Stormwater Control Practice Maintenance Plan

for

Morrow County Engineer Facility

located at

Home Road (C.R. 19) Morrow County, Ohio

Created: 3/15/2024

Last Revised: ___ ___, ____

Stormwater Control Practice Maintenance Plan

Project Name: **Morrow County Engineer Facility**

Project Owner Name and Contact Information:

Morrow County Infirmary Commissioners
80 N. Walnut Street
Mt. Gilead, OH 43338
Contact: Bart Dennison, P.E.
Phone: 419-947-4530
engineer@morrowcountyohio.gov

Project Ownership Adjustments: Update contact information upon change in the property ownership.

Project Owner Name and Contact Information:

Date:

Project Owner Name and Contact Information:

Date:

Project Owner Name and Contact Information:

Date:

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APPENDICES

1.0 STORMWATER CONTROL PRACTICE OVERVIEW

The following plan provides inspection and maintenance procedures associated with the post-construction water quantity controls associated with the **Morrow County Engineering Facility** project. The post-construction Stormwater Controls Practices (SCP) and associated inspection and maintenance procedures are taken from the City of Columbus Stormwater Drainage Manual to assure long-term adequacy of the stormwater management systems.

Stormwater quantity treatment for **Morrow County Engineering Facility** project will be addressed by managing stormwater runoff from the site using the SCP(s) listed here and described in Section 2.0.

This site utilizes a dry detention basin with an outlet control structure to control the release of runoff to the existing stormwater sewer system

The location of the SCP's are identified on the exhibits provided within Appendix A.

2.0 SCP INSPECTION AND MAINTENANCE REQUIREMENTS

All inspection and maintenance of the proposed SCP(s) is the responsibility of the **(Site Owner/Developer),** until such time as the development is transferred to a new Owner; hereinafter referred to as the SCP Operator. The SCP Operator is obligated to perform inspections and required maintenance in perpetuity for all privately owned SCPs, as outlined in this manual and as per the City of Columbus Stormwater Drainage Manual. Inspection and maintenance includes trash and debris removal, weed control, and mowing, as well as performing structural repairs as-needed to ensure the continued operation of the SCP in conformance with the design.

The SCP Operator shall complete the Inspection and Maintenance forms attached in Appendix C, demonstrating that the inspection and maintenance is being performed and documented at the frequency indicated on the forms. The maintenance inspection log shall be kept on the property and shall be made available to the county upon request.

The SCP Operator:

Morrow County Infirmary Commissioners
80 N. Walnut Street
Mt. Gilead, OH 43338
Contact: Bart Dennison, P.E.
Phone: 419-947-4530
engineer@morrowcountyohio.gov

The designation of the SCP Operator shall be revised on the plan cover page whenever the inspection and maintenance responsibility is transferred, such as new site ownership.

3.0 SCP INSPECTION AND MAINTENANCE PROCEDURES

SCP Inspection Features

The purpose of maintenance inspections is to assure safe and proper functioning of the stormwater control practices. The SCP Operator shall inspect and maintain the SCP's including all pipes and channels built to convey stormwater to the SCP's, as well as structures, improvements, and vegetation provided to control the quantity and quality of stormwater. A narrative for maintaining and inspecting Dry Detention Basins are located within Appendix B. As well as fact sheets that outline specific SCP features that are to be inspected and maintenance procedures. The location of the SCP's, project specific details, and specifications are identified on the Site Plans provided within Appendix A.

Inspection Frequency

The inspection and maintenance frequency shall coincide with the frequencies outlined within appendix B.

1. Establishment Period - Refer to Appendix B, Table 4-1 for suggested schedule.

2. Routine Inspection and Maintenance - Refer to Appendix B, Table 4-3 for suggested schedule.

3. As-Needed Maintenance - Refer to Appendix B, Table 4-5 for suggested schedule.

Inspection and Maintenance Reporting

Inspections shall include the completion of dated and signed inspection forms provided in the Appendix C and the notation of all deficiencies observed during the inspection. Additional inspection forms are available within the City of Columbus Stormwater Drainage Manual. The SCP Operator shall maintain copies of complete dated and signed inspection forms, along with recorded dates and descriptions of maintenance activities performed by the SCP Operator to remedy the deficiencies observed during prior inspections. The inspection and maintenance forms shall be kept on the property and shall be made available to the County upon request.

Appendix A:

SITE PLANS

- Site Plans
    - Plan view with site features
    - Storm sewer system
    - Stormwater outfall locations and outlet protection
    - Outlet structure profiles and details
    - Pond Details and cross sections

SITE IMPROVMENTS FOR
MORROW COUNTY ENGINEER
PID: G20-536-00-613-04
VILLAGE OF MT. GILEAD, GILEAD TOWNSHIP
MORROW COUNTY, OHIO
JANUARY 2024

BENCHMARKS	
BASED ON NAVD 1988 DATUM	
BM #1 **IRON PIN SET WITH RED CAP** **"GHG CONTROL POINT"**	NORTHING: 326508.2900 EASTING: 1883550.3440 ELEVATION: 1197.02
BM #2 **IRON PIN SET WITH RED CAP** **"GHG CONTROL POINT"**	NORTHING: 326288.5140 EASTING: 1884096.1500 ELEVATION: 1211.41
BM #3 **IRON PIN SET WITH RED CAP** **"GHG CONTROL POINT"**	NORTHING: 327087.6130 EASTING: 1883571.7600 ELEVATION: 1194.90

GENERAL SUMMARY

SITE LOCATION:
150 HOME RD (C.R. 76)
MT. GILEAD, OH 43338

PARCEL:
G20-536-00-613-04

TOTAL ACREAGE:
68.15 AC.

PROJECT SITE ACREAGE:
17.12 AC. (0.59 WHICH IS RIGHT OF WAY)
NET: 16.53 ACRES

CURRENT ZONING:
PC - PLANNED COMMERCIAL AND OFFICE DISTRICT

PRESENT USE:
UNDEVELOPED

PROPOSED PROJECT DESCRIPTION:
CONSTRUCTION OF A BUILDING, GRAVEL LOT AND PARKING SPACES.

STANDARD DRAWINGS

THE STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS LISTED BELOW SHALL BE CONSIDERED A PART OF THIS PLAN. THE DELAWARE COUNTY ENGINEER'S DESIGN, CONSTRUCTION AND SURVEYING STANDARDS, CURRENT SPECIFICATIONS OF THE CITY OF COLUMBUS & OHIO DEPARTMENT OF TRANSPORTATION, CURRENT EDITION (ENGLISH UNITS), INCLUDING ALL STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATION LISTED SHALL GOVERN THESE PLANS.

DELAWARE COUNTY	DEL-CO WATER	OHIO DEPARTMENT OF TRANSPORTATION (ODOT)
DCED-R100 DCED-S168 DCED-S169 DCED-S441 A&B	D-1 D-2 D-4 D-16 D-24 D-30	DM-1.1 DM-1.2 DM-1.3 DM-2.1 DM-4.2 DM-4.3 DM-4.4 CB-2-2 & CB-2-3 WQ-1.1 & WQ-1.2

THESE DRAWINGS ARE AVAILABLE AT THE FOLLOWING WEBPAGES:
https://www.dot.state.oh.us/SCDs/Pages/hydraulic.aspx
http//www.co.delaware.oh.us/engineer/Development/StdRoadwayDrawings.htm
http//www.co.delaware.oh.us/engineer/development/StdSewerDrawings.htm
https://delcowater.org/engineering-downloads/

FLOOD PLAIN

THE DEVELOPMENT IS LOCATED IN ZONE X. A ZONE DESCRIBED AS OUTSIDE OF THE 100 YEAR FLOODPLAIN ON FLOOD INSURANCE RATE MAP, MORROW COUNTY, OHIO, PANEL 150 OF 375, MAP NUMBER 39117C0150E, EFFECTIVE DATE JUNE 02, 2009.

VARIANCES

NO VARIANCES ARE NEEDED FOR THIS PROJECT

UTILITY CONTACT LIST

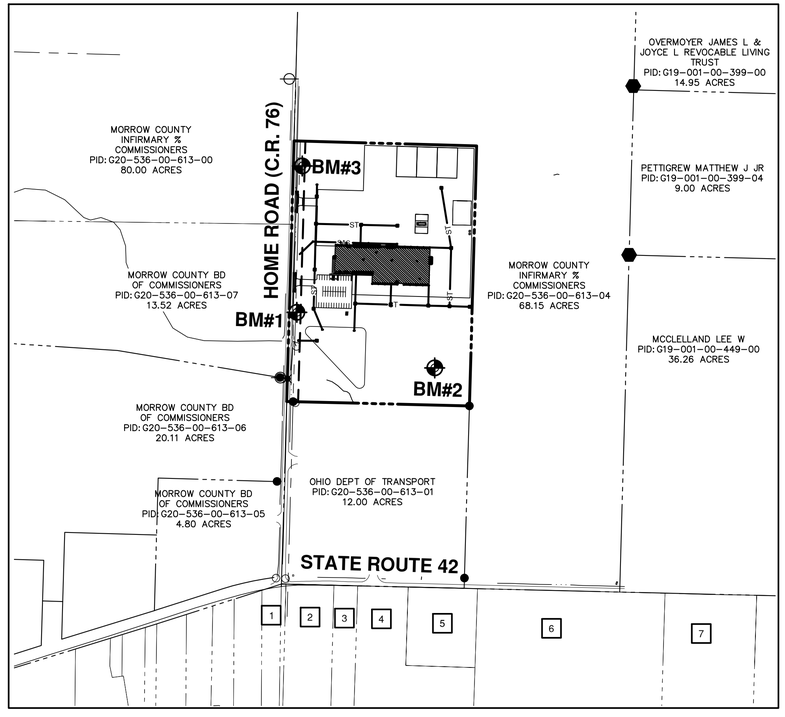
THE LOCATION OF THE UTILITIES SHOWN ON THE PLANS HAS BEEN OBTAINED THROUGH INFORMATION PROVIDED BY THE UTILITY COMPANIES AND BY FIELD SURVEY. THE FOLLOWING LIST IS OF KNOWN UTILITY COMPANIES WITH FACILITIES WITHIN THE CONSTRUCTION AREA:

AMERICAN ELECTRIC POWER 850 TECH CENTER DRIVE GAHANNA, OHIO 43230 ATTENTION: RICK ECKLE (614) 883-6829	DEL-CO WATER COMPANY, INC. 6658 OLENTANGY RIVER ROAD DELAWARE, OHIO 43015 (740) 548-7746 (EXT. 2403)	FRONTIER COMMUNICATIONS 550 LEADER STREET MARION, OH 43302 (740) 383-0575
TIME WARNER COMMUNICATIONS 1266 DUBLIN ROAD COLUMBUS, OHIO 43215 (614) 481-5262	COLUMBIA GAS OF OHIO MATT COYNE 3550 JOHNNY APPLESEED CT. COLUMBUS, OH 43231 (614) 818-2107	AT&T 111 NORTH 4TH STREET ROOM 802 COLUMBUS, OH (614) 223-7276
MORROW COUNTY ENGINEER BART DENNISON, P.E. 50 E. HIGH ST. MT. GILEAD, OHIO 43338 (419) 947-4530	MT. GILEAD VILLAGE SEWER/WATER VILLAGE ADMINISTRATOR 72 WEST HIGH ST. MT. GILEAD, OHIO 43338 (419) 946-1931	EMBARQ 441 WEST BROAD STREET PATASKALA, OH 43062 (740) 927-8282
MORROW SOIL & WATER CONSERVATION 5362 US HIGHWAY 42, SUITE 202 MT. GILEAD, OHIO 43338 (419) 946-7923	SUBURBAN NATURAL GAS 2626 LEWIS CENTER ROAD LEWIS CENTER, OH 43035 ATTENTION: SAM REDA (740) 548-2450	INSIGHT COMMUNICATIONS 3770 E. LIVINGSTON AVE. COLUMBUS, OH 43227 (614) 501-9432(EXT. 205)

OHIO Utilities Protection SERVICE
Call Before You Dig
800-362-2764 or 8-1-1
www.oups.org

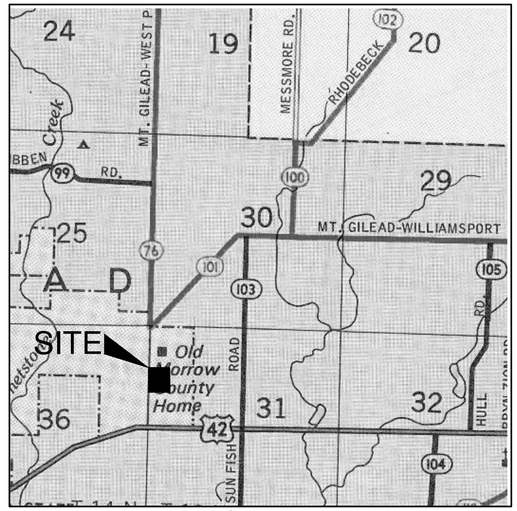
KEYED NOTES

1. MARQUIS BENJAMIN A
PID: G19-001-00-451-00
38.55 ACRES
2. RIZOR CHESTER J JR & CHRISTINA M
PID: G19-001-00-452-00
2.18 ACRES
3. MARQUIS BENJAMIN A
PID: G19-001-00-451-05
34.25 ACRES
4. CRIBBS CHARLES E & JAMIE L
PID: G19-001-00-451-06
8.01 ACRES
5. RICHARDSON JAMES A
PID: G19-001-00-451-01
2.00 ACRES
6. LEONHARD HAROLD N OR LEE ANN TRUSTEES
PID: G19-001-00-450-10
79.12 ACRES
7. FULGHAM DAVID W II & ASHLEY M BAKER
PID: G19-001-00-450-09
5.78 ACRES



PROJECT INDEX MAP
SCALE: 1" = 300'

GRAPHIC SCALE
0 150 300 600
1 inch = 300 feet



VICINITY MAP

Sheet List Table

Sheet Number	Sheet Title
C1	TITLE SHEET
C2	GENERAL NOTES
C3	DETAILS
C4	QUANTITIES & STM TABLES
C5	EXISTING CONDITIONS
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C7	GRADING PLAN
C8	GRADING DETAIL
C9	INTERSECTION DETAILS
C10	UTILITY PLAN
C11	STORM PROFILES
C12	BASIN DETAILS
C13	SWPP NOTES
C14	SWPPP DETAILS
C15	SWPPP PLAN

OWNER	ENGINEER	BUILDER
MORROW COUNTY INFIRMARY% COMMISSIONERS 80 N. WALNUT STREET MT. GILEAD, OH 43338 ATTN: MR. BART DENNISON, P.E. EMAIL: engineer@morrowcountyohio.gov PHONE: (419) 947-4530	GANDEE HEYDINGER GROUP 5676 STATE ROUTE 521, SUITE B DELAWARE, OH. 43015 ATTN: AARON HEYDINGER P.E. EMAIL: aheydinger@ghgcivil.com PHONE: (614) 942-6042	J&F CONSTRUCTION & DEVELOPMEENT INC. 2141 STATE ROUTE BUCYRUS, OH 44820 ATTN: JEFF BEAMER EMAIL: jbbeamer@jfconstruction.com PHONE: (419) 562-6662

DRAWING SET STATUS

- ☐ PRELIMINARY ENGINEERING SET
- ☐ COUNTY REVIEW SET
- ■ CONSTRUCTION DOCUMENT SET
- ☐ AS-CONSTRUCTED DOCUMENT SET

CHANGE ORDER SCHEDULE

CHANGE	PREPARED	DATE OF CHANGE	DESCRIPTION OF CHANGE	SHT NO.	APPROVED	DATE OF APPROVAL

APPROVALS

THE MORROW COUNTY ENGINEER'S DESIGN, CONSTRUCTION AND SURVEYING STANDARDS, THE STANDARD SPECIFICATIONS OF THE CITY OF COLUMBUS, CURRENT EDITION, INCLUDING STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS LISTED SHALL GOVERN THIS IMPROVEMENT.

THE MORROW COUNTY ENGINEER'S SIGNATURE ON THIS PLAN SIGNIFIES ONLY CONCURRENCE WITH THE GENERAL PURPOSE AND LOCATION OF THE PROPOSED IMPROVEMENTS WITH RESPECT TO IMPROVEMENTS WITHIN THE RIGHT-OF-WAY, STORM WATER MANAGEMENT, EROSION AND SEDIMENT CONTROL. ALL TECHNICAL DETAILS REMAIN THE RESPONSIBILITY OF THE PROFESSIONAL ENGINEER WHO PREPARED AND CERTIFIED THESE PLANS.

MORROW COUNTY ENGINEER

MORROW COUNTY ENGINEER _____ DATE _____

ENGINEER:

THIS IS TO CERTIFY THAT GOOD ENGINEERING PRACTICES HAVE BEEN UTILIZED IN THE DESIGN OF THIS PROJECT AND THAT ALL OF THE MINIMUM STANDARDS AS DELINEATED IN THE MORROW COUNTY DESIGN, CONSTRUCTION AND SURVEYING STANDARDS MANUAL HAVE BEEN MET, INCLUDING THOSE STANDARDS GREATER THAN MINIMUM WHERE, IN MY OPINION, THEY ARE NEEDED TO PROTECT THE SAFETY OF THE PUBLIC. ANY VARIANCES TO THE ABOVE STANDARDS ARE CONSISTENT WITH SOUND ENGINEERING PRACTICE AND ARE NOT DETRIMENTAL TO THE PUBLIC SAFETY AND CONVENIENCE. THESE VARIANCES HAVE BEEN LISTED HEREIN AND HAVE BEEN APPROVED BY THE MORROW COUNTY ENGINEER.

GANDEE HEYDINGER GROUP, LLC
5676 STATE ROUTE 521, SUITE B
DELAWARE, OH 43015
PHONE: (614) 942-6042

REGISTERED ENGINEER'S SIGNATURE AND SEAL — 3 / 15 / 2024 DATE

PLAN PREPAREDFOR:
J&F CONSTRUCTION & DEVELOPMENT, INC.
2141 State Route 19 | Bucyrus, Ohio 44820
419.562.6662 | jfconstruction.com

PLAN PREPARED BY:
GHG
GANDEE HEYDINGER GROUP
CIVIL ENGINEERS & SURVEYORS
5676 STATE ROUTE 521, SUITE B
DELAWARE, OH 43015
P: 614.942.6042
WWW.GHGCIVIL.COM

VILLAGE OF MT. GILEAD, MORROW COUNTY, OHIO
MORROW COUNTY ENGINEERING
FORMER INFIRMARY SITE
PID: G20-536-00-613-04
SITE IMPROVEMENT PLAN
TITLE SHEET

NO.	DATE	REVISION DESCRIPTION
0	11 / 13 / 2023	ISSUED FOR CONSTRUCTION
1	1 / 4 / 2024	OWNER BUILDING AND SITE LAYOUT UPDATE
2	3 / 13 / 2024	SITE LAYOUT, GRADING, STORM UPDATE

STATE OF OHIO
AARON S. HEYDINGER
PE 73986
REGISTERED PROFESSIONAL ENGINEER

DATE: 1 / 4 / 2024
SCALE: AS SHOWN
DRAWN BY: JB
CHECKED BY: AH
PROJECT NUMBER: 22-074-07
DRAWING NUMBER: C1
SHEET NUMBER: 1 / 16

C:\Users\aheydinger.GANDEE\Gandee Heydinger Group\OHG Team - Documents\General\Projects\22-074-07-JFC-Morrow Cty Eng Facility\Production Drawings\Site Construction\C1 TITLE SHEET Mar 27, 2024 - 3:38:25pm aheydinger

GENERAL NOTES SUBDIVISION

1. THE MORROW COUNTY DESIGN, CONSTRUCTION AND SURVEYING STANDARDS, LATEST EDITION, TOGETHER WITH THE CITY OF COLUMBUS (C.O.C.) CONSTRUCTION AND MATERIALS SPECIFCATIONS, LATEST EDITION, ALONG WITH THE MORROW COUNTY ENGINEER (MCEO) SUPPLEMENTAL SPECIFICATIONS, SHALL GOVERN ALL MATERIALS AND WORKMANSHIP INVOLVED IN THE IMPROVEMENTS SHOWN ON THESE PLANS, UNLESS OTHERWISE NOTED.

2. A PRECONSTRUCTION CONFERENCE SHALL BE HELD AT THE COUNTY ENGINEER'S OFFICE BEFORE ANY WORK IS BEGUN. REPRESENTATIVES OF THE OWNER, DESIGN ENGINEER, AND CONTRACTOR SHALL BE IN ATTENDANCE. A SCHEDULE OF SEQUENCE OF EVENTS DURING CONSTRUCTION MUST BE SUBMITTED FOR REVIEW PRIOR TO THIS MEETING.

3. PROOF SURVEYS ARE REQUIRED TO BE PERFORMED BY THE OWNER IN ORDER TO DEMONSTRATE CONCLUSIVELY THAT THE FACILITIES ARE CONSTRUCTED TO THE CAPACITY, ELEVATIONS, SLOPES, GRADES AND SIZES SHOWN ON THE APPROVED PLANS. SUCH SURVEYS SHALL BE CONDUCTED BY A REGISTERED PROFESSIONAL SURVEYOR, SHALL EMPLOY STANDARD TECHNIQUES, AND SHALL PRODUCE AND FURNISH FIELD NOTES TO THE COUNTY ENGINEER FOR REVIEW AND RECORD PURPOSES. REDUCTION OF NOTES AND ANY PLOTTING NECESSARY TO MAKE NOTES INTERPRETABLE SHALL BE COMPLETED BY THE SURVEYOR PERFORMING THE PROOF SURVEY. PROOF SURVEYS SHALL BE IN ADDITION TO, AND SEPARATE FROM, OTHER INSPECTIONS BY THE COUNTY ENGINEER. ALL DISCREPANCIES REVEALED IN THE AS-CONSTRUCTED FACILITIES BY THE PROOF SURVEY SHALL BE RECTIFIED BY THE OWNER AND THE PROOF SURVEY RE-PERFORMED IN ORDER TO DEMONSTRATE CONFORMANCE. THE PROOF SURVEY SHALL BE APPROVED BY THE COUNTY ENGINEER, IN WRITING, PRIOR TO THE RELEASE OF THE BUILDING PERMITS.

