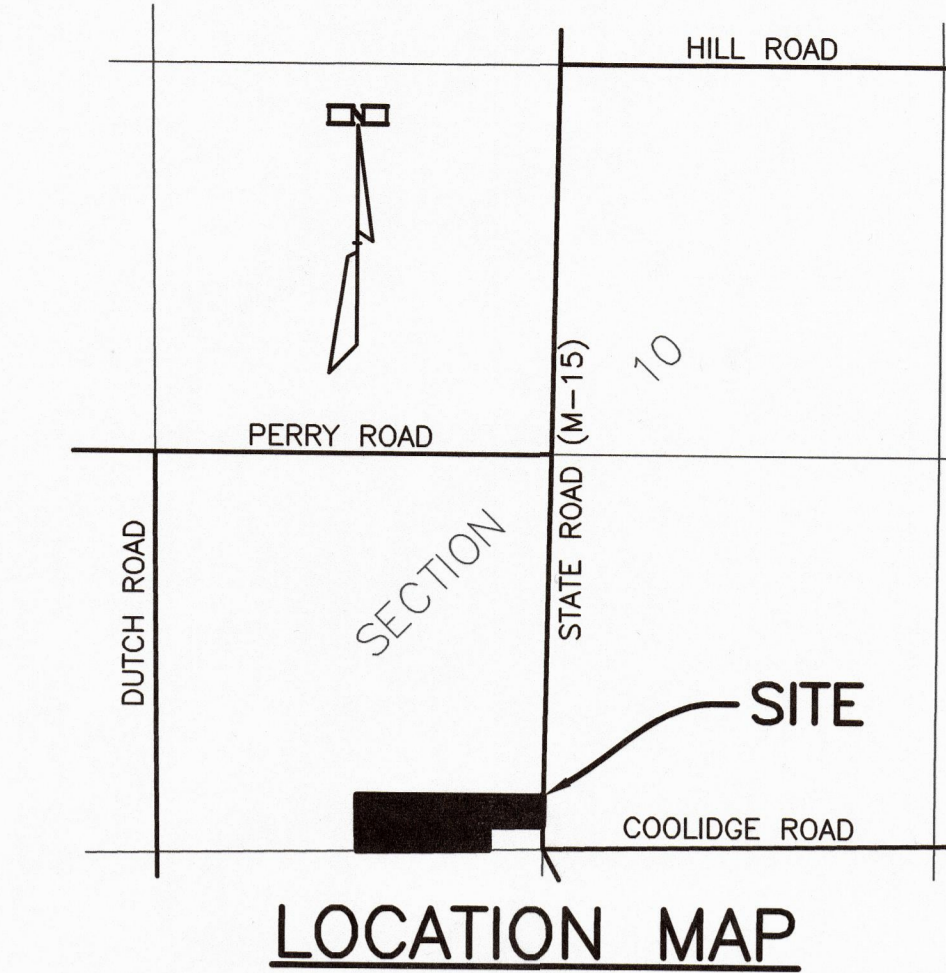


# SITE PLAN REVIEW

## RBF STORAGE

PART OF SECTION 10, T6N, R8E,  
ATLAS TOWNSHIP, GENESEE COUNTY, MICHIGAN



### SHEET INDEX

G0.01	COVER SHEET
1 OF 1	TOPOGRAPHICAL SURVEY (BY OTHERS)
V1.01	EXISTING CONDITIONS PLAN
C0.01	GENERAL NOTES & LEGENDS
C1.01	GENERAL SITE PLAN
C1.21	OVERALL GRADING PLAN
C1.31	STORM SEWER PLAN
C1.41	SOIL EROSION & SEDIMENTATION CONTROL PLAN
C4.01	ENLARGED UNIT PLAN
C4.02	ENLARGED ENTRANCE PLAN
C4.21	ENLARGED GRADING PLAN - EAST
C4.22	ENLARGED GRADING PLAN - WEST
C5.01	DETAILS - SITE
C5.31	DETAILS - STORM SEWER, DETENTION, & CALCULATIONS
C5.32	DETAILS - STORMWATER TREATMENT & CALCULATIONS
C5.41	DETAILS - GENESEE COUNTY SOIL EROSION
L1.01	OVERALL LANDSCAPE PLAN & DETAILS
L4.01	ENLARGED LANDSCAPE PLAN - EAST
L4.02	ENLARGED LANDSCAPE PLAN - WEST
#23-16036	PHOTOMETRIC PLAN (BY OTHERS)

### PROPRIETOR

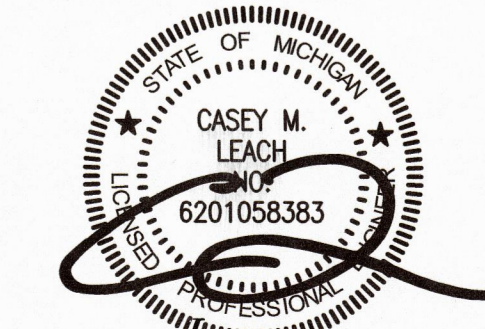
RBF HOLDINGS, LLC  
4140 MORRISH ROAD  
PH: (810) 516-4405  
CONTACT: BRETT JORY, P.E.  
EMAIL: RBF.JORY@GMAIL.COM

### BUILDING SUPPLIER

TRACHETE BUILDING SYSTEMS, INC.  
314 WILBURN ROAD,  
SUN PRARIE, WI 53590  
PH: (608) 356-5824  
CONTACT: RICK JANSSEN  
EMAIL: RJANSSEN@TRACHTE.COM

### ENGINEER & SURVEYOR

KIEFT ENGINEERING, INC.  
5852 S. MAIN ST., STE. 1  
CLARKSTON, MI 48346  
PH:(248) 884-8224  
CONTACT: CASEY LEACH, P.E.  
EMAIL: CLEACH@KIEFTENG.COM



REVISION INDEX		SHEET NUMBERS																			
REV.	DESCRIPTION	DATE	G0.01	V1.01	C0.01	C1.01	C1.21	C1.31	C1.41	C4.01	C4.02	C4.21	C4.22	C5.01	C5.31	C5.32	C5.41	L1.01	L4.01	L4.02	
0	CONCEPT REV. OWNER	04/20/2023		X		X															
1	CONCEPT REV. TWP.	04/24/2023		X		X															
2	PROGRESS PRINT OWNER	05/18/2023	X	X	X	X			X	X				X							
3	FINAL REV. OWNER	05/25/2023	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	SITE PLAN REVIEW	06/28/2023	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	SPR REV.1 & PERMITS	01/30/2024	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE USED, REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.



**KIEFT ENGINEERING, INC.**  
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS  
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346  
PHONE (248) 625-5251      www.kiefteng.com      FAX (248) 625-7110

DATE: 04/17/23	CKD. BY	DATE
DRAWN: GF	CL	06/27/23
DESIGN: CL		
SECTION: 10	T- 6 -N- R- 8 -E-	



72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL FREE)

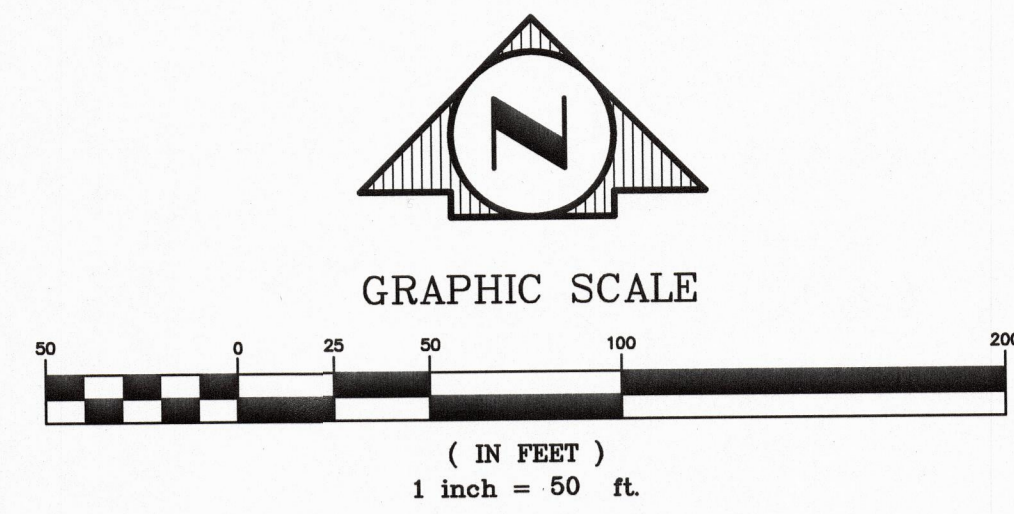
**COVER SHEET**  
**RBF STORAGE**  
ATLAS TOWNSHIP, GENESEE COUNTY, MICHIGAN

SCALE: AS SHOWN
SHEET NO: G0.01
KE 2022.284

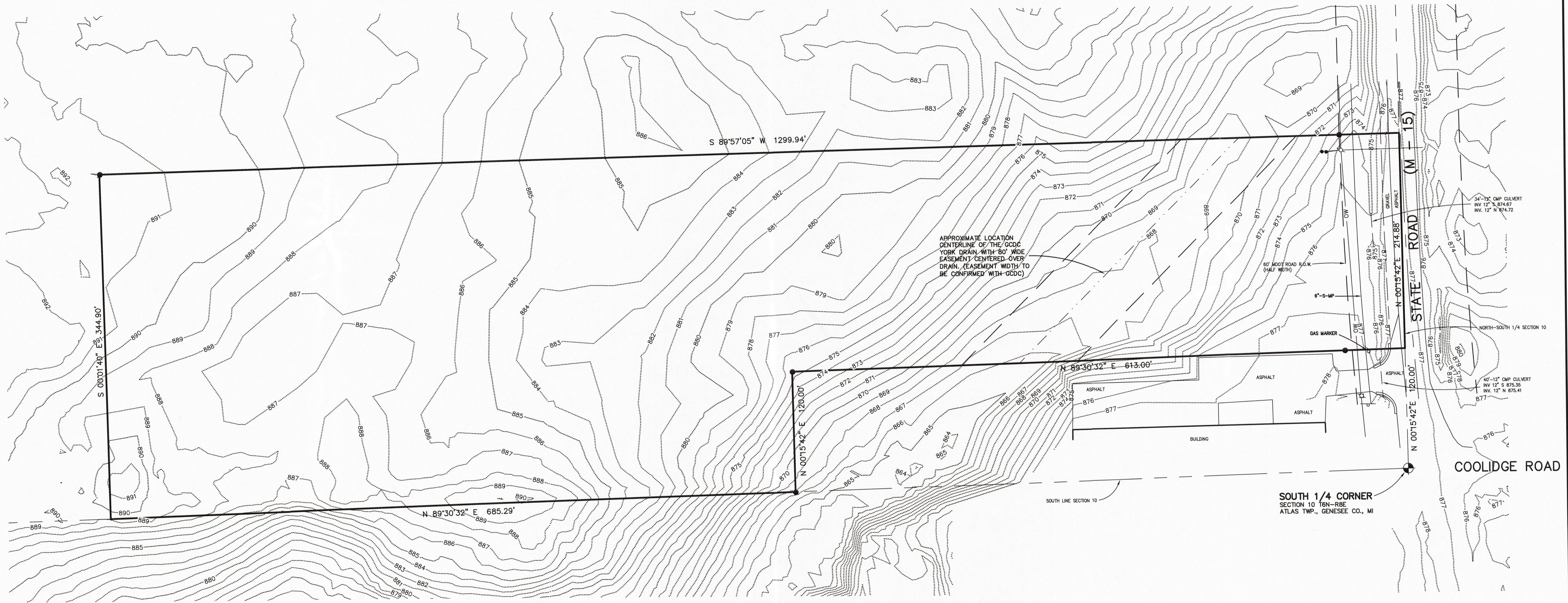
RBF STORAGE

**DESCRIPTION PROVIDED:**

PAT OF THE SOUTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 10, TOWN 6 NORTH, RANGE 8 EAST, ATLAS TOWNSHIP, GENESEE COUNTY, MICHIGAN, BEING MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE SOUTH 1/4 CORNER OF SECTION 10, THENCE N 00°15'42" E ALONG THE NORTH AND SOUTH 1/4 LINE OF SECTION 10, 120 FEET FOR THE POINT OF BEGINNING OF THE PARCEL OF LAND TO BE DESCRIBED, THENCE CONTINUING N 00°15'42" E, ALONG SAID NORTH AND SOUTH 1/4 LINE, 214.88 FEET; THENCE S 89°57'05" W, 1299.94 FEET; THENCE S 00°01'40" E, 344.90 FEET TO A POINT ON THE SOUTH LINE OF SAID SECTION 10; THENCE N 89°30'32" E, 685.29 FEET; THENCE N 00°15'42" E PARALLEL WITH THE NORTH AND SOUTH 1/4 LINE OF SECTION 10, 120.00 FEET; THENCE N 89°30'32" E, PARALLEL WITH THE SOUTH LINE OF SECTION 10, 613.00 FEET TO THE POINT OF BEGINNING. SUBJECT TO THE RIGHTS OF THE PUBLIC OVER M-15, STATE ROAD, SO-CALLED.



- LEGEND**
- FOUND IRON
  - SET IRON
  - FOUND MONUMENT
  - SET MONUMENT
  - STORM SEWER & MANHOLE
  - SANITARY SEWER & MANHOLE
  - WATERMAIN, HYDRANT, & GATE VALVE
  - GAS MAIN & VALVE
  - BURIED TELEPHONE & MANHOLE
  - U.G. UNDER GROUND ELECTRIC & MANHOLE
  - OVERHEAD ELECTRIC POLE & GUY WIRE
  - CATCH BASIN (CURB & ROUND)
  - CONTOUR LINE
  - FENCE
  - CHAIN RAIL
  - WELL
  - LIGHT POLE
  - METAL POLE
  - SIGN
  - STREET SIGN
  - MAILBOX
  - CONC. CONCRETE
  - ASPHT. ASPHALT



Revisions

REVISION

**TOPOGRAPHICAL SURVEY**

**PROPOSED STORAGE FACILITY**  
SECTION 10, ATLAS TOWNSHIP  
GENESEE COUNTY, MICHIGAN

*Surveying & Engineering Since 1957*  
**F.S.E.**  
5370 MILLER ROAD, SUITE 13 • SMARTZ CREEK, MI 48473  
PHONE: (810) 230-1333 FAX: (810) 230-7844

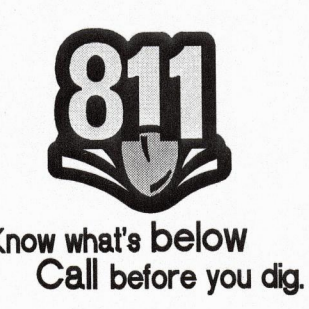
Date :  
9-22-22

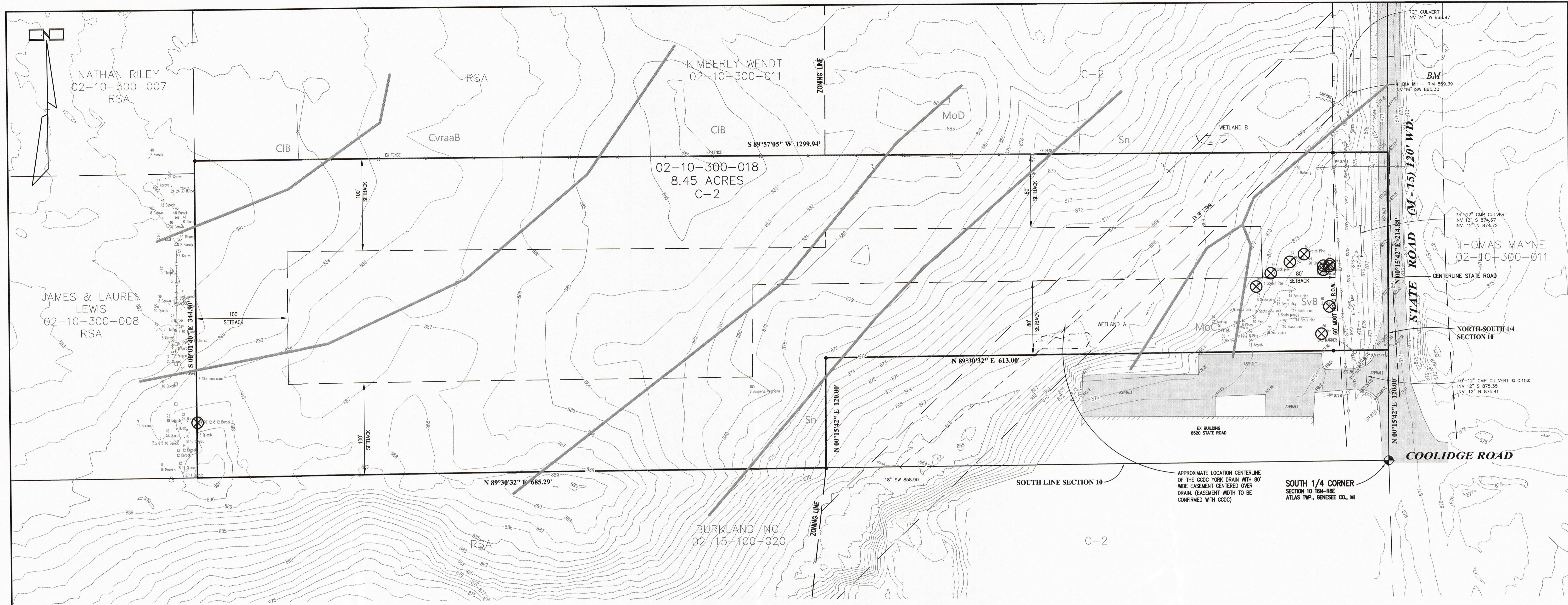
Drawn by:  
N.N.C.

Designed by:

Sheet No.  
1 OF 1

Job No.  
26460





**SITE INFORMATION:**  
LOT GROSS AREA: 8.45 ACRES

**ZONING INFORMATION:**  
ZONING DISTRICT: C-2 COMMERCIAL GENERAL  
PROPOSED SPECIAL USE: STORAGE UNITS  
MINIMUM LOT SIZE: NOT SPECIFIED  
MAXIMUM BUILDING HEIGHT: 35 FT

**SETBACKS:**

	FRONT	REAR	SIDES
STANDARD	80 FT	80 FT	80 FT EACH
ABUTTING RESIDENTIAL	100 FT	100 FT	100 FT EACH

MAXIMUM LOT COVERAGE: N/A FOR DISTRICT

**BENCHMARK:**  
RIM OF EXISTING STORM MH LOCATED  
63' NORTH OF NORTH PROPERTY LINE  
ON THE WEST SIDE OF STATE ROAD.  
ELEVATION - 869.39 NAVD 88

**WETLAND NOTE:**  
A WETLAND DETERMINATION & DELINEATION WAS PERFORMED BY GEI CONSULTANTS ON OCTOBER 26, 2023, AND A REPORT WAS ISSUED ON JANUARY 8, 2024. TWO (2) WETLANDS, WETLAND A AND WETLAND B, WERE IDENTIFIED IN THE REPORT. THESE WETLANDS ARE DEPICTED ON THE DRAWINGS BY INSERTING WETLAND GPS DATA FROM THE WETLAND CONSULTANT INTO THE CAD DRAWING.

**FLOOD HAZARD NOTE:**  
THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT APPEAR TO LIE WITHIN A SPECIAL FLOOD HAZARD AREA (ZONE X) AS DEFINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), & AS SHOWN ON FLOOD INSURANCE RATE MAP (FIRM) NO. 26049C0342D BARING AN EFFECTIVE DATE OF 9/25/2009.

**PLAN PREPARATION NOTE:**  
A FIELD SURVEY WAS PERFORMED BY FLINT SURVEYING & ENGINEERING CO., JOB NO. 26466, DATED SEPTEMBER 22, 2022. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE UTILITIES, OR EASEMENTS SHOWN ON THIS DRAWING. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS OF OVERHEAD AND UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION ACTIVITIES.

**TREE SURVEY NOTE:**  
THE TREE INFORMATION ON THIS PLAN WAS PROVIDED BY GEI CONSULTANTS. THE TREES WERE SURVEYED BY GEI ON OCTOBER 26, 2023, & GPS DATA FROM THIS SURVEY WAS INSERTED INTO THE DRAWING. KIEFT ENGINEERING HAS NOT INDEPENDENTLY CONFIRMED TREE DATA.

**SYMBOLS LEGEND**

EXISTING		
---	STORM SEWER	⊗
---	SANITARY SEWER	⊙
---	WATERMAIN	⊖
---	GAS MAIN	⊕
---	ELEC. TELE. CABLE	⊗
---	OVERHEAD WIRES	⊙
---	SANITARY MANHOLE	⊖
---	CATCH BASIN	⊕
---	INLET	⊙
---	REARYARD CATCH BASIN	⊖
---	END SECTION	⊕
---	SANITARY MANHOLE	⊙
---	GATE VALVE AND WELL	⊖
---	HYDRANT	⊕
---	CONTOURS	---
---	GRADE	---
---	SOIL TYPE LABEL	---
---	SOIL TYPE DELINEATION	---
---	TREE IDENTIFICATION	---
---	E.G. TREE#38, 3", SCOTS PINE	---
---	DEMOLISH TREE	---

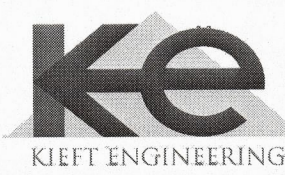
TREE #	Size	NAME	DBH (IN)	Species	TREE #	Size	NAME	DBH (IN)	Species	
100	6"	Juniperus virginiana	6	Juniperus virginiana	41	8"	Tilame	8	Tilia americana	
1	8"	Tilia americana	8	Tilia americana	42	8"	Carova	8	Carya ovata	
2	12"	Carova	12	Carya ovata	43	8"	Buroak	8	Quercus macrocarpa	
3	20"	Querub x 2 split	20	Quercus rubra	44	12"	Buroak	12	Quercus macrocarpa	
4	8"	Frapen x 3 split	8	Fraxinus pennsylvanica	45	24", 24", 30"	Buroak x 3	24, 24, 30	Quercus macrocarpa	
5	8"	Carova	8	Carya ovata	46	24"	Carova	24	Carya ovata	
6	8"	Carova	8	Carya ovata	47	8"	Carova	8	Carya ovata	
7	8"	Ulm sp x 2 split	8	Ulmus americana	48	8"	Buroak	8	Quercus macrocarpa	
8	16"	Quaalb	16	Quercus alba	49	8"	Pine	8	Pinus sylvestris	
9	12"	Buroak	12	Quercus macrocarpa	50	8"	Pine	8	Pinus sylvestris	
10	12", 14"	Querub	12, 14	Quercus rubra	51	10"	Pine	10	Pinus sylvestris	
11	16"	Pruser	16	Prunus serotina	52	8"	Pine	8	Pinus sylvestris	
12	8", 10"	Querub	8, 10	Quercus rubra	53	6"	Pine	6	Pinus sylvestris	
13	12"	Buroak	12	Quercus macrocarpa	54	11"	Acerub	11	Acer rubrum	
14	12"	Buroak	12	Quercus macrocarpa	55	3"	Pin syl	3	Pinus sylvestris	
15	18", 10"	Querub	18, 10	Quercus rubra	56	2"	Pinsyl	2	Pinus sylvestris	
16	18"	Querub	18	Quercus rubra	57	24"	Aconeg	24	Acer negundo	
17	8", 8", 10"	Buroak x 3	8, 8, 10	Quercus macrocarpa	58	1"	Pine	1	Pinus sylvestris	
18	16"	Quaalb	16	Quercus alba	59	3"	Pine	3	Pinus sylvestris	
19	12"	Quaalb	12	Quercus alba	60	1"	Pinsyl	1	Pinus sylvestris	
20	14", 20", 12", 8", 12"	Buroak	14, 20, 12, 8, 12	Quercus macrocarpa	61	1"	Pinsyl	1	Pinus sylvestris	
21	24"	Buroak	24	Quercus macrocarpa	62	20"	Ulmame	20	Ulmus americana	
22	10"	Querub	10	Quercus rubra	63	10x10	cluster of 15"	Pinusyl	1	Pinus sylvestris
23	10", 10", 8"	Tilame	10, 10, 8	Tilia americana	64	8"	Scotch Pine	8	Scots pines x 8	
24	9", 10"	Tilame	9, 10	Tilia americana	65	12"	Scots pine	12	Pinus sylvestris	
25	8"	Buroak	8	Carya ovata	66	16"	Jack pine	16	Pinus sylvestris	
26	8"	Carova	8	Carya ovata	67	6", 1", 1", 1"	Scotch Pine	6	Pinus sylvestris	
27	10"	Querub	10	Quercus rubra	68	3-6"	Scots pine	3	Pinus sylvestris	
28	14"	Buroak	14	Quercus macrocarpa	69	14"	Scots pine	14	Pinus sylvestris	
29	10"	Carova	10	Carya ovata	70	8"	Scots pine	8	Pinus sylvestris	
30	10"	Carova	10	Carya ovata	71	8"	Scots pine	8	Pinus sylvestris	
31	24"	Buroak	24	Quercus rubra	72	14"	Scots pine	14	Pinus sylvestris	
32	10"	Tilame	10	Tilia americana	73	12"	Scots pine	12	Pinus sylvestris	
33	16"	Carova	16	Carya ovata	74	12"	Scots pine	12	Pinus sylvestris	
34	8", 8"	Buroak x 2	8, 8	Quercus macrocarpa	75	14"	Scots pine	14	Pinus sylvestris	
35	10"	Tilame	10	Tilia americana	76	10"	Scots pine	10	Pinus sylvestris	
36	10"	Carova	10	Carya ovata	77	8"	Scots pine	8	Pinus sylvestris	
40	20"	Carova	20	Carya ovata	78	6"	Mulberry	6	Morus alba	

**TREE INDEX**

DATE	ISSUE
04/20/23	CONCEPT REVIEW OWNER
04/24/23	CONCEPT REVIEW PER. INQUIRY
05/25/23	FINAL REVIEW OWNER
05/28/23	SITE PLAN REVIEW
07/30/23	SITE PLAN REVIEW REV. 1 & PERMITS

**PROPRIETOR:**  
RBF HOLDINGS - BRETT JORY  
4140 MORRIS ROAD  
SWARTZ CREEK, MI 48473  
(810) 516-4405

THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE USED, REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.



**KIEFT ENGINEERING, INC.**  
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS  
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346  
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE:	CKD. BY:	DATE:
04/20/23	GF	06/27/23
DESIGN:	CL	
SECTION:	10	T-6 -N- R-8 -E-



**EXISTING CONDITIONS PLAN**  
RBF STORAGE  
ATLAS TOWNSHIP, GENESEE COUNTY, MICHIGAN

SCALE:
1" = 50'
SHEET NO: V1.01
KE 2022.284

RBF STORAGE

CIVIL GENERAL NOTES

- 1. PRIOR TO SUBMITTING PROPOSAL, VERIFY ALL CONDITIONS GOVERNING OR AFFECTING THE CIVIL WORK...
2. CONTRACTOR TO FURNISH ALL NECESSARY LABOR, MATERIAL, EQUIPMENT & FACILITIES TO FURNISH, FABRICATE & PERFORM THE REQUIRED CIVIL WORK.
3. ANY EXISTING CONSTRUCTION TO BE MODIFIED AS A PART OF THIS CONTRACT SHALL BE REBUILT AS REQUIRED TO THE SATISFACTION OF THE OWNER/ENGINEER.
4. EXISTING CONSTRUCTION NOT UNDERGOING ALTERATION IS TO REMAIN UNDISTURBED. WHERE SUCH CONSTRUCTION IS DISTURBED AS A RESULT OF THE OPERATIONS OF THIS CONTRACT, THE EXISTING CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AS REQUIRED & TO THE SATISFACTION OF THE OWNER/ENGINEER.
5. ALL WORK SHOWN ON THESE DRAWINGS MAY BE CHECKED BY AN INDEPENDENT TESTING AGENCY RETAINED BY OWNER TO ENSURE COMPLIANCE WITH THE REQUIREMENTS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL PROVIDE ACCESS AS REQUIRED FOR TESTING PURPOSES.
6. CONTRACTOR SHALL MAKE ALL NECESSARY FIELD VISITS FOR INSPECTION, MEASUREMENTS & VERIFICATION OF EXISTING CONDITIONS.
7. THE GENERAL CIVIL NOTES ARE INTENDED TO AUGMENT THE DRAWINGS & SPECIFICATIONS. SHOULD CONFLICTS EXIST BETWEEN THE DRAWINGS, SPECIFICATION, &/OR THE GENERAL CIVIL NOTES, THE STRICTEST PROVISION AS DETERMINED BY THE ENGINEER SHALL GOVERN.
8. WORK THE CIVIL DRAWINGS IN CONJUNCTION WITH ANY ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, LANDSCAPING, & ELECTRICAL DRAWINGS.
9. ALL WORK SHALL CONFORM TO APPLICABLE STATE & LOCAL CODES.
11. THE CONTRACTOR SHALL COMPLY WITH THE CONSTRUCTION SAFETY STANDARDS & THE OCCUPATIONAL SAFETY STANDARDS (OSHA) AS ISSUED BY THE U.S. DEPARTMENT OF LABOR & THE MICHIGAN DEPARTMENT OF LABOR (MIOSHA).
12. MATERIALS & WORKMANSHIP SHALL COMPLY WITH APPLICABLE CODES, SPECIFICATIONS, LOCAL ORDINANCES, INDUSTRY STANDARDS & UTILITY COMPANY REGULATIONS.
13. THE CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL THE EXISTING CONDITIONS AT THE SITE INCLUDING UTILITIES, SERVICES, ETC. & SHALL BE FULLY RESPONSIBLE FOR ANY DAMAGES THEY CAUSE TO BOTH EXISTING, NEW CONSTRUCTION, PROPERTY & ANY UNAUTHORIZED DISRUPTION TO ADJACENT OWNERS NORMAL USE OF UTILITIES, SERVICES & THE SURROUNDING FACILITIES.
14. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION PRIOR TO MAKING CHANGES TO, OR INTERRUPTIONS OF UTILITIES & SHALL COMPLY WITH SPECIAL INSTRUCTIONS FROM THE OWNER TO MINIMIZE THE EFFECT ON THEIR OPERATIONS. PRIOR TO ANY EXCAVATION, EARTH MOVING TO REMOVE OR ANY PIPE FROM SERVICE, THE CONTRACTOR SHALL REVIEW WITH THE OWNER'S REPRESENTATIVE THE LOCATION OF THE UNDERGROUND UTILITIES, SERVICE & STRUCTURES IN THE AREA WHERE THE WORK IS BEING PERFORMED. PROVIDE FULL TIME SUPERVISION DURING ALL EXCAVATION & EARTH MOVING OPERATIONS & TAKE ALL RESPONSIBLE PRECAUTIONS TO PROTECT EXISTING UTILITIES, SERVICES & OPERATIONS FROM DAMAGE OR DISRUPTION.
15. PROVIDE BARRIER PROTECTION FOR VEHICULAR & PEDESTRIAN TRAFFIC AT EXCAVATIONS. TEMPORARY FENCING, BARRICADING & PEDESTRIAN ROUTING SHALL BE COORDINATED WITH & APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
16. FOR PROTECTION OF UNDERGROUND UTILITIES THE CONTRACTOR SHALL CALL "MISS DIG" AT 800-482-7171 OR 811, A MINIMUM OF THREE DAYS PRIOR TO EXCAVATION ON THE SITE. ALL "MISS DIG" PARTICIPATING MEMBERS WILL THUS ROUTINELY BE NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF NOTIFYING UTILITY OWNER'S WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.
17. DISPOSE OF ALL EXCAVATED SOILS & WASTE MATERIALS (NEW & EXISTING) OFF SITE IN A LEGAL MANNER.
18. PERFORM FINAL CLEANUP OF WORK AREAS TO THE SATISFACTION OF THE OWNER.

