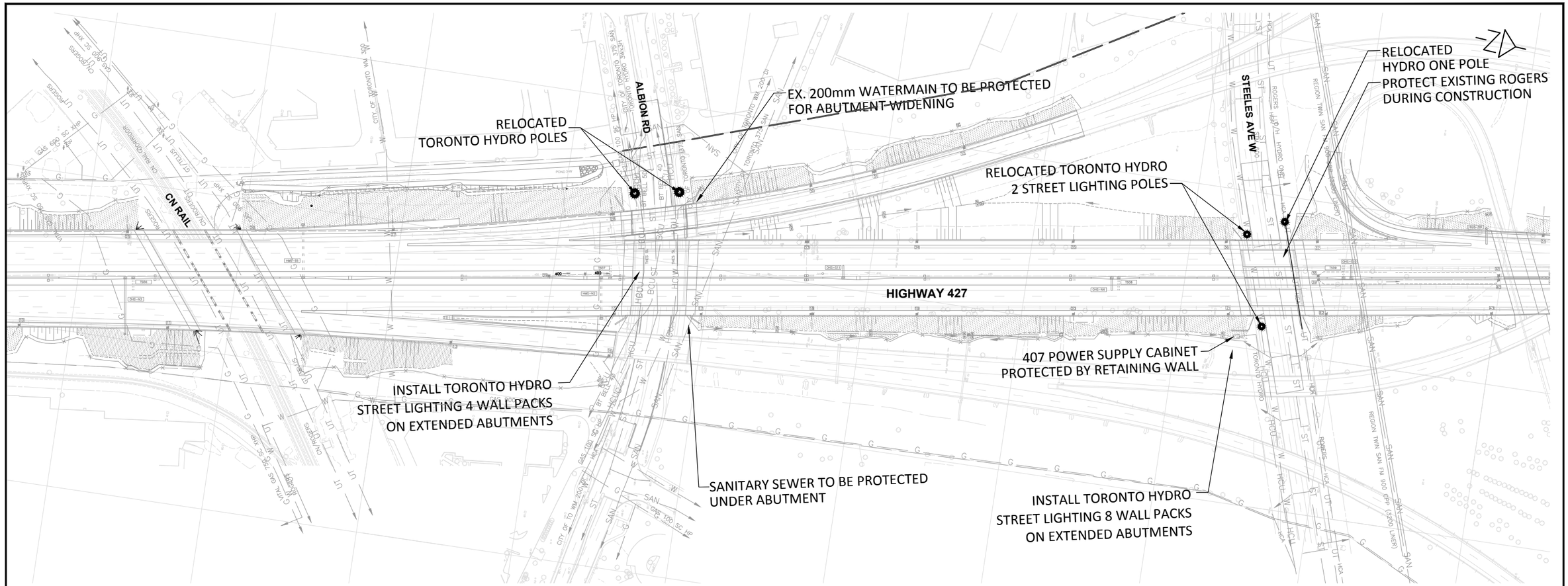

NOTE

PRELIMINARY UTILITY RELOCATION STRATEGIES ONLY. RELOCATION STRATEGIES ARE SUBJECT TO UTILITY COMPANY AND MUNICIPAL AUTHORITY APPROVAL.

NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
B	18/03/20	90% SUBMISSION TO CA				
A	18/01/12	90% SUBMISSION TO CA				

SCALE :

5m 0 10m

Metres
HORIZONTAL

CONSULTANT

	NAME (PRINT)	INIT.	DATE
DESIGNED	JONATHAN MOHACSI		
DRAWN	DAVID SANOSA		
CHECKED	DUNCAN CAMPBELL		
APPROVED LEAD. ENGINEER	JONATHAN MOHACSI		
APPROVED PROJ. MANAGER	PETER BAMFORTH		

Ontario

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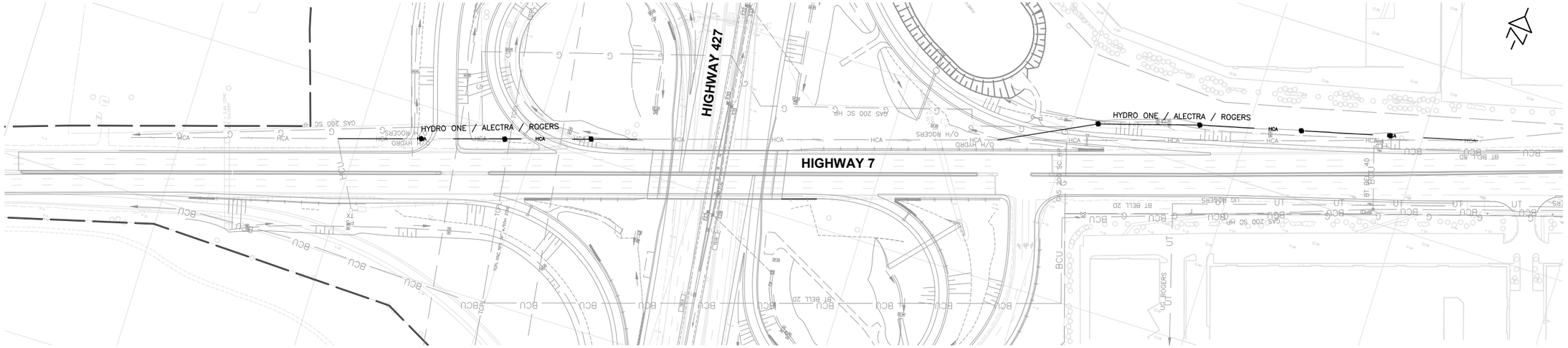
HWY 427 EXPANSION
ALBION ROAD/STEELES AVENUE

PRELIMINARY PRIVATE UTILITY RELOCATION STRATEGY

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	9	UTL	000	DWG	0400	B



HWY 7 AT O/H HYDRO RELOCATIONS FOR NEW RAMPS

NOTE

PRELIMINARY UTILITY RELOCATION STRATEGIES ONLY. RELOCATION STRATEGIES ARE SUBJECT TO UTILITY COMPANY AND MUNICIPAL AUTHORITY APPROVAL.

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A	18/01/12	90% SUBMISSION TO CA				

SCALE :

5m 0 10m

Metres
HORIZONTAL

CONSULTANT

	NAME (PRINT)	INIT.	DATE
DESIGNED	JONATHAN MOHACSI		
DRAWN	DAVID SANOSA		
CHECKED	DUNCAN CAMPBELL		
APPROVED LEAD ENGINEER	JONATHAN MOHACSI		
APPROVED PROJ. MANAGER	PETER BAMFORTH		

Ontario

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HWY 427 EXPANSION
HIGHWAY 7

PRELIMINARY PRIVATE UTILITY RELOCATION STRATEGY

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	9	UTL	000	DWG	0401	B

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR SHALL INSTALL PROPER EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO COMMENCING CONSTRUCTION.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING HEALTH AND SAFETY OF ALL WORKERS AND THE GENERAL PUBLIC ON SITE.
3. CONTRACTOR MUST OBTAIN VALID LOCATES FROM ALL UTILITIES PRIOR TO COMMENCING ANY EXCAVATIONS.
4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL MANHOLES, VALVE CHAMBERS, CPP PIPE, CPP JOINT RESTRAINTS, STEEL CASING AND CASING SPACERS, GROUT MIX, HYDRANTS, VALVES, COUPLINGS, AND CLOSURE PIECES PRIOR TO CONSTRUCTION.
5. EX. SANITARY FLOWS ARE TO BE MAINTAINED AT ALL TIMES. CONTRACTOR SHALL PROVIDE BYPASS PUMPING SYSTEM IF SANITARY SEWER NEEDS TO BE TAKEN OUT OF SERVICE IN ORDER TO MAKE THE FINAL CONNECTIONS. THE BYPASS PUMPING SYSTEM SHALL INCLUDE A REDUNDANT STANDBY PUMP.
6. CONTRACTOR SHALL PROVIDE RESTRAINED JOINTS ON THE WATERMAIN WHERE INDICATED ON THE DRAWINGS.
7. CONTRACTOR'S CPP PIPE SUPPLIER TO CONFIRM APPROPRIATE CPP PIPE CLASS.

NOTES RELATED TO WATERMAIN INSTALLED IN A STEEL CASING:

1. CPP WATERMAIN UNDER HIGHWAY 427 TO BE INSTALLED WITHIN A CONTINUOUSLY WELDED STEEL LINER. STEEL TO BE ASTM A139 GR. C OR EQUAL AS PER THE DETAIL ON DWG 0204.
2. VOID SPACE BETWEEN CPP WATERMAIN AND STEEL LINER TO BE FILLED WITH 3:1 SAND:CEMENT GROUT.
3. CONTRACTOR TO PROVIDE SUBMITTALS FOR THE STEEL LINER, CASING SPACERS, GROUT, AND CPP PIPE.

NOTES RELATED TO WATERMAIN COMMISSIONING:

1. CONTRACTOR SHALL COMPLETE HYDROSTATIC TESTING OF THE NEW WATERMAIN IN ACCORDANCE WITH OPSS 441.07.24 PRIOR TO MAKING FINAL CONNECTIONS TO THE EX. SYSTEM. IN THE EVENT THAT THE HYDROSTATIC TESTING FAILS, THE CONTRACTOR SHALL MAKE REPAIRS AND REPEAT THE HYDROSTATIC TESTING UNTIL THE WATERMAIN PASSES.
2. CONTRACTOR SHALL FLUSH AND DISINFECT NEW WATERMAIN IN ACCORDANCE WITH THE MOECC'S WATERMAIN DISINFECTION PROCEDURE PRIOR TO MAKING FINAL CONNECTIONS.

NOTES RELATED TO CONNECTIONS TO EX. CPP WATERMAIN:

1. CONTRACTOR SHALL EXCAVATE EX. WATERMAIN AT CONNECTION LOCATIONS PRIOR TO CONSTRUCTION TO CONFIRM ELEVATION, DIAMETER, AND PIPE MATERIAL.
2. CONTRACTOR SHALL EXPOSE JOINTS ON EX. CPP WATERMAIN AT CONNECTION LOCATIONS PRIOR TO CONSTRUCTION TO CONFIRM JOINT LOCATIONS. CONTRACTOR TO CONNECT NEW CPP PIPE TO EX. CPP PIPE AT A JOINT. LENGTH OF CPP CLOSURE PIECE TO BE BASED UPON THE LOCATION OF THE EX. JOINT. THE JOINT WHERE THE CONNECTION WILL OCCUR SHALL BE RESTRAINED WITH EITHER A WELD (INTERNAL OR EXTERNAL) OR AN APPROVED MECHANISM AS PER THE CPP SUPPLIER'S RECOMMENDATIONS (TYPICAL FOR BOTH ENDS).
3. CONTRACTOR SHALL EXPOSE THE NEXT THREE PIPE JOINTS ON THE EX. WATERMAIN UPSTREAM OF THE CONNECTION LOCATION TO INVESTIGATE WHETHER THE JOINTS ARE CURRENTLY WELDED ALL AROUND. IN THE CASE THAT THEY ARE NOT, THE CONTRACTOR SHALL EXPOSE, CLEAN, AND PROVIDE FULL CIRCUMFERENTIAL WELD ON ALL THREE JOINTS (TYPICAL FOR BOTH ENDS).
4. CONTRACTOR SHALL PROVIDE AT LEAST 48 HOURS NOTICE TO CITY OF VAUGHAN OPERATIONS STAFF PRIOR TO COMPLETING THE FINAL WATERMAIN CONNECTIONS. ALL FINAL CONNECTIONS SHALL BE MADE IN THE PRESENCE OF CITY OF VAUGHAN OPERATIONS STAFF.
5. ONLY CITY OF VAUGHAN OPERATIONS STAFF ARE PERMITTED TO OPERATE VALVES ON CITY WATERMAINS. CONTRACTOR SHALL NOT OPERATE ANY VALVES ON CITY WATERMAINS.

NOTES RELATED TO SANITARY SEWER COMMISSIONING:

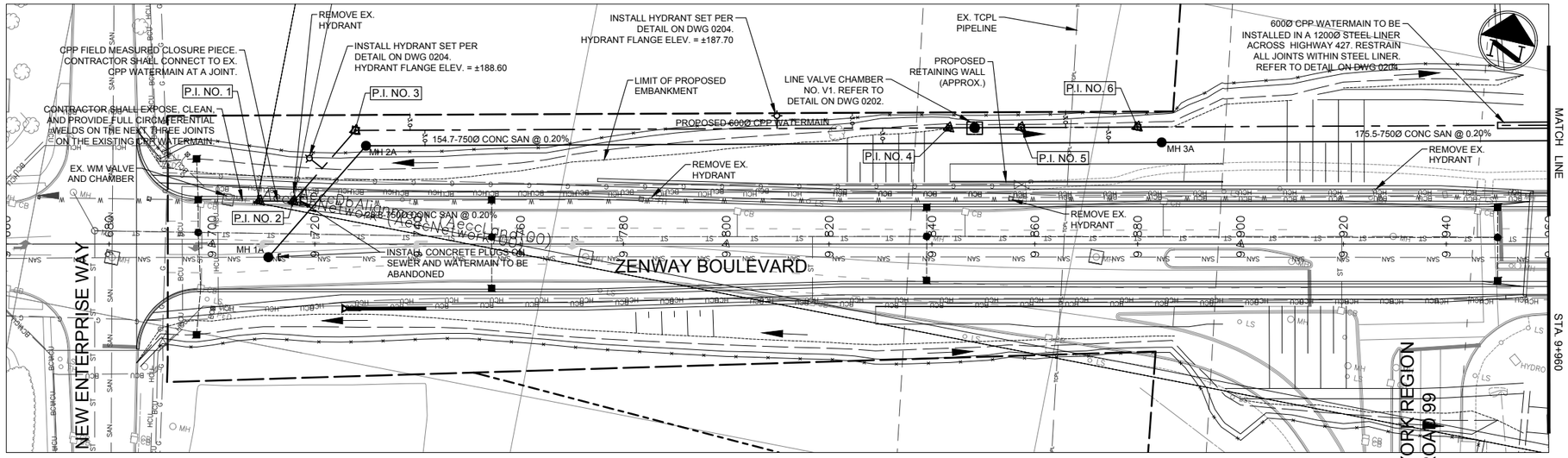
1. NEW SANITARY SEWERS ARE TO BE TESTED AND COMMISSIONED IN ACCORDANCE WITH REGION OF YORK "SANITARY SEWER INSPECTION, TESTING, AND ACCEPTANCE GUIDELINES"

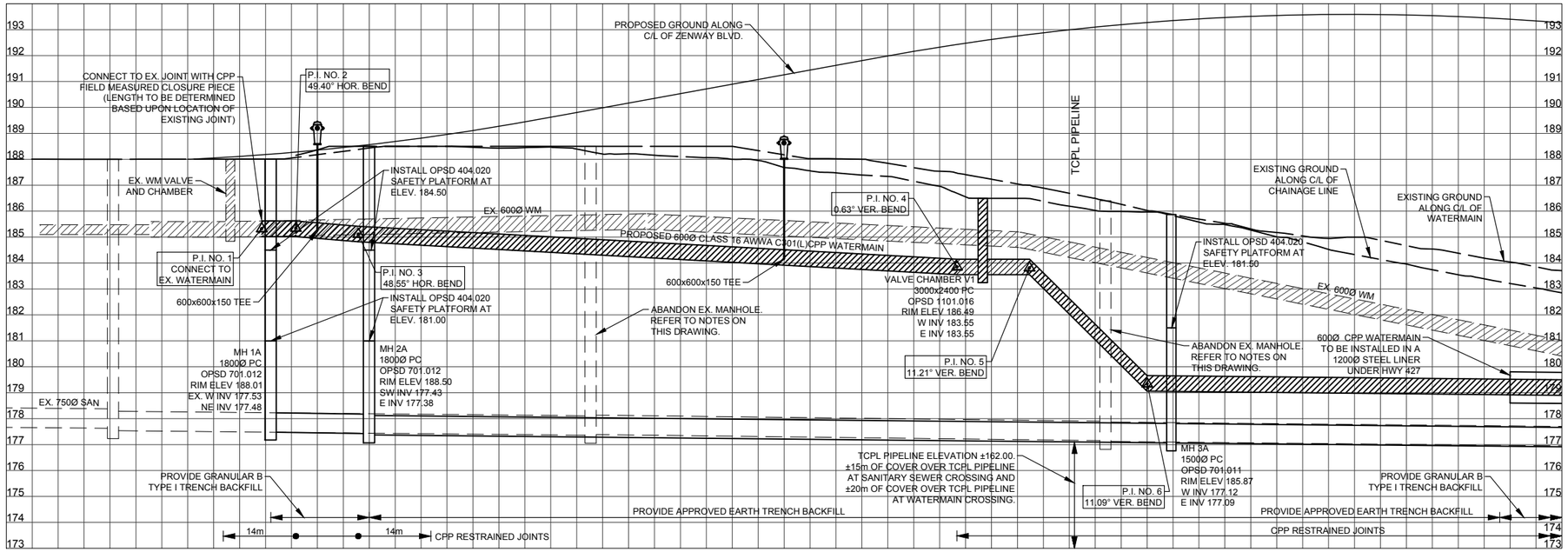
NOTES RELATED TO ABANDONMENT OF EXISTING INFRASTRUCTURE:

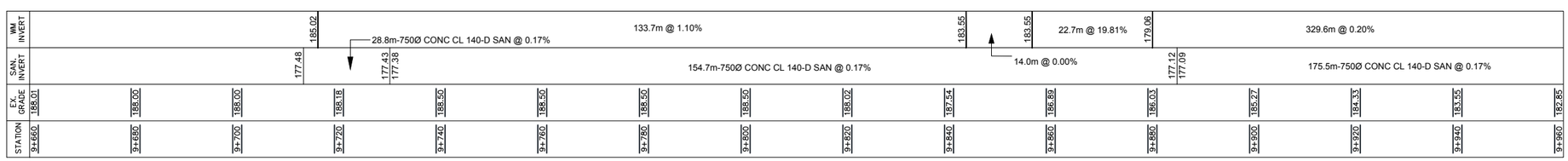
1. CONTRACTOR SHALL INSTALL CONCRETE PLUGS ON EX. SEWERS AND WATERMAINS TO BE ABANDONED AT ALL MANHOLES, CHAMBERS, AND LOCATIONS WHERE THE PIPE IS TO BE BROKEN.
2. ALL SEWERS TO BE ABANDONED ARE TO BE GROUTED IN PLACE USING FLOWABLE GROUT WITH A MINIMUM STRENGTH OF 5 MPa.
3. REMOVE PIPES TO BE ABANDONED IF FOUND TO BE IN CONFLICT WITH ANY PROPOSED WORKS.
4. CLOSE ALL VALVES IN EX. CHAMBER TO BE ABANDONED.
5. REMOVE BRICKWORK, FRAME AND COVER ON ALL EXISTING MANHOLES AND CHAMBERS TO BE ABANDONED.
6. THE CONE RISER OF ALL MANHOLES TO BE ABANDONED IS TO BE REMOVED.
7. MANHOLES AND CHAMBERS TO BE ABANDONED SHALL BE FILLED WITH 0.7 MPa UNSHRINKABLE FILL.
8. REMOVE EXISTING HYDRANTS TO BE ABANDONED ALONG WITH VALVES ON HYDRANT LEADS AND DISPOSE OFFSITE.

