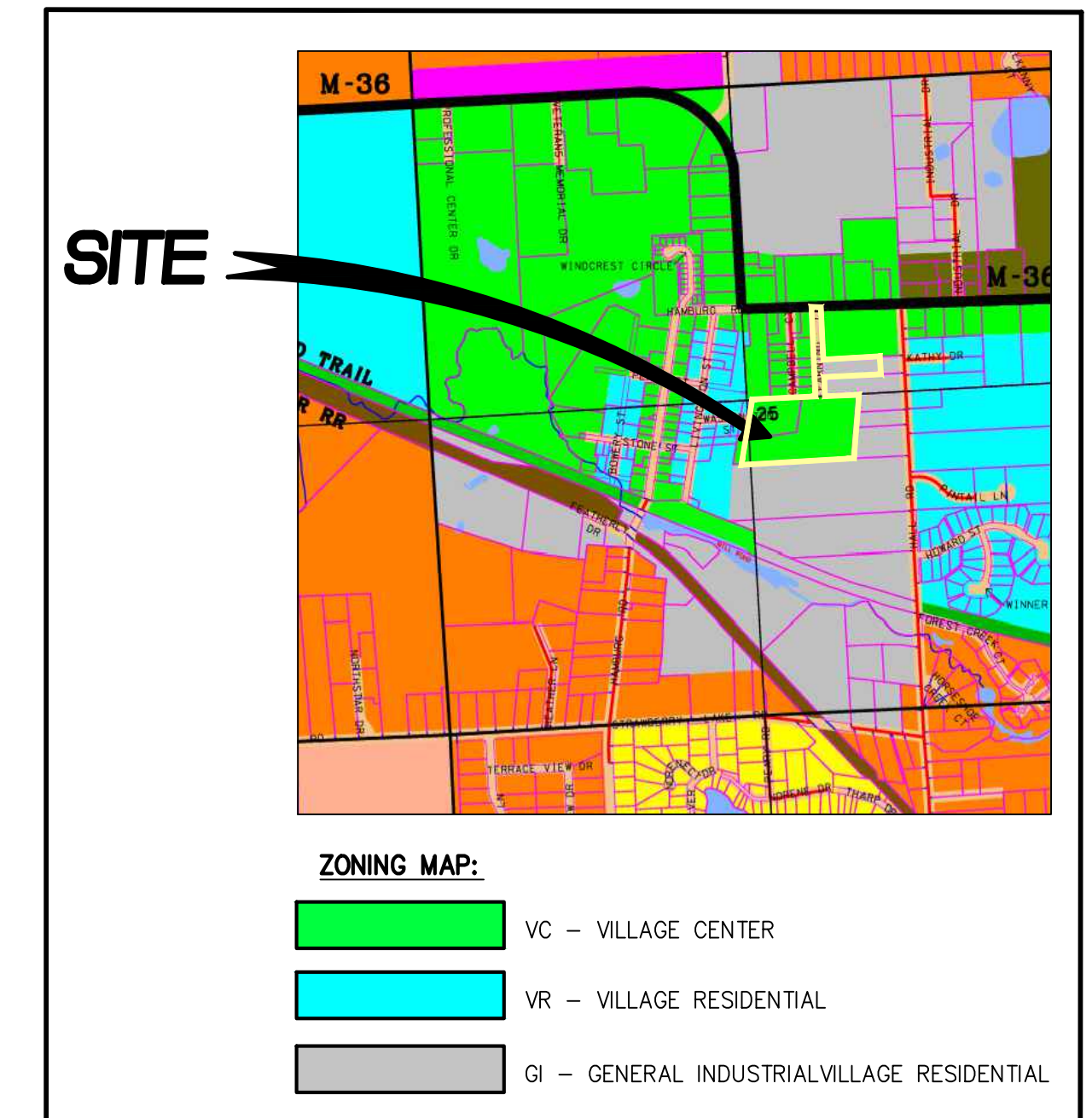
