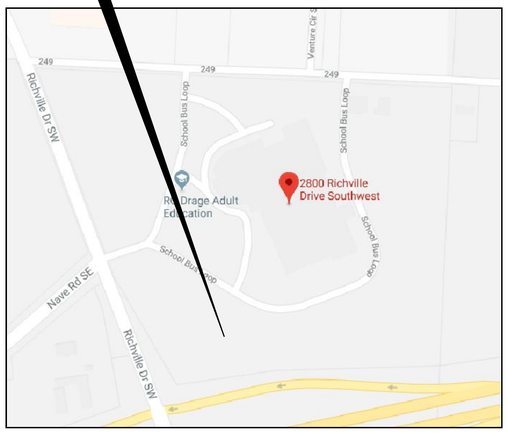
SITE IMPROVEMENT PLANS
FOR
DRAINAGE SWALE IMPROVEMENTS
AT
RG DRAGE CAREER TECHNICAL CENTER

MASSILLON, OHIO

JUNE, 2018

SITE LOCATION



VICINITY MAP
N.T.S.

N

DRAWINGS INDEX:

DAVID L. MYERS, P.E. DATE
P.E. # 70398

JASON POPIEL, P.E. DATE
CITY OF MASSILLON ENGINEER

Thorson • Baker + Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road (330) 659-6688 Ph.
Richfield, Ohio 44286 (330) 659-6675 Fax

SōL HARRIS/DAY architecture
8677 Fram Ave NW
North Canton, OH 44720
Ph.: 330.493.7222
Fx.: 330.493.5777
www.solharrisday.com

[designed for people, designed for life.]

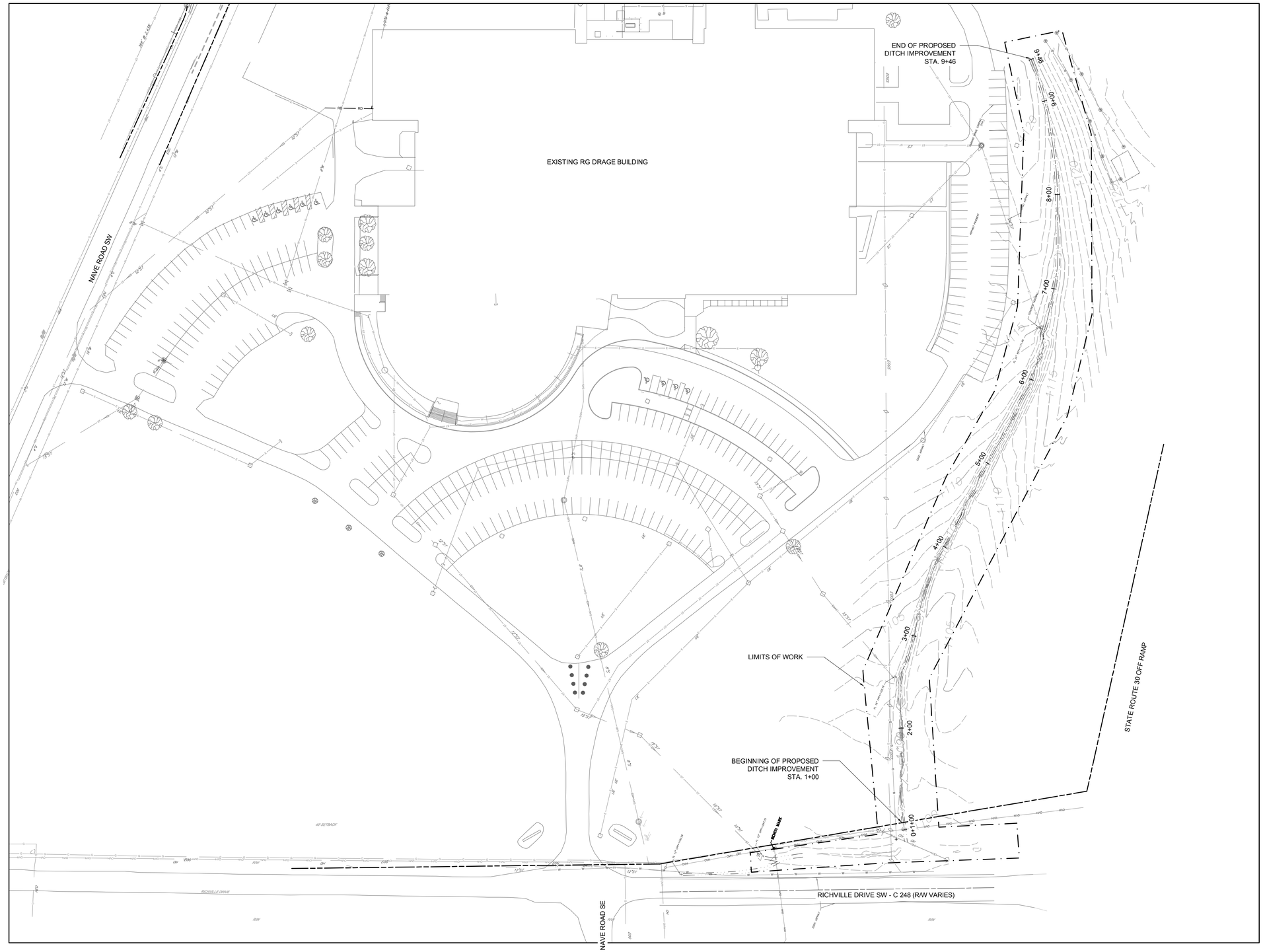
Drainage Swale Improvements for:
RG Drage Career Technical Center
2800 Richville Drive SW
Massillon, Ohio 44646

MARK	DATE	DESCRIPTION

PROJECT NO: 17.106
DATE: 2018.06.12

COVER SHEET

C0.0



EXISTING UTILITY LINE LOCATION/ DEPTH AND SIZE TO BE FIELD VERIFIED BY CONTRACTOR.
ELECTRIC, COMMUNICATION, GAS ARE FOR REFERENCE ONLY, SEE MEP PLANS FOR DESIGN.

OVERALL SITE PLAN
1" = 50'

2 WORKING DAYS
BEFORE YOU DIG
CALL TOLL FREE: 800-362-2764
OHIO UTILITIES PROTECTION SERVICE

Thorson • Baker + Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road
Richfield, Ohio 44286
(330) 659-6688 Ph.
(330) 659-6675 Fax

SōL HARRIS/DAY architecture
8677 Fram Ave NW
North Canton, OH 44720
Ph.: 330.493.7222
Fx.: 330.493.5777
www.solharrisday.com

[designed for people, designed for life.]

Drainage Swale Improvements for:

RG Drage Career Technical Center

2800 Richville Drive SW
Massillon, Ohio 44646

MARK	DATE	DESCRIPTION

PROJECT NO: 17.106
DATE: 2018.06.12

OVERALL SITE PLAN

C1.0

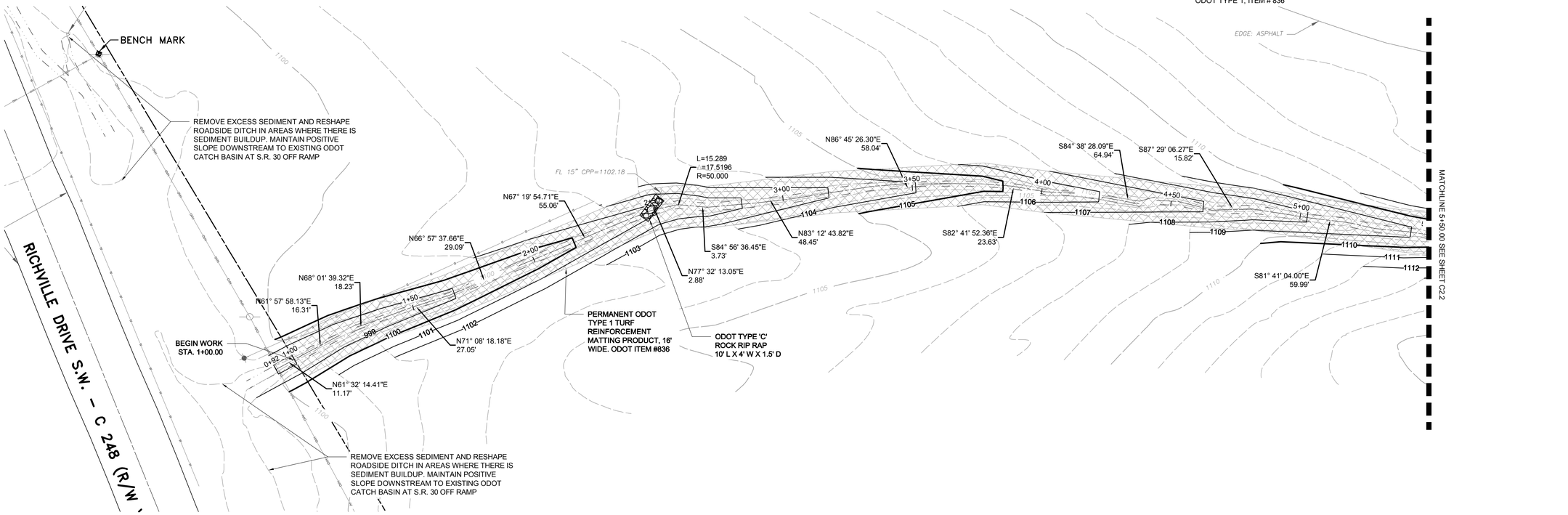
LEGEND

PROPOSED ODOT TYPE 'C' RIPRAP

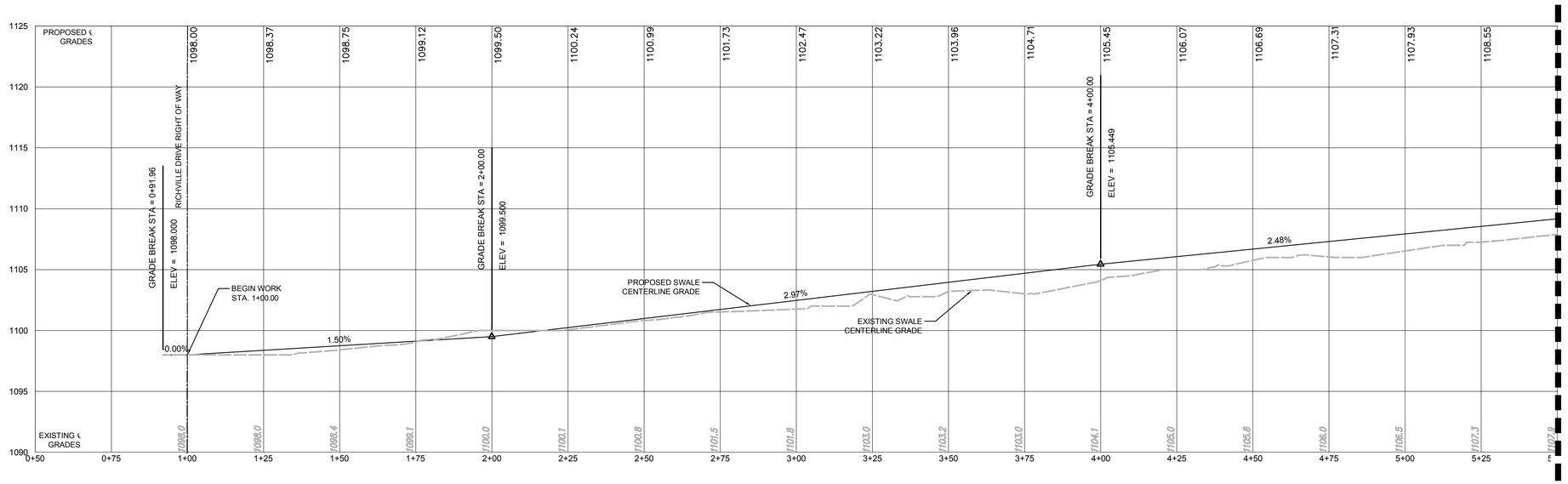
PROPOSED PERMANENT TURF REINFORCEMENT MATTING. ODOT TYPE 1, ITEM # 836

EXISTING CONTOURS

PROPOSED CONTOURS



PROPOSED SWALE CENTERLINE



EXISTING UTILITY LINE LOCATION/ DEPTH AND SIZE TO BE FIELD VERIFIED BY CONTRACTOR. ELECTRIC, COMMUNICATION, GAS ARE FOR REFERENCE ONLY, SEE MEP PLANS FOR DESIGN.

HORIZONTAL SCALE 20' 0' 20' 40'

VERTICAL SCALE 5' 0' 5' 10'

SWALE PLAN AND PROFILE
1" = 20'

2 WORKING DAYS BEFORE YOU DIG
CALL TOLL FREE: 800–362–2764
OHIO UTILITIES PROTECTION SERVICE

Thorson • Baker + Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road (330) 659-6688 Ph.
Richfield, Ohio 44286 (330) 659-6675 Fax

SOL HARRIS/DAY architecture
8677 Fram Ave NW
North Canton, OH 44720
Ph.: 330.493.2722
Fx.: 330.493.5777
www.solharriday.com
[designed for people, designed for life.]

