

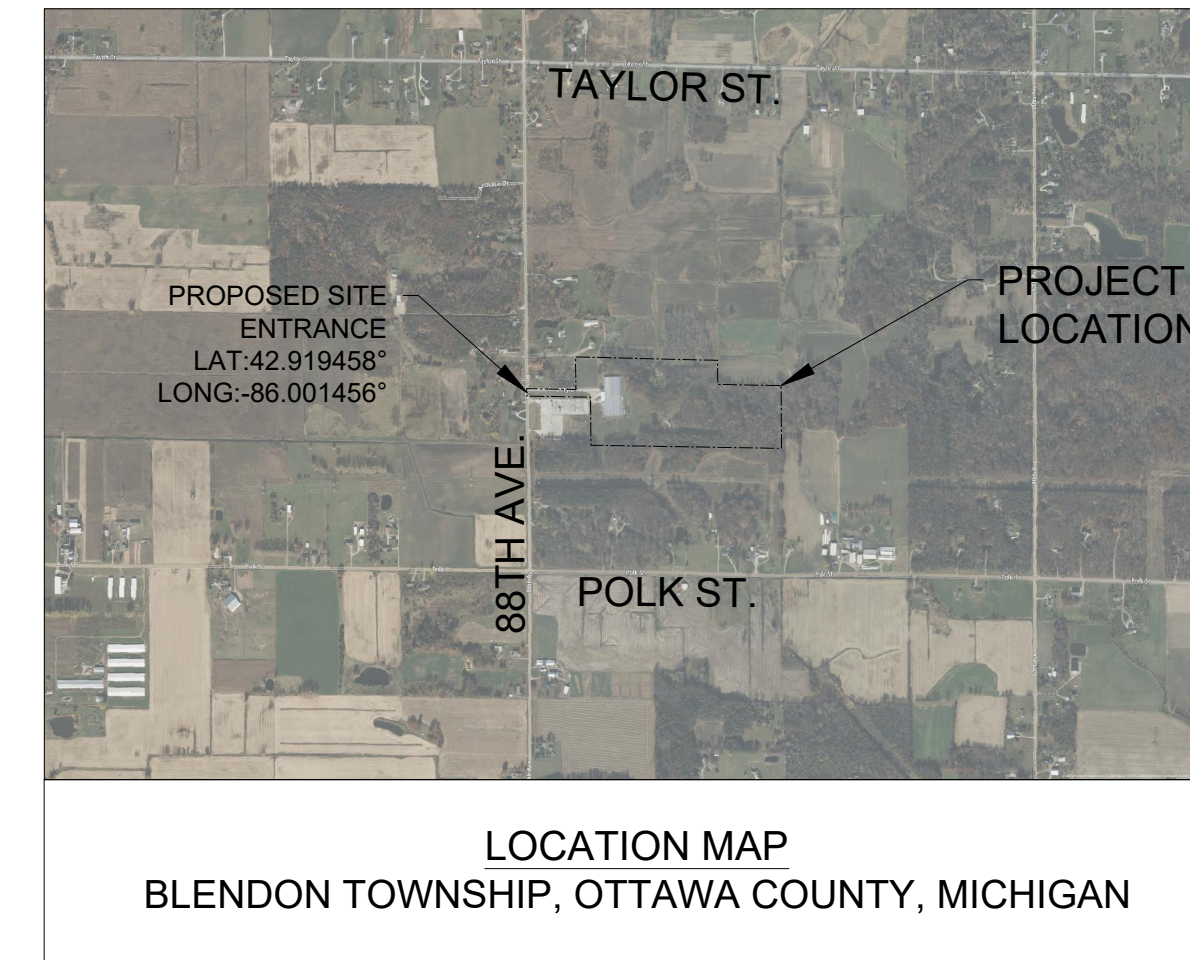
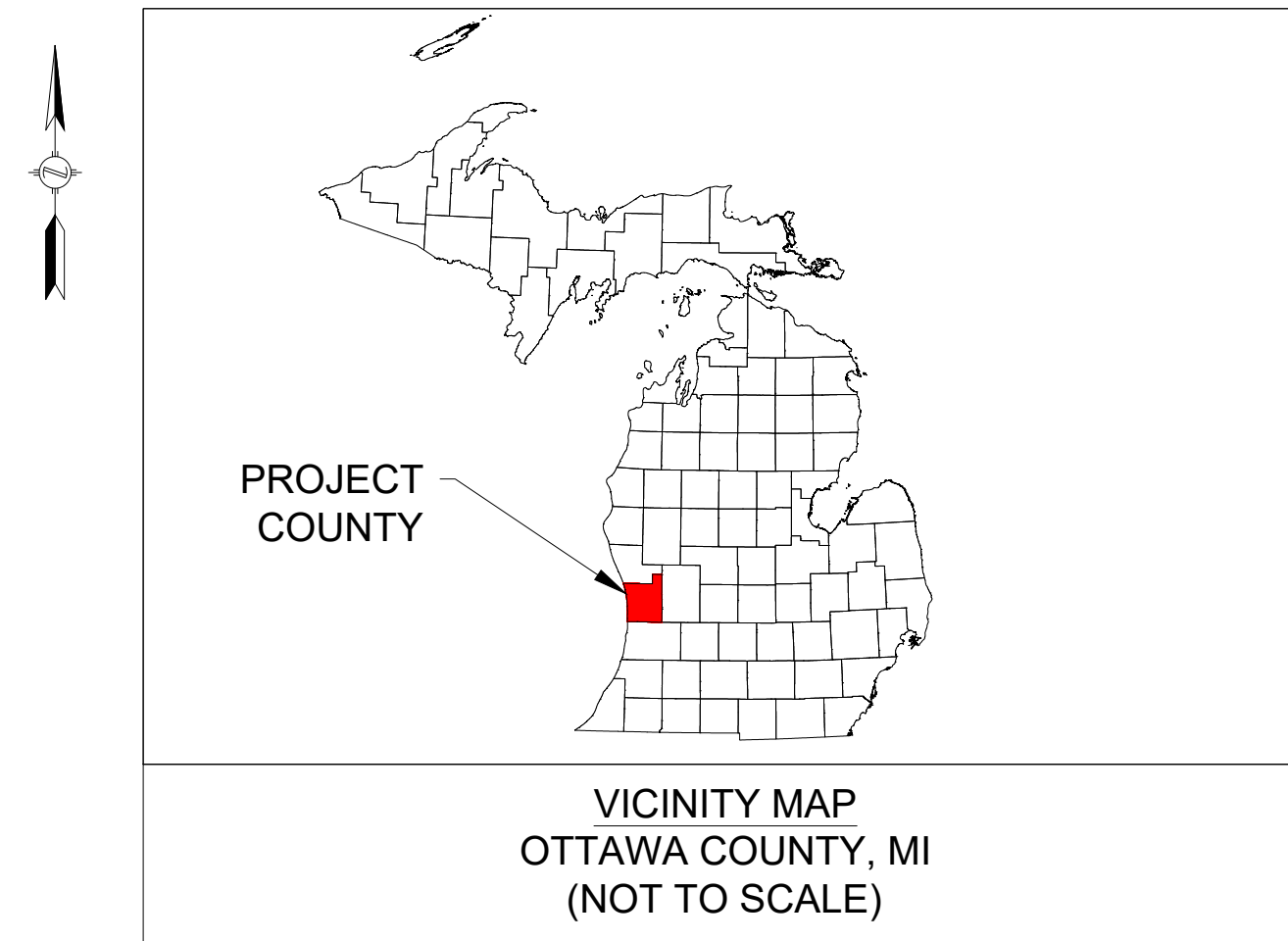
# KCE MI 4, LLC

## 30% CIVIL DESIGN PLANS FOR:

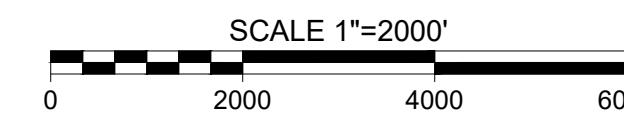
# KCE MI 4

### LOCATED IN

## BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN



MAP REFERENCE:  
MICROSOFT BING



DRAWING LIST		
DWG No.	TITLE	REV.
01	COVER SHEET	0
02 - 03	NOTES SHEETS	0
04	OVERALL EXISTING CONDITIONS PLAN	0
05 - 06	EXISTING CONDITIONS PLANS	0
07	OVERALL PROPOSED SITE PLAN	0
08 - 09	PROPOSED SITE PLANS	0
10	CONSTRUCTION DETAILS	0
11	PROPOSED LANDSCAPE PLAN	0
12	LANDSCAPE PLAN DETAILS	0
13	PROPOSED LIGHTING PLAN	0
14	OVERALL GRADING AND DRAINAGE PLAN	0
15-16	PROPOSED GRADING AND DRAINAGE PLANS	0
17-18	STORMWATER MANAGEMENT DETAILS	0
19	OVERALL EROSION AND SEDIMENT CONTROL PLAN	0
20-21	EROSION AND SEDIMENT CONTROL PLANS	0
22-25	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS	0

**PROPERTY LOCATION:**

KCE MI 4  
ADDRESS:  
8284 88TH AVENUE  
ZEELAND, MI 49464  
COORDINATES: 42.919458°, -86.001456°  
PARCEL ID: 70-13-08-300-022

**PROJECT OWNER:**

KCE MI 4, LLC  
25 MONROE STREET, SUITE 300  
ALBANY, NY 12210

CONTACT: BRIAN MADIGAN  
EMAIL: BRIAN.MADIGAN@KEYCAPTUREENERGY.COM  
PHONE: 518-903-4187

**PLAN PREPARED BY:**

ENVIRONMENTAL RESOURCES MANAGEMENT, INC.  
222 SOUTH 9TH STREET, SUITE 2900  
MINNEAPOLIS, MN 55402

CONTACT: WAYNE SICORA, PE  
EMAIL: WAYNE.SICORA@ERM.COM  
PHONE: 612-597-4574

**MISS DIG 811 (MICHIGAN ONE-CALL SYSTEM)**

THE EXISTENCE OF AND LOCATION OF ALL UTILITIES AS SHOWN ARE APPROXIMATE AND ARE BASED ON INFORMATION PROVIDED IN THE ALTA SURVEY. DIG NOTIFICATION IS REQUIRED BEFORE EXCAVATION.



**CALL 811 BEFORE YOU DIG!**

THE MISS DIG SYSTEM MUST BE CONTACTED AT 800-482-7171, 811, OR ONLINE AT MISSDIG811.ORG AT LEAST 72 HOURS BUT NO MORE THAN 14 CALENDAR DAYS IN ADVANCE OF CONSTRUCTION.



**30% CIVIL PLANS:  
NOT FOR CONSTRUCTION**

# DRAFT

		<p>PREPARED FOR:</p> <p>KCE MI 4, LLC 25 MONROE STREET, SUITE 300 ALBANY, NY 12210 TEL: 518-903-4187</p>	<p>PREPARED BY:</p>	<p><b>COVER SHEET</b></p> <p>KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN</p>	<p>DISCIPLINE NO.</p> <p>C-01</p>
				<p>REV.</p> <p>0</p>	
				<p>SCALE</p> <p>N.T.S.</p>	
				<p>DESIGNED BY</p> <p>LF</p>	
				<p>PROJECT NUMBER</p> <p>0780143</p>	
				<p>DATE DRAWN</p> <p>08/05/2025</p>	
				<p>DRAWN BY</p> <p>LF</p>	<p>SHEET NO.</p> <p>01</p>
				<p>Environmental Resources Management, Inc.</p>	

FILE PATH: C:\Users\carla.johnson\Documents\OneDrive - ERM\Key Capture Energy\Key Capture Energy (KCD) - KCE MI 4 (0780143)\Project Work\Engineering\CAD\Working Files\03% Plans\01 - COVER SHEET - MI 4.dwg LAYOUT1 - PRINTED ON 8/26/2025 BY Carle Johnson



# MATERIAL SPECIFICATIONS CONTINUED:

## 2. SECTION 301: SUBBASE

DESCRIPTION: THIS WORK CONSISTS OF CONSTRUCTING A GRANULAR SUBBASE ON A SURFACE APPROVED BY THE ENGINEER.

MATERIALS: PROVIDE MATERIAL, GRANULAR MATERIAL CLASS II, IN ACCORDANCE WITH SECTION 902.

### CONSTRUCTION:

- SPREAD THE SUBBASE MATERIAL EVENLY AND COMPACT TO AT LEAST 95% OF THE MAXIMUM UNIT WEIGHT, AT A LESS-THAN-OPTIMUM MOISTURE CONTENT, FOR ITS ENTIRE THICKNESS. PLACE THE SUBBASE IN LAYERS NO GREATER THAN 18 INCHES. WHERE THE REQUIRED DEPTH IS MORE THAN 18 INCHES, PLACE THE MATERIAL IN LAYERS OF EQUAL THICKNESS. CONSTRUCT THE SUBBASE TO PLAN GRADE WITHIN A TOLERANCE OF PLUS 1 INCH.
- DO NOT PLACE SUBBASE ON FROZEN, SOFT, UNSTABLE, OR RUTTED SUBGRADE. IF SUBBASE MATERIAL BECOMES MIXED WITH SUBGRADE MATERIAL, REMOVE, DISPOSE OF, AND REPLACE THE SUBBASE MATERIAL AT NO ADDITIONAL COST TO THE DEPARTMENT.

## 3. SECTION 302: AGGREGATE BASE COURSE

DESCRIPTION: THIS WORK CONSISTS OF CONSTRUCTING AN AGGREGATE BASE COURSE ON A SURFACE APPROVED BY THE ENGINEER.

MATERIALS: PROVIDE MATERIALS, DENSE-GRADED AGGREGATE 21AA, 21A, 22A, IN ACCORDANCE WITH SECTION 902.

### CONSTRUCTION:

#### PLACING AND COMPACTING

- COMPACT THE AGGREGATE LAYERS TO A UNIFORM THICKNESS, NO LESS THAN 3 INCHES AND NO GREATER THAN 8 INCHES. IF PLACING AGGREGATE BASE IN A LAYER LESS THAN 3 INCHES, BLEND THE NEW AGGREGATE BASE MATERIAL WITH THE LAYER BELOW TO ENSURE A TOTAL OF 6 INCHES. BLENDING MUST BE PERFORMED TO ENSURE THAT THE NEW AGGREGATE BASE MATERIAL IS UNIFORMLY MIXED WITH THE LAYER BELOW.
- COMPACT EACH LAYER OF AGGREGATE BASE TO AT LEAST 98% OF THE MAXIMUM UNIT WEIGHT AT A MOISTURE CONTENT NO GREATER THAN OPTIMUM FOR AGGREGATE BASE UNDER HOT MIX ASPHALT (HMA) PAVEMENT. COMPACT EACH LAYER OF AGGREGATE BASE TO AT LEAST 95% OF THE MAXIMUM UNIT WEIGHT AT A MOISTURE CONTENT NO GREATER THAN OPTIMUM FOR AGGREGATE BASE UNDER CONCRETE PAVEMENT. WITHIN THE LIMITS OF BRIDGE APPROACHES, FROM THE ABUTMENT WALL TO THE TYPICAL ROADWAY CROSS SECTION, COMPACT EACH LAYER OF THE AGGREGATE BASE TO AT LEAST 98% OF THE MAXIMUM UNIT WEIGHT. SHAPE THE FINISHED SURFACE AND THE LAYER THICKNESS TO WITHIN ±½ INCH OF THE CROWN AND GRADE SHOWN ON THE PLANS.
- REMOVE, DISPOSE OF, AND REPLACE AGGREGATE BASE MATERIAL THAT MIXES WITH SUBBASE OR SUBGRADE MATERIAL AT NO ADDITIONAL COST TO THE DEPARTMENT.

SEE SECTION 302.03 FOR CONSTRUCTION SPECIFICATIONS ON CONDITIONING AGGREGATE BASE, MAINTENANCE DURING CONSTRUCTION, AND SURPLUS EXISTING AGGREGATE BASE MATERIAL.

## 4. SECTION 306: AGGREGATE SURFACE COURSE AND MAINTENANCE GRAVEL

DESCRIPTION: THIS WORK CONSISTS OF CONSTRUCTING AGGREGATE SURFACE COURSE ON A PREPARED SUBGRADE OR EXISTING AGGREGATE SURFACE.

MATERIALS: PROVIDE MATERIALS, DENSE-GRADED AGGREGATE 21A, 21AA, 22A, 23A, 23AA, IN SECTION 902.

CONSTRUCTION: PREPARATION OF BASE - WHEN REQUIRED, BLADE, OR SCARIFY AND BLADE, EXISTING AGGREGATE SURFACES TO REMOVE IRREGULARITIES IN THE GRADE.

### PLACING AND COMPACTING

- PROVIDE A TICKET WITH EACH LOAD STATING THE REQUIRED INFORMATION IN SECTION 306.03.B.
- PROVIDE A UNIFORM AGGREGATE MIXTURE, COMPACTED IN PLACE TO A UNIFORM DENSITY FULL DEPTH. PROVIDE A COMPLETE SURFACE COURSE TO THE LINE, GRADE, OR CROSS SECTION AS SHOWN ON THE PLANS.
- PLACE MAINTENANCE GRAVEL AT DRIVEWAY AND INTERSECTION LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER TO PROVIDE A FLUSH TRANSITION TO DRIVEWAYS, INTERSECTING CROSS STREETS, AND ADJACENT SURFACES WHERE MAINTAINING TRAFFIC. GRADE MAINTENANCE GRAVEL TO PROVIDE POSITIVE DRAINAGE. MATCH THE EXISTING WIDTHS OF THE DRIVEWAYS AND INTERSECTIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- WHEN CONSTRUCTION OPERATIONS PROGRESS TO A POINT THAT MAINTENANCE GRAVEL IS NO LONGER NEEDED, AS DETERMINED BY THE ENGINEER, REMOVE THE MAINTENANCE GRAVEL ON THE SAME DAY AS PAVING OF THE REMOVAL AREA. REMOVE AND DISPOSE OF MAINTENANCE GRAVEL IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. IF APPROVED BY THE ENGINEER, THE CONTRACTOR MAY LEAVE MAINTENANCE GRAVEL IN PLACE AS PART OF THE WORK.
- DO NOT PLACE AGGREGATE ON UNSTABLE SURFACES, AS DETERMINED BY THE ENGINEER. MAINTAIN THE AGGREGATE IN A SMOOTH AND STABLE CONDITION UNTIL REMOVED, SURFACED, OR PROJECT COMPLETION.
- COMPACT THE AGGREGATE LAYERS TO A UNIFORM THICKNESS NO GREATER THAN 8 INCHES. IF PLACING HMA SURFACE OVER THE AGGREGATE SURFACE COURSE, COMPACT EACH AGGREGATE LAYER TO AT LEAST 98% OF THE MAXIMUM UNIT WEIGHT AT A MOISTURE CONTENT NO GREATER THAN OPTIMUM. FOR OTHER AGGREGATE SURFACE COURSE APPLICATIONS, COMPACT EACH LAYER OF AGGREGATE TO AT LEAST 95% OF THE MAXIMUM UNIT WEIGHT AT A MOISTURE CONTENT NO GREATER THAN OPTIMUM.

- GRADE THE FINISHED SURFACE AND LAYERS TO WITHIN ±½ INCH OF THE CROWN AND GRADE SHOWN ON THE PLANS.
- IF PLACING AGGREGATE BASE IN A LAYER NO GREATER THAN 3 INCHES, COMPACT USING PNEUMATIC-TIRED ROLLERS OR VIBRATORY COMPACTORS TO AT LEAST 95% OF THE MAXIMUM UNIT WEIGHT AT A MOISTURE CONTENT NO GREATER THAN OPTIMUM.

USE OF ADDITIVES - THE CONTRACTOR MAY USE ADDITIVES TO FACILITATE COMPACTION AND FOR DUST CONTROL.

## 5. SECTION 308: GEOSYNTHETICS FOR BASE

- DESCRIPTION: THIS WORK CONSISTS OF PROVIDING AND INSTALLING GEOSYNTHETIC PRODUCTS ON A SURFACE APPROVED BY THE ENGINEER.
- MATERIALS: PROVIDE MATERIALS, GEOTEXTILE SEPARATOR, STABILIZATION GEOTEXTILE, ROAD GRADE BIAXIAL GEOGRID, IN ACCORDANCE WITH SECTION 910.
- CONSTRUCTION:

GEOTEXTILE PLACEMENT - PLACE OR INSTALL GEOTEXTILE SEPARATOR OR STABILIZATION GEOTEXTILE PRODUCTS IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION GUIDELINES AND THIS SUBSECTION. DO NOT OPERATE EQUIPMENT THAT IS REQUIRED TO PLACE BACKFILL DIRECTLY ON GEOTEXTILE PRODUCTS. ELIMINATE WRINKLES OR WAVES THAT DEVELOP DURING PLACEMENT. PLACE THE PRODUCTS IN DIRECT CONTACT WITH THE SOIL BELOW BEFORE PLACING BACKFILL ON THE GEOTEXTILE PRODUCTS. DO NOT EXPOSE GEOTEXTILE TO ULTRAVIOLET DEGRADATION FOR MORE THAN 7 DAYS. SHINGLE-LAP LONGITUDINAL AND TRANSVERSE JOINTS AT LEAST 2 FEET OR SEAM THE JOINTS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ENSURE THAT FIELD OR FACTORY SEAMS MEET THE MINIMUM GRAB TENSILE STRENGTH FOR THE PRODUCT APPLICATION. DO NOT USE NYLON THREAD FOR GEOTEXTILE SEAMING. PLACE SEAMS FACING UPWARD FOR INSPECTION PURPOSES. REPAIR TEARS OR DAMAGE TO THE GEOTEXTILE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

GEOGRID PLACEMENT - ALL AREAS IMMEDIATELY BENEATH THE INSTALLATION AREA FOR THE GEOGRID MUST BE PROPERLY PREPARED AS SHOWN ON THE PLANS, AS SPECIFIED, OR AS DIRECTED BY THE ENGINEER. PLACE OR INSTALL THE GEOGRID IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION GUIDELINES AND THIS SUBSECTION. TO PREVENT UNDUE EXPOSURE OR DAMAGE TO THE GEOGRID, PLACE ONLY THE AMOUNT OF GEOGRID REQUIRED FOR IMMEDIATELY PENDING WORK. DO NOT EXPOSE GEOGRID TO ULTRAVIOLET DEGRADATION FOR MORE THAN 7 DAYS. THE GEOGRID MUST BE UNROLLED PARALLEL TO THE CENTERLINE OF THE ROADWAY. PLACE THE GEOGRID TAUT PRIOR TO PLACEMENT OF SUBSEQUENT AGGREGATE LAYER. ANCHOR THE GEOGRID IN POSITION AFTER PLACEMENT UNTIL PLACEMENT OF THE SUBSEQUENT AGGREGATE LAYER. OVERLAP ADJACENT ROLLS OF GEOGRID 2 FEET MINIMUM. WHENEVER POSSIBLE, THE PLACEMENT OF THE SUBSEQUENT AGGREGATE LAYER MUST PROCEED FROM THE CENTERLINE OF THE GEOGRID PLACED OUT TO ASSIST IN TENSIONING THE GEOGRID. PLACE AT LEAST 6 INCHES OF THE SUBSEQUENT AGGREGATE LAYER OVER THE GEOGRID BEFORE ALLOWING CONSTRUCTION VEHICLES ON THE GEOGRID.

AGGREGATE OR GRANULAR MATERIAL PLACEMENT - SPREAD AND SHAPE THE SUBSEQUENT LAYER OF AGGREGATE OR GRANULAR MATERIAL AFTER PLACING GEOSYNTHETIC TO CREATE A STABLE WORK PLATFORM BEFORE COMPACTION. PLACE ADDITIONAL AGGREGATE OR GRANULAR MATERIAL, AS REQUIRED BY APPLICABLE SECTIONS, AND COMPACT. FILL RUTS WITH ADDITIONAL AGGREGATE OR GRANULAR MATERIAL AND COMPACT BEFORE PLACING EACH SUBSEQUENT LAYER.

## 6. SECTION 401: PIPE CULVERTS

DESCRIPTION: THIS WORK CONSISTS OF CONSTRUCTING PIPE CULVERTS OF THE SIZE AND CLASS REQUIRED, INCLUDING EXCAVATION, BEDDING, AND BACKFILL.

MATERIALS: PROVIDE MATERIALS IN ACCORDANCE WITH THE FOLLOWING:

- GRANULAR MATERIAL, CLASS II, III, IIIA - SECTION 902
- AGGREGATE, 6A, 17A, 34R, 46G - SECTION 902
- ASPHALTIC MATERIALS - SECTION 904
- CULVERT PIPE - SECTION 909
- SEALERS FOR CULVERT JOINTS - SECTION 909
- STEEL PIPE (FOR JACKING IN PLACE) - SECTION 909
- DRAINAGE MARKER POST - SECTION 909
- GEOSYNTHETIC - SECTION 910
- CULVERT, DOWNSPOUTS - SECTION 909
- CONCRETE, GRADE 3500 - SECTION 1004
- MORTAR, TYPE R 2 - SECTION 1005

SELECT PIPE SECTIONS AND JOINT ASSEMBLIES FOR USE IN CULVERTS FROM THE QUALIFIED PRODUCTS LIST. PROVIDE GROUT FOR JACKED-IN-PLACE STEEL PIPE THAT CONSISTS OF A MIXTURE OF PORTLAND CEMENT AND NO GREATER THAN 50% SAND BY VOLUME.

