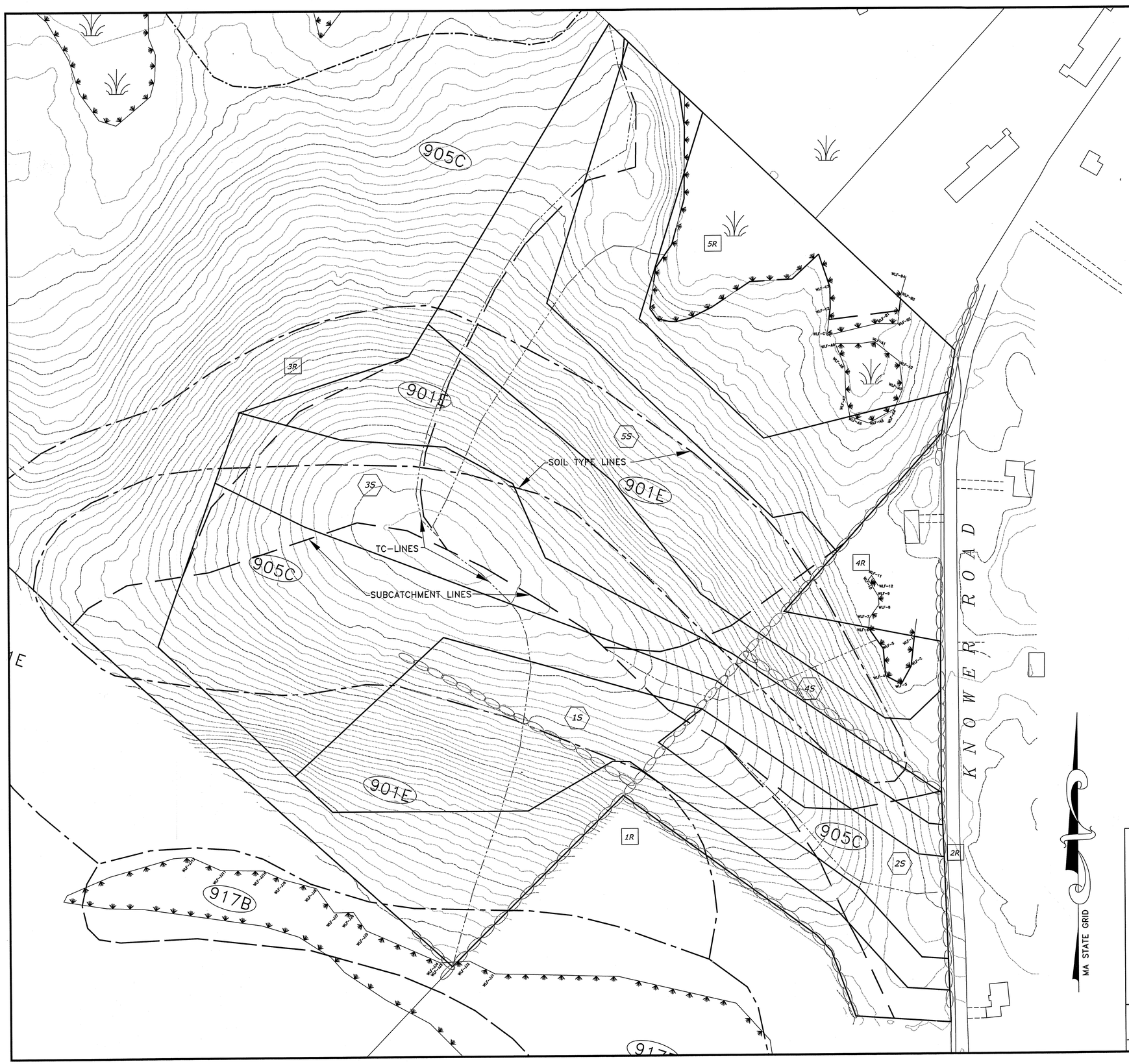


NOTES

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE PRE-CONSTRUCTION CONDITION DRAINAGE PATTERNS FOR MAP-134 LOTS-13 & 14 ON KNOWER ROAD.
2. CONTOURS DERIVED FROM NOAA LIDAR DATA & FIELD SURVEY.
3. SOIL DATA SHOWN HEREON DERIVED FROM GIS & NRCS WEBSOILSURVEY DATA. WETLANDS WERE LARGELY FLAGGED, BUT SOME WERE DELINEATED THROUGH GIS DATA.

COMMONWEALTH OF MASSACHUSETTS
TREVOR FLETCHER
CIVIL
NO. 57043
REGISTERED PROFESSIONAL ENGINEER

LEGEND

- EXISTING CLEARED AREA
- EDGE OF PROPOSED LAWN AREA
- 2S — SUBCATCHMENT
- 2P — POND
- 1R — REACH
- 262C — SOIL MAP SYMBOL
- WATERSHED BOUNDARY
- SOIL SERIES BOUNDARY
- TC LINES
- 242 — EXISTING CONTOUR

SOIL LEGEND

901E – BERKSHIRE-MARLOW ASSOC.
905C – PERU-MARLOW ASSOC.
917B – PILLSBURY-PEACHAM ASSOC.

0 80 160 240
SCALE: 1"=80' ON ORIGINAL

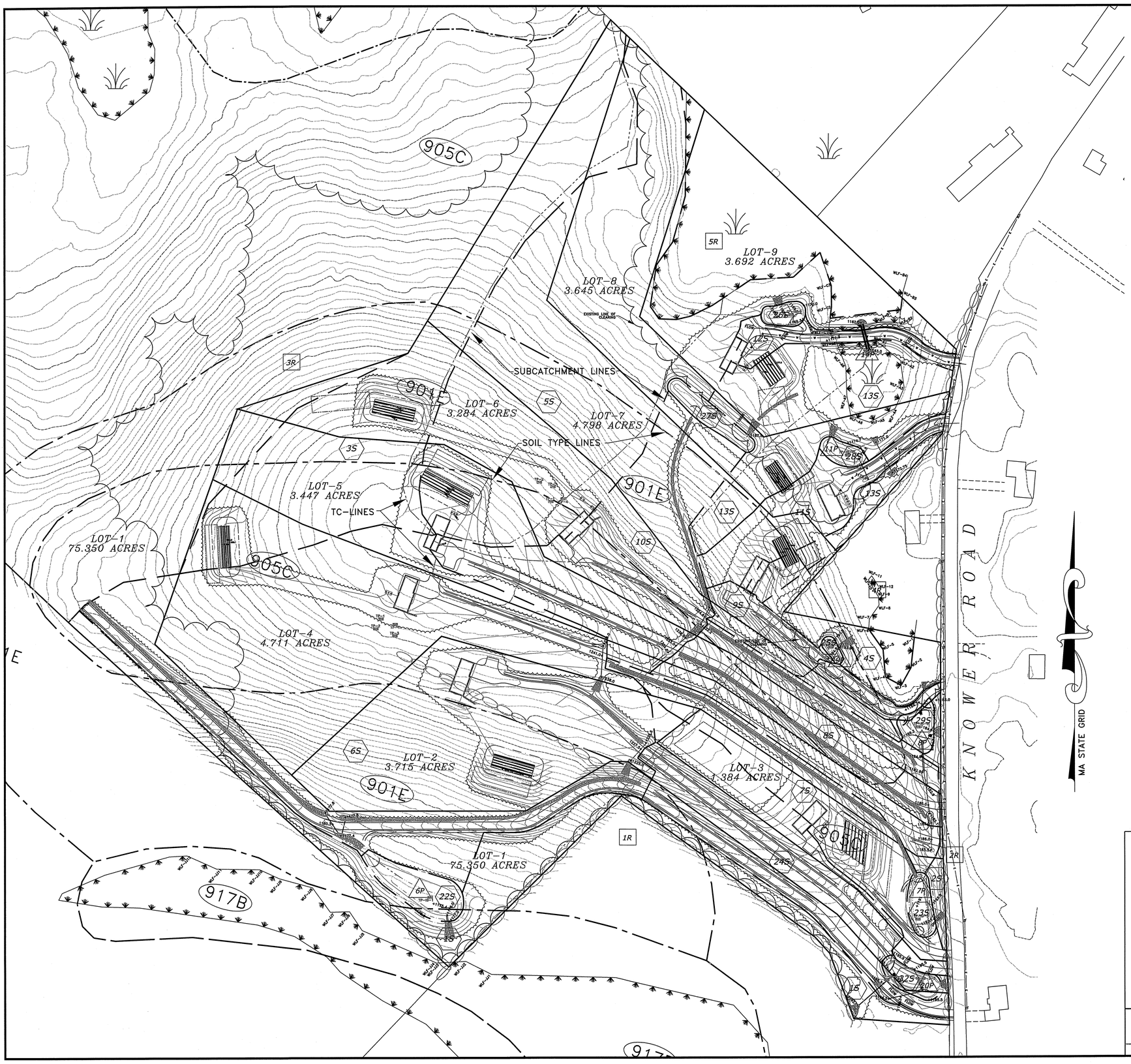
PRE-CONSTRUCTION CONDITION DRAINAGE PLAN
KNOWER ROAD (MAP-134 LOT-13/14)

OWNER:
BARKLEY ENTERPRISES, LLC
P.O. BOX 459
RINDGE, NH 03461

APRIL 1, 2024

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585-6959

JOB NO. 22185



NOTES

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE PROPOSED DRAINAGE PATTERNS THAT WILL RESULT FROM THE DEVELOPMENT OF 8 HOUSE LOTS AND ONE ADDITIONAL ACCESS DRIVE AT MAP–134 LOTS–13 & 14 ON KNOWER ROAD.
2. CONTOURS DERIVED FROM NOAA LIDAR DATA & FIELD SURVEY.
3. WHERE TC LINES ARE NOT SHOWN WITHIN A SUBCATCHMENT, THE LAG–CURVE METHOD PRODUCED A TC OF LESS THAN 6 MINUTES. A DIRECT MINIMUM OF 6 MINUTES WAS USED, AS IT IS THE MINIMUM RECOMMENDED.
4. SOIL DATA SHOWN HEREON DERIVED FROM GIS & NRCS WEBSOILSURVEY DATA. WETLANDS WERE LARGELY FLAGGED, BUT SOME WERE DELINEATED THROUGH GIS DATA.

COMMONWEALTH OF MASSACHUSETTS
TREVOR FLETCHER
CIVIL
NO. 57043
REGISTERED PROFESSIONAL ENGINEER

LEGEND

- EXISTING CLEARED AREA
- EDGE OF PROPOSED LAWN AREA
- 2S — SUBCATCHMENT
- 2P — POND
- 1R — REACH
- 262C — SOIL MAP SYMBOL
- WATERSHED BOUNDARY
- SOIL SERIES BOUNDARY
- TC LINES
- 242 — EXISTING CONTOUR
- 242 — PROPOSED CONTOUR

SOIL LEGEND

901E – BERKSHIRE–MARLOW ASSOC.
905C – PERU–MARLOW ASSOC.
917B – PILLSBURY–PEACHAM ASSOC.

