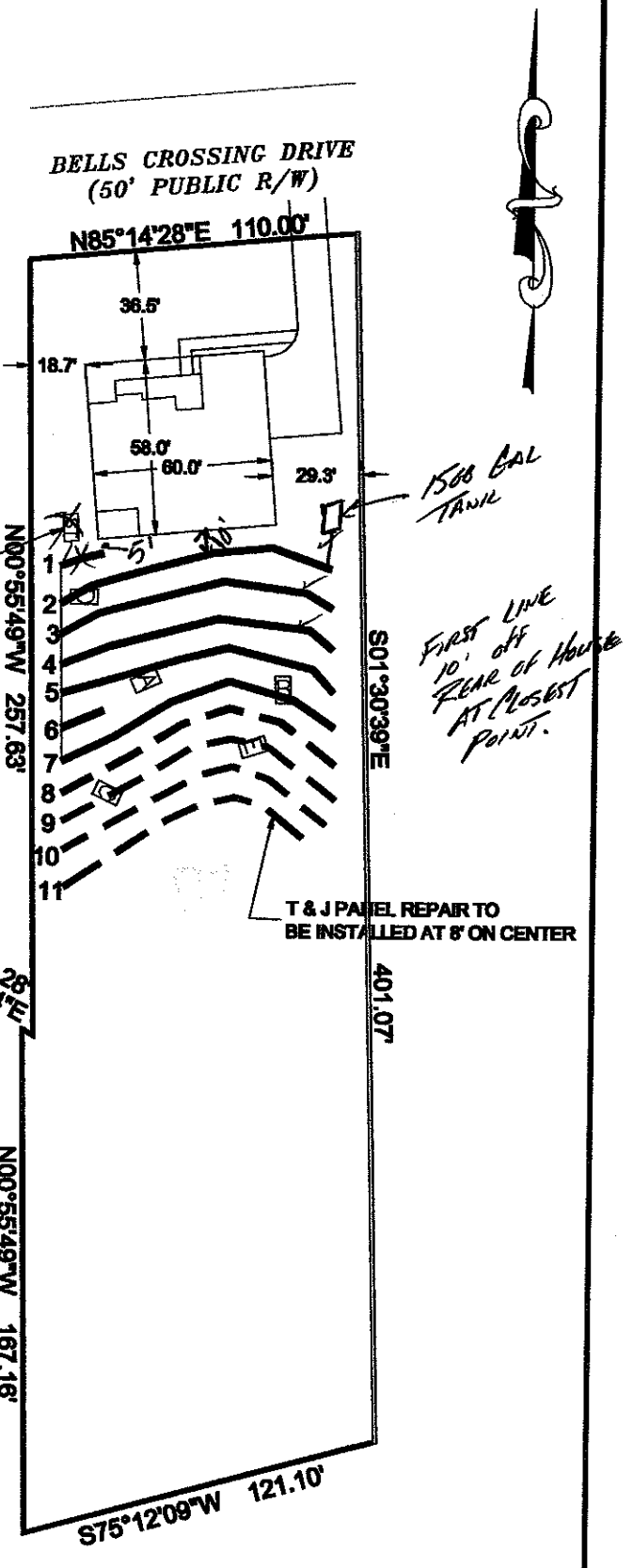
LINE SCHEDULE

LINE NUMBER	COLOR	FIELD ELEVATION	LENGTH (FT)
1	BLUE	0.9	15
2	RED	2.1	95
3	ORANGE	3.6	95
4	BLUE	4.9	95
5	PINK	6.4	97
6	YELLOW	6.9	15
7	RED	7.5	100
8	ORANGE	8.7	104
9	BLUE	10.8	105
10	PINK	12.7	102
11	RED	14.6	92



APPROVED MAR 19 2015

LOT 101 BELLS CROSSING SUBDIVISION

5-BEDROOM ACCEPTED STATUS GRAVITY SYSTEM
LINES 1-7 TOTAL 512 LINEAR FEET
EZFLOW OR CHAMBER
LTAR 0.3
25% REDUCTION
24" TRENCH DEPTH

5-BEDROOM ACCEPTED STATUS LPP 50% GRAVITY SYSTEM REPAIR
LINES 8-11 TOTAL 403 LINEAR FEET
CHAMBER (INSTALL 8' OC)
LTAR 0.275
50% REDUCTION
28" TRENCH DEPTH

FOR GENERAL USE NOT A SURVEY
PRELIMINARY NOT FOR CONSTRUCTION

SOIL PROFILES AND ANALYSIS PROVIDED BY
CENTRAL CAROLINA SOIL CONSULTING PLLC

PRIMARY SYSTEM

REPAIR SYSTEM

REPAIR LINES
(NOT USED)

PIT OR AUGER BORING A

0 30 60

SCALE:
1" = 60 ft.

