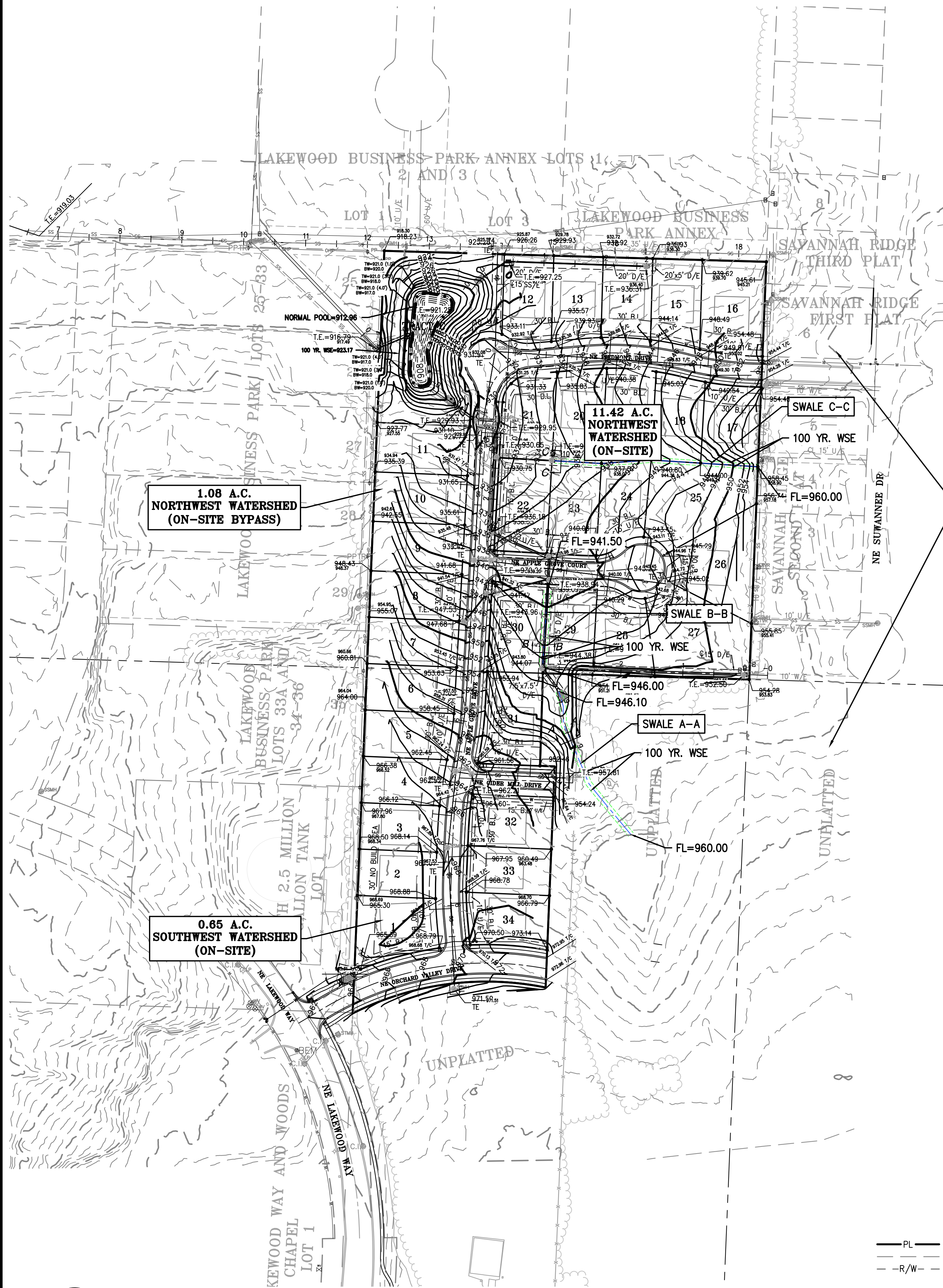


\\PHILIPS-SERVER\Projects\121142\Drawings\Storm\Master Drainage Plan.dwg Layout:1 Mar 05, 2024 - 9:18am JEANETTE OPAT



Know what's below.
Call before you dig.

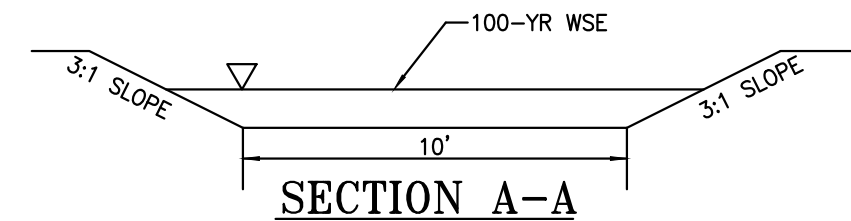
UTILITY NOTES:
VISUAL INDICATIONS OF UTILITIES ARE AS SHOWN.
UNDERGROUND LOCATIONS SHOWN, AS FURNISHED BY THEIR
LESSORS, ARE APPROXIMATE AND SHOULD BE VERIFIED IN
THE FIELD AT THE TIME OF CONSTRUCTION. FOR ACTUAL
FIELD LOCATIONS OF UNDERGROUND UTILITIES CALL 811.



