Site Address: 168 Shepherds Bluff Redraw ques Ø

IREDELL COUNTY HEALTH DEPARTMENT

STATESVILLE 704-878-5305 MOORESVILLE 704-664-5281

IMPROVEMENT PERMIT / AUTHORIZATION TO CONSTRUCT / OPERATION PERMIT / EXISTING SYSTEM INSPECTION

PERMIT# 144859 PIN# 4659764835.000 2911 DATE 7/17/08

OWNER OR APPLICANT David Naylor PHONE: Business 480-722-6918 Home

ADDRESS 454 Barfield Rd. Mooresville NC 28115

LOCATION Hwy 21 N TR Shepherds Rd. TL Shepherds Bluff on right

SUBDIVISION Shepherds Bluff BLOCK / SECTION LOT 5 LOT AREA 1.96 ac SITE CLASS PS DESIGN FLOW 480 L.T.A.R. .23

Septic Tank: 1000 Gallons: STB 794 Date 6/16/08

Pump Tank: 1000 Gallons: PT 27 Date 6/31/08

Pump Make: Model Serial No.

Nitrification Field: No Fields 1 Square Feet 1206 Linear Feet 402'

No Lines 3@134' Trench Width 36" Max Trench Bottom Depth 36"

☑ New System ☐ Repair ☐ Expansion System Type: I II III IV V VI

System Description: Pump PM 25% Reduction

Repair System Description: LPP805

Maintenance Agreement Required: ☐ Yes ☑ No

Gravel Depth N/A ☐ Gravity ☑ Pressure ☐ Slab ☑ Crawl Space ☐ Basement w/plumbing ☐ Basement wo/plumbing

☑ House/Mod. Home No. Bedrooms 4

☐ Mobile Home No. Persons

☐ Business No. Employees

☐ Other

Water Supply: ☑ Individual ☐ Public ☐ Community

Comments:/Conditions: 8/25/08 Reviewed Floors plans, in Compliance with plan by Rollans Garage will be front entry to avoid drainfield area

Comments:/Conditions: Well permit issued 9/9/08

INITIAL SITE SKETCH

See Plan by Rollans Soil & Environmental Services, Inc.

AS BUILT SKETCH

Permit can be suspended or revoked if any false information is supplied toward securing the permit/any unauthorized changes are made to the site/any unauthorized changes are made in the installation of the system. Improvement Permit with plat valid without expiration ☐ Improvement Permit with site plan valid for sixty months ☑ Authorization to Construct is valid for a period equal to that of Improvement Permit – not to exceed sixty months.

Signed: date 7-28-08

Improvement Permit by: Anthony Cohen RS date 7/17/08

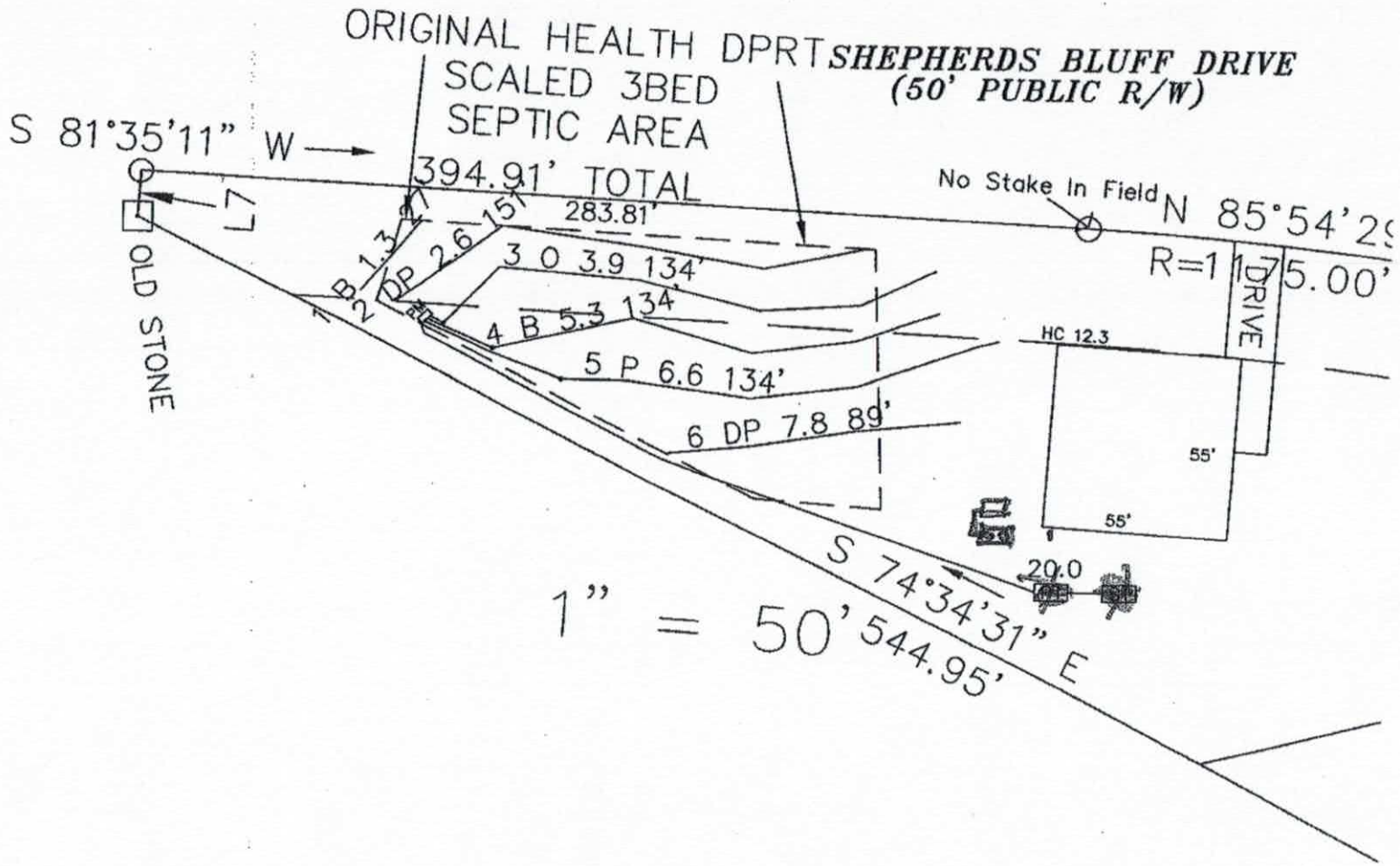
Authorization to Construct by: Melissa H. Nelson RS date 8/25/08

