

\\PHILIPS-SERVER\Projects\211142\Drawings\Storm\Master Drainage Plan.dwg Layout:1 Mar 07, 2024 - 10:01am JEANETTE UPAT

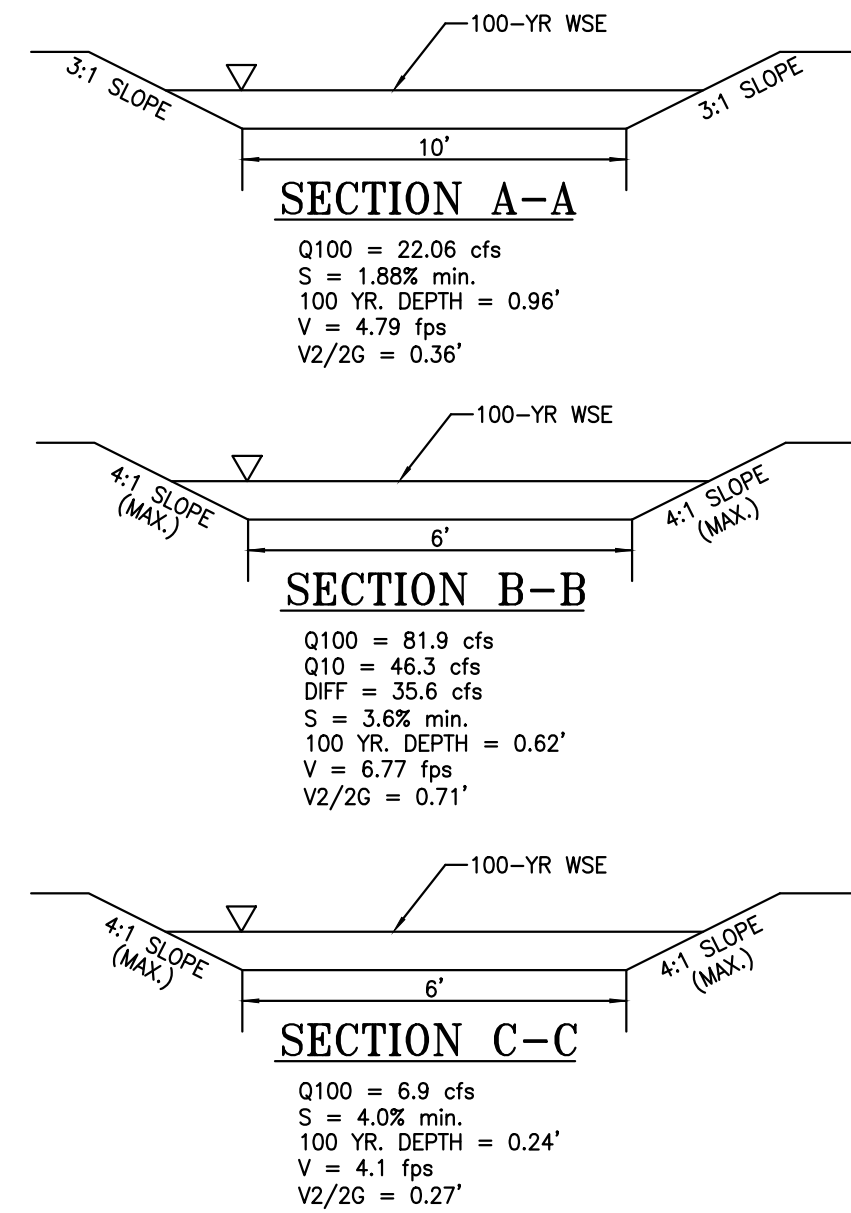


Know what's below.
Call before you dig.

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.



LEGEND
— PL — PROPERTY LINE
— LOT LINE
— R/W — RIGHT-OF-WAY
— DRAINAGE BOUNDARY FOR LOS VALUE RATING CALCULATION



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

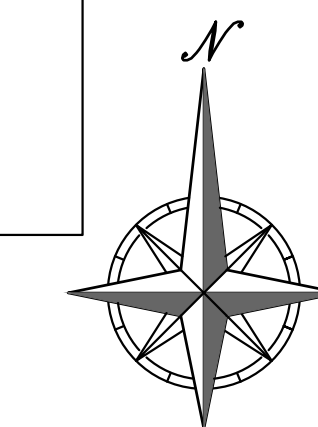
$$\tau_c = 62.4 * 0.39 * .036$$
$$\tau_c = 0.88 \text{ psf}$$

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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PLANNING
ENGINEERING
IMPLEMENTATION



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	BAG	DEU
LAND SURVEYING - LS-82		4.	7-20-23	MRH	DEU
ENGINEERING - E-361		5.	10-11-23	KAD	DEU
CORPORATE OF AUTHORIZATION					
LAND SURVEYING - LS-82					
ENGINEERING - E-361					