CONTROL

- 1. TOPOGRAPHIC INFORMATION: EXISTING INFORMATION IS BASED ON A TOPOGRAPHIC SURVEY BY FLINT SURVEYING AND ENGINEERING DATED SEPTEMBER 22, 2022. SUPPLEMENTED BY RECORD DRAWINGS & FIELD OBSERVATIONS.
2. VERTICAL CONTROL: ELEVATIONS SHOWN ARE BASED ON NAVD 88 DATUM. THE BENCH MARK USED IS THE RIM OF AN EXISTING STORM MANHOLE LOCATED 65 FEET NORTH OF THE NORTH PROPERTY LINE, ON THE WEST SIDE OF STATE ROAD (M-15).
3. LAYOUT: LOCATE NEW CONSTRUCTION BY MEASUREMENTS FROM CONNECTING AREAS OF EXISTING BUILDINGS, & ENGAGE THE SERVICES OF A PROFESSIONAL SURVEYOR TO ASSIST IN LAYOUT, & CONSTRUCTION STAKING. CONFIRM HORIZONTAL & VERTICAL CONTROL POINTS PRIOR TO CONSTRUCTION.

CLEARING, GRUBBING, & EARTHWORK

- 1. AT THE START OF EARTHWORK OPERATIONS, ALL SURFACE VEGETATION SHALL BE CLEARED & THE EXISTING TOPSOIL & ANY OTHER ORGANIC SOILS SHALL BE REMOVED IN THEIR ENTIRETY FROM BELOW THE PROPOSED BUILDING & PAVEMENT AREAS. EXISTING RANDOM CONCRETE & OTHER DEBRIS SHALL BE REMOVED FROM WITHIN THE BUILDING AREA. REMOVE STUMPS TO 12 INCHES BELOW FINAL GRADE IN FUTURE LAWN AREAS, & REMOVE STUMPS ENTIRELY FROM FUTURE PAVED & BUILDING AREAS. DISPOSE OF VEGETATIVE MATTER & DEBRIS OFFSITE.
2. THE SUB-GRADE SHALL BE THOROUGHLY PROOF-ROLLED WITH A HEAVY RUBBER-TIRED VEHICLE SUCH AS A LOADED SCRAPER OR LOADED DUMP TRUCK. ANY AREAS THAT EXHIBIT EXCESSIVE PUMPING & YIELDING DURING PROOF-ROLLING SHALL BE STABILIZED BY AERATION, DRYING & COMPACTION IF WEATHER CONDITIONS ARE FAVORABLE, OR REMOVAL & REPLACEMENT WITH ENGINEERED FILL.
3. ALL EXCAVATIONS ARE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE WHO SHALL BE CONSULTED WHEN POOR SOIL, WATER, OBSTRUCTIONS, PIPING, EXISTING FOOTINGS, EXCAVATIONS, ETC., ARE ENCOUNTERED.
4. CONTRACTOR SHALL FURNISH ALL REQUIRED DEWATERING EQUIPMENT TO MAINTAIN A DRY EXCAVATION UNTIL BACKFILL IS COMPLETE.
5. MATERIAL FOR BACKFILL OR ENGINEERED FILL REQUIRED TO ACHIEVE DESIGN GRADES SHOULD CONSIST OF NON-ORGANIC SOILS. THE ON-SITE SOILS THAT ARE FREE OF ORGANIC MATTER & DEBRIS MAY BE USED FOR ENGINEERED FILL WITH ENGINEER'S APPROVAL.
6. BACKFILL MATERIAL SHALL BE COMPACTED TO 95% OF ITS MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR METHODS (ASTM D1557), IN LIFTS NOT EXCEEDING 12-INCHES IN LOOSE THICKNESS.
7. FROZEN MATERIAL SHALL NOT BE USED AS FILL, NOR SHALL FILL BE PLACED ON FROZEN SUB-GRADE.

CLEARING, GRUBBING, & EARTHWORK CONT.

- 8. CONSTRUCTION DRAINAGE: STORM WATER ACCUMULATED IN THE PROJECT SITE EXCAVATIONS IS TO DRAIN BY NATURAL PERCOLATION.
9. SLOPE SMOOTHLY BETWEEN INDICATED ELEVATIONS TO ACHIEVE POSITIVE DRAINAGE. SLOPE ALL EARTH BANKS 4:1 OR FLATTER U.N.O.
10. NEW GRADES SHOWN ARE FINISHED GRADES & INCLUDES TOP OF TOPSOIL OR SURFACES SUCH AS PAVEMENTS & WALKS.
11. PROVIDE 4 INCHES OF PREPARED TOPSOIL (REUSE EXISTING), SEED, FERTILIZE, & STRAW MULCH /W NETTING AT DISTURBED LAWN AREAS, EXCEPT AS NOTED OTHERWISE. SECURE MULCH NETTING BY USING AN APPROPRIATE PINNING PATTERN PER MANUFACTURER'S SPECIFICATIONS. PROVIDE IRRIGATION & MAINTENANCE (MOWING, TRIMMING, ETC.) UNTIL 80% OF LAWN IS ESTABLISHED AS DETERMINED BY THE ENGINEER OR OWNER. SEE LANDSCAPING PLANS & SPECIFICATIONS IF AVAILABLE.
12. GREAT CARE SHALL BE TAKEN BY CONTRACTORS TO AVOID DAMAGE TO VEGETATION OUTSIDE THE LIMITS OF CONSTRUCTION & TO KEEP THE CONSTRUCTION AREAS TO A MINIMUM. DRIVING SHALL NOT BE PERMITTED OUTSIDE THE LIMITS OF CONSTRUCTION.

UTILITIES

- 1. MINIMUM COVER OF UNDERGROUND UTILITIES:
STORM SEWER 2.5 FT
PROVIDE TEMPORARY PROTECTION AS REQUIRED UNTIL COVER IS COMPLETED. INFORM OWNER'S REPRESENTATIVE IF AVAILABLE COVER, AT INDICATED ELEVATIONS, IS LESS THAN MINIMUM. VERTICAL CLEARANCE FOR ALL PIPES SHALL BE 18" MINIMUM FROM THE OUTSIDE OF PIPE.
2. EXISTING UTILITIES: INFORMATION HAS BEEN OBTAINED FROM EXISTING AVAILABLE DRAWINGS & SURFACE FEATURES SHOWN ON THE TOPOGRAPHICAL SURVEY. VERIFY THE INFORMATION BEFORE CONSTRUCTION. NOTIFY THE OWNER'S REPRESENTATIVE OF DISCREPANCIES OR INTERFERENCES.
3. ADJUST THE FRAME & COVER OF CATCH BASINS & MANHOLES THAT ARE NOT INDICATED TO BE ABANDONED OR REMOVED, TO FINISH GRADE ELEVATION. ADJUSTMENTS SHALL BE MADE USING PRECAST GRADE RINGS.
4. THE LOCATIONS & ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS & ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.
5. PRIOR TO CONSTRUCTION, EXISTING UTILITIES AT PROPOSED CONNECTIONS & CROSSINGS SHALL BE FIELD EXCAVATED TO VERIFY LOCATIONS, ELEVATION & SIZE. THE OWNER'S REPRESENTATIVE MAY CONFIRM, ADJUST OR REVISE DESIGN ELEVATIONS OF THE PROPOSED UTILITIES.
6. UNDERDRAIN: PROVIDE TYPICAL UNDERDRAIN UNDER PAVEMENT AT NEW CATCH BASINS, INLETS & OUTLET CONTROL STRUCTURES RECEIVING SURFACE DRAINAGE. UNDERDRAIN SHALL HAVE A MINIMUM OF 2'-6" COVER & A MINIMUM SLOPE OF 0.5%. SEE DETAIL ON C1.31.
7. ROUND CORRUGATED METAL PIPE WITH LONGITUDINAL SEAMS SHALL BE PLACED WITH SEAMS AT THE SIDES. CIRCUMFERENTIAL SEAMS WITH LAPS SHALL BE PLACED WITH THE LAPS IN THE DOWNSTREAM DIRECTION SO FLOW OF WATER IS DIRECTED OVER, INSTEAD OF UNDER, EACH SUCCEEDING DOWNSTREAM SECTION.
8. CORRUGATED METAL PIPE CONNECTIONS FOR MAKING FIELD JOINTS SHALL CONSIST OF CORRUGATED BANDS, SO CONSTRUCTED AS TO LAP ON EQUAL PORTIONS OF EACH CULVERT SECTION TO BE CONNECTED. ALL CONNECTIONS SHALL BE AN APPROVED TYPE, FABRICATED & INSTALLED SO THAT A SECURE & FIRM PIPE CONNECTION MAY BE READILY MADE IN THE FIELD.

GENERAL PAVING NOTES

- 1. ALL HOT MIX ASPHALT & CONCRETE PAVEMENT SHALL CONFORM TO THE 2012 MDOT SPECIFICATIONS FOR CONSTRUCTION.
2. SURFACE RESTORATION: RESTORE PAVEMENT & OTHER SURFACES DISTURBED BY CONTRACT OPERATIONS TO THEIR ORIGINAL CONDITION OR BETTER.
3. PAVEMENT STRIPING: PROVIDE 4 INCH WIDE WHITE PAINT STRIPING FOR STANDARD PARKING SPACE STRIPING, & 4 INCH WIDE HANDICAP BLUE FOR ALL ACCESSIBLE PARKING STRIPING. ALL PAVEMENT LANE MARKINGS SHALL MEET THE REQUIREMENTS SET FORTH IN THE MDOT 2012 STANDARD SPECIFICATION FOR REGULAR DRY PAINT MARKINGS. ALL PAINT SHALL BE APPLIED PER MANUFACTURERS RECOMMENDATIONS.
4. EXISTING PAVEMENT TO BE REMOVED SHALL BE SAW CUT, FULL DEPTH, & RECTANGULAR.
5. WHEN PLACING NEW PAVEMENTS, MAINTAIN SLOPE OF EXISTING SURROUNDING SURFACES.

ASPHALT

- 1. AFTER FINAL ROLLING, PROTECT PAVEMENT FROM VEHICULAR TRAFFIC UNTIL THE SURFACE HAS COOLED SUFFICIENTLY TO ELIMINATE SURFACE ABRASION.
2. PAVEMENT SEALER

- A. PAVEMENT SEALER SHALL BE TARCONITE BY NEYRA INDUSTRIES, INC., OR APPROVED SUBSTITUTE. SEALER SHALL MEET FS R-P-355e PITCH, COAL TAR EMULSION (COATING FOR BITUMINOUS PAVEMENTS).

ALTERNATE NO. 1: PAVEMENT SEALER SHALL BE JENNITE BY NEYRA INDUSTRIES, INC. OR APPROVED SUBSTITUTE

- NEYRA INDUSTRIES, INC. OR APPROVED SUBSTITUTE SEALER SHALL BE MIXED WITH 6 POUNDS OF SAND PER GALLON OF SEALER. SURFACE CLEANING, PRIMING & NUMBER OF APPLICATIONS SHALL BE AS SPECIFIED FOR BASE BID. SEALER SHALL EXCEED FS R-P-355e.
B. PRIMER SHALL BE POLYPRIME PENETRATING PRIMER BY NEYRA INDUSTRIES, INC. OR APPROVED SUBSTITUTE.
C. CLEAN EXISTING SURFACES FREE FROM ALL LOOSE OR FOREIGN MATTER. COAT OIL SPOTS WITH ACRYLIC OIL SPOT PRIMER.
D. APPLY PRIMER AT MINIMUM RATE OF .015 GAL. OF CONCENTRATED POLYPRIMER PER SQUARE YARD. ALLOW PRIMER TO CURE FOR A MINIMUM OF ONE HOUR PRIOR TO APPLICATION OF TARCONITE.
E. SEALER SHALL BE FIELD MIXED WITH 5 POUNDS OF SAND PER 1 GALLON OF TARCONITE TO FORM HOMOGENEOUS SLURRY. SAND SHALL BE WASHED DRY SILICA SAND.
F. APPLICATION SYSTEM FOR MODERATE TRAFFIC: ONE COAT OF POLYPRIME PENETRATING PRIMER & TWO SAND-SLURRY COATS OF TARCONITE. APPLICATION SPECIFICATION JV-S2.
G. NEW PAVEMENTS SHALL BE ALLOWED TO CURE AT LEAST 30 DAYS PRIOR TO APPLICATION.
H. APPLICATION OF PAVEMENT SEALER SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
I. BARRICADE COATED AREAS UNTIL COATING IS DRIED SUFFICIENTLY FOR TRAFFIC.

CAST-IN-PLACE CONCRETE & CONCRETE PAVING

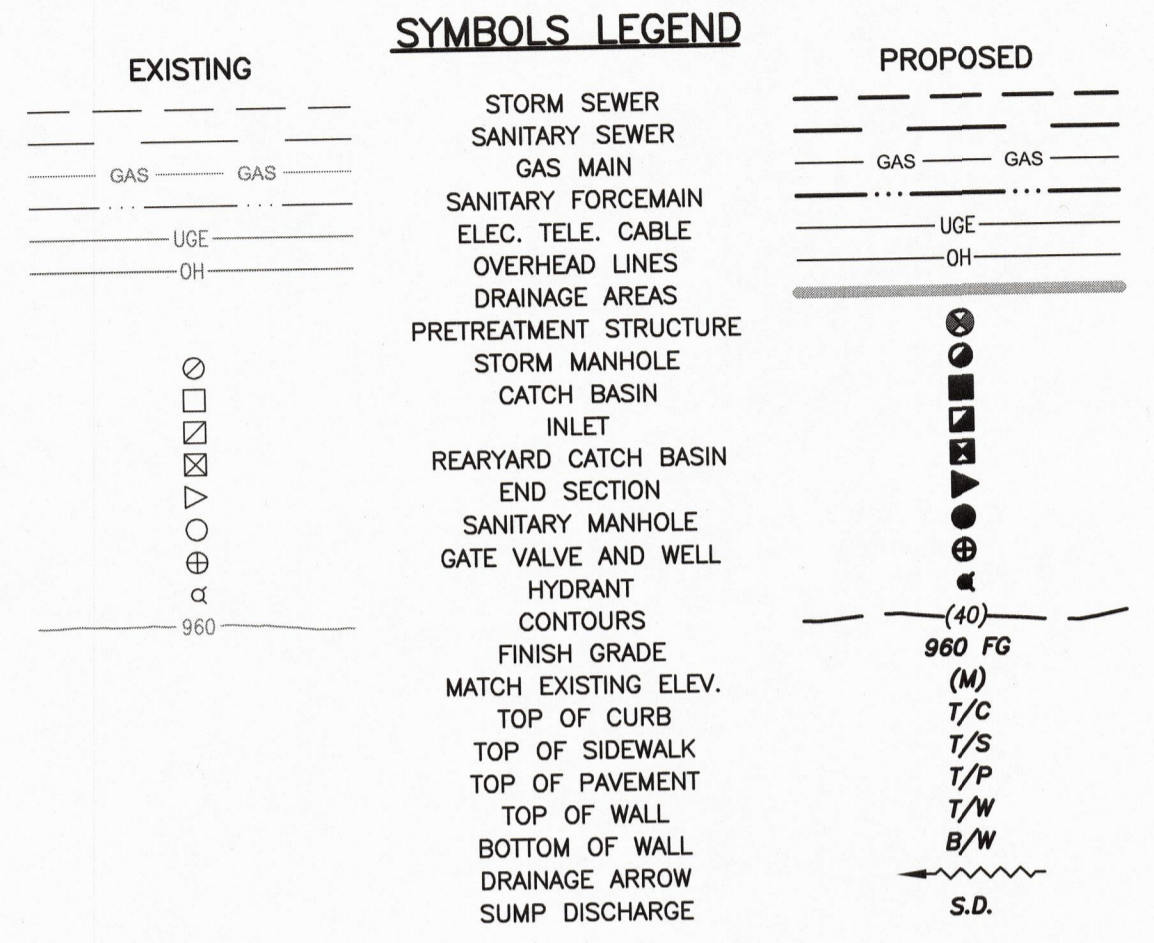
- 1. ALL CAST IN PLACE CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 301-LATEST REVISION, "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDING", EXCEPT AS NOTED ON THE DRAWINGS.
2. ALL CONCRETE PAVEMENT WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 330-LATEST REVISION, "GUIDE FOR THE DESIGN AND CONSTRUCTION OF CONCRETE PARKING LOTS", EXCEPT AS NOTED ON THE DRAWINGS.
3. ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 psi.
4. ALL EXTERIOR CONCRETE INCLUDING WALLS SHALL BE AIR ENTRAINED 5% +/- 1%.
5. ALL EXTERIOR CONCRETE EXPOSED TO WEATHER SHALL HAVE A MAXIMUM WATER TO CEMENTITIOUS RATIO OF 0.45.
6. UNLESS NOTED OTHERWISE, MINIMUM CONCRETE COVER SHALL BE:
CONCRETE CAST AGAINST EARTH 3 IN
CONCRETE EXPOSED TO EARTH OR WEATHER 2 IN
7. ALL REINFORCEMENT TO BE DETAILED, FABRICATED & ERECTED ACCORDING TO THE ACI STANDARDS: "DETAILS & DETAILING OF CONCRETE REINFORCEMENT", ACI 315 - LATEST REVISION & "MANUAL OF ENGINEERING & PLACING DRAWINGS FOR REINFORCED CONCRETE STRUCTURES", ACI 315R - LATEST REVISION.
8. LAPS, ANCHORAGES & SPLICES SHALL COMPLY WITH THE REQUIREMENTS OF ACI 318-LATEST REVISION, SECTIONS 12.2 & 12.15. LOCATIONS & SPLICES SHALL BE IN ACCORDANCE WITH THE CONSTRUCTION JOINT LOCATIONS, DETAILS & AS SHOWN ON THE REINFORCING STEEL SHOP DRAWINGS.
9. PROVIDE 3/4" CHAMFER STRIP AT ALL EXPOSED CORNERS OF CONCRETE WALLS, INCLUDING EXPOSED CORNERS OF CONCRETE PIERS.
10. LOCATE ALL SLEEVES, OPENINGS, EMBEDDED ITEMS, ETC., AS INDICATED ON THE DRAWINGS. THE CONCRETE CONTRACTOR SHALL CHECK WITH ALL OTHER TRADES TO MAKE SURE THE SLEEVES, OPENINGS & EMBEDDED ITEMS THAT ARE TO BE PROVIDED & SET BY THEM ARE IN PLACE PRIOR TO PLACING OF CONCRETE IN THE AREA INVOLVED
11. ALL INTERIOR SLABS ON GRADE SHALL BE PLACED ON A VAPOR BARRIER WITH A MINIMUM OF 4-INCHES MDOT CLASS II GRANULAR MATERIAL (SAND). MINIMUM REINFORCEMENT SHALL BE IN ACCORDANCE WITH CRSI ENGINEERING DATA REPORT NUMBER 37, OR AS DETAILED. ALL EXTERIOR SLABS ON GRADE SHALL BE PLACED ON A MINIMUM OF 4-INCHES CLEAN SAND. MINIMUM REINFORCEMENT SHALL BE IN ACCORDANCE WITH ACI 318 SECTION 7.12 - SHRINKAGE & TEMPERATURE REINFORCEMENT, OR AS DETAILED.
12. CONTRACTORS SHALL OBTAIN APPROVAL FROM THE ENGINEER, PRIOR TO PLACING OPENINGS OR SLEEVES, NOT SHOWN ON THE DRAWINGS, THROUGH ANY STRUCTURAL MEMBERS, ROOF, WALLS OR FOUNDATIONS. REVIEW ARCHITECTURAL, MECHANICAL & ELECTRICAL DRAWINGS FOR BASES, OPENINGS, SLEEVES, ANCHORS, INSERTS, CONDUITS, RECESSES & OTHER DEVICES IN CONCRETE WORK BEFORE CASTING CONCRETE.
13. PROVIDE POCKETS OR RECESSES IN CONCRETE WORK FOR STEEL COLUMNS & BEAMS AS REQUIRED &/OR AS CALLED FOR IN THE SPECIFICATIONS EVEN IF NOT SHOWN ON THE DRAWINGS. PROVIDE CONCRETE FILL AFTER STEEL ERECTION TO SEAL OPENINGS.
14. REFER TO BUILDING DRAWINGS FOR SLAB RECESSES &/OR FLOOR FINISH MATERIALS.
15. WELDING OF REINFORCING STEEL IS PROHIBITED UNLESS SPECIFICALLY DETAILED. WELDING SHALL CONFORM TO AWS D1.4 SPECIFICATION.

SOIL EROSION & SEDIMENTATION CONTROL

- 1. COMPLY WITH THE REQUIREMENTS OF THE GENESSEE COUNTY DRAIN COMMISSIONER (GCDC) EROSION & SEDIMENTATION CONTROL PERMIT ALONG WITH ALL APPLICABLE FEDERAL, STATE, COUNTY, & TOWNSHIP LAWS, CODES, & REGULATIONS PERTAINING TO THE IMPLEMENTATION, MAINTENANCE, & DOCUMENTATION OF SEDIMENTATION & EROSION CONTROL PRACTICES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION, MAINTENANCE, & DOCUMENTATION OF SEDIMENTATION & EROSION CONTROL & STORM WATER QUALITY ISSUES RELATED TO THE PROJECT, AS REQUIRED & AS NECESSARY TO COMPLY WITH APPLICABLE LAWS, CODES, & REGULATIONS.
3. INSPECTIONS SHALL BE MADE WEEKLY & AFTER RAIN EVENTS TO DETERMINE THE EFFECTIVENESS OF EROSION & SEDIMENT CONTROL MEASURES. ANY NECESSARY IMPROVEMENTS OR REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
4. SEDIMENT & EROSION FROM ALL WORK AREAS SHALL BE CONTAINED ON THE SITE, AWAY FROM WETLANDS, OUTFALLS, WATERWAYS, & ENVIRONMENTALLY SENSITIVE AREAS. WATERWAYS INCLUDE BOTH NATURAL & MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES, & PONDS.
5. MAINTAIN EROSION CONTROL MEASURES UNTIL CONSTRUCTION IS COMPLETE & LAWN AREAS ARE FULLY DEVELOPED.
6. PROVIDE JUTE MATTING OR NETTED MULCH ON TEMPORARY SLOPES 2:1 OR STEEPER. SEED & MULCH OTHER SLOPES TO REMAIN UNFINISHED FOR MORE THAN 14 DAYS.
7. REMOVE SEDIMENTATION & EROSION CONTROL MEASURES UPON COMPLETION OF PROJECT.

SEQUENCE OF EROSION & SEDIMENTATION CONTROL OPERATIONS:

- 1. A PERIMETER DEFENSE WILL BE INSTALLED PRIOR TO CONSTRUCTION TO CONTAIN RUNOFF FROM ALL PROPOSED DISTURBED AREAS. SEDIMENT CONTROL WILL BE INITIATED WHICH WILL CONSIST OF MAINTAINING ALL EXISTING VEGETATION & DIRECTING ALL RUNOFF ON SITE.
2. DURING CONSTRUCTION THE ENDS OF ALL OPEN PIPES WILL BE PROTECTED BY FILTER FABRIC, STONE FILTERS OR OTHER APPROVED MEANS.
3. ANY REMAINING DENUDEED AREA SHALL BE SEEDED & MULCHED DAILY, UPON COMPLETION OF FINAL GRADING.
4. AT THE COMPLETION OF THE CONSTRUCTION, TEMPORARY CONTROL MEASURES WILL BE REMOVED & CONVERTED TO PERMANENT CONTROLS. FINAL GRADING WILL BE COMPLETED & THE GROUND WILL BE PERMANENTLY STABILIZED. FILTER FABRIC FENCES SHALL BE REMOVED & ANY BARE SPOTS WILL BE SEEDED. CATCH BASINS & DRAIN INLETS WILL BE CAREFULLY UNCOVERED & ANY SEDIMENT OR DEBRIS WILL BE REMOVED.
5. CONTRACTOR IS TO SEED CRITICAL AREAS IDENTIFIED BY OWNER OR OWNER'S REPRESENTATIVE DAILY, WHEN THOSE AREAS ARE SUBJECT TO EARTH CHANGES. CONTRACTOR IS ALSO RESPONSIBLE FOR REGULAR MAINTENANCE OF PLANT COVER IN THESE AREAS. COVER SHALL BE MAINTAINED SO AS TO CONTROL SOIL EROSION.
6. AT THE CONCLUSION OF CONSTRUCTION, THE OWNER WILL ASSUME THE RESPONSIBILITY FOR PERMANENT MAINTENANCE OF THE EROSION & SEDIMENTATION CONTROL MEASURES.
7. PROVIDE DUST CONTROL WITH AN ON-SITE WATER WAGON. WATER SHALL BE IMPLEMENTED AS NEEDED & AT THE DIRECTION OF THE CITY AGENT.



LEGEND OF ABBREVIATIONS

Table with two columns: Abbreviation and Meaning. Includes terms like AT, ASPHALT, BACK TO BACK, BOTTOM OF RAMP, BOTTOM OF WALL, BACK OF CURB, BOTTOM OF PIPE, CATCH BASIN, CENTERLINE, CLASS, CORRUGATED METAL PIPE, CLEAN OUT, CONCRETE, CENTER POINT, CORRUGATED PERFORATED PLASTIC PIPE, DEMOLITION OR DEMOLISH, DOWNSPOUT, EAST, ELEVATION, ELECTRICAL, EQUAL, END SECTION, EXISTING, EXISTING, HYDRANT FLANGE BREAK ELEVATION, FINISHED FLOOR, FACE TO FACE, FINISHED GRADE ELEVATION, FACE OF CURB, GUTTER ELEVATION, GATE VALVE & WELL, HIGH POINT, HYDRANT, INLET, INVERT ELEVATION, LOCATION(S), LOW POINT, MATCH EXIST. ELEVATION, MAXIMUM, MANHOLE, MINIMUM, NORTH, ON CENTER, POINT OF CURVATURE, POINT TANGENT, PROPOSED, PROPOSED, RADIUS OR RIM ELEVATION, RAIN/ROOF CONDUCTOR, REINFORCED CONCRETE PIPE, RIGHT OF WAY, RAIL ROAD, SOUTH, ARC LENGTH, SANITARY SEWER, SUMP DISCHARGE, SOIL EROSION & SEDIMENTATION CONTROL, SPACED, ROAD STATION, STORM SEWER, TOP OF WALL, TOP OF CURB, TOP OF PAVEMENT, TOP OF RAMP, TOP OF SIDEWALK, TRENCH DRAIN, TOP OF PIPE, TYPICAL, UTILITY POLE, UNDERGROUND, UNLESS NOTED OTHERWISE, WEST, WITH, WATER MAIN, WATER SERVICE, DIAMETER.

PIPE SIZE DESIGNATION

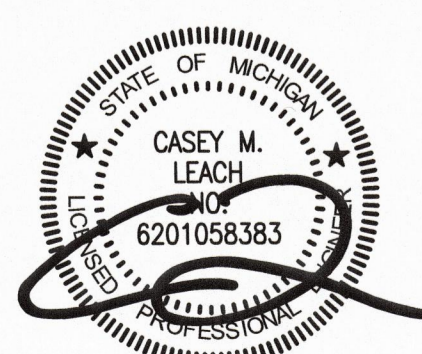
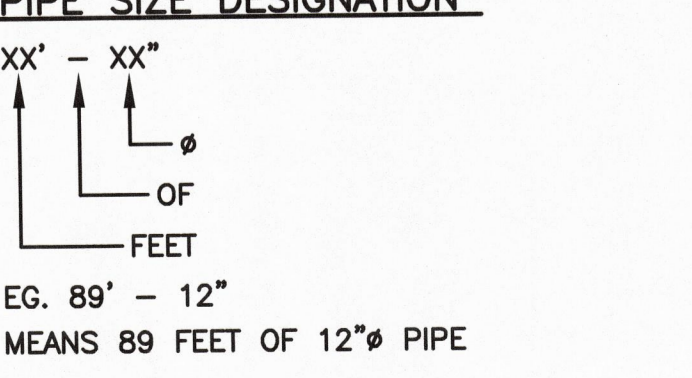
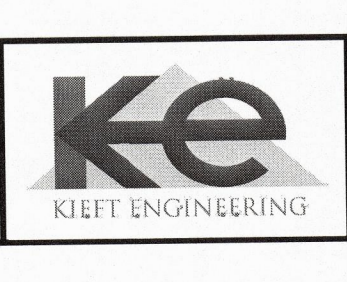


Table with columns: DATE, ISSUE, OWNER. Includes dates 05/18/23, 05/25/23, 06/28/23 and issues like PROGRESS PRINT, FINAL REVIEW, SITE PLAN REVIEW.