P.I. No.	BASELINE STATION	NORTHING	EASTING
1	9+709.26	4848427.44	293642.86
2	9+715.86	4848428.65	293649.35
3	9+727.89	4848444.43	293658.54
4	9+843.32	4848466.92	293771.75
5	9+857.33	4848469.65	293785.50
6	9+880.00	4848474.07	293807.74

MANHOLE NO.	BASELINE STATION	OFFSET	NORTHING	EASTING
MH 1A	9+710.97	2.57	4848417.01	293646.62
MH 2A	9+729.95	−19.08	4848441.89	293661.13
MH 3A	9+884.68	−19.76	4848472.04	293812.89







NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
B	18/3/20	90% SUBMISSION TO CA				
A	18/1/12	90% SUBMISSION TO CA				

SCALE :
5m 0 10m — Metres HORIZONTAL
1m 0 2m — Metres VERTICAL

CONSULTANT

DESIGNED	ALEX GREEN		
DRAWN	ALEX GREEN		
CHECKED	STEWART DICKSON		
APPROVED LEAD ENGINEER	ALEX GREEN		
APPROVED PROJ. MANAGER	PETER BAMFORTH		
	NAME (PRINT)	INIT.	DATE

Ontario

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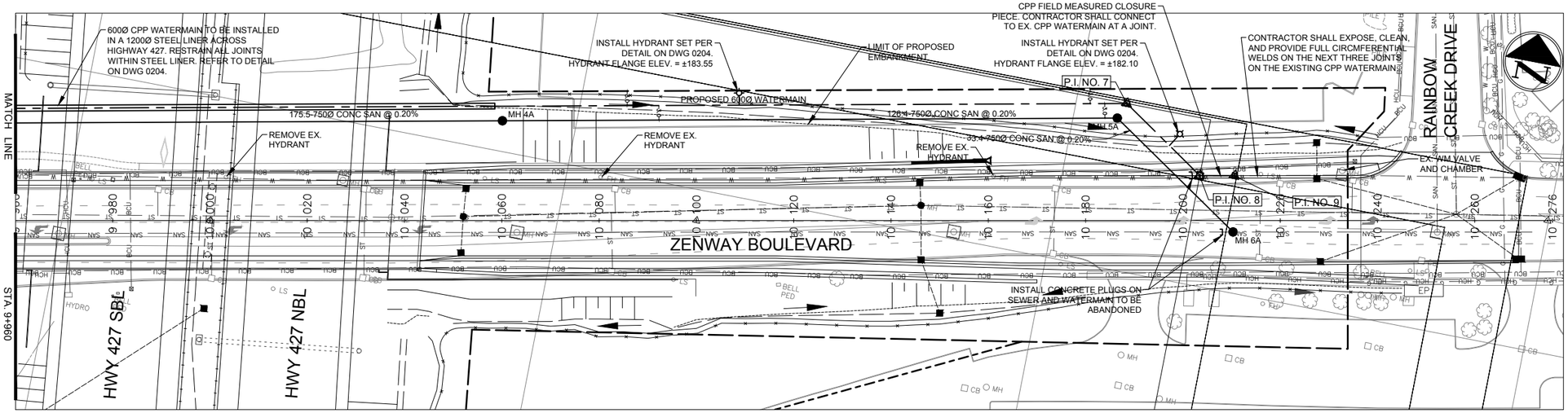
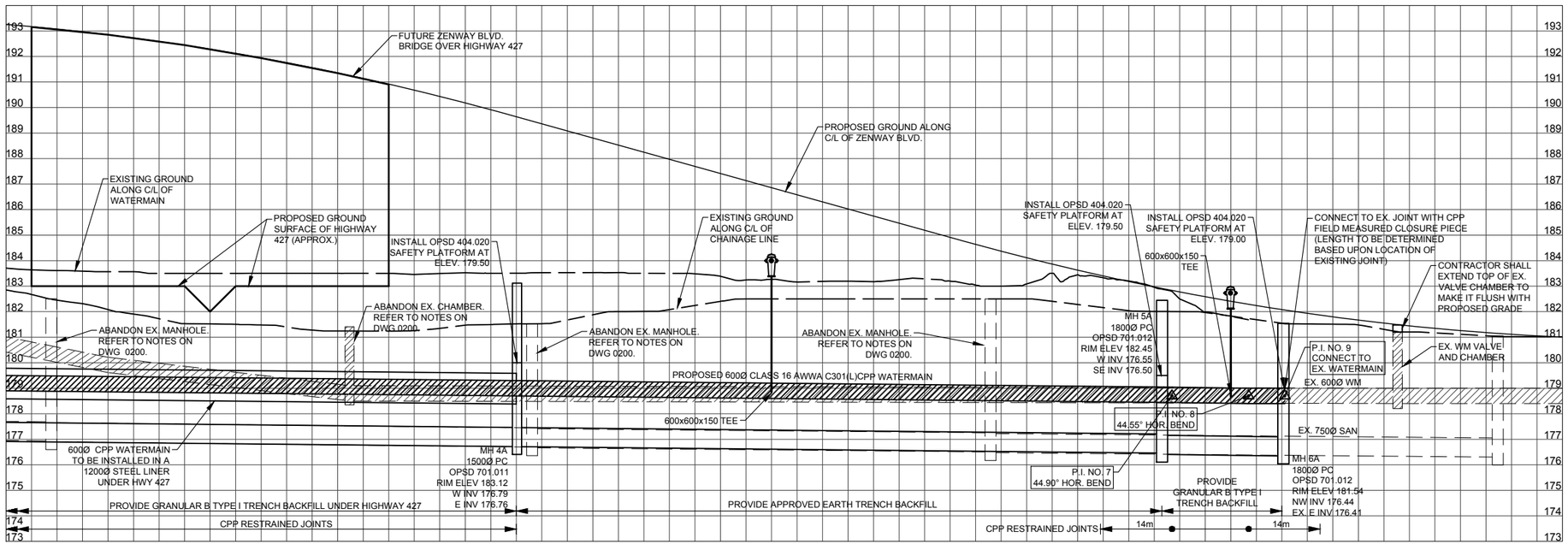
LOCAL | INTEGRATED | NEIGHBOURLY | KNOWLEDGEABLE

HWY 427 EXPANSION
ZENWAY BOULEVARD
WATERMAIN AND SANITARY SEWER
PLAN AND PROFILE
STA. 9+660 TO 9+960

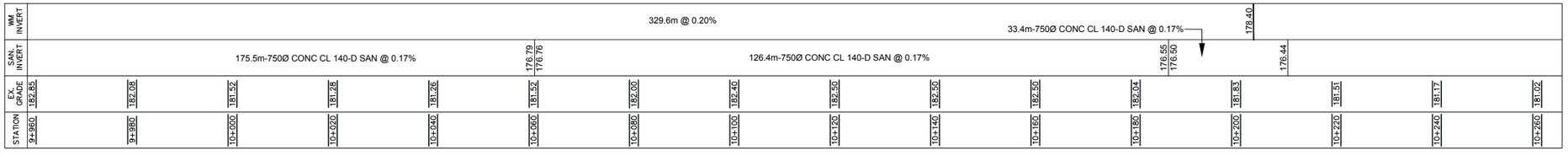
PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	1	UTL	000	DWG	0200	B





P.I. No.	BASELINE STATION	NORTHING	EASTING
7	10+188.47	4848534.18	294110.29
8	10+203.49	4848522.48	294127.86
9	10+210.61	4848523.82	294134.85

MANHOLE NO.	BASELINE STATION	OFFSET	NORTHING	EASTING
MH 4A	10+060.13	−20.53	4848506.23	293984.99
MH 5A	10+186.53	−21.08	4848530.86	294108.96
MH 6A	10+210.31	2.35	4848512.40	294136.77



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B	18/3/20	90% SUBMISSION TO CA				
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SCALE :

5m 0 10m
Metres HORIZONTAL

1m 0 2m
Metres VERTICAL

CONSULTANT

	NAME (PRINT)	INIT.	DATE
DESIGNED	ALEX GREEN		
DRAWN	ALEX GREEN		
CHECKED	STEWART DICKSON		
APPROVED LEAD ENGINEER	ALEX GREEN		
APPROVED PROJ. MANAGER	PETER BAMFORTH		

Ontario

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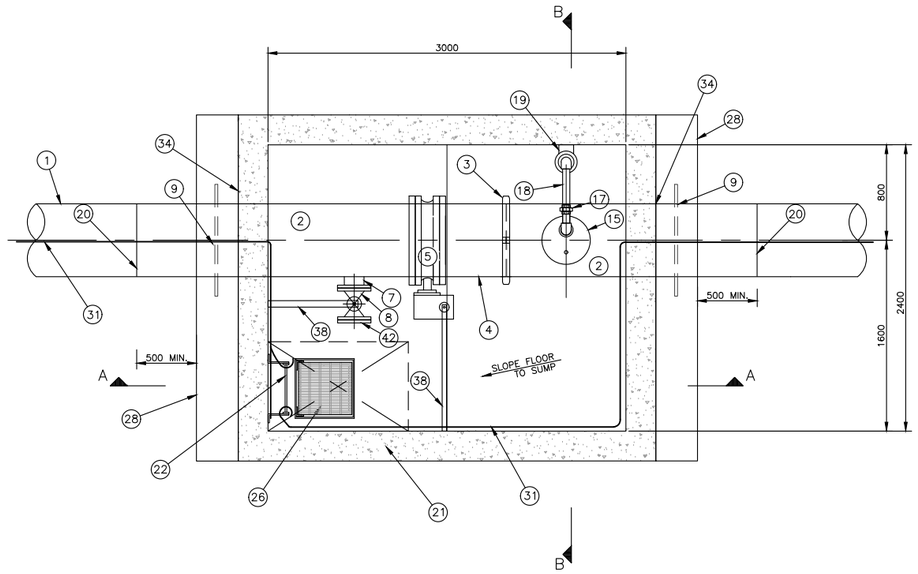
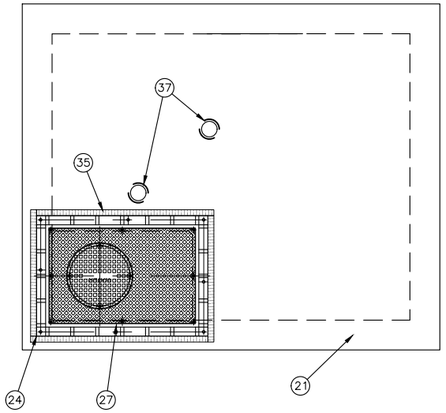
HWY 427 EXPANSION
ZENWAY BOULEVARD
WATERMAIN AND SANITARY SEWER
PLAN AND PROFILE
STA. 9+960 TO 10+280

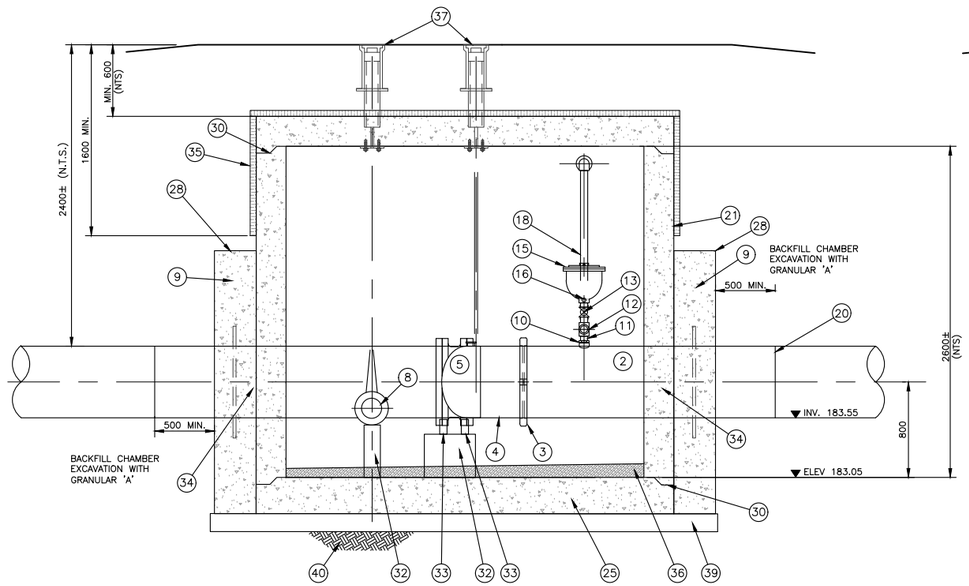
PROJECT ID.	STAGE IDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427−D	H	1	UTL	000	DWG	0201	A