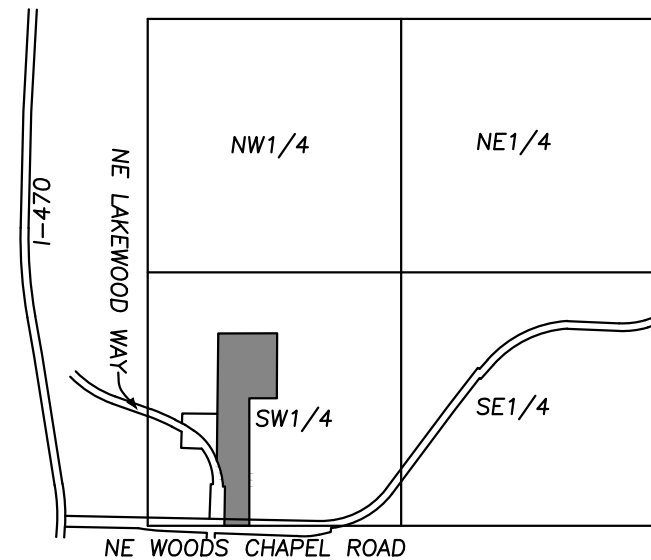
SHEET

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\\PHILIPS-SERVER\Projects\121142\Drawings\STORM Master Drainage Planning Layout2.dwg 10/26/2024 9:19am JEANETTE CPAI



Know what's below.
Call before you dig.



VICINITY MAP
SEC. 9-48-31

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.

NOTE:

LOTS 11, 12, 17-25 & 27-30 HAVE BEEN IDENTIFIED AS LOTS REQUIRING AS-GRADED PLOT PLANS. THESE LOTS HAVE BEEN DISTINGUISHED WITH "AGPP" ON THE PLAN. AS-GRADED PLOT PLANS ARE REQUIRED DUE TO EITHER SPECIFIC GRADING THAT PART OF THE OVERALL STORMWATER DESIGN OR THE LOT'S PROXIMITY TO ENGINEERED SWALES, DRAINAGE WAYS, DETENTION BASINS, OR DRAINAGE BERMS.

OIL-GAS WELLS:

MISSOURI DEPARTMENT OF NATURAL RESOURCES, MISSOURI GEOLOGICAL SURVEY, GEOSTRAT WEBSITE INDICATES THERE ARE TWO WELLS DRILLED ON THIS PROPERTY. ID #095-00155 IS SHOWN AS A DRY HOLE, DATED 10/27/1938. ID# 0005120 IS SHOWN AS AN EXPLORATORY HOLE, DATED 10/28/1938. PHELPS ENGINEERING HAS MADE A FIELD INVESTIGATION AND FOUND NO VISIBLE EVIDENCE OF THESE WELLS ON THE PROPERTY, AS OF THIS DATE.

FLOOD NOTE:

THIS PROPERTY LIES WITHIN ZONE X, DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON THE FLOOD INSURANCE RATE MAP PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY FOR THE CITY OF LEE'S SUMMIT, COMMUNITY NO. 290174, JACKSON COUNTY, MISSOURI, PANEL NO. 29095C0430G, AND DATED JANUARY 20, 2017.



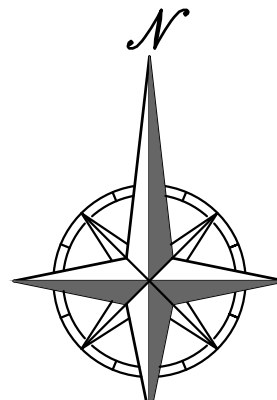
NOTE:
SEE SHEET 25 FOR LIMITS OF TRM INSTALLATION WITHIN SWALES

Orchard Woods Lot Type Table

Lot #	Lot Type	MBOE
1	A/G	972.0
2	A/G	967.9
3	A/G	967.1
4	A/G	965.1
5	A/G	961.5
6	A/G	957.5
7	A/G	952.6
8	A/G	946.7
9	A/G	940.7
10	A/G	934.6
11	A/G	930.7
12	D/L	925.2
13	W/O	925.6
14	W/O	929.9
15	W/O	934.1
16	W/O	938.5
17	A/G	954.8
18	A/G	953.5
19	A/G	948.5
20	A/G	944.0
21	A/G	939.4
22	W/O	937.1
23	D/L	939.3
24	A/G	942.3
25	A/G	947.8
26	A/G	944.3
27	A/G	944.0
28	A/G	942.0
29	A/G	944.0
30	A/G	940.0
31	W/O	952.1
32	W/O	958.0
33	D/L	962.8
34	A/G	969.5

LEGEND

— PL — PROPERTY LINE
— LOT LINE
— R/W — RIGHT-OF-WAY
— 920 — EXISTING CONTOURS
— 918 — EXISTING CONTOURS
— 920 — PROPOSED CONTOURS
— 918 — PROPOSED CONTOURS
A/G — AT GRADE
D/L — DAYLIGHT
W/O — WALKOUT



SCALE: 1"=60'
0' 60' 120'



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

PROJECT NO.	211142	DATE	2-27-23	REVISIONS	By	App.
CHECKED	DEU	APPROVED	DEU	1.	2-27-23	REVISOR PER CITY COMMENTS
CHECKED	DEU	APPROVED	DEU	2.	4-24-23	REVISOR PER CITY COMMENTS
CHECKED	DEU	APPROVED	DEU	3.	6-15-23	REVISOR PER CITY COMMENTS
CHECKED	DEU	APPROVED	DEU	4.	7-20-23	REVISOR PER CITY COMMENTS
CHECKED	DEU	APPROVED	DEU	5.	10-11-23	REVISOR PER CITY COMMENTS

SHEET

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