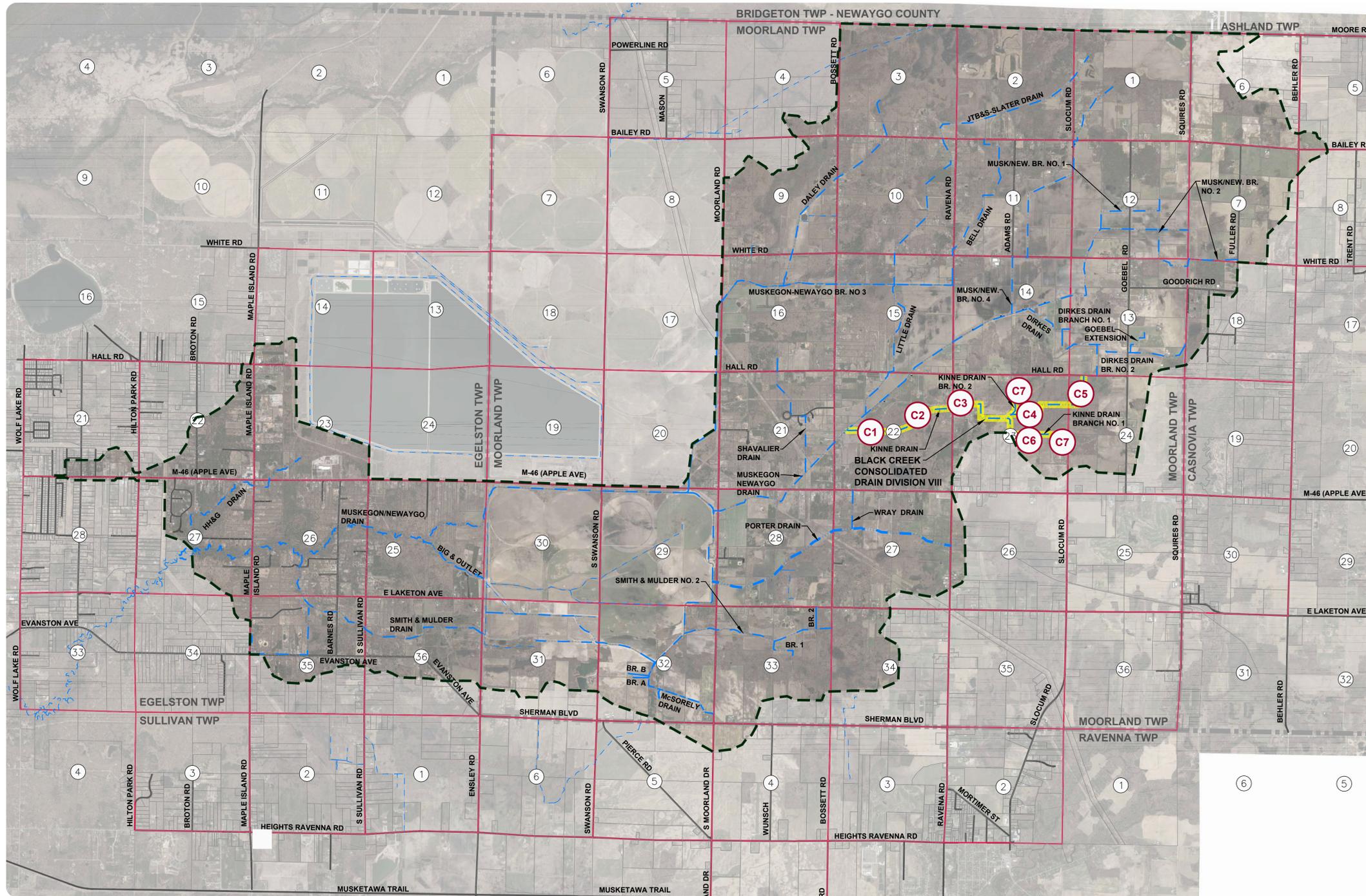
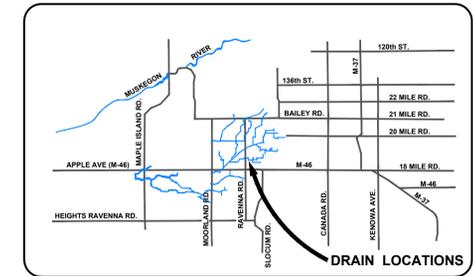




BLACK CREEK CONSOLIDATED DRAIN-DIVISION VIII

FORMER KINNE DRAIN
 EGELSTON, MOORLAND, RAVENNA & CASNOVIA TOWNSHIPS
 MUSKEGON COUNTY, MICHIGAN



VICINITY MAP
 NOT TO SCALE

INDEX OF SHEETS

CS - COVER SHEET

C1 - PLAN & PROFILE
 (STA. 0+00 - 22+50 FORMER KINNE DRAIN)

C2 - PLAN & PROFILE
 (STA. 22+50 - 50+50 FORMER KINNE DRAIN)

C3 - PLAN & PROFILE
 (STA. 50+50 - 80+50 FORMER KINNE DRAIN)

C4 - PLAN & PROFILE
 (STA. 80+50 - 110+50 FORMER KINNE DRAIN)

C5 - PLAN & PROFILE
 (STA. 110+50 - 139+00 FORMER KINNE DRAIN)

C6 - PLAN & PROFILE
 (STA. 0+00 - 25+50 FORMER KINNE BR 1 DRAIN)

C7 - PLAN & PROFILE
 (STA. 25+50 - 35+00 FORMER KINNE BR 1 DRAIN)
 (STA. 0+00 - 13+00 FORMER KINNE BR 2 DRAIN)

C8 - DETAILS

LEGEND

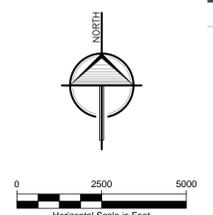
△ - TRAVERSE POINT	○ - FIRE HYDRANT
● - WELL	◇ - WATER VALVE
— - HIGHWAY	□ - GAS METER
● - MONUMENT	□ - WATER METER
○ - FOUND IRON STAKE	□ - TELEPHONE RISER
○ - SET IRON STAKE	□ - ELECTRIC METER
— - SIGN	□ - CATCH BASIN
— - RR SIGN	○ - ROUND CATCH BASIN
○ - GUY POLE	○ - UTILITY MANHOLE
○ - GUY ANCHOR	○ - STORM MANHOLE
○ - UTILITY POLE	○ - SANITARY MANHOLE
○ - LIGHT POLE	○ - ELECTRIC MANHOLE
○ - POST	○ - TELEPHONE MANHOLE
○ - SOIL BORING	○ - SHRUB
○ - U.G. UTILITY MARKER	○ - DECIDUOUS TREE
✉ - MAILBOX	○ - CONIFEROUS TREE

— - WATER UTILITY LINE
— - TELEPHONE UTILITY LINE
— - ELECTRIC UTILITY LINE
— - GAS UTILITY LINE
— - STEAM UTILITY LINE
— - STORM UTILITY LINE
— - SANITARY UTILITY LINE
— - FIBER OPTIC UTILITY LINE
— - OVERHEAD UTILITY LINE

— - ENCLOSED CHANNEL DRAIN
— - OPEN CHANNEL DRAIN
— - DRAINAGE DISTRICT BOUNDARY
— - SECTION LINE
— - TOWNSHIP LINE
— - ROADS
— - PROPERTY LINES
- SECTION NUMBERS
① - SHEET NUMBERS

UTILITY CONTACTS

CONSUMERS ENERGY KURT GOLDING MISSDIGDESIGNTICKETS @CMSENERGY.COM	GREAT LAKES ENERGY COOPERATIVE KIMBERLY MATELSKI (231) 487-1332 (O) DISPATCH@GLENERGY.COM	MUSKEGON AREA INTERMEDIATE SCHOOL DISTRICT KEN LOPEZ (616) 393-0138 (O) MITICKETS@DIGTRACK.COM	GAS-DTE GAS TRANSMISSION BARBARA SAUNDERS (313) 235-5111 (O) & GREG BLOSSER (313) 235-1080 (O) BLOSSER@DTEENERGY.COM	GAS-AMERIGAS CHAD KROUSE (231) 638-3183 (O) CHAD.KROUSE@AMERIGAS.COM	MUSKEGON COUNTY WASTEWATER STEVE BARNARD (810) 724-3441 (O) MISSDIG@CO.MUSKEGON.MI.US	FRONTIER/VERIZON KATHRYN ANDERSON (810) 724-3127 (O) MI.MISSDIG.FACILITIES. DESIGN.REQUEST@FTR.COM	WINDSTREAM COMMUNICATIONS (800) 289-1901 (O) LOCATE.DESK@WINDSTREAM.COM
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REVISIONS:	NO.	ISSUED FOR:	DATE
	1.	EX. CONDITION SURVEY	DEC. 2017
	2.	PRELIMINARY DESIGN	AUG. 2019
	3.	BIDS	JUNE 2020

