Drainage Diagram for PR North Parking TIER A-B 1of2

Prepared by NYSDEC DOP BD&C, Printed 12/28/2009

HydroCAD® 8.50 s/n 005484 © 2007 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.705	70	Woods, Good, HSG C (S1STR1,S2STR1,SAE1,SAW1,SBE1,SBW1,SCVSBW2,SCVSBW3)
2.525	74	grassland, good (S1STR1,S2STR1,SAE1,SAW1,SBE1,SBE2,SBW1,SBW2,SCVSBW2,SCVSBW3,SCVSI
1.719	98	Paved parking 60x360 (S1STR1,S2STR1,SAE1,SAW1,SBE1,SBE2,SBW1,SBW2,SCVSBW2,SCVSBW3,
5.948		**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
1.705	HSG C	S1STR1, S2STR1, SAE1, SAW1, SBE1, SBW1, SCVSBW2, SCVSBW3
0.000	HSG D	
4.243	Other	S1STR1, S2STR1, SAE1, SAW1, SBE1, SBE2, SBW1, SBW2, SCVSBW2, SCVSBW3, SCVSBW4
5.948		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S1STR1: Runoff Area=23,013 sf 16.30% Impervious Runoff Depth=3.38"
Flow Length=230' Tc=14.4 min CN=76 Runoff=2.36 cfs 0.149 af

Subcatchment S2STR1: Runoff Area=23,013 sf 16.30% Impervious Runoff Depth=3.38"
Flow Length=230' Tc=14.4 min CN=76 Runoff=2.36 cfs 0.149 af

Subcatchment SAE1: Runoff Area=27,467 sf 41.01% Impervious Runoff Depth=4.09"
Flow Length=48' Tc=11.1 min CN=83 Runoff=3.74 cfs 0.215 af

Subcatchment SAW1: Runoff Area=27,467 sf 41.01% Impervious Runoff Depth=4.09"
Flow Length=74' Tc=7.3 min CN=83 Runoff=4.25 cfs 0.215 af

Subcatchment SBE1: Runoff Area=27,467 sf 41.01% Impervious Runoff Depth=4.09"
Flow Length=46' Tc=7.6 min CN=83 Runoff=4.20 cfs 0.215 af

Subcatchment SBE2: Runoff Area=13,463 sf 42.91% Impervious Runoff Depth=4.20"
Flow Length=2' Tc=6.0 min CN=84 Runoff=2.22 cfs 0.108 af

Subcatchment SBW1: Runoff Area=51,297 sf 30.87% Impervious Runoff Depth=3.78"
Flow Length=100' Tc=18.8 min CN=80 Runoff=5.11 cfs 0.371 af

Subcatchment SBW2: Runoff Area=9,218 sf 53.40% Impervious Runoff Depth=4.52"
Tc=6.0 min CN=87 Runoff=1.61 cfs 0.080 af

Subcatchment SCVSBW2: Runoff Area=23,013 sf 16.30% Impervious Runoff Depth=3.38"
Flow Length=230' Tc=14.4 min CN=76 Runoff=2.36 cfs 0.149 af

Subcatchment SCVSBW3: Runoff Area=27,876 sf 5.79% Impervious Runoff Depth=3.09"
Flow Length=255' Tc=19.0 min CN=73 Runoff=2.26 cfs 0.165 af

Subcatchment SCVSBW4: Runoff Area=5,798 sf 28.87% Impervious Runoff Depth=3.88"
Tc=6.0 min CN=81 Runoff=0.90 cfs 0.043 af

Reach RSWLN1: Avg. Depth=0.26' Max Vel=3.04 fps Inflow=2.21 cfs 0.071 af
n=0.025 L=220.0' S=0.0227 '/' Capacity=152.06 cfs Outflow=2.19 cfs 0.071 af

Reach STR1: STREAM Avg. Depth=0.15' Max Vel=2.99 fps Inflow=4.71 cfs 0.298 af
n=0.040 L=103.0' S=0.0777 '/' Capacity=2,317.10 cfs Outflow=4.71 cfs 0.298 af

Reach STR2: TO CRYSTAL BROOK LINK Avg. Depth=0.16' Max Vel=2.86 fps Inflow=4.71 cfs 0.298 af
n=0.040 L=282.0' S=0.0684 '/' Capacity=2,175.06 cfs Outflow=4.66 cfs 0.298 af

Pond CVSAW3: CB Peak Elev=1,960.86' Inflow=2.26 cfs 0.165 af
Primary=0.00 cfs 0.000 af Secondary=2.26 cfs 0.165 af Outflow=2.26 cfs 0.165 af

Pond CVSAW4: CB Peak Elev=1,959.67' Inflow=2.26 cfs 0.165 af
Primary=2.13 cfs 0.082 af Secondary=0.13 cfs 0.083 af Outflow=2.26 cfs 0.165 af

Pond CVSAW5: CB Peak Elev=1,958.21' Inflow=1.02 cfs 0.126 af
Outflow=1.02 cfs 0.126 af