PIPE CULVERTS - PIPE CULVERTS ARE DIVIDED INTO SIX CLASSES, AS SPECIFIED IN TABLE 401-1. PROVIDE THE TYPE OF CULVERT MATERIAL INDICATED ON THE PLANS IF SHOWN. IF THE CONTRACT SPECIFIES ONLY THE SIZE AND CLASS OF THE CULVERT, SELECT AND PROVIDE AN ALTERNATIVE CULVERT PIPE ALLOWED IN TABLE 401-1. A HIGHER STRENGTH OR GREATER THICKNESS OF CULVERT MAY BE SUBSTITUTED FOR THE MINIMUM STRENGTH OR MINIMUM THICKNESS REQUIRED.

CONSTRUCTION: REFER TO SECTION 401.03 FOR CONSTRUCTION SPECIFICATIONS INCLUDING EXCAVATION AND CULVERT BEDDING, REPAIR OF DAMAGED COATED SURFACES, LAYING AND JOINING PIPE, BACKFILLING, HEADWALLS AND END SECTIONS, DRAINAGE MARKER POSTS, DISPOSAL OF SURPLUS MATERIAL, CLEANOUT, VIDEO INSPECTION, AND DEWATERING AND MAINTAINING STREAM FLOW DURING CONSTRUCTION.

## 7. SECTION 902: AGGREGATES

### GENERAL REQUIREMENTS:

- THE DEPARTMENT MAY RE-INSPECT AND RETEST AGGREGATES REGARDLESS OF INSPECTION AT THE PRODUCING PLANT. PROVIDE SAFE ACCESS TO THE MATERIAL FOR SAMPLING FROM HAUL UNITS OR STOCKPILES.
- DO NOT USE SPENT METAL CASTING FOUNDRY SAND UNLESS THE CONTRACT EXPRESSLY ALLOWS FOR ITS USE.
- DO NOT CONTAMINATE AGGREGATE DURING LOADING OR MEASUREMENT.

TESTING: REFER TO SECTION 902.02 FOR SPECIFICATIONS.

### DENSE-GRADED AGGREGATES FOR BASE COURSE, SURFACE COURSE, SHOULDERS, APPROACHES, AND PATCHING:

- WHEN NECESSARY, COMBINE FINE AGGREGATE WITH NATURAL AGGREGATE, IRON BLAST-FURNACE SLAG, REVERBERATORY FURNACE SLAG, OR CRUSHED CONCRETE TO PRODUCE MICHIGAN CLASS 21AA, 21A, 22A, 23A, AND 23AA DENSE-GRADED AGGREGATES IN ACCORDANCE WITH TABLE 902-1, TABLE 902-2, AND THIS SUBSECTION.
- THE USE OF CRUSHED CONCRETE IS PROHIBITED ON THE PROJECT WITHIN 100 FEET OF ANY WATER COURSE (STREAM, RIVER, COUNTY DRAIN, ETC.) AND LAKE REGARDLESS OF THE APPLICATION OR LOCATION OF THE WATER COURSE OR LAKE RELATIVE TO THE PROJECT LIMITS.
- DENSE-GRADED AGGREGATE PRODUCED BY CRUSHING PORTLAND CEMENT CONCRETE MUST NOT CONTAIN MORE THAN 5.0% BUILDING RUBBLE OR HMA BY PARTICLE COUNT. THE DEPARTMENT DEFINES BUILDING RUBBLE AS BUILDING BRICK, WOOD, PLASTER, OR OTHER MATERIAL. PIECES OF STEEL REINFORCEMENT CAPABLE OF PASSING THROUGH THE MAXIMUM GRADING SIEVE SIZE WITHOUT AID ARE ALLOWED.
- DO NOT USE CLASS 21AA, 21A, OR 22A DENSE-GRADED AGGREGATE PRODUCED BY CRUSHING PORTLAND CEMENT CONCRETE TO CONSTRUCT AN AGGREGATE BASE OR AN AGGREGATE SEPARATION LAYER WHEN THE DENSE-GRADED LAYER DRAINS INTO AN UNDERDRAIN UNLESS AT LEAST ONE OF THE FOLLOWING CONDITIONS APPLIES:
  - A VERTICAL LAYER OF AT LEAST 12 INCHES OF GRANULAR CLASS I, II, IIA, OR IIAA
  - EXISTS BETWEEN THE DENSE-GRADED AGGREGATE LAYER AND AN UNDERDRAIN; OR
  - A GEOTEXTILE LINER OR BLOCKING MEMBRANE THAT WILL BE A BARRIER TO LEACHATE IS PLACED BETWEEN THE CRUSHED CONCRETE AND THE UNDERDRAIN. PRODUCE CLASS 23A DENSE-GRADED AGGREGATE FROM STEEL FURNACE SLAG FOR USE ONLY AS AN UNBOUND AGGREGATE SURFACE COURSE OR AN UNBOUND AGGREGATE SHOULDER.

## 8. SECTION 916.01: STONE USED FOR EROSION AND SEDIMENT CONTROL

PROVIDE COBBLESTONE, COARSE AGGREGATE 3x1, AND RIPRAP FOR EROSION AND SEDIMENTATION CONTROL ON SLOPES, IN DITCHES, AND TO CONSTRUCT EROSION CONTROL DEVICES, INCLUDING CHECK DAMS. FURNISH NATURAL STONE THAT IS SOUND, NON-STRATIFIED, DURABLE ROCK. UNLESS OTHERWISE SPECIFIED AND NOT PROHIBITED BY PERMIT, THE CONTRACTOR MAY USE SOUND PIECES OF BROKEN CONCRETE FREE OF PROTRUDING REINFORCEMENT. DO NOT USE CRUSHED HMA PAVEMENT OR BROKEN BRICK AS EROSION AND SEDIMENTATION CONTROL MATERIAL.

- COBBLESTONE. FURNISH COBBLESTONE THAT CONSISTS OF ROUNDED OR SEMI-ROUNDED ROCK FRAGMENTS WITH AN AVERAGE DIMENSION FROM 3 TO 10 INCHES.
- COARSE AGGREGATE 3X1. FURNISH COARSE AGGREGATE 3x1 THAT MEETS THE REQUIREMENTS OF COMMERCIALY GRADED MATERIAL WITH PARTICLE SIZES FROM TO 3 INCHES.
- RIPRAP. FURNISH RIPRAP THAT IS NATURAL STONE, SOLID PRECAST CONCRETE BLOCKS OF GRADE 3000 CONCRETE, OR SOUND PIECES OF BROKEN CONCRETE. RIPRAP MUST NOT CONTAIN SOIL. RANDOMLY SCORE THE FACE OF THE PRECAST CONCRETE BLOCKS TO PROVIDE PLANE-OF-WEAKNESS JOINTS IN SECTIONS WITH AREAS FROM 4 TO 9 SQUARE FEET. LIFTING LUGS, CAST INTO CONCRETE BLOCKS, MUST NOT PROJECT ABOVE THE FINISHED CONCRETE SURFACE. THE DEPARTMENT CLASSIFIES RIPRAP AS PLAIN OR HEAVY, BASED ON THE HORIZONTAL CROSS SECTION DIMENSIONS ("FOOTPRINT" DIMENSIONS) AND THE IN-PLACE THICKNESS OF THE INDIVIDUAL PIECES.
- PLAIN RIPRAP. PROVIDE NATURAL STONE AND BROKEN CONCRETE WITH FOOTPRINT DIMENSIONS FROM 8 TO 16 INCHES AND AN IN-PLACE THICKNESS OF AT LEAST 16 INCHES. THE CONTRACTOR MAY USE SMALLER PIECES TO FILL SPACES FOR BETTER SLOPE PROTECTION. PROVIDE PRECAST CONCRETE BLOCK AT LEAST 6 INCHES THICK WITH A SURFACE AREA NO GREATER THAN 15 SQUARE FEET.
- HEAVY RIPRAP. THE SMALLEST FOOTPRINT DIMENSION FOR NATURAL STONE AND BROKEN CONCRETE MUST BE AT LEAST 16 INCHES. THE MAXIMUM-TO-MINIMUM DIMENSION RATIO MUST BE NO GREATER THAN 3:1. THE IN-PLACE THICKNESS MUST BE AT LEAST 36 INCHES. PROVIDE PRECAST CONCRETE BLOCK AT LEAST 16 INCHES THICK WITH A SURFACE AREA NO GREATER THAN 20 SQUARE FEET.

REQUIREMENTS FOR SPECIFIC EROSION AND SEDIMENT CONTROL APPLICATIONS

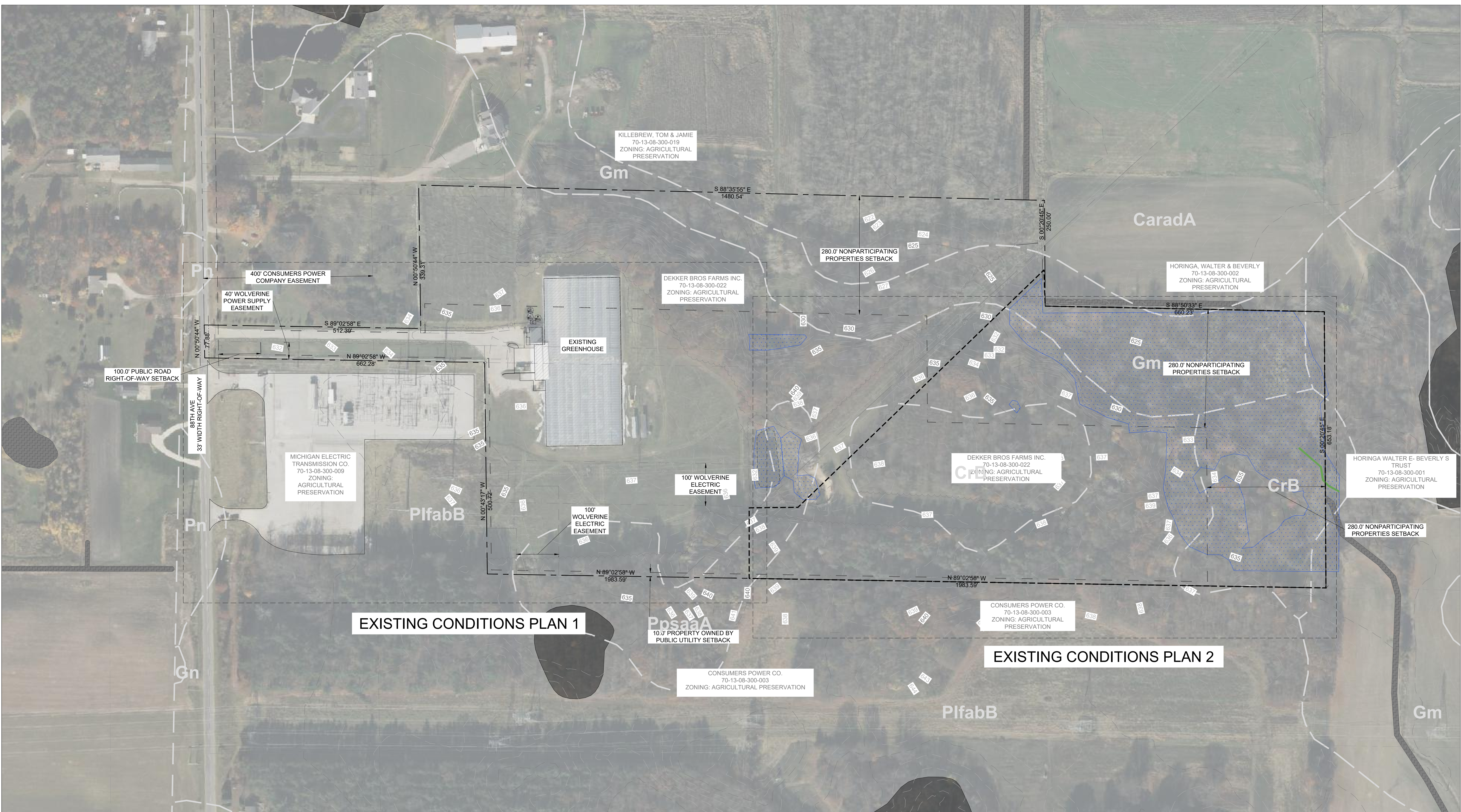
- AGGREGATE COVER - FURNISH DENSE-GRADED AGGREGATE 21AA, OPEN-GRADED AGGREGATE 46G, COARSE AGGREGATE 6A, OR COARSE AGGREGATE 3x1 PRODUCED NATURAL AGGREGATE, IRON BLAST-FURNACE SLAG, REVERBERATORY FURNACE SLAG, OR CRUSHED PORTLAND CEMENT CONCRETE.
- GRAVEL ACCESS APPROACH - FURNISH COARSE AGGREGATE 3x1, OR AS APPROVED BY THE ENGINEER, THAT IS PRODUCED FROM NATURAL AGGREGATE, IRON-BLAST FURNACE SLAG, REVERBERATORY FURNACE SLAG, OR CRUSHED PORTLAND CEMENT CONCRETE.

		PREPARED FOR:		PREPARED BY:		DISCIPLINE NO. C-03	
						<b>NOTES SHEET</b>	
		KCE MI 4, LLC 25 MONROE STREET, SUITE 300 ALBANY, NY 12210 TEL: 518-903-4187		KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN		REV. 0	
		SCALE: N.T.S.		DESIGNED BY: LF		PROJECT NUMBER: 0780143	
		DATE DRAWN: 08/05/2025		DRAWN BY: LF		SHEET NO.: 03	
		Environmental Resources Management, Inc.					

30% CIVIL PLANS:  
NOT FOR CONSTRUCTION

**DRAFT**

FILE PATH: C:\Users\jshannon\Documents\Drawings - ERM\Key Capture Energy\Key Capture Energy (KCE) - KCE MI 4 (0701043)\Project Work\Engineering\CAD\Working Files\30% Plans\04-06 KCE MI 4 Existing Conditions Plan.dwg OVERVIEW: 100 SCALE: PRINTED ON: 07/20/2025 BY: Carrie Johnson



**EXISTING CONDITIONS PLAN 1**

**EXISTING CONDITIONS PLAN 2**

**EXISTING CONDITIONS PLAN LEGEND**

--- PROPERTY BOUNDARY LINE	--- APPROXIMATE LEASE LINE
--- ADJACENT PROPERTY LINE	--- MATCHLINES
--- EXISTING OVERHEAD POWER LINE	--- EXISTING TREE LINE
--- EXISTING GAS LINE	--- EDGE OF EXISTING GRAVEL
--- YARD SETBACK	--- EXISTING BUILDING FOOTPRINT
--- EXISTING CONTOURS	--- TOP OF EXISTING POND
--- ROAD RIGHT OF WAY	--- DELINEATED WETLAND
--- EASEMENT LINE	--- DELINEATED STREAM
--- EDGE OF EXISTING ROAD	--- EXISTING GUY WIRE
--- EXISTING ROAD CENTERLINE	--- EXISTING POWER POLE
--- SOIL BOUNDARY LINE	--- EXISTING CATCH BASIN
--- EXISTING ELECTRIC LINE	--- EXISTING WELL
--- EXISTING FIBER OPTIC LINE	--- NWI WATERBODY DATA
--- EXISTING FENCE	--- NWI WETLAND DATA

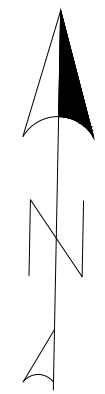
**HYDROLOGIC SOIL GROUP:**

- AmB (A/D)
- CaradA (A/D)
- CrB (A)
- Gm (A/D)
- PifabB (A)
- PpsaaA (A/D)

**NOTES:**

- NATIONAL WETLANDS INVENTORY (NWI) ENVIRONMENTAL DATA IS DISPLAYED OUTSIDE OF THE PROPERTY LINE FOR REFERENCE.
- ALL ENVIRONMENTAL FEATURES WITHIN THE PROPERTY LINE WERE DELINEATED IN OCTOBER OF 2023.

**30% CIVIL PLANS:  
NOT FOR CONSTRUCTION**



**DRAFT**

SCALE 1"=100'  
0 100 200 300 FEET

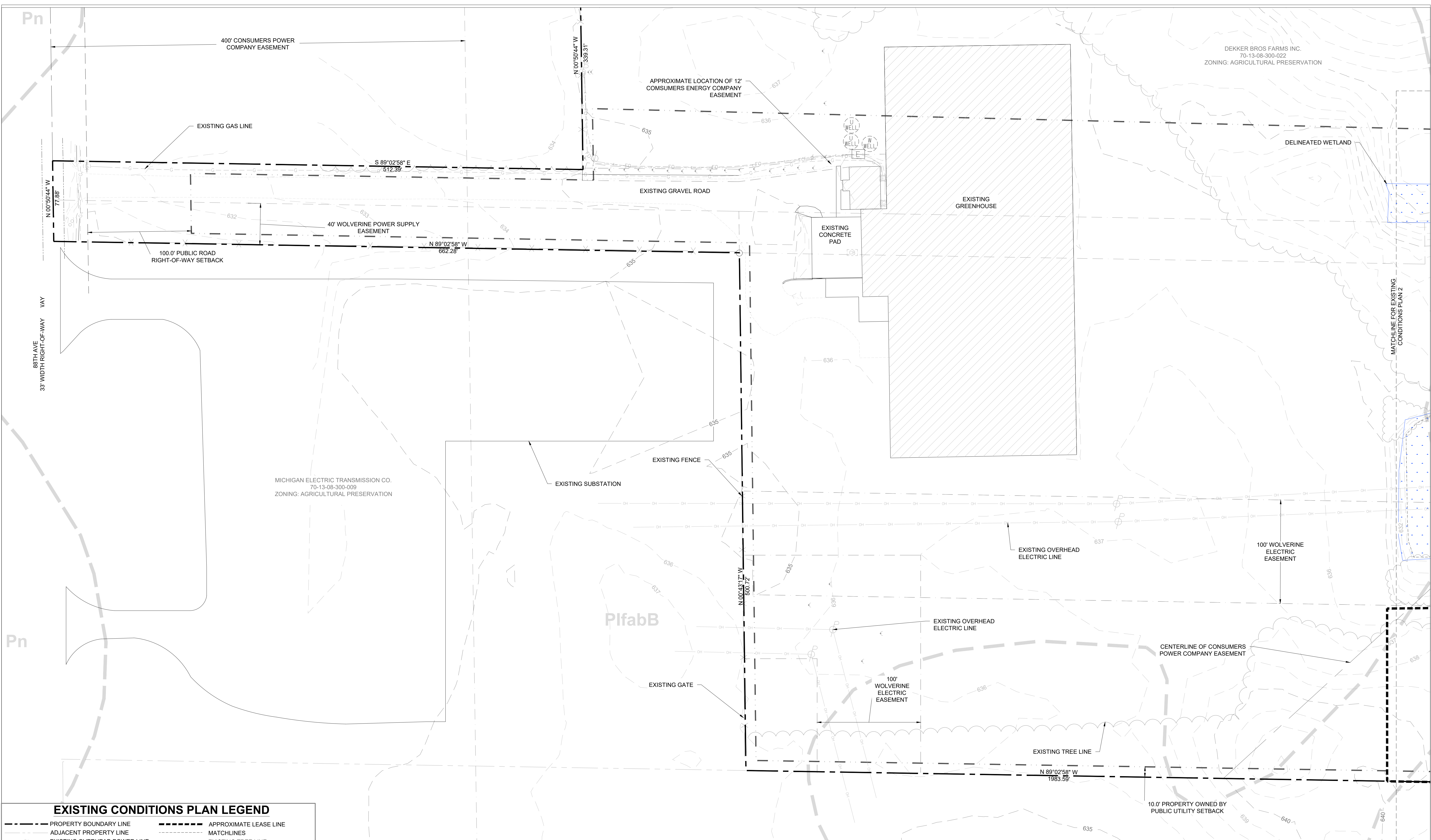
Rev.	Date	Description	By	Chk

PREPARED FOR:  
**KEY CAPTURE ENERGY**  
KCE MI 4, LLC  
25 MONROE STREET, SUITE 300  
ALBANY, NY 12210  
TEL: 518-903-4187



<b>OVERALL EXISTING CONDITIONS PLAN</b>				DISCIPLINE NO. <b>C-04</b>
KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN				REV. <b>0</b>
SCALE 1" = 100'	DESIGNED BY CJ, LF	PROJECT NUMBER <b>0780143</b>	SHEET NO. <b>04</b>	
DATE DRAWN 08/05/2025		DRAWN BY LF		
Environmental Resources Management, Inc.				

FILE PATH: C:\Users\carla.johnson\Documents\Drawings - ERM\Key Capture Energy\KCE MI 4 (0701043)\Project Work\Engineering\CAD\Working Files\30% Plans\04-06 KCE MI 4 Existing Conditions Plan.dwg (PROPOSED EX COND PLAN 1) 40 SCALE PRINTED ON 06/02/2025 BY Carla Johnson

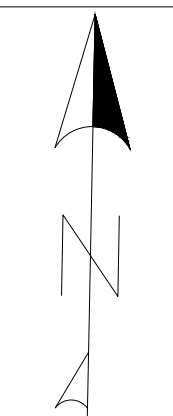


**EXISTING CONDITIONS PLAN LEGEND**

---	PROPERTY BOUNDARY LINE	---	APPROXIMATE LEASE LINE
---	ADJACENT PROPERTY LINE	---	MATCHLINES
---	EXISTING OVERHEAD POWER LINE	---	EXISTING TREE LINE
---	EXISTING GAS LINE	---	EDGE OF EXISTING GRAVEL
---	YARD SETBACK	---	EXISTING BUILDING FOOTPRINT
---	EXISTING CONTOURS	---	TOP OF EXISTING POND
---	ROAD RIGHT OF WAY	---	DELINEATED WETLAND
---	EASEMENT LINE	---	DELINEATED STREAM
---	EDGE OF EXISTING ROAD	---	EXISTING GUY WIRE
---	EXISTING ROAD CENTERLINE	---	EXISTING POWER POLE
---	SOIL BOUNDARY LINE	---	EXISTING CATCH BASIN
---	EXISTING ELECTRIC LINE	---	EXISTING WELL
---	EXISTING FIBER OPTIC LINE	---	NWI WATERBODY DATA
---	EXISTING FENCE	---	NWI WETLAND DATA

- HYDROLOGIC SOIL GROUP:**
- AmB (A/D)
  - CaradA (A/D)
  - CrB (A)
  - Gm (A/D)
  - PifabB (A)
  - PpsaaA (A/D)

**30% CIVIL PLANS:  
NOT FOR CONSTRUCTION**



**DRAFT**

SCALE 1"=40'  
0 40 80 120 FEET

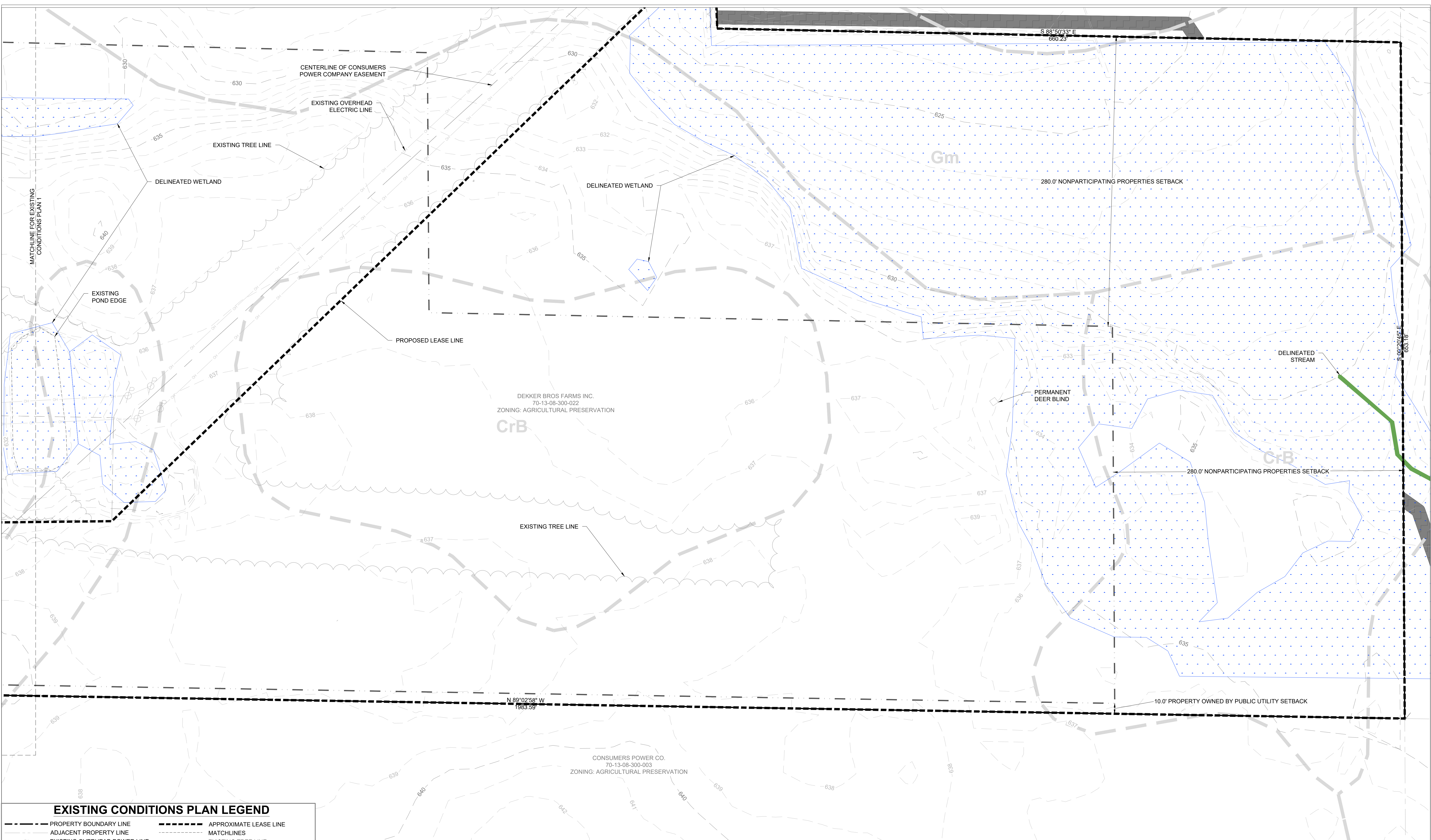
Rev.	Date	Description	By	Chk

PREPARED FOR:  
**KEY CAPTURE ENERGY**  
KCE MI 4, LLC  
25 MONROE STREET, SUITE 300  
ALBANY, NY 12210  
TEL: 518-903-4187



EXISTING CONDITIONS PLAN 1				DISCIPLINE NO. C-05
KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN				REV. 0
SCALE 1" = 40'	DESIGNED BY CJ, LF	PROJECT NUMBER 0780143	SHEET NO. 05	
DATE DRAWN 08/05/2025				
DRAWN BY LF				
Environmental Resources Management, Inc.				

