ROLLANS *Soil & Environmental Services, Inc.*

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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 #57 Autumn Grove Subdivision, Iredell County, North Carolina.

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November 5, 2007
Project #: 01-1043
Design By: Rollans Soil and Environmental Services

.25 OK

PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT

Owner:	E & J Development
Address:	227 Hideaway Lane Mooresville, NC 28117
Phone:	704-201-6465
County:	Iredell
Location:	Autumn Grove LOT 57
Source of Wastewater Flow:	4 Bedroom Single Family Residence
Estimated Gallons Per Day Flow:	480
System Flow:	35.55

Design Specifications

Drainfield Size:	500
Loading Rate (gpd/ft.^{2}):	0.25
Depth of Gravel in Trench:	NA (25% reduction)
Gravel Size:	NA (25% reduction)
Trench Depth:	18 in.
Trench Width:	36 in.
Septic Tank Size:	1000
Pump Tank Size:	1000
Estimated Supply Line Length:	188
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	32.71
Dosing Volume:	244.88
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:	4.46
Elevation Head:	23.70
Total Dynamic Head:	34.68
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.

Autumn Grove LOT 57
PRESSURE MANIFOLD DESIGN

DESIGN FLOW (gpd):	480
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.25
TOTAL AREA TRENCH BOTTOM:	1500
TOTAL LATERAL LENGTH:	500
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	480
SUPPLY LINE LENGTH:	188
TOTAL DYNAMIC HEAD:	34.68
MANIFOLD SIZE:	4 in.SCH 80 PVC
DOSING VOLUME:	244.88
PUMP TANK DRAW DOWN*:	11.7
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.*

Autumn Grove LOT 57

Project #: 01-1043

LAYOUT FOR 4 BEDROOM HOME

November 5, 2007

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		1.5			100.00		
INSTR. 1			101.50				
HOUSE				14.40	87.10		
TANK				25.60	75.90		
1	PINK			2.50	99.00	117	117
2	BLUE			3.50	98.00	116	116
3	ORANGE			4.50	97.00	116	116
4	RED			5.40	96.10	117	117
5	PINK			6.00	95.50	117	117
6	***BLUE***			***6.90***	***94.60***	***118***	***100***
7	***ORANGE***			***8.00***	***93.50***	***120***	***100***
8	***RED***			***9.10***	***92.40***	***121***	***100***
9	***PINK***			***10.20***	***91.30***	***119***	***100***
10	***BLUE***			***10.80***	***90.70***	***118***	***100***
					Total	**1179**	**1083**

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
**** System***	***500***	***0.25***	***ACCEPT.***	***0.25***	***25% RED.***	**PRESSURE MANIFOLD**
Repair	583	0.25	ACCEPT.	0.25	25% RED.	PRESSURE MANIFOLD

Notes:

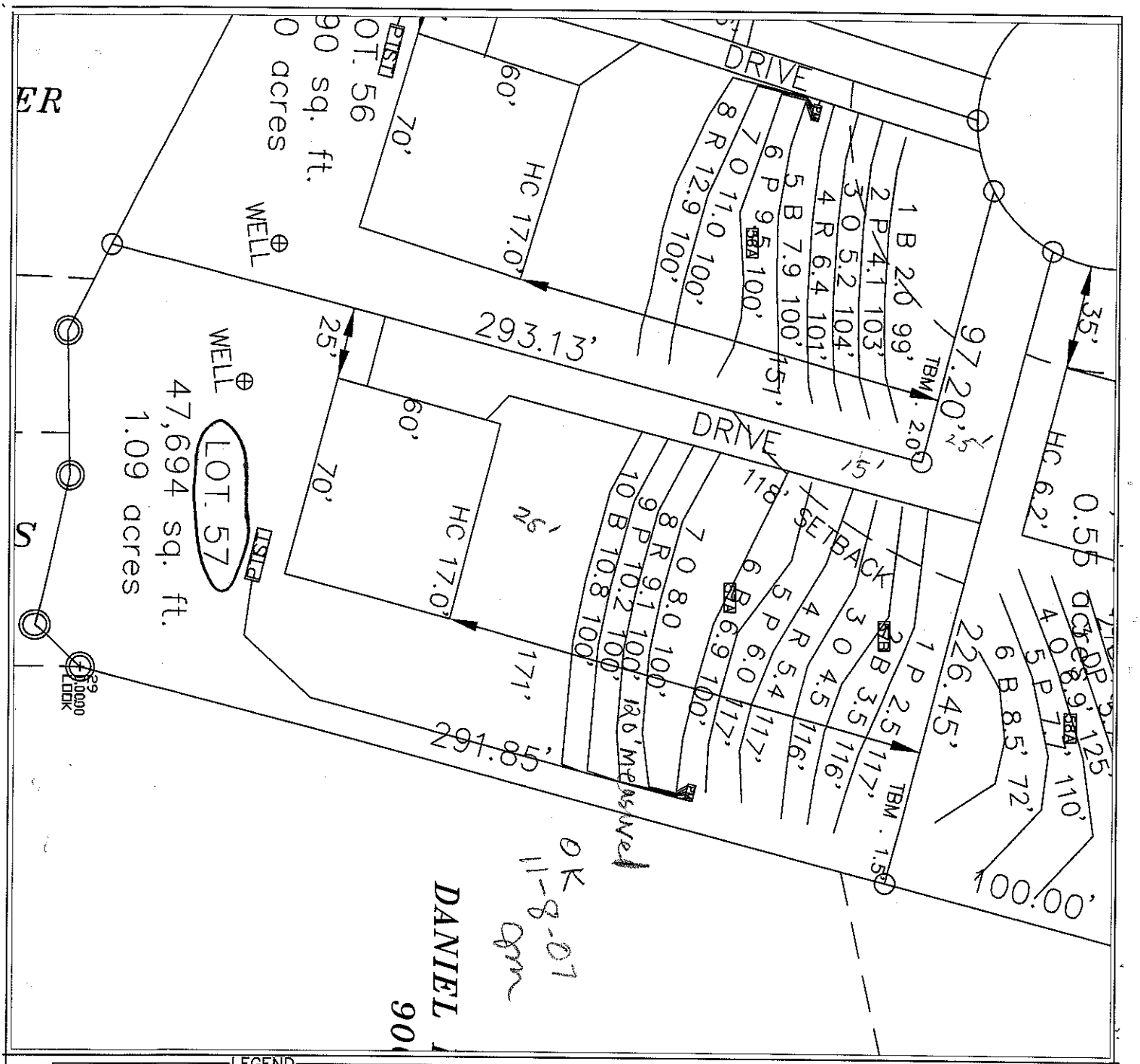
** TBM located on lot corner. (see site plan)
**TBM is assumed to be 100'
**All measures in feet
**Nitrification lines are demonstrated on contour via colored pin flags
**BS, HI, and FS indicate rod readings