Pond CVSBW1: CB Peak Elev=1,959.64' Inflow=2.36 cfs 0.149 af
Primary=2.21 cfs 0.071 af Secondary=0.15 cfs 0.078 af Outflow=2.36 cfs 0.149 af

Pond CVSBW2: HWALL Peak Elev=1,961.02' Inflow=2.36 cfs 0.149 af
Primary=2.36 cfs 0.149 af Secondary=0.00 cfs 0.000 af Outflow=2.36 cfs 0.149 af

Pond CVSBW3: CB Peak Elev=1,954.73' Inflow=3.20 cfs 0.150 af
Primary=2.98 cfs 0.088 af Secondary=0.23 cfs 0.062 af Outflow=3.20 cfs 0.150 af

Pond DMH1: TO DMH2 LINK Peak Elev=1,933.55' Inflow=3.64 cfs 1.509 af
15.0" x 300.0' Culvert Outflow=3.64 cfs 1.509 af

Pond DRYDETA: Dry Detention Pond Peak Elev=1,941.39' Storage=4,695 cf Inflow=4.12 cfs 1.509 af
Outflow=3.64 cfs 1.509 af

Pond DRYDETB: Dry Detention Pond Peak Elev=1,946.23' Storage=6,668 cf Inflow=6.83 cfs 0.980 af
Outflow=4.00 cfs 0.980 af

Pond DS-A-E: Dry Swale SW Treatment Peak Elev=1,943.93' Storage=6,145 cf Inflow=3.74 cfs 0.215 af
Primary=0.11 cfs 0.039 af Secondary=0.05 cfs 0.166 af Outflow=0.16 cfs 0.205 af

Pond DS-A-W: Dry Swale SW Treatment Peak Elev=1,943.99' Storage=8,525 cf Inflow=5.26 cfs 0.341 af
Primary=0.22 cfs 0.094 af Secondary=0.07 cfs 0.230 af Outflow=0.29 cfs 0.324 af

Pond DS-B-E: Dry Swale SW Treatment Peak Elev=1,948.04' Storage=7,870 cf Inflow=6.62 cfs 0.385 af
Primary=1.58 cfs 0.158 af Secondary=0.09 cfs 0.215 af Outflow=1.67 cfs 0.373 af

Pond DS-B-W: Dry Swale SW Treatment Peak Elev=1,948.31' Storage=8,784 cf Inflow=7.38 cfs 0.531 af
Primary=4.37 cfs 0.325 af Secondary=0.07 cfs 0.194 af Outflow=4.44 cfs 0.519 af

Link N/A1: PLOT CORNER MARKER
Primary=0.00 cfs 0.000 af

Link N/A2: PLOT CORNER MARKER
Primary=0.00 cfs 0.000 af

Total Runoff Area = 5.948 ac Runoff Volume = 1.858 af Average Runoff Depth = 3.75"
71.11% Pervious = 4.229 ac 28.89% Impervious = 1.719 ac

Summary for Subcatchment S1STR1:

Runoff = 2.36 cfs @ 12.06 hrs, Volume= 0.149 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	3,750	98	Paved parking 60x360
*	8,597	74	grassland, good
	10,666	70	Woods, Good, HSG C
	23,013	76	Weighted Average
	19,263		Pervious Area
	3,750		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.1700	0.12		**Sheet Flow, SHT begins in forest** Woods: Dense underbrush n= 0.800 P2= 4.00"
0.2	130	0.0600	10.65	127.75	**Channel Flow, OCF 1:3 x 2'flr x 2'd** Area= 12.0 sf Perim= 14.6' r= 0.82' n= 0.030 Earth, grassed & winding
14.4	230	Total			

Summary for Subcatchment S2STR1:

Runoff = 2.36 cfs @ 12.06 hrs, Volume= 0.149 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	3,750	98	Paved parking 60x360
*	8,597	74	grassland, good
	10,666	70	Woods, Good, HSG C
	23,013	76	Weighted Average
	19,263		Pervious Area
	3,750		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.1700	0.12		**Sheet Flow, SHT begins in forest** Woods: Dense underbrush n= 0.800 P2= 4.00"
0.2	130	0.0600	10.65	127.75	**Channel Flow, OCF 1:3 x 2'flr x 2'd** Area= 12.0 sf Perim= 14.6' r= 0.82' n= 0.030 Earth, grassed & winding
14.4	230	Total			

Summary for Subcatchment SAE1:

Runoff = 3.74 cfs @ 12.03 hrs, Volume= 0.215 af, Depth= 4.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	11,263	98	Paved parking 60x360
*	12,954	74	grassland, good
	3,250	70	Woods, Good, HSG C
	27,467	83	Weighted Average
	16,204		Pervious Area
	11,263		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	41	0.0610	0.07		**Sheet Flow, SHT begins in forest** Woods: Dense underbrush n= 0.800 P2= 4.00"
0.6	7	0.2143	0.20		**Sheet Flow,** Grass: Dense n= 0.240 P2= 4.00"
11.1	48	Total			

Summary for Subcatchment SAW1:

Check for non-erosive peak velocity 3.5 to 5.0 fps during 2-yr 24-hr event with 4.00 inch rain.