4. BE ADVISED: A SUBSURFACE DRAINAGE SYSTEM MAY EXIST ON THIS SITE. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING DRAIN PIPES OR TILES ENCOUNTERED IN THE FIELD AT ALL TIMES AND, IF DAMAGED, SHALL REPAIR OR REPLACE THEM IMMEDIATELY WITH THE SAME SIZE AND QUALITY OF MATERIALS AS FOUND. ALL DRAINAGE TILES ENCOUNTERED IN THE FIELD SHALL BE CONNECTED TO THE STORM SEWER SYSTEM AT A STRUCTURE.

5. THE CONTRACTOR SHALL NOTIFY THE COUNTY ENGINEER'S OFFICE FORTY EIGHT (48) HOURS PRIOR TO ANY CONSTRUCTION.

6. THE CONTRACTOR'S BID SHALL BE COMPREHENSIVE AND INCLUDE ALL LABOR AND MATERIALS NECESSARY TO COMPLETE ALL IMPROVEMENTS ACCORDING TO THE ENGINEERING PLANS AND SPECIFICATIONS.

7. THE CONTRACTOR SHALL LOCATE ALL UTILITIES OR UNDERGROUND STRUCTURES PRIOR TO CONSTRUCTION AND NOTIFY EACH RESPECTIVE UTILITY OWNER FORTY-EIGHT (48) HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONTACT O.U.P.S. AT 1-800-362-2764.

8. IF A DISCREPANCY EXISTS BETWEEN THE PLANS AND SPECIFICATIONS, THE COUNTY ENGINEER AND THE OWNER'S ENGINEER SHALL BE NOTIFIED BEFORE WORK IS COMMENCED.

9. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EXERCISE SAFETY PRECAUTIONS AND TO PROVIDE ALL SAFETY EQUIPMENT TO SAFEGUARD WORKMEN AND ALL PERSONS ON OR NEAR THE WORK SITE.

10. THE CONTRACTOR SHALL EXAMINE THE WORK SITE AND SHALL SATISFY HIMSELF AS TO THE CHARACTER, QUALITY AND QUANTITIES OF WORK TO BE PERFORMED.

11. HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING FEATURES WITHIN THIS SUBDIVISION IS APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF EXISTING FEATURES SHOWN ON PLANS, SUCH AS GAS LINES, WATER LINES AND FIELD TILE, TO PROPERLY EXECUTE THE WORK OF HIS CONTRACT. IT SHALL FURTHER BE THE RESPONSIBILITY OF THE CONTRACTOR TO EXERCISE DUE CAUTION AROUND EXISTING COMPLETED WORK ON THE SITE.

12. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY AND ALL EXISTING WORK DAMAGED DURING OR DUE TO THE EXECUTION OF THIS CONTRACT AT HIS OWN EXPENSE. ALL SAID WORK IS TO BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER AND THE COUNTY ENGINEER.

13. SITE CLEARING SHALL COMPLY WITH C.O.C. ITEM 201. REMOVAL OF EXISTING PIPE, PAVEMENT, STRUCTURES AND OTHER OBSTRUCTIONS SHALL COMPLY WITH C.O.C. ITEM 202.

14. ALL MATERIAL DEEMED UNSUITABLE BY THE COUNTY ENGINEER SHALL BE REMOVED FROM THE PROPOSED RIGHT-OF-WAY, CONSTRUCTION LIMITS OR FOR ANY EXCAVATION FOR THE STORM SEWER SYSTEM. THE MATERIAL REMOVED INCLUDES, BUT IS NOT LIMITED TO, ORGANIC SOIL, TOPSOIL, VEGETATION, TREES, STUMPS, ROOTS OR EXCESSIVELY WET INORGANIC MATERIALS. THE MATERIAL SHALL BE REMOVED REGARDLESS OF THE AMOUNT OF EMBANKMENT TO BE CONSTRUCTED AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 203, EXCAVATION.

15. THE MORROW COUNTY ENGINEER OR HIS DESIGNATED REPRESENTATIVE SHALL OBSERVE AND APPROVE ALL SUB-BASE MATERIALS AND COMPACTION IN PUBLIC FILL AREAS.

16. NON-ORGANIC SITE SOILS ARE ACCEPTABLE AS USE FOR STRUCTURAL FILL PROVIDED THEY MEET ALL REQUIREMENTS OF C.O.C. ITEM 203. MOISTURE ADJUSTMENT MAY BE REQUIRED AND SHALL BE PREFORMED BY THE CONTRACTOR.

17. ANY LANDSCAPE FEATURES, SUCH AS TREES, FENCES, RETAINING WALLS, ETC. IN DRAINAGE EASEMENTS SHALL BE REVIEWED BY THE MORROW COUNTY SOIL AND WATER CONSERVATION DISTRICT (MCSWCD) AND THE MORROW COUNTY ENGINEER (MCEO) PRIOR TO INSTALLATION. THE MCSWCD AND DCEO WILL REVIEW THE PROPOSED IMPROVEMENTS TO ASSURE THAT THE IMPROVEMENTS WILL NOT INTERFERE WITH THE STORM WATER CONTROL FACILITIES.

18. ALL CONTRACTOR(S) WORKING ON THIS SITE SHALL REFERENCE ALL IRON PINS AND MONUMENTS BEFORE EXCAVATING AT OR NEAR SAID IRON PINTS OR MONUMENTS. IF ANY PINS OR MONUMENTS ARE DESTROYED OR DAMAGED BY THE CONTRACTOR, THEY SHALL BE REPLACED BY A PROFESSIONAL OHIO LICENSED SURVEYOR AT THE COMPLETION OF THE PROJECT OR AT THE DIRECTION OF THE COUNTY ENGINEER AT NO EXPENSE TO THE OWNER. THE COST FOR THIS SHALL BE INCLUDED IN THE PRICE BID FOR VARIOUS ITEMS.

19. ALL QUESTIONS SHALL BE DIRECTED TO THE MORROW COUNTY ENGINEER AT (419) 947-4530.

BACKFILLING FOR STORM SEWERS, CULVERTS AND UTILITIES

1. UTILITY TRENCHES OUTSIDE THE RIGHT-OF-WAY SHALL BE BACKFILLED WITH SOILS MEETING THE REQUIREMENTS OF ITEM 203 (100 PCF OR GREATER). THESE TRENCHES ARE TO BE COMPACTED IN ACCORDANCE TO STANDARD DRAWING DCED R-100 AT +/- 2% OF OPTIMUM MOISTURE.

2. ALL UTILITY TRENCHES IN THE RIGHT-OF-WAY RUNNING PARALLEL TO THE EDGE PAVEMENT AND NOT OVER FIVE FEET (5') IN DEPTH SHALL BE BACKFILLED ACCORDING TO STANDARD DRAWING DCED R-100.

3. ALL UTILITY TRENCHES UNDER ROAD PAVEMENT, STARTING AT A DISTANCE OF FIVE FEET (5') FROM THE EDGE OF THE PAVEMENT AND EXTENDING ONE FOOT (1') IN DISTANCE FOR EACH ONE FOOT (1') IN DEPTH SHALL BE BACKFILLED WITH COMPACTED GRANULAR MATERIALS PER STANDARD DRAWING DCED R-100 OR LOW STRENGTH MORTAR BACKFILL. ALSO, THE TOP OF ALL UTILITY CONDUITS SHALL BE LOCATED AT LEAST ONE FOOT BELOW THE UNDERDRAINS.

4. ALL UTILITY TRENCHES OVER FIVE FEET (5') IN DEPTH WHICH RUN PARALLEL TO THE EDGE OF PAVEMENT OR THAT ARE IN THE ZONE OF INFLUENCE SHALL BE BACKFILLED AS PER STANDARD DRAWING DCED R-100.

5. THE CONTRACTOR SHALL INCLUDE IN THE UNIT PRICE BID FOR UNDERGROUND UTILITY PIPE, ALL TRENCHING, BACKFILLING AS PER PLAN, AND THE REMOVAL AND DISPOSAL OF BRUSH, TREES, STUMPS, ETC. WITHIN THE AREA OF EXCAVATION OF THE TRENCH.

6. THE CONTRACTOR SHALL REFER TO THE UTILITY PLAN AND PROFILE SHEETS TO DETERMINE CRITICAL UTILITY CROSSINGS.

7. IN PAVEMENT, SIDEWALK, AND UTILITY CROSSING AREAS THE BACKFILL SHALL BE COMPACTED GRANULAR MATERIAL PER C.O.C. ITEM 304, AND ALL OTHER REMAINING AREAS SHALL BE BACKFILLED PER C.O.C. ITEM 603.08.

8. THE CONTRACTOR SHALL RESTORE OFF-SITE CONSTRUCTION AREAS TO AN EQUAL OR BETTER CONDITION THAN THAT EXISTING PRIOR TO COMMENCEMENT OF CONSTRUCTION TO THE SATISFACTION OF THE COUNTY ENGINEER.

9. CASING PIPE REQUIRED WITHIN THE RIGHT-OF-WAY SHALL BE SDR 21 OR SCHEDULE 40 FOR NON-PRESSURIZED LINES AND C-900 (LESS THAN 12-INCHES) OR C-905 (GREATER THAN 12-INCHES) FOR PRESSURIZED LINES.

STORM SEWERS

1. THE CONTRACTOR SHALL INCLUDE IN THE UNIT PRICE BID FOR ITEM 603, ALL TRENCHING, EXCAVATION AND BACKFILLING PER STANDARD DRAWING DCED R-100, AND THE REMOVAL AND DISPOSAL OF BRUSH, TREES, STUMPS ETC. WITHIN THE AREA OF EXCAVATION OF THE TRENCH, UNLESS BID IN ITEM 203.

2. THE PROPOSED ELEVATIONS AND LOCATIONS OF INLETS, CATCH BASINS, AND PIPES, AND THE ESTIMATED LENGTHS OF PIPES, MAY BE ADJUSTED BY THE COUNTY ENGINEER DURING THE ENTIRE IMPROVEMENT OF THIS PROJECT. BASIS OF PAYMENT FOR POSSIBLE ADJUSTMENTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR VARIOUS STORM SEWERS TO BE ADJUSTED.

3. UNLESS OTHERWISE NOTED ON THE PLANS, ALL STORM SEWERS SHALL BE AS HEREAFTER SPECIFIED:
   a. ALL SIZES OF STORM SEWER LOCATED WITHIN THE RIGHT-OF-WAY SHALL BE TYPES "A" OR "B" CONDUIT (C.O.C. 706.02 OR C.O.C. 706.04).
   b. STORM SEWERS LOCATED OUTSIDE OF THE RIGHT-OF-WAY SHALL BE TYPE "C" CONDUIT (C.O.C. 706.02) OR POLYPROPYLENE COMPLYING WITH C.O.C. 720.13 OR 720.14.
   c. FOR ALL CONCRETE PIPE IN TYPE A, B, C AND D INSTALLATIONS, SEE THE CITY OF COLUMBUS SUPPLEMENTAL SPECIFICATIONS IN APPENDIX B OF THE MORROW COUNTY ENGINEERS DESIGN, CONSTRUCTION AND SURVEYING STANDARDS FOR THE MINIMUM CLASS OF PIPE THAT IS REQUIRED.

4. ALL TYPE "A", "B", AND "C" CONDUIT SHALL HAVE JOINTS, PER CITY OF COLUMBUS 901.15 AND SHALL USE TYPE C BITUMINOUS PIPE JOINT FILLER.

5. GRANULAR BEDDING SHALL BE PROVIDED FOR ALL TYPE "A", "B", AND "C" CONDUIT PER MORROW COUNTY STANDARD DRAWINGS DCED S-149, DCED S-151, DCED S-152, DCED S-153 AND DCED S-155.

6. ALL PIPES OUTSIDE THE RIGHT-OF-WAY SHALL HAVE A COVER OF 1.5 FEET MINIMUM. WHEREVER THIS IS NOT THE CASE, EMBANKMENT SHALL BE PLACED TO PROVIDE A MINIMUM COVER PRIOR TO THE INSTALLATION OF THE STORM SEWER.

7. OPENINGS SHALL BE PROVIDED IN THE DRAINAGE STRUCTURES TO ACCOMMODATE UNDERDRAIN OUTLETS. ANY CORING NECESSARY SHALL BE INCLUDED WITHIN THE COST OF THE UNDERDRAIN. UNDERDRAINS TO BE CONSTRUCTED IN ACCORDANCE WITH THE PLAN SPECIFICATIONS.

8. WHERE PLASTIC PIPE (HDPE) IS USED FOR STORM SEWERS TO BE PLACED ON DRAINAGE MAINTENANCE, 100% OF THE PIPE SHALL BE MANDRELLED 30 DAYS AFTER INSTALLATION. ALL PLASTIC PIPE FAILING THE MANDREL TEST SHALL BE RETESTED AND/OR REPLACED PER THESE STANDARDS AND SUPPLEMENTAL SPECIFICATIONS. IN ADDITION TO NOTIFYING THE COUNTY INSPECTOR, PLEASE ALSO NOTIFY MATT LANUM AT 740-368-1921 AT LEAST 2 BUSINESS DAYS PRIOR TO THE INSTALLATION TO GIVE THEM BOTH THE CHANGE TO OBSERVE THE CONSTRUCTION OF DRAINAGE FACILITIES TO BE PLACED ON DRAINAGE MAINTENANCE PARTICULARLY INCLUDING THE MANDREL TESTING.

GRADING NOTES

10. EXCAVATION AND EMBANKMENT SHALL COMPLY WITH C.O.C. ITEM 203 AND MORROW COUNTY SUPPLEMENTAL SPECIFICATIONS.

11. THE CONTRACTOR'S BID SHALL BE COMPREHENSIVE AND INCLUDE ALL LABOR AND EQUIPMENT TO COMPLETE ALL EXCAVATION, FILL AND GRADING IN ACCORDANCE WITH THE APPROVED ENGINEERING PLANS AND SPECIFICATIONS.

12. EXCAVATION AND EMBANKMENT QUANTITIES DO NOT INCLUDE ANY PROVISION FOR UNDERCUTTING, FOOTINGS, OR UNSUITABLE MATERIAL.

13. AFTER THE TOPSOIL IS REMOVED, PROOFROLL THE PAVEMENT AND BUILDING AREA SUBGRADES TO BE FILLED. SOFT AREAS SHOULD BE UNDERCUT AND STABILIZED PRIOR TO FILLING OPERATIONS. RELATIVE DEPTH OF UNDERCUT WILL BE DETERMINED WHEN SOFT AREAS ARE DISCOVERED. THE MORROW COUNTY ENGINEER SHALL DETERMINE THE DEPTH AND EXTENT OF THE UNDERCUT.

EROSION AND SEDIMENTATION CONTROL

SEE THE INCLUDED SWPPP SHEETS FOR EROSION CONTROL REQUIREMENTS AND NOTES THAT APPLY TO THIS PROJECT.

PIPE UNDERDRAINS

1. ALL MATERIALS AND WORKMANSHIP FOR UNDERDRAINS SHALL COMPLY WITH C.O.C. ITEM 605.

2. UNDERDRAINS SHALL BE INSTALLED AND BACKFILLED TO SUBGRADE ELEVATIONS IMMEDIATELY PRIOR TO CONSTRUCTION OF SUB-BASE AND AFTER THE PROOFROLL OF THE SUBGRADE. HOWEVER, WHERE SUBSURFACE CONDITIONS ARE SUCH THAT IMPROVEMENT OF UNSTABLE SUBGRADE CAN BE ACCOMPLISHED THROUGH DRYING ACTION OF UNDERDRAINS, THE COUNTY ENGINEER MAY AUTHORIZE OR REQUIRE THE CONTRACTOR TO DELAY CONSTRUCTION OF THE SUB-BASE AS NECESSARY.

3. IMMEDIATELY PRIOR TO THE CONSTRUCTION OF CURBS, THE MATERIAL LOCATED ABOVE AND WITHIN THE UNDERDRAIN TRENCH SHALL BE REMOVED TO A DEPTH NECESSARY TO EXPOSE CLEAN #8 OR #57 STONE. BACKFILL THE EXCAVATED AREA WITH CLEAN #8 OR #57 STONE.

4. REINFORCED ENDS SHALL BE PROVIDED FOR THE EXPOSED ENDS OF ALL UNDERDRAIN OUTLETS, IF THE EXPOSED PIPE ENDS ARE UNPROTECTED BY HEADWALLS, CATCH BASINS, OR MANHOLES. THE LAST 10 FEET OF UNDERDRAIN SHALL BE TYPE "F" WHEN OUTLETTING IN DITCH.

SITE CLEANUP

1. DURING CONSTRUCTION AND PRIOR TO ACCEPTANCE OF ANY PUBLIC IMPROVEMENTS, THE OWNER/DEVELOPER SHALL REMOVE OR CAUSE TO BE REMOVED ALL REFUSE, RUBBISH, UNUSED MATERIALS, EXCESS EARTH, FILL, ROCK, DEBRIS, AND FOREIGN MATTER FROM ALL PUBLIC RIGHTS OF WAY, IMPROVEMENTS, AND/OR EASEMENTS AS WERE DEPOSITED, LEFT OR RESULTED FROM THE CONSTRUCTION OF IMPROVEMENTS OF ANY NATURE WITHIN THE DEVELOPMENT. SUCH REMOVAL SHALL TAKE PLACE WITHIN TWENTY-FOUR (24) HOURS AFTER BEING NOTIFIED BY THE COUNTY ENGINEER THAT SUCH WORK IS REQUIRED, AND SHALL BE COMPLETED TO THE SATISFACTION OF THE COUNTY ENGINEER.

2. THIS WORK SHALL BE PERFORMED IN A MANNER WHICH PREVENTS EROSION AS WELL AS PREVENTS STORM WATER FROM ACCUMULATING OR PONDING ON THE SITE. THE WORK SHALL ALSO BE PERFORMED IN A MANNER THAT PREVENTS DISRUPTING OR IMPEDING SURFACE DRAINGE FROM ONSITE OR OFFSITE SOURCES AND PREVENTS ANY NEGATIVE EFFECTS ON ADJACENT PROPERTIES. A SIX-INCH OVERLAY OF TOPSOIL SHALL BE PROVIDED AND SHALL BE SEEDED PER MORROW COUNTY STANDARDS.

SEEDING

1. BASED ON CONSTRUCTION START-UP DATE AND CONTRACTOR'S SCHEDULE OF EVENTS, THE SEEDING MIXTURE AND SEDIMENT CONTROL MAY BE CHANGED TO COMPLY WITH MORROW COUNTY STANDARDS AND SUPPLEMENTAL SPECIFICATIONS, DUE TO A NON- GROWING SEASON AT THE TIME OF START-UP.

2. THE CONTRACTOR SHALL APPLY TEMPORARY AND PERMANENT SEEDING, FERTILIZER, AND MULCHING TO THE SATISFACTION OF THE COUNTY ENGINEER.

3. ALL SEEDING AND MULCHING SHALL BE BASED ON MORROW COUNTY STANDARDS AND SUPPLEMENTAL SPECIFICATIONS.

RETENTION/DETENTION BASINS

1. ANTI-SEEP COLLARS ARE REQUIRED FOR ALL RETENTION/DETENTION POND OUTLETS. A MINIMUM OF TWO COLLARS ARE REQUIRED. COLLARS MUST BE CONSTRUCTED (EXCAVATED) A MINIMUM OF 3.0' INTO UNDISTURBED SOIL ON ALL THREE SIDES. CLASS C CONCRETE PER CURRENT MORROW COUNTY SUPPLEMENTAL SPECIFICATIONS SHALL BE USED FOR REPLACEMENT OF THE EXCAVATED MATERIAL. THE COLLARS MUST BE A MINIMUM OF 8 INCHES THICK.
2. A CLAY CORE OF SUFFICIENT THICKNESS IS REQUIRED FOR ALL DETENTION AND RETENTION PONDS IN CUT AREAS. THE COUNTY ENGINEER SHALL FIELD APPROVE THE CORE THICKNESS OR THE CONDITION OF THE EXISTING SOILS AS A SUBSTITUTE FOR A CLAY CORE (E.G., EXISTING CLAY MATERIAL).
3. TREES AND LANDSCAPING SHALL NOT BE PERMITTED ON EMBANKMENT SURFACES

VILLAGE OF MOUNT GILEAD SANITARY SEWER NOTES

913.02 MATERIAL SPECIFICATIONS.

ALL SANITARY SEWERS SHALL BE CONSTRUCTED OF SEWER PIPE MEETING THE FOLLOWING MATERIAL SPECIFICATIONS:

(a) REINFORCED CONCRETE PIPE (RCP) AS DESCRIBED IN ASTM C-76, EPOXY COATED, FOR SIZES GREATER THAN 15 INCHES IN DIAMETER. STRENGTH DESIGN AS REQUIRED.

(b) POLYVINYL CHLORIDE (PVC) SDR 35 PIPE FOR SIZES 15 INCHES AND BELOW AND ACRYLONITRILE BUTADIENE STYRENE (ABS) FOR SANITARY SEWER TAPS.

913.03 JOINTING PROCESSES AND APPROVAL.

ALL SANITARY SEWER PIPE SHALL BE JOINED WITH PREMIUM WATER-TIGHT GASKET JOINTS. THE VILLAGE ADMINISTRATOR SHALL APPROVE OR REJECT NEWLY DEVELOPED JOINTING PROCESSES.

913.04 RATE OF INFILTRATION.

ALL NEW SANITARY SEWERS SHALL BE CONSTRUCTED IN SUCH A WATERTIGHT MANNER THAT THE AMOUNT OF WATER OTHER THAN SANITARY SEWAGE, TERMED INFILTRATION, SHALL NOT EXCEED 500 GALLONS PER INCH OF PIPE DIAMETER PER MILE OF SEWER DURING A TWENTY-FOUR HOUR PERIOD. THE VILLAGE ADMINISTRATOR MAY, AT HIS DISCRETION, PERFORM SUCH TESTS BY SUCH METHODS THAT HE FEELS ADVISABLE TO DETERMINE THE RATE OF INFILTRATION.

913.05 WYES.

ALL WYES SHOULD BE CONNECTED THROUGH THE USE OF ACRYLONITRILE BUTADIENE STYRENE (ABS) FITTINGS AND FERNCOS.

