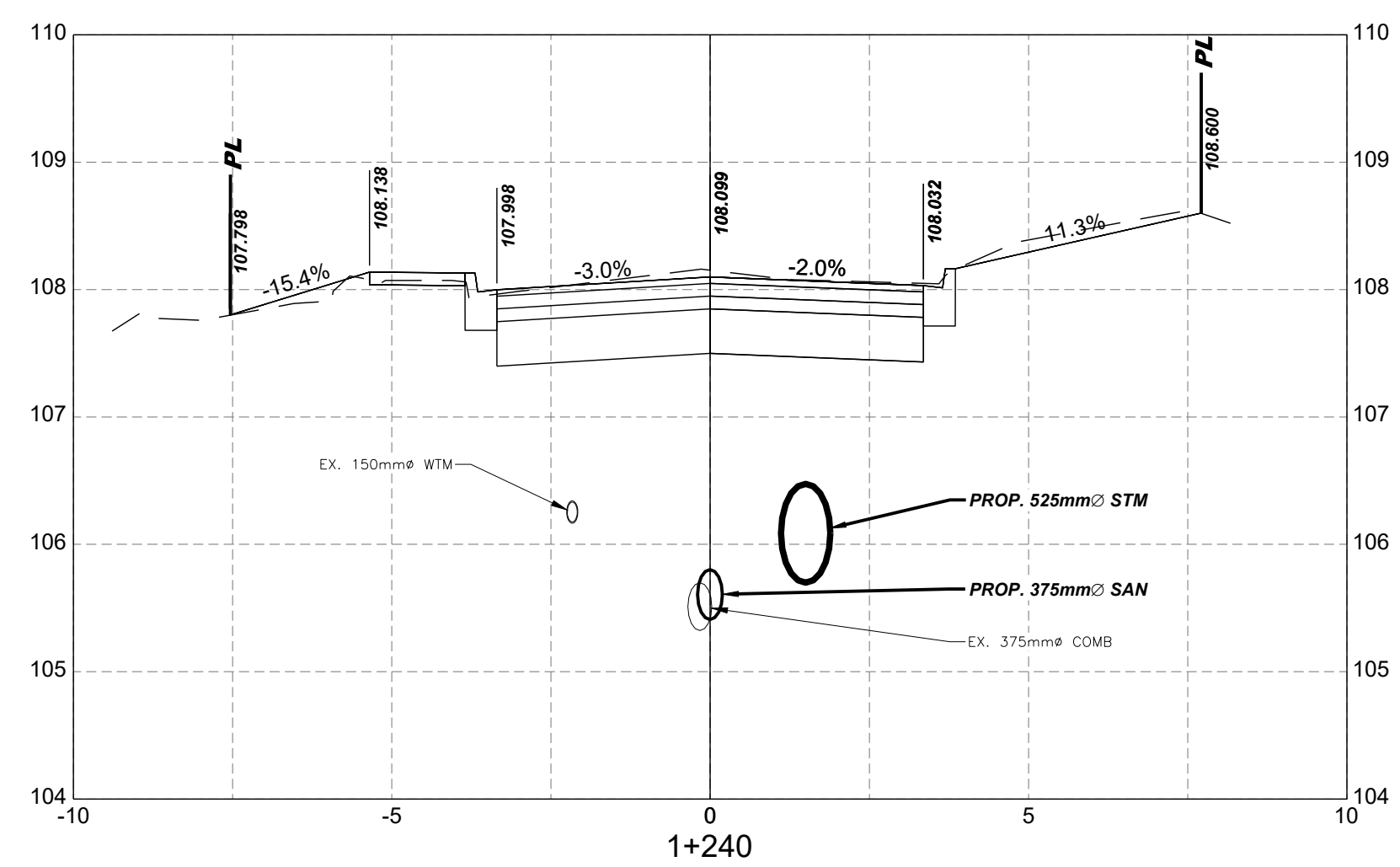
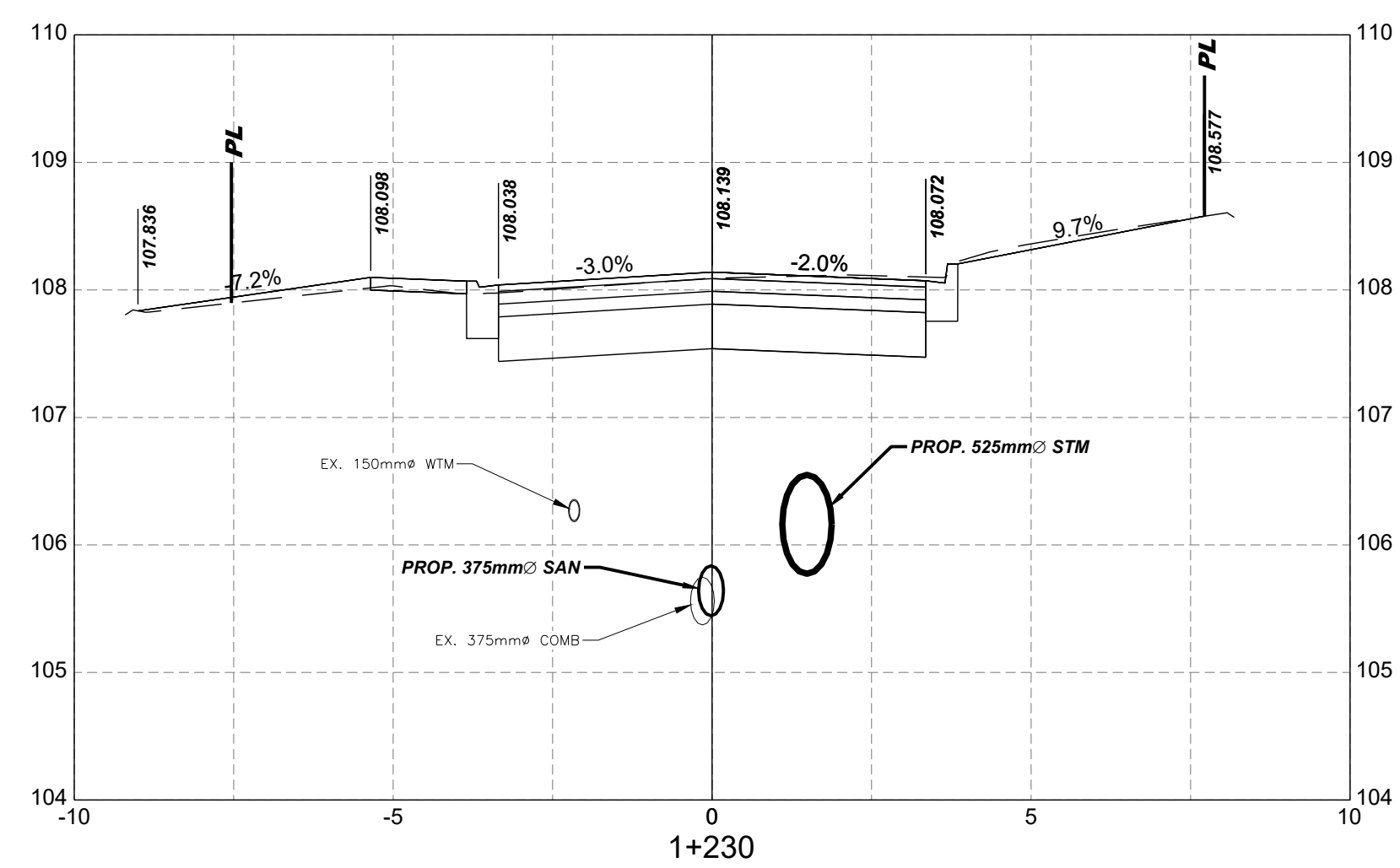
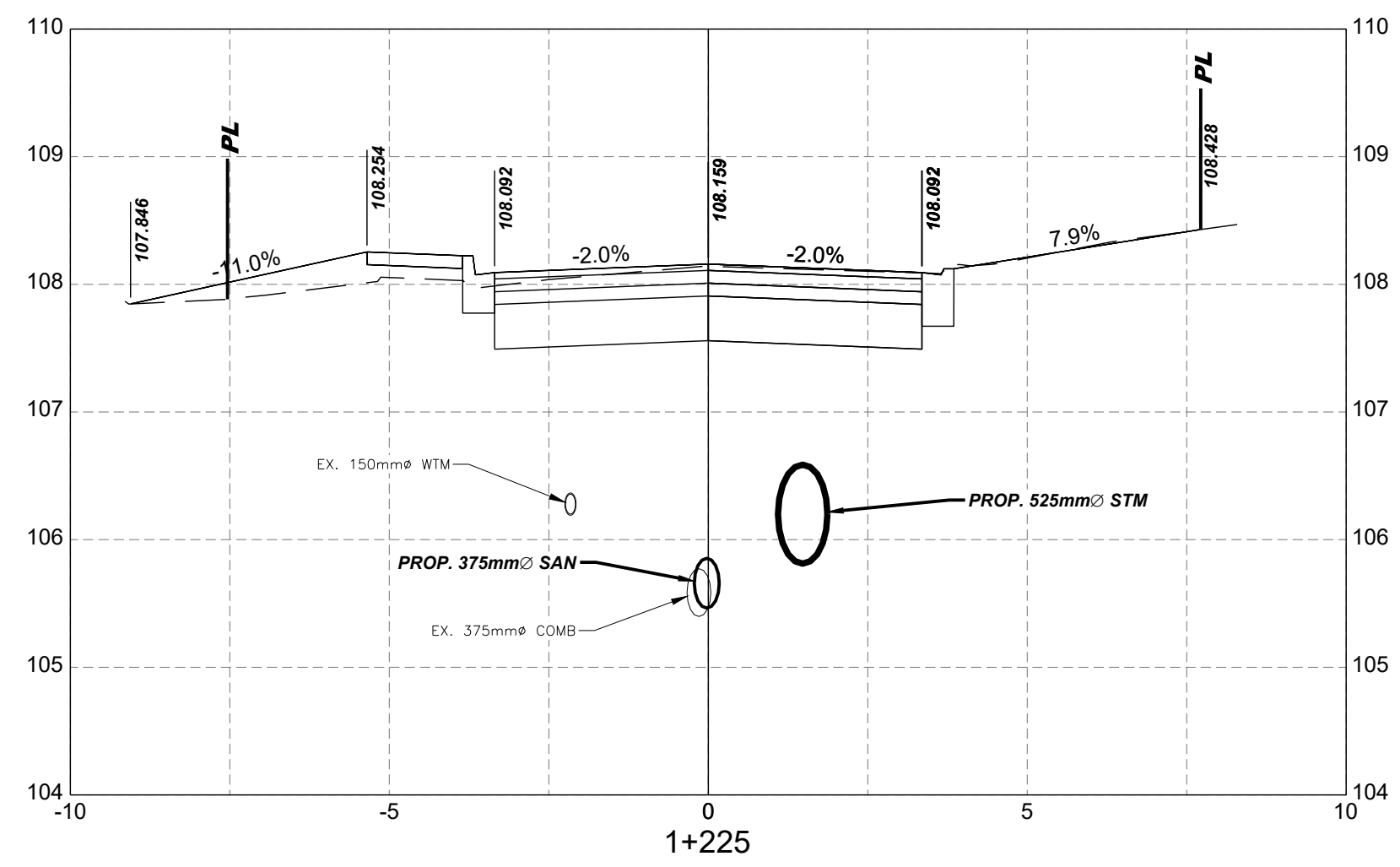
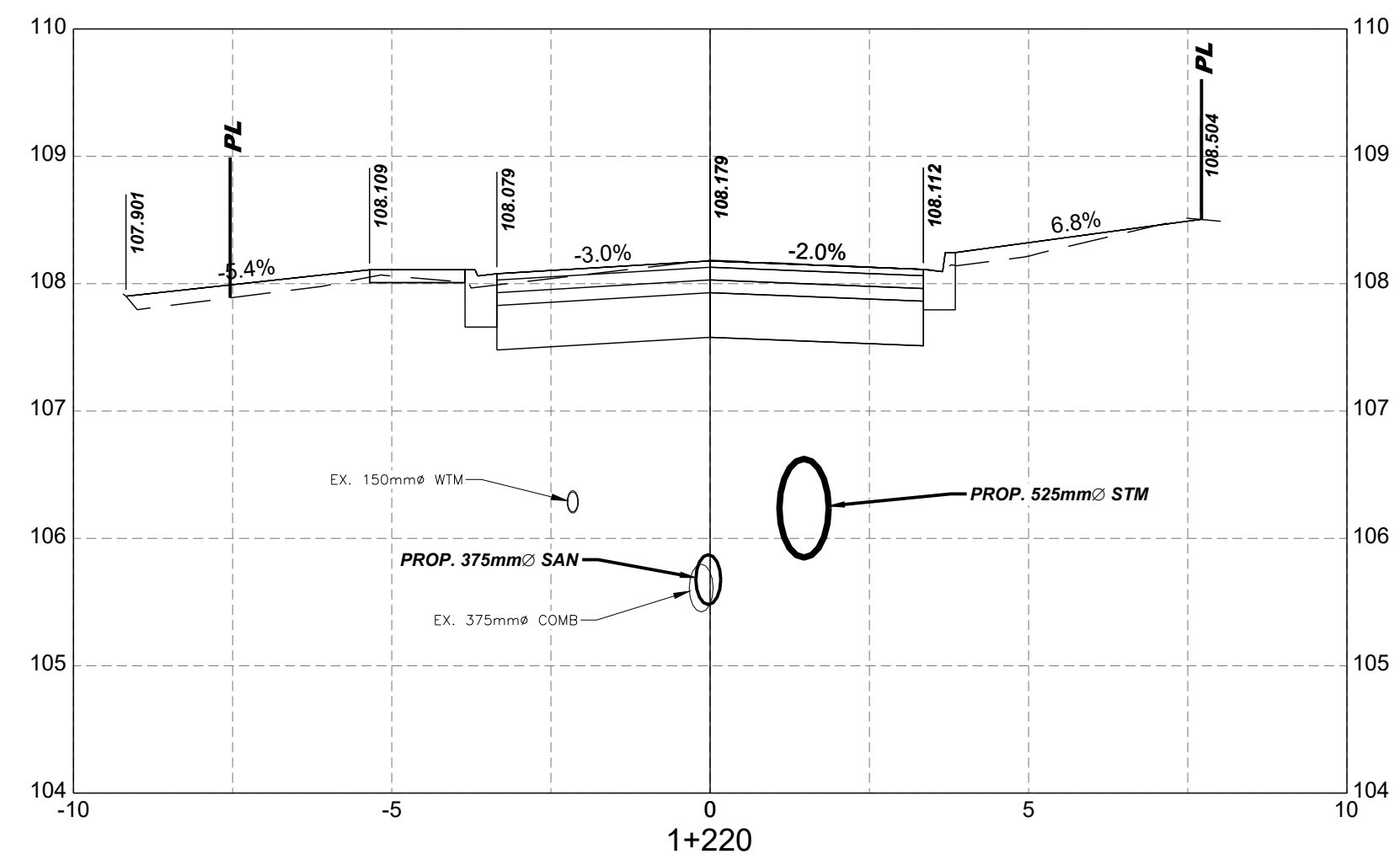
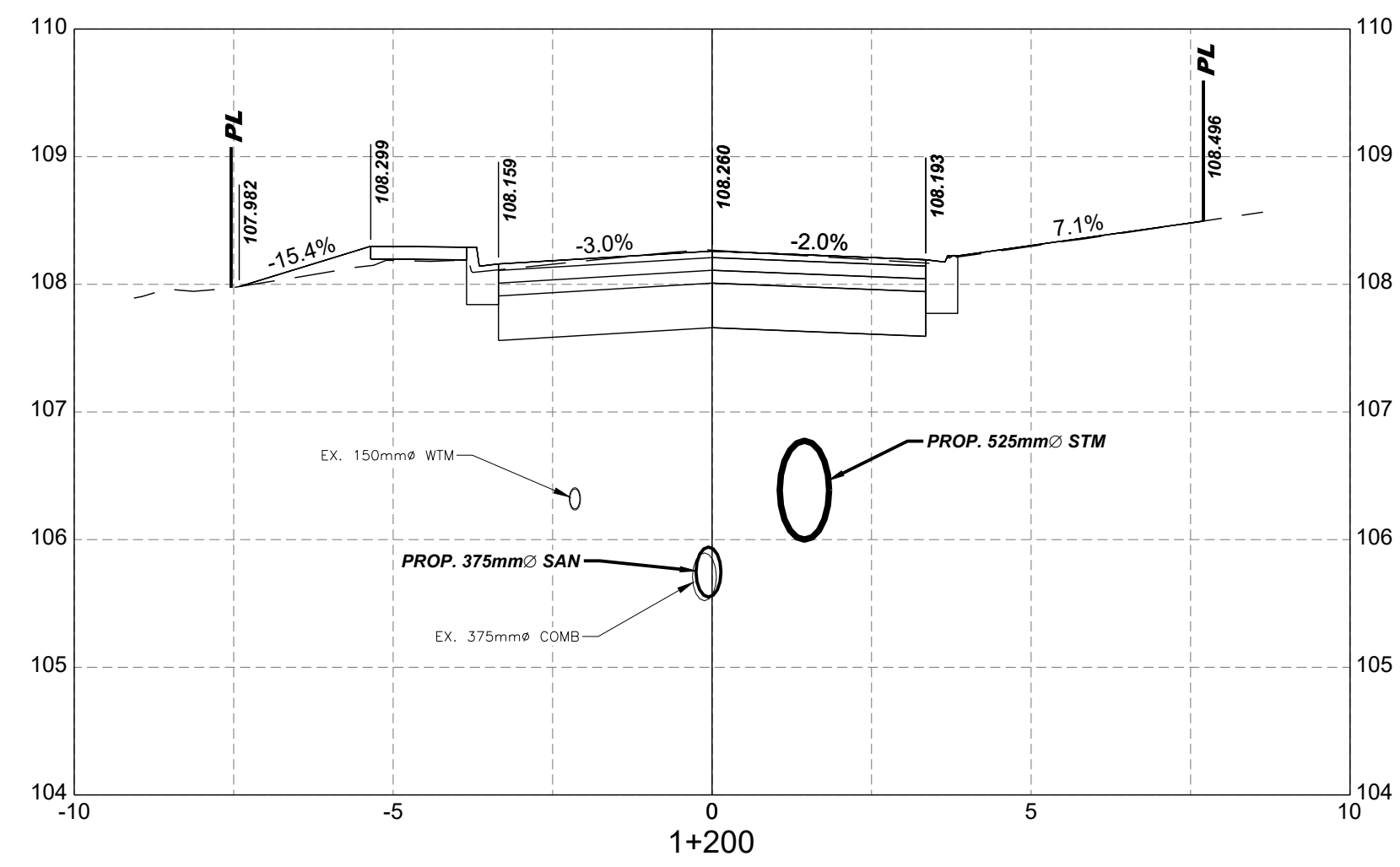
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**PROJECT / CONTRACT P21-004**  
**FOREST HILL / HILLCREST / ROCKCLIFFE**  
**UNDERGROUND IMPROVEMENTS**  
**HILLCREST AVENUE**  
**THE CITY OF ST. CATHARINES**  
**CROSS SECTIONS II**

CONSULTANT FILE No. 20235723	
DATE	SEPTEMBER 2024
SCALE	Hor : 1:100 m Ver : 1:50 m
REF. No.	P21-004
DWG No.	5723-00-C-302
REV.	0





