

TOWNSHIP OF CRANFORD

REHABILITATION OF DIKE RIVERSIDE DRIVE

MAYOR
KATHLEEN MILLER PRUNTY

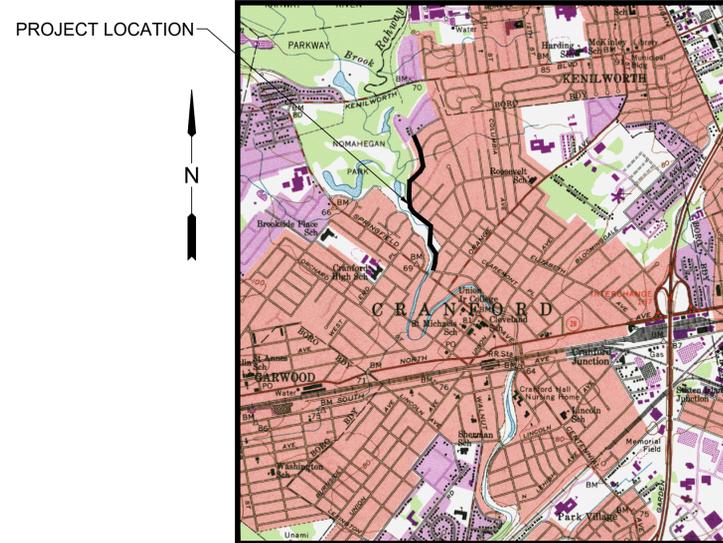
DEPUTY MAYOR
JASON GAREIS

TOWNSHIP COUNCIL
**BRIAN ANDREWS, COMMISSIONER OF
 PUBLIC WORKS AND ENGINEERING**

**GINA BLACK, COMMISSIONER OF
 PUBLIC AFFAIRS**

**MARY O'CONNOR, COMMISSIONER
 OF FINANCE**

TOWNSHIP ADMINISTRATOR
JAMIE CRYAN



SOURCE: USGS QUADRANGLES: ROSELLE
 USGS MAP

SEPTEMBER 2022

M M
MOTT MACDONALD
 Certificate No. 24GA28016600

Kevin K. Nollstadt
 08/15/2022
KEVIN K. NOLLSTADT
 Professional Engineer - N.J. Lic. No. 24GE04519700

PUBLIC UTILITIES
PSE&G 472 WESTON CANAL ROAD SOMERSET, NJ 08873 JONATHAN HALLENBECK (973) 764-3243
VERIZON FIOS ENGINEERING 290 WEST MOUNT PLEASANT AVE, FLR G., BLDG 4 LIVINGSTON, NJ 07083 CARLOS DIAS (732) 577-7414
COMCAST 800 RAHWAY AVE UNION, NJ 07083 ROBERT KNOEPFEL (732) 604-744 EXT 6202293
ELIZABETHTOWN GAS 520 GREEN LANE UNION, NJ 07083 GREG BALINT (908) 662-8321
NEW JERSEY AMERICAN WATER 1341 NORTH AVE PLAINFIELD, NJ 07062 SCOTT SCHREIBER (908) 791-3464
JOINT MEETINGS 500 SOUTH FIRST STREET ELIZABETH, NJ 07202 JOSEPH BONACCOROS, SUPERINTENDENT
RAHWAY VALLEY SEWERAGE AUTHORITY 1050 EAST HAZELWOOD AVE RAHWAY, NJ 07065 ROBERT L. VALENT (732) 388-0868

NOTE:
 PRIOR TO ANY EXCAVATION, CONTRACTOR MUST HAVE ALL
 UTILITIES MARKED OUT BY THE APPROPRIATE UTILITY
 COMPANIES BY CALLING 1-800-272-1000 OR 811.

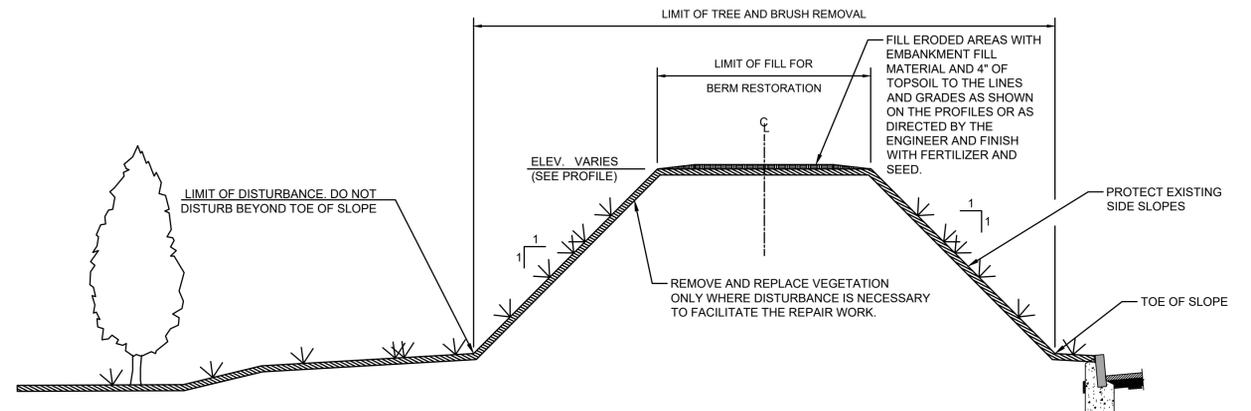
INDEX OF DRAWINGS			
SHEET NUMBER	SHEET TITLE	DATE	REVISED
1	COVER	08/15/2022	
2	NOTES AND DETAILS	08/15/2022	
3	SITE PLAN AND PROFILE	08/15/2022	
4	SITE PLAN AND PROFILE	08/15/2022	
5	SITE PLAN AND PROFILE	08/15/2022	
6	SESC DETAILS	08/15/2022	

LEGEND

	SURVEY BENCHMARK		PROP. "A" INLET
	SURVEY MONUMENT		PROP. STORM SEWER MANHOLE
	EX "A" INLET		PROP. SANITARY SEWER MANHOLE
	EX STORM SEWER MANHOLE		PROP. SANITARY CLEAN OUT
	EX SANITARY CLEAN OUT		PROP. PIPE COUPLING
	EX SANITARY MANHOLE		PROP. FLOW DIRECTION
	EX GAS SERVICE MARKOUT		PROP. SANITARY SEWER MAIN
	EX GAS VALVE		PROP. SANITARY SEWER LATERAL
	EX FIRE HYDRANT		PROP. UTILITY BYPASS
	EX WATER METER		PROP. STORM SEWER PIPE
	EX WATER SERVICE VALVE		
	EX WATER VALVE		
	EX UTILITY POLE		
	EX GUY WIRE		
	EX. SEWER MAIN		
	EX. WATER MAIN		
	EX. GAS MAIN		
	EX. STORM PIPE		
	EX. ELECTRIC CROSSING		
	EX. COMCAST CROSSING		
	EX. SEWER LATERAL		
	EX. WATER SERVICE		
	EX. SIDEWALK		
	EX. CURB		
	EX. DRIVEWAY		
	EX. GUTTER		

