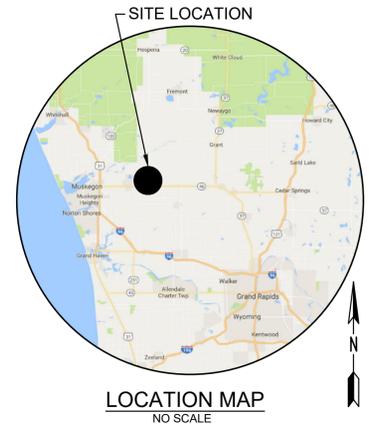


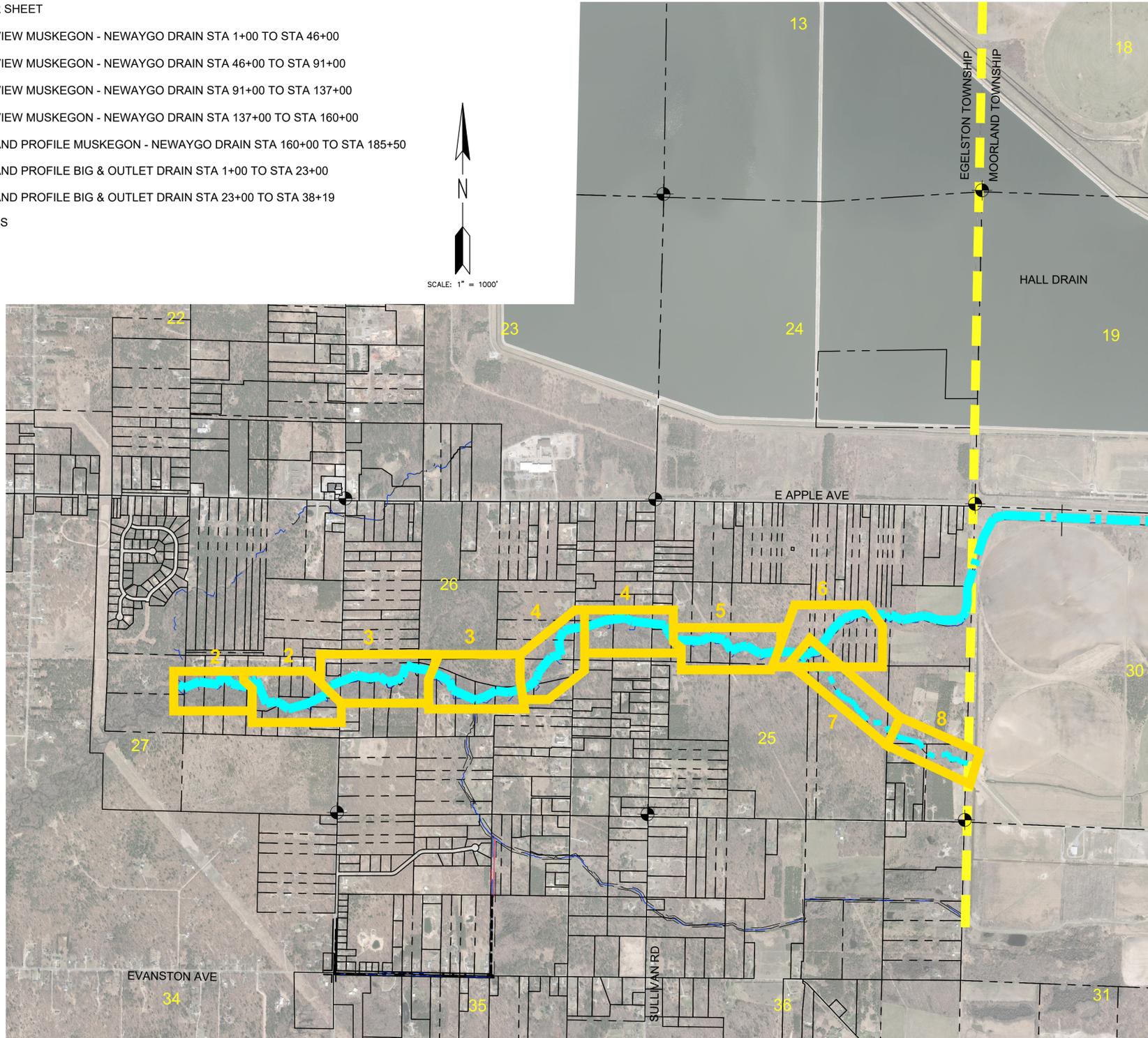
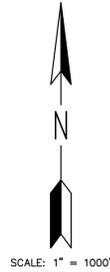


BRENDA M. MOORE
MUSKEGON COUNTY DRAIN COMMISSIONER
STEPHANIE BARRETT, DEPUTY DRAIN COMMISSIONER
BLACK CREEK DRAIN DRAINAGE DISTRICT
DIVISION 3
MUSKEGON-NEWAYGO DRAIN & BIG AND OUTLET DRAIN
 PART OF EGELSTON, MOORLAND, RAVENNA & CASNOVIA TOWNSHIPS
 MUSKEGON COUNTY, MICHIGAN