Bateman Civil Survey Company
Engineers • Surveyors • Planners

MeritageHomes

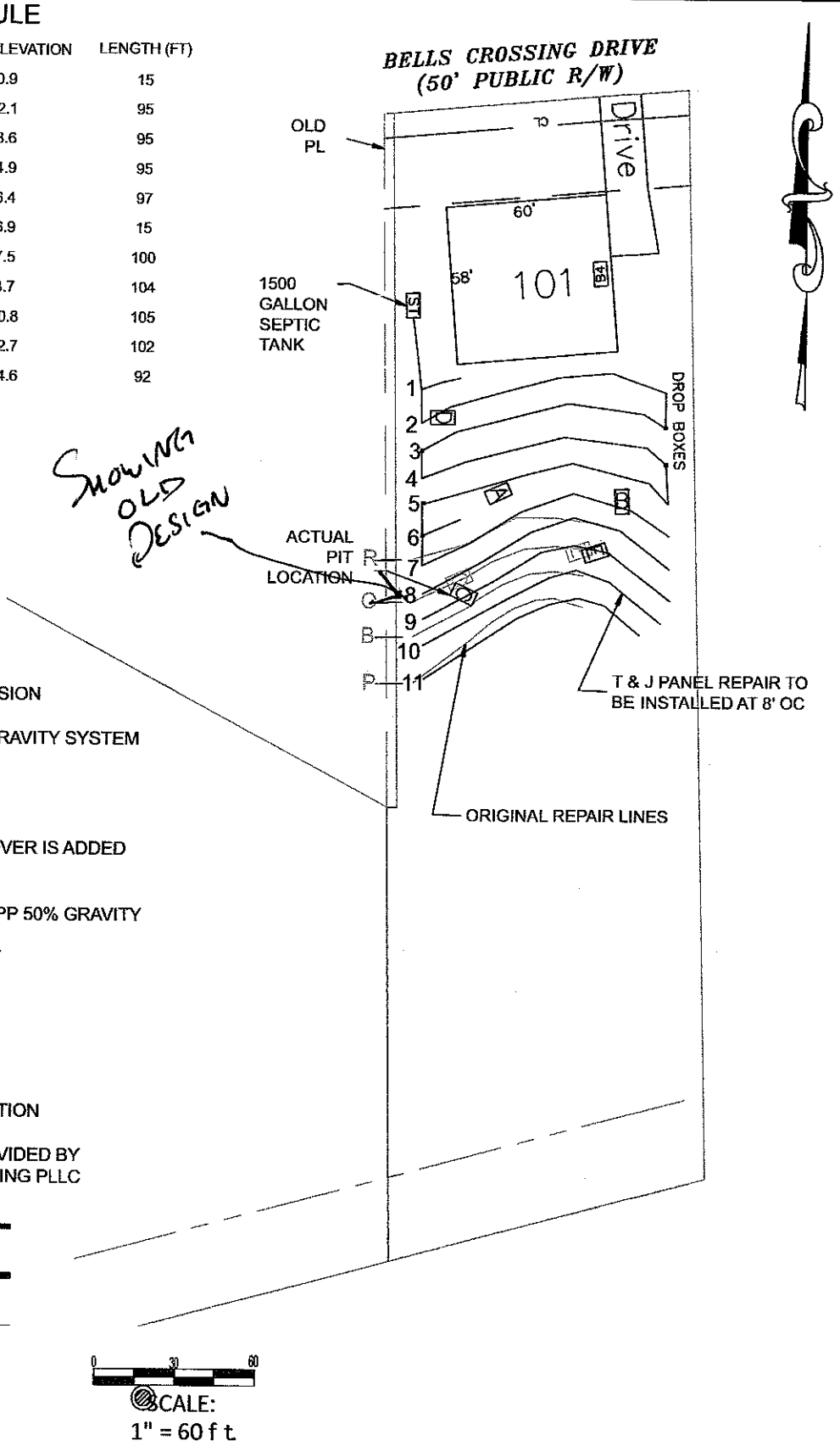
LOT 101

BELLS CROSSING SUBDIVISION
MOORESVILLE, NC
IREDELL COUNTY

DATE: 2/27/15 DRAWN BY: MDB CHECKED BY: TMB

LINE SCHEDULE

LINE NUMBER	COLOR	FIELD ELEVATION	LENGTH (FT)
1	BLUE	0.9	15
2	RED	2.1	95
3	ORANGE	3.6	95
4	BLUE	4.9	95
5	PINK	6.4	97
6	YELLOW	6.9	15
7	RED	7.5	100
8	ORANGE	8.7	104
9	BLUE	10.8	105
10	PINK	12.7	102
11	RED	14.6	92



