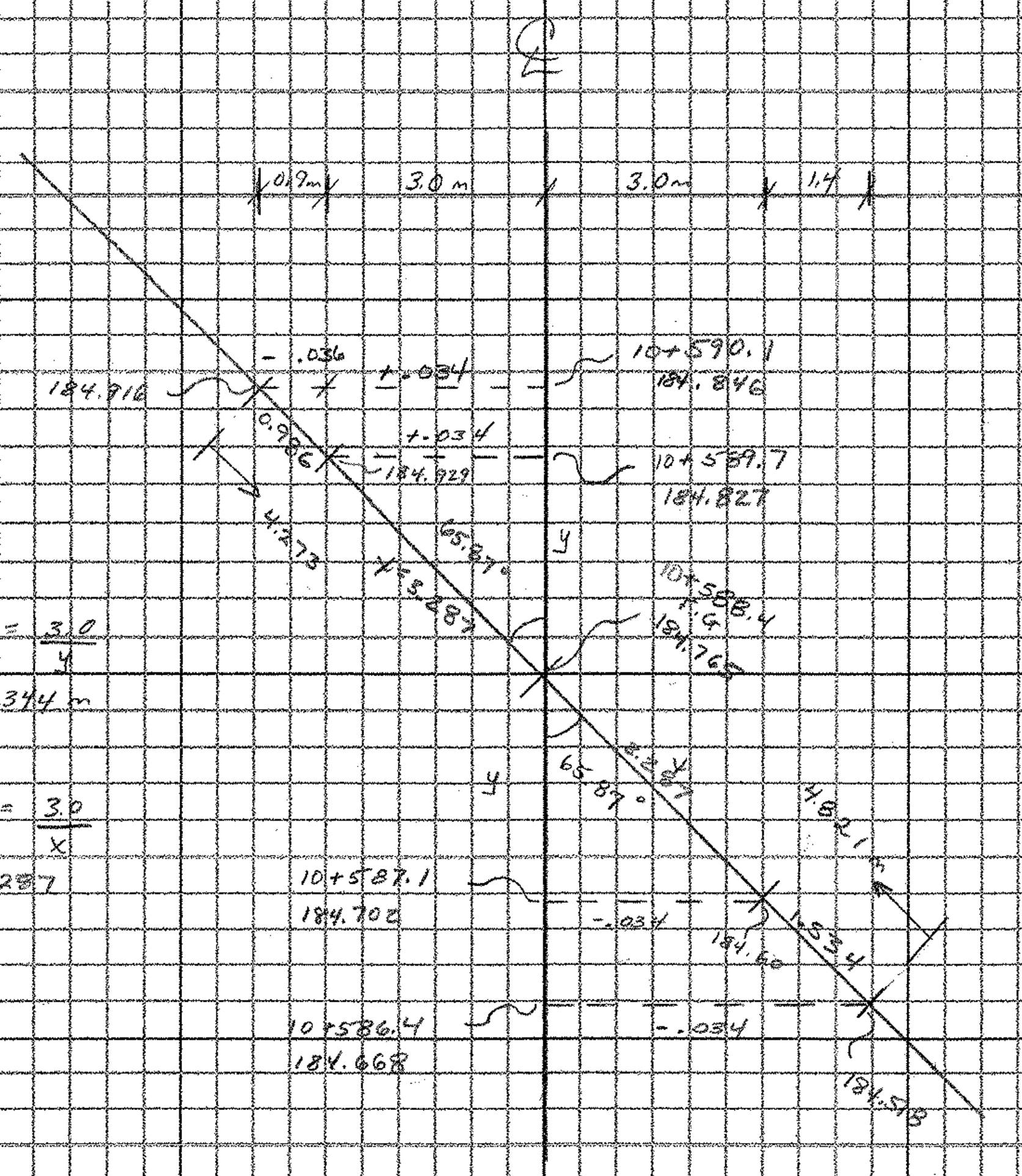

℄
0.9m
3.0m
3.0m
1.4
-.036
+.034
+.034
184.916
184.929
0.986
4.273
x=3.287
65.87°
10+590.1
184.846
10+589.7
184.827
10+588.4
F.G.
184.765
y
y
65.87°
3.287
4.821
1.534
10+587.1
184.702
-.034
184.60
10+586.4
184.668
-.034
184.518