Drainage Swale Improvements for:

RG Drage Career Technical Center

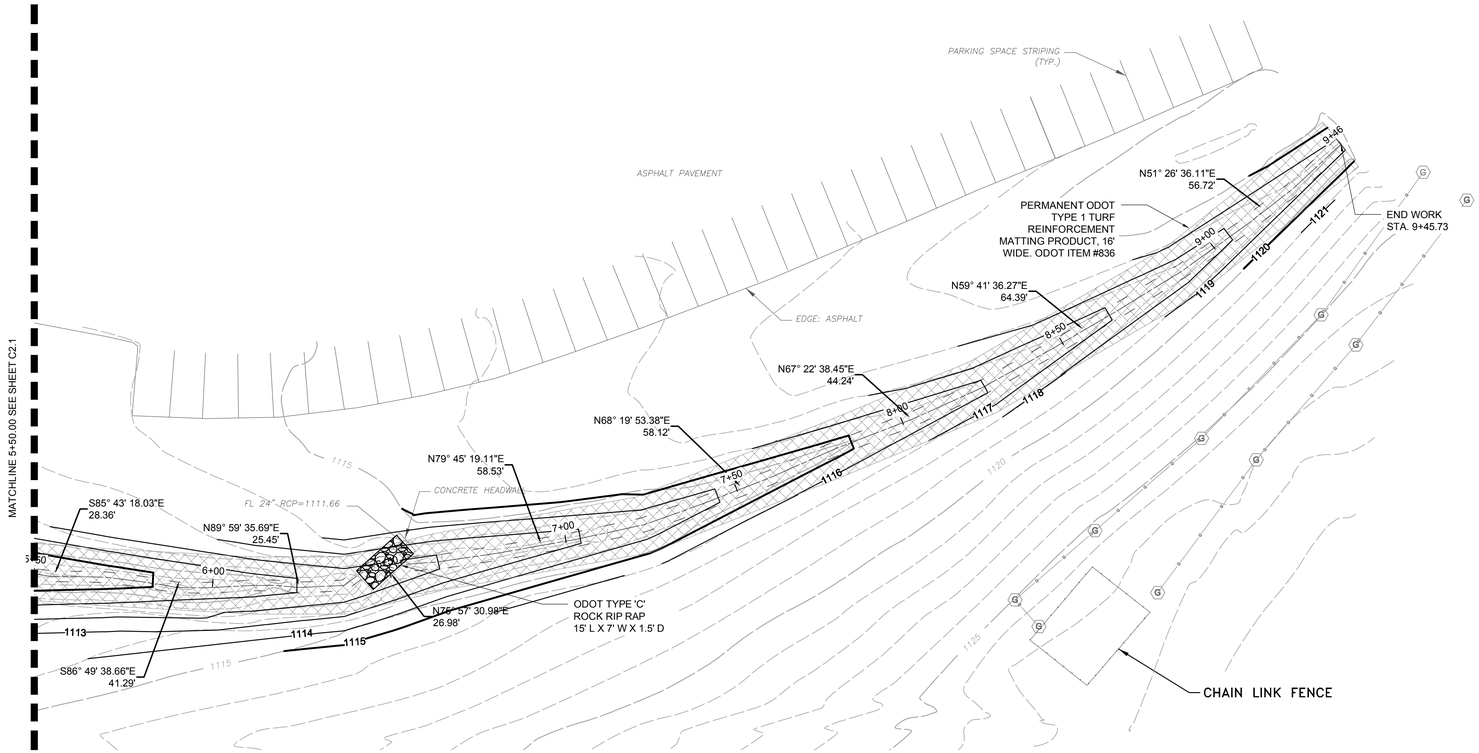
2800 Richville Drive SW
Massillon, Ohio 44646

MARK	DATE	DESCRIPTION

PROJECT NO: 17.106
DATE: 2018.06.12

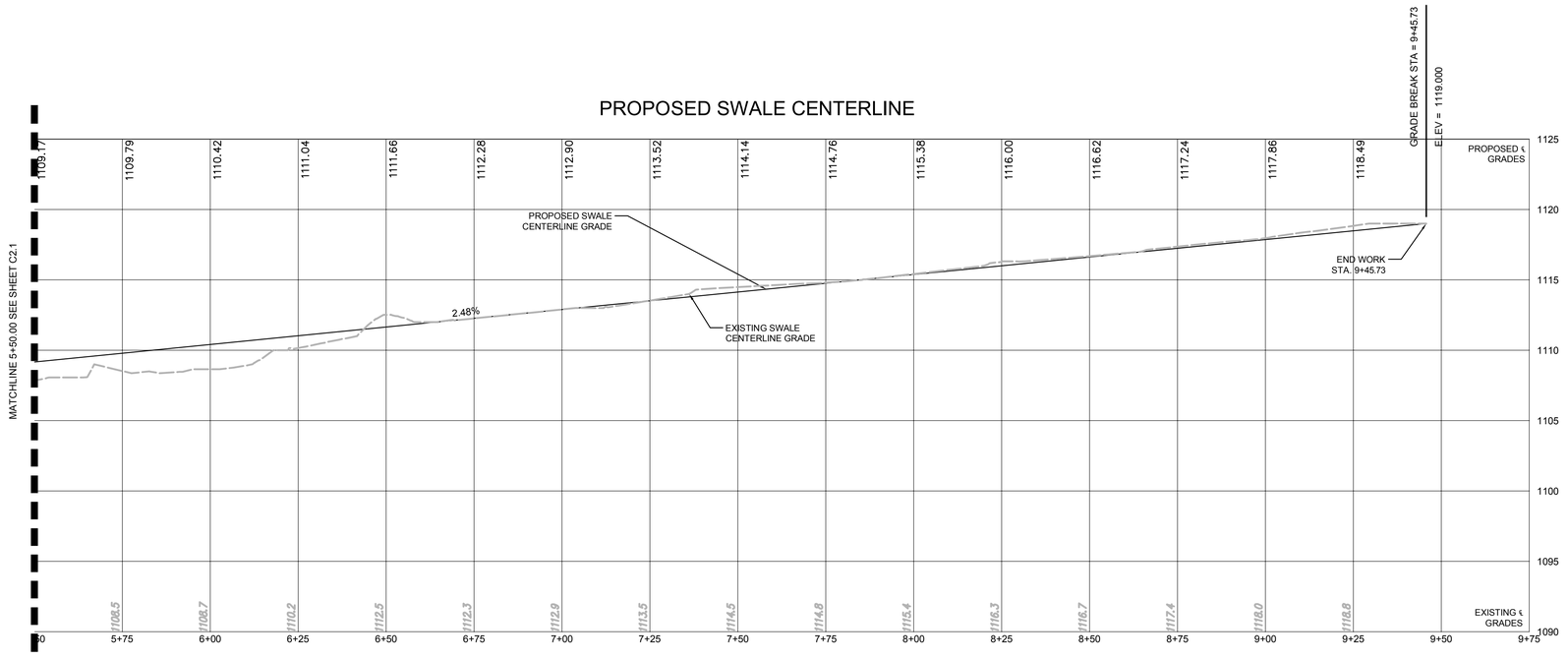
SWALE PLAN AND PROFILE 1+00.00 TO 5+50.00

C2.1



Total Volume Table

Station	Fill Area (S.F.)	Cut Area (S.F.)	Fill Volume (C.Y.)	Cut Volume (C.Y.)	Cumulative Fill Vol (C.Y.)	Cumulative Cut Vol (C.Y.)
1+00.00	0.00	12.55	0.00	0.00	0.00	0.00
1+50.00	0.40	21.45	0.37	31.04	0.37	31.04
2+00.00	0.00	16.42	0.37	35.27	0.75	66.31
2+50.00	0.49	7.83	0.46	22.31	1.20	88.61
3+00.00	1.97	2.27	2.27	9.39	3.48	98.00
3+50.00	4.92	2.92	6.38	4.81	9.86	102.81
4+00.00	5.09	2.20	9.32	4.68	19.18	107.49
4+50.00	3.06	2.33	7.54	4.20	26.72	111.69
5+00.00	6.87	2.77	9.19	4.71	35.91	116.41
5+50.00	7.11	8.15	12.94	10.22	48.85	126.63
6+00.00	15.54	1.05	20.98	8.55	69.83	135.18
6+50.00	0.90	17.24	15.34	17.43	85.17	152.61
7+00.00	0.00	7.32	0.84	22.62	86.01	175.23
7+50.00	0.00	4.84	0.00	11.23	86.01	186.46
8+00.00	0.64	2.02	0.59	6.35	86.60	192.81
8+50.00	0.59	1.48	1.16	3.22	87.76	196.03
9+00.00	0.01	3.38	0.57	4.50	88.33	200.53



LEGEND

- PROPOSED ODOT TYPE 'C' RIPRAP
- PROPOSED PERMANENT TURF REINFORCEMENT MATTING. ODOT TYPE 1, ITEM # 836
- 1051 / 1050 — EXISTING CONTOURS
- 1051 / 1050 — PROPOSED CONTOURS

EXISTING UTILITY LINE LOCATION/ DEPTH AND SIZE TO BE FIELD VERIFIED BY CONTRACTOR.
ELECTRIC, COMMUNICATION, GAS ARE FOR REFERENCE ONLY, SEE MEP PLANS FOR DESIGN.

20' 0' 20' 40'
HORIZONTAL SCALE
5' 0' 5' 10'
VERTICAL SCALE

SWALE PLAN AND PROFILE
1" = 20'

2 WORKING DAYS
BEFORE YOU DIG
CALL TOLL FREE: 800-362-2764
OHIO UTILITIES PROTECTION SERVICE

Thorson + Baker + Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road
Richfield, Ohio 44286
(330) 659-6688 Ph.
(330) 659-6675 Fax

SOL HARRIS/DAY architecture
8677 Frank Ave NW
North Canton, OH 44720
ph: 330.493.7222
fx: 330.493.5777
www.solharrisday.com
[designed for people, designed for life.]

Drainage Swale Improvements for:

RG Drage Career Technical Center

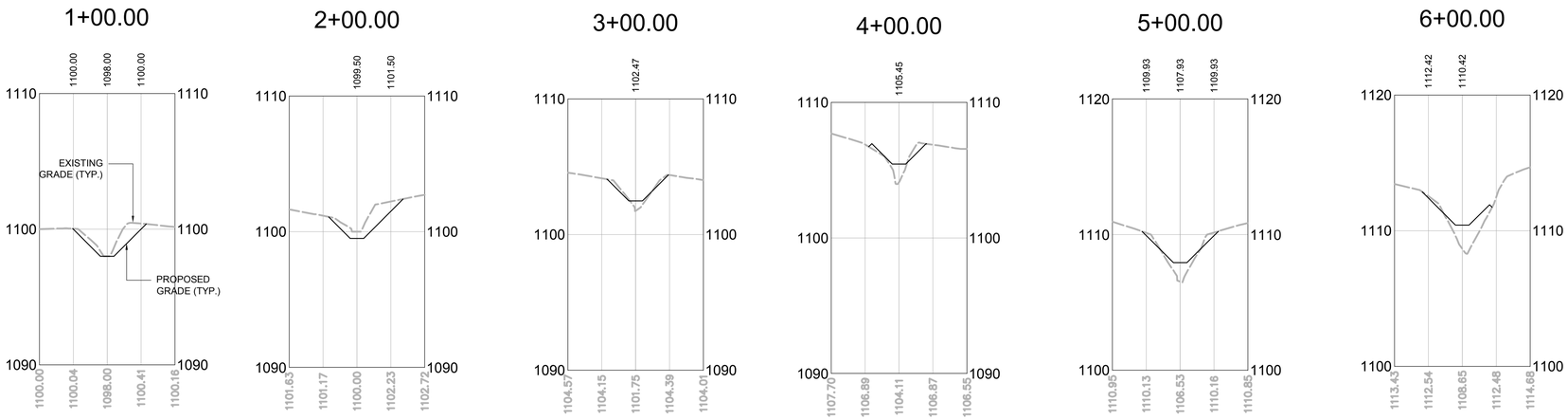
2800 Richville Drive SW
Massillon, Ohio 44646