Installed by: [redacted] TARHEEL SEPTIC & GRADING

Operation Permit by: Wesley Sparks RS date 2/4/09

Existing System Inspection by: date

HEALTH DEPT. COPY: WHITE OWNER COPY (FINAL): YELLOW OWNER COPY (INITIAL): PINK


ORIGINAL HEALTH DPRT
SCALED 3BED
SEPTIC AREA
394.91' TOTAL
SHEPHERDS BLUFF DRIVE
(50' PUBLIC R/W)
S 81°35'11" W
No Stake In Field
N 85°54'29
R=1175.00'
OLD STONE
283.81'
B 1.3 47
DP 2.6 151
3 0 3.9 134'
4 B 5.3 134'
5 P 6.6 134'
6 DP 7.8 89'
HC 12.3
DRIVE
55'
55'
20.0
S 74°34'31" E
544.95'
1" = 50'

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 Pressure Manifold distribution for a 4 bedroom single family residence on Lot # 5 in Shepherds Bluff Subdivision, Iredell County, North Carolina.

Contents:

	Page
Information for the Installer	1
Design Information	
Design Specifications	2-3
Layout Specifications	4
System Tapsheet	5
Site Plan/System Plan	6
Calculations	7

July 10, 2008
Project #: 01-1474
Design By: Rollans Soil and Environmental Services

INFORMATION FOR THE INSTALLER:

- The permit should be read very carefully prior to bidding. The following are details that must be considered along with all other considerations.
- Tanks shall be approved by NC DENR, and certification supplied by the manufacturer.
- Tanks shall be water tested prior to installation.
- The installer shall be responsible to the owner for placement of the tanks and to insure that final grades are returned to the original natural grade, with exception of added structural features.
- The supply trench shall be compacted to eliminate cavities left during initial fill placement.
- Installation of the system shall be during dry conditions in order to protect the soil structure.
- All fittings shall be pressure rated fittings.
- All joints shall be cleaned with PVC pipe cleaner and a heavy bodied glue applied to weld all joints.
- Trenches shall be carefully excavated so the bottom is within 2" from the highest to . the lowest points of elevation within the trench. If the bottom elevation needs adjusting after it has been trenched, it will be done by removing high points rather than filling low points. It is extremely important to insure that trenches are not over excavated during initial trenching. All fine grading within the trench will be hand done with a shovel. No loose material will be left in the trench
- All pipe openings in the tanks shall be properly grouted. This also applies to the joints around the riser.
- All tanks shall be properly back filled and compacted to prevent slump at a later date.
- Earth dams, constructed of relatively impervious material, shall be installed at the beginning and end of each lateral.
- No heavy equipment shall be used on the field during or after installation. The use of a small loader (i.e. Bobcat) or a trencher (i.e. Ditch Witch 2300/2310) may be used for installation.
- Elevations at pinflag locations should be checked by the installer prior to beginning trenches.
- Pumptank riser should be 6" above grade, control panel should be 12" above grade.
- Septic tank riser shall be a minimum of 6" above finished grade.
- System is specified as an innovative 25% reduction.
- Repair is specified as a PPBPS with low pressure distribution installation.
- Rake trench walls, lime sidewalls, install trenches 36" wide and have no more than 1/4" fall in 10 feet.

PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT

Owner:	Shepherds Bluff, LLC
Address:	111-B Raceway Dr Mooresville, NC 28117
Phone:	704-664-7029
County:	Iredell
Location:	Shepherds Bluff Lot 5
Source of Wastewater Flow:	4 Bedroom Single Family Residence
Estimated Gallons Per Day Flow:	480
System Flow:	21.33

Design Specifications

Drainfield Size:	402
Loading Rate (gpd/ft.^{2}):	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:	1000
Estimated Supply Line Length:	204
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	35.50
Dosing Volume:	183.75
Supply Manifold:	4 in. SCH 80 PVC
Supply Manifold Length:	4 ft. (minimum)
Supply Manifold Volume:	N/A
Recommended Float Controls:	SJE Sensor Float Control Switches as Required for Control Panel or County Approved Equivalents
Recommended Control Panel:	SJE-Rhombus Model 112 (NEMA 4x) Control Panel or County Approved Control Panel.
Pressure Head:	2 ft.
Friction Head:	1.71
Elevation Head:	21.10
Total Dynamic Head:	28.54
Threaded Union:	In Tank
Gate Valves:	1 in Tank 1 at Pressure Manifold
Check Valves:	In Tank
Anti-Siphon Hole:	NA
Additional Comments:	Soil suitability was performed by Rollans Soil & Environmental Services.