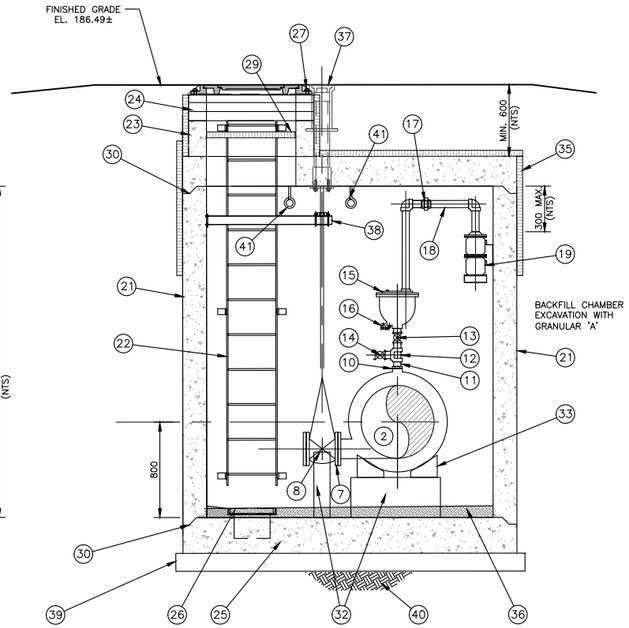
600ø CPP PLAN BELOW GRADE
1:50



PLAN @ GRADE
1:50



SECTION A
1:50



SECTION B
1:50

41	LIFT HOOKS PER OPSD DWG. 1101.019
40	UNDISTURBED GROUND
39	150mm 19mm CRUSHER RUN LEVELLING PAD, IN WET CONDITIONS ADJUST THICKNESS AND MATERIAL IN ACCORDANCE WITH GEOTECHNICAL RECOMMENDATIONS.
38	VALVE STEM EXTENSION SUPPORT FOR ALL VALVES SEE DWG. No. 0203.
37	VALVE BOX SET TO FIN GRADE PER OPSD 1101.020 TYP. (OUT OF SECTION).
36	CAST FLOOR TO SLOPE TO SUMP.
35	50mm THICK RIGID INSULATION AND PROTECTION BOARD TYP.
34	SEAL OPENINGS WITH NON-SHRINK GROUT TYP.
33	VALVE SUPPORT SEE DETAIL ON DWG. No. 0203
32	CONC. VALVE SUPPORT SEE DETAIL ON DWG. No. 0203
31	TRACER WIRE, EXTEND TRACER WIRES TO UNDERSIDE OF FRAME. SECURE TO LADDER BRACKET AND PROVIDE 600mm FREE END AND BRASS TAGS TYP.
30	SEAL ALL PRECAST SECTION JOINTS FROM THE OUTSIDE WITH INFI-SHILD SEAL WRAP OR APPROVED EQUAL
29	FROST PLUG SEE DETAIL ON DWG. No. 0203
28	POURED IN PLACE THRUST BLOCK TO OPSD 1101.018
27	RECTANGULAR FRAME AND TWO PIECE COVER SEE OPSD DWG. 402.030. CIRCULAR COVER TO INCLUDE TWO 25x25mm HOLES
26	SUMP WITH HINGED FLIP UP GRATING COVER AND FRAME SEE DETAIL DWG. No. 0203.
25	PRECAST CONC. BASE C/W SUMP DEPRESSION.
24	PRECAST CONCRETE ADJUSTMENT UNITS 200mm MIN. 600mm MAX.
23	PRECAST CHIMNEY PER OPSD 1101.019.
22	ACCESS LADDER, PER OPSD DWG. 404.010 / 406.010.
21	PRECAST CONCRETE CHAMBER TO BE DESIGNED BY MANUFACTURER
20	RESTRAINED JOINT.
19	50ø FLOODSAFE VALMATIC MODEL 1300 MOUNTED TO PRECAST CHAMBER WALL AS PER VALVE MANUFACTURERS RECOMMENDATIONS.
18	50ø S.S. VENT PIPE TO BE SECURED TO CEILING WITH S.S. HANGER RODS.
17	UNION.
16	S.S. BALL VALVE DRAIN ASSEMBLY (SIZE TO SUIT AIR VALVE DRAIN).
15	50ø COMBINATION AIR RELEASE, VACUUM BREAKER VALVE ASSEMBLY VALMATIC MODEL VM-202C.2, INTERIOR & EXTERIOR OF VALVE SHALL BE FUSION BONDED EPOXY COATED ANSI/NSF 61 APPROVED (INSTALL VALVE ASSEMBLY WHERE SHOWN).
14	50ø S.S. BALL VALVE WITH TEFLON SEAT AND SPRING RETURN.
13	50ø S.S. BALL VALVE WITH TEFLON SEAT.
12	THREADED 50ø SS TEE.
11	THREADED 50ø SS SPOOL PIECE TYP.
10	50ø NPT NIPPLE
9	THRUST FLANGE WELDED ALL AROUND AS PER PIPE MANUFACTURER'S DESIGN.
8	150ø FLANGED, RESILIENT SEAT GATE VALVE AWWA C-509 FUSION BONDED EPOXY SHOP COAT FINISH ON EXTERIOR OF VALVE, INTERIOR COATING TO BE NSF 61 APPROVED C/W 50mm SQ. OPERATING NUT AND EXTENSION STEM.
7	150ø TANGENT FLANGED BRANCH.
6	INTENTIONALLY LEFT BLANK
5	600ø FLANGED BUTTERFLY VALVE AWWA C-504 FUSION BONDED EPOXY SHOP COAT FINISH ON EXTERIOR OF VALVE, INTERIOR COATING TO BE NSF 61 APPROVED. VALVE SEAT ADJUST ON ADAPTER SIDE, WITH OPERATOR / HANDWHEEL, VALVE TO BE SUITABLE FOR CONTINUOUS SUBMERGED SERVICE.
4	600ø SPOOL PIECE
3	VICTAULIC AGS COUPLING STYLE W77, FUSION BONDED EPOXY SHOP COAT FINISH ON EXTERIOR, FBE INTERIOR COATING TO BE ANSI/NSF 61 APPROVED. PIPE GAP PER MANUFACTURER'S RECOMENDATIONS.
2	600ø CPP WALL PIECE
1	600ø CPP WATERMAIN
ITEM	ITEM DESCRIPTION

VALVE CHAMBER TABLE

CHAMBER No.	TOP OF FRAME ELEV	PIPE INVERT	STATION	DRAWING NO.
V1	186.49	183.55	9+848	0200

NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
B	18/3/20	90% SUBMISSION TO CA				
A	18/1/12	90% SUBMISSION TO CA				

SCALE :
AS SHOWN

CONSULTANT				
DESIGNED	ALEX GREEN			
DRAWN	ALEX GREEN			
CHECKED	STEWART DICKSON			
APPROVED LEAD ENGINEER	ALEX GREEN			
APPROVED PROJ. MANAGER	PETER BAMFORTH			
	NAME (PRINT)	INIT.	DATE	

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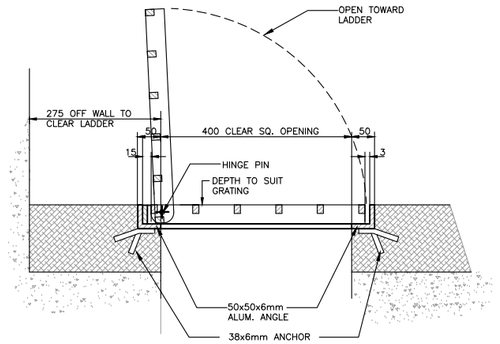
HWY 427 EXPANSION
ZENWAY BOULEVARD
WATERMAIN AND SANITARY SEWER
VALVE CHAMBER V1

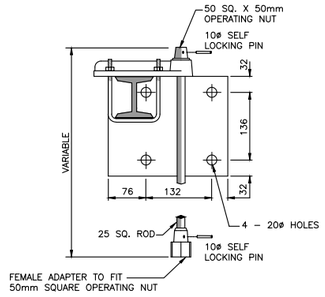
PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	1	UTL	000	DWG	0202	B



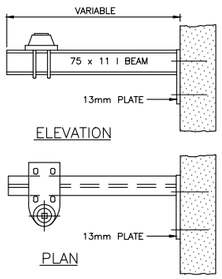
SUMP FRAME AND COVER
1:50

NOTES
1. ALL ALUM WELDED CONSTRUCTION.
2. ALL ALUM. IN CONTACT WITH CONC. TO RECEIVE TWO COATS OF BITUMINOUS PAINT.
3. FRAME DIMENSIONS SHALL SUIT FINAL SUMP DIMENSIONS.

VALVE SUPPORT CONC. BASE
1:50



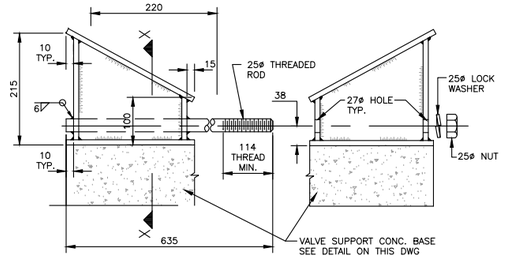
VALVE STEM EXTENSION SUPPORT
N.T.S. (2.0m MAX. VERTICAL SPACING)

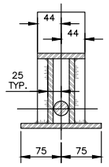


ELEVATION

PLAN

NOTES:
1. BRACKET CONSTRUCTION TO BE STAINLESS STEEL.
2. FASTEN BRACKETS TO WALL USING 15mm DIA, x 200mm LONG BOLTS.
3. BOLTS AND ANCHORS TO BE STAINLESS STEEL –19mm.

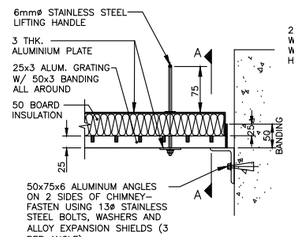


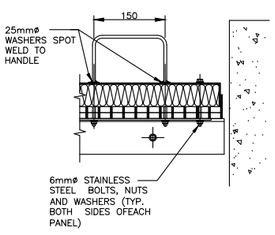


SECTION X–X

NOTES:
1. ALL STEEL PLATE TO BE 10mm. THICK
2. CONTINUOUS WELDS AT ALL INTERSECTING JOINTS TO BE 6mm.
3. ALL PARTS TO BE HOT DIP GALVANIZED AFTER FABRICATION.
4. COAT UNDERSIDE OF PLATE WITH 2 COATS OF BITUMINOUS PAINT.
5. SUBMIT SHOP DRAWINGS.
6. TWO SUPPORTS ARE TO BE PROVIDED UNDER THE FLANGES OF EACH BUTTERFLY VALVE.

VALVE SUPPORT
N.T.S.





TYPICAL FROST PLUG DETAIL
1:50

NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
B	18/3/20	90% SUBMISSION TO CA				
A	18/1/12	90% SUBMISSION TO CA				

SCALE :
AS SHOWN

CONSULTANT

	NAME (PRINT)	INIT.	DATE
DESIGNED	ALEX GREEN		
DRAWN	ALEX GREEN		
CHECKED	STEWART DICKSON		
APPROVED LEAD ENGINEER	ALEX GREEN		
APPROVED PROJ. MANAGER	PETER BAMFORTH		

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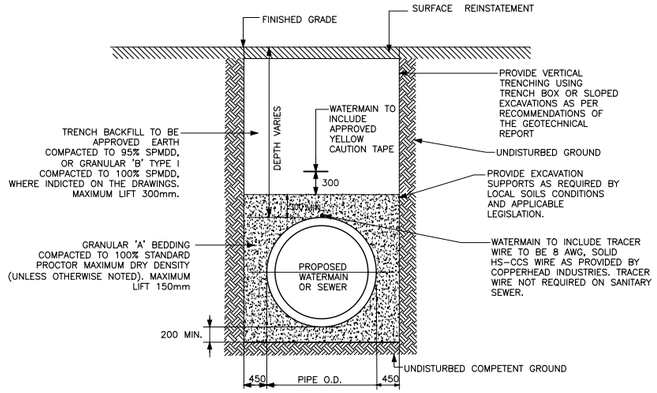
HWY 427 EXPANSION
ZENWAY BOULEVARD
WATERMAIN AND SANITARY SEWER
VALVE CHAMBER DETAILS

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427–D	N	1	UTL	000	DWG	0203	B

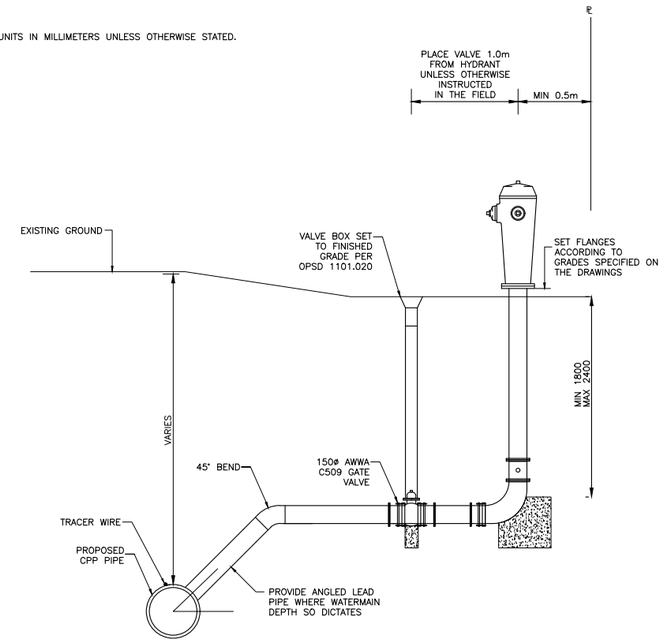


TYPICAL DETAIL FOR SINGLE PIPE IN TRENCH

N.T.S.

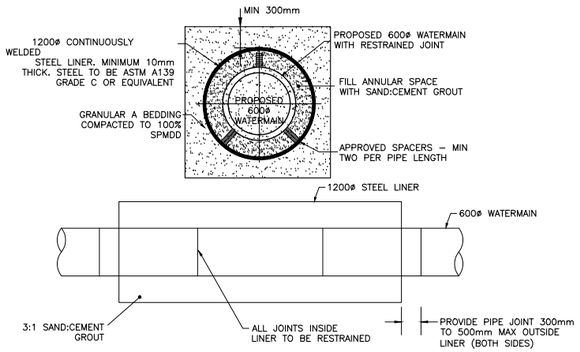
NOTES:

1. ALL UNITS IN MILLIMETERS UNLESS OTHERWISE STATED.



HYDRANT PLACEMENT DETAIL

N.T.S.



DETAIL OF WATERMAIN IN STEEL LINER UNDER FUTURE HIGHWAY 427

N.T.S.

NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
B	18/3/20	90% SUBMISSION TO CA				
A	18/1/12	90% SUBMISSION TO CA				

SCALE : N.T.S.

CONSULTANT

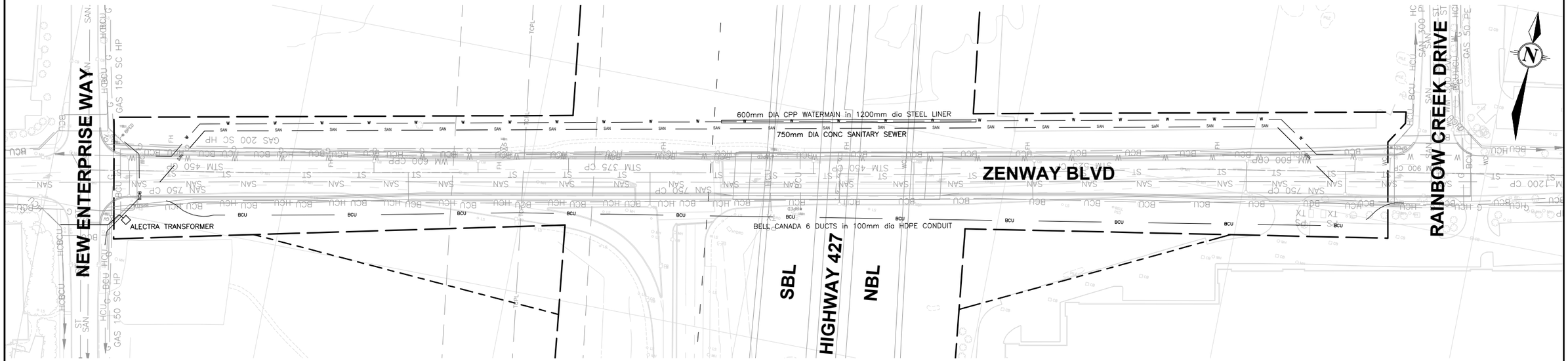
	NAME (PRINT)	INIT.	DATE
DESIGNED	ALEX GREEN		
DRAWN	ALEX GREEN		
CHECKED	STEWART DICKSON		
APPROVED LEAD ENGINEER	ALEX GREEN		
APPROVED PROJ. MANAGER	PETER BAMFORTH		

Ontario

link427 LOCAL | INTEGRATED | NEIGHBOURLY | KNOWLEDGEABLE

HWY 427 EXPANSION
ZENWAY BOULEVARD
WATERMAIN AND SANITARY SEWER
CONSTRUCTION DETAILS

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	1	UTL	000	DWG	0204	B



NOTE

PRELIMINARY UTILITY RELOCATION STRATEGIES ONLY. RELOCATION STRATEGIES ARE SUBJECT TO UTILITY COMPANY AND MUNICIPAL AUTHORITY APPROVAL.

NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
B	18/3/20	90% SUBMISSION TO CA				
A	18/1/12	90% SUBMISSION TO CA				

SCALE :

5m 0 10m

Metres
HORIZONTAL

CONSULTANT

	NAME (PRINT)	INIT.	DATE
DESIGNED	JONATHAN MOHACSI		
DRAWN	JONATHAN MOHACSI		
CHECKED	DUNCAN CAMPBELL		
APPROVED LEAD ENGINEER	JONATHAN MOHACSI		
APPROVED PROJ. MANAGER	PETER BAMFORTH		

Ontario

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HWY 427 EXPANSION
ZENWAY BOULEVARD

PRELIMINARY UTILITY RELOCATION STRATEGY

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	1	UTL	000	DWG	0205	B

GENERAL CONSTRUCTION NOTES:

1. CONTRACTOR SHALL INSTALL PROPER EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO COMMENCING CONSTRUCTION.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING HEALTH AND SAFETY OF ALL WORKERS AND THE GENERAL PUBLIC ON SITE.
3. CONTRACTOR MUST OBTAIN VALID LOCATES FROM ALL UTILITIES PRIOR TO COMMENCING ANY EXCAVATIONS.
4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL VALVE CHAMBERS, CPP PIPE, CPP JOINT RESTRAINTS, STEEL CASING AND CASING SPACERS, GROUT MIX, HYDRANTS, VALVES, COUPLINGS, AND CLOSURE PIECES PRIOR TO CONSTRUCTION.
5. CONTRACTOR SHALL PROVIDE RESTRAINED JOINTS ON THE WATERMAIN WHERE INDICATED ON THE DRAWINGS.
6. CONTRACTOR'S CPP PIPE SUPPLIER TO CONFIRM APPROPRIATE CPP PIPE CLASS.

NOTES RELATED TO WATERMAIN INSTALLED IN A STEEL CASING:

1. CPP WATERMAIN UNDER FUTURE TRANSIT CORRIDOR AND HIGHWAY 427 TO BE INSTALLED WITHIN A CONTINUOUSLY WELDED STEEL LINER. STEEL TO BE ASTM A139 GR. C OR EQUAL.
2. VOID SPACE BETWEEN CPP WATERMAIN AND STEEL LINER TO BE FILLED WITH 3:1 SAND:CEMENT GROUT.
3. CONTRACTOR TO PROVIDE SUBMITTALS FOR THE STEEL LINER, CASING SPACERS, CELLULAR FOAM GROUT, AND CPP PIPE.

NOTES RELATED TO WATERMAIN COMMISSIONING:

1. CONTRACTOR SHALL COMPLETE HYDROSTATIC TESTING OF THE NEW WATERMAIN IN ACCORDANCE WITH OPSS 441.07.24 PRIOR TO MAKING FINAL CONNECTIONS TO THE EX. SYSTEM. IN THE EVENT THAT THE HYDROSTATIC TESTING FAILS, THE CONTRACTOR SHALL MAKE REPAIRS AND REPEAT THE HYDROSTATIC TESTING UNTIL THE WATERMAIN PASSES.
2. CONTRACTOR SHALL FLUSH AND DISINFECT NEW WATERMAIN IN ACCORDANCE WITH THE MOECC'S WATERMAIN DISINFECTION PROCEDURE PRIOR TO MAKING FINAL CONNECTIONS.

