OWNER

MAP # LOT # PAUL O. BOFINGER FAMILY TRUST OF 2019 LISE BOFINGER, TRUSTEE P.O. BOX 187 WELD, ME 04285-0187

### ENGINEER

NORTHPOINT ENGINEERING, LLC 119 STORRS ST., STE 201 CONCORD, NH 03301

### **ABUTTERS**

MAP 28Z LOT 43 RALPH W. & JEANNE M A WILSON TRUST RALPH W. & JEANNE M A WILSON TRUSTEES P.O. BOX 4025 68 SHAKER ROAD CONCORD, NH 03301

MAP 28Z LOT 44 ADAM P. STEINBERG & KARRIE ANN STONE 39 OAK HILL ROAD CONCORD, NH 03301

MAP 411Z LOT 23 NOMINEE ACADIA TRUST & RICHARD C. MURRAY REV. TRUST 294R ISLAND POND ROAD DERRY, NH 03038-5903

MAP 411Z LOT 24 ESTHER O. MURRAY 98 MOUNTAIN ROAD CONCORD, NH 03301-6902

<u>MAP 411Z LOT 27</u> SKAJ REVOCABLE TRUST ALICE S. KINSLER TRUSTEE 92 MOUNTAIN ROAD CONCORD, NH 03301-6902

MAP 411Z LOT 47 PAMELA JANE OLIN 41 SHAKER ROAD CONCORD, NH 03301-6909

## LEGEND

### **APPLICANT**:

MERC PROPERTIES, LLC 189 NORTH MAIN STREET, SUITE 101 CONCORD, NH 03301

### **SURVEYOR**

RICHARD D. BARTLETT & ASSOCIATES, LLC. 214 NORTH STATE STREET CONCORD, NH 03301

# MAP 411Z LOT 48 SARAH JANE MORRISON CONCORD, NH 03302-4025

MAP 411Z LOT 50 HAILEY ELIZABETH & TRAVIS CHARLES PAIGE 42 SHAKER ROAD CONCORD, NH 03301-6924

MAP 411Z LOT 51 ALAN A. & LUCINDA M. PAIGE 40 ⅔ SHAKER ROAD CONCORD, NH 03301-6924

MAP 412Z LOT 11 CITY OF CONCORD 41 GREEN STREET CONCORD, NH 03301-4255

MAP 412Z LOT 69 PETER O. & HEATHER J. HAYDEN 33 OAK HILL ROAD CONCORD, NH 03301-8603

EGEND		
EXISTING	DESCRIPTION	<b>PROPOSED</b>
	STONE BOUND	
0	BENCHMARK	•
	IRON PIPE/PIN	ТВМ
©	DRILL HOLE	Õ
	CATCH BASIN	
$\bigcirc$	DRAIN MANHOLE	Õ
S	SEWER MANHOLE	Ŏ
Осо	CLEANOUT	<u>О</u> со
⊖ MW	MONITORING WELL	⊖ MW
$\bowtie$	UTILITY VALVE	M
z,°o	WATER SHUT-OFF VALVE	z₂°o
V	FIRE HYDRANT	*
	WELL	$\otimes$
	SIGN	
•	BOLLARD	•
C.	UTILITY POLE	
-0	GUY WIRE	-0
	TREE	$\bigcirc$
	SHRUB	$\bigcirc$
	WETLAND SYMBOL	
	SPOT GRADE	F100.00
	WETLAND LIMITS	× · · · · · · · · · · · · · · · · · · ·
<u> </u>	EDGE OF WATER	
	LINE (PER SWQPA)	
	50' WATERFRONT BUFFER (PER SWQPA)	
	150' WOODLAND BUFFER (PER SWQPA)	
	250' PROTECTED SHORELAND (PER SWQPA)	
	BOUNDARY	
	ABUTTER LINE	
	EASEMENT	
	EDGE OF PAVEMENT	
<u> </u>	CONTOUR (2-FT)	— F248 —
— - 250 - —	CONTOUR (10-FT)	— F250 —
——— W ———	WATER LINE	—— w ——
S	SEWER LINE	s
SFM	SEWER FORCE MAIN	SFM
G	GAS LINE	G
D	DRAINAGE LINE (<12")	——— D ———
	DRAINAGE LINE (>12")	
UD	UNDERGROUND UTIL.	UD
UGU	OVERHEAD UTIL.	UGU
0000000	STONEWALL	$\infty$
O	FENCE	o
	SILI FENCE	—— <del>×</del> ——

TREELINE

 $\frown$ 

# SUBDIVISION IMPROVEMENT PLANS **PREPARED FOR:**



# THE WOODS AT EAST VILLAGE

TAX MAP 411Z LOT 49 - SHAKER ROAD CONCORD, NEW HAMPSHIRE

> AREA PLAN SCALE: 1"=200'±



VICINITY MAP *SCALE:* 1"=2,000'±

SHEET INDEX

NO.	TITLE	LAST REVISED
	COVER SHEET	02/25/22
01	OVERVIEW PLAN	02/25/22
EX1 - EX2	EXISTING CONDITIONS PLAT	02/22/22
S1 - S2	CONDOMINIUM SITE PLAN	02/22/22
C1	SITE LAYOUT PLAN	02/25/22
C2	GRADING & DRAINAGE PLAN	02/25/22
<i>C3</i>	UTILITY PLAN	02/25/22
C4	ROADWAY & UTILITY PROFILES	02/25/22
C5	LANDSCAPE PLAN	02/25/22
C6	EROSION CONTROL PLAN	02/25/22
C7 - C16	CONSTRUCTION DETAILS	02/25/22
C17 - C19	PRIVATE ROADWAY CROSS-SECTIONS	02/25/22
X1 of 1	COMMON OPEN SPACE EXHIBIT	02/25/22
A1 - A4	ARCHITECTURAL PLANS	01/19/22







	2/2 0. DA	:2/22 TE	REVIEW COMMENTS REVISION	FOR: RICHARD D. BARTLETT	Fr. de
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1	2/22/22 DATE		FOR: RICHARD D. BARTLETT	
10.	DATE	REVISION	FOR: RICHARD D. BARTLETT & ASSOCIATES, LLC	