MUSKEGON COUNTY DRAIN COMMISSIONER
 141 E. APPLE AVE., MUSKEGON, MI 49842

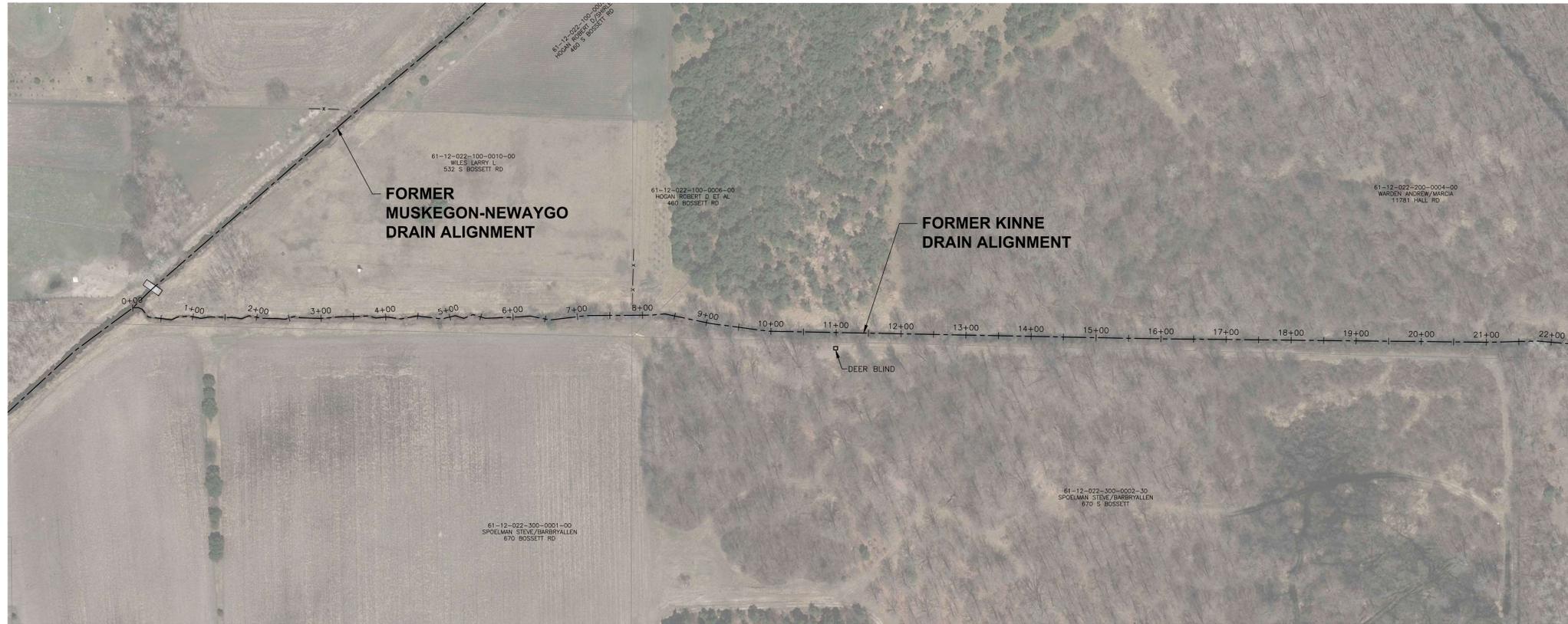
PROJECT:
 BLACK CREEK CONSOLIDATED DRAIN-DIVISION VIII
 EGELSTON, MOORLAND, RAVENNA & CASNOVIA TOWNSHIPS, MUSKEGON COUNTY, MI

DATE	BY
SEPT. 2017	CT JS
AUG. 2019	AW
AUG. 2019	AW
JUNE 2020	AW

PROJECT NUMBER: 17-008
 SURVEYED BY: CT JS
 DESIGNED BY: AW
 DRAFTED BY: RAG
 CADC:DJF

COVER SHEET

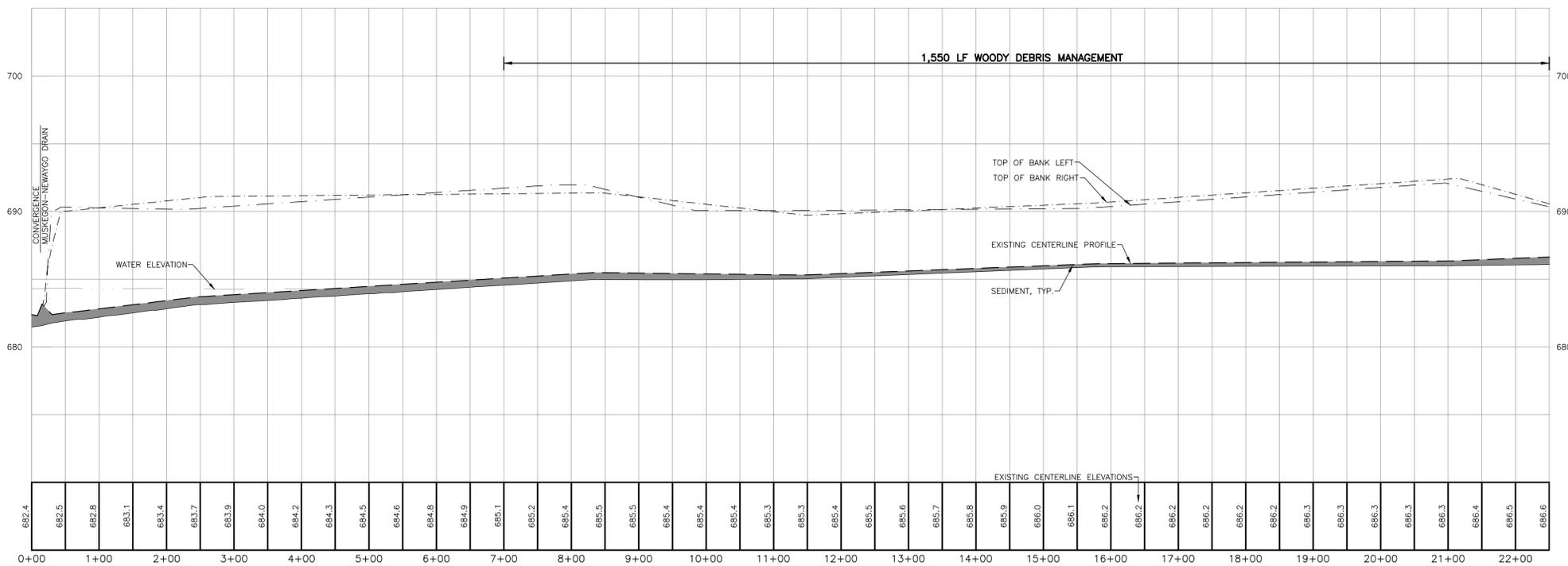
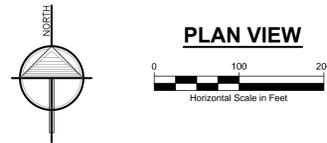
SHEET NUMBER
CS



MATCH LINE: SEE SHT. C2 FOR CONTINUATION

- NOTES:**
1. DRAIN R.O.W. 66 FEET TOTAL, 33 FEET EACH SIDE OF CENTERLINE.
 2. MULCH BLANKET BANKS AS DIRECTED BY ENGINEER. PAID FOR AS SY MULCH BLANKET.
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MISCELLANEOUS QUANTITIES:
MOBILIZATION 1 LS



CENTERLINE PROFILE
SCALE: HORIZONTAL: 1" = 100'
VERTICAL: 1" = 5'



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ENGINEERS & SURVEYORS

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CLIENT: MUSKEGON COUNTY DRAIN COMMISSIONER
141 E. APPLE AVE., MUSKEGON, MI 49842