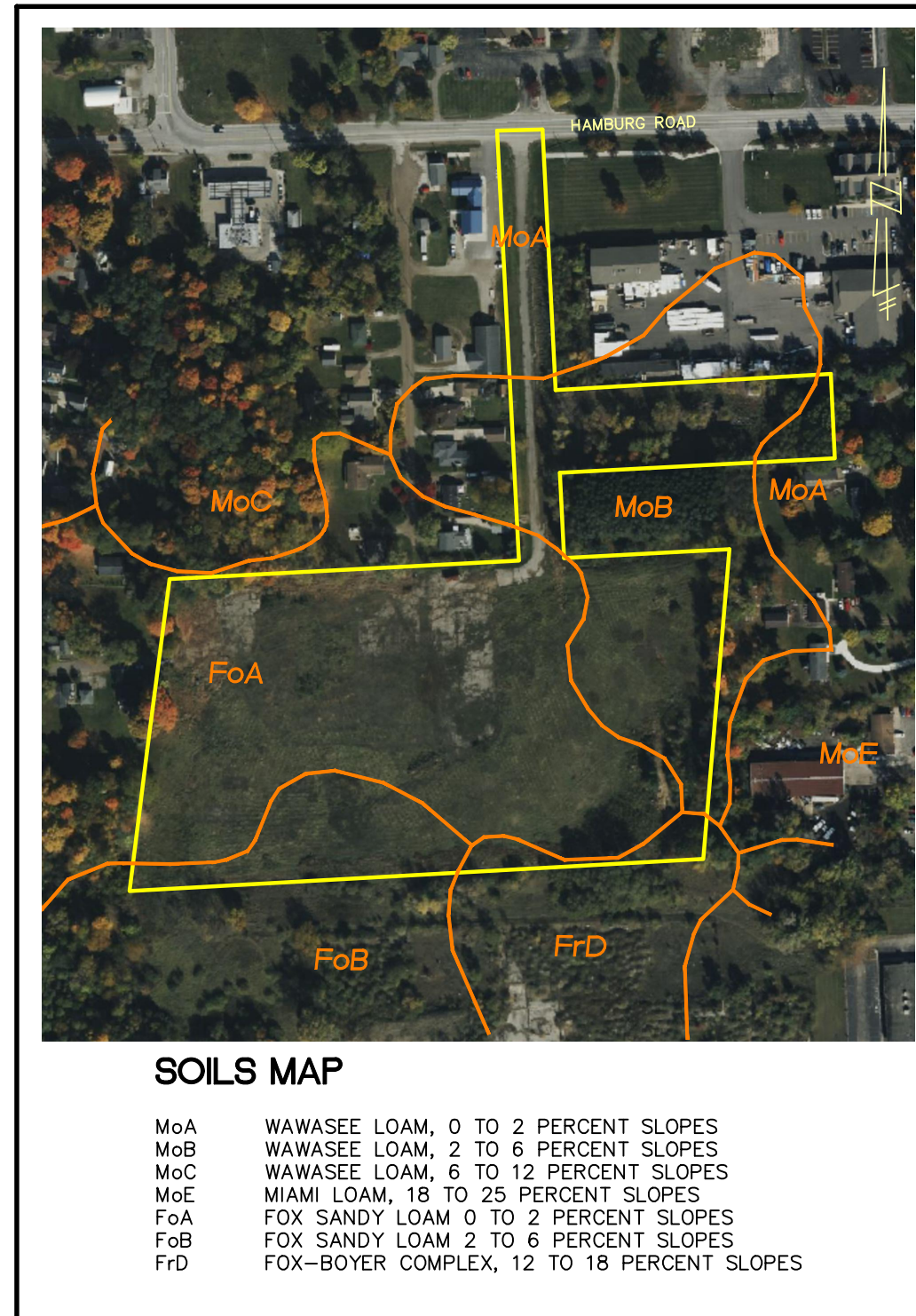


