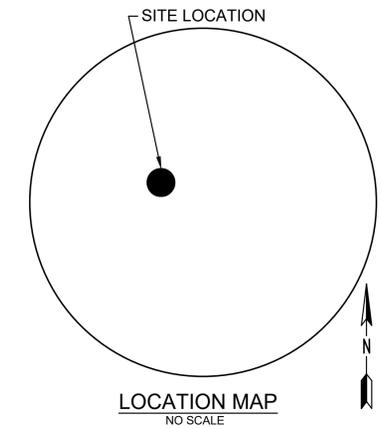




BRENDA M. MOORE MUSKEGON COUNTY DRAIN COMMISSIONER STEPHANIE BARRETT, DEPUTY DRAIN COMMISSIONER BLACK CREEK DRAIN DRAINAGE DISTRICT

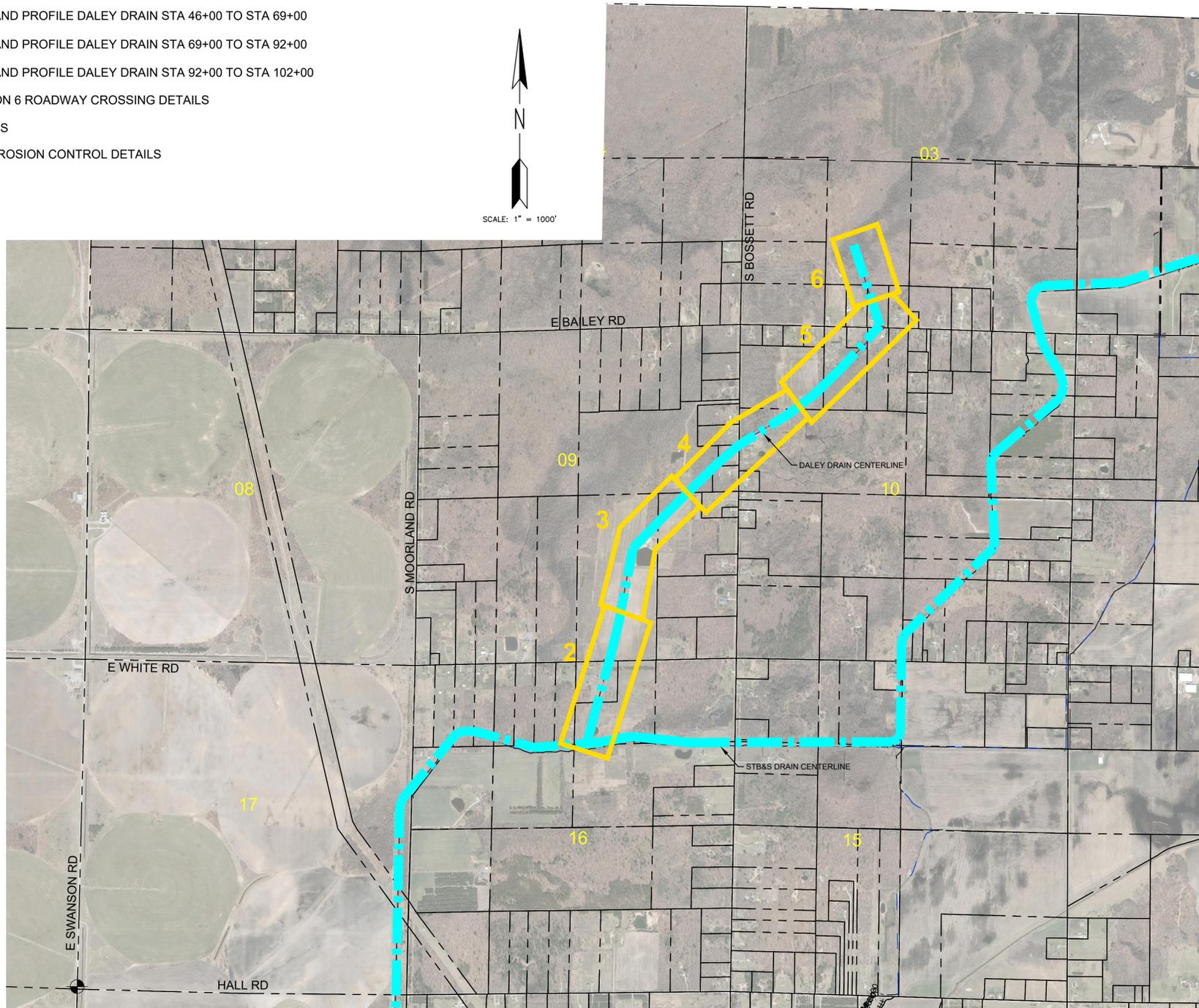
DIVISION 6 DALEY DRAIN

PART OF EGELSTON, MOORLAND, RAVENNA & CASNOVIA TOWNSHIPS
MUSKEGON COUNTY, MICHIGAN



LIST OF DRAWINGS

- 1 COVER SHEET
- 2 PLAN AND PROFILE DALEY DRAIN STA 1+00 TO STA 23+00
- 3 PLAN AND PROFILE DALEY DRAIN STA 23+00 TO STA 46+00
- 4 PLAN AND PROFILE DALEY DRAIN STA 46+00 TO STA 69+00
- 5 PLAN AND PROFILE DALEY DRAIN STA 69+00 TO STA 92+00
- 6 PLAN AND PROFILE DALEY DRAIN STA 92+00 TO STA 102+00
- 7 DIVISION 6 ROADWAY CROSSING DETAILS
- 8 DETAILS
- 9 SOIL EROSION CONTROL DETAILS