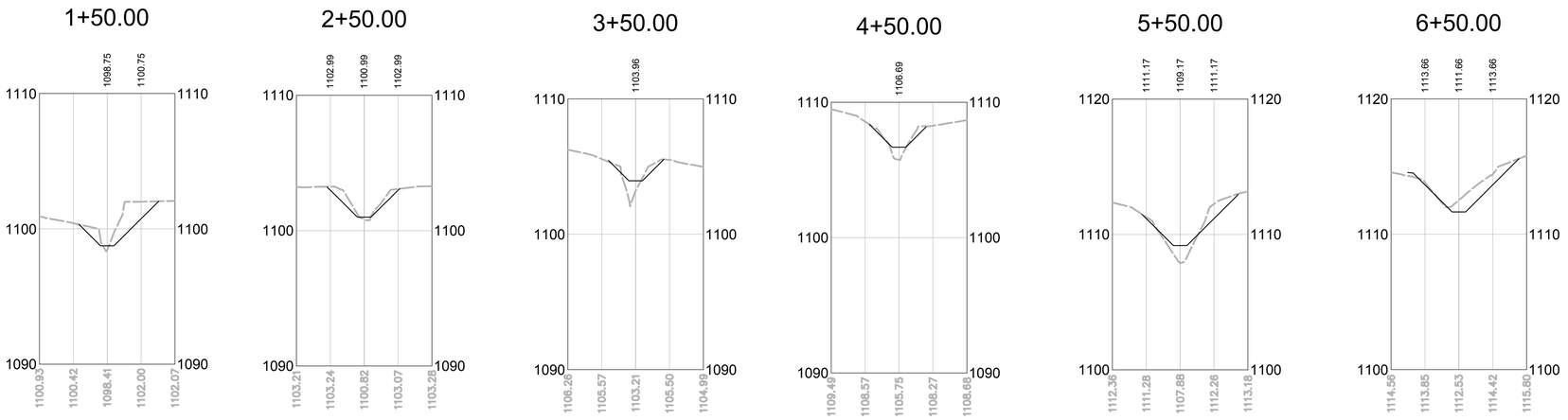
MARK	DATE	DESCRIPTION

PROJECT NO: 17.106
DATE: 2018.06.12

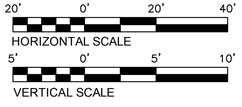
SWALE PLAN AND PROFILE 5+50.00 TO 9+45.73

C2.2





EXISTING UTILITY LINE LOCATION/ DEPTH AND SIZE TO BE FIELD VERIFIED BY CONTRACTOR.
ELECTRIC, COMMUNICATION, GAS ARE FOR REFERENCE ONLY, SEE MEP PLANS FOR DESIGN.



N

CROSS SECTIONS
1" = 20'

2 WORKING DAYS
BEFORE YOU DIG
CALL TOLL FREE: 800-362-2764
OHIO UTILITIES PROTECTION SERVICE

Thorson + Baker + Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road (330) 659-6688 Ph.
Richfield, Ohio 44286 (330) 659-6675 Fax

SōL HARRIS/DAY architecture
8677 Fram Ave NW
North Canton, OH 44720
ph.: 330.493.2722
fx.: 330.493.5777
www.solharrisday.com

[designed for people, designed for life.]

Drainage Swale Improvements for:

RG Drage Career Technical Center

2800 Richville Drive SW
Massillon, Ohio 44646

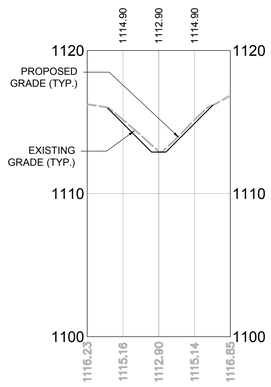
MARK	DATE	DESCRIPTION

PROJECT NO: 17.106
DATE: 2018.06.12

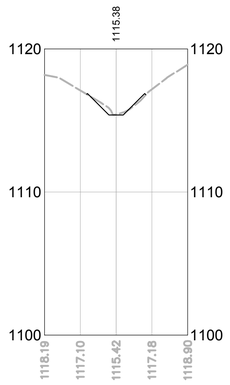
CROSS SECTIONS

C3.1

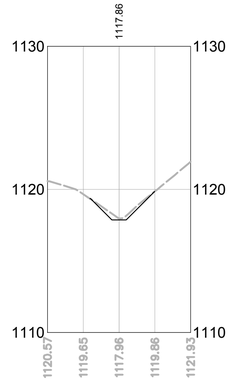
7+00.00



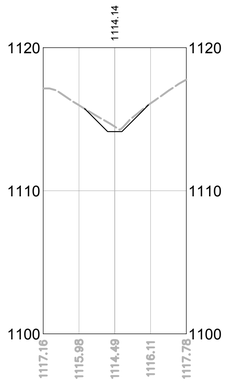
8+00.00



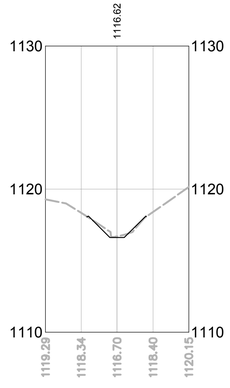
9+00.00



7+50.00



8+50.00



EXISTING UTILITY LINE LOCATION/ DEPTH AND SIZE TO BE FIELD VERIFIED BY CONTRACTOR.
ELECTRIC, COMMUNICATION, GAS ARE FOR REFERENCE ONLY, SEE MEP PLANS FOR DESIGN.

20' 0' 20' 40'
HORIZONTAL SCALE
5' 0' 5' 10'
VERTICAL SCALE

CROSS SECTIONS
1" = 20'

2 WORKING DAYS
BEFORE YOU DIG
CALL TOLL FREE: 800-362-2764
OHIO UTILITIES PROTECTION SERVICE

Thorson + Baker + Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road
Richfield, Ohio 44286
(330) 659-6688 Ph.
(330) 659-6675 Fax

SōL HARRIS/DAY architecture
[designed for people, designed for life.]
8877 Frank Ave NW
North Canton, OH 44720
Ph.: 330.493.7222
Fx.: 330.493.5777
www.solharrisday.com

Drainage Swale Improvements for:

RG Drage Career Technical Center

2800 Richville Drive SW
Massillon, Ohio 44646

MARK	DATE	DESCRIPTION

PROJECT NO: 17.106
DATE: 2018.06.12

CROSS SECTIONS

C3.2

GENERAL NOTES

1. THE TERM GENERAL CONTRACTOR (G.C.) OR CONTRACTOR AS USED IN THESE DOCUMENTS REFERS TO THE CONTRACTOR/ CONSTRUCTION MANAGER IN RESPONSIBLE CHARGE OF THE PROJECT IN TERMS OF COORDINATION, SCHEDULING, SUBCONTRACTOR COORDINATION, ETC. THIS TERM REFERS TO, BUT IS NOT LIMITED TO, GENERAL CONTRACTOR, CONSTRUCTION MANAGER, DESIGN BUILD CONTRACTOR, PRIME CONTRACTOR, ETC. THE TERM IS REFERENCING THE ENTITY THAT COORDINATES THE WORK OF OTHER TRADES.

2. THE EXISTING CONDITIONS SHOWN ON THESE DRAWINGS HAVE BEEN TAKEN FROM A SURVEY. THORSON BAKER & ASSOCIATES, INC. DOES NOT WARRANT THAT THE INFORMATION SHOWN HEREON IS EITHER ACCURATE OR COMPLETE. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE EXISTING CONDITIONS AT THE PROJECT SITE.

3. THE LOCAL JURISDICTION REQUIREMENTS, TOGETHER WITH THE JANUARY 1, 2016 EDITION OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION (ODOT) CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS) SHALL GOVERN ALL CONSTRUCTION ITEMS THAT ARE PART OF THIS PLAN, UNLESS NOTED OTHERWISE. IF THERE ARE DISCREPANCIES, THE LOCAL JURISDICTION REQUIREMENTS SHALL GOVERN.

4. THE GENERAL CONTRACTOR AND SUBCONTRACTORS SHALL BE SOLELY RESPONSIBLE FOR COMPLYING WITH ALL FEDERAL, STATE AND LOCAL SAFETY REQUIREMENTS, TOGETHER WITH EXERCISING PRECAUTIONS AT ALL TIMES FOR THE PROTECTION OF PERSONS (INCLUDING EMPLOYEES) AND PROPERTY. IT IS ALSO THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND SUBCONTRACTORS TO INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS, AND PROGRAMS IN CONNECTION WITH THE WORK.

5. THE LOCAL AUTHORITY AND THORSON BAKER & ASSOCIATES, INC. WILL NOT BE RESPONSIBLE FOR MEANS, METHODS, PROCEDURES, TECHNIQUES, OR SEQUENCE OF CONSTRUCTION. THE LOCAL AUTHORITY AND THORSON BAKER & ASSOCIATES, INC. WILL NOT BE RESPONSIBLE FOR SAFETY ON THE JOB SITE, OR FAILURE BY THE GENERAL CONTRACTOR TO PERFORM WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

6. ANY MODIFICATION TO THE SPECIFICATIONS OR CHANGES TO THE WORK AS SHOWN ON THESE DRAWINGS MUST HAVE PRIOR WRITTEN APPROVAL FROM THE RECORD ENGINEER AND LOCAL AUTHORITY.

7. THE GENERAL CONTRACTOR SHALL NOTIFY THE LOCAL AUTHORITIES AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCING THE WORK.

8. THE GENERAL CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.

9. ANY SURVEY MONUMENTS OR PERMANENT MARKERS DISTURBED DURING CONSTRUCTION SHALL BE RESET BY A LICENSED LAND SURVEYOR AT THE GENERAL CONTRACTOR'S EXPENSE.

10. ALL SIGNS, LANDSCAPING, STRUCTURES, OR OTHER APPURTENANCES DISTURBED OR DAMAGED DURING CONSTRUCTION SHALL BE REPLACED OR REPAIRED TO THE SATISFACTION OF THE LOCAL AUTHORITY OR THE OWNER AT THE GENERAL CONTRACTOR'S EXPENSE.

11. PERMITS TO CONSTRUCT IN THE PUBLIC RIGHT-OF-WAY OF EXISTING STREETS MUST BE OBTAINED BEFORE COMMENCING WORK.

DEMOLITION NOTES

1. THE GENERAL CONTRACTOR SHALL NOTIFY O.U.P.S. AT 1-800-362-2764 AND O.G.P.U.P.S. AT 1-800-925-0988 A MINIMUM OF TWO DAYS BEFORE THE START OF CONSTRUCTION.

2. REMOVAL OF STRUCTURES AND OBSTRUCTIONS: BUILDINGS, FOUNDATIONS, STRUCTURES, ASPHALT AND CONCRETE PAVEMENT, AND UTILITIES ABOVE AND BELOW GROUND SHALL BE REMOVED AND DISPOSED OF OFF SITE AS OUTLINED WITHIN THE CURRENT OHIO DEPARTMENT OF TRANSPORTATION "CONSTRUCTION AND MATERIAL SPECIFICATIONS" MANUAL UNDER ITEM 202.

3. TREES AND OTHER SITE FEATURES NOTED TO REMAIN SHALL BE PROTECTED THROUGHOUT CONSTRUCTION WITH CONSTRUCTION FENCING. PLACE 4' HT. ORANGE CONSTRUCTION FENCING AT AND AROUND ALL NOTED SITE FEATURES AND/OR THE DRIP LINE OF ALL TREES NOTED TO BE SAVED. DO NOT STORE VEHICLES, EQUIPMENT, OR MATERIALS WITHIN THE PROTECTED AREA. OBTAIN FIELD APPROVAL FROM THE OWNER AND/OR AUTHORIZED OWNER REPRESENTATIVE PRIOR TO ANY TREE REMOVAL. IF NECESSARY, CONTRACTOR WILL RELOCATE TO PROTECT SITE FEATURES. OTHER MEASURES MAY BE REQUIRED IF ANY DAMAGE TO SUCH ITEMS OR TREES OCCURS. REMOVE FENCING AFTER CONSTRUCTION.

4. ALL EXISTING UTILITY CASTINGS INCLUDING MANHOLES, CATCH BASINS, VALVES, VALVE BOXES, ETC. SHALL REMAIN AND BE ADJUSTED TO PROPOSED GRADES, UNLESS NOTED OTHERWISE. THE GENERAL CONTRACTOR SHALL COORDINATE WORK WITH THE RESPECTIVE UTILITY COMPANIES.

5. ALL EXISTING UTILITY LINES & SERVICES WITHIN THE LIMITS OF CONSTRUCTION SHALL REMAIN AND BE PROTECTED, UNLESS NOTED OTHERWISE. CONTRACTOR SHALL COORDINATE REMOVAL OR RELOCATION WITH THE RESPECTIVE UTILITY COMPANY FOR PROPER CAPPING/SEALING/DISCONNECTING, ETC.

6. THE CONTRACTOR SHALL COORDINATE WORK WITH LOCAL SAFETY DEPARTMENTS TO MAINTAIN TRAFFIC CONTROL.

7. ALL EXISTING UTILITY POLES, LIGHT POLES, ELECTRIC HANDHOLDS, UNDERGROUND WIRING, AND SITE LIGHTING SHALL BE PROTECTED, UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL COORDINATE WORK WITH THE LOCAL POWER SUPPLY COMPANY.