PROPRIETOR: RBF HOLDINGS - BRETT JORY, 4140 MORRISH ROAD, SWARTZ CREEK, MI 48473, (810) 516-4405

THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE USED, REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.



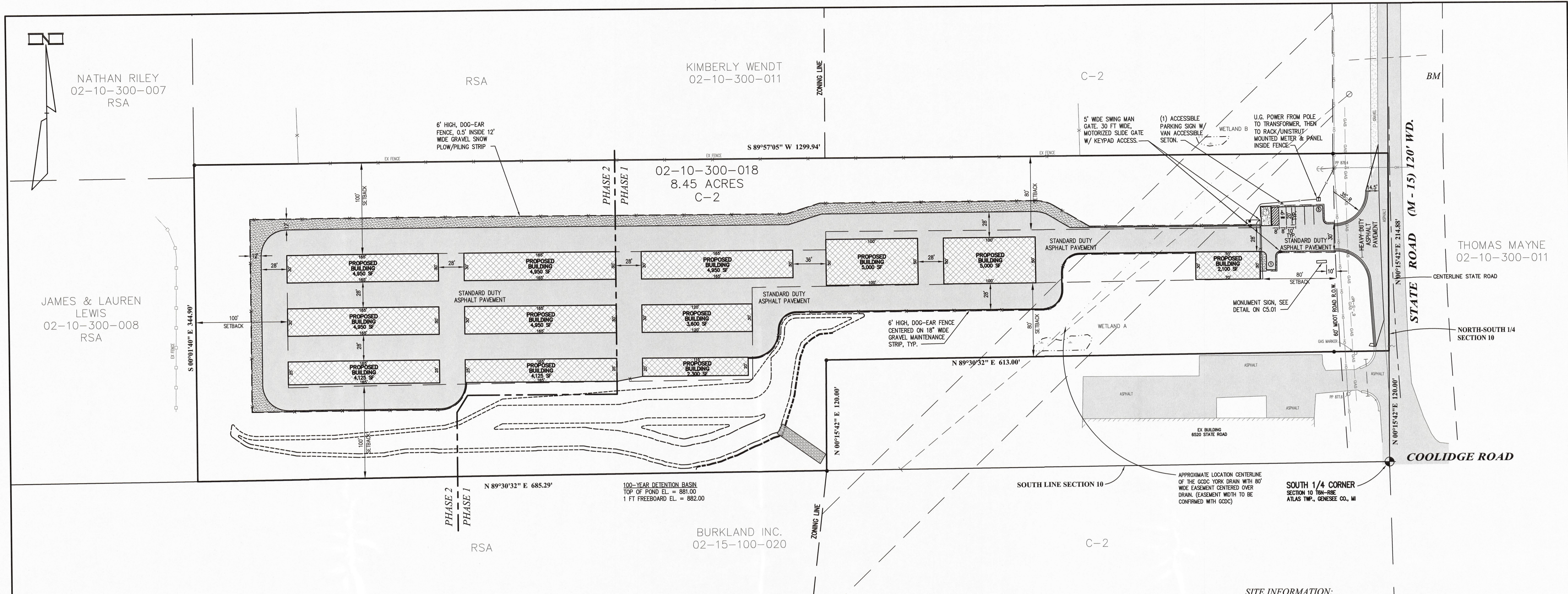
KIEFT ENGINEERING, INC. PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS, 5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346, PHONE (248) 625-5251, www.kiefteng.com, FAX (248) 625-7110

Table with columns: DATE, CKD. BY, DATE, DRAWN, DESIGN, SECTION. Includes dates 04/17/23, 06/27/23 and section T-6-N, R-8-E.



GENERAL NOTES & LEGENDS, RBF STORAGE, ATLAS TOWNSHIP, GENESSEE COUNTY, MICHIGAN

Table with columns: SCALE, SHEET NO., SHEET TITLE. Includes SCALE: NONE, SHEET NO: C0.01, SHEET TITLE: KE 2022.284

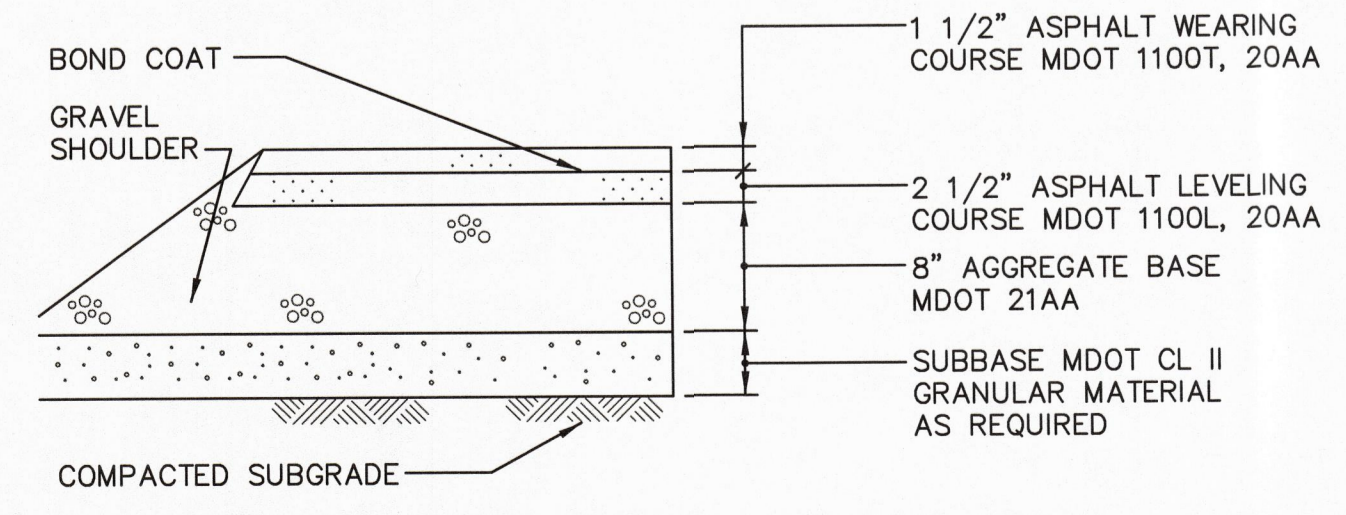


**PHASING NOTES:**

- THE PHASE LINE SHOWN ON THIS SHEET INDICATES THE BUILDINGS THAT WILL BE CONSTRUCTED DURING PHASE 1. OTHER ITEMS THAT WILL BE CONSTRUCTED DURING PHASE 1 ARE AS FOLLOWS:
  - ENTIRE SITE SHALL BE GRADED, INCLUDING DETENTION POND.
  - ALL LANDSCAPING SHALL BE INSTALLED.
  - A TEMPORARY FENCE SHALL BE INSTALLED DOWN THE PHASE LINE CONNECTING THE NORTH FENCE TO THE SOUTH FENCE. FENCING WEST OF THE PHASE LINE WILL NOT BE INSTALLED IN PHASE 1.
  - ALL STORM SEWER EXCEPT ES 4, CB 7, CB 8, CB 9, & CB 10 (THE WEST MOST RUN OF STORM SEWER) WILL BE CONSTRUCTED IN PHASE 1.
- THE AREA WHERE PHASE 2 BUILDINGS AND PAVEMENT ARE PROPOSED SHALL BE GRADED TO PROVIDE A CROWN NEAR THE CENTER OF THE SITE (CROWN RUNNING IN AN EAST/WEST DIRECTION), & SHALL DRAIN TO THE NORTH SWALE, WEST SWALE, OR DETENTION POND. THIS AREA SHALL BE SEEDED TO ESTABLISH LAWN.

**NOTES:**

- PROVIDE 2" EXTRA THICKNESS OF ASPHALT AT MANHOLES, CATCH BASINS, ETC. TAPER TO NORMAL THICKNESS IN 3'-0".
- DO NOT USE STANDARD DUTY PAVEMENT IN ROW.



**STANDARD DUTY ASPHALT PAVEMENT**  
N.T.S.

**SITE INFORMATION:**

LOT GROSS AREA: 8.45 ACRES

**ZONING INFORMATION:**

ZONING DISTRICT: C-2 COMMERCIAL GENERAL  
 PROPOSED SPECIAL USE: STORAGE UNITS  
 MINIMUM LOT SIZE: NOT SPECIFIED  
 MAXIMUM BUILDING HEIGHT: 1 STORY, 15 FT  
 MAXIMUM BUILDING SIZE: 3,000 SF  
 BUILDING SEPARATION: 15 FT MINIMUM, SHALL COMPLY  
 INTERIOR DRIVE WIDTH = 28 FT MINIMUM

**SETBACKS:**

	FRONT	REAR	SIDES
STANDARD	80 FT	80 FT	80 FT EACH
ABUTTING RESIDENTIAL	100 FT	100 FT	100 FT EACH

**MAXIMUM LOT COVERAGE: N/A FOR DISTRICT**

**REQUIRED OFF-STREET PARKING FOR SELF-STORAGE FACILITIES:**

- SPACES = (1) SPACE PER 200 STORAGE UNITS
- 300 STORAGE UNITS / (200 STORAGE UNITS SPACE = 1.5 → 2 SPACES)
- 4 SPACES + 2 SPACES = 6 TOTAL SPACES REQUIRED
- TOTAL SPACES PROVIDED, OF WHICH (1) IS VAN ACCESSIBLE
- PARKING SPACE SIZE: 20 FT X 10 FT

**POND SETBACKS: 25 FT FROM BUILDINGS, PROPERTY LINES, EASEMENTS, & ROW**

**PERCENTAGE OF IMPERVIOUS COVER**

TOTAL SITE = 8.17 ACRES  
 PAVEMENT = 2.12 ACRES  
 BUILDING = 1.17 ACRES

$\frac{1.17 + 2.12}{8.17} = 40.3\%$

**NOTES:**

- SEE SHEET C0.01 FOR GENERAL NOTES & LEGENDS.
- SEE SHEET C4.02 FOR ENLARGED ENTRANCE PLAN.
- NO STORAGE OF HAZARDOUS MATERIALS SHALL TAKE PLACE ON SITE.
- REPAIR, PAINTING, OR MAINTENANCE SHALL NOT TAKE PLACE ON SITE.

**BENCHMARK:**

RIM OF EXISTING STORM MH LOCATED  
 65' NORTH OF NORTH PROPERTY LINE  
 ON THE WEST SIDE OF STATE ROAD.  
 ELEVATION - 869.39 NAVD 88



DATE	ISSUE
04/20/23	CONCEPT REVIEW - OWNER
04/27/23	CONCEPT REVIEW PER TWP. INQUIRY
05/18/23	PROGRESS PRINT - OWNER
05/25/23	FINAL REVIEW - OWNER
06/28/23	SITE PLAN REVIEW
07/30/24	SITE PLAN REVIEW REV. 1 & PERMITS

**PROPRIETOR:**  
 RBF HOLDINGS - BRETT JORY  
 4140 MORRISH ROAD  
 SWARTZ CREEK, MI 48473  
 (810) 516-4405

THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE USED, REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.



**KIEFT ENGINEERING, INC.**  
 PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS  
 5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346  
 PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE: 04/20/23	CKD. BY:	DATE:
DRAWN: CL	CL	06/28/23
DESIGN: CL		
SECTION: 10	T- 6 -N- R- 8 -E-	

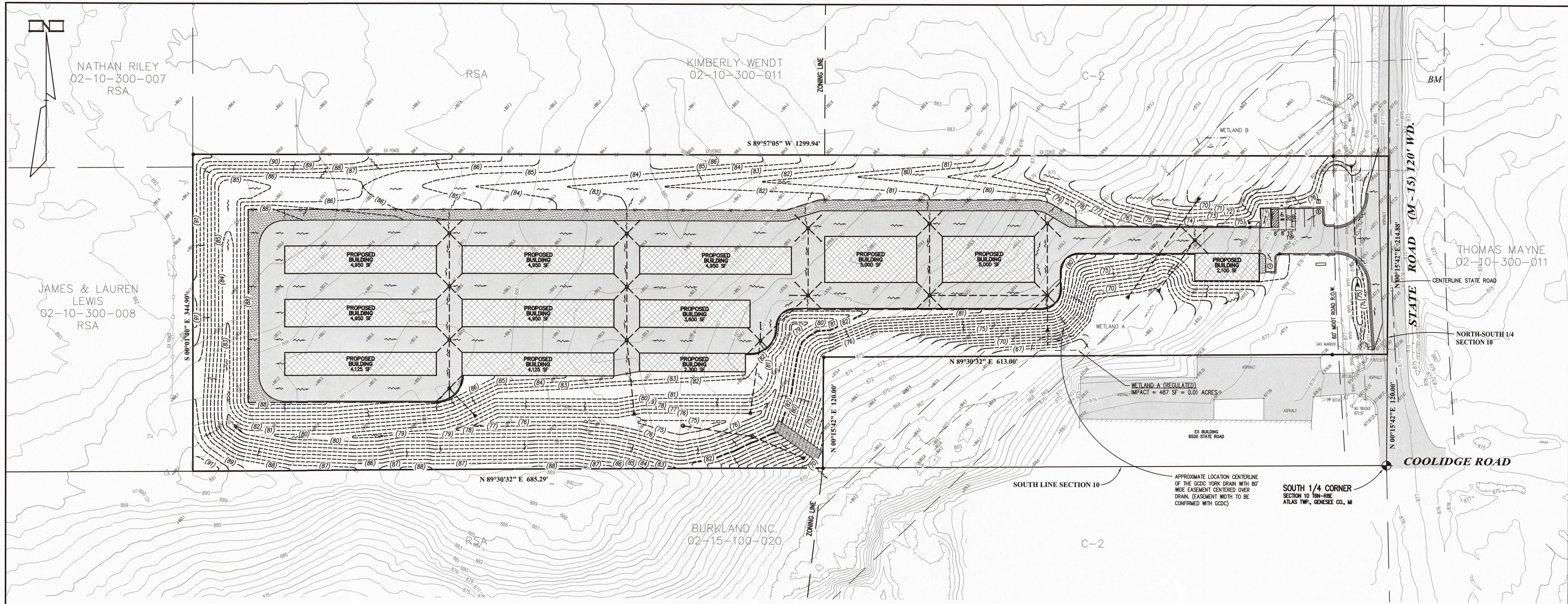


72 HOURS  
 (3 WORKING DAYS)  
 BEFORE YOU DIG  
 CALL MISS DIG  
 800-482-7171  
 (TOLL FREE.)

**GENERAL SITE PLAN**  
**RBF STORAGE**  
 ATLAS TOWNSHIP, GENESEE COUNTY, MICHIGAN

SCALE: 1" = 50'
SHEET NO: C1.01
KE 2022.284

RBF STORAGE

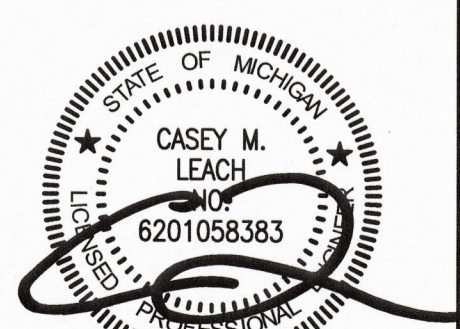


APPROXIMATE LOCATION CENTERLINE OF THE GDC YORK DRAIN WITH 80' WIDE EASEMENT CENTERED OVER DRAIN. (EASEMENT WIDTH TO BE CONFIRMED WITH GDC)

SOUTH 1/4 CORNER SECTION 10 T8N-R8E ATLAS TWP., GENESEE CO., MI

**GRADING NOTES:**  
 1. SLOPES SHOWN SHALL NOT EXCEED 1:4 UNLESS NOTED OTHERWISE.  
 2. SEE SHEETS C4.21 & C4.22 FOR DETAILED, ENLARGED GRADING PLANS.

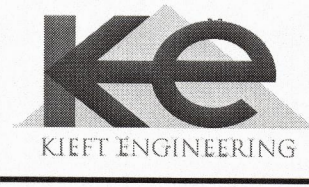
**BENCHMARK:**  
 RIM OF EXISTING STORM MH LOCATED 65' NORTH OF NORTH PROPERTY LINE ON THE WEST SIDE OF STATE ROAD. ELEVATION - 869.39 NAVD '88



DATE	ISSUE
05/27/23	FINAL REVIEW - OWNER
06/28/23	SITE PLAN REVIEW
07/30/24	SITE PLAN REVIEW REV. 1 & PERMITS

**PROPRIETOR:**  
 RBF HOLDINGS - BRETT JORY  
 4140 MORRISH ROAD  
 SWARTZ CREEK, MI 48473  
 (810) 516-4405

THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE USED, REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.



**KIEFT ENGINEERING, INC.**  
 PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS  
 5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346  
 PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE	CHK. BY	DATE
05/10/23	CL	06/27/23

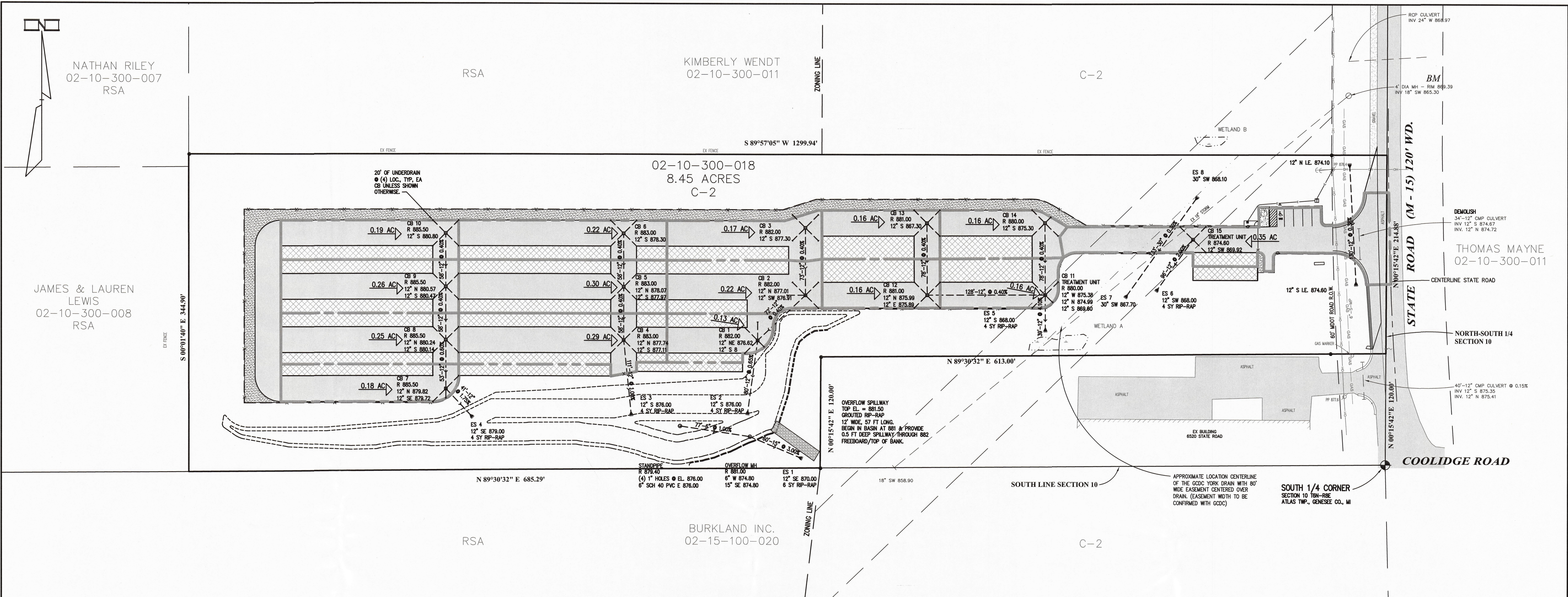
DESIGN: PCM  
 SECTION: 10 T-6-N-R-8-E



**OVERALL GRADING PLAN**  
**RBF STORAGE**  
 ATLAS TOWNSHIP, GENESEE COUNTY, MICHIGAN

SCALE: 1" = 50'  
 SHEET NO: C1.21  
 KE 2022.284

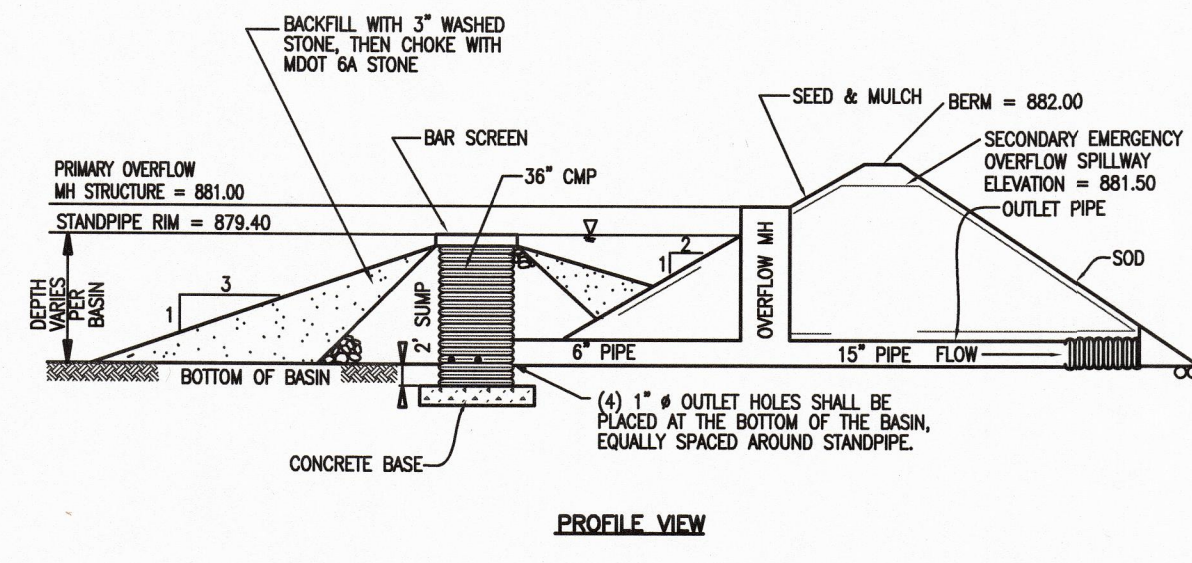
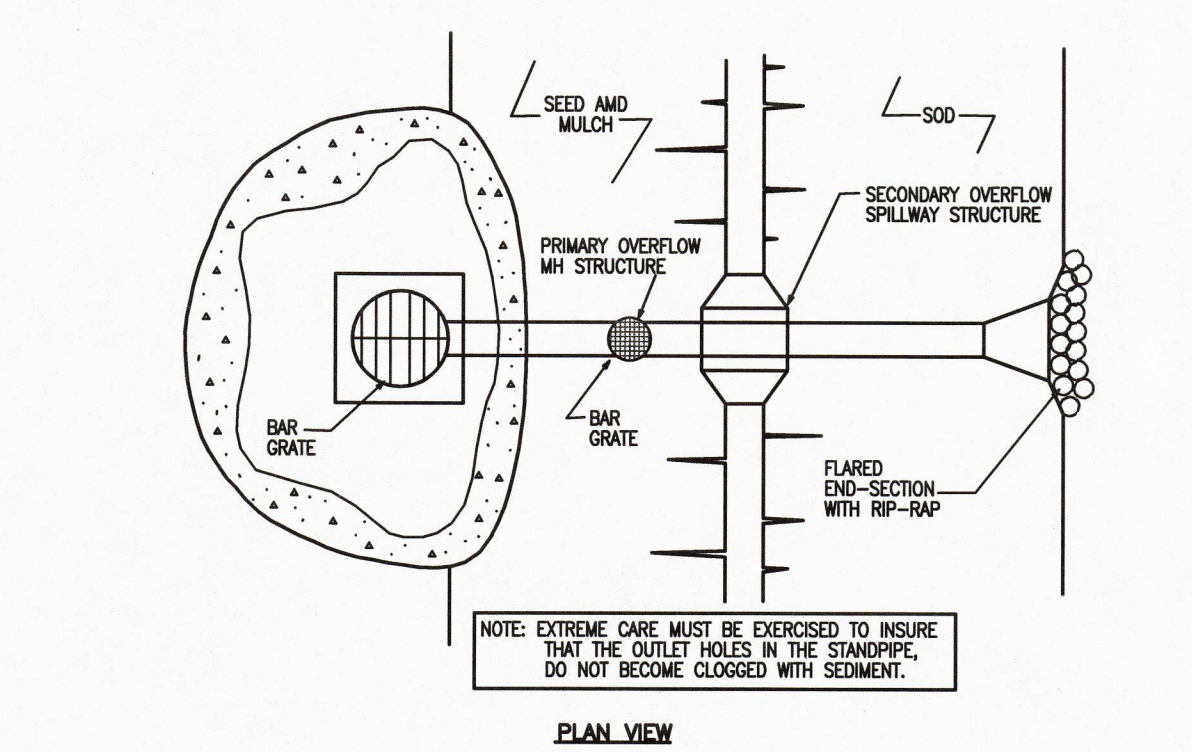
RBF STORAGE



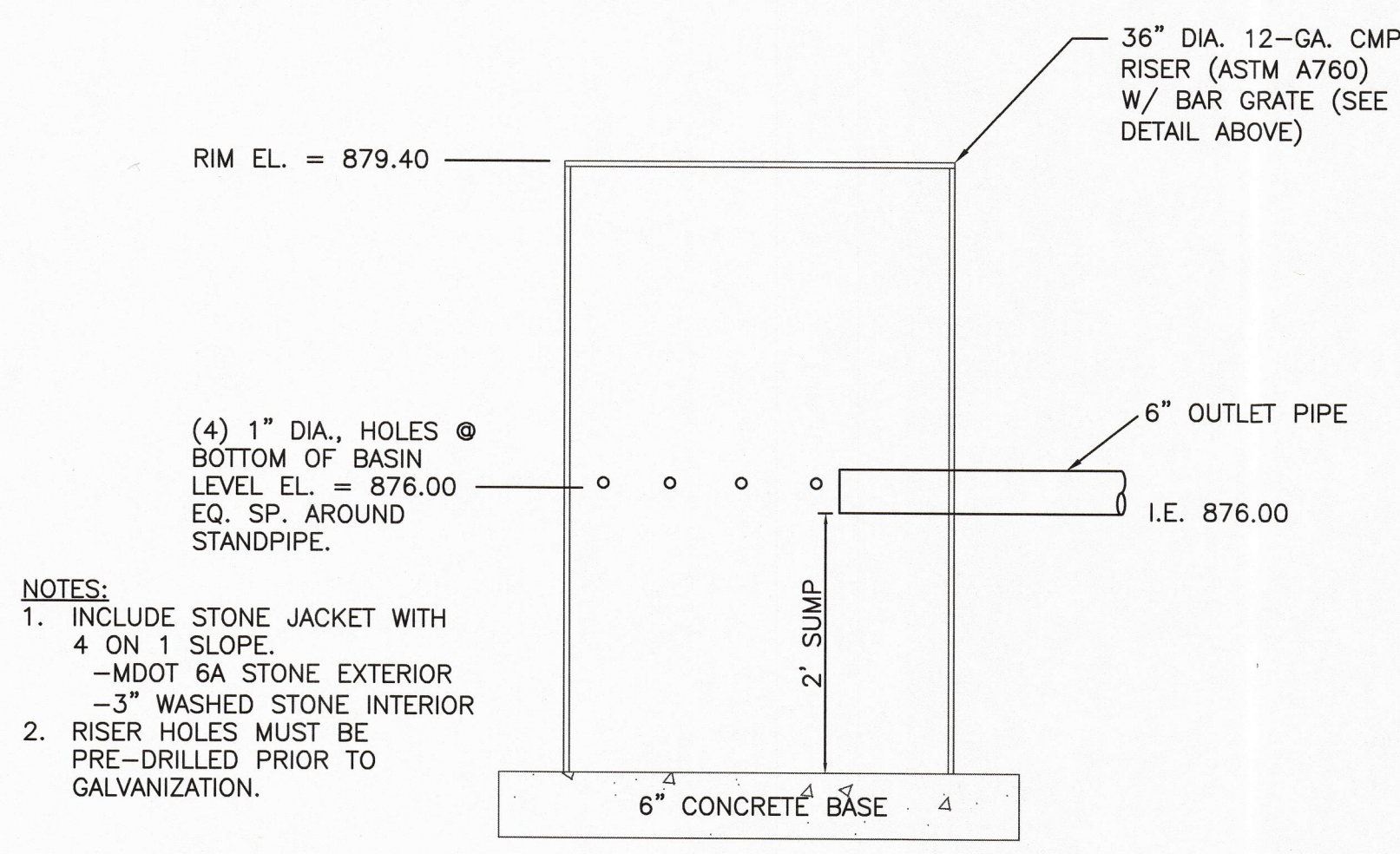
**DETENTION BASIN LEVELS**  
 EXISTING WATER ELEVATION = NONE  
 100 YEAR DESIGN HIGH WATER ELEVATION = 881.00  
 1' FREEBOARD ELEVATION = 882.00  
 STORAGE REQUIRED = 58,369 CF  
 STORAGE PROVIDED = 61,286 CF  
 STANDPIPE RIM = 879.40  
 OVERFLOW MANHOLE RIM = 881.00  
 EMERGENCY OVERFLOW SPILLWAY = 881.50  
 TOP OF BERM = 882.00  
 BOTTOM OF BASIN/STORAGE = 876.00  
 BOTTOM OF SETTLING POND = 875.00

- STORM SEWER NOTES:**
- SEE SHEET C3.11 FOR DETAILS & CALCULATIONS.
  - ALL STORM SEWER SHALL BE ADS HP STORM U.N.O.
  - JOINTS SHALL BE PREMIUM AND SOIL TIGHT.
  - PIPE LENGTHS SHOWN INCLUDE FLARED END SECTIONS.
  - PROVIDE BARSCREEN AT ALL END SECTIONS.
  - CASTINGS SHALL BE EAST JORDAN IRON WORKS AS FOLLOWS:
    - MANHOLES: 1040 FRAME W/ TYPE B VENTED LID
    - CATCHBASINS: 5100 FRAME W/ TYPE M1 (S105) SINUSOIDAL GRATE
  - PROVIDE (4) 20 FT RUNS OF UNDERDRAIN AT EACH CATCHBASIN AS SHOWN ON THIS SHEET. REDUCE UNDERDRAIN LENGTH AS TO NOT EXTEND BEYOND PAVEMENT LIMITS OR UNDER BUILDINGS.
  - ALL STORM SEWER WITHIN THE INFLUENCE OF THE ROADBED SHALL BE BACKFILLED WITH COMPACTED SAND (MDOT CL II GRANULAR MATERIAL) COMPACTED TO 95% MAX. DENSITY.

