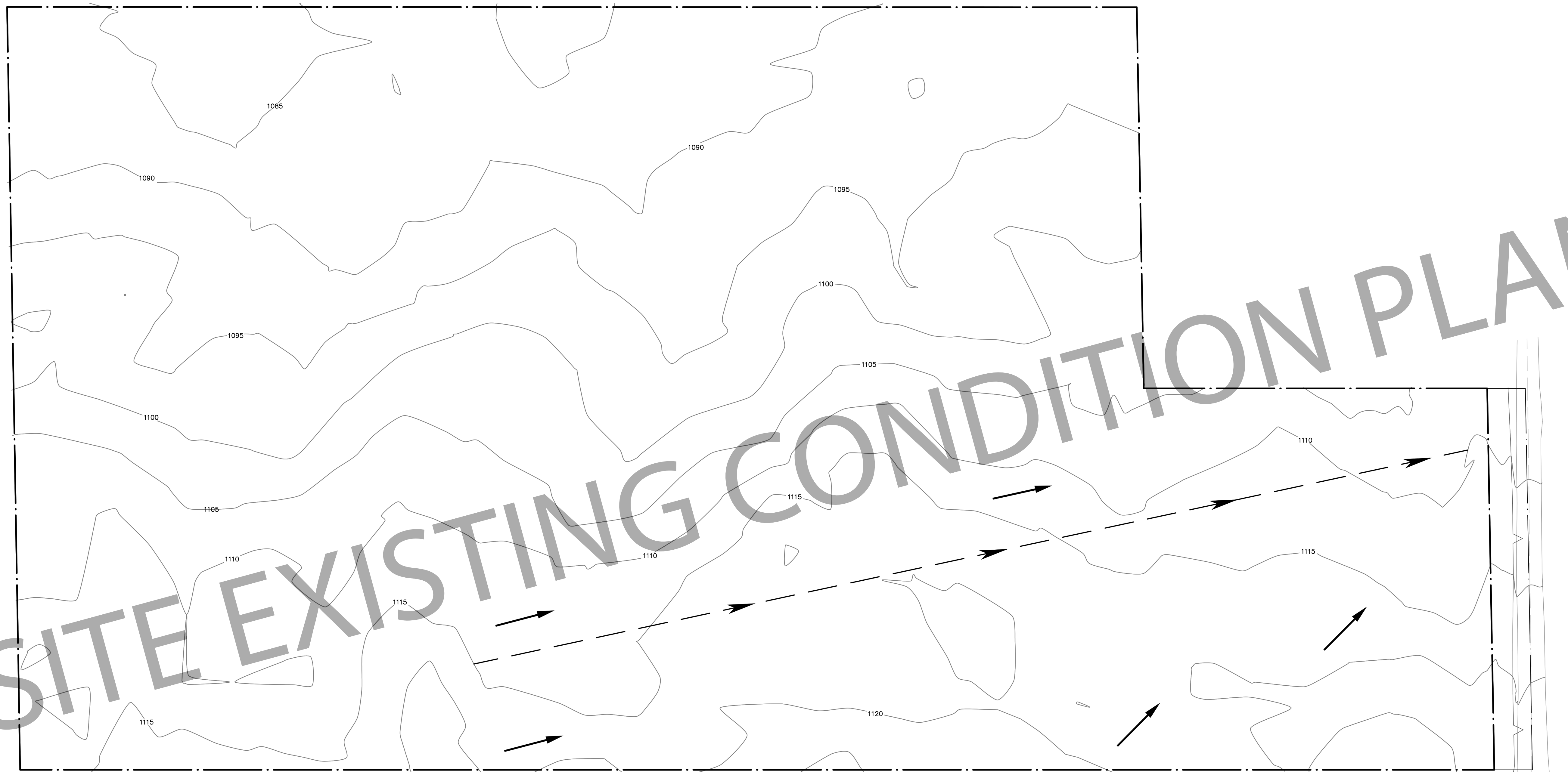




Drainage Area 'E1' - Existing Conditions Peak Runoff Calculations

The Intensity, Duration, Frequency Factors are based on NOAA Atlas 14

Time of Concentration Calculations

$$T_{C1} = \text{Sheet flow time}$$

$$T_{c1} = \frac{0.007 (n_{ol} L_{sh})^{0.8}}{(P)^{0.5} (S_{sh})^{0.4}}$$

n_{ol}	=	0.15	Roughness Coefficient
L_{sh}	=	100	Sheet flow length (ft.)
P	=	2.32	2-Yr, 24 hr, ATLAS-14 Rainfall depth (in.)
S_{sh}	=	0.04	Sheet flow slope (ft/ft)
T_{cl}	=	0.145	hour
T_{cl}	=	8.72	minutes

$$T_{C2} = \text{Shallow Concentrated Flow Time}$$

$$T_{c2} = \frac{D_f}{60V}$$

D _f	=	920	Flow Distance (ft)
S	=	0.04	Shallow concentrated slope (ft/ft)
V	=	3.23	Shallow concentrated flow velocity (ft/s) (unpaved)
T _α	=	4.75	minutes

$$\begin{aligned} T_c &= T_{c1} + T_{c2} = 13.47 \text{ minutes} \\ T_{c \text{ used}} &= 13.47 \text{ minutes} \end{aligned}$$