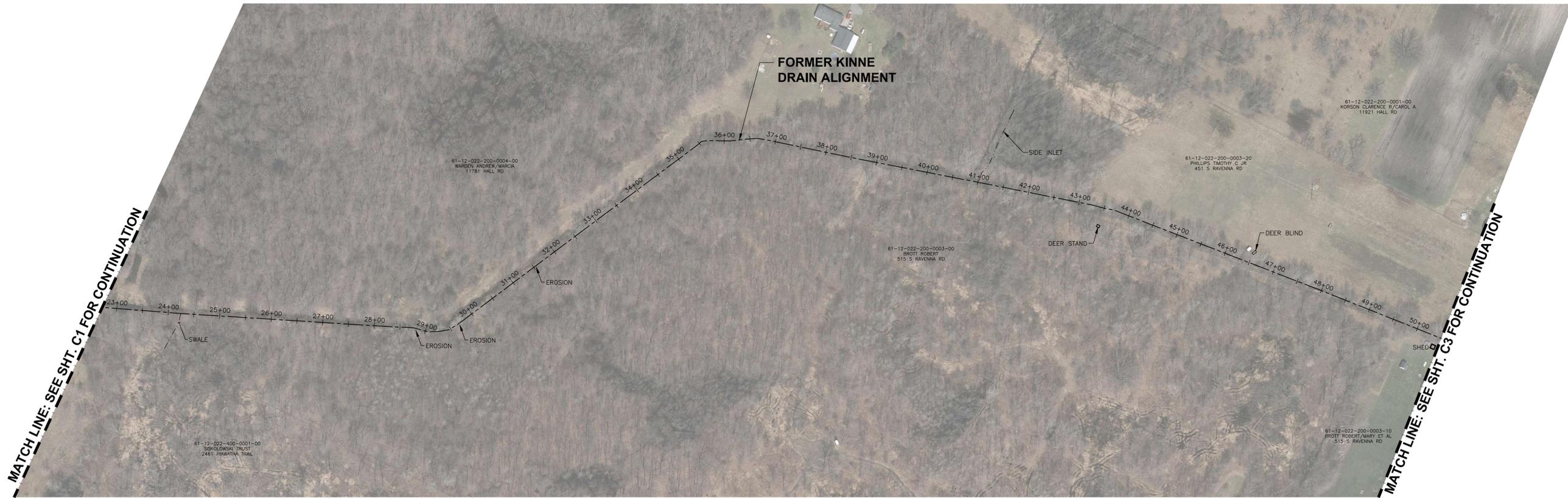
PROJECT: BLACK CREEK CONSOLIDATED DRAIN-DIVISION VIII
EGELSTON, MOORLAND, RAVENNA & CASNOVA TOWNSHIPS, MUSKEGON COUNTY, MI

PROJECT NUMBER:	DATE
17-008	SEPT. 2017
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	JUNE 2020

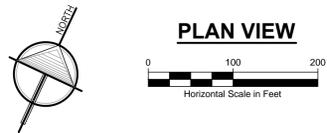
SURVEYED BY: CF JS
DESIGNED BY: AWS
DRAFTED BY: RAG
CADC:DJF

SHEET NAME: PLAN & PROFILE
STA: 0+00 - 22+50
FORMER KINNE DRAIN

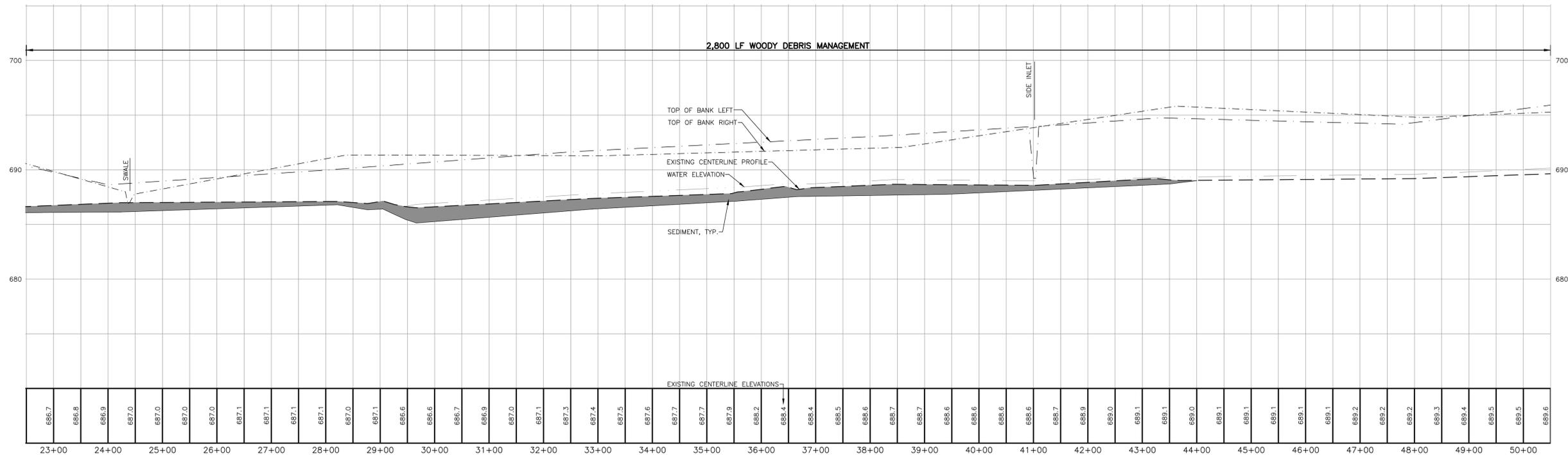
SHEET NUMBER: C1



MISCELLANEOUS QUANTITIES:
RIPRAP 75 SY



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CENTERLINE PROFILE
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VERTICAL: 1" = 5'

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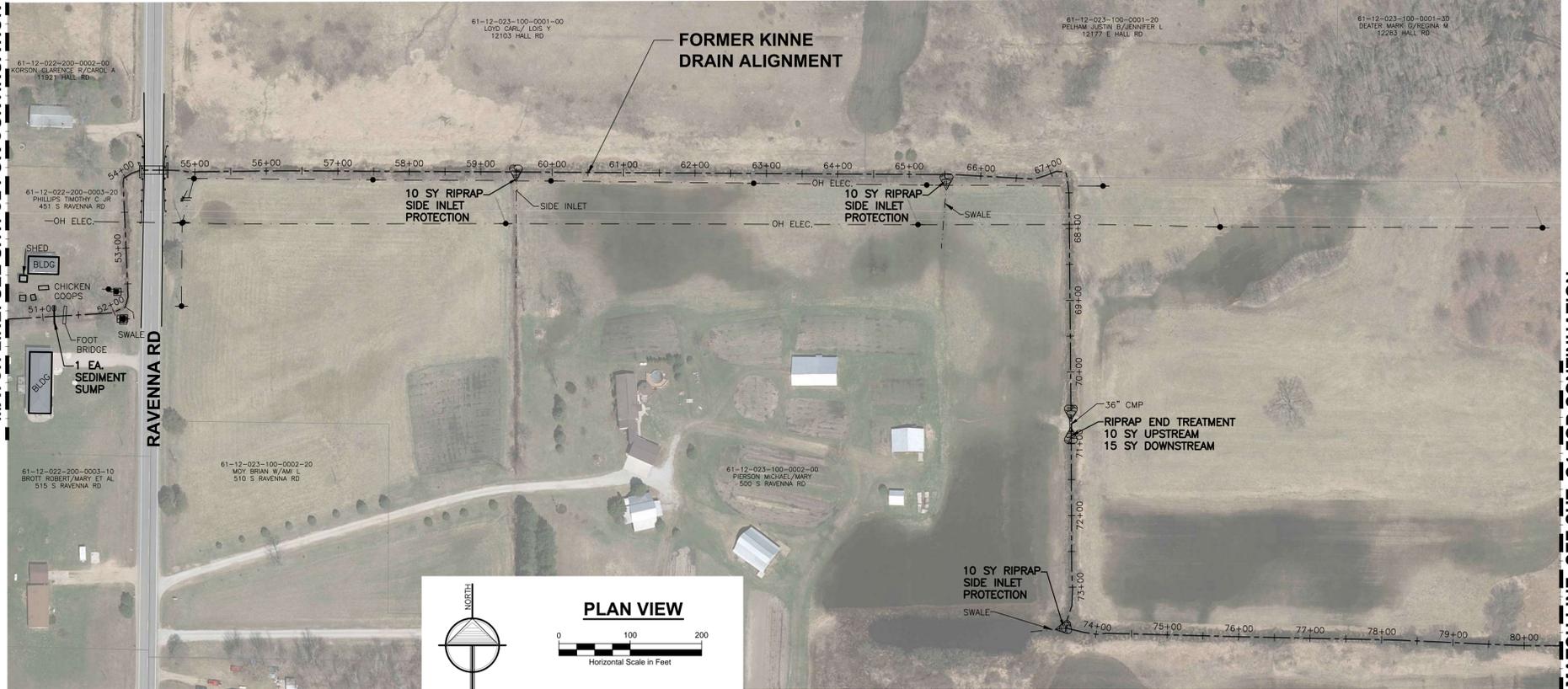
PROJECT NUMBER: 17-008
SURVEYED BY: CF JS
DESIGNED BY: AWS
DRAFTED BY: RAG
CACC/DJF

