GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH TOWN OF WENDELL AND/OR NCDOT STANDARD SPECIFICATIONS AND CITY OF RALEIGH STANDARDS AND SPECIFICATIONS FOR SEWER AND WATER.
2. BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY WITHERS & RAVENEL, INC.
3. THE INTERSECTION OF RIGHTS-OF-WAY SHALL BE ROUNDED WITH A RADIUS OF 20 FEET UNLESS OTHERWISE SPECIFIED ON THE PLANS.
4. THE CONTRACTOR SHALL CLEAR AND GRADE AS NECESSARY TO PROVIDE 15' x 350' SIGHT DISTANCE TRIANGLES AND ALL INTERNAL SUBDIVISION STREET INTERSECTIONS.
5. OPEN SPACE WITHIN THE DEVELOPMENT SHALL BE MAINTAINED BY THE OWNER AND/OR HOMEOWNER'S ASSOCIATION.
6. NO PORTION OF SF-1 IS IN THE 100 YEAR FLOODPLAIN PER FIRM MAP 3720177300J, DATED MAY 2, 2006.
7. GRADE SLOPES WILL NOT EXCEED 3:1 IN REAR OR SIDE OF LOTS.
8. ALL STRUCTURES AND PILES WITHIN ROW SHALL BE NCDOT BOXES AND REINFORCED CONCRETE PIPES. STRUCTURES AND PIPES OUTSIDE OF ROW SHALL BE NYOPLAST BOXES AND HDPE PIPE UNLESS OTHERWISE NOTED.

VELOCITY DISSIPATERS

OUTLET NUMBER	CLASS STONE	LENGTH (ft)	WIDTH (ft)	THICKNESS (in)
FES 101	B	12	6.8	22
FES 201	B or 1	20	10.5	22
FES 301	B	15	8.5	22

IMPERVIOUS SURFACE CALCULATIONS

SF-1

STREETS	=	181,184 SQ FT
DRIVEWAYS	=	72,050 SQ FT
SIDEWALKS	=	48,005 SQ FT
HOMES	=	156,317 SQ FT
PATIOS	=	0 SQ FT
TOTAL IMPERVIOUS SURFACE	=	457,556 SQ FT

