TURF FIELD DRAINAGE IMPROVEMENT PLANS FOR

SAU#70/DRESDEN SCHOOL DISTRICT/ HANOVER HIGH SCHOOL

PROJECT NO. 10021

LEBANON STREET
HANOVER, NEW HAMPSHIRE

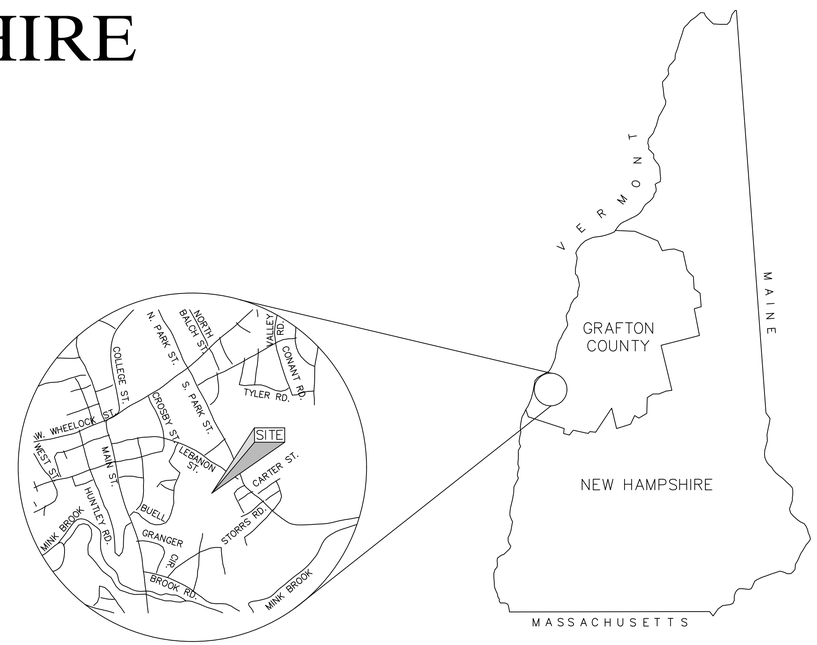
APRIL 12, 2019

STATE OF NEW HAMPSHIRE
KEVIN P. STETSON
No. 11784
LICENSED PROFESSIONAL ENGINEER
4-12-19

STATE OF NEW HAMPSHIRE
RODRICK J. FINLEY
No. 7466
LICENSED PROFESSIONAL ENGINEER

FOR BIDDING ONLY

INDEX OF SHEETS



LOCATION MAP

CIVIL ENGINEER:
PATHWAYS CONSULTING, LLC 240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448-2200

GEOTECHNICAL ENGINEER:
SANBORN, HEAD & ASSOCIATES, INC.
187 SAINT PAUL STREET, SUITE 4-C
BURLINGTON, VERMONT 05401
(802) 391-8520

PARTNER:
TOWN OF HANOVER
PUBLIC WORKS DEPARTMENT
194 LEBANON STREET
HANOVER, NEW HAMPSHIRE 03755
(603) 643-3327

RECORD OWNER:
SAU#70/DRESDEN SCHOOL DISTRICT
41 LEBANON STREET, SUITE 2
HANOVER, NEW HAMPSHIRE 03755-2147
(603) 643-3327

PROJECT DESCRIPTION:

THIS IS A DRAINAGE IMPROVEMENTS PROJECT LOCATED BELOW AND DIRECTLY ADJACENT TO THE HANOVER HIGH SCHOOL ATHLETIC TURF FIELD. THE TOWN OF HANOVER PREVIOUSLY INSTALLED THE SECTION OF NEW 48" PIPE BELOW THE FIELD IN 2018. THE INTENT OF THIS PROJECT IS TO REROUTE THE DRAINAGE THAT PASSES BELOW THE EXISTING FIELD THROUGH ONE COMMON 48" PIPE TO A NEW OUTFALL AND AT THE SAME TIME FILL AND ABANDON OR REMOVE THE EXISTING PIPES AND STRUCTURES BELOW THE FIELD. THE SAU OFFICE WILL ALSO BE REPLACING THE TURF ONCE SUBSTANTIAL COMPLETION IS REACHED ON THIS PROJECT. THAT WORK WILL BE UNDER SEPARATE CONTRACT, HOWEVER THE CONTRACTOR MUST COMMUNICATE ALL WORK WITH THE PARTIES INVOLVED WITH THE TURF REPLACEMENT.

CONSTRUCTION GENERAL NOTES:

1. ALL WORK MUST BE COORDINATED WITH THE SAU OFFICE.
2. THE CONTRACTOR SHALL PROVIDE A SITE STAGING AND ACCESS PLAN TO THE ENGINEER FOR REVIEW PRIOR TO THE PRE-CONSTRUCTION MEETING. THIS SHALL INCLUDE LOCATIONS OF ANTICIPATED STOCKPILING, CRANE PADS, CONCRETE WASHOUT AREAS, ACCESS RAMPS, JOB TRAILER LOCATION, ETC. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL STAGING AND ACCESS AS INCIDENTAL TO THE WORK ON THIS PROJECT.
3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPROVED DRAWINGS, SPECIFICATIONS, AND ANY ISSUED ADDENDA.
4. THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE OWNER AND ENGINEER PRIOR TO PROCEEDING WITH WORK. A DETAILED CONSTRUCTION SCHEDULE SHALL BE PROVIDED BY THE CONTRACTOR TO THE ENGINEER PRIOR TO THE MEETING.
5. WRITTEN DIMENSIONS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN CASE OF CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND SPECIFICATIONS. THE ENGINEER AND OWNER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATIONS.
6. EXPLORATORY EXCAVATION: THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETING EXPLORATORY EXCAVATION TO IDENTIFY CONFLICTS WITH EXISTING UTILITIES PRIOR TO ORDERING DRAINAGE COMPONENTS.
7. NO EXCAVATIONS SHALL BE LEFT OPEN AND UN-BACKFILLED AT THE END OF EACH WORK DAY UNLESS DISCUSSED AND APPROVED WITH THE OWNER. IF EXCAVATIONS ARE APPROVED TO BE LEFT OPEN, THEN THE WORK SHALL BE PROTECTED WITH FENCING AND OTHER MEASURES TO PREVENT ACCESS FROM THE PUBLIC.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS PREPARE BY PATHWAYS CONSULTING, LLC, DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS OR OWNER'S REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR ENGINEER HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY OR HEREAFTER BE INCORPORATED INTO THESE PLANS.
9. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE PROJECT AREA AND ALL CONDITIONS SURROUNDING IT THEREON.
10. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE ALL PERMITS OBTAINED FOR THIS PROJECT. A COPY OF THE CONTRACTOR SIGNED WETLAND PERMIT MUST BE POSTED ON-SITE A LOCATION ACCESSIBLE TO THE PUBLIC PRIOR TO CONSTRUCTION.
11. GRADING SHALL BE DIRECTED TOWARD CATCH BASINS UNLESS OTHERWISE DEPICTED ON THE DRAWINGS.
12. THE ENGINEER MAY PROVIDE THE CONTRACTOR WITH EXISTING SURVEY CONTROL POINTS IF AVAILABLE. THE CONTRACTOR MAY UTILIZE THE PROVIDED CONTROL POINTS AND BENCH MARKS ESTABLISHED BY THE ENGINEER TO SET UP WHATEVER SPECIFIC DETAIL CONTROLS THEY MAY NEED FOR ESTABLISHING NORTHINGS, EASTINGS, AND ELEVATIONS FOR THE PROJECT COMPONENTS. CONTROL POINT AND BENCHMARK ACCURACY WAS CONFIRMED AT THE TIME OF THE SURVEY AND IT IS THE CONTRACTOR RESPONSIBILITY TO VERIFY THE ACCURACY OF THESE POINTS PRIOR TO USING THEM FOR CONSTRUCTION OR RECORDING RECORD INFORMATION. IF THE CONTRACTOR FINDS ANY POINT PROVIDED TO BE INACCURATE, THE CONTRACTOR MUST NOTIFY THE ENGINEER IMMEDIATELY IN WRITING. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR LAYOUT OF THE WORK AT THE PROJECT SITE.
13. IF THE CONTRACTOR ANTICIPATES AN OVERAGE IN MATERIAL QUANTITIES INCLUDED IN THE CONTRACT, THE CONTRACTOR MUST NOTIFY THE ENGINEER IMMEDIATELY PRIOR TO PROCEEDING.
14. THE USE OF A CRANE FOR INSTALLATION OF LARGER STRUCTURES SHALL BE INCIDENTAL TO THE STRUCTURES.
15. ALL DRAINAGE PIPES SHALL BE INSTALLED WITH A PIPE LASER AND SHALL BE INSTALLED TRUE TO LINE AND GRADE PER THE DRAWINGS.
16. TRENCHES SHALL BE BACKFILLED IN LIFTS AS TO OBTAIN 95% DENSITY BASED ON A MODIFIED PROCTOR.
17. SMALLER DRAINAGE PIPES 15" OR LESS SHALL BE INSTALLED WITH FLEXIBLE RUBBER BOOTS AT THE STRUCTURE PENETRATIONS. LARGER PIPES MAY BE BRICK AND MORTARED IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATIONS.
18. ALL DRAINAGE FLOWS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

CONCRETE HEADWALL GENERAL NOTES:

1. THE PROPOSED CONCRETE HEADWALL TO BE PRECAST CONCRETE OR CAST-IN-PLACE.
2. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING DETAILED SHOP DRAWINGS STAMPED BY A LICENSED ENGINEER.
3. NO CONCRETE SHALL BE PLACED IN WATER OR ON SATURATED OR FROZEN GROUND.
4. THE FOUNDATION SHALL BEAR AT A MINIMUM OF 12" OF ASHTO NO. 67 STONE. THE STONE SHALL BE SEPARATED FROM THE EXISTING SOIL WITH WOVEN GEOTEXTILE FABRIC.
5. ALL FINISHED EXCAVATIONS SHALL BE OBSERVED BY THE ENGINEER PRIOR TO ANY CONCRETE BEING ORDERED OR A PRECAST STRUCTURE BEING INSTALLED.
6. ALL CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATIONS OF THE LATEST EDITION OF THE ACI BUILDING CODE (ACI 318) AND ACI 301, SPECIFICATIONS FOR STRUCTURAL CONCRETE BUILDINGS.
7. ALL CONCRETE SHALL BE REDI-MIX IN ACCORDANCE WITH ASTM C94.
8. ALL CONCRETE SHALL ATTAIN 4,000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAY AGE.
9. ALL REINFORCING BARS SHALL CONFORM TO THE LATEST ACI CODE.
10. ALL REINFORCING BARS SHALL CONFORM TO ASTM A615 GRADE 60.
11. HEADWALL SHALL BE DESIGNED WITH A DRAINAGE ORIFICE/WEEPHOLE AND BACKFILLED WITH WELL DRAINING MATERIAL.

EXISTING UTILITY NOTES

1. UTILITY INFORMATION SHOWN HEREON WAS OBTAINED FROM THE BEST AVAILABLE SOURCE AND MAY OR MAY NOT BE EITHER ACCURATE OR COMPLETE. CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF EXISTING UTILITIES AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY UTILITY, PUBLIC OR PRIVATE, SHOWN OR NOT SHOWN HEREON. CONTRACTOR SHALL CONNECT OR RECONNECT ALL UTILITIES TO THE NEAREST SOURCE THROUGH COORDINATION WITH THE UTILITY OWNER. EXPLORATORY EXCAVATION SHALL BE REQUIRED TO VERIFY LOCATION AND SIZE OF EXISTING UTILITIES AND APPURTENANCES.
2. THE CONTRACTOR SHALL NOT DISTURB ANY EXISTING UTILITY SERVICE (PRIVATE OR PUBLIC) WITHOUT WRITTEN AUTHORIZATION FROM THE OWNER.
3. SUBSURFACE FEATURES SUCH AS ELECTRIC AND TELEPHONE LINES, WATER LINES, SEWER LINES, STORM DRAIN AND CULVERTS, ETC., ENCOUNTERED IN THE CONSTRUCTION OF THE PROJECT SHALL BE PROTECTED, SUPPORTED, OR REMOVED AND REPLACED BY THE CONTRACTOR UNLESS OTHERWISE NOTED ON THE PLANS. THE COST OF THIS WORK SHALL BE INCIDENTAL TO THE CONTRACT UNLESS PAYMENT IS SPECIFICALLY NOTED AS A SEPARATE PAY ITEM. THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AND/OR HIGHWAY DEPARTMENTS WHEN THE WORK INVOLVES THEIR RESPECTIVE FACILITIES.THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING"DIG-SAFE" (886-DIG-SAFE) AT LEAST 72 HOURS PRIOR TO DIGGING.
4. THE CONTRACTOR SHALL HIRE A PRIVATE LOCATING COMPANY TO LOCATE ALL UTILITIES IN THE PROJECT LIMITS PRIOR TO START OF CONSTRUCTION.
5. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
6. THE CONTRACTOR SHALL COORDINATE MATERIALS AND INSTALLATION SPECIFICATIONS WITH THE INDIVIDUAL UTILITY AGENCIES/COMPANIES, AND ARRANGE FOR ALL INSPECTIONS.
7. ALL MANHOLES IN PAVEMENT SHALL HAVE RIMS SET TO 1/4" BELOW FINISH GRADE REGARDLESS OF ANY ELEVATIONS OTHERWISE SHOWN.

