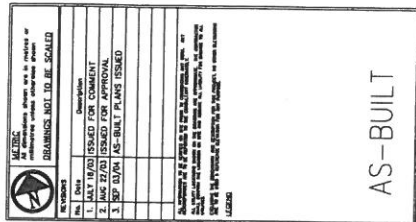


Appendix E
As-Built Plan & Profile Drawings



AS-BUILT

RWC R. W. Connelly Associates
CONCRETE ENGINEERS AND
STRUCTURAL DESIGNERS
234 WESTBROOK ROAD, CAMP, ON K0A 1L0
TEL: (416) 353-1000 FAX: (416) 353-0448
TEL: (416) 353-1001 FAX: (416) 353-0448
TEL: (416) 353-1002 FAX: (416) 353-0448

 Innovative Water & Sewer Systems Inc.
*Taking Water and Wastewater
into the 21st Century*
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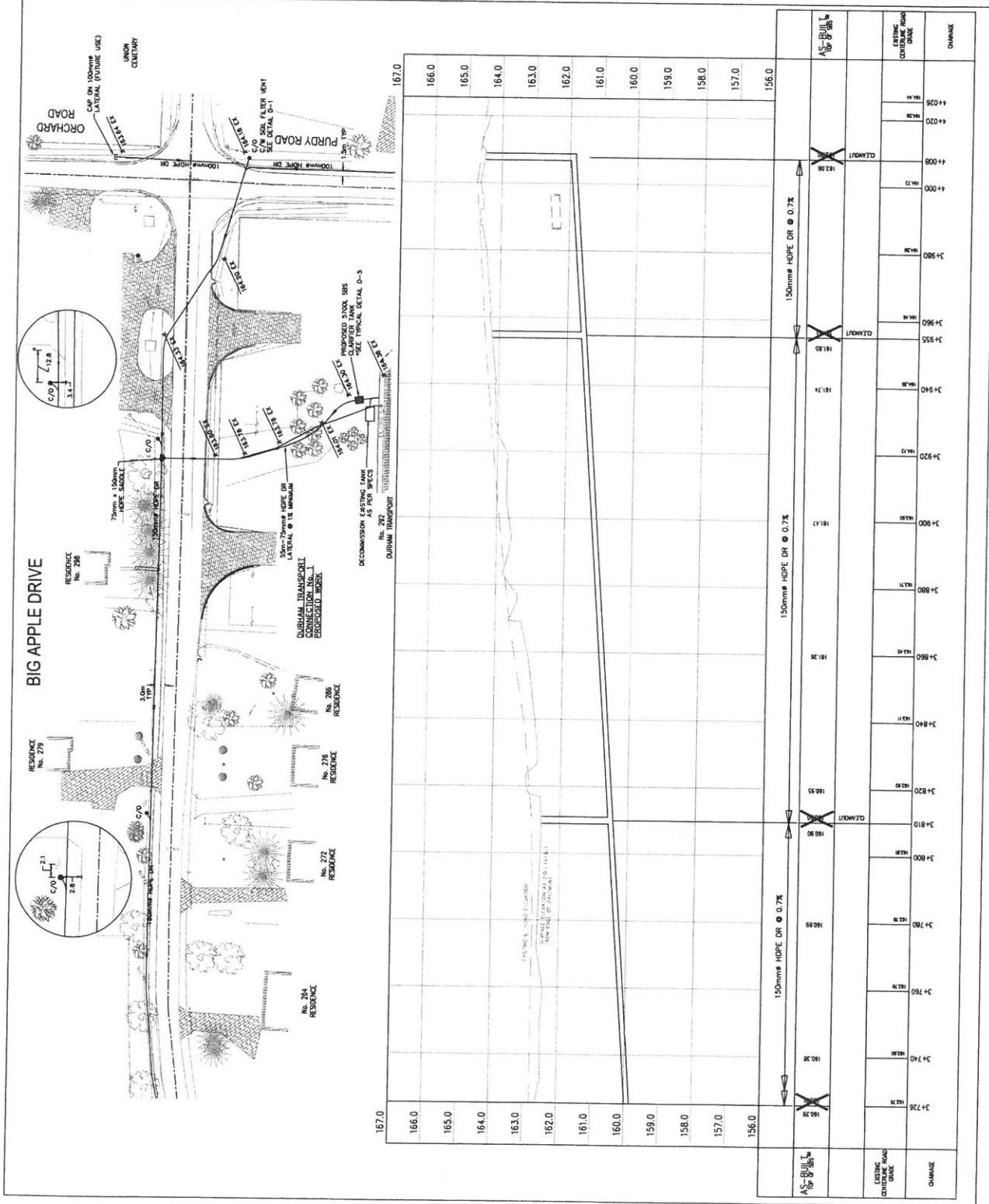
Township of Cramahe
In the heart of App.