LIST OF CONTACTS

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CONSUMERS ENERGY
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NORTON SHORES, MI 49441
PHONE: 231-332-2621

GAS DISTRIBUTION
DTE ENERGY GAS
VINCE DUCA
2359 OLTHOFF DRIVE
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CABLE TELEVISION
COMCAST
JON CHARLAND
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MUSKEGON, MI 49441
PHONE: 231-375-5112

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

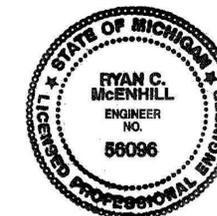
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PAUL R BOUMAN, PE
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PHONE: 231-788-2381

TELEPHONE
FRONTIER COMMUNICATIONS
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mcenthillr@engdot.com

LEGEND

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



Tyler Gage
RYAN C MCENHILL, P.E. #58096

6-25-20

DATE

COVER SHEET

NO.	REVISIONS	BY	DATE	Drawn	Check	Use	Approved
				SPM		5/20/20	

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16930 Robbins Road Suite 105
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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 6
1 OF 9

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811 Know what's below.
Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

BM #3 ELEV = 707.92
NE CORNER OF CONCRETE PARKING,
250'± S OF BAILEY €, 860'± W OF
N ADAMS RD €

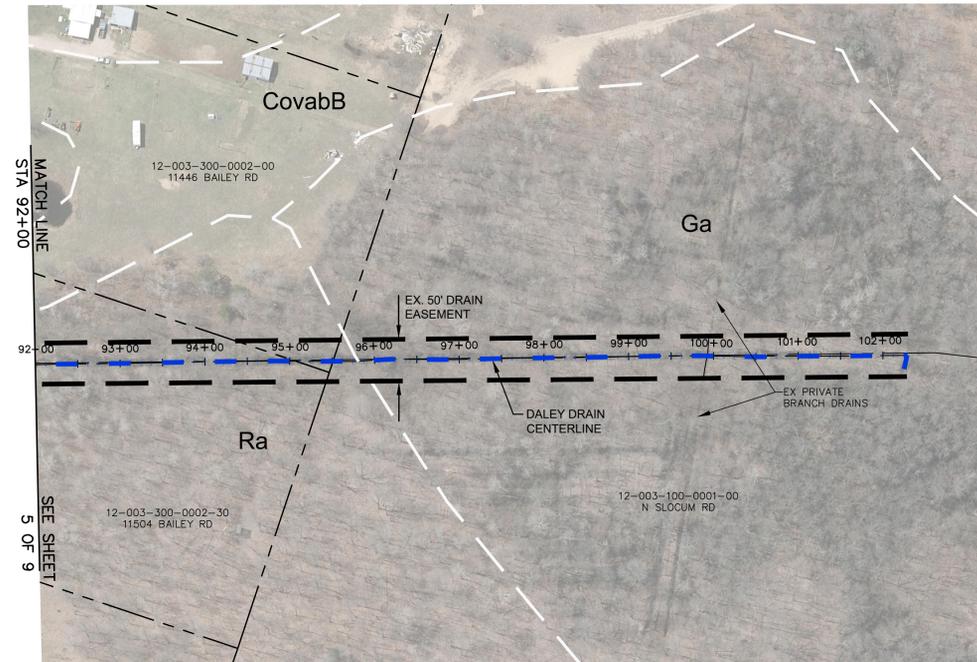
BM #4 ELEV = 707.74
SET SPIKE SW SIDE 10" POPLAR,
73'± N OF CROSSING, 660'± N OF
BAILEY AT EXTENSION OF RAVENNA RD

- GENERAL NOTES:
- ALL TREES MUST BE MARKED BY ENGINEER PRIOR TO REMOVAL.
 - FOR ACCESS CLEARING, ALL TREES REMOVED MUST BE CHIPPED OR HAVE LOGS STACKED WITHIN THE EASEMENT LIMITS. ALL OTHER WOODY MATERIAL MUST BE CHIPPED, BURIED-ON-SITE OR REMOVED FROM SITE. ALL TREES REMOVED FROM DITCH BOTTOM OR SIDES MUST BE CUT FLUSH.
 - SPOILS TO BE PLACED AND LEVELED ALONG THE WORKING SIDE OF THE DRAIN, SO AS NOT TO AFFECT THE EXISTING DRAINAGE PATTERNS.
 - LEVEL MULCH AND SEED SPOILS WITH OPEN CHANNEL SEED MIX. SPOILS SHALL NOT BE GREATER THAN 8-INCHES IN HEIGHT IN ANY GIVEN AREA.
 - PROPERTY OWNERS MUST BE NOTIFIED 7 DAYS PRIOR TO ANY ACCESS AND TREE REMOVALS ON THEIR PROPERTY.
 - SITE ACCESS IS RESTRICTED TO EXISTING DRAIN EASEMENTS, TEMPORARY ACCESS EASEMENTS, AND PUBLIC RIGHTS OF WAY SHOWN ON DRAWINGS. ALL OTHER ACCESS TO SITE SHALL BE APPROVED BY THE OWNER.
 - TEMPORARY SESC MEASURES MUST BE IN PLACE AT 500 FOOT INCREMENTS TO CONTROL SEDIMENT TRANSPORT.