COMMON OPEN SPACE 12" W/ WIRE 5 HEARTHSTONE 7 HEARTHSTONE 1 HEARTHSTONE 3 HEARTHSTONE 9 HEARTHSTONE PERIMETER BUFFER DRIVE DRIVE DRIVE DRIVE DRIVE 12'x40' LCA PRIVATE YARD 12'x40' LCA PRIVATE YARD 12'x40' LCA 12'x40' LCA PRIVATE YARDPRIVATE YARD 11 HEARTHSTONE 12'x40' LCA PRIVATE YARD DRIVE 13 HEARTHSTONE DRIVE COMMON 12'x40' LCA PRIVATE YARD (7) 🖯 (8 OPEN 12'x40' LCA PRIVATE YARD SPACE UNIT 2 UNIT UNIT UNIT UNIT 3 UNIT NOT YET BEGUN UNIT NOT YET NOT YET NOT YET NOT YET BEGUN BEGUN BEGUN BEGUN NOT YET BEGUN NOT YET BEGUN R=238.00 N75°18'28"E 🗸 L=42.20 , Δ=10°09'34 R=188.00 L=58.65 R=188.00 ∆=17°52'26 L=33.34  $\sim$ ∆=10°09'34" N85°28'02" 5-67 93.09' R=238.00 ----5-68 L = 42.20R=238.00 ∆=10°09'34" S75'18'28"\ S85.28'02''W L=74.25 —183.55' ∆=17°52'26" L=33.34 93.09, ∆=10°09'34" -65 5-83 5-64 5-80 COMMON OPEN SPACE 5-84 5-73 5-85 5-74 5-25 5-22 5-24 5-23 **----**1318.19'

> CONIFEROUS TREE SHRUB

DECIDUOUS TREE ARTESIAN WELL IRON PIPE OR REBAR

GRANITE OR CONCRETE BOUND (GB OR CB) DRILL HOLE (DH) UTILITY POLE

LIGHT POLE SEWER MANHOLE DRAIN MANHOLE CATCH BASIN

HYDRANT WATER SHUTOFF

WATER VALVE

IRRIGATION CONTROL VALVE GAS SHUTOFF

MONITORING WELL

1. Survey by total station between the dates of March 8 and 24 2021. Control Traverse error of closure is 1':19,133'.

NOTES

5-89

5-90

2. Horizontal datum is based on New Hampshire State Plane Coordinate System NAD 83 based on GPS observations and OPUS solutions. 3. Vertical datum is based on NAVD 88.

4. Owner of record: Paul O. Bofinger Family Trust of 2019 19 Tallant Road Concord, NH 03301 Map 411Z, Lot 49 Book 3622, Page 1484

5. The subject premises is within the Medium Density Residential zoning district, Minimum lot size = 12,500 sq. ft., Minimum buildable land = 6,250 sq. ft., Minimum frontage = 100', Building setbacks: front=25'; rear=25'; side=15', Maximum lot coverage = 40%.

6. The underground utilities depicted hereon have been located from field survey information and plotted from existing drawings. The surveyor makes no guarantee that the underground utilities depicted comprise all such utilities in the area, either in service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated although they are located as accurately as possible from the information available. The surveyor has not physically located the underground portion of the utilities. All contractors should notify, in writing, any utility company and appropriate governmental agencies prior to any excavation work and call DIG-SAFE at 811.

7. The intent of this plat is to depict a 20 unit condominium. 8. Wetland buffers shall be clearly and permanently marked before during

and after construction in accordance with Section 28.07 of the Subdivison Regulations.

I CERTIFY THAT THIS PLAT WAS PREPARED BY ME OR THOSE UNDER MY DIRECT IMMEDIATE SUPERVISION, AND DEPICTS A SURVEY CONDUCTED WITH A TOTAL STATION HAVING AN URBAN CLASSIFICATION AND A MINIMUM ERROR OF CLOSURE LESS THAN 1:10,000. I CERTIFY THAT THIS PLAN FULLY AND ACCURATELY DEPICTS THE LOCATION AND DIMENSIONS OF THE LAND AND EXISTING IMPROVEMENTS SHOWN THEREON AND, TO THE EXTENT FEASIBLE, ALL EASEMENTS APPURTENANT THERETO, THAT ALL UNITS DEPICTED THEREON AS COMPLETED HAVE BEEN SUBSTANTIALLY COMPLETED AND THAT THIS PLAT COMPLIES WITH THE PROVISIONS OF RSA 356-B:20 I-V.

741 02/22/2022 LICENSE NO. DATE

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			S. W. NO FRE	
			741	
			MARK 225	
			SARGENT SA	
				Ċ
			SIGNATURE	
1	2/22/22	REVIEW COMMENTS		
NO.	DATE	REVISION	FOR: RICHARD D. BARTLETT	







I. Flat entitled Resubdivision Flat lands of Horace C.R. Hooper Family	/
Trust & Lucinda M. Page and Alan & Lucinda M. Paige" dated Februar	⁻У
15, 2018 by FWS Land Surveying and recorded at the M.C.R>D. as plan	n
no. 201500004857.	

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3887	1019212.8336						4 5 T 4 1
195	1020765.2142						NO. NO. NO.
768	1021419.8416						S H MARK ARE
5262	1020755.2626		F				SARGENT S
3459	1020415.0393						SIGNATURE
472	1019140.4432			1	2/22/22	REVIEW COMMENTS	
.,_	10101101102	]	N	۷0.	DATE	REVISION	ASSOCIATES, LLC



E: G:\\_projects\21045\dwg\21045\_DESIGN.dwg BY: Jamie DATE: 28 Feb 2022 - 3:07pr



GRADING & DRAINAGE PLAN PREPARED FOR: THE WOODS AT EAST VILLAGE TAX MAP 411Z LOT 49 - SHAKER ROAD CONCORD, NEW HAMPSHIRE				
APPLICANT: MERC PROPERTIES, LLC 189 NORTH MAIN STREET, SUITE 10 CONCORD, NH 03301		OWNER: PAUL O. BOFINGER FAMILY TRUST 2019 LISE BOFINGER, TRUSTEE P.O. BOX 187 WELD, ME 04285-0187		
JEFFREY JEFFREY No.10420	NO.         DATE         DESCR           1         02/25/22         REVISED	IPTION D PER CITY RE	VIEW COMMENTS.	
Civil Engineering Land Plan	<b>THPOIN</b> <b>VEERING, L</b> Inning <b>J</b> Construction Serv	VT LC ices	9 Storrs St, Ste 201 ncord, NH 03301 6603-226-1166 x 603-226-1160 w.northpointeng.com	DATE: JAN. 2022 PROJ.: 21045 SCALE: 1''=40' SHEET: C2 OF 19



![](_page_9_Figure_0.jpeg)

LE: G:\\_projects\21045\dwg\21045\_DESIGN.dwg BY: Jamie DATE: 28 Feb 2022 – 3:10pm

![](_page_10_Figure_0.jpeg)

![](_page_10_Figure_9.jpeg)

![](_page_10_Figure_10.jpeg)