CLIENT: MUSKOGON COUNTY DRAIN COMMISSIONER
141 E. APPLE AVE., MUSKOGON, MI 49842
PROJECT: BLACK CREEK CONSOLIDATED DRAIN-DIVISION VIII
EGELSTON, MOORLAND, RAVENNA & CASNOVA TOWNSHIPS, MUSKOGON COUNTY, MI

SHEET NAME: PLAN & PROFILE
STA: 22+50 - 50+50
FORMER KINNE DRAIN

SHEET NUMBER: C2

MATCH LINE: SEE SHT. C2 FOR CONTINUATION

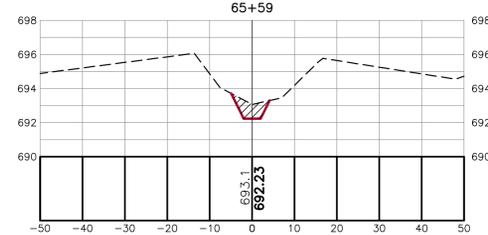
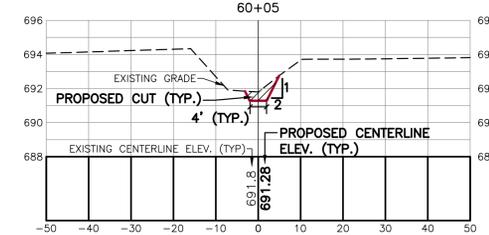
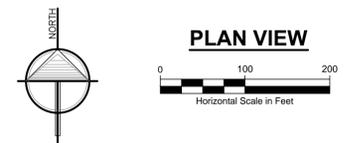


MATCH LINE: SEE SHT. C4 FOR CONTINUATION

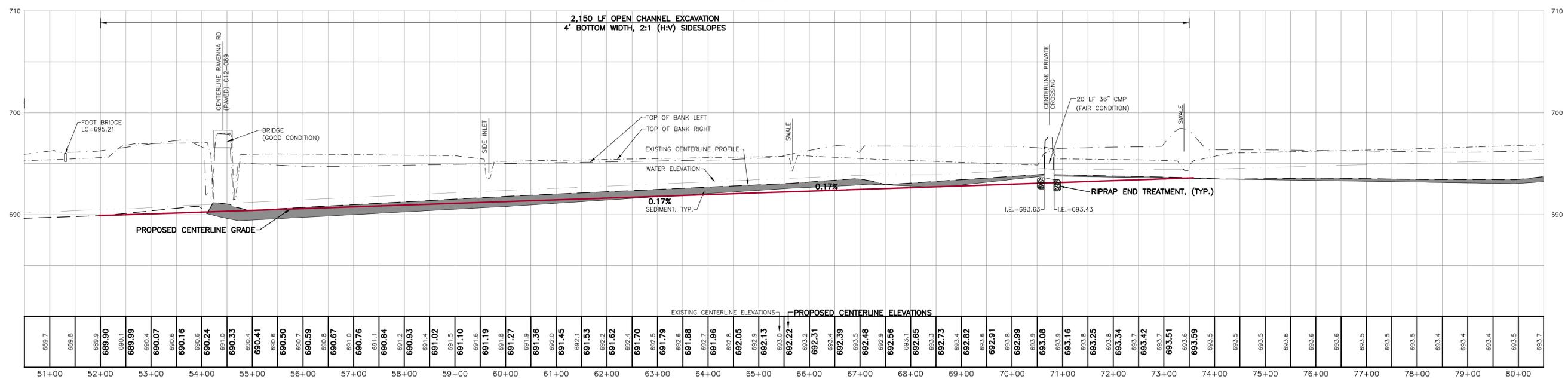
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MISCELLANEOUS QUANTITIES:

OPEN CHANNEL SEEDING	2,150 LF
MULCH BLANKET	3,000 SY
RIPRAP	50 SY



CROSS SECTIONS
SCALE: HORIZONTAL: 1" = 100'
VERTICAL: 1" = 5'



CENTERLINE PROFILE
SCALE: HORIZONTAL: 1" = 100'
VERTICAL: 1" = 5'



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PROJECT NUMBER: 17-008
CLIENT: MUSKOGON COUNTY DRAIN COMMISSIONER
141 E. APPLE AVE., MUSKOGON, MI 49842
PROJECT: BLACK CREEK CONSOLIDATED DRAIN-DIVISION VIII
EGBLSTON, MOORLAND, RAVENNA & CASNOVA TOWNSHIPS, MUSKOGON COUNTY, MI

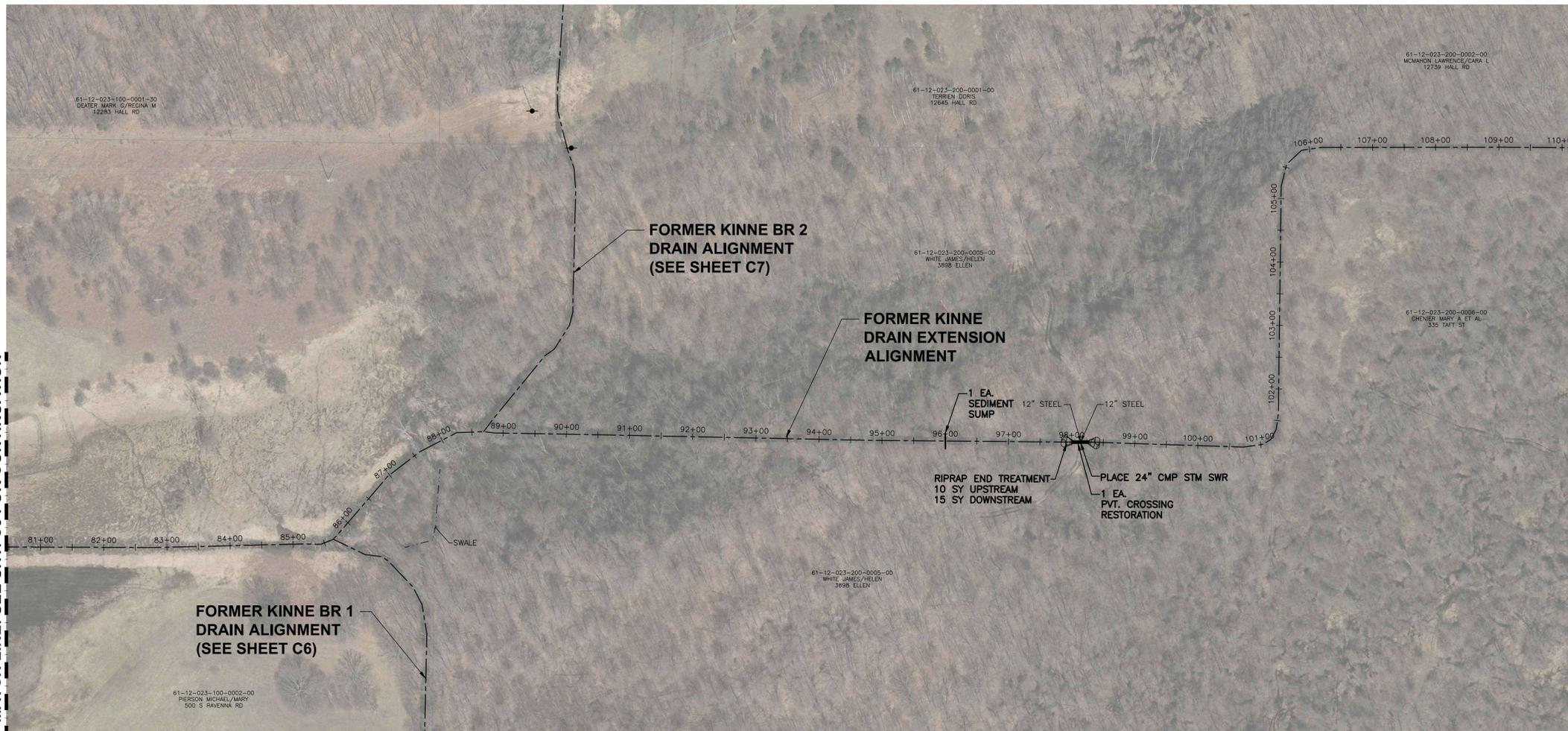
DATE	BY
SEPT. 2017	CT JS
AUG. 2019	AW
AUG. 2019	AW
JUNE 2020	AW