NOTES RELATED TO CONNECTIONS TO EX. CPP WATERMAIN:

1. CONTRACTOR SHALL EXCAVATE EX. WATERMAIN AT CONNECTION LOCATIONS PRIOR TO CONSTRUCTION TO CONFIRM ELEVATION, DIAMETER, AND PIPE MATERIAL.
2. CONTRACTOR SHALL EXPOSE JOINTS ON EX. CPP WATERMAIN AT CONNECTION LOCATIONS PRIOR TO CONSTRUCTION TO CONFIRM JOINT LOCATIONS. CONTRACTOR TO CONNECT NEW CPP PIPE TO EX. CPP PIPE AT A JOINT. LENGTH OF CPP CLOSURE PIECE TO BE BASED UPON THE LOCATION OF THE EX. JOINT. THE JOINT WHERE THE CONNECTION WILL OCCUR SHALL BE RESTRAINED WITH EITHER A WELD (INTERNAL OR EXTERNAL) OR AN APPROVED MECHANISM AS PER THE CPP SUPPLIER'S RECOMMENDATIONS (TYPICAL FOR BOTH ENDS).
3. CONTRACTOR SHALL EXPOSE THE NEXT THREE PIPE JOINTS ON THE EX. WATERMAIN UPSTREAM OF THE CONNECTION LOCATION TO INVESTIGATE WHETHER THE JOINTS ARE CURRENTLY WELDED ALL AROUND. IN THE CASE THAT THEY ARE NOT, THE CONTRACTOR SHALL EXPOSE, CLEAN, AND PROVIDE FULL CIRCUMFERENTIAL WELD ON ALL THREE JOINTS (TYPICAL FOR BOTH ENDS).
4. CONTRACTOR SHALL PROVIDE AT LEAST 48 HOURS NOTICE TO CITY OF VAUGHAN OPERATIONS STAFF PRIOR TO COMPLETING THE FINAL WATERMAIN CONNECTIONS. ALL FINAL CONNECTIONS SHALL BE MADE IN THE PRESENCE OF CITY OF VAUGHAN OPERATIONS STAFF.
5. ONLY CITY OF VAUGHAN OPERATIONS STAFF ARE PERMITTED TO OPERATE VALVES ON CITY WATERMAINS. CONTRACTOR SHALL NOT OPERATE ANY VALVES ON CITY WATERMAINS.

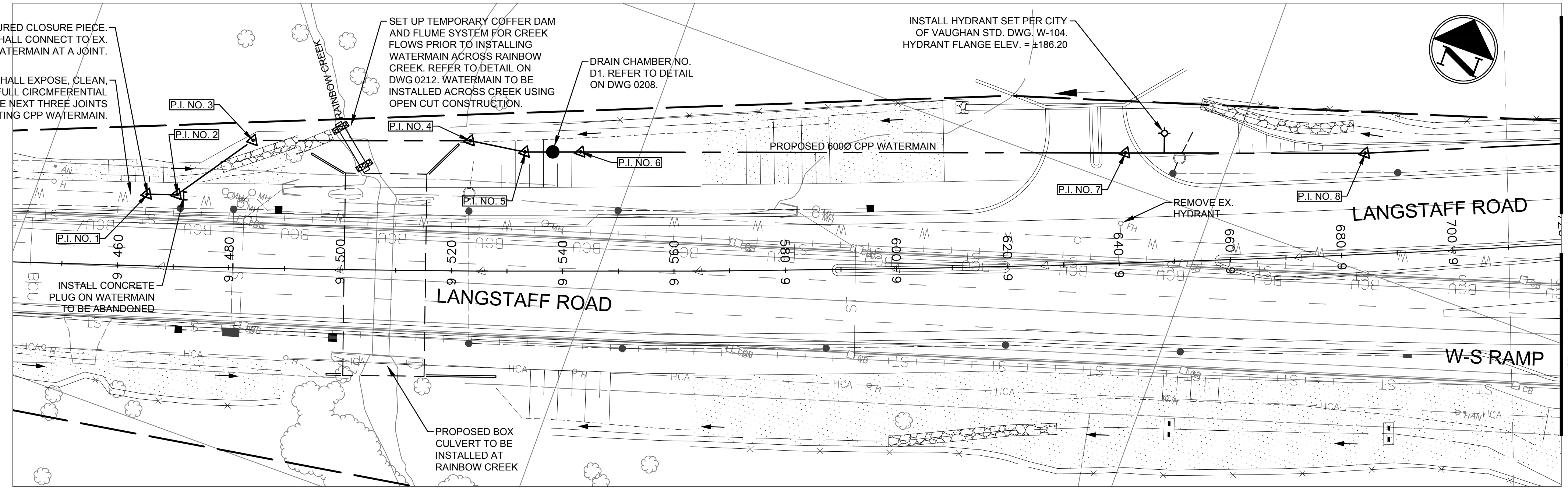
NOTES RELATED TO ABANDONMENT OF EXISTING INFRASTRUCTURE:

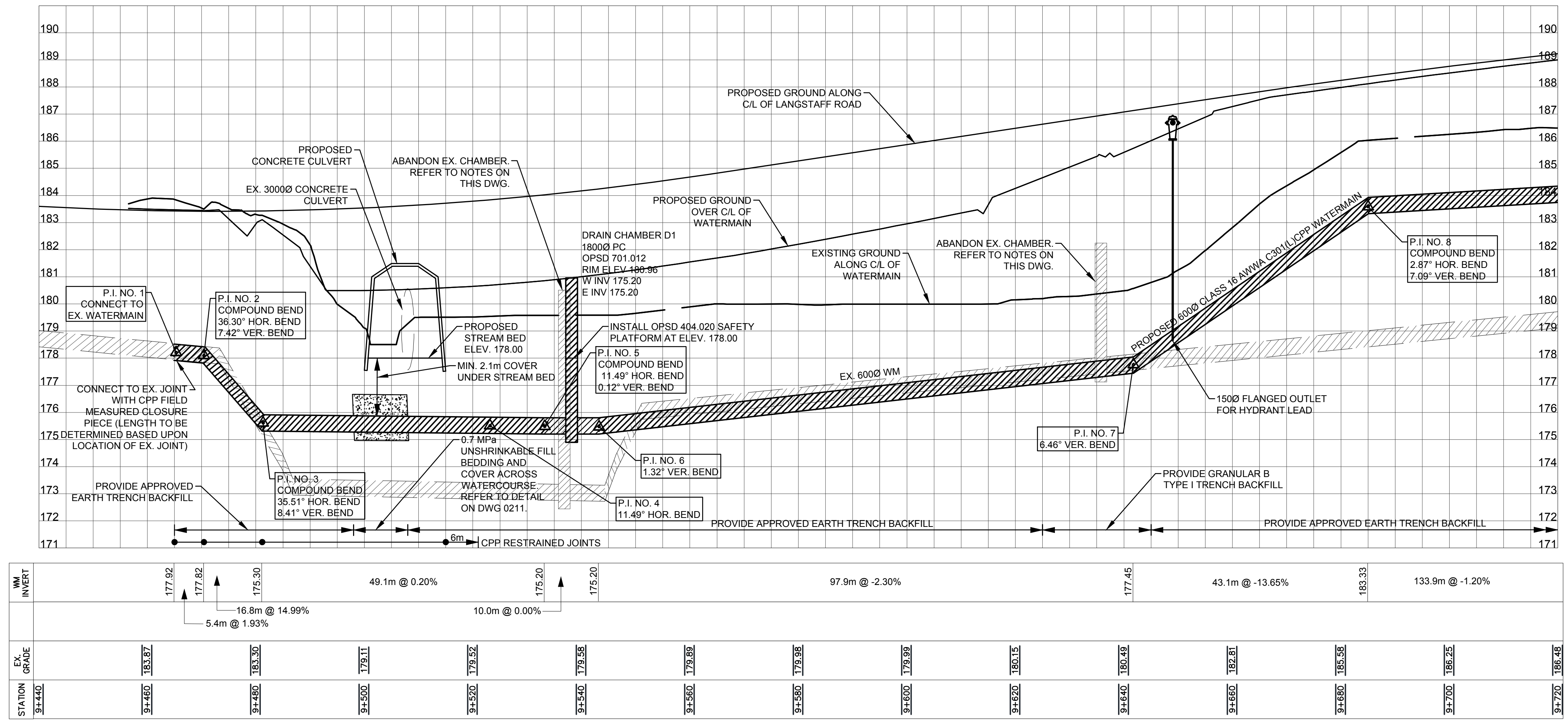
1. CONTRACTOR SHALL INSTALL CONCRETE PLUGS ON EX. WATERMAINS TO BE ABANDONED AT ALL CHAMBERS, AND LOCATIONS WHERE THE PIPE IS TO BE BROKEN.
2. REMOVE PIPES TO BE ABANDONED IF FOUND TO BE IN CONFLICT WITH ANY PROPOSED WORKS.
3. CLOSE ALL VALVES IN EX. CHAMBER TO BE ABANDONED.
4. REMOVE BRICKWORK, FRAME AND COVER ON ALL EXISTING CHAMBERS TO BE ABANDONED.
5. CHAMBERS TO BE ABANDONED SHALL BE FILLED WITH 0.7 MPa UNSHRINKABLE FILL.
6. REMOVE EXISTING HYDRANTS TO BE ABANDONED ALONG WITH VALVES ON HDYRANT LEADS AND DISPOSE OFFSITE.

P.I. No.	BASELINE STATION	NORTHING	EASTING
1	9+464.93	4849738.66	293219.19
2	9+470.43	4849740.41	293224.26
3	9+483.91	4849754.20	293233.80
4	9+523.15	4849767.43	293270.51
5	9+533.22	4849768.89	293280.45
6	9+543.22	4849772.28	293289.86
7	9+641.75	4849805.47	293381.94
8	9+685.04	4849820.08	293422.47

WATERMAIN PRESSURES:

OPERATING PRESSURE = 690 kPa (100 PSI)
TEST PRESSURE = 1035 kPa (150 PSI)
SURGE PRESSURE = 966 kPa (140 PSI)





NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
A	18/1/12	90% SUBMISSION TO CA				

SCALE :
5m 0 10m Metres HORIZONTAL
1m 0 2m Metres VERTICAL

CONSULTANT

	NAME (PRINT)	INIT.	DATE
DESIGNED	ALEX GREEN		
DRAWN	ALEX GREEN		
CHECKED	STEWART DICKSON		
APPROVED LEAD ENGINEER	ALEX GREEN		
APPROVED PROJ. MANAGER	PETER BAMFORTH		

Ontario

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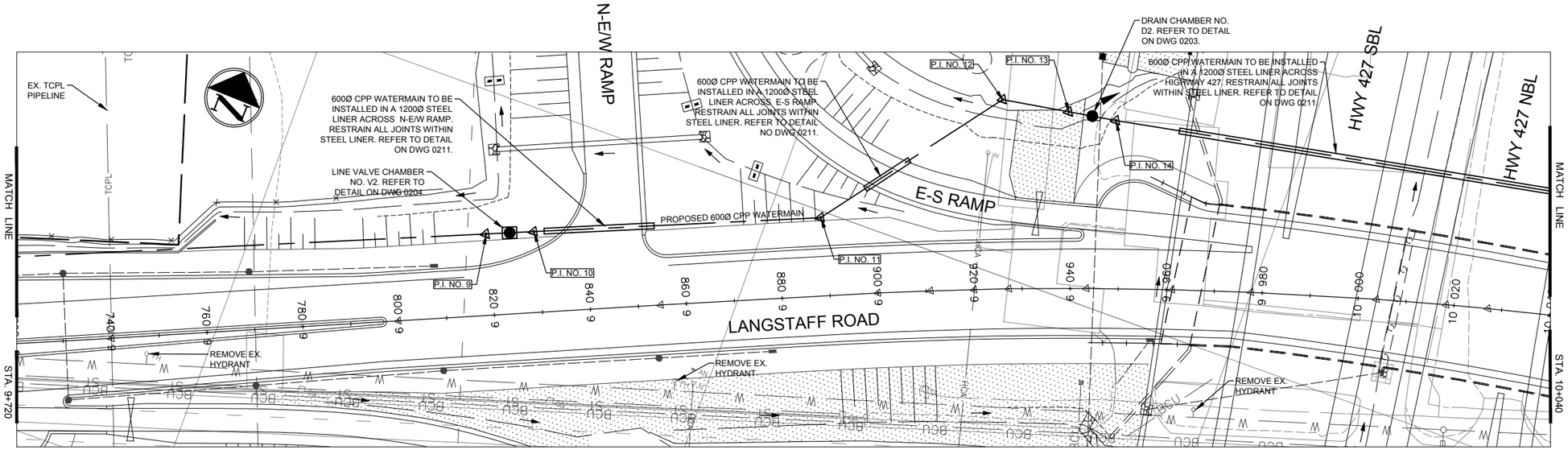
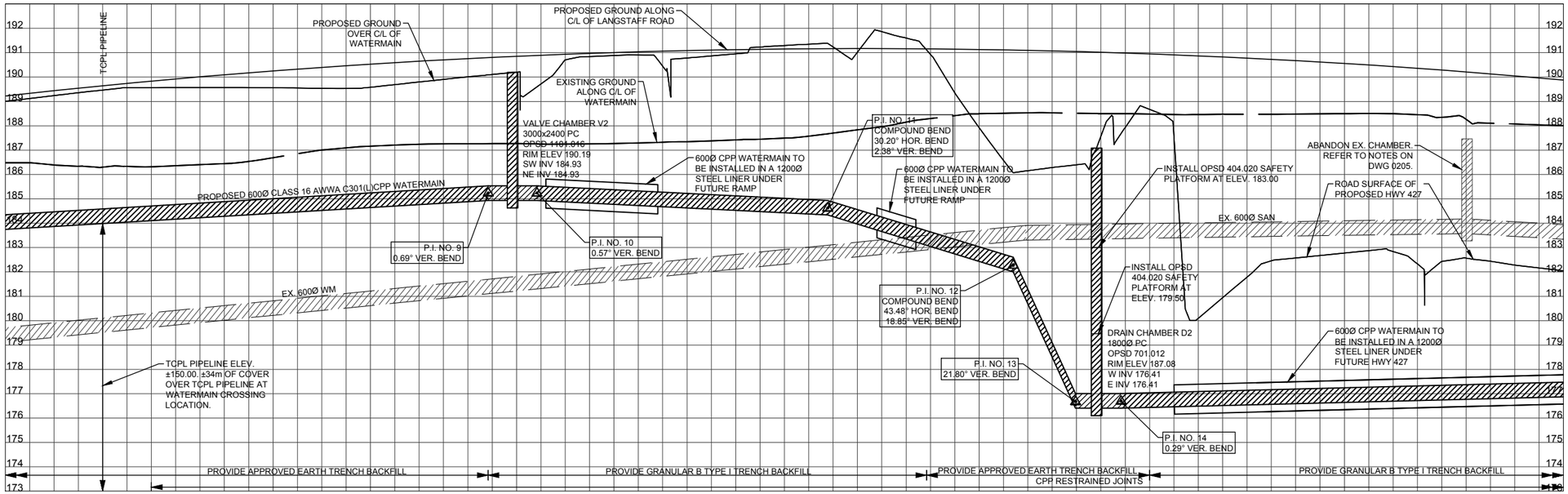
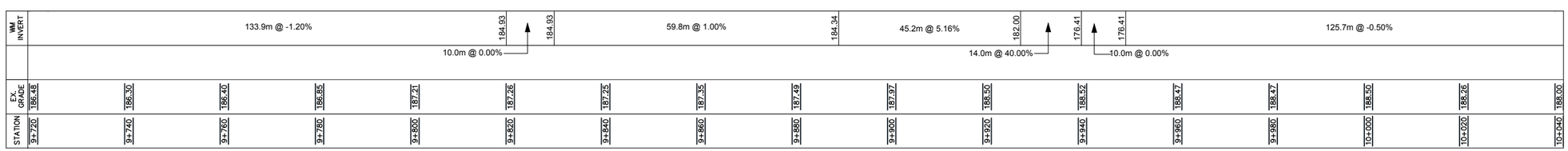
**HWY 427 EXPANSION
LANGSTAFF ROAD
WATERMAIN
PLAN AND PROFILE
STA. 9+440 TO 9+720**

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427–D	N	1	UTL	000	DWG	0206	A





P.I. No.	BASELINE STATION	NORTHING	EASTING
9	9+819.17	4849871.71	293545.97
10	9+829.17	4849875.57	293555.19
11	9+888.90	4849898.65	293610.38
12	9+926.98	4849934.67	293637.64
13	9+939.78	4849936.96	293651.45
14	9+949.03	4849938.59	293661.31



NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
A	18/1/12	90% SUBMISSION TO CA				

SCALE :

5m 0 10m
Metres HORIZONTAL

1m 0 2m
Metres VERTICAL

CONSULTANT

	NAME (PRINT)	INIT.	DATE
DESIGNED	ALEX GREEN		
DRAWN	ALEX GREEN		
CHECKED	STEWART DICKSON		
APPROVED LEAD ENGINEER	ALEX GREEN		
APPROVED PROJ. MANAGER	PETER BAMFORTH		