REFERENCES:

1. "REPORT OF PROJECT RESULTS: TOWN OF HANOVER – HANOVER, NH – PRE MEASURE INSPECTIONS – SANITARY SEWER REHABILITATION PROJECT" BY GREEN MOUNTAIN PIPELINE SERVICES, OCTOBER 2017.
2. "REPORT – EXPLORATION AND GEOTECHNICAL ENGINEERING SERVICES – STORM DRAIN PIPE COLLAPSE AT ATHLETIC FIELD – HANOVER HIGH SCHOOL," BY S.W. COLE ENGINEERING, INC., DATED FEBRUARY 8, 2018.
3. HARTIGAN WASTEWATER SERVICES VIDEO INSPECTION REPORT PERFORMED ON 42" LINE UNDER ARTIFICIAL TURF AT HANOVER HIGH SCHOOL DATED 11-05-2008.

LEGEND: EXISTING

CONTOUR — 450
DRAIN MANHOLE — D
CATCH BASIN
SANITARY MANHOLE — S
POST
ELECTRICAL BOX — E
UNDERGROUND ELECTRIC — UGE
CHAIN LINK FENCE
BOUNDARY LINE
DRAIN PIPE — D
HARDWOOD TREE
SOFTWOOD TREE
EDGE WATER
WETLAND
WETLAND BUFFER – 25 FOOT — 25
WETLAND BUFFER – 75 FOOT — 75
BORING (REFERENCE 2) — B-2

LEGEND: PROPOSED

EROSION CONTROL SOCK
PROPOSED CONTOUR — 428

DIG SAFE 1-888-344-7233

CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

THE LOCATION OF ANY UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. PATHWAYS CONSULTING, LLC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. 72 HOURS PRIOR TO ANY EXCAVATION ON SITE, THE CONTRACTOR SHALL CONTACT DIG-SAFE AT 1-888-DIG-SAFE.

GENERAL CONSTRUCTION SEQUENCE:

1. ATTEND A PRE-CONSTRUCTION MEETING PRIOR TO PROCEEDING WITH WORK.
2. NOTIFY DIGSAFE AND HAVE PRIVATE LOCATING COMPANY COMPLETE MARKING OF EXISTING UTILITIES PER THE PLANS AND SPECIFICATIONS PRIOR TO ANY EXCAVATION WORK ON-SITE.
3. INSTALL EROSION CONTROLS AS INDICATED ON PLANS AND AT OTHER LOCATIONS AS DETERMINED BY ENGINEER. INSTALL OTHER TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES AS EARTHWORK PROCEEDS AND AS DETERMINED NECESSARY BY THE ENGINEER.
4. CONSTRUCT ANY NECESSARY APPROVED TEMPORARY ACCESS AND STAGING FACILITIES AND COMPLETE ANY REQUIRED EXPLORATORY EXCAVATION WORK TO VERIFY UTILITIES WITHIN THE WORK AREA.
5. CONSTRUCT ALL NEW DRAINAGE INFRASTRUCTURE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. PROVIDE ANY NECESSARY DRAINAGE FLOW BYPASSES NEEDED TO COMPLETE THIS WORK.
6. PERFORM REQUIRED ABANDONMENT/GROUTING AND OR REMOVAL OF EXISTING DRAINAGE INFRASTRUCTURE PER THE PLANS AND SPECIFICATIONS.
7. COMPLETE SITE RESTORATION AND GRADING INCLUDING BUT NOT LIMITED TO GRAVELS, PAVING, AND RESTORATION OF LAWNS AND GRASSES.
8. ATTEND A SUBSTANTIAL COMPLETION WALK THROUGH WITH THE ENGINEER FOR PUNCH LIST DEVELOPMENT PRIOR TO THE DATE OF SUBSTANTIAL COMPLETION IN THE CONTRACT.
9. COMPLETE PUNCH LIST ITEMS IDENTIFIED DURING THE SUBSTANTIAL COMPLETION WALK THROUGH PRIOR TO THE DATE OF FINAL COMPLETION IN THE CONTRACT.
10. INSPECT AND MAINTAIN GRADING, EROSION CONTROL AND SEDIMENT CONTROL PRACTICES WEEKLY AND IMMEDIATELY AFTER ALL STORMS OF MORE THAN 1/2" IN 24 HOURS UNTIL VEGETATION IS PROPERLY ESTABLISHED. RESEED AREAS THAT HAVE NOT BEGAN TO ESTABLISH 2 WEEKS AFTER INITIAL SEEDING.
11. ATTEND A FINAL COMPLETION WALK THROUGH ONCE ALL PUNCH LIST ITEMS ARE BELIEVED TO BE COMPLETED AND ARE ACCEPTABLE TO THE OWNER.

STATE OF NEW HAMPSHIRE – RODRICK J. FINLEY No. 7466 LICENSED PROFESSIONAL ENGINEER

FOR BIDDING ONLY

REVISION NO.	DATE	DESCRIPTION	MADE BY	CHECKED BY	APPROVED BY

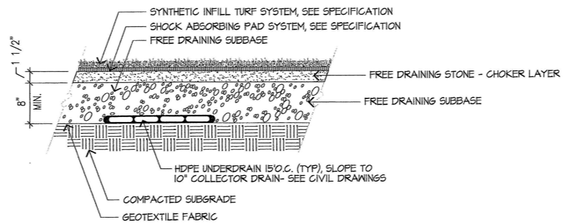
PROJECT NOTES FOR

HANOVER HIGH SCHOOL
TURF FIELD DRAINAGE IMPROVEMENTS

LEBANON STREET – HANOVER, NEW HAMPSHIRE

PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448-2200

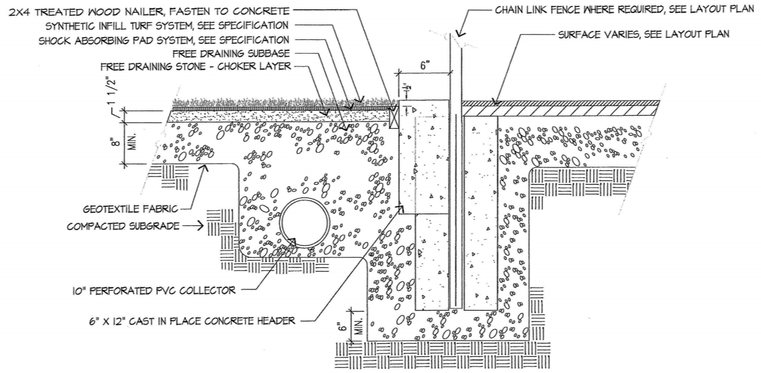
SCALE:	AS SHOWN
DESIGNED BY:	JDD
DRAWN BY:	DPM
CHECKED BY:	RJF
DATE:	04/12/19
PROJ. NO.	10021



4 TYPICAL INFILLED SYNTHETIC TURF SYSTEM

N.T.S.
REFERENCE: "ATHLETIC FIELD IMPROVEMENT PLANS FOR HANOVER HIGH SCHOOL" DATED AUGUST 14, 2006
NOTE: PROPOSED DETAIL FROM REFERENCE PLANS– NEEDS TO BE VERIFIED IN THE FIELD

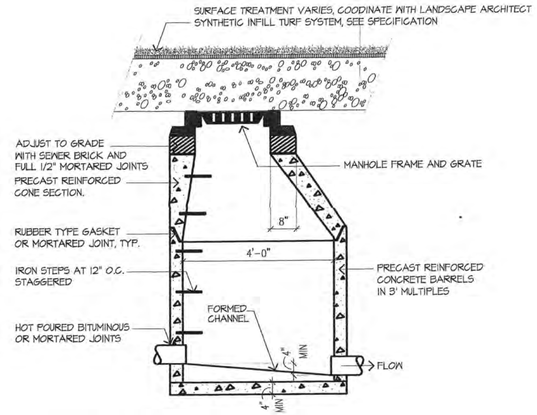
FOR REFERENCE ONLY



7 EDGE OF SYNTHETIC TURF AT FENCELINE AND WALKWAYS

N.T.S.
REFERENCE: "ATHLETIC FIELD IMPROVEMENT PLANS FOR HANOVER HIGH SCHOOL" DATED AUGUST 14, 2006
NOTE: PROPOSED DETAIL FROM REFERENCE PLANS– NEEDS TO BE VERIFIED IN THE FIELD

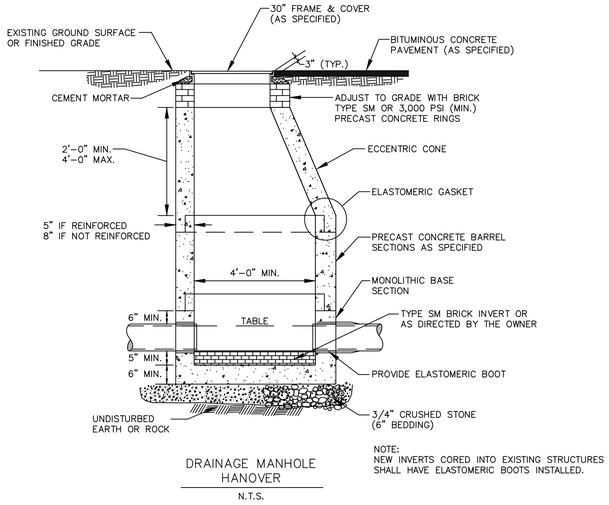
FOR REFERENCE ONLY



4 MANHOLE IN SYNTHETIC TURF

N.T.S.
REFERENCE: "ATHLETIC FIELD IMPROVEMENT PLANS FOR HANOVER HIGH SCHOOL" DATED AUGUST 14, 2006
NOTE:
1. PROPOSED DETAIL FROM REFERENCE PLANS– NEEDS TO BE VERIFIED IN THE FIELD.
2. MANHOLE DMH–GMPS3 MAY BE LARGER THAN 4'ø.

FOR REFERENCE ONLY

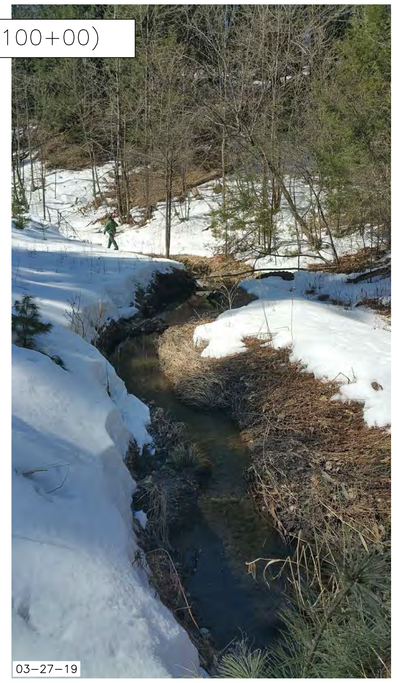


DRAINAGE MANHOLE
HANOVER
N.T.S.

N.T.S.
REFERENCE: "ATHLETIC FIELD IMPROVEMENT PLANS FOR HANOVER HIGH SCHOOL" DATED AUGUST 14, 2006
NOTE:
1. PROPOSED DETAIL FROM REFERENCE PLANS– NEEDS TO BE VERIFIED IN THE FIELD.
2. PER SHEET 4 OF "ATHLETIC FIELD IMPROVEMENT PLANS FOR HANOVER HIGH SCHOOL" DATED AUGUST 14, 2006, MANHOLE DMH–GMPS4 WAS PROPOSED TO BE A 6'ø MANHOLE.

FOR REFERENCE ONLY

PICTURES OF EXISTING CONDITIONS AT OUTLET (STA 100+00)



NOTES:
1. 8–INCH DIAMETER CMP PIPE LOCATION THAT IS AT APPROXIMATE STA 101+90.9 NEED TO BE VERIFIED IN FIELD BY CONTRACTOR USING GPR SURVEYOR HIRED BY SCHOOL ADMINISTRATIVE UNIT 70 AND COORDINATED BY THE CONTRACTOR.
2. ONCE THE 8–INCH PIPE IS LOCATED WITHIN FOOTPRINT OF PROJECT, NOTIFY ENGINEER.
3. THE CONTRACTOR SHALL DEVELOP A GROUT PLAN FOR THE 8–INCH CMP ONCE THE LOCATION IS KNOWN AND SUBMIT PLAN TO ENGINEER.
4. NO GROUTING SHALL TAKE PLACE WITHOUT KNOWING THE END OF THE 8–INCH PIPE LOCATION AS TO PREVENT UNKNOWN GROUT FLOW OFF THE PROPERTY.
5. 8–INCH CMP NEEDS TO BE GROUTED AS PART OF THE GROUTING OPERATION FOR THE 42–INCH PIPE.
6. IF THE 8–INCH PIPE GOES OFF PROPERTY, IT MAY BE POSSIBLE TO PLUG PIPE JUST OUTSIDE OF PROPERTY AND GROUT REMAINING PIPE BENEATH ATHLETIC FIELD.

