

# Attachment B

## CONSTRUCTION DOCUMENTS FOR REVIEW 2020 KARTH LAKE RUNOFF CONTROL RAMSEY COUNTY, MINNESOTA ULTEIG PROJECT NUMBER: 20.00419

REVISION NO.	SHEET NO.
----	001

**BENCHMARK INFORMATION:**

BM #	NORTHING	EASTING	ELEV	DESCRIPTION
11	202420.555	500632.271	909.889	REBAR WITH CAP
13	202435.259	500622.127	974.187	REBAR WITH CAP



LOCATION MAP



MINNESOTA STATE LOCATION MAP

Minnesota DOT: Ramsey County, US Foot, NAD83

DRAWING INDEX	
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004	DETAILS
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008	EROSION CONTROL PLAN

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: ROGER A. CLAY  
 Signed: Roger Clay  
Professional Engineer  
No. 123456789  
Exp. 12/31/2024

Date: 12-29-2020 License Number: 03452

**NOTES:**

- RIGHT OF WAY, PARCEL LINES AND MONUMENTS REPRESENTED ON THIS PLAN ARE FOR INFORMATIONAL PURPOSES ONLY. THIS PLAN DOES NOT CONSTITUTE A LAND SURVEY AND DOES NOT INVOLVE THE ESTABLISHMENT OR RE-ESTABLISHMENT OF PROPERTY CORNERS OR PROPERTY LINES IN ACCORDANCE WITH MN STATUTE 326.02. NO WARRANTY OF ANY TYPE IS EXPRESSED OR IMPLIED REGARDING THIS INFORMATION.
- VISIBLE ABOVE GROUND UTILITIES HAVE BEEN FIELD LOCATED AS SHOWN. UNDERGROUND UTILITIES SHOWN HEREON ARE REPRESENTED BASED UPON INFORMATION PROVIDED BY GOPHER STATE ONE CALL THROUGH FIELD MARKING, OR MAPPING PROVIDED. THE UNDERGROUND UTILITIES HAVE NOT BEEN PHYSICALLY LOCATED AS A PART OF THIS SURVEY. PRIOR TO EXCAVATION OR DIGGING, CONTACT GOPHER STATE ONE CALL AT 811 OR 800-252-1168.

**PUBLIC UTILITIES CONTACTS**

UTILITY	CONTACT	PHONE	EMAIL



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COVER

KARTH LAKE STABILIZATION PROJECT  
 ARDEN HILLS, MN

DRAWN BY: J. JOHNSON  
 CHECKED BY: R. CLAY  
 APPROVED BY: R. CLAY

DATE: DEC 29, 2020 UJF PROJ. NO: 20.00419

**GENERAL CONSTRUCTION NOTES**

1. THE 2018 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION (MNDOT) "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.
2. THE CONTRACTOR SHALL OBTAIN AND MAINTAIN A COPY OF ALL REQUIRED LOCAL, STATE, AND FEDERAL JURISDICTIONAL PERMITS REQUIRED FOR NEW CONSTRUCTION TO COMPLETE WITH ALL CONDITIONS, ATTACHMENTS, EXHIBITS AND PERMIT MODIFICATIONS IN GOOD CONDITION AT THE CONSTRUCTION SITE. THE COMPLETED PERMITS MUST BE AVAILABLE FOR REVIEW UPON REQUEST BY WATERSHED DISTRICT AND/OR JURISDICTIONAL REPRESENTATIVES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL MATERIAL AND LABOR TO CONSTRUCT THE FACILITY AS SHOWN AND DESCRIBED IN THE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH THE APPROPRIATE APPROVING AUTHORITIES, SPECIFICATIONS AND REQUIREMENTS. CONTRACTOR SHALL CLEAR AND GRUB ALL AREAS UNLESS OTHERWISE INDICATED, REMOVING TREES, STUMPS, ROOTS, MUCK, EXISTING PAVEMENT AND ALL OTHER DELETERIOUS MATERIAL.
4. EXISTING UTILITIES SHOWN ARE LOCATED ACCORDING TO THE INFORMATION AVAILABLE TO THE ENGINEER AT THE TIME OF THE TOPOGRAPHIC SURVEY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR THE ENGINEER. GUARANTEE IS NOT MADE THAT ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN OR THAT THE LOCATION OF THOSE SHOWN ARE ENTIRELY ACCURATE. FINDING THE LOCATION OF ANY EXISTING UTILITIES IS THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE DONE BEFORE COMMENCING ANY WORK IN THE VICINITY. FURTHERMORE, THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES DUE TO THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE OWNER OR ENGINEER WILL ASSUME NO LIABILITY FOR ANY DAMAGES SUSTAINED OR COST INCURRED BECAUSE OF THE OPERATIONS IN THE VICINITY OF EXISTING UTILITIES OR STRUCTURES, NOR FOR TEMPORARY BRACING AND SHORING OF SAME. IF IT IS NECESSARY TO SHORE, BRACE, SWING OR RELOCATE A UTILITY, THE UTILITY COMPANY OR DEPARTMENT AFFECTED SHALL BE CONTACTED AND THEIR PERMISSION OBTAINED REGARDING THE METHOD TO USE FOR SUCH WORK.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES WHICH MAY HAVE BURIED OR OVERHEAD UTILITIES WITHIN OR NEAR THE CONSTRUCTION AREA BEFORE COMMENCING WORK. THE CONTRACTOR SHALL PROVIDE 48 HOURS MINIMUM NOTICE TO ALL UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION. MINNESOTA STATE STATUTE REQUIRES THE CONTRACTOR TO CONTACT GOPHER STATE ONE CALL AT 811 PRIOR TO ANY UNDERGROUND EXCAVATION.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED CONSTRUCTION PERMITS AND BONDS IF REQUIRED PRIOR TO CONSTRUCTION.
7. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES ONE COPY OF THE CONSTRUCTION DOCUMENTS INCLUDING PLANS AND GEOTECHNICAL REPORT AND COPIES OF ANY REQUIRED CONSTRUCTION PERMITS.
8. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE OWNER AND NOTIFICATION TO THE ENGINEER.
9. ALL COPIES OF REQUIRED TEST RESULTS ARE TO BE SENT TO THE OWNER DIRECTLY FROM THE TESTING AGENCY.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DOCUMENTING AND MAINTAINING AS-BUILT INFORMATION WHICH SHALL BE RECORDED AS CONSTRUCTION PROGRESSES OR AT THE COMPLETION OF APPROPRIATE CONSTRUCTION INTERVALS AND SHALL BE RESPONSIBLE FOR PROVIDING AS-BUILT DRAWINGS TO THE OWNER FOR THE PURPOSE OF CERTIFICATION TO JURISDICTIONAL AGENCIES AS REQUIRED.
11. ANY WELLS DISCOVERED ON SITE DURING EARTH MOVING OR EXCAVATION SHALL BE REPORTED TO THE APPROPRIATE JURISDICTIONAL AGENCY AND OWNER AND ENGINEER WITHIN 24 HOURS OF DISCOVERY.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITE WORK THAT WOULD BE AFFECTED. FAILURE TO NOTIFY OWNER OF AN IDENTIFIABLE CONFLICT PRIOR TO PROCEEDING WITH INSTALLATION RELIEVES OWNER OF ANY OBLIGATION TO PAY FOR A RELATED CHANGE ORDER.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASPECTS OF SAFETY INCLUDING, BUT NOT LIMITED TO, EXCAVATION, TRENCHING, SHORING, TRAFFIC CONTROL, AND SECURITY.