PRELIMINARY SITE PLANS FOR:
THE CROSSING AT LAKELANDS TRAIL

PART OF E. 1/2 OF SECTION 25, TOWN 1 NORTH, RANGE 5 EAST
 HAMBURG TWP., LIVINGSTON COUNTY, MICHIGAN

PREPARED FOR:
 ELEVATE LAND HOLDINGS - THE CROSSING
 128 N. CENTER STREET
 NORTHVILLE, MICHIGAN 48167
 248.344.1885



SHEET INDEX

ENGINEERING PLANS:

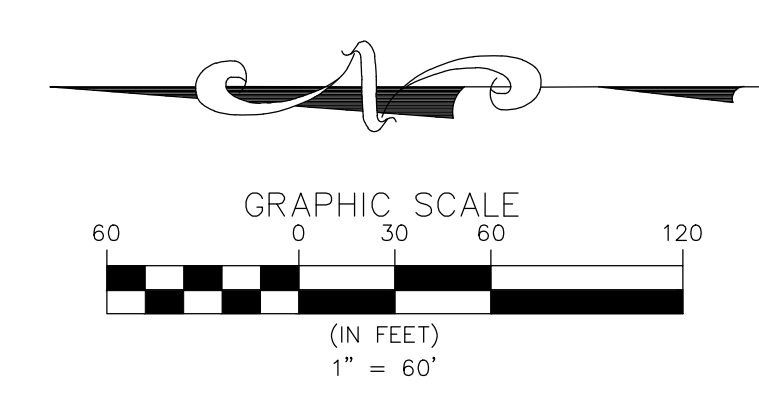
- COVER SHEET
- PREVIOUSLY APPROVED OPEN SPACE PLAN
- OVERALL PLAN AND OPEN SPACE PLAN
- UTILITIES PLAN
- GRADING PLAN
- GRADING PLAN
- GRADING PLAN
- STORM WATER MANAGEMENT PLAN

ARCHITECTURAL PLANS PREPARED BY:	LANDSCAPE PLANS PROVIDED BY:	TOPOGRAPHIC SURVEY PREPARED BY:
TK DESIGN & ASSOCIATES	ALLEN DESIGN	M. E. G. A.
26030 PONTIAC TRAIL	557 CARPENTER	298 VETERANS DRIVE
SOUTH LYON, MICHIGAN, 48178	NORTHVILLE, MICHIGAN 48167	FOWLerville, MICHIGAN, 48836
PHONE: 248.446.1960	PHONE: 248.467.4668	PHONE: 517.223.3512

SKL SEIBER KEAST LEHNER
 ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE 17001 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 586.412.7050	FARMINGTON HILLS OFFICE 39205 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3331
--	---

REVISIONS			ENGINEER'S SEAL
NO.	ITEM	DATE	
1.	PRE-APP SUBMITTAL	1-10-24	
DATE: 1-5-2024			DESIGNED BY: A.A. JOB NUMBER: 23-239
CHECKED BY: C.S.			DRAWING FILE: 1-23239-CV.dwg



PER PREVIOUSLY APPROVED PLANS
 PREPARED BY M.E.G.A. ENGINEERING
 DATED: 8-30-2022

OPEN SPACE REQUIRED:
 1,500 S.F./ UNIT=1,500 x 208
 312,000 S.F. (7.16 AC.) 44% OF SITE AREA (16.1 AC.)

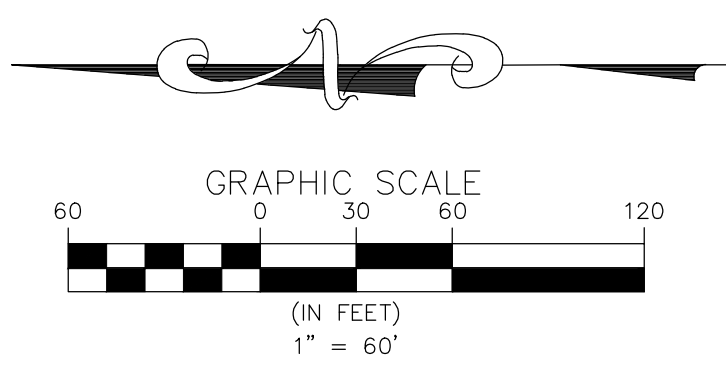
OPEN SPACE PROVIDED:
 262,684 S.F. (6.03 AC.) 37% OF SITE AREA (16.1 AC.)