FOR BIDDING ONLY

REVISION NO.	DATE	DESCRIPTION	MADE BY	CHECKED BY	APPROVED BY

GEOTECHNCIAL DETAILS FOR
HANOVER HIGH SCHOOL TURF FIELD DRAINAGE IMPROVEMENTS
LEBANON STREET – HANOVER, NEW HAMPSHIRE

SANBORN, HEAD & ASSOCIATES, INC.
187 SAINT PAUL STREET, SUITE 4–C
BURLINGTON, VERMONT 05401
(802) 391–8520

PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448–2200

SCALE: 1"= AS SHOWN	3
DESIGNED BY: ID	
DRAWN BY: JG/DPM	
CHECKED BY: SK	
DATE: 04/12/19	
PROJ. NO. 10021	SHEET 3 OF 10

GENERAL SURVEY NOTES:

1. HORIZONTAL DATUM IS NEW HAMPSHIRE STATE PLANE GRID NAD83 (SURVEY FEET) FROM GPS OBSERVATION.
2. VERTICAL DATUM IS NAVD88 FROM GPS OBSERVATION.
3. STRUCTURES FOR UNDERGROUND UTILITIES ARE SHOWN AS OBSERVED. THE SURVEYOR DOES NOT CERTIFY THAT OTHER UNDERGROUND UTILITIES DO NOT EXIST. UNDERGROUND UTILITIES ARE NOT WARRANTED TO BE EXACT OR COMPLETE AND ARE TO BE FIELD VERIFIED PRIOR TO ANY EXCAVATION OR SITE MODIFICATIONS.
4. PATHWAYS CONSULTING LLC COLLECTED DATA FOR THIS PLAN IN MAY AND JULY OF 2018. FAR EAST SECTION OF TOPOGRAPHY GENERATED FROM TOPOGRAPHY PRODUCED PRIOR TO 2008 BY PATHWAYS CONSULTING.
5. DRAINAGE MANHOLES DMH–GMPS3 APPROXIMATE LOCATION BASED ON REFERENCE 1. PER REFERENCE 1 DMH–GMPS3 WAS APPROXIMATELY 82.6' FROM DMH–GMPS2. DMH–GMPS2 WAS SURVEYED AS PART OF SURVEY REFERENCED IN NOTE 4 ABOVE.
6. INVERTS TO DEEP MANHOLES DMH–GMPS2 AND DMH–GMPS4 APPROXIMATE ONLY DUE TO THE DEPTH MEASURED DOWN TO FROM RIM OF MANHOLES.
7. BORING LOCATIONS PER REFERENCE 3.

NEW HAMPSHIRE STATE PLANE

APPROXIMATE BOUNDARY

DMH RIM 466.6' NW INV. IN: 463.6± N INV IN: 461.1± INV. OUT: 461.2±

REMOVE & DISPOSE OF EXISTING PIPE

CB RIM 469.9'

CB RIM 469.7

CONCRETE CURB

REFERENCE 1 LOG NOTE: SURVEY ABANDONED – UNABLE TO ADVANCE DUE TO COLLAPSED PIPE ≈ 361.9' FROM GMPS3 STA:≈101+01.4±

REFERENCE 1 LOG NOTE: START OF COLLAPSE ≈ 356.8' FROM GMPS3 STA:≈101+06.5±

REFERENCE 1 LOG NOTE: MATERIAL CHANGE TO PLASTIC PIPE ≈ 351.8' FROM GMPS3 STA:≈101+11.5±

EXISTING MANHOLE TO BE FILLED WITH GROUT. REMOVE AND DISPOSE OF FRAME & COVER.

EXISTING PIPE TO BE FILLED WITH PRESSURE GROUT UP TO HEADWALL

DMH–GMPS4 RIM 465.2' INV IN (NW): 460.7± 42" INV IN (NE): 431.7± 15" INV. IN (E): 448.2± 42" INV. OUT: 428.7±

B-2A B-2

EXISTING TURF FIELD

EXISTING PIPE TO BE FILLED WITH PRESSURE GROUT

REFERENCE 1 LOG NOTE: PIPE IS OVAL ≈ 206.8' FROM GMPS3 STA:≈102+56.2±

REFERENCE 1 LOG NOTE: HOLE VOID VISIBLE (INVERT) ≈ 178.7' FROM GMPS3 STA:≈102+84.6±

REFERENCE 1 LOG NOTE: TAP BREAK–IN INTRUDING ≈ 272.3' FROM GMPS3. PER REFERENCE 3 – 8" TO 12" IN SIZE STA:≈101+90.9±

REFERENCE 1 LOG NOTE: INFILTRATION STAIN (CROWN) ≈ 109.5' FROM GMPS3 STA:≈103+53.8±

EXISTING 24" PIPE PREVIOUSLY GROUTED. CONTRACTOR TO FIELD VERIFY AND FILL WITH GROUT IF NOT ALREADY FILLED.

REMOVE & DISPOSE OF EXISTING PIPE IN APPROXIMATE LIMITS SHOWN

DMH ASSUMED LOCATION AND INVERTS– CONTRACTOR NEEDS TO FIELD VERIFY APPROX. RIM: 464.0± (ASSUMED) 12" HDPE INVS. IN (E&W): 455.7± (ASSUMED) 18" HDPE INV. OUT: 455.7± (ASSUMED)

PIPE D – APPROX 18"ø HDPE

EXISTING PIPE TO BE FILLED WITH PRESSURE GROUT UP TO END CAP

DMH–GMPS3 ASSUMED LOCATION AND INVERTS– CONTRACTOR NEEDS TO FIELD VERIFY RIM: 464.0± (ASSUMED) 24" CMP INV. IN (NW): 443.8 (ASSUMED) (TO BE CONFIRMED PREVIOUSLY GROUTED) 18" HDPE INV. IN (N): 454.7± (ASSUMED) 36" CMP INV. IN (E): 443.4± (ASSUMED) 42" CMP INV OUT: 443.3± (ASSUMED) STA:≈104+65.7±

PIPE CAP

EXISTING MANHOLE TO BE FILLED WITH PRESSURE GROUT. REMOVE & DISPOSE OF FRAME & COVER.

EXISTING PIPE TO BE FILLED WITH PRESSURE GROUT UP TO END CAP

REMOVE & DISPOSE OF EXISTING DMH

ELECTRICAL BOXES

PAVED AREA

CB RIM 499.6'

CB RIM 495.1'

DMH RIM: 495.0 12" SDR INV. IN: 487.3± INV. IN: 480.7± INV. OUT: 479.6±

CB RIM 483.5 INV. OUT: 475.5±

DMH RIM: 485.2 (2 VERT. SDR PIPES 25' TO BOTTOM)

REDI–ROCK WALL APPROX. LIMITS

CB RIM 467.9' 12" HDPE INV. IN: 466.4± 12" HDPE INV. OUT: 463.4±

POTENTIAL EXISTING DRAIN MANHOLE (BURIED) W/ INLET PIPE FROM UNKNOWN SOURCE

CB RIM 492.5'

8" HDPE

CONCRETE SIDEWALK

PAVED SIDEWALK

GATE

DMH RIM: 486.9 INV'S. IN: 472.5± INV. OUT: 472.3±

CB RIM 477.3 INV. OUT: 469.5±

CB RIM 466.5± INV. OUT: 460.2±

REMOVE & DISPOSE OF EXISTING CATCH BASIN

CB RIM 487.0

DMH A RIM: 472.45 30" INV IN.: 466.75± 30" INV. OUT: 466.65±

REMOVE & DISPOSE OF EXISTING PIPE

DMH REMOVE AND DISPOSE OF STRUCTURE.

EXISTING PIPES TO BE PARTIALLY REMOVED AND CAPPED AS SHOWN

CB RIM 470.8 INV. OUT: 466.4±

DMH RIM 472.5 INV'S.: 464.5±

VORTECHNICS UNIT RIM: 472.1

DMH RIM: 472.1 INV. IN (V–NOTCH): 465.8± 18" HDPE INV. OUT: 464.0±

REMOVE & DISPOSE OF EXISTING PIPE

REMOVE AND DISPOSE OF PAVEMENT

DMH–GMPS2 RIM: 472.25 36" INV. IN (E): 451.55± 30" INV. IN (N): 457.75± 36" INV. OUT: 451.45±

EXISTING PIPE TO BE EXTENDED

18"ø HDPE INV. OUT 462.4

REMOVE & DISPOSE OF EXISTING PIPES

REMOVE & DISPOSE OF EXISTING CATCH

CB (GMPS1) RIM: 459.45 48"ø INV. IN: 453.45± 36"ø INV. OUT: 453.45±

PIPE SIZE TRANSITION FROM 36" TO 48"

SANITARY MH2 RIM: 473.8 8" PVC INV. IN: 468.6± 8" PVC INV. OUT: 459.3±

REMOVE & DISPOSE OF EXISTING PIPE(S)

APPROXIMATE BOUNDARY

DMH B RIM: 466.6 INV. IN: 460.6± INV. OUT: 460.4±

6" PVC PIPE (MONITORING) UP 40"

SANITARY MH#13 RIM: 464.5 20"ø DI INV. IN (S): 459.3± 10"ø DI INV. IN (E): 455.2± 20"ø DI INV. OUT: 455.2±

SANITARY MH3 RIM: 466.2 10"ø PVC INV. IN (E): 458.2± 8"ø PVC INV. IN (N): 458.1± 20"ø D.I. INV. OUT: 458.0±

8" PVC PIPE (MONITORING) UP 18"

CB RIM: 471.1 36" INV. IN: 462.3± 36" INV. OUT: 461.6± (COVERED BY CONCRETE RISER/DEBRIS)

SANITARY MH1 RIM: 493.5

CB RIM: 492.8 36"ø INV. IN: 485.6± 36"ø INV. OUT: 485.6±

SANITARY MH#13A RIM: 486.5 10"ø PVC INV. OUT: 466.6±

TOP BANK

STREAM

WETLAND

CONCRETE HEADWALL

42"ø HDPE INV. OUT 426.5'

CUT AND REMOVE END OF EXIST. WINGWALL

PER REFERENCE 3 @ 15.7 FT FROM OUTLET JOINT OFFSET LARGE (TRANSITION FROM HDPE TO CMP)

TOWN OF HANOVER 25' WETLAND BUFFER

12"ø HDPE INV. OUT 439.0'

SMH#9 RIM: 440.4

CONCRETE HEADWALL

12"ø HDPE INV. IN 441.6'

SMH#9 INVERT BASED ON PARK STREET INTERCEPTOR AS–BUILT DRAWINGS DATED 8/81 (238.85' LENGTH AND 3.4% SLOPE MH#10–MH#9) INV. IN/OUT: 434.9±

TOWN OF HANOVER 75' WETLAND BUFFER

EXISTING SANITARY SEWER (TYP.)