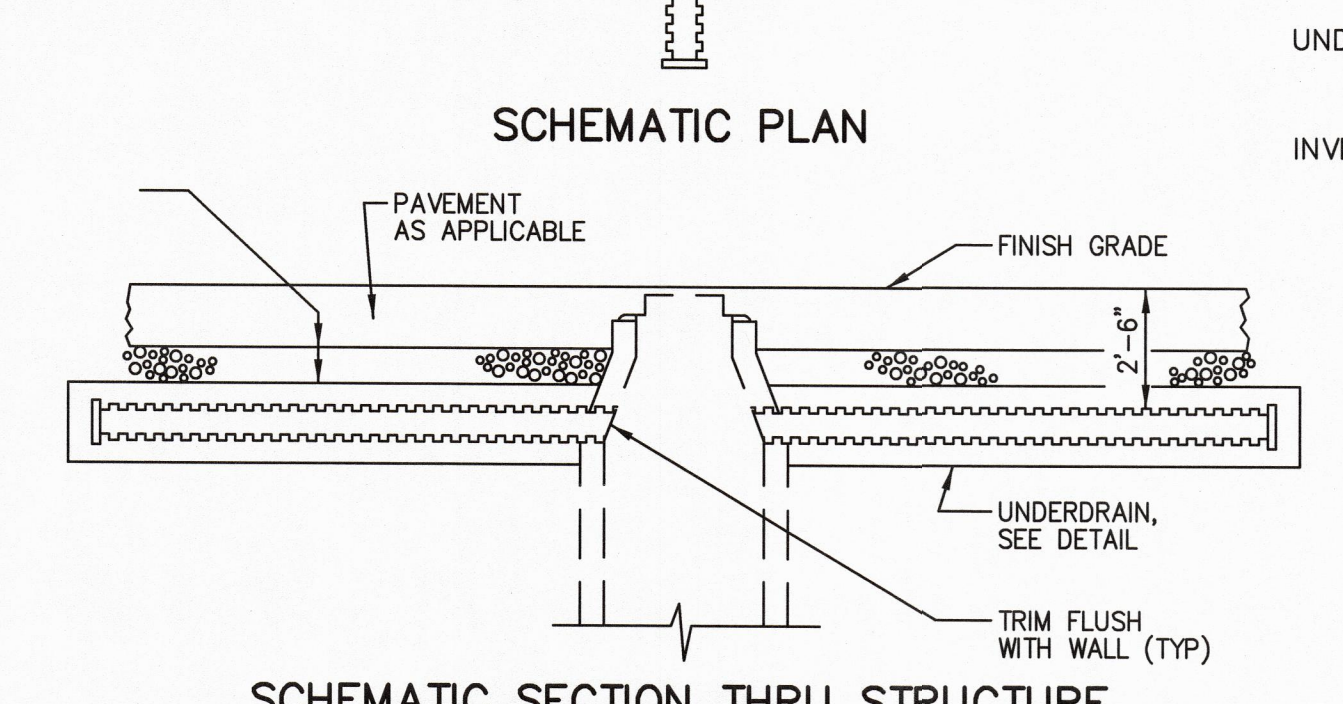
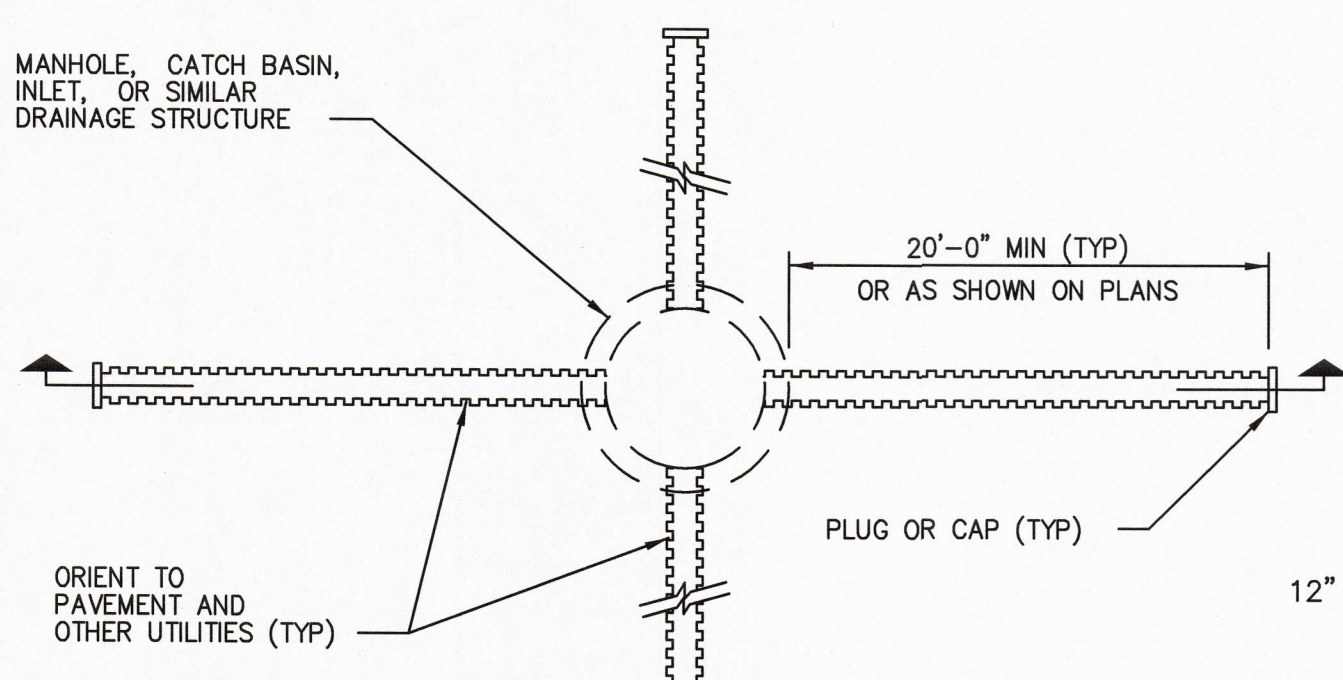
**BENCHMARK:**  
 RIM OF EXISTING STORM MH LOCATED 65' NORTH OF NORTH PROPERTY LINE ON THE WEST SIDE OF STATE ROAD. ELEVATION - 869.39 NAVD '88



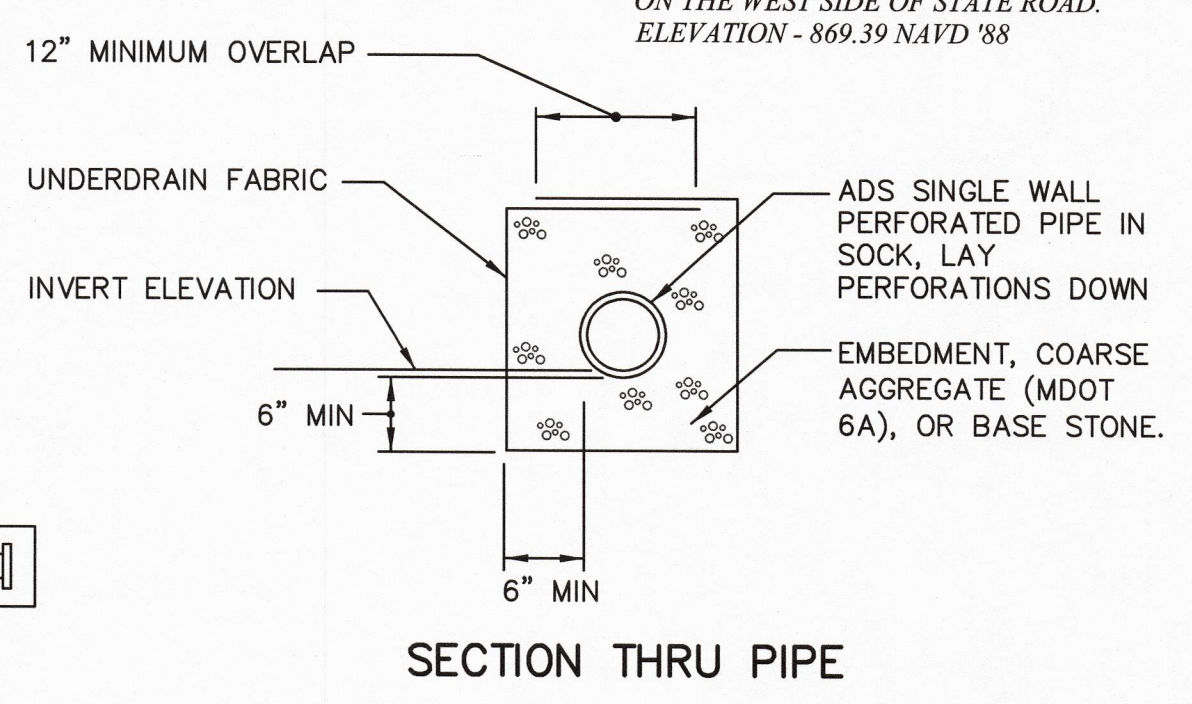
**STANDPIPE - DETENTION BASIN OUTLET FILTER**  
N.T.S.



**STANDPIPE DETAIL**  
N.T.S.



**UNDERDRAIN @ CATCHBASINS**  
N.T.S.

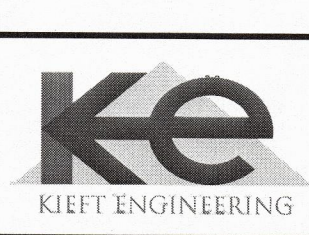


**SECTION THRU PIPE**

DATE	ISSUE
05/28/23	FINAL REVIEW OWNER
06/28/23	SITE PLAN REVIEW
07/30/23	SITE PLAN REVIEW REV 1 & PERMITS

**PROPRIETOR:**  
 RBF HOLDINGS - BRETT JORY  
 4140 MORRISH ROAD  
 SWARTZ CREEK, MI 48473  
 (810) 516-4405

THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE USED, REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.



**KIEFT ENGINEERING, INC.**  
 PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS  
 5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346  
 PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE: 05/22/23	CKD. BY: DATE
DRAWN: CL	CL 06/27/23
DESIGN: CL	
SECTION: 10	T- 6 -N- R- 8 -E-

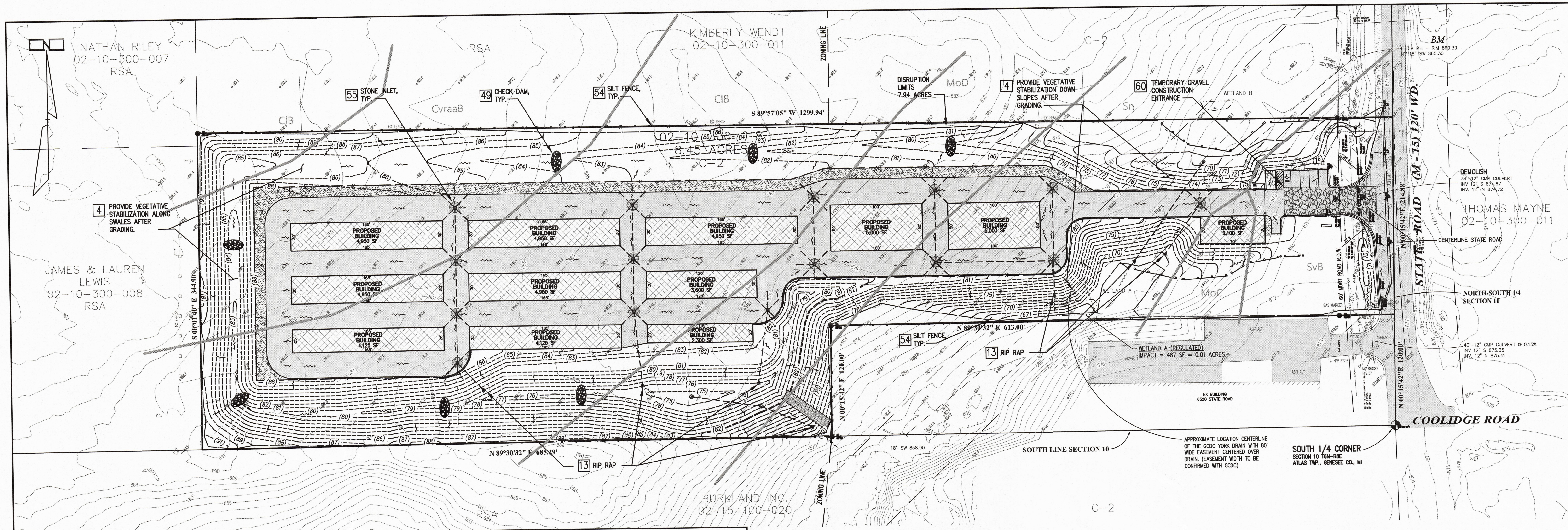


72 HOURS (5 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL FREE)

**STORM SEWER PLAN**  
 RBF STORAGE  
 ATLAS TOWNSHIP, GENESSEE COUNTY, MICHIGAN

SCALE: 1" = 50'  
 SHEET NO: C1.31  
 KE 2022.284

RBF STORAGE



Michigan unified keying system (modified)

KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
1			*	*	*	*	*	*	*
2			*	*	*	*	*	*	*
3			*	*	*	*	*	*	*
4			*	*	*	*	*	*	*
5			*	*	*	*	*	*	*
6			*	*	*	*	*	*	*
7			*	*	*	*	*	*	*
8			*	*	*	*	*	*	*
9			*	*	*	*	*	*	*
10			*	*	*	*	*	*	*
11			*	*	*	*	*	*	*
12			*	*	*	*	*	*	*
13			*	*	*	*	*	*	*
14			*	*	*	*	*	*	*
15			*	*	*	*	*	*	*
16			*	*	*	*	*	*	*
17			*	*	*	*	*	*	*
18			*	*	*	*	*	*	*
19			*	*	*	*	*	*	*
20			*	*	*	*	*	*	*
21			*	*	*	*	*	*	*
22			*	*	*	*	*	*	*
23			*	*	*	*	*	*	*
24			*	*	*	*	*	*	*
25			*	*	*	*	*	*	*
26			*	*	*	*	*	*	*
27			*	*	*	*	*	*	*
28			*	*	*	*	*	*	*
29			*	*	*	*	*	*	*
30			*	*	*	*	*	*	*
31			*	*	*	*	*	*	*
32			*	*	*	*	*	*	*
33			*	*	*	*	*	*	*
34			*	*	*	*	*	*	*
35			*	*	*	*	*	*	*
36			*	*	*	*	*	*	*
37			*	*	*	*	*	*	*
38			*	*	*	*	*	*	*

KEY	DETAIL	CHARACTERISTICS	A	B	C	D	E	F	G
39			*	*	*	*	*	*	*
40			*	*	*	*	*	*	*
41			*	*	*	*	*	*	*
42			*	*	*	*	*	*	*
43			*	*	*	*	*	*	*
44			*	*	*	*	*	*	*
45			*	*	*	*	*	*	*
46			*	*	*	*	*	*	*
47			*	*	*	*	*	*	*
48			*	*	*	*	*	*	*
49			*	*	*	*	*	*	*
50			*	*	*	*	*	*	*
51			*	*	*	*	*	*	*
52			*	*	*	*	*	*	*
53			*	*	*	*	*	*	*
54			*	*	*	*	*	*	*
55			*	*	*	*	*	*	*
56			*	*	*	*	*	*	*
57			*	*	*	*	*	*	*
58			*	*	*	*	*	*	*
59			*	*	*	*	*	*	*
60			*	*	*	*	*	*	*

**SOIL EROSION CONTROL MEASURES**

- CONSTRUCTION OPERATIONS SHALL BE SCHEDULED AND PERFORMED SO THAT TEMPORARY EROSION CONTROL MEASURES ARE IN PLACE PRIOR TO DEMOLITION AND TEMPORARY STABILIZATION MEASURES ARE IN PLACE IMMEDIATELY FOLLOWING DEMOLITION AND/OR GRADING OPERATIONS.
- EROSION PREVENTION SHALL BE TAKEN IN THE USE OF CONSTRUCTION EQUIPMENT TO PREVENT EROSION AND SEDIMENTATION.
- CLEARING SHALL BE DONE IN A MANNER TO INSURE THAT EROSION CONTROL MEASURES ARE NOT DISTURBED.
- THE PROJECT WILL CONTINUALLY BE MONITORED FOR SOIL EROSION AND SEDIMENT CONTROL COMPLIANCE. DEFICIENCIES WILL BE CORRECTED BY THE CONTRACTOR WITHIN 24 HOURS.
- TEMPORARY EROSION CONTROL MEASURES SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR UPON ESTABLISHMENT OF PERMANENT CONTROL MEASURES.

**CONSTRUCTION SCHEDULE**

- EXCAVATION AND STOCKPILING OF SOIL.
- INSTALLATION OF TEMPORARY EROSION CONTROL MEASURES INCLUDING GRADUAL DIVERSIONS AS REQUIRED IN FIELD PROTECTION OF STREAM CHANNELS.
- PERIODIC MAINTENANCE OF AFFECTED EROSION CONTROL MEASURES.
- PERMANENT MEASURES (FINAL GRADING, SEEDING AND MULCHING).

**SOIL STOCKPILING MEASURES**

- THE CONSTRUCTION OF STREAM CROSSINGS SHALL BE SUBJECT TO THE REGULATIONS FOR PROTECTION OF WATERSHEDS AS REQUIRED BY THE CLEAN WATER ACT AND THE CLEAN WATER ACT REGULATIONS OF PART 101.1222 OF PUBLIC ACT 451, AS AMENDED, 1994.
- A STABLE BARRIER SHALL BE CONSTRUCTED IMMEDIATELY UPON COMPLETION OF THE STREAM CROSSING AND THE BARRIER SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION OF THE STREAM CROSSING. THE BARRIER SHALL BE MAINTAINED IN GOOD WORKING ORDER THROUGHOUT THE CONSTRUCTION OF THE PROJECT.
- BARRIERS SHALL BE CONSTRUCTED OF HEAVY MATERIALS WHICH WILL NOT ERODE. THE BARRIER SHALL BE MAINTAINED AT ALL TIMES AND SHALL BE REPAIRS AS NECESSARY. ALL FILL SHALL BE CONFINED IN SUCH A MANNER SO AS NOT TO ERODE AND NOT INTERFERE WITH THE FLOW OF WATER.
- AT STREAM CROSSINGS SHALL BE STABILIZED WITHIN THREE FEET ABOVE THE CROWN OF THE ROADWAY. THE BARRIER SHALL BE SEEDING, FERTILIZED AND MULCHED TO PREVENT EROSION.
- UPON PROJECT COMPLETION THE EXCESS SOILS SHALL BE REMOVED AND DEPOSITED IN AN APPROVED LANDFILL SITE.
- TATCH BARRIERS MAY BE REMOVED UPON PLACEMENT OF PERMANENT EROSION CONTROL MEASURES.

**TEMPORARY SEEDING GUIDE**

SOIL TYPE	SEED RATE (LBS/1000 SQ FT)	SEED TYPE	APPLICATOR
CELINA	1.0	GRASS	SPRINKLER
CONOVER	1.0	GRASS	SPRINKLER
WAWASEE	1.0	GRASS	SPRINKLER
MIAMI	1.0	GRASS	SPRINKLER
SLOAN	1.0	GRASS	SPRINKLER
SPINKS-OAKVILLE	1.0	GRASS	SPRINKLER

**PERMANENT SEEDING GUIDE**

SOIL TYPE	SEED RATE (LBS/1000 SQ FT)	SEED TYPE	APPLICATOR
CELINA	1.0	GRASS	SPRINKLER
CONOVER	1.0	GRASS	SPRINKLER
WAWASEE	1.0	GRASS	SPRINKLER
MIAMI	1.0	GRASS	SPRINKLER
SLOAN	1.0	GRASS	SPRINKLER
SPINKS-OAKVILLE	1.0	GRASS	SPRINKLER

**NO DRAWING DETAIL PROVIDED**

**APPLICATIONS**

- ON CONSTRUCTION SITES DURING PERIODS OF LOW PRECIPITATION, LOW HUMIDITY AND HIGH TEMPERATURE OR HIGH WINDS.
- USE ON UNPAVED ROADWAYS, CONSTRUCTION SITES WITH VEHICLE TRAFFIC, SOIL STOCKPILE AREAS AND GENERAL AREAS WITH UNSTABILIZED OR FINE SOILS.

**DESIGN**

- DUST CONTROL APPLICATIONS CAN INCLUDE WATERING, CHEMICAL DUST SUPPRESSION, GRAVEL OR ASPHALT SURFACING, TEMPORARY AGGREGATE COVER AND HAUL TRUCK COVERS.
- FOLLOW MANUFACTURER'S INSTRUCTIONS REGARDING APPLICATION OF ANY DUST PALLIATIVE AND MIXING DETAILS.
- APPLY DUST SUPPRESSANT TO SURFACES USING A PRESSURE TYPE WATER DISTRIBUTOR TRUCK EQUIPPED WITH A SPRAY SYSTEM.
- LIMIT VEHICULAR TRAFFIC TO 15 MILES PER HOUR.
- IMMEDIATELY CLEAN-UP SEDIMENT TRACKED ONTO PAVED ROADS. KEEP CONSTRUCTION TRAFFIC DIRECTED TO STABILIZED SITE ROADWAYS WHEN POSSIBLE.
- DUST CONTROL APPLICATION NEEDS TO BE APPLIED ON A REGULAR SCHEDULE TO MAINTAIN EFFECTIVENESS.

**DUST CONTROL** [1]

**SESC LEGEND**

- 1 SESC KEY NOTE SYMBOL
- SILT FENCE
- CHECK DAM
- STONE INLET
- DISRUPTION LIMITS
- RIP RAP
- SOIL TYPE LABEL
- SOIL TYPE DELINEATION

**SESC NOTES:**

- OBTAIN A SOIL EROSION PERMIT FROM THE GENESEE COUNTY DRAIN COMMISSIONER WATER & WASTE SERVICES DIVISION (GCDC WWS) PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTION, MAINTENANCE, AND REPAIRS TO SESC MEASURES DURING CONSTRUCTION.
- ANY CORRECTIVE ACTIONS OR FINES ASSOCIATED WITH THE SESC PERMIT SHALL BE PAID BY THE CONTRACTOR.
- SEE SHEET C0.0 FOR SESC NOTES & SEQUENCE.
- SEE SHEET C5.41 FOR SESC DETAILS.

**SOILS LEGEND**

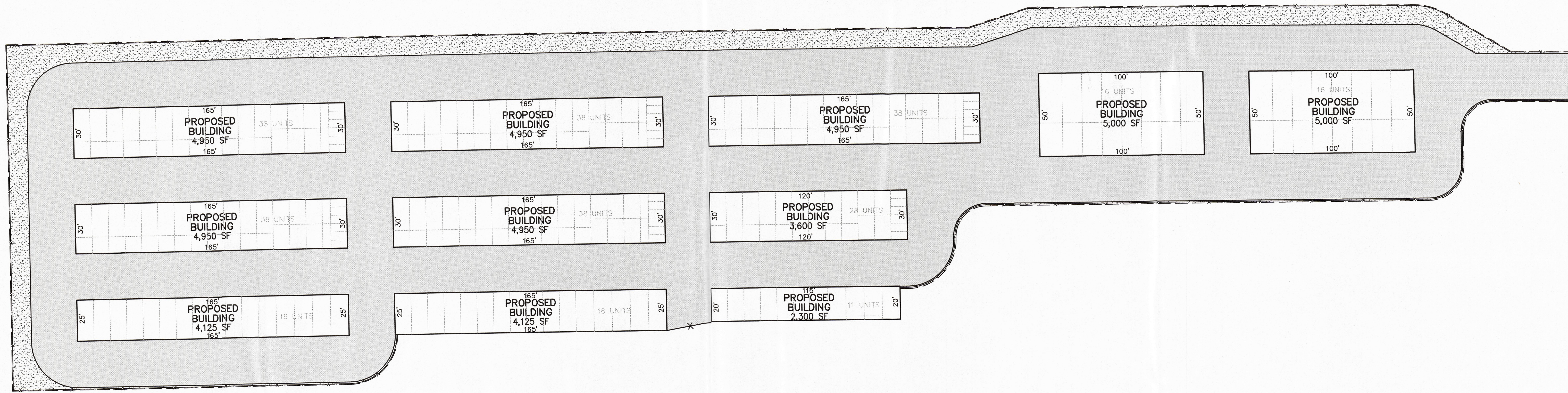
DATA FROM USDA WEB SOIL SURVEY

SYMBOL	NAME	SLOPE
CIB	CELINA CONOVER LOAMS	2 - 6% SLOPES
CvraaB	CONOVER LOAM	0 - 4% SLOPES
Moc	WAWASEE LOAM	6 - 21% SLOPES
MoD	MIAMI LOAM	12 - 18% PERCENT SLOPES
Sn	SLOAN SILT LOAM	OCCASIONALLY FLOODED
SvB	SPINKS-OAKVILLE SANDS	2 - 6% SLOPES

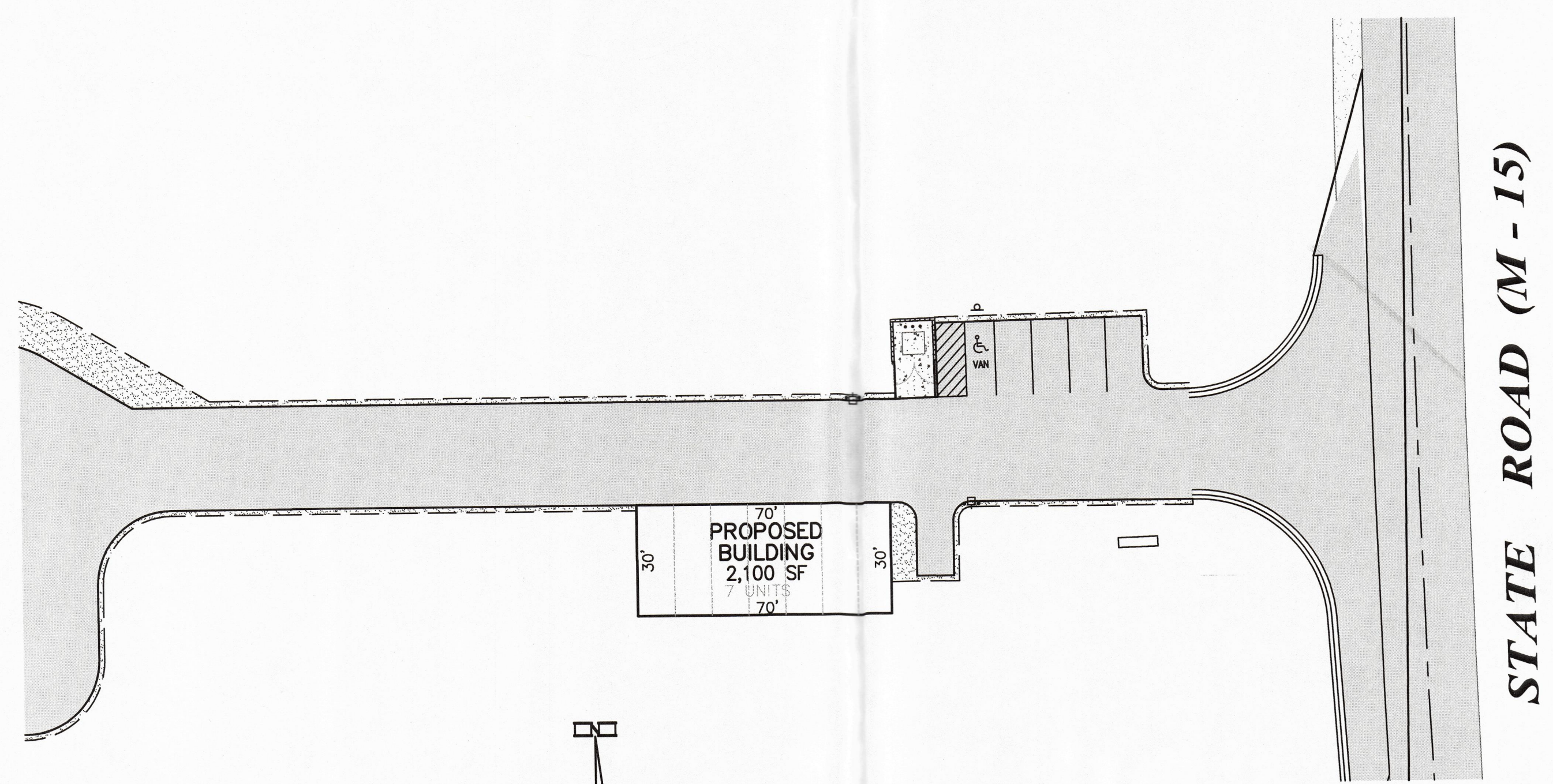
**LEGAL DESCRIPTION (PROVIDED):**

PART OF THE SOUTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 10, TOWN 6 NORTH, RANGE 8 EAST, ATLAS TOWNSHIP, GENESEE COUNTY, MICHIGAN, BEING MORE PARTICULARLY DESCRIBED AS: COMMENCING AT THE SOUTH 1/4 CORNER OF SECTION 10, THENCE N 00°15'42" E ALONG THE NORTH AND SOUTH 1/4 LINE OF SECTION 10, 120 FEET FOR THE POINT OF BEGINNING OF THE PARCEL OF LAND TO BE DESCRIBED, THENCE CONTINUING N 00°15'42" E ALONG SAID NORTH AND SOUTH 1/4 LINE, 314.88 FEET; THENCE S 89°30'32" W, 1299.94 FEET; THENCE S 00°01'40" E, 344.90 FEET TO A POINT ON THE SOUTH LINE OF SAID SECTION 10; THENCE N 89°30'32" E, ALONG SAID SOUTH LINE, 685.29 FEET; THENCE N 00°15'42" E PARALLEL WITH THE NORTH AND SOUTH 1/4 LINE OF SECTION 10, 120.00 FEET; THENCE N 89°30'32" E, PARALLEL WITH THE SOUTH LINE OF SECTION 10, 613.00 FEET TO THE POINT OF BEGINNING. SUBJECT TO THE RIGHTS OF THE PUBLIC OVER M-15, STATE ROAD, SO-CALLED.