NOTES/LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

DRAFTING	NR
DESIGN	FB/DH
CHECKED BY	DH
APPROVED BY	MM

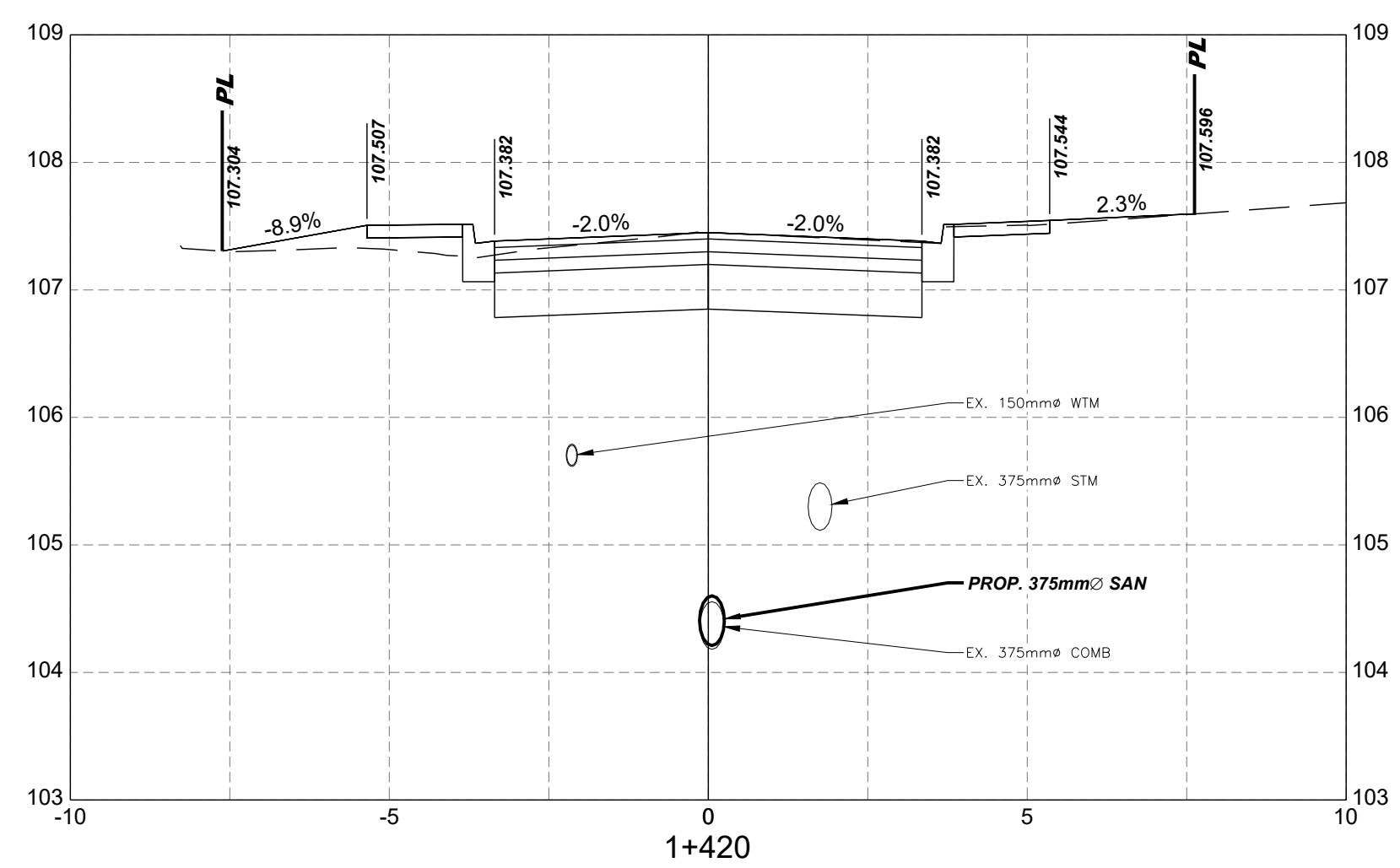
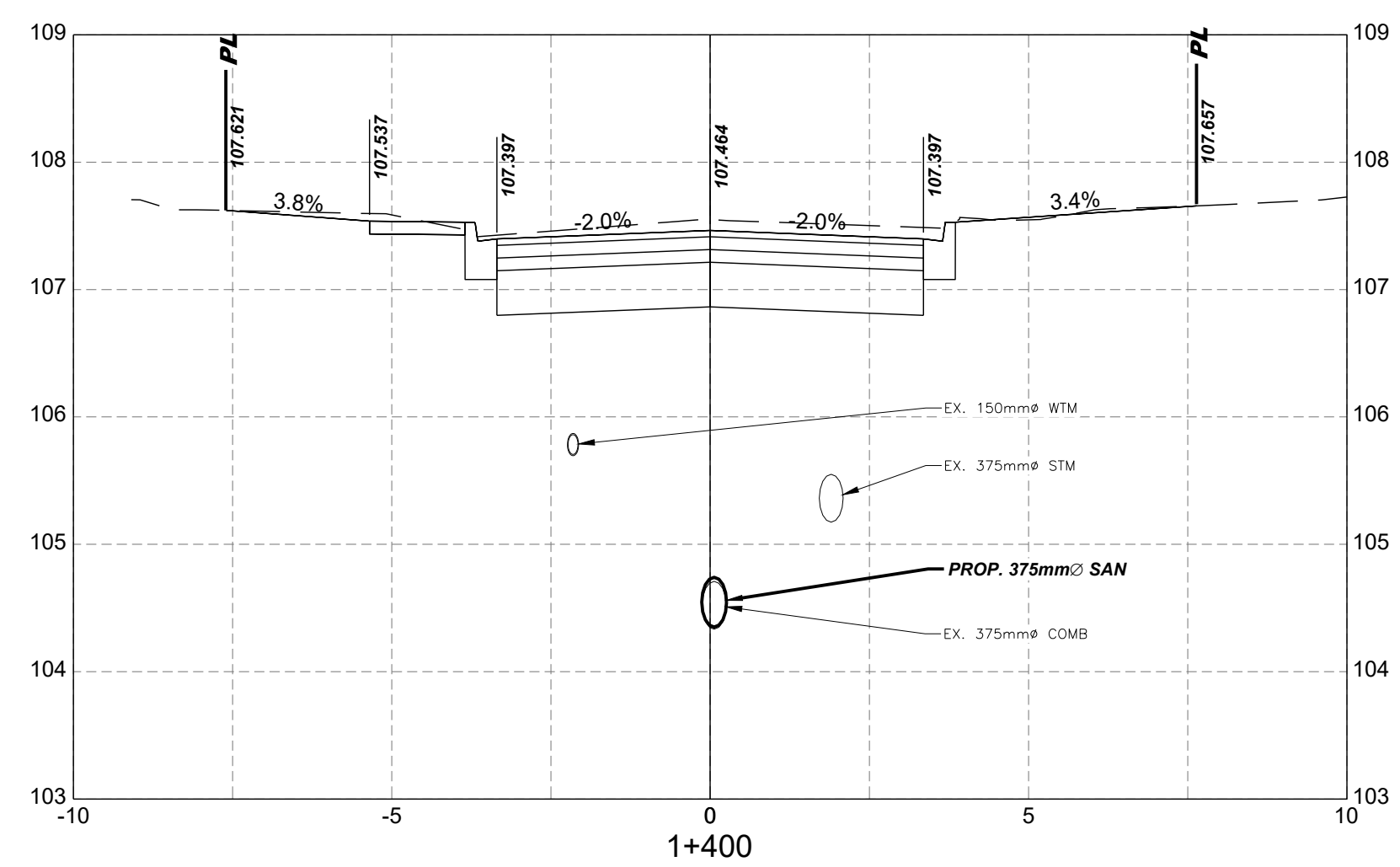
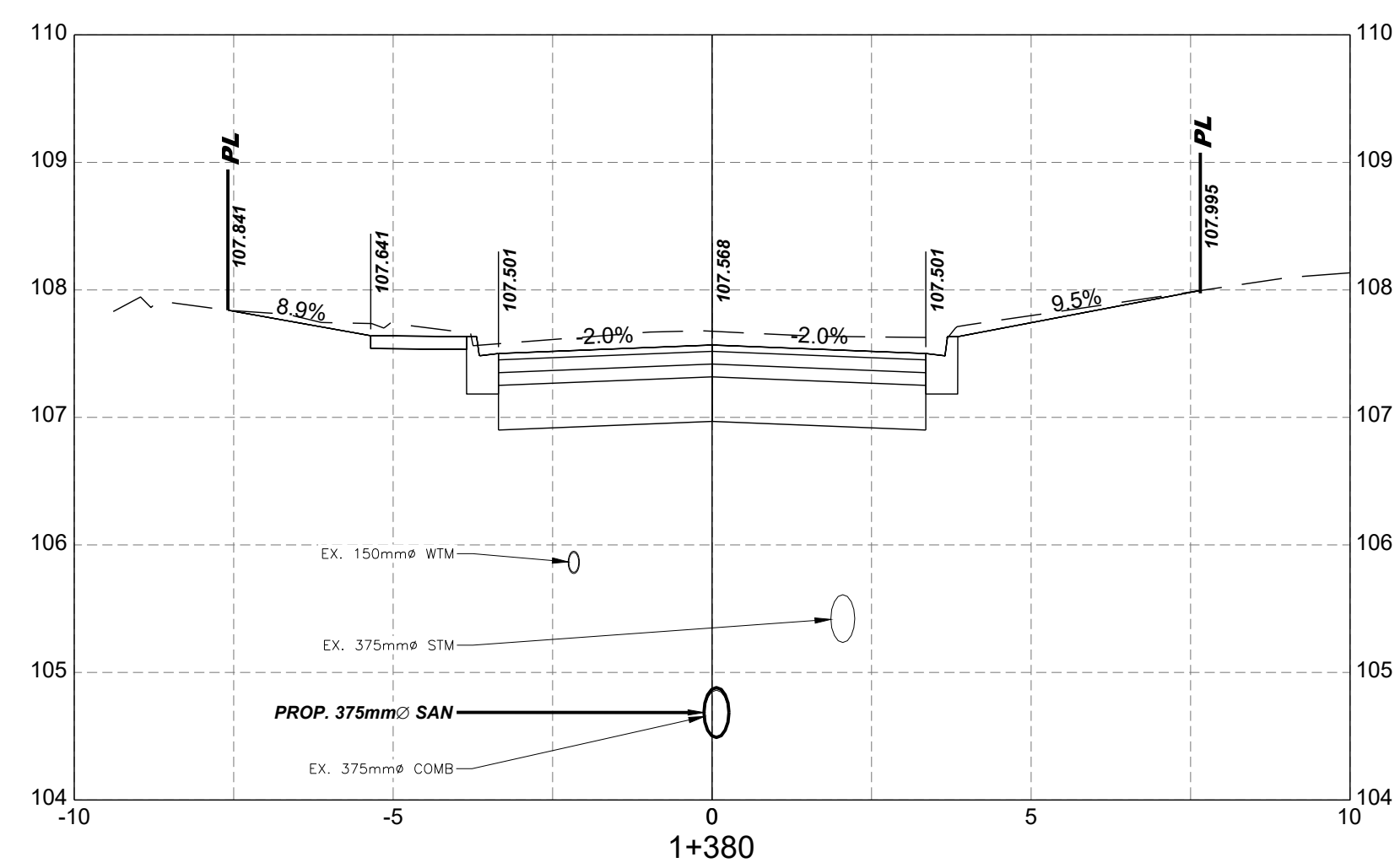
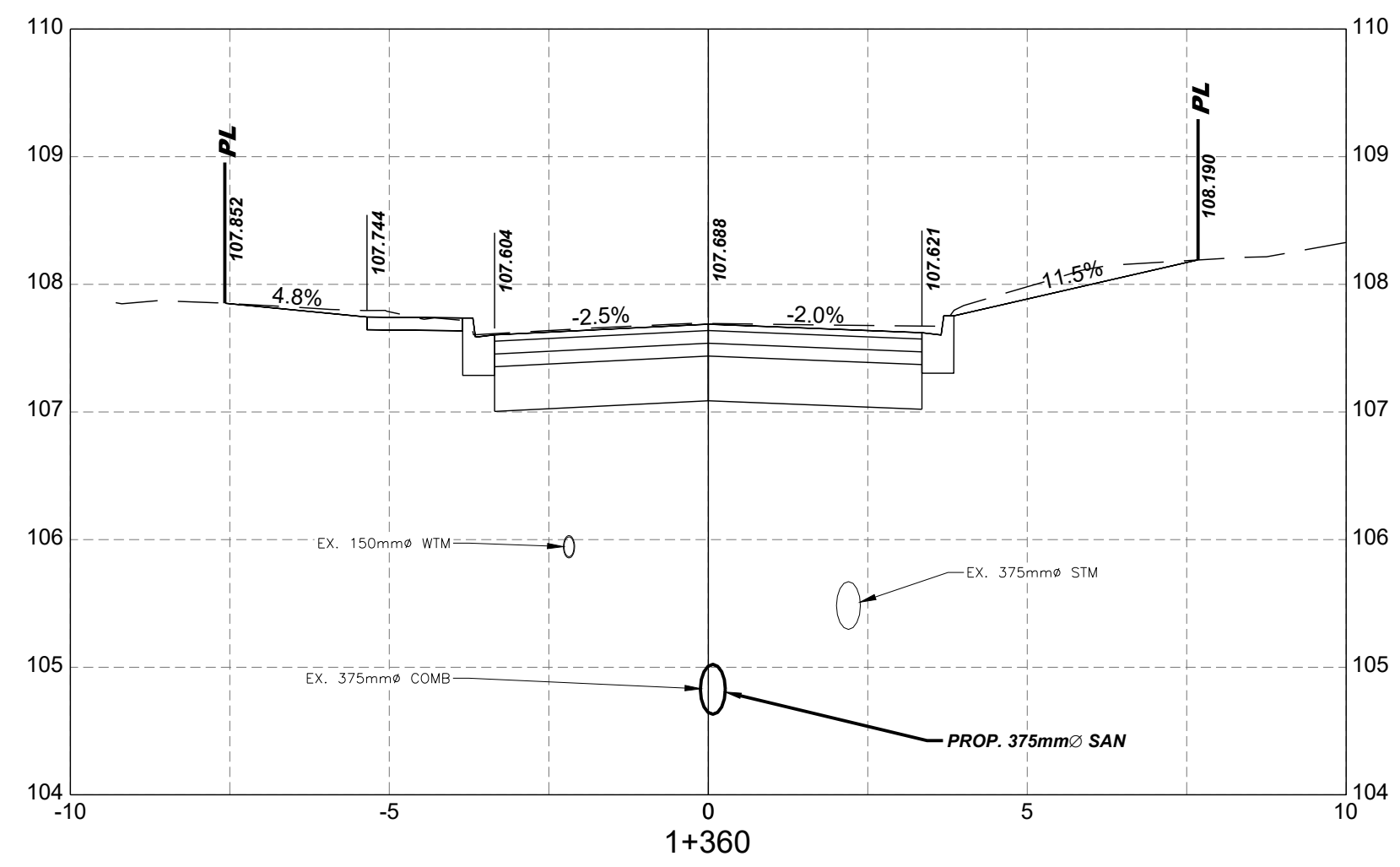
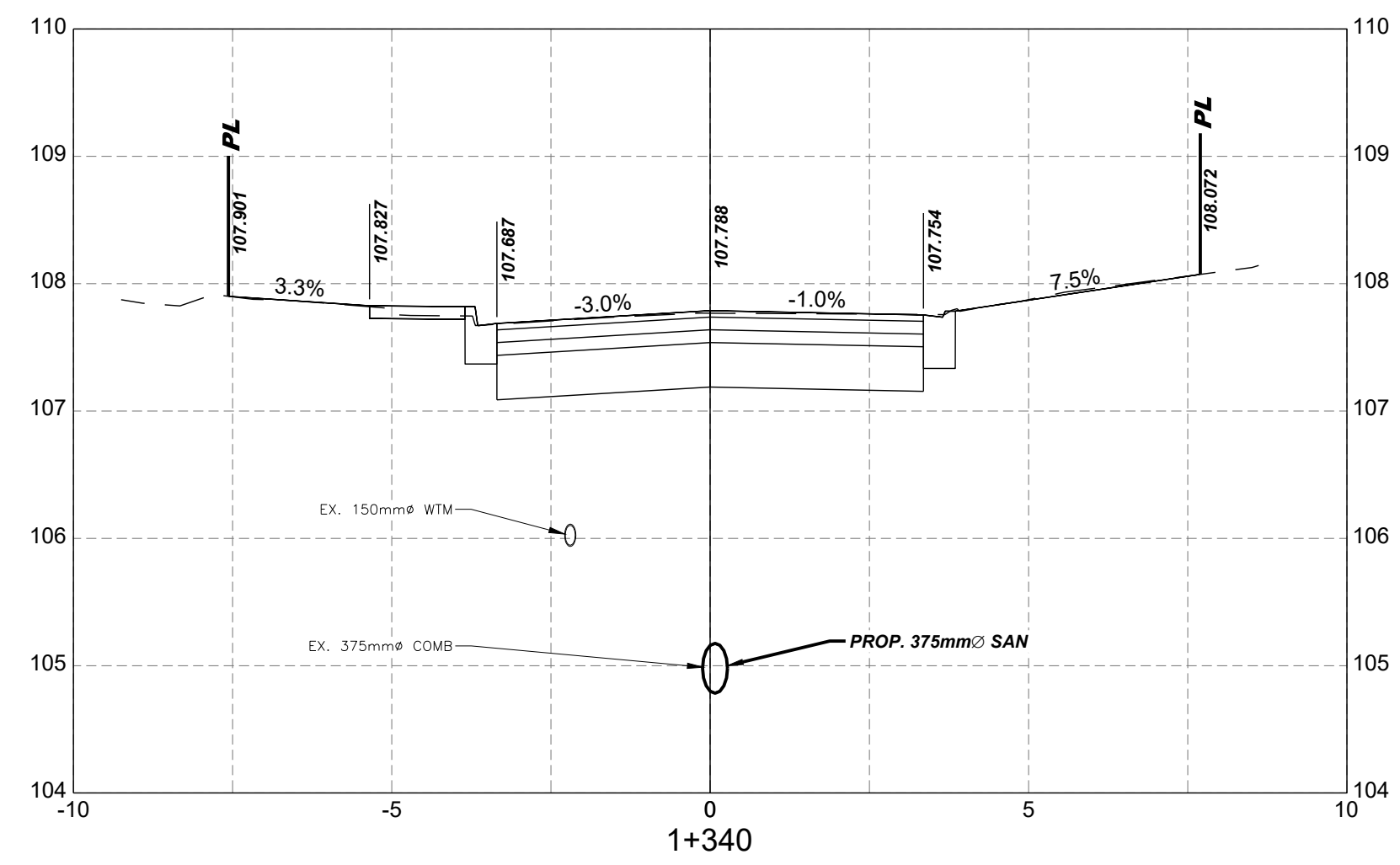
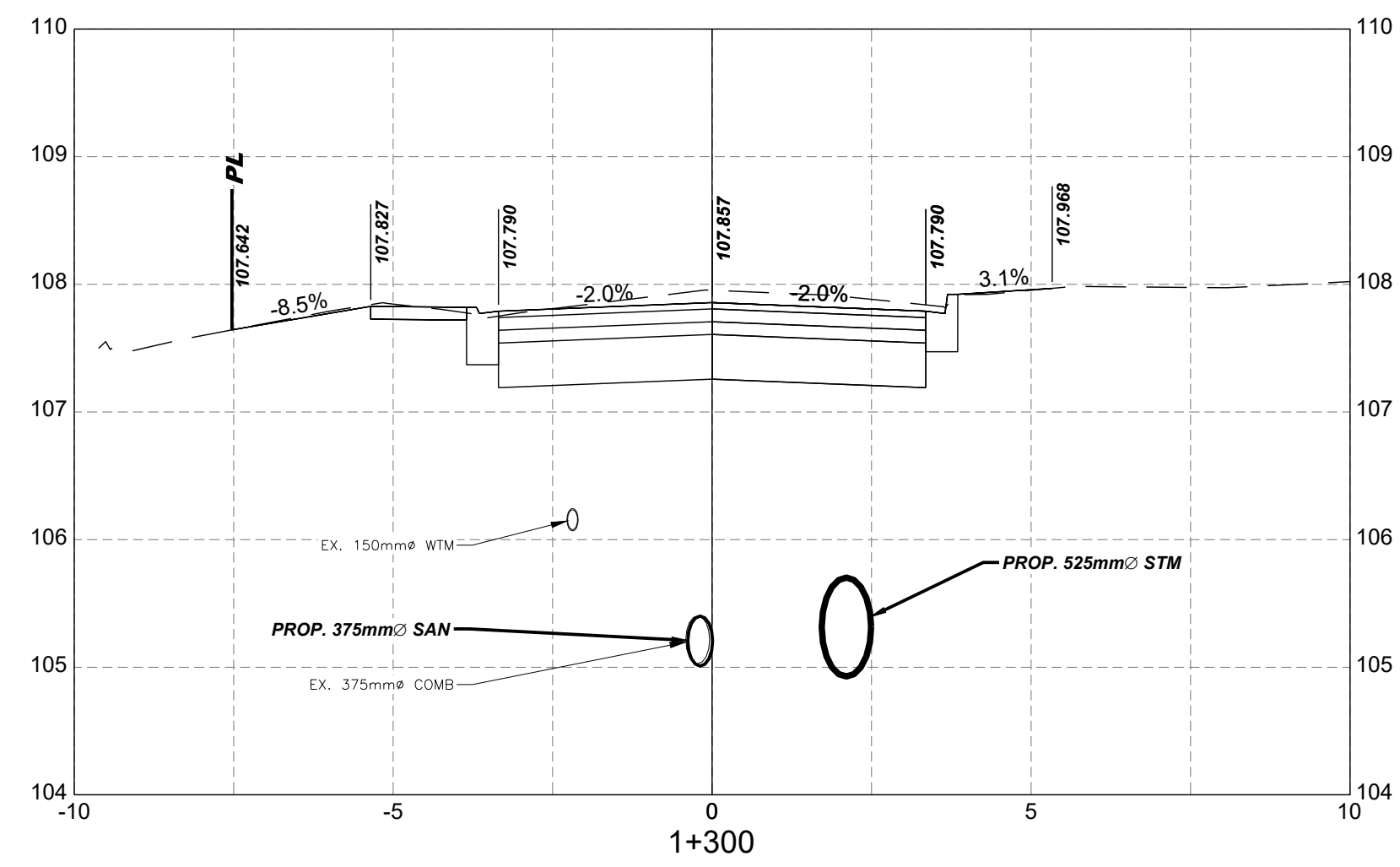
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2024-09-03  
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PROJECT / CONTRACT P21-004  
FOREST HILL / HILLCREST / ROCKCLIFFE  
UNDERGROUND IMPROVEMENTS  
**HILLCREST AVENUE**  
THE CITY OF ST. CATHARINES  
**CROSS SECTIONS III**

CONSULTANT FILE No. 20235723	
DATE	SEPTEMBER 2024
SCALE	Hor : 1:100 m Ver : 1:50 m
REF. No.	P21-004
DWG No.	5723-00-C-303
REV.	0





NOTES/LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

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DESIGN: FB/DH  
CHECKED BY: DH  
APPROVED BY: MM