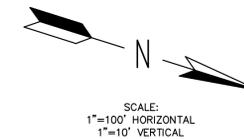
SOIL TYPES AND ABBREVIATIONS	
CovabB	Covert-Pipestone sands, 0 to 6 percent slopes
Ga	Granby loamy sand
PifabB	Plainfield sand, lake plain, 0 to 6 percent slopes
PifabD	Plainfield sand, lake plain, 6 to 18 percent slopes
PpsaaA	Pipestone-Covert-Saugatuck sands, 0 to 3 percent slopes
Ra	Roscommon and Au Gres Sands
Sa	Saranac loam

LEGEND

- = PROPERTY LINE OR R.O.W. LINE
- = EDGE OF PAVEMENT
- X - X - X - = FENCE
- = EXISTING GUARDRAIL
- ☀ = WETLANDS (AS MARKED BY OTHERS)
- +860 = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = EDGE OF WOODS
- ☀ = DECIDUOUS TREE
- ☀ = CONIFEROUS TREE
- ☀ = BUSH
- ☀ = STUMP
- GAS --- = EXISTING GAS LINE
- = EXISTING STORM SEWER
- = EXISTING SANITARY SEWER
- = EXISTING MANHOLE
- ⊕ = EXISTING STORM CATCH BASIN
- ⊕ = EXISTING WELL LOCATION
- ⊕ = EXISTING WATER VALVE
- ⊕ = EXISTING CURB STOP / METER
- ⊕ = EXISTING CATCH BASIN
- ⊕ = BENCH MARK LOCATION
- △ = EXISTING SIGN
- ⊕ = EXISTING MAILBOX
- ⊕ = EXISTING LIGHT POLE
- ⊕ = EXISTING GUY ANCHOR
- ⊕ = EXISTING UTILITY POLE
- ⊕ = EXISTING TELEPHONE PEDESTAL
- = EXISTING DRAIN EASEMENT
- = EXISTING DRAIN €
- = PROPOSED DRAIN €
- = PROPOSED TOP OF BANK
- = PROPOSED TOE OF BANK
- = SOIL TYPE
- ⊕ = PERMANENT SOIL EROSION CONTROL MEASURE OR RESTORATION DETAIL
- ⊕ = TEMPORARY SOIL EROSION CONTROL MEASURE

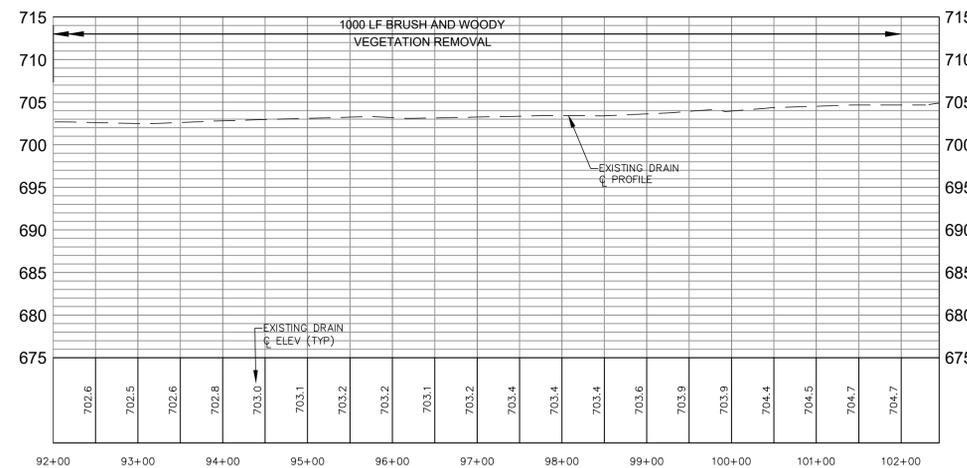


- SHEET SPECIFIC NOTES:
- WORK FROM EITHER SIDE OF THE DRAIN THIS SHEET AND WHICH PROVIDES THE LEASE ENVIRONMENTAL IMPACT ACCESS CLEARING WILL BE REQUIRED THIS SHEET IN THE FORM OF MINOR BRUSH AND WOODY VEGETATION REMOVAL. NOTIFY ENGINEER OR INSPECTOR PRIOR TO ANY CLEARING.
 - MISCELLANEOUS ITEMS OF WORK WILL BE PERFORMED AT THE DIRECTION OF THE ENGINEER.
 - DEPTH OF DRAIN FROM TOP OF BANK RANGES FROM 3 TO 4 FT.



WORK ITEM	LOCATION	QUANTITY
BRUSH AND WOODY VEGETATION REMOVAL	STA 92+00 TO 102+00	1000 LF

DALEY DRAIN



NO.	REVISIONS	BY	DATE

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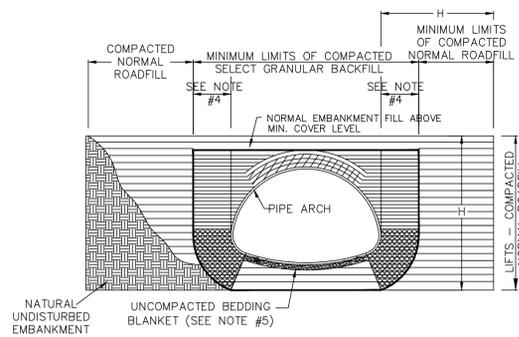
PROJECT NO.
16041