PARCEL#: 02-10-300-018  
ADDRESS: ADDRESS HAS NOT BEEN ASSIGNED.



REAR BUILDINGS UNIT PLAN  
SCALE: 1" = 30'



FRONT BUILDING UNIT PLAN  
SCALE: 1" = 30'

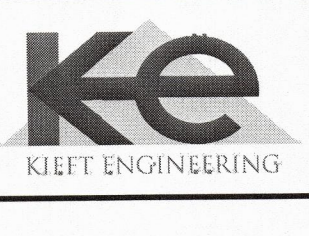
UNIT COUNT:  
300 TOTAL UNITS PROPOSED  
SEE TRACHTE BUILDING SYSTEMS, INC. PLAN # 58579 FOR UNIT SIZES.



DATE	ISSUE
05/25/23	FINAL REVIEW - OWNER
06/28/23	SITE PLAN REVIEW
07/30/24	SITE PLAN REVIEW REV. 1 & PERMITS

**PROPRIETOR:**  
RBF HOLDINGS - BRETT JORY  
4140 MORRISH ROAD  
SWARTZ CREEK, MI 48473  
(810) 516-4405

THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE USED, REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.



**KIEFT ENGINEERING, INC.**  
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS  
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346  
PHONE (248) 625-5251    www.kiefteng.com    FAX (248) 625-7110

DATE	CHK. BY	DATE
05/23/23	CL	06/27/23

DRAWN: GF  
DESIGN: CL  
SECTION: 10    T- 6 -N- R- 8 -E-



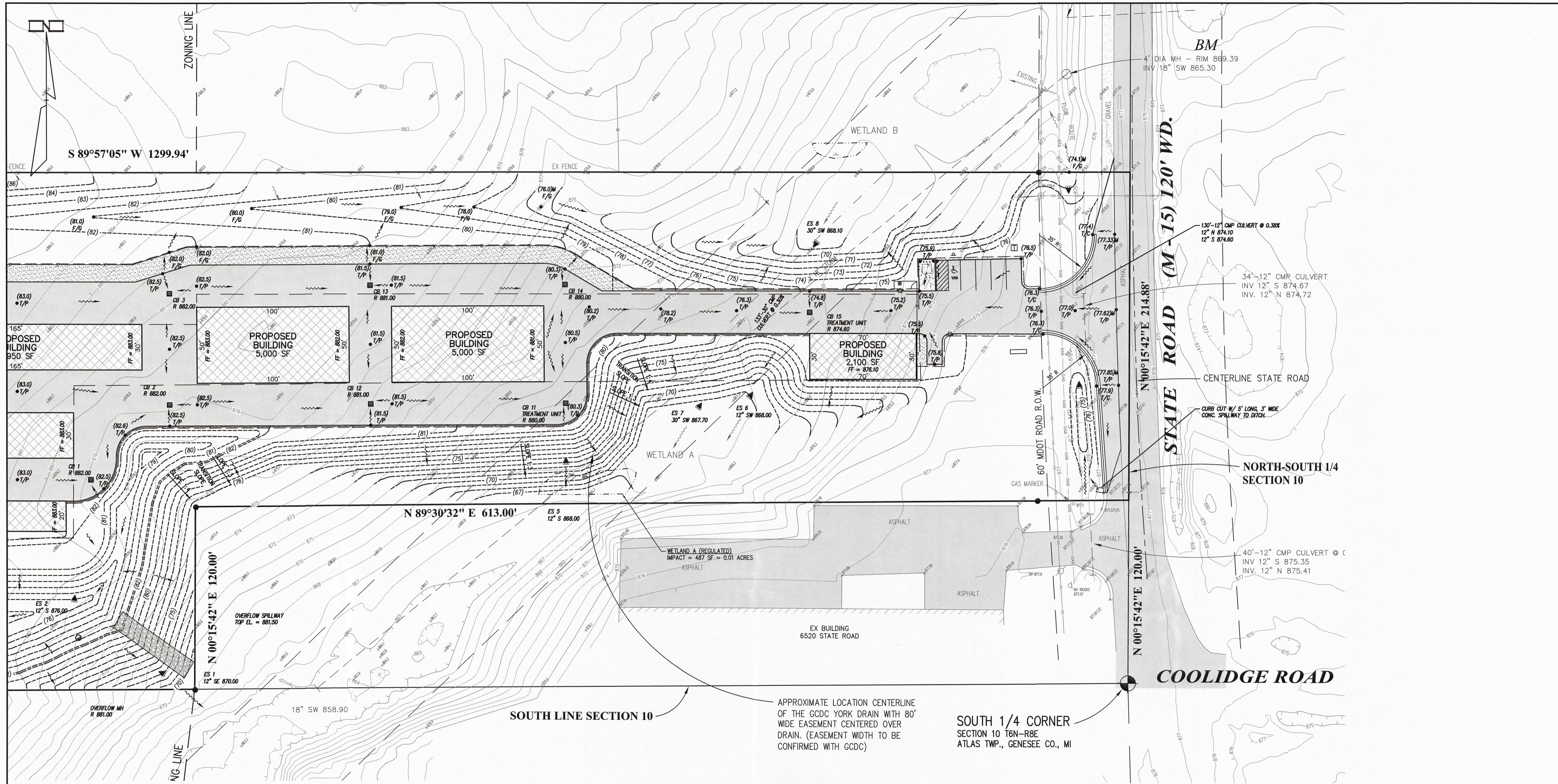
72 HOURS  
(3 WORKING DAYS)  
BEFORE YOU DIG  
CALL MISS DIG  
800-482-7171  
(TOLL FREE)

**ENLARGED UNIT PLANS**  
RBF STORAGE  
ATLAS TOWNSHIP, GENESEE COUNTY, MICHIGAN

SCALE:
1" = 30'
SHEET NO: C4.01
KE 2022.284

RBF STORAGE





S 89°57'05" W 1299.94'

ZONING LINE

WETLAND B

BM

STATE ROAD (M-15) 120' WD.

PROPOSED BUILDING 950 SF

PROPOSED BUILDING 5,000 SF

PROPOSED BUILDING 5,000 SF

PROPOSED BUILDING 2,100 SF

130'-12" CMP CULVERT @ 0.38%  
12' N 874.10  
12' S 874.60

34'-12" CMP CULVERT  
INV 12' S 874.67  
INV 12' N 874.72

NORTH-SOUTH 1/4 SECTION 10

40'-12" CMP CULVERT @ C  
INV 12' S 875.35  
INV 12' N 875.41

N 89°30'32" E 613.00'

N 00°15'42" E 120.00'

N 00°15'42" E 214.88'

STATE ROAD

COOLIDGE ROAD

OVERFLOW SPILLWAY  
TOP EL. = 881.50

SOUTH LINE SECTION 10

APPROXIMATE LOCATION CENTERLINE OF THE GCCC YORK DRAIN WITH 80' WIDE EASEMENT CENTERED OVER DRAIN. (EASEMENT WIDTH TO BE CONFIRMED WITH GCCC)

SOUTH 1/4 CORNER SECTION 10 T6N-R8E ATLAS TWP., GENESEE CO., MI

**GRADING NOTE:**  
SLOPES SHOWN SHALL NOT EXCEED 1:4 UNLESS NOTED OTHERWISE.

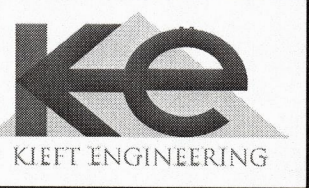
**BENCHMARK:**  
RIM OF EXISTING STORM MH LOCATED 65' NORTH OF NORTH PROPERTY LINE ON THE WEST SIDE OF STATE ROAD. ELEVATION - 869.39 NAVD '88



DATE	ISSUE
05/18/23	PROGRESS PRINT - OWNER
05/25/23	FINAL REVIEW - OWNER
05/28/23	SIDE PLAN REVIEW
07/30/24	SITE PLAN REVIEW REV. 1 & PERMITS

**PROPRIETOR:**  
RBF HOLDINGS - BRETT JORY  
4140 MORRISH ROAD  
SWARTZ CREEK, MI 48473  
(810) 516-4405

THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE USED, REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.



**KIEFT ENGINEERING, INC.**  
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS  
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346  
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

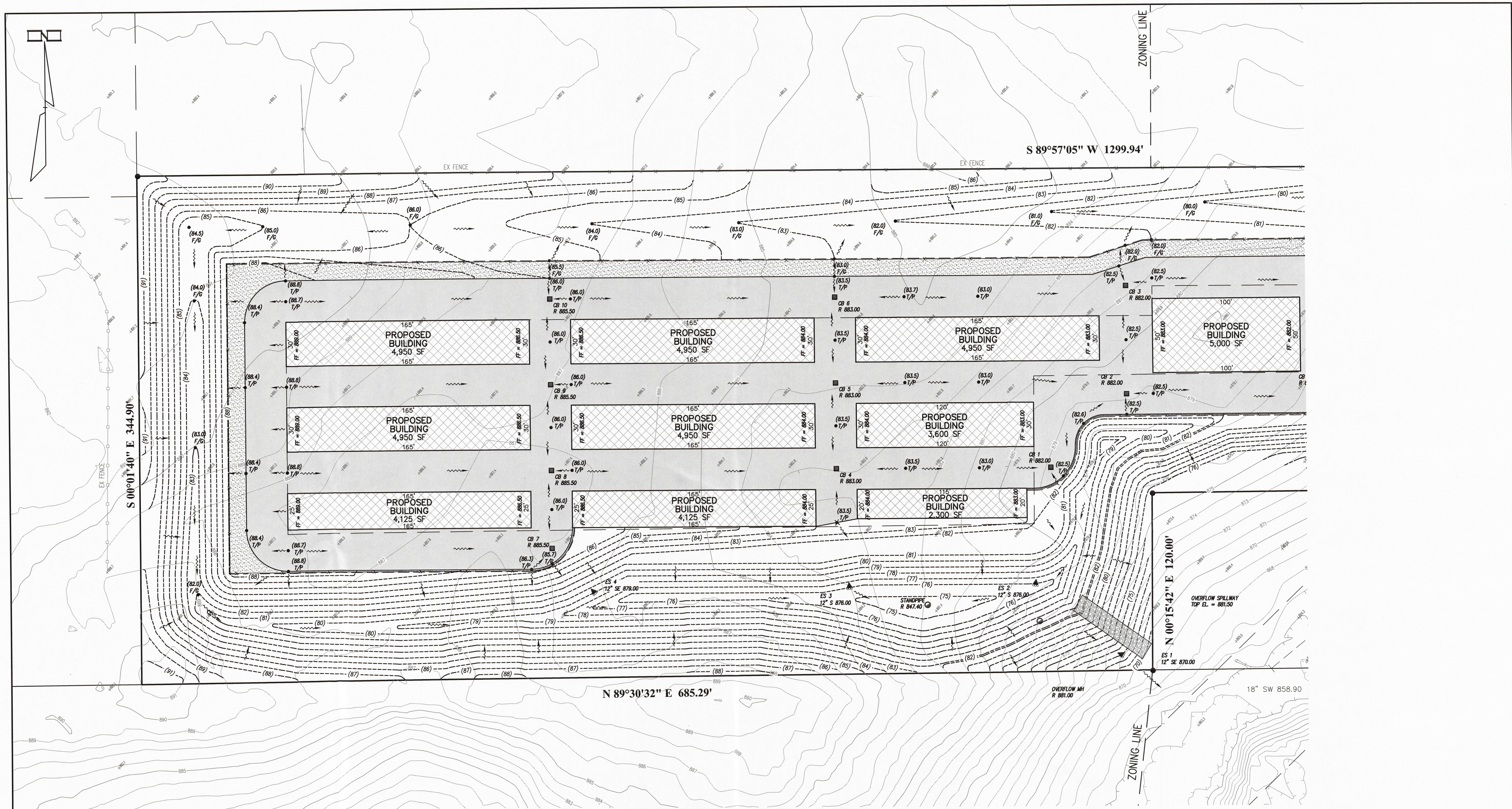
DATE: 04/17/23	CKD. BY: CL	DATE: 06/27/23
DRAWN: CL	DESIGN: PCM	SECTION: 10
T-6-N-R-8-E		



**ENLARGED GRADING PLAN - EAST**  
RBF STORAGE  
ATLAS TOWNSHIP, GENESEE COUNTY, MICHIGAN

SCALE: 1" = 30'
SHEET NO: C4.21
KE 2022.284

RBF STORAGE



**GRADING NOTE:**  
SLOPES SHOWN SHALL NOT EXCEED 1:4 UNLESS NOTED OTHERWISE.

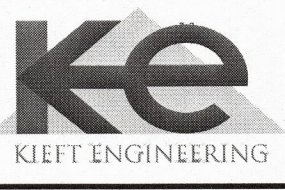
**BENCHMARK:**  
RIM OF EXISTING STORM MH LOCATED  
65' NORTH OF NORTH PROPERTY LINE  
ON THE WEST SIDE OF STATE ROAD.  
ELEVATION - 869.39 NAVD '88



DATE	ISSUE
05/18/23	PROGRESS PRINT - OWNER
05/25/23	FINAL REVIEW - OWNER
06/28/23	SITE PLAN REVIEW
07/30/23	SITE PLAN REVIEW REV. 1 & PERMITS

**PROPRIETOR:**  
RBF HOLDINGS - BRETT JORY  
4140 MORRISH ROAD  
SWARTZ CREEK, MI 48473  
(810) 516-4405

THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE USED, REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.



**KIEFT ENGINEERING, INC.**  
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS  
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346  
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

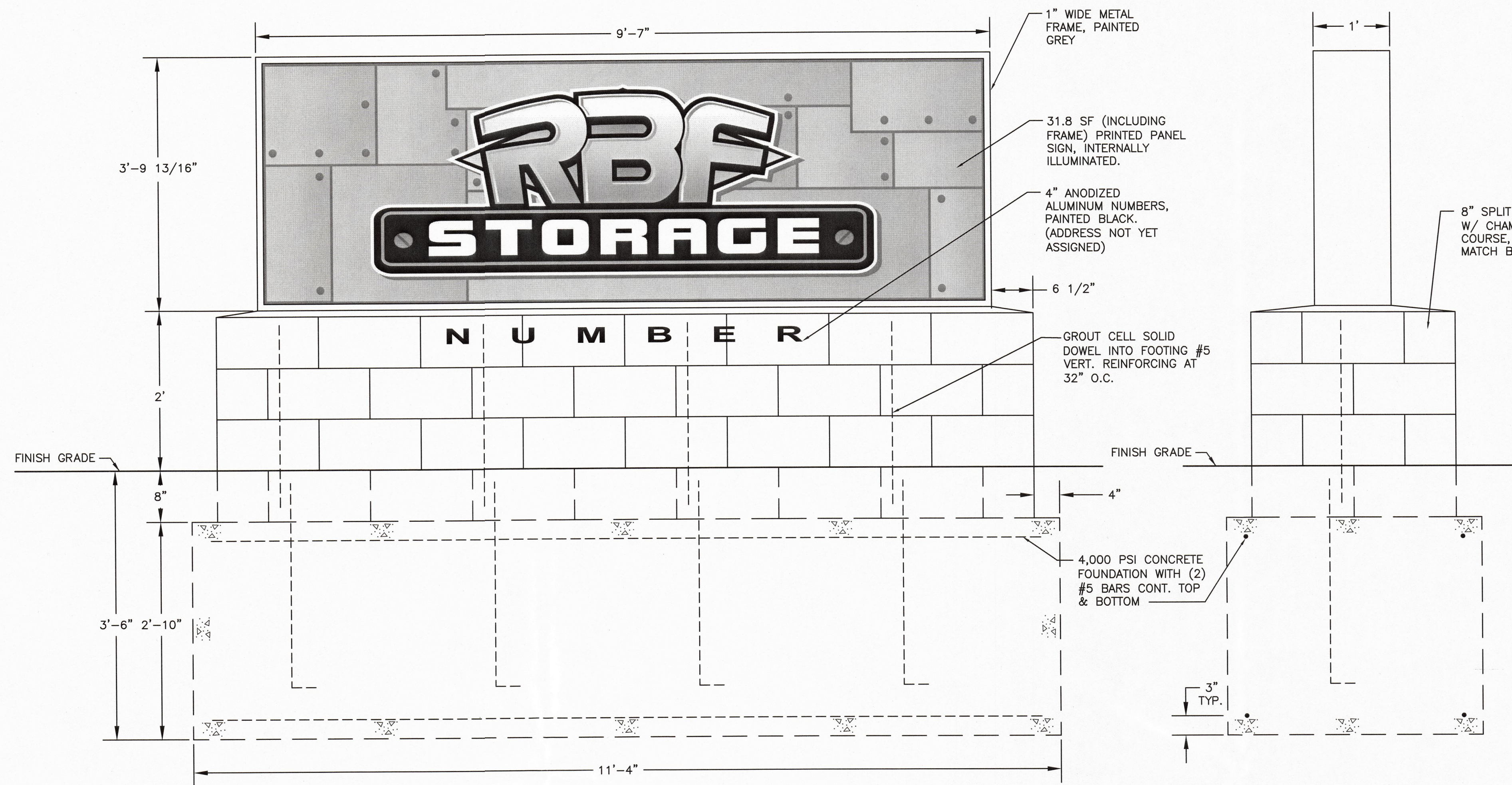
DATE:	04/17/23	CKD. BY:	DATE:
DRAWN:	CL	CL	06/27/23
DESIGN:	PCM		
SECTION:	10	T- 8 -N- R- 8 -E.	

72 HOURS  
(3 WORKING DAYS)  
BEFORE YOU DIG  
CALL MISS DIG  
800-482-7171  
(\*TOLL FREE \*)

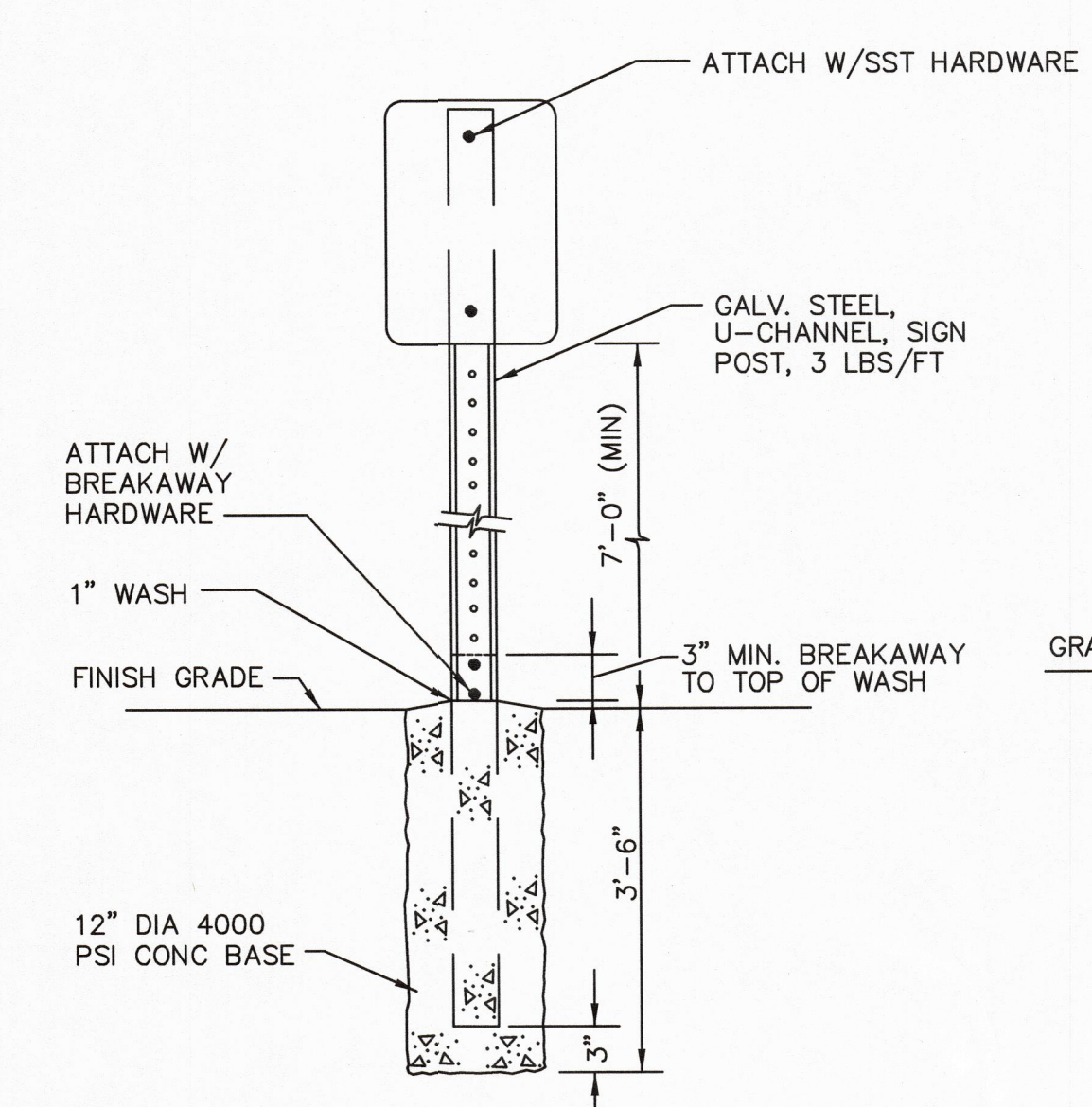
**ENLARGED GRADING PLAN - WEST**  
RBF STORAGE  
ATLAS TOWNSHIP, GENESSEE COUNTY, MICHIGAN

SCALE: 1" = 30'  
SHEET NO: C4.22  
KE 2022.284

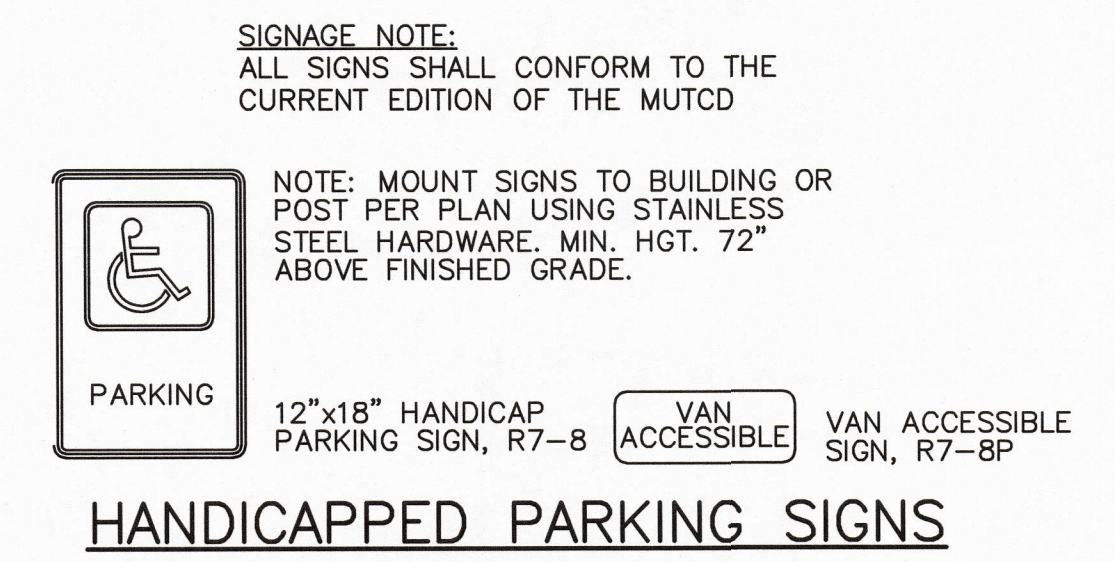
RBF STORAGE



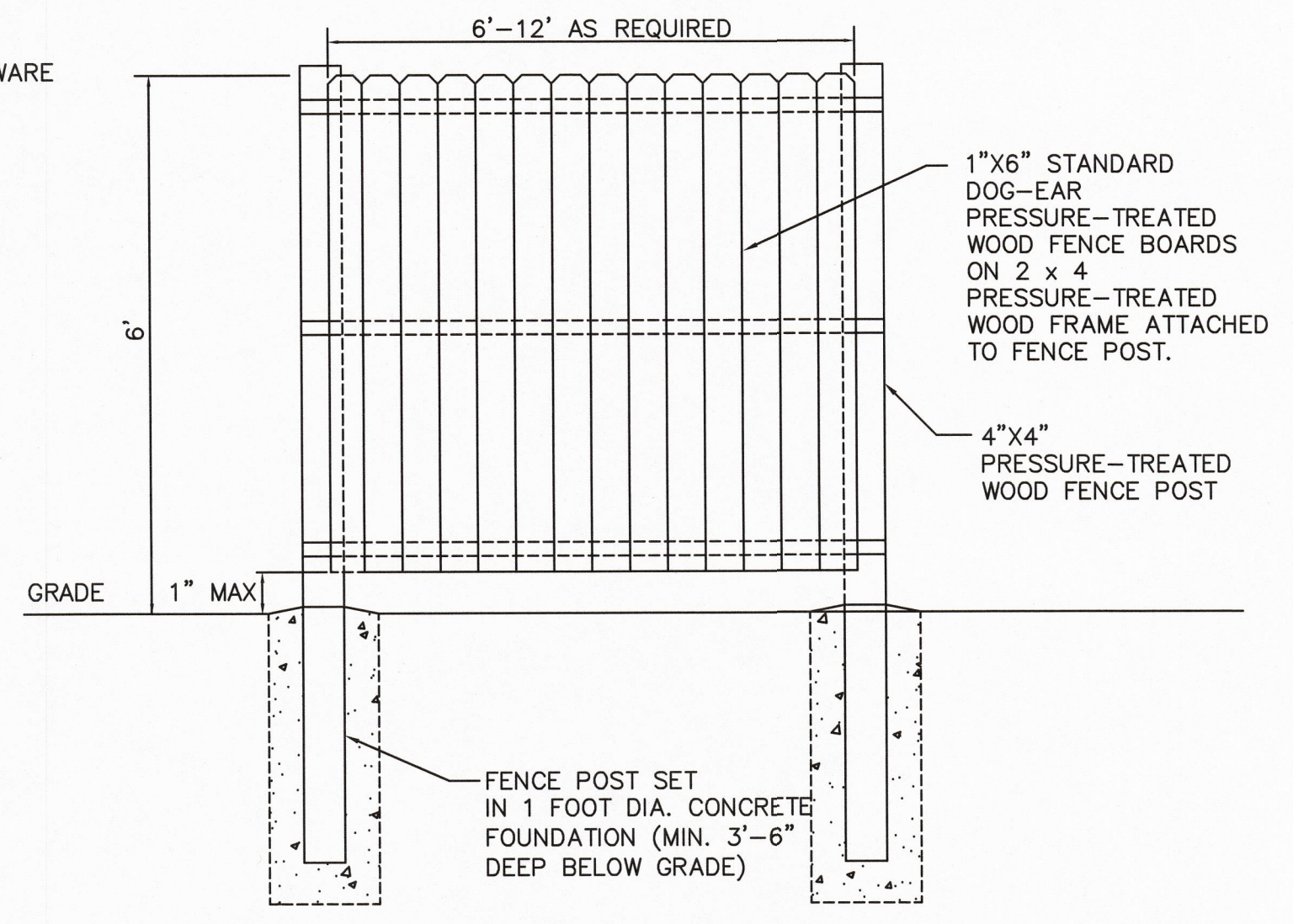
**MONUMENT SIGN**  
SCALE: 1" = 1'-0"



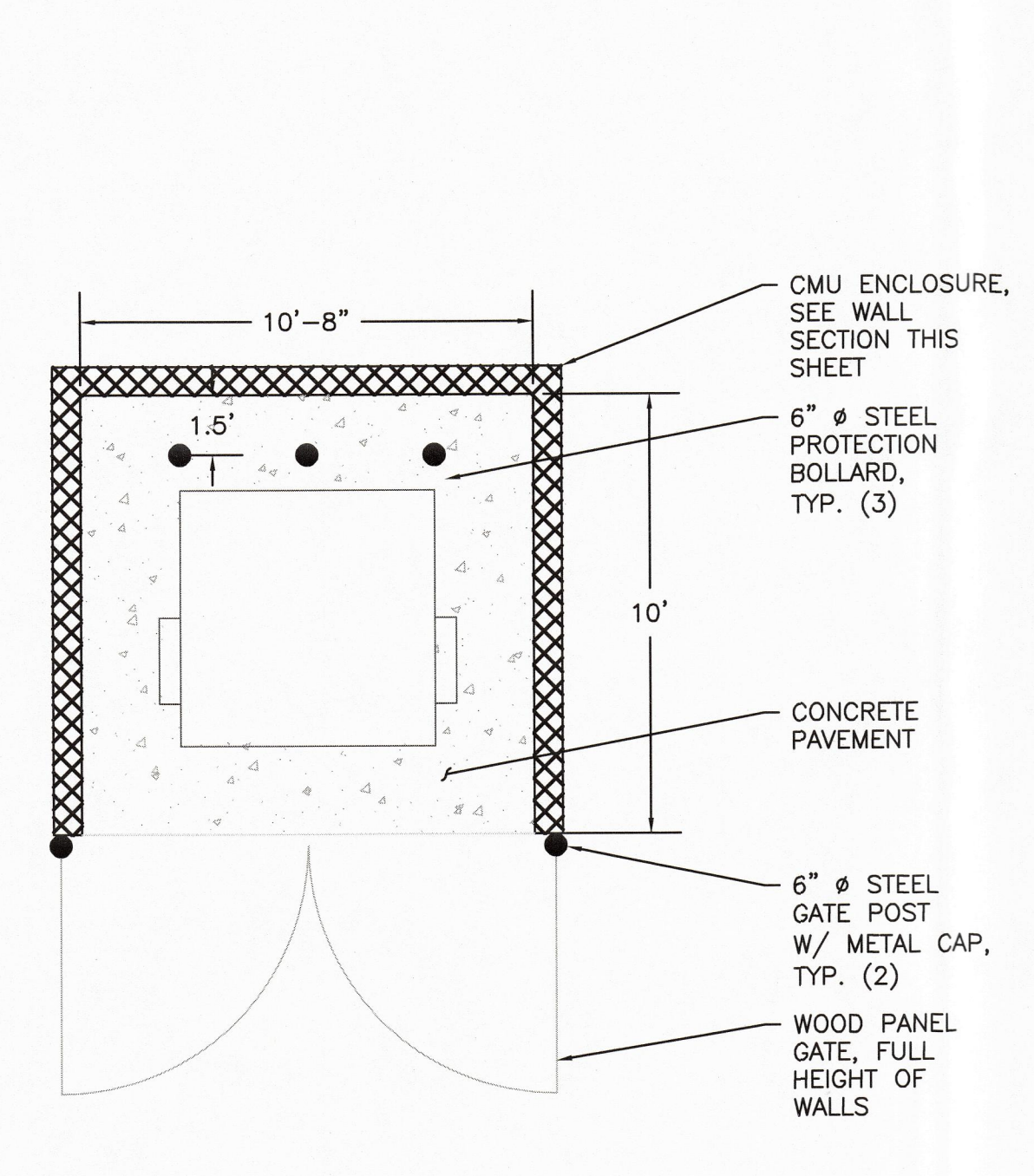
**TYPICAL SIGN MOUNTING**  
N.T.S.