**DEMOLITION NOTES**

1. ALL MATERIAL REMOVED FROM THIS SITE BY THE CONTRACTOR SHALL BE DISPOSED OF BY THE CONTRACTOR IN A LEGAL MANNER.
2. REFER TO THE EXISTING CONDITIONS AND REMOVAL PLAN FOR DETAILS OF EXISTING STRUCTURES, ETC. LOCATED WITHIN THE PROJECT SITE. UNLESS OTHERWISE NOTED, ALL EXISTING STRUCTURES, SLABS, CONCRETE, ASPHALT, DEBRIS PILES, SIGNS AND ALL APPURTENANCES ENCOUNTERED ARE TO BE REMOVED FROM THE SITE BY THE CONTRACTOR AND PROPERLY DISPOSED OF IN A LEGAL MANNER AS PART OF THIS CONTRACT. SOME ITEMS TO BE REMOVED MAY NOT BE DEPICTED ON THE REMOVAL PLAN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VISIT THE SITE AND DETERMINE THE FULL EXTENT OF ITEMS TO BE REMOVED. IF ANY ITEMS ARE IN QUESTION, THE CONTRACTOR SHALL CONTACT THE OWNER PRIOR TO REMOVAL OF SAID ITEMS.

**PAVING, GRADING AND DRAINAGE NOTES**

1. ALL VEGETATION AND ORGANIC MATERIALS (TOPSOIL) SHALL BE STRIPPED FROM THE AREAS TO BE GRADED. IF THIS MATERIAL IS TO BE STOCKPILED ON THE SITE, TOPSOIL MAY BE PLACED TO A HEIGHT OF FIVE FEET. SILT FENCE SHALL BE PLACED AROUND THE BASE OF THE STOCKPILE AND THE STOCKPILE SHALL BE SEEDED WITH NATIVE MIX IMMEDIATELY AFTER STRIPPING OPERATIONS ARE COMPLETE.
2. TOPSOIL WITHIN GRADED AREAS SHALL BE COMPLETELY REMOVED AND STOCKPILED ON SITE FOR RESPREADING. ALL UNSURFACED AREAS DISTURBED BY GRADING OPERATION SHALL RECEIVE 6 INCHES MINIMUM OF TOPSOIL. CONTRACTOR SHALL APPLY STABILIZATION FABRIC TO ALL SLOPES 3H:1V OR STEEPER. IF MORE TOPSOIL IS REQUIRED, THE CONTRACTOR SHALL IMPROVE IT. ALL COSTS TO BE INCLUDED IN TURF ESTABLISHMENT.
3. THE CONTRACTOR SHALL GRADE THE SITE TO THE ELEVATIONS INDICATED AND SHALL REGRADE WASHOUTS WHERE THEY OCCUR AFTER EVERY RAINFALL UNTIL A GRASS STAND IS WELL ESTABLISHED OR ADEQUATE STABILIZATION OCCURS. CONTOURS SHOWN ARE FOR FINISHED TOPSOIL. ADJUSTMENTS TO SUBGRADE IS THE CONTRACTOR'S RESPONSIBILITY.
4. THE CONTRACTOR SHALL INSTALL PROTECTION OVER ALL DRAINAGE STRUCTURES FOR THE DURATION OF CONSTRUCTION AND UNTIL ACCEPTANCE OF THE PROJECT BY THE OWNER. ALL DRAINAGE STRUCTURES SHALL BE CLEANED OF DEBRIS AS REQUIRED DURING AND AT THE END OF CONSTRUCTION TO PROVIDE POSITIVE DRAINAGE FLOW.
5. IF DEWATERING IS REQUIRED, THE CONTRACTOR SHALL OBTAIN ANY APPLICABLE REQUIRED PERMITS. THE CONTRACTOR IS TO COORDINATE WITH THE OWNER AND THE DESIGN ENGINEER PRIOR TO ANY EXCAVATION.
6. FIELD DENSITY TESTS SHALL BE TAKEN AT INTERVALS IN ACCORDANCE WITH THE LOCAL JURISDICTIONAL AGENCY OR TO MNDOT STANDARDS. IN THE EVENT THAT THE CONTRACT DOCUMENTS AND THE JURISDICTIONAL AGENCY REQUIREMENTS ARE NOT IN AGREEMENT, THE MOST STRINGENT SHALL GOVERN.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF DUST AND DIRT RISING AND SCATTERING IN THE AIR DURING CONSTRUCTION AND SHALL PROVIDE WATER SPRINKLING OR OTHER SUITABLE METHODS OF CONTROL. THE CONTRACTOR SHALL COMPLY WITH ALL GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION.
8. THE CONTRACTOR SHALL ENSURE THAT PLANTING AREAS ARE NOT COMPACTED AND DO NOT CONTAIN ROAD BASE MATERIALS. THE CONTRACTOR SHALL ALSO EXCAVATE AND REMOVE ALL UNDESIRABLE MATERIAL FROM ALL AREAS ON THE SITE TO BE PLANTED AND PROPERLY DISPOSED OF IN A LEGAL MANNER.
9. UNLESS OTHERWISE SHOWN, NO PROPOSED SLOPE SHALL EXCEED FOUR (4) HORIZONTAL TO ONE (1) VERTICAL. ALL SLOPED AREAS MUST BE PROTECTED FROM EROSION.
10. PRIOR TO PLACEMENT OF FILL MATERIAL, SCARIFY AND RECOMPACT 6" OF EXISTING MATERIAL.
11. SPOT ELEVATIONS SHALL TAKE PRECEDENCE OVER CONTOURS AND SLOPES SHOWN. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF SPOT ELEVATIONS THAT DO NOT APPEAR TO BE CONSISTENT WITH THE CONTOURS AND SLOPES.
12. THE CONTRACTOR SHALL ADHERE TO ALL TERMS & CONDITIONS AS OUTLINED IN THE GENERAL PERMIT FOR STORM WATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
13. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL UTILITIES AND NOTIFYING THE APPROPRIATE UTILITY COMPANY PRIOR TO BEGINNING CONSTRUCTION.