913.06 RESIDENCE SERVICE LINES.

(a) ALL RESIDENCE SERVICE LINES SHALL BE A MINIMUM-PIPE DIAMETER OF SIX INCHES FROM THE WYE TO THE PROPERTY LINE. THE PIPE AND JOINT MATERIALS SHALL BE AS DESCRIBED IN SECTIONS 913.02 AND 913.03. THE GRADE OF RESIDENCE SERVICE LINES SHALL BE A MINIMUM OF ONE-QUARTER INCH PER FOOT. NEW CONSTRUCTION OR REPAIR OF AN EXISTING LATERAL TO THE MAIN SHALL HAVE A SIX-INCH CLEANOUT AT THE EDGE OF THE RIGHT-OF-WAY. WHEN A NEW LATERAL IS INSTALLED WITH A CLEAN OUT AT THE EDGE OF THE RIGHT-OF-WAY THE VILLAGE WILL TAKE OWNERSHIP AND MAINTENANCE RESPONSIBILITY FOR THAT SECTION OF THE LATERAL IN THE RIGHT-OF-WAY.

(b) ALL SERVICE LINES THAT ARE SHARED WITH MORE THAN ONE HOUSEHOLD WILL MEET THE ABOVE REQUIREMENTS. ALSO, ANY REPAIRS WILL BE SHARED EQUALLY BY BOTH PROPERTY OWNERS FROM THE WYE AT THE MAIN TO THE POINT OF SEPARATION.

(c) THE PROPERTY OWNER IS RESPONSIBLE FROM THE MAIN LINE FOR ALL MAINTENANCE OF THE SEWER LATERAL TO THE RESIDENCE, UNLESS A NEW LATERAL FROM THE MAIN TO A CLEANOUT AT THE EDGE OF THE RIGHT-OF-WAY IS INSTALLED, THEN THE VILLAGE WILL TAKE OWNERSHIP AND MAINTENANCE RESPONSIBILITY FOR THAT SECTION OF THE LATERAL IN THE RIGHT-OF-WAY.

(d) EACH NEW SINGLE-FAMILY RESIDENCE SHALL HAVE ITS OWN PRIVATE SANITARY LATERAL AND CANNOT SHARE LATERALS WITH OTHER STRUCTURES.

(e) A PROPERTY OWNER'S LATERAL SHALL GO FROM THAT PARCEL OR PROPERTY TO THE RIGHT-OF-WAY TO ACCESS A SEWER MAIN. NO LATERAL SHALL CROSS OTHER PROPERTIES.

913.07 LATERAL SEWERS.

LATERAL SEWERS SHALL HAVE A MINIMUM PIPE SIZE OF EIGHT INCHES INTERNAL DIAMETER AND SHALL BE LAID ON A GRADE WHICH WILL PROVIDE A FULL FLOW VELOCITY OF TWO FEET PER SECOND.

913.08 METHOD OF TAPPING.

SHOULD IT BE DETERMINED THAT A TAP MUST BE MADE IN A SANITARY SEWER TO PROVIDE AN OUTLET FOR A RESIDENT SERVICE LINE, THE TAP SHALL BE CUT WITH AN APPROVED ROTARY TOOL AND AN APPROVED SADDLE SEALED IN PLACE WITH AN EPOXY CEMENT. SHOULD THE TAP BE OF THE SAME SIZE AS THE SEWER BEING TAPPED, A SECTION OF THE SEWER SHALL BE REMOVED AND A WYE BRANCH INSTALLED. EITHER OF THE ABOVE METHODS SHALL BE BACKED UP WITH CONCRETE AS DESCRIBED IN SECTION 913.05.

913.09 DRAINAGE INTO STORM SEWERS.

ALL FOUNDATION, FOOTER OR OTHER SUBSURFACE DRAINS SHALL DISCHARGE INTO THE STORM SEWER OR THROUGH A SUITABLE OPENING IN THE CURB. SHOULD IT BE IMPOSSIBLE TO PROVIDE A GRAVITY FLOW FOR THIS WATER TO THE POINT OF DISCHARGE, A SUMP PUMP, LIFT PUMP OR OTHER SUITABLE MECHANISM MUST BE PROVIDED FOR A PROPER DISPOSAL.

913.11 DOWNSPOUT CONNECTIONS TO SANITARY SEWER PROHIBITED.

NO PERSON SHALL CONNECT, CAUSE TO BE CONNECTED OR PERMIT THE CONTINUANCE OF ANY CONNECTION OF ANY DOWNSPOUT OR ANY OTHER RAIN WATER DRAINAGE DEVICE TO THE VILLAGE SANITARY SEWER SYSTEM OR ANY PART THEREOF.

913.14 MANHOLES.

FOR MANHOLE DETAILS SEE THE VILLAGE OF MOUNT GILEAD, OHIO STANDARDS.

(a) MANHOLES ARE TO BE A MAXIMUM SPACING OF 300 FEET.

(b) MANHOLES ARE REQUIRED AT JUNCTIONS, CHANGES IN DIRECTION, CHANGES IN GRADE, AND AT THE END OF THE SEWER.

913.16 ACCEPTANCE.

(a) ALL MAINS ARE TO BE TELEVISED AND VIDEORECORDED. COPIES OF THE VIDEO RECORDS SHALL BE SUBMITTED TO THE VILLAGE FOR REVIEW PRIOR TO FINAL ACCEPTANCE.

(b) ALL SANITARY SEWERS SHALL BE TESTED VIA AIR OR EXFILTRATION TEST. ALLOWABLE LEAKAGE RATE SHALL CONFORM TO THE OEPA AND VILLAGE OF MOUNT GILEAD STANDARDS.

(c) DEFLECTION TESTING (5%) REQUIRED FOR ALL FLEXIBLE PIPE MAINS.

VILLAGE OF MOUNT GILEAD WATER NOTES

911.17 MINIMUM STANDARDS ESTABLISHED

THE FOLLOWING MINIMUM STANDARDS ARE HEREBY ESTABLISHED AND REQUIRED FOR CONSTRUCTION OR REPLACEMENT OF WATER LINES CONNECTED TO THE VILLAGE WATERWORKS SYSTEM.

911.18 WATER MAINS

(a) ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE "CONSTRUCTION AND MATERIAL SPECIFICATIONS" OF THE STATE DEPARTMENT OF TRANSPORTATION (ODOT), LATEST EDITION; AMERICAN WATER WORKS ASSOCIATION (A WW A) SPECIFICATIONS, LATEST EDITION; AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), THE CURRENT OHIO ENVIRONMENTAL PROTECTION AGENCY STANDARDS AND SPECIFICATIONS, AND THE VILLAGE OF MOUNT GILEAD MATERIALS AND SPECIFICATIONS.

(b) DEVIATIONS FROM THESE STANDARDS AND SPECIFICATIONS ARE SUBJECT TO THE APPROVAL OF THE VILLAGE ADMINISTRATION AND THEIR ENGINEER.

(c) SLAG PRODUCTS ARE PROHIBITED FOR USE AS BEDDING, BACKFILL, BASE MATERIALS AND AGGREGATES.

(d) A MINIMUM OF TEN (10) FEET HORIZONTALLY AND EIGHTEEN (18) INCHES VERTICALLY FROM ANY SANITARY SEWER MUST ALWAYS BE MAINTAINED. NO ENTRY OR CONTACT WITH A SEWER MANHOLE IS PERMITTED.

(e) PIPE TO BE SIZED FOR A FIRE FLOW OF 500GPM AT A MINIMUM RESIDUAL PRESSURE OF 45 PSI.

(f) THE MINIMUM PIPE SIZE SHALL BE EIGHT (8) INCHES IN DIAMETER.

(g) PVC PRESSURE PIPE SHALL CONFORM TO THE REQUIREMENTS OF A WW A STANDARD C-900 LATEST REVISION, DR 18, CLASS 150; OPEN-CUT PVC PIPE SHALL HAVE DETECTABLE TRACER WIRE INSTALLED IN THE TRENCH. TRACER WIRE SHALL BE #12 GAUGE WITH A 30MIL POLYETHYLENE CASING. WIRE SHALL BE TESTED FOR CONDUCTIVITY AFTER INSTALLING.

(h) FOR DRILLED PIPE TRACER WIRE SHALL BE #8 GAUGE WITH A 45MIL POLYETHYLENE CASING.

(i) DRILLED PIPE SHALL BE CLASS 150 DR-18 CERTAIN TEED CERTA-LOK C900/RJ PVC PIPE OR APPROVED EQUAL.

(j) MECHANICAL JOINTS AND PUSH-ON JOINTS SHALL BE IN ACCORDANCE WITH ANSI A21.11 (AWWA C-111); INCORPORATING RUBBER GASKETS.

911.19 FITTINGS

(a) ALL FITTINGS AND APPROPRIATE JOINTS SHALL BE RESTRAINED BY AN APPROVED RETAINER GLAND DEVICE OR BY CONCRETE THRUST BLOCKING. (SEE VILLAGE OF MOUNT GILEAD, OHIO STANDARD DETAILS).

(b) FITTINGS SHALL BE OF DUCTILE IRON, MECHANICAL JOINT TYPE SHALL CONFORM A WW A C111 AND ANSI A21.10 (CLASS 250 MINIMUM) AND SHALL BE COATED AND LINED AND ASPHALTIC COATED IN ACCORDANCE WITH AWWA C151.

(c) THE BRANCH OF THE TEES FOR FIRE HYDRANTS SHALL BE OF THE ANCHORING TYPE, INCORPORATING A FOLLOWER GLAND AND SHALL BE COMPATIBLE WITH THE ANCHORING PIPE AS SHOWN IN THE STANDARDS DRAWINGS.

(d) ALL DUCTILE IRON FITTINGS TO BE FULLY WRAPPED WITH 8 MIL POLYETHYLENE WRAP WITH BOTH ENDS OF FITTING COVERED TO 1 FOOT BEYOND END AND TAPED SUFFICIENTLY WITH CORROSION PROTECTION PIPE WRAP TAPE.

911.20 VALVES

ALL IN LINE VALVES FOR WATERMAIN SHALL BE A-2362-23 MUELLER RESILIENT WEDGE GATE VALVES WITH STAINLESS STEEL BOLTS.

911.21 FIRE HYDRANTS.

(a) THE FIRE HYDRANTS SHALL BE FIVE AND ONE-QUARTER-INCH AWWA FIRE HYDRANT OR THE LATEST REVISION THEREOF AND A PRODUCT OF MUELLER, OR AN APPROVED EQUAL. THE OPENING DIRECTION SHALL BE LEFT.

(b) FIRE HYDRANTS SHALL HAVE A STANDARDIZED MECHANICAL JOINT, ONE AND ONE-HALF INCH PENTAGON OPERATING NUT AND NOZZLE CAP NUT, WITH TWO HOSE NOZZLES 180 DEGREES APART, ONE PUMPER IN BETWEEN. THE HOSE NOZZLE THREADING SHALL BE TWO AND ONE-HALF INCHES NATIONAL STANDARD HOSE THREAD. THE PUMPER NOZZLE THREADING SHALL BE FOUR AND ONE-HALF INCHES NATIONAL STANDARD PUMPING HOSE THREAD.

(c) ALL HYDRANTS SHALL HAVE A WATCH VALVE.

PLAN PREPARED FOR:
JF CONSTRUCTION & DEVELOPMENT, INC.
2141 State Route 19 | Bucyrus, Ohio 44820
419.562.8682 | jfconstruction.com

PLAN PREPARED BY:
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DELAWARE, OH 43015
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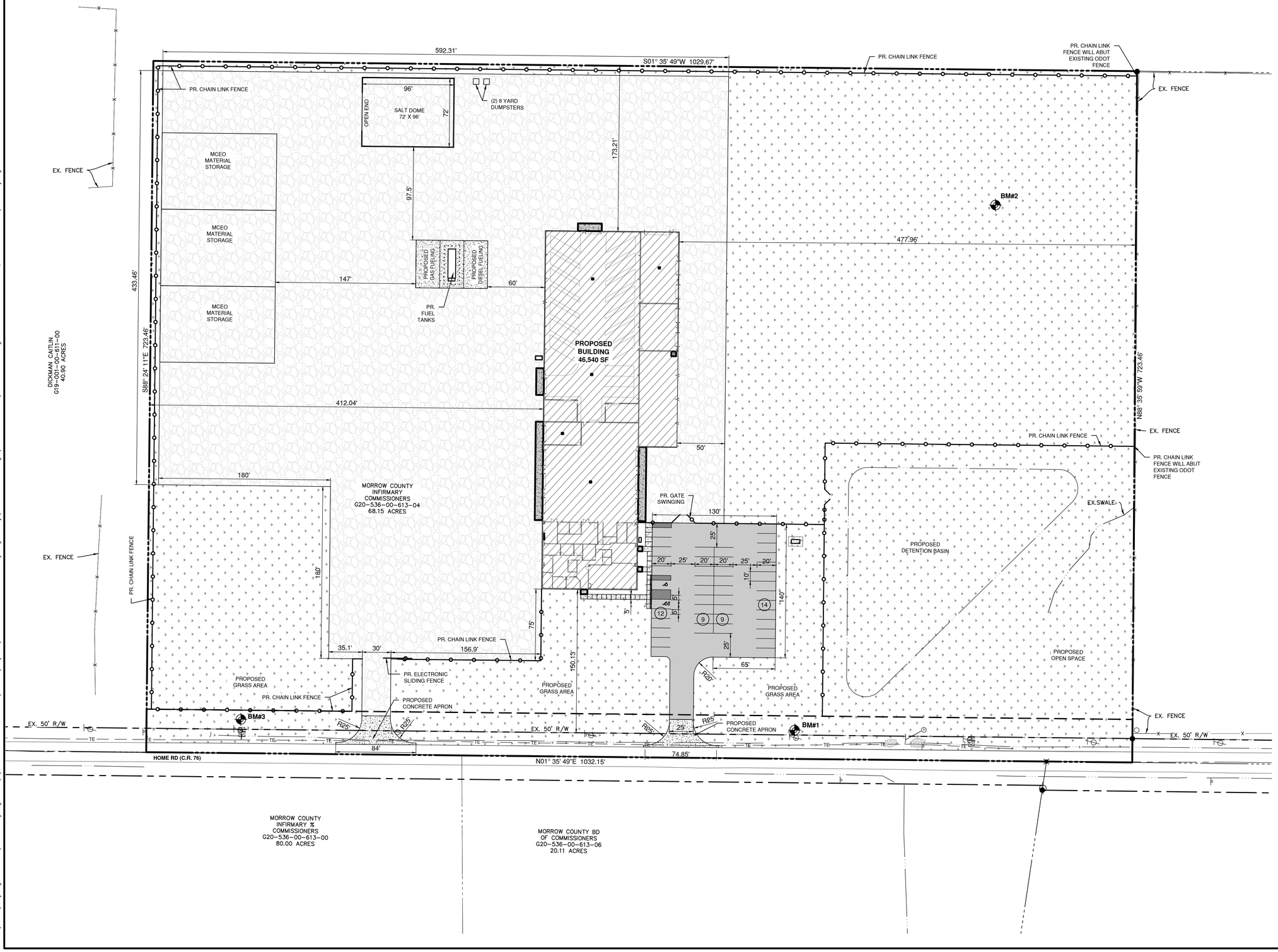
WWW.GHGCIVIL.COM

VILLAGE OF MT. GILEAD, MORROW COUNTY, OHIO
MORROW COUNTY ENGINEERING
FORMER INFIRMARY SITE
PID: G20-536-00-613-04
SITE IMPROVEMENT PLAN
GENERAL NOTES

NO.	DATE	REVISION DESCRIPTION
0	11 / 13 / 2023	ISSUED FOR CONSTRUCTION
1	1 / 4 / 2024	OWNER BUILDING AND SITE LAYOUT UPDATE
2	3 / 13 / 2024	SITE LAYOUT, GRADING, STORM UPDATE

DATE: 1 / 4 / 2024
SCALE: AS SHOWN
DRAWN BY: JB
CHECKED BY: AH
PROJECT NUMBER: 22-074-07
DRAWING NUMBER: C2
SHEET NUMBER: 2 / 16



LEGEND

- EXISTING ELECTRIC OR TELECOM BOXES
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING CONTOUR
- EXISTING FENCE
- EXISTING AIR CONDITIONER UNIT
- EXISTING SIGN
- EXISTING TREE
- EXISTING TREELINE
- PROPOSED FENCE
- BENCHMARK
- SOIL BORING
- EXISTING BUILDINGS
- PROPOSED GRAVEL
- PROPOSED CONCRETE
- PROPOSED GRASS AREA
- PROPOSED ASPHALT PAVING
- PROPOSED CHIP & SEAL

GRAPHIC SCALE

0 25 50 100

1 inch = 50 feet

PLAN PREPARED FOR:

CONSTRUCTION & DEVELOPMENT, INC.

2141 State Route 19 | Bucyrus, Ohio 44820

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VILLAGE OF MT. GILEAD, MORROW COUNTY, OHIO

MORROW COUNTY ENGINEERING

FORMER INFIRMARY SITE

PID: G20-536-00-613-04

SITE IMPROVEMENT PLAN

SITE PLAN

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DATE: 1 / 4 / 2024
SCALE: AS SHOWN

DRAWN BY	CHECKED BY
JB	AH

PROJECT NUMBER
22-074-07

DRAWING NUMBER
C6

SHEET NUMBER
6 / 16

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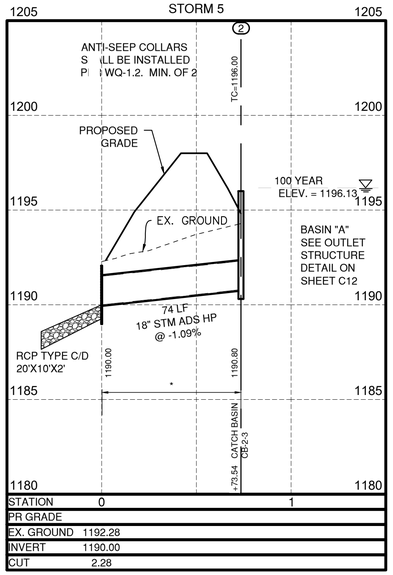
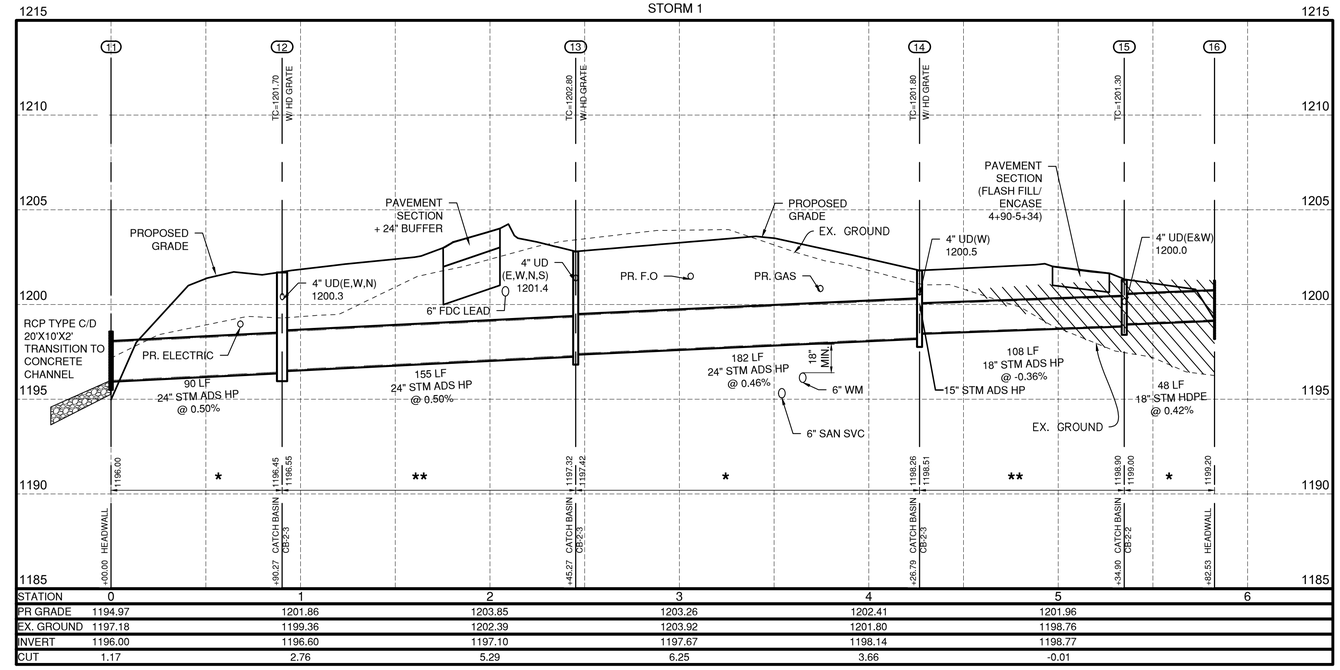
PROFILE VIEW OF STORM 5



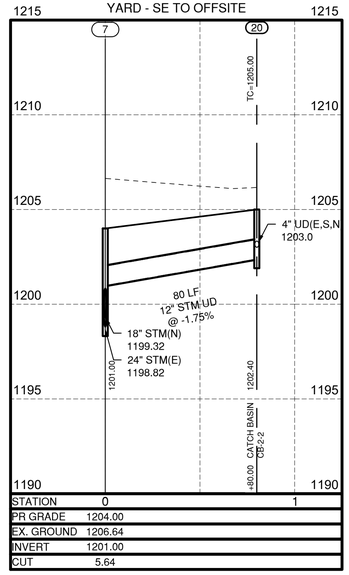
STATION	0	1
PR GRADE		
EX. GROUND	1192.28	
INVERT	1190.00	
CUT	2.28	

PROFILE VIEW OF STORM 1



STATION	0	1	2	3	4	5	6
PR GRADE	1194.97	1201.86	1203.85	1203.26	1202.41	1201.96	
EX. GROUND	1197.18	1199.36	1202.39	1203.92	1201.80	1198.76	
INVERT	1196.00	1196.60	1197.10	1197.67	1198.14	1198.77	
CUT	1.17	2.76	5.29	6.25	3.66	-0.01	

