

DATE: 9-04-2024
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NJ PROFESSIONAL ENGINEER LIC. No. 31866

PLANS WHICH DO NOT BEAR
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SOIL EROSION SEDIMENT CONTROL DETAILS

MERCHANTVILLE PENNSAUKEN WATER COMMISSION
BROWNING ROAD
WATER TREATMENT PLANT IMPROVEMENTS

<u>DRAWN BY:</u> FM	<u>DESIGN BY:</u> FM	<u>CHECKED BY:</u> JM	<u>SCALE:</u> AS NOTED
<u>DATE:</u> 3/24		<u>SHEET No.:</u>	
<u>JOB No.:</u> 0424M081		SESC-2	

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES TO BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCES, OR IN THE MAJOR DISTURBANCES, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED. ALL WORK TO BE DONE IN ACCORDANCE WITH THE STATE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY.
2. ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN 10 DAYS AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL IMMEDIATELY RECEIVE A TEMPORARY SEEDING. IF THE SEASON PREVENTS THE ESTABLISHMENT OF A TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH STRAW, OR EQUIVALENT MATERIAL, AT A RATE OF 2 TONS PER ACRE.
3. PERMANENT VEGETATION TO BE SEEDDED OR SODDED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING. MULCH WILL BE USED FOR PROTECTION UNTIL SEEDING IS ESTABLISHED.
4. A SUB-BASE COURSE WILL BE APPLIED IMMEDIATELY FOLLOWING ROUGH GRADING AND INSTALLATION OF IMPROVEMENTS IN ORDER TO STABILIZE STREETS, ROADS, DRIVEWAYS AND PARKING AREAS. IN AREAS WHERE NO UTILITIES ARE PRESENT THE SUB-BASE SHALL BE INSTALLED WITHIN 15 DAYS OF PRELIMINARY GRADING.
5. IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING, ALL CRITICAL AREAS SUBJECT TO EROSION (I.E. STEEP SLOPES, ROADWAY EMBANKMENTS) WILL RECEIVE A TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH OR A SUITABLE EQUIVALENT, AT A RATE OF TWO (2) TONS PER ACRE.
6. ANY STEEP SLOPE RECEIVING PIPELINE INSTALLATION WILL BE BACKFILLED AND STABILIZED DAILY AS THE INSTALLATION PROCEEDS (I.E. SLOPES GREATER THAN 3:1).
7. TRAFFIC CONTROL STANDARDS REQUIRE THE INSTALLATION OF A 50'X 30'X 1" PAD OF 1-1/2" TO 2" STONE AT ALL CONSTRUCTION DRIVEWAYS IMMEDIATELY AFTER INITIAL SITE DISTURBANCE. CRUSHED STONE, TIRE CLEANING PAD WILL BE INSTALLED WHEREVER A CONSTRUCTION ENTRANCE EXISTS. THE RIP-RAP PAD MUST BE 50' IN LENGTH; THE STONE MUST BE 1.5"-4" IN SIZE, PLACED 12" THICK AND THE FULL WIDTH OF THE ENTRANCE. IT SHOULD BE UNDERLINED WITH A SYNTHETIC FILTER FABRIC AND MAINTAINED.
8. IN ACCORDANCE WITH STANDARDS FOR PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION, ANY SOIL HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDES SHALL BE COVERED WITH A MINIMUM OF 12 INCHES OF SOIL HAVING A PH OF 5 OR MORE PRIOR TO SEEDBED PREPARATION.
9. THE CAMDEN COUNTY SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED 72 HOURS IN ADVANCE OF ANY SOIL DISTURBING ACTIVITY.
10. AT THE TIME THE SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS GOING TO BE ACCOMPLISHED, ANY SOIL THAT WILL NOT PROVIDE A SUITABLE ENVIRONMENT TO SUPPORT ADEQUATE VEGETATIVE GROUND COVER, SHALL BE REMOVED OR TREATED IN SUCH A WAY THAT WILL PERMANENTLY ADJUST THE SOIL CONDITIONS AND RENDER IT SUITABLE FOR VEGETATIVE GROUND COVER. IF THE REMOVAL OR TREATMENT OF THE SOIL WILL NOT PROVIDE SUITABLE CONDITION, NON-VEGETATIVE MEANS OF GROUND STABILIZATION WILL HAVE TO BE EMPLOYED.
11. CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
12. ANY CHANGES TO THE SITE PLAN WILL REQUIRE THE SUBMISSION OF A REVISED SOIL EROSION AND SEDIMENT CONTROL PLAN TO THE COUNTY SOIL CONSERVATION DISTRICT FOR REVIEW AND APPROVAL. THE REVISED PLAN MUST MEET ALL CURRENT NEW JERSEY SOIL EROSION AND SEDIMENT CONTROL STANDARDS.
13. PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL SOIL EROSION & SEDIMENT CONTROL MEASURES.
15. IN THAT N.J.S.A. 4:24-39 ET SEQ. REQUIRES THAT NO CERTIFICATES OF OCCUPANCY BE ISSUED BEFORE THE PROVISIONS OF THE CERTIFIED PLAN FOR SOIL EROSION AND SEDIMENT CONTROL HAVE BEEN COMPLIED WITH FOR PERMANENT MEASURES, ALL SITE WORK FOR SITE PLANS AND ALL WORK AROUND INDIVIDUAL LOTS IN SUBDIVISIONS, WILL HAVE TO BE COMPLETED PRIOR TO THE DISTRICT ISSUING A REPORT OF COMPLIANCE FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY BY THE MUNICIPALITY.

TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION

1. SITE PREPARATION
 - A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING.
 - B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS.
2. SEEDBED PREPARATION
 - A. APPLY LIMESTONE AND FERTILIZER. FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 SQUARE FEET OF 10-20-10 OR EQUIVALENT. APPLY LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDES) AS FOLLOWS:

SOIL TEXTURE	TONS/ACRE	LBS./1000 SQ. FT.
CLAY, CLAY LOAM, AND HIGH ORGANIC SOIL	4	180
SANDY LOAM, LOAM, SILT LOAM	3	135
LOAMY SAND, SAND	2	90

 PULVERIZED DOLOMITIC LIMESTONE IS PREFERRED FOR MOST SOILS SOUTH OF THE NEW BRUNSWICK-TRENTON LINE.
 - B. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING TOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM SEEDBED IS PREPARED.
 - C. INSPECT SEEDBED, JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RETILLED AS ABOVE.
 - D. SOILS HIGH IN SULFIDES OR HAVING A PH OF 4 OR LESS SHOULD BE MULCHED ONLY.
3. SEEDING
 - A. SEE TEMPORARY SEED MIXTURE FOR SPECIES AND APPLICATION RATES.
 - B. APPLY SEED UNIFORMLY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL, CULTPACKER SEEDER, OR HYDROSEEDER. MULCH SHALL NOT BE INCLUDED IN A HYDRO-SEEDER TANK WITH SEED. SEED SHALL BE INCORPORATED INTO THE SOIL BY RAKING OR DRAGGING. DEPTH OF SEED PLACEMENT MAY BE 1/4 INCH DEEPER ON COARSE TEXTURED SOIL.
 - C. AFTER SEEDING, FIRING THE SOIL SHALL BE PERFORMED WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDING EMERGENCE.
 - D. MULCHING IS REQUIRED ON ALL SEEDING.
4. MULCHING
 - A. MULCH MATERIALS SHOULD BE UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, OR SALT HAY TO BE APPLIED AT THE RATE OF 1 1/2 TO 2 TONS PER ACRE (70 TO 90 POUNDS PER 1,000 SQUARE FEET), EXCEPT THAT WHERE A CRIMPER IS USED INSTEAD OF A LIQUID MULCH-BINDER (TACKIFYING OR ADHESIVE AGENT), THE RATE OF APPLICATION MUST BE DOUBLE THE LOWER RATE. MULCH CHOPPER-BLOWERS MUST NOT GRIND THE MATERIAL.
 - B. SPREAD UNIFORMLY BY HAND OR MECHANICALLY SO THAT APPROXIMATELY 75% TO 95% OF THE SOIL SURFACE WILL BE COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FEET SECTIONS AND DISTRIBUTE 70 TO 90 POUNDS WITHIN EACH SECTION.
 - C. MULCH ANCHORING SHOULD BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA, STEEPNESS OF SLOPES, AND COSTS.
 1. PEG AND TWINE-- DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CRISS-CROSS AND A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE ROUND TURNS.
 2. MULCH NETTING-- STAPLE PAPER, JUTE, COTTON, OR PLASTIC NETTING TO THE SOIL SURFACE. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED.
 3. CRIMPER (MULCH ANCHORING TOOL)-- A TRACTOR-DRAWN IMPLEMENT, SOMEWHAT LIKE A DISC HARROW, ESPECIALLY DESIGNED TO PUSH OR CUT SOME OF THE BROADCAST LONG FIBER MULCH 3 TO 4 INCHES INTO THE SOIL SO AS TO ANCHOR IT AND LEAVE PART STANDING UPRIGHT. THIS TECHNIQUE IS LIMITED TO AREAS TRAVERSABLE BY A TRACTOR, WHICH MUST OPERATE ON THE CONTOUR OF SLOPES. STRAW MULCH RATE MUST BE 3 TONS PER ACRE. NO TACKIFYING OR ADHESIVE AGENT IS REQUIRED.
 - D. WOOD-FIBER OR PAPER-FIBER MULCH AT THE RATE OF 1,500 POUNDS PER ACRE MAY BE APPLIED BY A HYDROSEEDER. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL.
5. IRRIGATION
 - A. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER (A MINIMUM OF 1/4 INCH TWICE A DAY UNTIL VEGETATION IS WELL ESTABLISHED). THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE PERFORMED IN ABNORMALLY DRY OR HOT WEATHER OR ON DROUGHTY SITES.
 6. TOP DRESSING *
 - A. SPRING SEEDING WILL REQUIRE AN APPLICATION OF FERTILIZER SUCH AS 10-10-10 OR EQUIVALENT AT 400 POUNDS PER ACRE OR 10 POUNDS PER 1,000 SQUARE FEET BETWEEN SEPTEMBER 1 AND OCTOBER 15.
 - B. FALL SEEDING WILL REQUIRE THE ABOVE BETWEEN MARCH 15 AND MAY 1.
 - C. MIXTURES DOMINATED BY WEEPING LOVEGRASS OR LEGUMES MAY NOT NEED TOPDRESSING.