**FINISHED GRADING AND TURF ESTABLISHMENT NOTES**

1. ALL UNPAVED AREAS AND AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED AS PER PLANS. THE AREAS SHALL THEN BE SODDED OR SEEDED AS SPECIFIED IN THE PLANS, FERTILIZED, MULCHED, WATERED AND MAINTAINED UNTIL HARDY GRASS GROWTH IS ESTABLISHED IN ALL AREAS. ANY AREAS DISTURBED FOR ANY REASON PRIOR TO FINAL ACCEPTANCE OF THE JOB SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. ALL EARTHEN AREAS WILL BE SODDED OR SEEDED AND MULCHED AS SHOWN ON THE EROSION CONTROL PLAN.
2. SPOT ELEVATIONS SHALL TAKE PRECEDENCE OVER CONTOURS AND SLOPES SHOWN. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF SPOT ELEVATIONS THAT DO NOT APPEAR TO BE CONSISTENT WITH THE CONTOURS AND SLOPES. SPOT ELEVATIONS AND SPECIFIC PROFILE DESIGNS SHALL BE USED FOR SETTING ELEVATIONS OF CURB, GUTTER, AND UTILITIES.
3. TOPSOIL SHALL BE PLACED TO A MINIMUM DEPTH OF 6 INCHES IN AREAS BEING RESTORED.

**UTILITY NOTES**

1. UTILITY MATERIALS AND INSTALLATIONS SHALL COMPLY WITH ALL MINNESOTA STATE DOLI STANDARDS AND MEET THE STATE PLUMBING CODE.
2. CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER 72 HOURS PRIOR TO CONNECTING TO ANY EXISTING UTILITY.
3. THE CONTRACTOR SHALL CONSTRUCT CONCRETE INLET STRUCTURE, STORM SEWER, SWALES, RIP RAP, AND EROSION CONTROLS AS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL FURNISH ALL NECESSARY MATERIALS, EQUIPMENT, MACHINERY, TOOLS, MEANS OF TRANSPORTATION AND LABOR NECESSARY TO COMPLETE THE WORK IN FULL.
4. ALL EXISTING UNDERGROUND UTILITY LOCATIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS FOR UTILITY LOCATION AND COORDINATION IN ACCORDANCE WITH THE NOTES CONTAINED IN THE GENERAL CONSTRUCTION SECTION OF THIS SHEET.
5. THE CONTRACTOR SHALL RESTORE ALL DISTURBED VEGETATION.
6. DEFLECTION OF PIPE JOINTS AND CURVATURE OF PIPE SHALL NOT EXCEED THE MANUFACTURER'S SPECIFICATIONS. SECURELY CLOSE ALL OPEN ENDS OF PIPE AND FITTINGS WITH A WATERTIGHT PLUG WHEN WORK IS NOT IN PROGRESS. THE INTERIOR OF ALL PIPES SHALL BE CLEAN AND JOINT SURFACES WIPED CLEAN AND DRY AFTER THE PIPE HAS BEEN LOWERED INTO THE TRENCH. VALVES SHALL BE PLUMB AND LOCATED ACCORDING TO THE PLANS.
7. ALL PIPE AND FITTINGS SHALL BE CAREFULLY STORED FOLLOWING MANUFACTURER'S RECOMMENDATIONS. CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE COATING OR LINING OF ANY D.I. PIPE FITTINGS. ANY PIPE OR FITTING WHICH IS DAMAGED OR WHICH HAS FLAWS OR IMPERFECTIONS WHICH, IN THE OPINION OF THE ENGINEER OR OWNER RENDER IT UNFIT FOR USE, SHALL NOT BE USED. ANY PIPE NOT SATISFACTORY FOR USE SHALL BE CLEARLY MARKED AND IMMEDIATELY REMOVED FROM THE JOB SITE, AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
8. WATER FOR FIRE FIGHTING SHALL BE MADE AVAILABLE FOR USE BY THE CONTRACTOR PRIOR TO COMBUSTIBLES BEING BROUGHT ON SITE.
9. THE CONTRACTOR SHALL KEEP ACCURATE RECORDS FOR ALL ITEMS INSTALLED (TYPE, SIZE, LENGTH, AND LOCATION ETC.) AND PROVIDE LEGIBLE DOCUMENTS TO THE OWNER WHEN REQUESTED OR AT THE END OF CONSTRUCTION.