PRESSURE MANIFOLD TAPSHEET - Autumn Grove LOT#57

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	Trench Area
6	***BLUE***	94.6	***100***	SCH 40 1/2	**7.11**	300
7	***ORANGE***	93.5	***100***	SCH 40 1/2	**7.11**	300
8	***RED***	92.4	***100***	SCH 40 1/2	**7.11**	300
9	***PINK***	91.3	***100***	SCH 40 1/2	**7.11**	300
10	***BLUE***	90.7	***100***	SCH 40 1/2	**7.11**	300

total	**feet =**	**500**	**gal/min =**	**35.55**
		Des. Flow	**480**	
		Pump Run=	**6.89**	
		soil LTAR	**0.25**	
		LTAR +5%	**0.2625**	
		LTAR with ACCEPTED	**0.275625**	
		LTAR with ACCEPTED + 5%	**0.28940625**	



LEGEND

House Box.

System lines.

Repair lines.

GRAPHIC SCALE
1" = 50'

50 0 50 100

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

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470 NORTH BROAD STREET SUITE D
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ASHLEY ROLLANS, NC LICENSED SOIL SCIENTIST
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EMAIL: ROLLANS@WINDSTREAM.NET

MAP TITLE: SITE PLAN & DRAINFIELD AREAS

PROJECT NAME: E&J DEVELOPMENT/AUTUMN GROVE SUBDIVISION

LOCATION/DATE: HWY 21/115 IREDELL COUNTY, NORTH CAROLINA AUGUST 2007

JOB # : 01-1043
FILE: C:\JOBS\01-1043
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 Autumn Grove

Project Number 01-1043

Lot No: Lot 57

No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.25	$^{gpd/ft^2}$
25% RED.? (YES OR NO)	YES	
Supply Line Length	188	ft.
Supply Line Volume	32.712	gal.
Required Feet of Line	480	ft.
Amount of Line from Layout	500	ft.
Gallons per Minute	35.55	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Lateral Line Volume	326.5	gal.
Dosing Volume	244.88	gal.

Note: Dosing Volume based on75% of lateral line volume

Tank Draw Down	11.7	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	6.89	minutes
Elevation Head	23.7	ft.
Pressure Head	2	ft.
Friction Factor	2.37	ft./100 ft. *(From the interpolater.)*
Friction Head	4.46	ft.
Total Dynamic Head (+15%)	34.68	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)