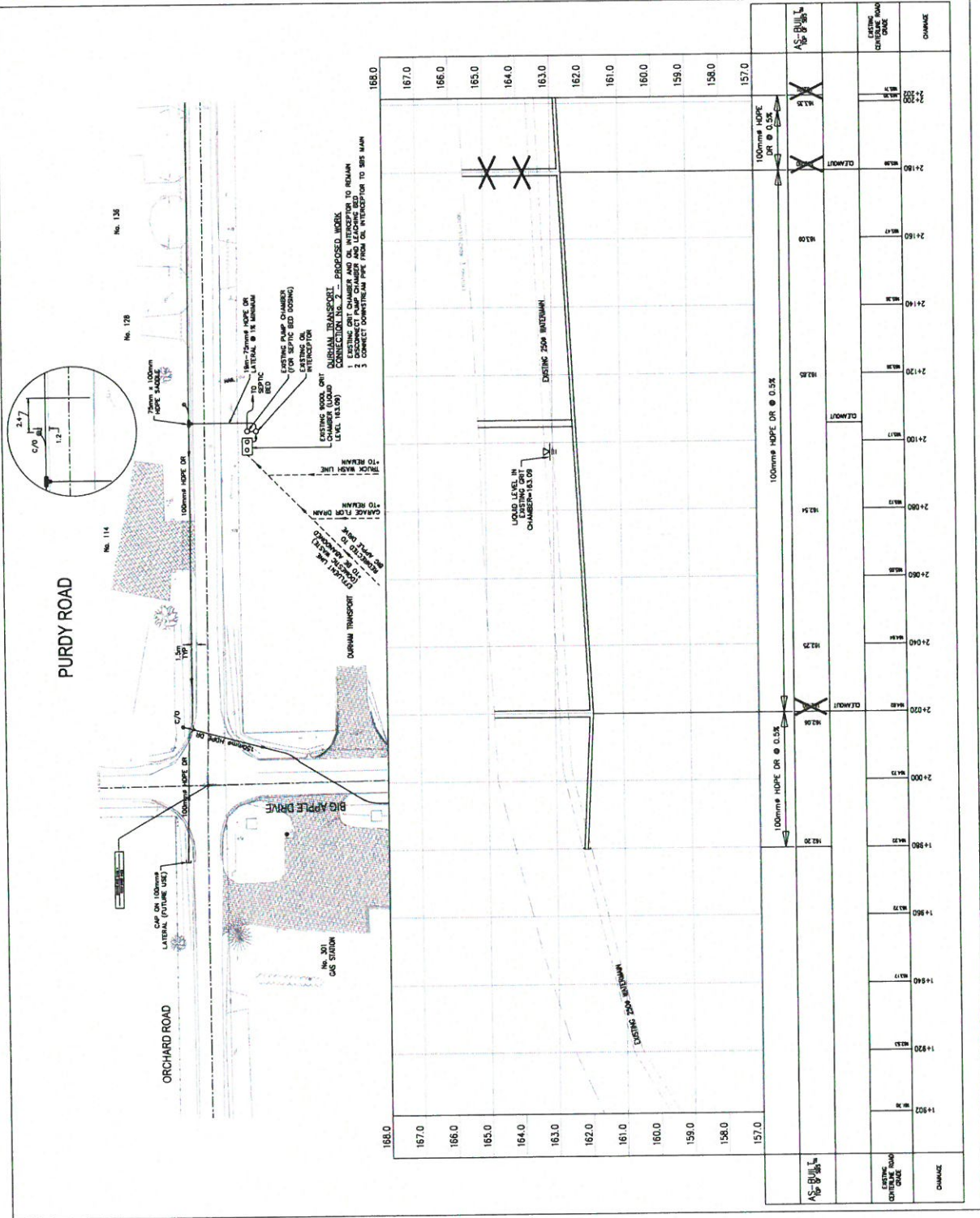
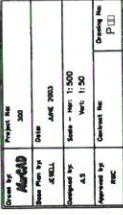
CRAMAHE TOWNSHIP
TOWN OF COLBORNE
INDUSTRIAL PARK
SMALL BORE SEWER™
SANITARY EXPANSION