3 WORKING DAYS
 BEFORE YOU DIG
 CALL MISS DIG
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 TOLL FREE FOR THE LOCATION
 OF UNDERGROUND FACILITIES

CLIENT INFO:
 ELEVATE LAND HOLDINGS-
 THE CROSSING
 128 N. CENTER STREET
 NORTHVILLE, MI 48167
 248.344.1885

PROJECT NAME:
 THE CROSSING AT
 LAKELANDS TRAIL
 PART OF E 1/2 OF SEC. 25, T.1N., R.5E.,
 HAMBURG TWP., LIVINGSTON COUNTY, MI

SHEET TITLE:
 PREVIOUSLY APPROVED
 SITE PLAN - OPEN SPACE



SITE DATA

EXISTING ZONING: COMMERCIAL PLANNED UNIT DEVELOPMENT (CPUD)
 SITE AREA = 15.478 ACRES
 MAX. DWELLING UNITS PER ACRE (VC): 10 DU/CCRE
 NO. OF BUILDING ON SITE: 16
 NO. OF UNITS PROPOSED: 208
 DWELLING UNITS PER ACRE (CPUD): 13.44 DU/CCRE (AMEND TO PUD AGREEMENT)

BUILDING SETBACKS:	REQUIRED	PREVIOUSLY APPROVED	PROPOSED
FRONT (FROM PAVEMENT):	20'	15'	19'
SIDE:	10'	15'	20'
REAR: TO PROPERTY LINE	25'	30'	30'
BUILDING TO BUILDING:	35'	N/A	N/A
BUILDING FRONT TO SIDE:	N/A	25'	N/A
BUILDING SIDE TO SIDE:	N/A	15'	20'
MAXIMUM BUILDING HEIGHT:	35'	35'	35'
MAXIMUM BUILDING STORIES:	2.5 STORIES	2 STORIES	3 STORIES
MINIMUM FLOOR AREA:			
1 BEDROOM	550 S.F.	875 S.F.	600 S.F.
2 BEDROOMS	650 S.F.	1100 S.F.	898 S.F.
3 BEDROOMS		N/A	936 S.F.
BUILDING COVERAGE:	35%	16%	13.3%
PAVED SURFACE PARKING AND ROADS CIRCULATION	40%	32%	26.7%
OPEN SPACE REQUIRED: 1,500 S.F. / UNIT=1,500 x 208 312,000 S.F. (7.16 AC.)	44%	37%	50.46%
OPEN SPACE PROVIDED:		6.03 AC.	7.81 AC.

PARKING:

REQUIRED: 312 (1.5 SPACE/UNIT)
 PROPOSED: 387 REGULAR PARKING SPACES
 17 GARAGE SPACES
 TOTAL PROPOSED: 404 SPACES (INCLUDING 10 B.F. SPACES)
 (1.94 SPACES/UNIT)

	PREVIOUSLY APPROVED PLANS	CURRENT PLANS
SITE AREA	16.1 AC.	15.478 AC.
NO. OF BUILDING ON SITE:	23	16
NO. OF UNITS PROPOSED:	208	208
DWELLING UNITS PER ACRE (CPUD):	12.91 DU/CCRE	13.44 DU/CCRE
BUILDING COVERAGE:	16%	13.3%
PAVED SURFACE PARKING AND ROADS CIRCULATION	32%	26.7%
OPEN SPACE:	37%	50.46%
PARKING PROVIDED:	406 SPACES (1.95 SPACES/UNIT)	404 SPACES (1.94 SPACES/UNIT)