				TREES			
ç	SYM.	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	COMMENT	S
	Aa	4	ACER SACCHARUM 'APOLLO'	APOLLO SUGAR MAPLE	2.5" CAL. (MIN)	B&B	А
	Ac	VAR.	ABIES CONCOLOR 'COMPACTA'	WHITE COMPACT FIR	6-8' HGT.	B&B	A
	AI	15	ACER SACCHARUM 'LEGACY'	LEGACY SUGAR MAPLE	2.5" CAL. (MIN)	B&B	А
	Af	12	ACER SACCHARUM 'FLASHFIRE'	FLASHFIRE SUGAR MAPLE	2.5" CAL. (MIN)	B&B	А
	Gb	5	GINKGO BILOBA 'PRESIDENTIAL GOLD'	PRESIDENTIAL GOLD MAIDENHAIR TREE	2.5" CAL. (MIN)	B&B	А
	Gs	20	GLEDITSIA T.I. 'STREET KEEPER'	STREET KEEPER HONEYLOCUST	2.5" CAL. (MIN)	B&B	A

			SHRUBS & PERENNIALS			
SYM.	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	COMMENT	SF
Hm	VAR.	HYDRANGEA MACROPHYLLA	ENDLESS SUMMER HYDRANGEA	#1 POT	CONTAINER	AS
lg	18	ILEX GLABRA 'GEM BOX'	INKBERRY, GEM BOX	12-24" HGT	CONTAINER	AS

![](_page_10_Figure_43.jpeg)

![](_page_11_Figure_0.jpeg)

EROSION CONTROL PLAN PREPARED FOR: THE WOODS AT EAST VILLAGE TAX MAP 411Z LOT 49 - SHAKER ROAD CONCORD, NEW HAMPSHIRE				
APPLICANT: MERC PROP 189 NORTH CONCORD, 1	PERTIES, LLC MAIN STREET, SUITE 101 NH 03301	OWNER: PAUL O. BOFINGER FA LISE BOFINGER, TRUS P.O. BOX 187 WELD, ME 04285-018	AMILY TRUST 2019 STEE 27	
JEFFREY V. LEWIS No.10420	NO.         DATE         DESCR.           1         02/25/22         REVISED	IPTION D PER CITY REVIEW COMMENTS.		
Civil Engineering Land Plan	RTHPOIN NEERING, Li Inning & Construction Serve	<b>VT</b> <b>LC</b> <i>ices</i> 119 Storrs St, Ste 201 Concord, NH 03301 Tel 603-226-1166 Fax 603-226-1160 www.northpointeng.com	DATE: JAN. 2022 PROJ.: 21045 SCALE: 1"=40' SHEET: C6 OF 19	

![](_page_12_Figure_0.jpeg)

![](_page_13_Figure_0.jpeg)

![](_page_14_Figure_0.jpeg)

![](_page_15_Figure_0.jpeg)

Lprojects\21045\dwg\21045\_DETAILS.dwg BY: Jamie DATE: 28 Feb 2022 - 3:14pm

![](_page_16_Figure_0.jpeg)

![](_page_16_Figure_1.jpeg)

NO.	REVISION	DATE	City of Concord	Engineering	Services Division
1	Standard Reference	01.19			
-	-	-	STODM	DDAIN	TDENCU
-	-	-	STORM	DRAIN	IKENCH
-	-	-			
D4 01	D I T I I				

![](_page_16_Figure_3.jpeg)

![](_page_16_Figure_4.jpeg)

![](_page_16_Figure_5.jpeg)

![](_page_16_Figure_6.jpeg)

![](_page_16_Figure_7.jpeg)

SITE LIGHTING TRENCH SECTION TYP.

![](_page_16_Figure_10.jpeg)

![](_page_16_Figure_19.jpeg)

- B. DO NOT COMPACT THE EXCAVATION.
- C. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
- 2. DO NOT PLACE INFILTRATION BASINS INTO SERVICE UNTIL THE CONTRIBUTING AREA HAS BEEN COMPLETELY STABILIZED.

# **INFILTRATION BASIN CROSS SECTION DETAILS**

-NOT TO SCALE-

![](_page_16_Picture_25.jpeg)

![](_page_17_Figure_0.jpeg)

![](_page_17_Figure_1.jpeg)

![](_page_17_Figure_2.jpeg)

![](_page_17_Figure_3.jpeg)

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![](_page_17_Figure_5.jpeg)

NOTES:

- 1. CONTACT SURFACES OF COVERS AND FRAMES SHALL BE MACHINED AT THE FOUNDRY TO PREVENT ROCKING OF COVERS IN ANY ORIENTATION.
- 2. CASTINGS SHALL BE EQUAL TO CLASS 30, CONFORMING TO ASTM A48/48M-03 AND SHALL BE OF EVEN-GRAINED CAST IRON, SMOOTH, AND FREE FROM SCALE, LUMPS, BLISTERS, SAND HOLES, AND DEFECTS.
- 3. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30 INCH CLEAR OPENING. A 3 INCH (MINIMUM HEIGHT) WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER. MANHOLE COVERS SHALL HAVE NON-PENETRATION PICK HOLES.

### <u>TYPICAL SEWER MANHOLE COVER</u> -NOT TO SCALE-

# SEWER PIPE TESTING REQUIREMENTS

### GRAVITY SEWER PIPE TESTING:

- 1. ALL NEW GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY THE USE OF
- LOW-PRESSURE AIR TESTS. 2. LOW-PRESSURE AIR TESTING SHALL BE IN CONFORMANCE WITH: A) ASTM F1417-92(2005) "STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW-PRESSURE AIR"; OR B) UNI-BELL PVC PIPE ASSOCIATION UNI-B-6, "LOW-PRESSURE AIR TESTING OF INSTALLED
- SEWER PIPE" (1998). 3. ALL NEW GRAVITY SEWERS SHALL BE CLEANED AND VISUALLY INSPECTED AND SHALL BE TRUE TO
- LINE AND GRADE FOLLOWING INSTALLATION AND PRIOR TO USE. 4. ALL PLASTIC SEWER PIPE SHALL BE DEFLECTION TESTED NOT LESS THAN 30 DAYS FOLLOWING
- INSTALLATION.5. THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5 PERCENT OF AVERAGE INSIDE DIAMETER.

FORCE MAIN AND LOW PRESSURE SEWER TESTING:

1. FORCE MAINS AND LOW PRESSURE SEWERS SHALL BE TESTED IN ACCORDANCE WITH SECTION 4 OF AWWA C600-05 "INSTALLATION OF CAST IRON WATER MAINS AND THEIR APPURTENANCES", AT A PRESSURE EQUAL TO THE GREATER OF 150 PERCENT OF THE DESIGN OPERATING TOTAL DYNAMIC HEAD OR AT LEAST 100 PSI.

### SEWER PIPE SPECIFICATIONS:

WHICH EVER IS HIGHER.