* IF SLOW RELEASE NITROGEN (300 POUNDS 38-0-0 PER ACRE OR EQUIVALENT) IS USED IN ADDITION TO SUGGESTED FERTILIZER, THIS FOLLOW-UP OF TOP DRESSING IS NOT MANDATORY.

PERMANENT SEEDING MIXTURE (DRY)

- THIS SEEDING MIXTURE IS COMPOSED OF DROUGHT-TOLERANT SPECIES WHICH CAN THRIVE WITH LOW MAINTENANCE. THE PROPRIETARY NAME OF THE MIXTURE IS RECLAIM CONSERVATION. MIX-DRY FORMULA AS MANUFACTURED BY LOFTS, INC., BOUND BROOK, N.J. 08805, (800)526-3890. A MIXTURE OF EQUAL QUALITY MAY BE SUBSTITUTED IF APPROVED BY OUR OFFICE.
- | % | COMMON NAME | BOTANICAL NAME |
|----|---------------------------|--|
| 40 | CLEMFINE TALL FESCUE | FESTUCA ARUNDINACEA "CLEMFINE" |
| 15 | WEEDGRASS CURVULA | WEEDGRASS CURVULA |
| 15 | RELANT HARD FESCUE | FESTUCA LONGIFOLIA "RELANT" |
| 10 | JAMESTOWN CHEWINGS FESCUE | FESTUCA RUBRA VAR. COMMUTATA "JAMESTOWN" |
| 10 | PALMER PERENNIAL RYE | LOLIUM PERENNE "PALMER" |
| 10 | WHITE CLOVER | TRIFOLIUM REPENS |
| 5 | BLACKWELL SWITCHGRASS | PANICUM VIRGATUM "BLACKWELL" |

THE MINIMUM APPLICATION RATE FOR THIS SEEDING MIXTURE SHALL BE FOUR (4) POUNDS/1000 SQUARE FEET OR 175 POUNDS/ACRE.

RECOMMENDED SEEDING PERIODS ARE APRIL 1-MAY 31 AND AUGUST 16-OCTOBER 15. SUMMER SEEDING SHALL BE PERFORMED ONLY IF ADEQUATE IRRIGATION IS PROVIDED TO ENSURE SUCCESSFUL GERMINATION.