FILE PATH: C:\Users\carlie.johnson\Documents\OneDrive - ERM\Key Capture Energy\Key Capture Energy (KCE) - KCE MI 4 (0701043)\Project Work\Engineering\CAD\Working Files\30% Plans\04-06 KCE MI 4 Existing Conditions Plan.dwg PROPOSED EX COND PLAN 2 40 SCALE PRINTED ON 06/02/2025 BY Carlie Johnson



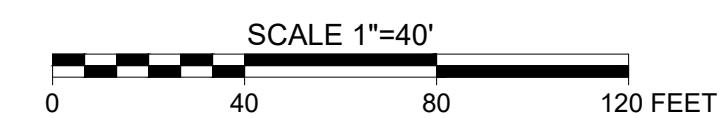
**EXISTING CONDITIONS PLAN LEGEND**

	PROPERTY BOUNDARY LINE		APPROXIMATE LEASE LINE
	ADJACENT PROPERTY LINE		MATCHLINES
	EXISTING OVERHEAD POWER LINE		EXISTING TREE LINE
	EXISTING GAS LINE		EDGE OF EXISTING GRAVEL
	YARD SETBACK		EXISTING BUILDING FOOTPRINT
	EXISTING CONTOURS		TOP OF EXISTING POND
	ROAD RIGHT OF WAY		DELINEATED WETLAND
	EASEMENT LINE		DELINEATED STREAM
	EDGE OF EXISTING ROAD		EXISTING GUY WIRE
	EXISTING ROAD CENTERLINE		EXISTING POWER POLE
	SOIL BOUNDARY LINE		EXISTING CATCH BASIN
	EXISTING ELECTRIC LINE		EXISTING WELL
	EXISTING FIBER OPTIC LINE		NWI WATERBODY DATA
	EXISTING FENCE		NWI WETLAND DATA

- HYDROLOGIC SOIL GROUP:**
- AmB (A/D)
  - CaradA (A/D)
  - CrB (A)
  - Gm (A/D)
  - PfabB (A)
  - PpsaaA (A/D)

**30% CIVIL PLANS:  
NOT FOR CONSTRUCTION**

**DRAFT**

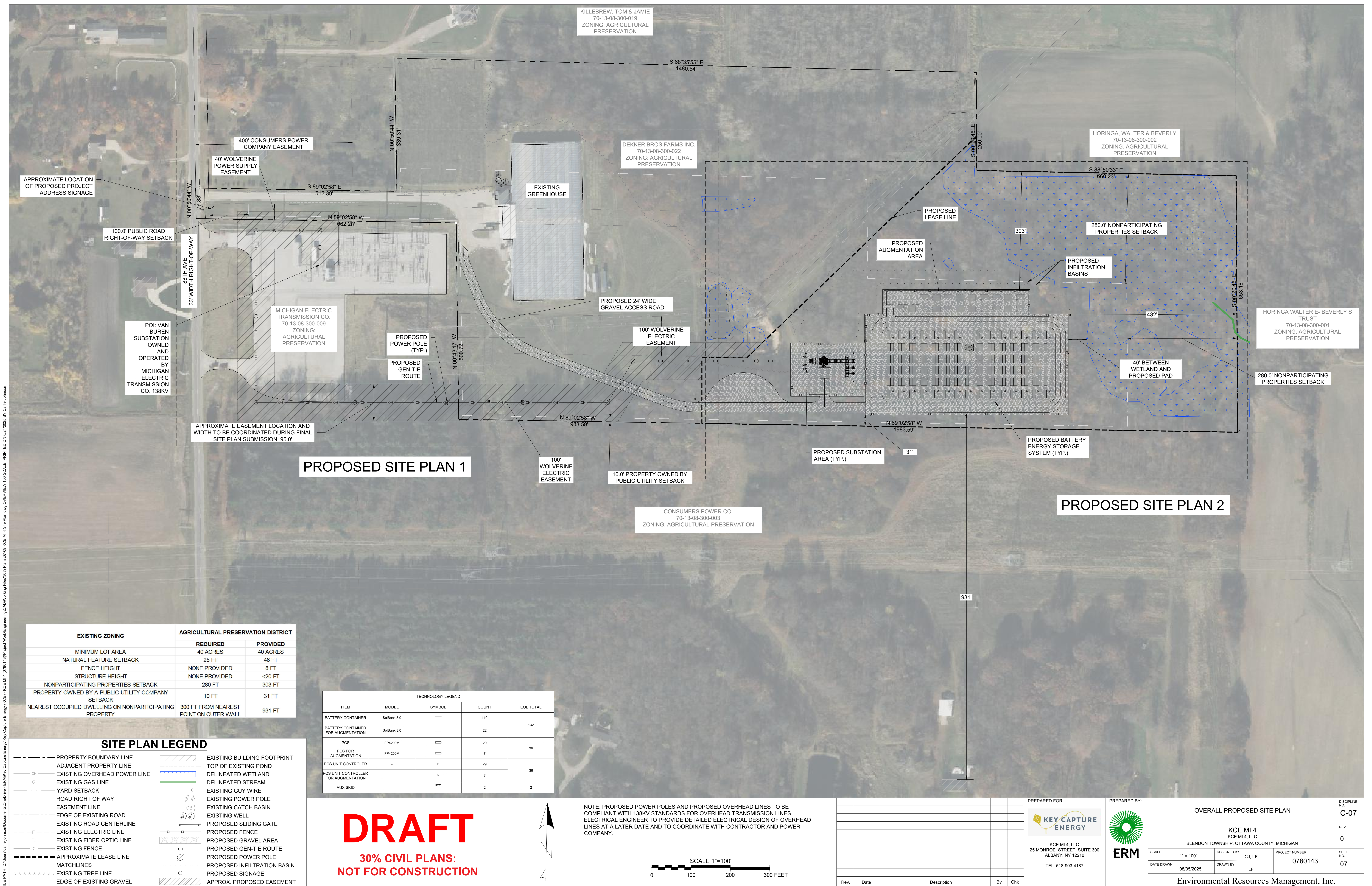


Rev.	Date	Description	By	Chk

PREPARED FOR:  
**KEY CAPTURE ENERGY**  
KCE MI 4, LLC  
25 MONROE STREET, SUITE 300  
ALBANY, NY 12210  
TEL: 518-903-4187



EXISTING CONDITIONS PLAN 2				DISCIPLINE NO. C-06
KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN				REV. 0
SCALE 1" = 40'	DESIGNED BY CJ, LF	PROJECT NUMBER 0780143	SHEET NO. 06	
DATE DRAWN 08/05/2025		DRAWN BY LF		
Environmental Resources Management, Inc.				



FILE PATH: C:\Users\carlie.johnson\Documents\OneDrive - ERM\Key Capture Energy\Key Capture Energy (KCE) - KCE MI 4 (0701043)\Project Work\Engineering\CAD\Working Files\30% Plans\07-09-KCE MI 4 Site Plan.dwg OVERVIEW 100 SCALE PRINTED ON 02/04/2025 BY Carlie Johnson

**PROPOSED SITE PLAN 1**

**PROPOSED SITE PLAN 2**

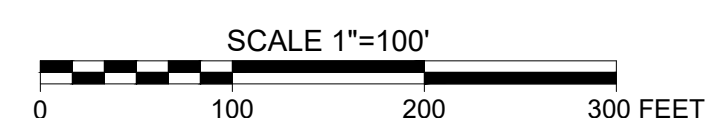
EXISTING ZONING	AGRICULTURAL PRESERVATION DISTRICT	
	REQUIRED	PROVIDED
MINIMUM LOT AREA	40 ACRES	40 ACRES
NATURAL FEATURE SETBACK	25 FT	46 FT
FENCE HEIGHT	NONE PROVIDED	8 FT
STRUCTURE HEIGHT	NONE PROVIDED	<20 FT
NONPARTICIPATING PROPERTIES SETBACK	280 FT	303 FT
PROPERTY OWNED BY A PUBLIC UTILITY COMPANY SETBACK	10 FT	31 FT
NEAREST OCCUPIED DWELLING ON NONPARTICIPATING PROPERTY	300 FT FROM NEAREST POINT ON OUTER WALL	931 FT

TECHNOLOGY LEGEND				
ITEM	MODEL	SYMBOL	COUNT	EOL TOTAL
BATTERY CONTAINER	SoBank 3.0		110	132
BATTERY CONTAINER FOR AUGMENTATION	SoBank 3.0		22	
PCS	FP4200M		29	36
PCS FOR AUGMENTATION	FP4200M		7	
PCS UNIT CONTROLLER	-		29	36
PCS UNIT CONTROLLER FOR AUGMENTATION	-		7	
AUX SKID	-		2	2

SITE PLAN LEGEND	
	PROPERTY BOUNDARY LINE
	ADJACENT PROPERTY LINE
	EXISTING OVERHEAD POWER LINE
	EXISTING GAS LINE
	YARD SETBACK
	ROAD RIGHT OF WAY
	EASEMENT LINE
	EDGE OF EXISTING ROAD
	EXISTING ROAD CENTERLINE
	EXISTING ELECTRIC LINE
	EXISTING FIBER OPTIC LINE
	EXISTING FENCE
	APPROXIMATE LEASE LINE
	MATCHLINES
	EXISTING TREE LINE
	EDGE OF EXISTING GRAVEL
	EXISTING BUILDING FOOTPRINT
	TOP OF EXISTING POND
	DELINEATED WETLAND
	DELINEATED STREAM
	EXISTING GUY WIRE
	EXISTING POWER POLE
	EXISTING CATCH BASIN
	EXISTING WELL
	PROPOSED SLIDING GATE
	PROPOSED FENCE
	PROPOSED GRAVEL AREA
	PROPOSED GEN-TIE ROUTE
	PROPOSED POWER POLE
	PROPOSED INFILTRATION BASIN
	PROPOSED SIGNAGE
	APPROX. PROPOSED EASEMENT

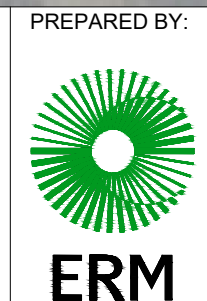
**DRAFT**  
30% CIVIL PLANS:  
NOT FOR CONSTRUCTION

NOTE: PROPOSED POWER POLES AND PROPOSED OVERHEAD LINES TO BE COMPLIANT WITH 138KV STANDARDS FOR OVERHEAD TRANSMISSION LINES. ELECTRICAL ENGINEER TO PROVIDE DETAILED ELECTRICAL DESIGN OF OVERHEAD LINES AT A LATER DATE AND TO COORDINATE WITH CONTRACTOR AND POWER COMPANY.



Rev.	Date	Description	By	Chk

PREPARED FOR:  
**KEY CAPTURE ENERGY**  
KCE MI 4, LLC  
25 MONROE STREET, SUITE 300  
ALBANY, NY 12210  
TEL: 518-903-4187



OVERALL PROPOSED SITE PLAN				DISCIPLINE NO. C-07
KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN				REV. 0
SCALE 1" = 100'	DESIGNED BY CJ, LF	PROJECT NUMBER 0780143	SHEET NO. 07	
DATE DRAWN 08/05/2025	DRAWN BY LF	Environmental Resources Management, Inc.		

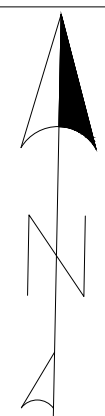
FILE PATH: C:\Users\carlie.johnson\Documents\Drawings - ERM\Key Capture Energy\Key Capture Energy (KCE) - KCE MI 4 (0701043)\Project Work\Engineering\CAD\Working Files\30% Plans\07-09 KCE MI 4 Site Plan.dwg PROPOSED SITE PLAN 1 40 SCALE PRINTED ON 02/20/2025 BY Carlie Johnson



**SITE PLAN LEGEND**

- |                                 |                                 |
|---------------------------------|---------------------------------|
| --- PROPERTY BOUNDARY LINE      | ▨ EXISTING BUILDING FOOTPRINT   |
| --- ADJACENT PROPERTY LINE      | ▨ TOP OF EXISTING POND          |
| OH EXISTING OVERHEAD POWER LINE | ▨ DELINEATED WETLAND            |
| --- EXISTING GAS LINE           | ▨ DELINEATED STREAM             |
| --- YARD SETBACK                | --- EXISTING GUY WIRE           |
| --- ROAD RIGHT OF WAY           | --- EXISTING POWER POLE         |
| --- EASEMENT LINE               | --- EXISTING CATCH BASIN        |
| --- EDGE OF EXISTING ROAD       | --- EXISTING WELL               |
| --- EXISTING ROAD CENTERLINE    | --- PROPOSED SLIDING GATE       |
| --- EXISTING ELECTRIC LINE      | --- PROPOSED FENCE              |
| --- EXISTING FIBER OPTIC LINE   | --- PROPOSED GRAVEL AREA        |
| --- EXISTING FENCE              | --- PROPOSED GEN-TIE ROUTE      |
| --- APPROXIMATE LEASE LINE      | --- PROPOSED POWER POLE         |
| --- MATCHLINES                  | --- PROPOSED INFILTRATION BASIN |
| --- EXISTING TREE LINE          | --- PROPOSED SIGNAGE            |
| --- EDGE OF EXISTING GRAVEL     | ▨ APPROX. PROPOSED EASEMENT     |

**30% CIVIL PLANS:  
NOT FOR CONSTRUCTION**



**DRAFT**

SCALE 1"=40'  
0 40 80 120 FEET

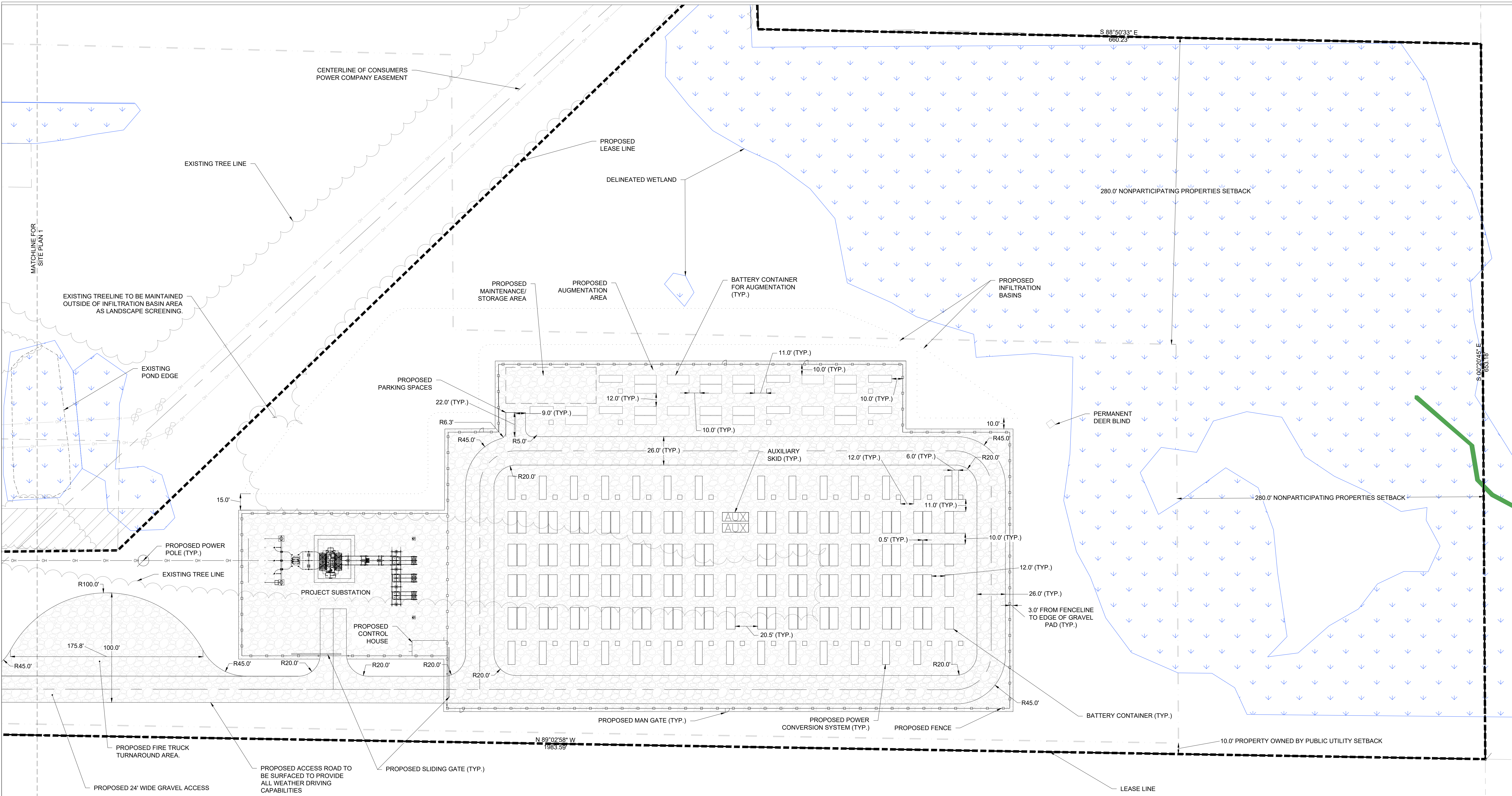
Rev.	Date	Description	By	Chk

PREPARED FOR:  
**KEY CAPTURE ENERGY**  
KCE MI 4, LLC  
25 MONROE STREET, SUITE 300  
ALBANY, NY 12210  
TEL: 518-903-4187



PROPOSED SITE PLAN 1			
KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN			
SCALE: 1" = 40'	DESIGNED BY: CJ, LF	PROJECT NUMBER: 0780143	DISCIPLINE NO.: C-08
DATE DRAWN: 08/05/2025	DRAWN BY: LF		REV. NO.: 0
Environmental Resources Management, Inc.			SHEET NO.: 08

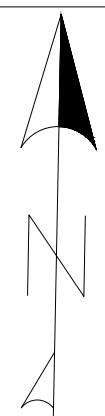
FILE PATH: C:\Users\carlie.johnson\Documents\Drawings - ERM\Key Capture Energy\Key Capture Energy (KCE) - KCE MI 4 (0701043)\Project Work\Engineering\CAD\Working Files\30% Plans\07-09 KCE MI 4 Site Plan.dwg PROPOSED SITE PLAN 2 40 SCALE PRINTED ON 02/20/2025 BY Carlie Johnson



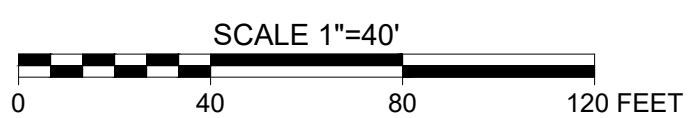
**SITE PLAN LEGEND**

- |                                 |                                 |
|---------------------------------|---------------------------------|
| --- PROPERTY BOUNDARY LINE      | ▨ EXISTING BUILDING FOOTPRINT   |
| --- ADJACENT PROPERTY LINE      | ▨ TOP OF EXISTING POND          |
| OH EXISTING OVERHEAD POWER LINE | ▨ DELINEATED WETLAND            |
| --- EXISTING GAS LINE           | ▨ DELINEATED STREAM             |
| --- YARD SETBACK                | --- EXISTING GUY WIRE           |
| --- ROAD RIGHT OF WAY           | --- EXISTING POWER POLE         |
| --- EASEMENT LINE               | --- EXISTING CATCH BASIN        |
| --- EDGE OF EXISTING ROAD       | --- EXISTING WELL               |
| --- EXISTING ROAD CENTERLINE    | --- PROPOSED SLIDING GATE       |
| --- EXISTING ELECTRIC LINE      | --- PROPOSED FENCE              |
| --- EXISTING FIBER OPTIC LINE   | --- PROPOSED GRAVEL AREA        |
| --- EXISTING FENCE              | --- PROPOSED GEN-TIE ROUTE      |
| --- APPROXIMATE LEASE LINE      | --- PROPOSED POWER POLE         |
| --- MATCHLINES                  | --- PROPOSED INFILTRATION BASIN |
| --- EXISTING TREE LINE          | --- PROPOSED SIGNAGE            |
| --- EDGE OF EXISTING GRAVEL     | ▨ APPROX. PROPOSED EASEMENT     |

**30% CIVIL PLANS:  
NOT FOR CONSTRUCTION**



**DRAFT**

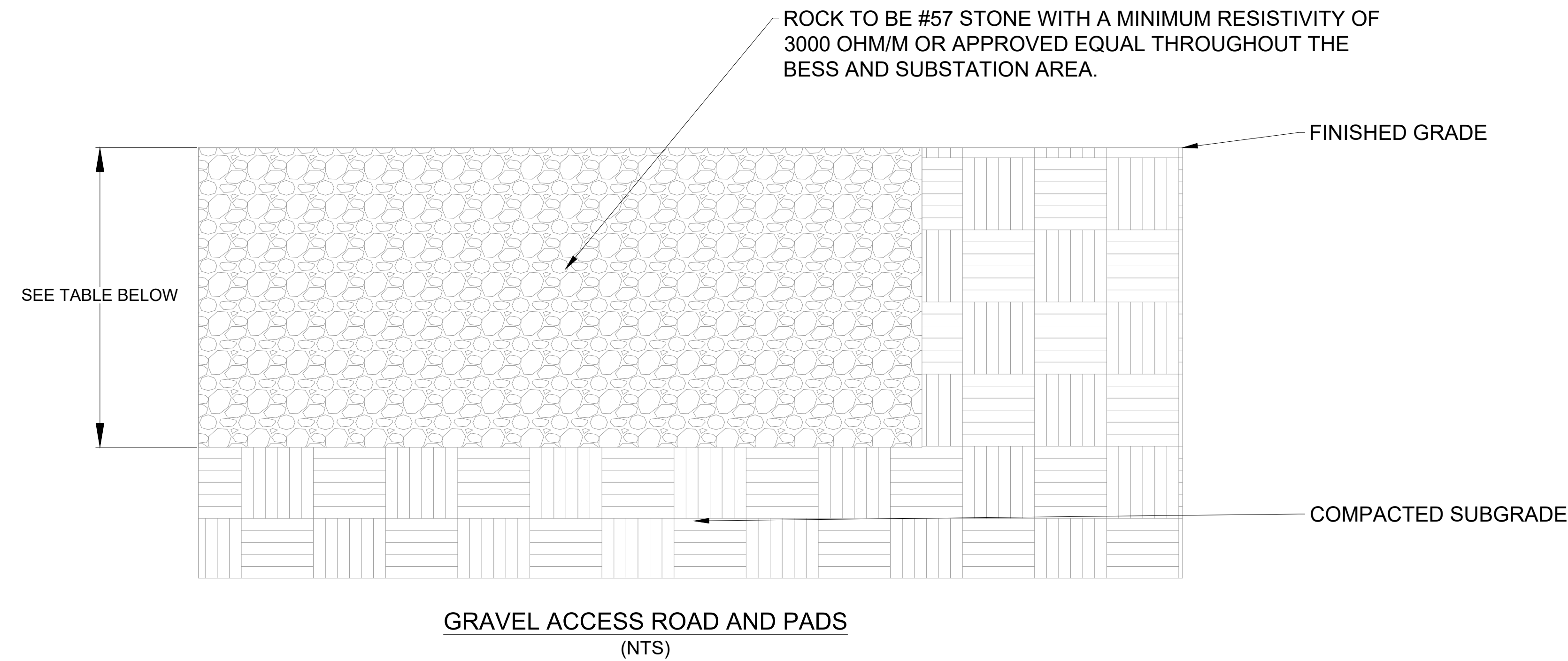


Rev.	Date	Description	By	Chk

PREPARED FOR:  
**KEY CAPTURE ENERGY**  
KCE MI 4, LLC  
25 MONROE STREET, SUITE 300  
ALBANY, NY 12210  
TEL: 518-903-4187