GRAVEL DRIVE

MAINTENANCE BUILDING

6" PVC PIPE INSTALLED BY TOWN WINTER 2018–2019 INV. OUT 457.8 TO BE REMOVED AND DISPOSED OF

PIPE TO BE REMOVED AND DISPOSED OF

42"ø HDPE

42"ø CMP

PIPE C – APPROX

15"ø CMP

PIPE E – APPROX

SMH#10 APROX LOCATION, RIM, AND INVERTS BASED ON PARK STREET INTERCEPTOR AS–BUILT DRAWINGS DATED 8/81 (132.55' LENGTH AND 3.2% SLOPE MH#11–MH#10 AND 238.85' LENGTH MH#10–MH#9) INV. IN/OUT: 443.0±

EXISTING PIPE TO BE FILLED WITH PRESSURE GROUT UP TO END CAP

T.B.M. NO. 99 MARK ON SCORE BOARD ELEV. 467.39'

48" HDPE PREVIOUSLY INSTALLED BY THE TOWN OF HANOVER DEPARTMENT OF PUBLIC WORKS BELOW THE FIELD (APPROXIMATE LIMITS)

SMH#12 APROX LOCATION, RIM, AND INVERTS BASED ON PARK STREET INTERCEPTOR AS–BUILT DRAWINGS DATED 8/81 (161.6' LENGTH AND 1.8% SLOPE MH#13–MH#12) INV. IN/OUT: 452.3±

APPROXIMATE LOCATION OF ELECTRICAL CONDUITS

LIGHT POLE

EXISTING PIPE TO BE PARTIALLY REMOVED AND CAPPED AS SHOWN

15"ø CMP INV. IN 455.2

REMOVE AND DISPOSE OF EXISTING HEADWALL

SMH#11 APROX LOCATION, RIM, AND INVERTS BASED ON PARK STREET INTERCEPTOR AS–BUILT DRAWINGS DATED 8/81 (239.5' LENGTH AND 2.1% SLOPE MH#12–MH#11) INV. IN/OUT: 447.3±

FOR BIDDING ONLY

0 30 60 90 120 150

IN FEET

STATE OF NEW HAMPSHIRE – KEVIN P. STETSON No. 11784 LICENSED PROFESSIONAL ENGINEER

4-12-19

STATE OF NEW HAMPSHIRE – RODRICK J. FINLEY No. 7466 LICENSED PROFESSIONAL ENGINEER

REVISION NO.	DATE	DESCRIPTION	MADE BY	CHECKED BY	APPROVED BY

EXISTING CONDITIONS AND DEMOILTION/ABANDONMENT PLAN FOR

HANOVER HIGH SCHOOL TURF FIELD DRAINAGE IMPROVEMENTS

LEBANON STREET – HANOVER, NEW HAMPSHIRE

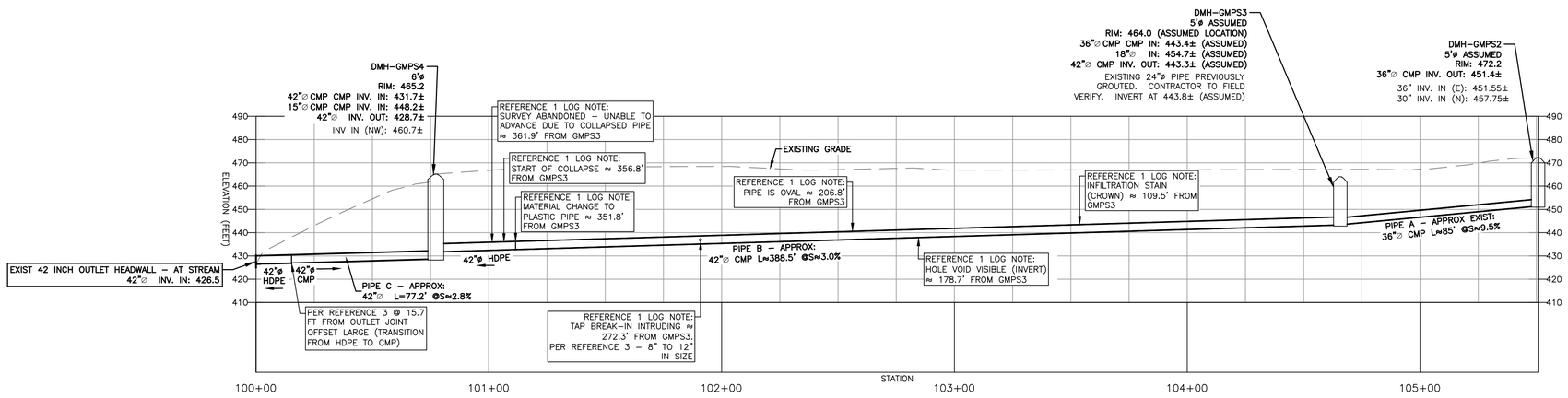
SANBORN, HEAD & ASSOCIATES, INC.
187 SAINT PAUL STREET, SUITE 4–C
BURLINGTON, VERMONT 05401
(802) 391–8520

PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448–2200

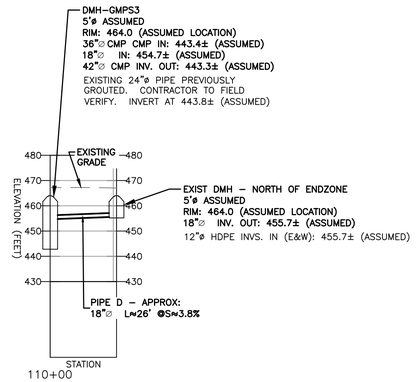
SCALE:	AS SHOWN
DESIGNED BY:	RJF/ID
DRAWN BY:	CRM/DPM
CHECKED BY:	RJF/SK
DATE:	04/12/19
PROJ. NO.	10021

4

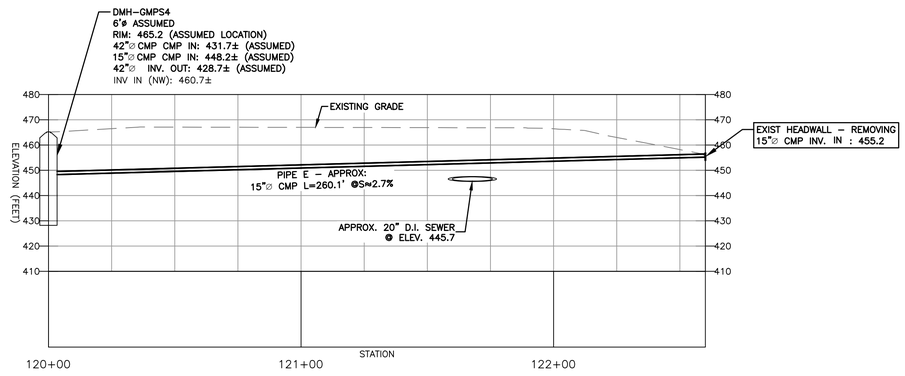
NOTE: ALL PIPE LENGTHS GIVEN FROM/TO CENTER OF STRUCTURES.



DRAIN PROFILE – STA. 100+00 TO STA. 105+51
SCALE: 1"=30' – HORIZONTAL
1"=30' – VERTICAL



DRAIN PROFILE – STA. 110+00 TO STA. 110+26
SCALE: 1"=30' – HORIZONTAL
1"=30' – VERTICAL



DRAIN PROFILE – STA. 120+00 TO STA. 122+60
SCALE: 1"=30' – HORIZONTAL
1"=30' – VERTICAL

FOR BIDDING ONLY

STATE OF NEW HAMPSHIRE – KEVIN P. STETSON No. 11784 LICENSED PROFESSIONAL ENGINEER
4-12-19

STATE OF NEW HAMPSHIRE – RODRICK J. FINLEY No. 7466 LICENSED PROFESSIONAL ENGINEER

REVISION NO.	DATE	DESCRIPTION	MADE BY	CHECKED BY	APPROVED BY

EXISTING DRAINAGE PROFILES FOR
HANOVER HIGH SCHOOL TURF FIELD DRAINAGE IMPROVEMENTS
LEBANON STREET – HANOVER, NEW HAMPSHIRE

SANBORN, HEAD & ASSOCIATES, INC.
187 SAINT PAUL STREET, SUITE 4-C
BURLINGTON, VERMONT 05401
(802) 391-8520

PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448-2200

SCALE: AS SHOWN	
DESIGNED BY: RJF/ID	
DRAWN BY: CRM/DPM	
CHECKED BY: RJF/SK	
DATE: 04/12/19	
PROJ. NO. 10021	SHEET 5 OF 10

5

NEW HAMPSHIRE STATE PLANE

PROPOSED PIPE 12
15" HDPE 14' @6.0%
INVERT OUT: 461.2

EXISTING STRUCTURE TO REMAIN. NEW INVERT OUT. PLUG INVERT OF PIPE REMOVED WITH BRICK AND NON-SHRINK GROUT.

PROPOSED STONE MASONRY HEADWALL 5
15"⌀ INV. IN: 460.2

STONE DISCHARGE APRON

PERMANENT STONE CHECK DAMS

TIE PROPOSED PIPE 8 INTO REMAINING PORTION OF EXISTING 15" PIPE. CONTRACTOR TO PERFORM EXPLORATORY EXCAVATION TO VERIFY EXISTING INVERT ELEVATION PRIOR TO ORDERING CB1. MINIMUM SLOPE TO CB1 SHALL BE 1.0%. PIPE 9 UPSTREAM INVERT @CB1, DOWNSTREAM INVERT AT DMH-M2, AND SLOPE MAY NEED TO BE ADJUSTED AS RESULT.

PROPOSED PIPE 8
12" HDPE ≈ 86' @ ≈1.0%±

PROPOSED CB1
4'⌀
RIM: 466.5
12" INV. IN: 462.3
15" INV. OUT: 462.2

PROPOSED DMH-M4
6'⌀
RIM: 451.2
48" RCP INV. IN: 442.5
48" RCP INV. OUT:431.6

CONTRACTOR TO PERFORM EXPLORATORY EXCAVATION TO VERIFY EXISTING SANITARY SEWER ELEVATION PRIOR TO ORDERING DMH-M3 AND DMH-M4.

PIPE DAM

PIPE 4
48" HDPE @ 0.3%
PREVIOUSLY INSTALLED BY THE TOWN OF HANOVER DEPARTMENT OF PUBLIC WORKS BELOW THE FIELD (APPROXIMATE LIMITS)

INSTALL NORTH AMERICAN GREEN SC150 ON SLOPE FOLLOWING SEEDING

PROPOSED PIPE 9
15"⌀ HDPE L=119' @S=1.0%

PROPOSED PIPE 6
48" RCP 35' @S=13.2%
INVERT OUT: 427.0

T.B.M. NO. 99
MARK ON SCORE BOARD
ELEV. 467.39'

EXTEND PIPE 4
48" HDPE @ 0.3% TO PROPOSED DMH-M2

PROPOSED PIPE 10
15" 21' @S=1.4%

PROPOSED DMH-M3
6'⌀
RIM: 464.0
48" INV. IN: 458.7
15" INV. IN: 452.5
48" RCP INV. OUT:452.0

PIPE DAM

PROPOSED PIPE 11B
15" HDPE 122' @1.2%

PROPOSED PIPE 11C
15" HDPE 20' @S=1.2%
INV. IN: 452.77

EXTEND PIPE 4
48" HDPE @0.3% TO PROPOSED DMH-M3

PROPOSED PIPE 11A
15" HDPE 77' @S=1.3%
INV. IN: 455.20

PROPOSED STONE MASONRY HEADWALL 3
15"⌀ INV. IN: 455.2

EXIST DMH B
TO REMAIN W/ NEW INV. OUT
RIM: 466.6
15" INV. OUT:460.4

PROPOSED DMH-M2
8'⌀
RIM: 468.0
15" INV. IN: 461.0
15" INV. IN: 460.1
30" INV. IN: 461.0
48" INV. IN: 460.1
48" INV. OUT:460.0

PROPOSED PIPE 3
HDPE L=64' @26.5%

PROPOSED PIPE 2
48" HDPE 58' @1.0%

PROPOSED FILL AREA

PROPOSED PIPE 7
15" HDPE 30' @1.0%

EXIST DMH A
TO REMAIN W/ NEW INV. OUT
RIM: 473.8
30" INV. OUT:466.6

REPLACE GRAVELS AND PAVEMENT FOLLOWING COMPLETION OF DRAINAGE WORK

EXTEND EXISTING 18" HDPE PIPE TO NEW DMH-M1

PROPOSED DMH-M1 (REPLACE CB)
8'⌀
RIM: 467.6
18" INV. IN: 462.2
36" INV. IN: 460.9
15" INV. IN: 460.7
48" INV. OUT:460.7

PROPOSED PIPE 1
36" HDPE 143' @0.5%

PROPOSED STONE MASONRY HEADWALL 1

EXISTING STRUCTURE TO REMAIN. REMOVE EXIST. DAMAGED CONCRETE RISER, FRAME, AND GRATE. ADD NEW RISER W/ FRAME & GRATE TO GRADE.

EXIST CB-A
TO REMAIN W/ NEW INV. OUT
RIM: 471.1
36" INV. IN: 462.3
36" INV. OUT:461.6

APPROXIMATE BOUNDARY

CONCRETE CURB

EXISTING TURF FIELD

CONCRETE SIDEWALK

PAVED SIDEWALK

ELECTRICAL LINES

APPROXIMATE LOCATION OF ELECTRICAL CONDUITS

LIGHT POLE

PAVED AREA

GATE

VORTECHNICS UNIT
RIM: 472.1

DMH
RIM: 472.1
INV. IN (V-NOTCH): 465.8±
18" HDPE INV. OUT: 464.0±

DMH
RIM: 472.5
INV'S.: 464.5±

CB
RIM 470.8
INV. OUT: 466.4±

DMH A
RIM: 472.45
30" INV IN.: 466.75±
30" INV. OUT: 466.65±

CB
RIM 487.0

DMH
RIM: 486.9
INV'S. IN: 472.5±
INV. OUT: 472.3±

CB
RIM 477.3
INV. OUT: 469.5±

CB
RIM 492.5'

CB
RIM 495.1'

DMH
RIM: 495.0
12" SDR INV. IN: 487.3±
INV. IN: 480.7±
INV. OUT: 479.6±

CB
RIM 483.5
INV. OUT: 475.5±

DMH
RIM: 485.2 (2 VERT. SDR PIPES 25' TO BOTTOM)

CB
RIM 487.0'

REDI-ROCK WALL APPROX. LIMITS

12" HDPE INV. IN: 466.4±
12" HDPE INV. OUT: 463.4±

CB
RIM 469.9'

CB
RIM 469.7

DMH
RIM 466.6'
NW INV. IN: 463.6±
N INV IN: 461.1±
INV. OUT: 461.2±

SMH#10
APROX LOCATION, RIM, AND INVERTS BASED ON PARK STREET INTERCEPTOR AS-BUILT DRAWINGS DATED 8/81 (132.55' LENGTH MH#11-MH#10 AND 8/81 MH#10-MH#9) 1.0±

SMH#12
APROX LOCATION, RIM, AND INVERTS BASED ON PARK STREET INTERCEPTOR AS-BUILT DRAWINGS DATED 8/81 (161.6' LENGTH AND 1.8% SLOPE MH#13-MH#12) INV. IN/OUT: 452.3±

SMH#11
APROX LOCATION, RIM, AND INVERTS BASED ON PARK STREET INTERCEPTOR AS-BUILT DRAWINGS DATED 8/81 (239.5' LENGTH AND 2.1% SLOPE MH#12-MH#11) INV. IN/OUT: 447.3±

SMH#9
RIM 440.4

SMH#9 INVERT BASED ON PARK STREET INTERCEPTOR AS-BUILT DRAWINGS DATED 8/81 (238.85' LENGTH AND 3.4% SLOPE MH#10-MH#9) INV. IN/OUT: 434.9±

12"⌀ HDPE INV. OUT 429.0

CONCRETE HEADWALL

12"⌀ HDPE INV. IN 441.0

EXISTING SANITARY SEWER (TYP.)