DRAFTED BY: RAG
CADC:DJF

PLAN & PROFILE
STA: 50+50 - 80+50
FORMER KINNE DRAIN

SHEET NUMBER
C3

MATCH LINE: SEE SHT. C3 FOR CONTINUATION

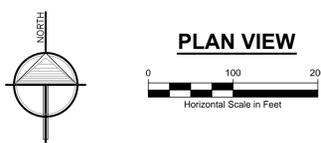


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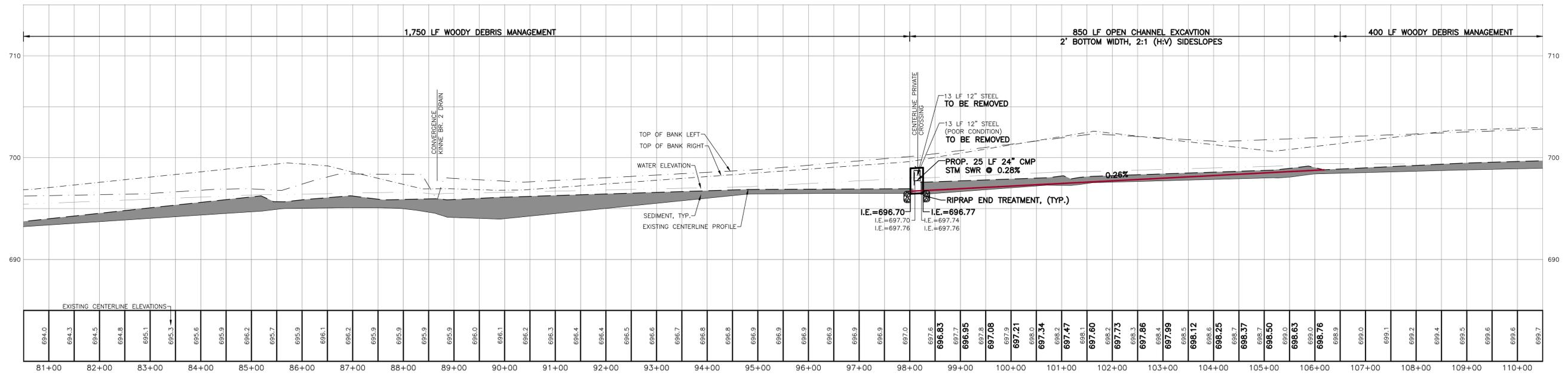
MISCELLANEOUS QUANTITIES:

OPEN CHANNEL SEEDING	850 LF
MULCH BLANKET	1,000 SY

MATCH LINE: SEE SHT. C5 FOR CONTINUATION



PLAN VIEW



CENTERLINE PROFILE
SCALE: HORIZONTAL: 1" = 100'
VERTICAL: 1" = 5'



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MUSKEGON COUNTY DRAIN COMMISSIONER
141 E. APPLE AVE., MUSKEGON, MI 49842

BLACK CREEK CONSOLIDATED DRAIN-DIVISION VIII
EGELSTON, MOORLAND, RAVENNA & CASNOVA TOWNSHIPS, MUSKEGON COUNTY, MI

PROJECT NUMBER: 17-008

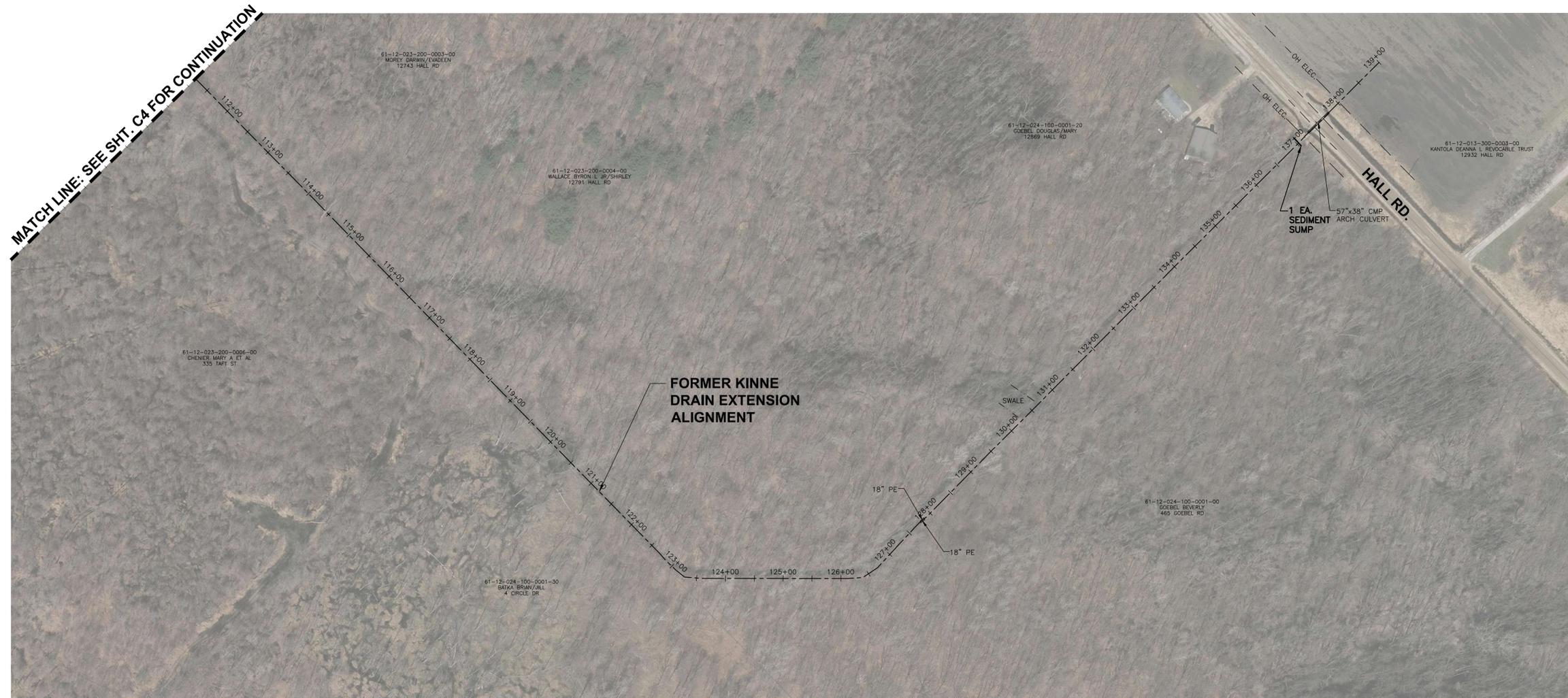
SURVEYED BY: CF JS
DESIGNED BY: AWS
DRAFTED BY: RAG
CACC/DJF

DATE
SEPT. 2017
AUG. 2019
AUG. 2019
JUNE 2020

SHEET NAME
PLAN & PROFILE
STA: 80+50 - 110+50
FORMER KINNE DRAIN

SHEET NUMBER
C4

MATCH LINE: SEE SHT. C4 FOR CONTINUATION



- NOTES:**
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MISCELLANEOUS QUANTITIES:
 OPEN CHANNEL SEEDING 680 LF
 MULCH BLANKET 1,000 SY