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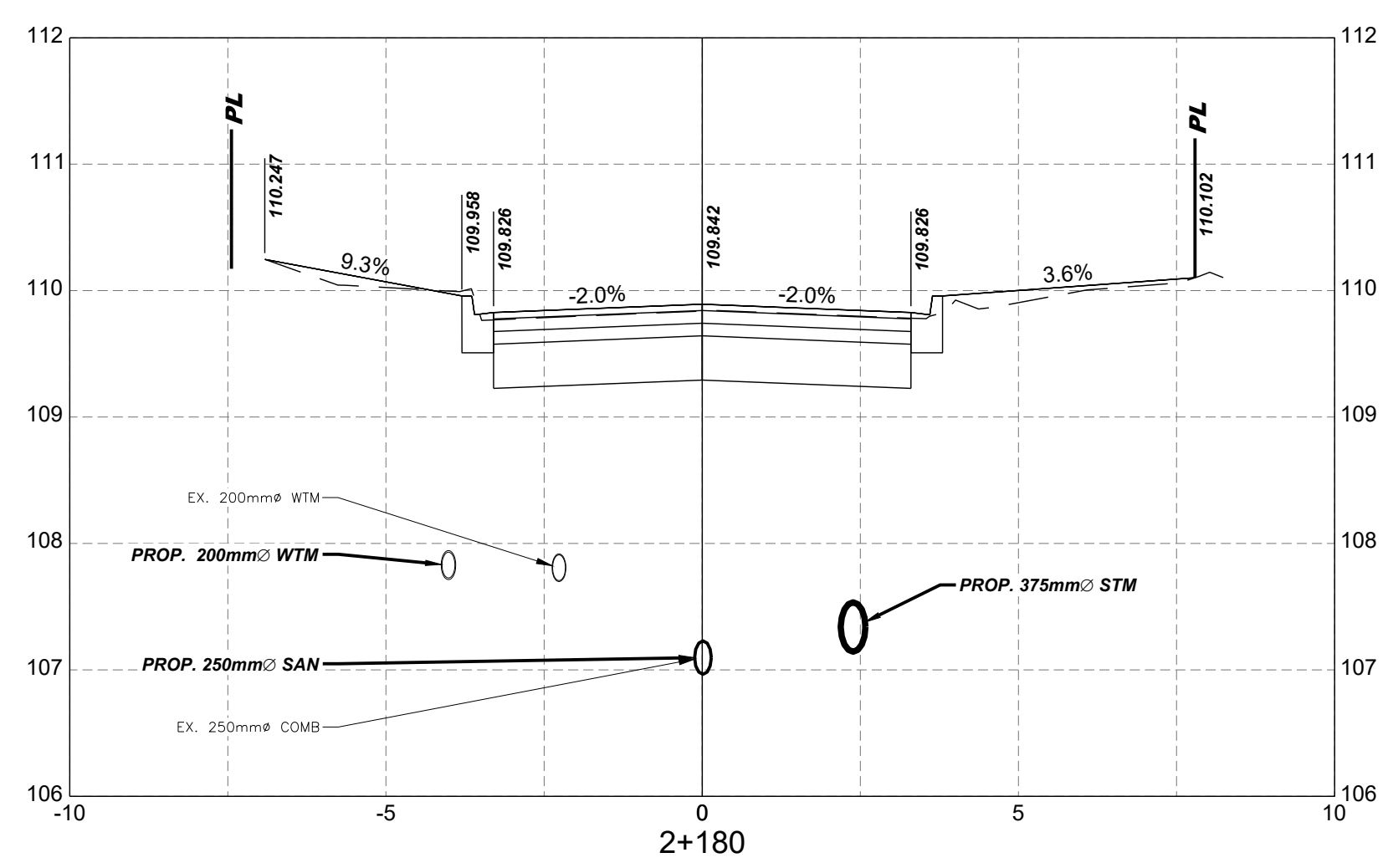
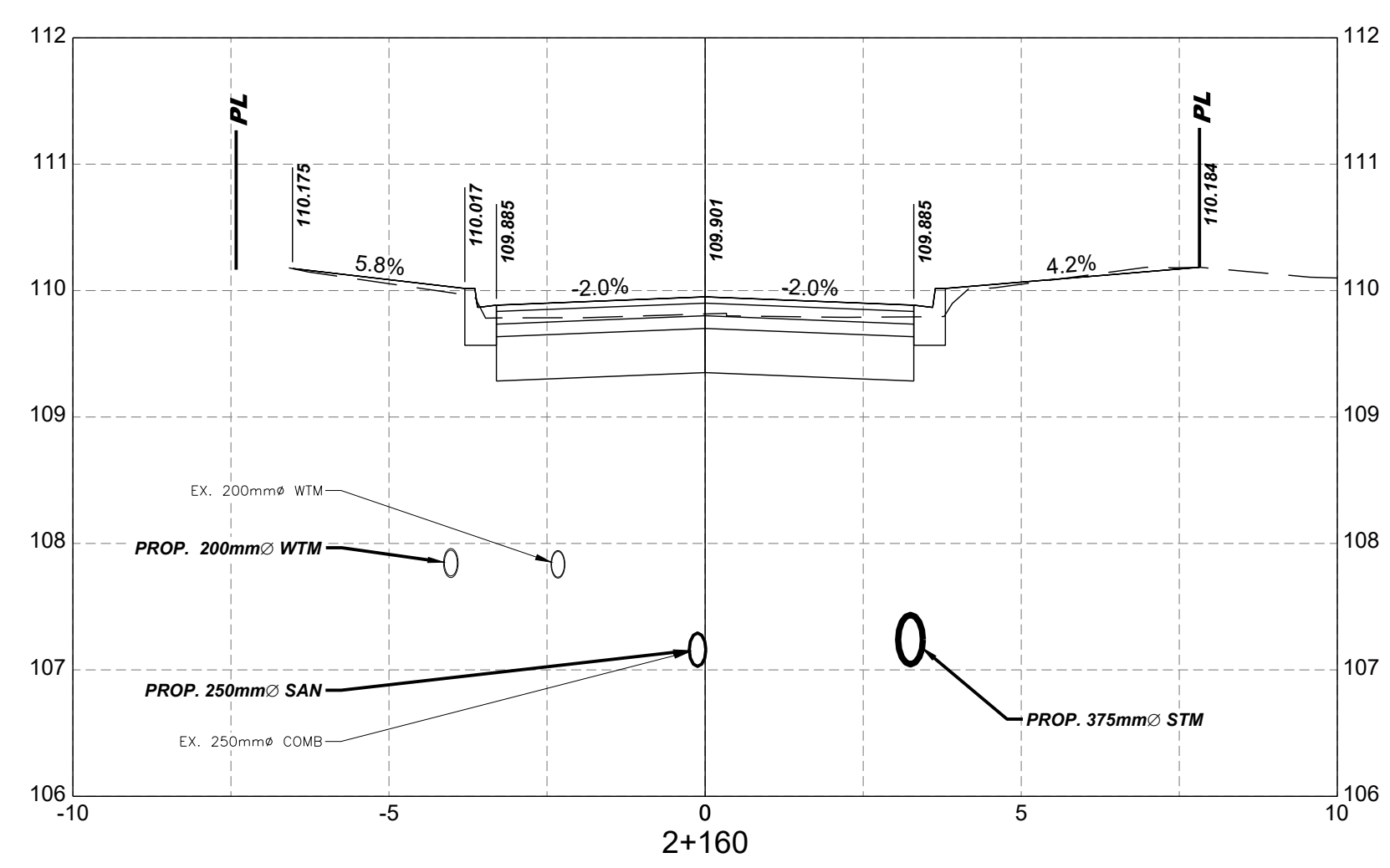
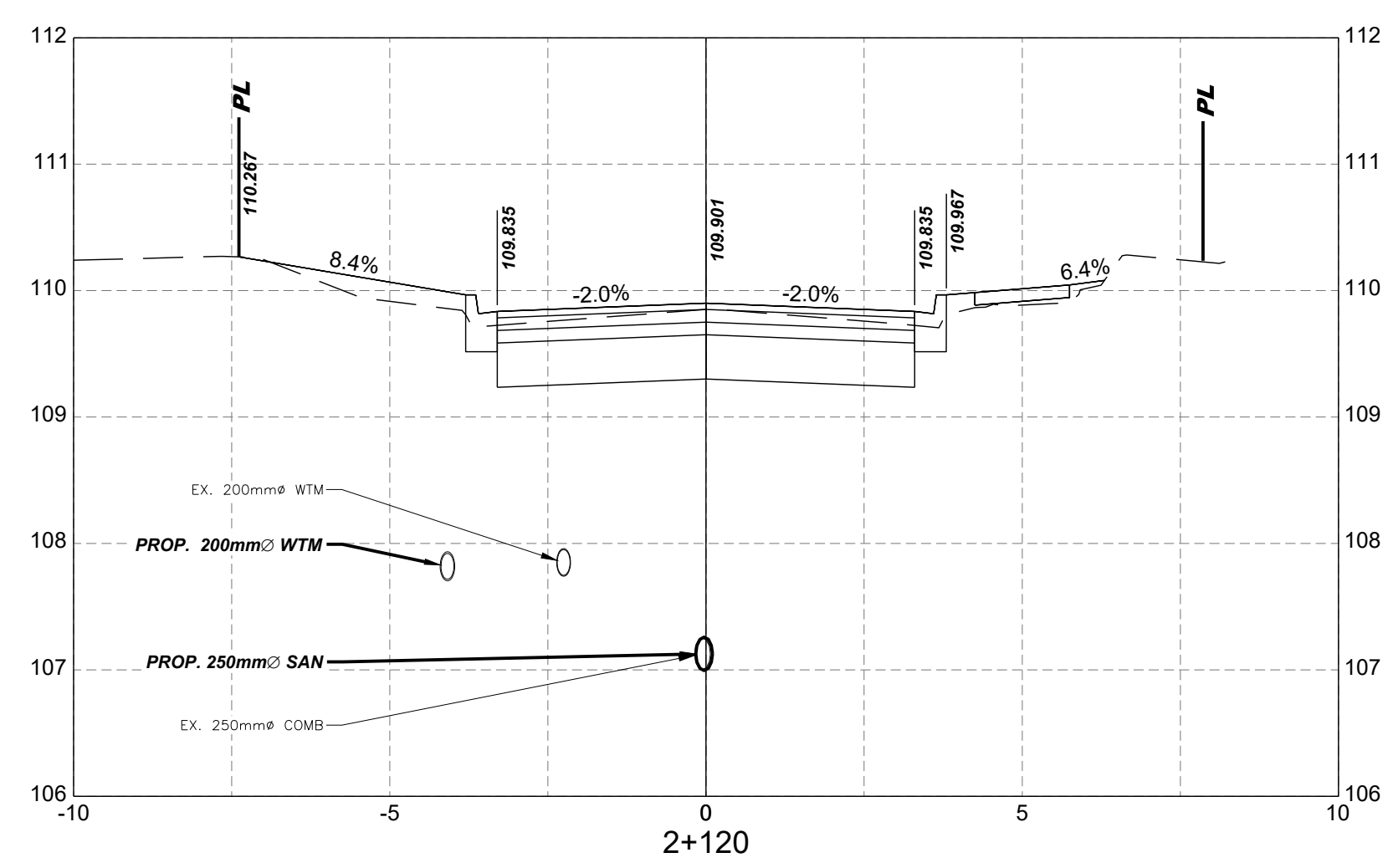
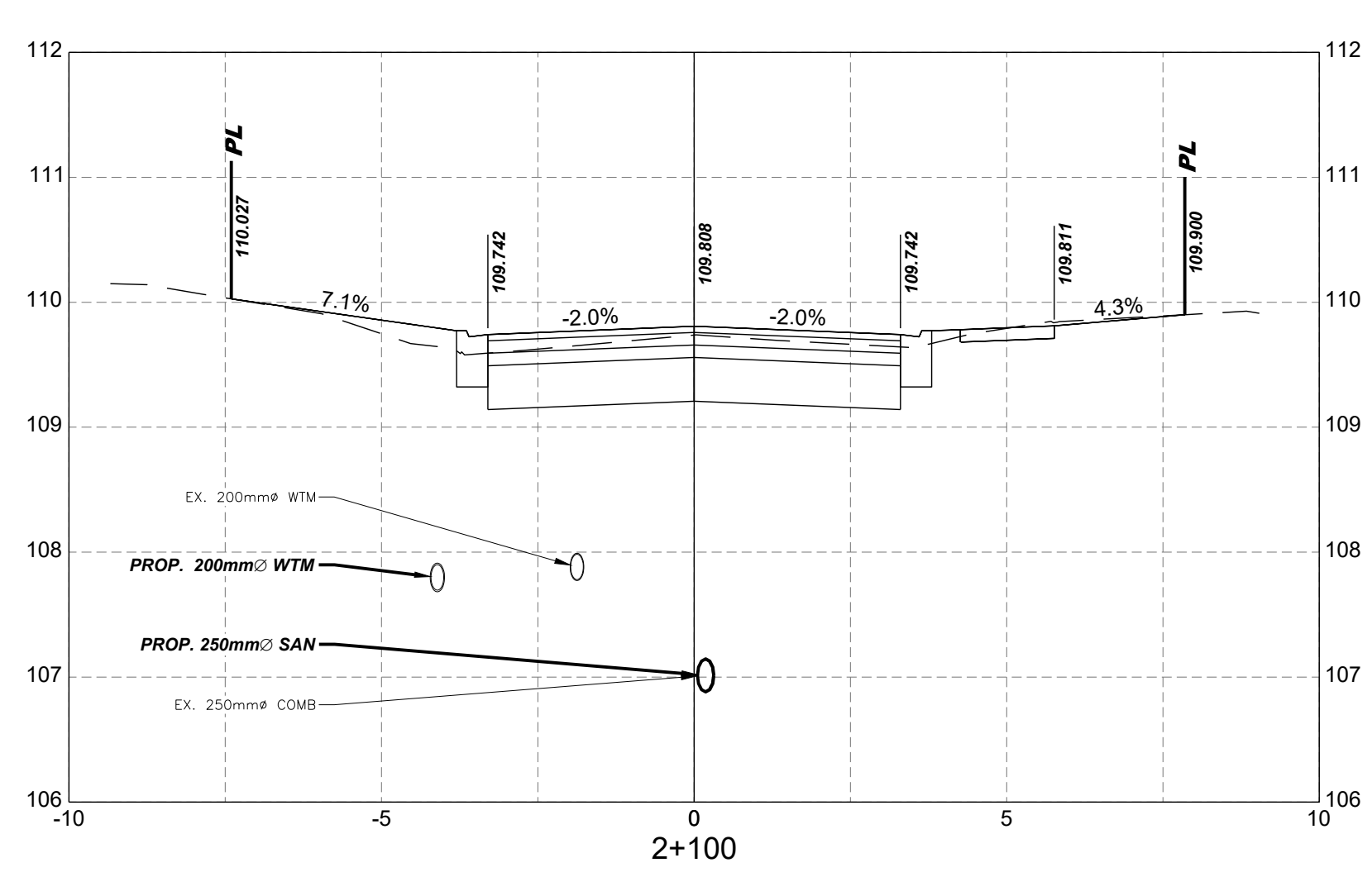
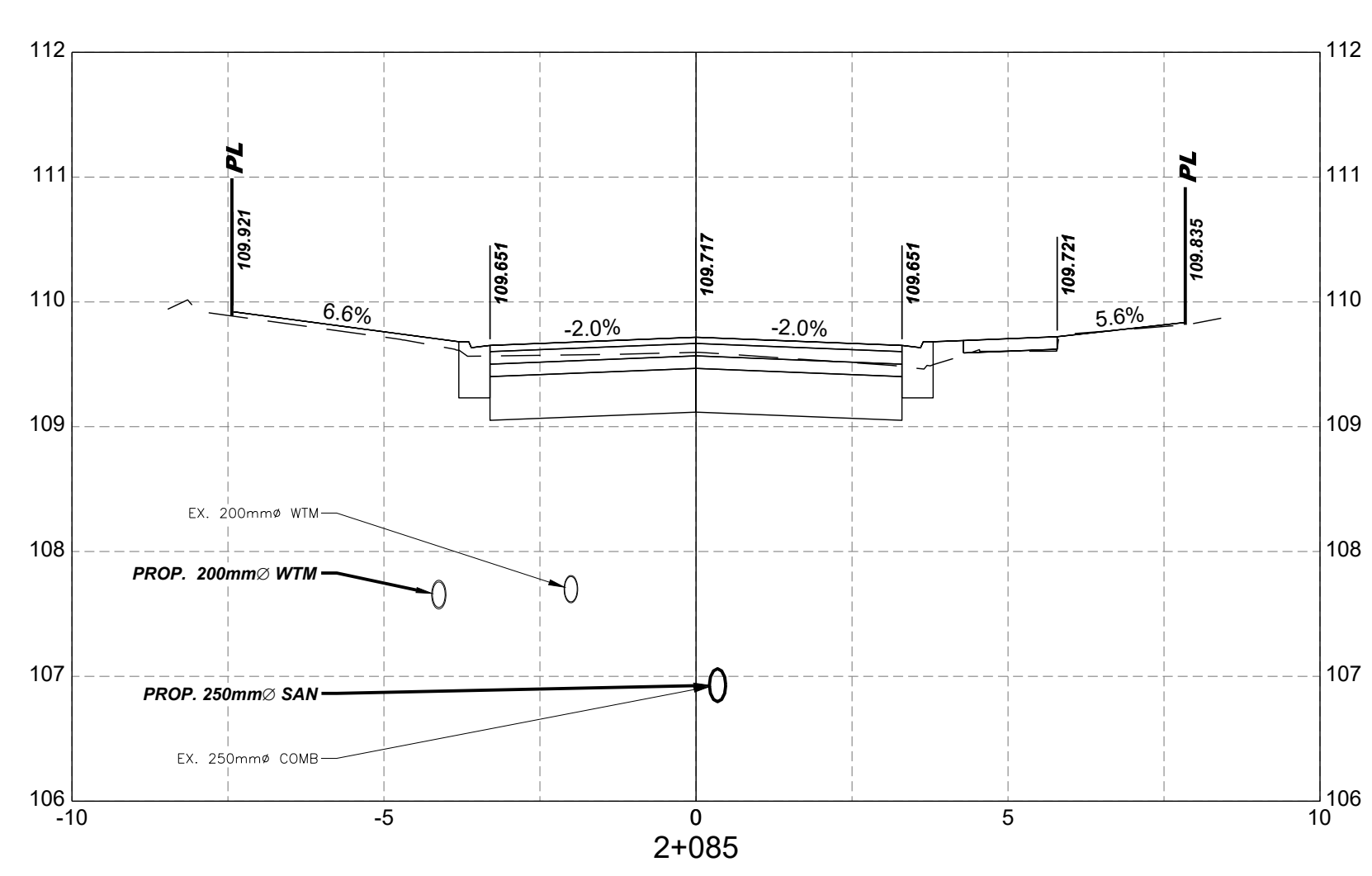
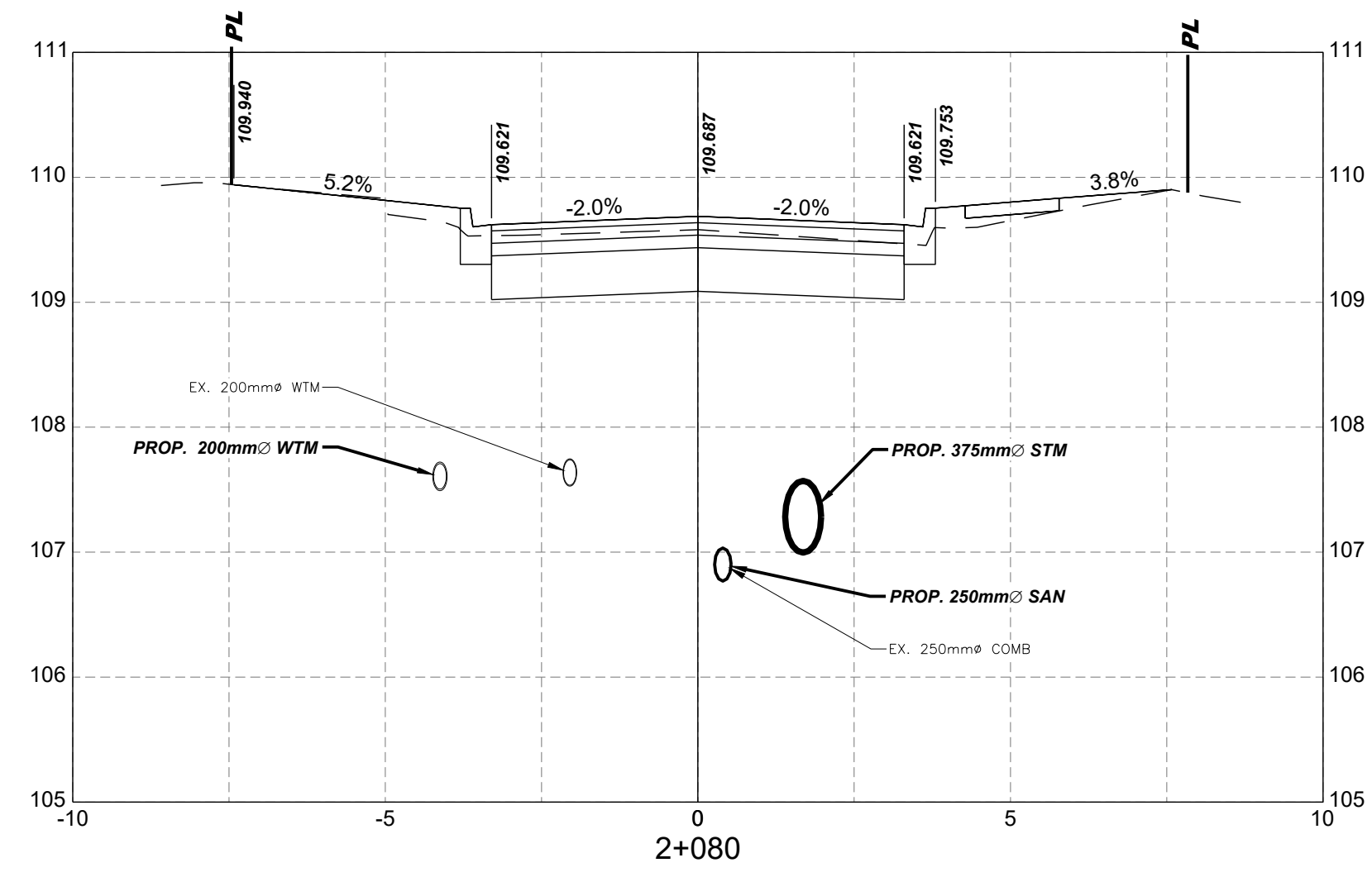
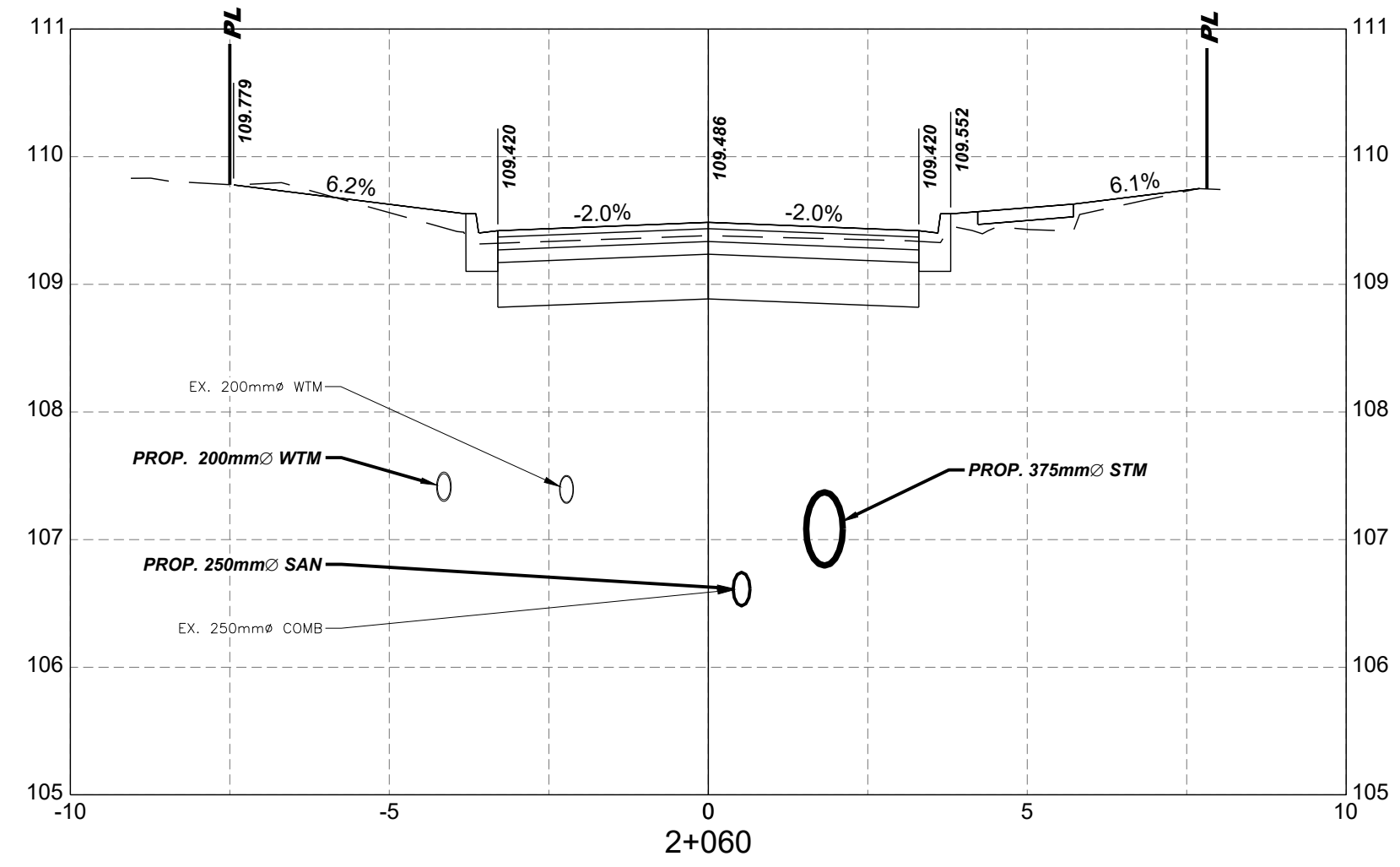
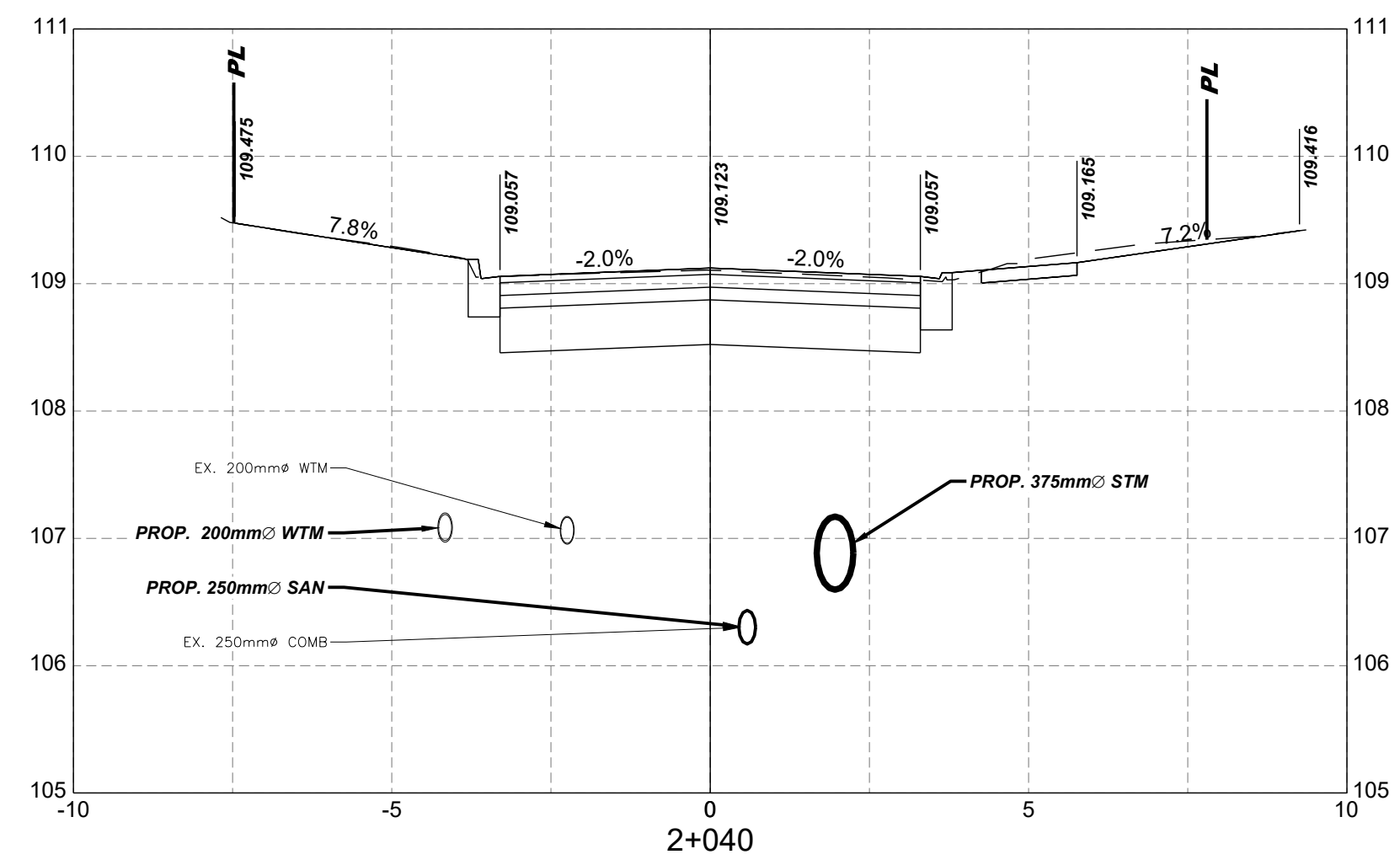
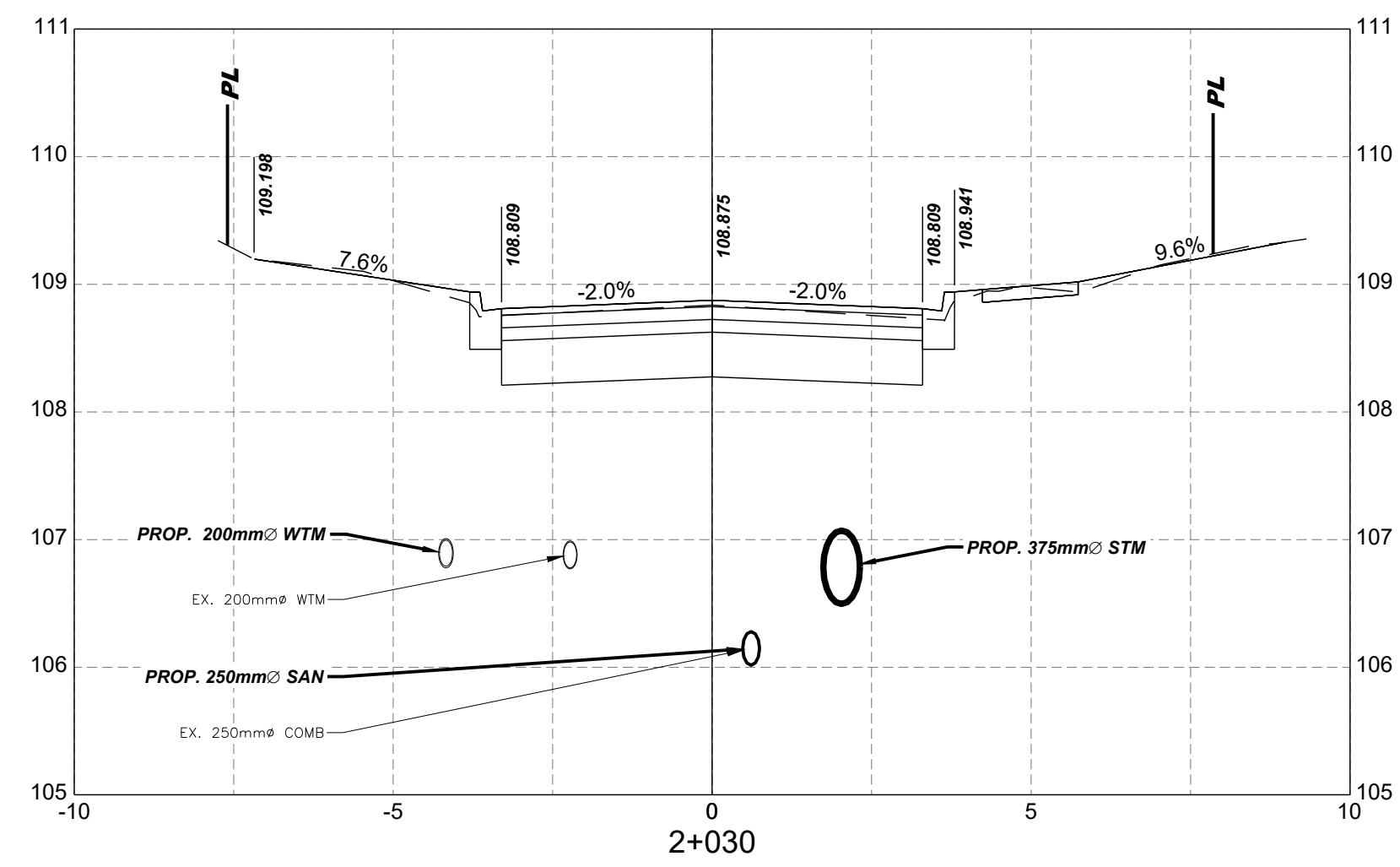
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**PROJECT / CONTRACT P21-004**  
**FOREST HILL / HILLCREST / ROCKCLIFFE**  
**UNDERGROUND IMPROVEMENTS**  
**HILLCREST AVENUE**  
**THE CITY OF ST. CATHARINES**  
**CROSS SECTIONS IV**