REVISION NO.	SHEET NO.
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Minnesota DOT: Ramsey County, US Foot, NAD83

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: ROGER A. CLAY  
 Roger Clay P.E.  
 Signed: \_\_\_\_\_  
 Date: 12-10-2020 License Number: 23452



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**NOTES**

KARTH LAKE STABILIZATION PROJECT  
 ARDEN HILLS, MN

DRAWN BY: J. JOHNSON  
 CHECKED BY: R. CLAY  
 APPROVED BY: R. CLAY  
 DATE: DEC 10, 2020 | UTE PROJ. NO. 20-00419

REVISION NO.	SHEET NO.
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**EXISTING**

- PROPERTY LINE
- SETBACK LINE
- - - - - TEMPORARY EASEMENT LINE
- - - - - PERMANENT EASEMENT LINE
- 000 — EXISTING CONTOUR
- (CB) CATCH BASIN
- <<<--- STORM SEWER
- ⊙ PP POWER POLE
- OHP — OHP — OVERHEAD POWER
- UGP — UGP — UNDERGROUND POWER
- COMM — COMM — UNDERGROUND COMMUNICATION LINE
- Ω — SIGN
- █ REMOVE BITUMINOUS PAVEMENT
- ▭ REMOVE CURB AND GUTTER
- ▭ EXISTING GRAVEL
- ▭ RIPRAP

**PROPOSED**

- SF — SILT FENCE
- 000 — PROPOSED CONTOUR
- 895.00FG FINISH GRADE ELEVATION
- 2.0% PROPOSED SLOPE & DIRECTION OF FLOW
- ▭ RIPRAP
- ▭ STORM SEWER
- OHP — OHP — OVERHEAD POWER
- UGP — UGP — UNDERGROUND POWER
- STORM MANHOLE
- ▭ CATCH BASIN
- ▭ PROPOSED CONCRETE

**ESTIMATED QUANTITIES**

Item No.	Item	Quantity	Unit
1	Mobilization	1	LS
2	Clearing and Grubbing	1	LS
3	Topsoil Stripping	1	LS
4	Remove Bituminous Pavement	34	SY
5	Remove Concrete Structure	1	LS
6	Remove Grouted Riprap	1	LS
7	Remove 18" CPP Storm Sewer	1	LS
8	Common Embankment (CV)	100	CY
9	Aggregate Base (CV) Class 5	10	CY
10	Concrete Inlet Structure	1	EA
11	24" RC Storm Sewer Pipe Class 3	170	LF
12	36" x 22" Arch RC Storm Sewer Pipe Class 3	50	LF
13	36" x 22" Arch RC Pipe Apron	1	EA
14	Storm Manhole 60"	4	VF
15	Storm Manhole 84"	8	VF
16	Connect to Existing Storm Sewer	1	EA
17	Pipe Bedding Material	100	CY
18	Safety Gate for 36-in Arch RC Apron	1	EA
19	Random Rip Rap (Class III)	70	CY
20	Install Type III Barricade 6' Wide	2	EA
21	Turf Reinforcement Mat Type Category 2	640	SY
22	Filter Log Type Straw Bioroll	100	LF
23	Turf Establishment	1	LS
24	Erosion Control Blanket Category 3	510	Sq Yd
25	Silt Fence, Type HI	100	LF



Minnesota DOT: Ramsey County, US Foot, NAD83

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: ROGER A. CLAY  
 Roger Clay  
 License No. 23452  
 Signed: \_\_\_\_\_

Date: 12-10-2020 License Number: 23452



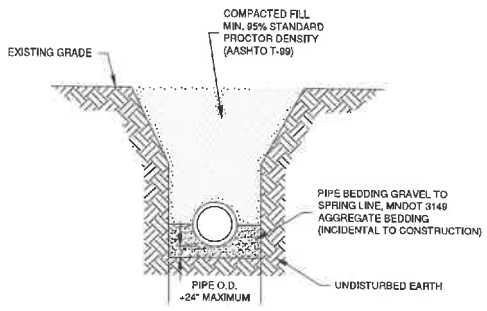
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LEGEND AND QUANTITIES  
 KARTH LAKE STABILIZATION PROJECT  
 ARDEN HILLS, MN

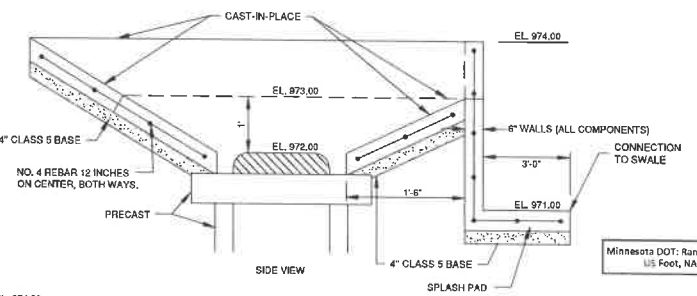
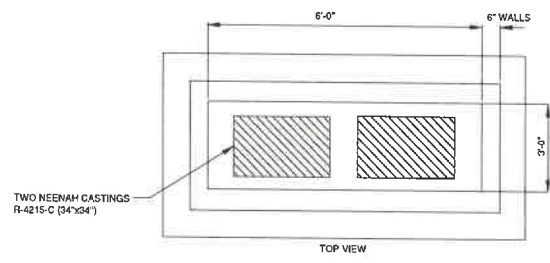
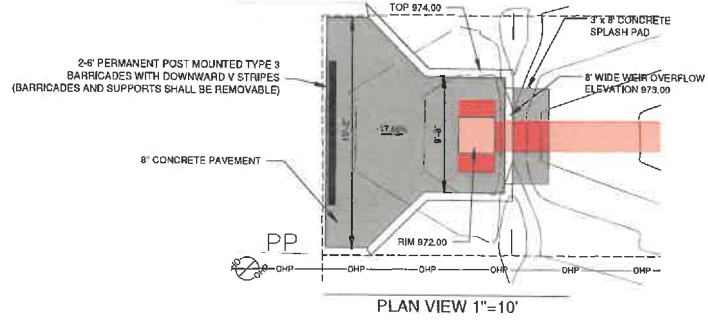
DRAWN BY: J. JOHNSON  
 CHECKED BY: R. CLAY  
 APPROVED BY: R. CLAY