Sheet ___ of ___

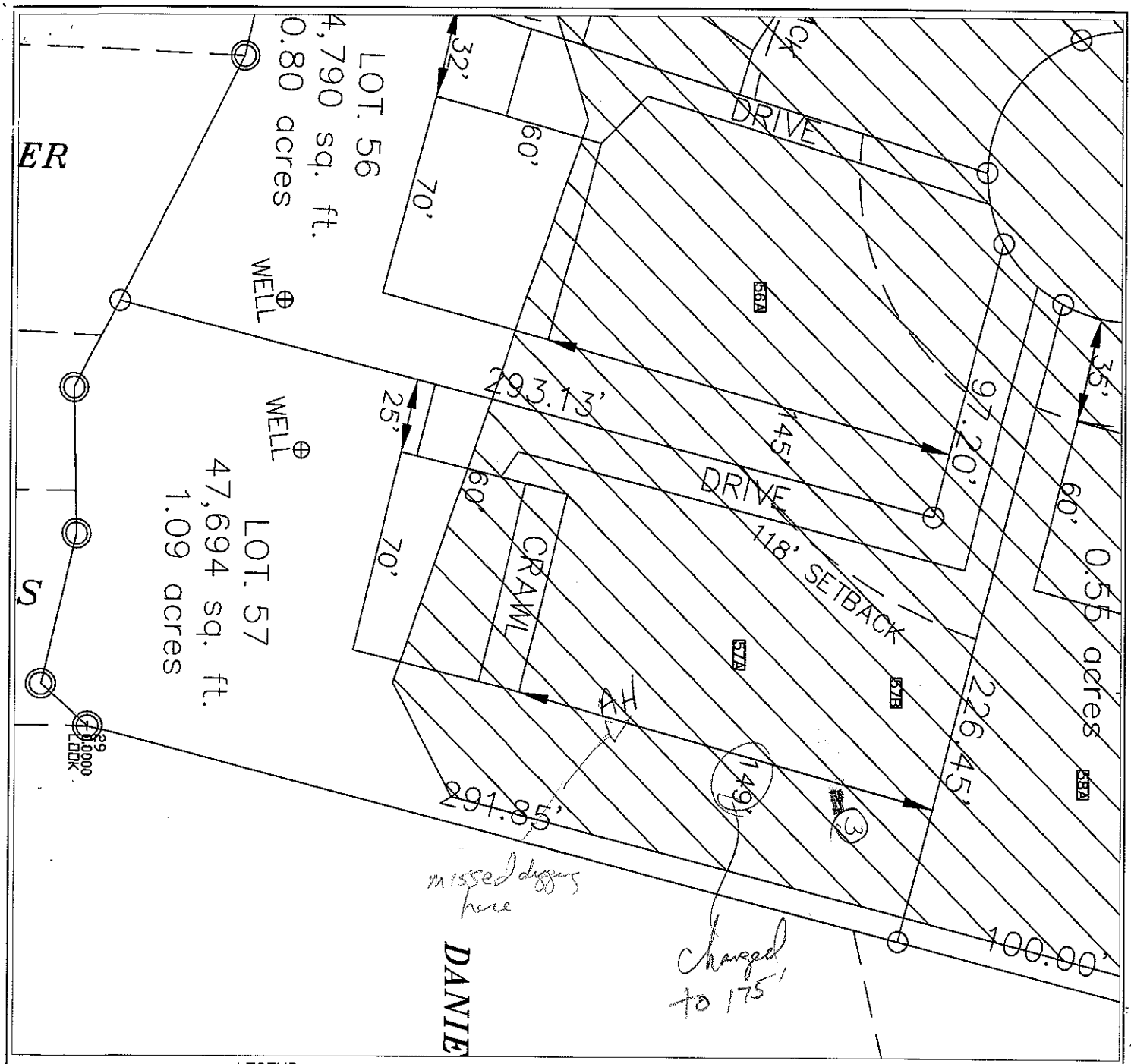
DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

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

10/26/15 PITS SHALLOW OPEN WET

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 57A	SS 0-5% 8%	0-12	BScl Gr	SS, SP, FR SEXP	Chr2@35" around root ch; common YB	63"	—	35"	PS
		12-26	RC MFABk/SBk	SS, SP, FR SEXP	Common YB from 20-26"				
		26-63	RC/SCVW/WFSBk	SS, SP, FR SEXP	Common YB to 55"; Chr2 around root channels @35" Mn from 44-55"				.25 to 35"
P 57B	SS 0-5%	0-13	BCL WFSBk	SS, SP, FR SEXP	Chr 2 from 36-40"	68"	—	36"	PS
		13-36	RB C MFABk	SS, SP, FR SEXP	Common YB				
		36-46	R C WFSBk/ABk	SS, SP, FR SEXP	Common Chr2 & YB				
		46-68	R CL WFSBk	SS, SP, FR SEXP	common Sap				.25
(3)	10-10-07	0-7	wk gr brn SL	fr NSNP					
		7-20	mSBk red C	fr SSP SEXP					
		20-37	wkSBk red C	fr-fi SSSP	few yel brn mottles				.25-.3
		37-55	wkSBk CL	fr to SSSP fw-common fw-frequently mod	SAP red, few brn mottles				
NH 5-10%		0-12	BSCL GR	fri SSSPSmod					
		12-42	RC MFABk	fri SSSPSmod					
		42-48	RCL WSBk	fri SSSPSmod	—	48	—	—	.275

COMMENTS: _____



LEGEND

House Box.

System lines.

Repair lines.

GRAPHIC SCALE
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