8. CONTRACTOR SHALL KEEP ALL EXISTING UTILITIES OPERATING DURING DEMOLITION AND CONSTRUCTION AND UNTIL THE NEW SYSTEMS ARE OPERATING PROPERLY. PROVIDE TEMPORARY CONNECTIONS AS REQUIRED.

9. ALL SIGNS DESIGNATED TO BE REMOVED SHALL BE REINSTALLED AS DIRECTED, OR TURNED OVER TO OWNER.

10. COORDINATE DEMOLITION OF ALL EXISTING ITEMS WITH OTHER DRAWINGS. REMOVE/ABANDON EXISTING UTILITIES, SERVICES, SITE FEATURES AS REQUIRED.

GRADING NOTES

1. ALL SLOPES, SURFACES, SIGNAGE AND PAVEMENT MARKINGS ALONG ACCESSIBLE ROUTES AND WITHIN PARKING AND LOADING/ UNLOADING ZONES SHALL BE CONSTRUCTED TO MEET THE REQUIREMENTS AS OUTLINED IN THE AMERICANS WITH DISABILITY ACT, STANDARDS FOR ACCESSIBLE DESIGN LATEST EDITION.

2. GRADES/SLOPES SHALL BE STRAIGHT LINE BETWEEN POINT ELEVATIONS AND CONTOURS SHOWN.

3. SPOT ELEVATIONS SHOWN ARE BOTTOM OF CURB UNLESS NOTED OTHERWISE. ALL POINTS SHOWN ARE INTENDED TO BE LOCATED AT PC's, PT's, MIDPOINTS OF CURB RADII, INTERSECTIONS, AND CORNER LOCATIONS. TOP OF CURB ELEVATIONS ARE HIGHER THAN SHOWN.

4. ALL EMBANKMENT UNDER PAVEMENTS AND STRUCTURES SHALL BE COMPACTED WITH SELECT SITE MATERIAL PER ODOT SPECIFICATIONS 203 & 204.

5. ALL AREAS AFFECTED BY SITE WORK, EXCLUDING PAVED, LANDSCAPED AND STRUCTURE AREAS, SHALL BE SEEDED AND MULCHED PER ODOT SPECIFICATION 659.

6. CONTRACTOR SHALL STRIP ANY TOPSOIL AND STOCKPILE PRIOR TO SITE GRADING OPERATION. CONTRACTOR SHALL REPLACE STOCKPILED TOPSOIL PER ODOT SPECIFICATION 653 IN ALL LAWN & LANDSCAPED AREAS. HAUL EXCESS SOIL OFF-SITE OR BRING IN TOPSOIL UNLESS NOTED OTHERWISE. TOPSOIL SHALL BE DEFINED IN LAWNS AND GRASSES SPECIFICATIONS. IF LAWNS AND GRASSES SPECIFICATIONS IS NOT PROVIDED, TOPSOIL SHALL BE DEFINED PER ODOT 653 AND CONTAIN NO OBJECTS GREATER THAN 2MM IN DIAMETER.

7. SLOPES INDICATED AS PERCENTAGES ARE APPROXIMATE.

8. ANY SLOPES GREATER THAN 2:1 SHALL BE STABILIZED PER ODOT 670 & 671.

9. SEE UTILITY PLAN FOR ADDITIONAL STORM STRUCTURE DATA.

10. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO EQUAL OR BETTER CONDITION THAN EXISTED BEFORE CONSTRUCTION.

11. NO NON-RUBBER TIRE VEHICLE SHALL BE MOVED ON STREETS. EXCEPTIONS MAY BE GRANTED WHERE SHORT DISTANCES AND SPECIAL CIRCUMSTANCES ARE INVOLVED. GRANTING OF EXCEPTIONS MUST BE IN WRITING AND ANY RESULTING DAMAGE MUST BE REPAIRED TO THE SATISFACTION OF THE JURISDICTIONAL AUTHORITY.

12. SEE SHEET C4.3 & C4.4 FOR EROSION CONTROL NOTES & DETAILS.

13. SLOPES SHALL NOT EXCEED 2% IN ANY DIRECTION WITHIN HANDICAP PARKING AREA AND LOADING/ UNLOADING ZONES.

14. EXISTING SOILS ON SITE MAY BE USED AS SUBGRADE MATERIAL IF APPROVED BY THE PROJECT GEOTECHNICAL ENGINEER.

15. SLOPE OF SUBGRADE SHALL FOLLOW SAME SLOPE AS PAVEMENT ABOVE AS NOTED ON GRADING PLAN.

GENERAL UTILITY NOTES

1. EXISTING UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES SHOWN ON THESE PLANS ARE FROM BEST AVAILABLE RECORDS, SURVEYS, DRAWINGS, AND FIELD INVESTIGATION, AND ARE NOT NECESSARILY COMPLETE OR EXACT; THEREFORE, THEIR LOCATION MUST BE CONSIDERED APPROXIMATE ONLY. ALSO, THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS NOT PRESENTLY KNOWN. THE CONTRACTOR IS RESPONSIBLE FOR THE INVESTIGATION, LOCATION, SUPPORT, PROTECTION, AND RESTORATION OF ALL EXISTING UTILITIES AND APPURTENANCES WHETHER SHOWN ON THESE PLANS OR NOT. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED DURING CONSTRUCTION AT NO COST TO THE PROJECT. THE CONTRACTOR SHALL EXPOSE ALL UTILITIES OR STRUCTURES PRIOR TO CONSTRUCTION TO VERIFY THE VERTICAL AND HORIZONTAL LOCATIONS. MAKE SUCH ADJUSTMENTS IN ELEVATIONS AS ARE REQUIRED TO PROVIDE SUFFICIENT CLEARANCE BETWEEN THE EXISTING AND PROPOSED UTILITIES. CALL THE OHIO UTILITIES PROTECTION SERVICE (800) 362-2764 AND THE OIL AND GAS PRODUCERS UNDERGROUND PROTECTION SERVICE (800) 925-0988 AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCING WORK.

2. THORSON BAKER + ASSOCIATES EXPRESSLY DISCLAIMS ANY RESPONSIBILITY FOR THE ACCURACY AND COMPLETENESS OF INFORMATION GIVEN REGARDING THE LOCATION OF EXISTING UNDERGROUND UTILITIES.

3. THORSON BAKER + ASSOCIATES OFFERS THE EXISTING UNDERGROUND UTILITY INFORMATION AS SHOWN ON PROFILE SHEETS AS A GUIDE ONLY, AND DOES NOT GUARANTEE OR ASSUME ANY LIABILITY IMPLIED OR OTHERWISE FOR THE ACCURACY OF INFORMATION GIVEN HEREON. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO ASCERTAIN FOR HIMSELF/HERSELF THE CONDITIONS THAT MAY BE ENCOUNTERED DURING CONSTRUCTION OF THE PROJECT.

4. A QUALITY LEVEL "B" EXISTING UNDERGROUND UTILITY LOCATION AS DEFINED BY AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) WAS COMPLETED BY OTHERS TO ASSIST WITH THE DESIGN OF THE PROPOSED UNDERGROUND UTILITIES FOR THIS PROJECT. QUALITY LEVEL"B" DOES NOT EXPOSE OR DETERMINE ACTUAL LOCATIONS OR ELEVATIONS OF EXISTING UTILITIES. THIS ALLOWS THE POSSIBILITY THAT CONFLICTS COULD ARISE BETWEEN EXISTING AND PROPOSED UNDERGROUND UTILITIES AS "UNFORESEEN CONDITIONS" DURING THE CONSTRUCTION PHASE OF THE PROJECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EXCAVATE AND EXPOSE EXISTING UNDERGROUND UTILITIES PRIOR TO BEGINNING WORK TO DETERMINE ACTUAL LOCATIONS AND ELEVATIONS AND TO DETERMINE IF REQUIRED CLEARANCE CONFLICTS EXIST BETWEEN EXISTING AND PROPOSED UTILITIES. THIS WORK SHOULD BE PERFORMED IN A TIMELY MANNER SO AS TO PROVIDE ADEQUATE TIME FOR MODIFICATIONS TO THE CONSTRUCTION DOCUMENTS AND/OR RE-DESIGN IF REQUIRED.

5. WHEN UNKNOWN OR INCORRECTLY LOCATED UNDERGROUND UTILITIES ARE ENCOUNTERED IN THE RIGHT-OF-WAY DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER, ENGINEER AND THE MUNICIPAL ENGINEER.

6. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH ALL UTILITY COMPANIES TO AVOID INFRASTRUCTURE CONFLICTS.

7. ALL TRENCHES SHALL BE BACKFILLED OR SECURELY PLATED DURING NONWORKING HOURS.

8. CONTRACTOR SHALL VERIFY AND COORDINATE SIZE AND LOCATION OF GAS LINE WITH MECHANICAL ENGINEER AND UTILITY COMPANY.

9. ALL DISTURBED AND/OR DAMAGED STORM SEWER PIPES, FIELD TILE AND APPURTENANCES, PAVEMENTS, BERMS AND DITCHES SHALL BE REPAIRED AND/OR REPLACED TO PRE-CONSTRUCTION CONDITION OR BETTER.

10. COORDINATE LAYOUT OF ALL SITE UTILITIES WITH SITE GEOMETRIC PLANS.

11. REMOVE EXISTING ASPHALT/CONCRETE TO ALLOW FOR INSTALLATION OF UTILITIES - SAW CUT ALL EDGES.

12. EXCEPT AS MAY BE MODIFIED SPECIFICALLY BY THESE PLANS, OR LOCAL AUTHORITY REQUIREMENTS, ALL UTILITY WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIALS SPECIFICATIONS, RECENT EDITION.

13. UTILITY INSTALLATION PERMITS AND PERMIT FEES ARE THE RESPONSIBILITY OF THE CONTRACTOR.

14. EXCESS EXCAVATION FROM UTILITY INSTALLATION SHALL BE WASTED ON THE PROJECT SITE AS DIRECTED BY THE ENGINEER OF RECORD, OR EXCESS EXCAVATION NOT WASTED ON THE PROJECT SITE SHALL BE HAULED AWAY BY THE CONTRACTOR. MATERIAL DISPOSED OF OFF-SITE MUST BE DISPOSED OF IN AN ENVIRONMENTALLY SAFE FASHION AND IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION AND FINAL CLEARANCE OF ANY REQUIRED NEEDLING, UNDERPINNING, SHORING OR BRACING OF EXISTING STRUCTURES.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING A TRENCH SAFETY PLAN WHICH MEETS ALL LOCAL, STATE AND FEDERAL REGULATION.

17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE PROPER HORIZONTAL AND VERTICAL DISTANCES BETWEEN ALL UTILITIES AS REQUIRED BY THE UTILITY OWNERS AND JURISDICTIONAL AGENCIES.

18. THE FOLLOWING PROPOSED UTILITIES SHOWN ON THIS PLAN ARE FOR ROUTING AND COORDINATION PURPOSES ONLY. DESIGN, SIZING, CAPACITY, CAPACITY OF EXISTING SYSTEMS ETC., IS THE RESPONSIBILITY OF OTHERS. SIZES AND CONNECTION LOCATIONS SHOWN ON THIS SHEET WERE PROVIDED BY THE UTILITY VENDOR, MECHANICAL, PLUMBING, ELECTRICAL, TECHNOLOGY OR SPECIALTY ENGINEER:
    - NATURAL GAS
    - FIBER OPTICS
    - TELEPHONE
    - CABLE
    - ELECTRICAL

TRAFFIC CONTROL NOTES

1. ALL TRAFFIC CONTROL DEVICES SHALL BE FURNISHED, ERECTED, MAINTAINED, AND REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (PART 7 CONSTRUCTION AND MAINTENANCE OPERATIONS). COPIES ARE AVAILABLE FROM THE ODOT, BUREAU OF TRAFFIC, 25 SOUTH FRONT STREET, COLUMBUS, OHIO 43215.

2. STEADY-BURNING, TYPE "C," LIGHTS SHALL BE REQUIRED ON ALL BARRICADES, DRUMS AND SIMILAR TRAFFIC DEVICES IN USE AT NIGHT. CONES ARE NOT PERMITTED TO BE USED FOR NIGHT WORK.

3. ACCESS TO ALL ADJOINING PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING MAIL SERVICE IN THE CONSTRUCTION AREA.

5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADEQUATELY BARRICADE THE STREET IN THE VICINITY OF THE WORK AREAS UNTIL SUCH TIME AS THE STREET IS OPEN TO TRAFFIC.

LAYOUT/GEOMETRY NOTES

1. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS FOR LAYOUT.

