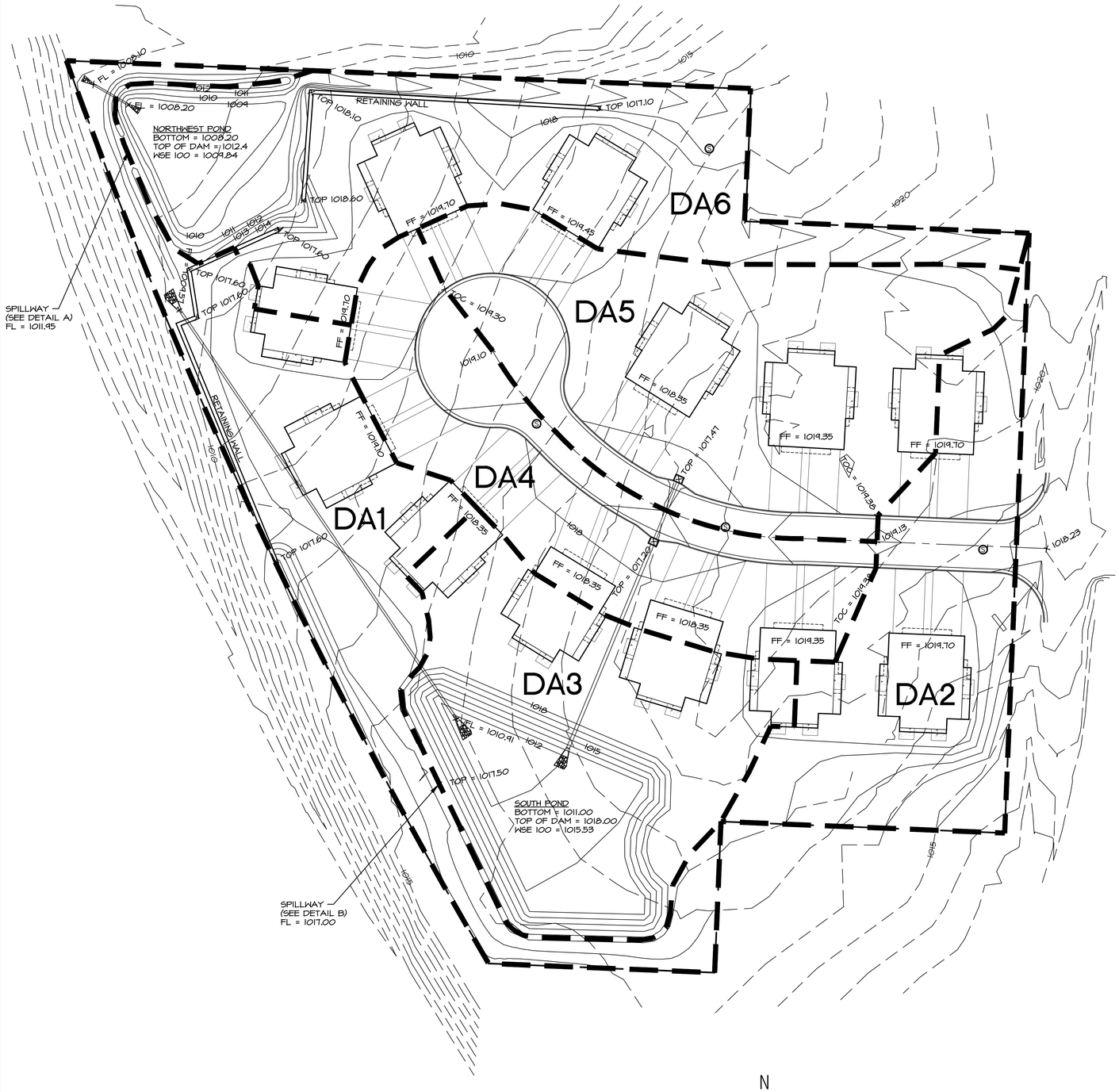

POND PLAN

SCALE: 1" = 30'-0"