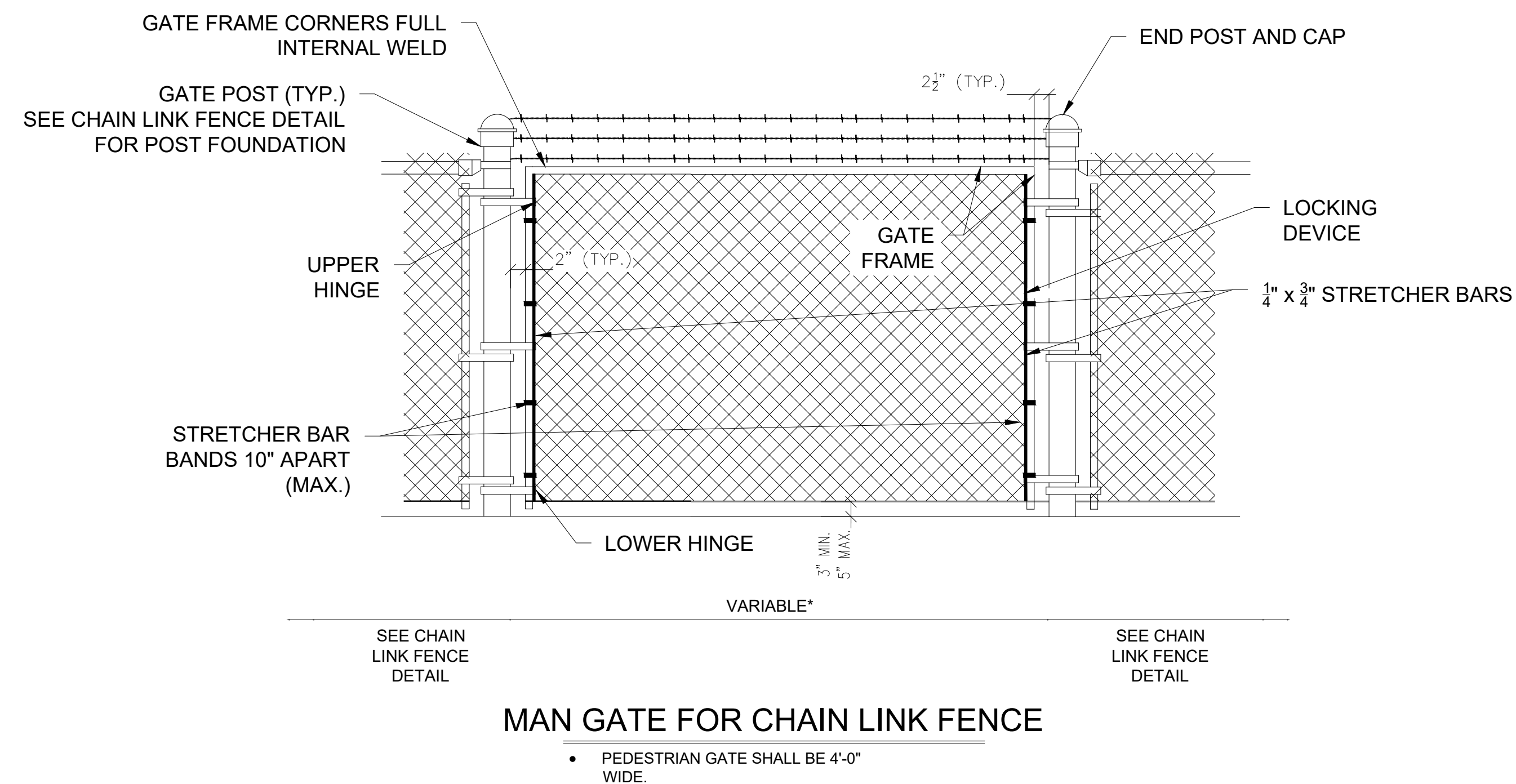
PROPOSED SITE PLAN 2				DISCIPLINE NO. C-09
KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN				REV. 0
SCALE 1" = 40'	DESIGNED BY CJ, LF	PROJECT NUMBER 0780143	SHEET NO. 09	
DATE DRAWN 08/05/2025				DRAWN BY LF
Environmental Resources Management, Inc.				



TYPICAL UNPAVED ROAD SECTION			
BASE COURSE THICKNESS	SUBBASE TYPE	GEOGRID STABILIZATION	AREA
7 INCHES	NATIVE SOIL	NO <sup>3</sup>	BESS/ SUBSTATION AREA

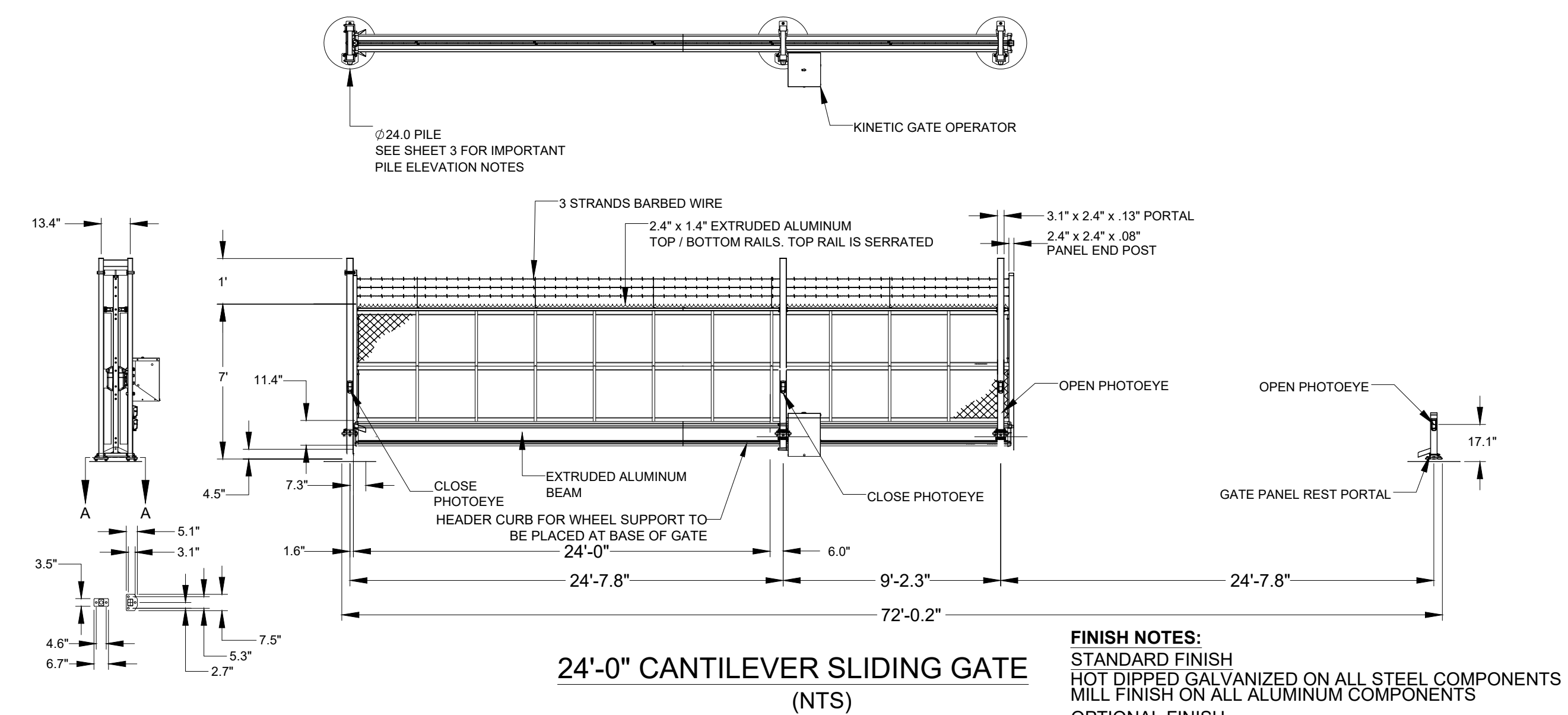
**NOTES:**

- GRAVEL SECTION APPLICABLE FOR BOTH ACCESS ROADS AND PROPOSED PADS.
- BASE MATERIALS SHOULD MEET MDOT 21AA STONE OR OTHER ALTERNATE GRADATION AS APPROVED BY THE GEOTECHNICAL ENGINEER.
- PER RECOMMENDATION FROM GEOTECHNICAL REPORT PREPARED BY TERRACON, DATED JULY 17, 2024.



**MAN GATE FOR CHAIN LINK FENCE**

- PEDESTRIAN GATE SHALL BE 4'-0" WIDE.



**24'-0" CANTILEVER SLIDING GATE (NTS)**

- FINISH NOTES:**  
 STANDARD FINISH  
 HOT DIPPED GALVANIZED ON ALL STEEL COMPONENTS  
 MILL FINISH ON ALL ALUMINUM COMPONENTS  
 OPTIONAL FINISH  
 POWDER COAT PAINT, RAL# TO BE SPECIFIED



TYPICAL ADDRESS SIGN

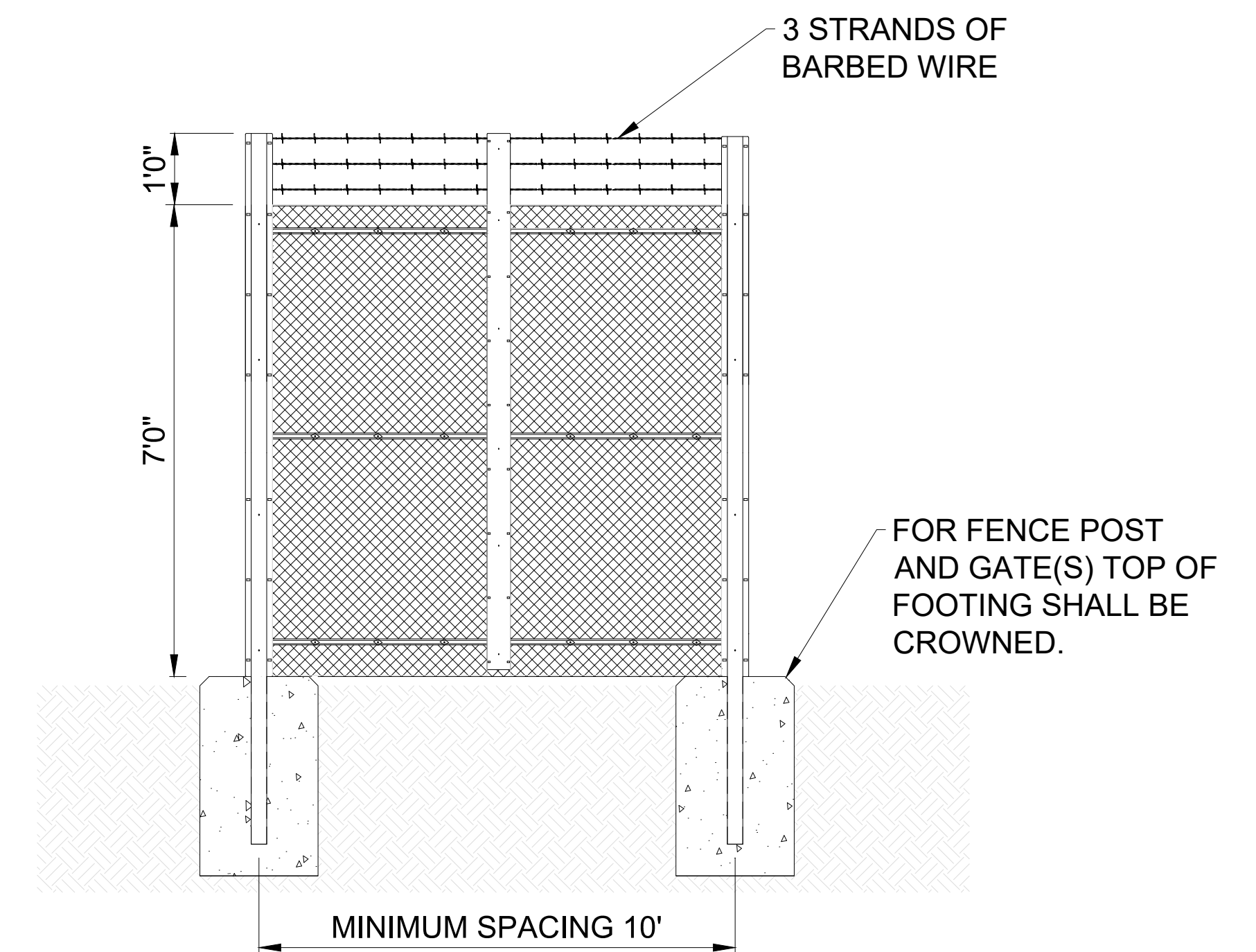


TYPICAL FIRE LANE SIGN

**NOTES:**

- ALL SIGNS TO BE 18" X 24" IN SIZE.
- SIGNS SHALL BE UV RESISTANT AND IN COLOR. SIGN MATERIAL SHALL BE HDPE OR LIGHT GAGE GALVANIZED STEEL.
- SIGNS TO BE ATTACHED TO FENCING WITH PERMANENT FASTENERS.

**PERMANENT SIGNAGE (NTS)**

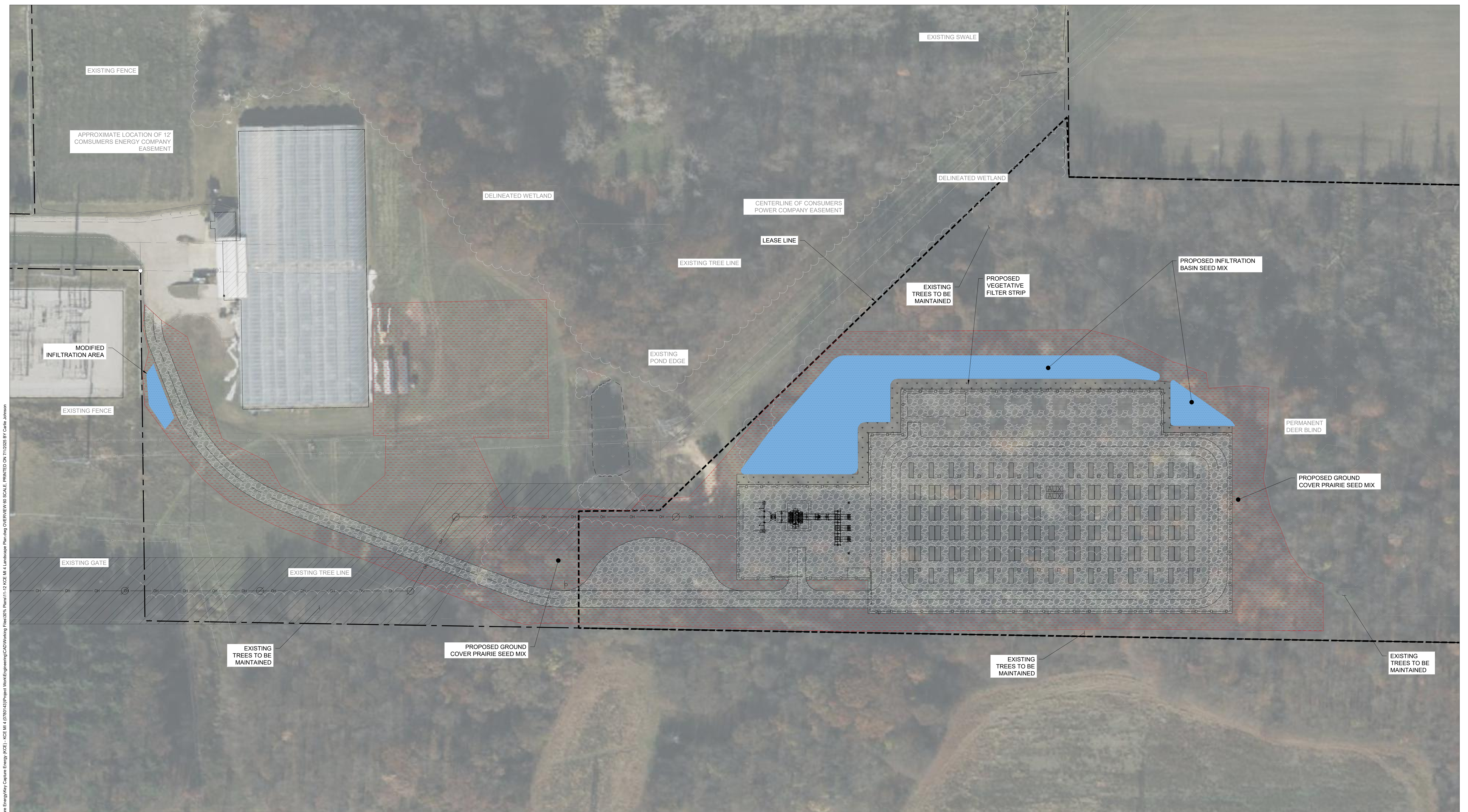


**8 FT HIGH CHAIN LINK PRIVACY FENCE DETAIL (NTS)**

**30% CIVIL PLANS:  
NOT FOR CONSTRUCTION**

**DRAFT**

Rev.		Date	Description	By	Chk	PREPARED FOR: <b>KEY CAPTURE ENERGY</b> KCE MI 4, LLC 25 MONROE STREET, SUITE 300 ALBANY, NY 12210 TEL: 518-903-4187	PREPARED BY: <b>ERM</b>	CONSTRUCTION DETAILS KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN		DISCIPLINE NO. C-10
SCALE		NTS	DESIGNED BY	JB	PROJECT NUMBER	0780143	SHEET NO. 10		REV. 0	
DATE DRAWN		08/05/2025	DRAWN BY		JB	Environmental Resources Management, Inc.				

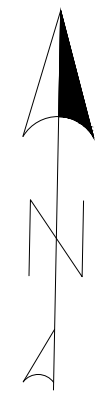


FILE PATH: C:\Users\carla.johnson\Documents\Drawings - ERM\Key Capture Energy\Key Capture Energy (KCE) - KCE MI 4 (0701043)\Project Work\Engineering\CAD\Working Files\30% Plans\11-2 KCE MI 4 Landscape Plan.dwg OVERVIEW 00 SCALE: PRINTED ON 7/1/2025 BY Carla Johnson

**LANDSCAPE PLAN LEGEND**

---	PROPERTY BOUNDARY LINE	---	ROAD CENTERLINE
---	ADJACENT PROPERTY LINE	---	PROPOSED SLIDING GATE
OH	EXISTING OVERHEAD POWER LINE	---	PROPOSED FENCE
G	EXISTING GAS LINE	---	PROPOSED GRAVEL AREA
---	YARD SETBACK	OH	PROPOSED GEN-TIE ROUTE
---	EASEMENT LINE	---	PROPOSED VEGETATED FILTER STRIP
x	EXISTING FENCE	---	PROPOSED POWER POLE
---	APPROXIMATE LEASE LINE	---	GROUND COVER PRAIRIE SEED MIX
---	EXISTING TREE LINE	---	INFILTRATION BASIN SEED MIX
---	EDGE OF EXISTING GRAVEL	---	APPROX. PROPOSED EASEMENT
---	EXISTING POWER POLE	---	
---	EXISTING BUILDING FOOTPRINT	---	
---	DELINEATED WETLAND	---	

**30% CIVIL PLANS:  
NOT FOR CONSTRUCTION**



**DRAFT**

SCALE 1"=60'

0 60 120 180 FEET

Rev.	Date	Description	By	Chk

PREPARED FOR:

**KEY CAPTURE ENERGY**

KCE MI 4, LLC  
25 MONROE STREET, SUITE 300  
ALBANY, NY 12210  
TEL: 518-903-4187



PREPARED BY: <b>ERM</b>				DISCIPLINE NO. <b>C-11</b>
PROPOSED LANDSCAPE PLAN				REV. <b>0</b>
KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN				SHEET NO. <b>11</b>
SCALE 1" = 60'	DESIGNED BY NQ	PROJECT NUMBER <b>0780143</b>	Environmental Resources Management, Inc.	
DATE DRAWN 08/05/2025	DRAWN BY LF			

GENERAL LANDSCAPE PLANTING NOTES:

- ALL EXISTING VEGETATION OUTSIDE OF THE LIMIT OF DISTURBANCE IS TO BE PROTECTED AND RETAINED. TEMPORARY FENCING AROUND TREES SHALL BE PLACED NO CLOSER THAN THE DRIPLINES OF THE CANOPIES.
- SEEDING TO OCCUR DURING FALL, WHEN SOILS ARE DRY AND WORKABLE.
- ANY NATIVE GRASS, RUSH, OR SEDGE WITHIN THE SEED MIXES CAN BE REPLACED WITH ANY OTHER NATIVE GRASS, RUSH, OR SEDGE NATIVE TO MICHIGAN'S SOUTHERN PENINSULA. ANY FORB REPLACEMENTS SHOULD BE FROM THE PROVIDED LIST OF ACCEPTABLE FORB SUBSTITUTIONS.
- INSTALL APPROPRIATE EROSION CONTROL TO ENSURE SEED ESTABLISHMENT.
- ENSURE BASINS ARE SEEDED ENOUGH IN ADVANCE TO ALLOW FOR ONE FULL YEAR OF GROWTH PRIOR TO ACTIVE USE.
- SEEDING TO BE CHECKED AND SPOT-SUPPLEMENTED AS NEEDED BY THE CONTRACTOR.

Native Connections

3815 N Westnedge Ave, Kalamazoo, MI 49004  
 (P) 269.459.6900  
 info@nativeconnections.net  
 www.nativeconnections.net

Infiltration Basin Mix

This mix is designed to withstand the low water quality and highly variable conditions associated with stormwater features. Most of the species are salt tolerant and most species will do well in mesic to wet hydrology with others filling in the wettest and driest ends of the spectrum. The high native seed count and heavy annual nurse crop in this mix ensure full and aggressive establishment.

Total Seeding Rate: 35.98 lbs per acre  
 3.13 lbs grasses • 2.85 lbs forbs • 30 lbs nurse crop  
 113.11 native seeds per sq ft

Grasses, Sedges & Rushes		PLS Oz/acre	Seeds/sq ft
<i>Andropogon gerardii</i>	Big Bluestem	3.00	0.69
<i>Carex vulpinoidea</i>	Fox Sedge	2.00	4.59
<i>Eleocharis palustris</i>	Great Spike Rush	0.40	0.47
<i>Elymus canadensis</i>	Canada Wild Rye	12.00	1.430
<i>Elymus virginicus</i>	Virginia Wild Rye	12.00	1.16
<i>Glyceria striata</i>	Fowl Manna Grass	1.20	4.410
<i>Juncus effusus</i>	Soft Rush	0.40	9.18
<i>Juncus tenuis</i>	Path Rush	0.40	9.18
<i>Panicum virgatum</i>	Switchgrass	4.00	1.29
<i>Schizachyrium scoparium</i>	Little Bluestem	8.00	2.750
<i>Scirpus cyperinus</i>	Wool Grass	0.40	15.610
<i>Scirpus validus (S. tabernaemontanii)</i>	Soft-stem Bulrush	1.00	0.85
<i>Sorghastrum nutans</i>	Indian Grass	4.00	0.83
<i>Spartina pectinata</i>	Prairie Cordgrass	2.00	0.300
Total Grasses		50.80	52.74

Infiltration Basin Mix, cont.