2. CONTRACTOR IS OBLIGATED TO VERIFY ALL DIMENSIONS ON THE GROUND AND REPORT ANY LAYOUT DISCREPANCIES IMMEDIATELY TO THE OWNER'S REPRESENTATIVE.

3. PRECISE LAYOUT SHALL BE DETERMINED ON THE GROUND AND APPROVED BY THE OWNER'S REPRESENTATIVE.

4. ± INDICATES APPROXIMATE DIMENSIONS.

5. DO NOT SCALE FROM THIS DRAWING. ALL WRITTEN DIMENSIONS SHALL GOVERN. ALL ANGLES ARE 90° UNLESS OTHERWISE NOTED. DIMENSIONS ARE TO FACE OF CURB AND/OR TO FACE OF BUILDING.

6. ALL PROPERTY PINS DISTURBED DURING THE COURSE OF CONSTRUCTION SHALL BE RESET AT THE CORRECT LOCATION BY A LICENSED SURVEYOR AT THE EXPENSE OF THE CONTRACTOR.

Thorson • Baker + Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road (330) 659-6688 Ph.
Richfield, Ohio 44286 (330) 659-6675 Fax

SōL HARRIS/DAY architecture
6677 Frank Ave NW
North Canton, OH 44720
ph: 330.493.3722
fx: 330.493.5777
www.solharrisday.com
[DESIGNED FOR PEOPLE. DESIGNED FOR LIFE.]

Drainage Swale Improvements for:
RG Drage Career Technical Center
2800 Richville Drive SW
Massillon, Ohio 44646

MARK	DATE	DESCRIPTION

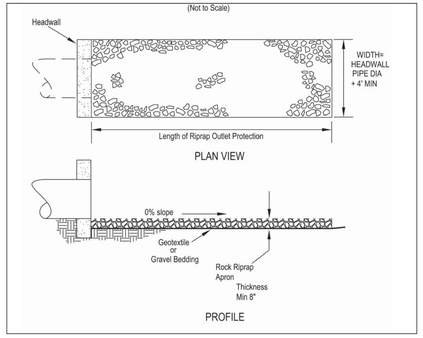
PROJECT NO: 17.106
DATE: 2018.06.12

GENERAL NOTES

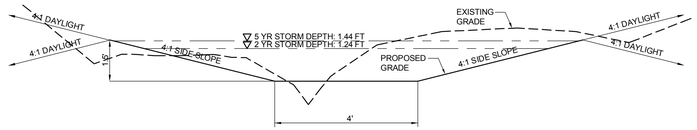
C4.1

Specifications
for

Rock Outlet Protection



1. Subgrade for the filter or bedding and riprap shall be prepared to the required lines and grades as shown on the plan. The subgrade shall be cleared of all trees, stumps, roots, sod, loose rock, or other material.
2. Riprap shall conform to the grading limits as shown on the plan.
3. Geotextile shall be securely anchored according to manufacturers' recommendations.
4. Geotextile shall be laid with the long dimension parallel to the direction of flow and shall be laid loosely but without wrinkles and creases. Where joints are necessary, strips shall be placed to provide a 12-in. minimum overlap, with the upstream strip overlapping the downstream strip.
5. Gravel bedding shall be ODOT No. 67's or 57's unless shown differently on the drawings.
6. Riprap may be placed by equipment but shall be placed in a manner to prevent slippage or damage to the geotextile.
7. Riprap shall be placed by a method that does not cause segregation of sizes. Extensive pushing with a dozer causes segregation and shall be avoided by delivering riprap near its final location within the channel.
8. Construction shall be sequenced so that outlet protection is placed and functional when the storm drain, culvert, or open channel above it becomes operational.
9. All disturbed areas will be vegetated as soon as practical.



SWALE TYPICAL SECTION

GEOTEXTILE UNDERLAYMENT SPECIFICATIONS

References

Additional guidance for evaluation, planning, and design of outlet protection is given in:

- NRCS Ohio Practice Standard 468, Lined Waterway Or Outlet
- NRCS Engineering Field Handbook, Chapter 6 - Structures
- NRCS Design Note 24, Guide for Use of Geotextiles
- ODOT Location and Design Manual, Rock Channel Protection at Culvert and Storm Sewer Outlets

Table 4.4.2 Requirements for Geotextiles

Property	Test method	Woven - Class I	Nonwoven - Class I
Tensile strength (pounds) 1/	ASTM D 4632 grab test	200 minimum in any principal direction	180 minimum
Elongation at failure (percent) 1/	ASTM D 4632 grab test	<50	≥ 50
Puncture (pounds) 1/	ASTM D 4833	90 minimum	80 minimum
Ultraviolet light (% residual tensile strength)	ASTM D 4355 150-hr exposure	70 minimum	70 minimum
Apparent opening size (AOS)	ASTM D 4751	As specified, but no smaller than 0.212 mm (#70) 2/	As specified max. #40 2/
Percent open area (percent)	CW0-02215-86	4.0 minimum	----------
Permitivity sec-1	ASTM D 4491	0.10 minimum	0.70 minimum

1/ Minimum average roll value (weakest principal direction).
2/ U.S. standard sieve size.
Note: CWO is a USACE reference.

TURF REINFORCEMENT MATTING SPECIFICATIONS (ODOT #836)

The following Minimum Average Roll Values (MARV) for physical properties are derived from quality control testing performed by a GAI-LAP accredited laboratory:

Property	Test Method	Type 1	Type 2	Type 3
Ground Cover Factor (2) (percent, minimum)	ECTC	40	50	60
Mass per Unit Area(2) (oz/yd^2 [g/m^2] minimum)	ASTM D 6566	8[270]	10[340]	14[475]
Thickness (mils. [mm], minimum)	ASTM D 6525, at 2 kPa	120 [3.05]	500 [12.7]	500 [12.7]
Tensile Strength(1) (lb/ft [kN/m], minimum)	ASTM D 5035	145 X 110 [2.1 X 1.6]	165 X 123 [2.4 X 1.8]	210 X 160 [3.0 X 2.3]
Ultraviolet Resistance (percent, minimum)	ASTM D 4355, 500 hours total exposure	80	80	80

Furnish mats meeting the following permissible design values when tested at an independent hydraulics testing facility for a minimum of 0.5 hours on an unvegetated erodible soil bed of sand or firm loam.

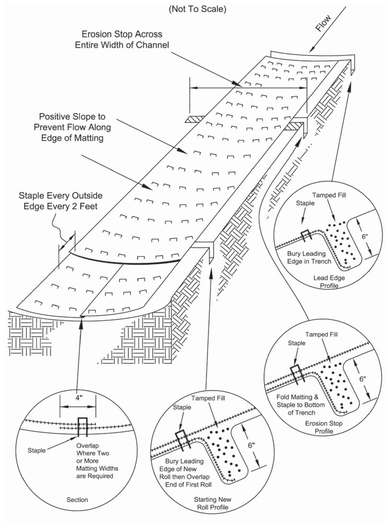
Property	Type 1	Type 2	Type 3
Velocity Resistance (fps[m/sec],minimum)	5 [1.5]	8.5 [2.6]	12 [3.6]
Shear Stress Resistance (lb/ft^2 [kN/m^2], minimum)	2 [.100]	3 [.144]	5 [.240]
Soil Loss (in. [mm])	1 [25]	1 [25]	1 [25]

Furnish mats meeting the following permissible design values when tested at an independent hydraulics testing facility for a minimum of 0.5 hours on a vegetated, erodible soil bed of sand or firm loam.

Property	Type 1	Type 2	Type 3
Velocity Resistance (fps[m/sec],minimum)	8 [2.5]	13 [4]	18 [5.5]
Shear Stress Resistance (lb/ft^2 [kN/m^2], minimum)	3 [.140]	5 [.240]	8 [.380]
Soil Loss (in. [mm])	1 [25]	1 [25]	1 [25]

Specifications
for

Turf Reinforcement Matting



Specifications
for

Turf Reinforcement Matting

1. Channel/Slope Soil Preparation Grade and compact area of installation, preparing seedbed by loosening 2"-3" of topsoil above final grade. Incorporate amendments such as lime and fertilizer into soil. Remove all rocks, clods, vegetation or other debris so that installed TRM will have direct contact with the soil surface.
2. Channel/Slope Seeding Apply seed to soil surface prior to installation. All check slots, anchor trenches, and other disturbed areas must be reseeded. Refer to the Permanent Seeding specification for seeding recommendations.

Slope Installation

3. Excavate top and bottom trenches (12"x6"). Intermittent erosion check slots (6"x6") may be required based on slope length. Excavate top anchor trench 2' x 3' over crest of the slope.
4. If intermittent erosion check slots are required install TRM in 6"x6" slot at a maximum of 30' centers or the mid point of the slope. TRM should be stapled into trench on 12" centers.
5. Install TRM in top anchor trench, anchor on 12" spacings, backfill and compact soil.
6. Unroll TRM down slope with adjacent rolls overlapped a minimum of 3". Anchor the seam every 18". Lay the TRM loose to maintain direct soil contact, do not pull taught.
7. Overlap roll ends a minimum of 12" with upslope TRM on top for a shingle effect. Begin all new rolls in an erosion check slot if required, double anchor across roll every 12".
8. Install TRM in bottom anchor trench (12"x6"), anchor every 12". Place all other staples throughout slope at 1 to 2.5 per square yard dependant on slope. Refer to manufacturer's anchor guide.

Channel Installation

9. Excavate initial anchor trench (12"x6") across the lower end of the project area.
10. Excavate intermittent check slots (6"x6") across the channel at 30' intervals along the channel.
11. Excavate longitudinal channel anchor slots (4'x4") alcng both sides of the channel to bury the edges. Whenever possible extend the TRM 2'-3' above the crest of channel side slopes.
12. Install TRM in initial anchor trench (downstream) anchor every 12", backfill and compact soil.
13. Roll out TRM beginning in the center of the channel toward the intermittent check slot. Do not pull taught. Unroll adjacent rolls upstream with a 3" minimum overlap (anchor every 18") and up each channel side slope.
14. At top of channel side slopes install TRM in the longitudinal anchor slots, anchor every 18".
15. Install TRM in intermittent check slots. Lay into trench and secure with anchors every 12", backfill with soil and compact.
16. Overlap roll ends a minimum of 12" with upstream TRM on top for a shingling effect. Begin all new rolls in an intermittent check slot, double anchored every 12".
17. Install upstream end in a terminal anchor trench (12"x6"); anchor every 12", backfill and compact.
18. Complete anchoring throughout channel at 2.5 per square yard using suitable ground anchoring devices (U shaped wire staples, metal geotextile pins, plastic stakes, and triangular wooden stakes). Anchors should be of sufficient length to resist pullout. Longer anchors may be required in loose sandy or gravelly soils.

SOL HARRIS/DAY architecture
8677 Fram Ave NW
North Canton, OH 44720
Ph.: 330.493.2722
Fx.: 330.493.5777
www.solharriday.com

[designed for people, designed for life.]

Drainage Swale Improvements for:

RG Drage Career Technical Center

2800 Richville Drive SW
Massillon, Ohio 44646

MARK	DATE	DESCRIPTION

PROJECT NO: 17.106
DATE: 2018.06.12

DETAILS

C4.2

Thorson • Baker + Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road
Richfield, Ohio 44286
(330) 659-6688 Ph.
(330) 659-6675 Fax

SEDIMENT POLLUTANT CONTROLS (GENERAL NOTES):

1. PERIMETER SEDIMENT CONTROLS (I.E. SEDIMENT TRAPS, SILT FENCE, COMPOST SOCKS, COMPOST BERMS, ETC...) SHALL BE IMPLEMENTED AS THE FIRST STEP OF GRADING AND WITHIN SEVEN DAYS FROM THE START OF GRUBBING AND SHALL CONTINUE TO FUNCTION UNTIL UPSLOPE AREAS DRAINING TO THEM ARE PERMANENTLY STABILIZED, OR AS DIRECTED BY THE CITY/VILLAGE ENGINEER, OR DESIGNATED REPRESENTATIVE.

2. NO EROSION AND SEDIMENT CONTROL BMP'S SHALL BE REMOVED FROM THE SITE PRIOR TO ADEQUATE PERMANENT STABILIZATION OF THE ASSOCIATED UPLAND DRAINAGE AREAS AND WITHOUT FIRST OBTAINING AUTHORIZATION FROM THE CITY/VILLAGE ENGINEER, OR HIS DESIGNATED REPRESENTATIVE, UNLESS THEIR REMOVAL IS SPECIFICALLY PROVIDED FOR WITHIN THE SITE'S APPROVED PLAN.