GENERAL NOTES

- ALL ELEVATIONS SHOWN ON THE DRAWINGS ARE BASED UPON NAVD 1988 DATUM UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL ADEQUATELY PROTECT ALL EXISTING STRUCTURES AND UTILITIES. ANY DAMAGE TO EXISTING STRUCTURES OR UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND ALL COSTS FOR REPAIRS SHALL BE BORNE BY THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN ACCORDANCE WITH THE "UNDERGROUND FACILITY PROTECTION ACT" (P.L. 1994 CH. 118) AND PROVIDE THE ENGINEER WITH THE NOTIFICATION CONFIRMATION NUMBER PRIOR TO ANY EXCAVATION.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL UTILITY MARKOUTS AND FORWARDING CONFIRMATION NUMBERS TO THE OWNER AND ENGINEER.
- AVAILABLE INFORMATION AS TO THE LOCATION OF EXISTING SUBSTRUCTURES AND UTILITIES HAS BEEN COLLECTED FROM VARIOUS SOURCES. THE RESULTS OF SUCH INVESTIGATIONS AS MAY BE SHOWN ON THE CONTRACT DRAWINGS ARE NOT GUARANTEED AS TO ACCURACY OR COMPLETENESS. ALL EXISTING UTILITIES ARE SHOWN FOR GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL DIG TEST PITS TO VERIFY TRUE AND EXACT LOCATIONS OF UNDERGROUND LINES, AS HE DEEMS NECESSARY TO COMPLETE THE CONSTRUCTION OR AS DIRECTED BY THE ENGINEER.
- THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES A MINIMUM OF 72 HOURS PRIOR TO EXCAVATION. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ANY AND ALL NECESSARY PERMITS FROM THE AFFECTED UTILITY COMPANIES AND FOR SCHEDULING OF INSPECTIONS BY UTILITY COMPANY PERSONNEL, IF REQUIRED, DURING CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ROAD OPENING PERMITS FROM THE MUNICIPALITY AND/OR COUNTY AND COMPLY WITH THE REQUIREMENTS OF THE MUNICIPALITY AND/OR COUNTY.
- THE CONTRACTOR SHALL ABIDE BY ALL LOCAL, STATE AND FEDERAL LAWS, ORDINANCES, ETC. IN THE EXECUTION OF THIS WORK.
- THE CONTRACTOR SHALL ABIDE BY ALL REQUIREMENTS OF THE "HIGH VOLTAGE PROXIMITY ACT". EXCAVATIONS OR TRENCHING WITHIN CLOSE PROXIMITY TO UNDERGROUND FACILITIES OR UTILITY POLES WILL REQUIRE PROTECTION IN AN APPROVED MANNER TO PREVENT DAMAGE OR INTERRUPTION OF SERVICE TO OVERHEAD OR UNDERGROUND FACILITIES. THE COST TO PROVIDE THIS PROTECTION WILL BE BORNE BY THE CONTRACTOR.
- PRIOR TO THE START OF ANY CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A WORK SCHEDULE, AND CERTIFICATES OF INSURANCE (FOR GENERAL AND SUBCONTRACTORS) TO THE OWNER AND ENGINEER FOR APPROVAL.
- ALL EXCESS RECYCLABLE DEMOLITION MATERIAL SHALL BE REMOVED AND DISPOSED OF AT AN APPROVED RECYCLING FACILITY AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR IS ADVISED THAT ALL MUNICIPAL PUBLIC NUISANCE LAWS AND NOISE ORDINANCES SHALL BE OBSERVED DURING THE COURSE OF CONSTRUCTION.
- THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN APPROPRIATE SIGNAGE FOR TRAFFIC CONTROL AND PEDESTRIAN SAFETY DURING CONSTRUCTION.
- CONTRACTOR ACKNOWLEDGES THAT HE HAS UNDERTAKEN WHATEVER PRE-BID INVESTIGATIONS HE DEEMS NECESSARY TO ASCERTAIN THE COMPOSITION, SIZE, SHAPE, LOCATION, AND DEPTH OF MATERIALS THAT WILL BE DEMOLISHED AND REMOVED THAT PRESENTLY EXIST ABOVE OR BELOW GRADE, WITHIN THE LIMIT OF CONSTRUCTION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES DURING THE CONSTRUCTION PERIOD.
- THE CONTRACTOR SHALL MAINTAIN THE FLOW OF ALL STREAMS, DRAINAGE DITCHES, STORM SEWERS AND SANITARY SEWERS AT ALL TIMES BY A MEANS ACCEPTABLE TO THE ENGINEER AND ALL RESPONSIBLE AGENCIES.
- ALL SHOP DRAWINGS, MATERIALS AND EQUIPMENT TO BE INSTALLED AND ALL OTHER REQUIRED SUBMITTALS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
- THE CONTRACTOR OR HIS REPRESENTATIVE IS TO DESIGNATE AN INDIVIDUAL FOR CONSTRUCTION SITE SAFETY DURING THE COURSE OF SITE IMPROVEMENTS PURSUANT TO N.J.A.C. 5:23-2.21(E) OF THE NEW JERSEY UNIFORM CONSTRUCTION CODE AND C.F.R. 1926.32(F) (OSHA COMPETENT PERSON).
- THE CONTRACTOR SHALL BROOM SWEEP STREETS, USE APPROVED METHOD TO CONTROL DUST AND HOSE DOWN THE PAVEMENT TO KEEP SURFACE CLEAN.
- DETOURING OF TRAFFIC, SHALL BE COORDINATED WITH LOCAL OFFICIALS (FIRE, POLICE, FIRST AID, BOARD OF EDUCATION BUS COORDINATOR, ETC.) REFER TO SPECIFICATIONS AND TRAFFIC CONTROL PLAN FOR SPECIFIC REQUIREMENTS.
- UNLESS OTHERWISE PERMITTED, NO WORK SHALL BE DONE BETWEEN THE HOURS OF 6:00 PM AND 7:00 AM PREVAILING TIME. NO EQUIPMENT SHALL BE STARTED PRIOR TO 7:30 AM, PREVAILING TIME. IF IT SHALL BECOME ABSOLUTELY NECESSARY TO PERFORM WORK AT NIGHT, THE ENGINEER SHALL BE INFORMED IN ADVANCE. GOOD LIGHTING AND ALL OTHER NECESSARY FACILITIES FOR PROPER CARRYING OUT AND INSPECTING THE WORK SHALL BE PROVIDED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING THE AREAS OF DISTURBANCE TO THEIR ORIGINAL CONDITIONS. MATERIALS AND EQUIPMENT NEEDED TO BE PAID FOR UNDER THE VARIOUS ITEMS BID FOR THE PROJECT.
- RIGHT OF WAY LINES AND PROPERTY LINES HAVE BEEN SHOWN UTILIZING FOUND MONUMENTS AND TAX MAP INFORMATION ONLY.
- NJDOT STANDARDS SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2019 EDITION TO GOVERN. NJDOT STANDARD CONSTRUCTION DETAILS TO GOVERN OVER ALL MATERIALS, EQUIPMENT AND PROCEDURES.
- ALL MISCELLANEOUS ITEMS SHALL BE PAID FOR UNDER ITEM 2 - CLEARING SITE