- 1. PVC GRAVITY SEWER SHALL CONFORM WITH ASTM D3034
- 2. PVC SEWER JOINT SEALS SHALL CONFORM WITH ASTM D3212
- 3. PVC FORCE MAIN MATERIALS SHALL CONFORM WITH ASTM D2241 OR ASTM D1785
- 4. THRUST BLOCKS SHALL BE PROVIDED AT ALL FORCE MAIN BENDS.
- 5. FORCE MAIN DESIGN PRESSURE SHALL BE AT LEAST 2.5X DESIGN TDH OR 100 PSI,
- 6. PVC FORCE MAIN TESTING SHALL CONFORM WITH ASTM D2241 OR ASTM D1785.

CONSTRUCTION DETAILS PREPARED FOR: THE WOODS AT EAST VILLAGE TAX MAP 411Z LOT 49 - SHAKER ROAD CONCORD, NEW HAMPSHIRE					
APPLICANT: MERC PROP 189 NORTH CONCORD, I	ERTIES, LLC MAIN STREET, SUITE 101 NH 03301	OWNER:	PAUL O. BOFINGER FA LISE BOFINGER, TRUS P.O. BOX 187 WELD, ME 04285-0187	MILY TRUST 2019 TEE 7	
JEFFREY W. LEWIS No.10420	NO.         DATE         DESCRI           1         02/25/22         REVISED           —         —         —           —         —         —           —         —         —           —         —         —           —         —         —           —         —         —           —         —         —           —         —         —           —         —         —	I <i>PTION</i> D PER CITY REV	/IEW COMMENTS.		
Civil Engineering Land Plan	RTHPOIN NEERING, LI	NT 119 Con Tel C Fax www	Storrs St, Ste 201 cord, NH 03301 603-226-1166 603-226-1160 v.northpointeng.com	DATE: JAN. 2022 PROJ.: 21045 SCALE: AS SHOWN SHEET: C12 OF 19	

![](_page_18_Figure_0.jpeg)

![](_page_18_Figure_1.jpeg)

![](_page_18_Figure_2.jpeg)

![](_page_18_Figure_4.jpeg)

![](_page_18_Figure_5.jpeg)

# THRUST BLOCK TABLE

SIZE			HORIZONTAL	VERTICAL DISTANCE	
		ТҮРЕ	IN SAND OR GRAVEL IN ROCK		
ſ	4"	TEE BRANCH	2'-0"	2'-0"	2'-0"
		90° BEND	2'-0"	2'-0"	2'-0"
		45° BEND	2'-0"	2'-0"	2'-0"
		22 1/2° BEND OR LESS	2'-0"	2'-0"	2'-0"
ſ	6"	TEE BRANCH	2'-0"	2'-0"	2'-0"
		90° BEND	2'-0"	2'-0"	2'-0"
		45° BEND	2'-0"	2'-0"	2'-0"
		22 1/2° BEND OR LESS	2'-0"	2'-0"	2'-6"
ſ	8"	TEE BRANCH	2'-6"	2'-0"	2'-6"
		90° BEND	3'-0"	2'-0"	2'-0"
		45° BEND	2'-6"	2'-0"	2'-0"
L		22 1/2° BEND OR LESS	2'-0"	2'-0"	2'-0"
ſ	10"	TEE BRANCH	3'-0"	2'-0"	3'-0"
I		90° BEND	3'-0"	2'-0"	3'-0"
l		45° BEND	2'-6"	2'-0"	2'-6"
l		22 1/2° BEND OR LESS	2'-0"	2'-0"	2'-0"
ſ	12"	TEE BRANCH	4'-0"	2'-0"	3'-0"
I		90° BEND	4'-0"	3'-0"	4'-0"
I		45° BEND	3'-6"	2'-0"	3'-0"
L		22 1/2° BEND OR LESS	2'-0"	2'-0"	2'-0"
ſ	16"	TEE BRANCH	4'-0"	3'-0"	4'-6"
I		90° BEND	5'-0"	4'-0"	5'-0"
		45° BEND	4'-0"	3'-0"	4'-0"
		22 1/2° BEND OR LESS	3'-0"	2'-0"	3'-0"
ſ	20"	TEE BRANCH	5'-0"	3'-0"	4'-0"
		90° BEND	6'-0"	4'-0"	5'-0"
		45° BEND	4'-6"	3'-0"	4'-6"
l		22 1/2° BEND OR LESS	3'-0"	2'-0"	3'-0"

![](_page_18_Figure_8.jpeg)

### EROSION CONTROL NOTES

INITIAL DISTURBANCE

1. THE SMALLEST PRACTICAL AREA SHALL BE DISTRURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTRURBED AREAS ARE STABILIZED.

2. ALL PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS.

4. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PLANS. IN ADDITION, SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF OF THE INDIVIDUAL SITE CONTRACTOR MAY WARRANT

3. ALL AREAS OF UNSTABILIZED SOIL SHALL BE TEMPORARILY STABILIZED AS SOON AS PRACTICAL BUT NO LATER THAN 45 DAYS OF

5. <u>ALL TEMPORARY EROSION CONTROL MEASURES USED SHALL BE INSPECTED WEEKLY AND AFTER EVERY 0.25-INCH OR GREATER</u> <u>RAINFALL WITHIN A 24-HOUR PERIOD</u>. THE INSPECTIONS SHALL VERIFY THAT THE STRUCTURAL BMPS SHOWN AND DESCRIBED ON THE PLANS ARE IN GOOD CONDITION AND ARE MINIMIZING EROSION. A MAINTENANCE AND INSPECTION REPORT SHALL BE MADE WITH EACH INSPECTION. COMPLETED INSPECTION FORMS SHALL BE KEPT ON-SITE FOR THE DURATION OF THE PROJECT.

6. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINSHED GRADE. ALL CUT AND FILL SLOPES SHALL BE LOAMED AND SEEDED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.

7. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE A MINIMUM APPLICATION OF 4-INCHES OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.

8. ALL SWALES AND DITCHLINES SHALL BE FULLY STABILIZED PRIOR TO HAVING STORMWATER DIRECTED TOWARDS THEM. 9.ALL SWALES AND DITCHLINES SHALL BE PERIODICALLY CLEANED OF DEPOSITED SEDIMENT SO AS TO MAINTAIN AN EFFECTIVE GRADE

AND CROSS SECTION.

10. IN THE EVENT THAT DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.

11. ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE BY OCTOBER 15TH. OR WHICH ARI 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 NETTING, ELSEWHERE. THE PLACEMENT 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

12. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.

13. AFTER OCTOBER 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, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON, BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT.

14. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD.

