ROLLANS ***Soil & Environmental Services, PA.***
P.O. Box 832 Mooresville, NC 28115 Phone: (704) 658-1723 Fax: (704) 278-0989

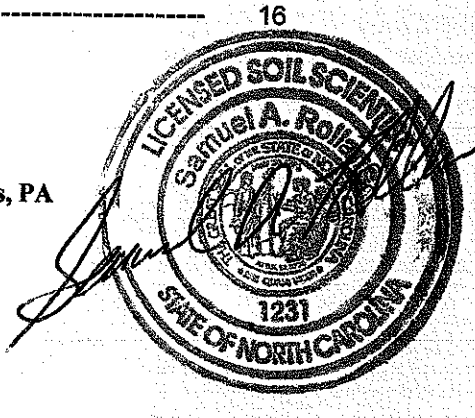
Ashley Rollans, NC Licensed Soil Scientist
Mobile: (704) 746-5046
Email: rollans.ashley@yahoo.com

Attached is a proposed design for an Accepted Septic System with gravity distribution for a 4 bedroom single family residence on Lot# 5 in Davidson Creek Subdivision (PIN#: 4655304747), Iredell County, North Carolina.

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January 11, 2016
Project #: 01-3100
Design By: Rollans Soil & Environmental Services, PA



1/11/16

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.
- Where required by the county health department, post installation inspections by the designer must be scheduled 5 week days in advance.
- 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.
- Septic tank riser shall be a minimum of 6" above finished grade.
- System is specified as a gravity 25% reduction (Accepted) installation.
- Repair is specified as a gravity 25% reduction (Accepted).
- Backfill nimimum of 6" of material (County Approved) over drainfield material, rake sidewalls, install trenches 36" wide and have no more than 1/4" fall in 10 feet.

GRAVITY ACCEPTED SYSTEM FOR WASTEWATER TREATMENT

Owner/Applicant: Desiree Willoughby

Address: P.O. Box 2255
Davidson, NC 28036

Phone: 704.650.8190

County: Iredell

Location: Davidson Creek LOT 5

Approved
1/26/16
MD

Source of Wastewater Flow: 4 Bedroom Single Family Residence

Estimated Gallons Per Day Flow: 480

System Flow: N/A

Design Specifications

Drainfield Size: 400

Loading Rate (gpd/ft.^{2}): 0.3

Depth of Gravel in Trench: N/a

Gravel Size: N/A

Trench Depth: 24 in. Repair Trench Depth 24 in.

Trench Width: 36 in.

Septic Tank Size: 1000

Estimated Supply Line Length: 22

Supply Line Diameter: 4 in. SCH 40 PVC

Supply Line Volume: 14.37

Dosing Volume: N/A

Supply Manifold: N/A

Supply Manifold Length: N/A

Supply Manifold Volume: N/A

Recommended Float Controls: N/A

Recommended Control Panel: N/A

Pressure Head: N/A

Friction Head: N/A

Elevation Head: N/A

Total Dynamic Head: N/A

Threaded Union: N/A

Gate Valves: N/A

Check Valves: N/A

Anti-Siphon Hole: N/A

Additional Comments: Soil suitability was performed by Rollans Soil & Environmental Services

Davidson Creek LOT 5

ACCEPTED SYSTEM

DESIGN FLOW (gpd):	480
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.3
TOTAL AREA TRENCH BOTTOM:	1200
TOTAL LATERAL LENGTH:	400
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	400
SUPPLY LINE LENGTH:	22
TOTAL DYNAMIC HEAD:	N/A
MANIFOLD SIZE:	N/A
DOSING VOLUME:	N/A
PUMP TANK DRAW DOWN*:	N/A
SEPTIC TANK SIZE:	1000

Approved
1/26/16
MD

Approved 1/26/16 MD

Davidson Creek LOT 5

Project #: 01-3100

LAYOUT FOR 4 BEDROOM HOME

January 11, 2016

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM							
INSTR. 1							
1	***RED***					***129***	***100***
2	***BLUE***					***129***	***100***
3	***ORANGE***					***107***	***100***
4	***PINK***					***104***	***100***
5	YELLOW					87	87
6	RED					42	42
7	BLUE					82	82
8	ORANGE					76	76
9	PINK					52	52
10	YELLOW					96	96
					Total	**904**	**835**

	LINE LENGTH	LTAR GPD/FT2	SYSTEM TYPE	SOIL LTAR GPD/FT2	TRENCH SYSTEM	DISTRIBUTION
** System*	***400***	***0.300***	***ACCEPT.***	***0.300***	***25% RED.***	***GRAVITY***
Repair	435	0.300	***ACCEPT.***	0.300	***25% RED.***	***GRAVITY***

Notes: **All measures in feet

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

**BS, HI, and FS indicate rod readings

CALCULATIONS

Location Davidson Creek Subdivision

Project Number *01-3100

Lot No: 5

No. of Bedrooms 4

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

LTAR 0.300 $^{gal}/_{ft^2\ day}$

PPBPS? (YES OR NO) NO

Supply Line Length 22 ft.