TYPICAL DIKE CROSS-SECTION
NOT TO SCALE

EMBANKMENT FILL MATERIAL GRADATION	
EARTH EMBANKMENT FILL (IMPERVIOUS FILL)	
SIEVE SIZE	% FINER
3/8"	90-100
#4	85-95
#10	80-95
#40	60-80
#100	30-55
#200	25-40

SCHEDULE OF CONSTRUCTION ITEMS			
ITEM NO.	ITEM DESCRIPTION	UNITS	ESTIMATED QUANTITY
1	MOBILIZATION	LUMP SUM	1
2	CLEARING SITE	LUMP SUM	1
3	EMBANKMENT FILL	C.Y.	230
4	SOIL EROSION AND SEDIMENT CONTROL	LUMP SUM	1
5	CONSTRUCTION STAKEOUT	LUMP SUM	1
6	TOPSOILING, 4" THICK	SQ. YD.	1,600
7	FERTILIZING AND SEEDING	SQ. YD.	1,600

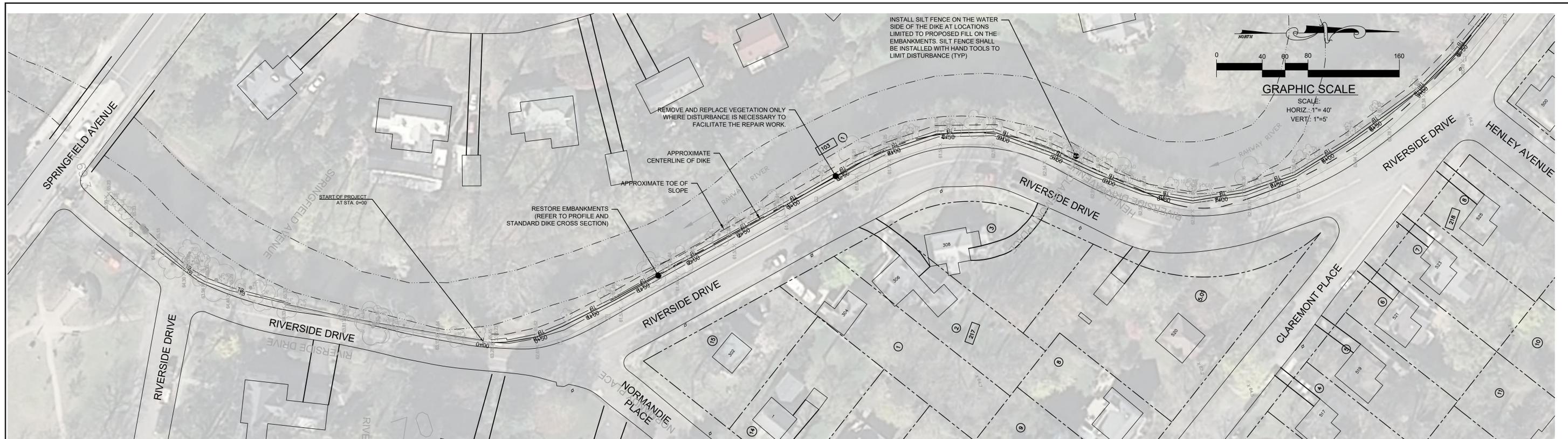
© Mott MacDonald

This document is issued for the party which commissioned it and for specific purposes connected with the captioned project only. It should not be relied upon by any other party or used for any other purpose. We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

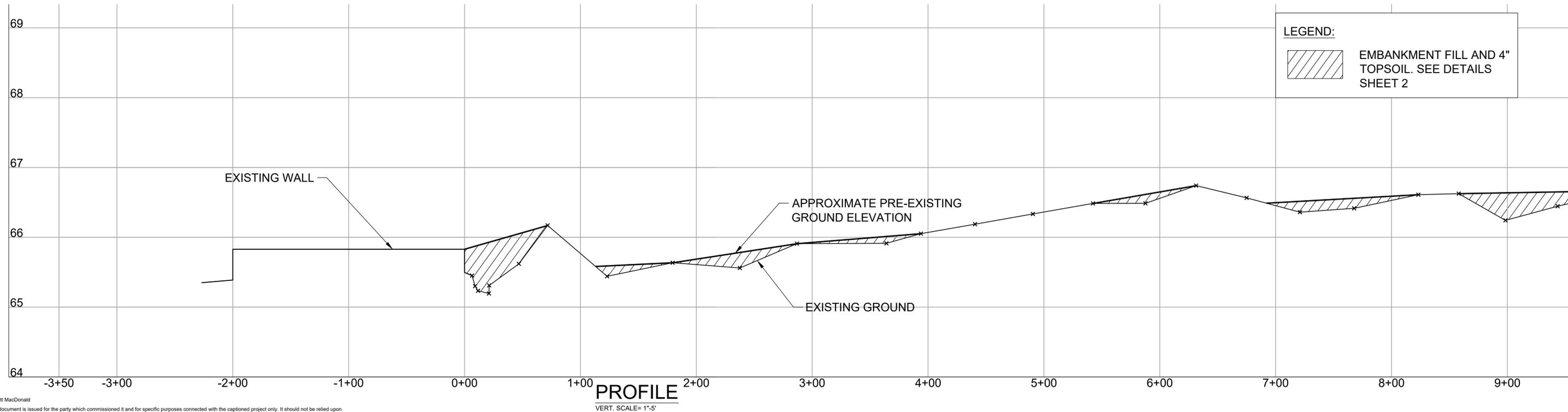
<p>412 Mt Kemble Avenue Suite G22 Morristown, New Jersey 07960 Certificate No. 24GA28016600</p> <p>T +1 (800) 832 3272 F +1 (973) 376 1072</p>	<p>Client</p> <p>TOWNSHIP OF CRANFORD UNION COUNTY, NEW JERSEY</p>	<p>Project Number 507351416</p>	<p>B/O 2</p>	<p>Total 6</p>	<p>Designed RS 08/15 Eng check KKN 08/15</p>	<p>Title REHABILITATION OF DIKE RIVERSIDE DRIVE</p>
					<p>Drawn RS 08/15 Coordination</p>	
		<p>Dwg check SJA 08/15 Approved KKN 08/15</p>			<p>Scale at ARCH D 1"=40'</p>	<p>NOTES AND DETAILS</p>
		<p>Status Rev Security STD</p>	<p>Drawing Number</p>			
<p>Rev</p>	<p>Date</p>	<p>Drawn</p>	<p>Description</p>	<p>Ch'k'd</p>	<p>App'd</p>	