LIST OF DRAWINGS

- 1 COVER SHEET
- 2 PLAN VIEW MUSKEGON - NEWAYGO DRAIN STA 1+00 TO STA 46+00
- 3 PLAN VIEW MUSKEGON - NEWAYGO DRAIN STA 46+00 TO STA 91+00
- 4 PLAN VIEW MUSKEGON - NEWAYGO DRAIN STA 91+00 TO STA 137+00
- 5 PLAN VIEW MUSKEGON - NEWAYGO DRAIN STA 137+00 TO STA 160+00
- 6 PLAN AND PROFILE MUSKEGON - NEWAYGO DRAIN STA 160+00 TO STA 185+50
- 7 PLAN AND PROFILE BIG & OUTLET DRAIN STA 1+00 TO STA 23+00
- 8 PLAN AND PROFILE BIG & OUTLET DRAIN STA 23+00 TO STA 38+19
- 9 DETAILS



LIST OF CONTACTS

OWNER
 MUSKEGON COUNTY DRAIN COMMISSIONER
 BRENDA M MOORE
 PHONE: 231-724-6219
 STEPHANIE BARRETT
 PHONE: 231-724-6319
 CENTRAL SERVICES BUILDING
 141 E APPLE AVENUE
 MUSKEGON, MI 49442

GAS DISTRIBUTION
 DTE ENERGY GAS
 VINCE DUCA
 2359 OLTHOFF DRIVE
 MUSKEGON, MI 49444
 PHONE: 231-777-4034

GAS TRANSMISSION
 DTE ENERGY GAS
 TYLER GAGE, PE
 444 WEALTHY STREET
 GRAND RAPIDS, MI 49503
 PHONE: 989-330-3231
 tyler.gage@dteenergy.com

TELEPHONE
 FRONTIER COMMUNICATIONS
 DAVID FLERMOEN
 860 TERRACE STREET
 MUSKEGON, MI 49444
 PHONE: 231-727-1319

ELECTRIC
 CONSUMERS ENERGY
 MICHELLE ANDREE
 700 E STERNBERG RD
 NORTON SHORES, MI 49441
 PHONE: 231-332-2621

CABLE TELEVISION
 COMCAST
 JON CHARLAND
 700 W BROADWAY AVE
 MUSKEGON, MI 49441
 PHONE: 231-375-5112

ROADS
 MUSKEGON COUNTY ROAD COMMISSION
 PAUL R BOUMAN, PE
 7700 E APPLE AVENUE
 MUSKEGON, MI 49442
 PHONE: 231-788-2381

ENGINEER
 Eng, Inc.
 RYAN C McENHILL, PE
 16930 ROBBINS ROAD
 SUITE 105
 GRAND HAVEN, MI 49417
 PHONE: 616-743-7070
 mcenhillr@engdot.com

LEGEND

- BLACK CREEK CONSOLIDATED DRAIN CENTERLINE
- MUNICIPAL BOUNDARY
- PARCEL LINE
- ROAD
- SECTION LINE
- SECTION NUMBER
- SECTION CORNER
- SHEET LOCATION

NO	REVISIONS	BY	DATE	Drawn	SPM	Use	Approved	Date

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 Lansing, MI 48911
 517.687.1100
 16930 Robbins Road Suite 105
 Grand Haven, MI 49417
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PROJECT NO.
16041

SHEET NO.
 DIVISION 3
1 OF 9

RYAN C MCENHILL, P.E. #56096

DATE

COVER SHEET

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BM #1 ELEV = 674.00
SET SPIKE W SIDE UTILITY POLE N OF EVANSTON AVE, 75' OF MAPLE ISLAND RD.