CONSULTANT FILE No. 20235723	
DATE	SEPTEMBER 2024
SCALE	Hor : 1:100 m Ver : 1:50 m
REF. No.	P21-004
DWG No.	5723-00-C-304
REV.	0





NOTES/LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

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APPROVED BY	MM

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2024-09-03  
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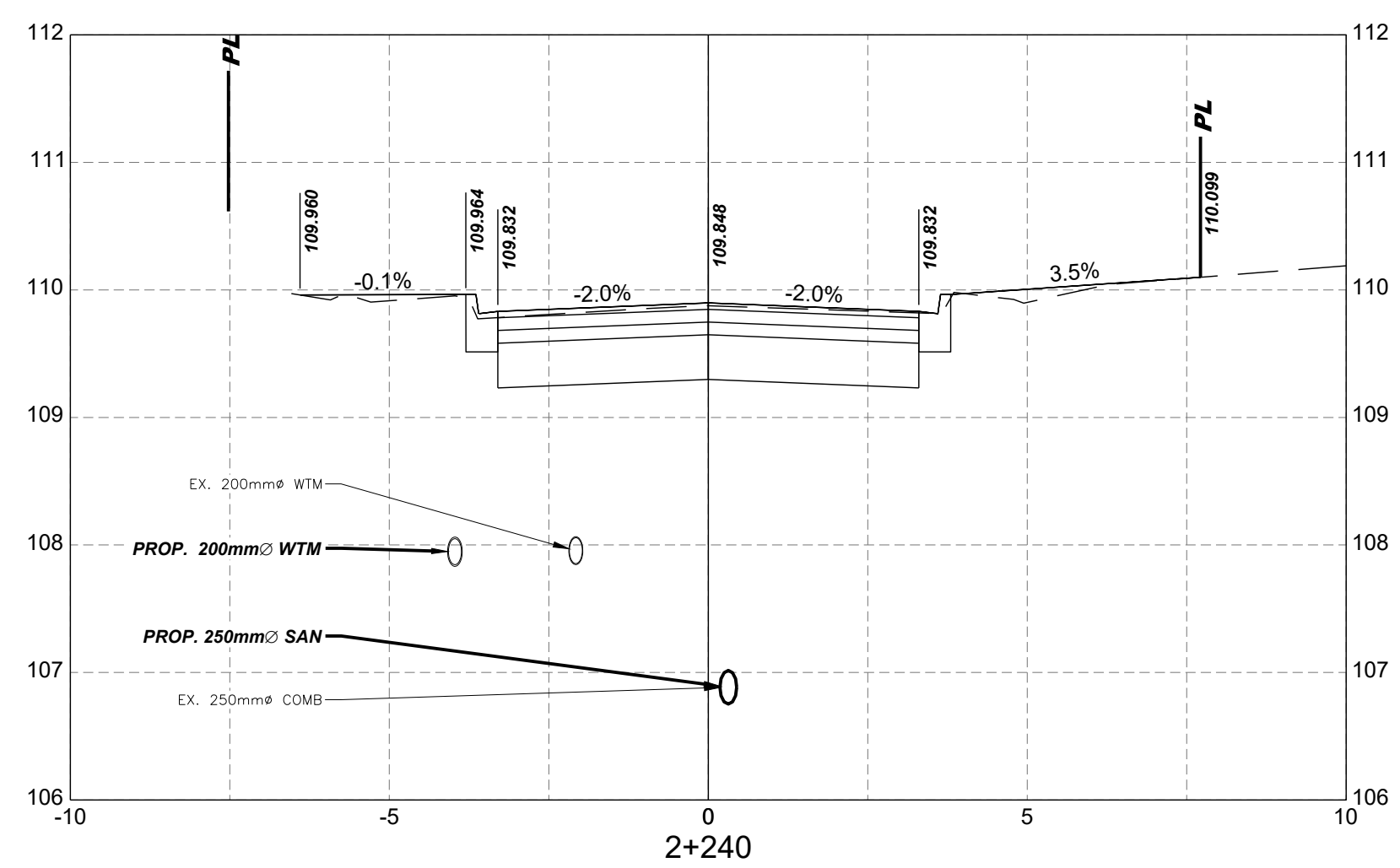
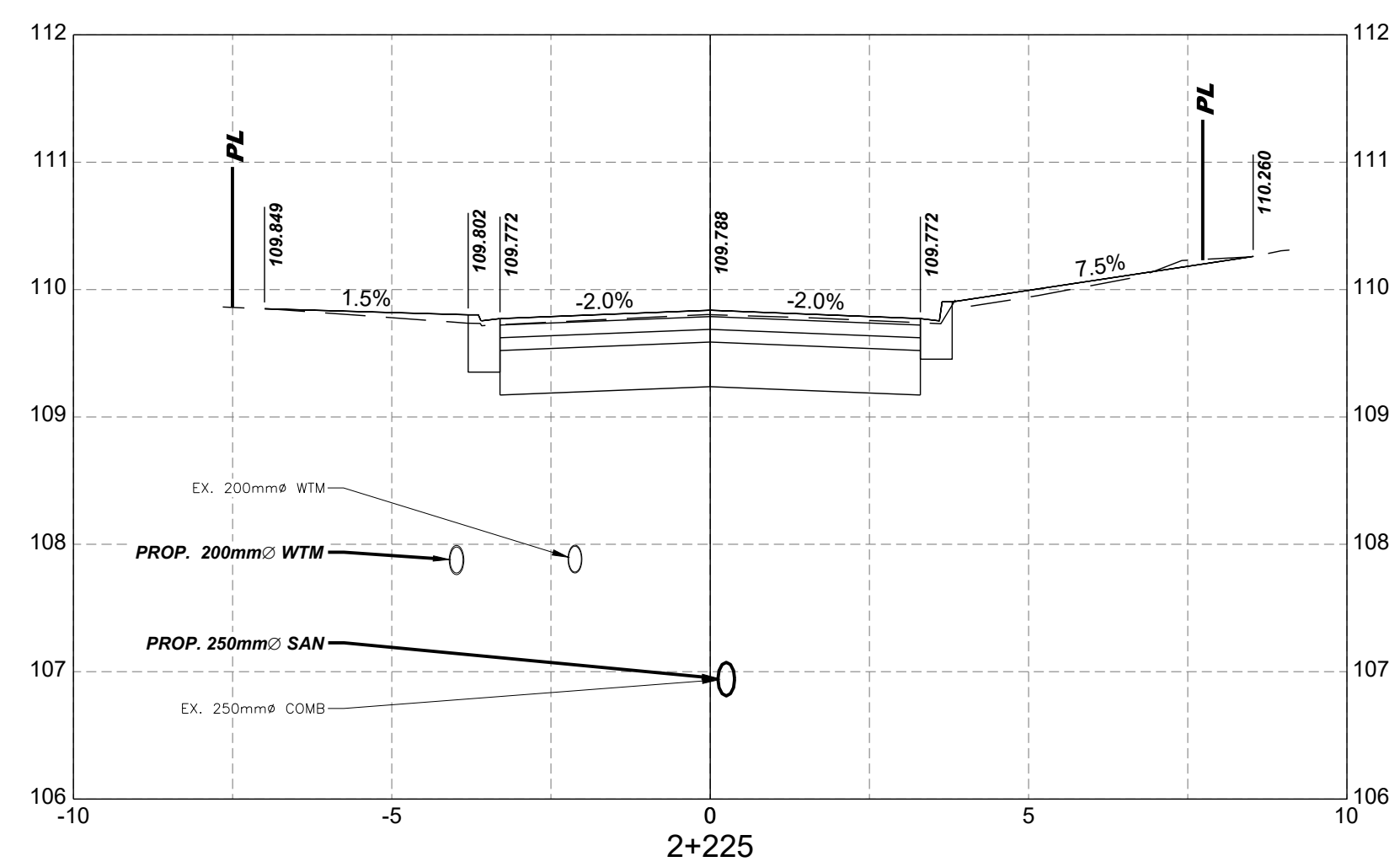
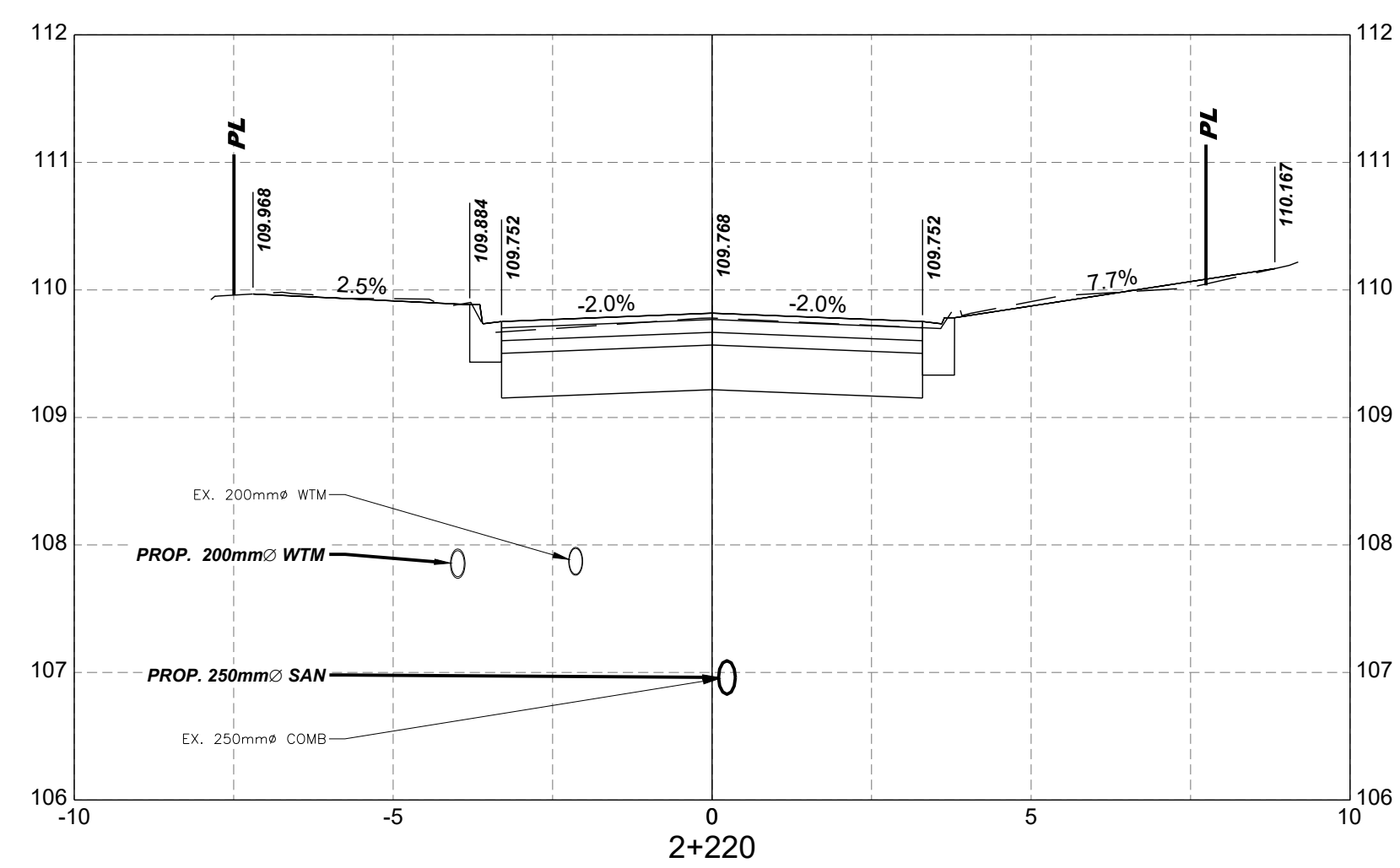
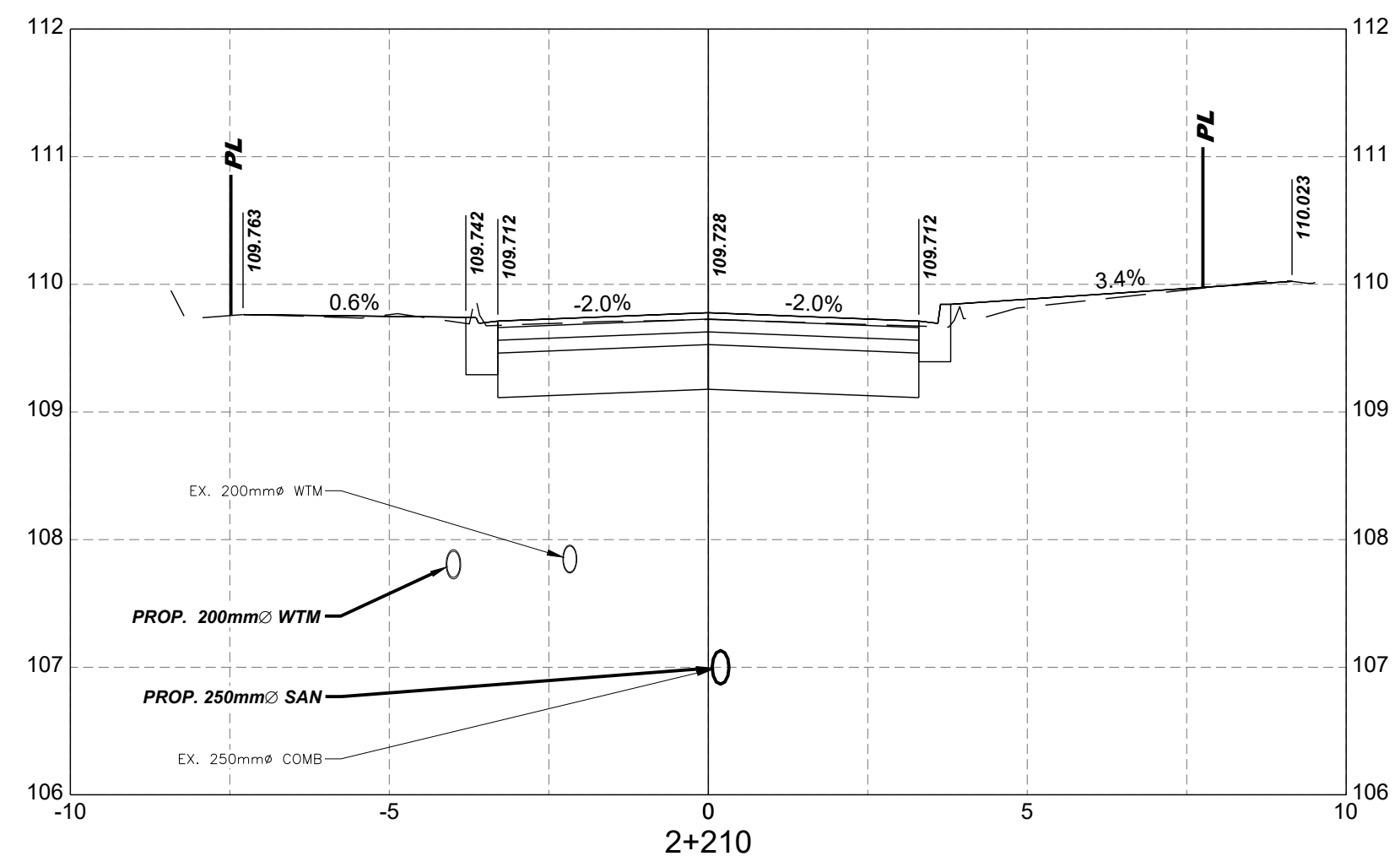
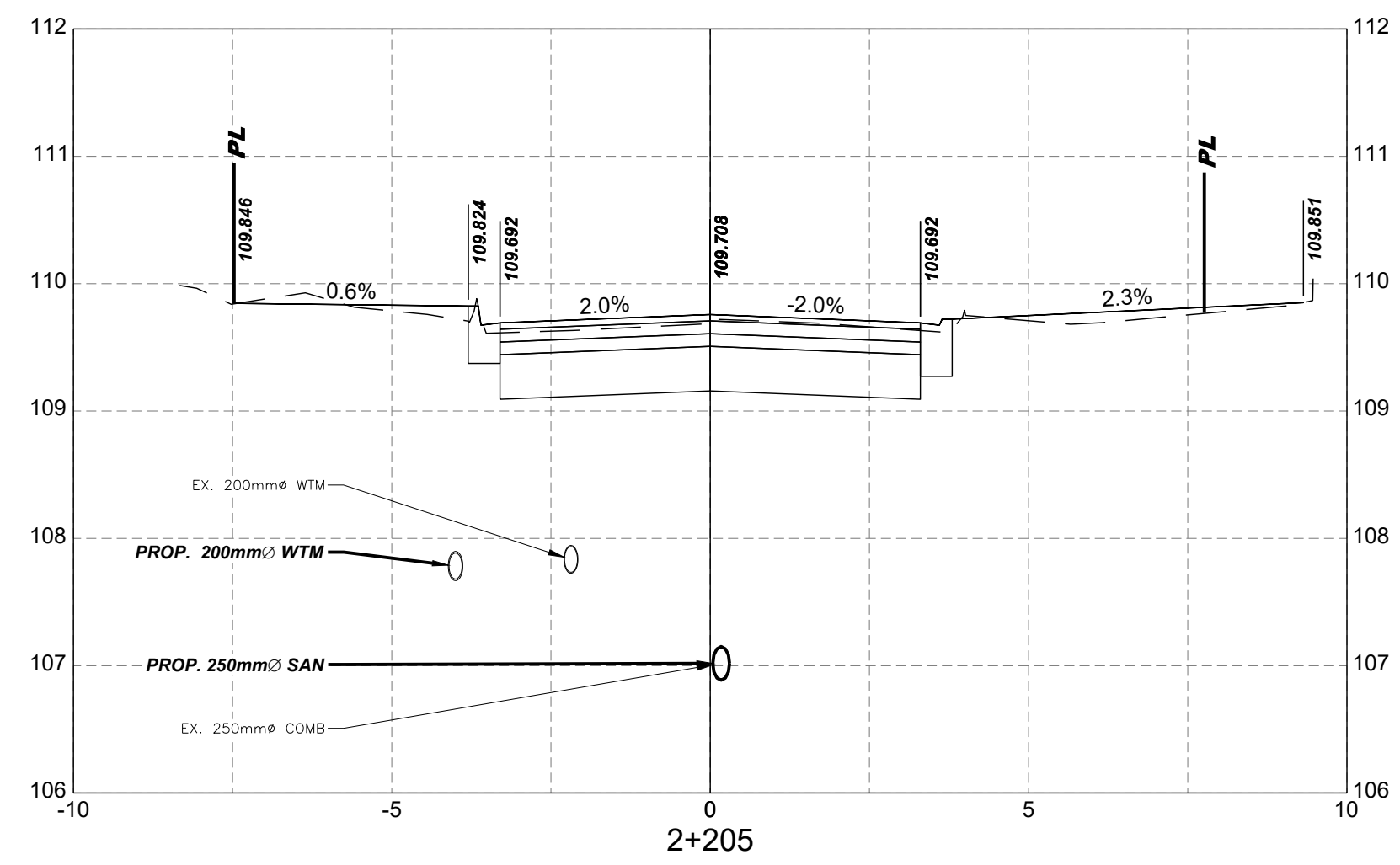
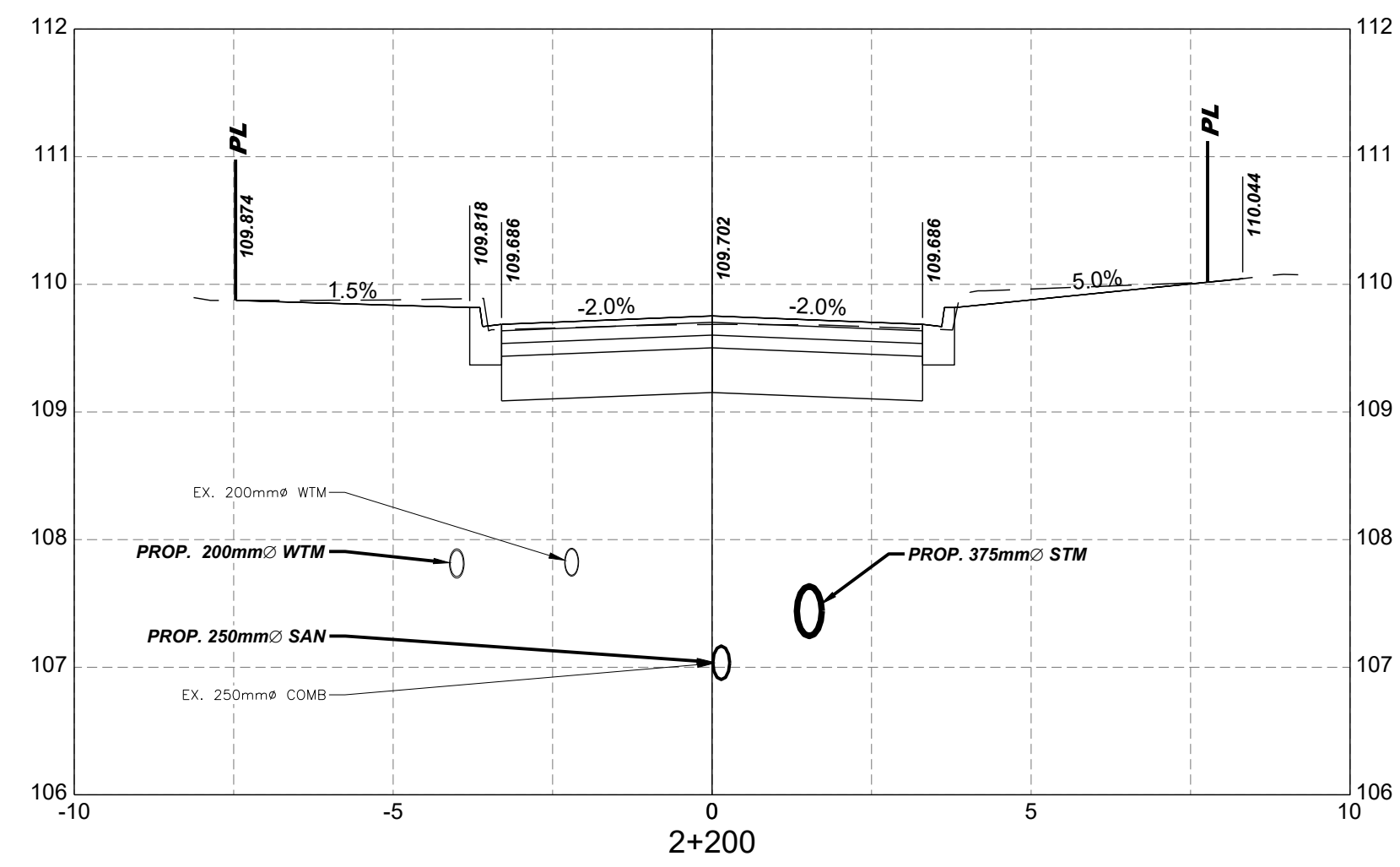
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PROJECT / CONTRACT P21-004  
FOREST HILL / HILLCREST / ROCKCLIFFE  
UNDERGROUND IMPROVEMENTS  
**FOREST HILL ROAD**  
THE CITY OF ST. CATHARINES  
**CROSS SECTIONS V**

CONSULTANT FILE No.	20235723
DATE	SEPTEMBER 2024
SCALE	Hor : 1:100 m Ver : 1:50 m
REF. No.	P21-004
DWG No.	5723-00-C-305
REV.	0