DATE: DEC 10, 2020 UEL PROJ. NO. 20.00419

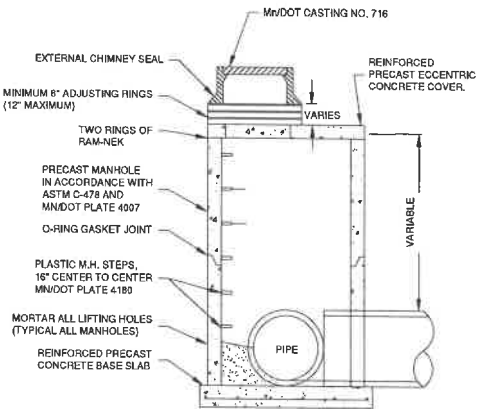
REVISION NO.	SHEET NO.
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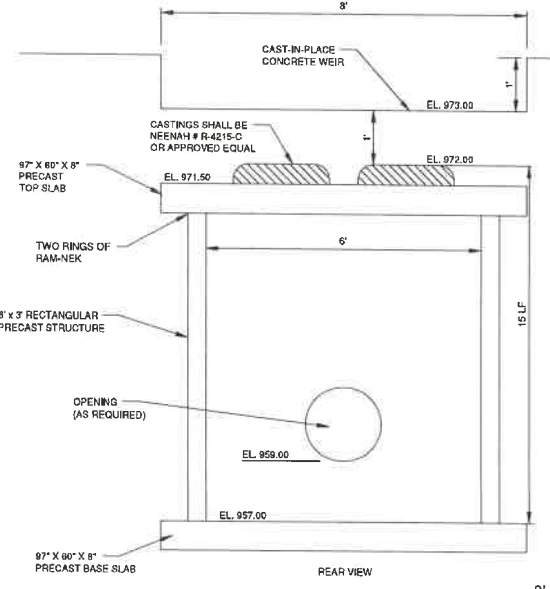
TRENCH BACKFILL DETAIL - RCP/PVC



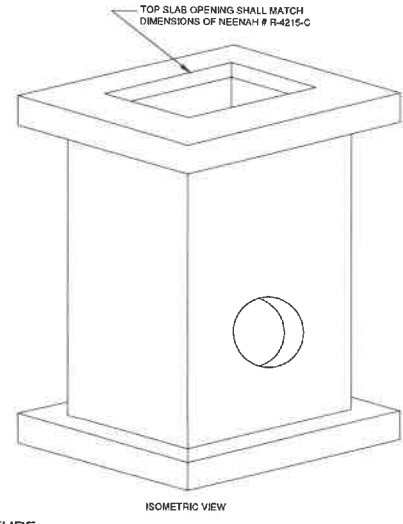
Minnesota DOT: Ramsey County,  
US Foot, NAD83



NOTE  
1. IF POLYPROPYLENE PIPE IS USED THE MANHOLES  
SHALL HAVE FLEXIBLE RUBBER SLEEVES  
INSTALLED FOR APPROPRIATE PIPE SIZES AT NO  
ADDITIONAL COST.



3' x 6' INLET STRUCTURE



I hereby certify that this plan, specification or report  
was prepared by me or under my direct supervision  
and that I am a duly Licensed Professional Engineer  
under the laws of the State of Minnesota.

Print Name: ROGER A. CLAY  
Signed: Roger Clay  
Date: 02-10-2021 License Number: 23452

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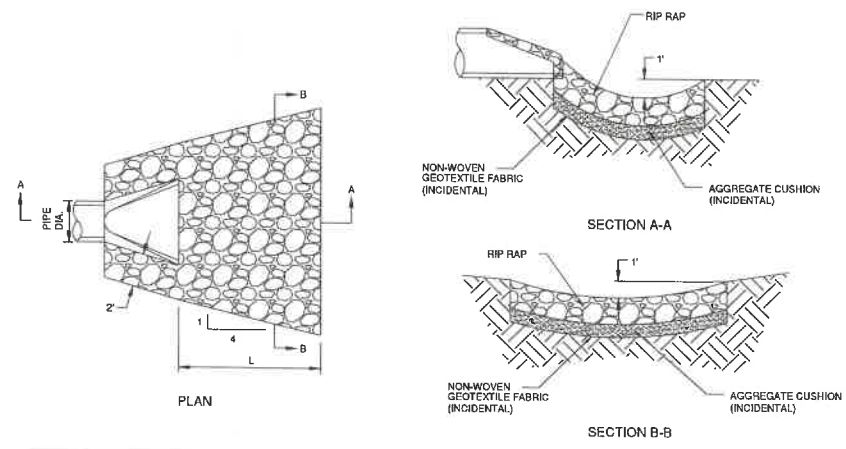
DETAILS

KARTH LAKE STABILIZATION  
PROJECT  
ARDEN HILLS, MN

DRAWN BY: J. JOHNSON  
CHECKED BY: R. CLAY  
APPROVED BY: R. CLAY  
DATE: FEB 10, 2021 UEL PROJ. NO: 20.00419

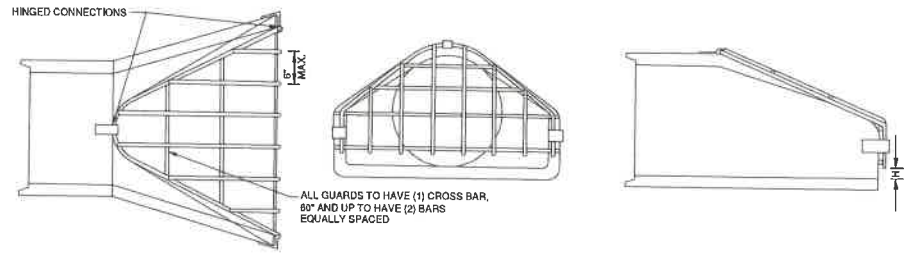


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PIPE DIA. (IN)	L (FT)	24" DEPTH RIP RAP (CY)	12" DEPTH AGG. CUSH. (CY)
12	8	5.5	2.6
15	8	5.8	2.9
18	10	7.8	3.9
21	10	8.4	4.2
24	12	11.0	5.5
27	12	11.6	5.8
30	14	14.5	7.3
33	16	16.4	7.6
36	16	18.3	8.2
42	18	21.7	10.9
48	20	25.8	12.9