Shepherds Bluff Lot 5
PRESSURE MANIFOLD DESIGN

DESIGN FLOW (gpd):	480
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.3
TOTAL AREA TRENCH BOTTOM:	1206
TOTAL LATERAL LENGTH:	402
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	400
SUPPLY LINE LENGTH:	204
TOTAL DYNAMIC HEAD:	28.54
MANIFOLD SIZE:	4 in.SCH 80 PVC
DOSING VOLUME:	183.75
PUMP TANK DRAW DOWN*:	8.8
SEPTIC TANK SIZE:	1000
PUMP TANK SIZE:	1000

**Pump tank draw down based on a volume basis of 21 gallons per inch. Draw down may vary among pump tank manufacturers.*

Shepherds Bluff Lot 5

Project #: 01-1474

LAYOUT FOR 4 BEDROOM HOME

July 10, 2008

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		5.7			100.00		
INSTR. 1			105.70				
HOUSE CNR				12.30	93.40		
P. TANK				20.00	85.70		
1	BLUE			1.30	104.40	27	27
2	DARK PINK			2.60	103.10	151	151
3	*ORANGE*			*3.90*	*101.80*	*171*	*134*
4	*BLUE*			*5.30*	*100.40*	*200*	*134*
5	*PINK*			*6.60*	*99.10*	*195*	*134*
6	DARK PINK			7.80	97.90	187	189
				11.50	*94.20*	931	769

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
** System*	*402*	*0.30*	*ACCEPT.*	*0.30*	*25% RED.*	PRESSURE
Repair	367	0.30	*MOD.*	0.30	PPBPS	MANIFOLD LOW PRESSURE

Notes:

**TBM is assumed to be 100'

**All measures in feet

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

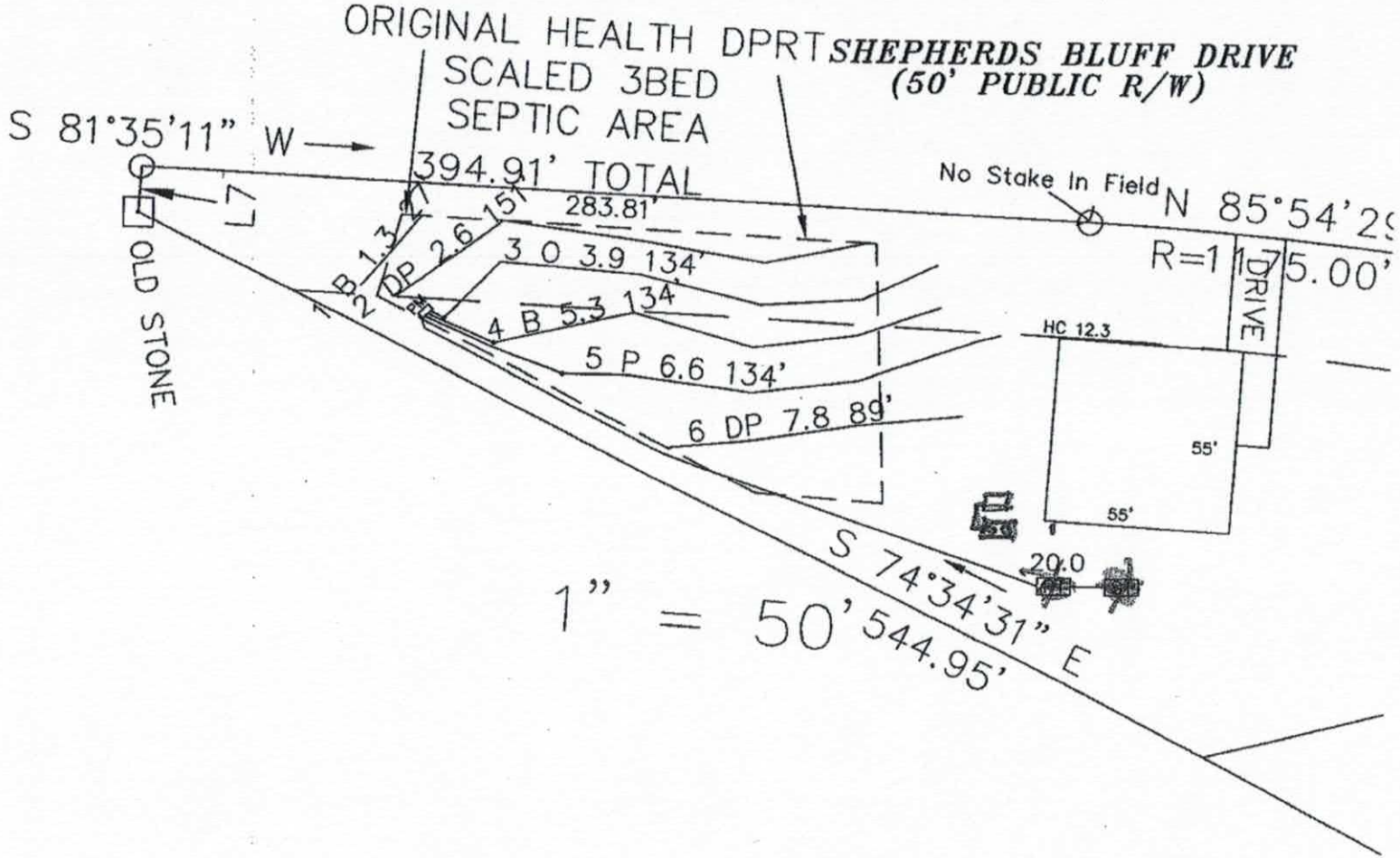
**BS, HI, and FS indicate rod readings

PRESSURE MANIFOLD TAPSHEET - Shepherds Bluff Lot 5

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	Trench Area	Line LTAR
3	ORANGE	101.8	134	SCH 40 1/2	7.11	402	0.15
4	BLUE	100.4	134	SCH 40 1/2	7.11	402	0.15
5	PINK	99.1	134	SCH 40 1/2	7.11	402	0.15
	total	feet =	402	gal/min =	21.33		