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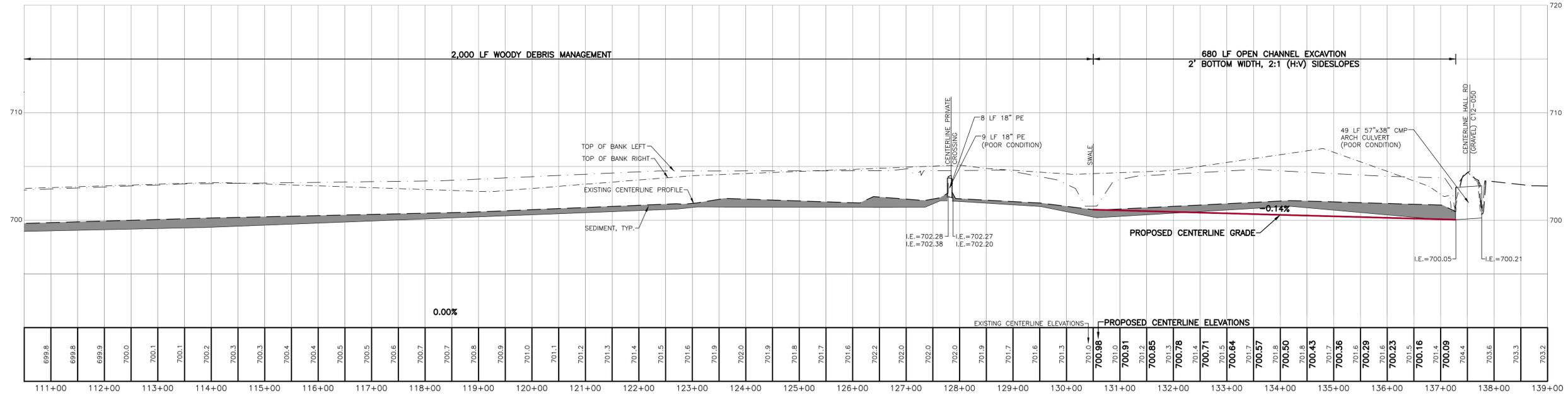
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DATE	BY
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PLAN & PROFILE
 STA: 110+50 - 139+00
 FORMER KINNE DRAIN

C5



CENTERLINE PROFILE
 SCALE: HORIZONTAL: 1" = 100'
 VERTICAL: 1" = 5'

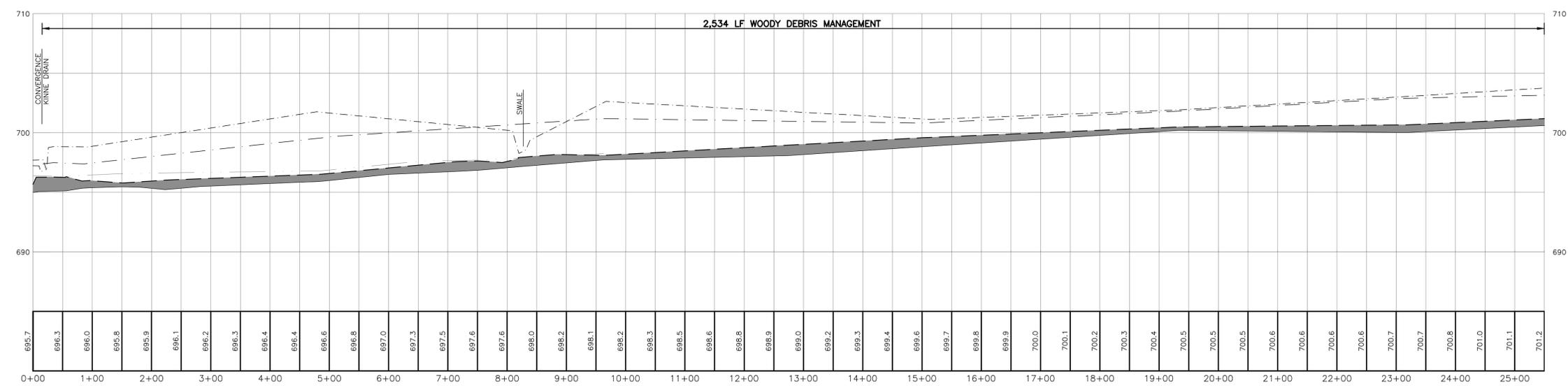
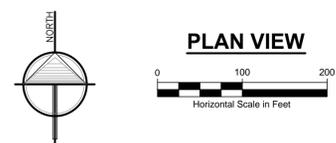
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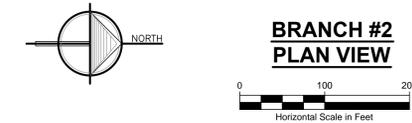
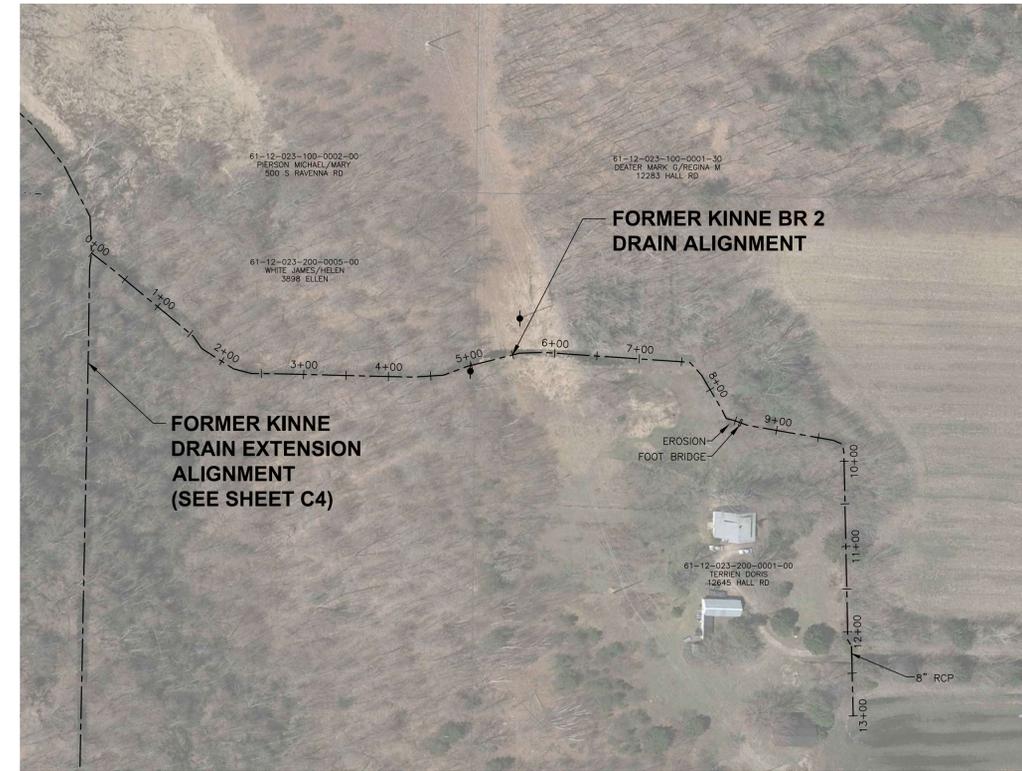
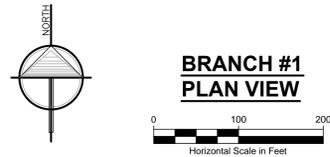
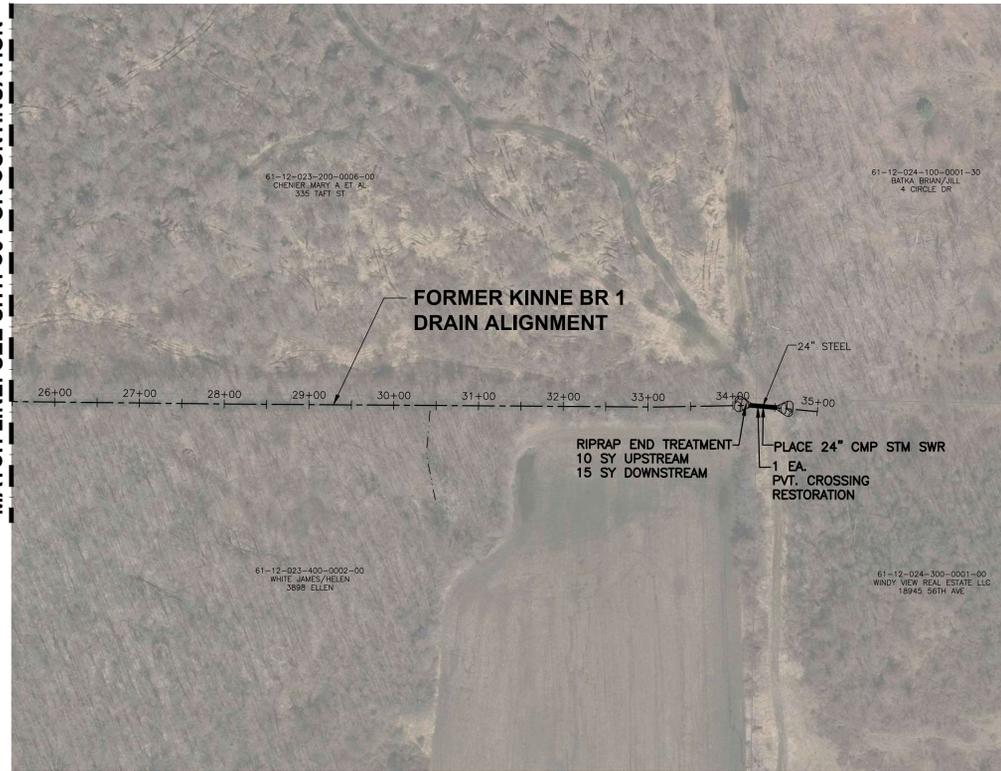
BLACK CREEK CONSOLIDATED DRAIN-DIVISION VIII
EGGESTON, MOORLAND, RAVENNA & CASNOVA TOWNSHIPS, MUSKOGEE COUNTY, MI