PLAN AND PROFILE
00120 TO 00420
BIG APPLE DRIVE

Drawn by MS-219	Project No. 300
Issue Plan by J.WILL	Date JUNE 2003
Designed by J.S	Scale - Horiz: 1:500 Vert: 1:50
Approved by RHC	Contract No. Drawing No. P79

CHARGE	CHARGE	EXISTING CONTRACT ROAD OR ALLEY
CHARGE	3+136	3+136
	3+140	3+140
	3+150	3+150
	3+170	3+170
	3+180	3+180
	3+200	3+200
	3+220	3+220
	3+230	3+230
	3+240	3+240
	3+260	3+260
	3+280	3+280
	3+300	3+300
CHARGE	3+320	3+320
	3+340	3+340
	3+360	3+360
	3+370	3+370
	3+380	3+380
	3+400	3+400
	3+420	3+420
	3+440	3+440
	3+460	3+460
	3+480	3+480
	3+500	3+500
	3+520	3+520





NOTES:

1. ALL LOTS TO BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR REVIEW.
2. ALL LOTS TO BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR REVIEW.
3. ALL LOTS TO BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR REVIEW.
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8. ALL LOTS TO BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR REVIEW.
9. ALL LOTS TO BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR REVIEW.
10. ALL LOTS TO BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR REVIEW.