0 80 160 240
SCALE: 1"=80' ON ORIGINAL

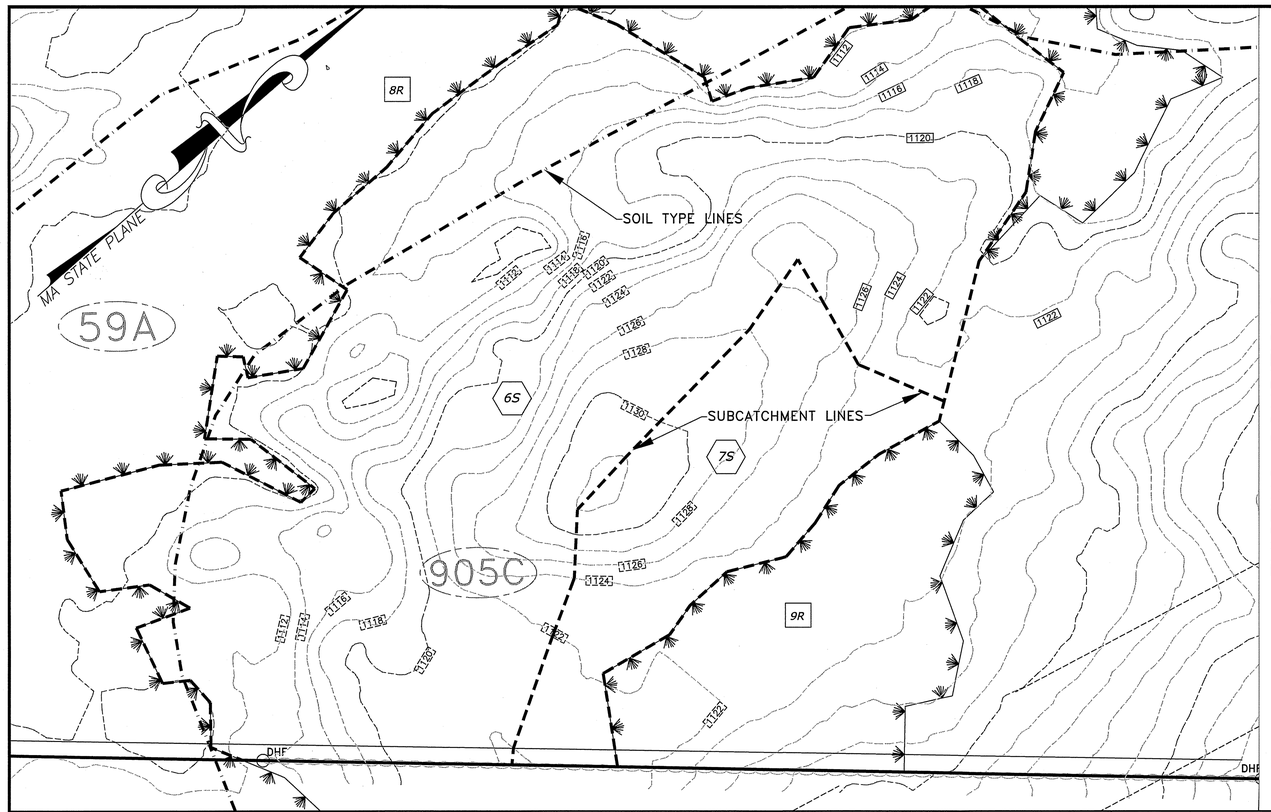
POST–CONSTRUCTION CONDITION DRAINAGE PLAN
KNOWER ROAD (MAP–134 LOT–13/14)

OWNER:
BARKLEY ENTERPRISES, LLC
P.O. BOX 459
RINDGE, NH 03461

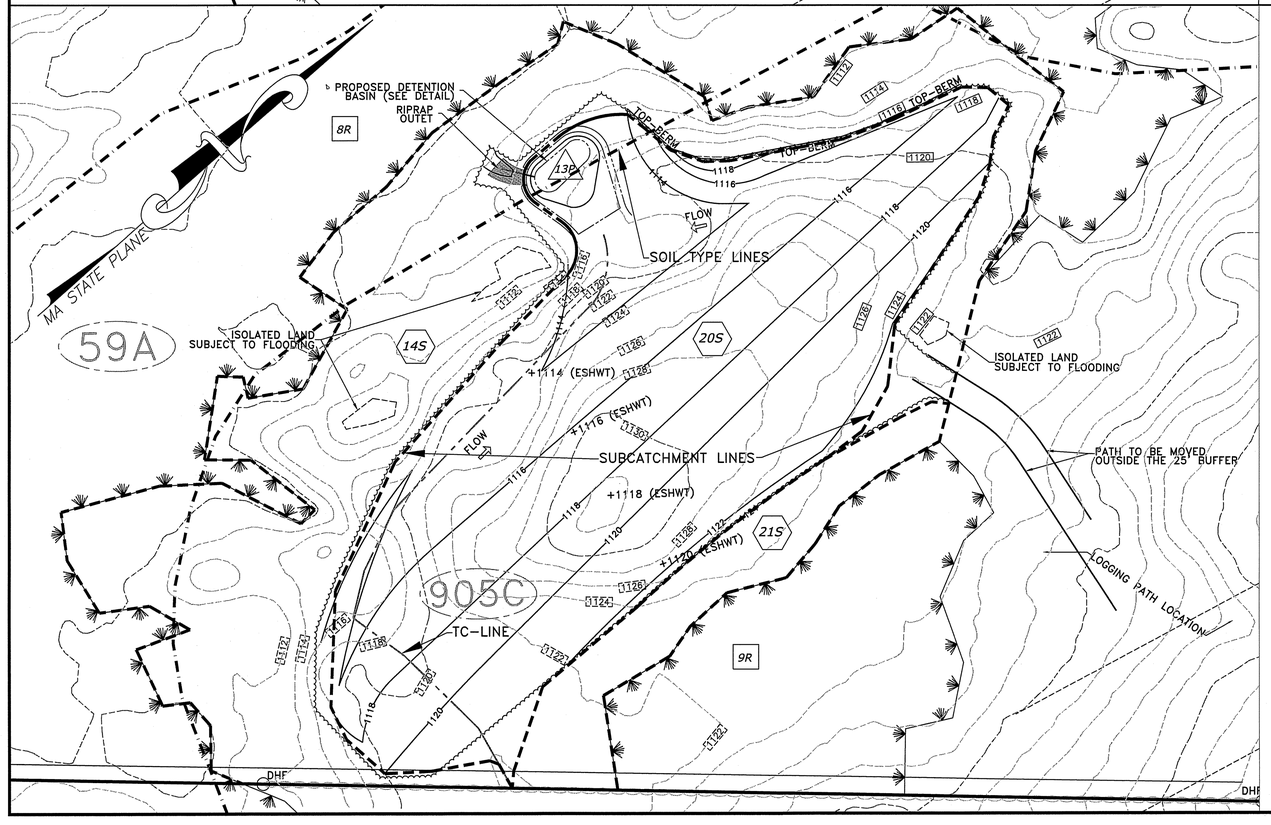
APRIL 1, 2024

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585–6959

JOB NO. 22185



EXISTING CONDITIONS



PROPOSED PLAN

NOTES

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE PROPOSED DRAINAGE PATTERNS THAT WILL RESULT FROM THE REGRADING OF THE AREA SHOWN HEREON TO GENERATE GRAVELLY FILL FOR THE PROPOSED DRIVEWAYS ON THE A-N-R RESIDENTIAL DEVELOPMENT.
2. CONTOURS DERIVED FROM NOAA LIDAR DATA & FIELD SURVEY.
3. WHERE TC LINES ARE NOT SHOWN WITHIN A SUBCATCHMENT, THE LAG-CURVE METHOD PRODUCED A TC OF LESS THAN 6 MINUTES. A DIRECT MINIMUM OF 6 MINUTES WAS USED, AS IT IS THE MINIMUM RECOMMENDED.

COMMONWEALTH OF MASSACHUSETTS
TREVOR FLETCHER
CIVIL
NO. 57043
REGISTERED PROFESSIONAL ENGINEER

LEGEND

- EXISTING CLEARED AREA
- EDGE OF PROPOSED LAWN AREA
- 2S — SUBCATCHMENT
- 2P — POND
- 1R — REACH
- 262C — SOIL MAP SYMBOL
- WATERSHED BOUNDARY
- SOIL SERIES BOUNDARY
- TC LINES
- 242 — EXISTING CONTOUR
- 242 — PROPOSED CONTOUR

SOIL LEGEND

59A – BUCKSPORT & WONSQUEAK MUCKS
905C – PERU-MARLOW ASSOC.

0 80 160 240
SCALE: 1"=80' ON ORIGINAL

EXISTING/PROPOSED DRAINAGE PLAN
REAR SECTION OF KNOWER ROAD DEVELOPMENT
(MAP-134 LOT-13/14)

OWNER:
BARKLEY ENTERPRISES, LLC
P.O. BOX 459
RINDGE, NH 03461

APRIL 1, 2024

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585-6959

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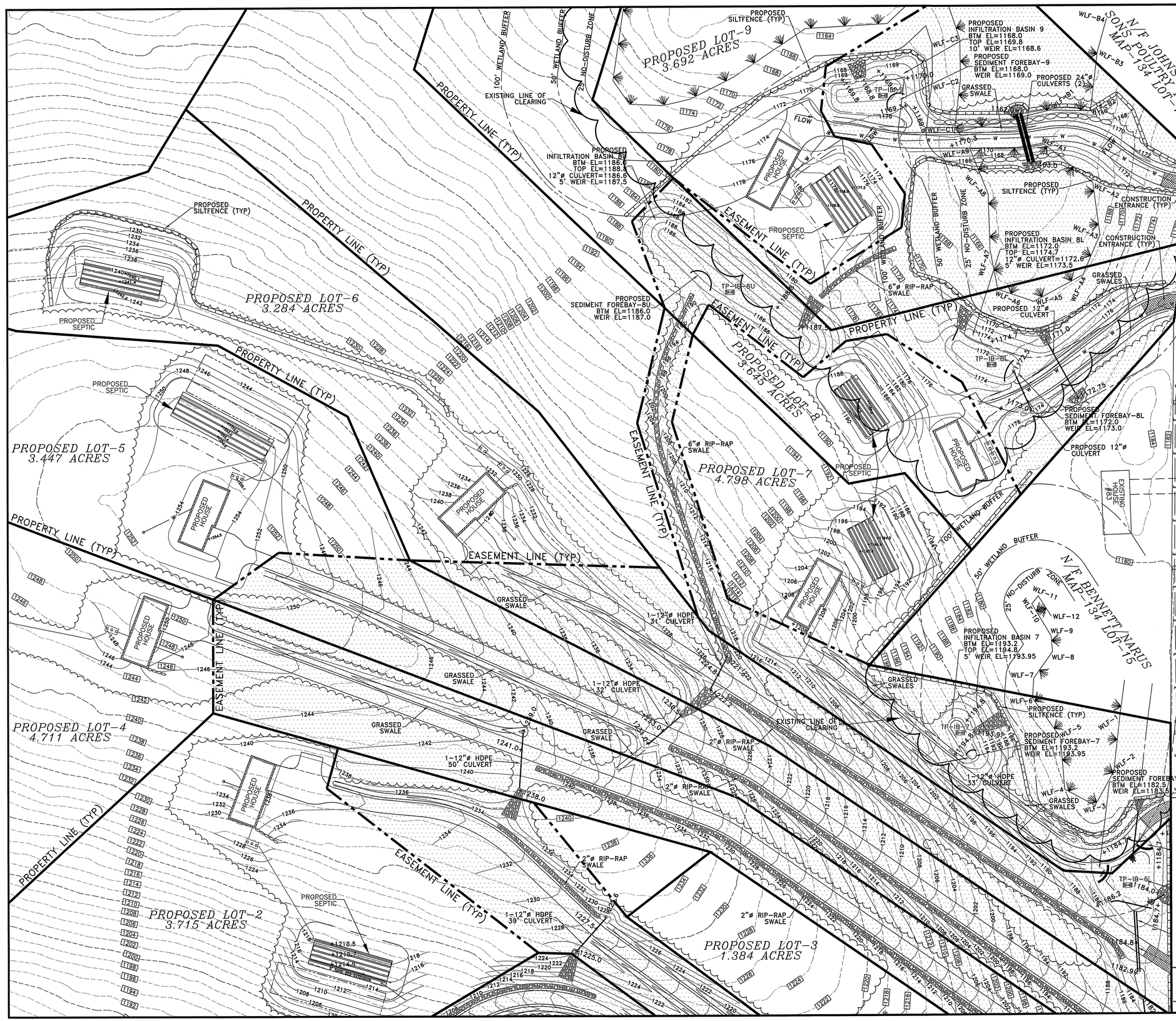