NOTES/LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

DRAFTING	NR
DESIGN	FB/DH
CHECKED BY	DH
APPROVED BY	MM

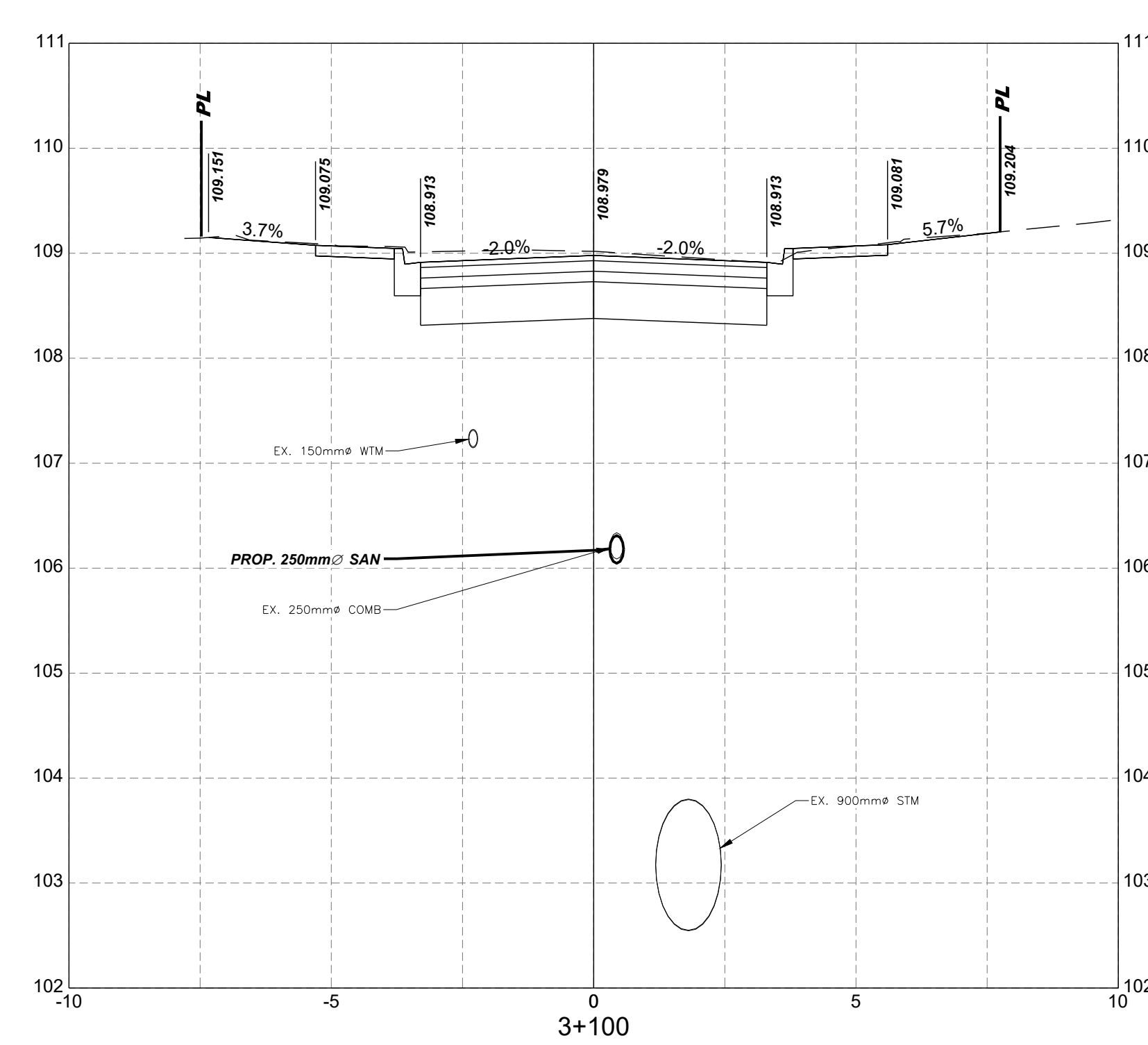
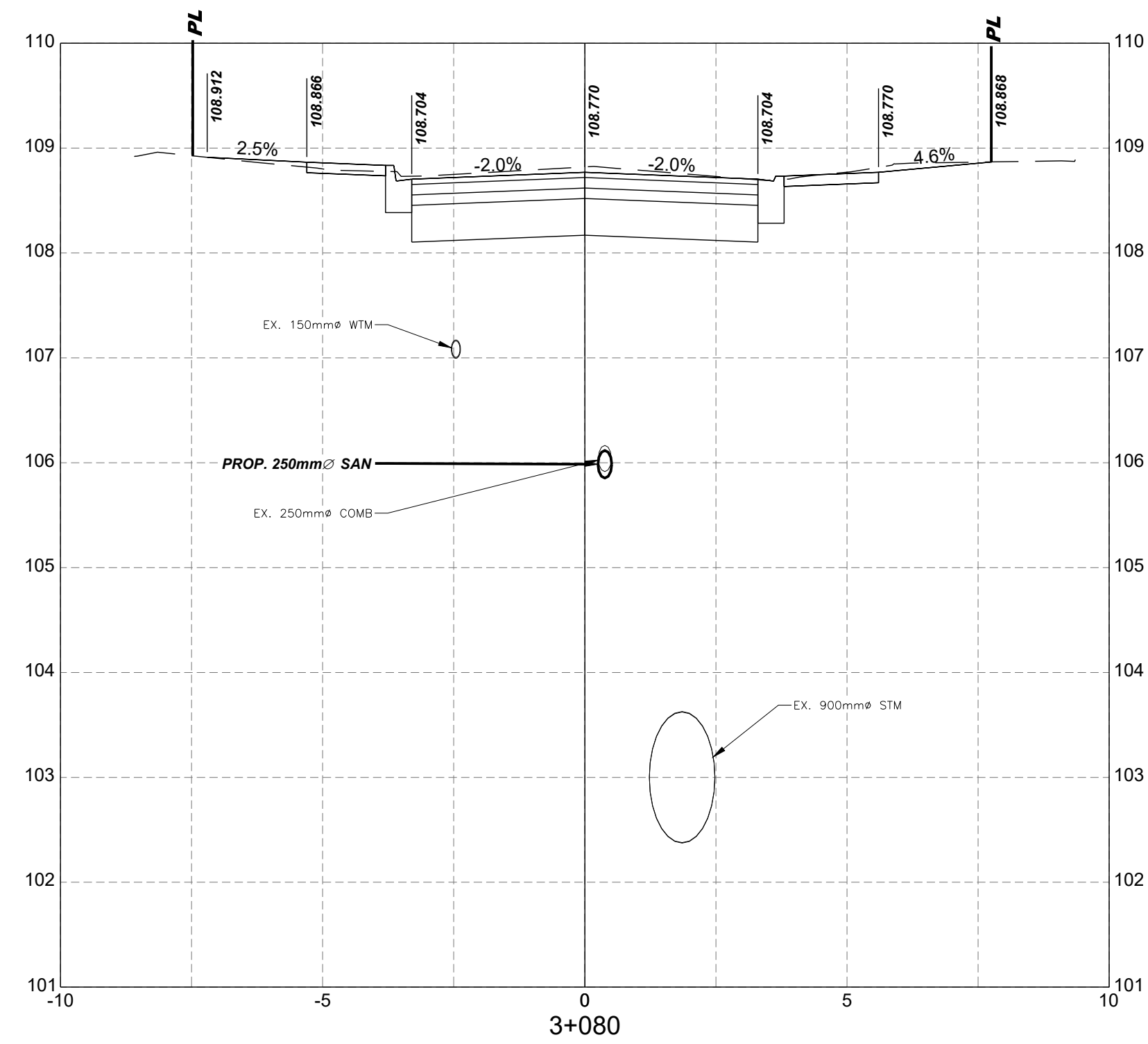
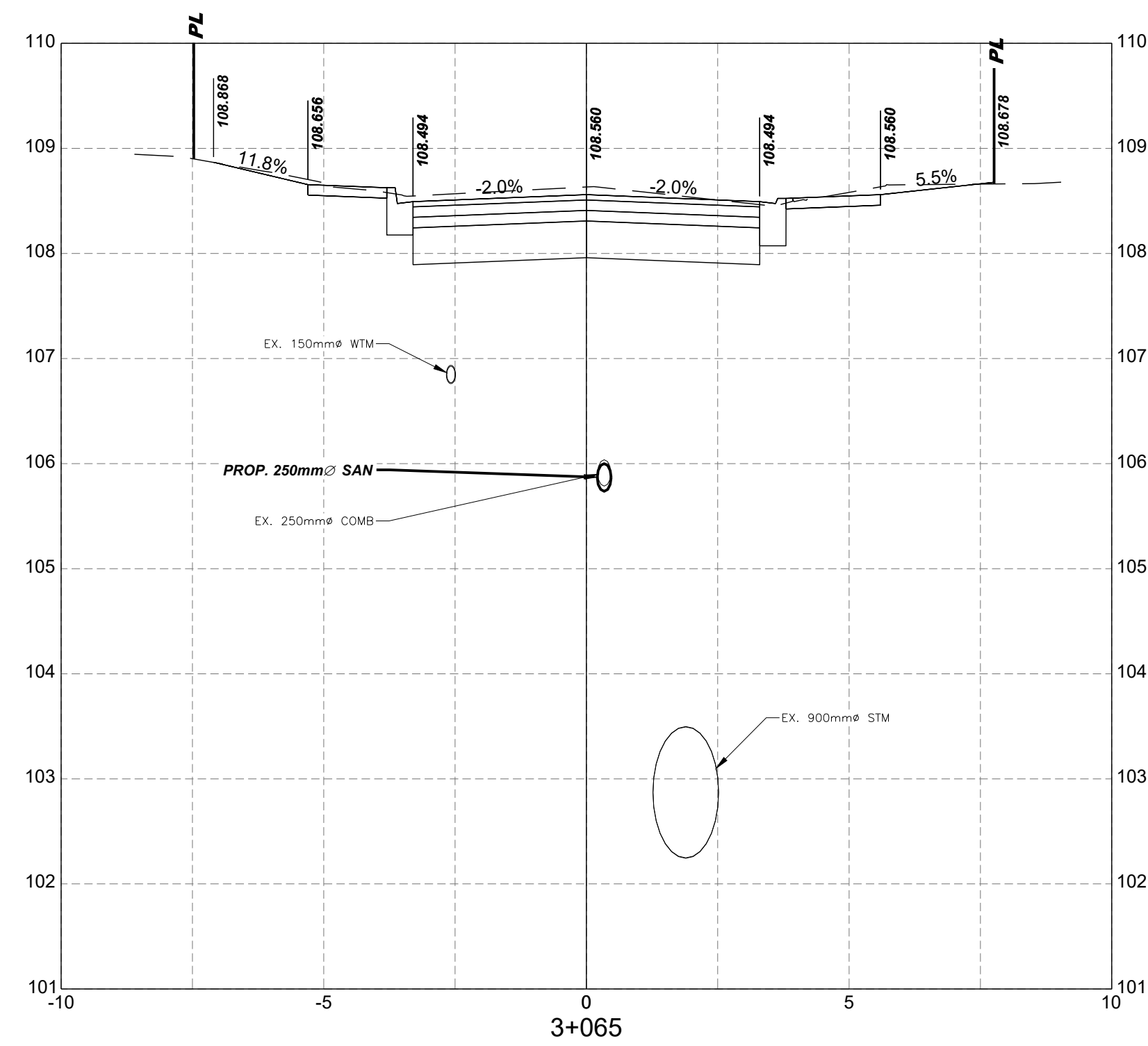
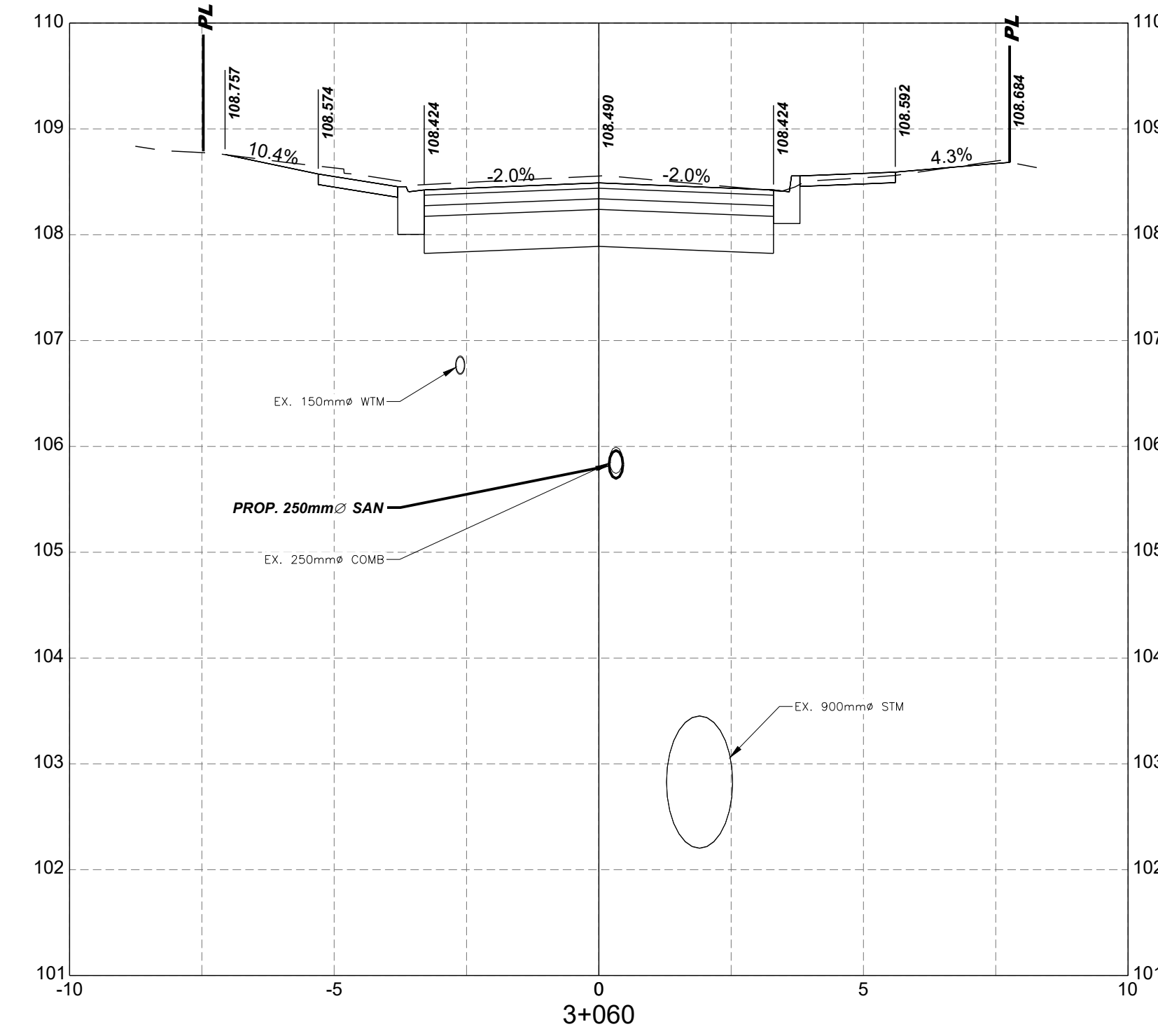
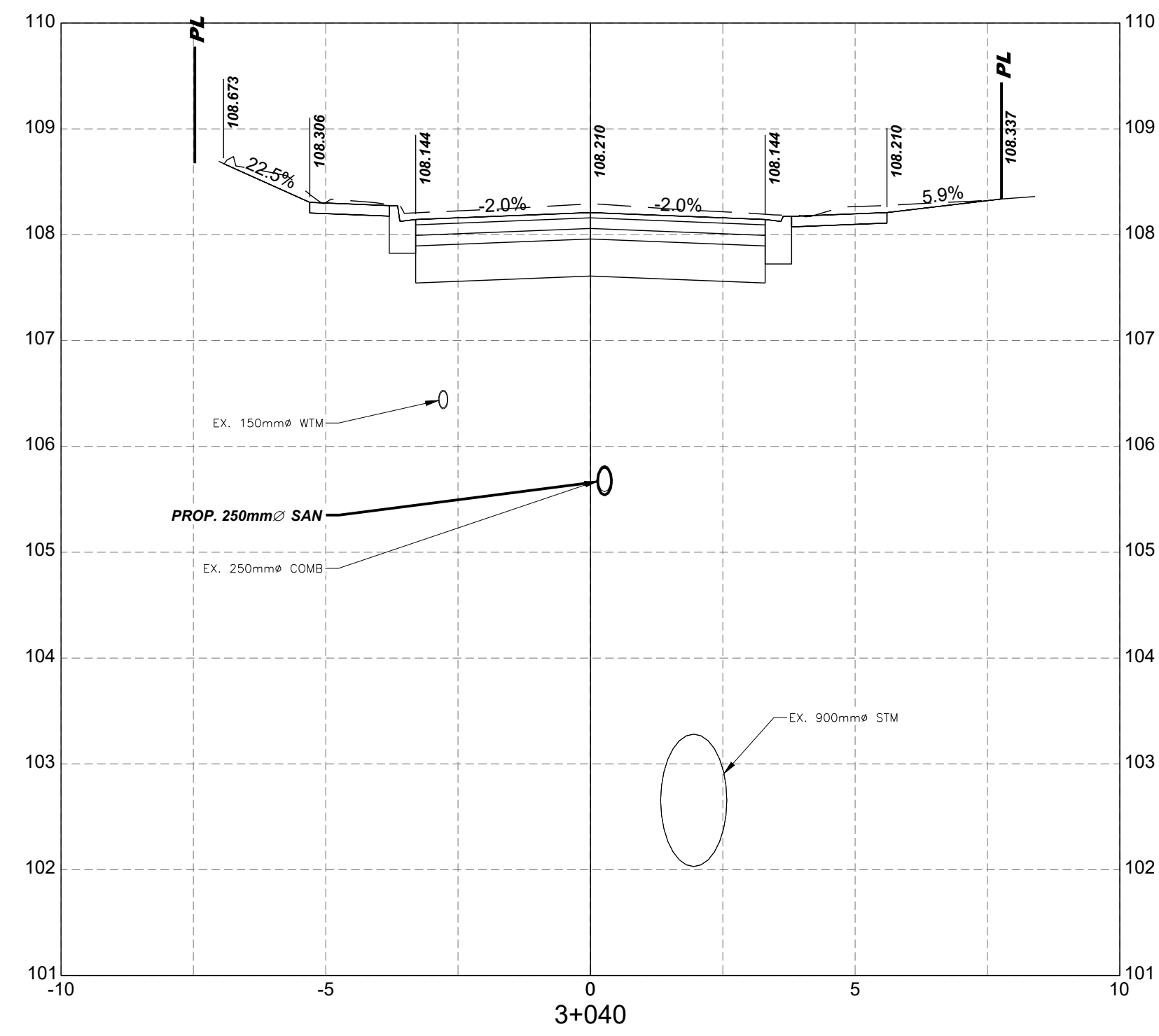
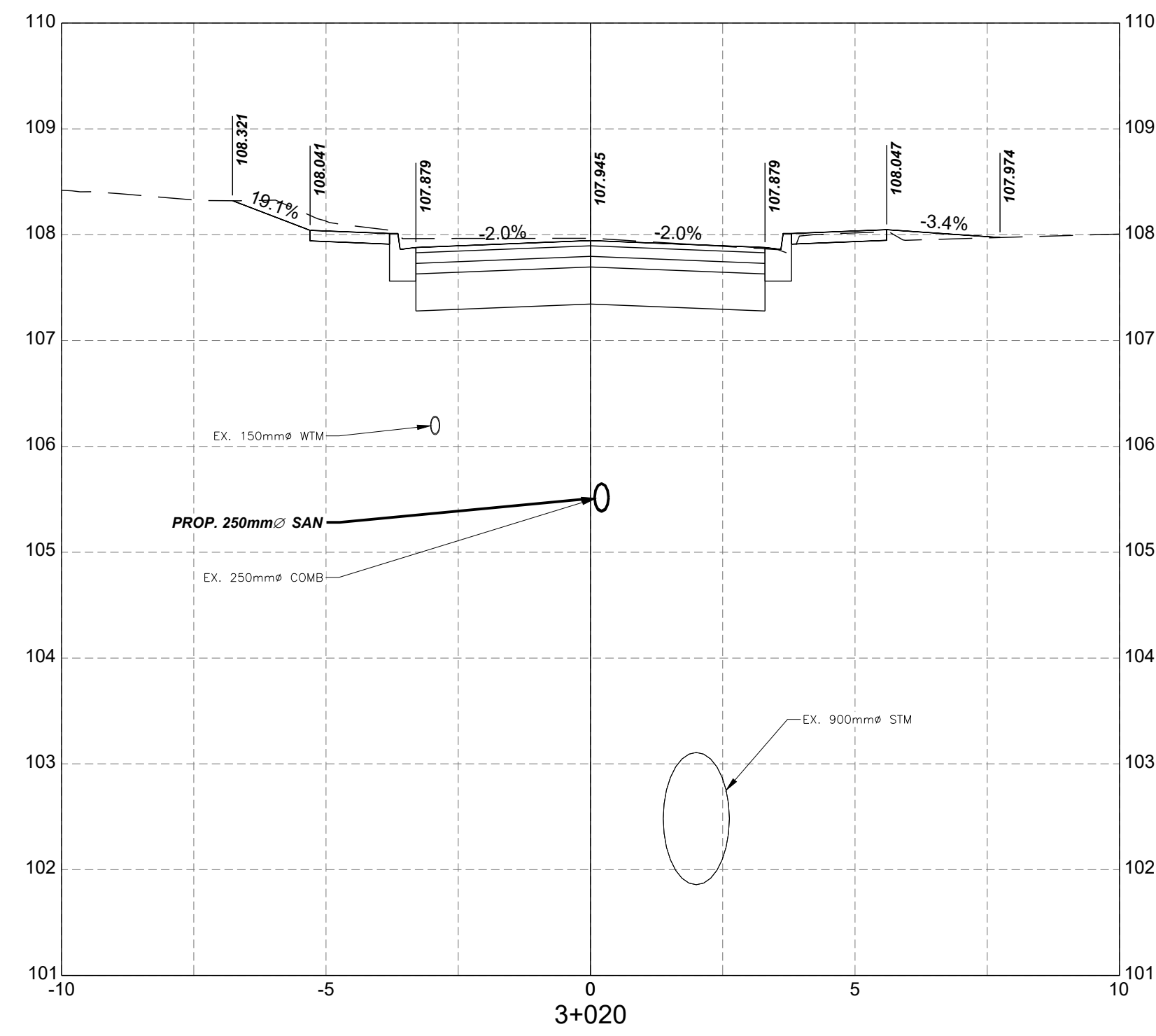
Professional Engineers Ontario  
**Limited Licensee**  
 Name: M. A. MASCIOLI  
 Number: 100203964  
 Category: CIVIL  
 2024-09-03  
 This license is subject to the limitations as detailed on the certificate.  
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PROJECT / CONTRACT P21-004  
 FOREST HILL / HILLCREST / ROCKCLIFFE  
 UNDERGROUND IMPROVEMENTS  
**FOREST HILL ROAD**  
 THE CITY OF ST. CATHARINES  
**CROSS SECTIONS VI**

CONSULTANT FILE No.	20235723
DATE	SEPTEMBER 2024
SCALE	Hor : 1:100 m Ver : 1:50 m
REF. No.	P21-004
DWG No.	5723-00-C-306
REV.	0