SHEET NO.
6 OF 9

DIVISION 6

**PLAN AND PROFILE
DALEY DRAIN
STA 92+00 TO STA 102+00**

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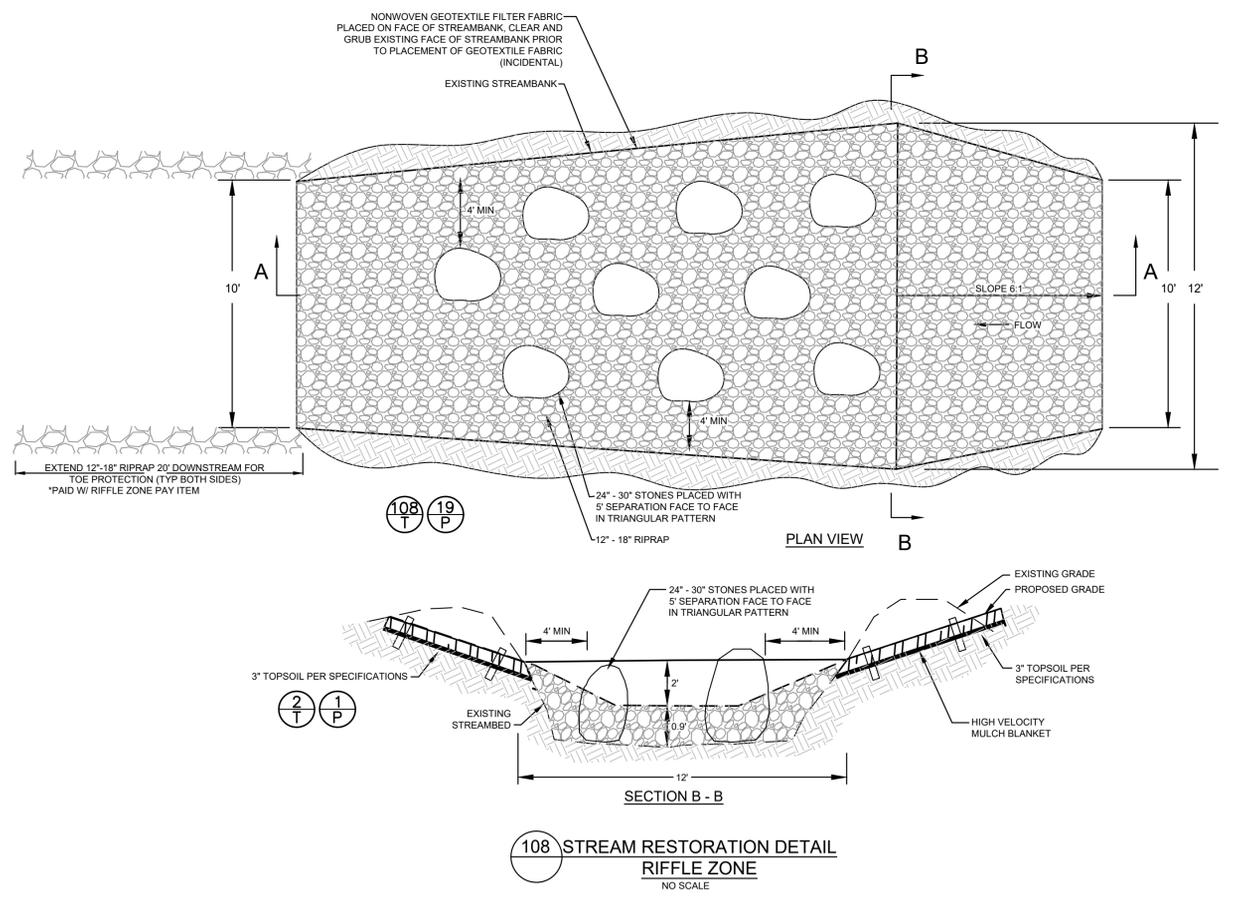
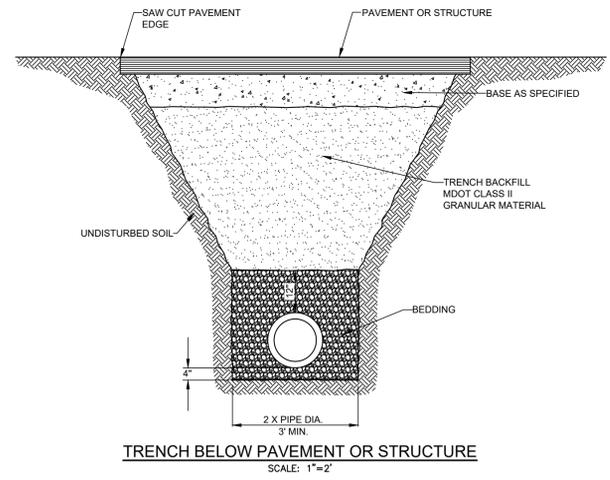
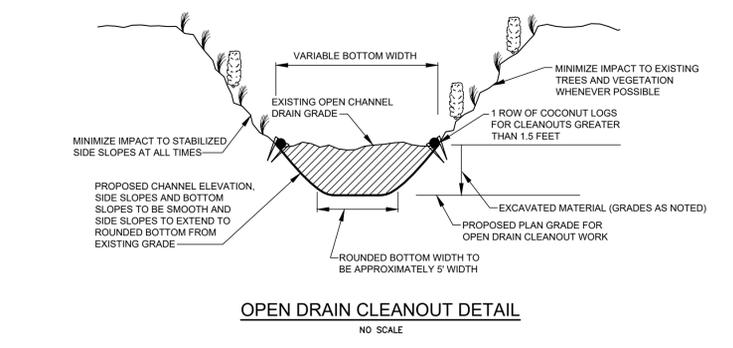
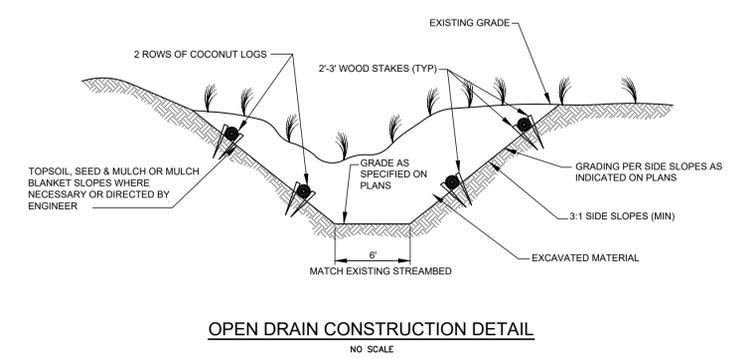
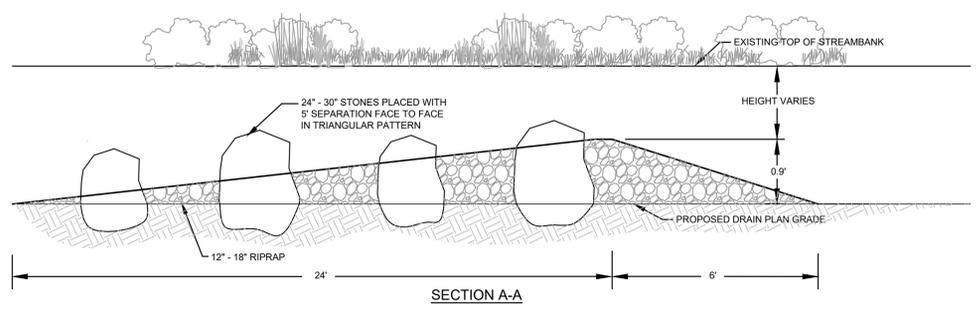
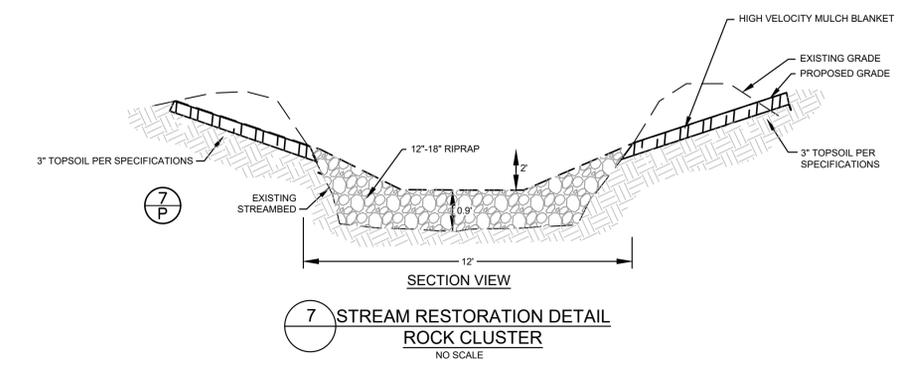
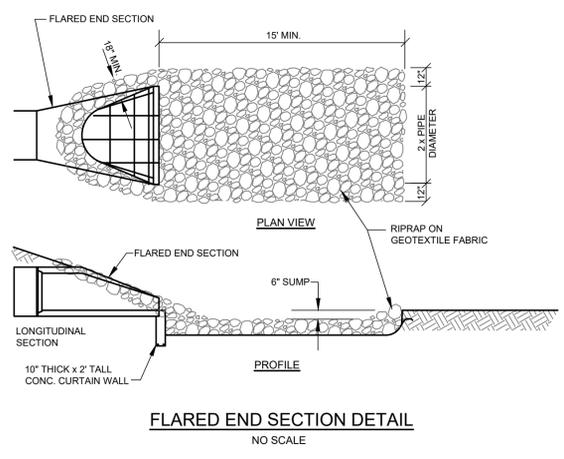
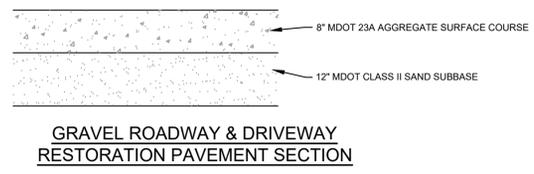
- SECTION
- CRITICAL BACKFILL ZONE, PRESSURE ON SOIL GREATEST HERE.
 - INITIAL LIFTS OVER CROWN OF STRUCTURE AS INDICATED BY SHADED AREA TO BE COMPACTED TO REQUIRED DENSITY WITH HAND OPERATED EQUIPMENT OR WITH SMALL TRACTOR (D-4 OR SMALLER) DRAWN EQUIPMENT.
 - SELECT GRANULAR STRUCTURAL BACKFILL LIMITS.