TOWN OF HANOVER 25' WETLAND BUFFER

TOWN OF HANOVER 75' WETLAND BUFFER

WETLAND

STREAM

TOP BANK

ECS

B-2A
B-2

SANITARY MH2
RIM: 473.8
8" PVC INV. IN: 468.6±
8" PVC INV. OUT: 459.3±

SANITARY MH1
RIM: 493.5

36" CMP

CB
RIM: 492.8
36"⌀ INV. IN: 485.6±
36"⌀ INV. OUT: 485.6±

SANITARY MH13
RIM: 486.5
10"⌀ PVC INV. OUT: 466.6±

SANITARY MH13
RIM: 464.5
20"⌀ DI INV. IN (S): 459.3±
10"⌀ DI INV. IN (E): 455.2±
20"⌀ DI INV. OUT: 455.2±

SANITARY MH3
RIM: 466.2
10"⌀ PVC INV. IN (E): 458.2±
8"⌀ PVC INV. IN (N): 458.1±
20"⌀ D.I. INV. OUT: 458.0±

6" PVC PIPE (MONITORING) UP 40"

8" PVC PIPE (MONITORING) UP 18"

EXISTING HEADWALL

NHDOT CLASS B STONE

ENERGY DISSIPATER. SEE DETAIL.

REPLENISH EXISTING STREAM RIPRAP W/ NHDOT CLASS B STONE.

FORTIFY W/ NHDOT CLASS B STONE.

BOULDER RETAINING WALL.

CONCRETE HEADWALL. TO BE DESIGNED BY OTHERS.

PIPE OUTLET BLOW-UP

0 10 20
IN FEET

FOR BIDDING ONLY

RODRICK J. FINLEY No. 7466 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

0 30 60 90 120 150
IN FEET

REVISION NO.	DATE	DESCRIPTION	MADE BY	CHECKED BY	APPROVED BY

SITE LAYOUT PLAN FOR

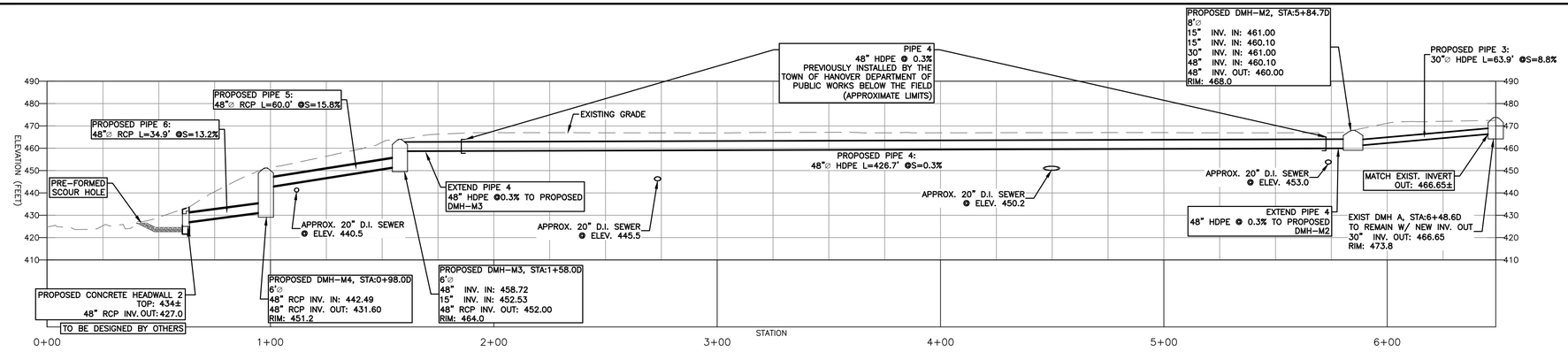
HANOVER HIGH SCHOOL
TURF FIELD DRAINAGE IMPROVEMENTS

LEBANON STREET – HANOVER, NEW HAMPSHIRE

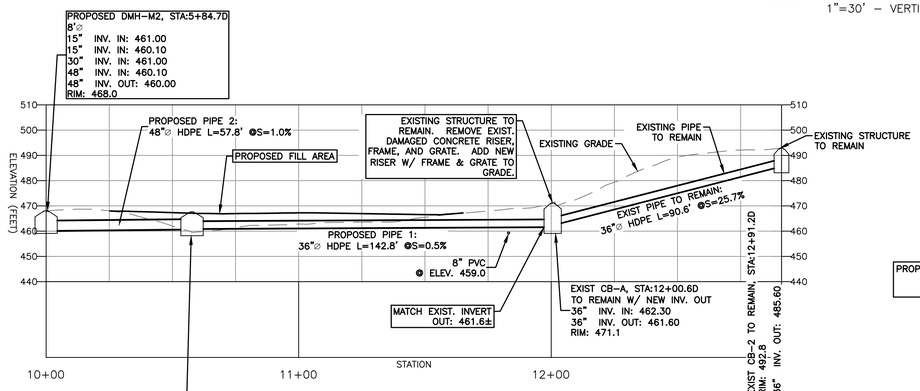
PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448-2200

SCALE: AS SHOWN	6
DESIGNED BY: RJF	
DRAWN BY: DPM	
CHECKED BY: RJF	
DATE: 04/12/19	
PROJ. NO. 10021	SHEET 6 OF 10

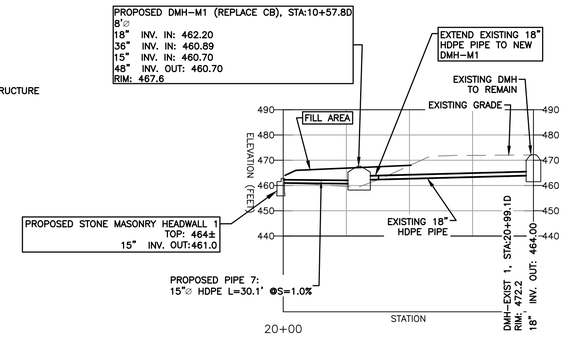
NOTE: ALL PIPE LENGTHS GIVEN FROM/TO CENTER OF STRUCTURES.



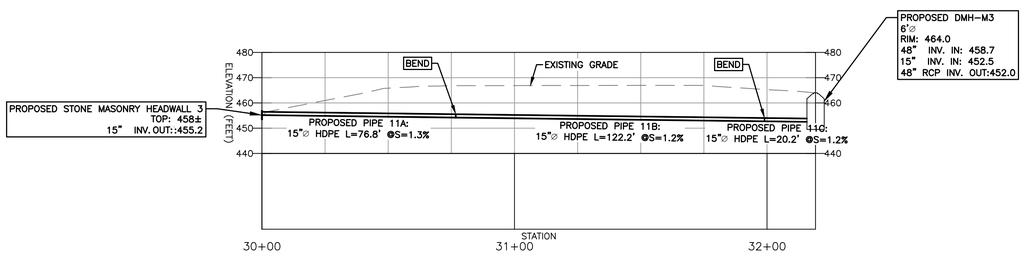
DRAIN PROFILE – STA. 0+00 TO STA. 6+49
SCALE: 1"=30' – HORIZONTAL
1"=30' – VERTICAL



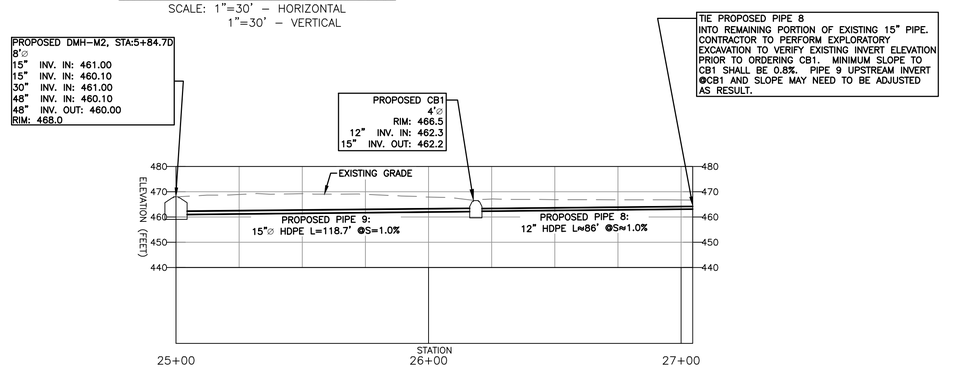
DRAIN PROFILE – STA. 10+00 TO STA. 12+91
SCALE: 1"=30' – HORIZONTAL
1"=30' – VERTICAL



DRAIN PROFILE – STA. 20+00 TO STA. 20+99
SCALE: 1"=30' – HORIZONTAL
1"=30' – VERTICAL



DRAIN PROFILE – STA. 30+00 TO STA. 32+19
SCALE: 1"=30' – HORIZONTAL
1"=30' – VERTICAL



DRAIN PROFILE – STA. 25+00 TO STA. 27+05
SCALE: 1"=30' – HORIZONTAL
1"=30' – VERTICAL

FOR BIDDING ONLY

0 30 60 90 120 150
IN FEET

STATE OF NEW HAMPSHIRE – RODRICK J. FINLEY No. 7466 LICENSED PROFESSIONAL ENGINEER

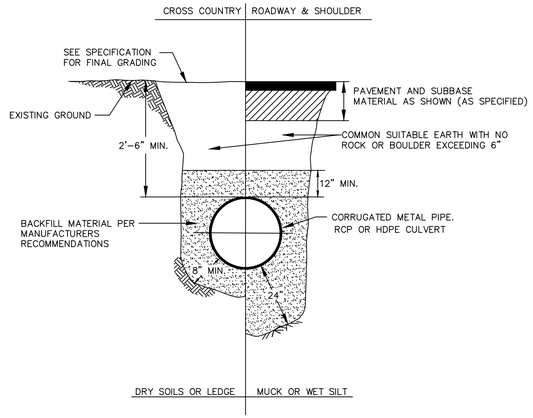
REVISION NO.	DATE	DESCRIPTION	MADE BY	CHECKED BY	APPROVED BY

PROPOSED STORM SEWER PROFILES FOR
HANOVER HIGH SCHOOL
TURF FIELD DRAINAGE IMPROVEMENTS
LEBANON STREET – HANOVER, NEW HAMPSHIRE

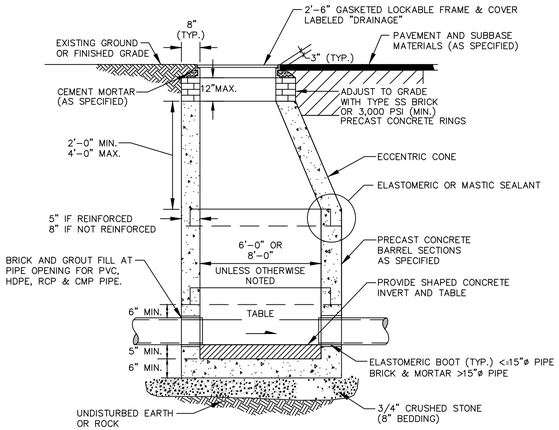
PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448–2200

SCALE: AS SHOWN	
DESIGNED BY: RJF	
DRAWN BY: DPM	
CHECKED BY: RJF	
DATE: 04/12/19	
PROJ. NO. 10021	SHEET 7 OF 10

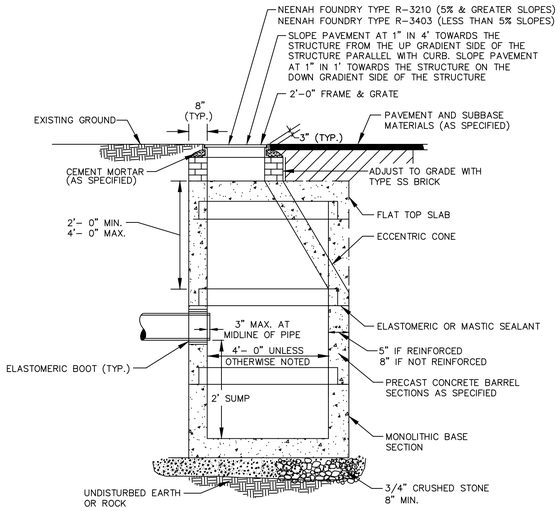
7



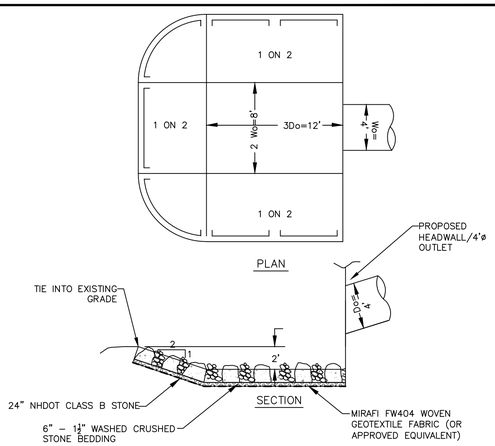
1 DRAINAGE TRENCH
N.T.S.