— PL — PROPERTY LINE
— LOT LINE
— R/W — RIGHT-OF-WAY

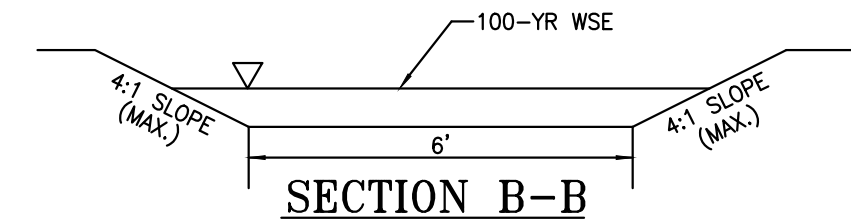
LEGEND

DRAINAGE BOUNDARY
FOR LOS VALUE RATING
CALCULATION



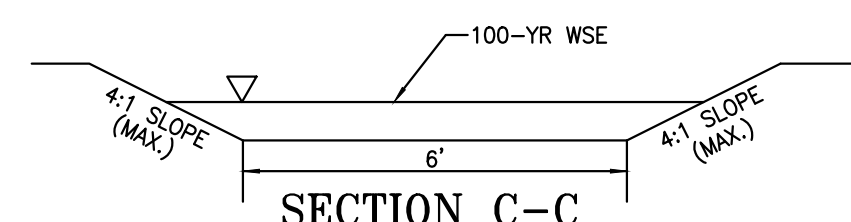
SECTION A-A

Q100 = 22.06 cfs
S = 1.88% min.
100 YR. DEPTH = 0.96'
V = 4.79 fps
V2/2G = 0.36'



SECTION B-B

Q100 = 81.9 cfs
Q10 = 46.3 cfs
DIFF = 35.6 cfs
S = 3.6% min.
100 YR. DEPTH = 0.62'
V = 6.77 fps
V2/2G = 0.71'



SECTION C-C

Q100 = 6.9 cfs
S = 4.0% min.
100 YR. DEPTH = 0.24'
V = 4.1 fps
V2/2G = 0.27'

NOTE:
SEE SHEET 25 FOR LIMITS OF TRM INSTALLATION WITHIN SWALES

Maximum Shear Stress Calculations

$$\tau_c = \gamma * d * s$$

Where:
 τ_c = Maximum Shear Stress
 γ = Density of Water $\left(\frac{62.4 \text{ Lb}}{\text{Ft}^3} \right)$
 d = Depth of Water (ft.)
 s = Channel Slope $\left(\frac{\text{Ft}}{\text{Ft}} \right)$

Swale A-A

$$\tau_c = 62.4 * 0.96 * .0188$$
$$\tau_c = 1.13 \text{ psf}$$

Conclusion: All disturbed areas within Swale A-A will be required to re-establish vegetation. The vegetation within Swale A-A is classified as Class "B" vegetation. This has a permissible shear stress of 2.1 psf. Therefore, the shear stress with the swale is permissible.

Swale B-B

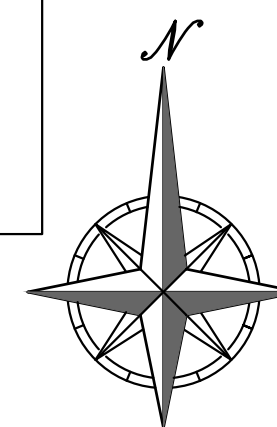
$$\tau_c = 62.4 * 0.39 * .036$$
$$\tau_c = 0.88 \text{ psf}$$

Conclusion: All disturbed areas within Swale B-B will be required to re-establish vegetation. The vegetation within Swale B-B is classified as Class "C" vegetation. This has a permissible shear stress of 1.0 psf. Therefore, the shear stress with the swale is permissible.

Swale C-C

$$\tau_c = 62.4 * 0.24 * .040$$
$$\tau_c = 0.60 \text{ psf}$$

Conclusion: All disturbed areas within Swale C-C will be required to re-establish vegetation. The vegetation within Swale C-C is classified as Class "C" vegetation. This has a permissible shear stress of 1.0 psf. Therefore, the shear stress with the swale is permissible.



SCALE: 1"=100'
0' 100' 200'

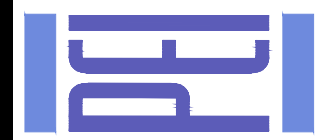
"AS-BUILT"

DATED: 11-13-23 BY: JTK



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Fax (913) 393-1165
www.philipsengineering.com

PLANNING
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MASTER DRAINAGE PLAN
ORCHARD WOODS
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

PROJECT NO.	211142	No.	Date	By	App.
DATE: 10-21-2022	DRAWN: BAG	1.	2-27-23	JMO	DEU
CHECKED: DEU	APPROVED: DEU	2.	4-24-23	JMO	DEU
CORPORATE OF AUTHORIZATION		3.	6-15-23	BJG	DEU
LAND SURVEYING - LS-82		4.	7-20-23	MRH	DEU
ENGINEERING - E-361		5.	10-11-23	KAD	DEU
CERTIFICATE OF AUTHORIZATION					
LAND SURVEYING - 2007001028					
ENGINEERING - 2007000038					

SHEET

20