Peak Runoff Calculations

T _C	=	13.47	minutes
A	=	17.06	acre
C _w	=	0.35	
Q	=	C x I x A	

2-Yr IDF

I(2-Yr)	=	2.40	
Q(2-Yr)	=	14.33	cfs

10-Yr IDF

I(10-Yr)	=	3.58	
Q(10-Yr)	=	21.38	cfs

100-Yr IDF

I(100-Yr)	=	5.57	
Q(100-Yr)	=	33.26	cfs

Cw Calculations

Total Area	=	17.06	acre
Pervious Area	=	17.06	acre
Impervious Area	=	0	acre
C	=	0.9	(impervious)
Cw	=	0.35	(pervious)
Cw = Weighted Runoff Coefficient			
Cw	=	0.35	
Impervious Area %	=	0	

SITWORKS NOTES:

1. CONTRACTOR SHALL FIELD VERIFY LOCATION AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION OF PROPOSED FACILITIES. NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
2. CONTRACTOR SHALL NOTIFY THE APPROPRIATE UTILITY COMPANY 48 HOURS PRIOR TO EXCAVATING NEAR THEIR UTILITY.
3. CONTRACTOR SHALL TAKE ALL DUE PRECAUTIONS TO PROTECT EXISTING FACILITIES FROM DAMAGE. ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF CONSTRUCTION OPERATIONS WILL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
4. CONTRACTOR SHALL TAKE EXTRA CARE TO PROTECT TREES IN AREAS ADJACENT TO CONSTRUCTION.
5. CONTRACTOR SHALL CONFIRM NO CONFLICTS BETWEEN EXISTING AND PROPOSED DRY/WET UTILITIES IN PUBLIC R.O.W., BEFORE STARTING SITE WORK CONSTRUCTION.

LEGENDS



PROPERTY LINE

DIRECTION OF EXISTING FLOW

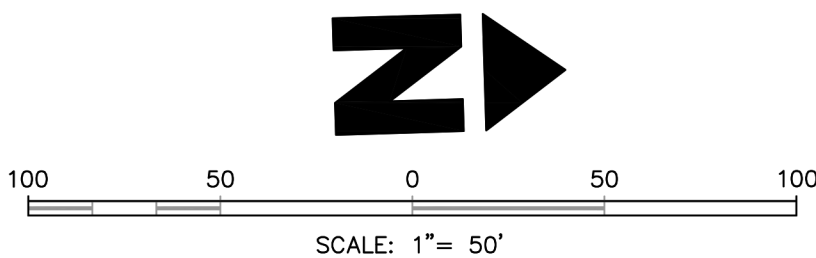
DESIGNATES EXISTING SITE CONTOURS

CONSTRUCTION NOTE:

CONTRACTOR SHALL CONFIRM NO CONFLICTS BETWEEN EXISTING AND PROPOSED DRY/WET UTILITIES IN PUBLIC R.O.W., BEFORE STARTING SITE WORK CONSTRUCTION.

CONTRACTOR SHALL HYDROMULCH ALL NEWLY GRADED AREAS AND EXPOSED SOILS UPON PAVING COMPLETION.

EXCESS SOIL MATERIAL IS THE RESPONSIBILITY OF THE CONTRACTOR & IS TO BE DISPOSED OFFSITE RESPONSIBLY AT NO SEPARATE PAY.



LAKES AND VILLAS LLC II

7661 INMAM RD SW,
FIFE LAKE, MI 49633

SITE EXISTING CONDITION PLAN

DESIGNED BY:

DWN BY:

CHK BY:

SHEET
REFERENCE:

C.01

Cw Calculations			
Total Area	=	17.06	acre
Pervious Area	=	12.14	acre
Impervious Area	=	4.92	acre
C	=	0.68	(impervious)
C	=	0.35	(pervious)
Cw = Weighted Runoff Coefficient			
Cw	=	0.45	
Percent Impervious = 29 %			

DETENTION SERVICE AREAS - PROPOSED CONDITION PEAK RUNOFF CALCULATIONS

The Intensity, Duration, Frequency Factors are based on NOAA Atlas 14

Time of Concentration Calculations				Peak Runoff Calculations			
T_{c1}	=	Sheet flow time over paved area		T_c	=	10	minutes
$T_{c1} = \frac{D_f}{60V}$				A	=	17.06	acre
D_f	=	155	Flow Distance (ft)	Cw	=	0.45	
S	=	0.05	Shallow concentrated slope (ft/ft)	Q	=	C x I x A	
V	=	4.55	Shallow concentrated flow velocity (ft/s)	2-Yr IDF			
T_{c2}	=	0.57	minutes	I(2-Yr)	=	2.40	
				Q(2-Yr)	=	18.23	cfs
				10-Yr IDF			
				I(10-Yr)	=	3.58	
				Q(10-Yr)	=	27.19	cfs
				100-Yr IDF			
T_c	=	0.57	minutes	I(100-Yr)	=	5.57	
T_c used	=	10	minutes	Q(100-Yr)	=	42.30	cfs