NOTES

1. THE PURPOSE OF THIS PLAN IS TO PROPOSE A STORMWATER SYSTEM THAT WILL TREAT & DETAIN WATER FLOWING FROM THE PROPOSED DEVELOPMENT TO ELIMINATE THE NEGATIVE HYDROLOGICAL EFFECTS OF THE DEVELOPMENT ON THE SURROUNDING AREAS.
2. THE SUBJECT PROPERTY IS LOCATED IN THE R-II ZONING DISTRICT
   DIMENSIONAL REQUIREMENTS:
   FRONTAGE= 175' (54' FOR FLAG LOTS)
   AREA= 60,000 S.F. MIN. (150,000 S.F. MIN FOR FLAG LOTS)
   MINIMUM FRONT SETBACK=30'
   MINIMUM SIDE SETBACK=15'
   MINIMUM REAR SETBACK=20'
   MAXIMUM LOT COVERAGE= 20%
3. FIELD SURVEY PERFORMED BY GPS SURVEY TO THE STANDARDS OF MASSACHUSETTS REGULATION 250 CMR 6.00. CONTOURS PARTIALLY DERIVED FROM SAID SURVEY & NOAA LIDAR DATA THE SURROUNDING AREAS.
4. WHEREAS NO TITLE REPORT HAS BEEN PREPARED, NO DETERMINATION OF TITLE IS MADE OR IMPLIED.
5. THE MAJORITY OF THE LOT HAS BEEN LOGGED, AS INDICATED BY THE EXISTING LINE OF CLEARING SHOWN AS LARGE, BOLD ARCS. THE AREA BETWEEN THIS LINE AND EXTERIOR PROPERTY LINES HAVE REMAINED UNDISTURBED. THE PROPOSED TREELINES WITHIN EXISTING UNDISTURBED AREA INDICATE AREAS TO BE LEFT UNTOUCHED. THE PROPOSED TREELINES WITHIN PREVIOUSLY DISTURBED AREAS INDICATE THE EDGE OF THE ANTICIPATED LAWN FOR THE HOUSES AND STORMWATER. THE TREELINES IN THIS AREA WILL BE LEFT TO GROW NATURALLY.
6. DRAINAGE EASEMENTS ARE SHOWN HEREON AND ARE TO BE FOR THE BENEFIT OF THE OWNERS (AND THEIR CONTRACTED AGENTS) RESPONSIBLE TO PERFORM INSPECTIONS/MAINTENANCE ON THE INFILTRATION BASINS, SEDIMENT FOREBAYS, SWALES, CULVERTS, AND ANY OTHER STORMWATER FEATURES. THE EASEMENTS SHALL ALSO PROVIDE RIGHT OF ACCESS OVER ALL DRIVEWAYS FOR THIS PURPOSE. INSPECTIONS OF THE STORMWATER SYSTEM AND NECESSARY MAINTENANCE BASED ON THE INSPECTION RESULTS IS TO BE PERFORMED ON A YEARLY BASIS. A LOG OF ALL INSPECTIONS & MAINTENANCE PERFORMED MUST BE SUBMITTED TO THE WESTMINSTER DPW ON A YEARLY BASIS BY THE FINAL DAY IN JUNE. EACH INSPECTION/MAINTENANCE LOG SHOULD BE KEPT FOR A MINIMUM OF THREE YEARS.

   FURTHERMORE, SAID OWNERS SHALL CONTRACT A MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER TO CERTIFY THE PERFORMANCE OF REQUIRED MAINTENANCE AND PROVIDE AN ASSESSMENT OF OVERALL SYSTEM PERFORMANCE. THE ENGINEER IS TO PROVIDE THIS INFORMATION IN AN ANNUAL REPORT TO SAID ENTITY, WHO IS TO SUBMIT THE REPORT TO THE PLANNING BOARD.
7. THIS PROJECT IS COVERED THROUGH A NDPES CONSTRUCTION GENERAL PERMIT (ID:MAR10050W) AND A SWPPP HAS BEEN DEVELOPED FOR THE SITE. THIS SWPPP SHALL BE READILY AVAILABLE TO ALL OPERATORS ON-SITE. INSPECTIONS ARE TO BE PERFORMED BY AN INDIVIDUAL WHO MEETS THE REQUIREMENTS OF PART 4 OF THE EPA'S 2022 CGP AT A SCHEUDLE OF ONCE PER WEEK OR ONCE EVERY TWO WEEKS AND WITHIN 24 HOURS OF A RAINFALL OF 1/2" OR MORE. INSPECTIONS SHALL BE PERFORMED USING THE EPA'S CGP INSPECTION TEMPLATE, OR AN ADEQUATE EQUIVALENT. THESE INSPECTIONS ARE TO BE PERFORMED FROM THE BEGINNING OF CONSTRUCTION UNTIL COMPLETION & FINAL STABILIZATION OF THE PROJECT.
8. ALL SWALES HAVE BEEN DESIGNED TO HAVE A MAXIMUM VELOCITY OF 4.0 FPS IN THE 25-YEAR DESIGN STORM.
9. ALL DRIVEWAY CULVERTS HAVE BEEN DESIGNED TO PASS STORMWATER FLOW FROM A 50-YEAR DESIGN STORM WITHOUT BACKING UP.
10. NO WORK WITHIN 100' OF ANY WETLANDS SHALL BE PERFORMED WITHOUT A NOTICE OF INTENT FILED AND ORDER OF CONDITIONS ISSUED BY THE WESTMINSTER CONSERVATION COMMISSION.

LEGEND

- PROPERTY LINE
- EASEMENT LINE
- 242 EXISTING CONTOUR
- 242 PROPOSED CONTOUR
- TP DEEP HOLE TEST PIT
- + 238.6 PROPOSED SPOT ELEVATION
- W WATER SERVICE
- UTILITY POLE
- STONE WALL
- E ELECTRIC LINE
- WETLAND LINE
- DRAINAGE EASEMENT
- PROPOSED SILTFENCE
- PROPOSED EDGE OF YARD
- EXISTING CLEARED AREA

MA STATE GRID

0 40 80 120
SCALE: 1"=40' ON ORIGINAL

COMMONWEALTH OF MASSACHUSETTS
TREVOR FLETCHER
CIVIL
NO. 57043
REGISTERED PROFESSIONAL ENGINEER

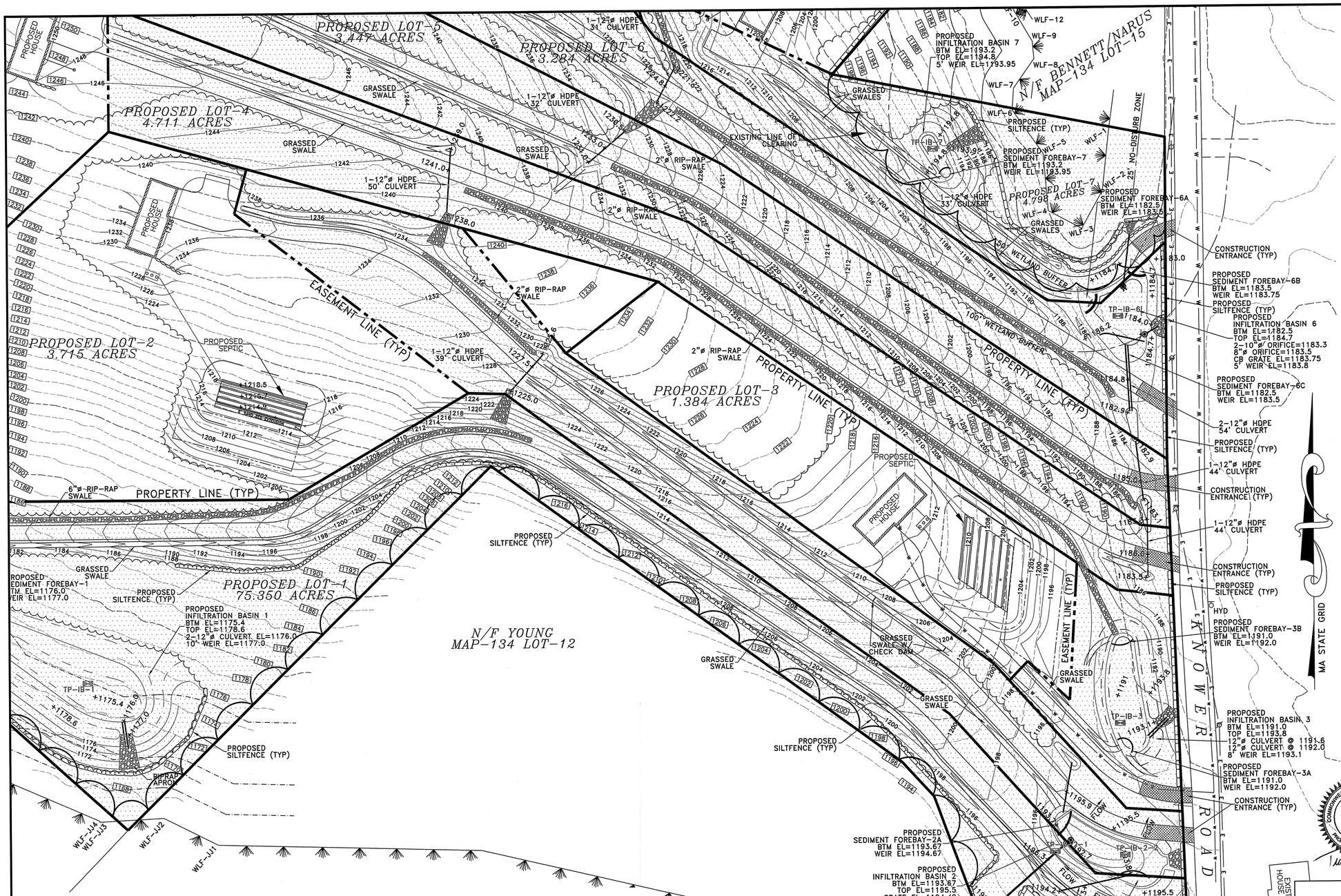
STORMWATER MANAGEMENT PLAN
KNOWER ROAD (MAP-134 LOT-13/14)

OWNER:
BARKLEY ENTERPRISES, LLC
P.O. BOX 459
RINDGE, NH 03461

APRIL 1, 2024

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585-6959

JOB NO. 22185



NOTES

1. THE PURPOSE OF THIS PLAN IS TO PROPOSE A STORMWATER SYSTEM THAT WILL TREAT & DETAIN WATER FLOWING FROM THE PROPOSED DEVELOPMENT TO ELIMINATE THE NEGATIVE HYDROLOGICAL EFFECTS OF THE DEVELOPMENT ON THE SURROUNDING AREAS.
2. THE SUBJECT PROPERTY IS LOCATED IN THE R-II ZONING DISTRICT
   DIMENSIONAL REQUIREMENTS:
   FRONTAGE= 175' (54' FOR FLAG LOTS)
   AREA= 60,000 S.F. MIN. (150,000 S.F. MIN FOR FLAG LOTS)
   MINIMUM FRONT SETBACK=30'
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   MINIMUM REAR SETBACK=20'
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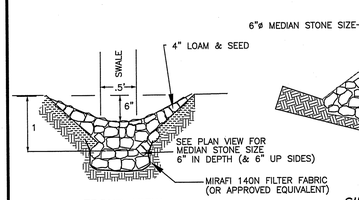
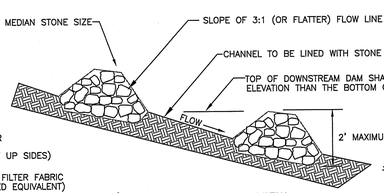
LEGEND

- PROPERTY LINE
- EASEMENT LINE
- 242 — EXISTING CONTOUR
- 242 — PROPOSED CONTOUR
- TP — DEEP HOLE TEST PIT
- + 238.6 — PROPOSED SPOT ELEVATION
- W — WATER SERVICE
- UTILITY POLE
- STONE WALL
- E — ELECTRIC LINE
- WETLAND LINE
- DRAINAGE EASEMENT
- PROPOSED SILTFENCE
- PROPOSED EDGE OF YARD
- EXISTING CLEARED AREA

COMMONWEALTH OF MASSACHUSETTS
TREVOR FLETCHER
CIVIL
NO. 57043
REGISTERED PROFESSIONAL ENGINEER



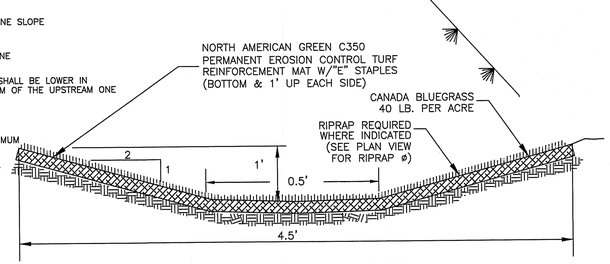
FRONT VIEW



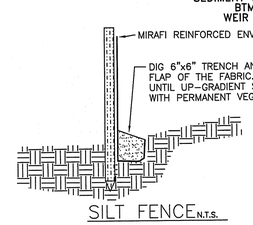
SIDE/ CROSS-SECTIONAL VIEW

STONE CHECK DAMS SHALL BE INSTALLED WHERE SHOWN ON PLAN VIEW, AND MAY BE INCORPORATED WITHIN ANY GRASSED SWALES IF THE CONTRACTOR FEELS IT NECESSARY TO PREVENT EROSION

STONE CHECK DAM DETAIL NTS



PROPOSED SWALE DETAIL NTS



SILT FENCE N.T.S.