Forbs		PLS Oz/acre	Seeds/sq ft
<i>Allium cernuum</i>	Nodding Wild Onion	2.00	0.35
<i>Asclepias incarnata</i>	Swamp Milkweed	2.40	0.26
<i>Asclepias tuberosa</i>	Butterfly Milkweed	2.40	0.24
<i>Bidens cernua</i>	Nodding Bur Marigold	0.80	0.39
<i>Doellingeria umbellata</i>	Flat-topped Aster	0.40	0.62
<i>Echinacea purpurea</i>	Purple Coneflower	8.00	1.21
<i>Eutrochium purpureum</i>	Sweet Joe Pye Weed	1.20	1.16
<i>Helenium autumnale</i>	Sneezeweed	0.80	2.39
<i>Heliopsis helianthoides</i>	False sunflower	4.00	0.58
<i>Lobelia siphilitica</i>	Great Blue Lobelia	0.40	4.59
<i>Mimulus ringens</i>	Monkey Flower	0.40	21.12
<i>Monarda fistulosa</i>	Wild Bergamot	0.80	1.29
<i>Penstemon digitalis</i>	Foxglove Beardtongue	1.20	3.58
<i>Physostegia virginiana</i>	Obedient Plant	0.40	0.10
<i>Polygonum pennsylvanicum (Persicaria p.)</i>	Pennsylvania Smartweed	4.00	1.19
<i>Pycnanthemum virginianum</i>	Mountain mint	0.40	2.02
<i>Ratibida pinnata</i>	Yellow Coneflower	1.60	1.10
<i>Rudbeckia hirta</i>	Black-eyed Susan	6.00	12.67
<i>Senna hebecarpa</i>	Wild Senna	4.00	0.13
<i>Solidago riddellii</i>	Riddell's Goldenrod	0.40	0.85
<i>Symphotrichum novae-angliae</i>	New England Aster	0.40	0.61
<i>Verbena hastata</i>	Blue Vervain	1.60	3.42
<i>Zizia aurea</i>	Golden Alexander	2.00	0.51
Total Forbs		45.60	60.38
Temporary Grass Cover		Oz/acre	Seeds/sq ft
<i>Lolium multiflorum</i>	Annual Ryegrass	112.00	34.71
<i>Avena sativa</i>	Seed Oats	368.00	8.45
Total Temp Grasses		480.00	43.16

Native Connections

Basic Mesic Tallgrass Prairie Mix

Total Seeding Rate: 31.28 lbs per acre  
 3.88 lbs grasses • 2.41 lbs forbs • 25 lbs nurse crop  
 39.42 native seeds per sq ft • up to 8 ft

Grasses		PLS Oz/acre	Seeds/sq ft
<i>Andropogon gerardii</i>	Big Bluestem	10.00	2.30
<i>Elymus canadensis</i>	Canada Wild Rye	16.00	1.91
<i>Panicum virgatum</i>	Switchgrass	8.00	2.57
<i>Schizachyrium scoparium</i>	Little Bluestem	20.00	6.89
<i>Sorghastrum nutans</i>	Indian Grass	8.00	2.20
Total Grasses		62.00	15.87

Forbs		PLS Oz/acre	Seeds/sq ft
<i>Asclepias syriaca</i>	Common Milkweed	2.00	0.18
<i>Asclepias tuberosa</i>	Butterfly Milkweed	2.00	0.20
<i>Baptisia lactea (B. leucantha, B. alba)</i>	White Wild Indigo	1.00	0.04
<i>Chamaecrista fasciculata</i>	Partridge Pea	8.00	0.50
<i>Echinacea purpurea</i>	Purple Coneflower	6.00	0.91
<i>Heliopsis helianthoides</i>	False sunflower	4.00	0.58
<i>Liatis spicata</i>	Marsh Blazingstar	1.50	0.38
<i>Monarda fistulosa</i>	Wild Bergamot	2.00	3.21
<i>Penstemon digitalis</i>	Foxglove Beardtongue	1.50	4.48
<i>Ratibida pinnata</i>	Yellow Coneflower	2.50	1.72
<i>Rudbeckia hirta</i>	Black-eyed Susan	4.00	8.45
<i>Silphium integrifolium</i>	Rosinweed	0.25	0.01
<i>Solidago rigida</i>	Stiff Goldenrod	1.00	0.94
<i>Symphotrichum novae-angliae</i>	New England Aster	1.00	1.52
<i>Zizia aurea</i>	Golden Alexander	1.75	0.44
Total Forbs		38.50	23.56

Temporary Grass Cover		Oz/acre	Seeds/sq ft
<i>Lolium multiflorum</i>	Annual Ryegrass	80.00	24.79
<i>Avena sativa</i>	Seed Oats	320.00	7.35
Total Temp Grasses		400.00	32.14

Acceptable Forb substitutions:

hog peanut (*Amphicarpaea bracteata*), thimbleweed (*Anemone cylindrica*), purple milkweed (*Asclepias purpurascens*, state threatened), false boneset (*Brickellia eupatorioides*, state special concern), prairie coreopsis (*Coreopsis palmata*, state threatened), showy tick-trefoil (*Desmodium canadense*), upland boneset (*Eupatorium sessilifolium*, state threatened), daisy fleabane (*Erigeron strigosus*), flowering spurge (*Euphorbia corollata*), white gentian (*Gentiana alba*, state endangered), veiny pea (*Lathyrus venosus*), bush clovers (*Lespedeza capitata* and *L. hirta*), Virginia mountain mint (*Pycnanthemum virginianum*), starry campion (*Silene stellata*, state threatened), early goldenrod (*Solidago juncea*), smooth aster (*Symphotrichum laeve*), frost aster (*S. pilosum*), yellow pimpernel (*Taenidia integerrima*), feverwort (*Triosteum perfoliatum*), Culver's root (*Veronicastrum virginicum*)

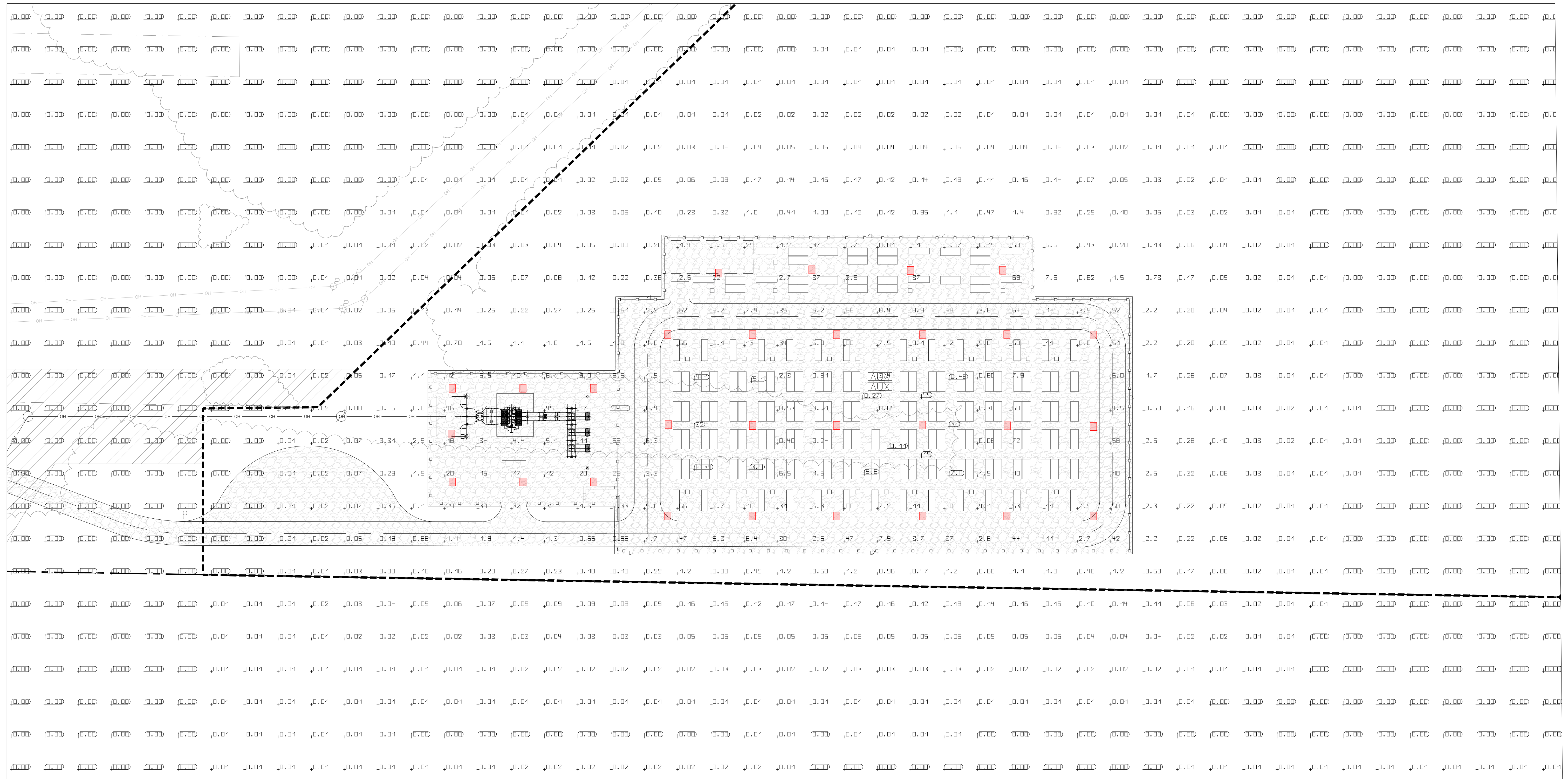
FILE PATH: C:\Users\katie.johnson\Documents\OneDrive - ERM\Key Capture Energy\KCE - KCE MI 4 (0780143)\Project Work\Engineering\CAD\Working Files\30% Plans\1-12 KCE MI 4 Landscape Plan.dwg DETAILS PRINTED ON 7/1/2023 BY Katie Johnson

30% CIVIL PLANS:  
 NOT FOR CONSTRUCTION

DRAFT

PREPARED FOR:		PREPARED BY:		DISCIPLINE NO.	
KEY CAPTURE ENERGY		ERM		C-12	
KCE MI 4, LLC 25 MONROE STREET, SUITE 300 ALBANY, NY 12210 TEL: 518-903-4187		KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN		REV. 0	
SCALE: NTS	DESIGNED BY: NQ	PROJECT NUMBER: 0780143	SHEET NO. 12		
DATE DRAWN: 08/05/2025	DRAWN BY: LF	Environmental Resources Management, Inc.			

FILE PATH: C:\Users\carline.johnson\Documents\OneDrive - ERM\Key Capture Energy\Key Capture Energy (KCE) - KCE MI 4 (070143)\Project Work\Engineering\CAD\Working Files\30% Plans\3 KCE MI 4 Lighting Plan\Key 50 SCALE PRINTED ON 7/10/2025 BY Carline Johnson



Lighting Calculation Summary						
Area	Units	Average	Min	Max	Avg/Min	Max/Min
Main Battery Area	lux (fc)	18 (1.7)	0.1 (0.01)	89.1 (8.3)	180 (170)	89 (83)
Project Substation	lux (fc)	34.1 (3.2)	1 (0.1)	101 (9.4)	34.1 (32)	101 (94)

Obtrusive Light Summary <sup>1,2</sup>						
Receptor	Light Trespass		Source Intensity		Sky Glow	
	Post-Curfew target	Illuminance	Target	Actual	Max ULR %	Actual ULR %
8370 88th Ave.	1 lux	0 lux	0.5 kcd	0.005 kcd	2.5000	0.0000
8665 Polk St.	1 lux	0 lux	0.5 kcd	0.032 kcd		

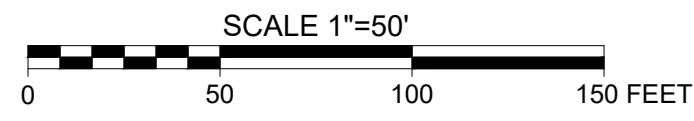
<sup>1</sup>Targets based on guidance in CIE 150:2017 for Environmental Zone E2, low district brightness areas  
<sup>2</sup>All receptors are screened by trees; calculations assume no screening effects

Luminaire Schedule						
Luminaire ID	Quantity	Manufacturer	Model	Lumens	Watts	CCT
1.0000	30.0000	Lithonia Lighting	KSF	14,000	250	3500 K

**LIGHTING PLAN LEGEND**

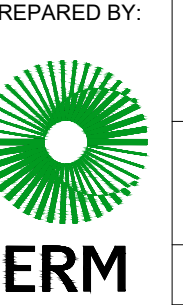
- SITE BOUNDARY LINE
- - - LEASE LINE
- BATTERY CONTAINER
- LUMINOUS FLUX CALCULATION RESULTS
- LUMINAIRE ID 1

**DRAFT**  
 30% CIVIL PLANS:  
 NOT FOR CONSTRUCTION



Rev.	Date	Description	By	Chk

PREPARED FOR:  
  
 KCE MI 4, LLC  
 25 MONROE STREET, SUITE 300  
 ALBANY, NY 12210  
 TEL: 518-903-4187



PROPOSED LIGHTING PLAN

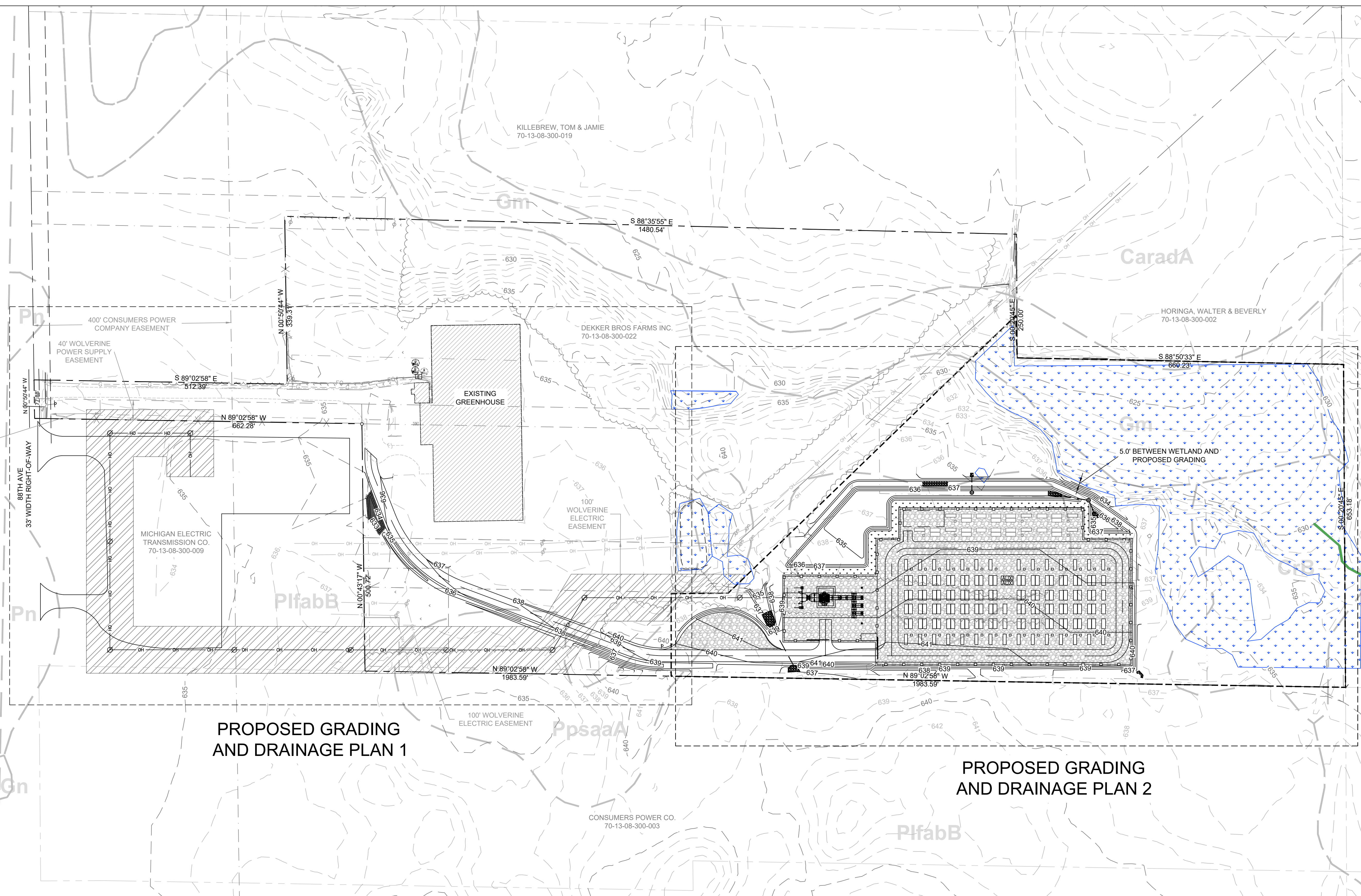
KCE MI 4  
 KCE MI 4, LLC  
 BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN

SCALE: 1" = 50'  
 DATE DRAWN: 08/05/2025  
 DESIGNED BY: LP  
 DRAWN BY: JB  
 PROJECT NUMBER: 0780143  
 SHEET NO.: 13

Environmental Resources Management, Inc.

DISCIPLINE NO.: C-13  
 REV.: 0

FILE PATH: C:\Users\jessica.lafont@erm.com\OneDrive - ERM\Key Capture Energy (KCE) - KCE MI 4 (0780143)\Project Work\Engineering\GD\Working Files\03% Plans\14-18 KCE MI 4 GRADING AND DRAINAGE Plan\_Overview.dwg OVERVIEW 100 SCALE PRINTED ON 11/01/2025 BY Jessica Bitt



**PROPOSED GRADING AND DRAINAGE PLAN 1**

**PROPOSED GRADING AND DRAINAGE PLAN 2**

**GRADING AND DRAINAGE PLAN LEGEND**

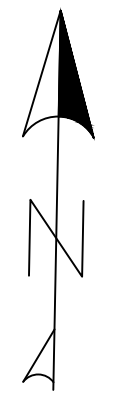
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| <ul style="list-style-type: none"> <li>--- PROPERTY BOUNDARY LINE</li> <li>--- ADJACENT PROPERTY LINE</li> <li>--- EXISTING OVERHEAD POWER LINE</li> <li>--- EXISTING GAS LINE</li> <li>--- YARD SETBACK</li> <li>--- ROAD RIGHT OF WAY</li> <li>--- EASEMENT LINE</li> <li>--- EDGE OF EXISTING ROAD</li> <li>--- EXISTING ROAD CENTERLINE</li> <li>--- SOIL BOUNDARY LINE</li> <li>--- EXISTING ELECTRIC LINE</li> <li>--- EXISTING FIBER OPTIC LINE</li> <li>--- EXISTING FENCE</li> <li>--- APPROXIMATE LEASE LINE</li> <li>--- MATCHLINES</li> <li>--- EXISTING TREE LINE</li> <li>--- EDGE OF EXISTING GRAVEL</li> <li>--- EXISTING BUILDING FOOTPRINT</li> </ul> | <ul style="list-style-type: none"> <li>--- TOP OF EXISTING POND</li> <li>--- DELINEATED WETLAND</li> <li>--- DELINEATED STREAM</li> <li>--- EXISTING GUY WIRE</li> <li>--- EXISTING POWER POLE</li> <li>--- EXISTING CATCH BASIN</li> <li>--- EXISTING WELL</li> <li>--- PROPOSED SLIDING GATE</li> <li>--- PROPOSED FENCE</li> <li>--- PROPOSED GRAVEL AREA</li> <li>--- PROPOSED GEN-TIE ROUTE</li> <li>--- PROPOSED POWER POLE</li> <li>--- PROPOSED CONTOURS</li> <li>--- PROPOSED STORM PIPING</li> <li>--- PROPOSED VEGETATED FILTER STRIP</li> <li>--- PROPOSED HW/EW</li> <li>--- FLOW ARROW</li> <li>--- APPROX. PROPOSED EASEMENT</li> </ul> |
|---|--|

**HYDROLOGIC SOIL GROUP:**

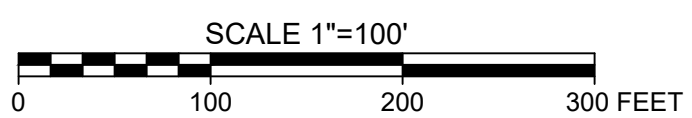
- AmB (A/D)
- CaradA (A/D)
- CrB (A)
- Gm (A/D)
- PifabB (A)
- PpsaaA (A/D)

**DRAFT**

**30% CIVIL PLANS:  
NOT FOR CONSTRUCTION**



NOTE: DESIGN INFILTRATION RATE WAS ASSUMED TO BE 3.6 IN/HOUR BASED ON EXISTING SOILS ON-SITE. INFILTRATION TESTING, IN ACCORDANCE WITH THE OTTAWA COUNTY WATER RESOURCE COMMISSIONER SITE DEVELOPMENT RULES MANUAL, SHALL BE PERFORMED PRIOR TO FINAL DESIGN.

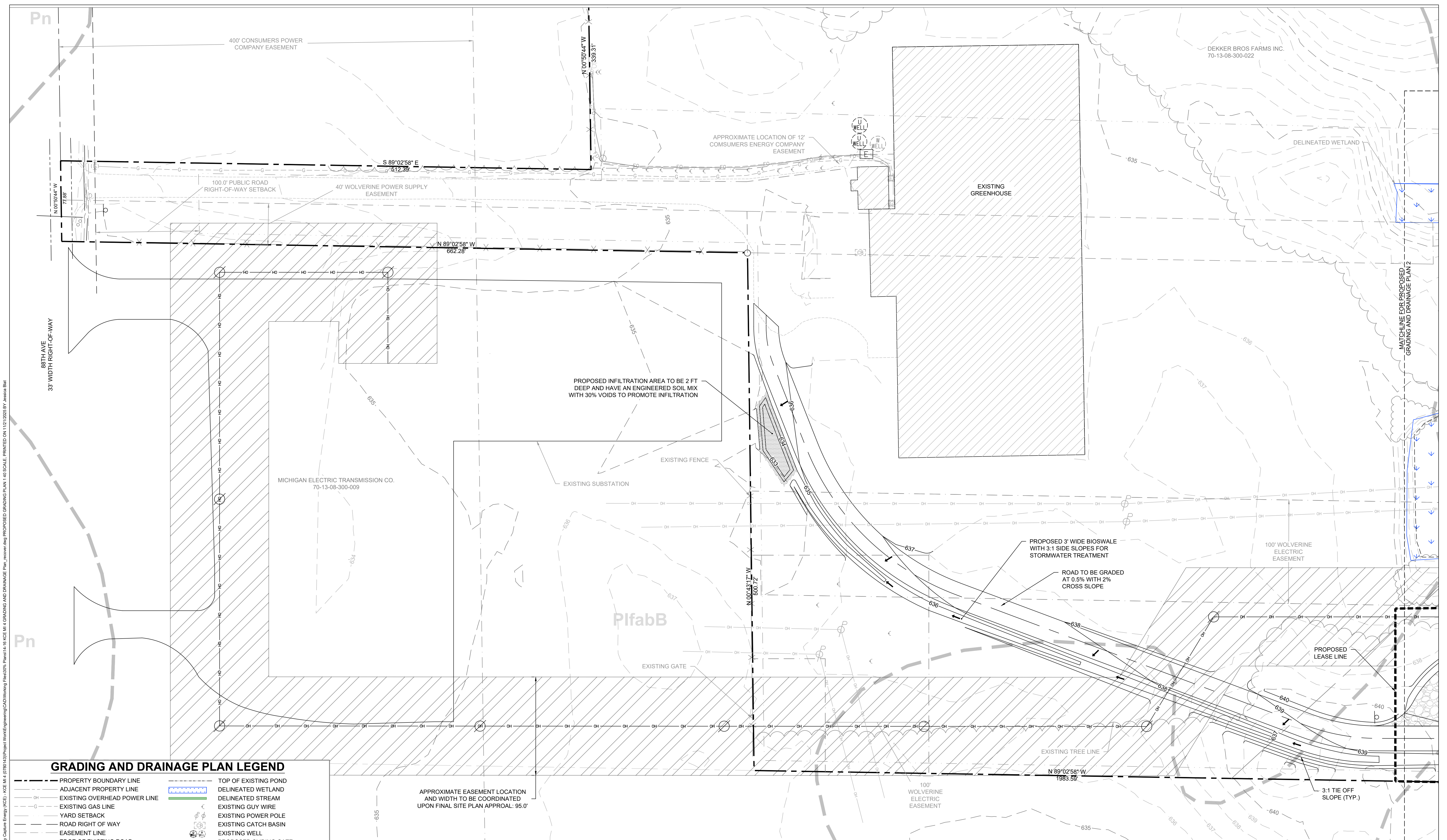


Rev.	Date	Description	By	Chk

PREPARED FOR:  
  
 KCE MI 4, LLC  
 25 MONROE STREET, SUITE 300  
 ALBANY, NY 12210  
 TEL: 518-903-4187



<b>OVERALL GRADING AND DRAINAGE PLAN</b>		DISCIPLINE NO. <b>C-14</b>
KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN		REV. <b>0</b>
SCALE 1" = 100'	DESIGNED BY CJ	PROJECT NUMBER <b>0780143</b>
DATE DRAWN 08/05/2025	DRAWN BY CJ	SHEET NO. <b>14</b>
Environmental Resources Management, Inc.		