PROJECT NUMBER:	DATE
17-008	SEPT. 2017
	AUG. 2019
	AUG. 2019
	JUNE 2020

PLAN & PROFILE
STA: 0+00 - 25+60
FORMER KINNE BR 1
DRAIN

SHEET NUMBER
C6

MATCH LINE: SEE SHT. C6 FOR CONTINUATION



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1. DRAIN R.O.W. 66 FEET TOTAL, 33 FEET EACH SIDE OF CENTERLINE.
 2. MULCH BLANKET BANKS AS DIRECTED BY ENGINEER. PAID FOR AS SY MULCH BLANKET.
 3. SALVAGE AND RE-SPREAD TOPSOIL, SEED & MULCH ALL DISTURBED AREAS. PAID FOR AS LF OPEN CHANNEL SEEDING.
 4. REMOVE ALL DEAD, DYING, LEANING AND ANY ASH TREES WITHIN 5' OF DRAIN TOP OF BANK. PAID FOR AS LF OPEN CHANNEL EXCAVATION OR LF WOODY DEBRIS MANAGEMENT.
 5. IF DRAIN IS ACCESSED ACROSS PROPERTY OUTSIDE OF THE DRAIN EASEMENT, A LAND OWNER'S AGREEMENT FORM MUST BE OBTAINED.
 6. QUANTITIES WILL NOT BE PAID ABOVE CONTRACT AMOUNT UNLESS AUTHORIZED BY ENGINEER.

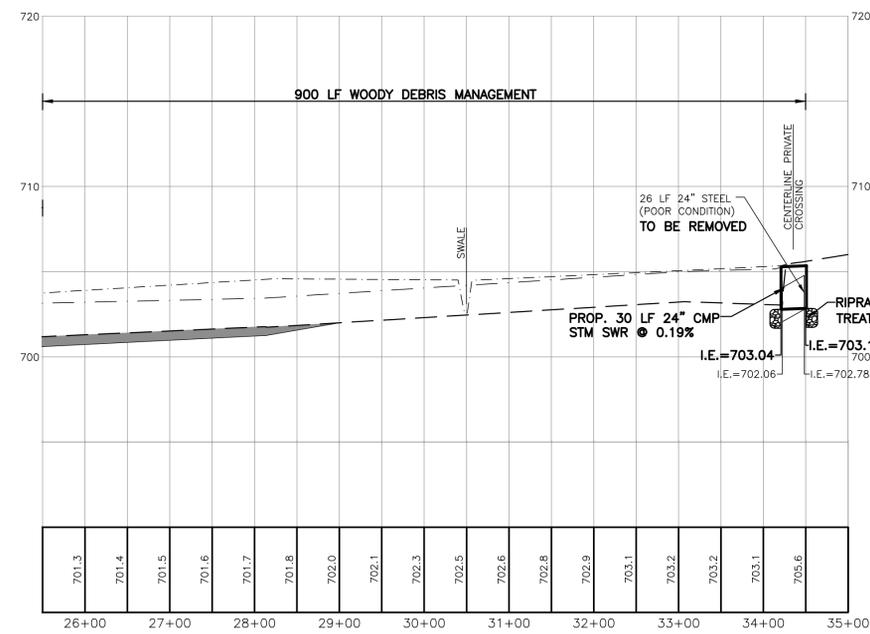
2121 3 Mile Rd. NW
Walker, MI 49544
Ph: 616-301-7888
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NO.	ISSUED FOR	DATE
1.	EX. CONDITION SURVEY	DEC. 2017
2.	PRELIMINARY DESIGN	AUG. 2019
3.	BIDS	JUNE 2020

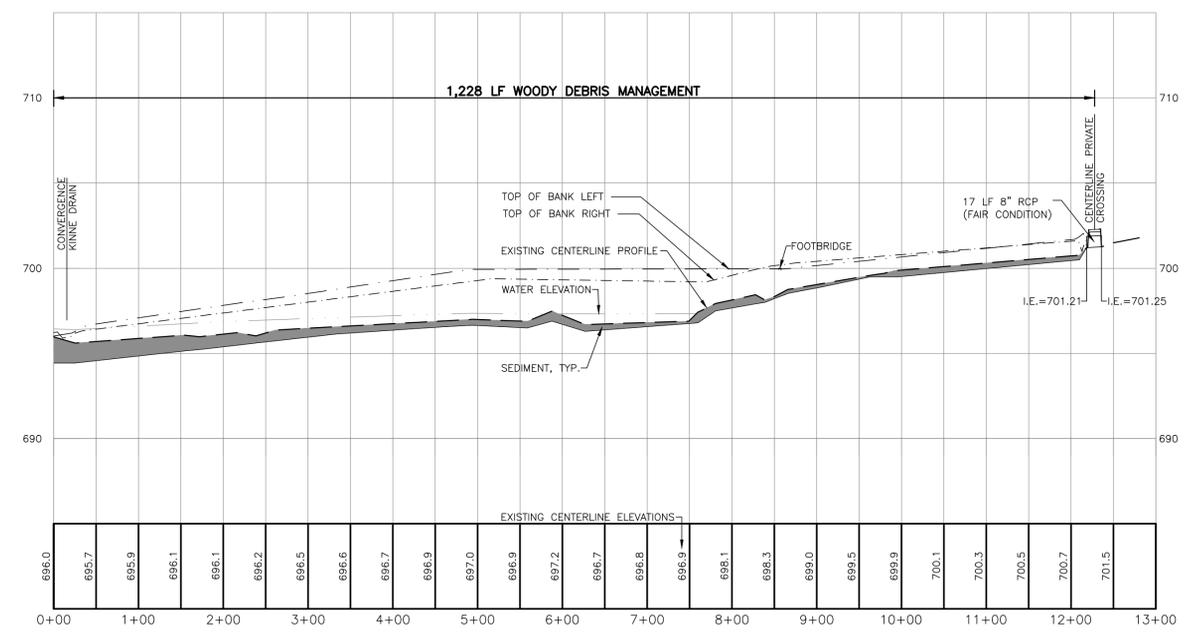
MUSKEGON COUNTY DRAIN COMMISSIONER
141 E. APPLE AVE., MUSKEGON, MI 49842

BLACK CREEK CONSOLIDATED DRAIN-DIVISION VIII
EGELSTON, MOORLAND, RAVENNA & CASNOVA TOWNSHIPS, MUSKEGON COUNTY, MI

DATE	PROJECT
SEPT. 2017	141 E. APPLE AVE., MUSKEGON, MI 49842
AUG. 2019	BLACK CREEK CONSOLIDATED DRAIN-DIVISION VIII
AUG. 2019	EGELSTON, MOORLAND, RAVENNA & CASNOVA TOWNSHIPS, MUSKEGON COUNTY, MI
JUNE 2020	



**KINNE BRANCH 1 DRAIN
CENTERLINE PROFILE**
SCALE: HORIZONTAL: 1" = 100'
VERTICAL: 1" = 5'



**KINNE BRANCH 2 DRAIN
CENTERLINE PROFILE**
SCALE: HORIZONTAL: 1" = 100'
VERTICAL: 1" = 5'

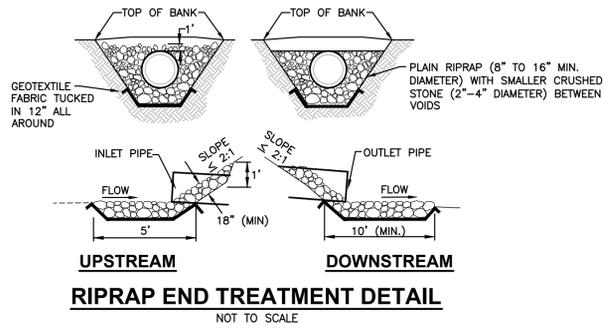
ALL UTILITIES AS SHOWN ARE APPROXIMATE LOCATIONS DERIVED FROM ACTUAL MEASUREMENTS AND AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATION NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THE AREA.