- NOTES:
1. ALL SELECT GRANULAR BACKFILL TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (6"-8" LOOSE TYPICALLY) AND COMPACTED TO 90 PERCENT DENSITY PER AASHTO T-180.
 2. COMPLETE AND REGULAR MONITORING OF THE CSP ARCH SHAPE IS NECESSARY DURING ALL BACKFILLING OF THE STRUCTURE.
 3. PREVENT EXCESSIVE DISTORTION OF SHAPE AS NECESSARY BY VARYING COMPACTION METHODS AND EQUIPMENT.
 4. THIS WIDTH SHOULD BE EQUAL TO 1/2 SPAN TO ONE SPAN WIDTH TYPICALLY. GREATER OR LESSER DISTANCE MAY BE REQUIRED. DISTANCE DEPENDS ON BEARING LOAD FOR ANY GIVEN LOADING, STRUCTURE SHAPE AND BACKFILL MATERIAL. THIS MUST BE EVALUATED BY THE PROJECT ENGINEER FOR EACH SPECIFIC SITUATION.
 5. SHAPED BED FOR A MINIMUM WIDTH OF SPAN/2. MINIMUM BEDDING THICKNESS IS TWICE THE CORRUGATION DEPTH.
 6. EMBANKMENT WIDTH H TO BE SUCH THAT A STABLE EMBANKMENT CAPABLE OF RESISTING SIDE PRESSURES FROM CSP PIPE-ARCH SHAPE WILL BE MAINTAINED THROUGHOUT THE LIFE OF INSTALLATION. THIS WIDTH TO BE DETERMINED BY THE PROJECT ENGINEER.