KEVIN K. NOLLSTADT
Professional Engineer - N.J. Lic. No. 24GE04519700

Kevin Nollstadt
Date 08-15-2022



PLAN



PROFILE
VERT. SCALE = 1"=5'

© Mott MacDonald
This document is issued for the party which commissioned it and for specific purposes connected with the captioned project only. It should not be relied upon by any other party or used for any other purpose. We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

MOTT MACDONALD
412 Mt Kemble Avenue
Suite G22
Morristown, New Jersey 07960
Certificate No. 24GA28016600
T +1 (800) 832 3272
F +1 (973) 376 1072

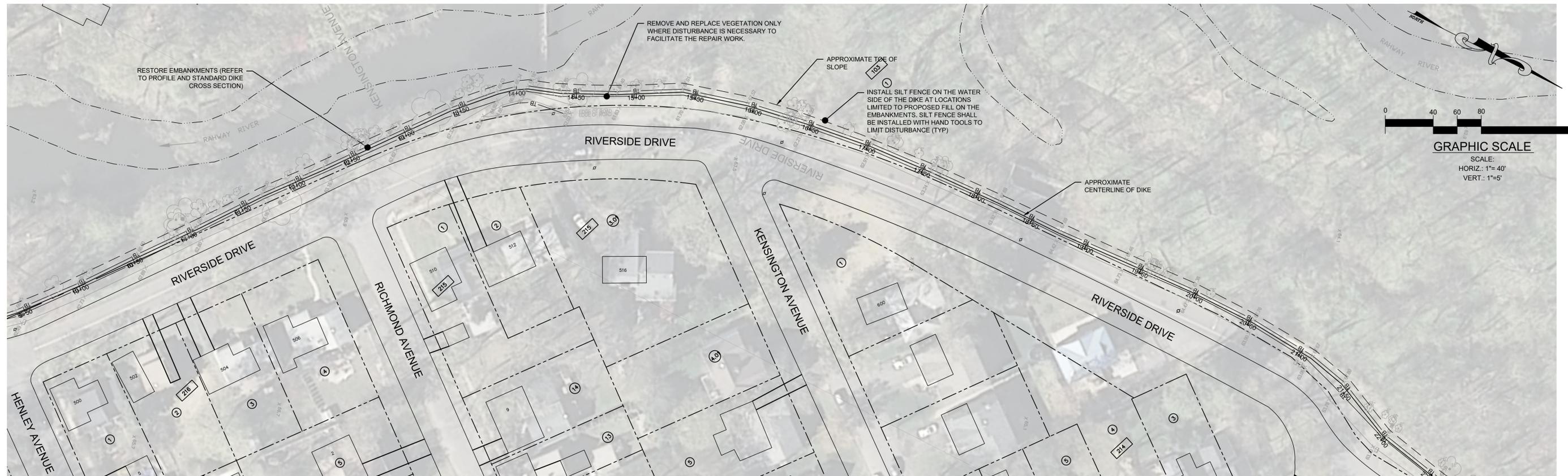
Client
**TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY**

Rev	Date	Drawn	Description	Ch'k'd	App'd

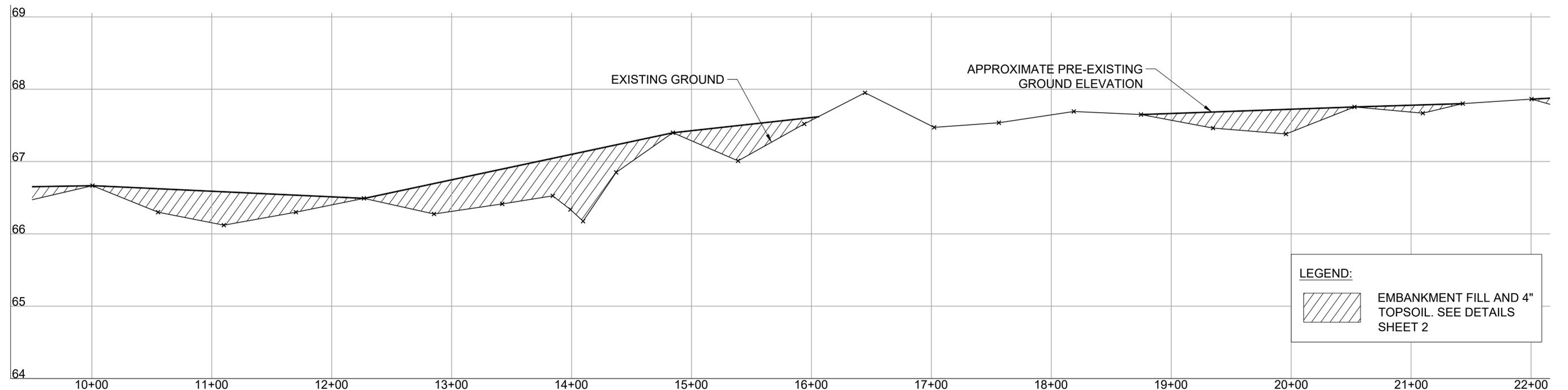
KEVIN K. NOLLSTADT
Professional Engineer - N.J. Lic. No. 24GE04519700
Kevin Nollstadt
Date 08-15-2022
Project Number **507351416** B/O **3** Total **6**

Designed	RS	08/15	Eng check	KKN	08/15
Drawn	RS	08/15	Coordination		
Dwg check	SJA	08/15	Approved	KKN	08/15
Scale at ARCH D	Status	Rev	Security	STD	
Drawing Number					

Title
**REHABILITATION OF DIKE
RIVERSIDE DRIVE**
SITE PLAN AND PROFILE



PLAN



PROFILE
VERT. SCALE= 1"=5'

LEGEND:

 EMBANKMENT FILL AND 4" TOPSOIL. SEE DETAILS SHEET 2

© Mott MacDonald
This document is issued for the party which commissioned it and for specific purposes connected with the captioned project only. It should not be relied upon by any other party or used for any other purpose. We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