0 40 80 120
SCALE: 1"=40' ON ORIGINAL

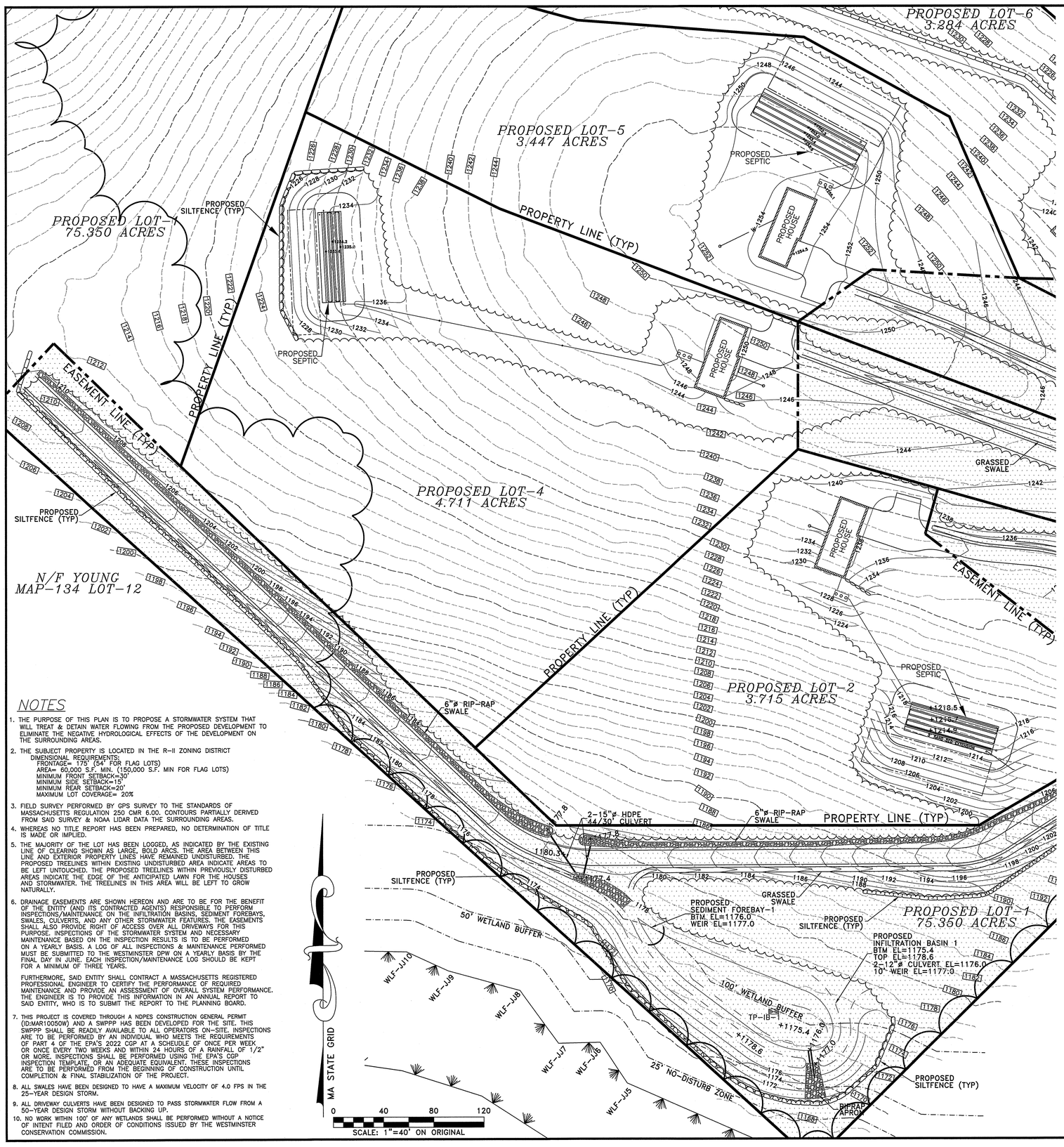
STORMWATER MANAGEMENT PLAN
KNOWER ROAD (MAP-134 LOT-13/14)

OWNER:
BARKLEY ENTERPRISES, LLC
P.O. BOX 459
RINDGE, NH 03461

APRIL 1, 2024

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585-6959

JOB NO. 22185



NOTES

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   DIMENSIONAL REQUIREMENTS:
   FRONTAGE= 175 (54' FOR FLAG LOTS)
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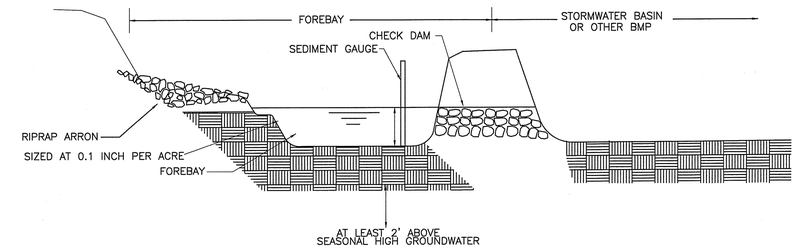
10. NO WORK WITHIN 100' OF ANY WETLANDS SHALL BE PERFORMED WITHOUT A NOTICE OF INTENT FILED AND ORDER OF CONDITIONS ISSUED BY THE WESTMINSTER CONSERVATION COMMISSION.

TABLE OF SEDIMENT FOREBAY ELEVATIONS

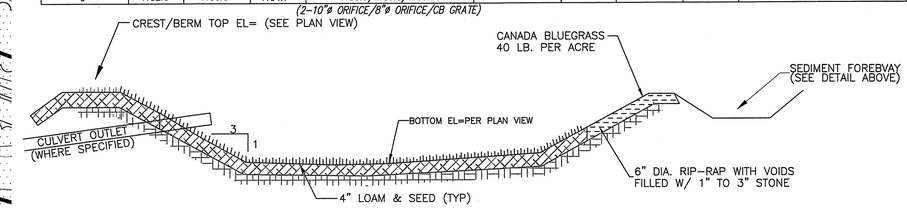
FOREBAY #	BTM ELEV	WEIR ELEV	TOP ELEV	FOREBAY #	BTM ELEV	WEIR ELEV	TOP ELEV
1	1176.0	1177.0	1178.6	6B	1183.5	1183.75	1184.5
2A	1193.67	1194.67	1195.5	6C	1182.5	1183.5	1184.5
2B	1194.0	1194.75	1195.5	7	1193.2	1193.95	1194.8
3A	1191.0	1192.0	1193.7	8U	1186.0	1187.0	1189.0
3B	1191.0	1192.0	1193.7	8L	1172.0	1173.0	1174.9
6A	1182.5	1183.5	1184.5	9	1168.0	1169.0	1170.0



SEDIMENT FOREBAY (TYP) NTS

TABLE OF INFILTRATION BASIN ELEVATIONS

BASIN #	BTM ELEV	WEIR ELEV	TOP ELEV	OTHER OUTLET	BASIN #	BTM ELEV	WEIR ELEV	TOP ELEV	OTHER OUTLET
1	1175.4	1177.0	1178.6	1176.0 (2-12"ø CULVERTS)	7	1193.2	1193.95	1194.8	NONE
2	1193.67	1194.75	1195.5	1194.42 (CB GRATE)	8U	1186.0	1187.5	1188.8	1186.6 (12"ø CULVERT)
3	1191.0	1193.1	1193.8	1191.6/1192.0 (2-12"ø CULVERTS)	8L	1172.0	1173.5	1174.7	1172.6 (12"ø CULVERT)
6	1182.5	1183.8	1184.7	1183.3/1183.5/1183.75 (2-10"ø ORIFICE/8"ø ORIFICE/CB GRATE)	9	1168.0	1168.6	1169.8	NONE



TYPICAL BASIN CROSS SECTION NTS

TEST PIT DATA

DEEP HOLE # TP-IB-1

FINE SANDY LOAM 10YR 2/2	A	0" – 5"
FINE SANDY LOAM 10YR 5/8	B	5" – 14"
LOAM 2.5Y 6/3	C	14" – 24"

ESWT= 13" 7.5YR 5/8/2.5Y 6/2

DEEP HOLE # TP-IB-2-1

FINE SANDY LOAM 10YR 2/2	A	0" – 4"
FINE SANDY LOAM 10YR 5/8	B	4" – 26"
FINE SANDY LOAM 2.5Y 6/3	C	26" – 30"

ESWT= 26" 7.5YR 5/8/2.5Y 6/2

DEEP HOLE # TP-IB-2-2

FINE SANDY LOAM 10YR 2/2	A	0" – 5"
FINE SANDY LOAM 10YR 5/8	B	5" – 16"
FINE SANDY LOAM 2.5Y 6/3	C	16" – 22"

ESWT= 22" 7.5YR 5/8/2.5Y 6/2

DEEP HOLE # TP-IB-3

FINE SANDY LOAM 10YR 2/2	A	0" – 3"
FINE SANDY LOAM 10YR 5/8	B	3" – 22"
FINE SANDY LOAM 2.5Y 5/3 5% GRVL 5% CBBL	C	22" – 90"

ESWT= 22" 7.5YR 5/8/2.5Y 6/2

DEEP HOLE # TB-IB-6

FINE SANDY LOAM 10YR 2/2	A	0" – 7"
FINE SANDY LOAM 10YR 5/8	B	7" – 28"
FINE SANDY LOAM 2.5Y 5/3 5% GRVL 5% CBBL	C	28" – 62"

ESWT= 23" 7.5YR 5/8/2.5Y 6/2

DEEP HOLE # TB-IB-7

FINE SANDY LOAM 10YR 2/2	A	0" – 7"
FINE SANDY LOAM 10YR 5/8	B	7" – 27"
FINE SANDY LOAM 2.5Y 5/3 5% GRVL 5% CBBL	C	27" – 72"

ESWT= 27" 7.5YR 5/8/2.5Y 6/2

DEEP HOLE # TP-IB-8U

FINE SANDY LOAM 10YR 2/2	A	0" – 5"
FINE SANDY LOAM 10YR 5/8	B	5" – 23"
FINE SANDY LOAM 2.5Y 5/3 5% GRVL 5% CBBL	C	23" – 75"

ESWT= 23" 7.5YR 5/8/2.5Y 6/2

DEEP HOLE # TP-9

FINE SANDY LOAM 10YR 2/2	A	0" – 7"
FINE SANDY LOAM 10YR 5/8	B	7" – 24"
FINE SANDY LOAM 2.5Y 5/3 5% GRVL 5% CBBL	C	24" – 60"

ESWT= 29" 10YR 5/8 & 2.5YR 6/2

SOIL LOGS SHOWN HEREON FOR TEST PITS EXCAVATED ON 11/9/2023 (IB-3 – IB-9) AND 3/28/24 (IB-1 & 2) BY JOSHUA JOSLYN, S.E.