PROPOSED LEGEND

- SANITARY SEWER
- WATER MAIN
- STORM SEWER
- DITCH/SWALE
- TREE PROTECTION FENCE
- SILT FENCE
- FLOODPLAIN
- WETLANDS
- CONTOUR
- CURB AND GUTTER
- SANITARY MANHOLE
- SANITARY CLEANOUT
- STORM MANHOLE
- YARD CATCH BASIN
- ROAD CATCH BASIN W/SILT SAC
- END SECTION
- FIRE HYDRANT
- GATE VALVE AND WELL
- PAVEMENT (ASPHALT)
- PAVEMENT (CONCRETE SIDEWALK)
- DIRECTION SURFACE WATER FLOW
- OVERFLOW ROUTE
- GRADE

REVISIONS

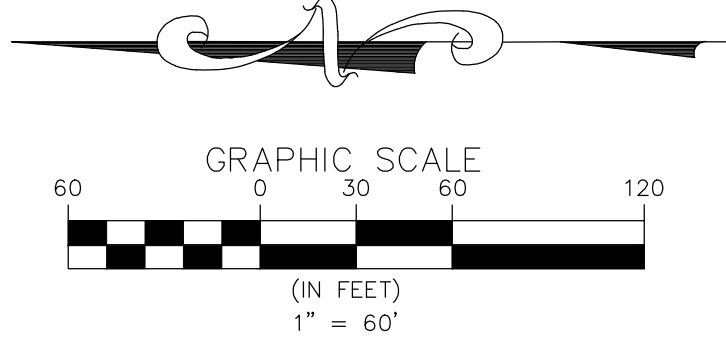
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 TOLL FREE FOR THE LOCATION OF UNDERGROUND UTILITIES

811

PROJECT NUMBER: 23-239
 PROJECT MANAGER: B. EMERINE
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 DATE: 1/10/24
 OFFICE: FARMINGTON HILLS

CLIENT INFO:
 ELEVATE LAND HOLDINGS- THE CROSSING
 128 N. CENTER STREET
 NORTHVILLE, MI 48167
 248.344.1885



PROPOSED LEGEND

	SANITARY SEWER
	WATER MAIN
	STORM SEWER
	DITCH/SWALE
	TREE PROTECTION FENCE
	FLOODPLAIN
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	GRADE

NO.	REVISIONS DESCRIPTION	DATE

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PROJECT NUMBER: 23-239
PROJECT MANAGER: B. EMERINE
DRAWN BY: B.D.
CHECKED BY: C.S.
DATE: 1/10/24
OFFICE: FARMINGTON HILLS

CLIENT INFO:
ELEVATE LAND HOLDINGS-
THE CROSSING AT
LAKELANDS TRAIL
128 N. CENTER STREET
NORTHVILLE, MI 48167
248.344.1885

PROJECT NAME:
THE CROSSING AT
LAKELANDS TRAIL
PART OF E. 1/2 OF SEC. 25, T.1N., R.5E.,
HAMBURG TWP., LIVINGSTON COUNTY, MI

SHEET TITLE:
UTILITIES PLAN

PAGE No.:
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PROPOSED LEGEND

	SANITARY SEWER
	WATER MAIN
	STORM SEWER
	DITCH/SWALE
	TREE PROTECTION FENCE
	SILT FENCE
	FLOODPLAIN
	WETLANDS
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	OVERFLOW ROUTE
	GRADE

(SEE SHEET 6)

PROJECT NAME:
THE CROSSING AT LAKELANDS TRAIL
PART OF E. 1/2 OF SEC. 25, T.1N., R.9E., HAMBURG TWP., LIVINGSTON COUNTY, MI

SHEET TITLE:
GRADING PLAN

PAGE No.:
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CLIENT INFO:
ELEVATE LAND HOLDINGS- THE CROSSING
128 N. CENTER STREET
NORTHVILLE, MI 48167
248.344.1885

PROJECT NUMBER:
23-239

PROJECT MANAGER:
B. EMERINE

DRAWN BY:
J. BOGARD

CHECKED BY:
C.S.