N

AREA DESC.	AREA FT^2	AREA AC	DRAIN TO	TOTAL AREA FT^2	TOTAL AREA AC
DA1	27,302	0.627	UNCAPTURED	27,302	0.627
DA2	22,454	0.516	UNCAPTURED	22,454	0.516
DA3	27,876	0.640	SOUTH POND	82,407	1.892
DA4	21,263	0.488	SOUTH POND		
DA5	33,268	0.764	SOUTH POND		
DA6	32,601	0.748	NORTHWEST POND	32,601	0.748

Pond Design Calculations

Northwest Pond

Runoff Calculations
- A = 0.748 Acres
- Tc = 12.71 min.
- CN = 90

- Q2 = 1.21 cfs
- Q10 = 1.67
- Q100 = 2.96

Stage Storage:

- 100-yr WSE = 1009.84'

Emergency Spillway Design:

- Weir Length = 80 ft
- Weir Elevation = 1011.95'
- Side Slope = 3:1
- Flow Depth = 0.10 ft

Spillway Erosion Protection (APWA 5605.5, E.1):

- Flow Area = 8.03 ft^2
- Flow WP = 80.6 ft
- R = 0.10 ft
- S = 0.22 ft/ft
- Y = 62.4 x 0.10 x 0.22 = 1.37 psf

Spillway to be lined with well maintained turf grass.
No additional erosion protection required.

Pond Design Calculations

South Pond

Runoff Calculations
- A = 1.892 Acres
- Tc = 9.761 min.
- CN = 90

- Q2 = 5.541 cfs
- Q10 = 7.64
- Q100 = 13.49

Stage Storage:

- 100-yr WSE = 1015.53'

Emergency Spillway Design:

- Weir Length = 50 ft
- Weir Elevation = 1017.50'
- Side Slope = 3:1
- Flow Depth = 0.20 ft

Spillway Erosion Protection (APWA 5605.5, E.1):

- Flow Area = 10.04 ft^2
- Flow WP = 50.57 ft
- R = 0.199 ft
- S = 0.065 ft/ft
- Y = 62.4 x 0.199 x 0.065 = 0.805 psf

Spillway to be lined with well maintained turf grass.
No additional erosion protection required.

NW Pond 100-yr Spillway Performance (100% Clogged)

Trapezoidal Weir
Crest = Broad
Bottom Length (ft) = 80
Total Depth (ft) = 0.45

Calculations
Weir Coeff. Cw = 3.09
Compute By - Known Q
Known Q (cfs) = 2.96

Highlighted
Depth (ft) = 0.10
Q (cfs) = 2.96
Area (sq ft) = 8.03
Velocity (fps) = 0.37
Top Width (ft) = 80.6
Energy (ft) = 0.11

S Pond 100-yr Spillway Performance (100% Clogged)

Trapezoidal Weir
Crest = Broad
Bottom Length (ft) = 50
Total Depth (ft) = 0.50

Calculations
Weir Coeff. Cw = 3.09
Compute By - Known Q
Known Q (cfs) = 13.49

Highlighted
Depth (ft) = 0.20
Q (cfs) = 13.49
Area (sq ft) = 10.04
Velocity (fps) = 1.35
Top Width (ft) = 50.4
Energy (ft) = 0.22

REFERENCE PLANS PREPARED BY RENAISSANCE INFRASTRUCTURE CONSULTING DATED 6/11/20 FOR ADDITIONAL INFORMATION. SPECIFICALLY REFERENCE SHEET C09 - POND PLAN FOR ORIGINAL LAYOUT.

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LEE'S SUMMIT, MO

STATE OF MISSOURI
ALBERT P. HERMANS
NUMBER E-23306
REGISTERED PROFESSIONAL ENGINEER
5/19/23

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Consulting Structural and Civil Engineers
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DATE:	3/15/23
REVISION	
1	5/18/23
2	
3	
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C09