15. IN NO WAY ARE THOSE TEMPORARY FROSION CONTROL MEASURES INDICATED ON THESE PLANS TO BE CONSIDERED ALL INCLUSIVE THE CONTRACTOR SHALL USE JUDGEMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT

16. AREAS HAVING FINISH GRADE SLOPES STEEPER THAN 3 : 1 SHALL BE STABILIZED WITH EROSION CONTROL MATS WHEN AND IF FIELD CONDITIONS WARRANT, OR IF SO ORDERED. EROSION CONTROL MATS SHALL BE INSTALLED TO CONFORM WITH THE RECOMMENDED BEST MANAGEMENT PRACTICE OUTLINED IN THE "STORMWATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE"

17. IN ORDER TO PROTECT WETLAND AREAS FROM SILTATION DURING CONSTRUCTION OF HOMES ON INDIVIDUAL LOTS, SILTATION FENCE SHALL BE INSTALLED UP GRADIENT OF DESIGNATED WETLANDS WHERE EXCAVATION IS PROPOSED TO OCCUR WITHIN 30-FEET OF SAID WETLANDS.

18. ALL CONSTRUCTION WITHIN 100 FEET OF ANY WETLAND SHALL BE UNDERTAKEN WITH SPECIAL CARE TO AVOID EROSION AND SILTATION INTO THE WETLANDS.

19. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURED - BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED

- A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;

- A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED; OR · EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

20. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, EXCEPT FOR SILT FENCE INSTALLED IN ACCORDANCE WITH ENV-WQ 1506.04, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN WELDED PLASTIC, PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH.

21. IF DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE, THE PROPERTY OWNER SHALL BE REQUIRED TO INSTALL NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE CITY.

### CONSTRUCTION SEQUENCE

1. CONTRACTOR TO NOTIFY DIG-SAFE 72-HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.

CUT AND CLEAR TREES AND BRUSH ONLY WITHIN DESIGNATED LIMITS OF CLEARING AS NECESSARY TO FACILITATE PROPOSE CONSTRUCTION. ALL TREES, BRANCHES AND OTHER VEGETATIVE MATERIALS SHALL BE PROPERLY DISPOSED OF OFF SITE BY THE CONTRACTOR.

3. PRIOR TO COMMENCEMENT OF ANY GRUBBING OR EARTHMOVING OPERATIONS, ALL SPECIFIED PERIMETER CONTROLS AND STABILIZED CONSTRUCTION EXIT SHALL BE IN PLACE AS SHOWN ON THE PROJECT PLANS.

4. COMPLETE GRUBBING OPERATIONS. ALL STUMPS AND SIMILAR ORGANIC DEBRIS SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR. NATIVE ORGANIC SOIL MATERIALS SUITABLE FOR USE AS TOPSOIL SHALL BE STOCKPILED WITHIN AREAS OUT OF THE WAY OF OTHER CONSTRUCTIONS ACTIVITIES AND DRAINAGE FLOW. STOCKPILES SHALL BE TEMPORARILY SEEDED WITH WINTER RYE AND BE SURROUNDED WITH HAY BALES AND/OR FABRIC SILTATION FENCE IN ORDER TO PREVENT LOSS DUE TO EROSION.

5. PRIOR TO ROUGH GRADING ANY PORTION OF THE SITE, THE PERMANENT RETENTION BASINS AND DRAINAGE SWALES SHALL BE INSTALLED FOR ANY PORTIONS OF THE SITE THAT WILL DIRECT RUNOFF TO THE BASINS OR SWALES

6. BEGIN EARTHMOVING OPERATIONS: PERMANENT DOWNSLOPE WORK SHALL BE PROTECTED FROM UPGRADIENT STORMWATER FLOW BY THE CONSTRUCTION OF TEMPORARY EARTHEN DIKES OR EXCAVATED SWALES.

7. INSTALL DRAINAGE SWALE SYSTEMS, DETENTION BASINS AND OTHER UTILITIES WORKING FROM LOW TO HIGH. INCOMPLETE WORK SHALL BE PROTECTED FROM SILTATION BY THE USE OF SILTATION BARRIERS AROUND SWALES UNTIL THE SITE HAS BECOME FULLY STABILIZED.

8. CONSTRUCT TEMPORARY CULVERTS AS NECESSARY TO FACILITATE CONSTRUCTION ACTIVITIES. ALL SUCH CROSSINGS SHALL BE PROTECTED WITH HAY BALE BARRIERS TO LIMIT EROSION.

9. CONSTRUCT CLOSED DRAINAGE SYSTEM, AND OTHER SUBSURFACE UTILITIES, AS APPLICABLE.

10. COMMENCE CONSTRUCTION OF ROADWAYS. PERFORM EXCAVATION ACTIVITIES REQUIRED TO ACHIEVE SUBGRADE ELEVATION. ALL EXCAVATED EMBANKMENTS, DITCHES, SWALES AND ROADWAY CROSS CULVERTS SHALL BE INSTALLED AND STABILIZED. ALL SWALES AND DITCHLINES SHALL BE PROTECTED FROM EROSION BY IMPLEMENTATION OF SILT FENCES AND/OR EROSION CONTROL MULCH BERMS AS SHOWN ON THE PROJECT PLANS. DIVERT STORMWATER RUNOFF THROUGH THE USE OF TEMPORARY CULVERTS, OR OTHER MEANS NECESSARY PRIOR TO THE COMPLETIONS OF A FUNCTIONAL STORM DRAINAGE SYSTEM. SLOPES AND EMBANKMENTS SHALL BE STABILIZED BY TRACKING AND TEMPORARY SEEDING WITH WINTER RYE PRIOR TO TURF ESTABLISHMENT. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO HAVING RUNOFF DIRECTED TO THEM.

11. COMPLETE CONSTRUCTION OF ROADWAY EMBANKMENTS BY ADDING APPROPRIATE BASE MATERIALS GRADED TO PROPER ELEVATION.

12. COMPLETE EXCAVATION /STABILIZATION GRADING ACTIVITIES. WHEN COMPLETE, IMMEDIATELY BEGIN TOPSOILING PROPOSED TURF AREAS USING STOCKPILED LOAM SUPPLEMENTED WITH BORROW LOAM, IF NECESSARY TO LEAVE A THICKNESS OF 4-INCHES OF FRIABLE

13. APPLY TOPSOIL TO ROADWAY SLOPES AND OTHER AREAS DISTURBED BY CONSTRUCTION. TOPSOIL USED MAY BE NATIVE ORGANIC MATERIAL SCREENED SO AS TO BE FREE OF ROOTS, BRANCHES, STONES, AND OTHER DELETERIOUS MATERIALS. TOPSOIL SHALL BE APPLIED SO AS TO PROVIDE A MINIMUM OF A 4-INCH COMPACTED THICKNESS.