COMMONWEALTH OF MASSACHUSETTS
TREVOR FLETCHER
CIVIL
NO. 57043
REGISTERED PROFESSIONAL ENGINEER

LEGEND

	PROPERTY LINE
	EASEMENT LINE
242	EXISTING CONTOUR
242	PROPOSED CONTOUR
TP	DEEP HOLE TEST PIT
+ 238.6	PROPOSED SPOT ELEVATION
W	WATER SERVICE
	UTILITY POLE
	STONE WALL
E	ELECTRIC LINE
	WETLAND LINE
	DRAINAGE EASEMENT
	PROPOSED SILTFENCE
	PROPOSED EDGE OF YARD
	EXISTING CLEARED AREA

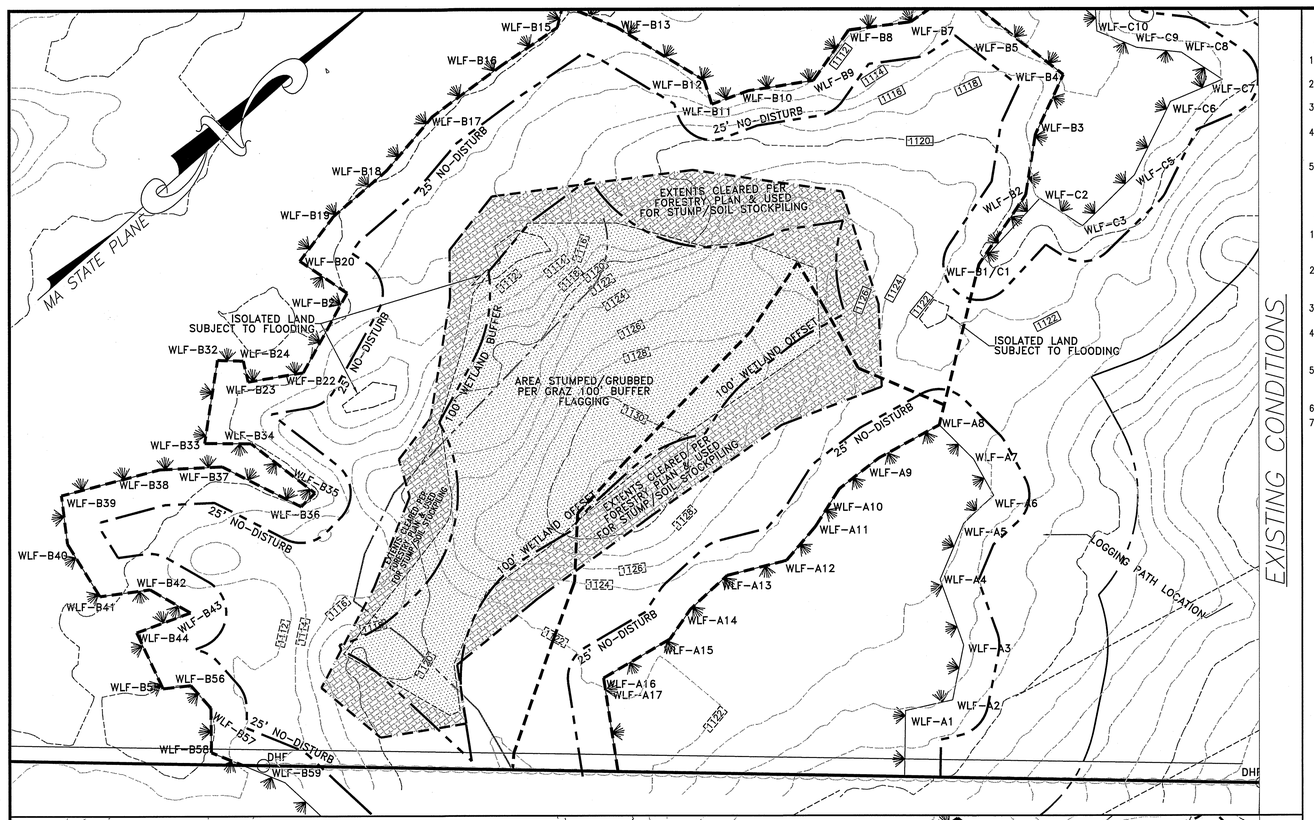
STORMWATER MANAGEMENT PLAN
KNOWER ROAD (MAP-134 LOT-13/14)

OWNER:
BARKLEY ENTERPRISES, LLC
P.O. BOX 459
RINDGE, NH 03461

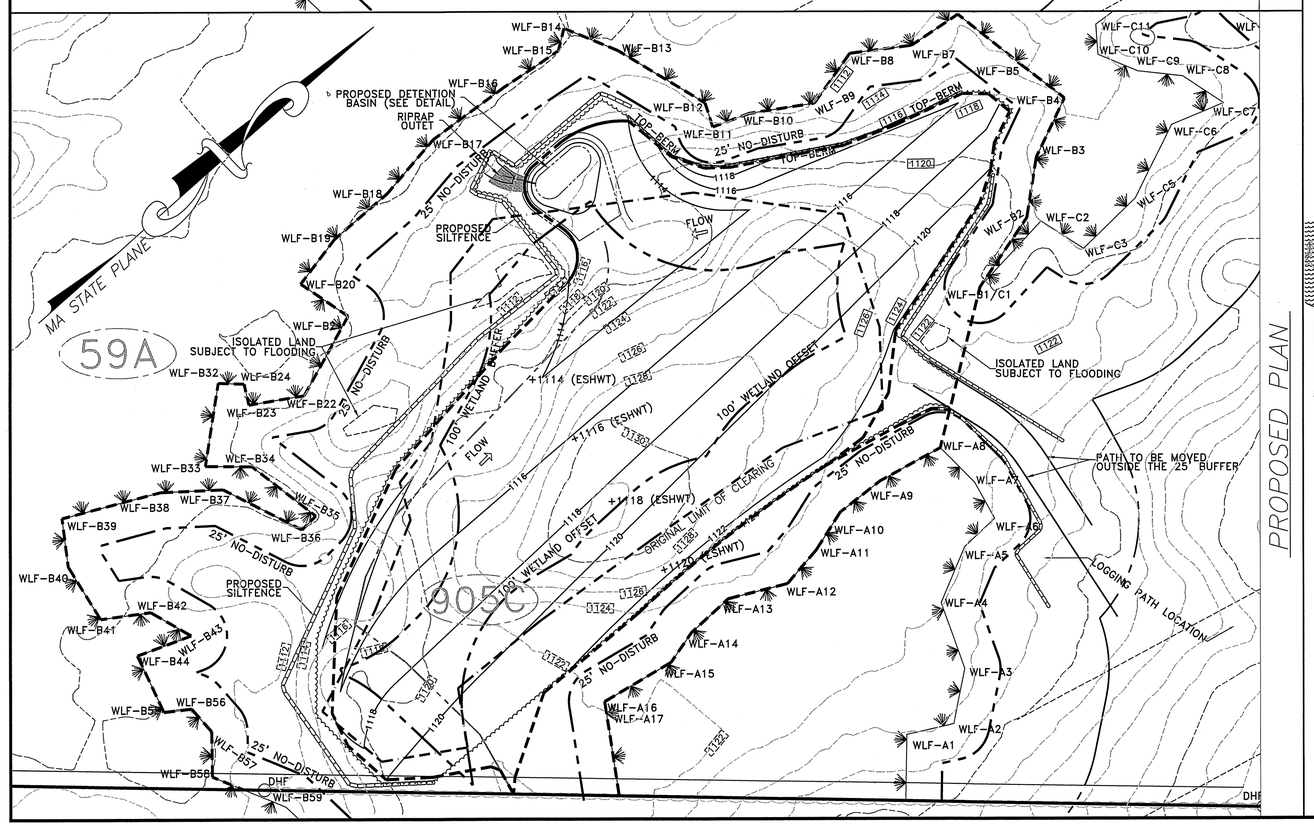
APRIL 1, 2024

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585-6959

JOB NO. 22185



EXISTING CONDITIONS



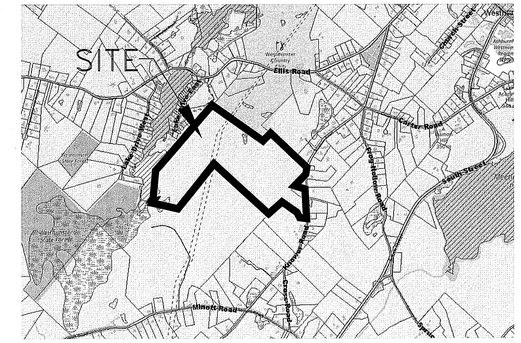
PROPOSED PLAN

EXISTING CONDITIONS NOTES

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE EXISTING CONDITIONS OF THE AREA WHERE THE PROPOSED WORK IS TO TAKE PLACE.
2. BOTH HATCHED AREAS WERE CLEARED PER A FORESTRY CUTTING PLAN, AND THE AREA WAS ACCESSED VIA THE PATH SHOWN HEREON.
3. FOLLOWING THE CLEARING OF THE AREA, THE WETLANDS AND 100' BUFFER WAS FLAGGED BY GRAZ ENGINEERING ON SEPTEMBER 21, 2023 TO INDICATE THE LIMIT OF DISTURBANCE ALLOWED WITHOUT FILING A NOTICE OF INTENT.
4. THE LIMIT OF STUMPING/GRUBBING WAS LARGELY KEPT OUTSIDE OF THE 100' BUFFER ZONE, SHOWN BY THE INTERIOR 'DOTTED' HATCHING. SOME TOPSOIL AND STUMPS WERE STOCKPILED OUTSIDE OF THIS DOTTED HATCH AREA, BUT WITHIN THE PREVIOUSLY CLEARED AREA INDICATED BY THE EXTERIOR 'CROSS' HATCHING.
5. THE WORK DEPICTED ABOVE RESULTED IN AN ENFORCEMENT ORDER BEING ISSUED BY THE WESTMINSTER CONSERVATION COMMISSION ON THE PROPERTY.

PROPOSED PLAN NOTES

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE EXCAVATION PROPOSED TO CREATE AN AREA TO STORE STUMPS GENERATED FROM THE LOGGING OPERATION. FILL GENERATED BY THIS EXCAVATION WILL BE UTILIZED FOR RESIDENTIAL DRIVEWAY MATERIAL AT THE FRONT OF THE LOT.
2. THE PROPOSED GRADING WILL RESULT IN THE REMOVAL OF A DRUMLIN CONSITING OF SANDY/GRAVELLY MATERIAL AND LEAVE THE AREA AS A GENTLE SLOPE FROM EAST TO WEST. STUMPS PLACED IN THIS AREA SHALL NOT BE BURIED.
3. SILTFENCE SHOWN HEREON TO BE INSTALLED PRIOR TO THE ADDITIONAL DISTURBANCE OF ANY AREA WITHIN THE 100' BUFFER ZONE.
4. FILL SHALL NOT BE MOVED TO ANY AREA PROTECTED BY THE MASSACHUSETTS WETLAND PROTECTION ACT (100' BUFFER ZONES) WITHOUT ADDITIONAL NOTICE OF INTENT FILINGS WITH WESTMINSTER CONSERVATION COMMISSION & MASSDEP.
5. THE INTENT OF THIS PLAN IS TO CUT DOWN THE HILL, BUT REMAIN ABOVE THE SEASONAL HIGH WATER TABLE (SHWT). ESTIMATIONS OF THE SHWT ARE SHOWN HEREON ALONG A CROSS SECTION OF THE HILL FROM THE HIGHER ELEVATION WETLANDS ON THE EAST SIDE TO THE LOWER ELEVATION WETLANDS ON THE WEST SIDE.
6. EROSION CONTROLS TO BE UTILIZED DOWNGRADIENT OF STOCKPILES TO PREVENT EXCESS EROSION OVER THE SITE.
7. DETENTION BASIN SHOWN HEREON TO BE CONSTRUCTED FIRST AS A SEDIMENT TRAP. ONCE CONSTRUCTION ACTIVITIES COME TO AN END AND STABILIZATION OCCURS, TRAP TO BE CLEANED OUT AND CONVERTED INTO THE DETENTION BASIN PER THE DETAIL SHOWN HEREON.