Ontario

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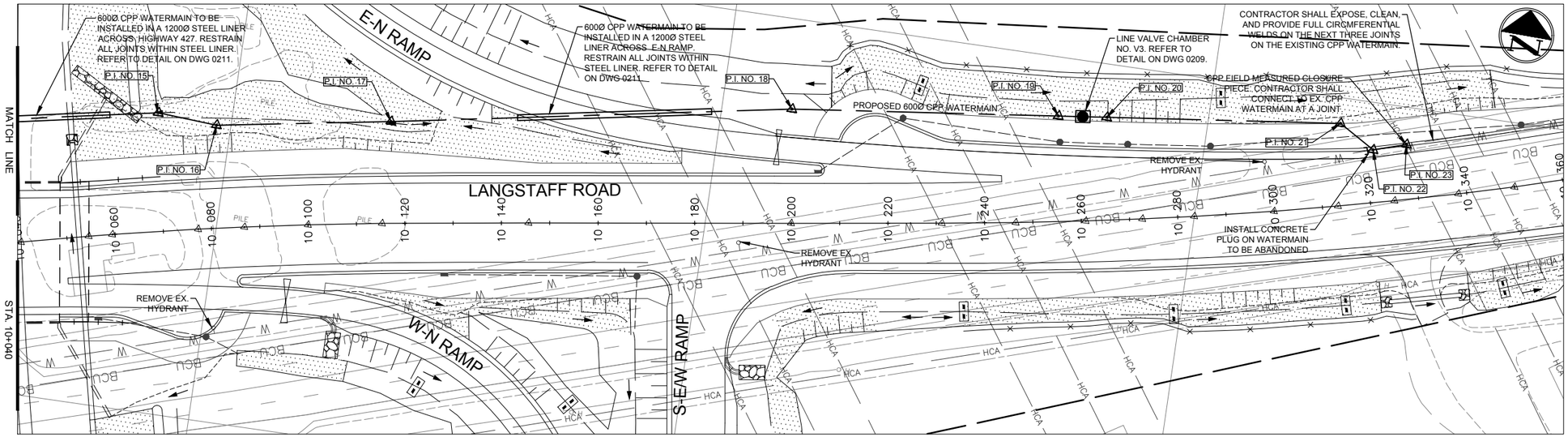
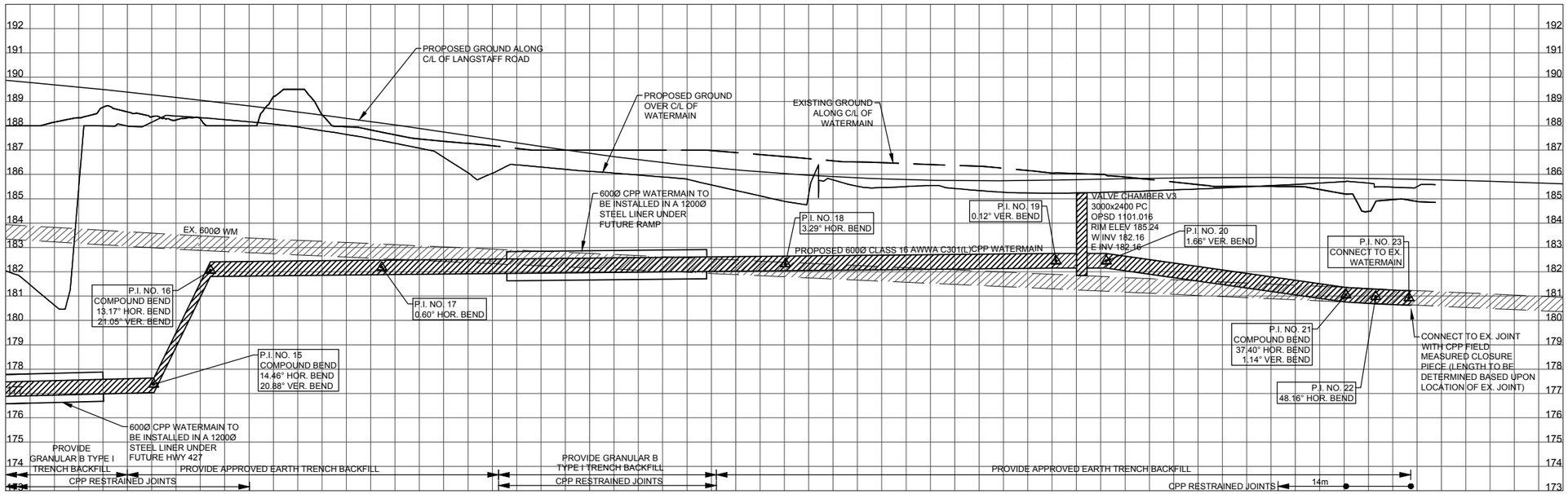
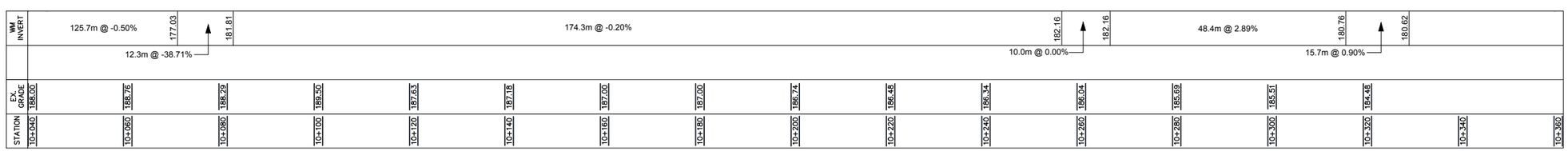
HWY 427 EXPANSION
LANGSTAFF ROAD
WATERMAIN
PLAN AND PROFILE
STA. 9+720 TO 10+040

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427–D	N	1	UTL	000	DWG	0207	A





P.I. No.	BASELINE STATION	NORTHING	EASTING
15	10+070.51	4849961.89	293784.77
16	10+082.05	4849961.08	293797.07
17	10+117.26	4849966.98	293832.68
18	10+200.17	4849981.40	293914.45
19	10+255.81	4849987.85	293969.24
20	10+266.10	4849989.02	293979.17
21	10+315.38	4849994.68	294027.21
22	10+321.59	4949990.24	294034.68
23	10+328.72	4849992.34	294041.35



NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
A	18/1/12	90% SUBMISSION TO CA				

SCALE :

5m 0 10m
Metres HORIZONTAL

1m 0 2m
Metres VERTICAL

CONSULTANT

	NAME (PRINT)	INIT.	DATE
DESIGNED	ALEX GREEN		
DRAWN	ALEX GREEN		
CHECKED	STEWART DICKSON		
APPROVED LEAD ENGINEER	ALEX GREEN		
APPROVED PROJ. MANAGER	PETER BAMFORTH		

Ontario

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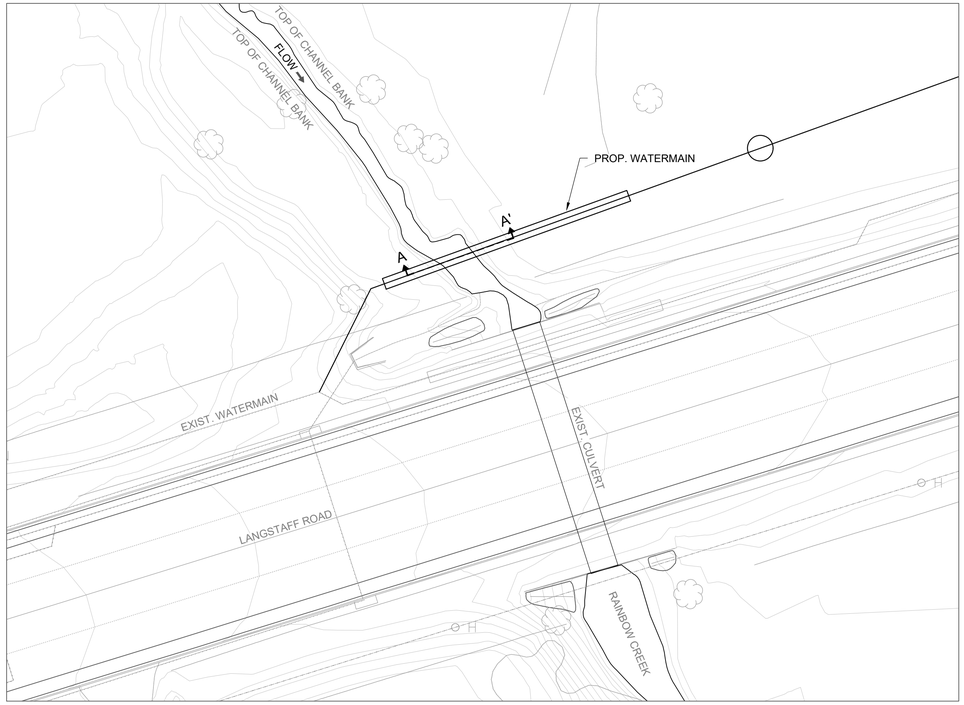
LOCAL | INTEGRATED | NEIGHBOURLY | KNOWLEDGEABLE

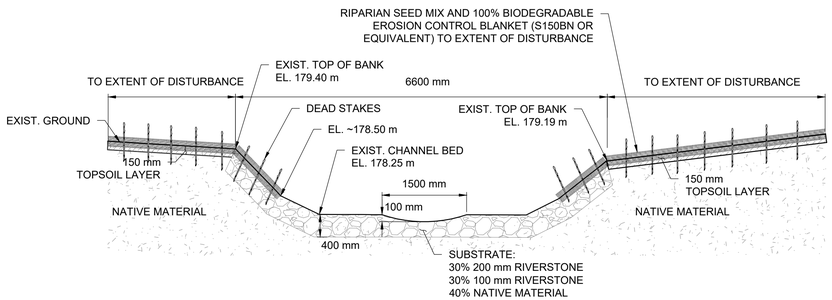
HWY 427 EXPANSION
LANGSTAFF ROAD
WATERMAIN
PLAN AND PROFILE
STA. 10+040 TO 10+360

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	1	UTL	000	DWG	0208	A

APPENDIX A.



PLANFORM
1:200



NOTES
1. EXISTING CHANNEL GEOMETRY TO BE REPLICATED.
2. CHANNEL BED AND BANKS TO BE FIELD-FIT, AS REQUIRED, TO TIE-IN TO EXISTING CHANNEL.
3. DISTURBED AREAS TO BE RESTORED WITH TOPSOIL, RIPARIAN SEED MIX, AND 100% BIODEGRADABLE EROSION CONTROL BLANKET

CROSS SECTION A-A'
1:50

SITE STABILIZATION NOTES

RESTORE/STABILIZE ALL DISTURBED SOILS WITH 150 mm LAYER OF TOPSOIL, RIPARIAN SEED MIX, AND S150BN EROSION CONTROL BLANKET (OR EQUIVALENT TIGHT WEAVE BIODEGRADABLE EROSION CONTROL BLANKET).

RIPARIAN SEED MIX SPECIES INCLUDED APPROXIMATE VOLUME BY TOTAL WEIGHT:

COMMON NAME	SCIENTIFIC NAME	% OF MIX
FOWL MANNA GRASS	Glyceria striata	2
FOWL BLUEGRASS	Poa palustris	30
FOX SEDGE	Carex vulpinoidea	30
PATH RUSH	Juncus tenuis	8
VIRGINIA WILD RYE	Elymus virginicus	30

NOTES
1. APPLY SEED MIX AT A RATE OF 25 kg PER HECTARE.
2. SEEDING SHALL OVERLAP ADJACENT GROUND COVER BY 300 mm.
3. APPLY COMMON OAT (*Avena sativa*) NURSE CROP AT A RATE OF 22 kg PER HECTARE.
4. WATER SOIL AFTER SEED APPLICATION.

OPERATIONAL BEST MANAGEMENT PRACTICES

GENERAL

1. ALL CONTRACT DRAWINGS, SPECIFICATIONS AND APPLICABLE PERMITS MUST BE KEPT ON SITE DURING CONSTRUCTION FOR REFERENCE.
2. ALL GRADES WITHIN THE REGULATORY FLOODPLAIN WILL BE MAINTAINED OR MATCHED.

SITE AND MATERIAL MANAGEMENT

1. ALL CONSTRUCTION EQUIPMENT AND MATERIALS (IMPORTED OR EXCAVATED) MUST BE STORED IN A DESIGNATED STAGING/STORAGE AREA, AWAY FROM ANY WATERBODY IN A STABLE AREA OUTSIDE OF THE FLOODPLAIN AND THE REGULATED REDSIDE DACE HABITAT LIMIT.
2. MINIMIZE THE AREA OF DISTURBANCE TO THE EXTENT POSSIBLE.

DATE	REVISIONS	BY	CHK	LEAD DISC.	PROJ. MAN.

SCALE : AS NOTED

PROFESSIONAL GEOSCIENTIST ONTARIO
PAUL V. VILLARD
PRACTISING MEMBER
2018-04-05

CONSULTANT

DESIGNED	PV	
DRAWN	BM	
CHECKED	PV	
APPROVED PROJ. MANAGER	PV	2018-04-05
	NAME (PRINT)	DATE

Ontario

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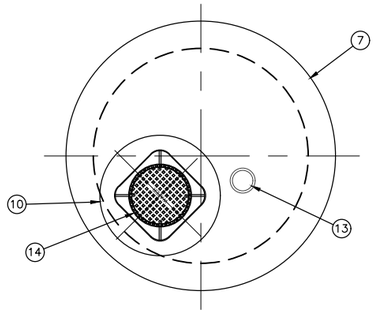
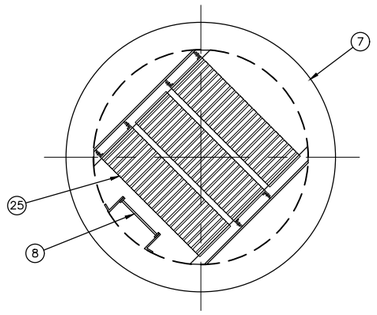
TITLE

HWY 427 EXPANSION
LANGSTAFF ROAD
WATERMAIN REPLACEMENT

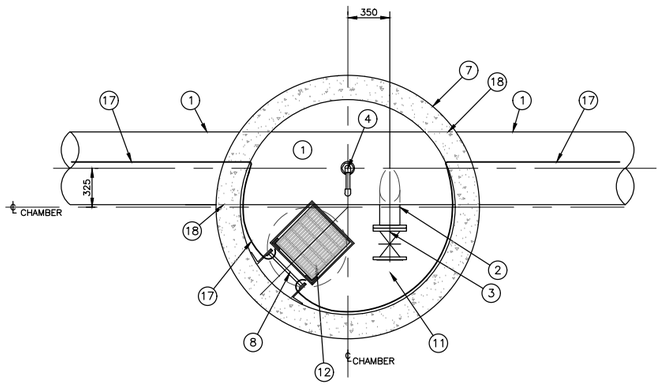
TEMPORARY CHANNEL RESTORATION



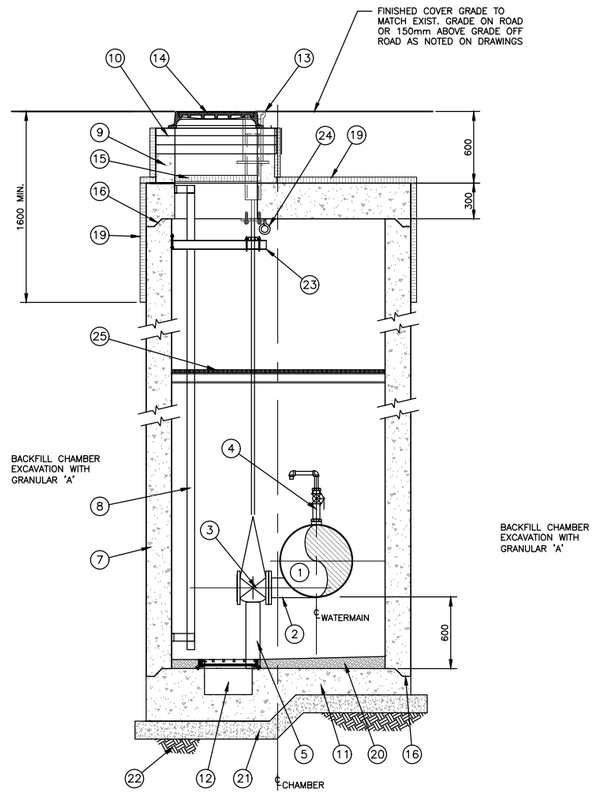
PLAN @ GRADE
1:25



PLAN @ 1M BELOW GRADE
1:25



600ø CPP PLAN BELOW GRADE
1:25



TYP. ELEVATION
1:25

NOTES:

1. INTERIOR OF ALL STEEL PIPE IN CONTACT WITH POTABLE WATER SHALL BE FUSION BONDED EPOXY (FBE) COATED TO AWWA C213 AND BE NSF 61 APPROVED. ALL EXTERIOR SURFACES SHALL BE FBE COATED TO AWWA C213.
2. LIFTING HOOKS ARE TO BE CENTERED OVER ALL VALVES AND OTHER APPURTENANCES. HOOK CAPACITY WILL BE ADEQUATE TO LIFT ANY VALVE WITHIN CHAMBER.
3. ALL FLANGE NUTS AND BOLTS TO BE STAINLESS STEEL. PROTECTO CAPS TO BE ADDED TO ALL NUTS AND BOLTS.
4. VALVE STEM EXTENSION SUPPORT BRACKETS SHALL SUPPORT TOTAL WEIGHT OF THE EXTENSION STEM, NO FORCES SHALL BE TRANSMITTED TO THE VALVE OR GEARBOX.
5. ALL VALVES SHALL OPEN LEFT (COUNTER CLOCKWISE)
6. TRACER WIRE TO BE INSTALLED AS PER CITY STANDARDS C/W WIRE LEADS WITH BRASS TAGS TO TERMINATE @ TOP OF ACCESS LADDER.
7. ALL EXTERIOR METAL PIPE, COUPLINGS AND RESTRAINT SYSTEMS IN CONTACT WITH SOIL SHALL BE WRAPPED WITH DENSO PASTE AND TAPE AS PER MANUFACTURER'S RECOMMENDATIONS.