3 WORKING DAYS
**BEFORE YOU DIG
CALL MISS DIG**
1-800-482-7171

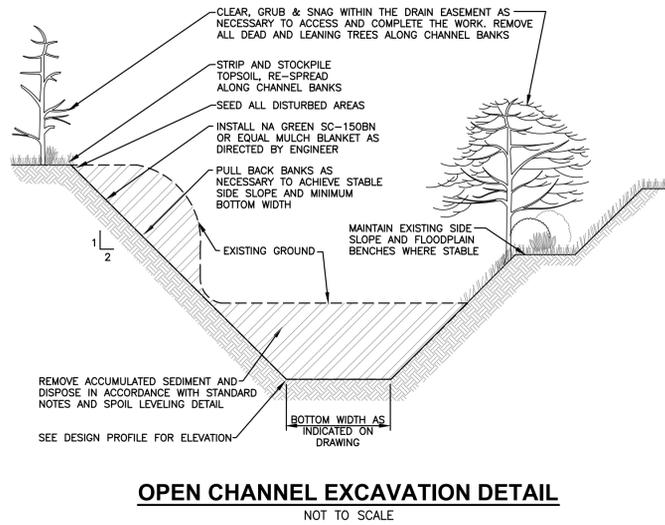
PLAN & PROFILE
STA. 25+50 - 35+00
FORMER KINNE BR 1 DRAIN
STA. 0+00 - 13+00
FORMER KINNE BR 2 DRAIN

PROJECT NUMBER: 17-008
SURVEYED BY: CF JS
DESIGNED BY: AWS
DRAFTED BY: RAG
CAGC/DJF

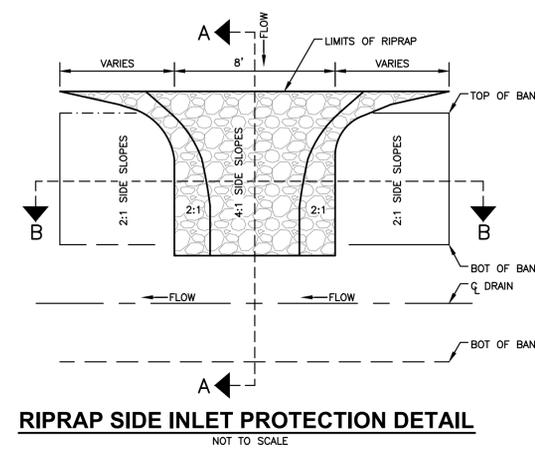
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C7



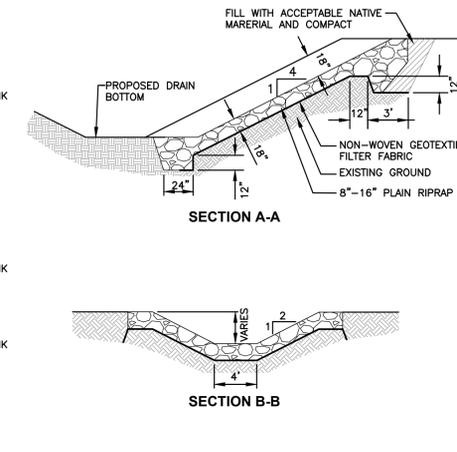
UPSTREAM **DOWNSTREAM**
RIPRAP END TREATMENT DETAIL
NOT TO SCALE



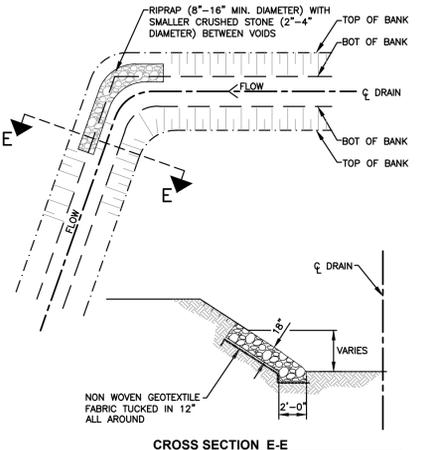
OPEN CHANNEL EXCAVATION DETAIL
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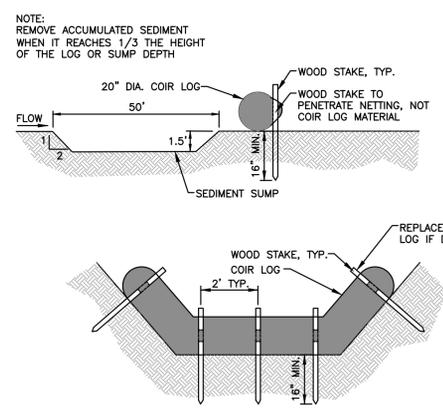
RIPRAP SIDE INLET PROTECTION DETAIL
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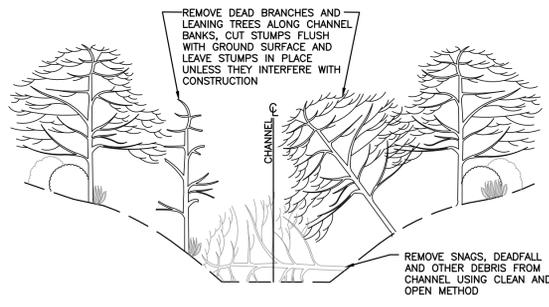
SECTION A-A
SECTION B-B



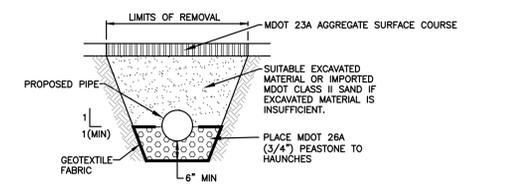
RIPRAP BANK STABILIZATION DETAIL
NOT TO SCALE



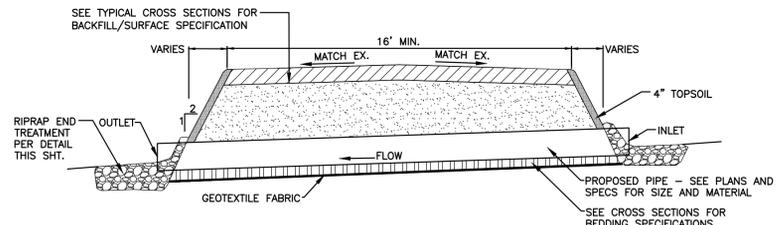
SEDIMENT SUMP DETAIL
NOT TO SCALE



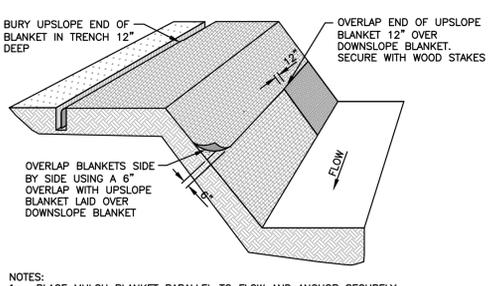
WOODY DEBRIS MANAGEMENT DETAIL
NOT TO SCALE



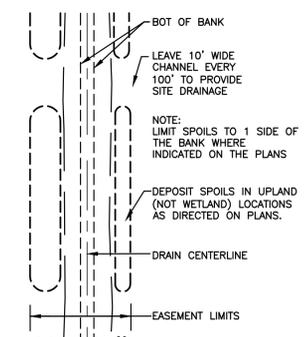
TYPICAL PRIVATE CULVERT CROSS SECTION
NOT TO SCALE



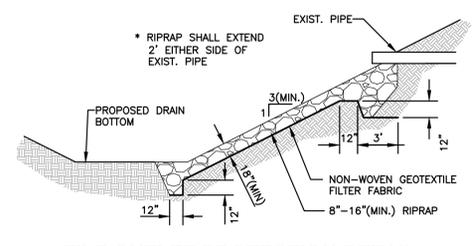
TYPICAL PRIVATE CULVERT INSTALLATION
NOT TO SCALE



MULCH BLANKETS INSTALLATION DETAIL
NOT TO SCALE



SPOILS LEVELING DETAIL
NOT TO SCALE



TILE OUTLET PROTECTION DETAIL
NOT TO SCALE

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CLIENT: MUSKOGEE COUNTY DRAIN COMMISSIONER
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PROJECT: BLACK CREEK CONSOLIDATED DRAIN-DIVISION VIII
EGLESTON, MOORLAND, RAVENNA & CASNOVA TOWNSHIPS, MUSKOGEE COUNTY, MI

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AUG. 2019	
JUNE 2020	

DETAILS
SHEET NUMBER
C8

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