DATE:
1/10/24

OFFICE:
FARMINGTON HILLS

811

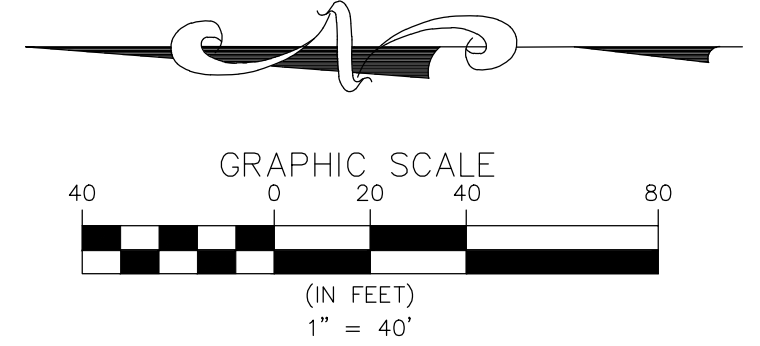
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(SEE SHEET 5)



(SEE SHEET 7)



PROPOSED LEGEND

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	STORM SEWER
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 DRAWN BY:
 C.C.S.
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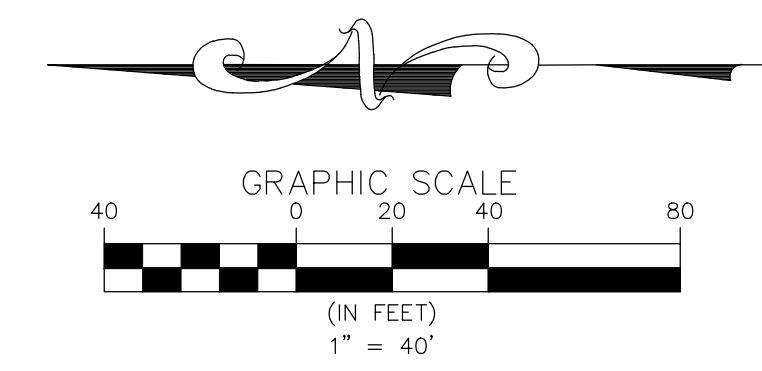
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SHEET TITLE:
 GRADING PLAN

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(SEE SHEET 6)



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PROJECT NUMBER: 23-239	PROJECT MANAGER: B. EMERINE
DRAWN BY: C.S.	CHECKED BY: C.S.
DATE: 1/10/24	OFFICE: FARMINGTON HILLS

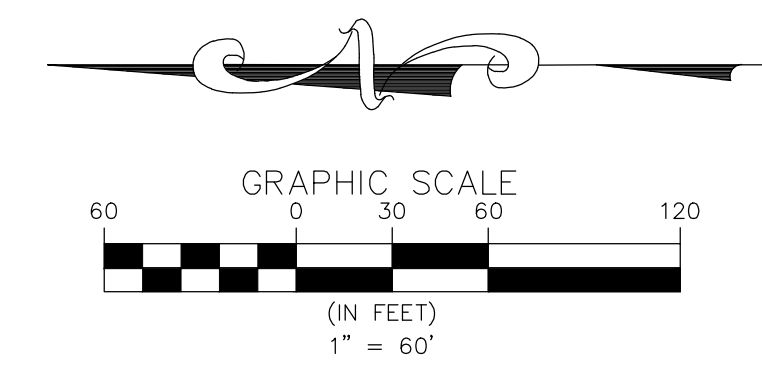
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248.344.1885

PROJECT NAME:
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LAKELANDS TRAIL**
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HAMBURG TWP., LIVINGSTON COUNTY, MI

SHEET TITLE:
GRADING PLAN

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PROPOSED LEGEND	
	SANITARY SEWER
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	OVERFLOW ROUTE
	GRADE



WATER QUALITY VOLUME REQUIRED
 $A = 15.10$ Ac
 $C = 0.62$
 $Vw-q = 3,630 \times C \times A = 33,984 \text{ ft}^3 \text{ required} < Vr-a$