% IMPERVIOUS = 457,556 / (43560 X 25.32) = 41.5 %

5 6 7

STORM DRAINAGE PIPE TABLE- FES 101

Upstream Structure	Downstream Structure	Upstream Inlet Area (acres)	Upstream Inlet Rational Coefficient	Upstream Inlet Rational Flow (cfs)	System Intensity (in/hr)	Total System Flow (cfs)	Maximum Capacity (cfs)	Pipe diameter	Material	Length (ft)	Slope (%)	Upstream Invert (ft)	Downstream Invert (ft)	Average Velocity (ft/s)
CB 111	CB 110	0.43	0.63	1.97	7.22	1.97	8.94	15 inch	Concrete	83.50	1.92	262.20	260.60	5.85
CB 113	CB 112	0.39	0.67	1.90	7.22	1.90	4.99	15 inch	Concrete	100.58	0.60	258.70	258.10	3.79
CB 110	CB 109	0.29	0.60	1.27	7.17	3.21	13.04	15 inch	Concrete	65.00	4.08	260.40	257.75	8.80
CB 112	CB 109	0.03	0.85	0.19	7.12	2.06	5.27	15 inch	Concrete	22.52	0.67	257.90	257.75	4.03
CB 78 (LBG)	CB 79 (LBG)	0.18	0.50	0.65	7.22	0.65	13.69	15 inch	Concrete	34.50	4.49	280.65	279.10	5.74
CB 103	CB 104	0.16	0.61	0.71	7.22	0.71	6.20	15 inch	Concrete	25.00	0.92	252.93	252.70	3.36
CB 109	CB 108	0.15	0.75	0.82	7.10	6.04	8.18	18 inch	Concrete	82.54	0.61	257.50	257.00	5.06
CB 79 (LBG)	CB 80 (LBG)	0.30	0.45	0.98	7.20	1.63	13.33	15 inch	Concrete	250.01	4.26	279.00	268.35	7.37
YI 124	YI 123	0.33	0.40	0.96	7.22	0.96	2.71	8 inch	Corrugated HDPE (Smooth Interior)	142.67	4.30	266.13	260.00	7.11
CB 104	CB 105	0.09	0.69	0.45	7.19	1.16	6.48	15 inch	Concrete	47.66	1.01	252.60	252.12	3.99
CB 108	CB 107	0.12	0.60	0.52	7.04	6.51	7.91	18 inch	Concrete	88.23	0.57	256.80	256.30	5.00
CB 80 (LBG)	CB 81 (LBG)	0.19	0.50	0.69	7.07	2.28	13.13	15 inch	Concrete	233.46	4.13	268.25	258.60	8.03
YI 123	YI 122	0.32	0.41	0.95	7.15	1.90	2.61	10 inch	Corrugated HDPE (Smooth Interior)	129.91	1.21	259.74	258.17	5.22
CB 105	CB 106	0.11	0.79	0.63	7.15	1.78	6.71	15 inch	Concrete	25.00	1.08	252.02	251.75	4.62
CB 107	CB 106	0.16	0.61	0.71	6.98	7.13	24.54	18 inch	Concrete	84.25	5.46	256.10	251.50	12.04
CB 81 (LBG)	CB 121	0.20	0.50	0.73	6.97	2.95	26.71	18 inch	Concrete	65.11	6.47	258.50	254.29	9.95
YI 122	CB 121	0.21	0.44	0.67	7.06	2.53	2.64	10 inch	Corrugated HDPE (Smooth Interior)	119.49	1.24	258.07	256.59	5.51
CB 106	CB 120	0.16	0.61	0.71	6.95	9.52	22.86	24 inch	Concrete	48.98	1.02	251.00	250.50	6.94
CB 121	CB 120	0.08	0.73	0.43	6.95	5.84	20.91	18 inch	Concrete	89.36	3.96	254.19	250.65	10.14
CB 120	CB 119	0.29	0.47	0.99	6.91	16.23	22.62	24 inch	Concrete	25.00	1.00	250.40	250.15	7.83
CB 119	JB 102	0.19	0.67	0.93	6.90	17.08	27.40	24 inch	Concrete	122.66	1.47	250.05	248.25	9.20
JB 102	FES 101	N/A	N/A	N/A	6.85	14.05	23.01	24 inch	Concrete	14.50	1.03	248.15	248.00	7.69