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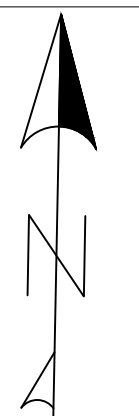
**GRADING AND DRAINAGE PLAN LEGEND**

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>--- PROPERTY BOUNDARY LINE</li> <li>--- ADJACENT PROPERTY LINE</li> <li>--- OH --- EXISTING OVERHEAD POWER LINE</li> <li>--- G --- EXISTING GAS LINE</li> <li>--- YARD SETBACK</li> <li>--- ROAD RIGHT OF WAY</li> <li>--- EASEMENT LINE</li> <li>--- EDGE OF EXISTING ROAD</li> <li>--- EXISTING ROAD CENTERLINE</li> <li>--- SOIL BOUNDARY LINE</li> <li>--- E --- EXISTING ELECTRIC LINE</li> <li>--- FO --- EXISTING FIBER OPTIC LINE</li> <li>--- X --- EXISTING FENCE</li> <li>--- APPROXIMATE LEASE LINE</li> <li>--- MATCHLINES</li> <li>--- EXISTING TREE LINE</li> <li>--- EDGE OF EXISTING GRAVEL</li> <li>--- EXISTING BUILDING FOOTPRINT</li> </ul> | <ul style="list-style-type: none"> <li>--- TOP OF EXISTING POND</li> <li>--- DELINEATED WETLAND</li> <li>--- DELINEATED STREAM</li> <li>--- EXISTING GUY WIRE</li> <li>--- EXISTING POWER POLE</li> <li>--- EXISTING CATCH BASIN</li> <li>--- EXISTING WELL</li> <li>--- PROPOSED SLIDING GATE</li> <li>--- PROPOSED FENCE</li> <li>--- PROPOSED GRAVEL AREA</li> <li>--- PROPOSED GEN-TIE ROUTE</li> <li>--- PROPOSED POWER POLE</li> <li>--- PROPOSED CONTOURS</li> <li>--- PROPOSED STORM PIPING</li> <li>--- PROPOSED VEGETATED FILTER STRIP</li> <li>--- PROPOSED HW/EW</li> <li>--- FLOW ARROW</li> <li>--- APPROX. PROPOSED EASEMENT</li> </ul> |
|---|--|

APPROXIMATE EASEMENT LOCATION AND WIDTH TO BE COORDINATED UPON FINAL SITE PLAN APPROVAL: 95.0'

- HYDROLOGIC SOIL GROUP:**
- AmB (A/D)
  - CaradA (A/D)
  - CrB (A)
  - Gm (A/D)
  - PifabB (A)
  - PpsaaA (A/D)

**30% CIVIL PLANS:  
NOT FOR CONSTRUCTION**



**DRAFT**

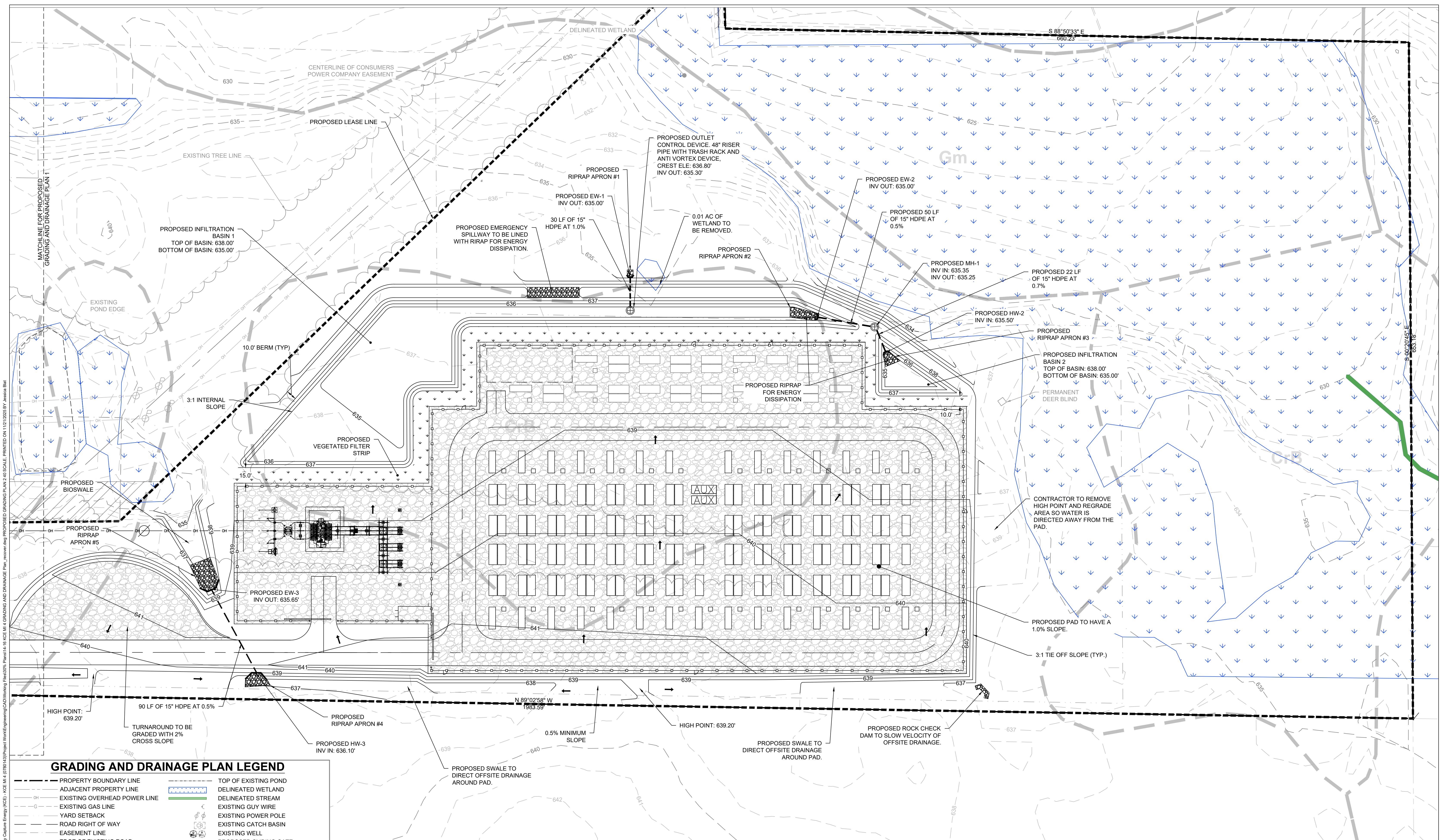
SCALE 1"=40'  
0 40 80 120 FEET

Rev.	Date	Description	By	Chk

PREPARED FOR:  
**KEY CAPTURE ENERGY**  
KCE MI 4, LLC  
25 MONROE STREET, SUITE 300  
ALBANY, NY 12210  
TEL: 518-903-4187



<p>PROPOSED GRADING AND DRAINAGE PLAN 1</p>		<p>DISCIPLINE NO. <b>C-15</b></p>
<p>KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN</p>		<p>REV. <b>0</b></p>
<p>SCALE 1" = 40'</p>	<p>DESIGNED BY CJ</p>	<p>PROJECT NUMBER <b>0780143</b></p>
<p>DATE DRAWN 08/05/2025</p>	<p>DRAWN BY CJ</p>	<p>SHEET NO. <b>15</b></p>
<p>Environmental Resources Management, Inc.</p>		



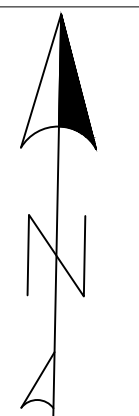
FILE PATH: C:\Users\jcaho\OneDrive - ERM\Key Capture Energy (KCE) - KCE MI 4 GRADING AND DRAINAGE PLAN 2 40 SCALE. PRINTED ON 11/21/2025 BY: Jessica Bai

**GRADING AND DRAINAGE PLAN LEGEND**

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>--- PROPERTY BOUNDARY LINE</li> <li>--- ADJACENT PROPERTY LINE</li> <li>-OH- EXISTING OVERHEAD POWER LINE</li> <li>-G- EXISTING GAS LINE</li> <li>-Y- YARD SETBACK</li> <li>-R- ROAD RIGHT OF WAY</li> <li>-E- EASEMENT LINE</li> <li>-R- EDGE OF EXISTING ROAD</li> <li>-R- EXISTING ROAD CENTERLINE</li> <li>-S- SOIL BOUNDARY LINE</li> <li>-E- EXISTING ELECTRIC LINE</li> <li>-FO- EXISTING FIBER OPTIC LINE</li> <li>-X- EXISTING FENCE</li> <li>-L- APPROXIMATE LEASE LINE</li> <li>-M- MATCHLINES</li> <li>-T- EXISTING TREE LINE</li> <li>-G- EDGE OF EXISTING GRAVEL</li> <li>-B- EXISTING BUILDING FOOTPRINT</li> </ul> | <ul style="list-style-type: none"> <li>--- TOP OF EXISTING POND</li> <li>--- DELIMITED WETLAND</li> <li>--- DELIMITED STREAM</li> <li>--- EXISTING GUY WIRE</li> <li>--- EXISTING POWER POLE</li> <li>--- EXISTING CATCH BASIN</li> <li>--- EXISTING WELL</li> <li>--- PROPOSED SLIDING GATE</li> <li>--- PROPOSED FENCE</li> <li>--- PROPOSED GRAVEL AREA</li> <li>--- PROPOSED GEN-TIE ROUTE</li> <li>--- PROPOSED POWER POLE</li> <li>--- PROPOSED CONTOURS</li> <li>--- PROPOSED STORM PIPING</li> <li>--- PROPOSED VEGETATED FILTER STRIP</li> <li>--- PROPOSED HW/EW</li> <li>--- FLOW ARROW</li> <li>--- APPROX. PROPOSED EASEMENT</li> </ul> |
|---|--|

- HYDROLOGIC SOIL GROUP:**
- AmB (A/D)
  - CaradA (A/D)
  - CrB (A)
  - Gm (A/D)
  - PflabB (A)
  - PpsaaA (A/D)

**30% CIVIL PLANS:  
NOT FOR CONSTRUCTION**



**DRAFT**

SCALE 1"=40'  
0 40 80 120 FEET

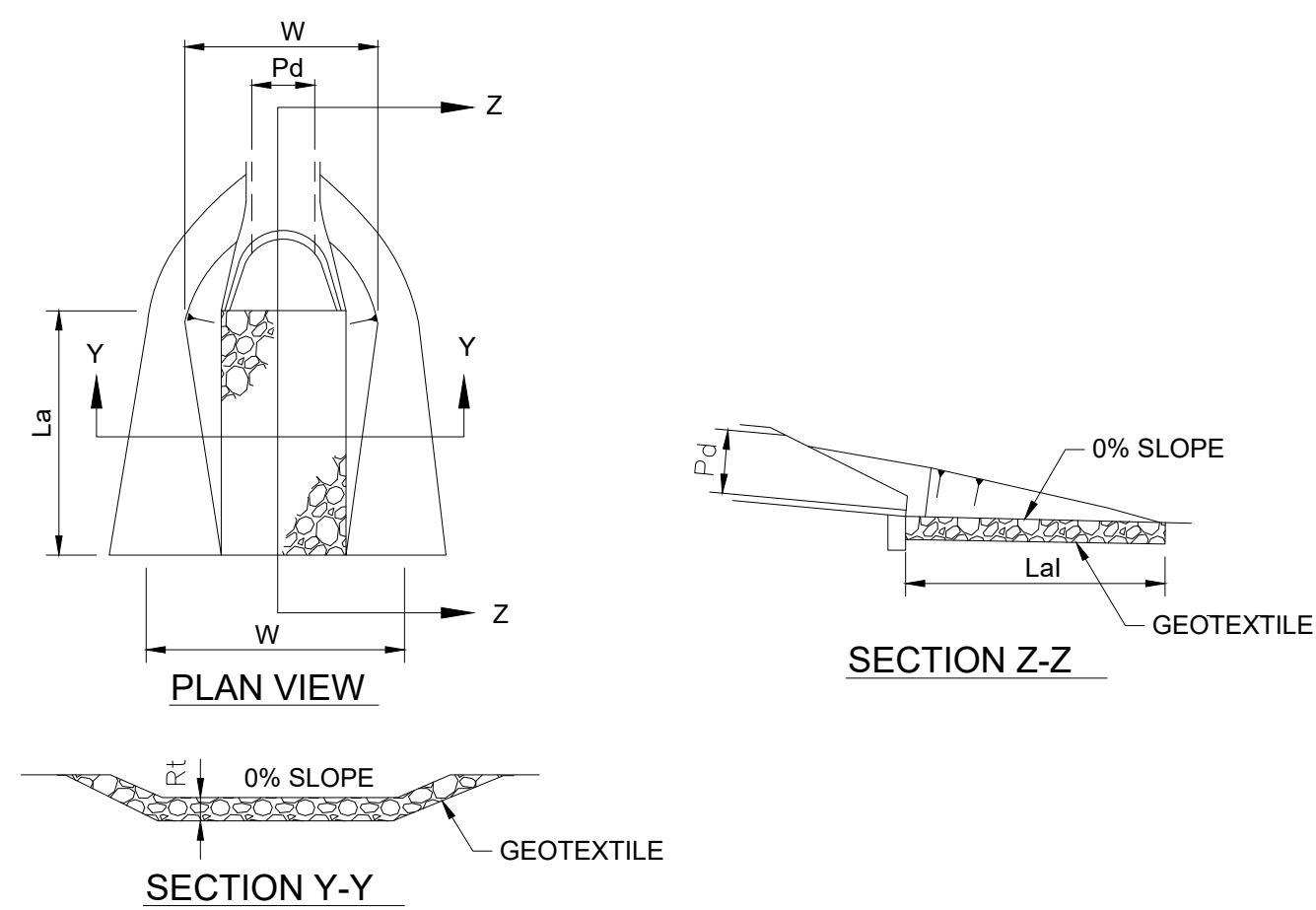
Rev.	Date	Description	By	Chk

PREPARED FOR:  
**KEY CAPTURE ENERGY**  
KCE MI 4, LLC  
25 MONROE STREET, SUITE 300  
ALBANY, NY 12210  
TEL: 518-903-4187



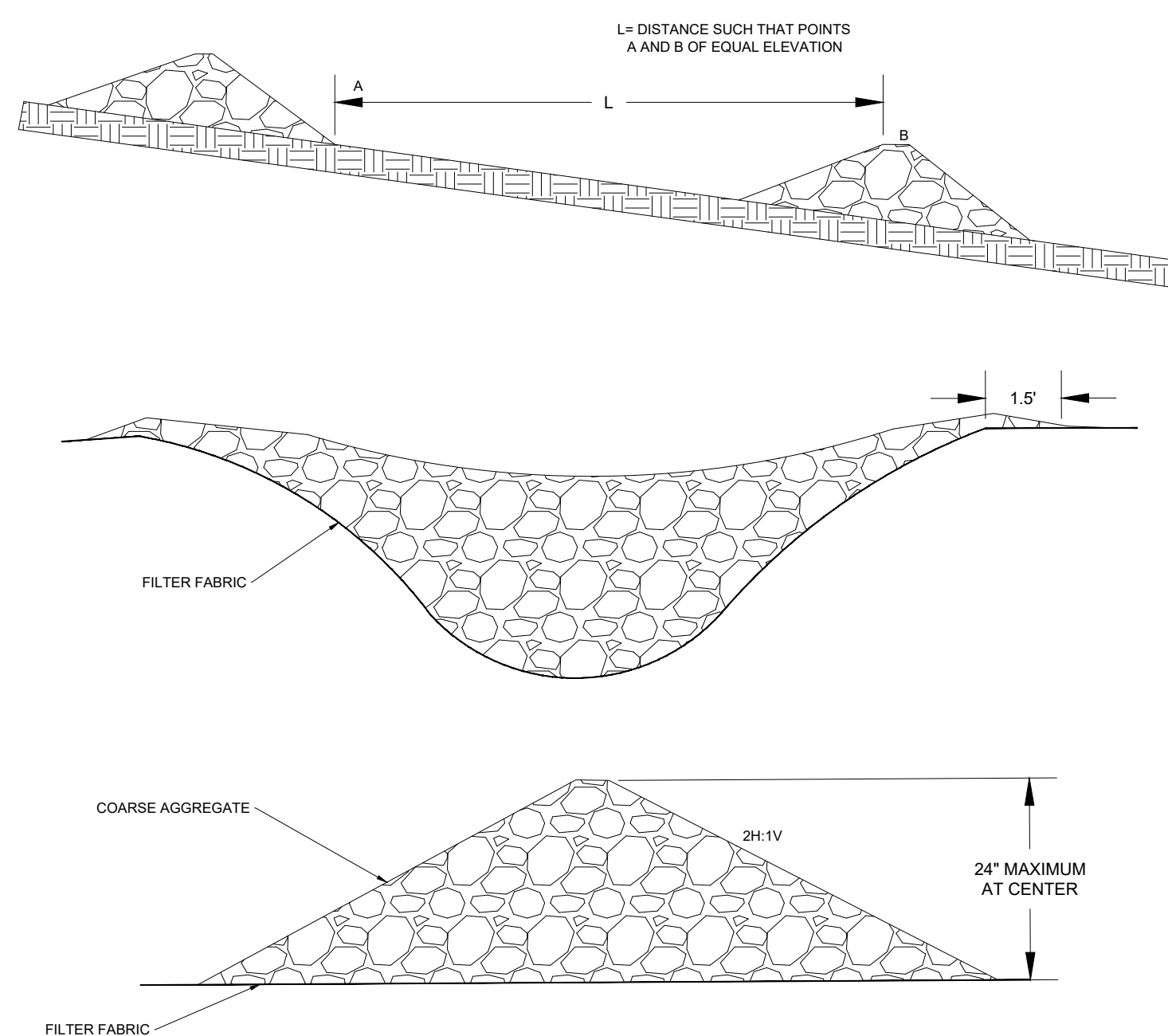
<p>PROPOSED GRADING AND DRAINAGE PLAN 2</p>		<p>DISCIPLINE C-16</p>
<p>KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN</p>		<p>REV. 0</p>
<p>SCALE 1" = 40'</p>	<p>DESIGNED BY CJ</p>	<p>PROJECT NUMBER 0780143</p>
<p>DATE DRAWN 08/05/2025</p>	<p>DRAWN BY CJ</p>	<p>SHEET NO. 16</p>
<p>Environmental Resources Management, Inc.</p>		



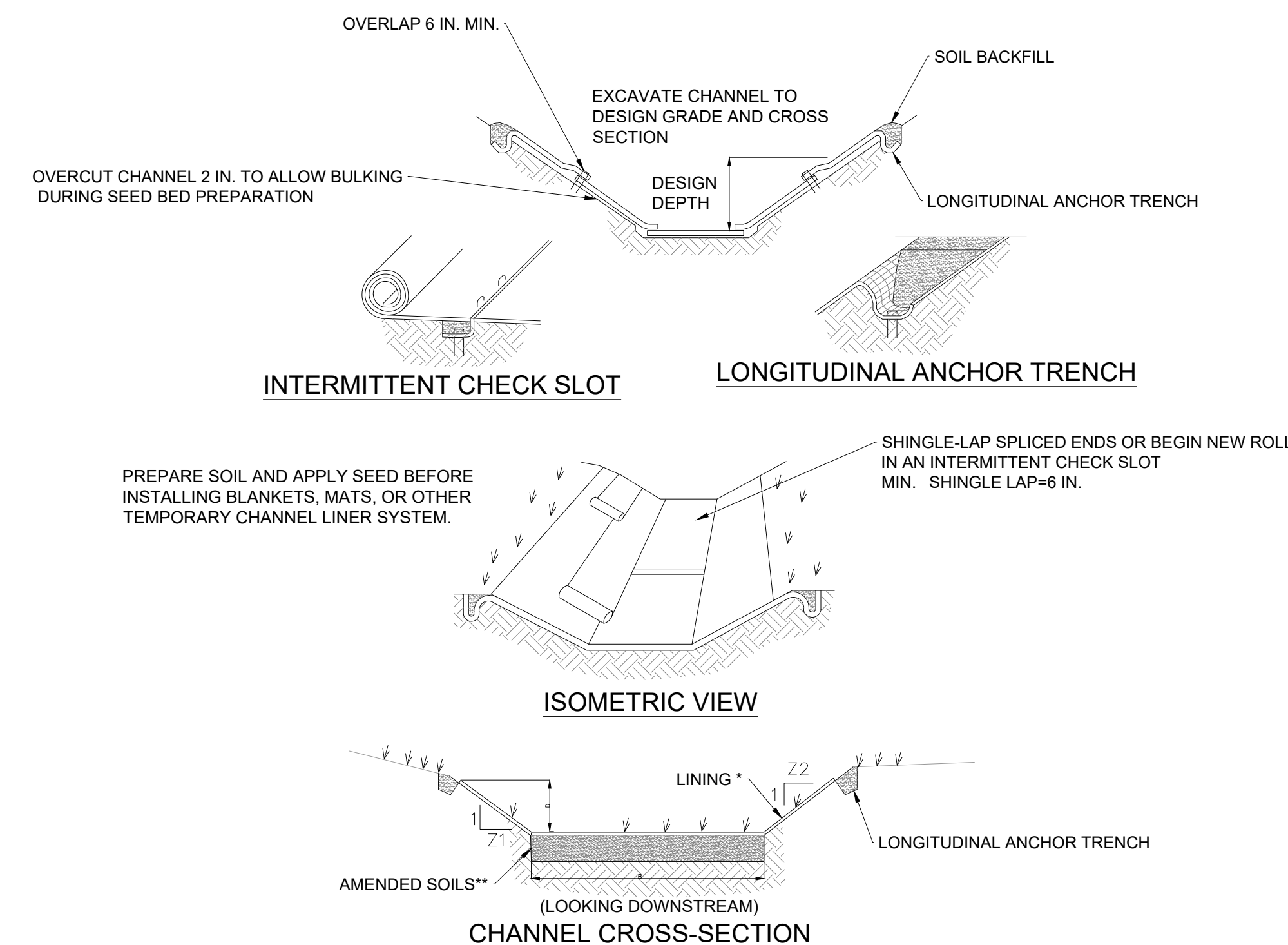


OUTLET NO.	PIPE SIZE Pd (IN)	TOTAL WATER CONDITION (MAX OR MIN)	Q (CFS)	V (FPS)	RIPRAP SIZE (IN)	La (FT)	W (FT)	DEPTH (RI, IN)
RIP RAP APRON #1	15	MAX	0.28	0.62	4	6	4	9
RIP RAP APRON #2	15	MAX	9.09	7.41	4	16	4	9
RIP RAP APRON #3	15	MAX	9.09	7.41	4	16	4	9
RIP RAP APRON #4	15	MAX	0.42	2.46	4	6	4	9
RIP RAP APRON #5	15	MAX	0.42	2.46	4	6	4	9
EMERGENCY SPILLWAY	N/A	MIN	0	0	4	8	50	9

**RIP RAP APRON**  
(NTS)



**CHECK DAM DETAIL**  
(NTS)



\* SEE MANUFACTURER'S LINING INSTALLATION DETAIL FOR STAPLE PATTERNS, VEGETATIVE STABILIZATION FOR SOIL AMENDMENTS, SEED MIXTURES AND MULCHING INFORMATION.  
\*\*AMENDED SOILS SPECIFICATIONS TO BE DETERMINED IN THE FINAL PLANS.

**NOTES**

ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF CHANNEL IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.  
CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT ANY LOCATION.  
SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO CHANNEL WITHOUT FURTHER DAMAGE. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.  
NO MORE THAN ONE THIRD OF THE SHOOT (GRASS LEAF) SHALL BE REMOVED IN ANY MOWING. GRASS HEIGHT SHALL BE MAINTAINED BETWEEN 2 AND 3 INCHES UNLESS OTHERWISE SPECIFIED. EXCESS VEGETATION SHALL BE REMOVED FROM PERMANENT CHANNELS TO ENSURE SUFFICIENT CHANNEL CAPACITY.

**CONSTRUCTION SEQUENCE**

- BEGIN VEGETATED SWALE CONSTRUCTION ONLY WHEN THE UPGRADIENT TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ARE IN PLACE. VEGETATED SWALES SHOULD BE CONSTRUCTED AND STABILIZED EARLY IN THE CONSTRUCTION SCHEDULE, PREFERABLY BEFORE MASS EARTHWORK AND PAVING INCREASE THE RATE AND VOLUME OF RUNOFF.
- ROUGH GRADE THE VEGETATED SWALE. EQUIPMENT SHALL AVOID EXCESSIVE COMPACTION AND/OR LAND DISTURBANCE. EXCAVATING EQUIPMENT SHOULD OPERATE FROM THE SIDE OF THE SWALE AND NEVER ON THE BOTTOM. IF EXCAVATION LEADS TO SUBSTANTIAL COMPACTION OF THE SUBGRADE (WHERE AN INFILTRATION TRENCH IS NOT PROPOSED), 18 INCHES SHALL BE REMOVED AND REPLACED WITH A BLEND OF TOPSOIL AND SAND TO PROMOTE INFILTRATION AND BIOLOGICAL GROWTH. AT THE VERY LEAST, TOPSOIL SHALL BE THOROUGHLY DEEP PLOWED INTO THE SUBGRADE IN ORDER TO PENETRATE THE COMPACTED ZONE AND PROMOTE AERATION AND THE FORMATION OF MACROPORES. FOLLOWING THIS, THE AREA SHOULD BE DISKED PRIOR TO FINAL GRADING OF TOPSOIL.
- CONSTRUCT CHECK DAMS, IF REQUIRED.
- FINE GRADE THE VEGETATED SWALE. ACCURATE GRADING IS CRUCIAL FOR SWALES. EVEN THE SMALLEST NONCONFORMITIES MAY COMPROMISE FLOW CONDITIONS.
- SEED, VEGETATE AND INSTALL PROTECTIVE LINING AS PER APPROVED PLANS AND ACCORDING TO FINAL PLANTING LIST. PLANT THE SWALE AT A TIME OF THE YEAR WHEN SUCCESSFUL ESTABLISHMENT WITHOUT IRRIGATION IS MOST LIKELY. HOWEVER, TEMPORARY IRRIGATION MAY BE NEEDED IN PERIODS OF LITTLE RAIN OR DROUGHT. VEGETATION SHOULD BE ESTABLISHED AS SOON AS POSSIBLE TO PREVENT EROSION AND SCOUR.
- ONCE ALL TRIBUTARY AREAS ARE SUFFICIENTLY STABILIZED, REMOVE TEMPORARY EROSION AND SEDIMENT CONTROLS. IT IS VERY IMPORTANT THAT THE SWALE BE STABILIZED BEFORE RECEIVING UPLAND STORMWATER FLOW.
- FOLLOW MAINTENANCE GUIDELINES, AS DISCUSSED BELOW.

NOTE: IF A VEGETATED SWALE IS USED FOR RUNOFF CONVEYANCE DURING CONSTRUCTION, IT SHOULD BE REGRADED AND RESEED IMMEDIATELY AFTER CONSTRUCTION AND STABILIZATION HAS OCCURRED. ANY DAMAGED AREAS SHOULD BE FULLY RESTORED TO PROVIDE FUTURE FUNCTIONALITY OF THE SWALE.