LOT 101 BELLS CROSSING SUBDIVISION

5-BEDROOM ACCEPTED STATUS GRAVITY SYSTEM
LINES 1-7 TOTAL 512 LINEAR FEET
EZFLOW OR CHAMBER
LTAR 0.3
25% REDUCTION
36" TRENCH DEPTH MAX AFTER COVER IS ADDED

5-BEDROOM ACCEPTED STATUS LPP 50% GRAVITY SYSTEM REPAIR
LINES 8-11 TOTAL 403 LINEAR FEET
CHAMBER (INSTALL 8' OC)
LTAR 0.275
50% REDUCTION
36" TRENCH DEPTH MAX

FOR GENERAL USE NOT A SURVEY
PRELIMINARY NOT FOR CONSTRUCTION

SOIL PROFILES AND ANALYSIS PROVIDED BY
CENTRAL CAROLINA SOIL CONSULTING PLLC

PRIMARY SYSTEM

REPAIR SYSTEM

REPAIR LINES
(NOT USED)

PIT OR AUGER BORING A

0 30 60
SCALE:
1" = 60 f t.

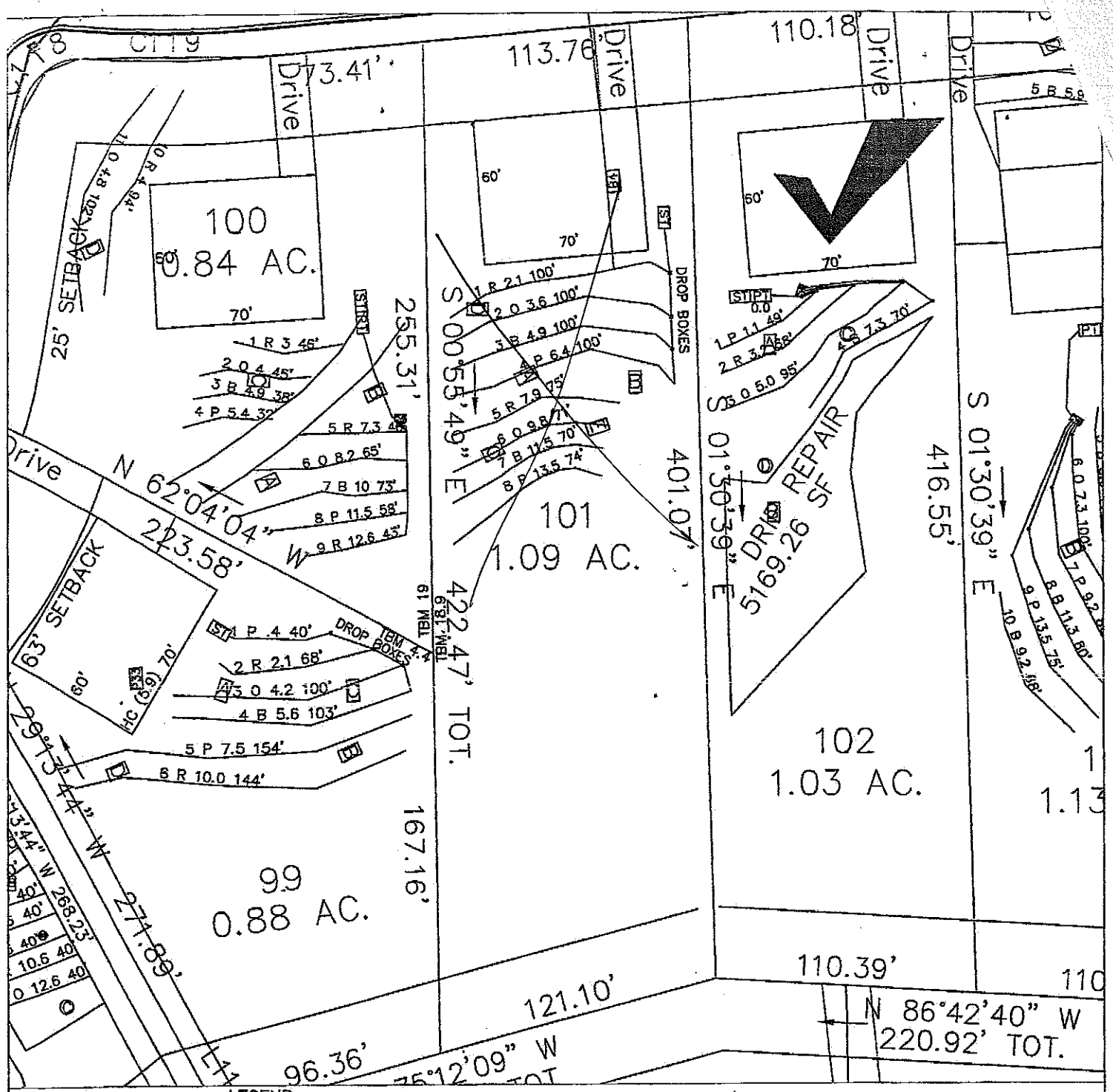
Bateman Civil Survey Company
Engineers Surveyors Planners
200 N. Main Street, Holly Springs, NC 27540 Ph: 919.577.1080 Fax: 919.577.1081
www.batemancivilsurvey.com info@batemancivilsurvey.com
NCBELS Firm No. C-2378