RIP RAP DETAIL



ROUND		ARCH	
PIPE SIZE	H	PIPE SIZE	H
12"	2 1/2"	36"-44"	4"
18"	3"	44"-50"	5"
24"	4"	54"-60"	6"
30"	5"	64"-70"	7"
36"	6"		
42"	7"		
48"	8"		

BAR SIZES			
PIPE SIZE	WALL DIA. ROUNDED	WALL DIA.	BAR SIZE
12"-24"	3/8"	5/8"	5/8"
24"-30"	1/2"	3/4"	3/4"
30"-36"	1 1/8"	1"	1"
36"-42"	1 3/8"	1 1/8"	1 1/8"
42"-48"	1 7/8"	1 3/4"	1 3/4"
48"-54"	2 1/8"	2"	2"
54"-60"	2 3/8"	2 1/8"	2 1/8"
60"-72"	3 1/8"	2 3/4"	2 3/4"
72"-84"	3 7/8"	3 1/4"	3 1/4"

ALL L.G. - PIPEWALL THICK. + 1/2" UP  
HOT DIP GALVANIZED PER MINDOT 330P OR ASTM-A153

TRASH GUARD FOR FLARED ENDS

Minnesota DOT, Ramsey County,  
US Foot, NAD83

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 Professional Engineer  
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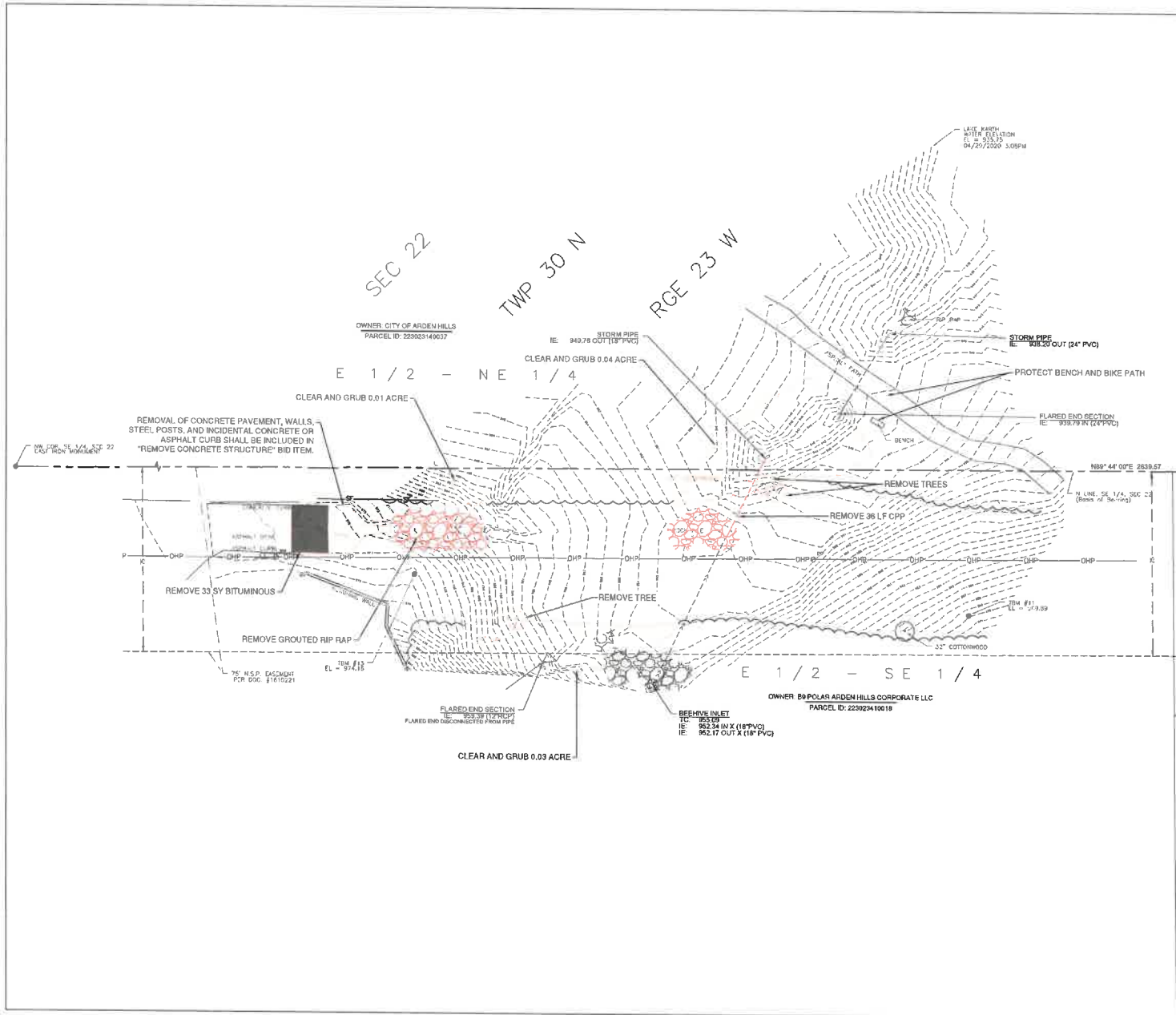
DETAILS

KARTH LAKE STABILIZATION  
 PROJECT  
 ARDEN HILLS, MN

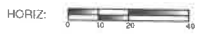
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 APPROVED BY: R. CLAY

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REVISION NO.	SHEET NO.
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LEXINGTON AVENUE



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EXISTING CONDITIONS AND REMOVAL PLAN