PROFILE VIEW OF YARD - SE TO OFFSITE



STATION	0	1
PR GRADE	1204.00	
EX. GROUND	1206.64	
INVERT	1201.00	
CUT	5.64	

ALL TRENCH BACKFILL SHALL BE COMPACTED BACKFILL TO 98% OF MAXIMUM DRY WEIGHT AT OPTIMUM MOISTURE CONTENT (±3%) UNLESS NOTED AS:

* : COMPACTED BACKFILL, ITEM 603 AND 703

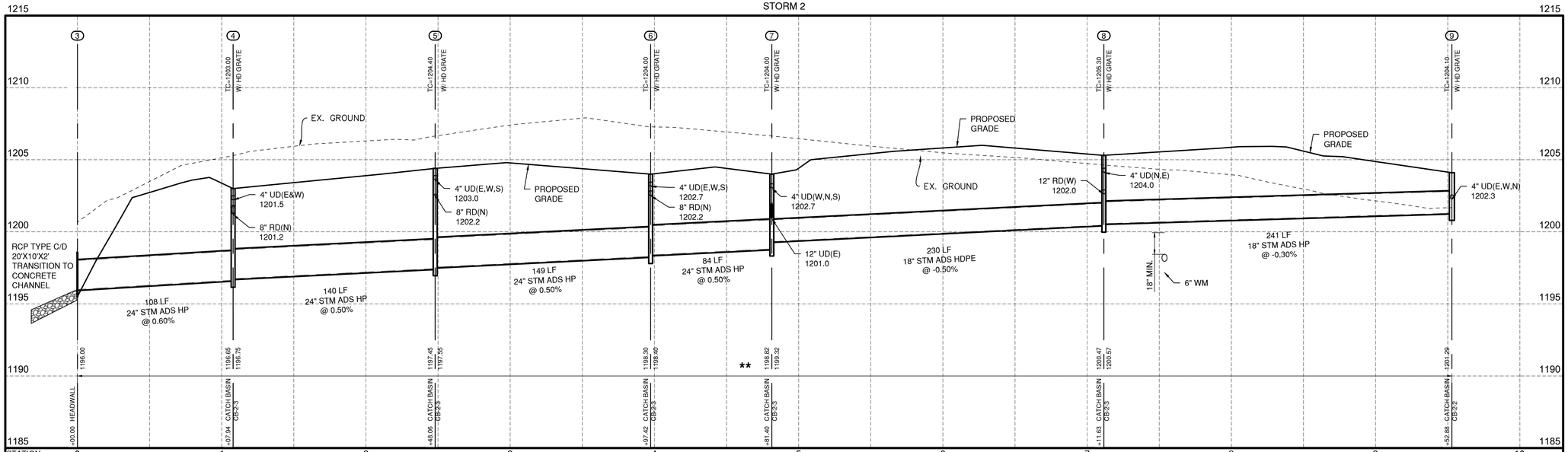
** : GRANULAR BACKFILL, ITEM 603 AND 703

DENOTES AREA TO BE FILLED PRIOR TO INSTALLATION OF STORM SEWER PER ITEM 203 DCEO

GRAPHIC SCALE
0 2 4 8
1 inch = 4 feet

GRAPHIC SCALE
0 20 40 80
1 inch = 40 feet

PROFILE VIEW OF STORM 2



STATION	0	1	2	3	4	5	6	7	8	9	10
PR GRADE	1195.50	1203.37	1203.89	1204.78	1204.03	1204.41	1205.81	1205.40	1205.86	1204.87	
EX. GROUND	1200.67	1205.13	1206.30	1207.40	1207.27	1206.46	1205.48	1204.73	1203.95	1202.14	
INVERT	1196.00	1196.60	1197.21	1197.81	1198.41	1199.43	1200.03	1200.63	1201.07	1201.37	
CUT	4.67	8.53	9.09	9.59	8.86	7.03	5.45	4.10	2.89	0.78	

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PLAN PREPARED FOR:

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VILLAGE OF MT. GILEAD, MORROW COUNTY, OHIO
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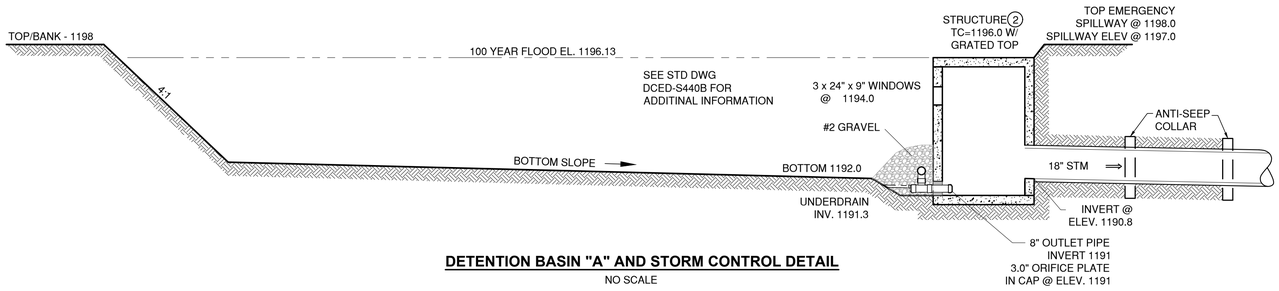
DATE: 1 / 4 / 2024
SCALE: AS SHOWN

DRAWN BY	CHECKED BY
JB	AH

PROJECT NUMBER
22-074-07

DRAWING NUMBER
C11

SHEET NUMBER
11 / 16

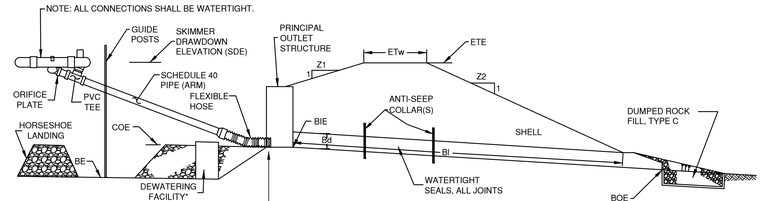


DETENTION BASIN "A" AND STORM CONTROL DETAIL

NO SCALE

TEMPORARY SEDIMENT BASIN SCHEDULE								
LOCATION	TRIBUTARY ACREAGE	REQUIRED SEDIMENT STORAGE VOLUME (37 CY/AC)	PROVIDED SEDIMENT STORAGE VOLUME	REQUIRED DEWATERING STORAGE VOLUME (67 CY/AC)	PROVIDED DEWATERING STORAGE VOLUME	EMERGENCY SPILLWAY ELEVATION	TOP OF EMBANKMENT ELEVATION	SCOPE OF WORK SUMMARY
SEDIMENT BASIN **BASIN A**	14.14 AC.	524 C.Y. 14,148 C.F.	555 C.Y. @ ELEV. 1193.5	948 C.Y. 25,596 C.F.	1296 C.Y. @ ELEV. 1195.0	1197	1198	PROPOSED BASIN FOR NEW COUNTY ENGINEER FACILITY

NOTE: SEE THIS SHEET FOR OUTLET SIZING AND DETAILS FOR THE PROPOSED SEDIMENT BASIN. SEE DETAILS BELOW FOR DEWATERING OUTLET DETAILS.



INSERT FLEXIBLE HOSE FROM SKIMMER INTO PROPOSED STORM SEWER OUTLET. SEAL AND GROUT TO NOT ALLOW ADDITIONAL WATER TO FLOW INTO PROPOSED STORM SEWER OTHER THAN DISCHARGE FROM SKIMMER. SKIMMER SHALL REMAIN FUNCTIONAL UNTIL SITE IS STABILIZED.

SKIMMER					
BASIN NO.	Skimmer Size (IN)	Arm Length (FT)	Arm Diameter (IN)	Rope Length (FT)	Stub Length (FT)
A	4	10	3	20.0	1

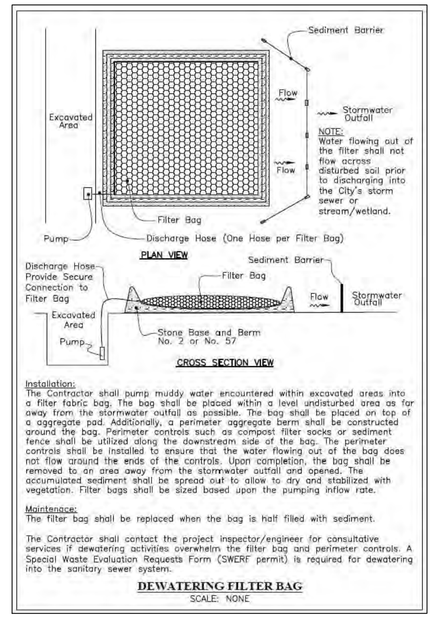
SEDIMENT BASIN TYPICAL SECTION WITH SKIMMER

GUIDE STAKES SHOULD BE INSTALLED TO PREVENT THE SKIMMER FROM MOVING SIDE TO SIDE. A DEVICE (CONCRETE BLOCK OR EQUIVALENT) TO PREVENT THE SKIMMER FROM SETTLING BELOW THE TOP OF SEDIMENT STORAGE ZONE SHOULD ALSO BE INSTALLED.

SEDIMENT BASINS WITH PERMANENT ENDWALLS AND SKIMMERS														
			SKIMMER			BARREL					EMBANKMENT		CLEAN OUT	
BASIN NO.	Z1 (FT)	Z2 (FT)	ORIFICE DIA SOD (IN)	DRAWDOWN ELEV SDE (FT)	MAT'L	DIA Bd (IN)	INLET ELEV BIE (FT)	MAT'L	LENGTH BI (FT)	OUTLET ELEV BOE (FT)	TOP ELEV ETE (FT)	TOP WIDTH Etw (FT)	ELEV COE (FT)	BOTTOM ELEV BE (FT)
A	4	4	3.2	1193.5	PVC	18	1190.80	PVC	80	1190.0	1198	10	1193.5	1192

DEWATERING OUTLET STRUCTURE

1. DEWATERING OUTLET STRUCTURE SHALL BE CONSTRUCTED AND OPERATIONAL BEFORE UPSLOPE LAND DISTURBANCE BEGINS.
2. SITE PREPARATION - THE AREA UNDER THE EMBANKMENT SHALL BE CLEARED, GRUBBED, AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED AS NEEDED TO FACILITATE SEDIMENT CLEANOUT. GULLIES AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1. THE SURFACE OF THE FOUNDATION AREA WILL BE THOROUGHLY SCARIFIED BEFORE PLACEMENT OF THE EMBANKMENT MATERIAL.
3. SEDIMENT CLEANOUT - - SEDIMENT SHALL BE REMOVED AND THE SEDIMENT BASIN RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS REACHED THE CLEANOUT ELEVATION ON A STAKE OR MARKER PLACED IN THE MIDDLE OF THE BASIN. SEDIMENT REMOVED FROM THE BASIN SHALL BE PLACED SO THAT IT WILL NOT ERODE.
4. FINAL REMOVAL - - DEWATERING OUTLET STRUCTURES SHALL BE REMOVED AFTER THE UPSTREAM DRAINAGE AREA IS STABILIZED. REMOVAL SHALL NOT CAUSE SEDIMENT TO BE DISCHARGED. THE SEDIMENT BASIN SITE AND SEDIMENT REMOVED FROM THE BASIN SHALL BE STABILIZED.



Installation:
The Contractor shall pump muddy water encountered within excavated areas into a filter fabric bag. The bag shall be placed within a level undisturbed area as far away from the stormwater outfall as possible. The bag shall be placed on top of a aggregate pad. Additionally, a perimeter aggregate berm shall be constructed around the bag. Perimeter controls such as compost filter socks or sediment fence shall be utilized along the downstream side of the bag. The perimeter controls shall be installed to ensure that the water flowing out of the bag does not flow around the ends of the controls. Upon completion, the bag shall be removed to an area away from the stormwater outfall and opened. The accumulated sediment shall be spread out to allow to dry and stabilized with vegetation. Filter bags shall be sized based upon the pumping inflow rate.

Maintenance:
The filter bag shall be replaced when the bag is half filled with sediment.

The Contractor shall contact the project inspector/engineer for consultative services if dewatering activities overwhelm the filter bag and perimeter controls. A Special Waste Evaluation Requests Form (SWERF permit) is required for dewatering into the sanitary sewer system.

DEWATERING FILTER BAG

SCALE: NONE

PLAN PREPARED FOR:
J&J CONSTRUCTION & DEVELOPMENT, INC.
2141 State Route 19 | Bucyrus, Ohio 44820
419.562.8682 | jhomsruction.com

PLAN PREPARED BY:
GHG
GANDEE HEYDINGER GROUP
CIVIL ENGINEERS & SURVEYORS
5676 STATE ROUTE 521, SUITE B
DELAWARE, OH 43015
P: 614.942.6042
WWW.GHGCIVIL.COM

VILLAGE OF MT. GILEAD, MORROW COUNTY, OHIO
MORROW COUNTY ENGINEERING
FORMER INFIRMARY SITE
PID: G20-536-00-613-04
SITE IMPROVEMENT PLAN
BASIN DETAILS

NO.	DATE	REVISION DESCRIPTION
0	11 / 13 / 2023	ISSUED FOR CONSTRUCTION
1	1 / 4 / 2024	OWNER BUILDING AND SITE LAYOUT UPDATE
2	3 / 13 / 2024	SITE LAYOUT, GRADING, STORM UPDATE

DATE: 1 / 4 / 2024
SCALE: AS SHOWN

DRAWN BY	CHECKED BY
JB	AH

PROJECT NUMBER
22-074-07

DRAWING NUMBER
C12

SHEET NUMBER
12 / 16

SITE SWP3 (OHIO EPA PERMIT OHC000006)

A. DESCRIPTION OF NATURE AND TYPE OF CONSTRUCTION ACTIVITY:

THE PROPOSED IMPROVEMENTS INCLUDE CONSTRUCTION OF A MORROW COUNTY ENGINEERING SITE.

B. TOTAL SITE AREA AND TOTAL AREA TO BE DISTURBED:

THE TOTAL SITE ACREAGE IS: 68.15 ACRES OVERALL
DISTURBED AREA: 16.7 ACRES INCLUDING ASPHALT, GRAVEL PAD, AND DETENTION BASIN.

C. ESTIMATE OF IMPERVIOUS AREA AND PERCENT IMPERVIOUS AREA CREATED BY CONSTRUCTION ACTIVITY:

THE PRE DEVELOPED IMPERVIOUS AREAS ARE: 68.15 AC'S

ESTIMATED POST DEVELOPED IMPERVIOUS AREAS AREA: 7.8 AC'S

D. RUNOFF COEFFICIENTS FOR BOTH PRE-CONSTRUCTION AND POST CONSTRUCTION SITE CONDITIONS:

THE PRE-DEVELOPED CONDITION AGRICULTURAL LAND WITH A CORRESPONDING CURVE NUMBER OF 81.

THE POST-DEVELOPED CONDITIONS WILL BE GRASS COVER, BUILDING, AND PAVEMENT AREAS WITH CORRESPONDING CURVE NUMBERS OF 74 AND 91, & 98.

E. EXISTING SOIL DATA AND QUALITY OF DISCHARGE FROM THE SITE:

SEE SITE MAP AND TABLE THIS SHEET FOR DETAILS.

THE QUALITY OF THE EXISTING DISCHARGE FROM THE SITE IS NOT KNOWN.

F. DESCRIPTION OF PRIOR LAND USES ON THE SITE:

EXISTING - VACANT / AGRICULTURAL.

G. SEQUENCE OF CONSTRUCTION ACTIVITIES:

OBTAIN PROPER PERMITS AND APPROVALS: MORROW COUNTY AND OHIO EPA.

PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL PLACE THE NECESSARY BEST MANAGEMENT PRACTICES AS LISTED IN THE OHIO DEPARTMENT OF NATURAL RESOURCES RAINWATER AND LAND DEVELOPMENT MANUAL OR CONTAINED WITHIN THIS PLAN(SILT FENCE, CHECK DAMS, DIVERSION SWALES, AND BASINS PER DETAILS)

CONTRACTOR SHALL INSTALL STORM SEWERS, POST-CONSTRUCTION EROSION CONTROL, AND BMP'S AS REQUIRED. PROVISIONS FOR INLET PROTECTION SHALL BE PLACED ON ALL STORM INLETS.

PERFORM ANY NECESSARY GRADING ACTIVITIES. DISTURBED AREAS SHALL BE SEEDED WITHIN 7 DAYS OF CONSTRUCTION. DRAINAGE SHALL BE DIRECTED TO A FILTERING FACILITY AT ALL TIMES DURING CONSTRUCTION. TOPSOIL SHALL BE STOCKPILED FOR LATER RE-SPREAD IN LOCATIONS SHOWN HEREON OR HAULED OFFSITE.

COMPLETE ANY FINE GRADING, DITCH OR BERM GRADING, AND STABILIZE THESE AREAS.

INSTALL PAVEMENT SECTIONS AND MARKINGS, BEGIN BUILDING CONSTRUCTION, AND INSTALLATION OF PRIVATE UTILITIES.

SEED AND MULCH THE SITE ACCORDING TO THE TEMPORARY AND PERMANENT SEEDING REQUIREMENTS TO REESTABLISH THE DENUDED AREAS.

CONTACT MORROW COUNTY TO COMPLETE A FINAL ACCEPTANCE OF PROJECT.

THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE EROSION CONTROL DEVICES ONLY AFTER ALL AREAS HAVE BEEN PAVED AND/OR SEEDED/MULCHED. AFTER REMOVAL OF THE EROSION CONTROL DEVICES, THE CONTRACTOR SHALL CLEAN ALL INLETS AND STORM SEWER PIPES OF ALL SEDIMENT INCURRED DURING CONSTRUCTION.

H. NAME AND LOCATION OF THE IMMEDIATE RECEIVING STREAM OR SURFACE WATER(S) AND THE FIRST SUBSEQUENT NAMED RECEIVING WATER. THE DESCRIPTION OF WETLANDS OR OTHER SPECIAL AQUATIC SITES AT OR NEAR THE SITE WHICH WILL BE DISTURBED OR WHICH WILL RECEIVE DISCHARGES FROM DISTURBED AREAS OF THE SITE:

THE SITE CURRENTLY DRAINS TO THE WEST TO UNNAMED TRIBUTARY AND ULTIMATELY TO DITCH N EAST SIDE OF HOME ROAD (C.R. 76).

I. INDIVIDUAL LOT EROSION CONTROL PRACTICES, IF APPLICABLE:

CONSTRUCTION SEDIMENT TO BE CONTROLLED ONSITE.

J. BEST MANAGEMENT PRACTICES FOR DEDICATED ASPHALT OR CONCRETE PLANTS, IF APPLICABLE:

NO ASPHALT OR CONCRETE PLANTS WILL BE MAINTAINED ON THIS SITE.

K. PERMIT REQUIREMENTS

OHIO EPA GENERAL PERMIT OHC000006
PERMIT #: 4GC09602*AG

L. PROJECT NAME AND PROJECT CONTACT INFORMATION

PROJECT NAME: MORROW COUNTY ENGINEER SITE
PROJECT LOCATION: HOME ROAD
MT GILEAD, OHIO

OWNER/DEVELOPER	ENGINEER
MORROW COUNTY INFIRMARY% COMMISSIONERS 80 N. WALNUT STREET MT. GILEAD, OH 43338 ATTN: MR. BART DENNISON, P.E. EMAIL: engineer@morrowcountyohio.gov PHONE: (419) 947-4530	GANDEE HEYDINGER GROUP 5676 S.R. 521, SUITE B DELAWARE, OH. 43015 ATTN: AARON HEYDINGER P.E. EMAIL: aheydinger@ghgcivil.com PHONE: (614) 315-0539

L. LOG DOCUMENTING ONSITE GRADING AND STABILIZATION ACTIVITIES

A LOG WILL BE KEPT ONSITE FOR REVIEW UPON REQUEST.

K. SITE MAP CHECKLIST:

- MAP SHOWING LIMITS OF EARTH DISTURBING ACTIVITY ONSITE INCLUDING ASSOCIATED OFF-SITE BORROW OR SPOIL AREAS THAT ARE NOT ADDRESSED BY A SEPARATE NOI AND ASSOCIATED SWP3.
- SOILS TYPES SHOULD BE DEPICTED FOR ALL AREAS OF THE SITE, INCLUDING LOCATIONS OF UNSTABLE OR HIGHLY ERODIBLE SOILS.
- EXISTING AND PROPOSED CONTOURS. A DELINEATION OF DRAINAGE WATERSHEDS EXPECTED DURING AND AFTER MAJOR GRADING ACTIVITIES AS WELL AS THE SIZE OF EACH DRAINAGE WATERSHED, IN ACRES.
- SURFACE WATER LOCATIONS INCLUDING SPRINGS, WETLANDS, STREAMS, LAKES, WATER WELLS, ETC., ON OR WITHIN 200 FEET OF THE SITE, INCLUDING THE BOUNDARIES OF WETLANDS OR STREAM CHANNELS AND FIRST SUBSEQUENT NAMED RECEIVING WATER(S) THE PERMITTEE INTENDS TO FILL OR RELOCATE FOR WHICH THE PERMITTEE IS SEEKING APPROVAL FROM THE ARMY CORPS OF ENGINEERS AND/OR OHIO EPA.
- EXISTING AND PLANNED LOCATIONS OF BUILDING, ROADS, PARKING FACILITIES, AND UTILITIES.
- THE LOCATION OF ALL EROSION AND SEDIMENT CONTROL PRACTICES, INCLUDING THE LOCATION OF AREAS LIKELY TO REQUIRE TEMPORARY STABILIZATION DURING THE COURSE OF SITE DEVELOPMENT.
- SEDIMENT AND STORM WATER MANAGEMENT BASIN INFORMATION
- LOCATION OF PERMANENT STORM WATER MANAGEMENT FACILITIES TO CONTROL POLLUTANTS IN STORM WATER ONCE CONSTRUCTION OPERATIONS HAVE BEEN COMPLETED.
- AREAS DESIGNATED FOR STORAGE OR DISPOSAL OF SOLID, SANITARY AND TOXIC WASTES, INCLUDING DUMPSTER AREAS, AREAS DESIGNATED FOR CEMENT TRUCK WASHOUT, AND VEHICLE REFUELING.
- LOCATION OF CONSTRUCTION ENTRANCE.
- LOCATION OF ANY IN-STREAM ACTIVITIES INCLUDING STREAM CROSSINGS
  ••• NOT APPLICABLE ON THIS PLAN.