Des. Flow	480
Pump Run=	8.61
soil LTAR	0.3
LTAR +5%	0.315
LTAR with ACCEPTED	0.4
LTAR with ACCEPTED + 5%	0.42


ORIGINAL HEALTH DPRT
SCALED 3BED
SEPTIC AREA
394.91' TOTAL
SHEPHERDS BLUFF DRIVE
(50' PUBLIC R/W)
S 81°35'11" W
No Stake In Field
N 85°54'29
R=1175.00'
OLD STONE
283.81'
B 1.3 27
DP 2.6 151
3 0 3.9 134'
4 B 5.3 134'
5 P 6.6 134'
6 DP 7.8 89'
HC 12.3
DRIVE
55'
55'
20.0
S 74°34'31" E
544.95'
1" = 50'

CALCULATIONS

Location Shepherds Bluff

Project Number 01-1474

Lot No: Lot 5

No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.3	$^{gpd/ft^2}$
25% RED.? (YES OR NO)	YES	
Supply Line Length	204	ft.
Supply Line Volume	35.496	gal.
Required Feet of Line	400	ft.
Amount of Line from Layout	402	ft.
Gallons per Minute	21.33	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Lateral Line Volume	262.506	gal.
Dosing Volume	183.75	gal.

Note: Dosing Volume based on70% of lateral line volume

Tank Draw Down	8.8	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	8.61	minutes
Elevation Head	21.1	ft.
Pressure Head	2	ft.
Friction Factor	0.84	ft./100 ft. *(From the interpolater.)*
Friction Head	1.71	ft.
Total Dynamic Head (+15%)	28.54	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

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH
ON-SITE WASTEWATER SECTION

Sheet ___ of ___
PROPERTY ID #: _____
COUNTY: _____

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: David Naylor
ADDRESS: _____ APPLICATION DATE _____
PROPOSED FACILITY: _____ DATE EVALUATED: 8-29-07
LOCATION OF SITE: Silver Sands Block 5 PROPOSED DESIGN FLOW (.1949): 3610 PROPERTY SIZE: _____
WATER SUPPLY: ☐ Private ☐ Public ☒ Well ☐ Spring ☐ Other _____ PROPERTY RECORDED: _____
EVALUATION METHOD: ☒ Auger Boring ☐ Pit ☐ Cut TYPE OF WASTEWATER: ☒ Sewage ☐ Industrial Process ☐ Mixed

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	OTHER PROFILE FACTORS .1943 SOIL DEPTH	OTHER PROFILE FACTORS .1956 SAPRO CLASS	OTHER PROFILE FACTORS .1944 RESTR HORIZ	PROFILE CLASS & LTAR
1	nose/ linear 8-11%	0-30	wksbk scl	fr sss p		30			need pits
		30	sl sap						
2		0-8	compacted			20			to 5'
		8-14	sbk scl	fr sss p					
		14-20	sbk c	fi/fr sss p					
		20	sl sap						
3	Pit near AH #1	0-12	mo sbk/ gr c	fr sss p			c-sap m-sap		.3 100' well setback
		12-30	wk sbk cl	fr ss sp					
		30-58	l sap						
4	Pit near AH #2	0-6	wk sbk scl	fr sss p			m-sap		.3
		6-24	wk sbk c	fi sss p					
		24-60	sl sap w/ c-clay inclusions						