AS-BUILT

CRAMHNE TOWNSHIP
TOWN OF COLLEGE
INDUSTRIAL PARK
SMALL BORE SEWER™
SANITARY EXPANSION

PLAN AND PROFILE
2/2002 TO 2/1002
PURDY ROAD

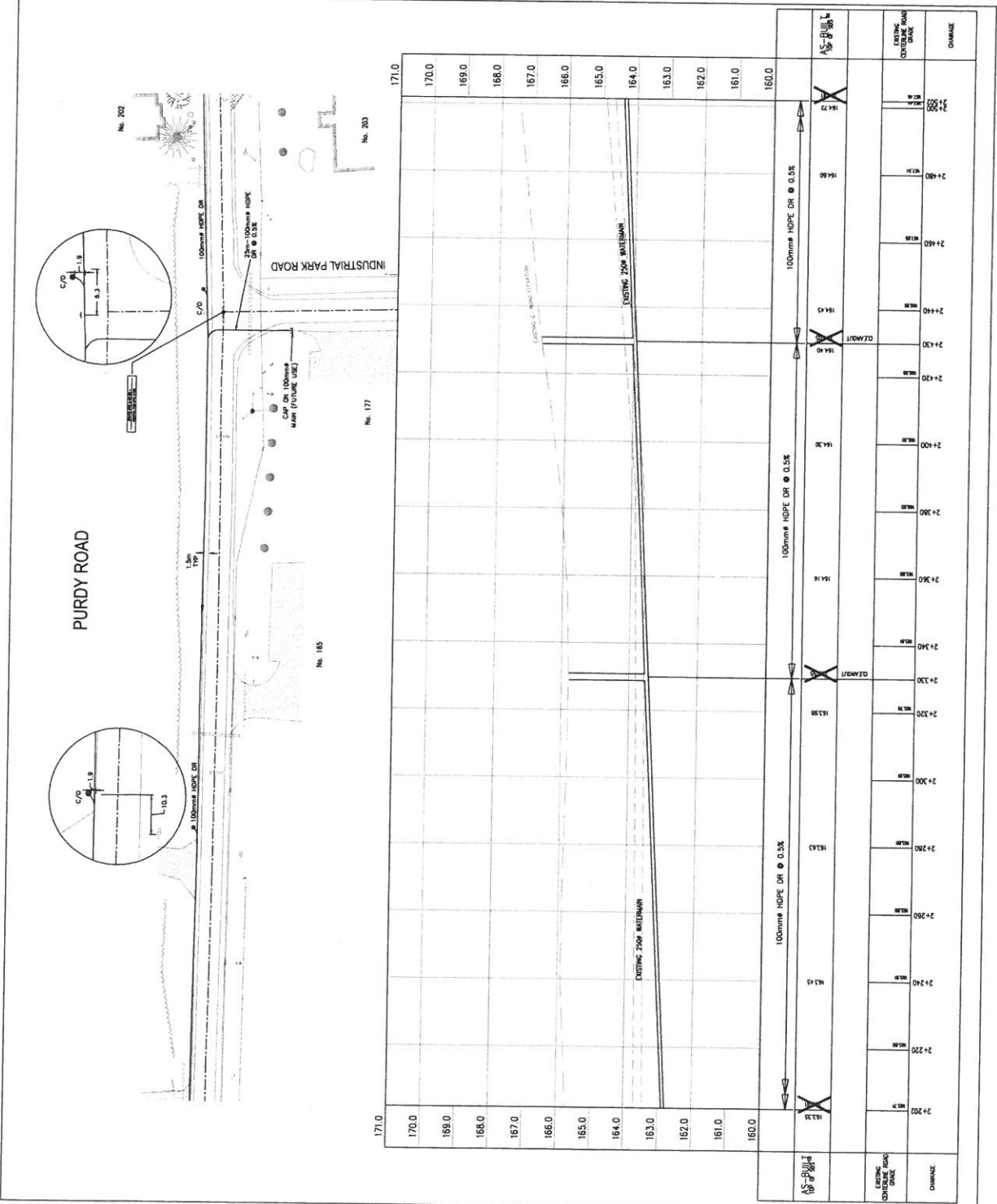
CRAMHNE TOWNSHIP
TOWN OF COLLEGE
INDUSTRIAL PARK
SMALL BORE SEWER™
SANITARY EXPANSION