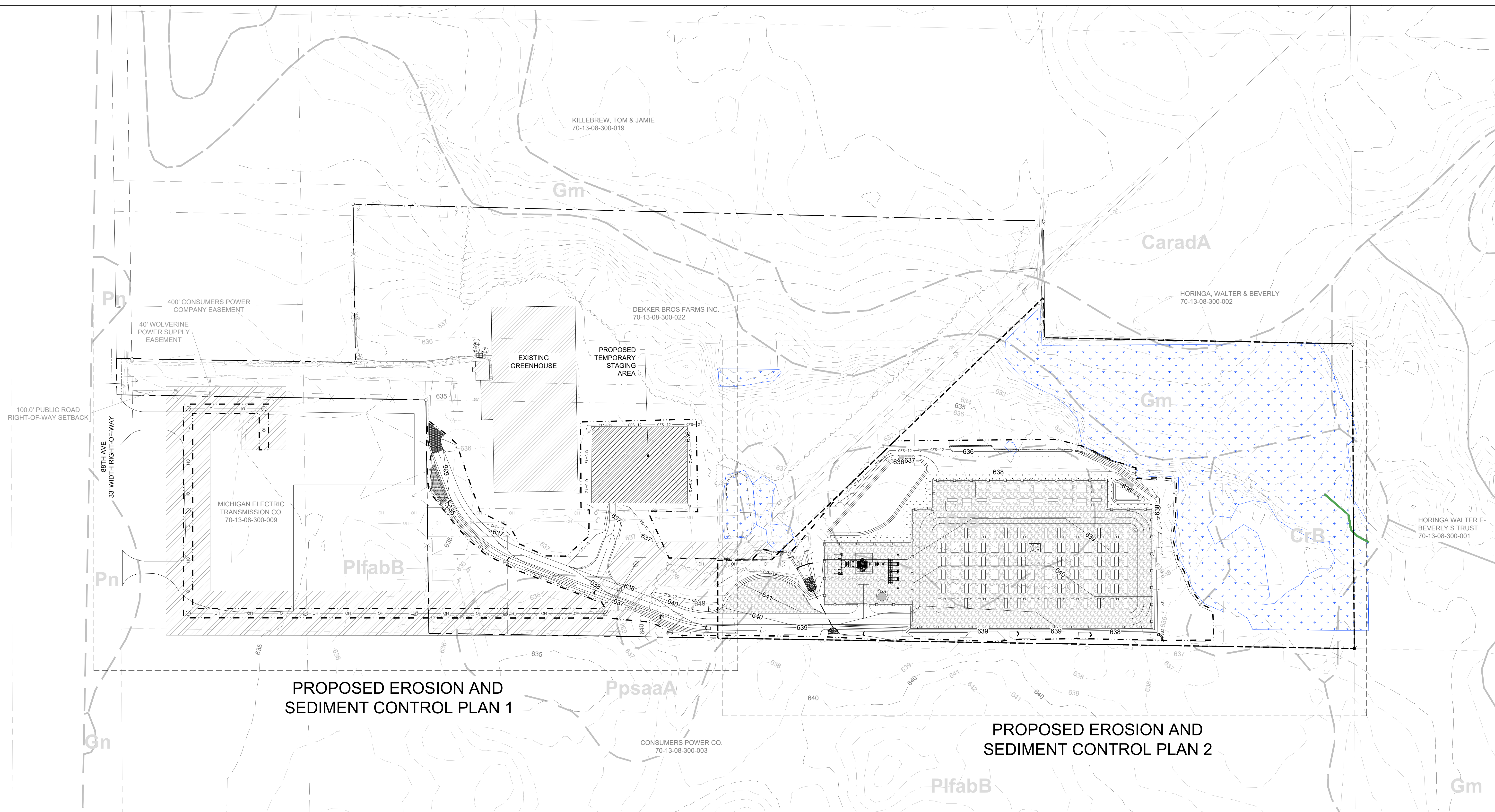
**VEGETATED/BIO SWALE**  
(NTS)

**30% CIVIL PLANS:  
NOT FOR CONSTRUCTION**

**DRAFT**

PREPARED FOR:		PREPARED BY:		DISCIPLINE NO.	
KEY CAPTURE ENERGY		ERM		C-18	
KCE MI 4, LLC 25 MONROE STREET, SUITE 300 ALBANY, NY 12210 TEL: 518-903-4187		KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN		REV. 0	
SCALE: N.T.S.	DESIGNED BY: JB	PROJECT NUMBER: 0780143	SHEET NO. 18		
DATE DRAWN: 08/05/2025	DRAWN BY: JB	Environmental Resources Management, Inc.			
Rev.	Date	Description	By	Chk	

FILE PATH: C:\Users\jessica.bar\OneDrive - ERM\Key Capture Energy (KCE) - KCE MI 4 (0780143)\Project Work\Engineering\CAD\Working Files\03\KCE MI 4 ESC Plan\_recover.dwg OVERVIEW 100 SCALE PRINTED ON 10/20/25 BY Jessica Blat



**PROPOSED EROSION AND SEDIMENT CONTROL PLAN 1**

**PROPOSED EROSION AND SEDIMENT CONTROL PLAN 2**

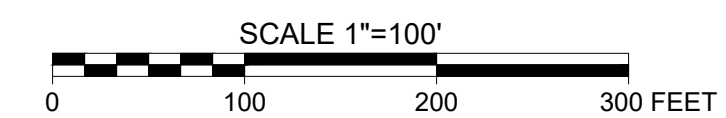
**EROSION AND SEDIMENT CONTROL PLAN LEGEND**

	PROPERTY BOUNDARY LINE		EXISTING GUY WIRE
	ADJACENT PROPERTY LINE		EXISTING POWER POLE
	EXISTING OVERHEAD POWER LINE		EXISTING CATCH BASIN
	EXISTING GAS LINE		EXISTING WELL
	YARD SETBACK		PROPOSED SLIDING GATE
	ROAD RIGHT OF WAY		PROPOSED FENCE
	EASEMENT LINE		PROPOSED GRAVEL AREA
	EDGE OF EXISTING ROAD		PROPOSED GEN-TIE ROUTE
	EXISTING ROAD CENTERLINE		PROPOSED POWER POLE
	SOIL BOUNDARY LINE		PROPOSED CONTOURS
	EXISTING ELECTRIC LINE		PROPOSED STORM PIPING
	EXISTING FIBER OPTIC LINE		PROPOSED VEGETATED FILTER STRIP
	EXISTING FENCE		PROPOSED HWEW
	APPROXIMATE LEASE LINE		PROPOSED COMPOST FILTER SOCK
	MATCHLINES		PROPOSED ROCK CONSTRUCTION ENTRANCE
	EXISTING TREE LINE		PROPOSED STACKED PYRAMID COMPOST FILTER SOCK
	EDGE OF EXISTING GRAVEL		PROPOSED 18" TEMPORARY CHECK DAM
	EXISTING BUILDING FOOTPRINT		PROPOSED WETLAND PROTECTION FENCE
	TOP OF EXISTING POND		LIMIT OF DISTURBANCE
	DELINEATED WETLAND		APPROX. PROPOSED EASEMENT
	DELINEATED STREAM		

**DRAFT**  
**30% CIVIL PLANS:**  
**NOT FOR CONSTRUCTION**

- HYDROLOGIC SOIL GROUP:**
- AmB (A/D)
  - CaradA (A/D)
  - CrB (A)
  - Gm (A/D)
  - PifabB (A)
  - PpsaaA (A/D)

NOTE: CONTRACTOR TO UTILIZE OPEN SPACE DURING CONSTRUCTION FOR SOIL STOCKPILES. LOCAL CONTROLS TO BE PLACED AROUND STOCKPILES.



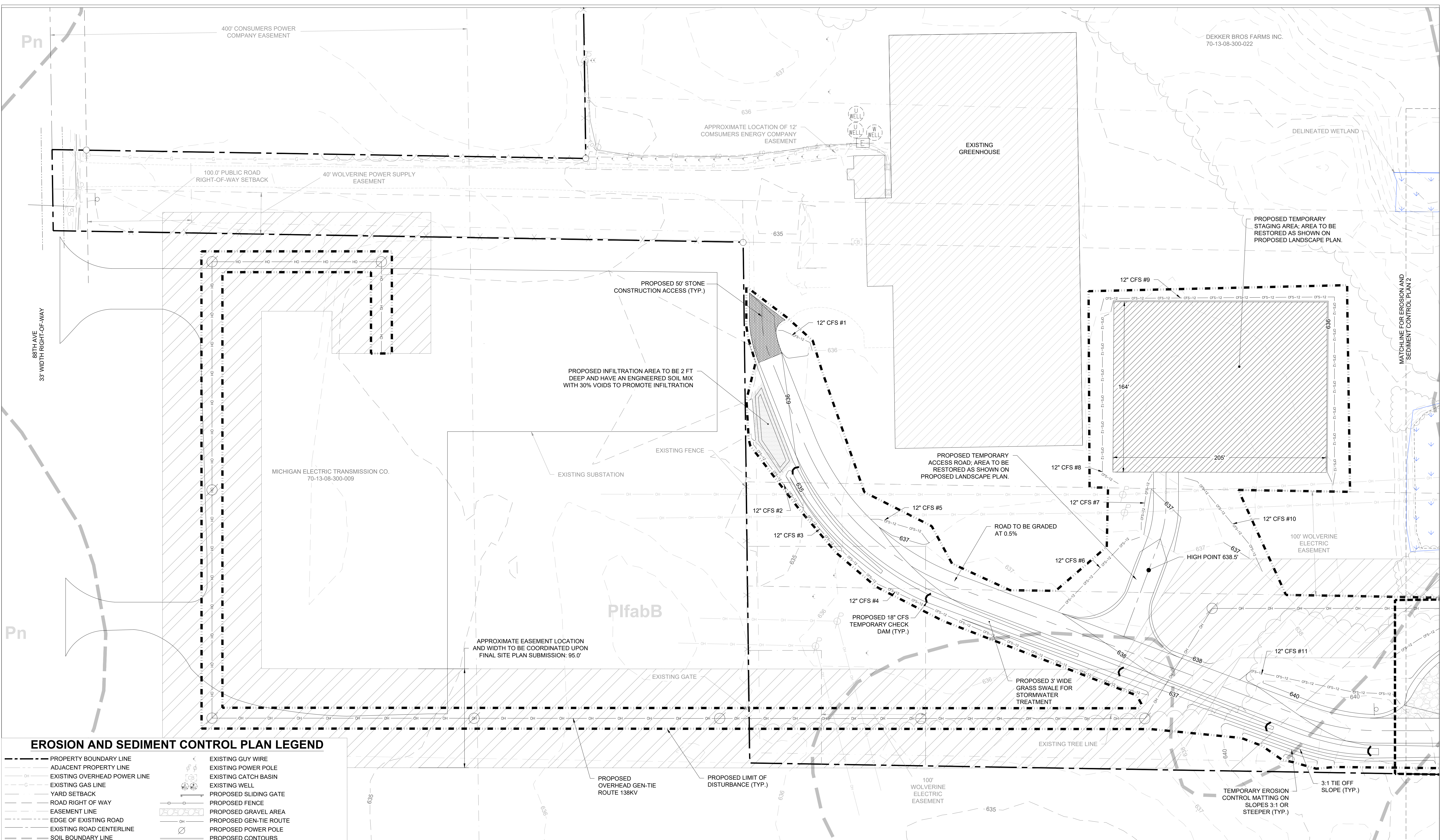
Rev.	Date	Description	By	Chk

PREPARED FOR:  
**KEY CAPTURE ENERGY**  
 KCE MI 4, LLC  
 25 MONROE STREET, SUITE 300  
 ALBANY, NY 12210  
 TEL: 518-903-4187



OVERALL EROSION AND SEDIMENT CONTROL PLAN		DISCIPLINE NO. <b>C-19</b>
KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN		REV. <b>0</b>
SCALE 1" = 100'	DESIGNED BY CJ, LF	PROJECT NUMBER <b>0780143</b>
DATE DRAWN 08/05/2025	DRAWN BY LF	SHEET NO. <b>19</b>
Environmental Resources Management, Inc.		

FILE PATH: C:\Users\jessica.bar\OneDrive - ERM\Key Capture Energy (KCE) - KCE MI 4 (0780143)\Project Work\Engineering\CAD\Working Files\03% Plans\18-21 KCE MI 4 ESC Plan\_revised.dwg PROPOSED ESC PLAN 1 40 SCALE PRINTED ON 7/22/2025 BY Jessica Blat



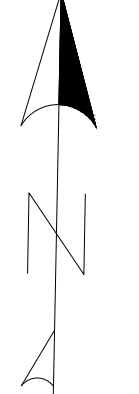
**EROSION AND SEDIMENT CONTROL PLAN LEGEND**

- PROPERTY BOUNDARY LINE
- ADJACENT PROPERTY LINE
- EXISTING OVERHEAD POWER LINE
- EXISTING GAS LINE
- YARD SETBACK
- ROAD RIGHT OF WAY
- EASEMENT LINE
- EDGE OF EXISTING ROAD
- EXISTING ROAD CENTERLINE
- SOIL BOUNDARY LINE
- EXISTING ELECTRIC LINE
- EXISTING FIBER OPTIC LINE
- EXISTING FENCE
- APPROXIMATE LEASE LINE
- MATCHLINES
- EXISTING TREE LINE
- EDGE OF EXISTING GRAVEL
- EXISTING BUILDING FOOTPRINT
- TOP OF EXISTING POND
- DELINEATED WETLAND
- DELINEATED STREAM
- EXISTING GUY WIRE
- EXISTING POWER POLE
- EXISTING CATCH BASIN
- EXISTING WELL
- PROPOSED SLIDING GATE
- PROPOSED FENCE
- PROPOSED GRAVEL AREA
- PROPOSED GEN-TIE ROUTE
- PROPOSED POWER POLE
- PROPOSED CONTOURS
- PROPOSED STORM PIPING
- PROPOSED VEGETATED FILTER STRIP
- PROPOSED H/HEW
- PROPOSED COMPOST FILTER SOCK
- PROPOSED ROCK CONSTRUCTION ENTRANCE
- PROPOSED STACKED PYRAMID COMPOST FILTER SOCK
- PROPOSED 18" TEMPORARY CHECK DAM
- PROPOSED WETLAND PROTECTION FENCE
- LIMIT OF DISTURBANCE
- APPROX. PROPOSED EASEMENT

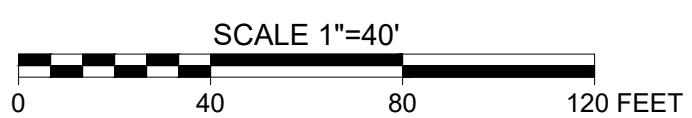
DRAFT

30% CIVIL PLANS:  
NOT FOR CONSTRUCTION

- HYDROLOGIC SOIL GROUP:**
- AmB (A/D)
  - CaradA (A/D)
  - CrB (A)
  - Gm (A/D)
  - PifabB (A)
  - PpsaaA (A/D)



NOTE: CONTRACTOR TO UTILIZE OPEN SPACE DURING CONSTRUCTION FOR SOIL STOCKPILES. LOCAL CONTROLS TO BE PLACED AROUND STOCKPILES.



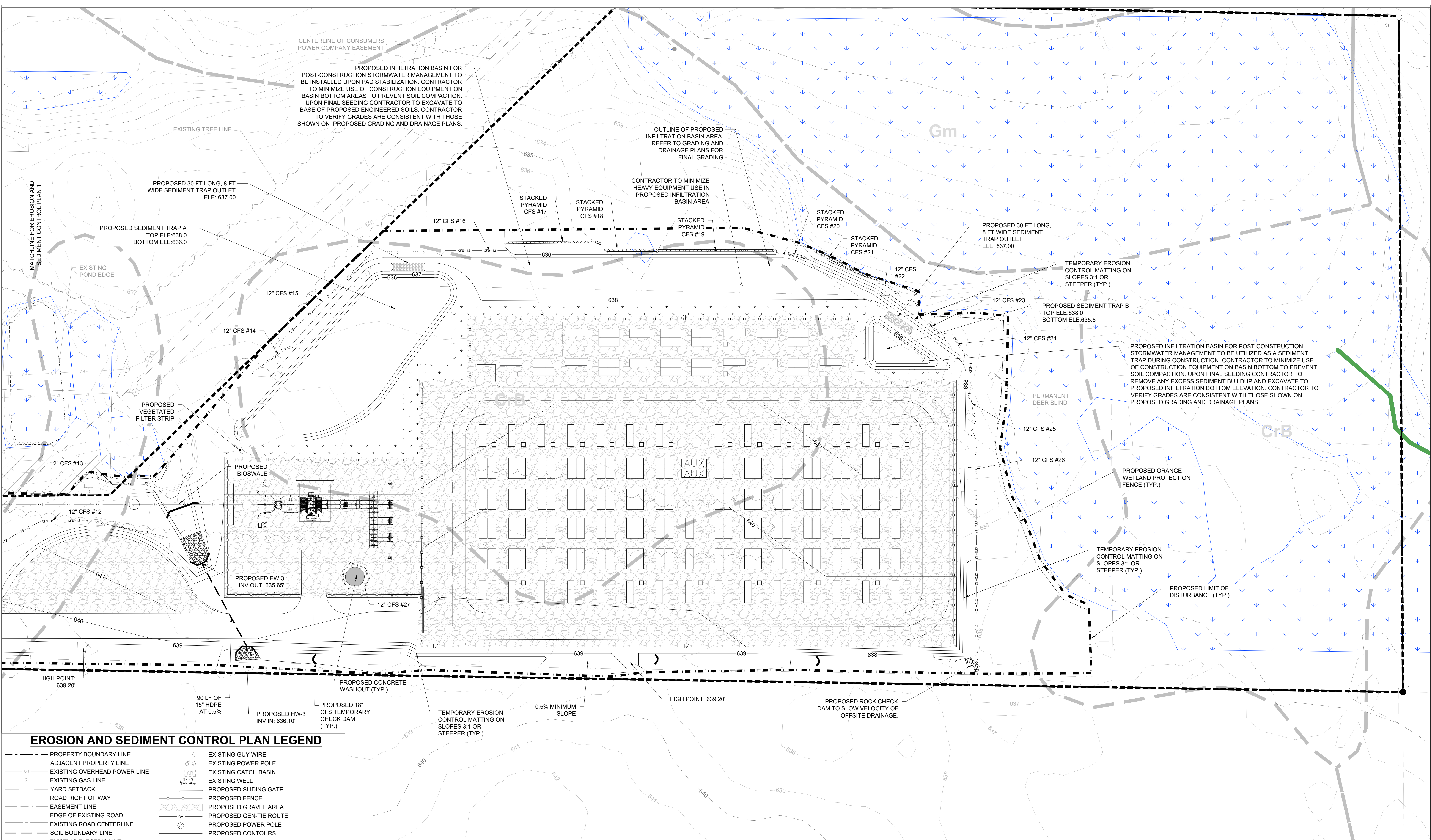
Rev.	Date	Description	By	Chk

PREPARED FOR:  
**KEY CAPTURE ENERGY**  
KCE MI 4, LLC  
25 MONROE STREET, SUITE 300  
ALBANY, NY 12210  
TEL: 518-903-4187



<b>PROPOSED EROSION AND SEDIMENT CONTROL PLAN 1</b>				DISCIPLINE NO. <b>C-20</b>
KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN				REV. <b>0</b>
SCALE 1" = 40'	DESIGNED BY CJ, LF	PROJECT NUMBER <b>0780143</b>		
DATE DRAWN 08/05/2025	DRAWN BY LF			
Environmental Resources Management, Inc.				SHEET NO. <b>20</b>

FILE PATH: C:\Users\jgarcia\OneDrive - ERM\My Capture Energy (KCE) - KCE MI 4 (0780143)\Project Work\Engineering\CAD\Working Files\03% Plans\18-21 KCE MI 4 ESC Plan\_revised.dwg PROPOSED ESC PLAN 2 40 SCALE PRINTED ON 7/22/2025 BY JGarcia Bit



PROPOSED INFILTRATION BASIN FOR POST-CONSTRUCTION STORMWATER MANAGEMENT TO BE INSTALLED UPON PAD STABILIZATION. CONTRACTOR TO MINIMIZE USE OF CONSTRUCTION EQUIPMENT ON BASIN BOTTOM AREAS TO PREVENT SOIL COMPACTION. UPON FINAL SEEDING CONTRACTOR TO EXCAVATE TO BASE OF PROPOSED ENGINEERED SOILS. CONTRACTOR TO VERIFY GRADES ARE CONSISTENT WITH THOSE SHOWN ON PROPOSED GRADING AND DRAINAGE PLANS.

OUTLINE OF PROPOSED INFILTRATION BASIN AREA. REFER TO GRADING AND DRAINAGE PLANS FOR FINAL GRADING.

CONTRACTOR TO MINIMIZE HEAVY EQUIPMENT USE IN PROPOSED INFILTRATION BASIN AREA.

PROPOSED INFILTRATION BASIN FOR POST-CONSTRUCTION STORMWATER MANAGEMENT TO BE UTILIZED AS A SEDIMENT TRAP DURING CONSTRUCTION. CONTRACTOR TO MINIMIZE USE OF CONSTRUCTION EQUIPMENT ON BASIN BOTTOM TO PREVENT SOIL COMPACTION. UPON FINAL SEEDING CONTRACTOR TO REMOVE ANY EXCESS SEDIMENT BUILDUP AND EXCAVATE TO PROPOSED INFILTRATION BOTTOM ELEVATION. CONTRACTOR TO VERIFY GRADES ARE CONSISTENT WITH THOSE SHOWN ON PROPOSED GRADING AND DRAINAGE PLANS.

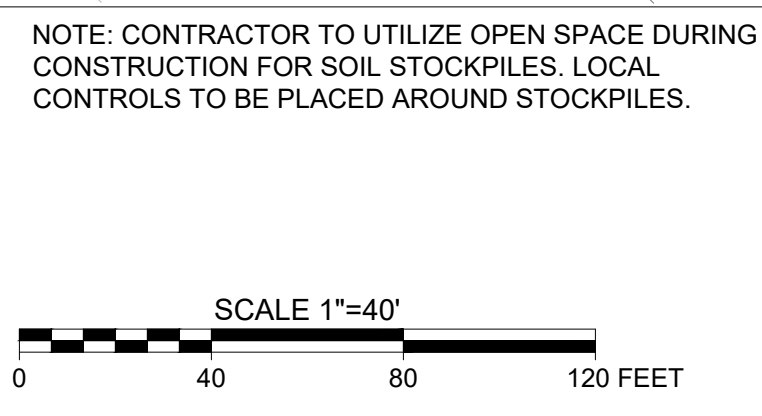
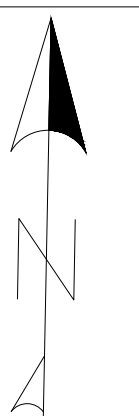
**EROSION AND SEDIMENT CONTROL PLAN LEGEND**

- PROPERTY BOUNDARY LINE
- ADJACENT PROPERTY LINE
- OH --- EXISTING OVERHEAD POWER LINE
- C --- EXISTING GAS LINE
- YARD SETBACK
- ROAD RIGHT OF WAY
- EASEMENT LINE
- EDGE OF EXISTING ROAD
- EXISTING ROAD CENTERLINE
- SOIL BOUNDARY LINE
- EXISTING ELECTRIC LINE
- EXISTING FIBER OPTIC LINE
- EXISTING FENCE
- APPROXIMATE LEASE LINE
- MATCHLINES
- EXISTING TREE LINE
- EDGE OF EXISTING GRAVEL
- EXISTING BUILDING FOOTPRINT
- TOP OF EXISTING POND
- DELINEATED WETLAND
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- EXISTING CATCH BASIN
- EXISTING WELL
- PROPOSED SLIDING GATE
- PROPOSED FENCE
- PROPOSED GRAVEL AREA
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- PROPOSED POWER POLE
- PROPOSED CONTOURS
- PROPOSED STORM PIPING
- PROPOSED VEGETATED FILTER STRIP
- PROPOSED HWEW
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- PROPOSED STACKED PYRAMID COMPOST FILTER SOCK
- PROPOSED 18" TEMPORARY CHECK DAM
- PROPOSED WETLAND PROTECTION FENCE
- LIMIT OF DISTURBANCE
- APPROX. PROPOSED EASEMENT

**HYDROLOGIC SOIL GROUP:**

- AmB (A/D)
- CaradA (A/D)
- CrB (A)
- Gm (A/D)
- PflabB (A)
- PpsaaA (A/D)

**DRAFT**  
30% CIVIL PLANS:  
NOT FOR CONSTRUCTION



Rev.	Date	Description	By	Chk

PREPARED FOR:

KCE MI 4, LLC  
25 MONROE STREET, SUITE 300  
ALBANY, NY 12210  
TEL: 518-903-4187



PROPOSED EROSION AND SEDIMENT CONTROL PLAN 2				DISCIPLINE NO. C-21
KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN				REV. 0
SCALE 1" = 40'	DESIGNED BY CJ, LF	PROJECT NUMBER 0780143	SHEET NO. 21	
DATE DRAWN 08/05/2025	DRAWN BY LF	Environmental Resources Management, Inc.		