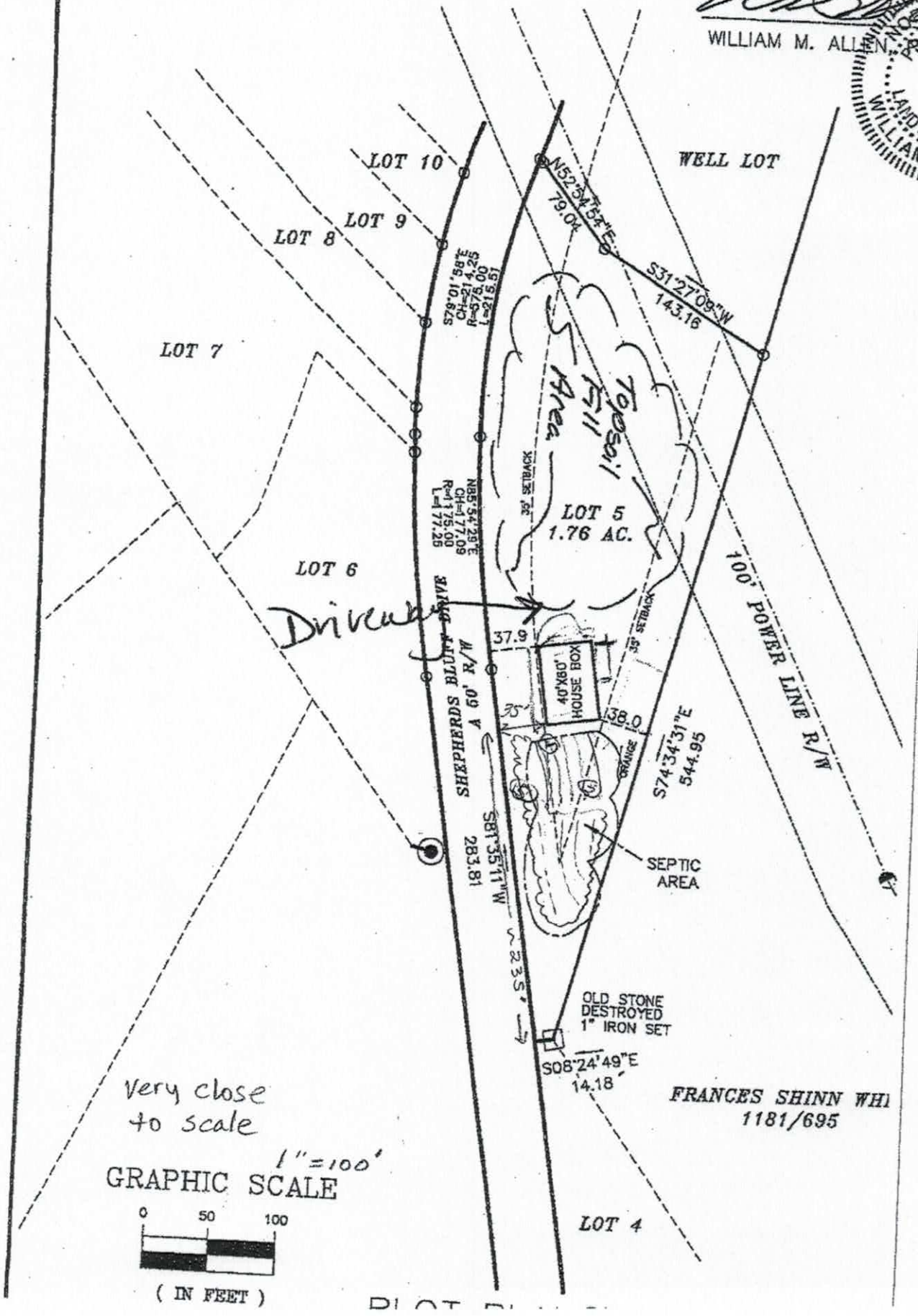
DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
vailable Space (.1945)		
ystem Type(s)		
e LTAR		

OTHER FACTORS (.1946): _____
SITE CLASSIFICATION (.1948): _____
EVALUATED BY: J Mehaffie
OTHER(S) PRESENT: Ben
MMENTS: _____

soil dry

survey made under my supervision recorded in deed book _____, page ___
plat book 47, page 124, that the ratio of precision is 1':10,000,
was prepared in accordance with the General Statutes of North Carolina Cha
my hand and seal on the 17TH, day of AUGUST, A.D. 20 06

WILLIAM M. ALLEN, NO. L-



Very close to scale

1"=100'

GRAPHIC SCALE

0 50 100

(IN FEET)

PLOT

IREDELL COUNTY HEALTH DEPARTMENT

Application For Improvement Permit and/or Authorization To Construct, Existing System Inspection

(THE ABOVE PERMIT DOCUMENTS WILL BECOME INVALID IF INFORMATION PROVIDED ON THIS APPLICATION IS FALSIFIED OR CHANGED, OR IF THE SITE IS ALTERED. THE IMPROVEMENT PERMIT IS VALID FOR EITHER 60 MONTHS OR WITHOUT EXPIRATION DEPENDING UPON DOCUMENTATION SUBMITTED - APPLICATION WITH SITE PLAN 60 MONTHS, APPLICATION WITH COMPLETE, SCALED PLAT WITHOUT EXPIRATION. SEE 15A NCAC 18A .1937(f) FOR DETAILS)

1. APPLICATION FOR: ✓ Improvement Permit ___Authorization To Construct ___BOTH ___Existing System Inspection

2. Page 2: *Site Plan Worksheet* Form MUST Accompany This Application
   The following optional attachments may also be submitted: ___ Survey Plat, Scaled no more than 1 Inch = 60 Feet
   Place check ( ) beside whichever is submitted if applicable ___ Custom Site Plan, Scaled no more than 1 Inch = 60 Feet

3. Applicant Information:

David Naylor	454 Barfield Rd Mooresville	704-663-0456	980-722-6918
Applicant Name	Mailing Address	Home Phone	Work Phone
Owner Name	Mailing Address	Home Phone	Work Phone

4. Property Information:

Lot 5	Shepherd's Bluff	Lot 5
Street Address	Subdivision Name	Section/Phase and Lot Number

Driving Directions: _____

****

5. RESIDENTIAL Site Development Information: *(Check or Complete ALL that apply)*

(✓) New, Single Family Residence
( ) New, Multi-Family Residence
( ) Expansion of Existing Septic System
( ) Repair To Failing Septic System

Maximum Number of Bedrooms 3
Maximum Number of Occupants ___
If Expansion, Current Number of Bedrooms ___

(✓) Crawl Space Foundation?
( ) Concrete Slab Foundation?
( ) Basement w/Plumbing?
( ) Basement w/out Plumbing?

IF Non- Residential Site Development:
Type of Business _____
Square Footage of Building _____
Maximum Number of Employees _____
Maximum Number of Seats _____

****

6. Proposed Water Supply:

(✓) New Well ( ) Existing Well ( ) Community Well ( ) City Water ( ) Other Public Water

****

7. Desired Septic System Type: *(You may rank in order of preference, if any)*

( ) Alternative ( ) Conventional ( ) Innovative (✓) Modified Conventional ( ) Other_____ ( ) No Preference

****

8. Please Answer The Following To The Best of Your Ability:

( ) Yes (✓) No Does the site contain any jurisdictional wetlands?
( ) Yes (✓) No Is any non-domestic sewage (i.e. industry) to be generated?
( ) Yes (✓) No Is the site subject to approval by any other public agency?