CONTECH
CONSTRUCTION PRODUCTS INC.
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CORRUGATED METAL PIPE-ARCH TYPICAL BACKFILL SECTION

DRAWN BY: CMD	REV. BY: XX	SCALE: N/A
DATE: 4/20/04	DATE: XX	1



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PART OF EGGLESTON, MOORLAND, RAVENNA & CASNOVIA TOWNSHIPS
MUSKEGON COUNTY, MICHIGAN

PROJECT NO.
16041

SHEET NO.
8 OF 9

DIVISION 6

DETAILS

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EROSION CONTROL MEASURES

1	SEEDING		When bare soil is exposed, temporarily or permanently, to erosive forces from wind and/or water on flat areas, mild slopes, grassed waterways and spillways, diversion ditches and dikes, borrow and stockpile areas, and spoil piles. On flat areas, mild 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. When a temporary or permanent vegetative cover is necessary or desired to prevent soil erosion and filter sediment in residential, commercial or high traffic areas; or on steep slopes, auxiliary spillways, and grassed swales.
2	MULCH		On disturbed slopes and stream or drain banks when site grading or construction activities result in grades that may cause increased erosive velocities or off-site sedimentation.
3	SODDING		As a temporary measure to line a channel, cover stockpile areas or to provide immediate cover on exposed slopes.
4	SLOPE ROUGHENING AND SCARIFICATION		Over all exposed soil surfaces or prepared seed beds that need protection from precipitation impact, sheet flow, rill flow or wind prior to erosive force impact.
5	PLASTIC SHEETING OR GEOTEXTILE COVER		Along drain banks, shorelines, or where concentrated flows occur. Slows velocity, reduces erosion and sediment load.
6	SOIL BINDING POLYMERS		Riprap and toe of slope protection is used in areas where velocities are causing drain bank erosion and are too high to stabilize using other methods.
7	RIPRAP		In the stream or drain bank usually above the ordinary high water mark where an enclosed drain or tile discharges to an open drain.
8	RIPRAP TOE OF SLOPE		In a ditch or drain just upgradient from the discharge into a stream or open drain to prevent erosive velocities.
9	OUTFALL STABILIZATION		In intermittent streams or drains and constructed ditches and drainage swales where flow velocities and channel grades do not warrant armoring the channel with riprap or cobble.
10	SIDE DITCH OUTLET		Where access to the opposite side of a drain is temporarily required and crossing the drain by fording will result in less damage than constructing a crossing.
11	GRASSED WATERWAYS		Where access to the opposite side of a drain is temporarily required and the crossing location will be dredged and stabilized the same day.
12.1	TEMP CROSSING - FORD DRAIN		Where access to the opposite side of a drain is temporarily required and the crossing location will be dredged and stabilized the same day.
12.2	TEMP CROSSING - NATIVE SOIL FORD		Where access to the opposite side of a drain is temporarily required and timbers are available for use as a temporary crossing.
12.2	TEMP CROSSING - NATIVE SOIL FORD		Where access to the opposite side of a drain is temporarily or permanently required and installation will require minimum bank excavation.
12.3	TEMP CROSSING - TIMBER FORD		Where access to the opposite side of a drain is temporarily required and the channel is narrow and can accommodate a culvert with minimum backfill.
12.4	TEMP OR PERMANENT CROSSING - ROCK FORD		Where access to the opposite side of a drain is temporarily required and the banks are stable and can support a bridge deck.
12.5	TEMP CROSSING - TEMP CULVERT		Where surface runoff accumulates at the top of a slope and must be conveyed, either temporarily or permanently, from a higher to lower elevation within a short horizontal distance, down steep slopes, or when soils are highly erodible or excessively wet. Also used when velocities must be reduced to prevent channel scour or drain bank erosion at the outlet.
12.6	TEMP CROSSING - TEMP BRIDGE		Where surface runoff accumulates at the top of a slope and must be conveyed to a lower elevation without causing slope erosion, gully formation, slope failure, or channel scour.
13	PIPE DROP SPILLWAY		When concentrated flow must be conveyed down a drain bank or slope or discharge into another drain. Where slope failure or channel scour is observed or is likely to occur, or when runoff must be redirected around work in the drain.
14	SLOPED PIPE SPILLWAY		When slope failure at eroded outlets are observed or are likely to occur from concentrated runoff on very shallow slopes (where flow velocities will be low enough not to undermine the reinforced grass root structure).
15	ARMORED SPILLWAY		Where piping is causing erosion and unstable drain banks.
16	REINFORCED VEGETATED SPILLWAY		In and adjacent to a stream when flow conditions prevent completing work activity without diverting flow around a work area.
17	TOE DRAIN		Where the discharge velocity of concentrated flow exceeds the erosive velocity of the receiving area or channel.
18	TEMPORARY BYPASS CHANNEL		At culvert ends as a headwall when culvert backfill is eroding or a longer culvert is impractical.
19	ENERGY DISSIPATORS		As a permanent measure in locations where a vertical bank is required and other erosion control measures have failed. As a weir. As a temporary cofferdam during construction.
20	CONCRETE BAG RIPRAP HEADWALL		Within or adjacent to a stream to isolate or divert flow during construction. Can also be used to temporarily impound water for very short time periods.
21	SHEET PILING		
22	SAND OR STONE FILLED BAGS		