CONTRACTOR RESPONSIBILITIES

DETAILS HAVE BEEN PROVIDED ON THE PLANS IN AN EFFORT TO HELP THE CONTRACTOR PROVIDE EROSION AND SEDIMENTATION CONTROL. THE DETAILS SHOWN ON THE PLAN SHALL BE CONSIDERED A MINIMUM. ADDITIONAL OR ALTERNATE DETAILS MAY BE FOUND IN THE S.C.S. MANUAL "WATER MANAGEMENT AND SEDIMENT CONTROL FOR URBANIZING AREAS." THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING NECESSARY AND ADEQUATE MEASURES FOR PROPER CONTROL OF EROSION AND SEDIMENT RUNOFF FROM THE SITE ALONG WITH PROPER MAINTENANCE AND INSPECTION IN COMPLIANCE WITH THE NPDES GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY.

THE CONTRACTOR SHALL PROVIDE A SCHEDULE OF OPERATIONS TO THE OWNER. THE SCHEDULE SHOULD INCLUDE A SEQUENCE OF THE PLACEMENT OF THE SEDIMENTATION AND EROSION CONTROL MEASURES THAT PROVIDES FOR CONTINUAL PROTECTION OF THE SITE THROUGHOUT THE EARTH MOVING ACTIVITIES.

THE CONTRACTOR SHALL BE RESPONSIBLE TO HAVE THE CURRENT STORM WATER POLLUTION PREVENTION PLAN IMMEDIATELY AVAILABLE OR POSTED ON SITE.

THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT OFF-SITE TRACKING OF SEDIMENTS BY VEHICLES AND EQUIPMENT IS MINIMIZED. ALL SUCH OFF-SITE SEDIMENT SHALL BE CLEANED UP DAILY.

MAINTENANCE & INSPECTIONS

IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE SEDIMENT CONTROL FEATURES USED ON THIS PROJECT. THE NPDES PERMIT HOLDER SHALL PROVIDE QUALIFIED PERSONNEL TO CONDUCT A SITE INSPECTION EVERY 7 DAYS AND WITHIN 24 HOURS OF A 0.5" RAINFALL EVENT. RECORDS OF THESE INSPECTIONS SHALL BE KEPT AND MADE AVAILABLE TO JURISDICTIONAL AGENCIES IF REQUESTED. ANY SEDIMENT OR DEBRIS WHICH HAS REDUCED THE EFFICIENCY OF A STRUCTURE SHALL BE REMOVED IMMEDIATELY. SHOULD A STRUCTURE OR FEATURE BECOME DAMAGED, THE CONTRACTOR SHALL REPAIR OR REPLACE AT NO ADDITIONAL COST TO THE OWNER.

CLEAN FILL AND ENVIRONMENTAL DUE DILIGENCE

1. IF THE SITE WILL HAVE EXCESS FILL THAT WILL NEED TO BE EXPORTED TO AN OFF SITE LOCATION, THE RESPONSIBILITY OF CLEAN FILL DETERMINATION AND ENVIRONMENTAL DUE DILIGENCE RESTS ON THE APPLICANT. IF ALL CUT AND FILL MATERIALS WILL BE USED ON THE SITE, A CLEAN FILL DETERMINATION IS NOT REQUIRED BY THE OPERATOR UNLESS THERE IS A BELIEF THAT A SPILL OR RELEASE OF A REGULATED SUBSTANCE OCCURRED ON THE SITE.
2. ALL FILL MATERIAL MUST BE USED IN ACCORDANCE WITH OEPA CLEAN FILL POLICY.
3. CLEAN FILL IS DEFINED AS UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT (NOT INCLUDING MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE), AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON RECEIVING WATERS UNLESS OTHERWISE AUTHORIZED.
4. ENVIRONMENTAL DUE DILIGENCE IS DEFINED AS: INVESTIGATIVE TECHNIQUES, INCLUDING BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILIGENCE UNLESS VISUAL INSPECTIONS AND/OR REVIEW OF PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECTED TO A SPILL OR RELEASE OF REGULATED SUBSTANCE.
5. FILL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH OEPA'S MUNICIPAL OR RESIDENTIAL WASTE REGULATIONS.

DUST CONTROL

METHODS TO MINIMIZE AND CONTROL EROSION AND DUST FROM WIND. METHODS INCLUDE APPLYING WATER, USE OF DUST PALLIATIVES, AND COVERING STOCKPILES. SUITABLE FOR CONSTRUCTION ACTIVITIES THAT INVOLVE: VEHICLES TRAVELING ON UNPAVED ROADWAYS; DRILLING AND BLASTING; FINAL GRADING/SITE STABILIZATION; SOIL AND DEBRIS PILES; UNSTABILIZED SOILS; OR HAVE PROBLEMS RELATED TO BATCH DROP FROM FRONT-END LOADERS AND SEDIMENT TRACKING.

WATERING PREVENTS DUST ONLY FOR A SHORT PERIOD OF TIME AND MAY NEED TO BE APPLIED DAILY OR MORE OFTEN TO BE EFFECTIVE. EFFECTIVENESS DEPENDS ON SOIL, TEMPERATURE, HUMIDITY, AND WIND VELOCITY. OVER WATERING MAY CAUSE EROSION. GENERALLY, OIL OR OIL-TREATED SUBGRADE SHOULD NOT BE USED BECAUSE THE OIL MAY MIGRATE INTO DRAINAGEWAYS AND/OR SEEP INTO THE SOIL. CHEMICALLY TREATED SUBGRADE SOILS CAUSE THE SOIL TO BE WATER REPELLENT AND INTERFERE WITH RE-VEGETATION. SOME CHEMICAL DUST SUPPRESSANTS MAY BE SUBJECT TO FREEZING AND SOME MAY CONTAIN SOLVENTS AND MUST BE HANDLED PROPERLY. IN COMPACTED AREAS, WATERING AND OTHER LIQUID DUST CONTROL MEASURES MAY WASH SEDIMENT INTO THE STORMWATER DRAINAGE SYSTEM. ASPHALT, AS A MULCH TACK OR CHEMICAL MULCH, REQUIRES A 24-HOUR CURING TIME TO AVOID STICKING TO EQUIPMENT, SHOES, ETC. LOOSE ASPHALT AND ASPHALT MULCH MAY EVENTUALLY MIGRATE TO THE DRAINAGE SYSTEM. IN COMPACTED AREAS, WATERING OR OTHER LIQUID DUST CONTROL MEASURES MAY WASH SEDIMENT OR OTHER CONSTITUENTS INTO THE DRAINAGE SYSTEM.

WATER SHOULD BE APPLIED BY MEANS OF PRESSURE-TYPE DISTRIBUTORS OR PIPELINES EQUIPPED WITH A SPRAY SYSTEM THAT ENSURE EVEN DISTRIBUTION. SPRAY EQUIPMENT SHOULD BE EQUIPPED WITH POSITIVE FLOW SHUT-OFF SYSTEMS. UNLESS SUPPLIED BY PIPELINES, AT LEAST ONE MOBILE UNIT SHOULD BE AVAILABLE AT ALL TIMES TO APPLY WATER OR DUST PALLIATIVE AT THE SITE. QUICKLY STABILIZE EXPOSED SOILS USING VEGETATION, MULCHING, SPRAY-ON ADHESIVES, CALCIUM CHLORIDE, SPRINKLING, AND STONE/GRAVEL LAYERING. LIMIT ONSITE CONSTRUCTION TRAFFIC TO 15 MPH. REQUIRE HAUL TRUCKS TO BE COVERED. ENSURE THAT NON-POTABLE WASTER USED FOR DUST CONTROL IS APPROPRIATELY AND CLEARLY LABELED. CONTROL WATER USED FOR DUST CONTROL DOES NOT PRODUCE RUNOFF.

INSPECT AND VERIFY THAT MANAGEMENT BASED BMPS ARE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES. CHECK AREAS PROTECTED TO ENSURE COVERAGE. MOST DUST CONTROL MEASURE REQUIRE FREQUENT ATTENTION; OFTEN DAILY AND MULTIPLE TIMES PER DAY.

RECYCLING AND DISPOSAL METHODS

PROPER MEASURES FOR THE RECYCLING OR DISPOSAL OF MATERIALS ASSOCIATED WITH OR FROM THE PROJECT SITE SHALL BE UNDERTAKEN IN ACCORDANCE WITH EPA REGULATIONS.

A DESIGNATED CONCRETE WASH-OUT AREA SHALL BE PROVIDED ON SITE. MEASURES SHALL BE TAKEN TO CONTAIN ALL WASH-OUT WATER. UPON COMPLETION OF CONSTRUCTION WASH-OUT AREA SHALL BE REMOVED. ANY EXCESS CONCRETE SHALL BE DISPOSED OF PROPERLY.

THE CONTRACTOR SHALL FURNISH AND MAINTAIN SANITARY FACILITIES FOR WORKERS AND INSPECTORS AT ALL TIMES. ALL CONSTRUCTION WASTE SUCH AS EXCESS SOIL, BUILDING MATERIALS, LITTER, SHALL BE CONTAINED AND DISPOSED OF PROPERLY. WHENEVER POSSIBLE, EXCESS MATERIAL SHALL BE RE-USED OR RECYCLED, RATHER THAN DISPOSED OF.

OTHER CONTROLS

WASTE DISPOSAL:
ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER RENTED FROM A LICENSED SOLID WASTE MANAGEMENT COMPANY. THE DUMPSTER WILL MEET ALL LOCAL, CITY AND STATE SOLID WASTE MANAGEMENT REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER WILL BE EMPTIED A MINIMUM OF TWICE PER WEEK OR MORE OFTEN IF NECESSARY, AND THE TRASH WILL BE HAULED OFF-SITE. NO CONSTRUCTION WASTE MATERIALS WILL BE BURIED ONSITE. ALL PERSONNEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL. NOTICES STATING THESE PRACTICES WILL BE POSTED IN THE OFFICE TRAILER, THE INDIVIDUAL WHO MANAGES THE DAY-TO-DAY SITE OPERATIONS WILL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED. ALL CONSTRUCTION AND DEMOLITION DEBRIS (C&DD) WASTE WILL BE DISPOSED OF IN AN OHIO EPA APPROVED C&DD LANDFILL AS REQUIRED BY ORC 3714

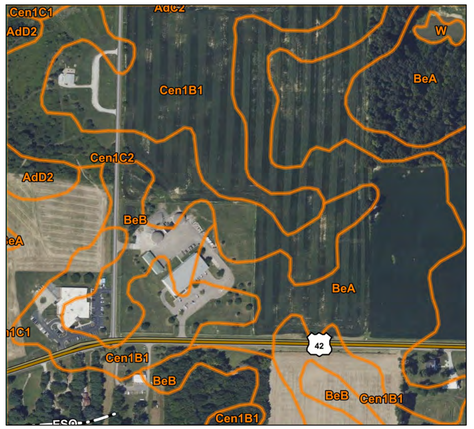
HAZARDOUS WASTE:
ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES. THE INDIVIDUAL WHO MANAGES DAY-TO-DAY SITE OPERATIONS WILL BE RESPONSIBLE FOR SEEING THAT THESE PRACTICES ARE FOLLOWED.

SANITARY WASTE:
ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF THREE TIMES PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR, AS REQUIRED BY LOCAL REGULATION.

OFF-SITE VEHICLE TRACKING:
OFF-SITE TRACKING OF SEDIMENTS SHALL BE MINIMIZED. A STABILIZED CONSTRUCTION ENTRANCE WILL BE PROVIDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENTS. ALL PAVED STREETS ADJACENT TO THE SITE WILL BE SWEPT DAILY TO REMOVE ANY EXCESS MUD, DIRT OR ROCK TRACKED FROM THE SITE. DUMP TRUCKS HAULING MATERIAL FROM THE CONSTRUCTION SITE WILL BE COVERED WITH A TARPAULIN.

DEWATERING ACTIVITIES:
THERE SHALL BE NO TURBID DISCHARGES TO SURFACE WATERS, RESULTING FROM DEWATERING ACTIVITIES. SEDIMENT-LADEN WATER MUST PASS THROUGH A SETTLING POND, FILTER BAG, OR OTHER COMPARABLE PRACTICE, PRIOR TO DISCHARGE.

PROCESS WASTEWATER:
ALL PROCESS WASTEWATER (EQUIPMENT WASHING, LEACHATE FROM ON-SITE WASTE DISPOSAL, ETC.) SHALL BE COLLECTED AND DISPOSED OF AT A PUBLICLY OWNED TREATMENT WORKS.



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AdC2	Amanda silt loam, 6 to 12 percent slopes, eroded	0.0	0.0%
AdD2	Amanda silt loam, 12 to 18 percent slopes, eroded	2.3	1.8%
BeA	Bennington silt loam, 0 to 2 percent slopes	35.5	28.1%
BeB	Bennington silt loam, 2 to 6 percent slopes	11.6	9.2%
Cen1B1	Centerburg silt loam, 2 to 6 percent slopes	46.7	36.9%
Cen1C1	Centerburg silt loam, 6 to 12 percent slopes	14.7	11.6%
Cen1C2	Centerburg silt loam, 6 to 12 percent slopes, eroded	15.1	11.9%
W	Water	0.6	0.5%
Totals for Area of Interest		**126.5**	**100.0%**

SPILL PREVENTION CONTROL AND COUNTERMEASURES (SPCC) PLAN

INVENTORY OF MATERIALS

THE MATERIALS OR SUBSTANCES LISTED BELOW ARE EXPECTED TO BE PRESENT ONSITE DURING CONSTRUCTION:

- CONCRETE
- DETERGENTS
- PAINTS (ENAMEL AND LATEX)
- METAL STUDS
- MASONRY BLOCK
- TAR
- FERTILIZERS
- PETROLEUM BASED PRODUCTS
- CLEANING SOLVENTS
- WOOD
- ROOFING SHINGLES
- LAMPS (INCLUDES FLUORESCENT LAMPS)

SPILL PREVENTION

MATERIAL MANAGEMENT PRACTICES:
THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORM WATER RUNOFF.

GOOD HOUSEKEEPING:
THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ONSITE DURING THE CONSTRUCTION.

- AN EFFECT WILL BE MADE TO STORE ONLY ENOUGH PRODUCT REQUIRED TO DO THE JOB.
- ALL MATERIALS STORED ONSITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.
- PRODUCT WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER'S LABEL.
- SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
- WHENEVER POSSIBLE, ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
- MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.
- THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS ONSITE.
- MATERIAL SAFETY AND DATA SHEETS WILL BE AVAILABLE UPON REQUEST.
- THE CONTRACTOR CAN USE PROTECTED STORAGE AREAS FOR INDUSTRIAL OR CONSTRUCTION MATERIALS TO MINIMIZE EXPOSURE TO SUCH MATERIALS TO STORM WATER.

HAZARDOUS PRODUCTS:
THESE PRACTICES ARE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS.

- PRODUCTS WILL BE KEPT IN ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.
- ORIGINAL LABELS AND MATERIAL SAFETY DATA SHEETS (MSDS) WILL BE RETAINED ON SITE.
- IF SURPLUS PRODUCT MUST BE DISPOSED OF, MANUFACTURE'S OR LOCAL AND STATE RECOMMENDED METHODS FOR PROPER DISPOSAL WILL BE FOLLOWED.

PRODUCT SPECIFIC PRACTICES

THE FOLLOWING PRODUCT PRACTICES WILL BE FOLLOWED ONSITE:

PETROLEUM PRODUCTS:
ALL ONSITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT SUBSTANCES USED ONSITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

FERTILIZERS:
FERTILIZERS USED WILL BE APPLIED PER OHIO DEPARTMENT OF TRANSPORTATION (ODOT) SPECIFICATIONS. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORM SEWER. STORAGE WILL BE IN A COVERED SHED OR OFFICE. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.

PAINTS:
ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT WILL BE PROPERLY DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.

CONCRETE TRUCKS:
CONCRETE TRUCKS WILL WASH OUT OR DISCHARGE SURPLUS CONCRETE ONLY IN AREAS DESIGNATED. THESE DESIGNATED AREAS SHALL BE LOCATED AWAY FROM WATERCOURSES, DRAINAGE DITCHES, FIELD DRAINS AND OTHER STORM WATER DRAINAGE AREAS. THE LOCATION WILL BE DETERMINED BY THE CONSTRUCTION MANAGER.

SPILL CONTROL PRACTICES

IN ADDITION TO THE GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTIONS OF THIS PLAN, THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:

- MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.
- MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ONSITE. EQUIPMENT AND MATERIALS MAY INCLUDE BUT NOT BE LIMITED TO BROOMS, DUST PANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC AND METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.
- ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.
- THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
- SPILLS OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE.
- THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM REOCCURRING AND HOW TO CLEAN UP THE SPILL IF THERE IS ANOTHER ONE. A DESCRIPTION OF THE SPILL, WHAT CAUSED IT, AND THE CLEANUP MEASURES WILL ALSO BE INCLUDED.
- THE CONTRACTOR, RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS, WILL BE IN CHARGE OF SPILL PREVENTION AND CLEANUP. HE WILL DESIGNATE AT LEAST TWO OTHER SITE PERSONNEL WHO WILL RECEIVE SPILL PREVENTION AND CLEANUP TRAINING. THESE INDIVIDUALS WILL EACH BECOME RESPONSIBLE FOR A PARTICULAR PHASE OF PREVENTION AND CLEANUP. THE NAMES OF RESPONSIBLE SPILL PERSONNEL WILL BE POSTED IN THE MATERIAL STORAGE AREA.

SPILL REPORTING REQUIREMENTS

IN AN EVENT OF A SMALL RELEASE, LESS THAN 25 GALLONS OF PETROLEUM WASTE, THE CONTRACTOR SHALL USE PETROLEUM BASED AND CONCRETE CURING COMPOUNDS PER MANUFACTURES HANDLING PROCEDURES.

IN AN EVENT OF A LARGE RELEASE, MORE THAN 25 GALLON OF PETROLEUM WASTE, THE CONTRACTOR SHALL CONTACT OHIO EPA (AT 1-800-282-9378), THE LOCAL FIRE DEPARTMENT AND THE LOCAL EMERGENCY PLANNING COMMITTEE (LEPC) WITHIN 30 MINUTES OF A SPILL OF 25 OR MORE GALLONS.

PLAN PREPARED FOR:
J&F CONSTRUCTION & DEVELOPMENT, INC.
2141 State Route 19 | Bucyrus, Ohio 44820
419.562.8682 | jfconstruction.com

PLAN PREPARED BY:
GANDEE HEYDINGER GROUP
CIVIL ENGINEERS & SURVEYORS
5676 STATE ROUTE 521, SUITE B
DELAWARE, OH 43015
P: 614.942.6042
WWW.GHGCIVIL.COM

VILLAGE OF MT. GILEAD, MORROW COUNTY, OHIO
MORROW COUNTY ENGINEERING
FORMER INFIRMARY SITE
PID: G20-536-00-613-04
SITE IMPROVEMENT PLAN
SWPP NOTES

NO.	DATE	REVISION DESCRIPTION
0	11 / 13 / 2023	ISSUED FOR CONSTRUCTION
1	1 / 4 / 2024	OWNER BUILDING AND SITE LAYOUT UPDATE
2	3 / 13 / 2024	SITE LAYOUT, GRADING, STORM UPDATE

DATE: 1 / 4 / 2024
SCALE: AS SHOWN
DRAWN BY: JB
CHECKED BY: AH
PROJECT NUMBER: 22-074-07
DRAWING NUMBER: C13
SHEET NUMBER: 13 / 16

Appendix B:

Inspection & Maintenance Guidance & Fact Sheets

- Dry Detention Basin - Inspection and Maintenance Guidance for Stormwater Control Practices
- Dry Detention Basin - Fact Sheet
- Swales/Filter Strips - Inspection and Maintenance Guidance for Stormwater Control Practices
- Swales/Filter Strips - Fact Sheet

4.1. DRY DETENTION BASINS

Dry detention basins are designed to capture stormwater during small to moderate rain events and slowly release the captured volume over a specific period of time. By design, they contain a forebay for capturing heavier sediment and floatables and a micropool in order to minimize standing water and saturated soil conditions that impede the maintenance and trimming of the facility. Dry detention basins improve water quality through biological uptake and filtering through deep rooted native plants, sediment settling including attached pollutants, temporary detention of stormwater, reduction of volume through evapotranspiration, and reduction of release rates that reduces downstream erosion.

Examples include:

- Dry ponds
- Extended detention basins
- Dry detention ponds

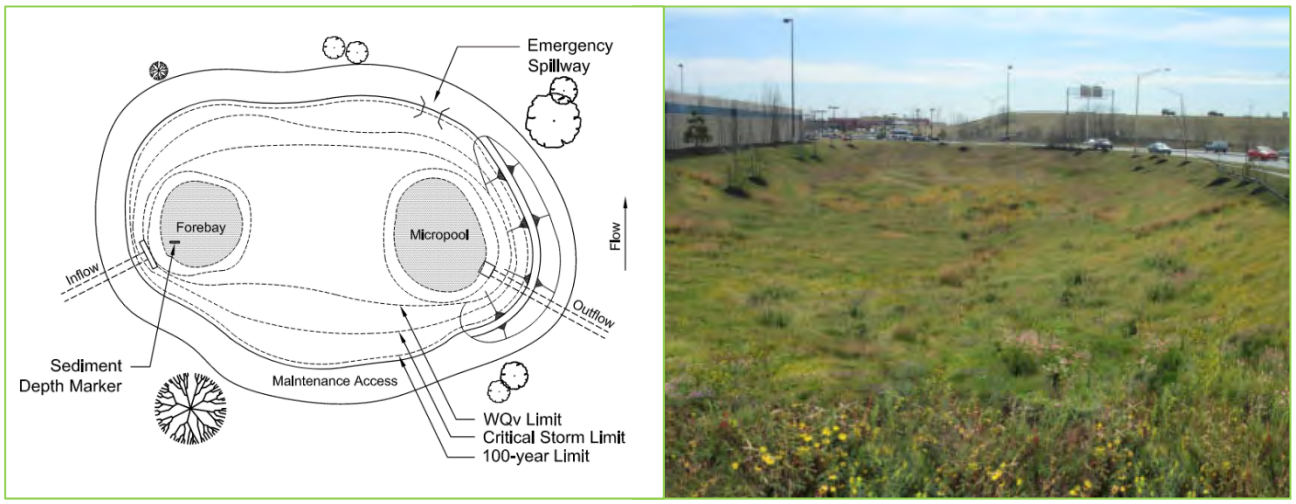


FIGURE 4-1 PLAN VIEW OF DRY DETENTION BASIN DESIGN (LEFT) AND TYPICAL DRY DETENTION POND (RIGHT)

4.1.1. ESTABLISHMENT PERIOD INSPECTION & MAINTENANCE

Establishment period inspection and maintenance (I&M) are critical to the overall success of dry detention basin facilities. The establishment period typically lasts two full growing seasons after plants are installed. This section includes I&M requirements to be implemented during the establishment period. A fact sheet with additional details on inspection and maintenance requirements, tasks and schedules for all phases of the facility is included in **Appendix A**. A Dry Detention Basin Inspection Form to be completed during inspections is included in **Appendix B**. Refer to the *City of Columbus Supplemental Specification SS 1609 Green Infrastructure Establishment Activities, CMSC 659, 661, 662* and individual facility construction project specifications for additional requirements.