****

I have read this application and certify that the information provided herein is true, complete, and correct. Authorized county and state officials are granted right of entry to conduct necessary inspections to determine compliance with applicable laws and rules. I understand that I am solely responsible for the proper identification and labeling of all property lines and corners and making the site accessible so that a complete site evaluation can be performed.

9. Signature: _____ 8-29-07
Property owner or owner's legal representative signature (SIGNATURE REQUIRED) DATE

IREDELL COUNTY HEATLH DEPARTMENT

PAGE 2: *SITE PLAN WORKSHEET*

SEE THE SAMPLE SITE PLAN BELOW. INCOMPLETE SITE PLANS WILL BE RETURNED TO YOU FOR COMPLETION AND MAY RESULT IN A DELAY IN THE ISSUANCE OF YOUR SEPTIC SYSTEM PERMIT!!!

Place an (X) beside each item as you complete the site plan:

- ✓ **Property Line measurements are clearly identified…**
- ✓ **All proposed structures are indicated…**
  SHOW: proposed house or business footprint, wells, water lines, patios, pools and decks, and any other item that will occupy space on the site
- ✓ **Front and side setbacks from property line…**
- ✓ **Preferred driveway location and configuration, preferred well location…**
- ✓ **Area you prefer your septic system to be placed…**
- ✓ **North arrow, or other sufficient indicator of direction…**

Circle N/A on the following if appropriate:

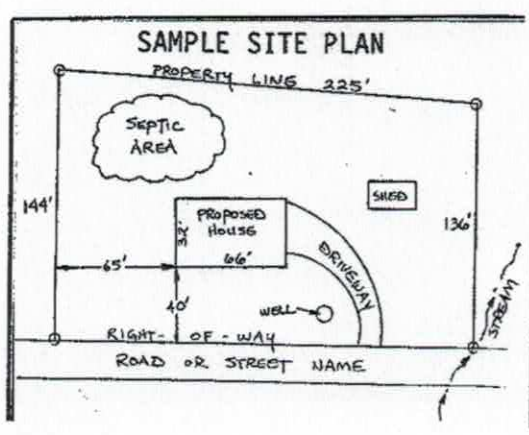
- ✓ **Location of septic systems and wells within 100' of your property… N/A**
- ✓ **Location of easements and rights of ways on your property… N/A**
- ✓ **Location of any designated wetlands on the property… N/A**