BM #2 ELEV = 672.91
SET SPIKE E SIDE UTILITY POLE N OF EVANSTON AVE, E OF DRIVE WAY 7360

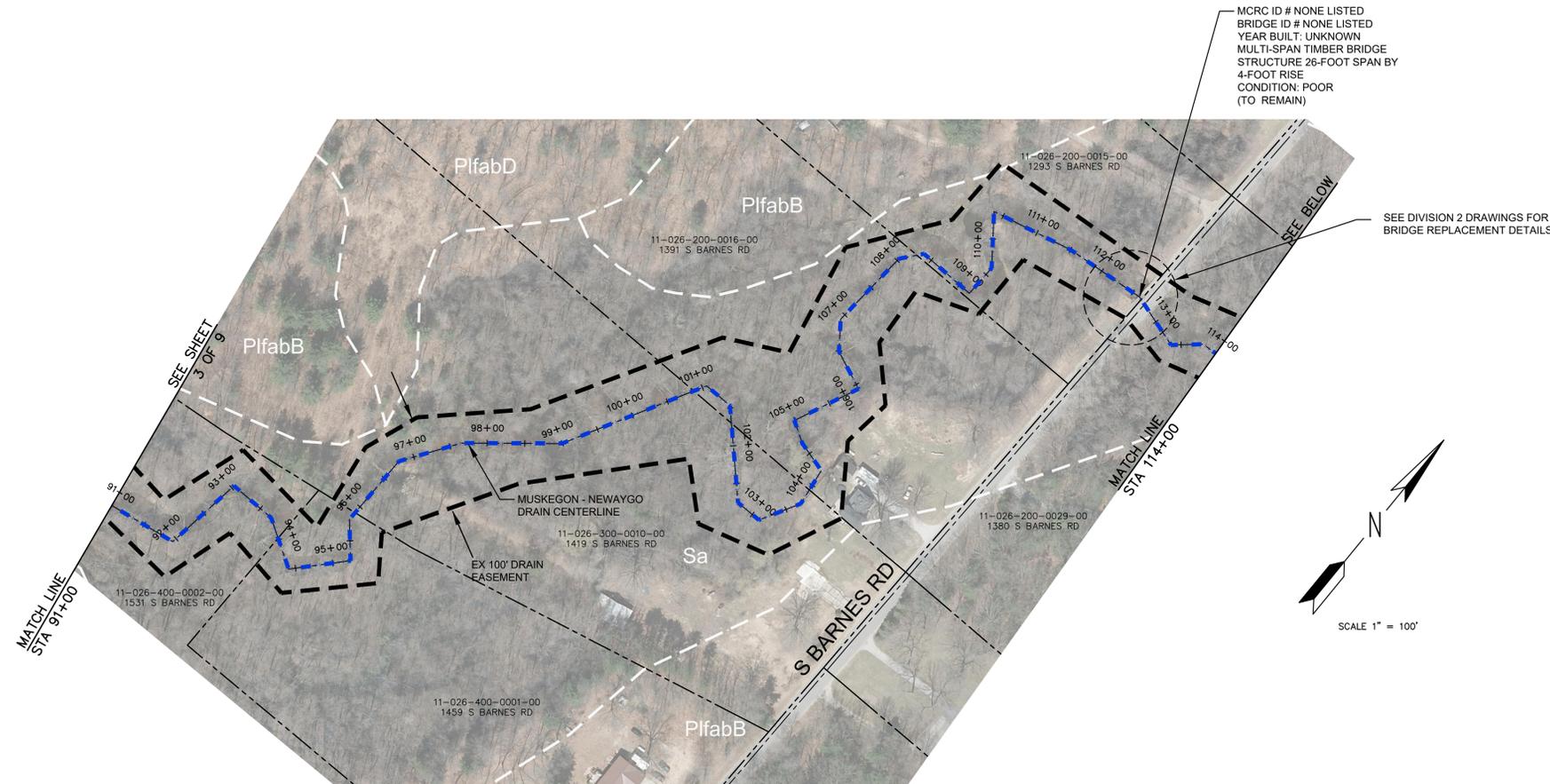
GENERAL NOTES:

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Ra	Roscommon and Au Gres Sands
Sa	Saranac loam

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- - - - - = EXISTING GUARDRAIL
- WETLANDS (AS MARKED BY OTHERS)
- +860 = EXISTING SPOT ELEVATION
- 860 = EXISTING CONTOUR ELEVATION
- = EDGE OF WOODS
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- ☀ = CONIFEROUS TREE
- ☀ = BUSH
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- = PROPOSED TOP OF BANK
- = PROPOSED TOE OF BANK
- = SOIL TYPE
- XX P = PERMANENT SOIL EROSION CONTROL MEASURE OR RESTORATION DETAIL
- XX T = TEMPORARY SOIL EROSION CONTROL MEASURE