DRAIN CHAMBER TABLE

CHAMBER No.	TOP OF FRAME ELEV	PIPE INVERT	STATION	DRAWING NO.
D1	180.96	175.20	9+538	0205
D2	187.08	176.41	9+944	0206

ITEM	ITEM DESCRIPTION
25	OPSD DWG. 404.020 SAFETY PLATFORM. ALLOW FOR VALVE STEM AT SHOP DRAWING STAGE.
24	LIFT HOOKS PER OPSD DWG. 1101.019.
23	VALVE STEM EXTENSION SUPPORT SEE DETAIL DWG. No. 0210.
22	UNDISTURBED GROUND.
21	150mm 19mm CRUSHER RUN LEVELING PAD, IN WET CONDITIONS ADJUST THICKNESS AND MATERIAL IN ACCORDANCE WITH GEOTECHNICAL RECOMMENDATIONS,
20	POUR 30 MPa CONC TOPPING (AFTER CONC. PIPE SUPPORTS ARE PLACED) MIN. 75mm THK, AND SLOPE TO SUMP @ 1%.
19	50mm THICK RIGID INSULATION AND PROTECTION BOARD TYP.
18	SEAL OPENINGS WITH NON-SHRINK GROUT TYP.
17	TRACER WIRE, EXTEND TRACER WIRES TO UNDERSIDE OF FRAME. SECURE TO LADDER BRACKET AND PROVIDE 600mm FREE END AND BRASS TAGS TYP.
16	SEAL ALL PRECAST SECTION JOINTS FROM THE OUTSIDE WITH INFI-SHILD SEAL WRAP OR APPROVED EQUAL.
15	FROST PLUG SEE DETAIL ON DWG. No. 0210.
14	FRAME AND COVER, PER OPSD DWG. 401.030 CIRCULAR COVER TO INCLUDE TWO 25x25mm HOLES.
13	VALVE BOX SET TO FIN GRADE PER OPSD 1101.020 TYP. (OUT OF SECTION).
12	SUMP (400x400x300 DEEP); WITH HINGED FLIP UP GRATING COVER AND FRAME SEE DETAIL DWG. No. 210.
11	PRECAST CONC. BASE PER OPSD DWG. 701.050 FOR 1800ø. C/W SUMP DEPRESSION
10	PRECAST CONCRETE ADJUSTMENT UNITS 200mm MIN. 600MM MAX.
9	300mm HIGH PRECAST PER OPSD 701.012 CHIMNEY.
8	ACCESS LADDER, PER OPSD DWG. 404.010 / 406.010
7	PRECAST CONCRETE MANHOLE PER OPSD DWG. 701.050 FOR 1800ø.
6	NOT USED
5	CONC VALVE SUPPORT SEE DETAIL ON DWG No. 0210.
4	SAMPLE POINT 50ø NPT NIPPLE SEE 'DETAIL' DWG. 0210.
3	150ø FLANGED, RESILIENT SEAT GATE VALVE AWWA C-509 FUSION BONDED EPOXY SHOP COAT FINISH ON EXTERIOR OF VALVE, INTERIOR COATING TO BE NSF 61 APPROVED C/W 50mm SQ. OPERATING NUT AND EXTENSION STEM.
2	150ø TANGENT FLANGED BRANCH.
1	600ø CPP WATERMAIN

NO.	DATE	REVISIONS	BY	CHK	LEAD DISC.	PROJ. MAN.
A	18/1/12	90% SUBMISSION TO CA				

SCALE :
AS SHOWN

CONSULTANT

	NAME (PRINT)	INIT.	DATE
DESIGNED	ALEX GREEN		
DRAWN	ALEX GREEN		
CHECKED	STEWART DICKSON		
APPROVED LEAD ENGINEER	ALEX GREEN		
APPROVED PROJ. MANAGER	PETER BAMFORTH		

Ontario

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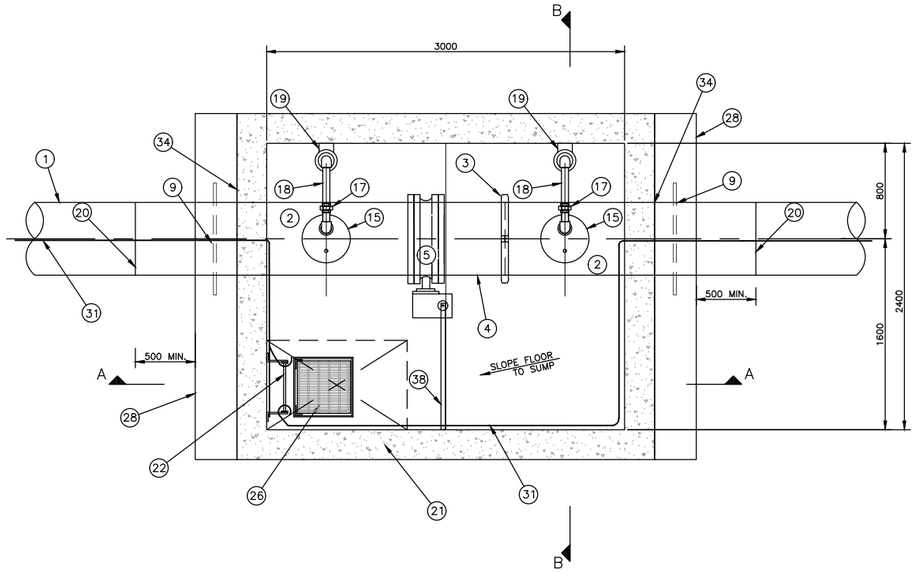
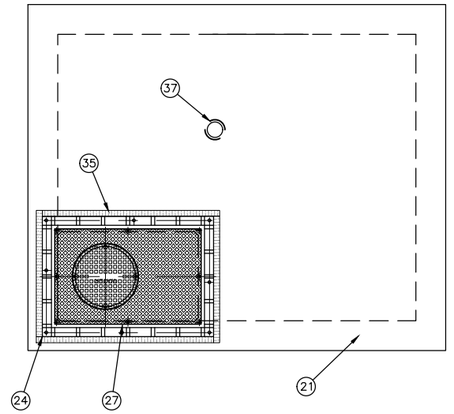
HWY 427 EXPANSION
LANGSTAFF ROAD
WATERMAIN
DRAIN VALVE CHAMBERS

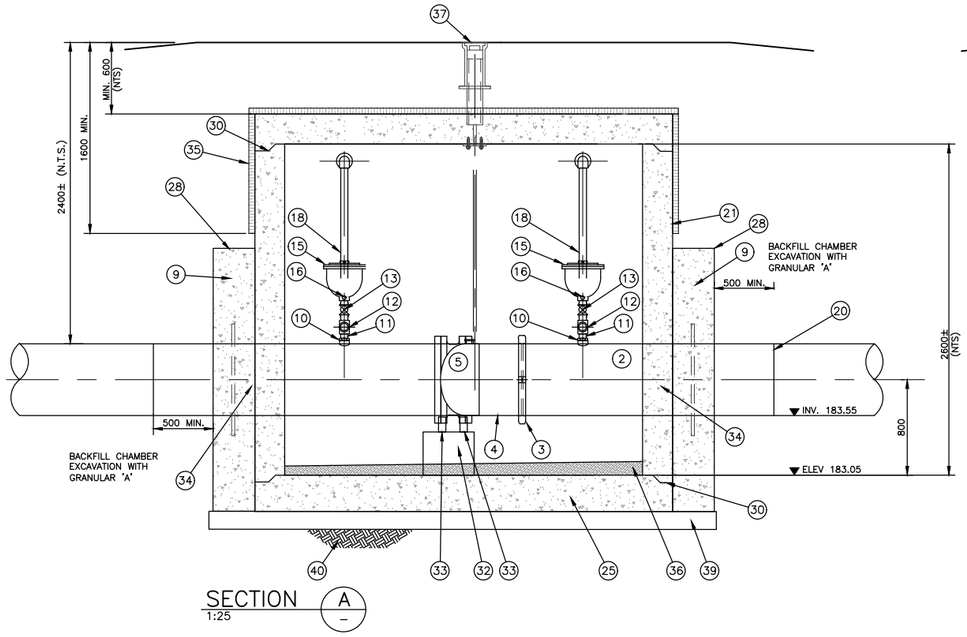
PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	1	UTL	000	DWG	0209	A



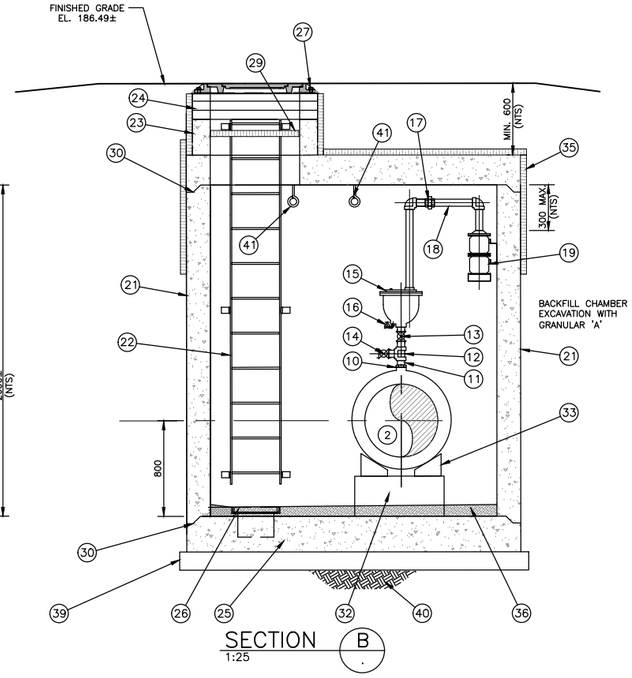
600ø CPP PLAN BELOW GRADE
1:25



PLAN @ GRADE
1:25



SECTION A
1:25



SECTION B
1:25

ITEM	ITEM DESCRIPTION
42	NOT USED.
41	LIFT HOOKS PER OPSD DWG. 1101.019
40	UNDISTURBED GROUND
39	150mm 19mm CRUSHER RUN LEVELLING PAD, IN WET CONDITIONS ADJUST THICKNESS AND MATERIAL IN ACCORDANCE WITH GEOTECHNICAL RECOMMENDATIONS.
38	VALVE STEM EXTENSION SUPPORT FOR ALL VALVES SEE DWG. No. 0210.
37	VALVE BOX SET TO FIN GRADE PER OPSD 1101.020 TYP. (OUT OF SECTION).
36	CAST FLOOR TO SLOPE TO SUMP.
35	50mm THICK RIGID INSULATION AND PROTECTION BOARD TYP.
34	SEAL OPENINGS WITH NON-SHRINK GROUT TYP.
33	VALVE SUPPORT SEE DETAIL ON DWG. No. 0210
32	CONC. VALVE SUPPORT SEE DETAIL ON DWG. No. 0210
31	TRACER WIRE, EXTEND TRACER WIRES TO UNDERSIDE OF FRAME. SECURE TO LADDER BRACKET AND PROVIDE 600mm FREE END AND BRASS TAGS TYP.
30	SEAL ALL PRECAST SECTION JOINTS FROM THE OUTSIDE WITH INFI-SHILD SEAL WRAP OR APPROVED EQUAL
29	FROST PLUG SEE DETAIL ON DWG. No. 0210
28	POURED IN PLACE THRUST BLOCK TO OPSD 1101.018
27	RECTANGULAR FRAME AND TWO PIECE COVER SEE OPSD DWG. 402.030. CIRCULAR COVER TO INCLUDE TWO 25x25mm HOLES
26	SUMP WITH HINGED FLIP UP GRATING COVER AND FRAME SEE DETAIL DWG. No. 0210.
25	PRECAST CONC. BASE C/W SUMP DEPRESSION.
24	PRECAST CONCRETE ADJUSTMENT UNITS 200mm MIN. 600mm MAX.
23	PRECAST CHIMNEY PER OPSD 1101.019.
22	ACCESS LADDER, PER OPSD DWG. 404.010 / 406.010.
21	PRECAST CONCRETE CHAMBER TO BE DESIGNED BY MANUFACTURER
20	RESTRAINED JOINT.
19	50ø FLOODSAFE VALMATIC MODEL 1300 MOUNTED TO PRECAST CHAMBER WALL AS PER VALVE MANUFACTURERS RECOMMENDATIONS.
18	50ø S.S. VENT PIPE TO BE SECURED TO CEILING WITH S.S. HANGER RODS.
17	UNION.
16	S.S. BALL VALVE DRAIN ASSEMBLY (SIZE TO SUIT AIR VALVE DRAIN).
15	50ø COMBINATION AIR RELEASE, VACUUM BREAKER VALVE ASSEMBLY VALMATIC MODEL VM-202C.2, INTERIOR & EXTERIOR OF VALVE SHALL BE FUSION BONDED EPOXY COATED ANSI/NSF 61 APPROVED (INSTALL VALVE ASSEMBLY WHERE SHOWN).
14	50ø S.S. BALL VALVE WITH TEFLON SEAT AND SPRING RETURN.
13	50ø S.S. BALL VALVE WITH TEFLON SEAT.
12	THREADED 50ø SS TEE.
11	THREADED 50ø SS SPOOL PIECE TYP.
10	50ø NPT NIPPLE
9	THRUST FLANGE WELDED ALL AROUND AS PER PIPE MANUFACTURER'S DESIGN.
8	NOT USED.
7	NOT USED.
6	INTENTIONALLY LEFT BLANK
5	600ø FLANGED BUTTERFLY VALVE AWWA C-504 FUSION BONDED EPOXY SHOP COAT FINISH ON EXTERIOR OF VALVE, INTERIOR COATING TO BE NSF 61 APPROVED. VALVE SEAT ADJUST ON ADAPTER SIDE, WITH OPERATOR / HANDWHEEL, VALVE TO BE SUITABLE FOR CONTINUOUS SUBMERGED SERVICE.
4	600ø SPOOL PIECE
3	VICTAULIC AGS COUPLING STYLE W77, FUSION BONDED EPOXY SHOP COAT FINISH ON EXTERIOR, FBE INTERIOR COATING TO BE ANSI/NSF 61 APPROVED. PIPE GAP PER MANUFACTURER'S RECOMENDATIONS.
2	600ø CPP WALL PIECE
1	600ø CPP WATERMAIN

VALVE CHAMBER TABLE				
CHAMBER No.	TOP OF FRAME ELEV	PIPE INVERT	STATION	DRAWING NO.
V1	184.93	190.19	9+824	0206
V2	182.16	185.24	10+261	0207

NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
A	18/1/12	90% SUBMISSION TO CA				

SCALE :
AS SHOWN

CONSULTANT				
DESIGNED	ALEX GREEN			
DRAWN	ALEX GREEN			
CHECKED	STEWART DICKSON			
APPROVED LEAD ENGINEER	ALEX GREEN			
APPROVED PROJ. MANAGER	PETER BAMFORTH			
	NAME (PRINT)	INIT.	DATE	

Ontario

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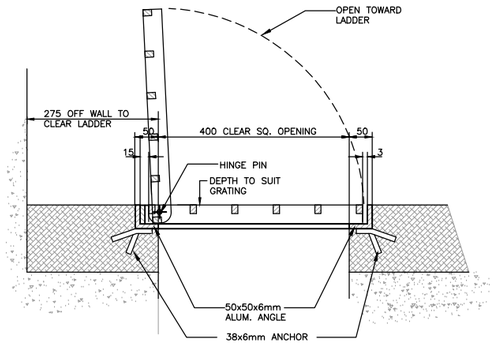
LOCAL | INTEGRATED | NEIGHBOURLY | KNOWLEDGEABLE

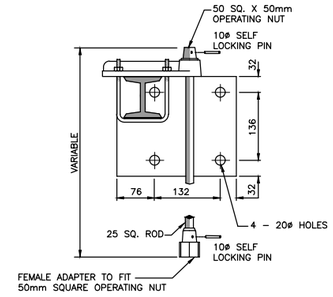
HWY 427 EXPANSION
LANGSTAFF ROAD
WATERMAIN
LINE VALVE CHAMBERS

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	1	UTL	000	DWG	0210	A

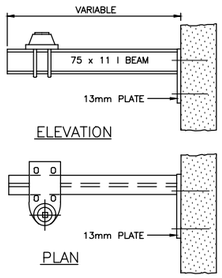


SUMP FRAME AND COVER
N.T.S.

NOTES
1. ALL ALUM WELDED CONSTRUCTION.
2. ALL ALUM. IN CONTACT WITH CONC. TO RECEIVE TWO COATS OF BITUMINOUS PAINT.
3. FRAME DIMENSIONS SHALL SUIT FINAL SUMP DIMENSIONS.



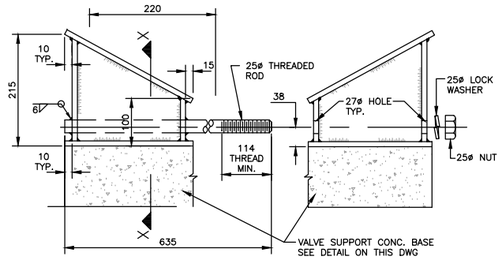
VALVE STEM EXTENSION SUPPORT
N.T.S.