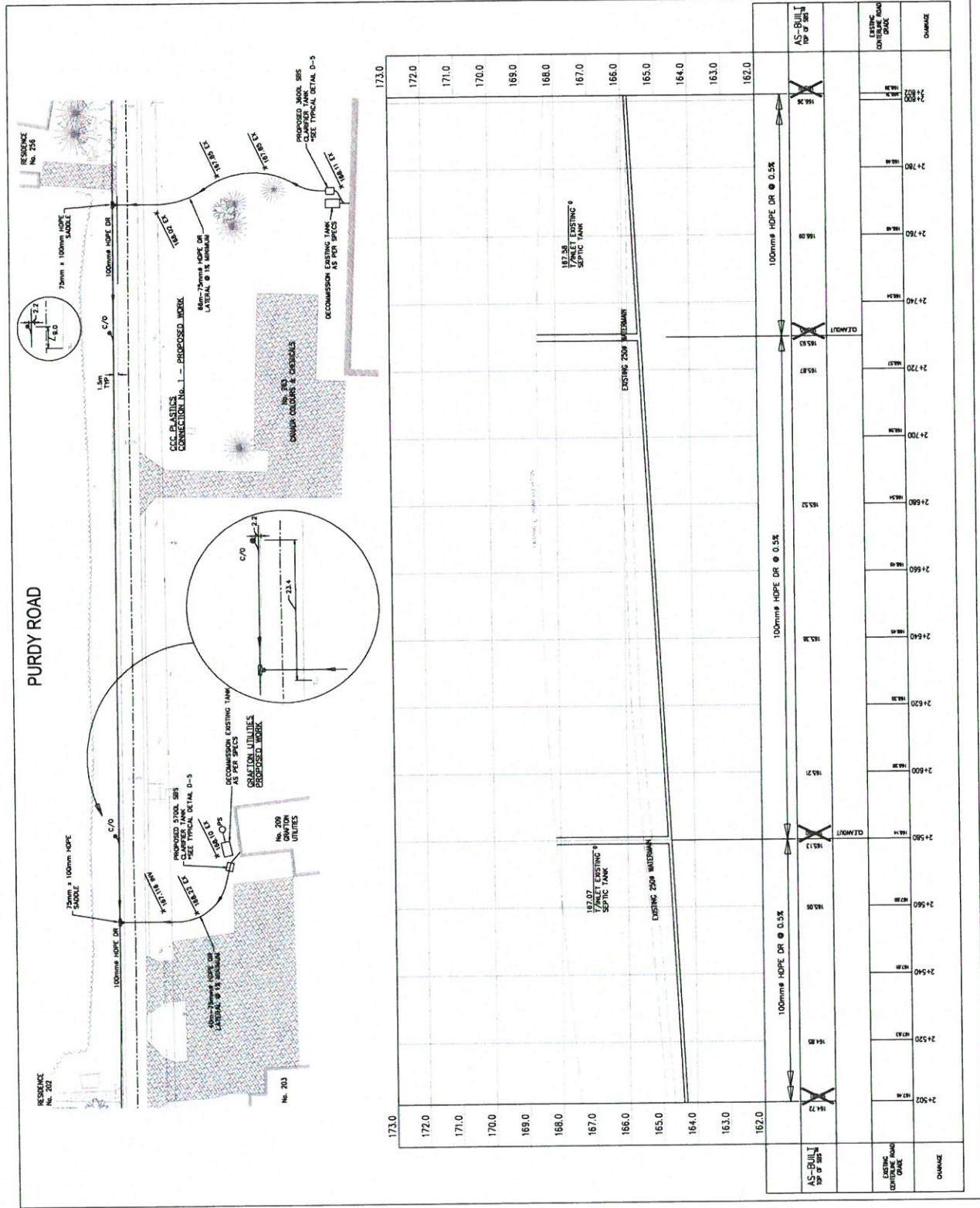
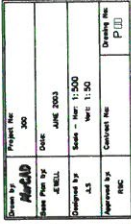
PLAN AND PROFILE
2/2002 TO 2/1002
PURDY ROAD

CRAMHNE TOWNSHIP
TOWN OF COLLEGE
INDUSTRIAL PARK
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SANITARY EXPANSION





No. 270

TOP OF SPTS 11[illegible]

RWC
R. W. Connolly Associates
POLYMER ENGINEERS AND
CONSULTANTS
336 WESTBROOK ROAD, CAM., ON M6A 1L0
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Toll Free 1-800-231-1154 www.ihss.com



Township of Cramnahe
In the heart of Appalachia

CRAMAHE TOWNSHIP
TOWN OF COLBORNE
INDUSTRIAL PARK
SMALL BORE SEWER™
SANITARY EXPANSION

PLAN AND PROFILE
2002 TO 2006
PURDY ROAD

Order #	Project No.
ALC010	300
Room Name	Date
ALC01	JUNE 2003
Designed by	Scale - Max 1:500
A.S.	Wet 1:50
Approved by	Contract Ref.
ABC	Drawing No.
	P10

Appendix E

Preliminary Cost Estimates





Industrial Park Sanitary System Upgrades
Municipal Class EA
Colborne, ON

Created: RJ
Checked: LC

PRELIMINARY CAPITAL COST ESTIMATE SUMMARY

		June 11, 2018
ALTERNATIVE	DESCRIPTION	TOTAL CAPITAL COST
1	DO NOTHING	N/A
2	EASEMENT FROM INDUSTRIAL PARK AVENUE	\$ 3,800,000.00
3	SANITARY PUMPING STATION	\$ 5,230,000.00
4	EASEMENT FROM ELGIN STREET NORTH	\$ 4,458,000.00