4.1.1.1. MONTHLY INSPECTIONS

Monthly inspections are required during the dry detention basin establishment period. The Dry Detention Basin Inspection Form in **Appendix B** must be used for performing and reporting monthly inspections at dry detention basins. The Dry Detention Basin Inspection Form must be used as a guideline for evaluating the continued

functionality and aesthetics of the dry detention facility, by providing a checklist of the key components to verify during inspections. The form is based on a rating scale of 1-5, with 1 indicating poor condition, and 5 being ideal. In addition to the quantification of each component, the form also provides a space for comments and recommended as-needed maintenance identified during the inspections. Maintenance tasks must be performed during inspections at the frequency specified in the following sections.

Recent rainfall events and current weather must be recorded on the inspection form during each inspection, as the data may serve as indications of basin functionality or maintenance concerns, such as drainage issues or slope slippage.

The overall condition of the dry detention facility must first be analyzed, focusing primarily on drainage and general aesthetics of the basin. Basin plant cover must appear healthy, with few significant weeds or invasive species present. Vegetative cover may be minimal during the establishment period, but coverage must increase over time, as the grass, and plants where applicable, reach maturity. The system must also be checked for the presence of any trash, debris, or chemical accumulation, which can hinder the aesthetics and functionality of the basin.

Following the system overview, the inlets and overflow structures must be examined for any blockages or obstructions to flow entering or exiting the basin. The pre-treatment area located at each inlet must then be checked for sediment accumulation. Because these rocks are designed to act as a primary filter for larger particles, sediment accumulation should become apparent over time. Therefore, the presence of sediment deposition is an ideal indication of filter effectiveness, although excessive sediment buildup will reduce the effectiveness of the basin at treating stormwater and must therefore be cleaned regularly.

The perimeter of the facility must be inspected for any erosion or undercutting along the basin bottom or side slopes, in addition to verifying slope stability or any changes in grading. Locations of gullying, soil instability, or unvegetated regions along the slopes due to erosion must be identified and remedied.

Facility deficiencies must be remedied during the inspection if possible. Section 4.1.1.2 includes the minimum maintenance tasks that must be performed during establishment period monthly inspections. Some establishment period maintenance tasks must only be performed during certain times of the year. Refer to the maintenance activity schedule included in Section 4.1.1.2 for guidance on when specific tasks can be performed during the establishment period. As-needed maintenance includes maintenance tasks not described in Section 4.1.1.2 that require additional resources to address (e.g. trained personnel, specialty equipment, etc.). If as-needed maintenance tasks are required, it should be noted in the comment section of the inspection form; provide enough detail for a follow-up work order to be created.

4.1.1.2. MAINTENANCE TASKS & SCHEDULE

Maintenance tasks to be performed at dry detention basins during the establishment period include:

- Watering
- Weeding
- Trimming
- Trash & debris removal
- Minor erosion repairs
- Minor sediment/leaf removal
- Reseeding exposed soil

Watering

During the establishment period, routine watering during the growing season is crucial in promoting the growth and success of the newly planted vegetation. Watering must be conducted weekly between May and October during the establishment period.

Weeding

Weeding is necessary to maintain aesthetics and to prevent the proliferation of unwanted species, which may cause hydraulic issues by blocking or obstructing inlet and outlet structures. Invasive species or non-native weeds must be removed by hand, such that no more than 5% weed coverage is present at any given time. Weeds must be removed entirely, including all roots and root fragments, before the plants set seed to minimize further spread of the species. Proactive weeding is especially critical during the establishment period.

Trimming

Routine trimming must be conducted along all access paths, drives, and lawn areas surrounding the dry detention basin to ensure the site remains easily accessible for maintenance crews, as well as to promote the aesthetics of the facility. Regions identified as “no mow” areas must remain undisturbed and must not be mowed or trimmed. A brush trimmer should be used to cut down brush and shrubs to a manageable height once annually between March and April.

Trash & Debris Removal

All SCP media and components must be inspected to ensure stormwater can move through the facility and drain through all inlets, outlets, spillways, outfalls, and risers as intended. Any visible trash, sediment, and debris must be removed from the system to prevent the clogging of the facility and to promote the aesthetics of the facility. Flooding concerns may result if water exceeding the dry detention basin capacity is unable to exit the site through the storm sewer system. Some dry detention basin overflow structures may contain traps used to collect and prevent trash or other floatable objects from clogging the structural components of the system. These traps must be regularly emptied to ensure the proper functionality of the basin.

Minor Erosion Repairs

Minor erosion from sheet flow entering and flowing through the wetland must be evaluated and corrected along the embankment and surrounding berms. This can typically be identified as regions of gullying or unvegetated areas along the side slopes. Unvegetated regions along the sides of the dry detention basin resulting from erosion may require plant replacement to stabilize the existing soil. In regions of heavily concentrated flow, such as near inlet structures, minor repairs to rock structures must be conducted by rearranging the existing stone to ensure complete coverage, as necessary. Routine establishment period maintenance does not include the placement of new rock.

Minor Sediment/Leaf Removal

Organic matter, such as leaf debris, must be removed from the structural components of the dry detention facility to prevent the system from becoming clogged, particularly near inlet and outlet structures. The sediment forebay must be regularly be cleaned of sediment to continue its function of removing suspended solids from surface flow. Minor sediment removal from the facility may be accomplished by using a shovel or vacuum system to collect dry accumulated sediment. Leaf removal must be conducted if leaf litter exceeds four (4) inches in depth or if the accumulated leaf debris is impeding the filtration or functionality of the SCP.

Reseed Exposed Soil

The dry detention basin must maintain at least 70 percent grass cover. In regions where ground cover is less than 70 percent, exposed soil must be re-seeded in accordance with the most recent version of the *City of Columbus Construction and Material Specifications (CMSC) 659 Seeding and Mulching*.

Table 4-1 below shows the recommended schedule and frequency of establishment period I&M tasks. This schedule reflects the minimum maintenance requirements for dry detention basins during the establishment period. Additional maintenance activities may be required based on observations made during the required monthly inspections. More extensive maintenance activities not listed in **Table 4-1** are considered "as-needed" maintenance tasks and must be described in detail on the Dry Detention Basin Inspection Form.

Table 4-1 Schedule and Frequency of Establishment Period I&M Activities for Dry Detention Basins

Inspection & Maintenance Type	Task	Suggested Schedule											
		January	February	March	April	May	June	July	August	September	October	November	December
Establishment Period	Inspection	Once/Month											
	Watering			Once/Week									
	Weeding			Once/Month									
	Trimming			Once/Week									
	Trash & Debris Removal	Once/Month											
	Minor Erosion Repairs	Once/Month											
	Minor Sediment/ Leaf Removal	Once/Month											
	Reseed Exposed Soil	Once/Month											

Note: Suggested schedule includes months when maintenance tasks can be performed shown in green with the frequency indicated within the schedule range

4.1.1.3. PERSONNEL REQUIREMENTS

Personnel performing work on City-owned dry detention basins must be approved by the City of Columbus. Personnel shall follow all applicable requirements, procedures, policies, and practices set forth in the City of Columbus health and safety documents, SOPs and plans. Personnel shall wear personal protective equipment (PPE) as described in this manual. Personnel operating any equipment and/or machinery must possess all applicable certifications and licenses. Entrance to underground stormwater facilities requires confined space entry permits and personnel certification. The use of fertilizers, pesticides, and herbicides is prohibited for use in dry detention basin facilities during the establishment period.

4.1.1.4. EQUIPMENT/SAFETY

The following equipment must be readily available and safety procedures must be followed during inspections and maintenance tasks. Adherence to all safety procedures during inspection and maintenance tasks is required.

- Proper PPE
- Safety cones
- Shovel
- Rake
- Debris/trash waste containers
- Compostable waste containers
- Recyclable material containers
- Wheelbarrow
- City of Columbus ID Badge
- Trimmer
- Mobile irrigation system
- Flashlight
- Leaf blower/vacuum

4.1.1.5. ESTIMATED LABOR HOURS

The estimated annual labor hours for establishment period inspection & maintenance tasks are included in **Table 4-2**. Estimates are based on a two-person crew performing inspection and maintenance activities.

Table 4-2 Dry Detention Basin Establishment Period Annual Labor Hours

Inspection & Maintenance Type	Estimated Annual Labor Hours per Dry Detention Basin (Hours/Year)
Establishment Period	35

Note: Estimates based on two-person crew performing maintenance and inspection tasks. Hours for as-needed maintenance required during the establishment period are not included in the estimate above.

4.1.2. ROUTINE INSPECTION & MAINTENANCE

To maintain proper functionality, dry detention basin facilities must be inspected and maintained on a routine basis after the establishment period has ended. This section focuses on the routine I&M activities that must be performed on a recurring basis after the establishment period has ended and for the rest of the service life of the facility. A fact sheet with additional details on inspection and maintenance requirements, tasks and schedules for all phases of the dry detention facility is included in **Appendix A**. A **Dry Detention Basin Inspection Form** must be completed during inspections and is included in **Appendix B**.

4.1.2.1. QUARTERLY INSPECTIONS

After the establishment period, inspections for dry detention facilities can be reduced from monthly inspections to quarterly inspections. Quarterly inspections are required for the service life of the dry detention facility. The **Dry Detention Basin Inspection Form** in **Appendix B** must be used for performing and reporting quarterly routine inspections at dry detention basins for the duration of the life of the facility. An overview of what to inspect at dry detention basins is described in Section 4.1.1.1.

Facility deficiencies must be remedied during the inspection if possible. Section 4.1.2.2 includes the minimum maintenance tasks that must be performed during routine quarterly inspections. Some routine maintenance tasks must only be performed during certain times of the year. Refer to the routine maintenance activity schedule included in Section 4.1.2.2 for guidance on when specific routine maintenance tasks can be performed. As-needed maintenance includes maintenance tasks not described in Section 4.1.2.2 that require additional resources to address (e.g. trained personnel, specialty equipment, etc.). If as-needed maintenance tasks are

required, it should be noted in the comment section of the inspection form; provide enough detail for a follow-up work order to be created.

4.1.2.2. MAINTENANCE TASKS & SCHEDULE

Routine maintenance includes:

- Weeding
- Trimming
- Trash & debris removal
- Minor erosion repairs
- Minor sediment/leaf removal
- Reseeding exposed soil

Weeding

Weeding is necessary to maintain aesthetics and to prevent the proliferation of unwanted species, which may cause hydraulic issues by blocking or obstructing inlet and outlet structures. Invasive species or non-native weeds must be removed by hand, such that no more than 5% weed coverage is present at any given time. Weeds must be removed entirely, including all roots and root fragments, before the plants set seed to minimize further spread of the species.

Trimming

Routine trimming must be conducted along all access paths, drives, and lawn areas surrounding the dry detention basin to ensure the site remains easily accessible for maintenance crews, as well as to promote the aesthetics of the wetland. Regions identified as “no mow” areas must remain undisturbed and must not be mowed or trimmed. A brush trimmer should be used to cut down brush and shrubs to a manageable height once annually between March and April.

Trash & Debris Removal

All SCP media and components must be inspected to ensure stormwater can move through the facility and drain through all inlets, outlets, spillways, outfalls, and risers as intended. Any visible trash, sediment, and debris must be removed from the system to prevent the clogging of the facility and to promote the aesthetics of the facility. Flooding concerns may result if water exceeding the dry detention basin capacity is unable to exit the site through the storm sewer system. Some dry detention basin overflow structures may contain traps used to collect and prevent trash or other floatable objects from clogging the structural components of the system. These traps must be regularly emptied to ensure the proper functionality of the basin.

Minor Erosion Repairs

Minor erosion from sheet flow entering and flowing through the wetland must be evaluated and corrected along the embankment and surrounding berms. This can typically be identified as regions of gullying or unvegetated areas along the side slopes. Unvegetated regions along the sides of the dry detention basin resulting from erosion may require plant replacements to stabilize the existing soil. In regions of heavily concentrated flow, such as near inlet structures, minor repairs to rock structures must be conducted by rearranging the existing stone to ensure complete coverage, as necessary. Routine establishment period maintenance does not include the placement of new rock.

Minor Sediment/Leaf Removal

Organic matter, such as leaf debris, must be removed from the structural components of the dry detention basin to prevent the system from becoming clogged, particularly near inlet and outlet structures. The sediment forebay must be regularly be cleaned of sediment to continue its function of removing suspended solids from

surface flow. Minor sediment removal from the facility may be accomplished by using a shovel or vacuum system to collect dry accumulated sediment. Leaf removal must be conducted if leaf litter exceeds four (4) inches in depth or if the accumulated leaf debris is impeding the filtration or functionality of the SCP.

Reseed Exposed Soil

The dry detention basin must maintain at least 70 percent grass cover. In regions where ground cover is less than 70 percent, exposed soil must be re-seeded in accordance with the most recent version of the *City of Columbus Construction and Material Specifications (CMSC) 659 Seeding and Mulching*.

Table 4-3 below shows the recommended schedule and frequency of routine inspection and maintenance tasks. This schedule reflects the minimum maintenance requirements for a dry detention basin during the establishment period. Additional maintenance activities may be required based on observations made during the required quarterly inspections. More extensive maintenance activities not listed in **Table 4-3** are considered as-needed maintenance tasks.

Table 4-3 Schedule and Frequency of Routine I&M Activities for Dry Detention Basins

Inspection & Maintenance Type	Task	Suggested Schedule											
		January	February	March	April	May	June	July	August	September	October	November	December
Routine	Inspection	Once/Quarter											
	Weeding			Once/Quarter									
	Trimming			Once/2 Weeks									
	Trash & Debris Removal	Once/Quarter											
	Minor erosion repairs	Once/Quarter											
	Minor Sediment/ Leaf Removal	Once/Quarter											
	Reseed Exposed Soil	Once/Quarter											

Note: Suggested schedule includes months when maintenance tasks can be performed shown in green with the frequency indicated within the schedule range

4.1.2.3. PERSONNEL REQUIREMENTS

Personnel performing work on City-owned dry detention basins must be approved by the City of Columbus. Personnel shall follow all applicable requirements, procedures, policies, and practices set forth in the City of Columbus health and safety documents, SOPs and plans. Personnel shall wear personal protective equipment (PPE) as described in this manual. Personnel operating any equipment and/or machinery must possess all applicable certifications and licenses. Entrance to underground stormwater facilities requires confined space entry permits and personnel certification.

The use of fertilizers, pesticides, and herbicides is strongly discouraged for use in dry detention basins sites. If use is required (i.e. all other options have been expended to address the issue) approval must be obtained from the City of Columbus, and applications shall be made in accordance with all applicable local, state, and federal regulations by a licensed applicator. Products must be approved for aquatic use.

4.1.2.4. EQUIPMENT/SAFETY

The following equipment must be readily available and safety procedures must be followed during routine inspections and maintenance task. Adherence to all safety procedures during inspection and maintenance tasks is required.

- Proper PPE
- Shovel
- Rake
- Debris/trash waste containers
- Compostable waste containers
- Recyclable material containers
- Wheelbarrow
- City of Columbus ID Badge
- Trimmer
- Leaf blower/vacuum
- Flashlight

4.1.2.5. ESTIMATED LABOR HOURS

The estimated annual labor hours for routine inspection and maintenance tasks are included in **Table 4-4.** Estimates are based on a two-person crew performing inspection and maintenance activities.

Table 4-4 Dry Detention Basin Routine Inspection & Maintenance Period Annual Labor Hours

Inspection & Maintenance Type	Estimated Annual Labor Hours per Dry Detention Basin (Hours/Year)
Routine	19

Note: Estimates based on two-person crew performing maintenance and inspection tasks. Hours for as-needed maintenance required during the routine I&M period are not included in the estimate above.

4.1.3. AS-NEEDED MAINTENANCE

During each inspection, the facility must be inspected for aesthetics and proper functionality. As-needed maintenance may be required when deficiencies are observed that require maintenance beyond the listed scope of tasks in the Establishment Period and Routine I&M Sections of this manual or where a follow-up work order is necessary. As-needed maintenance tasks must be evaluated and identified during each inspection. If as-needed maintenance tasks are required, it should be noted in the comment section of the inspection form; provide enough detail for a follow-up work order to be created.

4.1.3.1. MAINTENANCE TASKS & SCHEDULE

As-needed maintenance tasks include, but are not limited to, the following:

- Inlet/outlet structure cleaning
- Watering during drought
- Rock channel replacement
- Slope slippage repair
- Major sediment removal/leaf removal
- Major trash/debris removal
- Pest/disease/invasive species management

Inlet/Outlet Structure Cleaning

In order to maintain the functionality of the dry detention basin, inlet and outlet structures must occasionally be cleaned of large trash and debris. Blockages must be identified and removed before flow is severely obstructed from entering or exiting the facility.

Watering During Drought

Mature plants will not require scheduled watering after the initial establishment period. However, watering may be required during extreme drought conditions to ensure the survival of the vegetation within the facility. Soil cracking and plant distress are indicative of drought. If Franklin County is experiencing "Abnormally Dry" or "Moderate Drought" conditions as indicated by the United States Drought Monitor (http://droughtmonitor.unl.edu/) consult with the City of Columbus to determine if watering must be performed at City-owned SCPs.

Rock Channel Replacement

In locations of continued erosion, additional rock may be required to replace or strengthen the existing erosion control measures. This commonly occurs at locations of high flow velocity, such as the rock channels or rip-rap surrounding the inlet structures. Severe or continued erosion and settling may require the installation of more permanent erosion control or slope stability measures, such as re-grading of the facility.

Slope Slippage Repair

Slope repairs must be evaluated and performed when major signs of erosion, soil instability or slope slippages are observed along the basin slope. The slope must be repaired to the original design slope or a more gradual slope ratio.

Major Sediment/Leaf Removal

Dry detention basins that are experiencing severe sediment or leaf accumulation may require cleaning and debris removal efforts beyond what is regularly required. Stormwater must be able to freely move through the facility and drain through overflow structures, as intended. Therefore, it is important to keep all hydraulic components free of blockages. If water exceeding the basin capacity is unable to exit the site through the storm sewer system, severe clogging of the facility may result in the proliferation of vector (mosquito) habitat, reduced water storage volume, or flooding concerns.

Major Trash & Debris Removal

In addition to regular function of the facility, removal of excessive debris accumulations must be conducted on an as-needed basis to improve the overall aesthetics of the facility. When major trash and debris are present at the facility (e.g. illegal dumping, large downed tree branches) these items must be removed, and sorted for proper disposal (e.g. compost, recycling, waste).

Pest/Disease/Invasive Species Management

Dry detention basins must be closely monitored for the onset of pests, disease, or invasive species, which must be promptly addressed in order to mitigate potential spreading to nearby plants or basins. Invasive plant species must be removed entirely, including all roots and root fragments, before the plants set seed. These practices will aid in reducing further spread or establishment of the unwanted species. When managing the proliferation of pests within a dry detention basin, it is important to first identify the underlying cause of the issue. In some instances, completion of as-needed maintenance tasks may resolve the pest issue without having to take additional measures. For example, if the as-needed maintenance issue is generating favorable conditions for the pest to inhabit, such as vector (mosquito) populations resulting from the prolonged ponding due to clogged

outlet structures, returning the dry detention basin to its properly functioning state may subsequently eliminate the pest. However, if use of pesticides is required (i.e. all other options have been expended to address an issue) approval must be obtained from the City of Columbus, and applications of chemicals shall be made in accordance with all applicable local, state, and federal regulations by a licensed applicator. Products used must be approved for aquatic use.

Table 4-5 below shows a recommended schedule for when as-needed maintenance tasks must be completed. The table must be used for guidance on the time of year when it would be most beneficial to perform as-needed maintenance tasks. The schedule is not meant to be a comprehensive schedule for all possible tasks. The City will schedule as-needed maintenance tasks based on field observations recorded on inspection forms, time of year, and priority for addressing the issue(s). When possible, multiple tasks must be consolidated into one work order per facility. Alternatively, scheduling may also be streamlined by performing similar tasks across multiple facilities (i.e. one crew replacing mulch at all top priority facilities). The shaded areas in **Table 4-5** provide guidance on when as-needed maintenance tasks can be performed throughout the year. Inspections will dictate the need and frequency of performing these as-needed tasks.

Table 4-5 Schedule and Frequency of As-Needed Maintenance Activities for Dry Detention Basins

Maintenance Type	Task	Suggested Schedule											
		January	February	March	April	May	June	July	August	September	October	November	December
As-Needed	Inlet/Outlet Structure Cleaning												
	Watering During Drought												
	Rock Channel Replacement												
	Slope Slippage Repair												
	Major Sediment/Leaf Removal												
	Major Trash & Debris Removal												
	Pest/Disease/Invasive Species Management												

Note: Inspections will dictate whether the as-needed maintenance tasks listed above are required to be performed at the dry detention basin. Inspections will dictate the frequency these tasks must be performed. The schedule above provides guidance on when these specific tasks can be performed throughout the year.