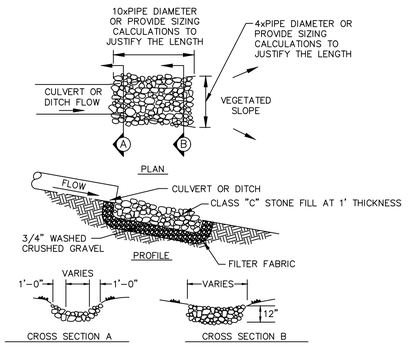
2 DRAINAGE MANHOLE
N.T.S.



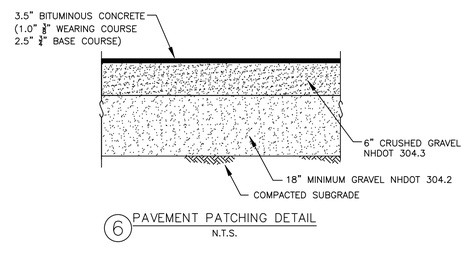
3 PRECAST CONCRETE CATCH BASIN
N.T.S.



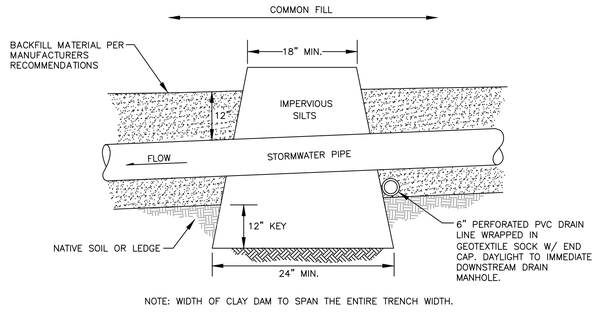
4 PREFORMED SCOUR HOLE
N.T.S.



5 STONE DISCHARGE APRON FOR PIPES 24"ø OR LESS
N.T.S.

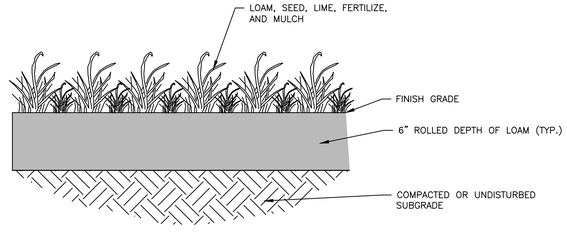


6 PAVEMENT PATCHING DETAIL
N.T.S.

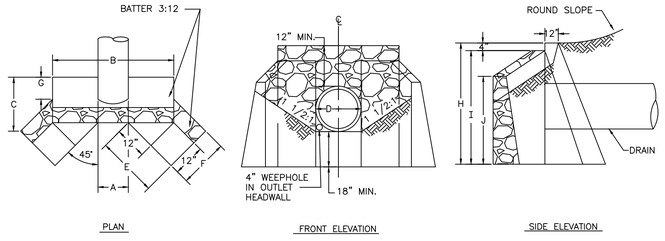


NOTE: WIDTH OF CLAY DAM TO SPAN THE ENTIRE TRENCH WIDTH.

7 PIPE DAM DETAIL
N.T.S.

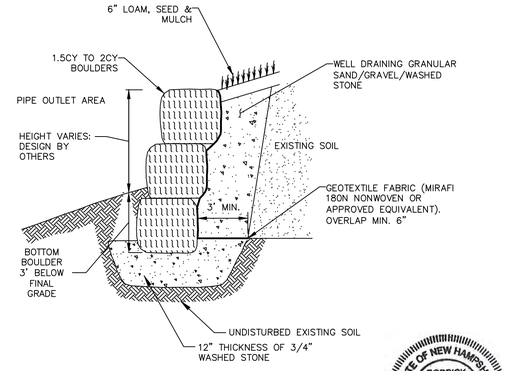


8 LOAM & SEED DETAIL
N.T.S.



DIA. ø INCHES	DIMENSIONS								
	A	B	C	E	F	G	H	I	J
12"	1'-3"	4'-0"	2'-2"	2'-4"	1'-10"	0'-7"	4'-0"	3'-8"	3'-0"
15"	1'-6"	4'-3"	2'-2"	2'-4"	1'-10"	0'-7"	4'-0"	3'-8"	3'-0"
18"	1'-9"	4'-6"	2'-2"	2'-4"	1'-10"	0'-7"	4'-0"	3'-8"	3'-0"
36"	3'-3"	6'-1"	2'-5"	3'-7"	2'-0"	0'-6"	5'-6"	5'-0"	4'-1"

9 STONE MASONRY HEADWALL DETAILS
N.T.S.



10 BOULDER RETAINING WALL
N.T.S.

FOR BIDDING ONLY

RODRICK J. FINLEY No. 7466 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

REVISION NO.	DATE	DESCRIPTION	MADE BY	CHECKED BY	APPROVED BY

DRAINAGE DETAILS FOR
HANOVER HIGH SCHOOL
TURF FIELD DRAINAGE IMPROVEMENTS
LEBANON STREET – HANOVER, NEW HAMPSHIRE

PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448-2200

SCALE: 1"= AS SHOWN	
DESIGNED BY: RJF	
DRAWN BY: DPM	
CHECKED BY: RJF	
DATE: 04/12/19	
PROJ. NO. 10021	SHEET 8 OF 10

8

EROSION CONTROL SPECIFICATIONS

1. SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH "NEW HAMPSHIRE STORMWATER MANAGEMENT", VOLUMES 1, 2, & 3, DECEMBER 2008 (OR LATEST EDITION). THE CONTRACTOR SHALL HAVE REFERENCE TO THESE PUBLICATIONS.
2. IMMEDIATE ATTENTION TO EROSION CONTROL PRACTICES DRAMATICALLY IMPROVES SOIL AND MOISTURE CONSERVATION AND REDUCES NEGATIVE IMPACTS ON WATER QUALITY. THE CONTRACTOR SHALL GIVE PRIORITY TO THE TIMELY INSTALLATION OF BOTH TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES.
3. THE EROSION AND SEDIMENT CONTROL PRACTICES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIRED FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE PRACTICES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS.
4. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT SHALL NOT EXCEED 5 ACRES AT ANY ONE TIME BEFORE STABILIZATION. A CONSTRUCTION SEQUENCE HAS BEEN DEVELOPED TO FACILITATE INSTALLATION OF EROSION CONTROL MEASURES AND THE COMPLETION OF GRADING, SEEDING, AND LANDSCAPING AS SOON AS POSSIBLE WITHIN A DISTURBED AREA.
5. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH MOVING OPERATIONS.
6. ALL PONDS AND SWALES SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE (PRIOR TO ROUGH GRADING THE SITE).
7. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THE PLANS SHALL BE CLEARLY FLAGGED BY SURVEY TAPE OR FENCING, IF REQUIRED, PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE CLEARING LIMITS SHALL BE PERMITTED. THE CLEARING LIMITS SHALL BE MAINTAINED FOR THE DURATION OF CONSTRUCTION.
8. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES, SUCH AS CONSTRUCTED WHEEL WASH SYSTEMS OR WASH PADS, MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN AND TRACK OUT TO ROAD RIGHT OF WAY DOES NOT OCCUR FOR THE DURATION OF THE PROJECT. ANY SEDIMENT TRACKED ONTO PAVED AREAS SHALL BE REMOVED BY THE END OF THE SAME WORK DAY IT IS NOTED, AND IF NOTED ON A NON-WORK DAY, NOT LATER THAN THE END OF THE NEXT WORK DAY.
9. EARTH STOCKPILES SHALL BE SEEDED AND MULCHED AND HAVE A SILT FENCE INSTALLED ON THE DOWNSLOPE SIDE, AT A MINIMUM. STOCKPILES SHALL BE COVERED WITH IMPERVIOUS TARPS AND/OR STABILIZED WITH TEMPORARY SEED AND MULCH TO PROTECT MATERIALS IN THE EVENT THAT THEY WILL REMAIN FOR LONGER THAN 1 MONTH.
10. INSTALL EROSION CONTROL MEASURES AS SHOWN. CLEAN ACCUMULATED SEDIMENT AS NECESSARY. LEAVE IN PLACE UNTIL DISTURBED AREAS HAVE BEEN ADEQUATELY STABILIZED. DISTURBED AREAS RESULTING FROM SILT FENCE REMOVAL SHALL BE PERMANENTLY SEEDED.
11. CUT AND FILL SLOPES CALL FOR INTENSIVE EROSION CONTROL MEASURES. INSTALL EROSION CONTROL BLANKET AS SHOWN ON ALL SLOPES 3:1 (1 RISE ON 3 RUN) AND STEEPER. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF THEIR CONSTRUCTION.
12. ALL DISTURBED AREAS SHALL HAVE TOPSOIL SPREAD (4" MINIMUM) AND BE LIMED, FERTILIZED, TILLED, SEEDED AND MULCHED (WITH ANCHORED BLANKET IF REQUIRED) WITHIN 72 HOURS OF FINAL GRADING. WHEN PERMANENT SEEDING CANNOT BE INSTALLED BY SEPTEMBER 15, TEMPORARY SEEDING AND MULCHING OF ALL DISTURBED AREAS SHALL BE INSTALLED IMMEDIATELY AND MAINTAINED IN THAT CONDITION UNTIL PERMANENT MEASURES CAN BE INSTALLED IN THE FOLLOWING PLANTING SEASON.
13. ROADWAYS/PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
14. WHEN WORK IS SUSPENDED WITHIN THE GROWING SEASON, ALL DISTURBED AREAS SHALL BE TEMPORARILY STABILIZED WITH SEED AND MULCH WITHIN 14 DAYS. OUTSIDE THE GROWING SEASON, ALL DISTURBED AREAS SHALL BE TEMPORARILY STABILIZED WITH MULCH; MULCH AND TACK ON SLOPES STEEPER THAN 3:1; OR EROSION MATTING ON SLOPES STEEPER THAN 2:1 AND MAINTAINED IN THAT CONDITION UNTIL PERMANENT MEASURES CAN BE INSTALLED IN THE FOLLOWING PLANTING SEASON.
15. TEMPORARY STABILIZATION OF DISTURBED AREAS:

SEED BED PREPARATION:	TILL THREE INCHES DEEP MIXING IN FERTILIZER. APPLY 2 TONS/ACRE (100#/1,000 SQ. FT.)
FERTILIZE:	UNIFORMLY APPLY NOT LESS THAN 300#/ACRE (7#/1,000 SQ. FT.) OF 10-20-20 OR EQUIVALENT.
SEEDING:	SELECT APPROPRIATE SEEDING MIXTURE FROM TABLE 1 BELOW. SPREAD SEED UNIFORMLY. FIRM SOIL BY ROLLING OR PACKING; IF NOT FEASIBLE, THEN RAKE LIGHTLY TO COVER SEEDS.
MULCHING:	MULCH ALL DISTURBED AREAS WITH 1-½ TO 2 TONS OF HAY OR STRAW PER ACRE (70-90#/1,000 SQ. FT.). ANCHOR ON ALL SLOPES 3:1 OR STEEPER AND ON SLOPES SUBJECT TO WASH OR WIND BLOWN CONDITIONS. JUTE OR OTHER BIODEGRADABLE BLANKET, STAKING AND STABLING MAY BE REQUIRED.