M M
MOTT MACDONALD

412 Mt Kemble Avenue
Suite G22
Morristown, New Jersey 07960
Certificate No. 24GA28016600

T +1 (800) 832 3272
F +1 (973) 376 1072

Client
**TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY**

Rev	Date	Drawn	Description	Ch'k'd	App'd

KEVIN K. NOLLSTADT
Professional Engineer - N.J. Lic. No. 24GE04519700

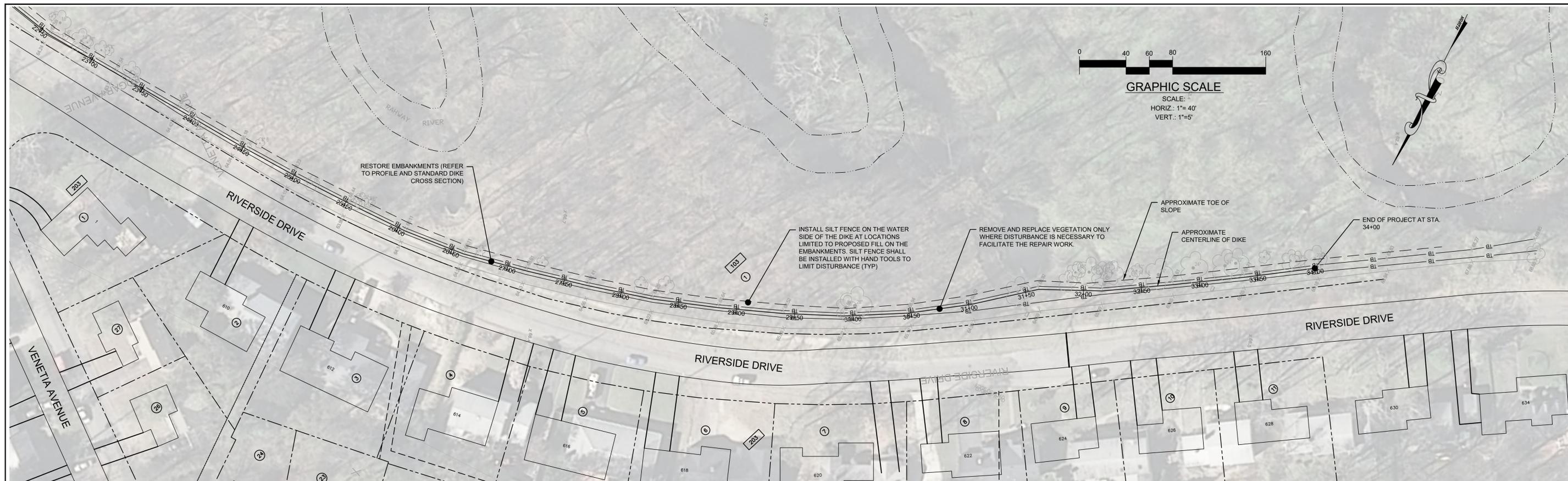
Kevin Nollstadt
Date 08-15-2022

Project Number **507351416** B/O **4** Total **6**

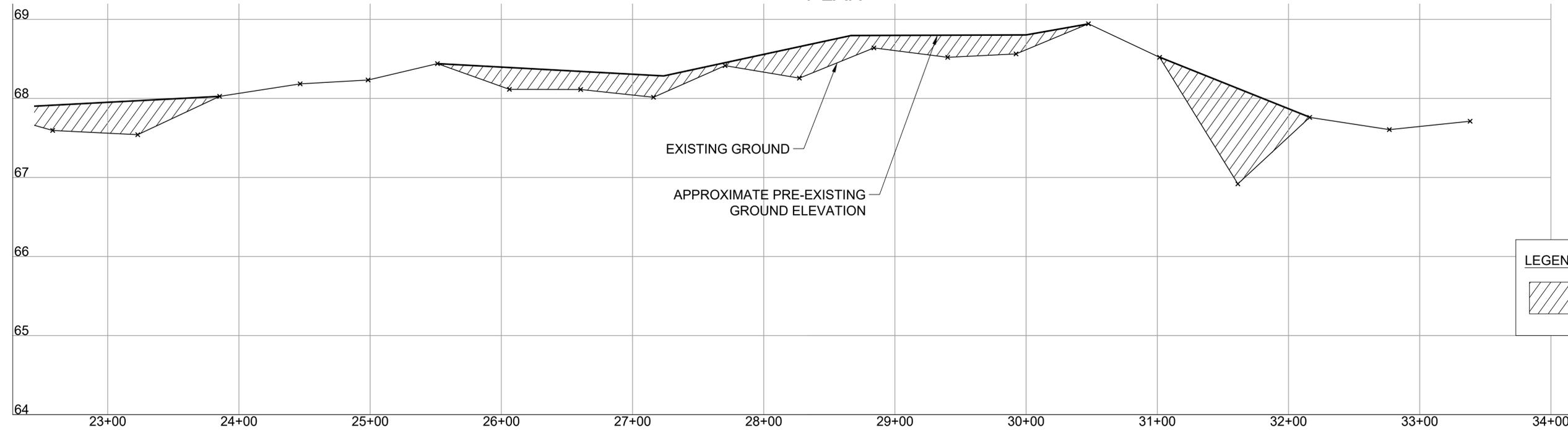
Designed	RS	08/15	Eng check	KKN	08/15
Drawn	RS	08/15	Coordination		
Dwg check	SJA	08/15	Approved	KKN	08/15
Scale at ARCH D	Status	Rev	Security	STD	
Drawing Number					

Title
**REHABILITATION OF DIKE
RIVERSIDE DRIVE**

SITE PLAN AND PROFILE



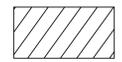
PLAN



PROFILE

VERT. SCALE= 1"=5'

LEGEND:

 EMBANKMENT FILL AND 4" TOPSOIL. SEE DETAILS SHEET 2

© Mott MacDonald
 This document is issued for the party which commissioned it and for specific purposes connected with the captioned project only. It should not be relied upon by any other party or used for any other purpose. We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

M M
MOTT MACDONALD

412 Mt Kemble Avenue
 Suite G22
 Morristown, New Jersey 07960
 Certificate No. 24GA28016600

T +1 (800) 832 3272
 F +1 (973) 376 1072

Client
TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY

Rev	Date	Drawn	Description	Ch'k'd	App'd

KEVIN K. NOLLSTADT
 Professional Engineer - N.J. Lic. No. 24GE04519700

Kevin Nollstadt Date 08-15-2022

Project Number **507351416** B/O **5** Total **6**

Designed	RS	08/15	Eng check	KKN	08/15
Drawn	RS	08/15	Coordination		
Dwg check	SJA	08/15	Approved	KKN	08/15
Scale at ARCH D	Status	Rev	Security	STD	
1"=40'					
Drawing Number					

Title
REHABILITATION OF DIKE
RIVERSIDE DRIVE

SITE PLAN AND PROFILE

STANDARD FOR PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION

DEFINITION
ESTABLISHMENT OF PERMANENT VEGETATIVE COVER ON EXPOSED SOILS WHERE PERENNIAL VEGETATION IS NEEDED FOR LONG TERM PROTECTION.

PURPOSE
TO PERMANENTLY STABILIZE THE SOIL, ASSURING CONSERVATION OF SOIL AND WATER, AND TO ENHANCE THE ENVIRONMENT.

WHERE APPLICABLE
ON EXPOSED SOILS THAT HAVE A POTENTIAL FOR CAUSING OFF-SITE ENVIRONMENTAL DAMAGE.

METHODS AND MATERIALS

I. 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. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS FOR LAND GRADING, P. 4.11.

B. INSTALL NEEDED EROSION CONTROL PRACTICES AND FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. SEE STANDARDS 4.2 THROUGH 4.16.