Supply Line Volume 14.366 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.
Septic Tank Size 1000 gal.

Panel Volume N/A gal.
# of Panels N/A
Dosing Volume N/A gal.

Tank Draw Down N/A

Pump Run Time

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

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

Sheet 1 of 1
PROPERTY ID #: 4655304794
COUNTY: Iredell

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: Desiree Willoughby
ADDRESS: [redacted] P.O. Box 2255 Davidson NC 28036
PROPOSED FACILITY: 4BR
PROPOSED DESIGN FLOW (.1949): 480 gpd
LOCATION OF SITE: 168 Monarch Lane, Mooresville NC 28115
APPLICATION DATE: 11/2/16
DATE EVALUATED: 11/2016
PROPERTY SIZE: ± 1.90 ac
PROPERTY RECORDED:

WATER SUPPLY: ☑ Private ☐ Public ☑ Well ☐ Spring ☐ Other
EVALUATION METHOD: ☑ Auger Boring ☐ Pit ☐ Cut
TYPE OF WASTEWATER: ☑ Sewage ☐ Industrial Process ☐ Mixed

Approved MP 11/26/16

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
B 1	L/10%	0-2	Bcl mmsbk	FrSSSPSEXP	-comp.	42	-	-	PS 0.3
		2-18	RBCmmsbk	" " " "					
		18-42	RYCl mfsbk	" " " "	-f-cSEP				
		42-48	var/ mass	" " " "	-				
B 2	L/11%	0-3	Fill			45	-	-	PS 0.3
		3-7	Bl sr	FrSSSP SEXP					
		7-48	RCmmsbk	" " " "					
B 3	L/11%	0-3	Fill			45	-	-	PS 0.3
		3-10	RBCmmsbk	FSSP SEXP	-compacted				
		10-48	RCmmsbk	FrSSSP SEXP					
B 4	L/18%	0-6	Bl sr	FrSSSP SEXP		49	-	-	PS 0.3
		6-49	RCmmsbk	FrSSSP SEXP	-fsap				

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	PS	PS
System Type(s)	Accepted	Accepted
Site LTAR	0.3	0.3

OTHER FACTORS (.1946):
SITE CLASSIFICATION (.1948): PS
EVALUATED BY: S. Ashley Rollins
OTHER(S) PRESENT: C. Wagner

COMMENTS:

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

Sheet ___ of ___
PROPERTY ID #:
COUNTY: Fredell

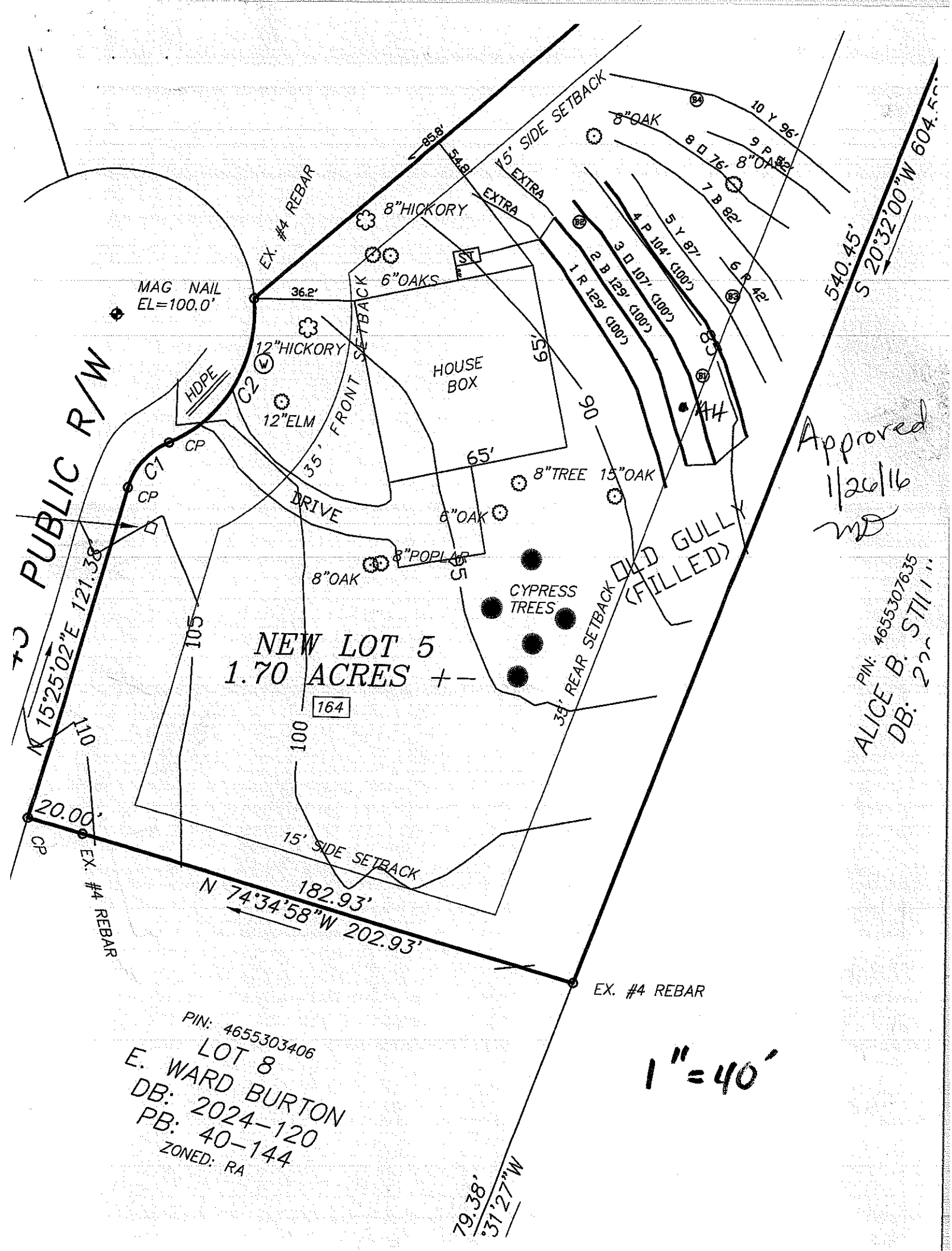
SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: Desiree Willoughby APPLICANT:
ADDRESS: APPLICATION DATE: DATE EVALUATED: 1/20/16
PROPOSED FACILITY: PROPOSED DESIGN FLOW (.1949): PROPERTY SIZE:
LOCATION OF SITE: Davidson Creek #5 PROPERTY RECORDED:
WATER SUPPLY: ☒ Private ☐ Public ☐ Well ☐ Spring ☐ Other
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	.1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
1	L 9-10%	0-3"	Fill						PS .3
		3"-18"	Bd/Brw C lumSBK FR SS, SP, SExP						
		18"-42"	R CL wSBK FR, SS, SP, SExP			42"			
		42"-48"	L SAP rmassive FR SS, SP, SExP						
2									
3									
4									

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	PS	PS
System Type(s)	25% Red	25% Red
Site LTAR	.3	.3

OTHER FACTORS (.1946):
SITE CLASSIFICATION (.1948): PS
EVALUATED BY: Mona Dotson
OTHER(S) PRESENT:


PUBLIC R/W
MAG NAIL
EL=100.0'
EX. #4 REBAR
85.8'
54.8'
5' SIDE SETBACK
EXTRA
EXTRA
8"HICKORY
6"OAKS
36.2'
12"HICKORY
12"ELM
HDPE
C2
C1
CP
CP
35' FRONT SETBACK
HOUSE
BOX
65'
65'
90
65'
DRIVE
8"TREE
15"OAK
6"OAK
8"POPLAR
8"OAK
CYPRESS
TREES
OLD GULLY
(FILLED)
38' REAR SETBACK
NEW LOT 5
1.70 ACRES +-
164
105
100
110
N 15°25'02"E 121.38'
20.00'
CP
EX. #4 REBAR
15' SIDE SETBACK
N 74°34'58"W 202.93'
182.93'
EX. #4 REBAR
79.38'
S 31°27"W
S 20°32'00"W 604.55'
540.45'
8"OAK
10 Y 96'
9 P 82'
8 B 76'
8"OAK
7 B 82'
5 Y 87'
4 P 104' (100')
3 B 107' (100')
2 B 129' (100')
1 R 129' (100')
6 R 42'
B4
B3
B2
B1
44
Approved
1/26/16
PIN: 4655307635
ALICE B. STILL
DB: 22
PIN: 4655303406
LOT 8
E. WARD BURTON
DB: 2024-120
PB: 40-144
ZONED: RA
1"=40'