MeritageHomes

LOT 101

BELLS CROSSING SUBDIVISION
MOORESVILLE, NC
IREDELL COUNTY

DATE: 2/27/15 DRAWN BY: MDB CHECKED BY:TMB



LEGEND

House Box.

System lines.

Repair lines.

GRAPHIC SCALE

1" = 60'

60 0 60 120

FOR PRELIMINARY PLANNING PURPOSES ONLY. ALL LOTS WILL REQUIRE FINAL APPROVAL BY THE COUNTY HEALTH DEPARTMENT ON A LOT BY LOT BASIS. THIS MAP SHOULD BY USED AS A GENERAL GUIDE, SOME ADJUSTMENTS WILL BE NECESSARY IN THE FIELD DUE TO SOIL VARIABILITY AND COMPLEX TOPOGRAPHIC FEATURES. THIS MAP ONLY REFLECTS EXISTING SOIL SUITABILITY FOR ON-SITE SEPTIC TANK SYSTEMS.

PLEASE REFER TO ATTACHED SOIL REPORT FOR ADDITIONAL SITE SPECIFIC INFORMATION

ROLLANS SOIL & ENVIRONMENTAL SERVICES
670 NORTH BROAD STREET SUITE D
MOORESVILLE, NC 28115
ASHLEY ROLLANS, NC LICENSED SOIL SCIENTIST
MOBILE: (704) 746-5046
EMAIL: ROLLANSENVIRONMENTAL@GMAIL.COM

MAP TITLE: SITE PLAN & DRAINFIELD AREAS

PROJECT NAME: BELLS CROSSING, LLC / BELLS CROSSING

LOCATION/DATE: PERRY RD
REDELL COUNTY, NORTH CAROLINA

JOB # : 01-1429
FILE: C:\JOBS\01-1429
PROJECT MGR.: C.B.F.
FIELD WORK: C.B.F., A.L.P. & M.D.B.
DRAWN BY: C.B.F. & M.D.B.

APPROVED MAR 1 9 2015

BA

SOIL/SITE EVALUATION

(Continuation Sheet) Balls Crossing LOTS 101

Sheet ___ of ___

DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

PROPERTY ID #: _____
DATE OF EVALUATION: _____
COUNTY: Iredell

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) .1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
P 101 A	SS 5-10%	0-7	B SL Gr	SS, SP, Fr SEXP		48"	-	-	PS 0.3 OK
		7-30	R C MF ABK	" " " "	Quartz vein from 0-40				
		30-45	R CL WFSBK	" " " "	com sap				
		45-52	Var. L sap mas	" " " "					
P 101 B	SS 5-10%	0-8	B CL WFSBK	SS, SP, Fr SEXP		34"	PS	-	PS 0.3
		8-19	R C VmABK	SS, SP, Fr SEXP					
		19-34	YR CL VmSBK	" " " "	com sap				
		34-49	Var SL sap mas						
		OK							
P 101 C	SS 10-15%	0-6	B SL Gr	SS, SP, Fr SEXP	-	42"	PS	-	PS .275
		6-34	RC MnSBK	" " " "	com sap from 6" to R Inch				
		34-42	R C/CL WFSBK	" " " "	com (varicose) in C inch WA incl				
		42-68	Var L Sap mas	" " " "				OK	
P 101 D	SS 0-5% 34	0-7	B SL Gr	SS, SP, Fr SEXP		62"	-	-	PS .275 .03 OK
		7-39	RC MF/WFABK/SBK	S, SP, Fr SEXP					
		39-62	RY CL WFSBK	SS, SP, Fr SEXP	com sap				
P 101 E	SS 10-15%	0-9	B SL Gr	Fri SSSP SEXP	few (Possible RBS)	58"	-	- OK	.275 0.3
		9-31	RC MFSBK	Fri SSSP SEXP	- common				
		31-58	RC/WSBK	Fri SSSP SEXP	- L/Rock/SAP				

COMMENTS: _____

ROLLANS *Soil & Environmental Services, Inc.*

470 N Broad Street, Suite D, Mooresville, NC 28115 Phone: (704) 658-1723 Fax: (704) 658-1724

Ashley Rollans, NC Licensed Soil Scientist
Mobile: (704) 746-5046
Email: rollans.ashley@yahoo.com

Brady Freeman, Registered Sanitarian
Mobile: (704) 746-6497
Email: bfree209@yahoo.com

Attached is a proposed design for an Accepted (25% reduction) Septic System with gravity distribution for a 4 bedroom single family residence on Lot # 101 BELLSCROSSING Subdivision, Iredell County, North Carolina.