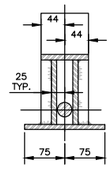


ELEVATION

PLAN

NOTES:
1. BRACKET CONSTRUCTION TO BE STAINLESS STEEL.
2. FASTEN BRACKETS TO WALL USING 15mm DIA, x 200mm LONG BOLTS.
3. BOLTS AND ANCHORS TO BE STAINLESS STEEL –19mm.

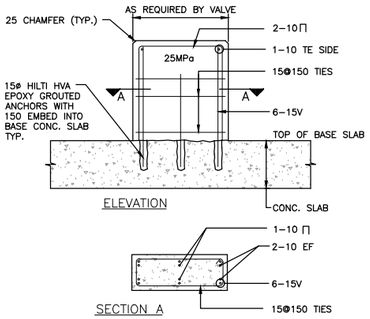




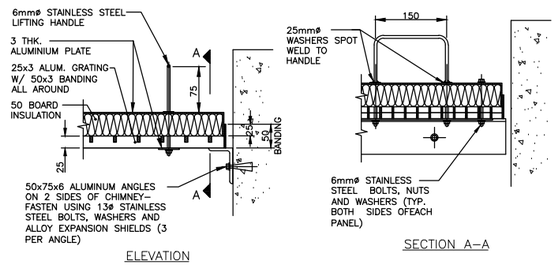
SECTION X–X

NOTES:
1. ALL STEEL PLATE TO BE 10mm. THICK
2. CONTINUOUS WELDS AT ALL INTERSECTING JOINTS TO BE 6mm.
3. ALL PARTS TO BE HOT DIP GALVANIZED AFTER FABRICATION.
4. COAT UNDERSIDE OF PLATE WITH 2 COATS OF BITUMINOUS PAINT.
5. SUBMIT SHOP DRAWINGS.
6. TWO SUPPORTS ARE TO BE PROVIDED UNDER THE FLANGES OF EACH BUTTERFLY VALVE.

VALVE SUPPORT
N.T.S.



VALVE SUPPORT CONC. BASE
N.T.S.



TYPICAL FROST PLUG DETAIL
N.T.S.

NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
A	18/1/12	90% SUBMISSION TO CA				

SCALE : AS SHOWN

CONSULTANT				
	DESIGNED	ALEX GREEN		
	DRAWN	ALEX GREEN		
	CHECKED	STEWART DICKSON		
	APPROVED LEAD ENGINEER	ALEX GREEN		
	APPROVED PROJ. MANAGER	PETER BAMFORTH		
		NAME (PRINT)	INT.	DATE

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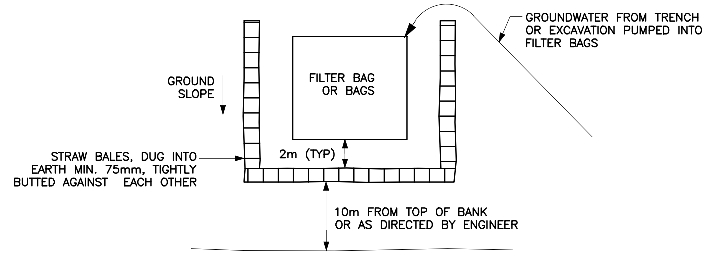
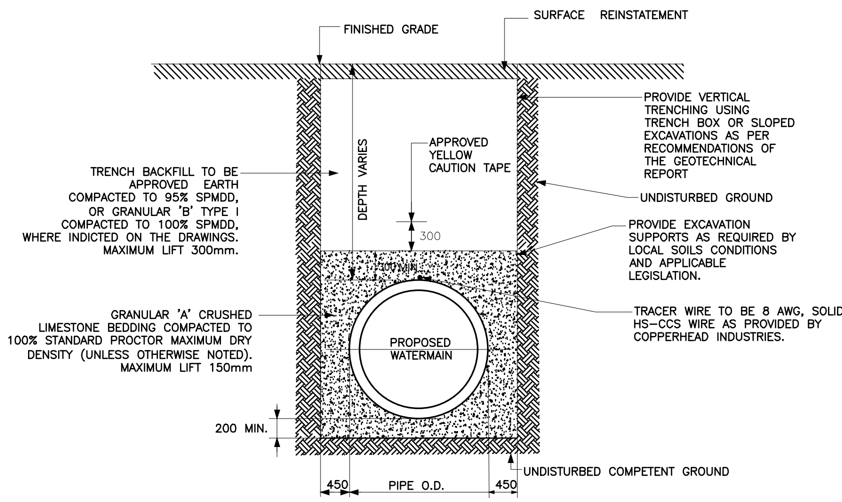
HWY 427 EXPANSION LANGSTAFF ROAD WATERMAIN VALVE CHAMBER DETAILS

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427–D	N	1	UTL	000	DWG	0211	A



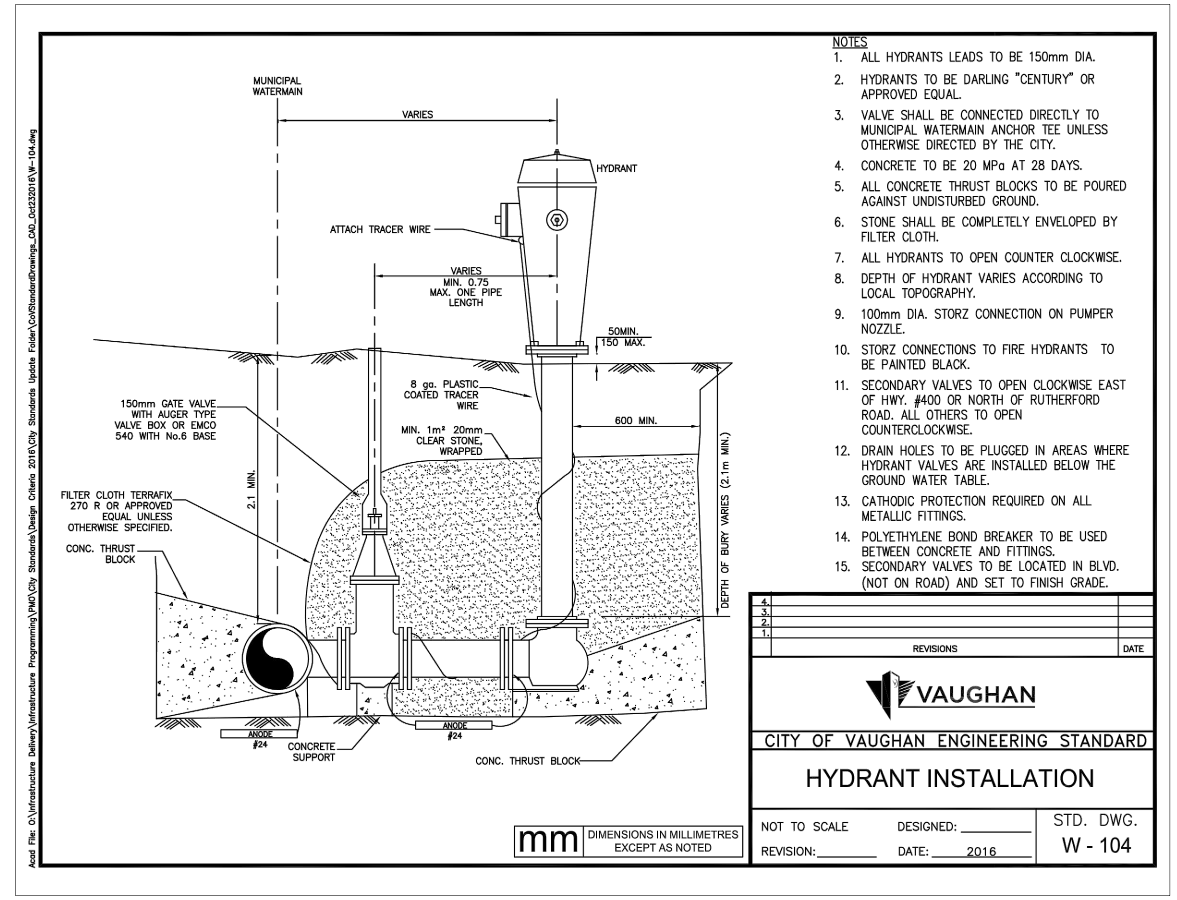
FILTER BAG FILTRATION ARRANGEMENT

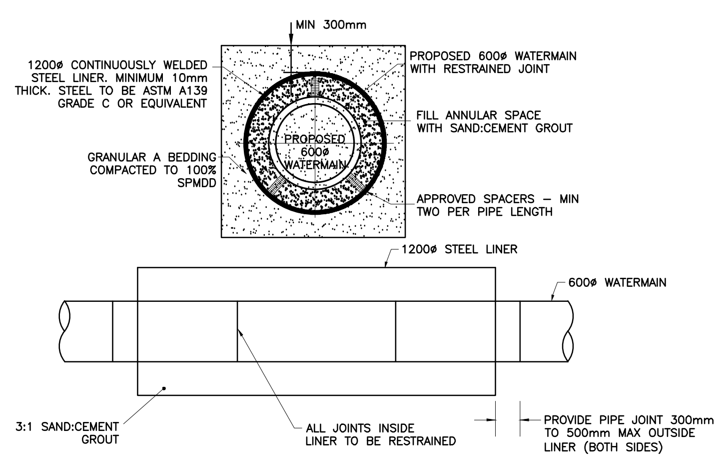
N.T.S.


FINISHED GRADE
SURFACE REINSTATEMENT
PROVIDE VERTICAL TRENCHING USING TRENCH BOX OR SLOPED EXCAVATIONS AS PER RECOMMENDATIONS OF THE GEOTECHNICAL REPORT
APPROVED YELLOW CAUTION TAPE
DEPTH VARIES
TRENCH BACKFILL TO BE APPROVED EARTH COMPACTED TO 95% SPMDD, OR GRANULAR 'B' TYPE I COMPACTED TO 100% SPMDD, WHERE INDICTED ON THE DRAWINGS. MAXIMUM LIFT 300mm.
UNDISTURBED GROUND
300
300 MIN.
PROVIDE EXCAVATION SUPPORTS AS REQUIRED BY LOCAL SOILS CONDITIONS AND APPLICABLE LEGISLATION.
TRACER WIRE TO BE 8 AWG, SOLID HS-CCS WIRE AS PROVIDED BY COPPERHEAD INDUSTRIES.
GRANULAR 'A' CRUSHED LIMESTONE BEDDING COMPACTED TO 100% STANDARD PROCTOR MAXIMUM DRY DENSITY (UNLESS OTHERWISE NOTED). MAXIMUM LIFT 150mm
PROPOSED WATERMAIN
200 MIN.
UNDISTURBED COMPETENT GROUND
450
PIPE O.D.
450

TYPICAL DETAIL FOR WATERMAIN IN TRENCH

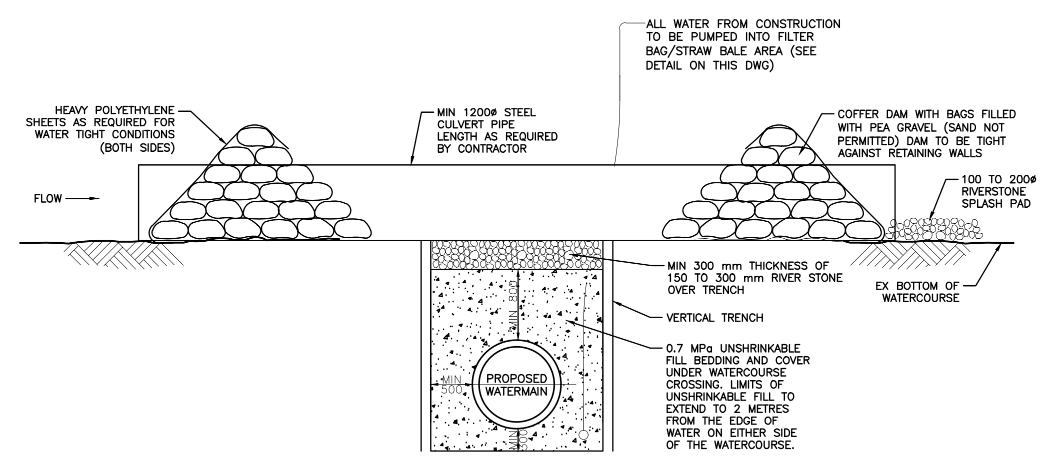
N.T.S.


MUNICIPAL WATERMAIN
VARIES
HYDRANT
ATTACH TRACER WIRE
VARIES MIN. 0.75 MAX. ONE PIPE LENGTH
50MIN. 150 MAX.
8 ga. PLASTIC COATED TRACER WIRE
150mm GATE VALVE WITH AUGER TYPE VALVE BOX OR EMCO 540 WITH No.6 BASE
MIN. 1m² 20mm CLEAR STONE, WRAPPED
600 MIN.
2.1 MIN.
FILTER CLOTH TERRAFIX 270 R OR APPROVED EQUAL UNLESS OTHERWISE SPECIFIED.
CONC. THRUST BLOCK
DEPTH OF BURY VARIES (2.1m MIN.)
ANODE #24
CONCRETE SUPPORT
ANODE #24
CONC. THRUST BLOCK
Acad File: O:\Infrastructure Delivery\Infrastructure Programming\PMO\City Standards\Design Criteria 2016\City Standards Update Folder\CoVStandardDrawings_CAD_Oct232016\W-104.dwg
mm DIMENSIONS IN MILLIMETRES EXCEPT AS NOTED
NOTES
1. ALL HYDRANTS LEADS TO BE 150mm DIA.
2. HYDRANTS TO BE DARLING "CENTURY" OR APPROVED EQUAL.
3. VALVE SHALL BE CONNECTED DIRECTLY TO MUNICIPAL WATERMAIN ANCHOR TEE UNLESS OTHERWISE DIRECTED BY THE CITY.
4. CONCRETE TO BE 20 MPa AT 28 DAYS.
5. ALL CONCRETE THRUST BLOCKS TO BE POURED AGAINST UNDISTURBED GROUND.
6. STONE SHALL BE COMPLETELY ENVELOPED BY FILTER CLOTH.
7. ALL HYDRANTS TO OPEN COUNTER CLOCKWISE.
8. DEPTH OF HYDRANT VARIES ACCORDING TO LOCAL TOPOGRAPHY.
9. 100mm DIA. STORZ CONNECTION ON PUMPER NOZZLE.
10. STORZ CONNECTIONS TO FIRE HYDRANTS TO BE PAINTED BLACK.
11. SECONDARY VALVES TO OPEN CLOCKWISE EAST OF HWY. #400 OR NORTH OF RUTHERFORD ROAD. ALL OTHERS TO OPEN COUNTERCLOCKWISE.
12. DRAIN HOLES TO BE PLUGGED IN AREAS WHERE HYDRANT VALVES ARE INSTALLED BELOW THE GROUND WATER TABLE.
13. CATHODIC PROTECTION REQUIRED ON ALL METALLIC FITTINGS.
14. POLYETHYLENE BOND BREAKER TO BE USED BETWEEN CONCRETE AND FITTINGS.
15. SECONDARY VALVES TO BE LOCATED IN BLVD. (NOT ON ROAD) AND SET TO FINISH GRADE.
4.
3.
2.
1.
REVISIONS
DATE
VAUGHAN
CITY OF VAUGHAN ENGINEERING STANDARD
HYDRANT INSTALLATION
NOT TO SCALE
DESIGNED:
REVISION:
DATE: 2016
STD. DWG.
W - 104


MIN 300mm
1200ø CONTINUOUSLY WELDED STEEL LINER. MINIMUM 10mm THICK. STEEL TO BE ASTM A139 GRADE C OR EQUIVALENT
PROPOSED 600ø WATERMAIN WITH RESTRAINED JOINT
FILL ANNULAR SPACE WITH SAND:CEMENT GROUT
PROPOSED 600ø WATERMAIN
GRANULAR A BEDDING COMPACTED TO 100% SPMDD
APPROVED SPACERS – MIN TWO PER PIPE LENGTH
1200ø STEEL LINER
600ø WATERMAIN
3:1 SAND:CEMENT GROUT
ALL JOINTS INSIDE LINER TO BE RESTRAINED
PROVIDE PIPE JOINT 300mm TO 500mm MAX OUTSIDE LINER (BOTH SIDES)

DETAIL OF WATERMAIN IN STEEL LINER UNDER FUTURE HIGHWAY 427 AND RAMPS

N.T.S.


ALL WATER FROM CONSTRUCTION TO BE PUMPED INTO FILTER BAG/STRAW BALE AREA (SEE DETAIL ON THIS DWG)
HEAVY POLYETHYLENE SHEETS AS REQUIRED FOR WATER TIGHT CONDITIONS (BOTH SIDES)
MIN 1200ø STEEL CULVERT PIPE LENGTH AS REQUIRED BY CONTRACTOR
COFFER DAM WITH BAGS FILLED WITH PEA GRAVEL (SAND NOT PERMITTED) DAM TO BE TIGHT AGAINST RETAINING WALLS
FLOW
100 TO 200ø RIVERSTONE SPLASH PAD
MIN 300 mm THICKNESS OF 150 TO 300 mm RIVER STONE OVER TRENCH
EX BOTTOM OF WATERCOURSE
VERTICAL TRENCH
MIN 800
0.7 MPa UNSHRINKABLE FILL BEDDING AND COVER UNDER WATERCOURSE CROSSING. LIMITS OF UNSHRINKABLE FILL TO EXTEND TO 2 METRES FROM THE EDGE OF WATER ON EITHER SIDE OF THE WATERCOURSE.
MIN 500
PROPOSED WATERMAIN
MIN 500

TYPICAL COFFER DAM/CULVERT FLOW BYPASS AND WATERMAIN TRENCH DETAIL AT EXISTING CREEK CROSSING (STA 9+508)

N.T.S.