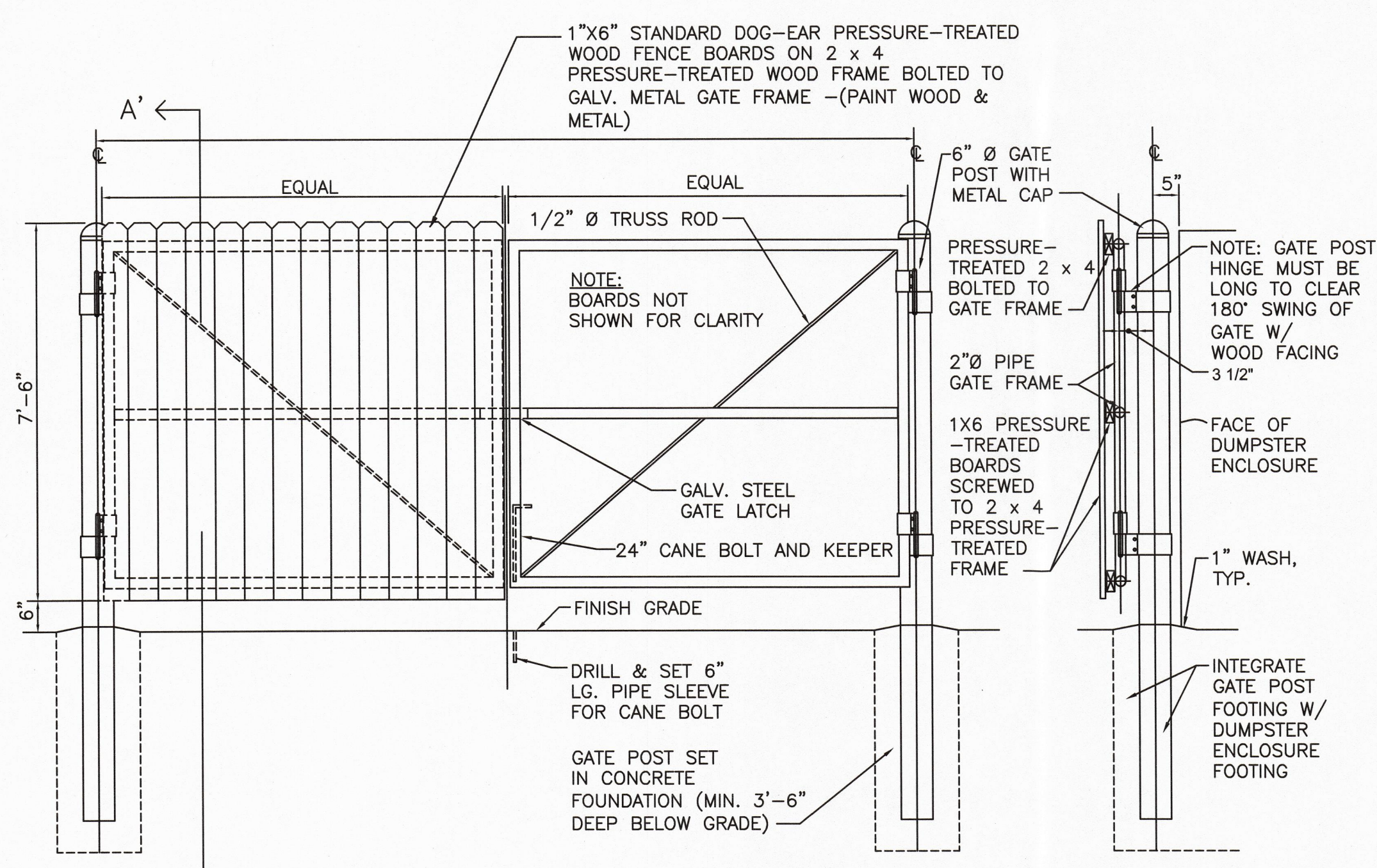
**HANDICAPPED PARKING SIGNS**



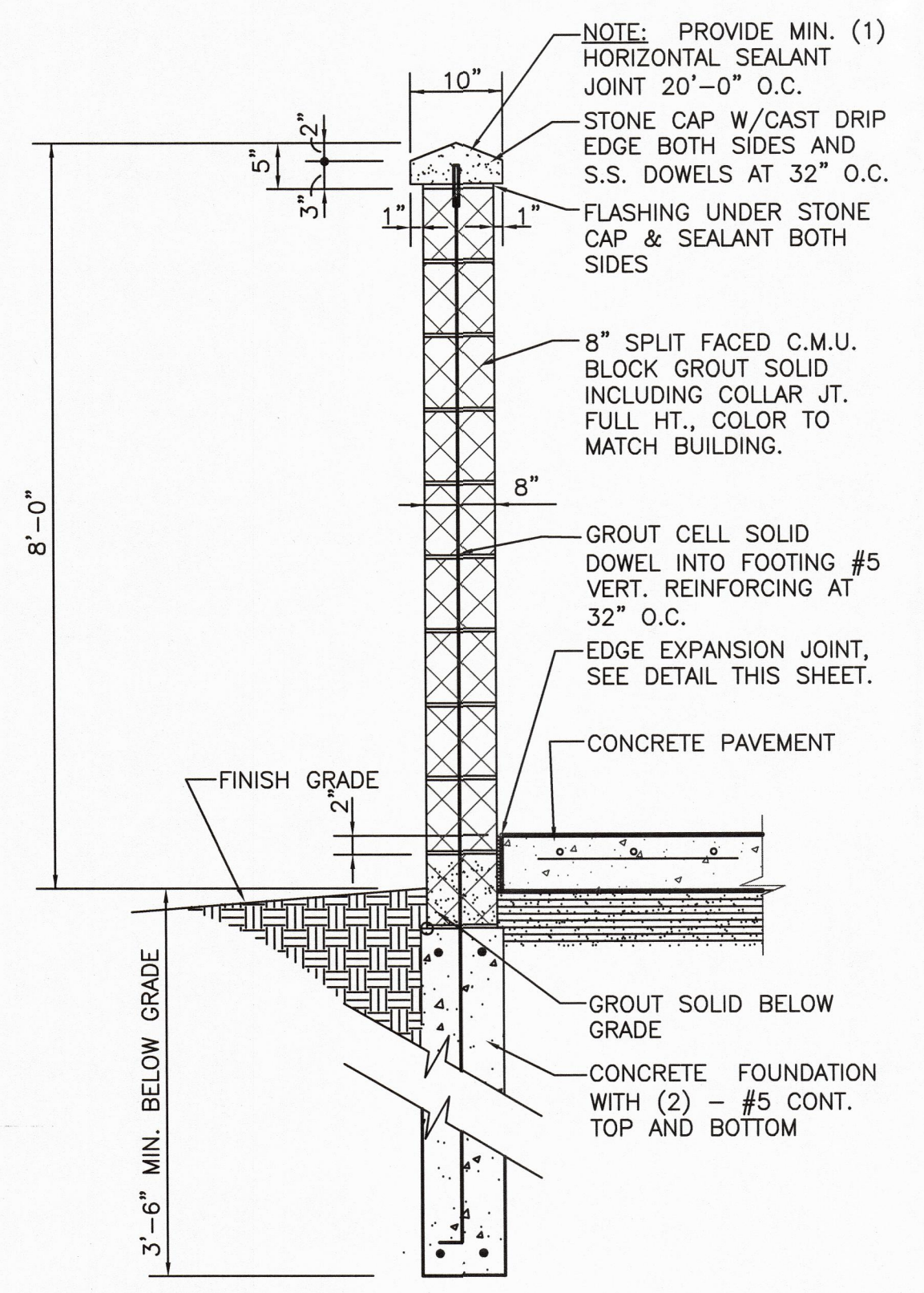
**DOG-EAR FENCE**  
N.T.S.



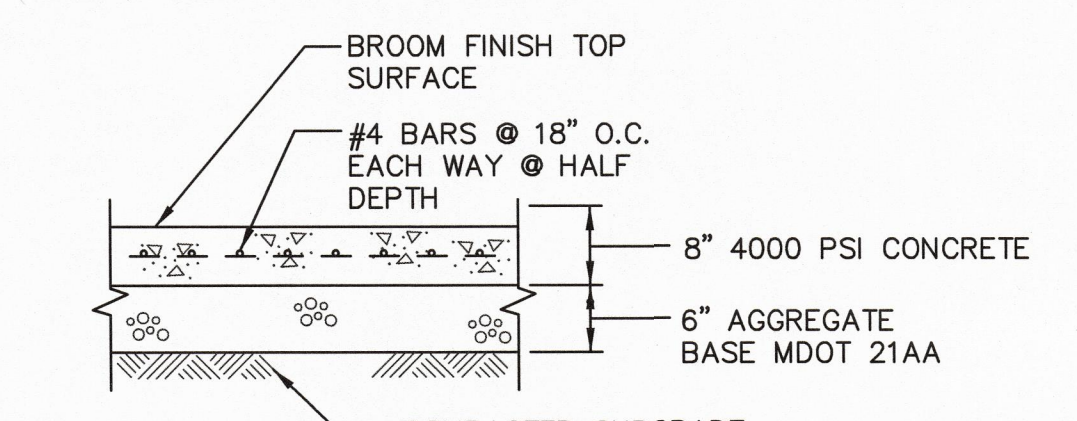
**DUMPSTER ENCLOSURE PLAN**  
N.T.S.



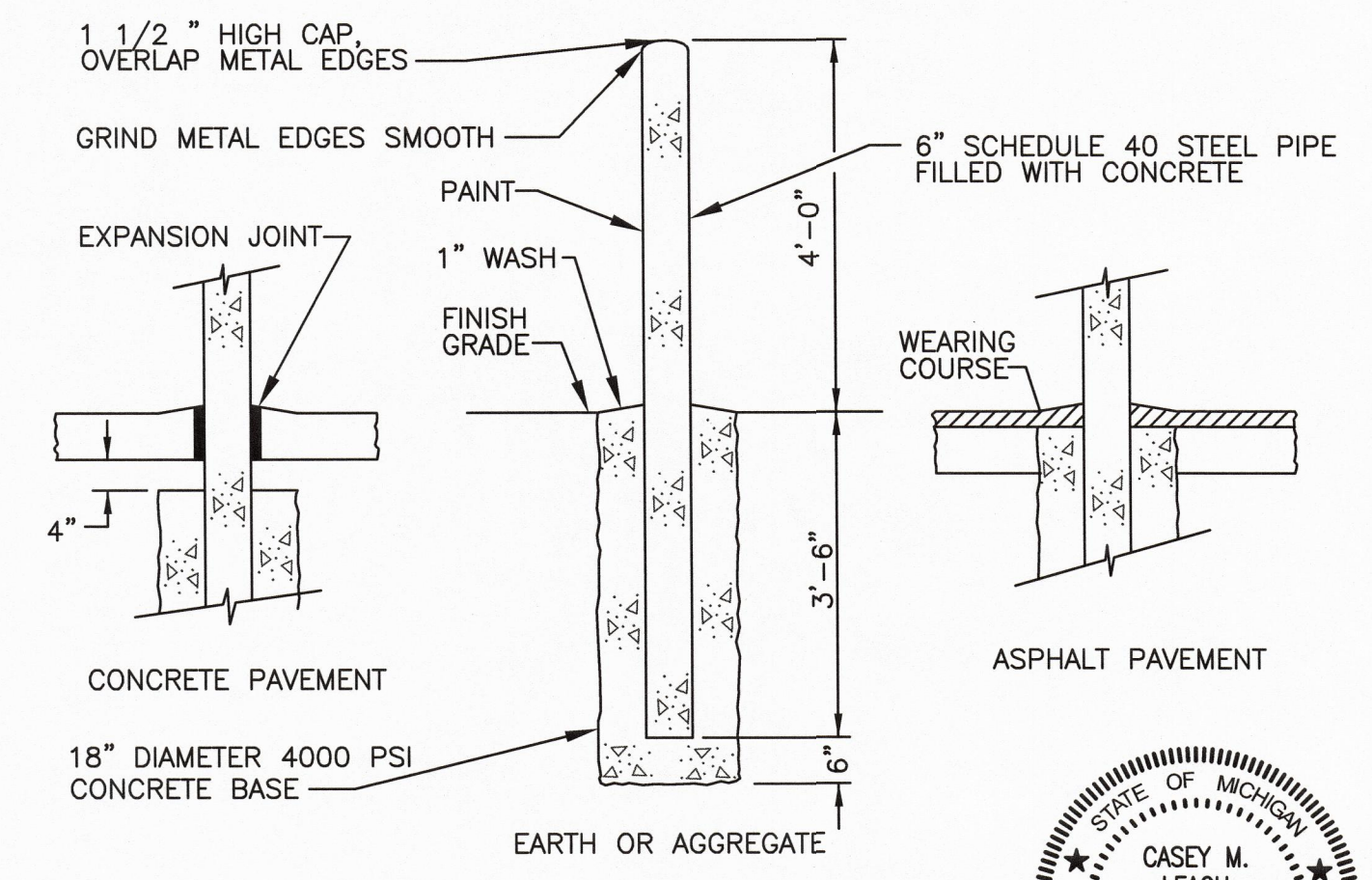
**ELEVATION AT DUMPSTER ENCLOSURE GATES**  
N.T.S.



**DUMPSTER ENCLOSURE WALL SECTION**  
N.T.S.



**CONCRETE PAVEMENT @ DUMPSTER**  
N.T.S.



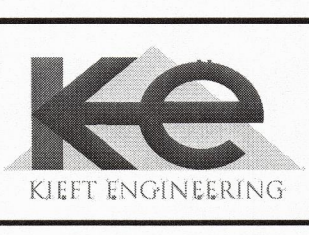
**PROTECTION BOLLARD**  
N.T.S.



DATE	ISSUE
05/18/23	PROGRESS PRINT - OWNER
05/25/23	FINAL REVIEW - OWNER
06/28/23	SITE PLAN REVIEW

**PROPRIETOR:**  
RBF HOLDINGS - BRETT JORY  
4140 MORRISH ROAD  
SWARTZ CREEK, MI 48473  
(810) 516-4405

THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE USED, REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.



**KIEFT ENGINEERING, INC.**  
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS  
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346  
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE: 05/18/23	CKD. BY: CL	DATE: 06/27/23
DRAWN: CL	CL	
DESIGN: CL		
SECTION: 10	T- 6 -N- R- 8 -E-	



**DETAILS - SITE**  
RBF STORAGE  
ATLAS TOWNSHIP, GENESEE COUNTY, MICHIGAN

SCALE: 1" = 50'  
SHEET NO: C5.01  
KE 2022.284

RBF STORAGE

**DETENTION BASIN CALCULATIONS (I.E. WITH OUTLET)**

SITE AREA (LESS ROW) A = 8.17 ACRES

RUNOFF AREAS

PAVEMENT @	0.95	92,288 SF	=	2.12 AC
BUILDING @	0.95	51,000 SF	=	1.17 AC
GRAVEL @	0.50	14,577 SF	=	0.33 AC
LAWN @	0.25	175,278 SF	=	4.02 AC
PCMD @	1.00	22,742 SF	=	0.52 AC
TOTAL		355,885 SF	=	8.17 AC

WEIGHTED C = 0.59

**REQUIREMENT A - FIRST FLUSH**

$V_{FF} = \frac{1}{2} \text{ OVER ENTIRE SITE}$

$V_{FF} \text{ REQ'D} = 29,657 \text{ CF REQ'D}$

EL (FT)	AREA (SF)	VOLUME (CF)	VOLUME (CF)
879.40	15,240	17,001	29,937
879	13,234	11,205	24,140
878	8,241	7,826	12,936
877	6,447	5,110	5,110
876	3,881		

**OUTFLOW CALCULATIONS**

**TIME TO DRAIN**

$T = \frac{V_{FF}}{Q_{FF}} > 24 \text{ HR}$

$Q_{FF} = \frac{29,657 \text{ CF}}{24 \text{ HR} \times 3600 \text{ SEC}} = 0.343 \text{ CFS}$

**ORIFICE FORMULA**

$Q_{FF} = 0.62(AO)(2gh)^{1/2}$

$A_O = \text{AREA ORIFICE PIPE}$

$g = 32.2 \text{ FT/SEC}^2$

H = DEPTH OF BASIN ABOVE CL OUTLET PIPE

$A_O = \frac{Q_{FF}}{0.62(2gh)^{1/2}} = 0.04 \text{ SF}$

$D_O = \text{DIAMETER OF ORIFICE}$

$D_O = \sqrt{\frac{4A_O}{\pi}} = 0.22 \text{ FT} = 2.63 \text{ INCH}$

$A_{PI} = \frac{\pi D^2}{4} = 0.7854 \text{ IN}^2$

$A_{PI} = 3.35 \rightarrow \text{USE } 4 \text{ 1" HOLES @ BOT. OF SP. EL.} = 876.00$

**REQUIREMENT B - CHANNEL PROTECTION FOR 2-YEAR, 24-HOUR STORM**

FROM MDEQ SPREADSHEET

$V_{FF} \text{ REQ'D} = 17,916 \text{ CF REQ'D} < V_{FF}$

**THEREFORE REQUIREMENT B IS MET UNDER REQUIREMENT A**

**REQUIREMENT C - FLOOD CONTROL FOR 100-YEAR, 24-HOUR STORM**

FLOOD CONTROL PROVIDED FOR ENTIRE SITE INCLUDING AREA NOT CAPTURED IN THE DETENTION POND

$Q_A = 0.20 \text{ CFS/ACRE} \times 8.17 \text{ ACRES} = 1.63 \text{ CFS}$

$Q_A = \frac{Q_A}{(A)(C)} = \frac{1.63}{(8.17)(0.59)} = \text{ACRE IMPERVIOUSNESS}$

$T_{100} = -25 + \sqrt{10,312.5} = 149.42 \text{ MINUTES}$

$V_{100} = \frac{16,500 T}{T + 25} = 12,109 \text{ CF}$

$V_{100} \text{ REQ'D} = V_{FC} = 58,369 \text{ CF REQ'D}$

EL (FT)	AREA (SF)	VOLUME (CF)	VOLUME (CF)
881	24,351	21,355	61,286
1380	18,493	15,790	39,931
879	13,234	11,205	24,140
878	9,291	7,826	12,936
877	6,447	5,110	5,110
876	3,881		

TOTAL VOLUME PROVIDED = 61,286 CF

**OUTFLOW CALCULATIONS**

**ORIFICE FORMULA**

$Q_A = 0.62(AO)(2gh)^{1/2}$

$A_O = \text{AREA ORIFICE PIPE}$

$g = 32.2 \text{ FT/SEC}^2$

H = DEPTH OF BASIN ABOVE CL OUTLET PIPE

$A_O = \frac{Q_A}{0.62(2gh)^{1/2}} = 0.15 \text{ SF}$

$D_O = \text{DIAMETER OF ORIFICE}$

$D_O = \sqrt{\frac{4A_O}{\pi}} = 0.44 \text{ FT} = 5.28 \text{ INCH} \rightarrow \text{USE } 6" \text{ RESTRICTION}$

**10 YEAR OUTLET PIPE SIZING (SIZED BASED ON AREA DRAINING TO POND)**

$Q_{10} = C_{10}A$

A = 2.21

C = 0.95

$T_{C10} = 15,957 \text{ MINUTES @ ES 4 INTO POND}$

$I_{10} = \frac{175}{T_C + 25} = 4.27 \text{ IN/HR}$

$Q_{10} = 8.97 \text{ CFS}$

A 15" DPE @ 3.99% W/P = 0.912 CAN PASS 12" 15" CFS

**100-YEAR SECONDARY OVERFLOW SPILLWAY (SIZED BASED ON AREA DRAINING TO POND)**

$Q_{100} = C_{100}A$

$I_{100} = \frac{275}{T_C + 25} = 6.71 \text{ IN/HR}$

$Q_{100} = 11,974 \text{ FT} \rightarrow \text{USE } 12 \text{ FT WEIR}$

A = 2.21

C = 0.95

$Q_{100} = 14.10 \text{ CFS}$

$H_{WEIR} = 0.50 \text{ FT}$

$Q_{100} = Q_{WEIR} = (3.33) \sqrt{H_{WEIR}^3}$

$I_{WEIR} = 11,974 \text{ FT} \rightarrow \text{USE } 12 \text{ FT WEIR}$

DATE: 05/25/23

ISSUE: FINAL REVIEW - OWNER

DATE: 06/28/23

ISSUE: SITE PLAN REVIEW

DATE: 05/25/23

ISSUE: FINAL REVIEW - OWNER

DATE: 06/28/23

ISSUE: SITE PLAN REVIEW

DATE: 05/25/23

ISSUE: FINAL REVIEW - OWNER

DATE: 06/28/23

ISSUE: SITE PLAN REVIEW

DATE: 05/25/23

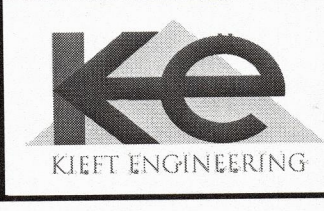
ISSUE: FINAL REVIEW - OWNER

DATE: 06/28/23

ISSUE: SITE PLAN REVIEW

**PROPRIETOR:**  
RBF HOLDINGS - BRETT JORY  
4140 MORRISH ROAD  
SWARTZ CREEK, MI 48473  
(810) 516-4405

THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.



**KIEFT ENGINEERING, INC.**  
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS  
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346  
PHONE (248) 625-5251 FAX (248) 625-7110 www.kiefteng.com

**STORM SEWER CALCULATIONS**

BASED ON RATIONAL FORMULA & MANNING'S EQUATIONS FOR OPEN CHANNEL FLOW

JOB No.: 2022.28

NAME: RBF STORAGE DATE: 6/28/2023

CLIENT: BRETT JORY TIME: 10:21 AM

STORM SEWER DESIGN

LOCATION: ATLAS TOWNSHIP, MI

STARTING TIME: 15.00

MANNING'S "n": 0.012

10-YR STM "I": 175

T+25.00

Upst Str. #	Dnst Str. #	Pipe Len (L) Ft	Added Area Acres	Time of Conc. (T) Min	Intensity (I) In/HR	(ACI) (Q) Cfs	PIPE DIA (D) Inches	PIPE SLP. (S) %	V Full (V) Fps	FI Time Min	INVERT ELEV. Upst #	INVERT ELEV. Dnst #	Q (capacity) Cfs	RIM OR GRADE	STR. NO.			
ES 8	ES 7	133	2.00	0.30	0.600	0.60	20.00	3.89	2.33	30	0.30	5.0	0.45	868.11	24.40	ES 8		
CB 15	ES 6	96	0.35	0.95	0.333	0.33	15.00	4.38	1.45	12	2.00	7.0	0.23	869.91	5.47	874.60	CB 15	
CB 14	CB 11	78	0.16	0.95	0.152	0.15	15.00	4.26	2.59	12	4.10	10.0	0.07	869.60	868.00	7.84	880.00	CB 14
CB 13	CB 12	78	0.16	0.95	0.152	0.15	15.00	4.38	0.67	12	0.40	3.1	0.42	876.36	876.00	2.45	881.00	CB 13
CB 12	CB 11	128	0.16	0.95	0.152	0.30	15.42	4.33	1.32	12	0.40	3.1	0.68	875.89	875.38	2.45	881.00	CB 12
CB 11	ES 5	39	0.16	0.95	0.152	0.61	16.10	4.26	2.59	12	4.10	10.0	0.07	869.60	868.00	7.84	880.00	CB 11
CB 3	CB 2	73	0.17	0.95	0.162	0.16	15.00	4.38	0.71	12	0.40	3.1	0.39	877.30	877.01	2.45	882.00	CB 3
CB 2	CB 1	72	0.22	0.95	0.209	0.37	15.39	4.33	1.61	12	0.40	3.1	0.39	876.91	876.62	2.45	882.00	CB 2
CB 1	ES 2	80	0.13	0.95	0.124	0.49	15.78	4.29	2.12	12	0.65	4.0	0.34	876.52	876.00	3.12	882.00	CB 1
CB 6	CB 5	58	0.22	0.95	0.209	0.21	15.00	4.38	0.91	12	0.40	3.1	0.31	878.30	878.07	2.45	883.00	CB 6
CB 5	CB 4	58	0.30	0.95	0.285	0.49	15.31	4.34	2.14	12	0.40	3.1	0.31	877.97	877.74	2.45	883.00	CB 5
CB 4	ES 3	111	0.29	0.95	0.276	0.77	15.62	4.31	3.32	12	1.00	4.9	0.38	877.11	876.00	3.87	883.00	CB 4
CB 10	CB 9	58	0.19	0.95	0.181	0.18	15.00	4.38	0.79	12	0.40	3.1	0.31	880.80	880.57	2.45	885.50	CB 10
CB 9	CB 8	58	0.26	0.95	0.247	0.43	15.31	4.34	1.86	12	0.40	3.1	0.31	880.47	880.24	2.45	885.50	CB 9
CB 8	CB 7	53	0.25	0.95	0.238	0.67	15.62	4.31	2.86	12	0.60	3.8	0.23	880.14	879.82	3.00	885.50	CB 8
CB 7	ES 4	41	0.18	0.95	0.171	0.84	15.85	4.28	3.58	12	1.75	6.5	0.10	879.72	879.00	5.12	885.50	CB 7

Calculations for Stormwater Runoff & Control  
SITE NAME: RBF STORAGE  
Total Site Dist Area: 8.17 acres  
2-Year, 24-Hour Rainfall (I): 175 (See Rainfall Tab for regional rainfall value or site specific rainfall event may be substituted with DNRE approval)