PERMANENT SEEDING MIXTURE (MOIST)

- THIS SEEDING MIXTURE IS COMPOSED OF MOISTURE-TOLERANT SPECIES WHICH CAN THRIVE WITH LOW MAINTENANCE. THE PROPRIETARY NAME OF THE MIXTURE IS RECLAIM CONSERVATION. MIX-MOIST FORMULA AS MANUFACTURED BY LOFTS, INC., BOUND BROOK, N.J. 08805, (800)526-3890. A MIXTURE OF EQUAL QUALITY MAY BE SUBSTITUTED IF APPROVED BY OUR OFFICE.
- | % | COMMON NAME | BOTANICAL NAME |
|----|---------------------------|--|
| 60 | ARID TALL FESCUE | FESTUCA ARUNDINACEA "ARID" |
| 15 | RELANT HARD FESCUE | FESTUCA LONGIFOLIA "RELANT" |
| 15 | TIMOTHY | PHLEUM PRATENSE |
| 10 | JAMESTOWN CHEWINGS FESCUE | FESTUCA RUBRA VAR. COMMUTATA "JAMESTOWN" |

THE MINIMUM APPLICATION RATE FOR THIS SEEDING MIXTURE SHALL BE FIVE (5) POUNDS/1000 SQUARE FEET OR 220 POUNDS/ACRE.

RECOMMENDED SEEDING PERIODS ARE APRIL 1-MAY 31 AND AUGUST 16-OCTOBER 15. SUMMER SEEDING SHALL BE PERFORMED ONLY IF ADEQUATE IRRIGATION IS PROVIDED TO ENSURE SUCCESSFUL GERMINATION.

PERMANENT SEEDING MIXTURE (WET)

- THIS SEEDING MIXTURE IS COMPOSED OF DROUGHT-TOLERANT SPECIES WHICH CAN THRIVE IN THE ACIDIC SOIL CONDITIONS COMMONLY FOUND IN THE PINELANDS. A MIXTURE OF EQUAL QUALITY MAY BE SUBSTITUTED IF APPROVED BY OUR OFFICE.
- | % | COMMON NAME | BOTANICAL NAME |
|----|---------------------------|--|
| 60 | ARID TALL FESCUE | FESTUCA ARUNDINACEA "ARID" |
| 15 | RELANT HARD FESCUE | FESTUCA LONGIFOLIA "RELANT" |
| 15 | TIMOTHY | PHLEUM PRATENSE |
| 10 | JAMESTOWN CHEWINGS FESCUE | FESTUCA RUBRA VAR. COMMUTATA "JAMESTOWN" |

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PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION

1. SITE PREPARATION
 - A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MAINTENANCE.
 - B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS.
2. SEEDBED PREPARATION
 - A. APPLY LIMESTONE AND FERTILIZER. FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 SQUARE FEET OF 10-20-10 OR EQUIVALENT. APPLY LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDES) AS FOLLOWS:

SOIL TEXTURE	TONS/ACRE	LBS./1000 SQ. FT.
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 - B. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING TOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM SEEDBED IS PREPARED.
 - C. INSPECT SEEDBED, JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RETILLED AND FIRMED AS ABOVE.
3. SEEDING
 - A. SEE PERMANENT SEED MIXTURE FOR SPECIES AND APPLICATION RATES.
 - B. APPLY SEED UNIFORMLY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL, CULTPACKER SEEDER, OR HYDROSEEDER. MULCH SHALL NOT BE INCLUDED IN A HYDRO-SEEDER TANK WITH SEED. EXCEPT FOR DRILLED, HYDROSEEDED OR CULTPACKED SEEDING, SHALL BE INCORPORATED INTO THE SOIL TO A DEPTH OF 1/4 TO 1/2 INCH, BY RAKING OR DRAGGING. DEPTH OF SEED PLACEMENT MAY BE 1/4 INCH DEEPER ON COARSE TEXTURED SOIL.
 - C. AFTER SEEDING, FIRING THE SOIL SHALL BE PERFORMED WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDING EMERGENCE.
 - D. MULCHING IS REQUIRED ON ALL SEEDING.
4. MULCHING
 - A. MULCH MATERIALS SHOULD BE UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, OR SALT HAY TO BE APPLIED AT THE RATE OF 1 1/2 TO 2 TONS PER ACRE (70 TO 90 POUNDS PER 1,000 SQUARE FEET), EXCEPT THAT WHERE A CRIMPER IS USED INSTEAD OF A LIQUID MULCH-BINDER (TACKIFYING OR ADHESIVE AGENT), THE RATE OF APPLICATION MUST BE DOUBLE THE LOWER RATE. MULCH CHOPPER-BLOWERS MUST NOT GRIND THE MATERIAL.
 - B. SPREAD UNIFORMLY BY HAND OR MECHANICALLY SO THAT APPROXIMATELY 75% TO 95% OF THE SOIL SURFACE WILL BE COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FEET SECTIONS AND DISTRIBUTE 70 TO 90 POUNDS WITHIN EACH SECTION.
 - C. MULCH ANCHORING SHOULD BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA, STEEPNESS OF SLOPES, AND COSTS.
 1. PEG AND TWINE-- DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CRISS-CROSS AND A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE ROUND TURNS.
 2. MULCH NETTING-- STAPLE PAPER, JUTE, COTTON, OR PLASTIC NETTING TO THE SOIL SURFACE. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED.
 3. CRIMPER (MULCH ANCHORING TOOL)-- A TRACTOR-DRAWN IMPLEMENT, SOMEWHAT LIKE A DISC HARROW, ESPECIALLY DESIGNED TO PUSH OR CUT SOME OF THE BROADCAST LONG FIBER MULCH 3 TO 4 INCHES INTO THE SOIL SO AS TO ANCHOR IT AND LEAVE PART STANDING UPRIGHT. THIS TECHNIQUE IS LIMITED TO AREAS TRAVERSABLE BY A TRACTOR, WHICH MUST OPERATE ON THE CONTOUR OF SLOPES. STRAW MULCH RATE MUST BE 3 TONS PER ACRE. NO TACKIFYING OR ADHESIVE AGENT IS REQUIRED.
 - D. WOOD-FIBER OR PAPER-FIBER MULCH AT THE RATE OF 1,500 POUNDS PER ACRE MAY BE APPLIED BY A HYDROSEEDER. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL.
5. IRRIGATION
 - A. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER (A MINIMUM OF 1/4 INCH TWICE A DAY UNTIL VEGETATION IS WELL ESTABLISHED). THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE PERFORMED IN ABNORMALLY DRY OR HOT WEATHER OR ON DROUGHTY SITES.
 6. TOP DRESSING *
 - A. SPRING SEEDING WILL REQUIRE AN APPLICATION OF FERTILIZER SUCH AS 10-10-10 OR EQUIVALENT AT 400 POUNDS PER ACRE OR 10 POUNDS PER 1,000 SQUARE FEET BETWEEN SEPTEMBER 1 AND OCTOBER 15.
 - B. FALL SEEDING WILL REQUIRE THE ABOVE BETWEEN MARCH 15 AND MAY 1.
 - C. MIXTURES DOMINATED BY WEEPING LOVEGRASS OR LEGUMES MAY NOT NEED TOPDRESSING.

* IF SLOW RELEASE NITROGEN (300 POUNDS 38-0-0 PER ACRE OR EQUIVALENT) IS USED IN ADDITION TO SUGGESTED FERTILIZER, THIS FOLLOW-UP OF TOP DRESSING IS NOT MANDATORY.

PERMANENT SEEDING MIXTURE (MOIST)

- THIS SEEDING MIXTURE IS COMPOSED OF SPECIES WITH A HIGH DEGREE OF MOISTURE TOLERANCE WHICH CAN THRIVE IN THE ACIDIC SOIL CONDITIONS COMMONLY FOUND IN THE PINELANDS. A MIXTURE OF EQUAL QUALITY MAY BE SUBSTITUTED IF APPROVED BY OUR OFFICE.
- | % | COMMON NAME | BOTANICAL NAME |
|----|---------------------|-------------------------------|
| 55 | REBEL 2 TALL FESCUE | FESTUCA ARUNDINACEA "REBEL 2" |
| 25 | STREAKER REDTOP | AGROSTIS ALBA "STREAKER" |
| 15 | RED FESCUE | FESTUCA RUBRA |
| 5 | SWITCHGRASS | PANICUM VIRGATUM "BLACKWELL" |

THE MINIMUM APPLICATION RATE FOR THIS SEEDING MIXTURE SHALL BE FIVE (5) POUNDS/1000 SQUARE FEET OR 220 POUNDS/ACRE.