Additional details on the as-needed maintenance are included in the **Dry Detention Basin Fact Sheet** in **Appendix A**.

4.1.3.2. MAINTENANCE RECORD

Maintenance records must be used for recording as-needed maintenance tasks. A work order will be created describing the tasks to be completed and the maintenance record will serve as verification of the actual work completed. Maintenance records are required for all as-needed maintenance identified during routine inspections. The maintenance record will include specific tasks completed based on the work order, quantities of materials utilized, and personnel responsible for completing the tasks. The maintenance record will be submitted to verify that all tasks included in the work order have been addressed. Each maintenance record will be unique based on the required task to be completed.

4.1.3.3. PERSONNEL REQUIREMENTS

Personnel performing work on City-owned dry detention basins must be approved by the City of Columbus. Personnel shall follow all applicable requirements, procedures, policies, and practices set forth in the City of Columbus health and safety documents, SOPs and plans. Personnel shall wear personal protective equipment (PPE) as described in this manual. Personnel operating any equipment and/or machinery must possess all applicable certifications and licenses. Entrance to underground stormwater facilities requires confined space entry permits and personnel certification.

The use of fertilizers, pesticides, and herbicides is strongly discouraged for use in dry detention basins. If use is required (i.e. all other options have been expended to address the issue) approval must be obtained from the City of Columbus, and applications shall be made in accordance with all applicable local, state, and federal regulations by a licensed applicator. Products must be approved for aquatic use.

4.1.3.4. EQUIPMENT/SAFETY

As-needed maintenance will vary greatly in equipment and safety requirements.

4.1.3.5. ESTIMATED LABOR HOURS

As-needed maintenance labor hours will vary greatly depending on the severity, extent, and required equipment to perform tasks. It is anticipated that a portion of this work will require specialized training, licenses, or certification of personnel resulting in a higher hourly labor rate for completion of these maintenance tasks.

8.1.1. DRY DETENTION BASIN FACT SHEET

Inspections and Maintenance

As a general standard, monthly inspections are required during the establishment period and quarterly inspections are required for the service life of all dry detention basins. During each visit and inspection, the following tasks should be performed in accordance with the schedule included in this fact sheet:

Inspection Form

- Complete an inspection form during facility inspection that details the condition of the facility, the work performed during the inspection, and any recommendations for as-needed maintenance.
- All SCP design components including area protection, stormwater entrances, pervious surfaces, energy dissipation devices, piping and appurtenances, and outlets should be inspected for physical damage and repair needs. Accessible piping joints should be inspected for cracking or disruptions of stormwater flow through the system.

Watering

- Watering should be conducted on a routine basis during the establishment period. Watering may also be required on an as-needed basis during the service life of the facility during times of drought, but consult with the City of Columbus to determine if water conservation efforts are in effect during drought.

Weeding

- All plants that are not specified on the permitted planting plan should be removed entirely, including all roots and root fragments, by hand, before plants set seed.
- No more than 5% weed coverage of any facility is permitted at any time. Proactive weeding is especially critical during the establishment period.

Trimming

- For dry detention basin sites with seeded lawn areas, these should be regularly trimmed during the growing season
- Locations with significant vegetative growth outside of the dry detention basin and adjacent to the sites may require specific trimming if the locations are not able to be mowed.
- Regions identified as “no mow” areas should remain undisturbed and should not be mowed or trimmed.
- A brush trimmer should be used to cut down brush and shrubs once annually between March and April.

Trash & Debris Removal

- Trash and debris, including leaves, should be removed from the surface of the dry detention basin during every site visit and inspection.
- All SCP media and components should be inspected to ensure stormwater can move through the facility as designed.
- Any visible trash, sediment, and debris should be removed from all dry detention facility components to prevent clogging or obstructions to stormwater flowing through the system.
- Basin overflow structures containing traps used to collect trash or other floatable objects should be emptied regularly.
- All trash and debris should be collected and sorted into appropriately designated compostable or non-compostable containers and properly disposed.

Minor Sediment/Leaf Removal

- Organic matter, such as leaf debris and sediment accumulations, must routinely be removed from the planting areas, rock channels, inlet protection, and basin structures.
- Minor sediment removal from the facility may be accomplished by using a shovel or vacuum system to collect dry accumulated sediment. Leaf removal must be conducted if leaf litter exceeds four (4) inches in depth or if the accumulated leaf debris is impeding the filtration or functionality of the SCP.

Reseed Exposed Soil

- Exposed soil should be re-seeded in accordance with the most recent version of the *City of Columbus Construction and Material Specifications (CMSC) 659 Seeding and Mulching* such that no less than 70% grass coverage of any dry detention basin is permitted at any time.

Minor Erosion Repairs

- The surface of the dry detention basin should be inspected for indications of settling or compaction of surface materials. If settling or minor compaction has occurred, surface material should be broken up using hand tools to increase void space and promote infiltration, if applicable.
- Minor repairs to rock channels, inlet rip-rap, and other stone should be conducted during each site inspection. This would include adjustments of existing stone but not the addition of more stone
- The SCP should be inspected for erosion or gullying along the inlet and outlet flow path, including all side slopes or graded channels within the basin. Significant erosion or settling may require regrading of the dry detention basin or replacement of some surface materials over time. Continued erosion within or directly adjacent to the basin may warrant the installation of more permanent erosion control or slope stability measures.

Inlet/Outlet Structure Cleaning

- Inlet and outlet structures must be inspected for large trash and debris. When necessary, cleaning should be noted on the inspection form for follow up as-needed work.

Pest/Disease/Invasive Species Management

- The onset of pests, disease, or invasive species should be promptly addressed to prevent further spread of the issue.
- Invasive plant species should be removed entirely, including all roots and root fragments, before the plants set seed.
- In some instances, performing as-needed maintenance tasks may eliminate the proliferation of pests within the facility. Therefore, any related maintenance issues should be resolved before implementing direct pest-control measures.
- The use of fertilizers, pesticides, and herbicides is prohibited during the establishment period, and strongly discouraged throughout the service life of the facility. If use is required, approval must be obtained from the City of Columbus, and applications shall be made in accordance with all applicable local, state, and federal regulations by a licensed applicator. Products used must be approved for aquatic use.

Slope Slippage Repair

- Dry detention facilities should be repaired when major signs of erosion, soil instability or slope slippages are observed along the basin slope. The slope should be repaired to the original design slope or a more gradual slope ratio.

Rock Channel Replacement

- Additional rock should be placed, as needed, in locations of continued erosion to replace or strengthen the existing erosion control measures.
- Severe erosion and settling may require the installation of more permanent erosion control or slope stability measures, such as regrading of the dry detention basin.

Schedule and Frequency of I&M Activities for Dry Detention Basins

Phase			Task	Suggested Schedule											
Establishment	Routine	As-Needed		January	February	March	April	May	June	July	August	September	October	November	December
X	X		Inspection	Once/Month or Once/Quarter											
X		X	Watering			Once/Week or As Needed									
X	X		Weeding			Once/Month or Once/Quarter									
X	X		Trimming			Once/ 2 Weeks									
X	X	X	Trash & Debris Removal	Once/Month or Once/Quarter or As Needed											
X	X	X	Minor Sediment/Leaf Removal	Once/Month or Once/Quarter or As Needed											
X	X		Reseed Exposed Soil	Once/Month or Once/Quarter											
X	X		Minor Erosion Repairs	Once/Month or Once/Quarter											
		X	Inlet/Outlet Structure Cleaning	As Needed											
		X	Pest/Disease/Invasive Species Management	As Needed											
		X	Slope Slippage Repair					As Needed							
		X	Rock Channel Replacement	As Needed											

4.4. SWALES/FILTER STRIPS

Swales are shallow, mildly sloped trapezoidal channels, and filter strips are sloped surfaces with a relatively mild longitudinal slope. The surfaces of both swales and filter strips are typically composed of plantings or dense turf grass and are effective at reducing runoff and removing pollutants. Swales and filter strips improve water quality through biological uptake, detention of stormwater, and treatment of stormwater percolating through soil and filter media.

Examples include:

- Vegetated swales
- Vegetated filter strips

4.4.1. ESTABLISHMENT PERIOD INSPECTION & MAINTENANCE

Establishment period inspection and maintenance are critical to the plantings in swales and filter strips and the overall success of these facilities. The establishment period typically lasts two full growing seasons after plants are installed. This section includes I&M requirements to be implemented during the establishment period. A fact sheet with additional details on inspection and maintenance requirements, tasks and schedules for all phases of these facilities is included in **Appendix A**. A **Swales/Filter Strips Inspection Form** to be completed during inspections is included in **Appendix B**. Refer to the *City of Columbus Supplemental Specification SS 1609 Green Infrastructure Establishment Activities, CMSC 659, 661, 662* and individual facility construction project specifications for additional requirements.

4.4.1.1. MONTHLY INSPECTIONS

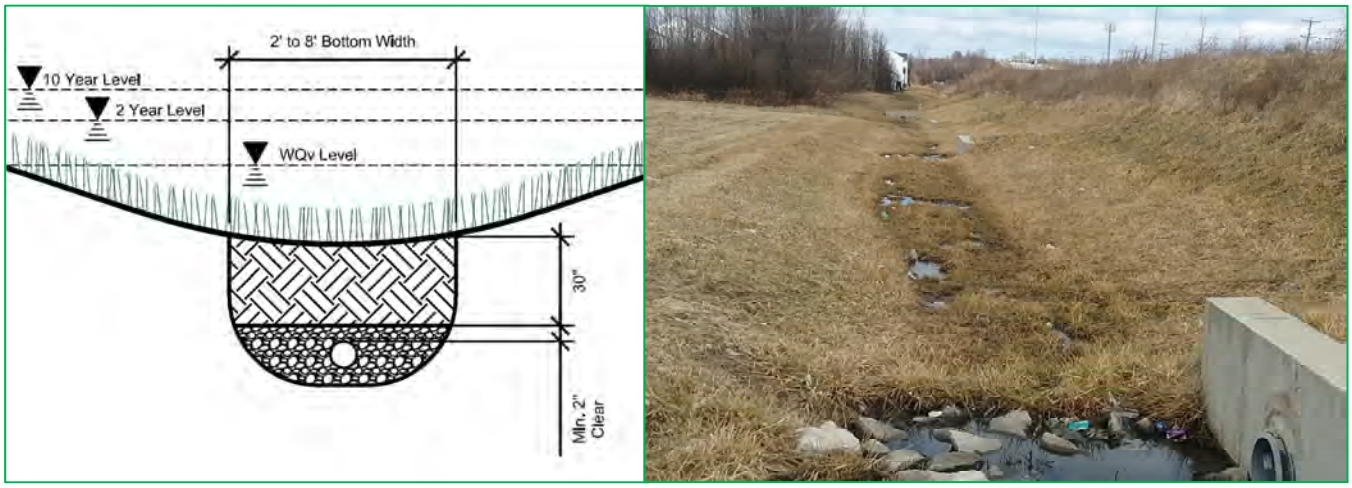


FIGURE 4-4 TYPICAL SWALE DESIGN PLAN VIEW (LEFT) AND TYPICAL SWALE INSTALLATION (RIGHT)

Monthly inspections are required during the swale/filter strip establishment period. The **Swale/Filter Strip Inspection Form** in **Appendix B** must be used for performing and reporting the monthly inspections at swale/filter strip facilities. Deficiencies noted during the inspections must be remedied during the inspection if possible. Maintenance tasks must be performed during inspections at the frequency specified in the following sections.

The Swale/Filter Strip Inspection Form must be used as a guideline for evaluating the continued functionality and aesthetics of the facility. The inspection form provides a checklist of the key assessment metrics that must be reviewed during each inspection. The form is based on a rating scale of 1-5 with 1 indicating poor conditions, and 5 indicating ideal conditions. In addition to the quantification of each assessment metric, the form also provides a space for comments and recommended as-needed maintenance.

Recent rainfall events and current weather must be recorded during each inspection, as the data may serve as indications of swale/filter strip functionality or maintenance concerns, such as flooding or severe erosion.

The overall condition of the swale/filter strip facility must first be analyzed, focusing primarily on the vegetation present in the planting area, as well as the general aesthetics of the facility. Swale/filter strip plants must appear healthy, with few weeds or invasive species present. Vegetative cover may be minimal during the establishment period, but coverage must increase over time, as the plants reach maturity. The facility must also be checked for the presence of any trash, debris, or chemical accumulation, in addition to mosquito proliferation, which may hinder the aesthetics and functionality.

Following the system overview, the inlets and overflow structures must be examined for any blockages or obstructions to flow entering or exiting the facility. Where pre-treatment areas are presents at inlets, these must be checked for sediment accumulation. Because these rocks are designed to act as a primary filter for larger particles, sediment accumulation should become apparent over time. Therefore, the presence of sediment deposition is an ideal indication of filter effectiveness, although excessive sediment buildup will reduce the effectiveness of the swale/filter strip at treating stormwater and must therefore be cleaned regularly.

The perimeter of the facility must be inspected for any erosion or undercutting along the facility bottom or side slopes, in addition to verifying slope stability or any changes in grading. Locations of gullying, soil instability, or unvegetated regions along the slopes due to erosion must be identified and remedied.

The functionality of the swale/filter strip media must be examined during each monthly inspection. Swale and filter strip facilities with mulch must be maintained to provide an adequate, even layer of mulch cover throughout the entire planting area. The soil moisture must appear average, with no cracks or prolonged ponding. Swales/filter strips are typically designed to drain within 24 hours. The soil must also be checked for compaction, which may reduce infiltration rates and present eventual ponding concerns. Excessive sediment deposits in the bottom of the facility must be removed regularly to promote the functionality of the facility as a stormwater treatment system.

As-needed maintenance includes maintenance activities not listed in Section 4.4.1.2 that require additional resources to address (e.g. trained personnel, specialty equipment, etc.). If as-needed maintenance tasks are required, it should be noted in the comment section of the inspection form; provide enough detail for a follow-up work order to be created.

4.4.1.2. MAINTENANCE TASKS & SCHEDULE

Maintenance tasks during the establishment period typically include:

- Watering
- Weeding
- Trimming
- Trash & debris removal
- Minor erosion repair
- Minor sediment/leaf removal

Watering

During the establishment period, routine watering during the growing season is crucial in promoting the growth and success of the newly planted vegetation. During periods of low rainfall, additional watering may be conducted as needed.

Weeding

Weeding is necessary in preventing the proliferation of unwanted species, which may choke or hinder the growth of swale/filter strip vegetation. All plants that are not specified in the vegetation must be removed by hand, such that no more than 5% weed coverage is present at any given time. Weeds must be removed entirely, including all roots and root fragments, before the plants set seed to minimize further spread of the species. Proactive weeding is especially critical during the establishment period.

Trimming

Because many swale/filter strip systems are located in public areas such as parks, rights-of way, or neighborhoods, routine trimming of seeded lawn areas surrounding or in the swale/filter strip site is necessary to promote the aesthetics of the facility.

Trash & Debris Removal

In addition to improving the aesthetics of the system, routine trash and debris removal must be conducted to maintain the functionality of the system. Any visible trash, sediment, and debris must be removed from the facility during each inspection to prevent the clogging of the swale/filter strip media, inlets and outlets, reduction of water storage volume, and to eliminate potential habitats for vector (mosquito) larvae.

All media and components must be inspected to ensure stormwater can move through the facility and drain through both the swale/filter strip media and the overflow structures, as intended. Substantial clogging of the facility may result in flooding concerns if water exceeding the basin capacity is unable to exit the site through the storm sewer system. Some overflow structures may contain traps used to collect and prevent trash and other floatable objects from entering the storm sewer system. These traps must regularly be emptied to ensure their continued functionality.

Minor Sediment/Leaf Removal

Organic matter, such as leaf debris, must be removed from the planting areas to prevent the filtration media from becoming clogged, which is necessary in maintaining the system's ability to infiltrate and treat stormwater. Rock channels, inlet protection, and other stone structures within the swale/filter strip must regularly be cleaned of sediment to continue their function of removing suspended solids from surface flow. Minor sediment removal from the facility may be accomplished by using a shovel or vacuum system to collect dry accumulated sediment. Leaf removal must be conducted if leaf litter exceeds four (4) inches in depth or if the accumulated leaf debris is impeding the filtration or functionality of the stormwater SCP.

Minor Erosion Repairs

Minor erosion from sheet flow entering and traveling through the swale/filter strip must be evaluated along the side slopes and bottom. This can typically be identified as regions of displaced mulch, gullying, or unvegetated areas along the side slopes. During each inspection, existing soil must be spread or smoothed along the bottom of the swale/filter strip, which will assist in weed control and erosion protection during the establishment period. In regions of heavily concentrated flow, such as near inlet structures, minor repairs to rock structures must be conducted by rearranging the existing stone to ensure complete coverage, as necessary.

Table 4-16 below shows the recommended schedule and frequency of establishment period inspection and maintenance tasks. This schedule reflects the minimum maintenance requirements of a swale/filter strip facility during the establishment period. Additional maintenance activities may be required based on observations made during the required monthly inspections. More extensive maintenance activities not listed in **Table 4-16** are considered establishment period maintenance tasks.

Table 4-16 Schedule and Frequency of Establishment Period I&M Activities for Swale/Filter Strip Facilities

Inspection & Maintenance Type	Task	Suggested Schedule											
		January	February	March	April	May	June	July	August	September	October	November	December
Establishment Period	Inspection	Once/Month											
	Watering			Once/Week									
	Weeding			Once/Month									
	Trimming			Once/Week									
	Trash & Debris Removal	Once/Month											
	Minor Sediment/ Leaf Removal	Once/Month											
	Minor Erosion Repairs	Once/Month											

Note: Suggested schedule includes months when maintenance tasks can be performed shown in green with the frequency indicated within the schedule range

4.4.1.3. PERSONNEL REQUIREMENTS

Personnel performing work on City-owned swales/filter strips must be approved by the City of Columbus. Personnel shall follow all applicable requirements, procedures, and practices set forth in the City of Columbus health and safety documents, SOPs and plans. Personnel shall wear personal protective equipment (PPE) as described in this manual. Personnel operating any equipment and/or machinery must possess all applicable certifications and licenses. Entrance to underground stormwater facilities requires confined space permits and personnel certification.

4.4.1.4. EQUIPMENT/SAFETY

The following equipment must be readily available and safety procedures must be followed during establishment period inspection & maintenance tasks. Adherence to all safety procedures during inspection and maintenance tasks is required.

- Proper PPE
- Safety cones
- Shovel
- Rake
- Debris/trash waste container
- Compostable waste container
- Recyclable material containers
- Wheelbarrow
- Leaf blower/vacuum
- Trimmer
- Flashlight
- City of Columbus ID Badge
- Mobile irrigation system

4.4.1.5. ESTIMATED LABOR HOURS

The estimated annual labor hours for establishment period inspection and maintenance tasks are included in **Table 4-17**. Estimates are based on a two-person crew performing inspection and maintenance activities.

Table 4-17 Swale/Filter Strip Establishment Period Annual Labor Hours

Inspection & Maintenance Type	Estimated Annual Labor Hours per Swale/Filter Strip (Hours/Year)
Establishment Period	18

Note: Estimates based on two-person crew performing maintenance and inspection tasks. Hours for as-needed maintenance required during the establishment period are not included in the estimate above.

4.4.2. ROUTINE INSPECTION & MAINTENANCE

To maintain proper functionality, swales/filter strips must be inspected and maintained on a routine basis even after the establishment period has ended. This section focuses on the routine inspection and maintenance activities that must be performed on a recurring basis after the establishment period for the service life of the facility. A fact sheet with additional details on inspection and maintenance requirements, tasks and schedules for all phases of swales and filter strips is included in **Appendix A**. A **Swale/Filter Strip Inspection Form** must be completed during inspections and is included in **Appendix B**.

4.4.2.1. MONTHLY INSPECTIONS

After the establishment period, inspections for swales/filter strips must continue to be performed monthly. Monthly inspections are required for the service life of the swale/filter strip. The **Swales/Filter Strip Inspection Form** in **Appendix B** must be used for performing and reporting monthly inspections at swales/filter strips. An overview of what to inspect at swales and filter strips is provided in Section 4.4.1.1.

Deficiencies noted during inspections must be remedied during the inspection if possible. As-needed maintenance includes maintenance activities not described in Section 4.4.2.2 that require additional resources to address (e.g. trained personnel, specialty equipment, etc.). If as-needed maintenance tasks are required, it should be noted in the comment section of the inspection form; provide enough detail for a follow-up work order to be created.

4.4.2.2. MAINTENANCE TASKS & SCHEDULE

Routine maintenance includes:

- Weeding
- Trimming
- Trash & debris removal
- Minor erosion repair
- Minor sediment/leaf removal

Weeding

Weeding is necessary to prevent the proliferation of unwanted species, which may choke or hinder the growth of swale/filter strip lawn. All must be removed by hand, such that no more than 5% weed coverage is present at any given time. Weeds must be removed entirely, including all roots and root fragments, before the plants set seed to minimize further spread of the species.

Trimming

Since many swale/filter strip systems are located in public areas such as parks, rights-of way, or neighborhoods, routine trimming of lawn areas is necessary to promote the aesthetics of the facility.

Trash & Debris Removal

In addition to improving the aesthetics of the system, routine trash and debris removal must be conducted to maintain the functionality of the system. Any visible trash, sediment, and debris must be removed from the SCP vegetated area and forebays during each inspection to prevent the clogging of the swale/filter strip media, reduction of water storage volume, and to eliminate potential habitats for vector (mosquito) larvae.

All media and components must be inspected to ensure stormwater can move through the facility and drain through both the swale/filter strip media and the overflow structures, as intended. Substantial clogging of the facility may result in flooding concerns if water exceeding the basin capacity is unable to exit the site through the storm sewer system. Some basin overflow structures may contain traps used to collect and prevent trash and other floatable objects from entering the storm sewer system. These traps must regularly be emptied to ensure their continued functionality.