Industrial Park Sanitary System Upgrades
Municipal Class EA
Colborne, ON

Created: LC
 Checked: RJ
 Date: 11-Jun-18

ALTERNATIVE 2 - EASEMENT FROM INDUSTRIAL PARK AVENUE

ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL
201	Mobilization and Demobilization	1	LS	\$ 10,000	\$ 10,000
202	Bonding and Insurance	1	LS	\$ 5,000	\$ 5,000
203	Traffic Control	1	LS	\$ 5,000	\$ 5,000
204	Dust Control	1000	kg	\$ 2	\$ 2,000
205	Catch Basin Filters	5	ea	\$ 50	\$ 250
206	Silt Fence	260	m	\$ 10	\$ 2,600
207	Clearing and Grubbing	1	LS	\$ 10,000	\$ 10,000
208	Provisional Sanitary Bypass Pumping (22,900 US gal/d)	5	Days	\$ 2,000	\$ 10,000
209	Rock Excavation (Provisional)	100	m ³	\$ 150	\$ 15,000
210	Pulverize Asphalt in Place ⁴	7100	m	\$ 5	\$ 35,500
211	Sewer Main ²				
a)	300mm PVC SDR 35 ⁵	3600	m	\$ 400	\$ 1,440,000
212	Sanitary Service Laterals ⁶	420	m	\$ 350	\$ 147,000
213	Maintenance Hole (1200mm) Including Frame and Grate	40	ea	\$ 5,000	\$ 200,000
214	Connect to Existing MH on Percy St.	1	ea	\$ 5,000	\$ 5,000
215	Flushing and CCTV Inspection	3600	m	\$ 2	\$ 7,200
216	Roadway Granulars ^{1,3}				
a)	Granular A (150mm)	12000	m ²	\$ 10	\$ 120,000
b)	Granular B (300mm)	12000	m ²	\$ 18	\$ 216,000
217	Asphalt ^{1,3}				
a)	Base (50mm HL8)	12000	m ²	\$ 15	\$ 180,000
b)	Surface (40mm HL3)	12000	m ²	\$ 25	\$ 300,000
218	Topsoil and Seed	5000	m ²	\$ 8	\$ 40,000
SUBTOTAL					\$ 2,750,000
Engineering				15%	\$ 413,000
Contingency				20%	\$ 633,000
TOTAL					\$ 3,800,000

Notes:

- 1) Road restoration assumed for all municipal streets.
- 2) Sewer main alignment is assumed to be in the centerline of roadways
- 3) Pavement structure is assumed. Additional geotechnical investigations will be required in detailed design.
- 4) Asphalt pulverization in place is assumed prior to road excavation.
- 5) Watermain installation with trench box to reduce the amount of disturbance to existing road structure.
- 6) Sanitary service laterals are proposed for the existing industrial park only.



Industrial Park Sanitary System Upgrades
Municipal Class EA
Colborne, ON

Created: LC
 Checked: RJ
 Date: 11-Jun-18

ALTERNATIVE 3 - SANITARY PUMPING STATION

ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL
301	Mobilization and Demobilization	1	LS	\$ 10,000	\$ 10,000
302	Bonding and Insurance	1	LS	\$ 5,000	\$ 5,000
303	Traffic Control	1	LS	\$ 5,000	\$ 5,000
304	Dust Control	1000	kg	\$ 2	\$ 2,000
305	Catch Basin Filters	5	ea	\$ 50	\$ 250
306	Silt Fence	410	m	\$ 10	\$ 4,100
307	Clearing and Grubbing	1	LS	\$ 10,000	\$ 10,000
308	Provisional: Sanitary Bypass Pumping (22,900 Us gal/d)	5	Days	\$ 2,000	\$ 10,000
309	Rock Excavation (Provisional)	100	m ³	\$ 150	\$ 15,000
310	Pulverize Asphalt in Place ⁶	14000	m ²	\$ 5	\$ 70,000
311	Sewer Main ²				
a)	300mm PVC SDR 35 ⁷	3400	m	\$ 400	\$ 1,360,000
312	Sanitary Service Laterals ⁸	420	m	\$ 350	\$ 147,000
313	Maintenance Hole (1200mm) Including Frame and Grate	40	ea	\$ 5,000	\$ 200,000
314	Pumping Station ⁵	1	LS	\$ 750,000	\$ 750,000
315	Provisional: Land Acquisition ³	0.2	ha	\$ 50,000	\$ 10,000
316	200mm PVC DR 18 Forcemain	615	m	\$ 350	\$ 215,250
317	Connect to Existing MH	1	ea	\$ 5,000	\$ 5,000
318	Flushing and CCTV Inspection	3200	m	\$ 2	\$ 6,400
319	Roadway Granulars ^{1,4}				
a)	Granular A (150mm)	14000	m ²	\$ 10	\$ 140,000
b)	Granular B (300mm)	14000	m ²	\$ 18	\$ 252,000
320	Asphalt ^{1,4}				
a)	Base (50mm HL8) ⁴	14000	m ²	\$ 15	\$ 210,000
b)	Surface (40mm HL3) ⁴	14000	m ²	\$ 25	\$ 350,000
321	Topsoil and Seed	1000	m ²	\$ 8	\$ 8,000
SUBTOTAL					\$ 3,790,000
Engineering				15%	\$ 570,000
Contingency				20%	\$ 870,000
TOTAL					\$ 5,230,000