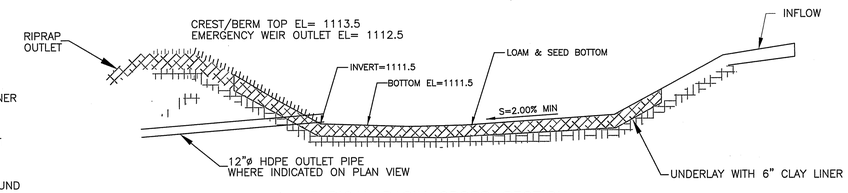
LOCUS 1"=1000'

LEGEND

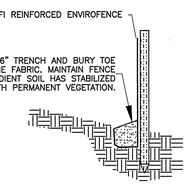
N/F	NOW OR FORMER OWNER
	WETLANDS
	WETLAND BOUNDARY
	100' WETLAND OFFSET
IPF ○	IRON PIN FOUND
DHF ○	DRILL HOLE FOUND
CBF □	CONCRETE BOUND FOUND
	ZONING SETBACKS
	STONEWALL

0 50 100 150

SCALE: 1"=50' ON ORIGINAL



TYPICAL BASIN CROSS-SECTION NTS

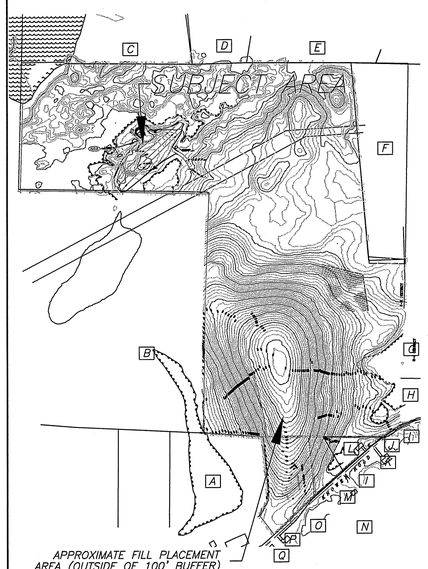


SILT FENCE N.T.S.

COMMONWEALTH OF MASSACHUSETTS
TREVOR FLETCHER
CIVIL
NO. 57043
REGISTERED PROFESSIONAL ENGINEER

ABUTTERS

A – DANIEL T. YOUNG – 113 KNOWER ROAD; WESTMINSTER, MA 01473 (MAP–134 LOT–12)
B – DEBORAH & DEAN JOHNSON – 71R KNOWER ROAD; WESTMINSTER, MA 01473 (MAP–152 LOT–13)
C – JANET M HALEY & JENNIFER MAILLOUX ROCHON; 65 LAKE DRIVE EAST; WESTMINSTER, MA 01473 (MAP–126 LOT–32)
D – CHARLENE I. & KEVIN ROSS – 48 LAKE DRIVE EAST; WESTMINSTER, MA 01473 (MAP–126 LOT–27)
E – SHARON A. & PHILLIP J. KEARNS (CO–TRUSTEES); P.O. BOX 47; WESTMINSTER, MA 01473 (MAP–126 LOT–2)
F – 994 NORTHFIELD ROAD, LLC; 19 BURKE STREET; LUNENBURG, MA 01462 (MAP–125 LOT–16)
G – DEAN W. & DEBORAH L. JOHNSON; 71R KNOWER ROAD; WESTMINSTER, MA 01473 (MAP–125 LOT–4)
H – JOHNSON & SONS POULTRY FARMS, INC; P.O. BOX 504; WESTMINSTER, MA 01473 (MAP–125 LOT–5)
I – MATHIEU & JACQUELINE NOWLAN; 76 KNOWER ROAD; WESTMINSTER, MA 01473 (MAP–134 LOT–2–1)
J – MARK LECLAIR; 493 FITCHBURG RD; MASON, NH 03048 (MAP–134 LOT–1)
K – ROBERT E. & ROBERTA M. MCLEOD; 82 KNOWER ROAD; WESTMINSTER, MA 01473 (MAP–134 LOT–2–2)
L – KYLE BENNETT & JAMIE J. NARUS; 83 KNOWER ROAD; WESTMINSTER, MA 01473 (MAP–134 LOT–15)
M – DANIEL K. & MANDY J. CHACE; 86 KNOWER ROAD; WESTMINSTER, MA 01473 (MAP–134 LOT–3)
N – MANDY & DANIEL CHACE; 86 KNOWER ROAD; WESTMINSTER, MA 01473 (MAP–134 LOT–4)
O – PURPOSEFUL REALTY, LLC; 20 MAIN STREET; ASHBURNHAM, MA 01430 (MAP–134 LOT–5)
P – MICHAEL G. & LEFAVE SAUNDERS; 100 KNOWER ROAD; WESTMINSTER, MA 01473 (MAP–134 LOT–6)
Q – JOANNE H. CURTIN; 104 KNOWER ROAD; WESTMINSTER, MA 01473 (MAP–134 LOT–7)



LOT OVERVIEW 1"=500'

REVISED 4–3–24

NOTICE OF INTENT PLAN

PARCEL 134–13
KNOWER ROAD; WESTMINSTER, MASSACHUSETTS

OWNER:
BARKLEY ENTERPRISES LLC.
PO BOX 459; RINDGE, NH 03461

PREPARED FOR:
BARKLEY ENTERPRISES LLC.

JANUARY 25, 2024

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447; (603) 585–6959

JOB NO. 22185

EROSION & SEDIMENTATION CONTROL PLAN

GENERAL

1. THIS PLAN IS PART OF A SET OF DOCUMENTS THAT ARE TO BE VIEWED AND REVIEWED IN THEIR ENTIRETY, SUCH DOCUMENTS INCLUDE THE CONSTRUCTION SPECIFICATIONS, CONSTRUCTION PLANS AND ANY PERMITS ISSUED BY THE TOWN OF WESTMINSTER, AGENTS OF THE TOWN OF WESTMINSTER OR OTHER REGULATORY AGENCIES.
2. THIS IS A PERFORMANCE SPECIFICATION WHICH THE CONTRACTOR SHALL APPLY APPROPRIATE MEANS AND METHODS TO ACHIEVE.

EROSION CONTROL MEASURES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT EROSION AND SEDIMENTATION ARE CONTROLLED. THIS PLAN SHALL BE ADAPTED TO FIT THE CONTRACTOR'S EQUIPMENT, WEATHER CONDITIONS, AND ANY ORDER OF CONDITIONS ISSUED BY THE BOARD OF HEALTH, CONSERVATION COMMISSION, AND ANY SPECIAL CONDITIONS ISSUED BY ANY OTHER REGULATORY AGENCY OF THE TOWN OF WESTMINSTER.
2. THE MOST IMPORTANT ASPECTS OF CONTROLLING EROSION AND SEDIMENTATION ARE LIMITING THE EXTENT OF DISTURBANCE AND STABILIZING SURFACES AS SOON AS POSSIBLE. OF SECONDARY IMPORTANCE IN EROSION CONTROL, IS LIMITING THE SIZE AND LENGTH OF THE TRIBUTARY DRAINAGE AREA WITHIN THE WORK SITE AND DRAINAGE STRUCTURES. THESE FUNDAMENTAL PRINCIPLES SHALL BE THE KEY FACTOR IN THE CONTRACTOR'S CONTROL OF EROSION ON THE SITE.
3. THE EXISTING SOIL CONDITIONS PROVIDE THE POTENTIAL OF RUNOFF TO OFF-SITE AREAS WITH EROSION.
4. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY DIVERSION SWALES AND SETTLING BASINS IN AREAS OF FUTURE CONSTRUCTION. CONSTRUCTION IS PERMITTED BEYOND THE LIMIT OF DISTURBANCE ONLY WHEN ADDITIONAL DRAINAGE MEASURES OR STABILIZATION MEASURES ARE NEEDED, AND SHALL BE SUBJECT TO APPROVAL BY THE TOWN OF WESTMINSTER PRIOR TO WORK OUTSIDE OF DESIGNATED LIMIT OF DISTURBANCE LINE. THE LIMIT OF DISTURBANCE LINE SHALL BE THE EROSION CONTROL BARRIER.
5. ALL DISTURBED SURFACES SHALL BE STABILIZED A MINIMUM OF 14 DAYS AFTER CONSTRUCTION IN ANY PORTION OF THE SITE HAS CEASED OR IS TEMPORARILY HALTED UNLESS ADDITIONAL CONSTRUCTION IS INTENDED TO BE INITIATED WITHIN 21 DAYS.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE AND REPAIR OF ALL EROSION CONTROL DEVICES ON-SITE. ALL EROSION CONTROL DEVICES SHALL BE REGULARY INSPECTED AT AN INTERVAL OF ONCE PER WEEK OR BIWEEKLY WITH ADDITIONAL INSPECTIONS AFTER RECEIVING A RAINFALL OF 1/2" OR MORE. ANY SEDIMENTS REMOVED FROM THE CONTROL DEVICES MUST BE DISPOSED OF PROPERLY.
7. AT NO TIME SHALL SILT-LADEN WATER BE ALLOWED TO ENTER SENSITIVE AREAS (WETLANDS, OFF-SITE AREAS, AND DRAINAGE SYSTEMS). ANY RUNOFF FROM DISTURBED SURFACES SHALL BE DIRECTED THROUGH SETTLING BASINS AND EROSION CONTROL BARRIERS PRIOR TO ENTERING ANY SENSITIVE AREAS.
8. IF POSSIBLE, SHEET FLOW STORMWATER UPGRADIENT FROM PROPOSED DISTURBANCES SHOULD BE INTERCEPTED WITH SWALES AND ROUTED AROUND SAID DISTURBANCE TO LIMIT FLOW OVER ALL DISTURBED AREAS.

PRELIMINARY SITE WORK

1. MATERIAL REMOVED SHOULD BE STOCKPILED, SEPARATING THE TOPSOIL FOR FUTURE USE ON THE SITE. EROSION CONTROLS SHALL BE UTILIZED ALONG THE DOWNSLOPE SIDE OF THE PILES IF THE PILES ARE TO REMAIN MORE THAN THREE WEEKS OR IF THE PILES ARE SUBJECT TO EROSION CONDITIONS SUCH ASE INTENSE RAIN, WIND OR OTHER EXPOSURE.
2. STOCKPILES SHALL BE LOCATED AS SPECIFIED HEREIN AND AS REQUIRED. SHOULD ADDITIONAL AREAS BE NEEDED THEY SHALL BE LOCATED WITHIN THE LIMITS OF DISTURBANCE, IN AREAS OF MINIMAL IMPACT. IF A STOCKPILE IS LOCATED ON A SLOPE, THE RUNOFF SHALL BE DIRECTED AWAY FROM THE PILE.
3. IF INTENSE RAINFALL IS ANTICIPATED, THE INSTALLATION OF SUPPLEMENTAL STRAW BALE DIKES, SILT FENCES, OR ARMORED DIKES SHALL BE UTILIZED.
4. IF THE SITE CONSTRUCTION OCCURS AT ANY TIME OTHER THAN THE MAY-NOVEMBER CONSTRUCTION SEASON, THE SITE DRAINAGE SYSTEM SHALL BE INSTALLED, MAINTAINING HYDRAULIC CAPACITY, PRIOR TO ANY ROUGH GRADING IN THE BUFFER ZONE.
5. INLET SEDIMENT CONTROL DEVICES SHALL BE INSTALLED ON ALL CATCH BASINS ADJACENT TO THE LIMIT OF WORK, EVEN IF OUTSIDE THE DELINEATED LIMIT OF WORK. THE GENERAL CONTRACTOR SHALL MONITOR AND EMPTY AND/OR REPLACE AS NEEDED.