**Pre-Development Conditions**

Cover Type	Soil Type	Area (sf)	Area (ac)	CN (from TR-55)	S	Q Runoff <sup>1</sup> (in)	Runoff Volume <sup>2</sup> (ft <sup>3</sup> )
Woods / Meadow	A	22651.2	0.52	30	23.3	0.276778167	522.4464683
Open Space	A	0	0	39	15.6	0.051024795	0
Woods	B	0	0	55	8.2	0.04416834	0
Meadow	B	0	0	58	7.2	0.081818901	0
Open Space	B	0	0	61	6.4	0.130576857	0
Woods	C	0	0	70	4.3	0.345958241	0
Meadow	C	61855.2	1.42	71	4.1	0.376751469	13124
Open Space	C	0	0	74	3.5	0.478261754	0
Woods	D	0	0	77	3.0	0.594507903	0
Meadow	D	271378.8	6.23	78	2.8	0.636803999	13876
Open Space	D	0	0	80	2.5	0.72713615	0
Impervious	N/A	0	0	98	0.20	2.03228931	0
Other:		0	0			NA	NA
TOTAL:	N/A	355885.2	8.2	N/A	N/A	N/A	16,000

**Post-Development Conditions**

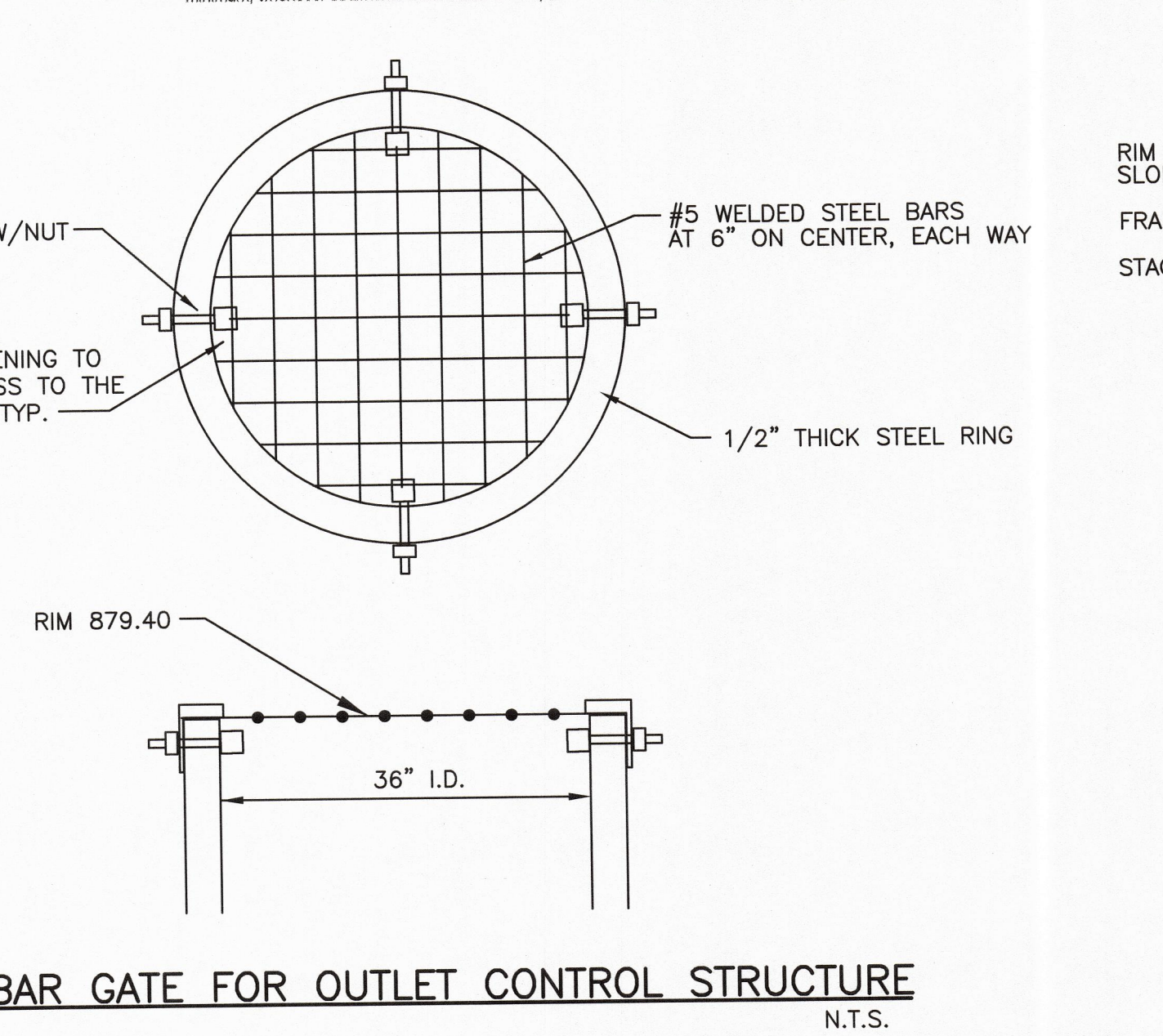
Cover Type	Soil Type	Area (sf)	Area (ac)	CN*	S	Q Runoff <sup>1</sup> (in)	Runoff Volume <sup>2</sup> (ft <sup>3</sup> )
Impervious	N/A	143312.4	3.29	98	0.2	2.03228931	2,114
Lawn	A	10890	0.25	30	23.3	0.276778167	2,887
Lawn	C	20473.2	0.47	71	4.1	0.376751469	1,882
Lawn	D	181209.6	4.16	78	2.8	0.636803999	1,983
TOTAL:	N/A	355885.2	8.2	N/A	N/A	N/A	17,916

**Runoff Volume Increase (ft<sup>3</sup>): 17,916**  
Runoff Volume Increase = (Post-Dev. Runoff Volume) MINUS (Pre-Dev. Runoff Volume)  
1. Runoff (in) =  $Q = (P - I_a)^2 / (P - I_a) + S$  Where: P = 2-Year, 24-Hour Rainfall (in)  
I<sub>a</sub> = 0.25 therefore; S = 1000 / CN - 10  
CN = Curve Number  
Q = Runoff (in)  
2. Runoff Volume (ft<sup>3</sup>) = Q x 1/12 x Area Area = Area of specific land cover (ft<sup>2</sup>)

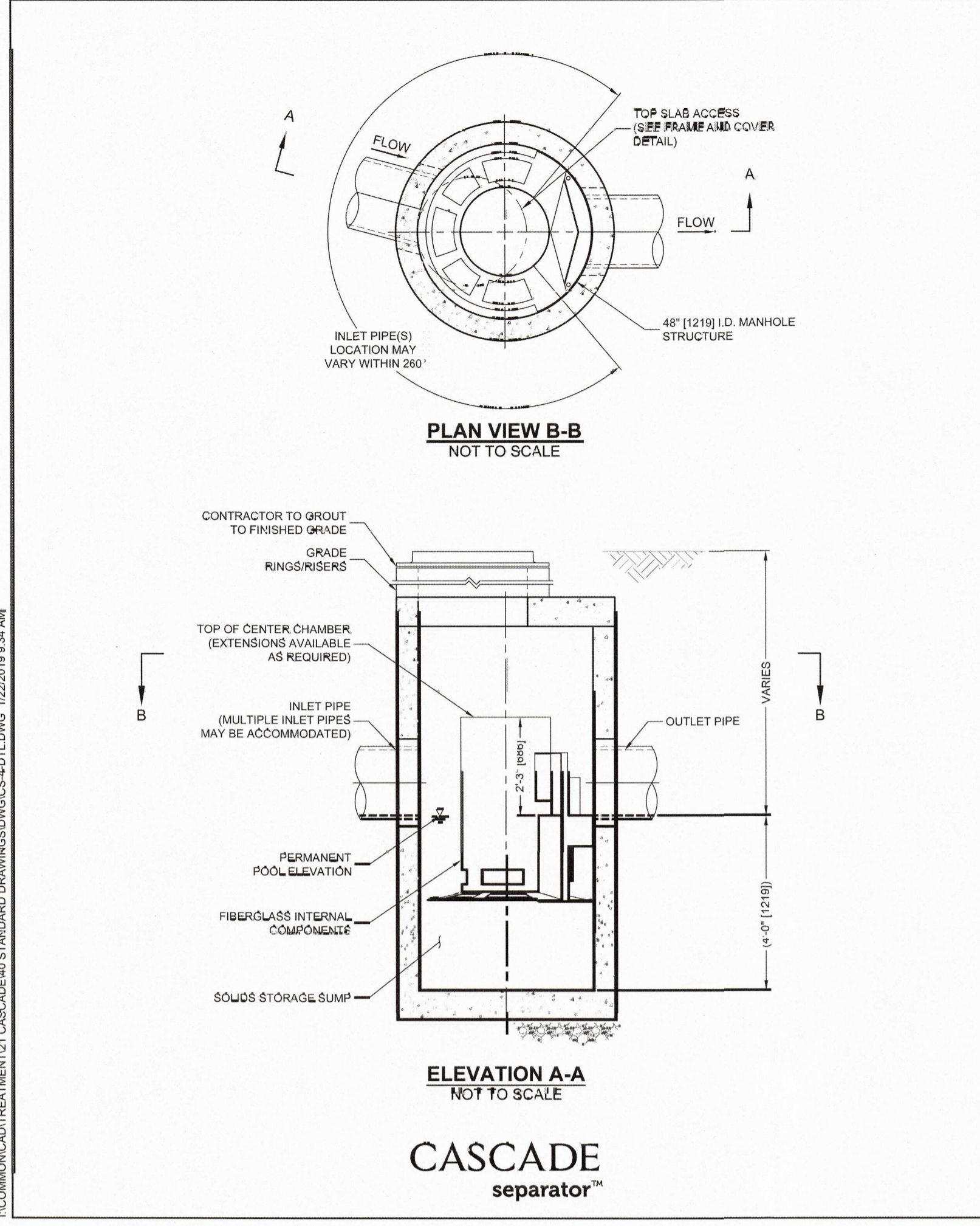
**STORM WATER MANAGEMENT SYSTEM LONG-TERM MAINTENANCE SCHEDULE**

MAINTENANCE ACTIVITIES	Storm Collection System (Sewers, Swales, Catch Basins, Manholes)	Manufactured Treatment System	Detention Basin System	Flow Restrictor Structure & Outlet Pipe	Pavement Areas	FREQUENCY
<b>Monitoring/Inspection</b>						
Inspect for Sediment Accumulation/Clogging	X	X	X	X	X	Annually
Inspect for Foliage, Dead Vegetation & Debris	X	X	X	X	X	Annually & After Major Events
Inspect for Erosion & Integrity of System	X	X	X	X	X	Annually & After Major Events
Inspect All Components During Wet Weather & Compare	X	X	X	X	X	Annually
Ensure Maintenance Access Remains Open/Clear	X	X	X	X	X	Annually
<b>Preventative Maintenance</b>						As Needed (See Note Below)
Remove Accumulated Sediments	X	X	X	X	X	As Needed
Remove Foliage, Dead Vegetation & Debris	X	X	X	X	X	As Needed
Sweeping of Paved Surfaces	X	X	X	X	X	As Needed
<b>Remedial Actions</b>						As Needed
Repair/Stabilize Areas of Erosion	X	X	X	X	X	As Needed
Replace Dead Plantings & Re-seed Bare Areas	X	X	X	X	X	As Needed
Structural Repairs	X	X	X	X	X	As Needed
Make Adjustments/Repairs to Ensure Proper Functioning	X	X	X	X	X	As Needed

NOTE: Manufactured treatment system and detention system to be cleaned according to the manufacturer's recommendations; at a minimum, whenever sediments accumulate to a depth of 6-12 inches, or if sediment resuspension is observed.



**DETENTION BAS**



### CASCADE SEPARATOR DESIGN NOTES

THE STANDARD CS-4 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

**CONFIGURATION DESCRIPTION**

GRATED INLET ONLY (NO INLET PIPE)

GRATED INLET WITH INLET PIPE OR PIPES

CURB INLET ONLY (NO INLET PIPE)

CURB INLET WITH INLET PIPE OR PIPES

SITE SPECIFIC DATA REQUIREMENTS			
STRUCTURE ID	CB 15		
WATER QUALITY FLOW RATE (cfs [L/s])	0.34 CFS		
PEAK FLOW RATE (cfs [L/s])	1.45 CFS		
RETURN PERIOD OF PEAK FLOW (yrs)	10-YEAR		
RIM ELEVATION	874.60		
PIPE DATA	INVERT	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	869.92	HP STORM	12"
OUTLET PIPE			

NOTES/SPECIAL REQUIREMENTS:  
PROVIDE OPENINGS FOR PAVEMENT UNDERDRAIN.

**GENERAL NOTES**

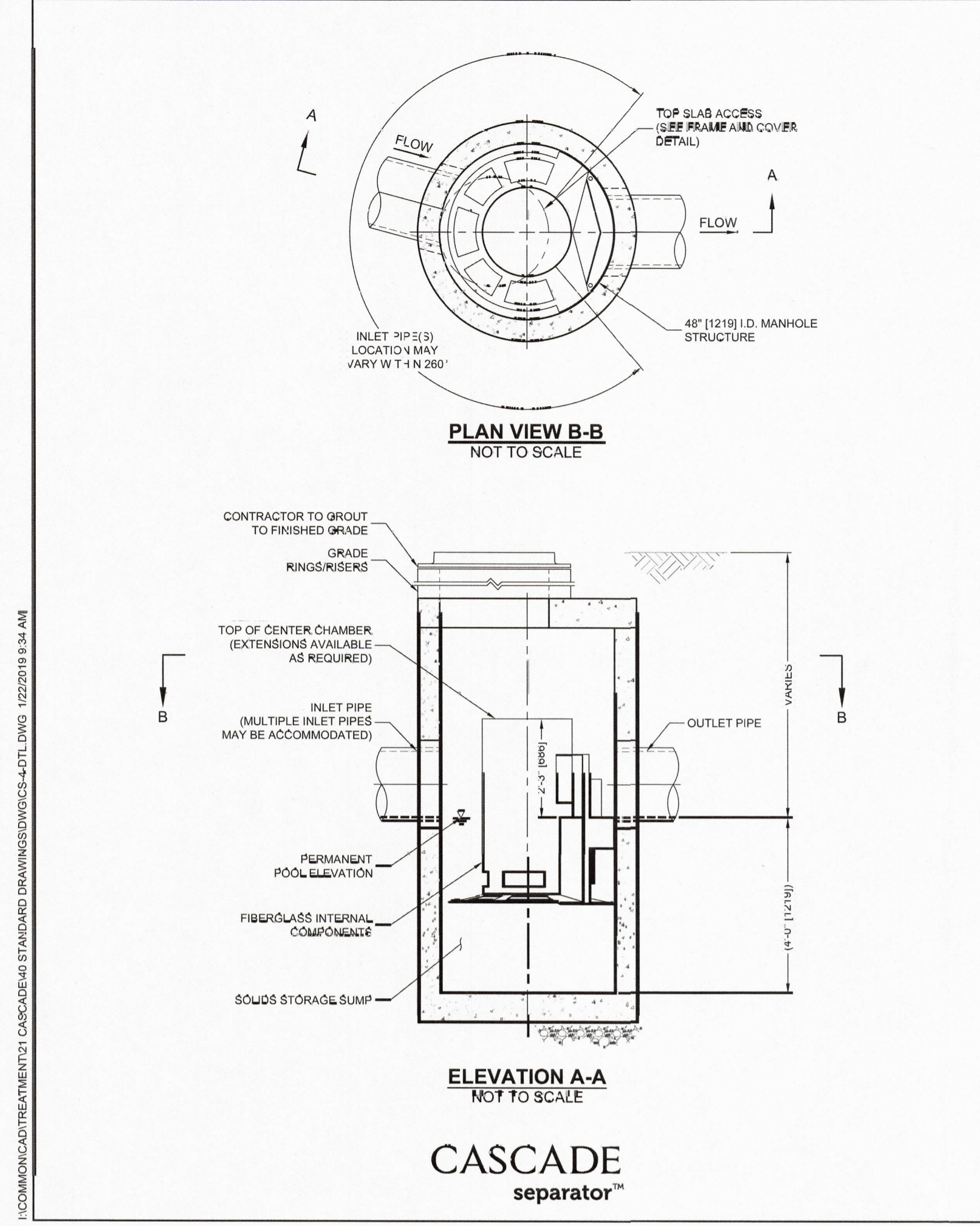
- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LDC REPRESENTATIVE: [www.contechllc.com](http://www.contechllc.com)
- CASCADE SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO COMPLY WITH STRUCTURE MANUFACTURER'S REQUIREMENTS OF PRODUCT.
- CASCADE SEPARATOR STRUCTURE SHALL MEET AASHTO M318 LOAD RATING, ASSUMING EARTH COVER OF 0'-2' (610), AND GROUNDWATER ELEVATION AT OR BELOW THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M336 AND BE CAST WITH THE CONTECH LOGO.
- CASCADE SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
- ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm].

**INSTALLATION NOTES**

- ANY SUB-BASE BACKFILL DEPTH AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CASCADE SEPARATOR MANHOLE STRUCTURE.
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE INSTALL AND GROUT INLET AND OUTLET PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

**CONTECH ENGINEERED SOLUTIONS LLC**  
8025 Centre Pointe Dr., Suite 400, West Chester, OH 45399  
800-338-1122 513-645-7000 513-645-7993 FAX

CS-4  
CASCADE SEPARATOR  
STANDARD DETAIL



### CASCADE SEPARATOR DESIGN NOTES

THE STANDARD CS-4 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

**CONFIGURATION DESCRIPTION**

GRATED INLET ONLY (NO INLET PIPE)

GRATED INLET WITH INLET PIPE OR PIPES

CURB INLET ONLY (NO INLET PIPE)

CURB INLET WITH INLET PIPE OR PIPES

SITE SPECIFIC DATA REQUIREMENTS			
STRUCTURE ID	CB 11		
WATER QUALITY FLOW RATE (cfs [L/s])	0.47 CFS		
PEAK FLOW RATE (cfs [L/s])	2.69 CFS		
RETURN PERIOD OF PEAK FLOW (yrs)	10-YEAR		
RIM ELEVATION	880.00		
PIPE DATA	INVERT	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	869.60	HP STORM	12"
OUTLET PIPE			

NOTES/SPECIAL REQUIREMENTS:  
PROVIDE OPENINGS FOR PAVEMENT UNDERDRAIN.

**GENERAL NOTES**

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LDC REPRESENTATIVE: [www.contechllc.com](http://www.contechllc.com)
- CASCADE SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO COMPLY WITH STRUCTURE MANUFACTURER'S REQUIREMENTS OF PRODUCT.
- CASCADE SEPARATOR STRUCTURE SHALL MEET AASHTO M318 LOAD RATING, ASSUMING EARTH COVER OF 0'-2' (610), AND GROUNDWATER ELEVATION AT OR BELOW THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M336 AND BE CAST WITH THE CONTECH LOGO.
- CASCADE SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
- ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm].

**INSTALLATION NOTES**

- ANY SUB-BASE BACKFILL DEPTH AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CASCADE SEPARATOR MANHOLE STRUCTURE.
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE INSTALL AND GROUT INLET AND OUTLET PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

**CONTECH ENGINEERED SOLUTIONS LLC**  
8025 Centre Pointe Dr., Suite 400, West Chester, OH 45399  
800-338-1122 513-645-7000 513-645-7993 FAX

CS-4  
CASCADE SEPARATOR  
STANDARD DETAIL

**Project:** RBF Storage  
**Location:** Atlas TWP., MI

**Purpose:** To calculate the first flush runoff flow rate (WQF) over a given site area. In this situation the WQV to be analyzed is the runoff produced by the first 0.9" of rainfall.

**Reference:** United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual.

Given:	Structure Name	A (acres)	A (miles <sup>2</sup> )	Runoff Coefficient	Percent Imp. (%)	t <sub>c</sub> (min)	t <sub>c</sub> (hr)
	CB12	0.35	0.00055	0.95	100.00	15.0	0.250
	CB11	0.48	0.00075	0.95	100.00	15.0	0.250

\* Assumes runoff coefficient of 0.3 for pervious areas and 0.9 for impervious areas.

**Procedure:** The Water Quality Flow (WQF) is calculated using the Water Quality Volume (WQV). This WQV, converted to watershed inches, is substituted for the runoff depth (Q) in the Natural Resources Conservation Service (formerly Soil Conservation Service), TR-55 Graphical Peak Discharge Method.

- Compute WQV in watershed inches using the following equation:  
 $WQV = P \cdot R$   
where: WQV = water quality volume (watershed inches)  
P = design precipitation (inches)  
R = volumetric runoff coefficient =  $0.05 + 0.009(I)$   
I = percent impervious cover

Structure Name	Percent Imp. (%)	R	P (in)	WQV (in)	WQV (cfs)
CB12	100.00	0.950	0.9	0.855	1086
CB11	100.00	0.950	0.9	0.855	1450

- Compute the NRCS Runoff Curve Number (CN) using the following equation, or graphically using Figure 2-1 from TR-55 (USDA, 1988):  
 $CN = 1000 / [10 + SP + 10(Q + 1.25SP)^{0.5}]$   
where: CN = Runoff Curve Number  
P = design precipitation (inches)  
Q = runoff depth (watershed inches)

Structure Name	Q (in)	CN
CB12	0.855	99.61
CB11	0.855	99.61

First Flush Calculation (Page 1 of 2)  
5/26/2023

**Project:** RBF Storage  
**Location:** Atlas TWP., MI

- Using computed CN, read initial abstraction (I<sub>a</sub>) from Table 4-1 in Chapter 4 of TR-55; compute I<sub>a</sub>/P, interpolating when appropriate.
- Compute the time of concentration (t<sub>c</sub>) in hours and the drainage area in square miles. A minimum t<sub>c</sub> of 0.167 hours (10 minutes) should be used.
- Read the unit peak discharge (q<sub>p</sub>) from Exhibit 4-II in Chapter 4 of TR-55 for appropriate t<sub>c</sub> for type II rainfall distribution.
- Substituting WQV (watershed inches) for runoff depth (Q), compute the water quality flow (WQF) from the following equation:  
 $WQF = (q_p)(A)(Q)$   
where: WQF = water quality flow (cfs)  
q<sub>p</sub> = unit peak discharge (cfs/m<sup>2</sup>/in)  
A = drainage area (mi<sup>2</sup>)  
Q = runoff depth (watershed inches)

Structure Name	q <sub>p</sub> (csm/in)	A (miles <sup>2</sup> )	Q (in)	WQF (cfs)
CB12	731	0.00055	0.855	0.34
CB11	731	0.00075	0.855	0.47

First Flush Calculation (Page 2 of 2)  
5/26/2023

### Estimated Net Annual Solids Load Reduction Based on the Rational Rainfall Method

**RBF Storage**  
Atlas Twp., MI  
CB12

AREA (acres): 0.35  
WEIGHTED C: 0.95  
Tc (minutes): 15.00

**CASCADE separator™**

CASCADE MODEL: CS-4  
PARTICLE SIZE (µm): #10  
RAINFALL STATION: 79  
WQ FLOW (cfs): 0.34

Rainfall Intensity <sup>1</sup> (in/hr)	Percent Rainfall Volume <sup>1</sup>	Cumulative Rainfall Volume	Total Flowrate (cfs)	Removal Efficiency (%)	Incremental Removal (%)
0.02	13.69%	13.7%	0.01	100.0	13.7
0.04	11.11%	24.8%	0.01	100.0	11.1
0.06	9.07%	33.9%	0.02	100.0	9.1
0.08	7.72%	41.6%	0.03	100.0	7.7
0.10	6.86%	48.4%	0.03	100.0	6.9
0.12	4.41%	52.9%	0.04	100.0	4.4
0.14	4.33%	57.2%	0.05	100.0	4.3
0.16	3.51%	60.7%	0.05	100.0	3.5
0.18	2.58%	63.3%	0.06	100.0	2.6
0.20	4.08%	67.4%	0.07	100.0	4.1
0.25	5.63%	73.0%	0.08	100.0	5.6
0.30	4.12%	77.1%	0.10	100.0	4.1
0.35	2.52%	79.6%	0.12	100.0	2.5
0.40	2.45%	82.1%	0.13	100.0	2.5
0.45	2.09%	84.2%	0.15	100.0	2.1
0.50	1.90%	86.1%	0.17	100.0	1.9
0.75	7.24%	93.3%	0.25	100.0	7.2
1.00	3.10%	96.4%	0.33	100.0	3.1
1.02	0.00%	96.4%	0.34	100.0	0.0
1.50	3.10%	99.5%	0.50	95.2	2.9
2.00	0.49%	100.0%	0.67	89.6	0.4
					99.8

Removal Efficiency Adjustment<sup>2</sup> = 6.5%  
Predicted % Annual Rainfall Treated = 93.5%  
Predicted Net Annual Load Removal Efficiency = 93.3%

1 - Based on 10 years of hourly precipitation data from NCDC 2846, Flint WSCMO, Genesee County MI  
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30 minutes.

### Estimated Net Annual Solids Load Reduction Based on the Rational Rainfall Method

**RBF Storage**  
Atlas Twp., MI  
CB11

AREA (acres): 0.48  
WEIGHTED C: 0.95  
Tc (minutes): 15.00

**CASCADE separator™**

CASCADE MODEL: CS-4  
PARTICLE SIZE (µm): #10  
RAINFALL STATION: 79  
WQ FLOW (cfs): 0.47

Rainfall Intensity <sup>1</sup> (in/hr)	Percent Rainfall Volume <sup>1</sup>	Cumulative Rainfall Volume	Total Flowrate (cfs)	Removal Efficiency (%)	Incremental Removal (%)
0.02	13.69%	13.7%	0.01	100.0	13.7
0.04	11.11%	24.8%	0.02	100.0	11.1
0.06	9.07%	33.9%	0.03	100.0	9.1
0.08	7.72%	41.6%	0.04	100.0	7.7
0.10	6.86%	48.4%	0.05	100.0	6.9
0.12	4.41%	52.9%	0.05	100.0	4.4
0.14	4.33%	57.2%	0.06	100.0	4.3
0.16	3.51%	60.7%	0.07	100.0	3.5
0.18	2.58%	63.3%	0.08	100.0	2.6
0.20	4.08%	67.4%	0.09	100.0	4.1
0.25	5.63%	73.0%	0.11	100.0	5.6
0.30	4.12%	77.1%	0.14	100.0	4.1
0.35	2.52%	79.6%	0.16	100.0	2.5
0.40	2.45%	82.1%	0.18	100.0	2.5
0.45	2.09%	84.2%	0.21	100.0	2.1
0.50	1.90%	86.1%	0.23	100.0	1.9
0.75	7.24%	93.3%	0.34	100.0	7.2
1.00	3.10%	96.4%	0.46	96.6	3.0
1.03	0.00%	96.4%	0.47	96.1	0.0
1.50	3.10%	99.5%	0.68	88.9	2.8
2.00	0.49%	100.0%	0.91	81.3	0.4
					99.5

Removal Efficiency Adjustment<sup>2</sup> = 6.5%  
Predicted % Annual Rainfall Treated = 93.5%  
Predicted Net Annual Load Removal Efficiency = 93.0%

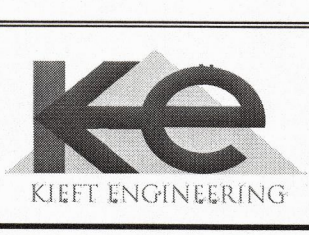
1 - Based on 10 years of hourly precipitation data from NCDC 2846, Flint WSCMO, Genesee County MI  
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30 minutes.



DATE	ISSUE
06/28/23	SITE PLAN REVIEW

**PROPRIETOR:**  
RBF HOLDINGS - BRETT JORY  
4140 MORRISH ROAD  
SWARTZ CREEK, MI 48473  
(810) 516-4405

THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE USED, REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.