TAN 65.87 = $\frac{3.0}{y}$

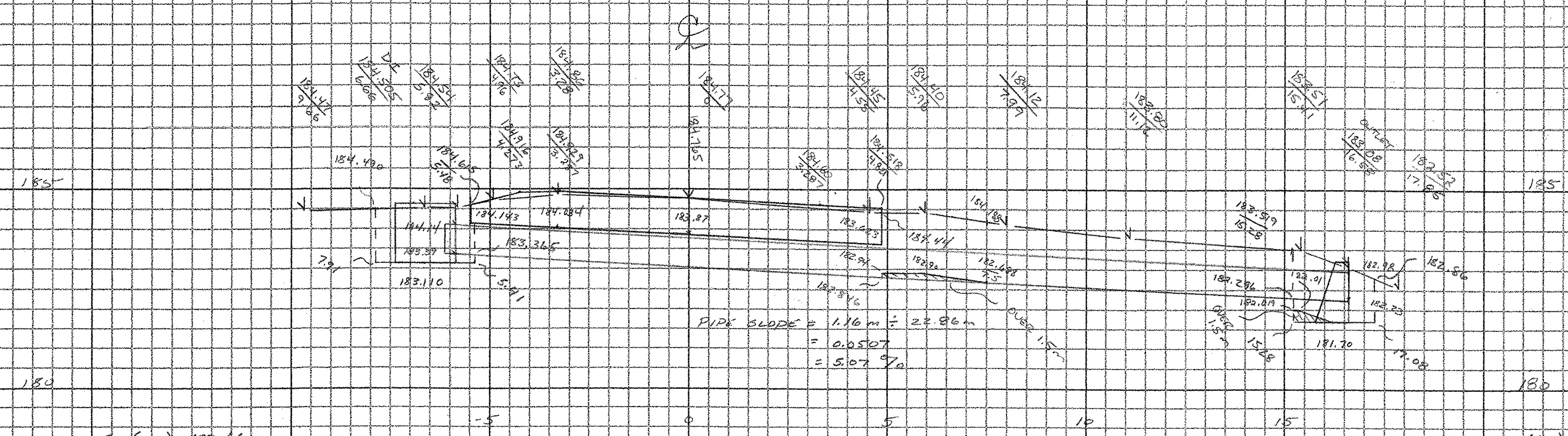
y = 1.344 m

SIN 65.87 = $\frac{3.0}{x}$

x = 3.287

DRAINAGE SYSTEM #8

10+591, 6.1m LT ~ 10+581, 15.0m RT


℄
185
180
184.47 / 9.06
DL 184.505 / 6.66
184.541 / 5.82
184.73 / 4.06
184.86 / 3.28
184.77 / 0
184.45 / 4.58
184.40 / 5.96
184.12 / 7.99
184.916 / 4.273
184.929 / 3.287
184.765
184.80 / 3.287
183.518 / 4.821
184.490
184.615 / 5.48
184.143
184.084
183.87
183.663
184.14
183.37
183.365
183.110
7.91
5.41
184.44
184.188
182.94
182.90
182.688 / 7.5
182.846
OVER 1.5m
-5
0
5
10
15

PIPE SLOPE = 1.16 m ÷ 22.86m
= 0.0507
= 5.07 %

INV (OUT) 183.46
SUMP - 0.150
BASE - 0.200
ELEV = 183.110

10+588.4

NEW ~~24.0m~~ 23.0m x 600 mm CPEP W/ CONCRETE HEADWALL / CATCH BASIN

INV (H.W.) = 182.30

601.2620 600 mm CPEP (SL)

CUT IN FIELD 22.86m

PAY 23.0 m

204.20 TRENCH EXCAVATION OF EARTH

CATCH BASIN:

-5.41	183.110
-5.41	184.140
-5.48	184.143
-5.48	184.615
-5.82	184.541
-6.66	184.505
-7.91	184.490
-7.91	183.110
-5.41	183.110

A_1 = 3.492 sm

Vol_1 = 3.492 sm x 2.5m
= 8.73 cm

PIPE:

-5.41	183.365
4.821	182.846
4.821	182.940
5.96	182.90
7.5	182.688
15.28	182.296
15.28	183.519
11.12	183.80
7.99	184.12
5.96	184.40
4.821	184.44
4.821	183.663
0	183.87
-5.41	184.140
-5.41	183.365

A_2 = ~~21.760~~ sm

Vol_2 = ~~21.760~~ sm x 1.75m
= ~~38.08~~ cm
38.52

(OVER 1.5m)

4.821	182.846
4.821	182.940
5.96	182.90
7.5	182.688
4.821	182.846

A_3 = 0.216 sm

Vol_3 = 0.216 sm x 1.75m
= 0.378 cm x 1.5
= 0.567 cm

HEADWALL:

15.28	183.519
15.28	182.019
15.41	182.01
16.2	181.70
17.08	181.70
17.08	182.86
16.58	183.08
15.41	182.51
15.28	183.519

A_4 = 2.574 sm

Vol_4 = 2.574 sm x 3.4 m
V_4 = 8.752 cm

(OVER 1.5m)