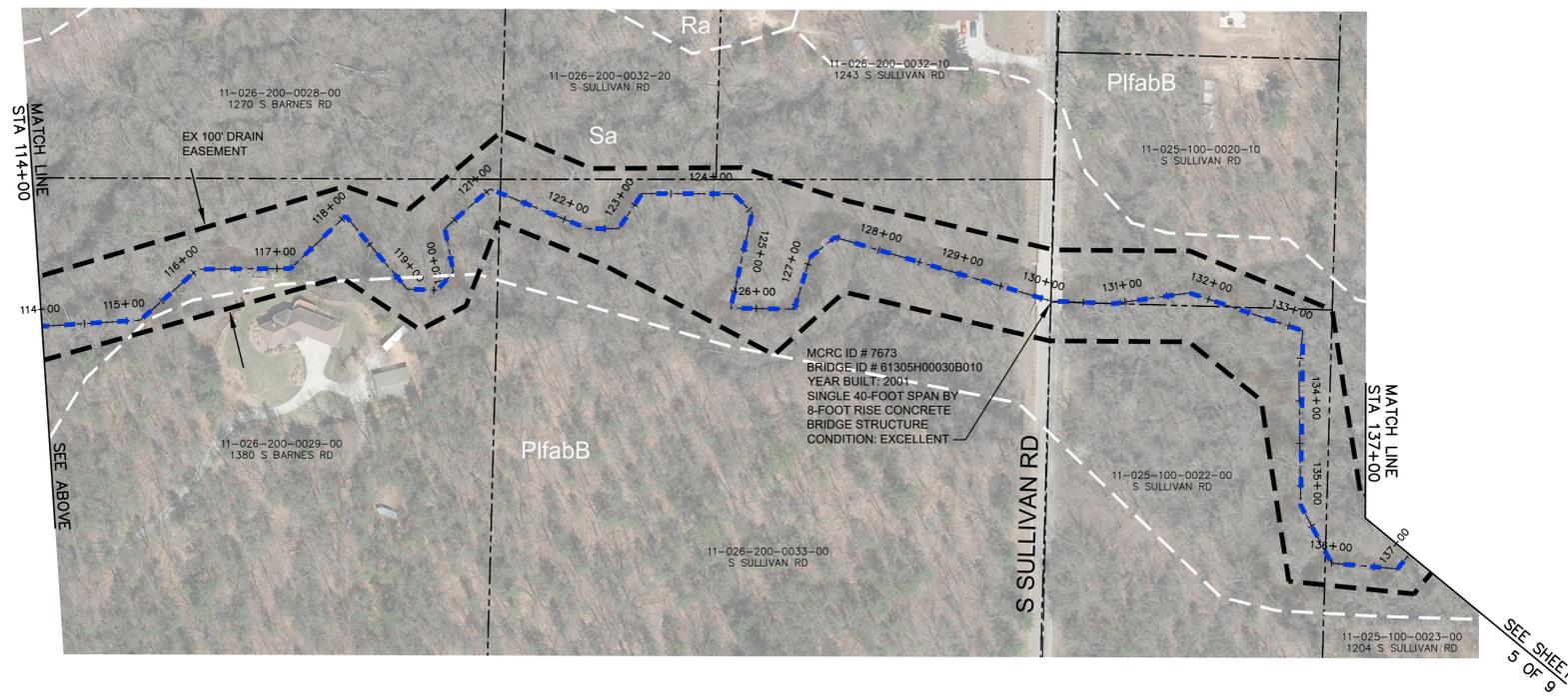


MCR# ID # NONE LISTED
BRIDGE ID # NONE LISTED
YEAR BUILT: UNKNOWN
MULTI-SPAN TIMBER BRIDGE
STRUCTURE 26-FOOT SPAN BY
4-FOOT RISE
CONDITION: POOR
(TO REMAIN)

SEE DIVISION 2 DRAWINGS FOR BRIDGE REPLACEMENT DETAILS

WORK ITEM	LOCATION	QUANTITY
CHANNEL VEGETATION AND DEADFALL REMOVAL	STA 91+00 TO 137+00	4600 LF

MUSKEGON - NEWAYGO DRAIN



MCR# ID # 7673
BRIDGE ID # 81305H00030B010
YEAR BUILT: 2011
SINGLE 40-FOOT SPAN BY
8-FOOT RISE CONCRETE
BRIDGE STRUCTURE
CONDITION: EXCELLENT