TABLE 1
PLANT SELECTION AND SEEDING RATES

SPECIES	PER ACRE	PER 1,000 SQ.FT.	REMARKS
WINTER RYE	2 BU OR 112 LBS.	2.5 LBS.	BEST FOR FALL SEEDING. SEED AUGUST 15 TO SEPTEMBER 15 FOR BEST COVER. SEED TO DEPTH OF ONE INCH.
OATS	2 1/2 BU OR 80 LBS.	2 LBS.	BEST FOR SPRING SEEDINGS. LATER THAN MAY 15 FOR SUMMER PROTECTION. SEED TO DEPTH OF ONE INCH.
ANNUAL RYE	40 LBS.	1 LB.	GROWS QUICKLY, BUT IS OF SHORT GRASS DURATION. USE WHERE APPEARANCES ARE IMPORTANT. COVER SEED WITH NO MORE THAN 1/4 INCH OF SOIL. WITH MULCH. SEEDING MAY BE DONE THROUGHOUT GROWING SEASON. OTHERWISE SEED EARLY SPRING OR BETWEEN AUGUST 15 & SEPTEMBER 15.

16. PERMANENT STABILIZATION OF DISTURBED AREAS:

SEED BED PREPARATION:	TOPSOIL (SANDY LOAM, LOAM, OR SILT LOAM), FRIABLE, FREE OF STUMPS, WOOD, AND ROOTS. STONES MORE THAN 1-½ INCHES IN DIAMETER OR LENGTH SHALL BE PLACED OVER ALL DISTURBED AREAS IN A 4" (MINIMUM) THICK LAYER. TOPSOIL SHALL BE FREE OF HERBICIDES AND TOXIC MATERIALS. TILL THREE INCHES DEEP, MIXING IN THE FERTILIZER AND LIME.
FERTILIZE:	UNIFORMLY APPLY NOT LESS THAN 500#/ACRE (12#/1,000 SQ. FT.) OF 10-20-20 OR EQUIVALENT.
SEEDING:	SPREAD SEED UNIFORMLY. FIRM SOIL BY ROLLING OR PACKING; IF NOT FEASIBLE, THEN RAKE LIGHTLY TO COVER SEEDS.
MULCHING:	MULCH ALL DISTURBED AREAS WITH 1-½ TO 2 TONS OF HAY OR STRAW PER ACRE (70-90#/1,000 SQ. FT.). ANCHOR ON ALL SLOPES 3:1 OR STEEPER AND ON SLOPES SUBJECT TO WASH OR WIND BLOWN CONDITIONS. JUTE OR OTHER BIODEGRADABLE BLANKET, STAKING AND STABLING MAY BE REQUIRED.

GRASS MATERIALS (SHADY GENERAL LAWN MIX)

GRASS SEED SHALL BE FRESH, CLEAN, NEW-CROP SEED AND SHALL MEET THE PROVISIONS OF THE NEW HAMPSHIRE AGRICULTURAL AND VEGETABLE SEEDS LAW. SEED SPECIFIED IN THIS SECTION SHALL MEET THE FOLLOWING ANALYSIS:

	LBS/ACRE
CHEWING FESCUE 'SR 5000'	40
CHAMPION PERENNIAL RYE GRASS	30
HARD FESCUE 'SR 3000'	25
RED FESCUE - 'PENNLAWN'	25
BLUEGRASS - 'GLADE'	10
	130 LBS/ACRE

OTHER SEED MIXTURES AND SEEDING RATES AS RECOMMENDED BY THE USDA - SOIL CONSERVATION SERVICE AND APPROVED BY OWNER MAY BE UTILIZED ONLY UPON PRIOR WRITTEN PERMISSION FROM THE ENGINEER.

17. SEEDING MIXTURES FOR GRASSED SWALES AS SPECIFIED BY THE USDA SOIL CONSERVATION SERVICE, WOODSVILLE, N.H. ARE:

SEEDING RATES

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 SQ.FT.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95

18. MAINTENANCE: DURING THE CONSTRUCTION PERIOD UNTIL SUCH TIME AS LONG TERM VEGETATION IS ESTABLISHED.
    A. DISTURBED AREAS WILL BE FERTILIZED AND RESEEDED.
    B. CATCH BASINS WILL BE CHECKED AND CLEANED AS NECESSARY.
    C. DRAINAGE AND GRASS TREATMENT SWALES SHALL BE CHECKED FREQUENTLY AND CLEANED AS REQUIRED.
    D. THE SILT FENCES WILL BE CHECKED ON A REGULAR BASIS AND REPAIRED AS NECESSARY TO CORRECT ANY DAMAGE, DETERIORATION, AND SHORT CIRCUITING.
    E. THE BOTTOM OF SEDIMENT BASINS SHALL BE PERIODICALLY CLEANED, WITH THE SEDIMENT REMOVED TO A SECURE LOCATION.
19. SITE VISITS: THE ENGINEER SHALL BE CONTACTED ON A REGULAR BASIS TO OBSERVE THE INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL PRACTICES. REFER TO CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. EROSION CONTROL PRACTICES SHALL BE IN STRICT ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.
20. ALL PERMANENT DITCHES, SWALES AND DRAINAGE STRUCTURES SHALL BE STABILIZED USING THE VEGETATIVE AND NON-STRUCTURAL BMPS PRIOR TO DIRECTING RUNOFF TO THEM.
21. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROLS WEEKLY AND AFTER EVERY 0.25" RAINFALL. ALL DAMAGED SILT FENCES SHALL BE REPAIRED. SEDIMENT DEPOSITS SHALL BE REMOVED AS NECESSARY.
22. ONLY STRAW MULCH IS ALLOWED ON SITE. NO HAY PRODUCTS ARE TO BE UTILIZED.
23. SEDIMENT FOREBAY AND VEGETATED DRAINAGE SWALES WILL BE STABILIZED BY SODDING TO PROVIDE IMMEDIATE VEGETATIVE TREATMENT ZONE, AS NOTED ON DRAWINGS.
24. SITE CONSTRUCTION ACTIVITY WILL BE COVERED BY A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARED BY OWNER'S ENGINEER PRIOR TO THE START OF EACH PHASE OF SITE WORK. ONE ITEM COVERED BY THE SWPPP SHALL BE THE POLLUTION CONTROL METHODS FOR PUMPS, FUEL STATIONS, AND EQUIPMENT STORAGE.
25. STABILIZATION MEASURES MUST BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY CEASED.
26. AN AREA SHALL BE CONSIDERED PERMANENTLY STABILIZED IF ONE OF THE FOLLOWING HAS OCCURRED:
    A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
    B. A MINIMUM OF 105% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
    D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED; OR
    E. NON-VEGETATIVE COVER, SUCH AS HYDROMULCH AND EROSION CONTROL BLANKETS, RIPRAP, STONE FILL, GABIONS AND/OR GEOTEXTILES HAVE BEEN PROPERLY INSTALLED.
27. WINTER CONSTRUCTION NOTES:
    A. TEMPORARY SEEDING SHALL OCCUR PRIOR TO SEPTEMBER 15TH.
    B. ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 105% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED BLANKET, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH BLANKET SHALL OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS;
    C. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 105% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS; AND
    D. AFTER NOVEMBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.
28. FUGITIVE DUST:
    FUGITIVE DUST SHALL BE CONTROLLED IN ACCORDANCE WITH ENV-A 1002.

    SOURCES OF FUGITIVE DUST MAY INCLUDE (1) CONSTRUCTION OR RENOVATION OF BUILDINGS, BRIDGES OR OTHER STRUCTURES, INCLUDING PAVING, SWEEPING, TRENCHING, EXCAVATING, FILLING, OR OTHER ACTIVITY ASSOCIATED WITH THE BUILDING OF STREETS, ROADS, HIGHWAYS, PARKING LOTS, PUBLIC WALKWAYS, SHOPPING CENTERS, HOUSING DEVELOPMENTS, OR OTHER CENTERS OF BUSINESS OR RESIDENTIAL DEVELOPMENT; (2) DEMOLITION, INCLUDING THE TEARING DOWN OF BUILDINGS, BRIDGES, OR OTHER STRUCTURES; AND (3) OUTDOOR STORAGE AND MATERIAL STOCKPILES, INCLUDING THE UNLOADING, REDISTRIBUTION, AND MAINTENANCE OF MATERIALS.

    THE CONTRACTOR SHALL TAKE PRECAUTIONS THROUGHOUT THE DURATION OF CONSTRUCTION TO PREVENT, ABATE, AND CONTROL THE EMISSION OF FUGITIVE DUST. THIS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
    A. THE USE OF WATER OR HYDROPHILIC MATERIAL ON OPERATIONS OR SURFACES, OR BOTH;
    B. THE APPLICATION OF ASPHALT, WATER OR HYDROPHILIC MATERIAL, OR TARPS OR OTHER SUCH COVERS TO MATERIAL STOCKPILES;
    C. THE USE OF HOODS, FANS, FABRIC FILTERS, OR OTHER DEVISES TO ENCLOSE AND VENT AREAS WHERE MATERIALS PRONE TO PRODUCING FUGITIVE DUST ARE HANDLED;
    D. THE USE OF CONTAINMENT METHODS FOR SANDBLASTING OR SIMILAR OPERATIONS; AND
    E. THE USE OF VACUUMS OR OTHER SUCTION DEVICES TO COLLECT AIRBORNE PARTICULATE MATTER.
29. INVASIVE SPECIES:
    THE PROJECT SHALL BE MANAGED TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES INCLUDING THE FOLLOWING REQUIREMENTS:

    NO PERSON SHALL COLLECT, TRANSPORT, IMPORT, EXPORT, MOVE, BUY, SELL, DISTRIBUTE, PROPAGATE OR TRANSPLANT ANY LIVING AND VIABLE PORTION OF ANY PLANT SPECIES, WHICH INCLUDES ALL OF THEIR CULTIVARS AND VARIETIES, LISTED IN TABLE 3800.1 OF AGR 3800, NEW HAMPSHIRE PROHIBITED INVASIVE SPECIES LIST.

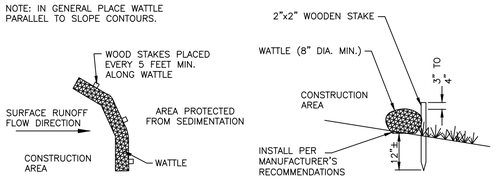
    NO PERSON SHALL COLLECT, TRANSPORT, IMPORT, EXPORT, MOVE, BUY, SELL, DISTRIBUTE, PROPAGATE OR RELEASE ANY LIVING INSECT SPECIES LISTED IN TABLE 3800.1, NEW HAMPSHIRE PROHIBITED INVASIVE SPECIES LIST.
30. ALL EROSION CONTROL BLANKETS TO BE NORTH AMERICAN GREEN (NAG) BIONET BIODEGRADABLE EROSION CONTROL BLANKETS (OR EQUIVALENT APPROVED BY OWNER'S REPRESENTATIVE). EROSION CONTROL BLANKETS AND MUST BE 100% BIODEGRADABLE (PLASTIC NETTING WILL NOT BE ALLOWED) AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

***SEE SEPARATE SWPPP NARRATIVE FOR DETAILED WORK PHASES, CONSTRUCTION SEQUENCING AND RELATED EROSION CONTROLS.

FOR BIDDING ONLY

TABLE 3800.1 NEW HAMPSHIRE PROHIBITED INVASIVE SPECIES LIST

SCIENTIFIC NAME	COMMON NAME
M	
Acer platanoides	Norway maple
Ailanthus altissima	tree of heaven
Alliaria petiolata	garlic mustard
Berberis thunbergii	Japanese barberry
Berberis vulgaris	European barberry
Celastrus orbiculatus	Oriental bittersweet
Centaurea biebersteinii	spotted knapweed
Cynanchum nigrum	black swallow-wort
Cynanchum rossicum	pale swallow-wort
Elaeagnus umbellata	autumn olive
Euonymus alatus	burning bush
Heracleum mantegazzianum	giant hogweed
Hesperis matronalis	dame's rocket
Iris pseudacorus	water-flag
Lepidium latifolium	perennial pepperweed
Ligustrum obtusifolium	blunt-leaved privet
Lonicera bella	showy bush honeysuckle
Lonicera japonica	Japanese honeysuckle
Lonicera morrowii	Morrow's honeysuckle
Lonicera tatarica	Tatarian honeysuckle
Microstegium vimineum	Japanese stilt grass
Polygonum cuspidatum	Japanese knotweed
Polygonum perfoliatum	mile-a-minute vine
Reynoutria × bohemica	bohemia knotweed
Rhamnus cathartica	common buckthorn
Rhamnus frangula	glossy buckthorn
Rosa multiflora	multiflora rose
INSECTS	
Acarapis woodi	honeybee tracheal mite
Adelges tsugae	hemlock woolly adelgid
Aeolesthes sarta	city longhorn beetle
Agrilus planipennis	emerald ash borer
Anoplophora glabripennis	Asian longhorned beetle
Callidiellum rufipenne	cedar longhorned beetle
Dendrolimus sibiricus	Siberian silk moth
Hylurgus lingniperda	redhaired bark beetle
Ips typographus	European spruce bark beetle
Lymantria dispar	Asian gypsy moth
Popillia japonica	Japanese beetle
Pyrrhalta viburni	viburnum leaf beetle
Rhizotrogus majalis	European chafer
Symantria monacha	nun moth
Tetropium fuscum	brown spruce longhorned beetle
Varroa destructor	varroa mite