Contents: **Page**

Information for the Installer---------- 1

Design Information
Design Specifications---------- 2-3
Layout Specifications---------- 4

Site Plan/System Plan---------- 5

Calculations---------- 6

Profile Descriptions---------- 7

September 22, 2008
Project No. 01-1429
Design By: Rollans Soil and Environmental Services

25% REDUCTION SYSTEM
FOR WASTEWATER TREATMENT

Owner:	Bells Crossing, LLC
Address:	127B Promenade Dr. Mooresville, NC 28117
Phone:	704 361 1084
County:	Iredell
Location:	BELLS CROSSING LOT 101
Source of Wastewater Flow:	4 Bedroom Single Family Residence
Estimated Daily Wastewater Production:	480 gpd
System Flow:	N/A

Design Specifications

Drainfield Size:	400
Loading Rate:	0.3
Depth of Gravel in Trench:	NA (25% reduction)
Gravel Size:	NA (25% reduction)
Trench Depth:	36 in.
Trench Width:	36 in.
Septic Tank Size:	1000
Pump Tank Size:	N/A
Estimated Supply Line Length:	18
Supply Line Diameter:	3 in. SCH 40 PVC
Supply Line Volume:	3.13
Dosing Volume:	N/A
Supply Manifold:	DROP BOX
Supply Manifold Length:	N/A
Supply Manifold Volume:	N/A
Recommended Float Controls:	N/A N/A
Recommended Control Panel:	N/A N/A
Pressure Head:	N/A
Friction Head:	N/A
Elevation Head:	N/A
Total Dynamic Head:	N/A
Threaded Union:	NA
Gate Valves:	NA NA
Check Valves:	NA
Anti-Siphon Hole:	NA
Additional Comments:	Soil suitability was performed by Rollans Soil & Environmental Services.

BELLS CROSSING LOT 101
GRAVITY DISTRIBUTION DESIGN

DESIGN FLOW:	480	
SOIL APPLICATION RATE:	0.3	
TOTAL AREA TRENCH BOTTOM:	1200	
TOTAL LATERAL LENGTH:	400	
NUMBER OF FIELDS:	1	
LATERAL LENGTH REQUIRED PER FIELD:	400	
SUPPLY LINE LENGTH:	18	
TOTAL DYNAMIC HEAD:	N/A	
MANIFOLD SIZE:	N/A	
DOSING VOLUME:	N/A	
PUMP TANK DRAW DOWN*:	N/A	
SEPTIC TANK SIZE:		1000
PUMP TANK SIZE:	N/A	

BELLS CROSSING LOT # 101

Project #: 01-1429

LAYOUT FOR 4 BEDROOM HOME

September 30, 2008

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		N/A			N/A		
INSTR. 1			N/A				
HOUSE CNR				N/A	N/A		
P. TANK				N/A	N/A		
1	***RED***			***N/A***	***N/A***	***100***	***100***
2	***ORANGE***			***N/A***	***N/A***	***100***	***100***
3	***BLUE***			***N/A***	***N/A***	***100***	***100***
4	***PINK***			***N/A***	***N/A***	***103***	***100***
5	RED			N/A	N/A	75	75
6	ORANGE			N/A	N/A	71	71
7	BLUE			N/A	N/A	70	70
8	PINK			N/A	N/A	74	74
					Total	**693**	**690**