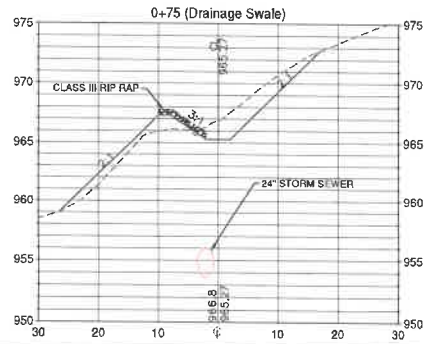
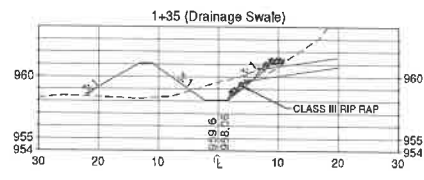
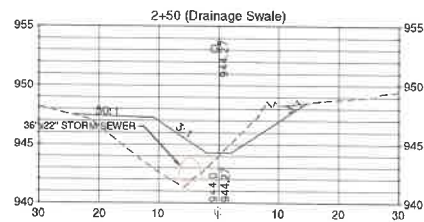
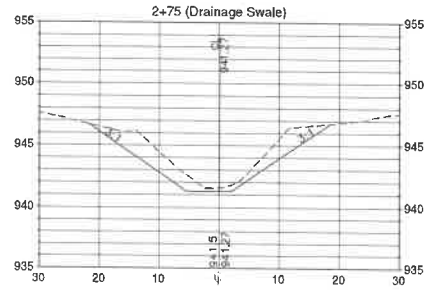
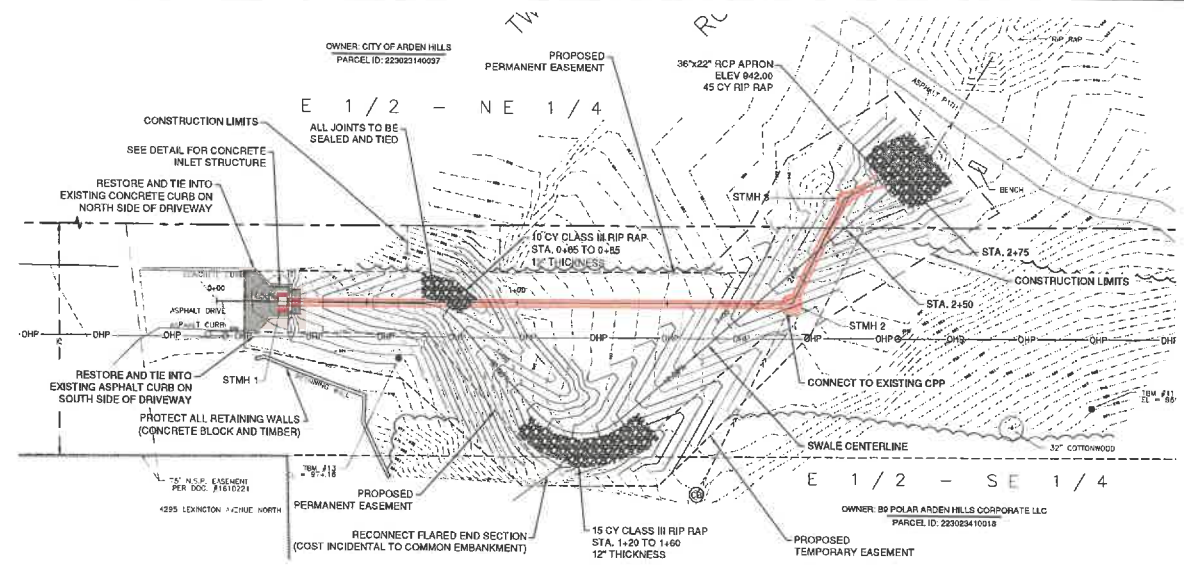
KARTH LAKE STABILIZATION PROJECT  
 ARDEN HILLS, MN

DRAWN BY: J. JOHNSON  
 CHECKED BY: R. CLAY  
 APPROVED BY: R. CLAY

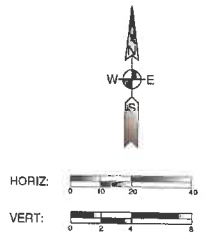
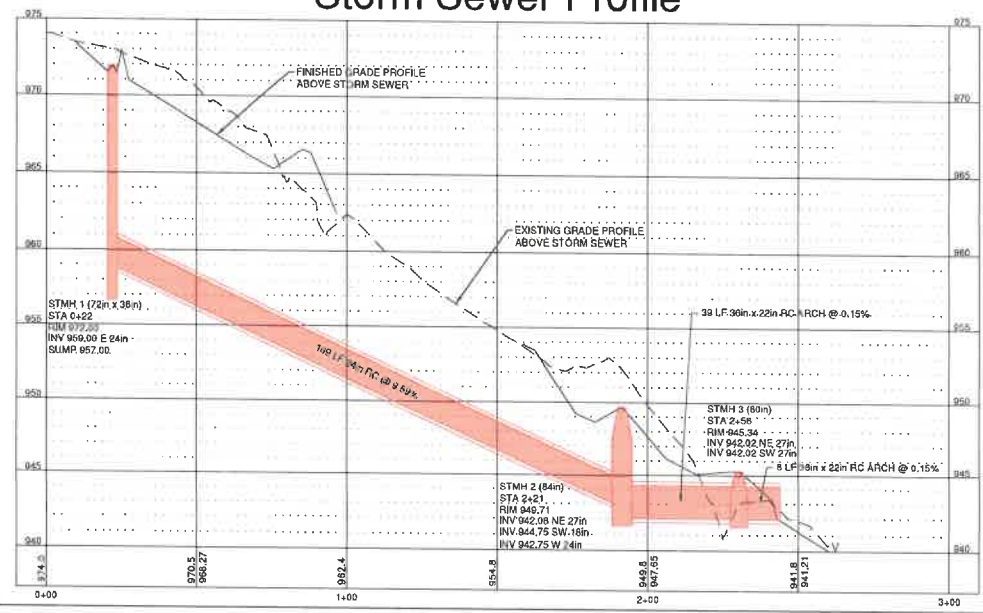
DATE: FEB 03, 2021 UEB PROJ. NO. 20.00419

REVISION NO.	SHEET NO.
----	007

NOTE  
1. EASEMENT LINES SHALL BE USED AS CONSTRUCTION LIMITS UNLESS SHOWN OTHERWISE.