EROSION CONTROL MEASURES (CONTINUED)

22	SAND OR STONE FILLED BAGS		Within or adjacent to a stream to isolate or divert flow during construction. Can also be used to temporarily impound water for very short time periods.
23	TREE REVETMENT		Where stream banks are eroding or undercutting. The placement of trees or tree tops along the edge of the stream provides a place for sediment to settle out behind the trees when water levels recede. The sediment remains in place behind the logs and allows a stream to "naturally" rebuild its banks.
24	LOG REVETMENT		Where stream banks are eroding or undercutting. The placement of logs along the edge of the stream provides a place for sediment to settle out behind the logs when water levels recede. The sediment remains in place behind the logs and allows a stream to "naturally" rebuild its banks.
25	GABION BASKETS		At the toe of steep slopes and drain banks within or adjacent to the stream channel when flow velocities are resulting in major drain bank or slope failure or instability and slope and drain bank reshaping with or without riprap is not practical.
26	DUST CONTROL		As a temporary measure on exposed and unstabilized areas that must be protected from wind or water erosion.
27	LIVE STAKING		Slopes and drain banks, wetland buffer and reservoir drawdown areas. In areas requiring stabilization but with limited access for equipment or when little site disturbance is required.
28	WATTLES		Where a slope or streambank requires stabilization and minimal disturbance is preferred or the site has limited access.
29	CELLULAR CONFINEMENT SYSTEMS		On steep slopes and stream or drain banks and in high velocity vegetated channels.

APPROXIMATE CONSTRUCTION SCHEDULE FOR SESC MEASURES

SESC - CONSTRUCTION SEQUENCE	APRIL 2021	MAY 2021	JUNE 2021	JULY 2021	AUG 2021
INSTALL TEMPORARY SESC MEASURES:					
A. STABILIZED CONSTRUCTION ACCESSES	■				
B. CONSTRUCTION/TREE PROTECTION FENCE	■				
C. SEEDING	■				
MAINTAIN TEMPORARY SESC MEASURES	■	■	■	■	■
SITE GRADING	■	■	■	■	■
OPEN DRAIN CONSTRUCTION	■	■	■	■	■
CULVERT CONSTRUCTION	■	■	■	■	■
PAVEMENT 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					

APPROXIMATE CONSTRUCTION SCHEDULE FOR SESC MEASURES

SESC - CONSTRUCTION SEQUENCE	SEPT 2021	OCT 2021
INSTALL TEMPORARY SESC MEASURES:		
A. STABILIZED CONSTRUCTION ACCESSES	■	
B. CONSTRUCTION/TREE PROTECTION FENCE	■	
C. SEEDING	■	
MAINTAIN TEMPORARY SESC MEASURES	■	■
SITE GRADING	■	■
OPEN DRAIN CONSTRUCTION	■	■
CULVERT CONSTRUCTION	■	■
PAVEMENT 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		

P = PERMANENT MEASURE # T = TEMPORARY MEASURE

EROSION AND SEDIMENT CONTROL MEASURES

40	CHECK DAM		In constructed and existing flow corridors to reduce flow velocities.
41	CATCH BASIN		Where surface water accumulates and needs an outlet or an open drain discharges to a stream or drain at erosive velocities. Within an enclosed drain system to provide an inlet and a sump.
42	VEGETATED BUFFER STRIPS		Along stream and drain corridors, sensitive areas, and shorelines when earth changes will occur during a drain maintenance or improvement project or when an eroding bank or drain easement area needs to be stabilized.
43	DIVERSION DIKE		Runoff needs to be diverted around sensitive areas, unstable or easily eroded soils, bare soils, away from steep banks, or around earth change activities.
44	DIVERSION DITCH		Runoff needs to be intercepted and or diverted around sensitive areas, unstable or easily eroded soils, bare soils, away from steep banks, or around earth change activities.
45	DIVERSION DITCH AND DIKE		Within existing flow corridors to divert runoff, temporarily or permanently, around sensitive areas, unstable or easily eroded soils, steep banks, along narrow drain easements or around maintenance or improvement activities.
46	STONE FILTER BERM		When runoff must be filtered prior to entering a lake, stream, drain or wetland. Never use in place of a check dam in a flowing stream.
47	SAND FENCE		In areas susceptible to wind erosion, particularly where the soil has not yet been stabilized by other means. To re-build a slope.
48	DEWATERING		When construction or maintenance activities are limited by the presence of water and a dry work area is required.
49	STRAW BALES		As a temporary diversion structure. Occasionally as an alternative to silt fence for projects that will be completed within a very short time period (less than one month).