STORM DRAINAGE PIPE TABLE-FES 201

Upstream Structure	Downstream Structure	Upstream Inlet Area (acres)	Upstream Inlet Rational Coefficient	Upstream Inlet Rational Flow (cfs)	System Intensity (in/hr)	Total System Flow (cfs)	Maximum Capacity (cfs)	Pipe diameter	Material	Length (ft)	Slope (%)	Upstream Invert (ft)	Downstream Invert (ft)	Average Velocity (ft/s)
YI 225	YI 224	0.27	0.55	1.08	7.22	1.08	2.66	10 inch	Corrugated HDPE (Smooth Interior)	105.50	1.26	254.50	253.17	4.63
CB 222	CB 221	0.25	0.61	1.11	7.22	1.11	7.46	15 inch	Concrete	22.50	1.33	251.50	251.20	4.36
YI 226	YI 223	0.37	0.48	1.29	7.22	1.29	2.41	8 inch	Corrugated HDPE (Smooth Interior)	111.06	3.39	256.43	252.66	7.03
YI 224	YI 223	0.30	0.49	1.07	7.14	2.13	2.89	12 inch	Corrugated HDPE (Smooth Interior)	101.43	0.56	252.82	252.25	4.03
CB 221	CB 219	0.24	0.63	1.10	7.20	2.20	6.22	15 inch	Concrete	113.24	0.93	251.00	249.95	4.64
CB 220	CB 219	0.16	0.62	0.72	7.22	0.72	9.21	15 inch	Concrete	27.06	2.03	250.50	249.95	4.47
YI 223	CB 219	0.56	0.48	1.96	7.05	5.27	4.96	15 inch	Corrugated HDPE (Smooth Interior)	105.31	0.50	252.00	251.47	4.56
CB 219	CB 218	0.17	0.63	0.78	6.96	8.79	13.09	18 inch	Concrete	96.54	1.55	249.70	248.20	7.94
CB 218	CB 217	0.67	0.64	3.12	6.92	11.72	10.90	18 inch	Concrete	83.50	1.08	247.90	247.00	6.87
YI 232	YI 231	0.36	0.45	1.18	7.22	1.18	2.48	8 inch	Corrugated HDPE (Smooth Interior)	144.99	3.59	244.03	238.83	7.01
CB 216	CB 215	0.30	0.63	1.38	7.22	1.38	10.79	18 inch	Concrete	27.50	1.05	245.17	244.88	4.19
CB 217	CB 215	0.57	0.63	2.61	6.87	14.13	16.84	18 inch	Concrete	58.38	2.57	246.50	245.00	10.67
YI 231	YI 230	0.48	0.44	1.54	7.14	2.69	3.62	12 inch	Corrugated HDPE	102.09	0.88	238.40	237.50	5.05
YI 230A	YI 230	0.35	0.49	1.25	7.22	1.25	4.14	8 inch	Corrugated HDPE	96.44	10.00	247.47	237.83	10.38
CB 215	CB 213	0.34	0.65	1.61	6.85	16.92	18.23	18 inch	Concrete	165.92	3.01	244.20	239.20	11.72
CB 214	CB 213	0.27	0.59	1.16	7.22	1.16	6.81	15 inch	Concrete	22.50	1.11	239.70	239.45	4.14
YI 230	YI 212A	0.48	0.40	1.40	7.07	5.25	12.60	15 inch	Corrugated HDPE	81.70	3.24	237.25	234.60	9.80
CB 211	CB 210	0.30	0.63	1.38	7.22	1.38	6.09	15 inch	Concrete	22.50	0.89	244.10	243.90	4.01
CB 213	CB 212	0.29	0.60	1.27	6.80	19.08	39.87	24 inch	Concrete	177.02	3.11	238.70	233.20	12.55
YI 212A	CB 212	0.21	0.50	0.76	7.04	5.97	9.35	15 inch	Corrugated HDPE	42.04	1.78	234.50	233.75	8.08
CB 209	CB 208	0.21	0.61	0.93	7.22	0.93	6.09	15 inch	Concrete	22.50	0.89	234.50	234.30	3.59
CB 210	CB 208	0.29	0.64	1.35	7.20	2.72	16.42	15 inch	Concrete	145.41	6.46	243.70	234.30	9.90
CB 212	CB 207	0.26	0.65	1.23	6.75	25.82	33.07	24 inch	Concrete	93.61	2.14	233.00	231.00	11.64
CB 208	CB 207	0.22	0.62	0.99	7.15	4.60	14.14	15 inch	Concrete	49.05	4.79	234.10	231.75	10.30
CB 207	CB 206	0.09	0.62	0.41	6.72	30.41	66.98	30 inch	Concrete	22.50	2.67	230.50	229.90	13.32
CB 206	CB 205	0.43	0.62	1.94	6.72	32.19	48.22	30 inch	Concrete	50.65	1.38	229.70	229.00	10.52
CB 205	CB 204	0.10	0.70	0.51	6.70	32.58	47.52	30 inch	Concrete	96.83	1.34	228.80	227.50	10.43
CB 204	CB 203	0.37	0.70	1.88	6.66	34.15	38.67	30 inch	Concrete	22.50	0.89	227.30	227.10	8.89