### Storm Sewer Profile



Minnesota DOT: Ramsey County, US Foot, NAD83

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: ROBERT A. CLAY  
 Signed: Roger Clay  
 License Number: 23452






Date: 02-10-2021

GRADING AND UTILITY PLAN  
 KARTH LAKE STABILIZATION PROJECT  
 ARDEN HILLS, MN

DRAWN BY: J. JOHNSON  
 CHECKED BY: R. CLAY  
 APPROVED BY: R. CLAY  
 DATE: FEB 10, 2021 UBI PROJ. NO. 20.00419

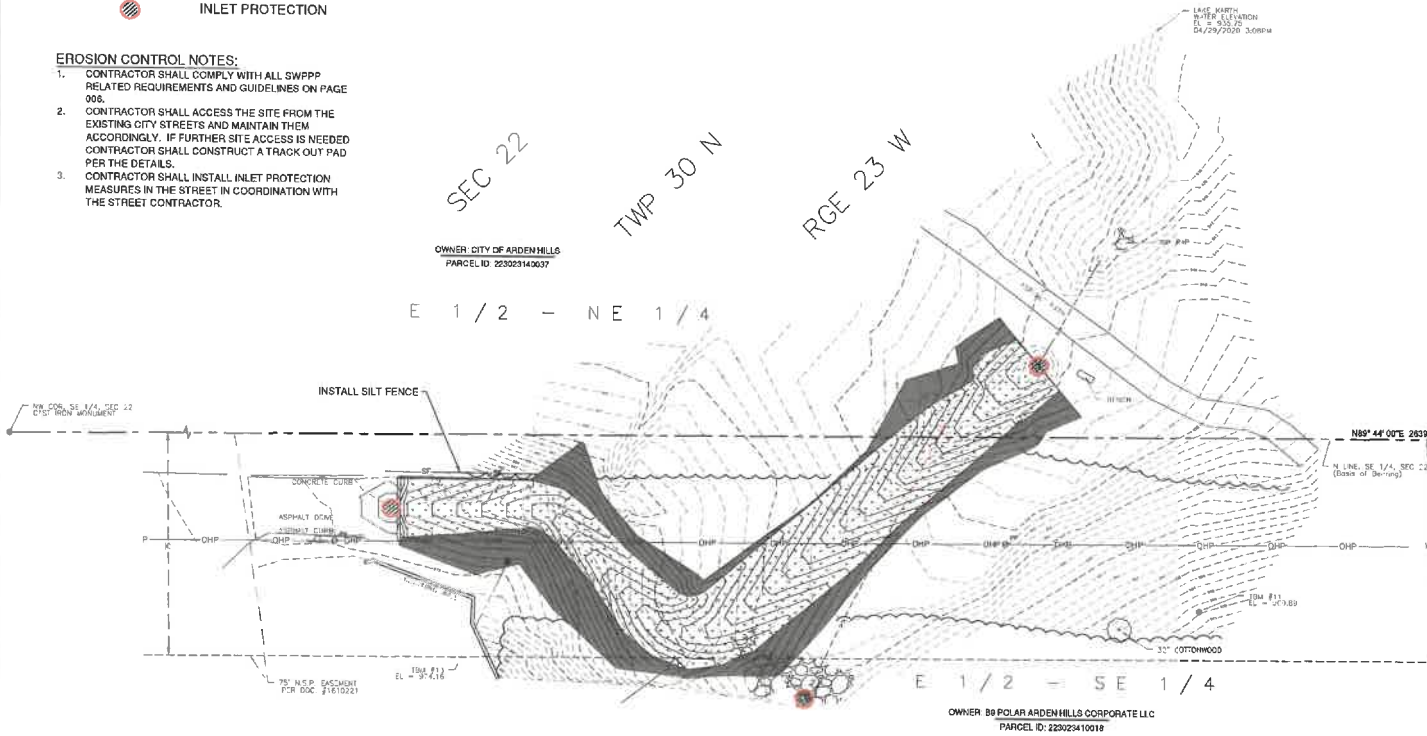
REVISION NO.	SHEET NO.
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**LEGEND**

-  SILT FENCE
-  BIO-ROLL
-  TURF REINFORCEMENT MAT
-  EROSION CONTROL BLANKET
-  INLET PROTECTION

**EROSION CONTROL NOTES:**

1. CONTRACTOR SHALL COMPLY WITH ALL SWPPP RELATED REQUIREMENTS AND GUIDELINES ON PAGE 006.
2. CONTRACTOR SHALL ACCESS THE SITE FROM THE EXISTING CITY STREETS AND MAINTAIN THEM ACCORDINGLY. IF FURTHER SITE ACCESS IS NEEDED CONTRACTOR SHALL CONSTRUCT A TRACK OUT PAD PER THE DETAILS.
3. CONTRACTOR SHALL INSTALL INLET PROTECTION MEASURES IN THE STREET IN COORDINATION WITH THE STREET CONTRACTOR.



Minnesota DOT: Ramsey County, US Foot, NAD83

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: ROGER A. CLAY  
 Signature: Roger A. Clay  
 Date: 02-03-2021 License Number: 25452



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 Web: www.ultieg.com  
 We Team. We Solve.™

**EROSION CONTROL PLAN**  
 KARTH LAKE STABILIZATION PROJECT  
 ARDEN HILLS, MN

DRAWN BY: J. JOHNSON  
 CHECKED BY: R. CLAY  
 APPROVED BY: R. CLAY  
 DATE: FEB 03, 2021 LBI PROJ NO: 20.00419