II. SEEDING PREPARATION
A. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS THOSE OFFERED BY RUTGERS UNIVERSITY SOIL TESTING LABORATORY. SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL COOPERATIVE EXTENSION SERVICE OFFICE. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 SQUARE FEET OF 10-20-10 OR EQUIVALENT. IN ADDITION, 300 POUNDS 38-0-0 PER ACRE OF EQUIVALENT OF SLOW RELEASE NITROGEN MAY BE USED IN LIEU OF TOPDRESSING (SEE PAGE 3.7, SECTION IV). APPLY LIMESTONE EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDES) AS FOLLOWS:

SOIL TEXTURE	TONS/ACRE	LBS./1,000 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, SPRINGTOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM, FINE SEEDBED IS PREPARED. ALL BUT CLAY OR SILTY SOILS AND COARSE SANDS SHOULD BE ROLLED TO FIRM THE SEEDBED WHEREVER FEASIBLE.

C. REMOVE FROM THE SURFACE ALL STONES TWO INCHES OR LARGER IN ANY DIMENSION. REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLOUDS, LUMPS, OR OTHER UNSUITABLE MATERIAL.

D. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RETILLED AND FIRMED AS ABOVE.

III. SEEDING
A. SELECT A MIXTURE FROM TABLE 3.1-1 OR USE MIXTURE RECOMMENDED BY THE COOPERATIVE EXTENSION SERVICE OR SOIL CONSERVATION SERVICE WHICH IS APPROVED BY THE SOIL CONSERVATION DISTRICT.

B. APPLY SEED UNIFORMLY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER. THE LATTER MAY BE JUSTIFIABLE FOR LARGE, STEEP AREAS WHERE CONVENTIONAL VEHICLES CANNOT TRAVEL. MULCH SHALL NOT BE INCLUDED IN THE TANK WITH THE SEED. EXCEPT FOR DRILLED, HYDROSEEDER OR CULTIPACKER SEEDING, SEED 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 WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDLING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL BE MAXIMIZED.

IV. MULCHING
MULCHING IS REQUIRED ON ALL SEEDING. MULCH WILL INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED AND WILL PROMOTE FASTER AND EARLIER ESTABLISHMENT. (THE EXISTENCE OF SATISFACTORY PERENNIAL VEGETATION AT THE TIME OF THE PROJECT OR UNIT COMPLETION SHALL BE DEEMED AS COMPLIANCE WITH THE MULCHING REQUIREMENT.)

A. MULCH MATERIALS SHOULD BE UNROTTED SMALL GRASS STRAW, HAY FREE OF SEEDS, OR SALT HAY TO BE APPLIED AT THE RATE OF 1-1/2 TONS PER ACRE (75 LBS. PER 1,000 SQ. FT.) 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 SQ. FT. SECTIONS AND DISTRIBUTE TO 90 POUNDS WITH 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 NETTINGS - STAPLE PAPER, JUTE, COTTON, OR PLASTIC NETTINGS 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 DISCHARROW, 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 TRAVELABLE 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.

4. LIQUID MULCH-BINDERS - MAY BE USED TO ANCHOR SALT HAY, HAY, OR STRAW MULCHES.
A. APPLICATIONS SHOULD BE HEAVIER AT EDGES WHERE WIND CATCHES THE MULCH, IN VALLEYS, AND AT CRESTS OF BANKS. REMAINDER OF AREA SHOULD BE UNIFORM IN APPEARANCE.

B. USE ONE OF THE FOLLOWING:
1. EMULSIFIED ASPHALT - (SS-1, CS-1, MS-2, RS-1, RS-2, CR-1, AND CR-2). APPLY 0.04 GAL./SQ. YD. OR 194 GAL./ACRE ON FLAT SLOPES LESS THAN 8 FEET HIGH. ON SLOPES 8 FEET OR MORE HIGH, USE 0.075 GAL./SQ. YD. OR 363 GAL./ACRE.
2. CUTBACK ASPHALT - RAPID CURING (RC-70, RC-250, AND RC-800) OR MEDIUM CURING (MC-250 OR MC-800). APPLY 0.04 GAL./SQ. YD. OR 194 GAL./ACRE ON FLAT AREAS AND ON SLOPES LESS THAN 8 FEET HIGH. ON SLOPES 8 FEET OR MORE HIGH, USE 0.075 GAL./SQ. YD. OR 363 GAL./ACRE.

3. SYNTHETIC OR ORGANIC BINDERS - BINDERS SUCH AS CURASOL, DCA-70, PETRO-SET, AND TERRA-TACK MAY BE USED AT RATES RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH MATERIALS.

NOTE: ALL NAMES GIVEN ABOVE ARE REGISTERED TRADE NAMES. THIS DOES NOT CONSTITUTE A RECOMMENDATION OF THESE PRODUCTS TO THE EXCLUSION OF OTHER PRODUCTS.

C. 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.

V. IRRIGATION (WHERE FEASIBLE)
IF SOIL MOISTURE IS DEFICIENT, AND MULCH IS NOT USED, SUPPLY NEW SEEDLINGS WITH ADEQUATE WATER (A MINIMUM OF 1/2 INCH TWICE A DAY UNTIL VEGETATION IS WELL ESTABLISHED). THIS IS ESPECIALLY TRUE WHEN SEEDLINGS ARE MADE IN ABNORMALLY DRY OR HOT WEATHER OR DROUGHTY SITES.

VI. TOPDRESSING
A. SPRING SEEDINGS WILL REQUIRE AN APPLICATION OF FERTILIZER SUCH AS 10-10-10 OR EQUIVALENT AT 400 POUNDS PER ACRE OR 10 POUNDS PER 1,000 SQ. FT. BETWEEN SEPTEMBER 1 AND OCTOBER 15.
B. FALL SEEDINGS WILL REQUIRE THE ABOVE BETWEEN MARCH AND MAY 1.
C. MIXTURES DOMINATED BY WEEPING LOVEGRASS OR LEGUMES MAY NOT NEED TOPDRESSING.
D. BERMUDAGRASS SHOULD BE TOPDRESSED BEFORE AUGUST 15.

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

NOTE: SOILS HAVING A pH OF 4 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM OF 12 INCHES OF SOIL HAVING A pH OF 5 OR MORE BEFORE SEEDBED PREPARATION. THE ADDED SOIL SHALL BE LIMED AS ABOVE.

SEQUENCE OF CONSTRUCTION

1. INSTALL SOIL EROSION AND SEDIMENT CONTROL MEASURES, ESTABLISH STAGING AND STOCKPILE AREAS.

2. REMOVE TREES AND VEGETATION

3. RESTORE DIKES WITH EMBANKMENT FILL AND INSTALL TOPSOIL, FERTILIZER AND SEED.

4. CLEANUP SITE AND REMOVE SOIL EROSION AND SEDIMENT CONTROL MEASURES.

- UPON COMPLETION OF SEDIMENT REMOVAL, REMOVE SOIL EROSION AND SEDIMENT CONTROL MEASURES, AND RESTORE STAGING AND STOCKPILE AREAS.
- DURATION OF THE PROJECT CONSTRUCTION WILL BE APPROXIMATELY 2 MONTHS.