NOTES RELATED TO THE COFFER DAM/BYPASS DETAIL:

1. THE COFFER DAM/BYPASS DETAIL IS SCHEMATIC. THE CONTRACTOR SHALL PROVIDE CULVERT DIAMETERS AND NUMBER OF CULVERTS REQUIRED TO PASS WATERCOURSE FLOWS AND AVOID WORK ZONE FLOODING.
2. ANY DAMAGE CAUSED TO THE WORK ZONE DUE TO FLOODING SHALL BE REPAIRED AND COFFER DAMS REINSTATED AT NO ADDITIONAL COST TO THE CONTRACT.
3. CONSTRUCTION INSIDE THE COFFER DAM AREA SHALL BE IN THE DRY. ALL WATER PUMPED FROM THE TRENCH SHALL BE DIRECTED TO FILTER BAG/STRAW BALE AREAS PLACED ON GRASS AREAS AS DIRECTED BY THE ENGINEER.
4. COFFER DAMS SHALL BE PLACED IMMEDIATELY PRIOR TO CONSTRUCTION IN THE WATERCOURSE AREAS, AND SHALL BE REMOVED IMMEDIATELY AFTER THE ENGINEER APPROVES THE CREEK AND WALL REINSTATEMENT.
5. THE CONTRACTOR SHALL COMPLY WITH ALL ENVIRONMENTAL PERMIT REQUIREMENTS WHEN WORKING IN THE WATERCOURSE AREA.

NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
A	18/1/12	90% SUBMISSION TO CA				

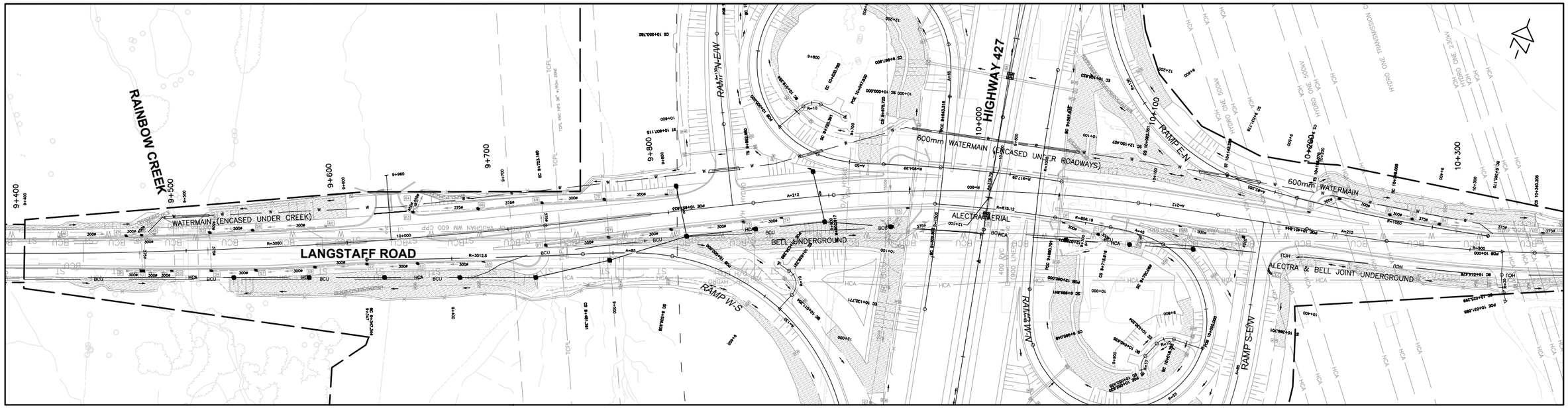
SCALE : N.T.S.

CONSULTANT	NAME (PRINT)	INIT.	DATE
DESIGNED	ALEX GREEN		
DRAWN	ALEX GREEN		
CHECKED	STEWART DICKSON		
APPROVED LEAD ENGINEER	ALEX GREEN		
APPROVED PROJ. MANAGER	PETER BAMFORTH		

LOCAL | INTEGRATED | NEIGHBOURLY | KNOWLEDGEABLE

HWY 427 EXPANSION LANGSTAFF ROAD WATERMAIN CONSTRUCTION DETAILS

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427–D	N	1	UTL	000	DWG	0212	A



NOTE

PRELIMINARY UTILITY RELOCATION STRATEGIES ONLY. RELOCATION STRATEGIES ARE SUBJECT TO UTILITY COMPANY AND MUNICIPAL AUTHORITY APPROVAL.

NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
A	18/1/12	90% SUBMISSION TO CA				

SCALE :

5m 0 10m

Metres
HORIZONTAL

CONSULTANT

	NAME (PRINT)	INIT.	DATE
DESIGNED	JONATHAN MOHACSI		
DRAWN	JONATHAN MOHACSI		
CHECKED	DUNCAN CAMPBELL		
APPROVED LEAD ENGINEER	JONATHAN MOHACSI		
APPROVED PROJ. MANAGER	PETER BAMFORTH		

Ontario

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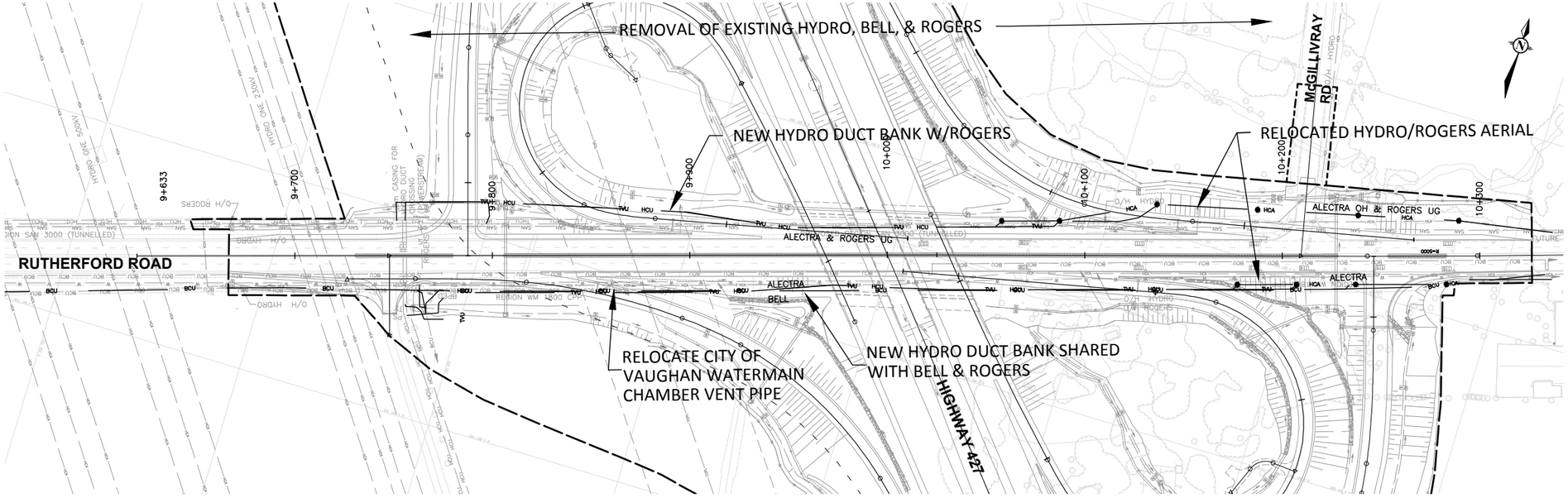
LOCAL | INTEGRATED | NEIGHBOURLY | KNOWLEDGEABLE

HWY 427 EXPANSION
LANGSTAFF ROAD

PRELIMINARY UTILITY RELOCATION STRATEGY

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	1	UTL	000	DWG	0213	A



NOTE

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RELOCATION STRATEGY

1. ALECTRA: REMOVE EXISTING POLE LINES ON NORTH & SOUTH; REPLACE WITH NEW POLE AND UNDERGROUND SYSTEM.
2. BELL: REMOVE EXISTING UNDERGROUND ON SOUTH SIDE AND MOVE TO SOUTH ALECTRA DUCT BANK.
3. ROGERS: REMOVE EXISTING AERIAL ON NORTH & SOUTH SIDES AND MOVE TO SOUTH ALECTRA DUCT BANKS.

*GENERAL PLAN BASED ON ALECTRA DRAWINGS DATED FEB 1, 2018; BELL DRAWINGS DATED JAN 3, 2018; AND ROGERS DRAWINGS DATED FEB 9, 2018.

NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
A	A	A				
B	18/01/05	90% SUBMISSION TO CA				
A	17/12/01	90% SUBMISSION TO CA				

SCALE :

12.5m 0 25m

Metres
HORIZONTAL

CONSULTANT

DESIGNED	IMRAN AHMAD		
DRAWN	EDDY LEUNG		
CHECKED	DUNCAN CAMPBELL		
APPROVED LEAD ENGINEER	JONATHAN MOHACSI		
APPROVED PROJ. MANAGER	PETER BAMFORTH		
	NAME (PRINT)	INIT.	DATE

Ontario

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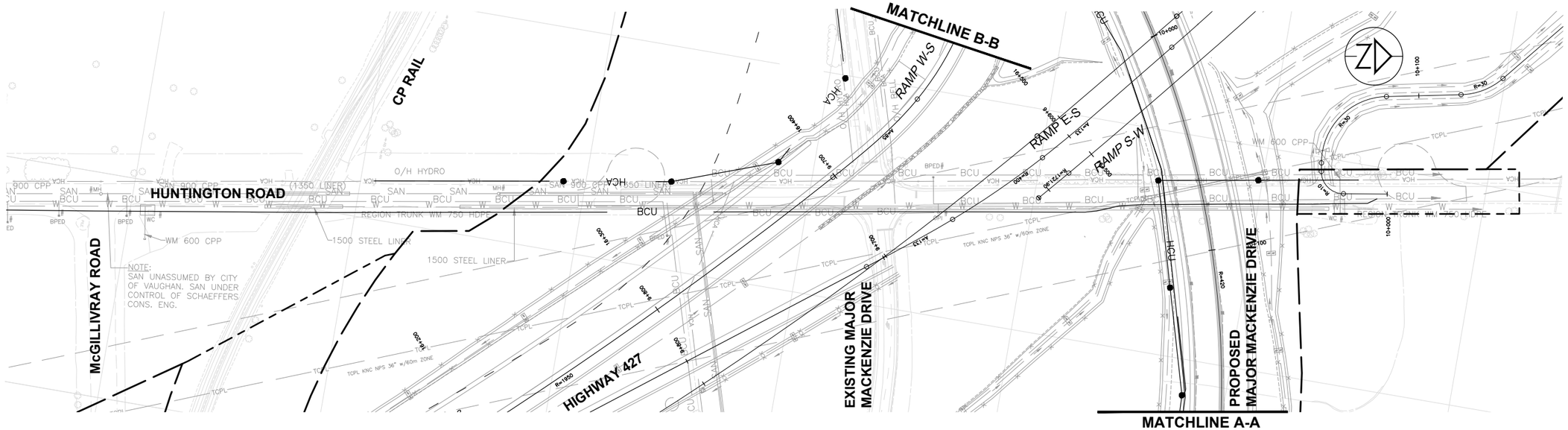
LOCAL | INTEGRATED | NEIGHBOURLY | KNOWLEDGEABLE

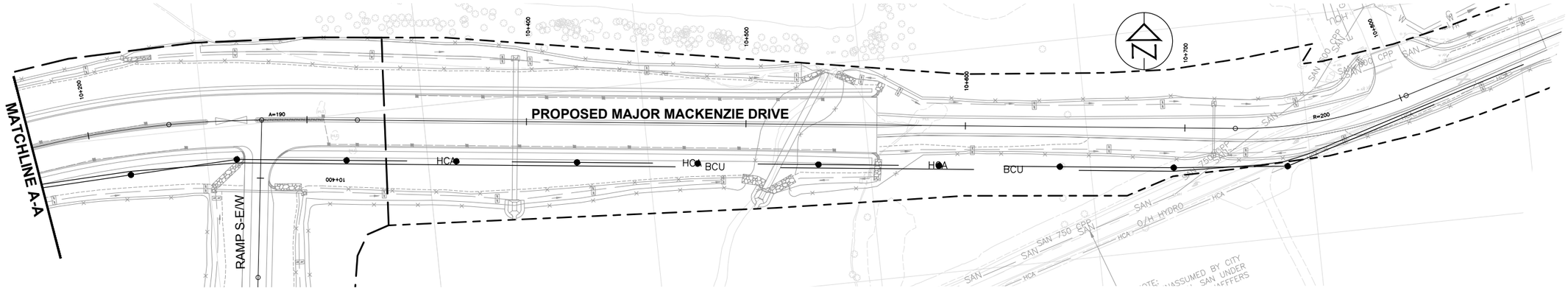
TITLE

HWY 427 EXPANSION

RUTHERFORD ROAD UTILITY RELOCATION STRATEGY

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	2	UTL	000	DWG	0200	C





NOTE

PRELIMINARY UTILITY RELOCATION STRATEGIES ONLY. RELOCATION STRATEGIES ARE SUBJECT TO UTILITY COMPANY AND MUNICIPAL AUTHORITY APPROVAL.

NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
C	18/03/02	90% SUBMISSION TO CA				
B	18/01/05	90% SUBMISSION TO CA				
A	17/12/01	90% SUBMISSION TO CA				

SCALE :

5m 0 10m

Metres
HORIZONTAL

CONSULTANT

	NAME (PRINT)	INIT.	DATE
DESIGNED	Sharm Talagala		
DRAWN	Arash Khaleghi		
CHECKED	Duncan Campbell		
APPROVED LEAD ENGINEER	Jonathan Mohacsi		
APPROVED PROJ. MANAGER	Peter Bamforth		

Ontario

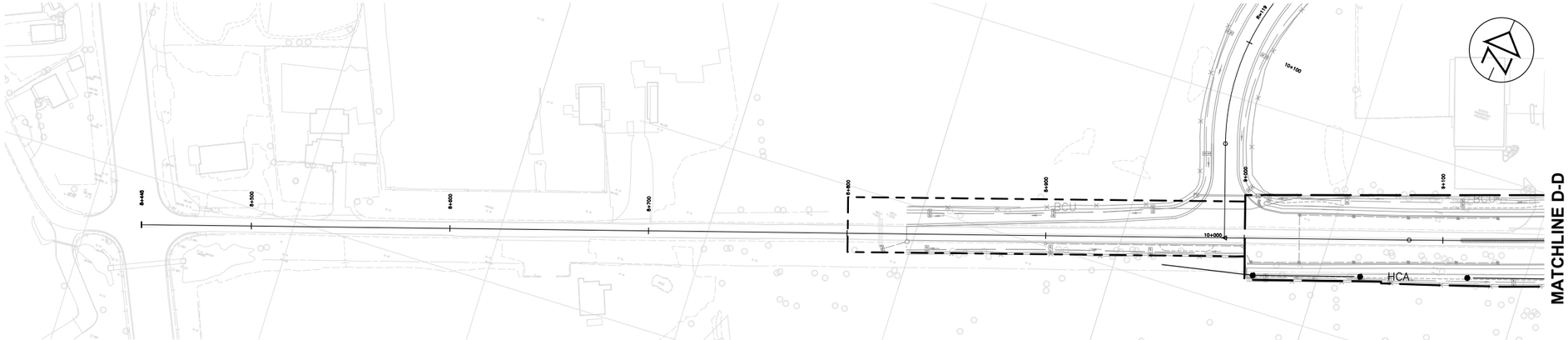
link427
LOCAL | INTEGRATED | NEIGHBOURLY | KNOWLEDGEABLE

TITLE

HWY 427 EXPANSION

HUNTINGTON ROAD & MAJOR MACKENZIE EAST UTILITY RELOCATION STRATEGY

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	3	UTL	000	DWG	0200	C



NOTE

PRELIMINARY UTILITY RELOCATION STRATEGIES ONLY. RELOCATION STRATEGIES ARE SUBJECT TO UTILITY COMPANY AND MUNICIPAL AUTHORITY APPROVAL.

NO.	DATE	REVISIONS	BY	CHK	LEAD. DISC.	PROJ. MAN.
C	18/03/02	90% SUBMISSION TO CA				
B	18/01/05	90% SUBMISSION TO CA				
A	17/12/01	90% SUBMISSION TO CA				

SCALE :

5m 0 10m

Metres
HORIZONTAL

CONSULTANT

DESIGNED	Sharm Talagala		
DRAWN	Arash Khaleghi		
CHECKED	Duncan Campbell		
APPROVED LEAD ENGINEER	Jonathan Mohacsi		
APPROVED PROJ. MANAGER	Peter Bamforth		
	NAME (PRINT)	INIT.	DATE

Ontario

link427
LOCAL | INTEGRATED | NEIGHBOURLY | KNOWLEDGEABLE

TITLE

HWY 427 EXPANSION

MAJOR MACKENZIE DRIVE WEST UTILITY RELOCATION STRATEGY

PROJECT ID.	STAGE INDENTIFIER	DESIGN PACKAGE NUMBER	DISCIPLINE	STRUCTURE NUMBER	DOCUMENT TYPE	DRAWING NUMBER	REVISION NUMBER
H427-D	N	3	UTL	000	DWG	0201	C