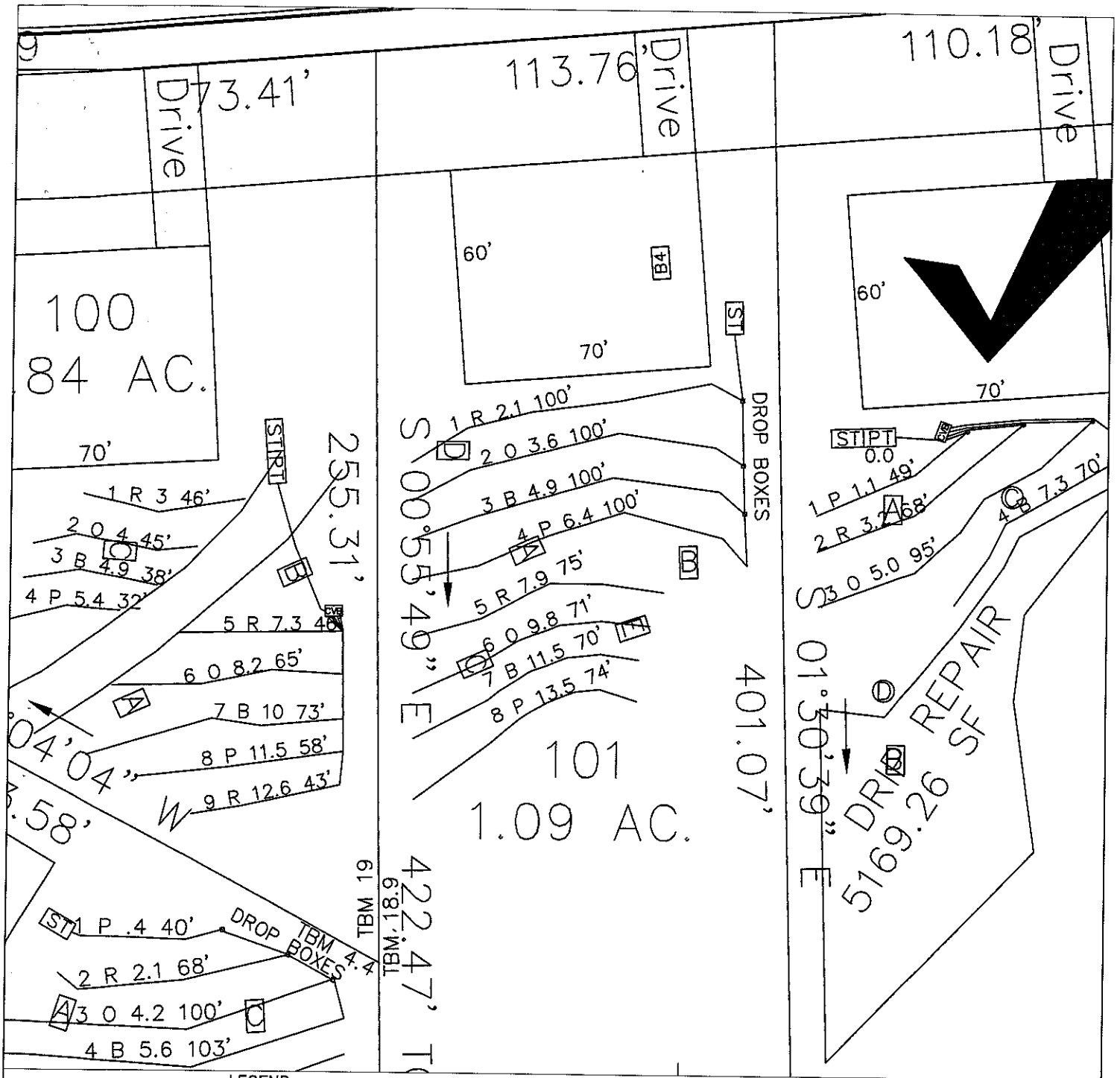
	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
** System*	*400*	*0.300*	*ACCEPT.*	*0.300*	*25% RED.*	**GRAVITY**
Repair	290	0.275	MOD.	0.275	PPBPS	**DISTRIBUTION** LOW PRESSURE

Notes:

**All measures in feet

**Nitrification lines are demonstrated on contour via colored pin flags

**BS, HI, and FS indicate rod readings



LEGEND

House Box.

System lines.

Repair lines.

GRAPHIC SCALE
1" = 40'

40 0 40 80

FOR PRELIMINARY PLANNING PURPOSES ONLY. ALL LOTS WILL REQUIRE FINAL APPROVAL BY THE COUNTY HEALTH DEPARTMENT ON A LOT BY LOT BASIS. THIS MAP SHOULD BY USED AS A GENERAL GUIDE, SOME ADJUSTMENTS WILL BE NECESSARY IN THE FIELD DUE TO SOIL VARIABILITY AND COMPLEX TOPOGRAPHIC FEATURES. THIS MAP ONLY REFLECTS EXISTING SOIL SUITABILITY FOR ON-SITE SEPTIC TANK SYSTEMS.

PLEASE REFER TO ATTACHED SOIL REPORT FOR ADDITIONAL SITE SPECIFIC INFORMATION

ROLLANS SOIL & ENVIRONMENTAL SERVICES
470 NORTH BROAD STREET SUITE D
MOORESVILLE, NC 28115
PHONE: (704) 658-1723
FAX: (704) 658-1724