STORM DRAINAGE PIPE TABLE-FES 301

Upstream Structure	Downstream Structure	Upstream Inlet Area (acres)	Upstream Inlet Rational Coefficient	Upstream Inlet Rational Flow (cfs)	System Intensity (in/hr)	Total System Flow (cfs)	Maximum Capacity (cfs)	Pipe diameter	Material	Length (ft)	Slope (%)	Upstream Invert (ft)	Downstream Invert (ft)	Average Velocity (ft/s)
CB 328	CB 327	0.09	0.75	0.49	7.22	0.49	6.09	15 inch	Concrete	22.50	0.89	262.70	262.50	2.98
CB 327	CB 326	0.22	0.62	0.99	7.19	1.48	5.53	15 inch	Concrete	149.87	0.73	262.30	261.20	3.82
YI 345	YI 344	0.96	0.39	2.72	7.22	2.72	3.96	15 inch	Corrugated HDPE (Smooth Interior)	227.58	0.32	261.38	260.65	3.48
CB 326	CB 325	0.23	0.64	1.07	7.05	2.50	5.99	15 inch	Concrete	151.02	0.86	261.00	259.70	4.66
YI 344	YI 343	0.28	0.44	0.90	6.98	3.50	4.95	15 inch	Corrugated HDPE (Smooth Interior)	200.00	0.50	260.55	259.55	4.37
CB 325	CB 323	0.23	0.64	1.07	6.93	3.48	6.36	15 inch	Concrete	149.35	0.97	259.50	258.05	5.30
CB 324	CB 323	0.28	0.65	1.32	7.22	1.32	5.27	15 inch	Concrete	22.50	0.67	258.20	258.05	3.56
YI 343	YI 342	0.70	0.45	2.29	6.82	5.58	8.05	18 inch	Corrugated HDPE (Smooth Interior)	200.00	0.50	259.20	258.20	4.92
CB 322	CB 321	0.25	0.69	1.26	7.22	1.26	6.09	15 inch	Concrete	22.50	0.80	257.00	256.80	3.91
CB 323	CB 321	0.23	0.64	1.07	6.83	5.70	9.40	18 inch	Concrete	137.22	0.80	257.80	256.70	5.57
YI 342	YI 341	0.25	0.45	0.82	6.67	6.22	8.05	18 inch	Corrugated HDPE (Smooth Interior)	200.00	0.50	258.10	257.10	5.03
CB 321	CB 320	0.31	0.64	1.44	6.74	8.14	9.62	18 inch	Concrete	59.64	0.84	256.50	256.00	6.11
YI 341	CB 340	0.64	0.45	2.10	6.52	7.98	8.06	18 inch	Corrugated HDPE (Smooth Interior)	195.28	0.50	257.00	256.02	5.20
CB 320	CB 319	0.06	0.78	0.34	6.70	8.42	18.27	24 inch	Concrete	45.98	0.65	255.50	255.20	5.70
CB 340	CB 319	0.05	0.90	0.35	6.39	8.12	7.81	18 inch	Concrete	75.89	0.55	255.92	255.50	5.02
CB 319	CB 318	0.11	0.73	0.58	6.33	16.51	28.24	24 inch	Concrete	38.50	1.56	255.00	254.40	9.34
CB 318	CB 317	0.17	0.05	0.06	6.32	16.53	38.74	24 inch	Concrete	47.73	2.93	254.20	252.80	11.84
CB 317	CB 316	0.05	0.68	0.25	6.30	16.71	38.92	24 inch	Concrete	101.32	2.96	252.60	249.60	11.92
CB 316	CB 315	0.15	0.63	0.69	6.27	17.22	39.90	24 inch	Concrete	22.50	3.11	249.40	248.70	12.23
CB 314	CB 313	0.46	0.56	1.87	7.22	1.87	14.59	15 inch	Concrete	43.10	5.10	248.00	245.80	8.18
CB 315	CB 312	0.07	0.78	0.40	6.27	17.55	41.65	24 inch	Concrete	135.70	3.39	248.50	243.90	12.69
CB 313	CB 312	0.12	0.72	0.63	7.20	2.50	14.60	15 inch	Concrete	22.50	5.11	245.60	244.45	8.89
YI 336A	YI 336	0.28	0.44	0.90	7.22	0.90	4.14	8 inch	Corrugated HDPE (Smooth Interior)	100.91	10.00	242.82	232.73	9.47
CB 334	CB 333	0.16	0.60	0.70	7.22	0.70	5.62	15 inch	Concrete	26.41	0.76	230.50	230.30	3.12
CB 311	CB 310	0.29	0.61	1.29	7.22	1.29	6.09	15 inch	Concrete	22.50	0.89	238.00	237.80	3.94
CB 312	CB 310	0.19	0.60	0.83	6.23	20.32	49.13	24 inch	Concrete	148.41	4.72	243.70	236.70	14.90
YI 336	YI 335	0.33	0.42	1.01	7.19	1.90	2.98	10 inch	Corrugated HDPE (Smooth Interior)	114.21	1.58	232.47	230.67	5.79
CB 333	CB 332	0.20	0.68	0.99	7.19	1.68	5.33	15 inch	Concrete	58.82	0.68	230.10	229.70	3.85
CB 310	CB 308	0.22	0.60	0.96	6.19	22.12	49.24	24 inch	Concrete	164.62	4.74	236.50	228.70	15.25
CB 331	CB 330	0.37	0.55	1.48	7.22	1.48	6.09	15 inch	Concrete	22.50	0.89	228.20	228.00	4.09
YI 335	CB 330	0.79	0.39	2.24	7.12	4.09	4.96	15 inch	Corrugated HDPE (Smooth Interior)	137.37	0.50	230.15	229.46	4.51
CB 332	CB 330	0.22	0.51	0.82	7.13	2.48	6.43	15 inch	Concrete	151.36	0.99	229.50	228.00	4.90
CB 308	CB 307	0.26	0.60	1.14	6.15	22.95	56.71	24 inch	Concrete	47.73	6.29	228.50	225.50	17.10
CB 330	CB 307	0.20	0.62	0.90	7.01	8.77	13.84	18 inch	Concrete	100.77	1.74	227.75	226.00	8.29
CB 307	CB 306	0.31	0.52	1.17	6.14	31.60	77.34	30 inch	Concrete	22.50	3.56	225.00	224.20	14.96
CB 306	CB 305	0.09	0.70	0.46	6.14	31.96	114.71	30 inch	Concrete	54.97	7.82	224.00	219.70	20.02
CB 304	CB 303	0.66	0.65	3.12	7.22	3.12	4.73	15 inch	Concrete	106.29	0.54	217.96	217.39	4.12
CB 305	CB 303	0.13	0.71	0.67	6.13	32.48	38.67	30 inch	Concrete	22.50	0.89	219.50	219.30	8.83
CB 303	YI 302	0.46	0.60	2.01	6.12	36.79	41.07	30 inch	Concrete	124.68	1.00	216.34	215.09	9.46
YI 302	FES 301	0.40	0.30	0.87	6.08	37.29	40.93	30 inch	Concrete	50.20	1.00	212.50	212.00	9.45