RECOMMENDED SEEDING PERIODS ARE APRIL 1-MAY 31 AND AUGUST 16-OCTOBER 15. SUMMER SEEDING SHALL BE PERFORMED ONLY IF ADEQUATE IRRIGATION IS PROVIDED TO ENSURE SUCCESSFUL GERMINATION.

PERMANENT SEEDING MIXTURE (WET)

- THIS SEEDING MIXTURE IS COMPOSED OF DROUGHT-TOLERANT SPECIES WHICH CAN THRIVE WITH LOW MAINTENANCE. THE PROPRIETARY NAME OF THE MIXTURE IS RECLAIM CONSERVATION. MIX-DRY FORMULA AS MANUFACTURED BY LOFTS, INC., BOUND BROOK, N.J. 08805, (800)526-3890. A MIXTURE OF EQUAL QUALITY MAY BE SUBSTITUTED IF APPROVED BY OUR OFFICE.
- | % | COMMON NAME | BOTANICAL NAME |
|----|---------------------------|--|
| 40 | CLEMFINE TALL FESCUE | FESTUCA ARUNDINACEA "CLEMFINE" |
| 15 | WEEDGRASS CURVULA | WEEDGRASS CURVULA |
| 15 | RELANT HARD FESCUE | FESTUCA LONGIFOLIA "RELANT" |
| 10 | JAMESTOWN CHEWINGS FESCUE | FESTUCA RUBRA VAR. COMMUTATA "JAMESTOWN" |
| 10 | PALMER PERENNIAL RYE | LOLIUM PERENNE "PALMER" |
| 10 | WHITE CLOVER | TRIFOLIUM REPENS |
| 5 | BLACKWELL SWITCHGRASS | PANICUM VIRGATUM "BLACKWELL" |

THE MINIMUM APPLICATION RATE FOR THIS SEEDING MIXTURE SHALL BE FOUR (4) POUNDS/1000 SQUARE FEET OR 175 POUNDS/ACRE.

RECOMMENDED SEEDING PERIODS ARE APRIL 1-MAY 31 AND AUGUST 16-OCTOBER 15. SUMMER SEEDING SHALL BE PERFORMED ONLY IF ADEQUATE IRRIGATION IS PROVIDED TO ENSURE SUCCESSFUL GERMINATION.

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- | % | COMMON NAME | BOTANICAL NAME |
|----|---------------------------|--|
| 40 | CLEMFINE TALL FESCUE | FESTUCA ARUNDINACEA "CLEMFINE" |
| 15 | WEEDGRASS CURVULA | WEEDGRASS CURVULA |
| 15 | RELANT HARD FESCUE | FESTUCA LONGIFOLIA "RELANT" |
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PERMANENT SEEDING MIXTURE (WET)

- THIS SEEDING MIXTURE IS COMPOSED OF DROUGHT-TOLERANT SPECIES WHICH CAN THRIVE WITH LOW MAINTENANCE. THE PROPRIETARY NAME OF THE MIXTURE IS RECLAIM CONSERVATION. MIX-DRY FORMULA AS MANUFACTURED BY LOFTS, INC., BOUND BROOK, N.J. 08805, (800)526-3890. A MIXTURE OF EQUAL QUALITY MAY BE SUBSTITUTED IF APPROVED BY OUR OFFICE.
- | % | COMMON NAME | BOTANICAL NAME |
|----|---------------------------|--|
| 40 | CLEMFINE TALL FESCUE | FESTUCA ARUNDINACEA "CLEMFINE" |
| 15 | WEEDGRASS CURVULA | WEEDGRASS CURVULA |
| 15 | RELANT HARD FESCUE | FESTUCA LONGIFOLIA "RELANT" |
| 10 | JAMESTOWN CHEWINGS FESCUE | FESTUCA RUBRA VAR. COMMUTATA "JAMESTOWN" |
| 10 | PALMER PERENNIAL RYE | LOLIUM PERENNE "PALMER" |
| 10 | WHITE CLOVER | TRIFOLIUM REPENS |
| 5 | BLACKWELL SWITCHGRASS | PANICUM VIRGATUM "BLACKWELL" |

THE MINIMUM APPLICATION RATE FOR THIS SEEDING MIXTURE SHALL BE FOUR (4) POUNDS/1000 SQUARE FEET OR 175 POUNDS/ACRE.