NOTES/LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

DRAFTING	NR
DESIGN	FB/DH
CHECKED BY	DH
APPROVED BY	MM

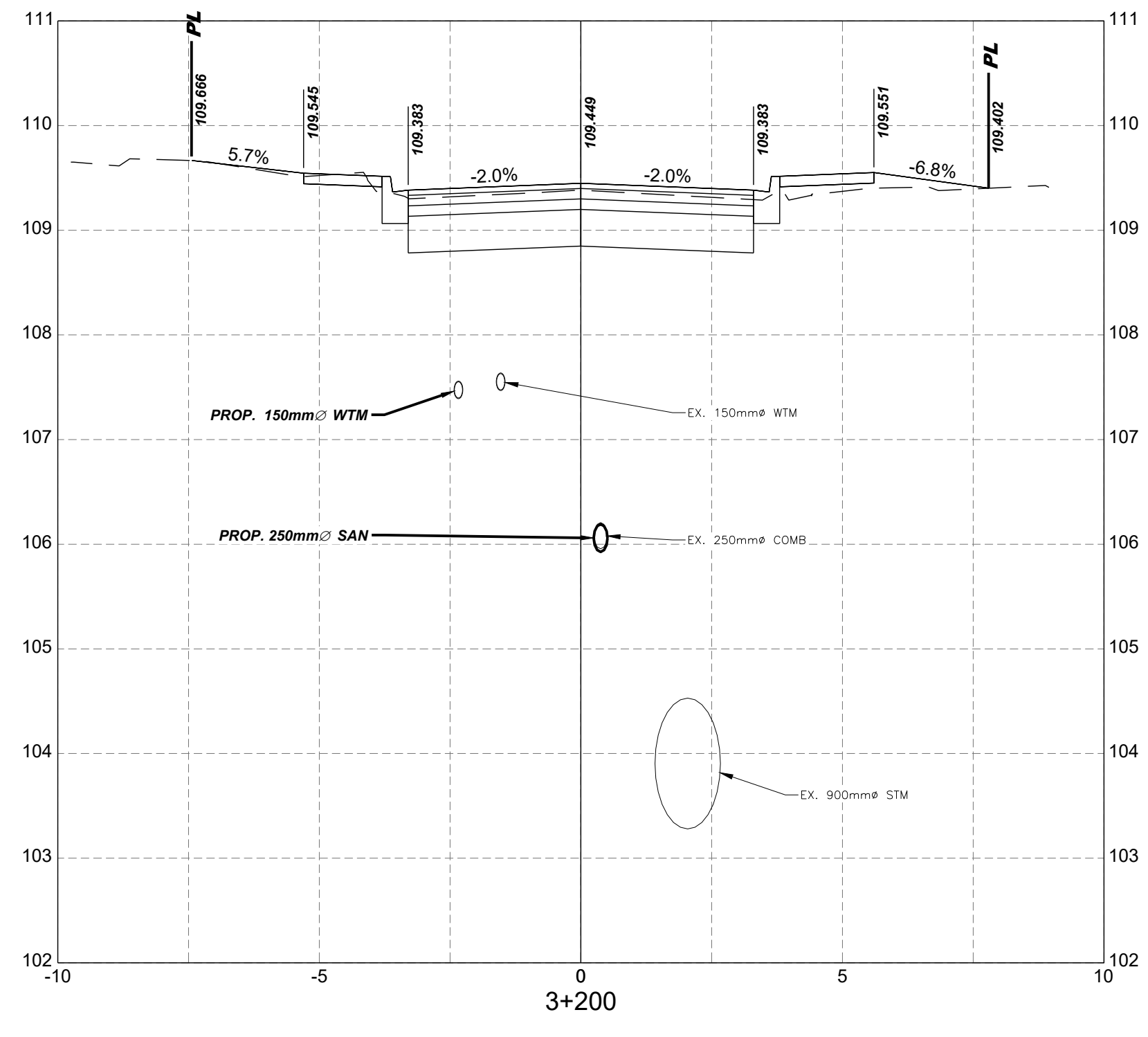
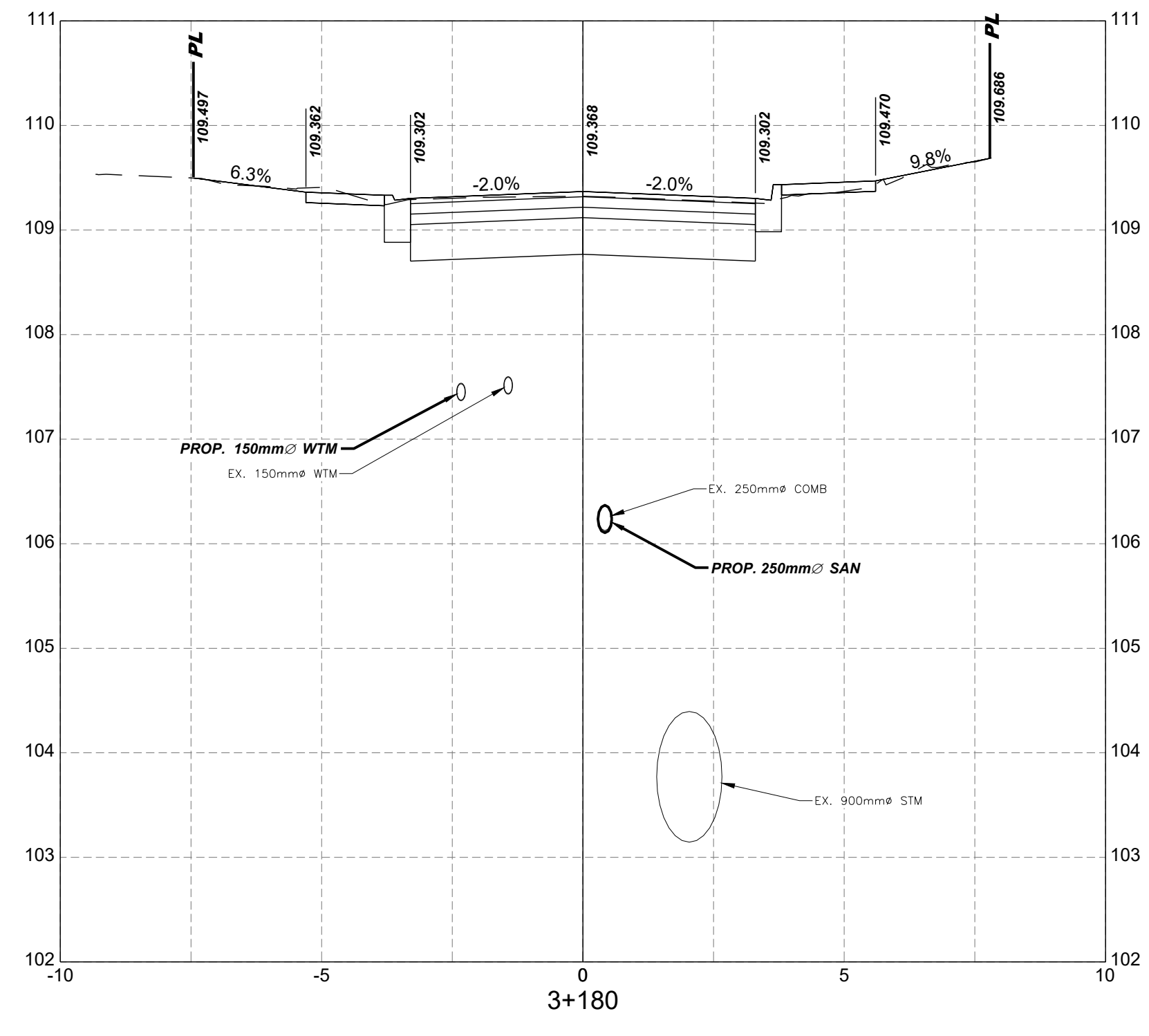
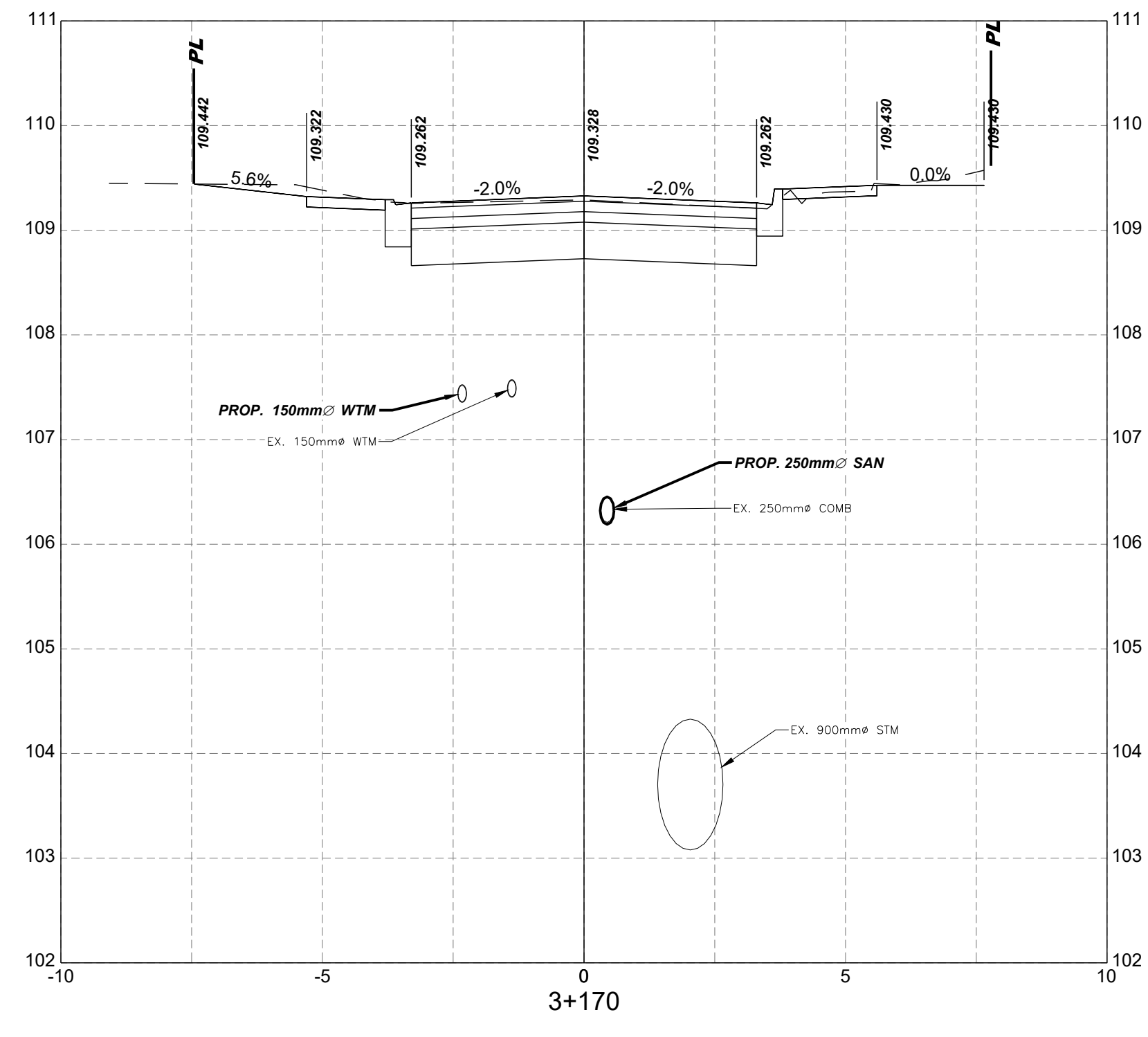
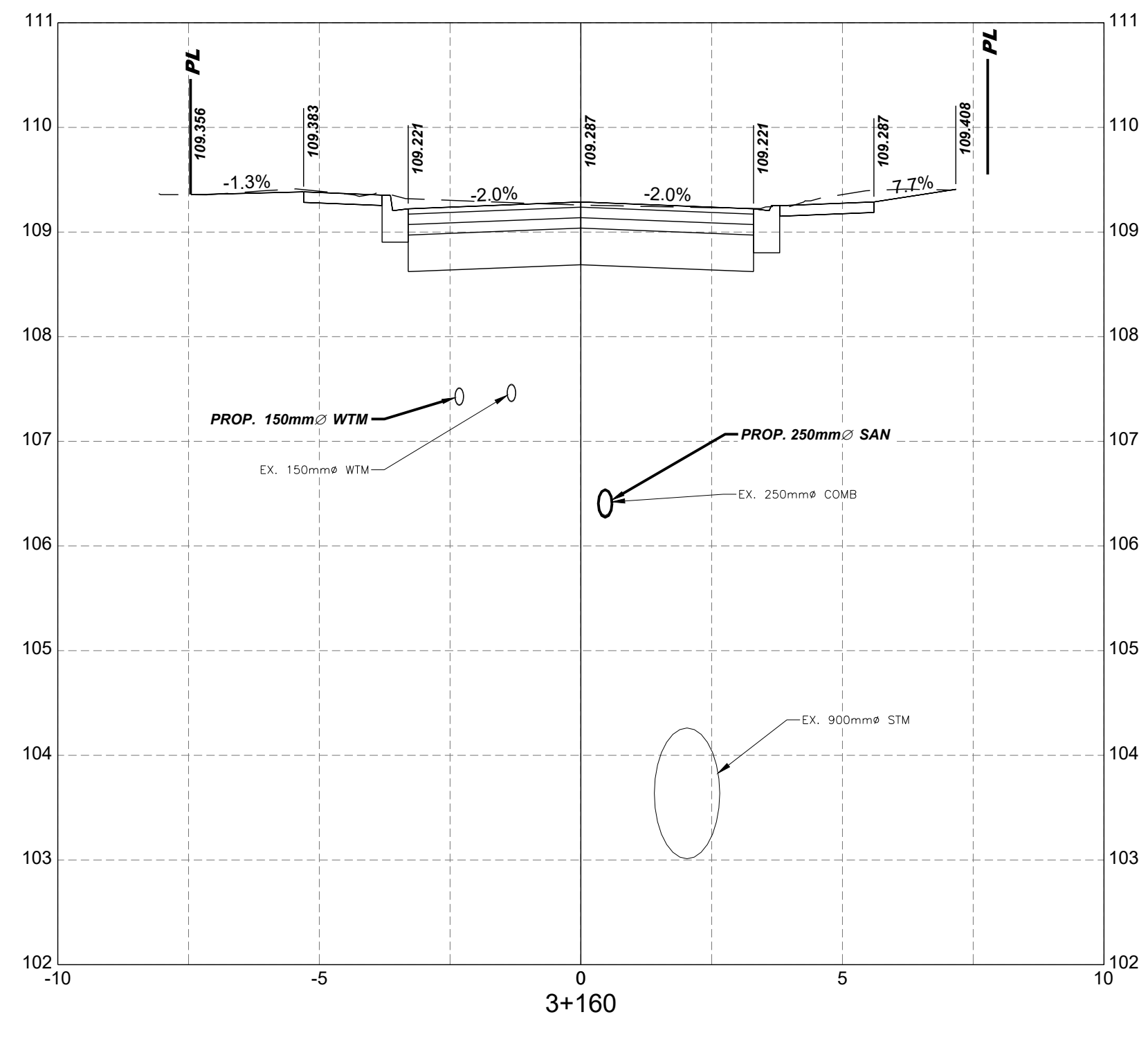
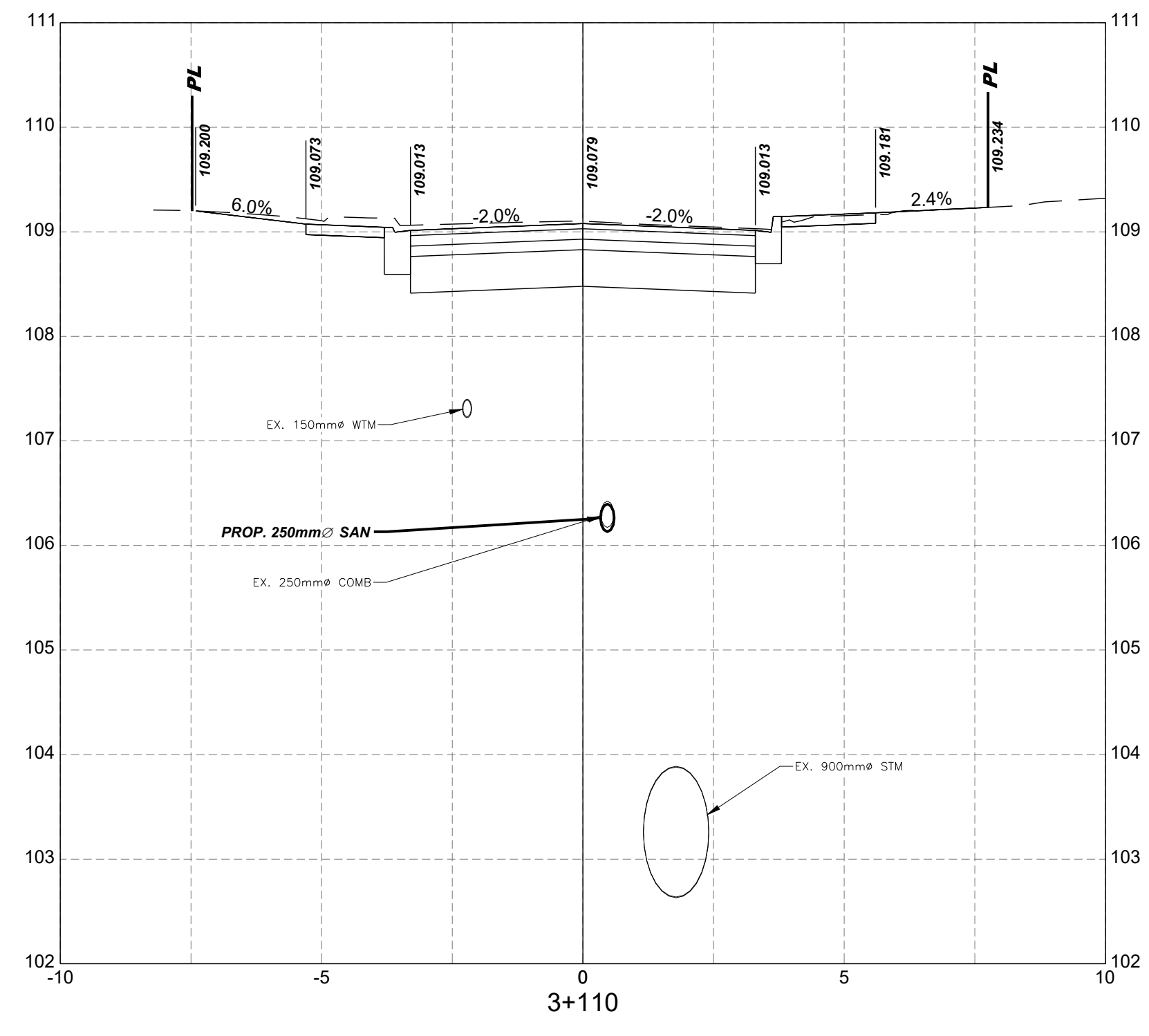
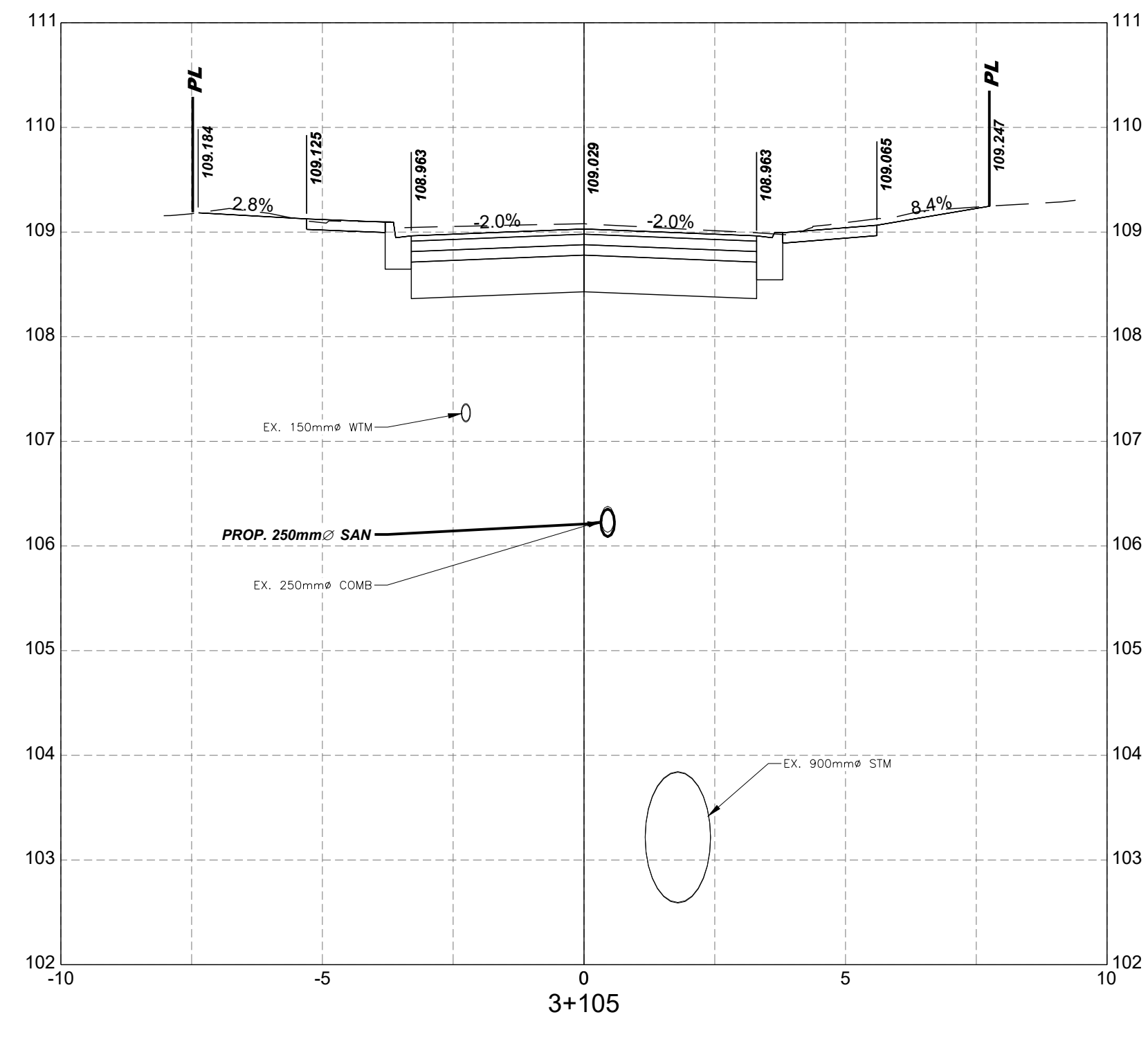
Professional Engineers  
Ontario  
**Limited Licensee**  
Name: M. A. MASCIOLI  
Number: 100203964  
Category: CIVIL  
2024-09-03  
This license is subject to the limitations as detailed on the certificate.  
Association of Professional Engineers of Ontario



PROJECT / CONTRACT P21-004  
FOREST HILL / HILLCREST / ROCKCLIFFE  
UNDERGROUND IMPROVEMENTS  
**ROCKCLIFFE ROAD**  
THE CITY OF ST. CATHARINES  
**CROSS SECTIONS VII**

CONSULTANT FILE No.	20235723
DATE	SEPTEMBER 2024
SCALE	Hor : 1:100m Ver : 1:50 m
REF. No.	P21-004
DWG No.	5723-00-C-307
REV.	0