PLAN VIEW
MUSKEGON - NEWAYGO DRAIN
STA 91+00 TO STA 137+00

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SHEET NO.
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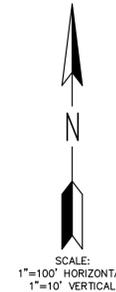
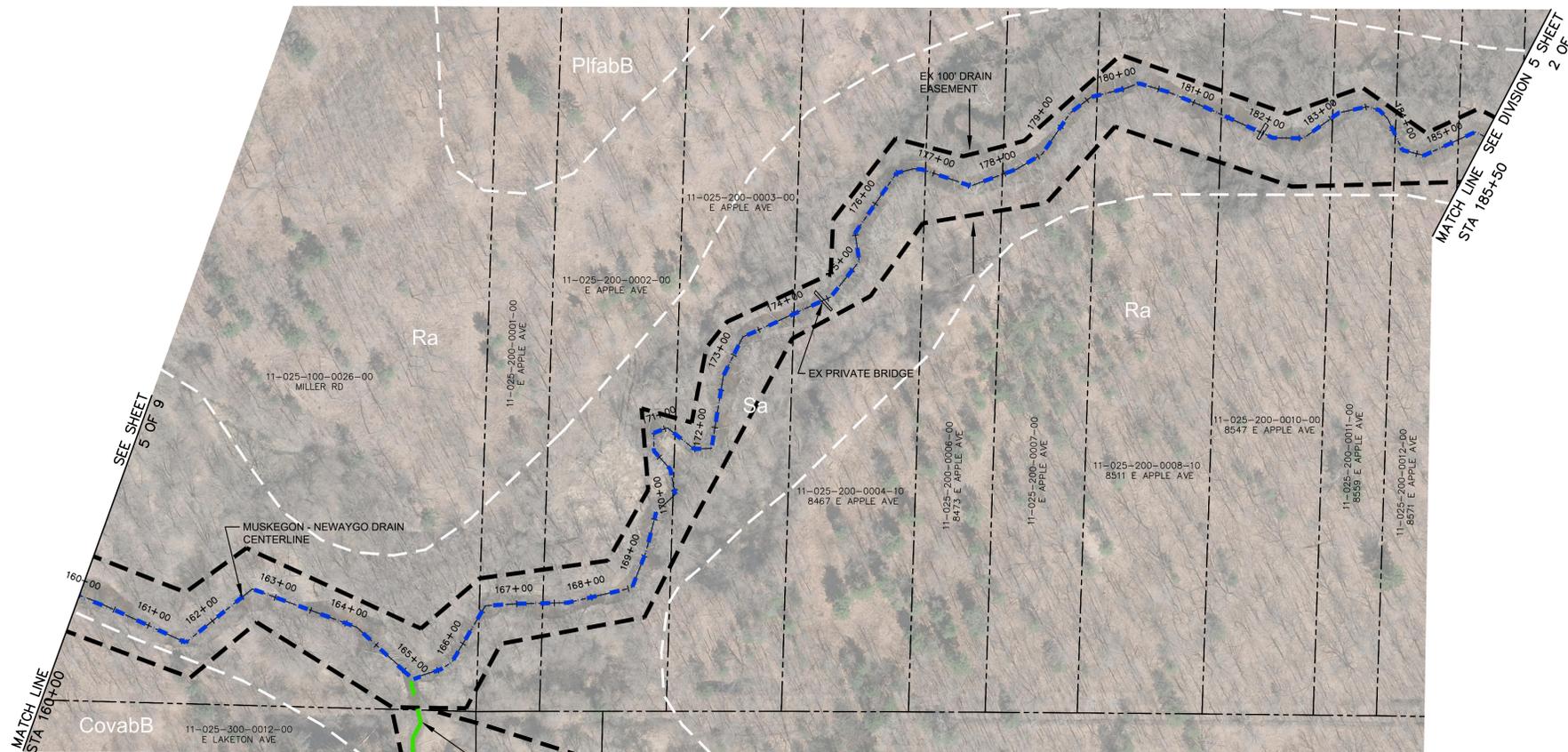
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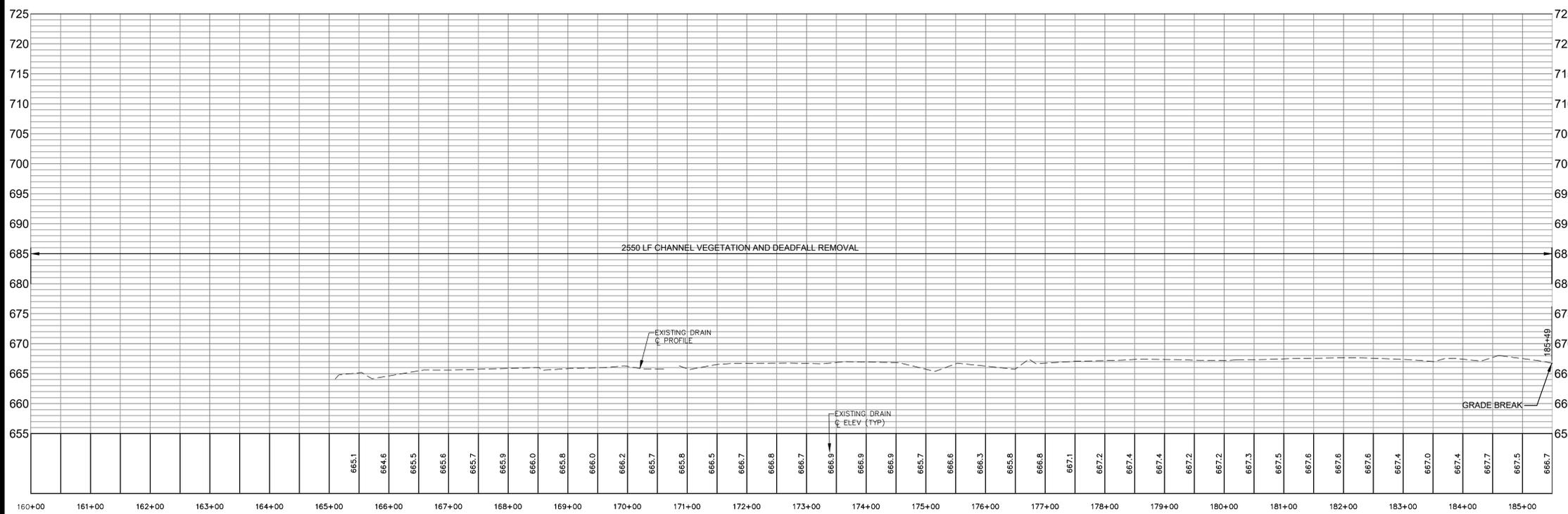
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WORK ITEM	LOCATION	QUANTITY
CHANNEL VEGETATION AND DEADFALL REMOVAL	STA 160+00 TO 185+50	2550 LF