SITeworks NOTES:

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LEGENDS

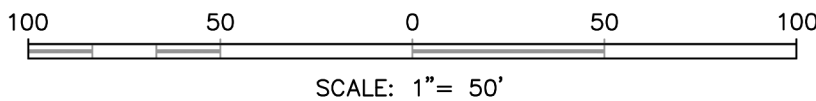
	PROPERTY LINE
	DIRECTION OF EXISTING FLOW
	DESIGNATES FINAL IMPERVIOUS AREA

CONSTRUCTION NOTE:

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LAKES AND VILLAS LLC II

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SITE PROPOSED
CONDITION PLAN

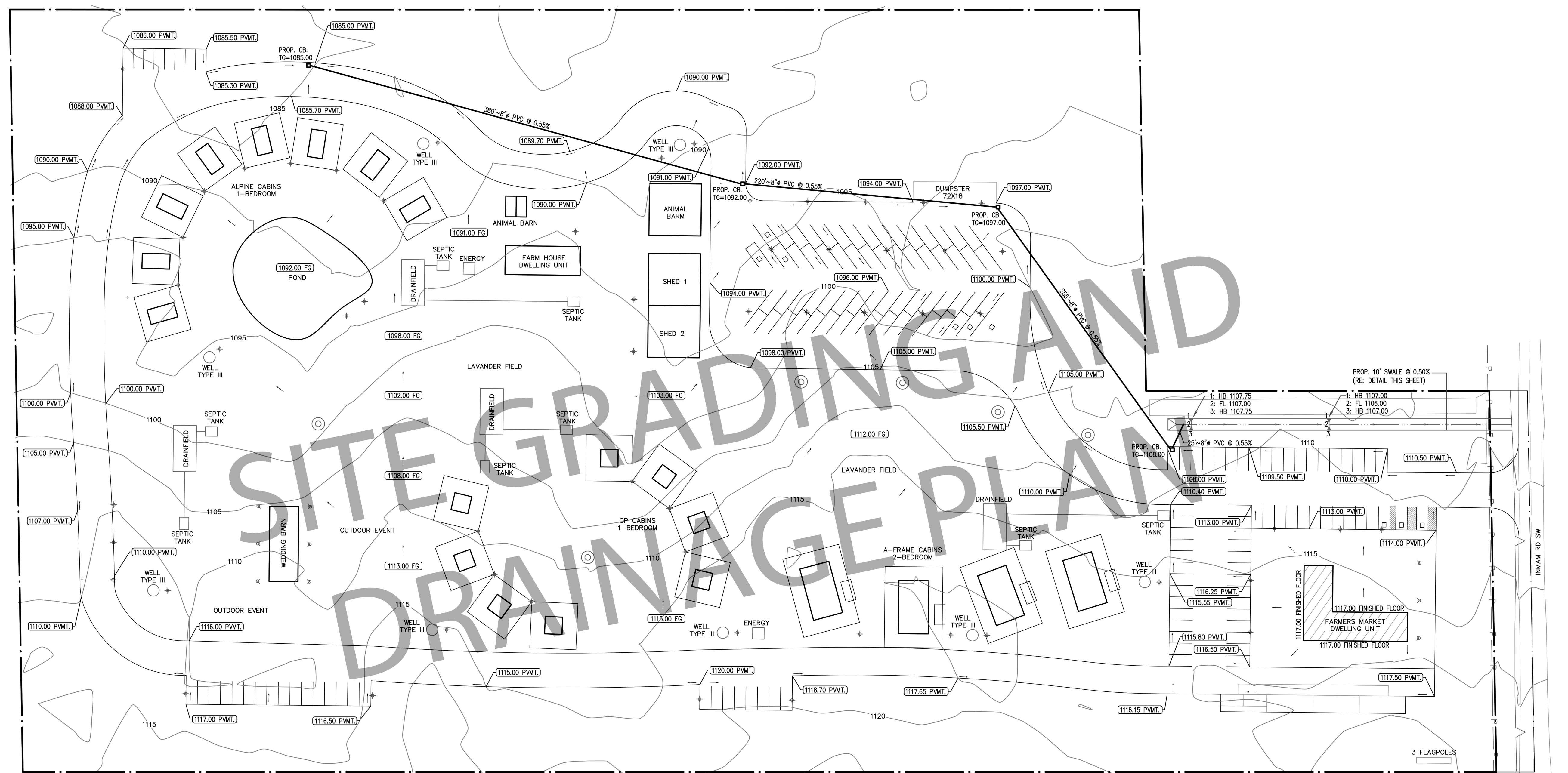
DESIGNED BY:

DWN BY:

CHK BY:

SHEET
REFERENCE:

C.02



7661 INMAM RD SW,
FIFE LAKE, MI 49633