**KIEFT ENGINEERING, INC.**  
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS  
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346  
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE: 05/23/23	CKD. BY: DATE
DRAWN: CL	CL 06/27/23
DESIGN: CL	
SECTION: 10	T-6-N-R-8-E

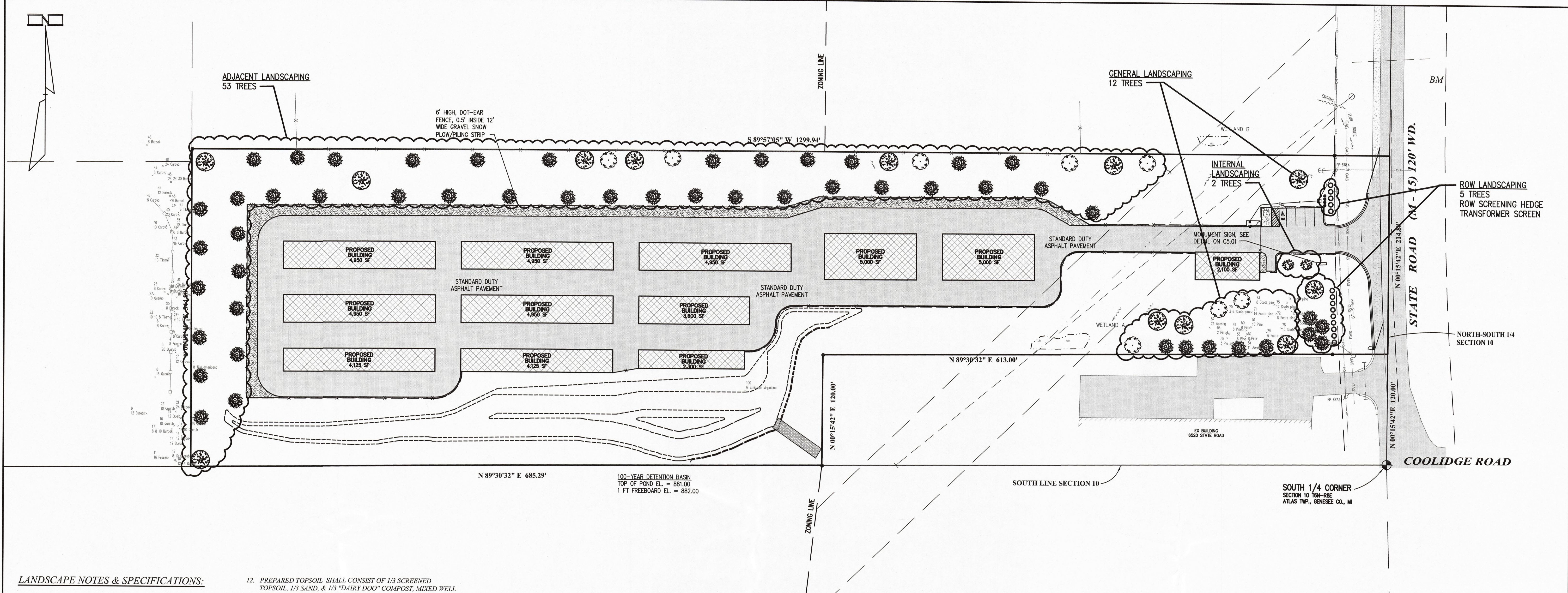


**DETAILS - STORMWATER TREATMENT & CALCULATIONS**  
RBF STORAGE  
ATLAS TOWNSHIP, GENESSEE COUNTY, MICHIGAN

SCALE: AS SHOWN
SHEET NO: C5.32
KE 2022.284

RBF STORAGE





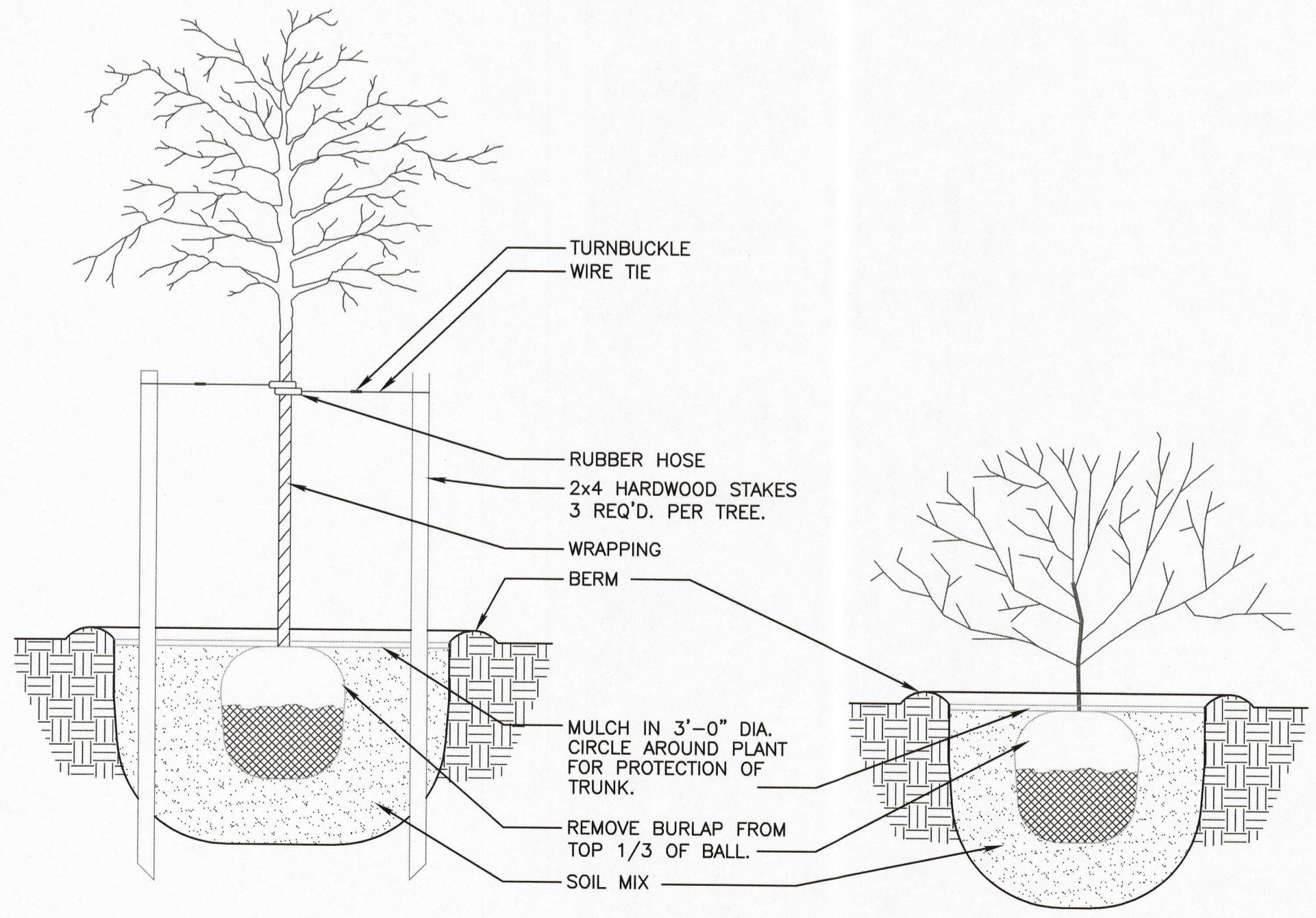
**LANDSCAPE NOTES & SPECIFICATIONS:**

- THE CONTRACTOR SHALL VISIT SITE, INSPECT EXISTING CONDITIONS & REVIEW PROPOSED PLANTING AND RELATED WORK. IN CASE OF DISCREPANCY BETWEEN PLAN & PLANT LIST, THE PLAN SHALL GOVERN QUANTITIES. CONTACT THE ENGINEER W/ ANY CONCERNS.
- THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL ON-SITE UTILITIES PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- THE CONTRACTOR SHALL COORDINATE ALL RELATED ACTIVITIES WITH OTHER TRADES, & SHALL REPORT ANY UNACCEPTABLE SITE CONDITIONS TO THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT.
- PLANTS SHALL BE FULL, WELL-BRANCHED, & IN HEALTHY VIGOROUS GROWING CONDITION.
- PLANTS SHALL BE WATERED BEFORE & AFTER PLANTING IS COMPLETE.
- ALL TREES MUST BE STAKED, FERTILIZED & MULCHED & SHALL BE GUARANTEED TO EXHIBIT A NORMAL GROWTH CYCLE FOR AT LEAST ONE (1) YEAR FOLLOWING PLANTING.
- ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED IN THE MOST RECENT EDITION OF THE "AMERICAN STANDARDS FOR NURSERY STOCK".
- CONTRACTOR WILL SUPPLY FINISHED GRADE & EXCAVATE AS NECESSARY TO SUPPLY PLANT MIX DEPTH IN ALL PLANTING BEDS AS INDICATED IN PLANT DETAILS & A DEPTH OF 4" IN ALL LAWN AREAS.
- PROVIDE CLEAN BACKFILL SOIL, USING MATERIAL STOCKPILED ON-SITE. SOIL SHALL BE SCREENED & FREE OF DEBRIS, FOREIGN MATERIAL, & STONE.
- SLOW-RELEASE FERTILIZER SHALL BE ADDED TO THE PLANT PITS BEFORE BEING BACKFILLED. APPLICATION SHALL BE AT THE MANUFACTURERS RECOMMENDED RATES.
- PROVIDE 4 INCHES OF PREPARED TOPSOIL (REUSE EXISTING WHEN POSSIBLE), SEED, FERTILIZE, & STRAW MULCH W/ NETTING AT DISTURBED LAWN AREAS, EXCEPT AS NOTED OTHERWISE. SECURE MULCH NETTING BY USING AN APPROPRIATE PINNING PATTERN PER MANUFACTURER'S SPECIFICATIONS. PROVIDE IRRIGATION & MAINTENANCE (MOWING, TRIMMING, ETC.) UNTIL 80% OF LAWN IS ESTABLISHED AS DETERMINED BY THE ENGINEER OR OWNER. SEE LANDSCAPING PLANS & SPECIFICATIONS IF AVAILABLE.
- PREPARED TOPSOIL SHALL CONSIST OF 1/3 SCREENED TOPSOIL, 1/3 SAND, & 1/3 "DAIRY DOO" COMPOST, MIXED WELL & SPREAD TO A DEPTH AS INDICATED IN PLANTING DETAILS.
- LAWN SHALL BE INSTALLED BY HYDROSEED.
- LAWN SEED MIXTURE SHALL BE COMPRISED OF THE FOLLOWING VARIETIES, MIXED TO THE SPECIFIED PROPORTIONS BY WEIGHT AND TESTED TO MINIMUM PERCENTAGES OF PURITY AND GERMINATION.

**DROUGHT RESISTANT SEED MIXTURE**

SEED TYPE	PROPORTION	PURITY
PENN LAWN FESCUE	60%	90%
KENTUCKY 28# COMMON BLUEGRASS	20%	90%
PENNFINE PERENNIAL RYE	20%	90%

- ALL PLANTINGS SHALL BE MULCHED WITH HARDWOOD BARK, SPREAD TO A DEPTH OF 3" FOR TREES & SHRUBS, & 2" OF ANNUALS, PERENNIALS, & GROUND COVER PLANTINGS. MULCH SHALL BE FREE FROM DEBRIS & FOREIGN MATERIAL, & PIECES OF INCONSISTENT SIZE.
- NO SUBSTITUTIONS OR CHANGES OF LOCATION, OR PLANT TYPE SHALL BE MADE WITHOUT THE APPROVAL OF THE ENGINEER OR OWNER'S REPRESENTATIVE.
- THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN THE PLANS & FIELD CONDITIONS PRIOR TO INSTALLATION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL PLANT MATERIAL IN A VERTICAL CONDITION THROUGHOUT THE GUARANTEED PERIOD.
- GREAT CARE SHALL BE TAKEN BY CONTRACTORS TO AVOID DAMAGE TO VEGETATION OUTSIDE THE LIMITS OF CONSTRUCTION & TO KEEP THE CONSTRUCTION AREAS TO A MINIMUM. DRIVING SHALL NOT BE PERMITTED OUTSIDE THE LIMITS OF CONSTRUCTION.
- ALL REQUIRED LANDSCAPING SHALL BE MAINTAINED ON A SEASONAL BASIS. THE OWNER SHALL REPLACE ALL DISEASED, DEAD, OR DAMAGED PLANTS. REPLENISH MULCH, CONTROL WEEDS, FERTILIZE, AND PRUNE BEGINNING UPON THE CONSTRUCTION OR PLANTING OF LANDSCAPING.



**TREE PLANTING**  
N.T.S.

**SINGLE SHRUB PLANTING**  
N.T.S.

**SITE INFORMATION:**  
LOT GROSS AREA: 8.45 ACRES

**ZONING INFORMATION:**  
ZONING DISTRICT: C-2 COMMERCIAL GENERAL  
PROPOSED SPECIAL USE: STORAGE UNITS  
(6) TOTAL SPACES PROVIDED

SEE SHEETS L4.01 & L4.02 FOR ENLARGED LANDSCAPE PLAN SHOWING PLANT VARIETY LABELS.

CALL	QUANTITY	COMMON NAME	SPECIES	INSTALL SIZE	SYMBOL
TO	4 EA	EMERALD GREEN ARBORVITAE	THUJA OCCIDENTALIS 'EMERALD GREEN'	5' HT.	●
EA	14 EA	BURNING BUSH	EUONYMUS ALATUS	30" HT. B&B	●
SP	2 EA	MISS KIM LILAC TREE	SYRINGA PATULA 'MISS KIM'	1.5" CAL. @ 6' B&B	●
AR	8 EA	RED MAPLE	ACER RUBRUM	3" CAL. DBH B&B	●
QA	12 EA	WHITE OAK	QUERCUS ALBA	3" CAL. DBH B&B	●
AC	50 EA	WHITE FIR	ABIES CONCOLOR	5' HT. B&B	●

**LANDSCAPE SCHEDULE**

NOTE: SEE SHEET C0.01 FOR LEGEND OF CIVIL SYMBOLS.

**LANDSCAPING ZONING NOTES:**

**GENERAL LANDSCAPING**  
OPEN SPACE AREA PLANTED AT A RATE OF 1 TREE PER 3,000 SF  
175,278 SF LAWN (FROM STORM CALCULATIONS)  
175,278 SF  
- 25,134 SF (DRAIN ESMT.)  
- 6,920 (ROW LANDSCAPING)  
- 76,353 SF (ADJACENT LANDSCAPING ALONG N & W LAWN)  
66,871 SF / (3,000 SF/TREE) = 22.3 → 24 TREES PROVIDED  
12 TREES PROVIDED AS ADJACENT LANDSCAPING  
12 TREES PROVIDED NEAR FRONT OF SITE

**ROW LANDSCAPING**  
5 FT WIDE FRONT YARD REQUIRED & PROVIDED  
BURNING BUSH HEDGE PLANTING SCREEN PROVIDED  
1 TREE PER 50 LF OF FRONTAGE REQUIRED  
214.88 FT FRONTAGE / (1 TREE/50 FT FRONTAGE) = 5 TREES PROVIDED

**ADJACENT LANDSCAPING**  
6 FT HIGH OPAQUE FENCE REQUIRED - DOG-EAR FENCE PROVIDED  
1 TREE PER 75 FEET OF LOT LINE REQUIRED  
1,300 FT  
345 FT  
685 FT  
120 FT  
+ 615 FT  
3,063 LF LOT LINE / (1 TREE/75 FT LOT LINE) = 41 TREES REQUIRED

53 TREES PROVIDED - THE ADDITIONAL 12 TREES ARE BEING COUNTED AS GENERAL LANDSCAPING.

**INTERNAL LANDSCAPING**  
5% OF PARKING AREA REQUIRED  
1 TREE REQUIRED PER 100 SF OF INTERIOR LANDSCAPING  
3,671 SF PARKING AREA (5%) = 184 SF REQUIRED  
184 SF / (1 TREE/100 SF) = 1.8 → 2 LILAC TREES PROVIDED

NEW LAWN SHALL BE PROVIDED AT ALL DISTURBED AREAS



DATE	ISSUE
05/24/23	FINAL REVIEW - OWNER
06/28/23	SITE PLAN REVIEW
01/30/24	SITE PLAN REVIEW REV. 1 & PERMITS

**PROPRIETOR:**  
RBF HOLDINGS - BRETT JORY  
4140 MORRISH ROAD  
SMARTZ CREEK, MI 48473  
(810) 516-4405



**KIEFT ENGINEERING, INC.**  
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS  
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346  
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

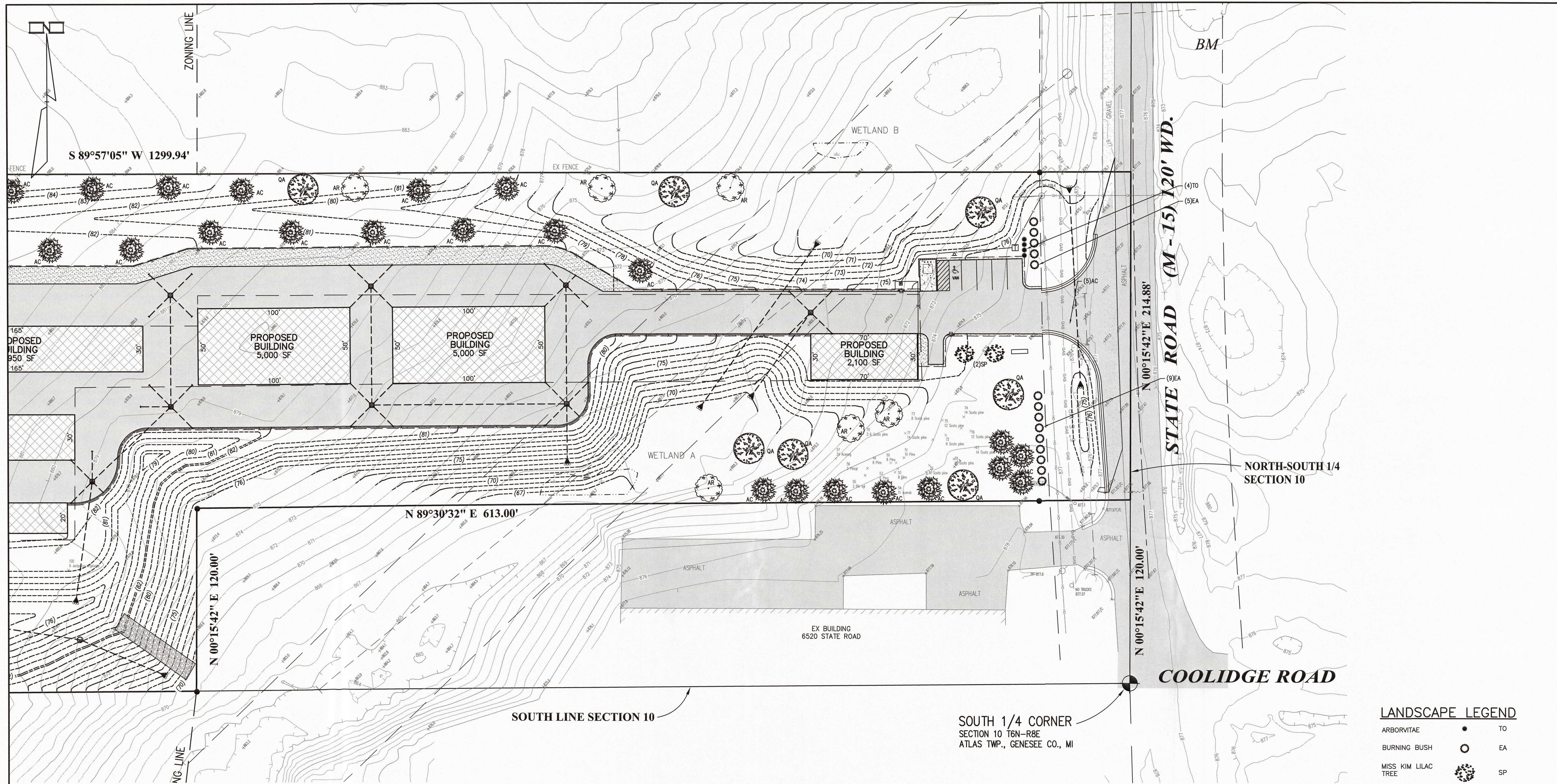
DATE	CHK. BY	DATE
05/24/23	CL	06/27/23

DESIGN: CL  
SECTION: 10 T-6-N-R-8-E

**OVERALL LANDSCAPE PLAN & DETAILS**  
RBF STORAGE  
ATLAS TOWNSHIP, GENESEE COUNTY, MICHIGAN

SCALE: 1" = 50'  
SHEET NO: L1.01  
KE 2022.284

REF STORAGE



**LANDSCAPE LEGEND**

- ARBORVITAE TO
- BURNING BUSH EA
- MISS KIM LILAC TREE SP
- RED MAPLE AR
- WHITE OAK QA
- WHITE FIR AC

NOTE: SEE SHEET C-2 FOR LEGEND OF CIVIL SYMBOLS.

- NOTES:**
- SEE SHEET C0.01 FOR GENERAL NOTES & LEGENDS.
  - SEE SHEET L1.01 FOR LANDSCAPE SCHEDULE, SPECIFICATIONS, & PLANTING DETAILS.
  - INSTALL NEW LAWN AT ALL DISTURBED AREAS.



DATE	ISSUE
05/24/23	FINAL REVIEW - OWNER
06/28/23	SITE PLAN REVIEW
07/30/24	SITE PLAN REVIEW REV. 1 & PERMITS

**PROPRIETOR:**  
 RBF HOLDINGS - BRETT JORY  
 4140 MORRISH ROAD  
 SWARTZ CREEK, MI 48473  
 (810) 516-4405

THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE USED, REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.



**KIEFT ENGINEERING, INC.**  
 PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS  
 5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346  
 PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-5110

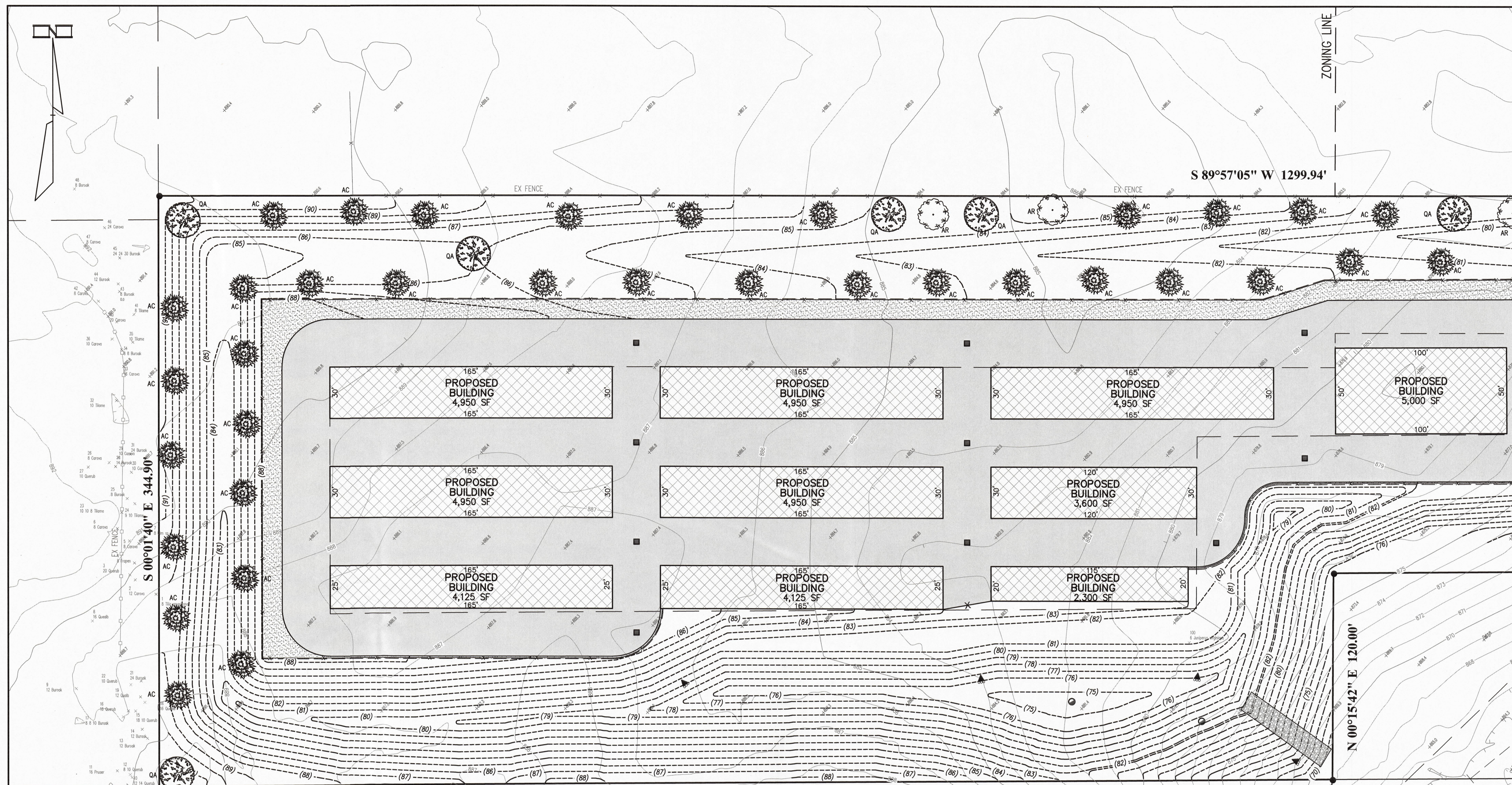
DATE: 06/24/23	CKD. BY: CL	DATE: 06/27/23
DRAWN: CL	CL	
DESIGN: CL		
SECTION: 10	T-6-N-R-8-E	



**ENLARGED LANDSCAPE PLAN - EAST**  
 RBF STORAGE  
 ATLAS TOWNSHIP, GENESEE COUNTY, MICHIGAN

SCALE: 1" = 30'
SHEET NO: L4.01
KE 2022.284

RBF STORAGE



**LANDSCAPE LEGEND**

- ARBORVITAE ● TO
- BURNING BUSH ○ EA
- MISS KIM LILAC TREE ● SP
- RED MAPLE ○ AR
- WHITE OAK ● QA
- WHITE FIR ● AC

NOTE: SEE SHEET C-2 FOR LEGEND OF CIVIL SYMBOLS.

**NOTES:**  
 1. SEE SHEET C0.01 FOR GENERAL NOTES & LEGENDS.  
 2. SEE SHEET L1.01 FOR LANDSCAPE SCHEDULE, SPECIFICATIONS, & PLANTING DETAILS.  
 3. INSTALL NEW LAWN AT ALL DISTURBED AREAS.



DATE	ISSUE
05/25/23	FINAL REVIEW - OWNER
06/28/23	SITE PLAN REVIEW
07/30/23	SITE PLAN REVIEW REV. 1 & PERMITS

**PROPRIETOR:**  
 RBF HOLDINGS - BRETT JORY  
 4140 MORRISH ROAD  
 SWARTZ CREEK, MI 48473  
 (810) 516-4405

THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE USED, REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.



**KIEFT ENGINEERING, INC.**  
 PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS  
 5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346  
 PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

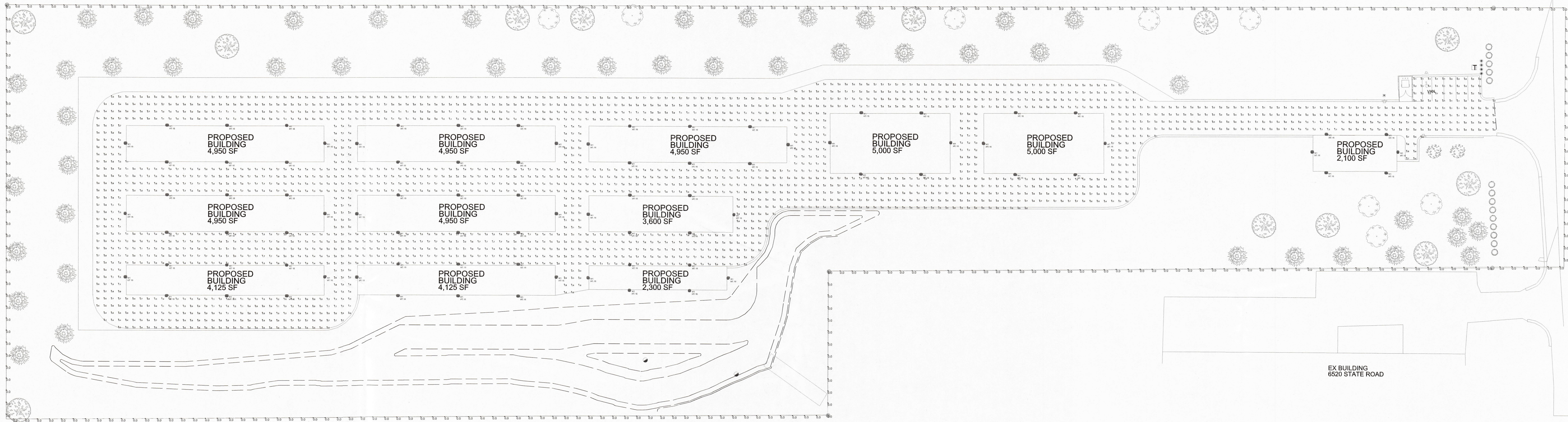
DATE: 05/24/23	CHK. BY: CL	DATE: 06/27/23
DRAWN: CL	DESIGN: CL	SECTION: 10



**ENLARGED LANDSCAPE PLAN - WEST**  
 RBF STORAGE  
 ATLAS TOWNSHIP, GENESEE COUNTY, MICHIGAN

SCALE: 1" = 30'
SHEET NO: L4.02
KE 2022.284

RBF STORAGE



Schedule								
Label	Symbol	Qty	Manufacturer	Catalog Number	Light Loss Factor	Lumens Per Lamp	Watts	Controls
W1		86	LITHONIA W1	WDGE2 LED P2 40K 70CRI T4M	0.900	2277	18,9815	

Statistics					
Description	Avg fc	Max fc	Min fc	Avg/Min (-1)	Max/Min (-1)
GROUND	1.05	2.2	0.0	N.A.	N.A.
PROPERTY LINE	0.00	0.0	0.0	N.A.	N.A.

PLAN VIEW: NOT TO SCALE

GENERAL NOTE  
 1. SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.  
 2. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 0' - 0", FOOD SERVICE AREA AT: 2' - 6", TREES SHOWN AT BOTTOM OF LEAVES  
 3. ALTERNATE LIGHTING FIXTURES WILL NOT MEET CITY ORDINANCE COMPLIANCE DUE TO THE PRECISE OPTICAL AND OUTPUT PERFORMANCE SELECTED FOR THESE FIXTURES. ALTERNATE LIGHTING PROPOSALS MUST BE RECALCULATED AND RESUBMITTED TO THE CITY FOR APPROVAL. CONTACT LAYOUTS@GASSERBUSH.COM FOR ASSISTANCE WITH ALTERNATE OPTIONS IF NEEDED."

- THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS.  
 THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.  
 - THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY.  
 - THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.  
 - UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIREMENTS DEFINED IN ASHRAE 90.1 2013. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT ASG@GASSERBUSH.COM OR 734-266-6705.  
 - FOR ORDERING INQUIRIES CONTACT GASSER BUSH AT QUOTES@GASSERBUSH.COM OR 734-266-6705.  
 - THIS DRAWING WAS GENERATED FROM AN ELECTRONIC IMAGE FOR ESTIMATION PURPOSE ONLY. LAYOUT TO BE VERIFIED IN FIELD BY OTHERS.  
 - MOUNTING HEIGHT IS MEASURED FROM GRADE TO FACE OF FIXTURE. POLE HEIGHT SHOULD BE CALCULATED AS THE MOUNTING HEIGHT LESS BASE HEIGHT.

RBF Storage - Site Lighting\_V1 #23-16036.AGI

Gasser Bush Associates / Applications

www.gasserbush.com

Designer: JC3

Date: 5/31/2023

Scale: NOT TO SCALE