DRAINAGE SYSTEM

1. THE DRAINAGE SYSTEM SHALL BE INSTALLED FROM THE DOWNSTREAM END UP.
2. A SILT FENCE SHALL BE INSTALLED AT THE OUTFALL OF ALL TEMPORARY BASINS AND SWALES. IT SHALL REMAIN IN PLACE UNTIL ALL TRIBUTARY AREAS ARE STABILIZED.
3. WATER SHALL NOT BE ALLOWED TO ENTER PIPES FROM UN-STABILIZED SURFACES. SILT FENCE SHALL BE MONITORED, CLEANED & REPLACED AS NEEDED ON A REGULAR BASIS. SEE NPDES SWPPP REQUIREMENTS IF APPLICABLE.
4. TRENCH EXCAVATIONS SHALL BE LIMITED TO THE MINIMUM LENGTH REQUIRED DAILY PIPE INSTALLAITON. ALL TRENCHES SHALL BE BACKFILLED AS SOON AS POSSIBLE. THE ENDS OF PIPES SHALL BE CLOSED NIGHTLY WITH PLYWOOD AND BACKER BOARD.
5. IF UNSTABLE AREAS ARE ENCOUNTERED DUE TO NATURAL SPRINGS OR GROUNDWATER BREAKOUT, INTERCEPTOR DRAINS SHALL BE INSTALLED TO DIRECT THE RUNOFF INTO THE DRAINAGE SYSTEM.
6. IT IS IMPORTANT THAT THE DRIVEWAY CROSSPITCH AND SWALES ARE CONSTRUCTED AS SHOWN HEREIN TO ELIMINATE THE RISK OF SEDIMENT-LADEN RUNOFF RUNNING INTO SENSITIVE AREAS/OFF-SITE AREAS.

PREVENTATIVE MAINTENANCE

THE CONTRACTOR SHALL BE RESPONISBLE FOR MAINTENANCE OF ALL TEMPORARY AND PERMANENT CONTROLS THROUGHOUT THE DURATION OF THIS CONTRACT. MAINTENANCE PRACTICES SHALL INCLUDE BUT ARE NOT LIMITED TO:

1. INSPECTIONS OF EROSION CONTROL MEASURES/STORMWATER FEATURES AT INTERVALS DICTATED WITHIN THE SWPPP – EITHER WEEKLY OR BIWEEKLY WITH ADDITIONAL INSPECTIONS AFTER RAINSTORMS OF 1/4" OR MORE.
2. CLEANING OF SEDIMENT AND DEBRIS FROM STORMWATER MANAGEMENT AREA FOREBAY TWICE A YEAR OR MORE FREQUENTLY AS DICTATED BY SWPPP INSPECTIONS.
3. IMPLEMENTATION OF OTHER MAINTENANCE OR REPAIR ACTIVITIES AS DEEMED NECESSARY BASED ON SWPPP INSPECTIONS.
4. REMOVAL OF BUILT UP SEDIMENT ALONG SILT FENCES, WATTLES AND / OR HAY BALE BARRIERS.
5. REMOVAL OF BUILT UP SEDIMENT IN BOTH TEMPORARY AND PERMANENT CONTROLS SUCH AS GRASS SWALES, SEDIMENT FOREBAYS AND RECHARGE / DETENTION BASINS.
6. RECONSTRUCTING THE STABILIZED CONSTRUCTION ENTRANCE IF NOT WORKING PROPERLY.
7. TREATMENT OF NON-STORMWATER DISCHARGES SUCH AS WATER FROM WATER LINE FLUSHINGS OR GROUNDWATER FROM DEWATERING EXCAVATIONS. SUCH FLOWS SHOULD BE DIRECTED TO A TEMPORARY SEDIMENTATION BASIN OR STORMWATER MANAGEMENT AREA.

INSTALLATION OF UTILITIES

1. CARE SHALL BE TAKEN TO ASSURE THAT THE UTILITY TRENCHES DO NOT CHANNELIZE RUNOFF TOWARDS EXISTING STREETS OR OTHER OFF-SITE AREAS.
2. THE INSTALLATION OF SUBSURFACE UTILITIES AND APPURTENANCES SHALL BE IN ACCORDANCE WITH THE APPLICABLE UTILITY COMPANY SPECIFICAITONS.
3. TRENCH EXCAVATIONS SHALL BE LIMITED TO THE MINIMUM LENGTH REQUIRED FOR DAILY UTILITY INSTALLATION. ALL TRENCHES SHALL BE BACKFILLED AS SOON AS POSSIBLE.

LANDSCAPING

1. LANDSCAPING SHALL OCCUR AS SOON AS POSSIBLE TO PROVIDE PERMANENT STABILIZATION OF DISTURBED SURFACES.
2. CONTRACTOR SHALL UTILIZE A VARIETY OF SLOPE STABILZATION METHODS AND MATERIALS WHICH SHALL BE ADJUSTED TO THE SITE CONDITIONS. EROSION CONTROL BLANKETS OF MIRAFI MIRAMAT (OR SIMILAR) SHALL BE AVAILABLE ON-SITE.
3. IF THE SEASON OR ADVERSE WEATHER CONDITIONS DO NOT ALLOW THE ESTABLISHMENT OF VEGETATION, TEMPORARY MULCHING WITH STRAW, TACKIFIED WOOD CHIPS, OR OTHER METHODS SHALL BE PROVIDED.
4. A MINIMUM OF 4" TOPSOIL SHALL BE PLACED AND ITS SURFACE SMOOTHED TO THE SPECIFIED GRADES PER THE PROJECT'S SPECS.
5. SEED APPLICATIONS SHALL BE IN ACCORDANCE WITH THE GRASS AND SLOPE COVER SPECIFICATIONS.

PRE-CONSTRUCTION

1. AN EROSION CONTROL BARRIER SHALL BE INSTALLED AS DEPICTED ON THE SITE PLAN. THIS BARRIER SHALL REMAIN IN PLACE UNTIL ALL TRIBUTARY SURFACES HAVE BEEN FULLY STABILIZED. THE EROSION CONTROL BARRIERS AS SHOWN ON THE SITE PLAN ARE THE MINIMUM REQUIRED TO PROTECT THE ON & OFF SITE DRAINAGE SYSTEMS.
2. THE CONTRACTOR SHALL ESTABLISH A STAGING AREA ON A PORTION OF THE AREA TO BE DISTURBED FOR THE OVERNIGHT STORAGE OF EQUIPMENT AND STOCKPILING OF MATERIALS.
3. IN THE STAGING AREA, THE CONTRACTOR HSALL HAVE A STOCKPILE OF MATERIALS REQUIRED TO CONTROL EROSION ON-SITE TO BE USED TO SUPPLEMENT OR REPAIR EROSION CONTROL DEVICES. THESE MATERIALS SHALL INCLUDE, BUT ARE NOT LIMITED TO: STRAWBALES, SILT FENCE AND CRUSHED STONE.
4. A TEMPORARY STONE CONSTRUCTION ENTRANCE IS REQUIRED TO PREVENT TRACKING OF SILT, MUD, ETC. ONTO EXISTING ROADS. THE STONE SHALL BE REPLACED REGULARLY AS WELL AS WHEN THE STONE IS SILT LADEN OR EQUIPMENT IS OBSERVED TO BE TRACKING SOIL ONTO THE ROADWAYS.
5. THE CONTRACTOR IS RESPONSIBLE FOR EROSION CONTROL ON SITE AND SHALL UTILIZED EROSION CONTROL MEASURES WHERE NEEDED REGARDLESS OF WHETHER THE MEASURES ARE SPECIFIED HEREIN, ON THE PLAN OR IN ANY ORDER OF CONDITIONS.

GENERAL CONSTRUCTION REQUIREMENTS

1. ANY REFUELING OF CONSTRUCTION VEHICLES AND EQUIPMENT SHALL NOT BE CONDUCTED IN PROXIMITY TO SEDIMENTATION BASINS OR DIVERSION SWALES, AND BE PERFORMED OFF-SITE IF POSSIBLE.
2. NO ON-SITE DISPOSAL OF SOLID WASTE, INCLUDING BUILDING MATERIALS IS ALLOWED OUTSIDE OF DESIGNATED AREAS. THE BURIAL OF STUMPS, CONSTRUCTION DEBRIS OR OTHER MATERIALS SHALL NOT BE ALLOWED ANYWHERE ON-SITE.
3. NO MATERIALS SHALL BE DISPOSED OF INTO THE WETLANDS OR EXISTING OR PROPOSED DRAINAGE SYSTEMS. ALL CONTRACTORS INCLUDING: CONCRETE SUPPLIERS, PAINTERS, AND PLASTERERS, SHALL BE INFORMED THAT THE CLEANING OF EQUIPMENT IS PROHIBITED IN AREAS WHERE THE WASH-WATER WILL DRAIN DIRECTLY INTO THE SITE DRAINAGE SYSTEMS.
4. THE CONTRACTOR IS RESPONSIBLE FOR DUST CONTROL WHICH SHALL INCLUDE STREET SWEEPING OF ALL PAVED SURFACES WITHIN THE SITE AND OFF-SITE AREAS THAT ARE IMPACTED BY SITE CONSTRUCTION ON A REGULAR BASIS, AS NEEDED.

GENERAL CONSTRUCTION NOTES

1) CONSTRUCT COBBLE STONE STABILIZED ENTRANCE APRONS (40' LONG X 12' WIDE PER DETAIL).

2) THE CONSTRUCTION SEQUENCING SHALL BE AS FOLLOWS:
   1. INSTALL CONSTRUCTION ENTRANCES AND PERIMETER EROSION CONTROLS (SILTFENCE TO BE INSTALLED DOWNGRADIENT OF ALL DISTURBANCE)
   2. CONSTRUCT WATER QUALITY SWALES AND DETENTION BASINS.
   3. STABILIZE SLOPES IN SEDIMENT FOREBAYS AND DETENTION BASINS. ALL ELEMENTS TO RECEIVE RUNOFF SHALL BE FIRST STABILIZED PRIOR TO DIRECTING WATER TO THEM. UTILIZE NORTH AMERICAN GREEN'S C350 EROSION CONTROL/TURF REINFORCEMENT MAT. USE LOAM, SEED & MULCH IN BASINS IF IN GROWING SEASON.
   4. REMOVE TREES, STRIP, AND STOCKPILE SOILS. IF STOCK PILE IS LEFT FOR MORE THAN 21 CALENDAR DAYS, IT SHALL BE COVERED WITH A TEMPORARY VEGETATIVE COVER (RYEGRASS/APPROVED EQUAL).
   5. MAKE CUTS AND FILLS AND SIDE SLOPES AND CONSTRUCT TEMPORARY WATER BARS AS NEEDED.
   6. LOAM SIDE SLOPES & SEED/MULCH WITHIN 72 HOURS OF FINAL GRADE.
   7. INSTALL PERMANENT DRAINAGE STRUCTURES, SUB DRAINS, AND SWALES/ CHECK DAMS.

3) SLOPE SEEDING SHALL BE STANDARD SLOPE SEED MIX. SEED APPLICATION SHALL CONTAIN STABILIZING STRAW MULCH. SEEDING DATES SHALL CONFORM WITH THE SPRING OR FALL PLANTING SEASON. TEMPORARY SEEDING SHALL BE AN ANNUAL RYEGRASS (OR RYEGRASS BLEND) SUITABLE FOR THE LOCALE.

4) STAKED & ENTRENCHED HAY BALES SHALL BE PLACED IN AREAS OF CONCENTRATED FLOW AS NEEDED. INSPECT AND REPAIR EROSION CONTROLS AND CONENTRATED FLOW AREAS WEEKLY OR BIWEEKLY AND FOLLOWING EACH RAINFALL (1/2" OR MORE), OR FOLLOWING SNOW MELTS. REMOVE SEDIMENT AS NEEDED. SEE I & M MANUAL. ADDITIONAL HAY BALE DAMS, GEOTEXTILES AND RIP-RAP MAY ALSO BE ADDED AS NECESSARY TO REDUCE FLOW AND PRECLUDE SOIL EROSION.