14. FINE GRADE ALL FUTURE TURF AREAS AND HYDROSEED WITH THE SPECIFIED SEED MIXTURE IMMEDIATELY AFTER FINE GRADING IS COMPLETED.

15. PERFORM FINE GRADING OF ROADWAY BASE MATERIALS. INSTALL THE BINDER COURSE OF PAVEMENT OVER ALL DESIGNATED AREAS. 16. INSTALL THE SPECIFIED WEARING COURSE OF PAVEMENT OVER THE BINDER COURSE. COMPLETE INSTALLATION OF LANDSCAPING,

17. CONTINUE TO MONITOR AND RECTIFY MINOR SITE AND SLOPE EROSION UNTIL ENTIRE SITE APPEARS TO BE COMPLETELY STABILIZED AND VEGETATED WITH A HEALTHY STAND OF TURF OR GROUND COVER. MAINTAIN SPECIFIED SILTATION/EROSION CONTROL MEASURES THROUGH ONE WINTER.

18. AFTER STABILIZATION REMOVE AND SUITABLY DISPOSE OF TEMPORARY EROSION CONTROL MEASURES.

19. MONITOR CONSTRUCTION ACTIVITIES ON INDIVIDUAL LOTS TO INSURE CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN SUCH A WAY AS NOT TO ENDANGER THE INTEGRITY OF ROADWAY EMBANKMENTS, STORMWATER SYSTEMS AND UTILITIES. ALL DRIVEWAYS ACROSS DITCHLINES SHALL HAVE CULVERTS INSTALLED IN ACCORDANCE WITH LOCAL REQUIREMENTS

20. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED FIVE (5) ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.

21. THE PROJECT SHALL BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 38000 RELATIVE TO INVASIVE SPECIES.

### **CONSTRUCTION SPECIFICATIONS**

- THE MINIMUM STONE USED SHOULD BE 3-INCH CRUSHED STONE • THE MINIMUM LENGTH OF THE PAD SHOULD BE 75 FEET, EXCEPT THAT THE MINIMUM LENGTH MAY BE REDUCED TO 50 FEET IF A 3-INCH TO 6-INCH HIGH BERM IS INSTALLED AT THE ENTRANCE OF THE PROJECT SITE
- ROAD OR 10 FEET. WHICHEVER IS GREATER
  - THE PAD SHOULD SLOPE AWAY FROM THE EXISTING ROADWAY • THE PAD SHOULD BE AT LEAST 6 INCHES THICK

  - AND THE EARTH SURFACE BELOW THE PAD
  - ARE TRACKED OFF-SITE.

- WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHOULD BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL, REGRADED ON SITE AND STABILIZED. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED.
- WHEN WHEEL WASHING IS REQUIRED, IT SHOULD BE CONDUCTED ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT-TRAPPING DEVICE, ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS.

### SEEDING SPECIFICATIONS:

1. TEMPORARY SEEDING

A. TO ESTABLISH A OUICK VEGETATIVE COVER ON EXPOSED SOILS THAT ARE TEMPORARILY INACTIVE, APPLY WINTER RYE AT A RATE OF 50 POUNDS PER ACRE AND TOP DRESS WITH HAY MULCH OR STRAW AT A RATE OF 2 TONS PER ACRE. B. TO AID IN GERMINATION LIGHTLY RAKE SEED INTO SOIL TO ENSURE GOOD SEED/SOIL CONTACT PRIOR TO MULCHING.

C. TO ANCHOR MULCH AND PREVENT DISPLACEMENT OF SEED, TRACK OVER NEWLY MULCHED AREA WITH TRACK VEHICLE TO CRIMP MULCH INTO THE SOIL.

2. PERMANENT SEEDING:

SLOPES SHALL NOT BE STEEPER THAN 2:1; 3:1 SLOPES OR FLATTER ARE PREFERRED. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.

SEEDBED PREPARATION A. AFTER FINAL SHAPING OF THE SLOPES IS ACHIEVED, APPLY A MINIMUM OF 4" OF TOPSOIL TO ALL EXPOSED SLOPES.

B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND MIX FERTILIZER AND LIME INTO THE SOIL. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.

ESTABLISHING A STAND

A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. THE TYPE AND AMOUNT OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL FERTILITY ANALYSIS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:

AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100 lbs. PER 1,000 sq.ft. NITROGEN (N), 50 lbs. PER ACRE OR 1.1 lbs. PER 1,000 sq.ft. PHOSPHATE (P2O5), 100 lbs. PER ACRE OR 2.2 lbs. PER 1,000 sq.ft. POTASH (K20), 100 lbs. PER ACRE OR 2.2 lbs. PER 1,000 sq.ft.

(NOTE: THIS IS THE EQUIVALENT OF 500 lbs. PER ACRE OF 10-20-20 FERTILIZER OR 1,000 lbs. PER ACRE OF 5-10-10.).

PREFERRED PLANTING SEASON IS BETWEEN MAY 1 AND JUNE 15 OR SEPTEMBER 1 TO OCTOBER 15. MULCH

A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING. B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE "BEST MANAGEMENT PRACTICE" FOR MULCHING.

MAINTENANCE TO ESTABLISH A STAND

PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH. SEED MIX: SEE SEED MIX TABLES FOR APPROPRIATE SEED MIX SPECIFICATION AND SEEDING RATES.

SIGNAGE AND OTHER SITE AMENITIES.

![](_page_19_Figure_73.jpeg)

- THE PAD SHOULD EXTEND THE FULL WIDTH OF THE CONSTRUCTION ACCESS
- A GEOTEXTILE FILTER FABRIC SHOULD BE PLACED BETWEEN THE STONE PAD
- THE PAD SHOULD BE MAINTAINED OR REPLACED WHEN MUD AND SOIL PARTICLES CLOG THE VOIDS IN THE STONE THAT MUD AND SOIL PARTICLES
- NATURAL DRAINAGE THAT CROSSED THE LOCATION OF THE STONE PAD SHOULD BE INTERCEPTED AND PIPED BENEATH THE PAD, AS NECESSARY WITH SUITABLE OUTLET PROTECTION.