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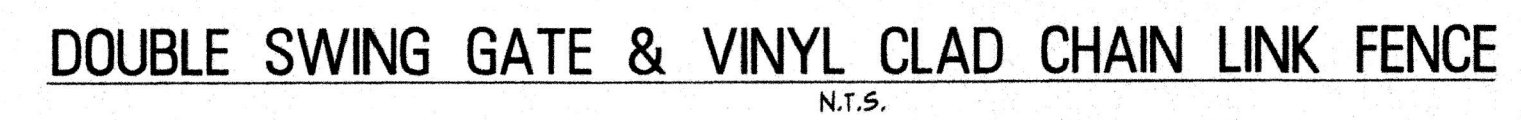
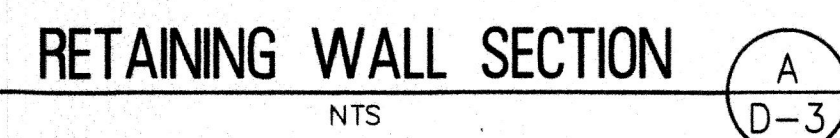
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TOP SOILING

TOPSOIL SHOULD BE USED WHERE SOILS ARE: SANDS, GRAVELY SOILS, CLAYS, SILTY CLAYS, VERY SHALLOW, OR WHERE THEY ARE EXTREMELY ACID (LESS THAN PH 4.0) OR SALTY (CONDUCTIVITY GREATER THAN 1.0 MILLIMOS PER CENTIMETER). TOPSOIL HAULED IN FROM OFF SITE AND ASSURANCE OF IMPROVED VEGETATIVE GROWTH IS DESIRED.

1. MATERIALS
 - A. TOPSOIL SHOULD BE FRIABLE AND LOAMY, FREE OF DEBRIS, OBJECTIONABLE WEEDS AND STONES, AND CONTAIN NO TOXIC SUBSTANCE THAT MAY BE HARMFUL TO PLANT GROWTH. A PH RANGE OF 5.0-7.5 IS ACCEPTABLE. SOLUBLE SALTS SHOULD NOT BE EXCESSIVE (CONDUCTIVITY LESS THAN 0.5 MILLIMOS PER CENTIMETER). TOPSOIL HAULED IN FROM OFF SITE SHOULD HAVE A MINIMUM ORGANIC MATTER CONTENT OF 2.75 PERCENT. ORGANIC MATTER CONTENT MAY BE RASSED BY ADDITIVES.
2. STRIPPING AND STOCKPILING
 - A. FIELD EXPLORATION SHOULD BE MADE TO DETERMINE WHETHER QUANTITY AND/OR QUALITY OF SURFACE SOIL JUSTIFIES STRIPPING.
 - B. STRIPPING SHOULD BE CONFINED TO THE IMMEDIATE CONSTRUCTION AREA.
 - C. WHERE FEASIBLE, LIME MAY BE APPLIED BEFORE STRIPPING AT A RATE DETERMINED BY SOIL TESTS TO BRING THE SOIL PH TO 6.5 IN LIEU OF SOIL TESTS, SEE LIME RATE GUIDE IN SEEDBED PREPARATION FOR PERMANENT VEGETATIVE COVER.
 - D. A 4-6 INCH STRIPPING DEPTH IS COMMON, BUT MAY VARY DEPENDING ON THE PARTICULAR SOIL.
 - E. STOCKPILES OF TOPSOIL SHOULD BE SITUATED SO AS NOT TO OBSTRUCT NATURAL DRAINAGE OR CAUSE OFF-SITE ENVIRONMENTAL DAMAGE.
 - F. STOCKPILES SHOULD BE VEGETATED IN ACCORDANCE WITH TEMPORARY SEEDING STANDARDS PREVIOUSLY DESCRIBED HEREIN.
3. SITE PREPARATION
 - A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION AND ANCHORING, AND MAINTENANCE.
 - B. SUBSOIL SHOULD BE TESTED FOR LIME REQUIREMENT AND LIMESTONE, IF NEEDED, SHOULD BE APPLIED TO BRING SOIL PH TO 6.5 AND INCORPORATED INTO THE SO



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