NOTES/LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

DRAFTING: NR  
 DESIGN: FB/DH  
 CHECKED BY: DH  
 APPROVED BY: MM

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**Limited Licensee**  
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 Number: 100203964  
 Category: CIVIL  
 2024-09-03  
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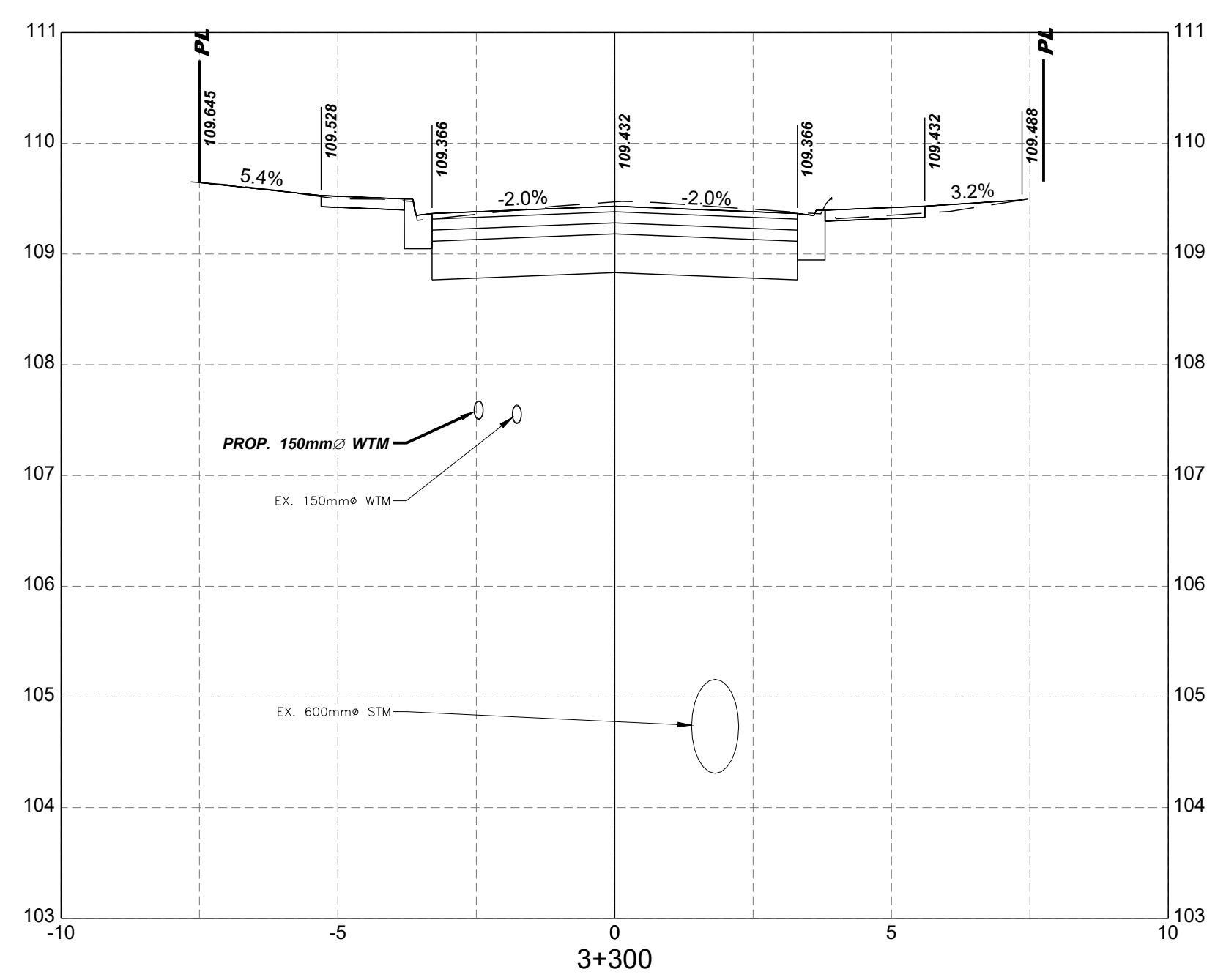
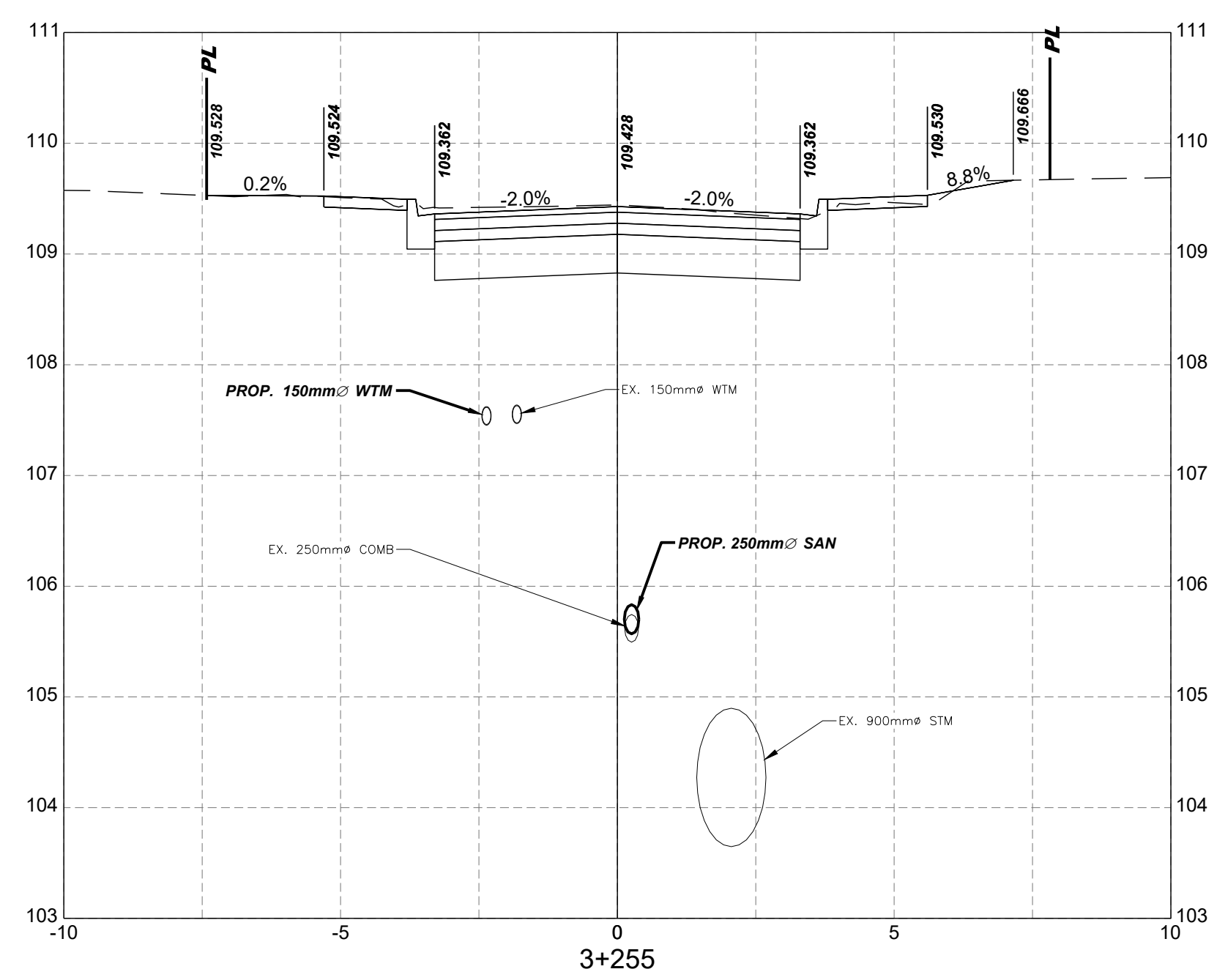
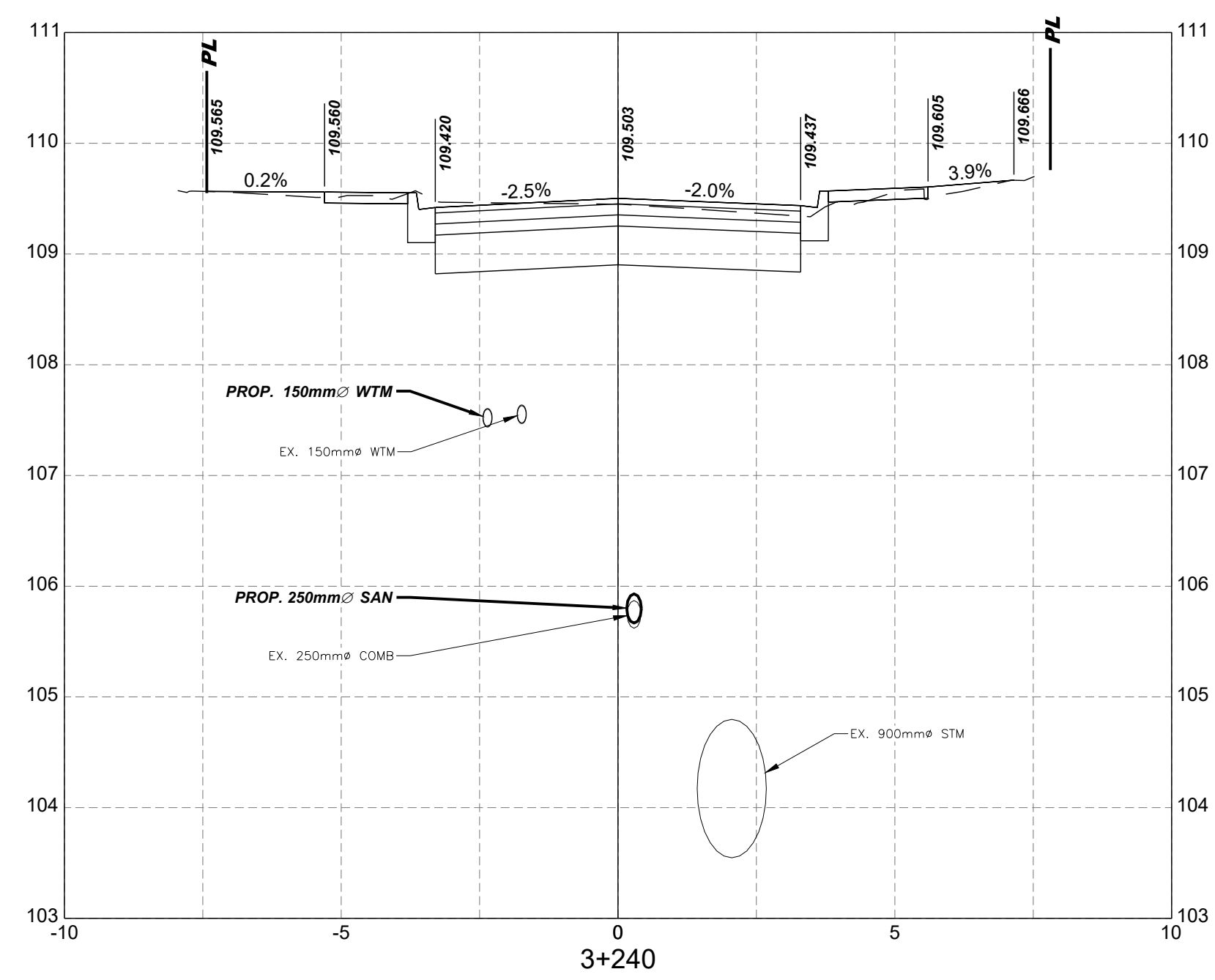
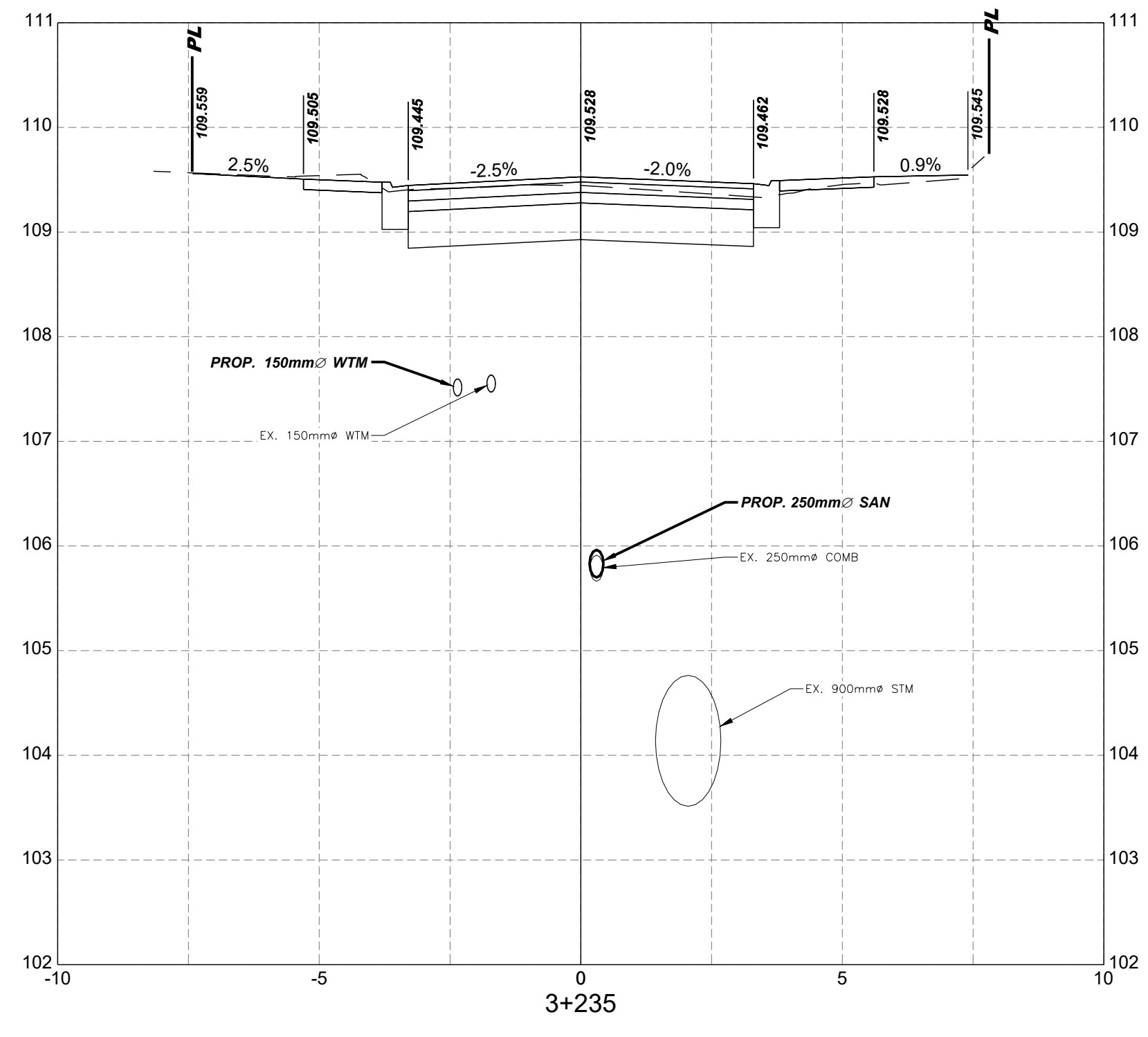
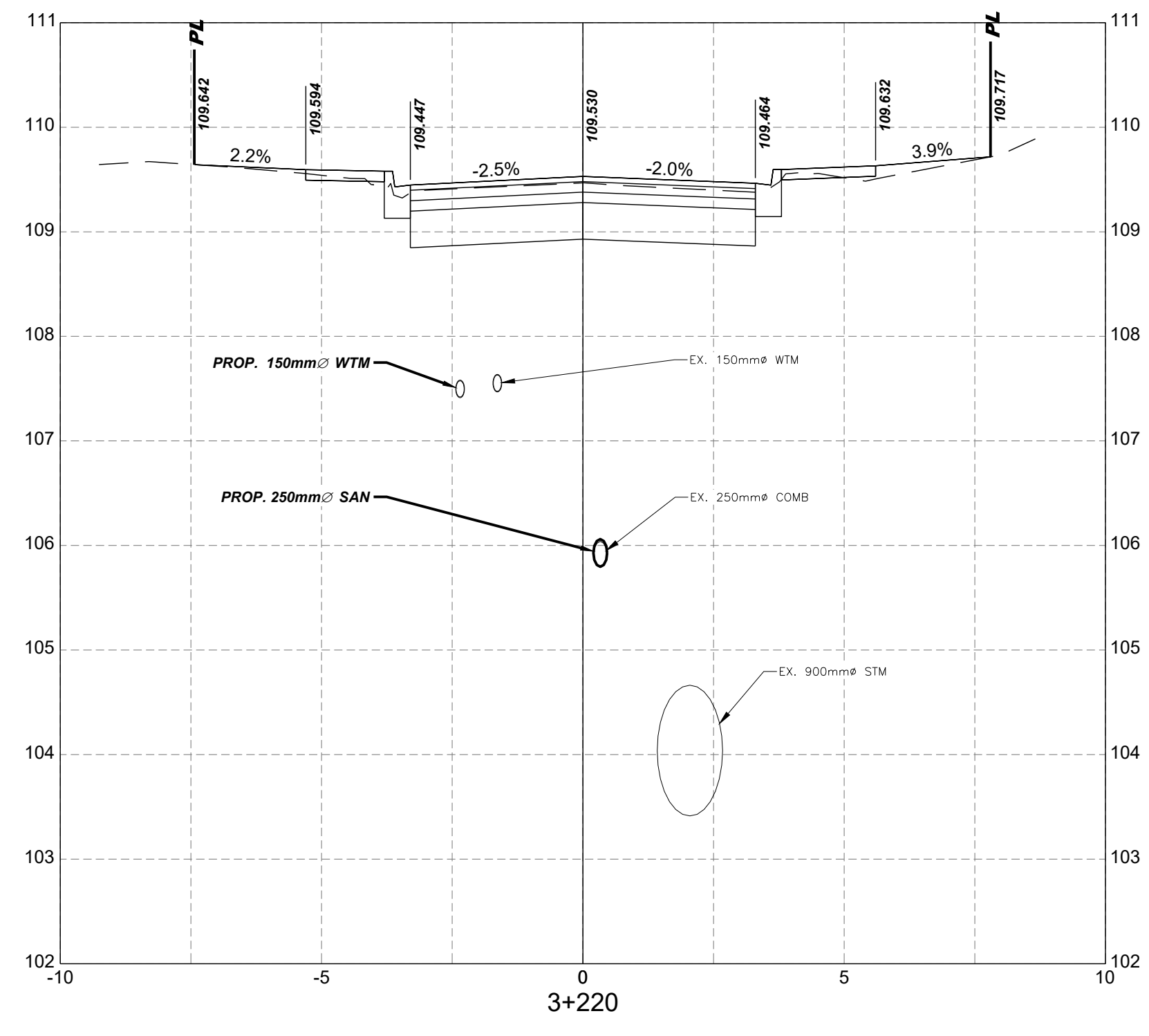
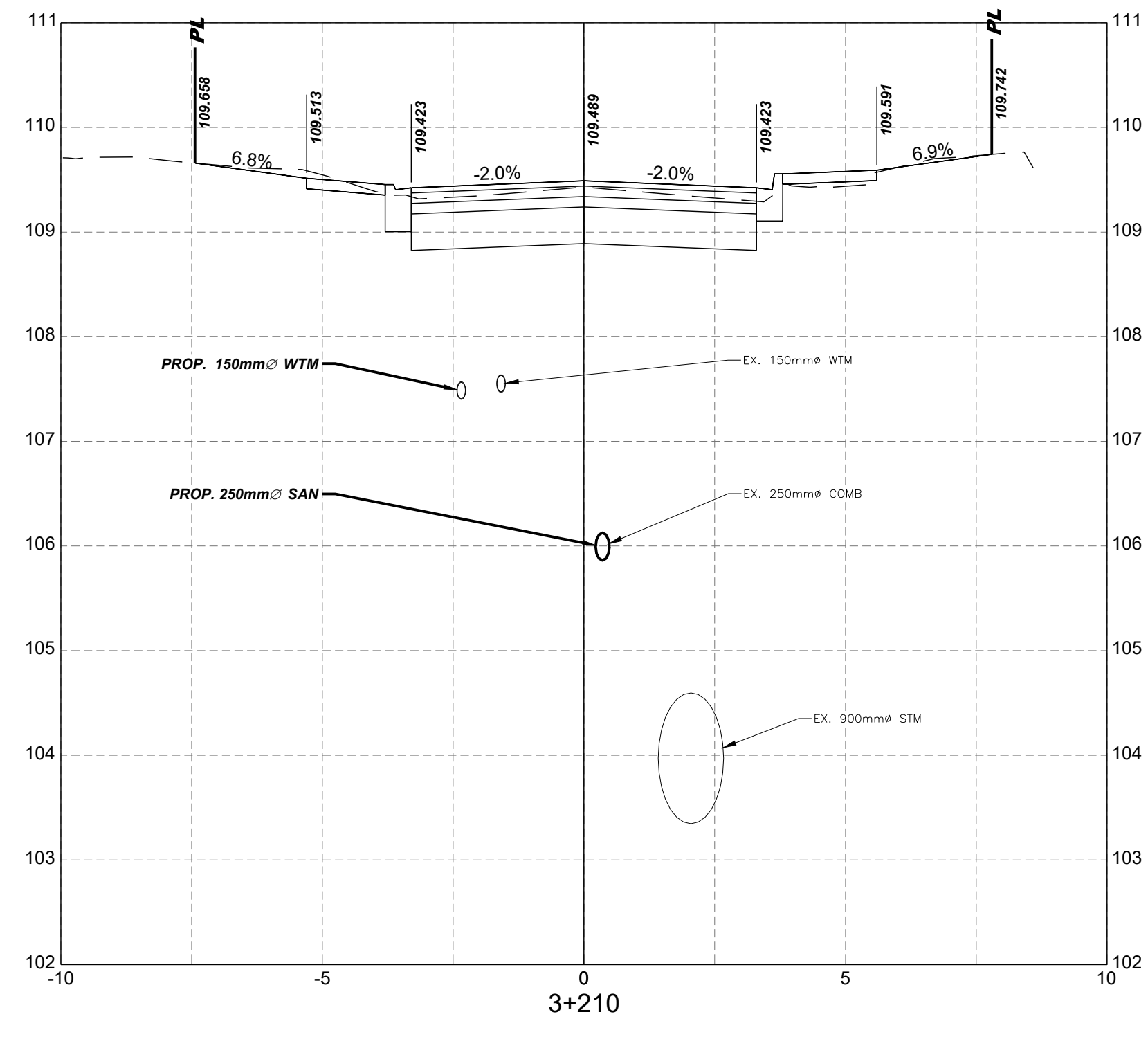
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**Associated Engineering**

**PROJECT / CONTRACT P21-004**  
**FOREST HILL / HILLCREST / ROCKCLIFFE**  
**UNDERGROUND IMPROVEMENTS**  
**ROCKCLIFFE ROAD**  
**THE CITY OF ST. CATHARINES**  
**CROSS SECTIONS VIII**

CONSULTANT FILE No. 20235723	
DATE	SEPTEMBER 2024
SCALE	Hor : 1:100 m Ver : 1:50 m
REF. No.	<b>P21-004</b>
DWG No.	<b>5723-00-C-308</b>
REV.	<b>0</b>





NOTES/LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

DRAFTING	NR
DESIGN	FB/DH
CHECKED BY	DH
APPROVED BY	MM

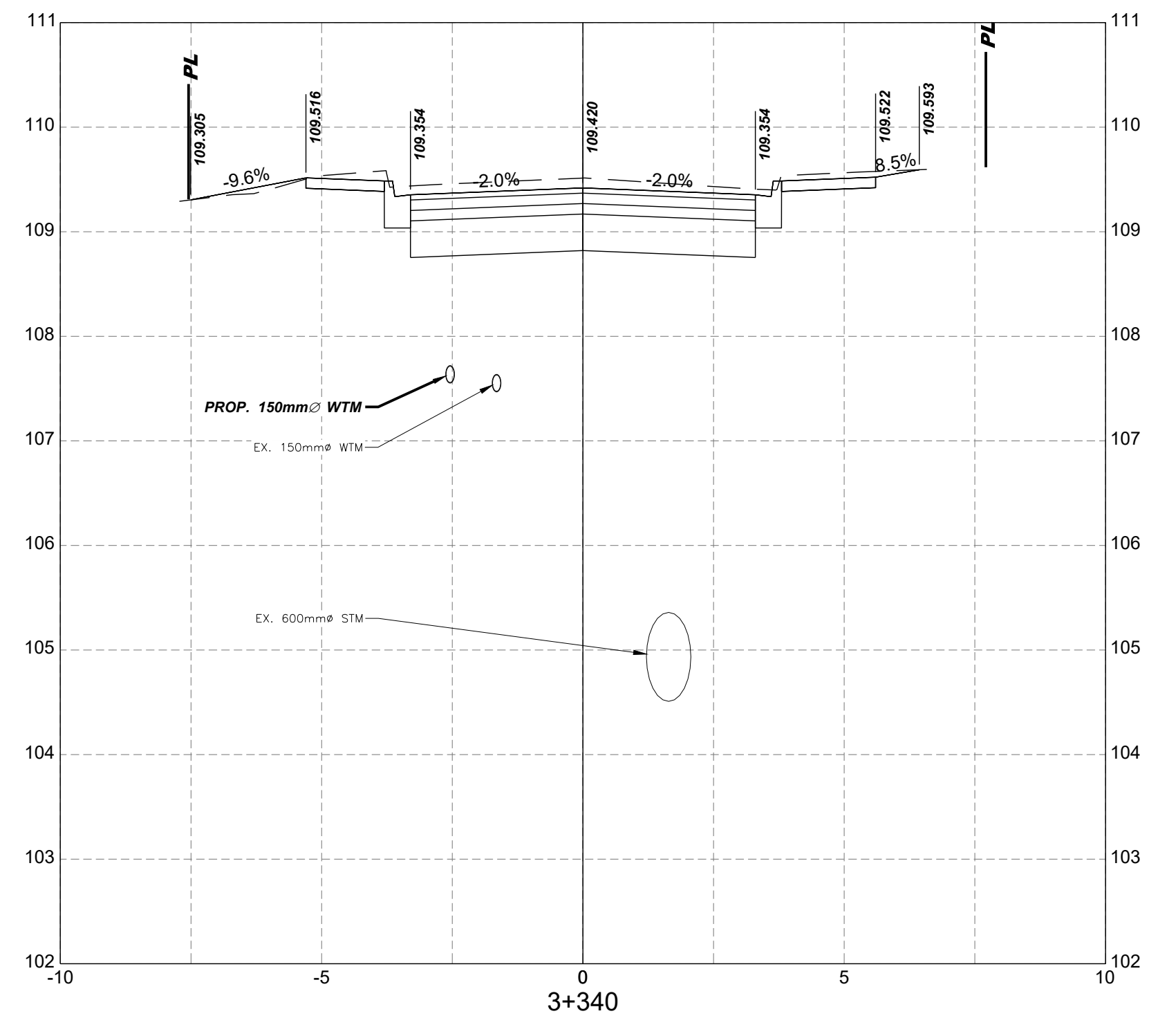
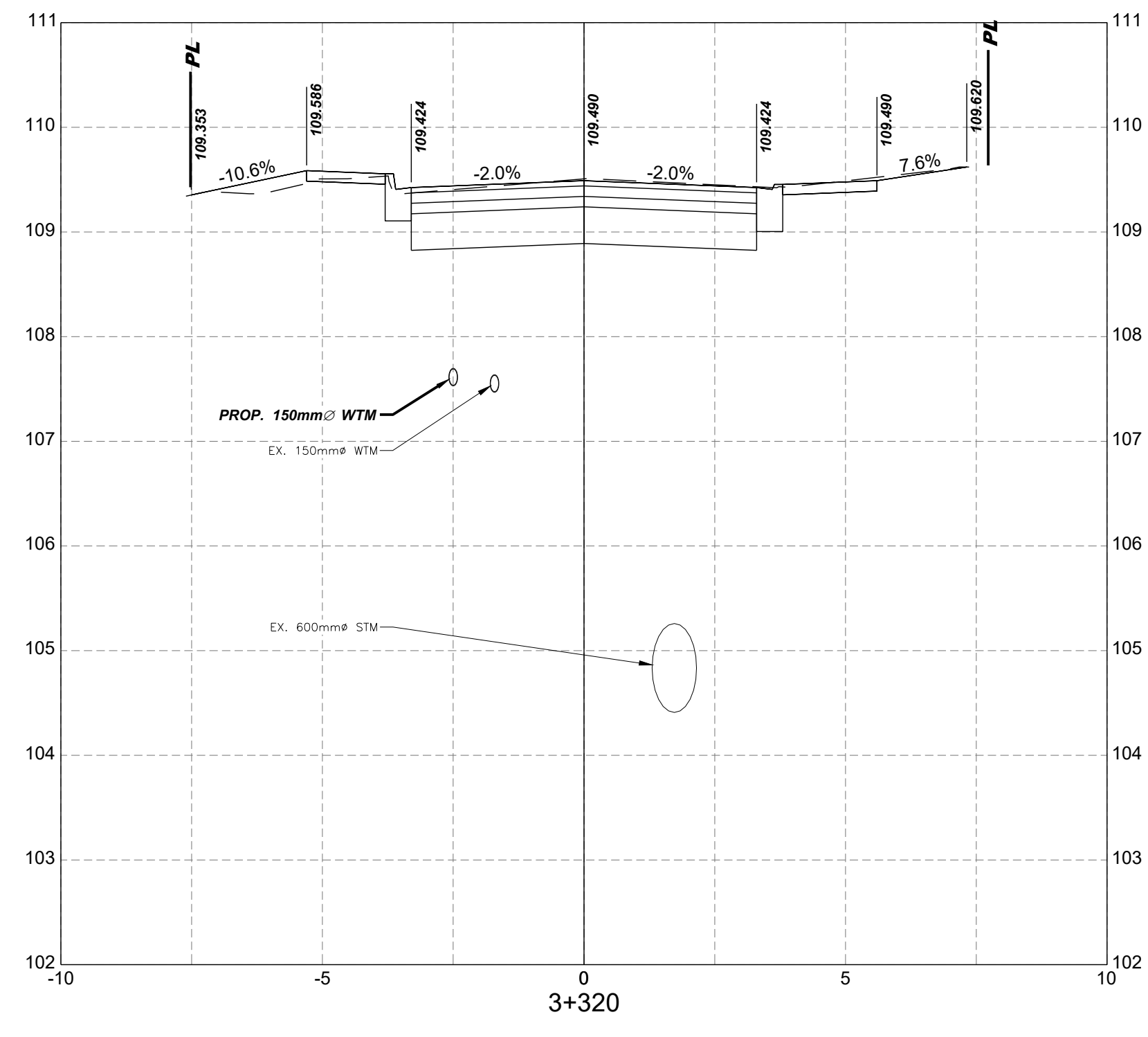
Professional Engineers Ontario  
**Limited Licensee**  
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 Number: 100203964  
 Category: CIVIL  
 2024-09-03  
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 STREETS MAXIMISED TOGETHER

PROJECT / CONTRACT P21-004  
 FOREST HILL / HILLCREST / ROCKCLIFFE  
 UNDERGROUND IMPROVEMENTS  
**ROCKCLIFFE ROAD**  
 THE CITY OF ST. CATHARINES  
**CROSS SECTIONS IX**

CONSULTANT FILE No.	20235723
DATE	SEPTEMBER 2024
SCALE	Hor : 1:100 m Ver : 1:50 m
REF. No.	P21-004
DWG No.	5723-00-C-309
REV.	0





NOTES/LEGEND			
0	ISSUED FOR TENDER	2024-09-03	NR
No.	REVISION	DATE	INIT.