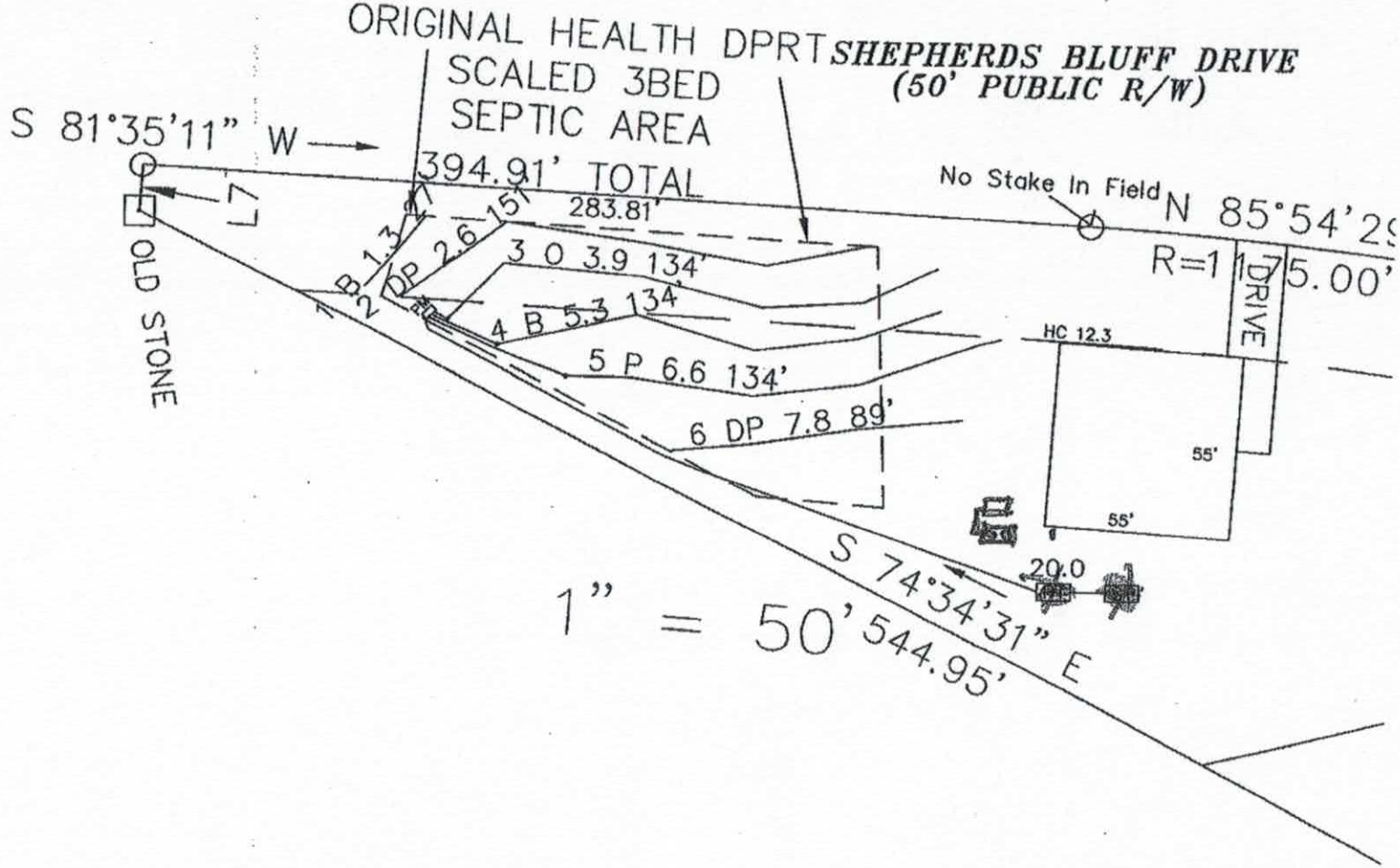
Signature: _____ 8-29-07

Property owner or owner's legal representative signature (SIGNATURE REQUIRED) **DATE**

USE THIS SPACE TO DRAW YOUR SITE PLAN

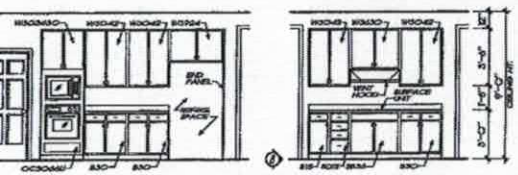
See attached survey plan

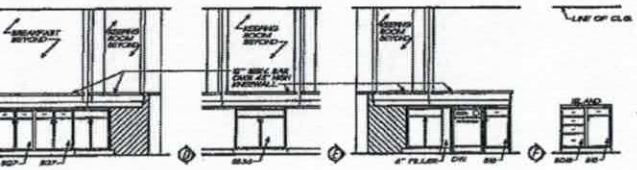



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6 DP 7.8 89'
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55'
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S 74°34'31" E
1" = 50'
544.95'