MUSKEGON - NEWAYGO DRAIN



**PLAN AND PROFILE
MUSKEGON - NEWAYGO DRAIN
STA 160+00 TO STA 185+50**

NO.	REVISIONS	DATE	BY

4063 Grand Oak Drive Suite A109
Lansing, MI 48911
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MUSKEGON COUNTY, MICHIGAN

PROJECT NO.
16041

SHEET NO.
DIVISION 3
6 OF 9

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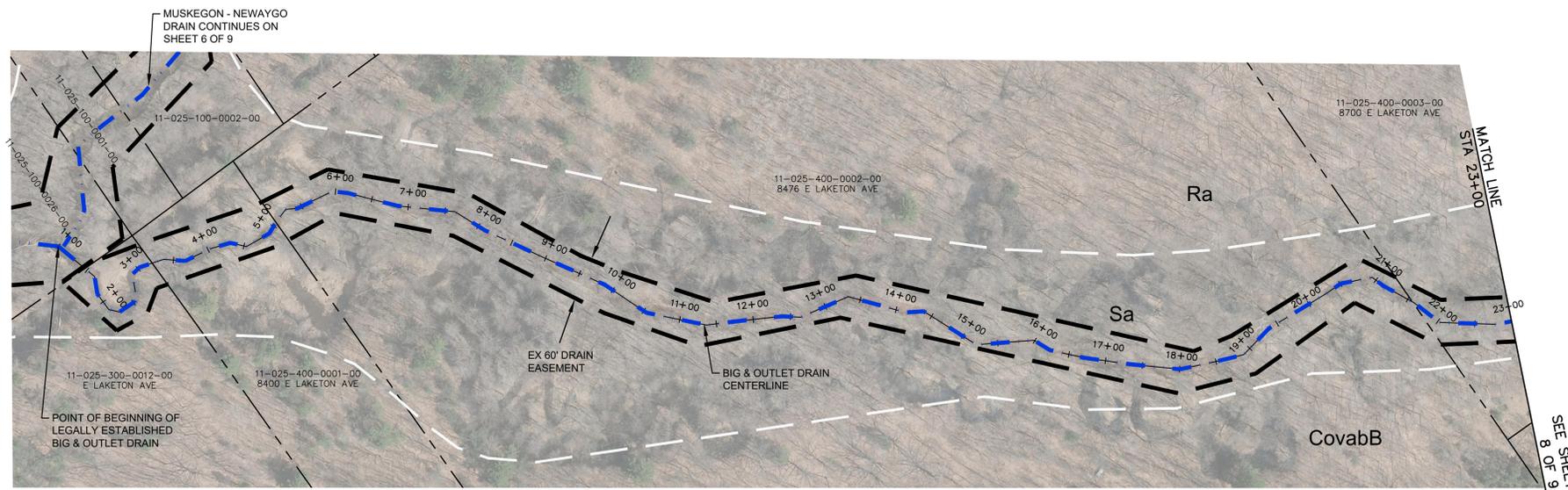
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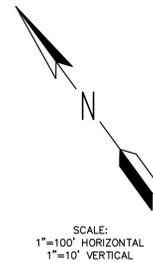
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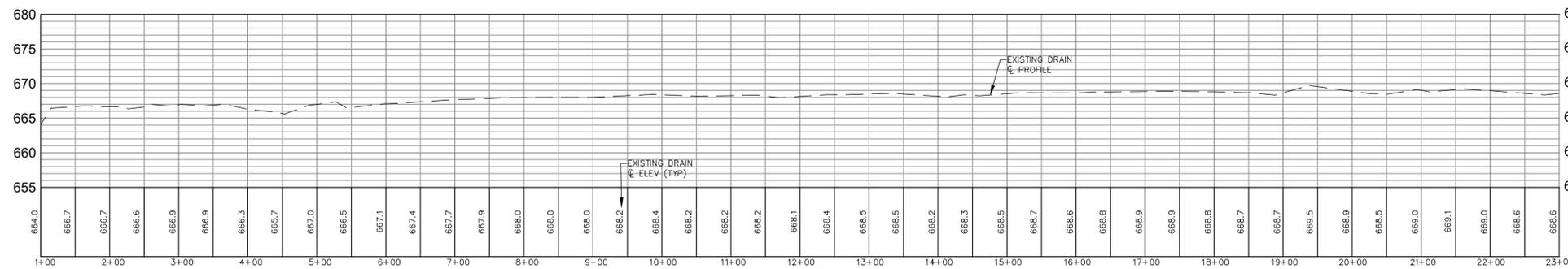
WORK ITEM	LOCATION	QUANTITY
CHANNEL VEGETATION AND DEADFALL REMOVAL	STA 1+00 TO 23+00	2200 LF