3. THERE SHALL BE NO SEDIMENT-LADEN OR TURBID DISCHARGES TO WATER RESOURCES OR WETLANDS RESULTING FROM DEWATERING ACTIVITIES. IF TRENCH OR GROUNDWATER CONTAINS SEDIMENT, IT MUST PASS THROUGH A SEDIMENT TRAP OR OTHER EQUALLY EFFECTIVE SEDIMENT CONTROL DEVICE, PRIOR TO BEING DISCHARGED FROM THE CONSTRUCTION SITE. ALTERNATIVELY, SEDIMENT MAY BE REMOVED BY SETTLING IN PLACE OR BY DEWATERING INTO A SUMP PIT, FILTER BAG OR COMPARABLE PRACTICE. GROUND WATER DEWATERING WHICH DOES NOT CONTAIN SEDIMENT OR OTHER POLLUTANTS IS NOT REQUIRED TO BE TREATED PRIOR TO DISCHARGE. HOWEVER, CARE MUST BE TAKEN WHEN DISCHARGING GROUND WATER TO ENSURE THAT IT DOES NOT BECOME POLLUTANT-LADEN BY TRAVERSING OVER DISTURBED SOILS OR OTHER POLLUTANT SOURCES.

4. STREETS DIRECTLY ADJACENT TO CONSTRUCTION ENTRANCES AND RECEIVING TRAFFIC FROM THE DEVELOPMENT AREA, SHALL BE CLEANED DAILY TO REMOVE SEDIMENT TRACKED OFF-SITE. IF APPLICABLE, THE CATCH BASINS ON THESE STREETS NEAREST TO THE CONSTRUCTION ENTRANCES SHALL ALSO BE CLEANED WEEKLY. BASED ON SITE CONDITIONS, THE CITY/VILLAGE ENGINEER, OR HIS DESIGNATED REPRESENTATIVE, MAY REQUIRE ADDITIONAL BEST MANAGEMENT PRACTICES TO CONTROL OFF-SITE TRACKING OF DUST.

5. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER, OR REPRESENTATIVE, TO PROVIDE INSPECTION OF ALL CONTROLS ON THE SITE AT LEAST ONCE EVERY SEVEN CALENDAR DAYS, AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN ONE-HALF INCH OF RAIN PER 24 HOUR PERIOD. WHEN INSPECTIONS REVEAL THE NEED FOR REPAIR, REPLACEMENT, OR INSTALLATION OF EROSION AND SEDIMENT CONTROL BMP'S, THE FOLLOWING PROCEDURES SHALL BE FOLLOWED:
   A. WHEN PRACTICES REQUIRE REPAIR OR MAINTENANCE: THE BMP SHALL BE REPAIRED WITHIN 3 DAYS OF INSPECTION. EXCEPTION: SEDIMENT PONDS SHALL BE REPAIRED OR MAINTAINED WITH 10 DAYS OF INSPECTION.
   B. WHEN PRACTICES FAIL TO PROVIDE THEIR INTENDED FUNCTION: A MORE APPROPRIATE BMP SHALL BE SELECTED AND IMPLEMENTED WITHIN 10 DAYS OF THE INSPECTION.
   C. WHEN PRACTICES DEPICTED IN THE SWP3 ARE NOT INSTALLED: THE BMP SHALL BE INSTALLED WITHIN 10 DAYS OF THE INSPECTION. IF THE INSPECTION REVEALS THAT THE BMP IS NOT NECESSARY, THE RECORD MUST CONTAIN AN EXPLANATION FOR THE DECISION.

INSPECTION MUST BE COMPLETED BY A CERTIFIED PROFESSIONAL EROSION CONTROL (CPESC) OR CERTIFIED EROSION SEDIMENT AND STORMWATER INSPECTOR (CESSWI). SHOULD THE SITE BECOME DORMANT FOR AN EXTENDED PERIOD OF TIME AND IS STABILIZED, A WAIVER MAY BE SENT TO THE OHIO EPA TO REQUEST A REDUCTION TO MONTHLY INSPECTIONS. AFTER EVERY INSPECTION, A SIGNED CHECKLIST SHALL BE PROVIDED BY THE INSPECTOR.

6. ALL EROSION AND SEDIMENT CONTROL PRACTICES SPECIFIED ON THIS PLAN SHALL CONFORM WITH THE DETAILS AND SPECIFICATIONS OUTLINED IN THE CURRENT VERSION OF THE OHIO DEPARTMENT OF NATURAL RESOURCES, "RAINWATER AND LAND DEVELOPMENT" MANUAL, OR AS SPECIFIED BY THE CITY/VILLAGE ENGINEER, OR DESIGNATED REPRESENTATIVE.

7. EROSION AND SEDIMENT CONTROL PRACTICES NOT ALREADY SPECIFIED ON THIS PLAN MAY BE NECESSARY DUE TO UNFORESEEN ENVIRONMENTAL CONDITIONS AND/OR CHANGES IN DRAINAGE PATTERNS CAUSED BY EARTH-MOVING ACTIVITY. ADDITIONAL PRACTICES SHALL BE IMPLEMENTED AT THE DEVELOPER'S EXPENSE AS DIRECTED BY THE CITY/VILLAGE ENGINEER, OR DESIGNATED REPRESENTATIVE.

8. NO STRUCTURAL SEDIMENT CONTROLS (SILT FENCE, SEDIMENT TRAPS, ETC.) SHALL BE USED IN A WATER RESOURCE OR WETLAND, UNLESS THEIR USE IS SPECIFICALLY PROVIDED FOR WITHIN THE SITE'S APPROVED PLAN.

9. SOIL STOCKPILES, TOPSOIL OR OTHERWISE, SHALL BE SITUATED AWAY FROM STREETS, SWALES, OR OTHER WATERWAYS AND SHALL BE SEEDED AND/OR MULCHED IMMEDIATELY.

10. ON-SITE PERSONNEL SHALL TAKE ALL NECESSARY MEASURES TO COMPLY WITH APPLICABLE REGULATIONS REGARDING FUGITIVE DUST EMISSIONS, INCLUDING OBTAINING NECESSARY PERMITS FOR SUCH EMISSIONS. THE CITY/VILLAGE ENGINEER, OR DESIGNATED REPRESENTATIVE, MAY REQUIRE DUST CONTROLS INCLUDING, BUT NOT LIMITED TO, THE USE OF WATER TRUCKS TO WET DISTURBED AREAS, TAPPING STOCKPILES, TEMPORARY STABILIZATION OF DISTURBED AREAS, AND REGULATION OF THE SPEED OF VEHICLES ON THE SITE.

11. ANY DISTURBED AREA NOT PAVED, SODDED, OR BUILT UPON SHALL HAVE A MINIMUM OF 80% UNIFORM VEGETATIVE COVER PRIOR TO FINAL INSPECTION AND, IN THE OPINION OF THE CITY/VILLAGE ENGINEER OR DESIGNATED REPRESENTATIVE, WILL BE MATURE ENOUGH TO CONTROL EROSION SATISFACTORILY AND SURVIVE SEVERE WEATHER.

Specifications
for
De-Watering

1. A de-watering plan shall be developed prior to the commencement of any pumping activities.
2. The de-watering plan shall include all pumps and related equipment necessary for the dewatering activities and designate areas for placement of practices. Outlets for practices shall be protected from scour either by riprap protection, fabric liner, or other acceptable method of outlet protection.
3. Water that is not discharged into a settling/treatment basin but directly into waters of the state shall be monitored hourly. Discharged water shall be within +/- 5° F of the receiving waters.
4. Settling basins shall not be greater than four (4) feet in depth. The basin shall be constructed for sediment storage as outlined in Chapter 6, SEDIMENT BASIN OR SEDIMENT TRAP. The inlet and outlet for the basin shall be located at the furthest points of the storage. A floating outlet shall be used to ensure that settled solids do not re-suspend during the discharge process. The settling basin shall be cleaned out when the storage has been reduced by 50% of its original capacity.
5. All necessary National, State and Local permits shall be secured prior to discharging into waters of the state

NON-SEDIMENT POLLUTANT CONTROLS (GENERAL NOTES):

1. ALL SANITARY WASTE SHALL BE COLLECTED FROM PORTABLE UNITS A MINIMUM OF ONE TIME PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR, AS REQUIRED BY LOCAL REGULATION.

2. THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ON SITE DURING THE CONSTRUCTION PROJECT:
   A. AN EFFORT WILL BE MADE TO STORE ONLY ENOUGH PRODUCT REQUIRED TO DO THE JOB.
   B. ALL MATERIALS STORED ON SITE WILL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR APPROPRIATE CONTAINERS, AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.
   C. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE MANUFACTURER'S LABEL. SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
   D. WHENEVER POSSIBLE, ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
   E. THE MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.
   F. THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS ON SITE.

3. IN ADDITION TO PREVIOUS NOTES, THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEAN-UP:
   A. CONTRACTOR MUST 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 25 GALLONS OR GREATER.
   B. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEAN-UP WILL BE POSTED AND SITE PERSONNEL MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEAN-UP SUPPLIES.
   C. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS WILL INCLUDE, BUT NOT LIMITED TO: BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOFFLES, CAT LITTER, SAND, SAWDUST, AND PLASTIC AND METAL TRASH CONTAINERS SPECIFICALLY DESIGNATED FOR THIS PURPOSE.
   D. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.
   E. THE SPILL AREA WILL BE KEPT WELL-VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
   F. SPILLS OF TOXIC OR HAZARDOUS MATERIALS WILL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF SIZE.
   G. 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.
   H. THE SITE SUPERINTENDENT RESPONSIBLE FOR THE DAY-TO-DAY OPERATIONS WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR. THEY WILL DESIGNATE 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 AND IN THE OFFICE TRAILER ON SITE.

Table 1: Permanent Stabilization

Area requiring permanent stabilization	Time frame to apply erosion controls
Any areas that will lie dormant for one year or more	Within seven days of the most recent disturbance
Any areas within 50 feet of a surface water of the state and at final grade	Within two days of reaching final grade
Any other areas at final grade	Within seven days of reaching final grade within that area

Table 2: Temporary Stabilization

Area requiring temporary stabilization	Time frame to apply erosion controls
Any disturbed areas within 50 feet of a surface water of the state and not at final grade	Within two days of the most recent disturbance if the area will remain idle for more than 14 days
For all construction activities, any disturbed areas that will be dormant for more than 14 days but less than one year, and not within 50 feet of a surface water of the state	Within seven days of the most recent disturbance within the area For residential subdivisions, disturbed areas must be stabilized at least seven days prior to transfer of permit coverage for the individual lot(s).
Disturbed areas that will be idle over winter	Prior to the onset of winter weather

Where vegetative stabilization techniques may cause structural instability or are otherwise unobtainable, alternative stabilization techniques must be employed. Permanent and temporary stabilization are defined in Part VII.

Specifications
for
Topsoiling

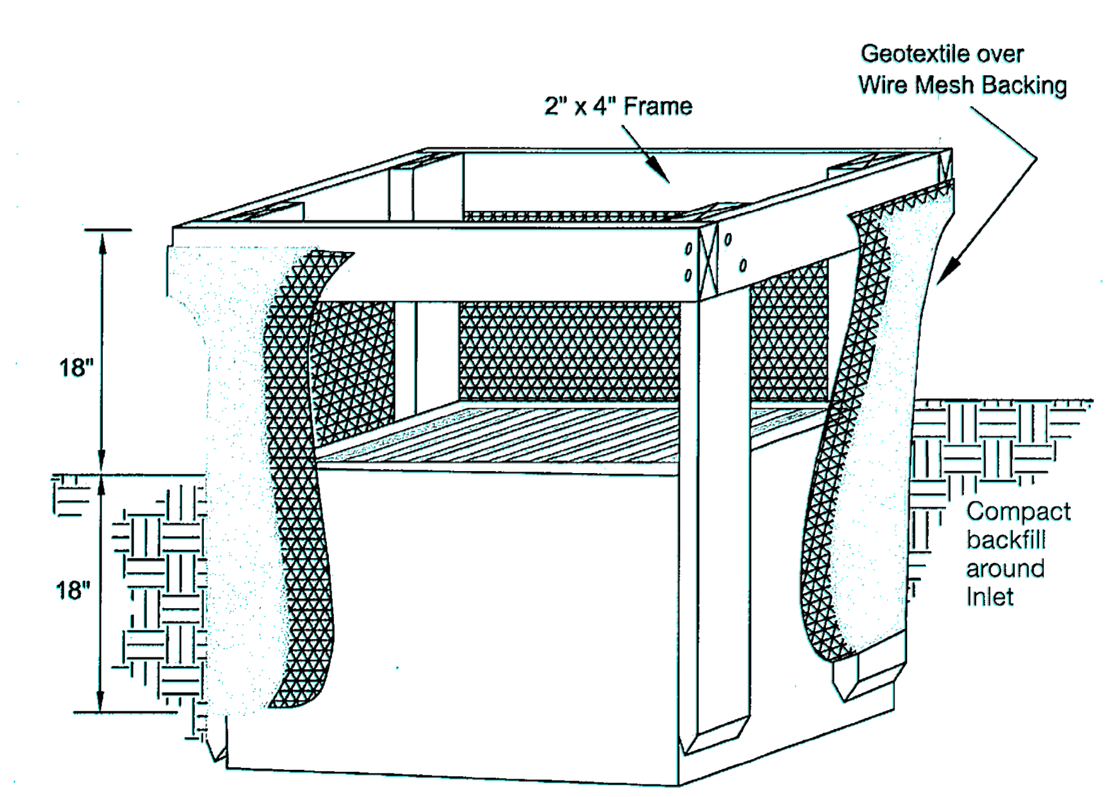
Salvaging and Stockpiling

1. Determine the depth and suitability of topsoil at the site. (For help, contact your local SWCD office to obtain a county soil survey report).
2. Prior to stripping topsoil, install appropriate downslope erosion and sedimentation controls such as sediment traps and basins.
3. Remove the soil material no deeper than what the county soil survey describes as "surface soil" (ie. A or Ap horizon).
4. Construct stockpiles in accessible locations that do not interfere with natural drainage. Install appropriate sediment controls to trap sediment such as silt fence immediately adjacent to the stockpile or sediment traps or basins downstream of the stockpile. Stockpile side slopes shall not exceed a ratio of 2:1.
5. If topsoil is stored for more than 21days, it should be temporary seeded, or covered with a tarp.