BRADY FREEMAN, R.S.
MOBILE: (704) 746 - 6497
EMAIL: BFREE2969@YAHOO.COM

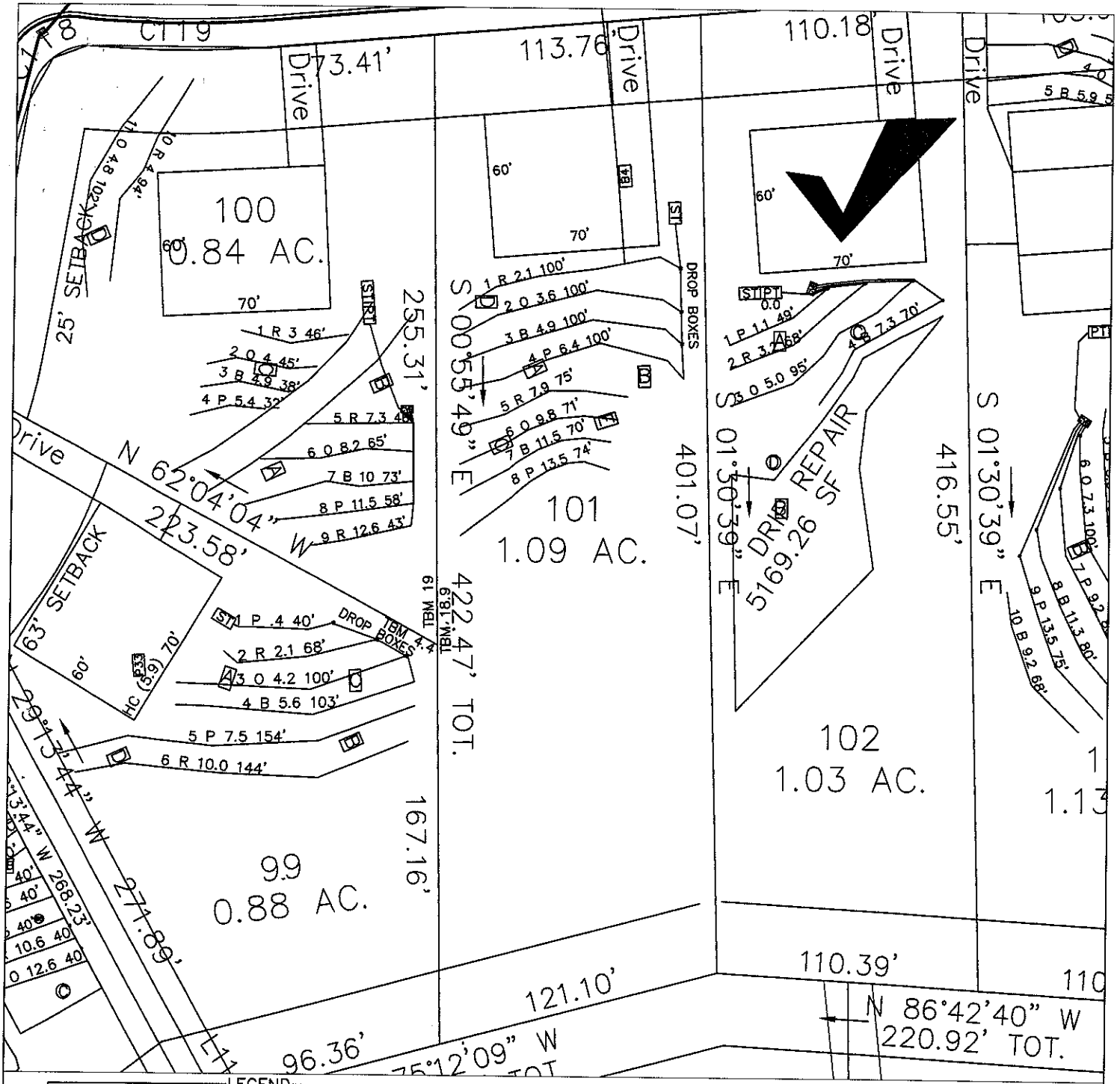
ASHLEY ROLLANS, NC LICENSED SOIL SCIENTIST
MOBILE: (704) 746 - 9346
EMAIL: ROLLANS@WINDSTREAM.NET

MAP TITLE: SITE PLAN & DRAINFIELD AREAS

PROJECT NAME: BELLS CROSSING, LLC / BELLS CROSSING

LOCATION/DATE: PERTH RD IREDELL COUNTY, NORTH CAROLINA SEP 2008

JOB # : 01-1429
FILE: C:\JOBS\01-1429
PROJECT MGR.: C.B.F.
FIELD WORK: C.B.F., A.L.P. & M.D.B.
DRAWN BY: C.B.F. & M.D.B.



LEGEND

House Box.

System lines.

Repair lines.

GRAPHIC SCALE

1" = 60'

60 0 60 120

FOR PRELIMINARY PLANNING PURPOSES ONLY. ALL LOTS WILL REQUIRE FINAL APPROVAL BY THE COUNTY HEALTH DEPARTMENT ON A LOT BY LOT BASIS. THIS MAP SHOULD BY USED AS A GENERAL GUIDE, SOME ADJUSTMENTS WILL BE NECESSARY IN THE FIELD DUE TO SOIL VARIABILITY AND COMPLEX TOPOGRAPHIC FEATURES. THIS MAP ONLY REFLECTS EXISTING SOIL SUITABILITY FOR ON-SITE SEPTIC TANK SYSTEMS.