6) ONCE PERMANENT SWALES AND BASINS ARE CONSTRUCTED, A LAYER OF MIRAFI 140N (OR EQUAL) FABRIC SHOULD BE INSTALLED IN THE FOREBAY TO AID IN THE BASIN CLEANING DURING THE UNSTABILIZED SITE CONDITIONS.

7) THE SITE CONTRACTOR SHALL MAKE DAILY INSPECTIONS OF SITE STABILIZATION MEASURES AND MAKE ADJUSTMENTS AND REPAIRS WHERE NECESSARY.

8) WINTER CONSTRUCTION NOTES:
   a) ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATED GROWTH BY OCTOBER 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES STEEPER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS:
   b) ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATED 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,
   c) AFTER NOVEMBER 15th, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL.

MISCELLANEOUS NOTES:

1) THE CONTRACTOR (DURING CONSTRUCTION) AND OWNERS SHALL MANAGE SITE OPERATIONS TO PRECLUDE THE INTRODUCTION OF ANY INVASIVE/ALIEN VEGETATION SPECIES.
2) THE SITE CONTRACTOR IS RESPONSIBLE FOR DUMPSTERS AND PORTA-POTTIES BEING AVAILBLE FOR USE AND THE MONITORING OF THESE FACILITIES TO REQUEST SERVICE IN A TIMELY FASHION.
3) THIS PROJECT IS COVERED THROUGH A NDPES CONSTRUCTION GENERAL PERMIT (ID:MAR10050W)

STORMWATER SYSTEM OPERATION & MAINTENANCE:

A) RESPONSIBILITY- THE OWNER SHALL BE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE STORMWATER SYSTEM AND RESPONSIBILITY SHALL BE TRANSFERRED TO PROSPECTIVE BUYERS AT THE SALE OF THE PROPERTY THROUGH A MAINTENANCE AGREEMENT.

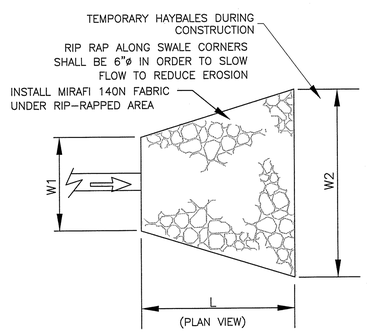
B) INSPECTIONS- SYSTEM INSPECTIONS SHALL BE MADE WEEKLY OR BIWEEKLY AND AFTER HEAVY RAINS (I.E. 1/2") DURING CONSTRUCTION AND ADJUSTMENTS MADE PROMPTLY. BASINS & SWALES SHALL BE INSPECTED MONTHLY WHILE ESTABLISHING FULL VEGETATIVE GROWTH AFTER CONSTRUCTION AND PER THE INSPECTION & MAINTENANCE PLAN THEREAFTER.

C) MAINTENANCE- SEE INSPECTION & MAINTENANCE AGREEMENT.

CONSTRUCTION SEQUENCING

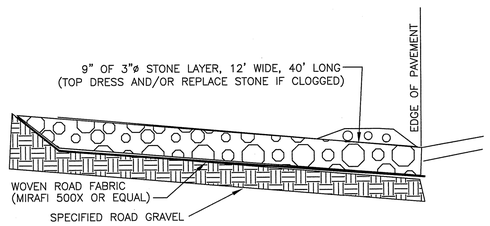
1A. CONSTRUCTION OF INFILTRATION BASINS 2 & 3
1B. STOCKPILING OF GRAVEL FOR DRIVEWAYS FROM REAR LAND
2. LOT-3 DRIVEWAY & ASSOCIATED CONVEYANCES TO IB-2 & 3
3A. LOT-3 HOUSE CONSTRUCTION
3B. INFILTRATION BASIN-8U CONSTRUCTION & CONVEYANCES
4. CONSTRUCTION OF INFILTRATION BASINS 1, 6, AND 7 (AFTER WETLANDS PERMITTING)
5A. CONSTRUCTION OF DRIVEWAYS/CONVEYANCES TO APPROPRIATE BASINS ON LOTS 1*, 2, 4, 5, 6, AND 7.
   *DRIVEWAY FOR LOT-1 ONLY NEEDS TO BE COMPLETED TO THE EXTENT NECESSARY TO CAPTURE UPGRADIENT DRAINAGE FROM OTHER DRIVEWAYS (UPPER SIDE SWALE)
5B. CONSTRUCTION OF HOUSES ON LOTS 2, 4, 5, 6, AND 7 CAN BEGIN WHEN DRIVEWAYS/CONVEYANCES TO APPROPRIATE BASINS HAVE BEEN STABILIZED ON THE SAME LOT AS THE HOUSE.
6. CONSTRUCTION OF INFILTRATION BASINS 8L & 9 (AFTER WETLANDS PERMITTING)
7A. CONSTRUCTION OF DRIVEWAYS/CONVEYANCES TO APPROPRIATE BASINS ON LOTS 8 & 9
7B. CONSTRUCTION OF HOUSES ON LOTS 8 & 9 CAN BEGIN WHEN DRIVEWAYS/CONVEYANCES TO APPROPRIATE BASINS HAVE BEEN STABILIZED ON THE SAME LOT AS THE HOUSE.

*NOTE-ALL BASINS TO BE CONSTRUCTED AS SEDIMENT BASINS ORIGINALLY, AND SHALL BE CLEANED AND CONVERTED TO A STABILIZED INFILTRATION BASIN ONLY WHEN ALL UPSTREAM SURFACES HAVE BEEN STABILIZED.



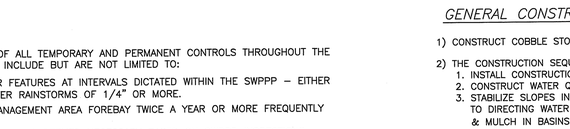
RIP-RAP APRON DETAIL NTS

	50 YR FLOW	W1	W2	L	S
INFILTRATION BASIN-1 OUTFALL	16.95 CFS	10'	20'	28'	3"ø
18"ø OUTLET FROM INF. BASIN 2	7.77 CFS	5'	12'	10'	4"ø
INFILTRATION BASIN-3 OUTFALL	4.19 CFS	8'	12'	15'	3"ø
NORTHERN 12"ø OUTLET FROM INF BASIN 6	5.25 CFS	3'	11'	10'	3"ø
EASTERN OUTLET FROM INF BASIN 6	1.08 CFS	5'	13'	10'	3"ø
INFILTRATION BASIN-7 OUTFALL	1.36 CFS	5'	16'	27'	3"ø
INFILTRATION BASIN-8U OUTFALL	5.68 CFS	5'	16'	27'	3"ø
INFILTRATION BASIN-8L OUTFALL	2.98 CFS	5'	14'	19'	3"ø
INFILTRATION BASIN-9 OUTFALL	1.92 CFS	10'	15'	16'	3"ø
2-24"ø WETLAND CROSSING CULVERTS	16.88 CFS	8'	14'	11'	6"ø
DRIVEWAY-1 2-15"ø CULVERTS	16.69 CFS	5'	13'	10'	3"ø
DRIVEWAY-2 UPPER 12"ø CULVERT	3.65 CFS	3'	12'	27'	3"ø
DRIVEWAY-2 LOWER 12"ø CULVERT	2.50 CFS	3'	12'	27'	3"ø
DRIVEWAY-5 LOWER 12"ø CULVERT	3.17 CFS	3'	6'	5'	3"ø
DRIVEWAY-5 UPPER 12"ø CULVERT	0.54 CFS	3'	15'	35'	3"ø
DRIVEWAY-6 UPPER 12"ø CULVERT	1.13 CFS	3'	6'	5'	3"ø
DRIVEWAY-8 LOWER 12"ø CULVERT	7.70 CFS	3'	12'	11'	6"ø

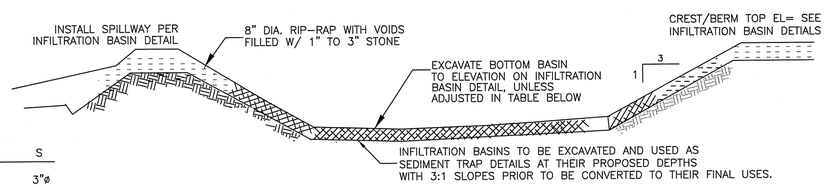


NOTE: IF STONE PAD DOES NOT ADEQUATELY PRECLUDE MUD TRACKING ONTO TOWN ROAD, HAND REMOVAL AND/OR WASHING AT APPROVED LOCATION SHALL BE PERFORMED.

CONSTRUCTION ENTRANCE DETAIL NTS



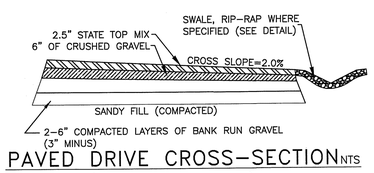
PAVED DRIVE CROSS-SECTION NTS



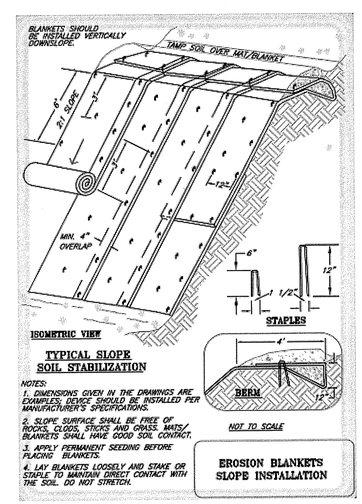
1. TRAP TO BE CLEANED WHEN 50% OF ORIGINAL VOLUME IS FILLED.
2. THE MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.
3. ALL SEDIMENT IS TO BE REMOVED TO RESTORE INFILTRATION RATES/DESIGN VOLUMES WHEN CONVERTED TO INFILTRATION/DETENTION BASINS.

SEDIMENT TRAP DETAIL NTS

	IB-1	IB-2	IB-3	IB-6	IB-7	IB-8L	IB-8U	IB-9
2-YEAR VOLUME (CF)	19,471	8,450	6,185	6,577	1,045	3,049	6,142	2,440
CONTRIBUTING AREA (AC)	8.24	1.732	1.296	1.790	0.632	0.831	2.403	0.349
REQUIRED STORAGE (CF)	19,471	6,235	4,666	6,444	1,045	2,991	6,142	1,257
AVAILABLE STORAGE (CF)	23,499	6,409	7,826	7,678	1,235	4,204	9,287	2,734
BOTTOM BED ADJUSTMENT	N/A	-2'	N/A	-2'	-1'	N/A	N/A	N/A



PAVED DRIVE CROSS-SECTION NTS
(CROSS SLOPE)
WHERE INDICATED ON PLAN



NOTES:
1. DIMENSIONS GIVEN IN THE DRAWINGS ARE EXAMPLES; DEVICE SHOULD BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
2. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/ BLANKETS SHALL HAVE GOOD SOIL CONTACT.
3. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
4. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

GRAZ Engineering, LLC
323 WEST LAKE ROAD; FITZWILLIAM, NH 03447
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Eastern Tree, LLC
ARBORISTS 978-752-0373
FITCHBURG, MA WORCESTER, MA

KNOWER ROAD (MAP-134 LOTS-13 & 14) RESIDENTIAL DEVELOPMENT
EROSION CONTROL NOTES & DETAILS

PREPARED FOR: BARKLEY ENTERPRISES, LLC
P.O. BOX 459; RINDGE, NH 03461

SCALE AS-NOTED
DRAWN BY T. FLETCHER
DATE APRIL 1, 2024
REVISED

COMMONWEALTH OF MASSACHUSETTS
TREVOR FLETCHER
CIVIL
NO. 57043
REGISTERED PROFESSIONAL ENGINEER

DRAWING SET
SHEET 8 OF 8