Spreading the Topsoil

1. Prior to applying topsoil, the topsoil should be pulverized.
2. To ensure bonding, grade the subsoil and roughen the top 3-4 in. by disking.
3. Do not apply when site is wet, muddy, or frozen, because it makes spreading difficult, causes compaction problems, and inhibits bonding with subsoil.
4. Apply topsoil evenly to a depth of at least 4 inches and compact slightly to improve contact with subsoil.
5. After speading, grade and stabilize with seeding or appropriate vegetation.

Specifications
for
Geotextile Inlet Protection



SECTION

1. Inlet protection shall be constructed either before upslope land disturbance begins or before the inlet becomes functional.
2. The earth around the inlet shall be excavated completely to a depth at least 18 inches.
3. The wooden frame shall be constructed of 2-inch by 4-inch construction grade lumber. The 2-inch by 4-inch posts shall be driven one (1) ft. into the ground at four corners of the inlet and the top portion of 2-inch by 4-inch frame assembled using the overlap joint shown. The top of the frame shall be at least 6 inches below adjacent roads if ponded water will pose a safety hazard to traffic.
4. Wire mesh shall be of sufficient strength to support fabric with water fully impounded against it. It shall be stretched tightly around the frame and fastened securely to the frame.
5. Geotextile material shall have an equivalent opening size of 20-40 sieve and be resistant to sunlight. It shall be stretched tightly around the frame and fastened securely. It shall extend from the top of the frame to 18 inches below the inlet notch elevation. The geotextile shall overlap across one side of the inlet so the ends of the cloth are not fastened to the same post.
6. Backfill shall be placed around the inlet in compacted 6-inch layers until the earth is even with notch elevation on ends and top elevation on sides.
7. A compacted earth dike or check dam shall be constructed in the ditch line below the inlet if the inlet is not in a depression. The top of the dike shall be at least 6 inches higher than the top of the frame.

Specifications
for
Permanent Seeding

Site Preparation

1. Subsoiler, plow, or other implement shall be used to reduce soil compaction and allow maximum infiltration. (Maximizing infiltration will help control both runoff rate and water quality.) Subsoiling should be done when the soil moisture is low enough to allow the soil to crack or fracture. Subsoiling shall not be done on slip-prone areas where soil preparation should be limited to what is necessary for establishing vegetation.
2. The site shall be graded as needed to permit the use of conventional equipment for seedbed preparation and seeding.
3. Topsoil shall be applied where needed to establish vegetation.

Seedbed Preparation

1. Lime—Agricultural ground limestone shall be applied to acid soil as recommended by a soil test. In lieu of a soil test, lime shall be applied at the rate of 100 pounds per 1,000-sq. ft. or 2 tons per acre.
2. Fertilizer—Fertilizer shall be applied as recommended by a soil test. In place of a soil test, fertilizer shall be applied at a rate of 25 pounds per 1,000-sq. ft. or 1000 pounds per acre of a 10-10-10 or 12-12-12 analyses.
3. The lime and fertilizer shall be worked into the soil with a disk harrow, spring-tooth harrow, or other suitable field implement to a depth of 3 inches. On sloping land, the soil shall be worked on the contour.

Seeding Dates and Soil Conditions

Seeding should be done March 1 to May 31 or August 1 to September 30. If seeding occurs outside of the above-specified dates, additional mulch and irrigation may be required to ensure a minimum of 80% germination. Tillage for seedbed preparation should be done when the soil is dry enough to crumble and not form ribbons when compressed by hand. For winter seeding, see the following section on dormant seeding.

Dormant Seedings

1. Seedings should not be made from October 1 through November 20. During this period, the seeds are likely to germinate but probably will not be able to survive the winter.
2. The following methods may be used for "Dormant Seeding":

- From October 1 through November 20, prepare the seedbed, add the required amounts of lime and fertilizer, then mulch and anchor. After November 20, and before March 15, broadcast the selected seed mixture. Increase the seeding rates by 50% for this type of seeding.
- From November 20 through March 15, when soil conditions permit, prepare the seedbed, lime and fertilize, apply the selected seed mixture, mulch and anchor. Increase the seeding rates by 50% for this type of seeding.
- Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder, or hydro-seeder (slurry may include seed and fertilizer) on a firm, moist seedbed.
- Where feasible, except when a cultipacker type seeder is used, the seedbed should be firmed following seeding operations with a cultipacker, roller, or light drag. On sloping land, seeding operations should be on the contour where feasible.

Mulching

1. Mulch material shall be applied immediately after seeding. Dormant seeding shall be mulched. 100% of the ground surface shall be covered with an approved material.
2. Materials
- Straw—If straw is used it shall be unrotted small-grain straw applied at the rate of 2 tons per acre or 90 pounds (two to three bales) per 1,000-sq. ft. The mulch shall be spread uniformly by hand or mechanically applied so the soil surface is covered. For uniform distribution of hand-spread mulch, divide area into approximately 1,000-sq.-ft. sections and spread two 45-lb. bales of straw in each section.
- Hydroseeders—If wood cellulose fiber is used, it shall be applied at 2,000 lb./ac. or 46 lb./1,000 sq. ft.
- Other—Other acceptable mulches include rolled erosion control mattings or blankets applied according to manufacturer's recommendations or wood chips applied at 6 tons per acre.

3. Straw and Mulch Anchoring Methods

Straw mulch shall be anchored immediately to minimize loss by wind or water.

- Mechanical—A disk, crimper, or similar type tool shall be set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be finely chopped but, generally, be left longer than 6 inches.
- Mulch Netting—Netting shall be used according to the manufacturer's recommendations. Netting may be necessary to hold mulch in place in areas of concentrated runoff and on critical slopes.
- Asphalt Emulsion—Asphalt shall be applied as recommended by the manufacture or at the rate of 160 gallons per acre.
- Synthetic Binders—Synthetic binders such as Acrylic DLR (Agri-Tac), DCA-70, Petroset, Terra Tack or equivalent may be used at rates specified by the manufacturer.
- Wood Cellulose Fiber—Wood cellulose fiber shall be applied at a net dry weight of 750 pounds per acre. The wood cellulose fiber shall be mixed with water with the mixture containing a maximum of 50 pounds cellulose per 100 gallons of water.

Irrigation

Permanent seeding shall include irrigation to establish vegetation during dry weather or on adverse site conditions, which require adequate moisture for seed germination and plant growth.

Irrigation rates shall be monitored to prevent erosion and damage to seeded areas from excessive runoff.

Table 7.10.2 Permanent Seeding

Seed Mix	Seeding Rate		Notes:
	Lbs./acre	Lbs./1,000 Sq. Feet	
General Use			
Creeping Red Fescue Domestic Ryegrass Kentucky Bluegrass	20-40 10-20 20-40	1/2-1 1/4-1/2 1/2-1	For close mowing & for waterways with <2.0 ft/sec velocity
Tall Fescue	40-50	1-1 1/4	
Turf-type (dwarf) Fescue	90	2 1/4	
Steep Banks or Cut Slopes			
Tall Fescue	40-50	1-1 1/4	
Crown Vetch Tall Fescue	10-20 20-30	1/4-1/2 1/2-3/4	Do not seed later than August
Flat Pea Tall Fescue	20-25 20-30	1/2-3/4 1/2-3/4	Do not seed later than August
Road Ditches and Swales			
Tall Fescue	40-50	1-11/4	
Turf-type (Dwarf) Fescue Kentucky Bluegrass	90 5	2 1/4 0.1	
Lawns			
Kentucky Bluegrass Perennial Ryegrass	100-120	2 2	
Kentucky Bluegrass Creeping Red Fescue	100-120	2 1-1/2	For shaded areas

Note: Other approved seed species may be substituted.

SōL HARRIS/DAY architecture
6677 Frank Ave NW
North Canton, OH 44720
ph: 330.493.3722
fx: 330.493.5777
www.solharrisday.com
[DESIGNED FOR PEOPLE, DESIGNED FOR LIFE.]

Drainage Swale Improvements for:
RG Drage Career Technical Center
2800 Richville Drive SW
Massillon, Ohio 44646

MARK	DATE	DESCRIPTION

PROJECT NO: 17.106
DATE: 2018.06.12

EROSION AND SEDIMENT CONTROL NOTES & DETAILS

TBA Thorson • Baker + Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road
Richfield, Ohio 44286
(330) 659-6688 Ph.
(330) 659-6675 Fax

C4.3

Specifications
for

Temporary Seeding

Table 7.8.1 Temporary Seeding Species Selection

Seeding Dates	Species	Lb./1000 ft2	Lb/Acre
March 1 to August 15	Oats Tall Fescue Annual Ryegrass	3 1 1	128 (4 Bushel) 40 40
	Perennial Ryegrass Tall Fescue Annual Ryegrass	1 1 1	40 40 40
	Annual Ryegrass Perennial Ryegrass Creeping Red Fescue Kentucky Bluegrass	1.25 3.25 0.4 0.4	55 142 17 17
	Oats Tall Fescue Annual Ryegrass	3 1 1	128 (3 bushel) 40 40
August 16th to November	Rye Tall Fescue Annual Ryegrass	3 1 1	112 (2 bushel) 40 40
	Wheat Tall Fescue Annual Ryegrass	3 1 1	120 (2 bushel) 40 40
	Perennial Rye Tall Fescue Annual Ryegrass	1 1 1	40 40 40
	Annual Ryegrass Perennial Ryegrass Creeping Red Fescue Kentucky Bluegrass	1.25 3.25 0.4 0.4	40 40 40
November 1 to Feb. 29	Use mulch only or dormant seeding		

Note: Other approved species may be substituted.

1. Structural erosion and sediment control practices such as diversions and sediment traps shall be installed and stabilized with temporary seeding prior to grading the rest of the construction site.
2. Temporary seed shall be applied between construction operations on soil that will not be graded or reworked for 21 days or greater. These idle areas shall be seeded within 7 days after grading.
3. The seedbed should be pulverized and loose to ensure the success of establishing vegetation. Temporary seeding should not be postponed if ideal seedbed preparation is not possible.
4. Soil Amendments—Temporary vegetation seeding rates shall establish adequate stands of vegetation, which may require the use of soil amendments. Base rates for lime and fertilizer shall be used.
5. Seeding Method—Seed shall be applied uniformly with a cyclone spreader, drill, cultipacker seeder, or hydroseeder. When feasible, seed that has been broadcast shall be covered by raking or dragging and then lightly tamped into place using a roller or cultipacker. If hydroseeding is used, the seed and fertilizer will be mixed on-site and the seeding shall be done immediately and without interruption.

Specifications
for

Temporary Seeding

Mulching Temporary Seeding

1. Applications of temporary seeding shall include mulch, which shall be applied during or immediately after seeding. Seedings made during optimum seeding dates on favorable, very flat soil conditions may not need mulch to achieve adequate stabilization.

2. Materials:

- Straw—If straw is used, it shall be unrotted small-grain straw applied at a rate of 2 tons per acre or 90 lbs./ 1,000 sq. ft. (2-3 bales)
- Hydroseeders—If wood cellulose fiber is used, it shall be used at 2000 lbs./ ac. or 46 lb./ 1,000-sq.-ft.
- Other—Other acceptable mulches include mulch mattings applied according to manufacturer's recommendations or wood chips applied at 6 ton/ ac.