BIG & OUTLET DRAIN



LEGEND

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- X - X - X - = FENCE
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**PLAN AND PROFILE
BIG & OUTLET DRAIN
STA 1+00 TO STA 23+00**

NO.	REVISIONS	DATE	BY

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7 OF 9

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APPROXIMATE CONSTRUCTION SCHEDULE FOR SESC MEASURES

SESC - CONSTRUCTION SEQUENCE	SEPT 2020	OCT 2020	NOV 2020
INSTALL TEMPORARY SESC MEASURES:			
A. STABILIZED CONSTRUCTION ACCESSES	■		
B. CONSTRUCTION/TREE PROTECTION FENCE	■		
C. SEEDING		■	
MAINTAIN TEMPORARY SESC MEASURES		■	■
DRAIN CONSTRUCTION		■	■
FINAL GRADE		■	■
FINAL SITE STABILIZATION (TO BE COMPLETED WITHIN 24 HOURS OF FINAL GRADING OR ACTIVITY WITHIN THAT AREA)			■
REMOVE TEMPORARY SESC MEASURES			■
PERMANENT SESC MEASURES			■

SESC Notes

General Maintenance

Temporary SESC measures to be maintained by the contractor or landowner.

Silt fence

- Silt fence is to be trenched in no less than 6 inches below the ground surface
- Inspect silt fence immediately following each rainfall
- Repair when silt fence is sagging or has been removed/torn down
- When silt collects to half the height of the fence all silt is to be removed and fence repaired
- Remove silt fence when permanent SESC measures are in place and vegetation is established

Seeding and Mulching

- Seeding practices include topsoil (as directed by engineer), and mulch or mulch blanket (as directed by engineer).
- Where necessary, appropriate mulch blanket must be applied based on slope and growing conditions as approved by the project engineer.
- All slopes and highly erosive areas will be temporarily seeded and mulched when construction activity is not taking place
- Seed and mulch is to be inspected following each rain event to determine if concentrated flows are present
- In the event that seed and mulch are removed by erosive runoff, repairs are to be made immediately.

Site will be permanently stabilized within 5 days of final grade

Compliance with Part 91 of PA 451

Respond immediately to stormwater operator and/or soil erosion and sedimentation control inspector concerns. Make corrective measures as required

Continued Maintenance Plan

Stormwater operator/APA owner or maintenance supervisor will inspect monthly through the first growing season. Non established vegetation will be repaired/reseeded as necessary

CONSTRUCTION & SOIL EROSION AND SEDIMENTATION CONTROL NOTES:

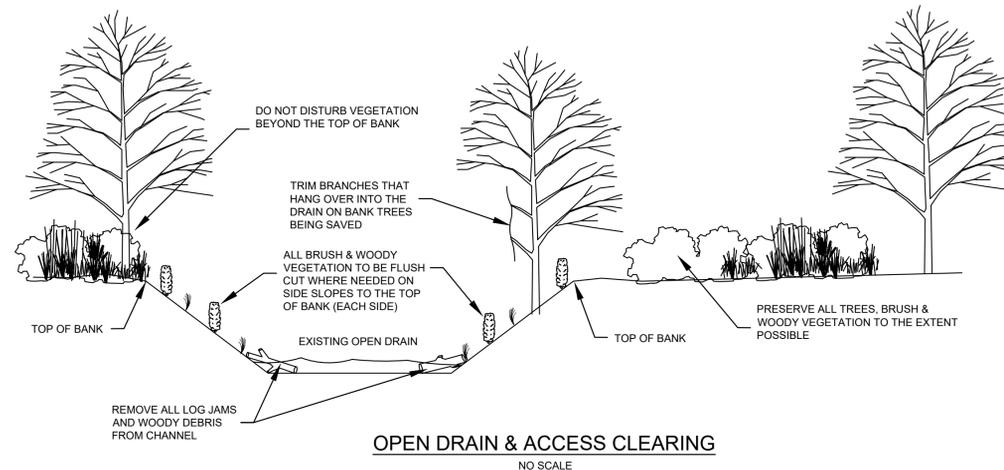
- ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE BEFORE CONSTRUCTION BEGINS. THE CONTRACTOR IS RESPONSIBLE FOR INSPECTING ALL MEASURES AT LEAST ONCE EACH WEEK AND/OR WITHIN 24 HOURS OF A PRECIPITATION EVENT THAT RESULTS IN STORM WATER RUNOFF OR DISCHARGE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL AND SHALL PROVIDE ALL EQUIPMENT AND MATERIAL NECESSARY TO KEEP DUST IN CHECK AT ALL TIMES. THE CONTRACTOR SHALL RESPOND IMMEDIATELY TO ANY AND ALL COMPLAINTS. STREETS, PARKING LOTS, DRIVEWAYS, PAVED ACCESS ROADS, AND ALL OTHER PAVED SURFACES SHALL BE SWEEPED AT LEAST ONCE A DAY AND/OR AS NEEDED THROUGHOUT THE DAY.
- MULCH AND/OR MULCH BLANKET SHALL BE APPLIED AND ANCHORED APPROPRIATELY ON ALL SLOPES GREATER THAN 2:1 OR ALL SLOPES DEEMED NECESSARY BY ENGINEER TO PREVENT OR CORRECT EROSION PROBLEMS AND ON ALL DISTURBED AREAS DUE TO CONSTRUCTION AS DETERMINED BY ENGINEER OR CERTIFIED SESC STORMWATER OPERATOR.
- ALL TEMPORARY SOIL EROSION MEASURES SHALL BE REMOVED AFTER PERMANENT MEASURES HAVE BEEN ESTABLISHED.
- ALL CONSTRUCTION SHALL BE CONFINED TO AREAS OF DISTURBANCE WITHIN THE ROAD RIGHT OF WAY AND/OR WITHIN DRAIN EASEMENTS. NO WORK, MATERIAL, OR STOCKPILES WILL BE ALLOWED OUTSIDE OF THESE LIMITS WITHOUT WRITTEN APPROVAL FROM LANDOWNER AND NOTICE TO ENGINEER PRIOR.
- PROTECT ALL TREES AND VEGETATION NOT SCHEDULED TO BE REMOVED. ENGINEER APPROVAL IS REQUIRED FOR ANY UNSCHEDULED REMOVAL OF TREES OR SHRUBS.
- EROSION AND SEDIMENTATION FROM WORK ON THIS PROJECT SHALL BE CONTAINED WITHIN THE WORK AREA AND NOT ALLOWED TO COLLECT ON OFF-SITE AREAS OR IN WATERWAYS - WATERWAYS INCLUDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
- SILT FENCE MAINTENANCE SHALL INCLUDE THE REMOVAL OF ANY BUILT-UP SEDIMENT. CONTRACTORS SHALL BE RESPONSIBLE TO REMOVE, REPLACE, RETRENCH OR REBACKFILL THE SILT FENCE SHOULD IT FALL OR BECOME DAMAGED DURING THE CONSTRUCTION.
- INLET FILTERS MAINTENANCE SHALL INCLUDE THE REMOVAL OF ANY ACCUMULATED SILT OR OTHER DEBRIS. IF INLET FILTERS CANNOT BE CLEANED, OR ARE DAMAGED, THEN THE FABRIC AND/OR STONE SHALL BE REPLACED.
- AN AGGREGATE CONSTRUCTION MAT SHALL BE PLACED AT ALL EXITS AND ENTRANCES TO CONSTRUCTION AREAS OUTSIDE THE INFLUENCE OF HMA SURFACES. MAINTENANCE OF MATS SHALL BE NECESSARY AND INCIDENTAL TO CONSTRUCTION.

MACDC - SESC MEASURES

1	SEEDING		When bare soil is exposed, temporarily or permanently, to erosive forces from wind and/or water on flat areas, mid slopes, grassed waterways and spillways, diversion ditches and dikes, borrow and stockpile areas, and spoil piles.
2	MULCH		On flat areas, mid slopes, grassed waterways and spillways, diversion ditches and dikes, borrow and stockpile areas, and spoil piles when areas are subject to raindrop impact, and erosive forces from wind or water.
7	RIPRAP		Along drain banks, shorelines, or where concentrated flows occur. Slows velocity, reduces erosion and sediment load.
26	DUST CONTROL		As a temporary measure on exposed and unstabilized areas that must be protected from wind or water erosion.
40	CHECK DAM		In constructed and existing flow corridors to reduce flow velocities.
61	SILT FENCE		As a temporary measure used to capture sediment from sheet flow. May also divert small volumes of sheet flow to protected outlets.
63	SEDIMENT SUMP (TRAP)		When working in the drain, or drain easement and the soil disturbance and anticipated sediment is limited.
66	STABILIZED CONSTRUCTION ACCESS		At locations where construction equipment will enter and exit the drain easement and tracking of soil is anticipated.

= PERMANENT MEASURE

= TEMPORARY MEASURE



Drawn By	DATE	By	DATE	Approved By	DATE
JAJ		JAJ	6/4/20		

REVISIONS

NO.	DATE	DESCRIPTION

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BLACK CREEK CONSOLIDATED DRAIN DRAINAGE DISTRICT
PART OF EGELSTON, MOORLAND, RAVENNA & CASNOVIA TOWNSHIPS
MUSKEGON COUNTY, MICHIGAN

PROJECT NO.
16041

SHEET NO.
DIVISION 3

9 OF 9

DETAILS

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