NOTES FOR SOIL EROSION AND SEDIMENT CONTROL:

- ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES ON THIS PLAN WILL BE CONSTRUCTED, AND MAINTAINED IN ACCORDANCE WITH THE NEW JERSEY STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL, (LATEST REVISION), PREPARED BY THE NEW JERSEY STATE SOIL CONSERVATION COMMITTEE. THESE MEASURES WILL BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE OR IN THEIR PROPER SEQUENCE AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED. AFTER RESTORATION IS COMPLETE, TEMPORARY CONTROL MEASURES SHALL BE REMOVED AND DISPOSED OF PROPERLY.
- ALL SOIL TO BE STOCKPILED FOR A PERIOD OF GREATER THAN 30 DAYS WILL BE TEMPORARILY SEEDED AND HAY MULCHED (OR HYDROSEEDED).
- DISTURBED AREAS THAT WILL BE EXPOSED IN EXCESS OF 14 DAYS SHALL BE TEMPORARILY SEEDED AND/OR MULCHED UNTIL PROPER WEATHER CONDITIONS EXIST FOR ESTABLISHMENT OF A PERMANENT VEGETATIVE COVER EXCEPT IN AREAS WHERE FINAL RESTORATION IS EXPECTED TO BE COMPLETED WITHIN SEVEN DAYS AFTER THE COMPLETION OF CONSTRUCTION, IN WHICH CASE NO TEMPORARY PROTECTIVE MEASURES WILL BE REQUIRED. IF FINAL RESTORATION IS EXPECTED TO BEGIN MORE THAN SEVEN DAYS AND COMPLETED MORE THAN 30 DAYS AFTER THE START OF CONSTRUCTION, SEEDING SHALL BE REQUIRED FOR TEMPORARY PROTECTION, EXCEPT WHERE SEASONAL CONDITIONS ARE NOT SUITABLE FOR GROWING VEGETATION. IN THIS CASE, MULCH WILL BE APPLIED UNTIL CONDITIONS ARE SUITABLE FOR ESTABLISHING VEGETATIVE COVER OR UNTIL FINAL RESTORATION IS IMPLEMENTED.
- SEEDING DATES: THE FOLLOWING ARE RECOMMENDED SEEDING DATES FOR THE ESTABLISHMENT OF TEMPORARY OR PERMANENT VEGETATION.
SPRING (MARCH 15 - MAY 30)
FALL (AUGUST 15 - OCTOBER 15)
- SEDIMENT FENCES ARE TO REMAIN IN PLACE AND MAINTAINED PROPERLY UNTIL PERMANENT VEGETATIVE COVER HAS BEEN ESTABLISHED.
- ALL STORM DRAINAGE INLETS SHALL BE PROTECTED WITH GRAVEL FILTERS, FABRIC FILTER OR HAY BALES UNTIL VEGETATION AND/OR PAVING IS ESTABLISHED.
- MULCH MATERIALS SHALL BE UNROTTED SALT HAY OR SMALL GRAIN STRAW AT THE RATE OF AT LEAST 1.5 TONS PER ACRE, OR 75 POUNDS PER 1,000 SQUARE FEET. IN NO CASE SHALL MORE THAN FIVE DAYS ELAPSE BETWEEN MULCHING OR BY HYDROSEEDING AS PER THE MANUFACTURER'S SPECIFICATIONS.
- ANY DAMAGE INCURRED BY EROSION SHALL BE RECTIFIED IMMEDIATELY.
- ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSPECTED AND MAINTAINED PERIODICALLY.
- ALL STORM DRAINAGE OUTLET POINTS MUST BE PROTECTED AS REQUIRED BEFORE THEY BECOME OPERATIONAL.
- THE CONTRACTOR MUST OBTAIN A DISTRICT ISSUED "REPORT OF COMPLIANCE" PRIOR TO APPLYING FOR THE MUNICIPAL CERTIFICATE OF OCCUPANCY. PLEASE GIVE THE DISTRICT ONE WEEK NOTICE TO SCHEDULE THIS INSPECTION.
- A BOND WILL BE ACCEPTED BY THE DISTRICT TO ISSUE A TEMPORARY REPORT OF COMPLIANCE WHEN SNOW COVER PROHIBITS THE PROPER SEED, MULCH OR HYDROSEED APPLICATION.
- ALL PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES. DO NOT USE A FIRE OR GARDEN HOSE TO CLEAN ROADS UNLESS RUNOFF IS DIRECTED TO A PROPER SEDIMENT BASIN.
- ALL SURFACES SHALL BE TREATED WITH 4" OF TOPSOIL PRIOR TO SEEDING.
- ALL PLAN REVISIONS MUST BE SUBMITTED TO THE DISTRICT FOR THE PROPER REVIEW.
- A CRUSHED STONE WHEEL CLEANING "TRACKING PAD" IS TO BE INSTALLED AT ALL SITE EXITS USING 2 1/2 INCH STONE, TO A LENGTH OF AT LEAST 50 FEET. ALL DRIVENAYS MUST EXHIBIT THIS ITEM IN THE DRIVE DURING CONSTRUCTION.
- MAXIMUM SLOPE SLOPES SHALL NOT EXCEED 2:1 UNLESS OTHERWISE APPROVED BY THE DISTRICT.
- ALL DEWATERING OPERATIONS SHALL DISCHARGE INTO AN APPROVED SEDIMENT BASIN.
- THE SOMERSET-UNION SOIL CONSERVATION DISTRICT MUST BE NOTIFIED, IN WRITING, FOR THE SALE OF ANY PORTION OF THE PROJECT OR FOR THE SALE OF ANY BUILDING LOTS. NEW OWNER NAME(S), ADDRESS, AND PHONE NUMBER SHALL BE PROVIDED TO THE DISTRICT.
- FINAL RESTORATION SHALL BE UNDERTAKEN AS SOON AS AN AREA IS NO LONGER NEEDED FOR CONSTRUCTION, STOCKPILING, OR ACCESS.
- ALL EXCAVATED MATERIAL SHALL BE STOCKPILED WITHIN THE STOCK PILE AREA FOR DEWATERING PRIOR TO BEING REMOVED ON SITE.
- WRITTEN NOTIFICATION SHALL BE PROVIDED TO THE SOMERSET-UNION SOIL DISTRICT 48 HRS. PRIOR TO THE START OF ANY LAND DISTURBANCE.
- ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH REQUIREMENTS OF N.J.A.C. 7:22-10.11(C).