3. Straw Mulch shall be anchored immediately to minimize loss by wind or water. Anchoring methods:

- Mechanical—A disk, crimper, or similar type tool shall be set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be finely chopped but left to a length of approximately 6 inches.
- Mulch Netting—Netting shall be used according to the manufacturers recommendations. Netting may be necessary to hold mulch in place in areas of concentrated runoff and on critical slopes.
- Synthetic Binders—Synthetic binders such as Acrylic DLR (Agri-Tac), DCA-70, Petroset, Terra Track or equivalent may be used at rates recommended by the manufacturer.
- Wood-Cellulose Fiber—Wood-cellulose fiber binder shall be applied at a net dry wt. of 750 lb./ac. The wood-cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 lb. / 100 gal.

Specifications
for

Additional Construction Site Pollution Controls

1. Construction personnel, including subcontractors who may use or handle hazardous or toxic materials, shall be made aware of the following general guidelines regarding disposal and handling of hazardous and construction wastes:
   - Prevent spills
   - Use products up
   - Follow label directions for disposal
   - Remove lids from empty bottles and cans when disposing in trash
   - Recycle wastes whenever possible
   - Don't pour into waterways, storm drains or onto the ground
   - Don't pour down the sink, floor drain or septic tanks
   - Don't bury chemicals or containers
   - Don't burn chemicals or containers
   - Don't mix chemicals together
2. **Containers shall be provided for the proper collection of all waste material including construction debris, trash, petroleum products and any hazardous materials used on-site.** Containers shall be covered and not leaking. All waste material shall be disposed of at facilities approved for that material. Construction Demolition and Debris (CD&D) waste must be disposed of at an Ohio EPA approved CD&D landfill.
3. **No construction related waste materials are to be buried on-site.** By exception, clean fill (bricks, hardened concrete, soil) may be utilized in a way which does not encroach upon natural wetlands, streams or floodplains or result in the contamination of waters of the state.
4. **Handling Construction Chemicals.** Mixing, pumping, transferring or other handling of construction chemicals such as fertilizer, lime, asphalt, concrete drying compounds, and all other potentially hazardous materials shall be performed in an area away from any watercourse, ditch or storm drain.
5. **Equipment Fueling and Maintenance,** oil changing, etc., shall be performed away from watercourses, ditches or storm drains, in an area designated for that purpose. The designated area shall be equipped for recycling oil and catching spills. Secondary containment shall be provided for all fuel oil storage tanks. These areas must be inspected every seven days and within 24 hrs. of a 0.5 inch or greater rain event to ensure there are no exposed materials which would contaminate storm water. Site operators must be aware that Spill Prevention Control and Countermeasures (SPCC) requirements may apply. An SPCC plan is required for sites with one single above ground tank of 660 gallons or more, accumulative above ground storage of 1330 gallons or more, or 42,000 gallons of underground storage. Contaminated soils must be disposed of in accordance with Item 8.
6. **Concrete Wash Water** shall not be allowed to flow to streams, ditches, storm drains, or any other water conveyance. A sump or pit with no potential for discharge shall be constructed if needed to contain concrete wash water. Field tile or other subsurface drainage structures within 10 ft. of the sump shall be cut and plugged. For small projects, truck chutes may be rinsed away from any water conveyances.
7. **Spill Reporting Requirements:** Spills on pavement shall be absorbed with sawdust or kitty litter and disposed of with the trash at a licensed sanitary landfill. Hazardous or industrial wastes such as most solvents, gasoline, oil-based paints, and cement curing compounds require special handling. Spills shall be reported to Ohio EPA (1-800-282-9378). Spills of 25 gallons or more of petroleum products shall be reported to Ohio EPA, the local fire department, and the Local Emergency Planning Committee within 30 min. of the discovery of the release. All spills which contact waters of the state must be reported to Ohio EPA.
8. **Contaminated Soils.** If substances such as oil, diesel fuel, hydraulic fluid, antifreeze, etc. are spilled, leaked, or released onto the soil, the soil should be dug up and disposed of at licensed sanitary landfill or other approved petroleum contaminated soil remediation facility. (not a construction/demolition debris landfill). Note that storm water run off associated with contaminated soils are not be authorized under Ohio EPA's General Storm Water Permit associated with Construction Activities.
9. **Open Burning.** No materials containing rubber, grease, asphalt, or petroleum products, such as tires, autoparts, plastics or plastic coated wire may be burned (OAC 3745-19). Open burning is not allowed in restricted areas, which are defined as: 1) within corporation limits; 2) within 1000 feet outside a municipal corporation having a population of 1000 to 10,000; and 3) a one mile zone outside of a corporation of 10,000 or more. Outside of restricted areas, no open burning is allowed within a 1000 feet of an inhabited building on another property. Open burning is permissible in a restricted area for: heating tar, welding, smudge pots and similar occupational needs, and heating for warmth or outdoor barbeques. Outside of restricted areas, open burning is permissible for landscape or land-clearing wastes (plant material, with prior written permission from Ohio EPA), and agricultural wastes, excluding buildings.
10. **Dust Control or dust suppressants** shall be used to prevent nuisance conditions, in accordance with the manufacturer's specifications and in a manner, which prevent a discharge to waters of the state. Sufficient distance must be provided between applications and nearby bridges, catch basins, and other waterways. Application (excluding water) may not occur when rain is imminent as noted in the short term forecast. Used oil may not be applied for dust control.
11. **Other Air Permitting Requirements:** Certain activities associated with construction will require air permits including but not limited to: mobile concrete batch plants, mobile asphalt plants, concrete crushers, large generators, etc. These activities will require specific Ohio EPA Air Permits for installation and operation. Operators must seek authorization from the corresponding district of Ohio EPA. For demolition of all commercial sites, a Notification for Restoration and Demolition must be submitted to Ohio EPA to determine if asbestos corrective actions are required.
12. **Process Waste Water/Leachate Management.** Ohio EPA's Construction General Permit only allows the discharge of storm water and does not include other waste streams/discharges such as vehicle and/or equipment washing, on-site septic leachate concrete wash outs, which are considered process wastewaters. All process wastewaters must be collected and properly disposed at an approved disposal facility. In the event, leachate or septage is discharged; it must be isolated for collection and proper disposal and corrective actions taken to eliminate the source of waste water.
13. **A Permit To Install (PTI)** is required prior to the construction of all centralized sanitary systems, including sewer extensions, and sewerage systems (except those serving one, two, and three family dwellings) and potable water lines. Plans must be submitted and approved by Ohio EPA. Issuance of an Ohio EPA Construction General Storm Water Permit does not authorize the installation of any sewerage system where Ohio EPA has not approved a PTI.

Specifications
for

Dust Control

1. Vegetative Cover and/mulch – Apply temporary or permanent seeding and mulch to areas that will remain idle for over 21 days. Saving existing trees and large shrubs will also reduce soil and air movement across disturbed areas. See Temporary Seeding; Permanent Seeding; Mulching Practices; and Tree and Natural Area Protection practices.
2. Watering – Spray site with water until the surface is wet before and during grading and repeat as needed, especially on haul roads and other heavy traffic routes. Watering shall be done at a rate that prevents dust but does not cause soil erosion. Wetting agents shall be utilized according to manufacturers instructions.
3. Spray-On Adhesives – Apply adhesive according to the following table or manufacturers' instructions.

Table 7.5.1 Adhesives for Dust Control

Adhesive	Water Dilution (Adhesive: Water)	Nozzle Type	Application Rate Gal./Ac.
Latex Emulsion	12.5:1	Fine	235
Resin in Water Acrylic Emulsion (No-traffic)	4:1	Fine	300
Acrylic Emulsion (No-traffic)	7:1	Coarse	450
Acrylic Emulsion (Traffic)	3.5:1	Coarse	350

4. Stone – Graded roadways and other suitable areas will be stabilized using crushed stone or coarse gravel as soon as practicable after reaching an interim or final grade. Crushed stone or coarse gravel can be used as a permanent cover to provide control of soil emissions.
5. Barriers – Existing windbreak vegetation shall be marked and preserved. Snow fencing or other suitable barrier may be placed perpendicular to prevailing air currents at intervals of about 15 times the barrier height to control air currents and blowing soil.
6. Calcium Chloride - This chemical may be applied by mechanical spreader as loose, dry granules or flakes at a rate that keeps the surface moist but not so high as to cause water pollution or plant damage. Application rates should be strictly in accordance with suppliers' specified rates.
7. Operation and Maintenance - When Temporary Dust Control measures are used; repetitive treatment should be applied as needed to accomplish control.

Street Cleaning - Paved areas that have accumulated sediment from construction should be cleaned daily, or as needed, utilizing a street sweeper or bucket -type endloader or scraper.

Specifications
for

Mulching

1. Mulch and other appropriate vegetative practices shall be applied to disturbed areas within 7 days of grading if the area is to remain dormant (undisturbed) for more than 21 days or on areas and portions of the site which can be brought to final grade.
2. Mulch shall consist of one of the following:

- Straw - Straw shall be unrotted small grain straw applied at the rate of 2 tons/ac. or 90 lb./1,000 sq. ft. (two to three bales). The straw mulch shall be spread uniformly by hand or mechanically so the soil surface is covered. For uniform distribution of hand-spread mulch, divide area into approximately 1,000 sq.ft. sections and place two 45-lb. bales of straw in each section.
- Hydroseeders - Wood cellulose fiber should be used at 2,000 lb./ac. or 46 lb./1,000 sq. ft.
- Other - Acceptable mulches include mulch mattings and rolled erosion control products applied according to manufacturer's recommendations or wood mulch/chips applied at 10-20 tons/ac.

3. Mulch Anchoring - Mulch shall be anchored immediately to minimize loss by wind or runoff. The following are acceptable methods for anchoring mulch.

- Mechanical - Use a disk, crimper, or similar type tool set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be finely chopped but be left generally longer than 6 inches.
- Mulch Nettings - Use according to the manufacturer's recommendations, following all placement and anchoring requirements. Use in areas of water concentration and steep slopes to hold mulch in place.
- Synthetic Binders - For straw mulch, synthetic binders such as Acrylic DLR (Agri-Tac), DCA-70, Petroset, Terra Tack or equal may be used at rates recommended by the manufacturer. All applications of Sythetic Binders must be conducted in such a manner where there is no contact with waters of the state.
- Wood Cellulose Fiber - Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 lb./acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 lb./100 gal. of wood cellulose fiber.

Specifications
for

Grade Treatment

Cut Slopes-Greater than 3:1 Slopes

1. Stair-step grading may be carried out on any material soft enough to be ripped with a bulldozer. The ratio of the horizontal distance to the vertical cut distance shall be flatter than 1:1 and the horizontal portion of the "step" shall slope toward the vertical wall. Individual vertical cuts shall not be more than 24 inches on soft soil materials and not more than 36 inches in rocky materials.
2. Grooving may be made with any appropriate implement which can be safely operated on the slope and which will not cause undue compaction. Suggested implements include discs, tillers, spring harrows, and the teeth on a front-end loader bucket. Such grooves shall not be less than 3 inches deep nor further than 15 inches apart.

Fill Slopes-Greater than 3:1 Slopes

Fill slopes steeper than 3:1 shall be grooved or allowed to remain rough as they are constructed utilizing method (1) or (2) below.

1. Grooving may be made with any appropriate implement which can be safely operated on the slope and which will not cause undue compaction such as discs, tillers, spring harrows, and the teeth on a front-end loader bucket. Grooves left shall not be less than 3 inches deep nor further than 15 inches apart.
2. As lifts of the fill are constructed, soil and rock materials may be allowed to fall naturally onto the slope surface. At no time shall slopes be bladed or scraped to produce a smooth, hard surface.

Cuts, Fills, and Graded Areas Which Will Be Mowed

1. Mowed slopes should not be steeper than 3:1 and shall avoid excessive roughness. These areas may be roughened with shallow grooves such as those, which remain after tilling, discing, harrowing, raking, or use of a cultipacker-seeder. The final pass of any such tillage implement shall be on the contour (perpendicular to the slope).
2. Grooves formed by implements shall be not less than 1 inch deep and not further than 12 inches apart. Fill slopes that are left rough during construction may be smoothed with a chain harrow or similar implement to facilitate mowing.

Roughening With Tracked Machinery

1. Avoid tracking clayey soils if possible, due to their potential for compaction. Conversely sandy soils will have low potential for compaction.
2. Operate tracked machinery up and down the slope to leave horizontal depressions in the soil. As few passes of the machinery should be made as possible to minimize compaction.

Thorson • Baker + Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road
Richfield, Ohio 44286
(330) 659-6688 Ph.
(330) 659-6675 Fax

SōL HARRIS/DAY architecture
6677 Frank Ave NW
North Canton, OH 44720
ph: 330.493.3722
fx: 330.493.5777
www.solharrisday.com
[DESIGNED FOR PEOPLE. DESIGNED FOR LIFE.]

Drainage Swale Improvements for:

RG Drage Career Technical Center

2800 Richville Drive SW
Massillon, Ohio 44646

MARK	DATE	DESCRIPTION

PROJECT NO: 17.106
DATE: 2018.06.12

EROSION AND SEDIMENT CONTROL NOTES & DETAILS

C4.4