Minor Erosion Repairs

Minor erosion from sheet flow entering and traveling through the swale/filter strip must be evaluated along the side slopes and bottom of the basin. This can typically be identified as regions of gullying or unvegetated areas along the side slopes. During each inspection, existing soil must be spread or smoothed along the bottom of the swale/filter strip, which will assist in weed control and erosion protection. In regions of heavily concentrated flow, such as near inlet structures, minor repairs to rock structures must be conducted by rearranging the existing stone to ensure complete coverage, as necessary.

Minor Sediment/Leaf Removal

Organic matter, such as leaf debris, must be removed from the vegetated areas to prevent the filtration media from becoming clogged, which is necessary in maintaining the system's ability to infiltrate and treat stormwater. Rock channels, inlet protection, and other stone structures within the basin must regularly be cleaned of sediment to continue their function of removing suspended solids from surface flow. Minor sediment removal from the facility may be accomplished by using a shovel or vacuum system to collect dry accumulated sediment. Leaf removal must be conducted if leaf litter exceeds four (4) inches in depth or if the accumulated leaf debris is impeding the filtration or functionality of the SCP.

Table 4-18 below shows the recommended schedule and frequency of routine inspection and maintenance tasks. This schedule reflects the minimum maintenance requirements throughout the service life of a swale and filter strip facility, after the establishment period has ended. Additional maintenance activities may be required based on observations made during the required monthly inspections. More extensive maintenance activities not listed in **Table 4-18** are considered as-needed maintenance tasks.

Table 4-18 Schedule and Frequency of Routine I&M Activities for Swales/Filter Strips

Inspection & Maintenance Type	Task	Suggested Schedule											
		January	February	March	April	May	June	July	August	September	October	November	December
Routine	Inspection	Once/Month											
	Weeding			Once/Month									
	Trimming			Once/Week									
	Trash & Debris Removal	Once/Month											
	Minor Sediment/ Leaf Removal	Once/Month											
	Minor Erosion Repairs	Once/Month											

Note: Suggested schedule includes months when maintenance tasks can be performed shown in green with the frequency indicated within the schedule range

4.4.2.3. PERSONNEL REQUIREMENTS

Personnel performing work on City-owned swales/filter strips must be approved by the City of Columbus. Personnel shall follow all applicable requirements, procedures, and practices set forth in the City of Columbus health and safety documents, SOPs and plans. Personnel shall wear personal protective equipment (PPE) as described in this manual. Personnel operating any equipment and/or machinery must possess all applicable certifications and licenses. Entrance to underground stormwater facilities requires confined space permits and personnel certification.

4.4.2.4. EQUIPMENT/SAFETY

The following equipment must be readily available and safety procedures must be followed during routine inspection & maintenance tasks. Adherence to all safety procedures during inspection and maintenance tasks is required.

- Proper PPE
- Safety cones
- Shovel
- Rake
- Debris/trash waste containers
- Compostable waste containers
- Recyclable material containers
- Wheelbarrow
- Leaf blower/vacuum
- City of Columbus ID Badge
- Flashlight

4.4.2.5. ESTIMATED LABOR HOURS

The estimated labor hours for each routine inspection & maintenance task are included in **Table 4-19**. Estimates are based on a two-person crew performing inspection and maintenance activities.

Table 4-19 Swale/Filter Strip Routine Inspection & Maintenance Annual Labor Hours

Inspection & Maintenance Type	Estimated Annual Labor Hours per Swale/Filter Strip (Hours/Year)
Routine	12

Note: Estimates based on two-person crew preforming maintenance and inspection tasks. Hours for as-needed maintenance required during the routine I&M period are not included in the estimate above.

4.4.3. AS-NEEDED MAINTENANCE

During each inspection, the facility must be inspected for aesthetics and proper functionality. As-needed maintenance may be required when deficiencies are observed that require maintenance beyond the listed scope of tasks in the Establishment Period and Routine I&M Sections of this manual or where a follow-up work order is necessary. As-needed maintenance tasks must be evaluated and identified during each inspection. If as-needed maintenance tasks are required, it should be noted in the comment section of the inspection form; provide enough detail for a follow-up work order to be created.

4.4.3.1. MAINTENANCE TASKS & SCHEDULE

As-needed maintenance includes, but is not limited to:

- Inlet/outlet structure cleaning
- Watering during drought
- Media replacement
- Major sediment/leaf removal
- Major trash & debris removal
- Pest/disease/invasive species management
- Soil compaction repair

Inlet/Outlet Structure Cleaning

In order to maintain the functionality of swales and filter strips, inlet and outlet structures must occasionally be cleaned of large trash and debris. Blockages must be identified and removed before flow is severely obstructed from entering or exiting the facility.

Watering During Drought

Mature plants will not require scheduled watering after the initial establishment period. However, watering may be required during extreme drought conditions to ensure the survival of the vegetation within the facility. Soil cracking and plant distress are indicative of drought. If Franklin County is experiencing “Abnormally Dry” or “Moderate Drought” conditions as indicated by the United States Drought Monitor (http://droughtmonitor.unl.edu/) consult with the City of Columbus to determine if watering must be performed at City-owned SCPs.

Media Replacement

Bioretention media must be replaced in locations where the existing soil has been relocated or removed from the swale/filter strip bottom to ensure the soil remains at the required depth for stormwater treatment. Facilities experiencing significant clogging of media may require complete replacement of the existing soil.

Major Sediment/Leaf Removal

Swale/filter strip facilities that are experiencing severe sediment or leaf accumulation may require cleaning and debris removal efforts beyond what is regularly required. Stormwater must be able to freely move through the facility and drain through both any soil media and overflow structures, as intended. Therefore, it is important to keep all structural components and soil media free of blockages. If water exceeding the basin capacity is unable to exit the site through the storm sewer system, severe clogging of the facility may result in the proliferation of vector (mosquito) habitat, reduced water storage volume, or flooding concerns.

Major Trash & Debris Removal

In addition to regulating the functionality of the facility, removal of excessive debris accumulations must be conducted to improve the overall aesthetics of the facility. Extensive trash and debris must be removed from the swale/filter strip during each inspection to prevent the clogging of any storage media, reduction of water storage volume, and to eliminate potential habitats for vector (mosquito) larvae.

Pest/Disease/Invasive Species Management

Swales and filter strips must be closely monitored for the onset of pests, disease, or invasive species, which must be promptly addressed in order to mitigate potential spreading to nearby plants or basins. Invasive plant species must be removed entirely, including all roots and root fragments, before the plants set seed. These practices will aid in reducing further spread or establishment of the unwanted species. When managing the proliferation of pests within a swale or filter strip facility, it is important to first identify the underlying cause of the issue. In some instances, completion of as-needed maintenance tasks may resolve the pest issue without having to take additional measures. For example, if the as-needed maintenance issue is generating favorable conditions for the pest to inhabit, such as vector (mosquito) populations resulting from the prolonged ponding due to clogged outlet structures, returning the facility to its properly functioning state may subsequently eliminate the pest. The use of fertilizers, pesticides, and herbicides is prohibited during the establishment period, and strongly discouraged following the establishment period. However, if use is required (i.e. all other options have been expended to address an issue) approval must be obtained from the City of Columbus, and applications shall be made in accordance with all applicable local, state, and federal regulations by a licensed applicator. Products used must be approved for aquatic use.

Soil Compaction Repairs

The surface media of the swale or filter strip must be inspected for indications of settling or compaction of surface materials, which will decrease soil porosity and reduce infiltration rates. If soil compaction or settling is observed, surface materials must be broken up using hand tools to increase void space.

Table 4-20 below shows a recommended schedule for when as-needed tasks must be completed and must be used for guidance on the time of year when it would be most beneficial to perform the work. The schedule is not meant to be a comprehensive schedule for all possible activities. The City will schedule as-needed maintenance tasks based on field observations recorded on inspection forms, time of year, and priority for addressing the issue(s). When possible, multiple tasks must be consolidated into one work order per facility. Alternatively, scheduling may also be streamlined by performing similar tasks across multiple facilities (i.e. one crew replacing media at all top priority facilities). The shaded areas in **Table 4-20** provide guidance on when as-needed maintenance activities can be performed throughout the year. Inspections will dictate the need and frequency of performing as-needed maintenance.

Table 4-20 Schedule and Frequency of As-Needed Maintenance Activities for Swales/Filter Strips

Maintenance Phase	Task	Suggested Schedule											
		January	February	March	April	May	June	July	August	September	October	November	December
As-Needed	Inlet/Outlet Structure Cleaning												
	Watering During Drought												
	Rock Channel Replacement												
	Media Replacement												
	Major Sediment/Leaf Removal												
	Major Trash & Debris Removal												
	Pest/Disease/Invasive Species Management												
	Soil Compaction Repairs												

Note: Inspections will dictate whether the as-needed maintenance tasks listed above are required to be performed. Inspections will dictate the frequency at which these tasks must be performed. The schedule above provides guidance on scheduling these specific tasks throughout the year.

Additional details on the as-needed maintenance are included in the **Swales/Filter Strips Fact Sheet** in **Appendix A**.

4.4.3.2. MAINTENANCE RECORD

Maintenance records must be used for recording as-needed maintenance tasks. A work order will be created describing the tasks to be completed and the maintenance record will serve as verification of the actual work completed. Maintenance records are required for all as-needed maintenance identified during establishment and routine inspections. The maintenance record will include specific tasks completed based on the work order, quantities of materials utilized, and personnel responsible for completing the tasks. The maintenance record will be submitted to verify that all tasks included in the work order have been addressed. Each maintenance record will be unique based on the required task to be completed.

4.4.3.3. PERSONNEL REQUIREMENTS

Personnel performing work on swales/filter strips must be approved by the City of Columbus. Personnel shall follow all applicable requirements, procedures, and practices set forth in the City of Columbus health and safety documents, SOPs and plans. Personnel shall wear personal protective equipment (PPE) as described in this manual. Personnel operating any equipment and/or machinery must possess all applicable certifications and licenses. Entrance to underground stormwater facilities requires confined space permits and personnel certification.

4.4.3.4. EQUIPMENT/SAFETY

As-needed maintenance will vary greatly in equipment and safety requirements.

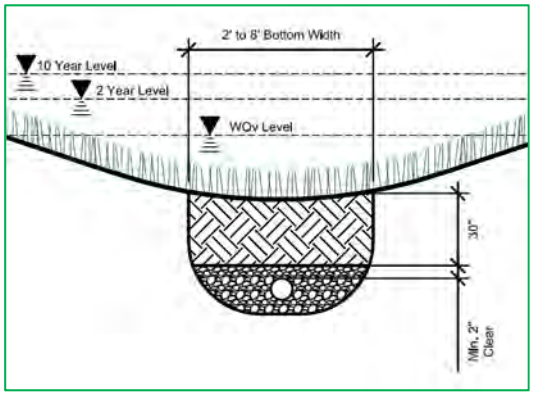
4.4.3.5. ESTIMATED LABOR HOURS

As-needed maintenance labor hours will vary greatly depending on the severity, extent, and required equipment to perform tasks. It is anticipated that a portion of this work will require specialized training, licenses, or certification of personnel resulting in a higher hourly labor rate for personnel performing these maintenance tasks.

8.1.4. SWALES/FILTER STRIPS FACT SHEET

Inspections and Maintenance

As a general standard, monthly inspections are required during the establishment period and for the service life of all swales/filter strips. . During each visit and inspection, the following tasks should be performed or evaluated in accordance with the schedule included in this fact sheet:



Inspection Form

- Complete an inspection form during facility inspection that details the condition of the facility, the work performed during the inspection, and any recommendations for as-needed maintenance.
- All SCP design components including area protection, stormwater entrances, pervious surfaces, energy dissipation devices, piping and appurtenances, and outlets should be inspected for physical damage and repair needs. Accessible piping joints should be inspected for cracking or disruptions of stormwater flow through the system.

Weeding

- All invasive species should be removed entirely including all roots and root fragments, by hand, before plants set seed.
- No more than 5% weed coverage of any facility is permitted at any time. Proactive weeding is especially critical during the establishment period.

Trimming

- For swale/filter strip sites with seeded lawn areas, these should be regularly trimmed during the growing season.

Major Trash & Debris Removal

- All SCP media and components should be inspected to ensure stormwater can move through the facility and drain through both the swale/filter strip media and the overflow structures, as intended.
- Any visible trash, sediment, and debris should be removed from all swale/filter strip facility components to prevent clogging or obstructions to stormwater flowing through the system.
- Swale/filter strip overflow structures containing traps used to collect trash or other floatable objects should be emptied regularly.
- All trash and debris should be collected and sorted into compostable or non-compostable containers and properly disposed of.

Inlet/Outlet Structure Cleaning

- Inlet and outlet structures must be inspected for large trash and debris. When necessary, cleaning should be noted on the inspection form for follow up as-needed work.

Sediment/Leaf Removal

- Organic matter, such as leaf debris and sediment accumulations, must be removed from the vegetated areas, rock channels, inlet protection, and other stone structures within the swale/filter strip.
- Minor sediment removal from the facility may be accomplished by using a shovel or vacuum system to collect dry accumulated sediment. Leaf removal must be conducted if leaf litter exceeds four (4) inches in depth or if the accumulated leaf debris is impeding the filtration or functionality of the SCP.

Soil Compaction Repairs

- In areas where soil compaction or settling is observed, surface materials should be broken up using hand tools to increase void space.

Minor Erosion Repairs

- Existing soil should be smoothed/spread along the swale/filter strip sides and bottom in places of gullying or displaced media to ensure adequate ground coverage and mitigate any minor erosion or slope undercutting.
- In regions of heavily concentrated flow, such as near inlet structures, minor repairs to rock structures should be conducted by rearranging the existing stone to ensure complete coverage. Routine maintenance does not include placing additional rock.

Media Replacement

- Swale/filter strip media should be replaced in locations where significant volumes of existing soil have been relocated or removed from the bottom of the facility by stormwater flows.
- Facilities experiencing significant clogging of the swale/filter strip media may require complete replacement of the existing soil.

Rock Channel Replacement

- Additional rock should be placed, as needed, in locations of continued erosion to replace or strengthen the existing erosion control measures.
- Severe erosion and settling may require the installation of more permanent erosion control or slope stability measures, such as regrading of the swale/filter strip.

Pest/Disease/Invasive Species Management

- The onset of pests, disease, or invasive species should be promptly addressed to prevent further spread of the issue.
- Invasive plant species should be removed entirely, including all roots and root fragments, before the plants set seed.
- In some instances, performing as-needed maintenance tasks may eliminate the proliferation of pests within the facility. Therefore, any related maintenance issues should be resolved before implementing direct pest-control measures.
- The use of fertilizers, pesticides, and herbicides is prohibited during the establishment period, and strongly discouraged throughout the service life of the facility. If use is required, approval must be obtained from the City of Columbus, and applications shall be made in accordance with all applicable local, state, and federal regulations by a licensed applicator. Products used must be approved for aquatic use.

Schedule and Frequency of I&M Activities for Swales/Filter Strips Facilities

Phase			Task	Suggested Schedule											
Establishment	Routine	As-Needed		January	February	March	April	May	June	July	August	September	October	November	December
X	X		Inspection	Once/Month											
X		X	Watering			Once/Week									
X	X		Weeding			Once/Month									
X	X		Trimming			Once/Week									
X	X	X	Major Trash & Debris Removal	Once/Month or As Needed											
		X	Inlet/Outlet Structure Cleaning	As Needed											
X	X	X	Sediment/Leaf Removal	Once/Month or As Needed											
		X	Soil Compaction Repairs	As Needed											
X	X		Minor Erosion Repairs	Once/Month											
		X	Media Replacement				As Needed						As Needed		
		X	Rock Channel Replacement	As Needed											
		X	Pest/Disease/Invasive Species Management	As Needed											

Appendix C:

Operations and Maintenance Inspection Forms

- Dry Detention Basin Inspection Form
- Swales/Filter Strips Inspection Form

8.2.1. DRY DETENTION BASIN INSPECTION FORM

Facility Name/Asset ID: _____Time In:_____am/pm **Out:_____**am/pm
City of Columbus Record Plan No.:_____ Date: _____
Inspector Name & Contact Information: _____

Inspection & Maintenance Type (Check One)	Weather	Temp (°F)	Days Since Last Rainfall	Most Recent Precipitation (in)
. **Establishment** ☐**Routine**				

Site Inspection

Category	Assessment Metric	Rating 1 (Poor) – 5 (Excellent)	Comments
System Overview	Aesthetics		
	Debris/Trash & Oil/Chemical Accumulation		
	Plant Cover		
	Vegetation Health		
	Weeds/ Invasives		
	Mosquito Proliferation		
Inflow Points	Inlet Functionality		
	Erosion		
Outlet/ Overflow Structures*	Outlet Functionality		
	Structural Condition		
	Erosion/ Undercutting		
	Slope Stability & Grading		
Bottom of System	Drainage		
	Sediment Buildup		

Maintenance Log

Maintenance Performed (Check all that apply)	Establishme	Routine
Watering	☐	
Minor Erosion Repair	☐	☐
Trimming	☐	☐
Weeding	☐	☐
Trash & Debris Removal	☐	☐
Sediment/Leaf Removal	☐	☐
Reseed Exposed Soil	☐	☐

*Reference the outlet structure details provided within the City approved engineering plan and/or Stormwater Control Practice (SCP) Maintenance Plan for structure features to inspect and maintain.

As-Needed Maintenance *(Check all that apply & describe in comment box)*

Inlet/Outlet Cleaning	Rock Channel Replacement	Slope Slippage Repair	Pest/Disease/ Invasive Species Management	Other

Comments/Description of As-Needed Maintenance

DRY DETENTION BASIN INSPECTION FORM RATING SYSTEM

Category	Assessment Metric	Rating Scale				
		5	4	3	2	1
System Overview	Aesthetics	Excellent	Good	Neglected	Deteriorating	Poor
	Debris/Trash & Oil/Chemical Accumulation	None		Slight		Excessive
	Plant Cover	80-100%	60-80%	40-60%	20-40%	0-20%
	Vegetation Health	Well Established/ Mature	Mostly Healthy	Sparse/ Stressed	Many Dying	Dead/Absent
	Weeds/ Invasives	None		Slight		Overgrown
	Mosquito Proliferation	Absent				Present
Inflow Points	Inlet Functionality	Unobstructed		Obstructed		Blocked
	Erosion	None		Minor- Lack of Vegetated Cover		Major – Erosion Rills and Gullies
Outlet/ Overflow Structures	Outlet Functionality	Clear	Sediment Buildup	Slight Obstruction	Severe Obstruction	Blocked
	Structural Condition	Excellent		Deteriorating		Poor
	Erosion/ Undercutting	None	Ground Cover Missing	Slight Channelization	Heavily Channelized	Substantial Scouring
	Slope Stability/Grading	Well Defined		Moderately Defined		Poorly Defined
Bottom of System	Drainage	Drains ≤ 48 Hours		Ponding >72 Hours		No Drainage/ Extensive Ponding
	Sediment Buildup**	None	<5%	5%-10%	10%-20%	>20%

**Reference the basin forebay, micropool, or alternative pretreatment SCP details, elevations and sediment monitoring procedures provided within the City approved engineering plan and/or Stormwater Control Practice Maintenance Plan.

8.2.5. SWALE/FILTER STRIP INSPECTION FORM

Facility Name/Asset ID: _____Time In:_____am/pm **Out:_____**am/pm
City of Columbus Record Plan No.:_____ Date: _____
Inspector Name & Contact Information: _____

Inspection & Maintenance Type (Check One)	Weather	Temp (°F)	Days Since Last Rainfall	Most Recent Precipitation (in)
. Establishment ☐Routine				

Site Evaluation

Category	Metric	Rating 1 (Poor) – 5 (Excellent)	Comments
System Overview	Aesthetics		
	Debris/Trash & Oil/Chemical Accumulation		
	Vegetation Health		
	Weeds/ Invasives		
	Mosquito Proliferation		
Inflow Points	Inlet Functionality		
Outlet/ Overflow Structures*	Outlet Functionality		
Pre-Treatment Area	Sediment Buildup		
Perimeter/ Embankment	Erosion/ Undercutting		
	Slope Stability & Grading		
Bottom of System			
	Soil Moisture		
	Drainage		
	Soil Compaction		
	Sediment Buildup		

Maintenance Performed (Check all that apply)		Routine
Trash & Debris Removal		☐
Weeding	☐	☐
Trimming		☐
Minor Erosion Repairs		☐
Sediment/ Leaf Removal		☐

*Reference the outlet structure details provided within the City approved engineering plan and/or Stormwater Control Practice (SCP) Maintenance Plan for structure features to inspect and maintain.

As-Needed Maintenance *(Check all that apply & describe in comment box)*

Inlet/Outlet Cleaning		Rock Channel Replacement	Media Replacement	Pest/Disease/Invasive Species Management	Other

Comments/Description of As-Needed Maintenance

SWALE/FILTER STRIP INSPECTION FORM RATING SYSTEM

Category	Assessment Metric	Rating Scale				
		5	4	3	2	1
System Overview	Aesthetics	Excellent	Good	Neglected	Deteriorating	Poor
	Debris/Trash & Oil/Chemical Accumulation	None		Slight		Excessive
	Vegetation Health	Well Established/ Mature	Mostly Healthy	Sparse/ Stressed	Many Dying	Dead/Absent
	Weeds/ Invasives	None		Slight		Overgrown
	Mosquito Proliferation	Absent				Present
Inflow Points	Inlet Functionality	Unobstructed		Obstructed		Blocked
Outlet/ Overflow Structures	Outlet Functionality	Clear	Sediment Buildup	Slight Obstruction	Severe Obstruction	Blocked
Pre-Treatment Area	Sediment Buildup	Empty/ Minimal Accumulation		Moderate/ Half Full		Full / Nearly Full
Perimeter/ Embankment	Erosion/ Undercutting	None	Ground Cover Missing	Slight Channelization	Heavily Channelized	Substantial Scouring
	Slope Stability/Grading	Well Defined		Moderately Defined		Poorly Defined
	Soil Moisture	Moist		Dry and Cracked		Cracked Soil - Extremely Hard
	Drainage	Under 24 Hours	Ponding > 24 Hours	Ponding > 48 Hours	Ponding >72 Hours	No Drainage - Extensive Ponding
	Soil Compaction	None		Slight		Extreme
	Sediment Buildup	None	<2”	2”-4”	4”-6”	>6”