- Notes:
- 1) Road restoration assumed for all municipal streets.
 - 2) Sewer main alignment is assumed to be in the centerline of roadways
 - 3) Land Acquisition may be required due to the size of the pump station
 - 4) Pavement structure is assumed. Additional geotechnical investigations will be required in detailed design.
 - 5) The pump station cost is based on a maximum pumping capacity of 30 L/s.
 - 6) Asphalt Pulverization in place is assumed prior to road excavation.
 - 7) Watermain installation with trench box to reduce the amount of disturbance to existing road structure.
 - 8) Sanitary service laterals are proposed for the existing industrial park only.



Industrial Park Sanitary System Upgrades
Municipal Class EA
Colborne, ON

Created: LC
Checked: RJ
Date: 11-Jun-18

ALTERNATIVE 4 - EASEMENT FROM ELGIN STREET NORTH

ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL
401	Mobilization and Demobilization	1	LS	\$ 10,000	\$ 10,000
402	Bonding and Insurance	1	LS	\$ 5,000	\$ 5,000
403	Traffic Control	1	LS	\$ 5,000	\$ 5,000
404	Dust Control	1000	kg	\$ 2	\$ 2,000
405	Catch Basin Filters	5	ea	\$ 100	\$ 1,000
406	Silt Fence	410	m	\$ 10	\$ 4,000
407	Clearing and Grubbing	1	LS	\$ 10,000	\$ 10,000
408	Provisional: Sanitary Bypass Pumping (22,900 Us gal/d)	5	Days	\$ 2,000	\$ 10,000
409	Rock Excavation (Provisional)	100	m ³	\$ 150	\$ 15,000
410	Pulverize Asphalt in Place ⁴	14000	m ²	\$ 5	\$ 70,000
411	Sewer Main ²				
a)	300mm PVC SDR 35 ⁵	4300	m	\$ 400	\$ 1,720,000
412	Sanitary Service Laterals ⁶	420	m	\$ 350	\$ 147,000
413	MH (1200mm) Including Frame and Grate	45	ea	\$ 5,000	\$ 225,000
414	Connect to Existing MH	1	ea	\$ 5,000	\$ 5,000
415	Flushing and CCTV Inspection	4300	m	\$ 2	\$ 9,000
	Roadway Granulars ^{1,4}				
a)	Granular A (150mm)	14000	m ²	\$ 10	\$ 140,000
b)	Granular B (300mm)	14000	m ²	\$ 18	\$ 252,000
416	Asphalt ^{1,3}				
a)	Base (50mm HL8)	14000	m ²	\$ 15	\$ 210,000
b)	Surface (40mm HL3)	14000	m ²	\$ 25	\$ 350,000
417	Topsoil and Seed	4500	m ²	\$ 8	\$ 36,000
				SUBTOTAL	\$ 3,230,000
				Engineering 15%	\$ 485,000
				Contingency 20%	\$ 743,000
				TOTAL	\$ 4,458,000

- Notes:
- 1) Road restoration assumed for all municipal streets.
 - 2) Sewer main alignment is assumed to be in the centerline of roadways
 - 3) Pavement structure is assumed. Additional geotechnical investigations will be required in detailed design.
 - 4) Asphalt pulverization in place is assumed prior to road excavation.
 - 5) Watermain installation with trench box to reduce the amount of disturbance to existing road structure.
 - 6) Sanitary service laterals are proposed for the existing industrial park only.