Imperv Parking Lot
use 2% cross slope

Dry swale

#% max longitudinal slope
#' wide floor?

see acad layout

Runoff = 4.25 cfs @ 11.98 hrs, Volume= 0.215 af, Depth= 4.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	11,263	98	Paved parking 60x360
*	12,954	74	grassland, good
	3,250	70	Woods, Good, HSG C
	27,467	83	Weighted Average
	16,204		Pervious Area
	11,263		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	17	0.1176	0.07		**Sheet Flow, SHT begins in forest** Woods: Dense underbrush n= 0.800 P2= 4.00"
1.3	12	0.0833	0.15		**Sheet Flow, SHT open existing grade** Grass: Dense n= 0.240 P2= 4.00"
2.0	45	0.4000	0.37		**Sheet Flow, SHT open graded area** Grass: Dense n= 0.240 P2= 4.00"
7.3	74	Total			

Summary for Subcatchment SBE1:

Runoff = 4.20 cfs @ 11.99 hrs, Volume= 0.215 af, Depth= 4.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	11,263	98	Paved parking 60x360
*	12,954	74	grassland, good
	3,250	70	Woods, Good, HSG C
	27,467	83	Weighted Average
	16,204		Pervious Area
	11,263		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	28	0.0964	0.07		**Sheet Flow, SHT begins in forest** Woods: Dense underbrush n= 0.800 P2= 4.00"
1.2	18	0.2500	0.25		**Sheet Flow, SHT** Grass: Dense n= 0.240 P2= 4.00"
7.6	46	Total			

Summary for Subcatchment SBE2:

Check for non-erosive peak velocity 3.5 to 5.0 fps during 2-yr 24-hr event with 4.00 inch rain.

Imperv Parking Lot
use 2% cross slope

Dry swale

#% max longitudinal slope
#' wide floor?

see acad layout

Runoff = 2.22 cfs @ 11.97 hrs, Volume= 0.108 af, Depth= 4.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	5,777	98	Paved parking 60x360
*	2,892	74	grassland, good
*	4,794	74	grassland, good
	0	70	Woods, Good, HSG C
	13,463	84	Weighted Average
	7,686		Pervious Area
	5,777		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	1	0.1300	0.04		**Sheet Flow, SHT begins in forest** Woods: Dense underbrush n= 0.800 P2= 4.00"
0.0	1	0.1700	1.03		**Shallow Concentrated Flow, SCF to channel** Forest w/Heavy Litter Kv= 2.5 fps
5.6					**Direct Entry,**
6.0	2	Total			

Summary for Subcatchment SBW1:

Runoff = 5.11 cfs @ 12.11 hrs, Volume= 0.371 af, Depth= 3.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	15,835	98	Paved parking 60x360
*	18,617	74	grassland, good
	16,845	70	Woods, Good, HSG C
	51,297	80	Weighted Average
	35,462		Pervious Area
	15,835		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	86	0.0698	0.08		**Sheet Flow, SHT begins in forest** Woods: Dense underbrush n= 0.800 P2= 4.00"
0.8	14	0.3571	0.28		**Sheet Flow,** Grass: Dense n= 0.240 P2= 4.00"
18.8	100	Total			

Summary for Subcatchment SBW2:

Runoff = 1.61 cfs @ 11.97 hrs, Volume= 0.080 af, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	4,922	98	Paved parking 60x360
*	4,296	74	grassland, good
	0	70	Woods, Good, HSG C
	9,218	87	Weighted Average
	4,296		Pervious Area
	4,922		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry for min Tc**

Summary for Subcatchment SCVSBW2:

Check for non-erosive peak velocity 3.5 to 5.0 fps during 2-yr 24-hr event with 4.00 inch rain.

Imperv Parking Lot
use 2% cross slope

Dry swale

#% max longitudinal slope
#' wide floor?

see acad layout

Runoff = 2.36 cfs @ 12.06 hrs, Volume= 0.149 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	3,750	98	Paved parking 60x360
*	8,597	74	grassland, good
	10,666	70	Woods, Good, HSG C
	23,013	76	Weighted Average
	19,263		Pervious Area
	3,750		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.1700	0.12		**Sheet Flow, SHT begins in forest** Woods: Dense underbrush n= 0.800 P2= 4.00"
0.2	130	0.0600	10.65	127.75	**Channel Flow, OCF 1:3 x 2'flr x 2'd** Area= 12.0 sf Perim= 14.6' r= 0.82' n= 0.030 Earth, grassed & winding
14.4	230	Total			

Summary for Subcatchment SCVSBW3:

Check for non-erosive peak velocity 3.5 to 5.0 fps during 2-yr 24-hr event with 4.00 inch rain.

Imperv Parking Lot
use 2% cross slope

Dry swale

#% max longitudinal slope
#' wide floor?

see acad layout

Runoff = 2.26 cfs @ 12.12 hrs, Volume= 0.165 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	1,614	98	Paved parking 60x360
*	10,606	74	grassland, good
	15,656	70	Woods, Good, HSG C
	27,876	73	Weighted Average
	26,262		Pervious Area
	1,614		Impervious Area