Storm Drains

1-2 80'-30"x19" HE RCP @ 2.8% ; Inv in 37.00; Inv out 34.74
2-3 48'-30"x19" HE RCP @ 0.5% ; Inv in 34.64; Inv out 34.40
3-4 80'-30"x19" HE RCP @ 0.5%; Inv in 34.30; Inv out 33.90
6-7 32'-15" RCP @ 0.5%; Inv in 28.00; Inv out 27.84
7-7A 152'-15" RCP @ 0.5%; Inv in 27.74; Inv out 26.98
7A-9 152'-18" RCP @ 0.5%; Inv in 26.88; Inv out 26.12
8-9 32'-15" RCP @ 0.5%; Inv in 26.38; Inv out 26.22
11-12 36'-15" RCP @ 1.0%; Inv in 17.62; Inv out 17.28
12-13 193'-15" RCP @ 1.5%; Inv in 17.15; Inv out 15.00
14-15 36'-15" RCP @ 1.0%; Inv in 16.66; Inv out 16.24
15-16 155'-15" RCP @ 0.76%; Inv in 16.18; Inv out 15.00
17-18 70'-15" RCP @ 0.5%; Inv in 17.00; Inv out 16.64
18-19 95'-18" RCP @ 0.5%; Inv in 16.54; Inv out 16.06
19-21 34'-21" RCP @ 0.8%; Inv in 15.94; Inv out 15.68
21-22 132'-24" RCP @ 0.3%; Inv in 15.38; Inv out 15.18
22-23 34'-24" RCP @ 0.4%; Inv in 15.14; Inv out 15.00
24-25 34'-15" RCP @ 0.5%; Inv in 20.27; Inv out 20.10
25-29 195'-18" RCP @ 0.8%; Inv in 20.00; Inv out 18.80
29-30 285'-21" RCP @ 0.5%; Inv in 18.33; Inv out 16.90
30-30A 90'-24" RCP @ 0.3%; Inv in 16.80; Inv out 16.53
30A-32 200'-24" RCP @ 0.3%; Inv in 16.43; Inv out 15.83
31-32 32'-15" RCP @ 1.0%; Inv in 19.50; Inv out 19.18
32-33 145'-24" RCP @ 0.3%; Inv in 15.73; Inv out 15.30
33-34 95'-24" RCP @ 0.4%; Inv in 15.20; Inv out 15.02
27-26 34'-15" RCP @ 0.4%; Inv in 21.74; Inv out 21.58
26-25 208'-15" RCP @ 0.65%; Inv in 21.98; Inv out 20.10
35 300'-15" RCP @ 3.17%; Inv in 15.00; Inv out 5.50
36A 90'-15" RCP @ 0.44%; Inv in 5.40; Inv out 5.00
10 72'-30" RCP @ 1.06%; Inv in 25.80; Inv out 24.90
9-out 30'-18" RCP @ 3.8%; Inv in 26.02; Inv out 24.90
37-19 50'-15" RCP @ 0.6%; Inv in 16.36; Inv out 16.06
38-17 70'-15" RCP @ 1.0%; Inv in 17.70; Inv out 17.00

Notes:

1. All inlet structures greater than 4' in height shown with * shall have steps
2. Inlet noses are Type "A"
3. All inlets to be cast-in-place

Storm Structures

1 30"x19" ES-1 ; Inv 37.00
2 DI-3A ; Top 38.21 ; Inv 34.64 , H = 3.57'
3 DI-3A ; Top 38.21 ; Inv 34.30, H = 3.91'
4 30"x19" ES-1 ; Inv 33.90
6 DI-2A ; Top 30.97; Inv 28.00, H: 2.97'
7 DI-2A ; Top 30.97 ; Inv 27.74, H: 3.23'
* 7A DI-2A ; Top 31.67 ; Inv 26.88, H: 4.79', 15-1
8 DI-2A ; Top 29.66 ; Inv 26.38, H = 3.27'
9 DI-2A ; Top 29.65 ; Inv 26.12, H: 3.53'
11 DI-3A ; Top 20.90 ; Inv 17.62, H: 3.28'
12 DI-3A ; Top 20.90 ; Inv 17.15, H: 3.75'
13 ES-1 ; Inv 15.00
* 15 DI-3A ; Top 20.75 ; Inv 16.60, H: 4.15'
* 16 DI-3A ; Top 20.75 ; Inv 16.18, H: 4.57'
16 ES-1 ; Inv 15.00
17 DI-3A ; Top 20.98 ; Inv 17.00, H: 3.98'
18 DI-3A ; Top 19.90 ; Inv 16.54, H: 3.36'
19 DI-3A ; Top 19.50 ; Inv 15.94, H: 3.56', 15-1
21 DI-3A ; Top 19.50 ; Inv 15.68, H = 3.82, 15-1
* 22 MH-1 ; Top 21.00 ; Inv 15.14, H: 5.86'
23 ES-1 ; Inv 15.00
24 DI-3A ; Top 23.81 ; Inv 20.27, H: 3.54'
25 DI-3A ; Top 23.81 ; Inv 20.00, H: 3.81'
* 26 DI-3B ; L = 10' ; Top 26.19 ; Inv 21.48, H: 4.71'
* 27 DI-3B ; L = 10' ; Top 26.19 ; Inv 21.74, H: 4.45'
* 29 MH-1 ; Top 22.80 ; Inv 18.33, H: 4.47'
* 30 MH-1 ; Top 26.70 ; Inv 16.80, H: 9.90'
* 30A DI-2A ; Top 26.25 ; Inv 16.43, H: 9.77'
31 DI-2B ; L = 12' ; Top 23.38 ; Inv 19.50, H = 3.88'
* 32 DI-2B ; L = 12' ; Top 23.38 ; Inv 15.73, H: 7.65'
* 33 MH-1 ; Top 23.80 ; Inv 15.20, H: 8.60'
34 ES-1 ; Inv 15.00
* 36 MH-1 ; Top 11.50 ; Inv 5.90 , H: 6.10'
37 DI-3B ; L: 6' ; Top 19.68 ; Inv 16.36, H: 3.32'
38 DI-3B ; L = 10' ; Top 20.85 ; Inv 17.70, H: 3.15'

Weir Flow $Q_2 \sim 20.8$ cfs

$Q_2 = 3.33(b - 0.2h)h^{3/2}$

$Q_2 = 3.33(49.5)(.25)^{3/2} = 20.8$ cfs

MS-19 calc. ; $Q_2 \sim 20.0$ cfs

$Q_2 = \frac{1.49}{n} A R^{2/3} S^{1/2}$

$Q_2 = \frac{1.49}{.05}(50' \times 0.27')\left(\frac{50' \times 0.27'}{50' + 2'}\right)^{2/3}(.015)^{1/2}$

$Q_2 = (29.8)(13.5)(0.407)(0.122) = 20.0$ cfs

$\therefore 20.0 / 13.5 = 1.5$ fps

REVISIONS	BY
10-7-13	
12-9-13	
2-3-14	
4-24-14	

Architectural Graphics
6676 LAKESHORE DRIVE
QUINTON, VIRGINIA 23141
804-551-6944

GRADING AND DRAINAGE PLAN
EAGLES PRESERVE
AT JORDAN ON THE JAMES

SEAL: COMMONWEALTH OF VIRGINIA — WALTER M. ALTMAN III — No. 11039 — 4/29/14 — PROFESSIONAL ENGINEER

DRAWN : PBM	CHECKED : WMA
DATE : 8-19-13	
SCALE : AS NOTED	
JOB NO. :	
SHEET 9 OF 35 SHEETS	