COMPOST WATTLE (TYP.)
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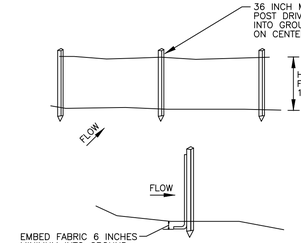
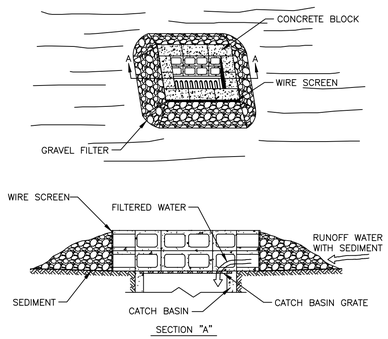


CONSTRUCTION SPECIFICATIONS

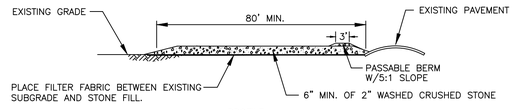
1. SILT FENCE MAY BE EITHER PREMANUFACTURED OR PREPARED ON SITE. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
2. SILT FENCE SHALL BE LOCATED AS SHOWN ON THE PLAN AND WHEREVER CONSTRUCTION ACTIVITIES MAY RESULT IN A TEMPORARY RUNOFF TO A STREAM OR WETLAND WHICH MAY CARRY SILT OR SEDIMENT.
3. THE TRENCH SHALL BE TOED IN PLACE BY PLACEMENT IN A 6 INCH TRENCH AND BACKFILLING WITH A SUITABLE MATERIAL.
4. WHEN A TRENCH CANNOT BE CONSTRUCTED, THE FABRIC MAY BE FOLDED AT THE BASE IN A MANNER SUCH THAT A MINIMUM OF 6 INCHES OF FABRIC LIES ON THE GROUND TOWARD THE DIRECTION OF FLOW. THE FOLDED FABRIC SHALL BE COVERED TO A DEPTH OF 6 INCHES WITH SUITABLE MATERIAL EXTENDING A MINIMUM OF 4 INCHES BEYOND THE FABRIC.
5. SUPPORTING STAKES SHALL BE PLACED NO MORE THAN 10 FEET APART.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED. FENCING SHALL BE REPLACED WHEN TORN, WHEN TRENCHING IS DISTURBED, WHEN THE FENCE DISPLAYS PLUGGING AS EVIDENCED BY SILT-LADEN APPEARANCE, WHEN WATER IS EXCESSIVELY RETARDED BY THE FENCE, OR WHENEVER "BULGES" APPEAR.

SILT FENCE
N.T.S.

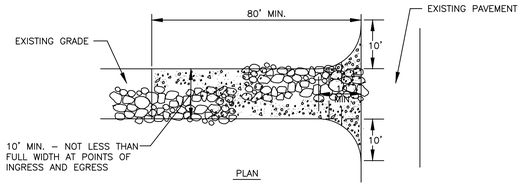


SECTION "A"

BLOCK & STONE INLET SEDIMENT FILTER DETAIL
N.T.S.



PROFILE



PLAN

NOTES:

1.) MAINTAIN ENTRANCE TO PREVENT TRACKING OF SEDIMENT INTO PUBLIC R.O.W. REDUCE TRACKING OF SOIL ONTO PUBLIC R.O.W. BY CLEANING OR TOP DRESSING STONE FILL.
2.) PROVIDE SEPARATE WHEEL CLEANING AREA WITH SUITABLE SEDIMENTATION BASIN.

STABILIZED CONSTRUCTION ENTRANCE
N.T.S.

STATE OF NEW HAMPSHIRE - RODRICK FINLEY No. 7466 LICENSED PROFESSIONAL ENGINEER

REVISION NO.	DATE	DESCRIPTION	MADE BY	CHECKED BY	APPROVED BY

EROSION CONTROL DETAILS FOR
HANOVER HIGH SCHOOL
TURF FIELD DRAINAGE IMPROVEMENTS
LEBANON STREET - HANOVER, NEW HAMPSHIRE

PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448-2200

SCALE: 1"= AS SHOWN	9
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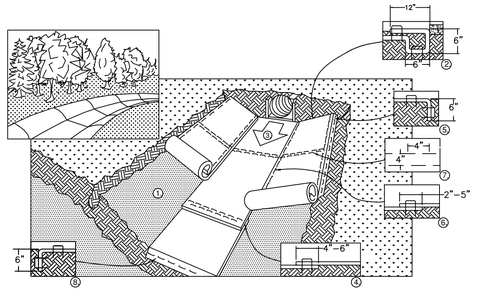
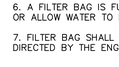


1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
   NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" ACROSS THE WIDTH OF THE RECP's.
3. ROLL CENTER RECP's IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE/MANUFACTURER'S RECOMMENDATIONS. WHEN USING THE DOT SYSTEM , STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE RECP's END OVER END (SHINGLE STYLE) WITH A 4" – 6" OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER TO SECURE RECP's.
5. FULL LENGTH EDGE OF RECP's AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT RECP's MUST BE OVERLAPPED APPROXIMATELY 2" – 5" (DEPENDING ON RECP's TYPE) AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE RECP's MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

NOTE: *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.

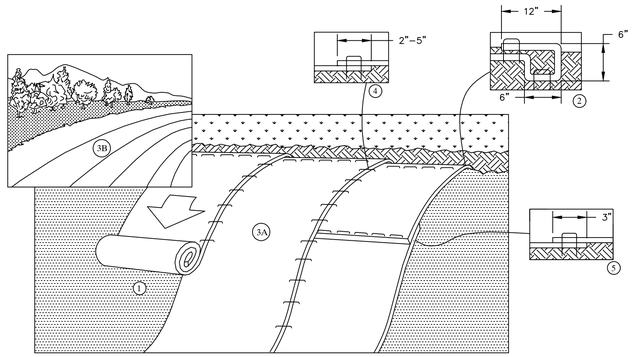


CRITICAL POINTS
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE *
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES **

NOTE:
* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.
** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.

CHANNEL/DITCH/SWALE INSTALLATION OF TURF REINFORCEMENT MATTING (TRM)

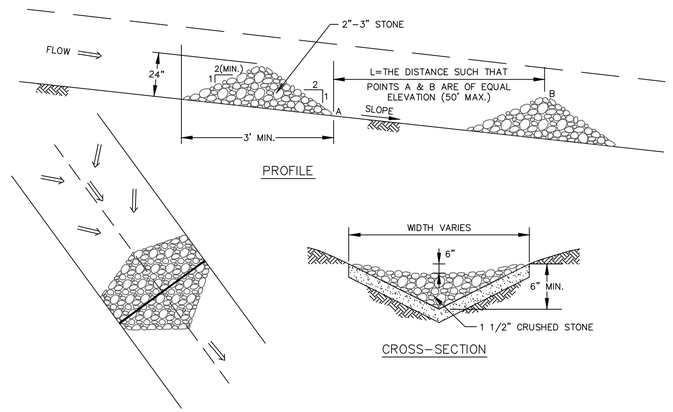
N.T.S.



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP'S), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP'S WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP'S BACK OVER SEED AND COMPACTED SOIL. SECURE RECP'S OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP'S.
3. ROLL THE RECP'S (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP'S WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP'S MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE/PER THE MANUFACTURER'S GUIDELINES. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP'S MUST BE STAPLED WITH APPROXIMATELY 2"–5" OVERLAP DEPENDING ON RECP'S TYPE.
5. CONSECUTIVE RECP'S SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP, STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP'S WIDTH.
   NOTE: *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP'S.

SLOPE INSTALLATION OF TURF REINFORCEMENT MATTING (TRM)

N.T.S.



STONE CHECK DAMS

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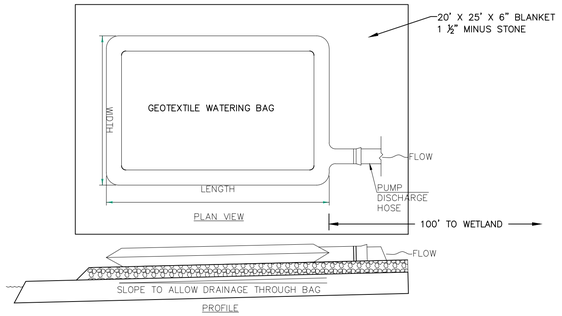


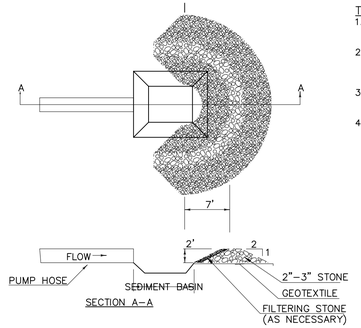
CONSTRUCTION SPECIFICATIONS

1. THE PRIMARY PURPOSE OF FILTER BAG IS TO RETAIN SILT, SAND, AND FINES DURING DEWATERING OPERATIONS.
2. FILTER BAGS SHALL BE INSTALLED ON A VEGETATED SLOPE GRADED TO ALLOW INCOMING WATER TO FLOW THROUGH THE BAG.
3. FILTER BAGS MAY ALSO BE PLACED ON COARSE AGGREGATE, STONE, OR HAYBALES TO INCREASE FILTRATION EFFICIENCY.
4. FILTER BAGS SHALL BE LOCATED A MINIMUM OF 50' FROM WATERS OF THE STATE UNLESS OTHERWISE APPROVED BY THE ENGINEER.
5. THE NECK OF THE FILTER BAG SHALL BE STRAPPED TIGHTLY TO THE DISCHARGE HOSE.
6. A FILTER BAG IS FULL WHEN IT NO LONGER CAN EFFICIENTLY FILTER SEDIMENT OR ALLOW WATER TO PASS AT A REASONABLE RATE.
7. FILTER BAG SHALL BE DISPOSED OF AS APPROVED IN THE SWPPP PLAN OR AS DIRECTED BY THE ENGINEER.

FILTER BAG

N.T.S.

FOR BIDDING ONLY



TEMPORARY DEWATERING NOTES:

1. LOCATIONS OF COFFERDAMS AND WATER DIVERSION COMPONENTS DETAILED ON THE PLANS ARE APPROXIMATE AND MAY BE ADJUSTED AS REQUIRED TO ACCOMMODATE THE CONTRACTORS MEANS AND METHODS OF CONSTRUCTION.
2. CONTRACTOR CANNOT MAKE MAJOR ALTERATIONS TO THE APPROACH AND LOCATION FOR COFFERDAMS AND WATER DIVERSION PROVIDED ON THESE PLANS BEFORE SUBMITTING PLANS FOR THE ALTERED APPROACH TO OWNER FOR REVIEW AND APPROVAL PRIOR TO PROCEEDING WITH ANY RELATED WORK.
3. CONTROL OF WATER WITHIN THE EXCAVATION SHALL BE CONDUCTED IN SUCH A MANNER AS TO PREVENT DISTURBANCE. DEWATERING SHALL BE CONTINUOUS UNTIL THE STREAM MAINTENANCE WORK IS COMPLETE.
4. THE CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED AS A RESULT OF COFFERDAMS AND/OR OTHER DEWATERING COMPONENTS, TO THEIR ORIGINAL CONDITION, UNLESS OTHERWISE SHOWN ON THE PLANS.

CONSTRUCTION SPECIFICATIONS

1. USE 2" TO 3" STONE. FILTERING STONE SHALL BE 3/4".
2. PLACE STONE OVER GEOTEXTILE.
3. ONCE PUMPING IS COMPLETE FOR THE PROJECT, THE SEDIMENT TRAPPED BEHIND THE DAM SHALL BE DISPOSED OF IN AN APPROVED WASTE AREA.
4. THE CHECK DAM(S) SHALL BE REMOVED AND THE AREA STABILIZED AND RESTORED TO NEAR PRE-CONSTRUCTION CONDITION.

CHECK DAM FOR HOSE OUTLET PROTECTION

N.T.S.

STATE OF NEW HAMPSHIRE – RODRICK J. FINLEY No. 7496 LICENSED PROFESSIONAL ENGINEER

REVISION NO.	DATE	DESCRIPTION	MADE BY	CHECKED BY	APPROVED BY

EROSION CONTROL DETAILS FOR

HANOVER HIGH SCHOOL
TURF FIELD DRAINAGE IMPROVEMENTS

LEBANON STREET – HANOVER, NEW HAMPSHIRE

PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448-2200

SCALE: 1"= AS SHOWN	10
DESIGNED BY: RJF	
DRAWN BY: DPM	
CHECKED BY: RJF	
DATE: 04/12/19	
PROJ. NO. 10021	SHEET 10 OF 10