### <u>MAINTENANCE REQUIREMENTS</u>

• THE CONTRACTOR SHOULD SWEEP THE PAVEMENT AT EXITS WHENEVER SOIL MATERIALS ARE TRACKED ONTO THE ADJACENT PAVEMENT OR TRAVELED

![](_page_19_Figure_80.jpeg)

![](_page_19_Figure_81.jpeg)

![](_page_19_Figure_82.jpeg)

![](_page_19_Figure_83.jpeg)

![](_page_19_Figure_84.jpeg)

![](_page_19_Figure_85.jpeg)

![](_page_19_Figure_86.jpeg)

STONE GRADE STABILIZATION STRUCTURE

B. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. THE

## MULCH BERM (PERIMETER CONTROL)

A MULCH BERM, OFTEN REFERRED TO AS A FILTER BERM OR AN EROSION CONTROL MIX BERM, IS A COMPOSITE OF PRIMARILY ORGANIC MATERIAL THAT CAN BE MANUFACTURED EITHER ON OR OFF THE PROJECT SITE. A MULCH BERM MAY CONSIST OF SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS A MULCH BERM IS EFFECTIVE AS A SEDIMENT BARRIER INSTALLED ACROSS OR AT THE TOE OF A SLOPE TO INTERCEPT AND RETAIN SMALL AMOUNTS OF SEDIMENT FROM DISTURBED OR UNPROTECTED AREAS **COMPOSITION** 

1. THE MULCH (OR EROSION CONTROL MIX) SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER. IT MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH. THE MIX COMPOSITION SHALL MEET THE FOLLOWING STANDARDS:

2. THE ORGANIC MATTER CONTENT SHALL BE BETWEEN 80 AND 100%, DRY WEIGHT BASIS. 3. PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN AND A MINIMUM OF 70% MAXIMUM BY 85%, PASSING A 0.75"

4. THE ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED.

- 5. LARGE PORTIONS OF SILT, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX
- 6. SOLUBLE SALTS CONTENT SHALL BE < 4.0 MMHOS/CM.
- 7. THE PH SHOULD BETWEEN 5.0 AND 8.0.
- **INSTALLATION**

1. THE BERM MUST BE PLACED ALONG A RELATIVELY LEVEL CONTOUR. IT MAY BE NECESSARY TO CUT TALL GRASSES OR WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES THAT WOULD ENABLE FINES TO WASH UNDER THE BERM. 2. BERM MAY BE FORMED WITH A BARK BLOWER OR WITH OTHER EQUIPMENT. BERM SHALL BE A MINIMUM OF 3-FEET WIDE AT THE BASE AND SHALL BE AT LEAST 18-INCHES IN HEIGHT.

3. BERM MAY BE PLACED DIRECTLY ON GROUND, NO TRENCHING OR STAKING IS REQUIRED.

INSPECTION AND MAINTENANCE

1. MULCH BERMS SHALL BE INSPECTED WEEKLY AND/OR AFTER EACH SIGNIFICANT RAINFALL, AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY. 2. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EACH STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY

REACH ONE-HALF THE HEIGHT OF THE BERM. 3. THE BERM SHALL BE RESHAPED AS NECESSARY

4. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE BERM IS REMOVED SHOULD BE GRADED TO CONFORM TO THE EXISTING TOPOGRAPHY AND RE-SEEDED

![](_page_19_Picture_107.jpeg)

MULCH BERM CROSS-SECTION DETAIL -NOT TO SCALE-

STONE CHECK DAM NOT TO SCALE

![](_page_19_Picture_115.jpeg)

ONSTRUCTION SPECIFICATIONS

1. CHECKS DAMS SHOULD BE INSTALLED BEFORE RUNOFF IS DIRECTED TO THE SWALE OR DITCH.

2. CAREFUL PLACEMENT WILL BE NECESSARY TO ACHIEVE COMPLETE COVERAGE OF THE DITCH OR SWALE AND TO ENSURE THAT THE CENTER OF THE STRUCTURE IS LOWER THAN THE EDGES.

3. THE MAXIMUM HEIGHT OF THE STRUCTURE SHOULD BE 2-FEET AND THE CENTER OF THE STRUCTURE SHOULD BE AT LEAST 6-INCHES LOWER THAN THE OUTER EDGES.

THE MAXIMUM SPACING BETWEEN THE STRUCTURES SHOULD BE SUCH THAT THE TOE OF THE UPSTREAM STRUCTURE IS AT THE SAME ELEVATION AS THE TOP OF DOWNSTREAM STRUCTURE.

5. STRUCTURES SHALL BE REMOVED FROM THE CHANNEL WHEN THEIR USEFUL LIFE HAS EXPIRED.

### AINTENANCE & INSPECTIO

1. CHECK DAMS SHOULD BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED STORMS, AND ANY NECESSARY REPAIRS SHOULD BE MADE IMMEDIATELY.

2. PARTICULAR ATTENTION SHOULD BE GIVEN TO END RUN AND EROSION AT THE DOWNSTREAM TOE OF THE STRUCTURE, AND TO ENSURE THAT THE CENTER OF THE DAM IS LOWER THAN THE EDGES.

3. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURES WHEN IT HAS ACCUMULATED TO ONE HALF OF THE ORIGINAL HEIGHT OF THE STRUCTURE.

. WHEN THE STRUCTURES ARE REMOVED, THE DISTURBED PORTION SHOULD BE BROUGHT TO THE FXISTING CHANNEL GRADE AND THE AREAS PREPARED, SEEDED, AND MULCHED IMMEDIATELY.

![](_page_20_Figure_0.jpeg)

1. GRADE AND SHAPE AREA OF INSTALLATION.

2. REMOVE ALL ROCKS, CLODS, AND VEGETATIVE OR OTHER OBSTRUCTIONS SO THAT THE INSTALLED BLANKETS OR MATS WILL HAVE DIRECT CONTACT WITH THE SOIL.

3. PREPARE SEEDBED BY LOOSENING 2-3 INCHES OF TOPSOIL ABOVE FINAL GRADE, AND INCORPORATE AMENDMENTS, SUCH AS LIME AND FERTILIZER, INTO SOIL ACCORDING TO SOIL TEST AND THE SEEDING PLAN.

4. SEED AREA BEFORE BLANKET INSTALLATION FOR EROSION CONTROL AND RE-VEGETATION. SEEDING AFTER MAT INSTALLATION IS OFTEN SPECIFIED FOR TURF REINFORCEMENT APPLICATION.

1. WHEN APPLICABLE, ANCHORING SHOULD BE DONE PER MANUFACTURERS RECOMMEDATION.

2. U-SHAPED WIRE STAPLES, METAL GEOTEXTILE STAKE PINS, OR TRIANGULAR WOODEN STAKES CAN BE USED TO ANCHOR MATS TO THE GROUND SUFFACE. WIRE STAPLES SHOULD BE A MINIMUM OF 11 GAUGE. METAL STAKE PINS SHOULD BE 3/16-INCH DIAMETER STEEL WITH A 1 ½-INCH STEEL WASHER AT THE HEAD OF THE PIN. WIRE STAPLES AND METAL STAKES SHOULD BE DRIVEN FLUSH TO THE SOIL SURFACE. ALL ANCHORS SHOULD BE 6-8 INCHES LONG AND HAVE SUFFICIENT GROUND PENETRATION TO RESIST PULLOUT. LONGER ANCHORS MAY BE REQUIRED FOR LOOSE SOILS. INSTALLATION ON SLOPES

1. BEGIN AT THE TOP OF THE SLOPE AND ANCHOR ITS BLANKET IN A 6-INCH DEEP X 6-INCH WIDE TRENCH. BACKFILL TRENCH AND TAMP EARTH FIRMLY

2. UNROLL BLANKET DOWN SLOPE IN THE DIRECTION OF THE WATER FLOW. THE EDGES OF ADJACENT PARALLEL ROLLS MUST BE OVERLAPPED 4 INCHES AND BE STAPLED EVERY 3 FEET.