## TEMPORARY SEEDING

### DESCRIPTION

TEMPORARY SEEDINGS ESTABLISH TEMPORARY COVER ON DISTURBED AREAS BY PLANTING APPROPRIATE RAPIDLY GROWING ANNUAL GRASSES OR SMALL GRAINS. TEMPORARY SEEDING PROVIDES EROSION CONTROL ON AREAS IN BETWEEN CONSTRUCTION OPERATIONS. GRASSES WHICH ARE QUICK GROWING ARE SEEDING AND USUALLY MULCHED TO PROVIDE PROMPT, TEMPORARY SOIL STABILIZATION. IT EFFECTIVELY MINIMIZES THE AREA OF A CONSTRUCTION SITE PRONE TO EROSION AND SHOULD BE USED EVERYWHERE THE SEQUENCE OF CONSTRUCTION OPERATIONS ALLOWS VEGETATION TO BE ESTABLISHED.

### SPECIFICATIONS FOR TEMPORARY SEEDING

TEMPORARY SEEDING SPECIES SELECTION			
SEEDING DATES	SPECIES	LB./1,000 FT. <sup>2</sup>	LB. PER AC.
APRIL 1- SEPTEMBER 15	OATS BARLEY	2	96
		2	96
JUNE 1- JULY 15	BUCKWHEAT	2	75
AUGUST 1- OCTOBER 15	CEREAL RYE PERENNIAL RYEGRASS	3	120
		0.5	20
SEPTEMBER 20- OCTOBER 15	WHEAT	3	120
NOV. 1 TO SPRING SEEDING		USE MULCH ONLY, SODDING PRACTICES OR DORMANT SEEDING.	
NOTE: OTHER APPROVED SEED SPECIES MAY BE SUBSTITUTED.			

- STRUCTURAL EROSION AND SEDIMENT-CONTROL PRACTICES SUCH AS DIVERSIONS SHALL BE INSTALLED AND STABILIZED WITH TEMPORARY SEEDING PRIOR TO GRADING THE REST OF THE CONSTRUCTION SITE.
- TEMPORARY SEED SHALL BE APPLIED BETWEEN CONSTRUCTION OPERATIONS ON SOIL THAT WILL NOT BE GRADED OR REWORKED FOR 21 DAYS OR GREATER. THESE IDLE AREAS SHALL BE SEEDING WITHIN 7 DAYS AFTER GRADING.
- THE SEEDBED SHOULD BE PULVERIZED AND LOOSE TO PROVIDE THE SUCCESS OF ESTABLISHING VEGETATION. TEMPORARY SEEDING SHALL NOT BE POSTPONED IF IDEAL SEEDBED PREPARATION IS NOT POSSIBLE.
- SOIL AMENDMENTS--TEMPORARY VEGETATION SEEDING RATE SHALL ESTABLISH ADEQUATE STANDS OF VEGETATION WHICH MAY REQUIRE THE USE OF SOIL AMENDMENTS. BASE RATE FOR LIME AND FERTILIZER SHALL BE USED.
- SEEDING METHOD--SEED SHALL BE APPLIED UNIFORMLY WITH A CYCLONE SPREADER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER. WHEN FEASIBLE, SEED THAT HAS BEEN BROADCAST SHALL BE COVERED BY RAKING OR DRAGGING AND THEN LIGHTLY TAMPED INTO PLACE USING A ROLLER OR CULTIPACKER. IF HYDROSEEDING IS USED, THE SEED AND FERTILIZER WILL BE MIXED ON SITE, AND THE SEEDING SHALL BE DONE IMMEDIATELY AND WITHOUT INTERRUPTION.

### MULCHING TEMPORARY SEEDING

- APPLICATIONS OF TEMPORARY SEEDING SHALL INCLUDE MULCH WHICH SHALL BE APPLIED DURING OR IMMEDIATELY AFTER SEEDING. SEEDINGS MADE DURING OPTIMUM SEEDING DATES ON FAVORABLE VERY FLAT SOIL CONDITIONS MAY NOT NEED MULCH TO ACHIEVE ADEQUATE STABILIZATION.
- MATERIALS:
  - STRAW MULCH--IF STRAW MULCH IS USED, IT SHALL BE SMALL GRAIN STRAW MULCH APPLIED AT THE RATE OF 2 TONS PER ACRE.
  - STANDARD HYDRO MULCH-- TYPICALLY, 100% PAPER MULCH WITH TACKIFIER OR 50% WOOD BLEND WITH TACKIFIER WHICH SHALL BE APPLIED AT A RATE OF 1,800 TO 2,000 LBS PER ACRE.
  - BONDED FIBER MATRIX HYDRO MULCH-- APPLIED AT A RATE OF 2,500 TO 3,000 LBS PER ACRE.
  - SINGLE NET STRAW BLANKET-- INSTALL WITH 6" WOOD PEGS OR METAL STAPLES, 36" SPACING. OVERLAP DOWNSLOPE MINIMUM 6" OR BURY EXPOSED EDGES.
  - DOUBLE NET STRAW BLANKET-- INSTALL WITH 6" WOOD PEGS OR METAL STAPLES, 24" SPACING. OVERLAP DOWNSLOPE MINIMUM 6" OR BURY EXPOSED EDGES.
  - PERMANENT TURF REINFORCEMENT MAT--INSTALL WITH 6" WOOD PEGS OR METAL STAPLES, 18" SPACING. OVERLAP DOWNSLOPE MINIMUM 6" OR BURY EXPOSED EDGES.

NOTE: THESE ARE GUIDELINES; AN EXPERIENCED, TRAINED INDIVIDUAL SHOULD REVIEW SITE CONDITIONS FOR APPROPRIATE METHODS AND MATERIALS.

**30% CIVIL PLANS:  
NOT FOR CONSTRUCTION**

## COMPOST FILTER SOCK

- THE CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN COMPOST FILTER SOCK THROUGHOUT THE CONSTRUCTION PERIOD.
- MATERIALS - COMPOST USED FOR FILTER SOCKS SHALL BE WEED, PATHOGEN AND INSECT FREE AND FREE OF ANY REFUSE, CONTAMINANTS OR OTHER MATERIALS TOXIC TO PLANT GROWTH. THEY SHALL BE DERIVED FROM A WELL-DECOMPOSED SOURCE OF ORGANIC MATTER AND CONSIST OF A PARTICLES RANGING FROM 3/8" TO 2".
- FILTER SOCKS SHALL BE 3 OR 5 MIL CONTINUOUS, TUBULAR, HDPE 3/8" KNITTED MESH NETTING MATERIAL, FILLED WITH COMPOST PASSING THE ABOVE SPECIFICATIONS FOR COMPOST PRODUCTS.

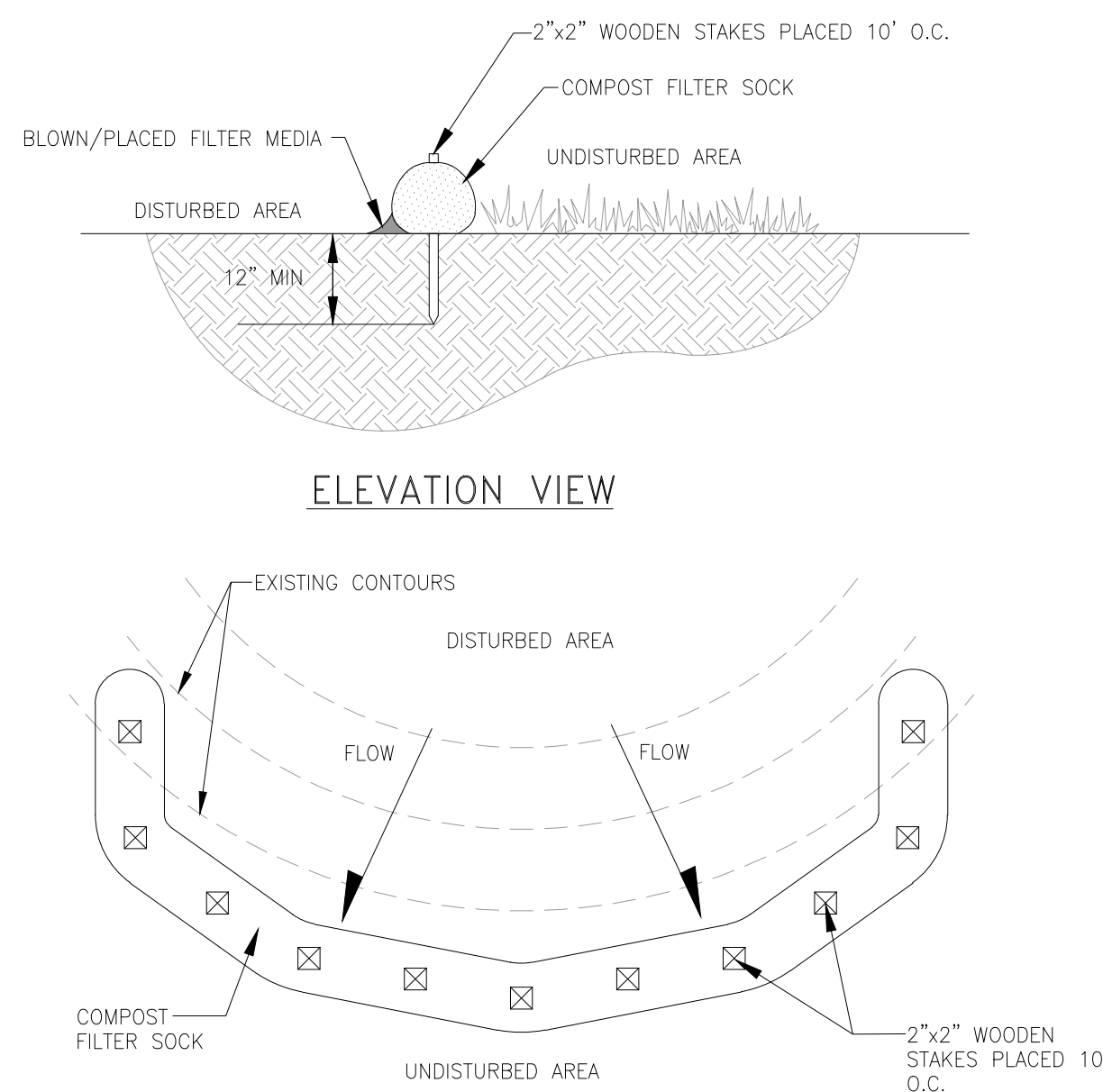
### INSTALLATION:

- FILTER SOCKS WILL BE PLACED ON A LEVEL LINE ACROSS SLOPES, GENERALLY PARALLEL TO THE BASE OF THE SLOPE OR OTHER AFFECTED AREA. ON SLOPES APPROACHING 2:1, ADDITIONAL SOCKS SHALL BE PROVIDED AT THE TOP AND AS NEEDED MID-SLOPE.
- FILTER SOCKS INTENDED TO BE LEFT AS A PERMANENT FILTER OR PART OF THE NATURAL LANDSCAPE, SHALL BE SEEDING AT THE TIME OF INSTALLATION FOR ESTABLISHMENT OF PERMANENT VEGETATION.
- FILTER SOCKS ARE NOT TO BE USED IN CONCENTRATED FLOW SITUATIONS OR IN RUNOFF CHANNELS.

### MAINTENANCE:

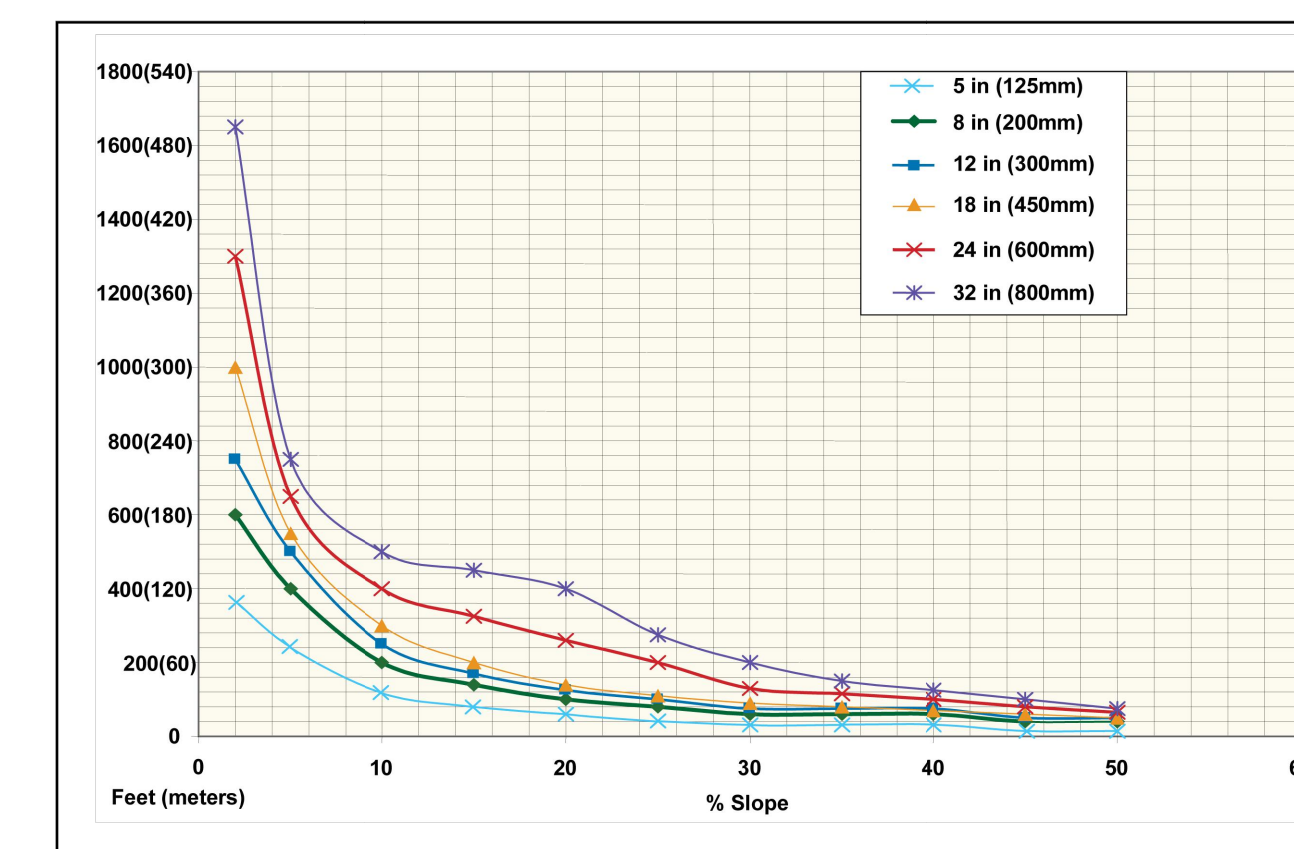
- ROUTINELY INSPECT FILTER SOCKS AFTER EACH SIGNIFICANT RAIN, MAINTAINING FILTER SOCKS IN A FUNCTIONAL CONDITION AT ALL TIMES.
- REMOVE SEDIMENTS COLLECTED AT THE BASE OF THE FILTER SOCKS WHEN THEY REACH 1/3 OF THE EXPOSED HEIGHT OF THE PRACTICE.
- WHERE THE FILTER SOCK DETERIORATES OR FAILS, IT WILL BE REPAIRED OR REPLACED WITH A MORE EFFECTIVE ALTERNATIVE.
- REMOVAL - FILTER SOCKS WILL BE DISPERSED ON SITE WHEN NO LONGER REQUIRED IN SUCH AS WAY AS TO FACILITATE AND NOT OBSTRUCT SEEDINGS.

SPECIFICATIONS FOR COMPOST FILTER SOCK - SEE THE FOLLOWING SHEET FOR ADDITIONAL SIZING INFORMATION



## FILTREXX CFS SIZING CHART

Figure 1.2. Maximum Slope Lengths of Filtrexx® Perimeter Control Based on a 1 in (25 mm) 24 hr Rainfall Event.



## FILTREXX CFS MESH SPECIFICATIONS

Design Specification | 1.1 Perimeter Control - Compost Filter Sock | 6

Table 1.1. Filtrexx SiltSocx® Mesh Material Specifications.

Material Type	NATURAL ORIGINAL (Cotton Fiber)	NATURAL PLUS (Wood Fiber)	BASIC (5 mil High Density Polyethylene HDPE)	BASIC PLUS (Multi-Filament Polypropylene MFPF)	DURABLE (Multi-Filament Polypropylene MFPF)	DURABLE PLUS / DURASOFT HD (Multi-Filament Polypropylene MFPF)	EXTREME (Multi-Filament Polypropylene MFPF)
Material Characteristic	Biodegradable	Biodegradable	Photodegradable	Photodegradable	Photodegradable	Photodegradable	Photodegradable
Design Diameters	5 in (125mm), 8 in (200mm), 12 in (300mm)	5 in (125mm), 8 in (200mm), 12 in (300mm)	8 in (200mm), 12 in (300mm), 18 in (450mm), 24 in (600mm), 32 in (800mm)	8 in (200mm), 12 in (300mm), 18 in (450mm), 24 in (600mm), 32 in (800mm)	8 in (200mm), 12 in (300mm), 18 in (450mm), 24 in (600mm), 32 in (800mm)	5 in (125mm), 8 in (200mm), 12 in (300mm), 18 in (450mm), 24 in (600mm), 32 in (800mm)	8 in (200mm), 12 in (300mm), 18 in (450mm), 24 in (600mm), 32 in (800mm)
Mesh Opening	1/8 in (3mm)	1/8 in (3mm)	3/8 in (10mm)	3/8 in (10mm)	1/8 in (3mm)	1/8 in (3mm)	1/16 in (1.5mm)
Tensile Strength (ASTM D4951)	MD: 193 lbs TD: 158 lbs	MD: 210 lbs TD: 289 lbs	MD: 211 lbs TD: 223 lbs	MD: 236 lbs TD: 223 lbs	MD: 545 lbs TD: 226 lbs	MD: 670 lbs TD: 423 lbs	MD: 1562 lbs TD: 797 lbs
% Original Strength from Ultraviolet Exposure (ASTM G-55)	ND	ND	23% at 1000 hr	100% at 1000 hr	100% at 1000 hr	100% at 1000 hr	100% at 1000 hr
Functional Longevity/ Project Duration*	up to 12 months <sup>1</sup>	up to 18 months <sup>1</sup>	up to 4 yr	up to 4 yr	up to 5 yr	up to 5 yr	up to 5 yr

\*Tensile Strength is based on 12" diameter using ASTM D4951. See Filtrexx TechLink #3342 for full tensile strength testing.  
<sup>1</sup>Functional longevity ranges are estimates only. Site specific environmental conditions may result in significantly shorter or longer time periods.  
<sup>2</sup>Data based on Caltrans research and specifications.  
<sup>3</sup>See TechLink #3339 for research & testing.

Design Specification | 1.1 Perimeter Control - Compost Filter Sock | 7

Table 1.2. Filtrexx® Sediment Control Performance and Design Specifications Summary.

Design Diameter	5 in (125mm)	8 in (200mm)	12 in (300mm)	18 in (450mm)	24 in (600mm)	32 in (800mm)	Testing Lab / Reference	Publication(s)
Effective Height	4 in (100mm)	6.5 in (160mm)	9.5 in (240mm)	14.5 in (360mm)	19 in (480mm)	26 in (650mm)	The Ohio State University, Ohio Agricultural Research and Development Center	Transactions of the American Society of Agricultural & Biological Engineers, 2006
Effective Circumference	12 in (300mm)	25 in (630mm)	38 in (960mm)	57 in (1430mm)	77 in (1900mm)	100 in (2500mm)		
Density (when filled)	7.8 lbs (3.5 kg/m <sup>3</sup> )	13 lbs/ft <sup>3</sup> (20 kg/m <sup>3</sup> )	32 lbs/ft <sup>3</sup> (50 kg/m <sup>3</sup> )	67 lbs/ft <sup>3</sup> (100 kg/m <sup>3</sup> )	133 lbs/ft <sup>3</sup> (200 kg/m <sup>3</sup> )	200 lbs/ft <sup>3</sup> (300 kg/m <sup>3</sup> )	Soil Control Lab, Inc.	
Air Space	20%	20%	20%	20%	20%	20%	Soil Control Lab, Inc.	
Maximum continuous length	unlimited	unlimited	unlimited	unlimited	unlimited	unlimited		
Staking Requirement	10 ft (3m)	10 ft (3m)	10 ft (3m)	10 ft (3m)	10 ft (3m)	10 ft (3m)		
Maintenance Requirement (sediment accumulation removal at 2 height)	2 in (50mm)	3.25 in (80mm)	4.75 in (120mm)	7.25 in (180mm)	9.5 in (240mm)	13 in (330mm)		
Initial Maintenance Requirement based on Rainfall Runoff <sup>1</sup>	13 in (33 cm), 665 Liters/m <sup>2</sup>	22 in (55 cm), 1100 Liters/m <sup>2</sup>	32 in (80 cm), 1580 Liters/m <sup>2</sup>	42 in (105 cm), 2160 Liters/m <sup>2</sup>	64 in (160 cm), 3180 Liters/m <sup>2</sup>	86 in (215 cm), 3880 Liters/m <sup>2</sup>	The University of Georgia and Auburn University	
Functional Longevity <sup>2</sup>	6 mo - 5 yr	6 mo - 5 yr	6 mo - 5 yr	6 mo - 5 yr	6 mo - 5 yr	6 mo - 5 yr		
Maximum Slope Length (< 2%)	360 ft (110m)	600 ft (180m)	750 ft (220m)	1000 ft (300m)	1300 ft (390m)	1600 ft (500m)	The Ohio State University, Ohio Agricultural Research and Development Center	Filtrexx Design Tool, Filtrax Library #331, Filtrax Tech Link #3304 & #3311
Hydraulic Flow Through Rate	4.5 gpm/ft (24 L/min/m)	7.5 gpm/ft (39 L/min/m)	11.3 gpm/ft (141 L/min/m)	15.6 gpm/ft (198 L/min/m)	22.5 gpm/ft (281 L/min/m)	30.0 gpm/ft (374 L/min/m)	The Ohio State University, Ohio Agricultural Research and Development Center; University of Georgia, School of Engineering; Watershed Research Group	Filtrexx Tech Link #3311 & #3313, #3308, American Society of Agricultural & Biological Engineers Meeting Proceedings, 2006, Second International Conference on Research in Watershed, 2006
P Factor (RUSLE)	0.1-0.32	0.1-0.32	0.1-0.32	0.1-0.32	0.1-0.32	0.1-0.32	USDA ARS Environmental Quality Lab; University of Georgia	American Society of Agricultural & Biological Engineers Meeting Proceedings, 2006
Sediment Storage Capacity <sup>3</sup>	104 cu. in (1710cc)	174 cu. in (2850cc)	396 cu. in (6490cc)	857 cu. in (14000cc)	1631 cu. in (26840cc)	2647 cu. in (43177cc)		Filtrexx Tech Link #3314
Total Solids Removal	98%	98%	98%	98%	98%	98%	Soil Control Lab, Inc.	International Erosion Control Association, 2006
Total Suspended Solids Removal	78%	78%	78%	78%	78%	78%	USDA ARS Environmental Quality Lab	Filtrexx Tech Link #3308, American Society of Agricultural & Biological Engineers Meeting Proceedings, 2006
Turbidity Reduction	63%	63%	63%	63%	63%	63%	USDA ARS Environmental Quality Lab	Filtrexx Tech Link #3308, American Society of Agricultural & Biological Engineers Meeting Proceedings, 2006
Clay (<0.002mm) Removal	63%	63%	63%	63%	63%	63%	USDA ARS Environmental Quality Lab	Filtrexx Tech Link
Silt (0.002-0.05mm) Removal	64%	64%	64%	64%	64%	64%	USDA ARS Environmental Quality Lab	Filtrexx Tech Link
Other Recommended Uses	Slope Protection, Erosion Control, Filter Strip, Sedimentation System	Slope Protection, Erosion Control, Filter Strip, Sedimentation System	Slope Protection, Erosion Control, Filter Strip, Sedimentation System	Slope Protection, Erosion Control, Filter Strip, Sedimentation System	Slope Protection, Erosion Control, Filter Strip, Sedimentation System	Slope Protection, Erosion Control, Filter Strip, Sedimentation System		

<sup>1</sup> Based on rainfall intensity of 12.5 in (318 mm) applied to a bare clay loam soil at a 10% slope over a flow rate of 150 in (3810 mm) and mean runoff volume of 2301 in (58460 mm).  
<sup>2</sup> Functional Longevity is dependent on mesh material type, UV exposure, freeze/thaw frequency, region of US/Canada, runoff sediment frequency/velocity/loading, and adherence to specified maintenance requirement. Functional longevity ranges are estimates only. Site specific environmental conditions may result in significantly shorter or longer time periods.  
<sup>3</sup> Sediment Storage Capacity = sediment accumulation behind directly adjacent < within the device.

**DRAFT**

PREPARED FOR:		EROSION AND SEDIMENT CONTROL DETAILS 3		DISCIPLINE NO.
				C-24
KCE MI 4, LLC 25 MONROE STREET, SUITE 300 ALBANY, NY 12210 TEL: 518-903-4187		KCE MI 4 KCE MI 4, LLC BLENDON TOWNSHIP, OTTAWA COUNTY, MICHIGAN		REV.
DATE DRAWN: 08/05/2025		DESIGNED BY: L.F., J.B.	PROJECT NUMBER: 0780143	0
Rev.		DATE DRAWN: 08/05/2025	DRAWN BY: L.F., J.B.	SHEET NO.: 24
Environmental Resources Management, Inc.				