AL NOTES

GENERAL FRAMING NOTES





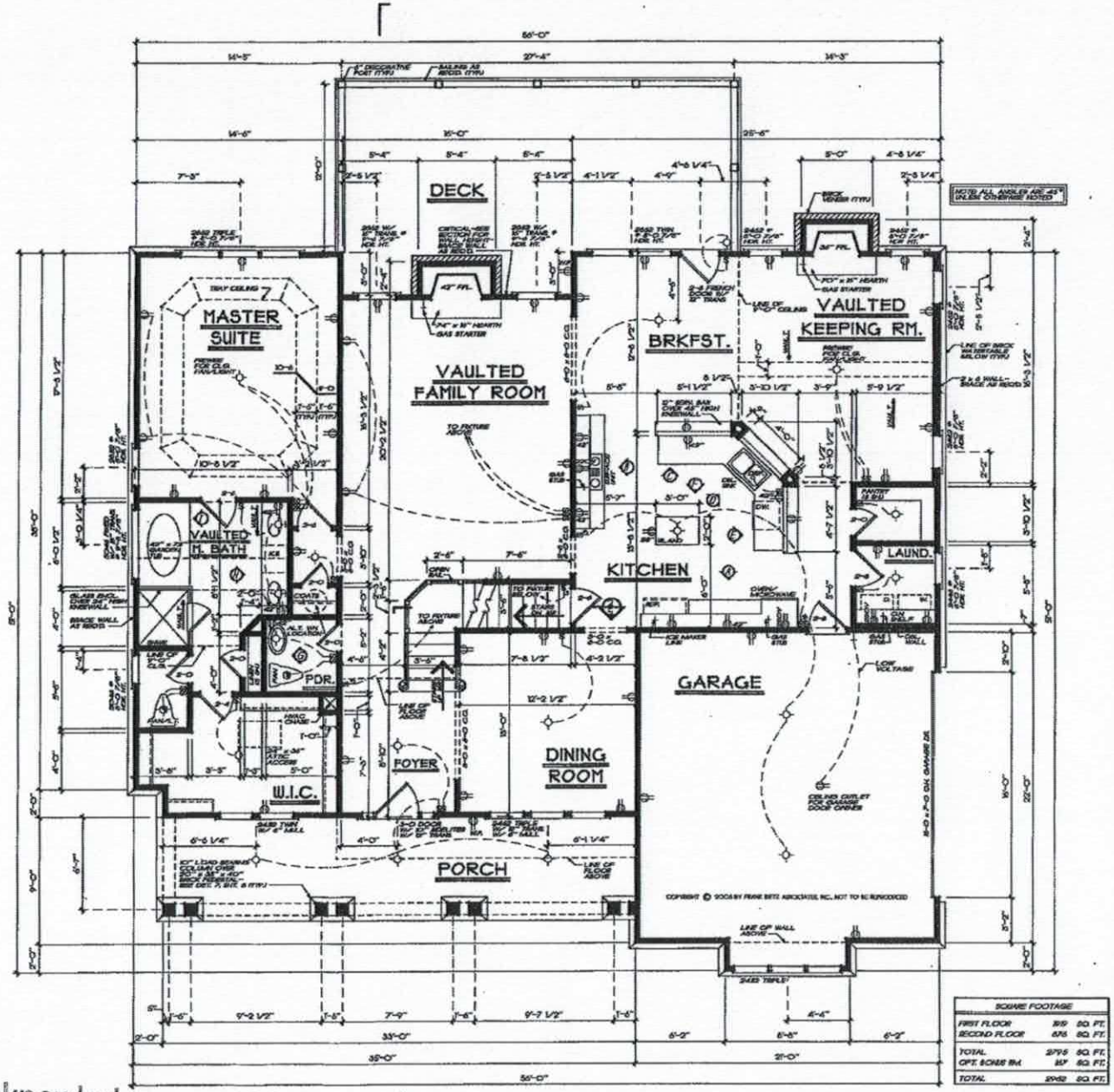
TCHEN ELEVATIONS



R. ELEV.



STER BATH ELEVATIONS

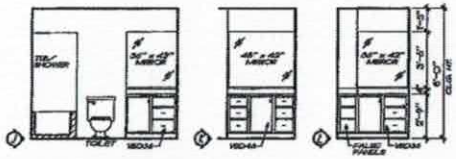


Acknowledgement Of
Plans Submittal ONLY!
Date 8-25-08
Date 8/25/08

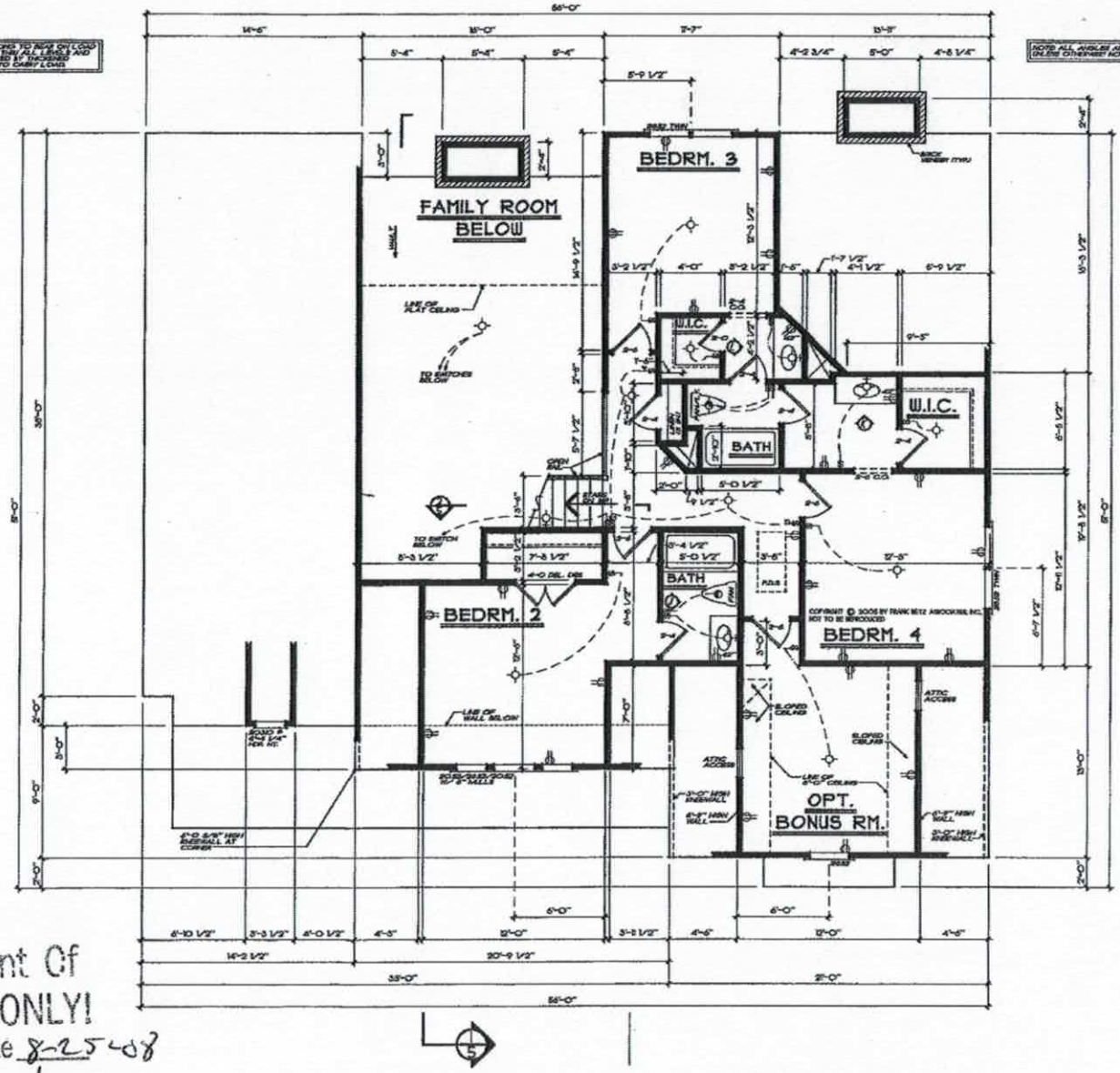
FIRST FLOOR PLAN

FRANK BETZ ASSOCIATES, INC. ASSUMES NO LIABILITY FOR ANY CHANGES OR MODIFICATIONS MADE TO THESE PLANS BY OTHERS.

FIRST FLOOR PLAN



BATH ELEVATIONS



Acknowledgement Of
Plans Submittal ONLY!
Date 8-25-08
Date 8/25/08

SECOND FLOOR PLAN

FRANK BEITZ ASSOCIATES, INC. ASSUMES NO LIABILITY FOR ANY CHANGES OR MODIFICATIONS MADE TO THESE PLANS BY OTHERS.

SECOND FLOOR PLAN