3. WHEN BLANKETS MUST BE SPLICED, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH 6-INCH OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12 INCHES APART 4. LAY BLANKETS LOOSELY AND MAINTAIN DIRECT CONTACT WITH THE SOIL - DO NOT STRETCH.

5. BLANKETS SHALL BE STAPLED SUFFICIENTLY TO ANCHOR BLANKET AND MAINTAIN CONTACT WITH THE SOIL. STAPLES SHALL BE PLACED DOWN THE CENTER AND STAGGERED WITH THE STAPLES PLACED ALONG THE EDGES. STEEP SLOPES, 1:1 TO 2:1, REQUIRE 2 STAPLES PER SQUARE YARD. MODERATE SLOPES, 2:1 TO 3:1, REQUIRE 1-2 STAPLES PER SQUARE YARD (1 STAPLE 3' O/C). GENTLE SLOPES REQUIRE 1 STAPLE PER SQUARE YARD.

1. DIG INITIAL ANCHOR TRENCH 12 INCHES DEEP AND 6 INCHES WIDE ACROSS THE CHANNEL AT THE LOWER END OF THE

2. EXCAVATE INTERMITTENT CHECK SLOTS, 6 INCHES DEEP AND 6 INCHES WIDE ACROSS THE CHANNEL AT 25-30 FOOT INTERVALS ALONG THE CHANNEL 3. CUT LONGITUDINAL CHANNEL ANCHOR SLOTS 4 INCHES DEEP AND 4 INCHES WIDE ALONG EACH SIDE OF THE INSTALLATION TO BURY EDGES OF MATTING. WHENEVER POSSIBLE EXTEND MATTING 2-3 INCHES ABOVE THE CREST OF

CHANNEL SIDE SLOPES 4. BEGINNING AT THE DOWNSTREAM END AND IN THE CENTER OF THE CHANNEL, PLACE THE INITIAL END OF THE FIRST ROLL IN THE ANCHOR TRENCH AND SECURE WITH FASTENING DEVICES AT 1-FOOT INTERVALS. NOTE: MATTING WILL

INITIALLY BE UPSIDE DOWN IN ANCHOR TRENCH. 5. IN THE SAME MANNER, POSITION ADJACENT ROLLS IN ANCHOR TRENCH, OVERLAPPING THE PRECEDING ROLL A MINIMUM OF 3 INCHES. SECURE THESE ENDS OF MATS WITH ANCHORS AT 1-FOOT INTERVALS, BACKFILL AND COMPACT

6. UNROLL CENTER STRIP OF MATTING UPSTREAM. STOP AT NEXT CHECK SLOT OR TERMINAL ANCHOR TRENCH. UNROLL ADJACENT MATS UPSTREAM IN SIMILAR FASHION, MAINTAINING A 3-INCH OVERLAP.

7. FOLD AND SECURE ALL ROLLS OF MATTING SNUGLY INTO ALL TRANSVERSE CHECK SLOTS. LAY MAT IN THE BOTTOM OF THE SLOT THEN FOLD BACK AGAINST ITSELF. ANCHOR THROUGH BOTH LAYERS OF MAT AT 12-INCH INTERVALS, THEN BACKFILL AND COMPACT SOIL. CONTINUE ROLLING ALL MAT WIDTHS UPSTREAM TO THE NEXT CHECK SLOT OR TERMINAL

### INSPECTION AND MAINTENANCE

1. ALL BLANKET AND MATS SHOULD BE INSPECTED PERIODICALLY FOLLOWING INSTALLATION.

FES —

RIPRAP OUTLET APRON —

d50

HEADWALL

RIPRAP OUTLET APRON -

d<sub>50</sub>

PIPE DIA.

PIPE DIA.

d<sub>O</sub>

2. INSPECT INSTALLATION AFTER SIGNIFICANT RAINSTORMS TO CHECK FOR EROSION AND UNDERMINING. ANY FAILURE SHOULD BE REPAIRED IMMEDIATELY.

3. IF WASHOUT OR BREAKAGE OCCURS, RE-INSTALL THE MATERIAL AFTER REPAIRING THE DAMAGE TO THE SLOPE OR

![](_page_20_Figure_23.jpeg)

Civil Engineering 🖌 Land Planning 🦨 Construction Services

![](_page_20_Picture_28.jpeg)

OVERFLOW

RUNOFF WATER WITH SEDIMENT

La

APRON WITH FES

RIP RAP GRAD	RIP RAP GRADATION TABLE			
% OF WEIGHT SMALLER THAN GIVEN SIZE	FOR d50 = XX			
100	1.5-2.0 d5			
85	1.3-1.8 d5			
50	1.0-1.5 d5			
15	0.3-0.5 d5			

![](_page_20_Figure_38.jpeg)

![](_page_20_Figure_43.jpeg)

OUTLET PROTECTION APRON DETAIL

APRON WITH HEADWALL

-NOT TO SCALE-

![](_page_21_Figure_0.jpeg)

![](_page_22_Figure_0.jpeg)

![](_page_22_Figure_2.jpeg)

![](_page_22_Figure_3.jpeg)

![](_page_22_Figure_4.jpeg)

![](_page_22_Figure_5.jpeg)

![](_page_22_Figure_6.jpeg)

![](_page_23_Figure_0.jpeg)

# 6+50

![](_page_23_Figure_3.jpeg)

![](_page_23_Figure_4.jpeg)

![](_page_23_Figure_5.jpeg)

4+50

![](_page_23_Figure_7.jpeg)

![](_page_23_Picture_8.jpeg)

	-33:1	2:1	50:1	50:1	-4:1 00 -4:1 00
					336
					332
	└─PROP. WA	ATER			328
					324
)			2	20	322

![](_page_23_Picture_12.jpeg)

![](_page_24_Figure_0.jpeg)

![](_page_24_Figure_1.jpeg)

![](_page_24_Figure_2.jpeg)

-33:1	2:1	50:1	50:1 -4:1	000340
				336
0			PROP. SAN	332
				328
		2	0	326

![](_page_24_Picture_5.jpeg)

![](_page_24_Figure_6.jpeg)

![](_page_25_Figure_0.jpeg)