15.28	182.019
15.28	181.70
16.2	181.70
15.41	182.01
15.28	182.019

A_5 = 0.163 sm

Vol_5 = 0.163 x 3.4m
= 0.554 cm x 1.5
= 0.831 cm

EXC. FOR STONE PAD = 0.3m x 1.76m x 3.4m = 1.795 cm

TOTAL = ~~58.755~~ cm
59.595

507.15 REINFORCING STEEL

4 - #5 BARS @ 0.90m = 3.6m x 1.555 kg/m = 5.60 KG

501.25 CONCRETE, CLASS B (STANDARD D-2)

2.0 cm

613.10 STONE FILL, TYPE I (OUTLET)

F.M. BY J. SMITH

3.4m x 2.26m x 0.3m = 2.30 cm

649.31 GEO. UNDER STONE FILL

2.54m x 3.40m = 8.64 sm

604.20 PRECAST REIN. CONCRETE CATCH BASIN

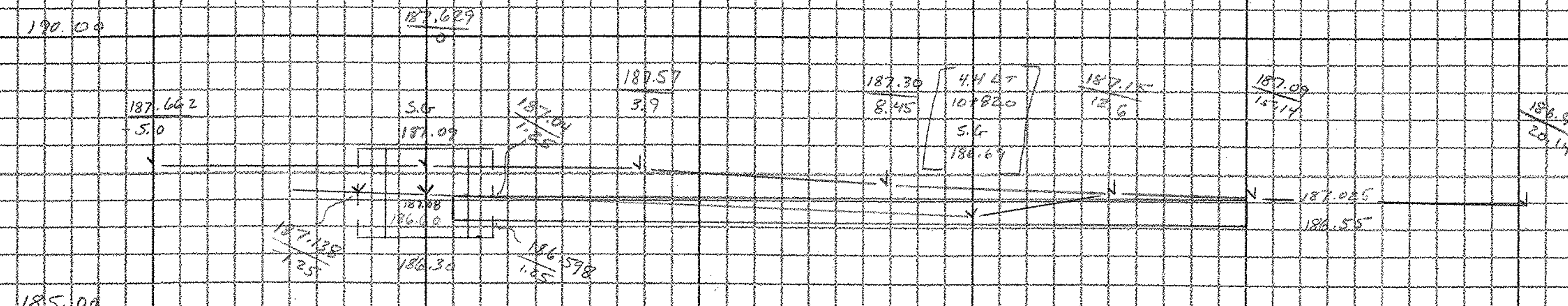
1 EA.

GEG
4/13/05

DWB
5/3/05

DRAINAGE SYSTEM #9

10+810, 3.6m LT ~ 10+825, 6.1m LT


190.00
185.00
187.629 / 0
187.662 / 5.0
S.G. 187.09
187.04 / 1.25
187.57 / 3.9
187.30 / 8.45
4.4 LT 10+820 S.G. 186.69
187.15 / 12.6
187.09 / 15.14
186.98 / 20.14
187.08
186.60
187.138 / 1.25
186.30
186.598 / 1.25
187.085
186.55

PIPE SLOPE = 0.05m ÷ 14.52m
= 0.0034
= 0.344 %

INV (OUT) 186.65
SUMP - 0.150
BASE - 0.200
ELEV 186.300

10+810 = 0
@
3.6m LT

10+825
@
6.1m LT

℄ F.G.
188.057

NEW 15m x 375mm CPEP W/ PRECAST CATCH BASIN

GEG
2/8/05

204.20 TRENCH EXCAVATION OF EARTH

CATCH BASIN:

-1.25	187.138
-1.25	186.30
0	186.30
1.25	186.30
1.25	187.04
0	187.09
-1.25	187.138

A_1 = 1.974 sm

Vol_1 = 1.974 sm x 2.5m
= 4.935 cm

PIPE:

1.25	186.598
15	186.55
15	187.09
12.6	187.15
10	186.69
1.25	187.04
1.25	186.598

A_2 = 4.756 sm

Vol_2 = 4.756 sm x 1.47m
= 6.991 cm

TOTAL = 11.926 cm

604.20 PRECAST REIN. CONCRETE CATCH BASIN

1 EA.

601.2610 375 mm CPEP (SL)

INSTALLED 14.52m CUT IN FIELD

PAID 15.0m

VAOT Metric

CROSS SECTION SHEET

PROJECT NAME: GRAFTON - ROCKINGHAM
PROJECT NUMBER: STP 0126 4(S) 9/2
FILE NAME:
PROJECT LEADER:
DESIGNED BY:
const: g:/common/cadd/m-xsection.dgn
PLOT DATE: 07-JUN-2000 13:
DRAWN BY: C. GREENWOOD
CHECKED BY: D. BREER
SHEET 8 OF 23

129 DRAIN