SESC Notes

- General Maintenance**
- Temporary SESC measures to be maintained by the contractor at all times.
- 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 required), and mulch or mulch blanket (as directed by Engineer or required on plans).
 - Where necessary, appropriate mulch blanket must be applied based on slope and growing conditions as approved by the 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
- Storm drain inlet protection**
- Storm drain inlets to be inspected weekly and after each rain event.
 - Empty sediment and keep inlet protection clean during inspection and maintenance operations.
- 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 TEMPORARY 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.
- SURFACE RESTORATION OF ALL SEWER TRENCHES IN LAWN AREAS SHALL BE TOP SOILED, SEEDED, AND MULCHED WITHIN 5 CALENDAR DAYS OF BACKFILLING THE TRENCH.
- 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 3:1 OR GREATER ON ALL SLOPES DEEMED NECESSARY TO PREVENT OR CORRECT EROSION PROBLEMS AND ON ALL DISTURBED AREA DUE TO CONSTRUCTION.
- 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 STORM SEWER EASEMENTS. NO WORK, MATERIAL, OR STOCKPILES WILL BE ALLOWED OUTSIDE OF THESE LIMITS.
- ALL TRENCHES SHALL BE BACKFILLED TO GRADE OR PROPERLY PROTECTED IN ACCORDANCE WITH PROJECT PLANS & SPECIFICATIONS AT THE END OF EVERY DAY. AT NO TIME SHALL A TRENCH BE LEFT OPEN FOR A PERIOD LONGER THAN 48 HOURS.
- UNLESS SPECIFICALLY NOTED OTHERWISE, ALL UTILITY TRENCHES SHALL CONFORM TO TYPICAL TRENCH DETAIL.
- PROTECT ALL TREES AND VEGETATION NOT SCHEDULED TO BE REMOVED. ENGINEER APPROVAL IS REQUIRED FOR ANY UNSCHEDULED REMOVAL OF TREES, SHRUBS OR LANDSCAPING.
- 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 FAIL OR BECOME DAMAGED DURING THE CONSTRUCTION.
- INLET FILTER MAINTENANCE SHALL INCLUDE THE REMOVAL OF ANY ACCUMULATED SILT OR OTHER DEBRIS. IF INLET FILTERS CANNOT BE CLEANED, OR ARE DAMAGED, THEN THE FILTER AND/OR STONE SHALL BE REPLACED.

SEDIMENT CONTROL MEASURES

60	STORM DRAIN INLET PROTECTION		Around the entrance to a newly constructed catch basin or an inlet that will capture runoff from an earth change activity.
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.
62	SEDIMENT BASIN		When working in the drain, or drain easement. In streams or drains where sediment sumps are inadequate.
63	SEDIMENT SUMP (TRAP)		When working in the drain, or drain easement and the soil disturbance and anticipated sediment is limited.
64	POLYMER FLOCCULANTS		Where turbid water can be collected and suspended sediments removed prior to discharging runoff to a lake, stream, drain, or a wetland or runoff leaves the drain easement.
65	TURBIDITY CURTAIN		Within a stream or drain parallel to flow when a slack water area is necessary to isolate earth change activities from a lake or channel.
66	STABILIZED CONSTRUCTION ACCESS		At locations where construction equipment will enter and exit the drain easement and tracking of soil is anticipated.

ROUTINE MAINTENANCE ACTIVITY DETAILS

80	Debris Removal
81	Sediment Removal
82	Stormwater Basin Maintenance
83	Vegetation Removal Without Grubbing
84	Vegetation Removal With Selective Grubbing
85	Slope and Streambank Stabilization
86	Drain Crossing Maintenance
87	Enclosed Drain Maintenance
88	Culvert Repair

CONSTRUCTION & RESTORATION ACTIVITY DETAILS

100	Stormwater Basin Construction
101	Drain Relocation
102	Drain Enclosure
103	Drain Crossing
104	Weir Installation
105	Beaver Dam Removal
106	Low Flow Channel
107	Floodway Shelf
108	Rifle Zones
109	Pools
110	Meanders
111	Cross-Vanes
112	J-Hook Vanes

DETAILED DRAWINGS AND SPECIFICATIONS ARE LOCATED IN THE MICHIGAN ASSOCIATION OF COUNTY DRAIN COMMISSIONERS SOIL EROSION AND SEDIMENTATION CONTROL AUTHORIZED PUBLIC AGENCY PROCEDURES MANUAL

SYMBOLGY FOR INSERTION INTO CONSTRUCTION DRAWINGS:

P = PERMANENT MEASURE
T = TEMPORARY MEASURE

DATE: 6/22/20
BY: JAJ
DATE: 6/22/20
APPROVED BY: JAJ
DATE: 6/22/20

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PART OF EGGLESTON, MOORLAND, RAVENNA & CASNOVIA TOWNSHIPS
MUSKEGON COUNTY, MICHIGAN

PROJECT NO. 16041
SHEET NO. 9 OF 9
DIVISION 6
SOIL EROSION CONTROL DETAILS

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