NOTE:
SOMERSET-UNION SOIL CONSERVATION DISTRICT MUST BE NOTIFIED IN WRITING PRIOR TO ANY DISTURBANCE

SOILS, SEED MIXTURES, AND DATES FOR PERMANENT SEEDINGS FOR SOIL STABILIZATION

SOILS & SITES	SEED MIXTURE 1/	MINIMUM SEEDING RATES 2/ (pounds)	OPTIMUM SEEDING DATES Based on Plant Hardiness Zone 3/			
			ZONE 5	ZONE 6	ZONE 7	
A. Well to Excessively Well Drained	Normal Seeding Depth is from 1/4-1/2 Inch except A-3, A-4, A-7	Per 1,000 Sq. Ft.				
1. Unmowed areas, e.g. landfills, rights of way, wildlife areas	Weeping lovegrass Sericea lespedeza	2 20	0.1 0.5	--	--	3/1-8/1
2. Unmowed, coarse textured soils, wildlife areas; make good forage	Switchgrass	25	0.6	5/1-7/1	4/1-6/1	4/1-6/1
3. Unmowed areas	Weeping lovegrass 1/2-1", Crownvetch	3 12	0.1 0.3	--	--	3/1-8/1
4. Best for coarse textured soils; suppresses woody growth; unmowed areas	Weeping lovegrass 1/2-1", flatpea	3 30	0.1 0.7	--	--	3/1-8/1
5. Unmowed areas, e.g. road banks, gravel pits, etc.	Perennial ryegrass Crownvetch Spreading fescue	25 12 25	0.6 0.3 0.6	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15
6. Landfills, coarse textured soils; unmowed areas	Hard fescue/or Sheep fescue Perennial ryegrass	45 10	1.0 0.2	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15
7. Mowed areas, e.g. lawns, recreation areas	Bermudagrass Zoysiagrass	12 15	Bushel sprigs spaced at 21 - 31 contours	--	--	5/1-7/15
B. Moderately to Well Drained	Mixtures A-1 through A-7 and the following:					
1. Low maintenance areas, e.g. detention basins, landfills, dikes, diversions (sun to open shade)	Tall fescue Spreading fescue Kentucky bluegrass	30 30 30	0.7 0.7 0.7	3/15-5/15 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15
2. Unmowed areas (aesthetics not important)	Tall fescue Sericea lespedeza	25 20	0.6 0.4	3/15-6/1	3/1-5/15	2/15-5/1 8/15-10/15
3. Low maintenance areas, occasional mowing only	Tall fescue Birdsfoot trefoil	45 10	1.0 0.2	3/15-6/1	3/1-5/15	--
4. Mowed areas, e.g. recreation areas, lawns, etc. (sun and shade)	Spreading fescue Red fescue Kentucky bluegrass Perennial ryegrass	15 15 25 10	0.3 0.3 0.6 0.2	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 (shade and cool sites only)
5. Mowed areas, e.g. lawns (sunny sites) (high maintenance, aesthetic areas)	Kentucky bluegrass (three cultivar blend) Hard fescue Perennial ryegrass	60 20 10	1.4 0.4 0.2	3/15-6/1	3/1-5/15	--
C. Poorly to Somewhat Poorly Drained	Mixtures B-1, B-3, B-4 and B-5 and the following:					
1. Mowed and unmowed sunny wet areas, e.g. ditch banks, waterways	Reed canarygrass Redtop Perennial ryegrass	20 4 20	0.4 0.1 0.4	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	1/15-5/1 8/15-10/15

NOTES:

- Seeding mixtures and/or rates not listed above may be used if recommended by the local Soil Conservation District, Soil Conservation Service, recommendations of the Cooperative Extension Service may be used if approved by the Soil Conservation District. Legumes (flatpea, crown vetch, trefoil, lespedeza) should be mixed with proper inoculant prior to planting.
- Grass seed mixture checked by the chief of the Bureau of Seed Certification, New Jersey Department of Agriculture, Trenton, New Jersey, will assure the purchaser that the mixture obtained is the mixture ordered.
- Plant Hardiness Zone (see map, p. 3.2,6)

- Zone 5 - Portions of Sussex and Warren Counties
- Zone 6 - Portions of Bergen, Camden, Essex and Gloucester, all of Hunterdon, portions of Mercer and Middlesex, all of Morris and Passaic, portions of Somerset, Sussex, Union and Warren Counties
- Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

TABLE 3.2-1

TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION

Definition
Establishment of temporary vegetative cover on soils exposed for periods of two to 12 months.

Purpose
To temporarily stabilize the soil and reduce damage from wind and water erosion until permanent stabilization is accomplished.

Where Applicable
On exposed soils that have the potential for causing off-site environmental damage.

Methods and Materials

I. Site Preparation
A. Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. All grading should be done in accordance with Standards for Land Grading, p. 4.11.

B. Install needed erosion control practices or facilities such as diversions, grade stabilization structures, channel stabilization measures, sediment basins, and waterways. See Standards 4.2 through 4.16.

II. Seedbed Preparation

A. Apply limestone and fertilizer according to soil test recommendations such as those offered by Rutgers University Soil Testing Laboratory. Soil sample mailers are available from the local Cooperative Extension Service office. If soil testing is not feasible on small or variable sites, or where timing is critical, fertilizer may be applied at the rate of 500 pounds per acre or 11 pounds per 1,000 square feet of 10-20-10 or equivalent. If seed is drilled over banded fertilizer, the rate of fertilizer is reduced 50 percent. Apply limestone (equivalent to 50 percent calcium plus magnesium oxides) as follows:

SOIL TEXTURE	TONS/ACRE	LBS./1,000 SQ. FT.
Clay, clay loam, and high organic soil	3	135
Sandy loam, loam, silt loam	2	90
Loamy sand, sand	1	45

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, springtooth 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 refilled as above.

D. Soils high on sulfides or having a pH of 4 or less should be mulched only. See Standards for Stabilization with Mulch only, p. 3.3.1.

III. Seeding

A. Select seed from recommendations in Table 3.1-1.

TEMPORARY SEEDING RATES AND DATES

SPECIES	SEEDING RATES (pounds)		OPTIMUM SEEDING DATE 1/			OPTIMUM SEED DEPTH 2/ (inches)
	Per Acre	Per 1,000 Sq. Ft.	ZONE 5	ZONE 6	ZONE 7	
Annual ryegrass	40	1.0	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15	0.5
Perennial ryegrass	40	1.0	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15	0.5
Oats	65	2.0	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15	1.0
Barley	96	2.2	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15	1.0
Pearl millet	20	0.5	6/1-7/1	5/15-7/15	5/1-8/1	1.0
Sudangrass	30	0.7	6/1-7/1	5/15-7/15	5/1-8/1	1.0
Millett (German or Hungarian)	30	0.7	6/1-7/1	5/15-7/15	5/1-8/1	1.0
Weeping lovegrass	5	0.2	6/1-7/1	5/15-7/15	5/1-8/1	0.25

- May be planted throughout summer if soil moisture is adequate or can be irrigated
- Twice the depth for sandy soils
- Plant Hardiness Zone (see map, p. 3.2,6)

Zone 5 - Portions of Sussex and Warren Counties

Zone 6 - Portions of Bergen, Camden, Essex and Gloucester, all of Hunterdon, portions of Mercer and Middlesex, all of Morris and Passaic, portions of Somerset, Sussex, Union and Warren Counties

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex, all of Monmouth, Ocean and Salem and portion of Union County

Zone 7 - Atlantic, portion of Bergen, all of Burlington, Cape May and Cumberland, portions of Essex and Gloucester, all of Hudson, portion of Middlesex,