DRAFTING	NR
DESIGN	FB/DH
CHECKED BY	DH
APPROVED BY	MM

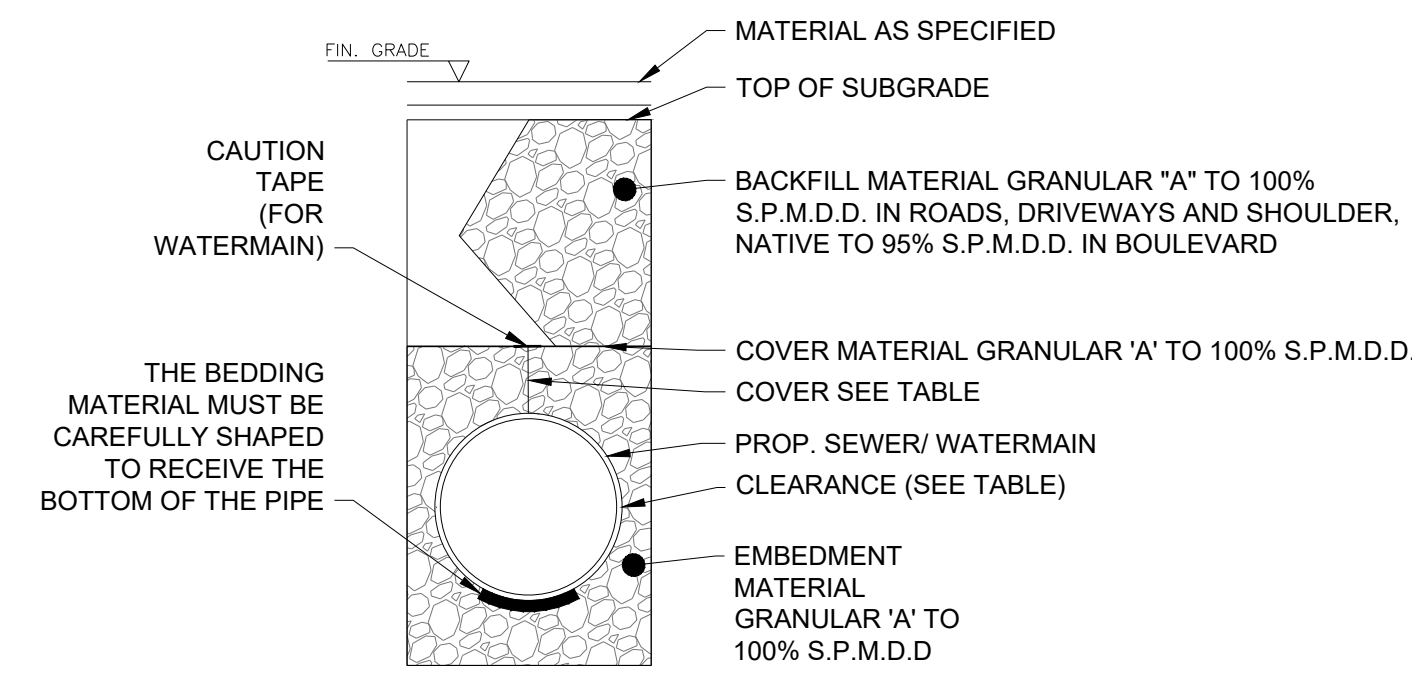
**Professional Engineers Ontario**  
**Limited Licensee**  
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 Category: CIVIL  
 2024-09-03  
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PROJECT / CONTRACT P21-004  
 FOREST HILL / HILLCREST / ROCKCLIFFE  
 UNDERGROUND IMPROVMENTS  
**ROCKCLIFFE ROAD**  
 THE CITY OF ST. CATHARINES  
**CROSS SECTIONS X**

CONSULTANT FILE No. 20235723	
DATE	SEPTEMBER 2024
SCALE	Hor : 1:100 m Ver : 1:50 m
REF. No.	P21-004
DWG No.	5723-00-C-310
REV.	0



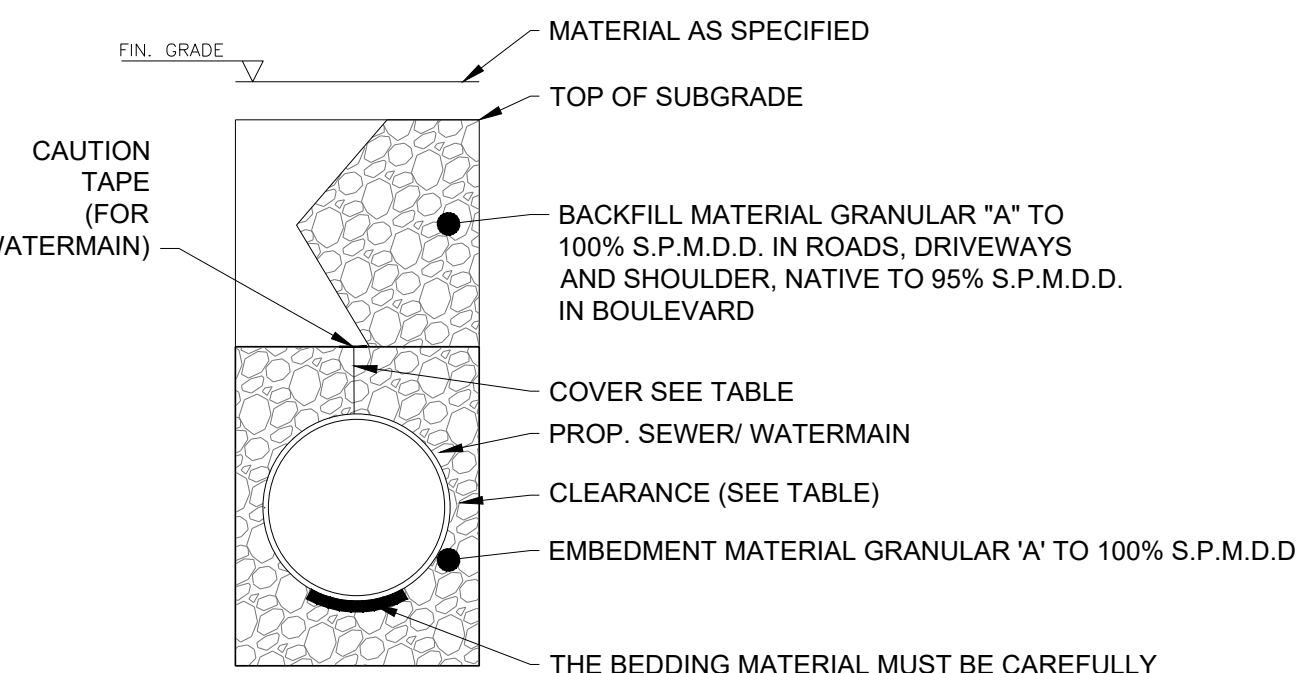
NOTES:

- REFER TO OPSD 802.030, OPSD-802.031 AND OPSD-802.032 FOR ADDITIONAL DETAILS ON THE BEDDING, COVER AND BACKFILL OF ROAD PIPES IN TYPE 1, 2, 3 AND 4 SOILS.

CLEARANCE & COVER TABLE			
PIPE INSIDE DIAMETER (mm)	CLEARANCE (mm)	COVER MINIMUM (mm)	
900 OR LESS	300	300	
OVER 900	500	300	

FOR RIGID PIPE  
IN EARTH EXCAVATION

1 TYPICAL TRENCH CROSS-SECTION  
NTS

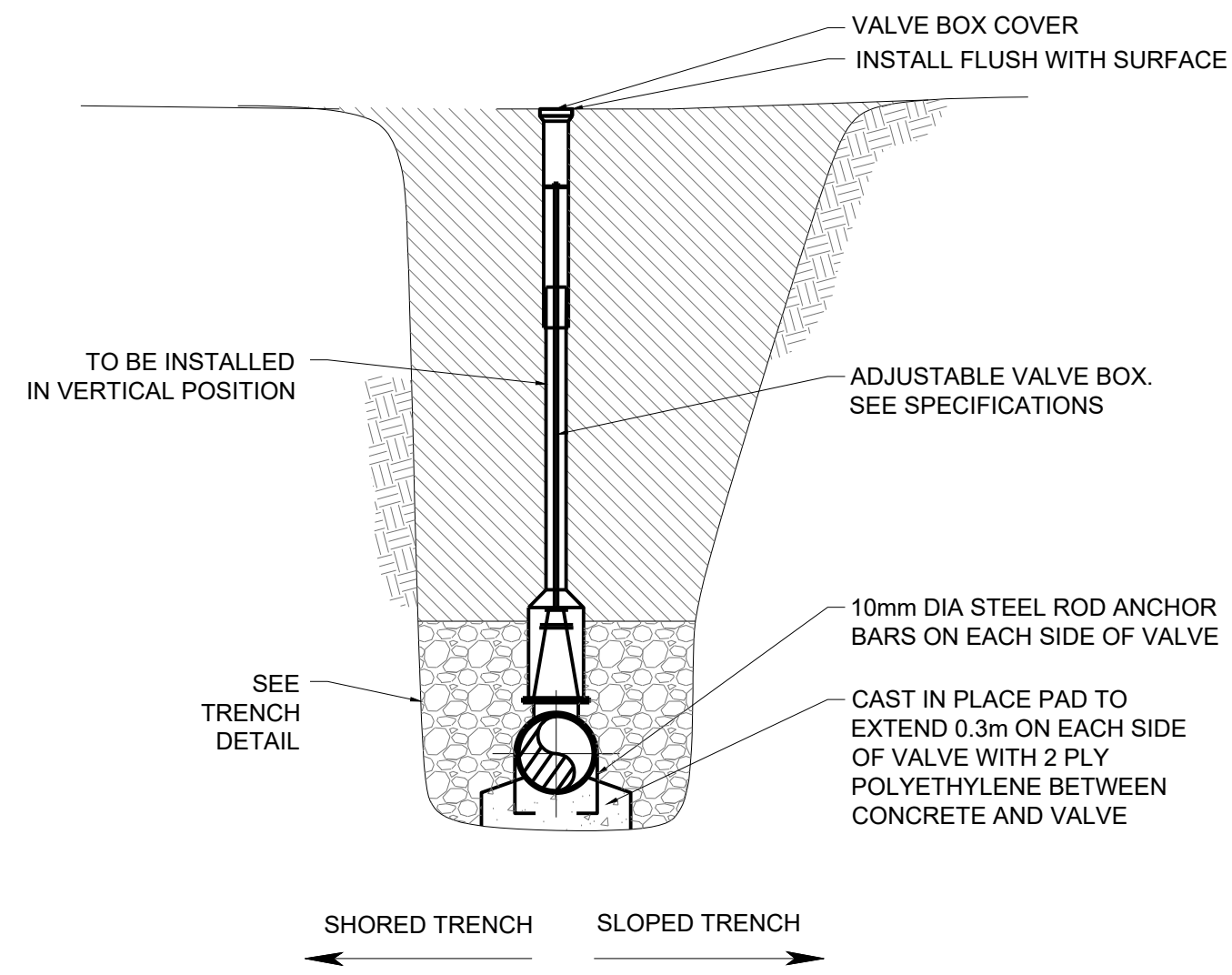


NOTES:

- REFER TO OPSD 802.010 FOR ADDITIONAL DETAILS ON THE EMBEDMENT AND BACKFILL OF FLEXIBLE PIPE IN AN EARTH EXCAVATION.
- EMBEDMENT MATERIAL MEANS MATERIAL AS IT RELATES TO FLEXIBLE PIPE FROM THE BOTTOM OF THE BEDDING TO THE BOTTOM OF THE BACKFILL. EMBEDMENT MATERIAL REFERS TO BOTH BEDDING AND COVER MATERIAL AND IS TO BE PLACED AND COMPACTED IN A UNIFORM MANNER TO PROVIDE THE PROPER SUPPORT FOR THE PIPE AND TO FORM PART OF THE STRUCTURE OF THE PIPE.
- AS A MINIMUM AND UNLESS DIRECTED OTHERWISE SURFACE RESTORATION TYPES SHALL MATCH EXISTING AND AS FOLLOWS:
  - MAINTAINED GREEN SPACES AND GRASS AREAS: 100mm TOPSOIL AND SOD AS SPECIFIED
  - SHOULDERS: GRANULAR 'M' AS SPECIFIED
  - ROADWAYS: HOT MIX ASPHALT AS SPECIFIED
  - BOULEVARDS: 100mm TOPSOIL AND SOD

FOR FLEXIBLE PIPE  
IN EARTH EXCAVATION

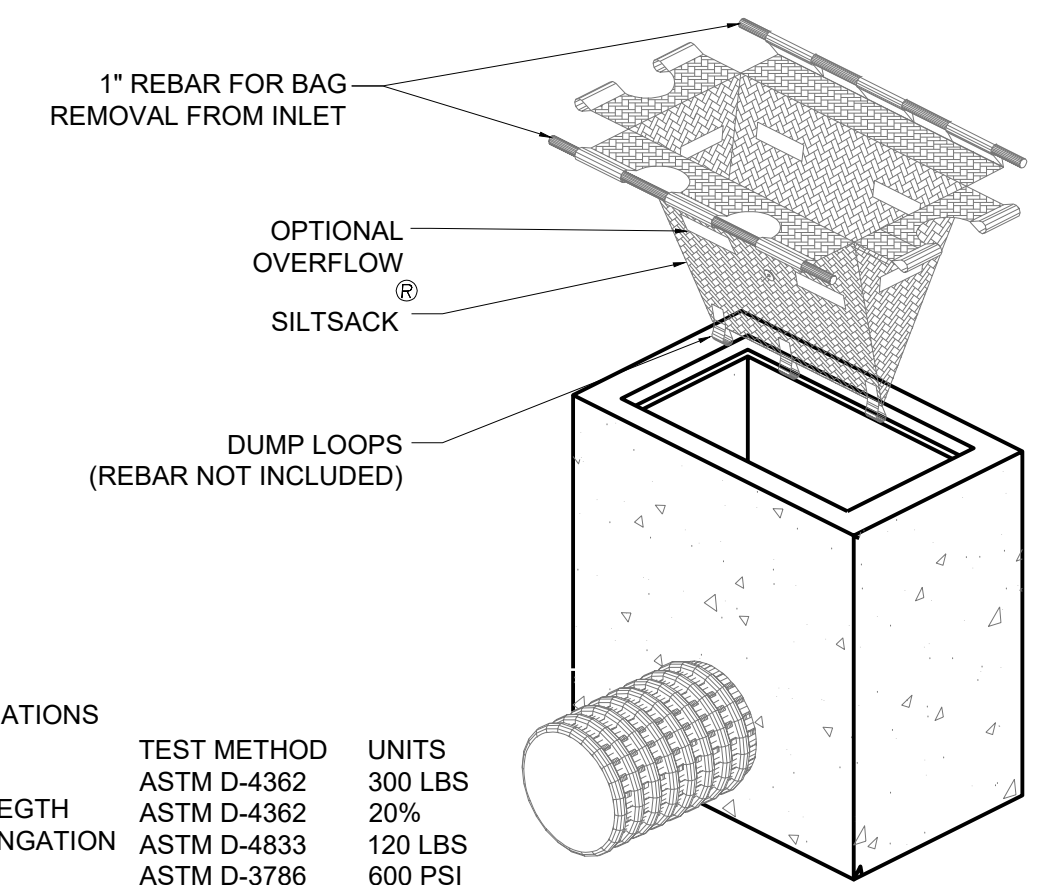
2 TYPICAL TRENCH CROSS-SECTION  
NTS



NOTES:

- PROVIDE CATHODIC PROTECTION IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.

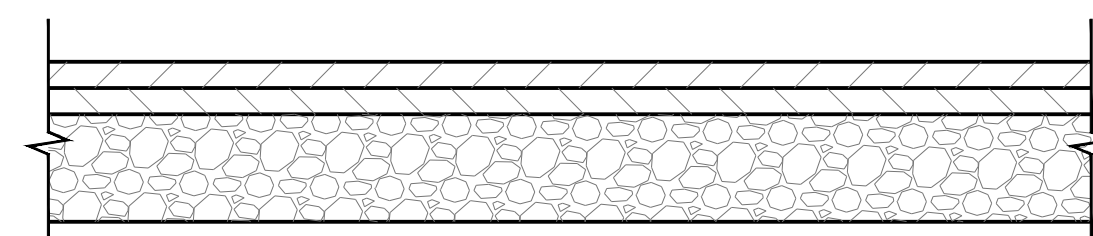
4 VALVE INSTALLATION DETAIL  
NTS



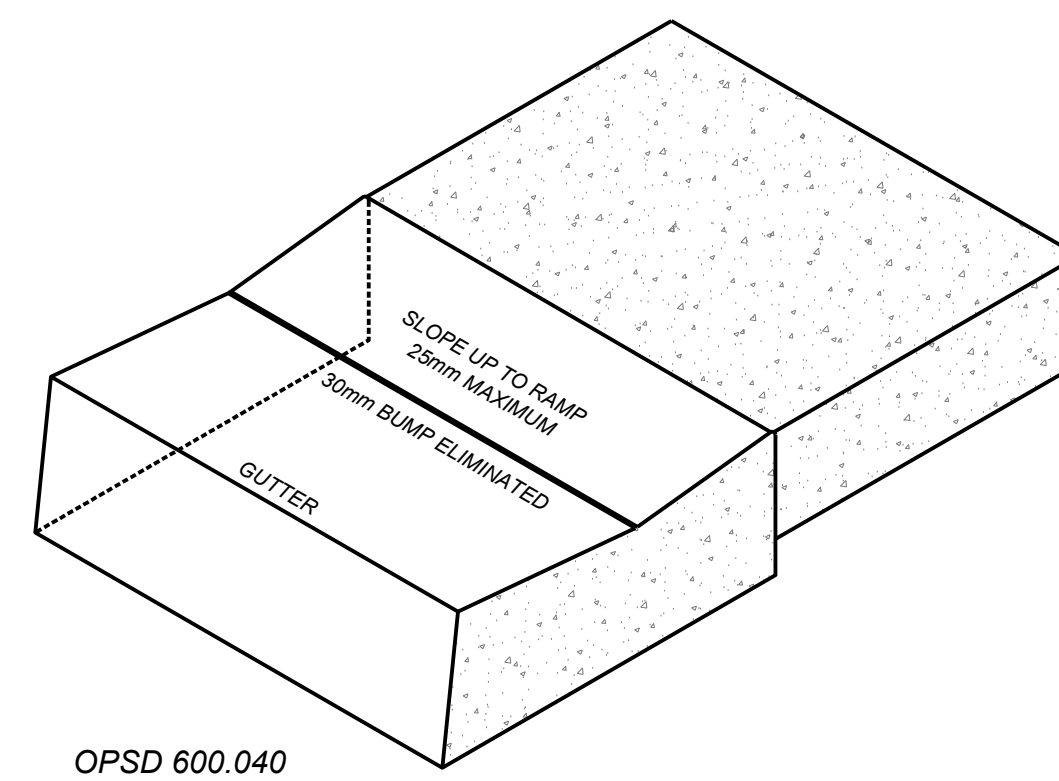
SILTSACK SPECIFICATIONS

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4362	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4362	20%
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	600 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80%
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITIVITY	ASTM D-4491	0.55 SEC-1

5 SEDIMENT CONTROL DEVICE  
NTS

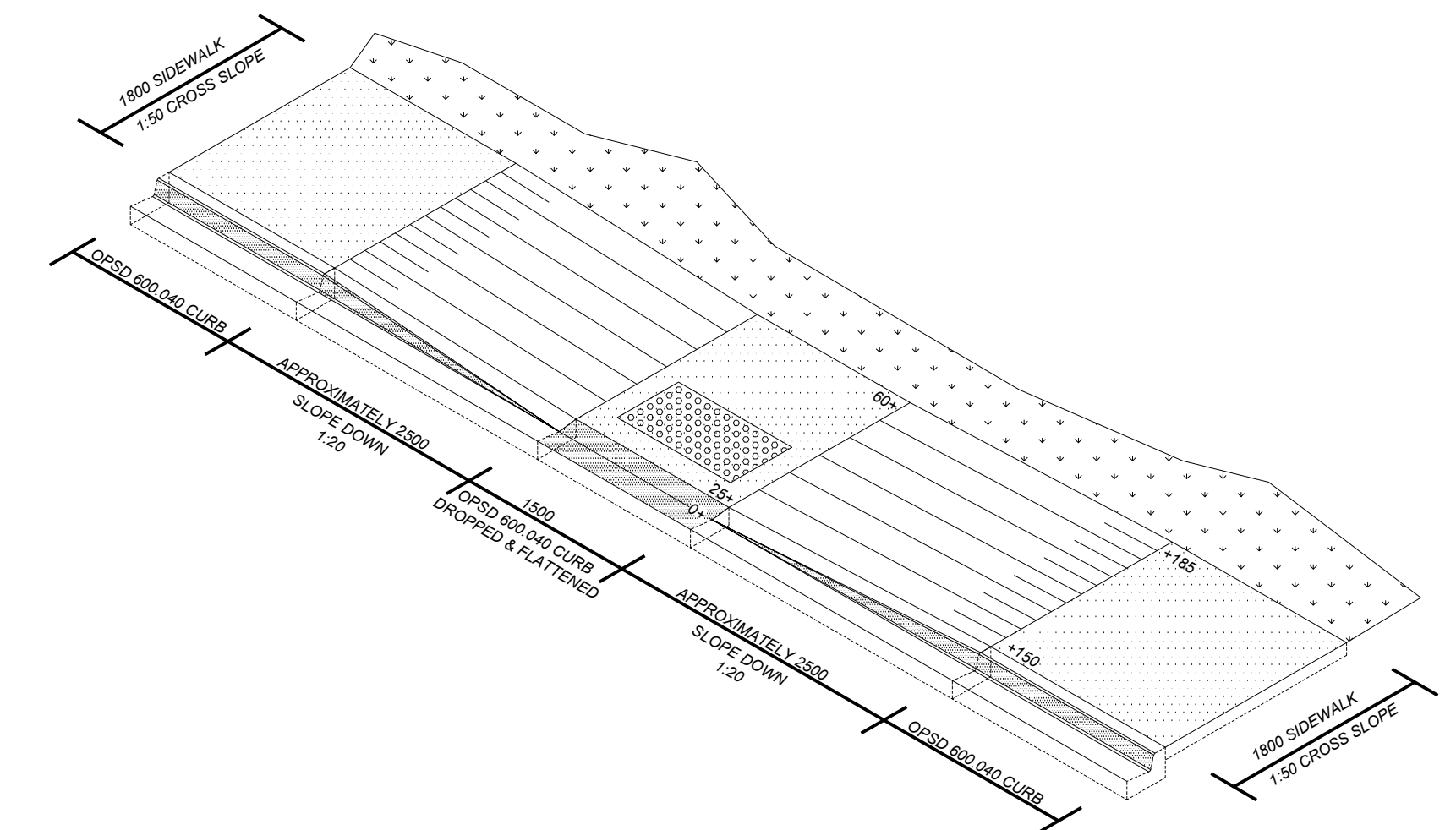


2 TYPICAL ROAD STRUCTURE  
NTS



OPSD 600.040  
STANDARD CURB & GUTTER  
FLATTENED AT RAMP  
SEE OPSD 310.033 NOTE 4  
DJR 2023-12-30

6 TYP. FLATTENED CURB AT RAMPS  
NTS



7 PROP. CURB RAMP AT MID BLOCK  
NTS

NO.	REVISION	DATE	INIT.
0	ISSUED FOR TENDER	2024-09-03	NR

NOTES/LEGEND	

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DESIGN: FB/DH  
CHECKED BY: DH  
APPROVED BY: MM

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BEST MANAGED COMPANIES

PROJECT / CONTRACT P21-004  
FOREST HILL / HILLCREST / ROCKCLIFFE  
UNDERGROUND IMPROVEMENTS

THE CITY OF ST. CATHARINES  
**DETAILS I**

CONSULTANT FILE No. 20235723	REV. 0
DATE SEPTEMBER 2024	
SCALE AS SHOWN	
REF. No. P21-004	
DWG No. 5723-00-C-501	