DETERMINE DETENTION REQUIREMENTS (100-YEAR STORM)
 $Ac = 15.10$ Ac (Onsite Area Tributary to Basin)
 $Ac_{off} = 0.00$ Ac (Offsite Area Tributary to Basin)
 $Q_{100} = 3.02$ cfs (0.2 CFS/ACRE)
 $C = 0.62$

CALCULATE VARIABLE RELEASE RATE
 $Q_{vrr} = 1.1055 - 0.206 \ln(A)$ $Q_{vrr} = \text{Allowable release rate in cfs/acre}$
 $Q_{vrr} = 0.55$ cfs/acre $A = \text{Contribution area in acres}$
 (does not govern)
 $Q_{100p} = Q_{vrr} \times A$ $Q_{100p} = \text{Allowable 100-year post-development peak flow rate in cfs}$
 $Q_{100p} = 3.02$ cfs (0.2 CFS/ACRE)

CALCULATE 100-YEAR DETENTION VOLUME (V100D)
 $Ac = 15.10$ Ac (Onsite Area Tributary to Basin)
 $Ac_{off} = 0.00$ Ac (Offsite Area Tributary to Basin)
 $V_{100D} = 18985 \times C \times A$ $V_{100D} = \text{POST-DEVELOPMENT 100-YEAR RUNOFF VOLUME IN CF}$
 $V_{100D} = 177738$ cf

CALCULATE 100-YEAR PEAK INFLOW RATE (Q100IN)
 $Ac = 15.10$ Ac (Onsite Area Tributary to Basin)
 $Ac_{off} = 0.00$ Ac (Offsite Area Tributary to Basin)
 $Q_{100IN} = C \times I_{100} \times A$ $Q_{100IN} = \text{100-YEAR POST-DEVELOPMENT PEAK INFLOW RATE IN CFS}$
 $I_{100} = 83.3 / (Tc + 9.17)^{0.81}$ $I_{100} = \text{100-year peak rainfall intensity in inches/hour}$
 $I_{100} = 4.658$ in/hr
 $Q_{100IN} = 43.61$ cfs

CALCULATE STORAGE CURVE FACTOR FOR THE 100-YEAR DETENTION VOLUME (R)
 $R = [0.206 - 0.15 \ln(Q_{100P}/Q_{100IN})]$
 $R = 0.607$

CALCULATE 100-YEAR REQUIRED DETENTION BASIN VOLUME
 $V_{100D} = (V_{100R} \times R) - VCP-P$ $V_{100D} = \text{Required 100-year detention volume in cf}$
 $V_{100R} = \text{100-Year runoff volume in cf}$
 $R = \text{Storage curve factor}$
 $Vcp-p = \text{Provided CVPC Volume in cf}$
 $V_{100D} = VED$
 $V_{100D} = 107800$ C.F. **REQUIRED DETENTION VOLUME**

DETERMINE STORAGE IN SEDIMENT BASIN

Elevation	Area	Volume (c.f.)
902	4676	0
903	6459	5568
904	8357	12976
905	10369	22339
906	12483	33765
907	14697	47355

HW EL = 907.0 Volume at HW = 47355

DETERMINE STORAGE IN DETENTION BASIN

Elevation	Area	Volume (c.f.)
901	11800	0
902	14490	13145
903	17297	29039
904	20211	47793
905	23232	69514
906	26354	94307
907	29577	122273

HW EL = 907.0 Volume at HW = 122273

C-Factor Determination

Tributary Area =	15.10 Acres
Impervious Areas	
Bldgs, Roads and S/V	8.30 Ac. at C = 0.90
Pervious Areas	
Lawn Areas =	6.15 Ac. at C = 0.20
Low Water	0.65 Ac. at C = 1.00
C Avg. =	0.62

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ENGINEERING | SURVEYING

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NO.	DESCRIPTION	DATE

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PROJECT NUMBER: 23-239

PROJECT MANAGER: B. EMERINE

DRAWN BY: [Redacted]

CHECKED BY: [Redacted]

DATE: 1/10/24

OFFICE: FARMINGTON HILLS

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SHEET TITLE:

STORM WATER MANAGEMENT PLAN

PAGE No.:

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