*SEE SHT 4.1 FOR STRUCTURE SCHEDULE

THESE PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE TOWN OF WENDELL

ZONING / SUBDIVISION ADMINISTRATOR — DATE 1-18-08

TOWN OF WENDELL FIRE CHIEF — DATE

GRAPHIC SCALE 50 0 25 50 100 — 1 inch = 50 ft.

KENNETH L. JESNECK, NORTH CAROLINA PROFESSIONAL ENGINEER, SEAL 18498 — 1/17/08

No.	Revision	Date	By
6	PULTE REVISIONS	12/21/07	JAC
7	PER TOW COMMENTS	01/15/08	JAC

No.	Revision	Date	By
1	FIRST REVIEW COMMENTS	03/07/07	SFP
2	PER TOW & COR COMMENTS	04/25/07	JAC
3	MYLAR	05/10/07	DLP
4	GRADING AND STORM REVISIONS	08/10/07	JAC
5	GRADING & STORM REVISIONS	10/10/07	JEW

Designer	KAP	Scale	1" = 50'
Drawn By	WEC	Date	12/07/06
Checked By	W&R	Job No.	205261.04

WENDELL FALLS

Wendell — Wake County — North Carolina

STORM DRAINAGE & GRADING PLAN SF-1

WITHERS & RAVENEL
ENGINEERS | PLANNERS | SURVEYORS
111 MacKenan Drive Cary, North Carolina 27511 tel: 919-469-3340 fax: 919-467-6008 www.withersravenel.com

Sheet No. 4.0

K:\05\05-260\05261.04\CAD\SF-1\CONST. PLANS\3rd Submittal\SHT 04-grading drainage plan.DWG- Wednesday, January 16, 2008 10:55:50 AM - JOHN CORE