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ROLLANS SOIL & ENVIRONMENTAL SERVICES

470 NORTH BROAD STREET SUITE D
MOORESVILLE, NC 28115
PHONE: (704) 658-1723
FAX: (704) 658-1724

BRADY FREEMAN, R.S.
MOBILE: (704) 746-6497
EMAIL: BFREE2098@YAHOO.COM

ASHLEY ROLLANS, NC LICENSED SOIL SCIENTIST
MOBILE: (704) 746-5046
EMAIL: ROLLANSBWINDSTREAM.NET

MAP TITLE: SITE PLAN & DRAINFIELD AREAS

PROJECT NAME: BELLS CROSSONG, LLC / BELLS CROSSING

LOCATION/DATE: PERTH RD, IREDELL COUNTY, NORTH CAROLINA, SEP 2006

JOB # : 01-1429
FILE: C:\JOBS\01-1429
PROJECT MGR.: C.B.F.
FIELD WORK: C.B.F., A.L.P. & M.D.B.
DRAWN BY: C.B.F. & M.D.B.

CALCULATIONS

Location BELLS CROSSING

Project Number 01-1429

Lot No: Lot 101

No. of Bedrooms 4

Design Flow 480 $^{gal}/_{day}$

LTAR 0.3 $^{gpd/ft^2}$

25% RED.? (YES OR NO) YES

Supply Line Length 18 ft.

Supply Line Volume 3.132 gal.

Required Feet of Line 400 ft.
Amount of Line from Layout 400 ft.

Gallons per Minute N/A $^{gal}/_{min}$

Required Septic Tank Capacity 1000 gal.
Minimum Standard Tank Size 1000

Lateral Line Volume 261.2 gal.

Dosing Volume N/A gal.
Note: Dosing Volume based on70% of lateral line volume

Tank Draw Down N/A *Generic Draw Down of 21 gal.per in.*

Pump Run Time N/A minutes

Elevation Head N/A ft.
Pressure Head N/A ft.
Friction Factor N/A ft./100 ft. *(From the interpolater.)*
Friction Head N/A ft.

Total Dynamic Head (+15%) N/A ft.

FRICTION FACTOR
INTERPOLATER
2" SCH 40 PVC

GPM	*f*
20	0.84
	-0.88
25	1.27
	-1.28
30	1.78
	-1.76
35	2.37
	-2.25
40	3.03
43.07	3.48
45	3.77
48.14	4.28
50	4.58
57.11	5.89
60	6.42

SOIL/SITE EVALUATION

(Continuation Sheet)

Balls Crossing LOTS 101

Sheet ___ of ___

DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

PROPERTY ID #: _____
DATE OF EVALUATION: _____
COUNTY: Iredell

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) .1941 STRUCTURE/ TEXTURE	SOIL MORPHOLOGY (.1941) .1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
P	SS	0-7	B SL Gr	SS, SP, Fr SEXP					PS
101		7-30	RC MFABK	" " " "	Quartz veins from bdrock	48	-	-	
A	5-10%	30-45	RCL WFSBK	" " " "	com sap				0.3
		45-52	Var. L sap mass	" " " "					OK
P	SS	0-8	BCL WFSBK	SS, SP, Fr SEXP					PS
101		8-19	RC VmABK	SS, SP, Fr SEXP		34"	PS	-	
B	5-10%	19-34	YR CL VmmSBK	" " " "	com sap				0.3
		34-49	Var SL sap mass						
		OK							
P	SS	0-6	B SL Gr	SS, SP, Fr SEXP	-	42"	PS	-	PS
101		6-34	RC MmSBK	" " " "	com sap few LR incl				.275
C	10-15%	34-42	RCL WFSBK	" " " "	com ver com C incl WR incl			OK	
		42-68	Var L Sap mass	" " " "					
P	SS	0-7	B SL Gr	SS, SP, Fr SEXP		60"	-	-	PS
100		7-39	RC MF/MFABK/SBK	S, SP, Fr SEXP					.275
D	0-5%	39-62	RY CL WFSBK	SS, SP, Fr SEXP	com sap			OK	.03
	34								
P	SS	0-9	B SCL Gr	Fr: SSSP SEXP	few (Possible RBS)	58"	-	OK	.275
101	10-15%	9-31	RC MFSBK	Fr: SSSP SEXP	common			-	
E		31-58	RCL WSBK	Fr: SSSP SEXP	L/Rock/SAP				0.3

COMMENTS: _____