GENERAL NOTES:

1. FOR THE PURPOSE OF THIS PROJECT

OWNER - MAPLEWOOD NAVCAPMAN
2 ENTERPRISE DRIVE
SHELTON, CT 06484

ENGINEER - RMA GEO-ENVIRONMENTAL RMA ENVIRONMENTAL LLC
20 MAIN STREET
WICKFORD, RI 02852
CONTACT - JOSHUA ROSENBERG, PE.

WETLANDS - MCCUE ENVIRONMENTAL, LLC
LAFAYETTE MILL COMPLEX - 650 TEN ROD ROAD
NORTH KINGSTOWN, RI 02852
CONTACT - JOE MCCUE, PWS

2. THE OWNER / CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY FEDERAL, STATE, MUNICIPAL APPROVALS, PERMITS, LICENSES, CERTIFICATES OF INSPECTION AND PAY ALL LEGAL FEES IN CONNECTION WITH THE WORK OF THIS PROJECT. THESE DRAWINGS AND ASSOCIATED DATA ARE FOR THE APPLICATION FOR AN EMERGENCY ALTERATION PERMIT.

3. EXISTING SITE LAYOUT DEVELOPED USING THE "TOPOGRAPHIC SURVEY, LAND OF MAPLEWOOD NAVCAPMAN LLC, #126 TOLLGATE ROAD (MAP 126 LOT 318) CITY OF WARWICK, KENT COUNTY, RHODE ISLAND" DEVELOPED BY BL COMPANIES, DATED 1/06/2022. ADDITIONAL SITE FEATURES DEVELOPED FROM AVAILABLE GEOSPATIAL DATA, & AERIAL IMAGERY FROM RIGIS, FIELD-BASED DATA COLLECTED BY RMA & MCCUE ENVIRONMENTAL. PERTINENT SITE FEATURES GPS LOCATED. INFORMATION IS PROVIDED FOR REFERENCE PURPOSES ONLY AND SHOULD NOT BE CONSTRUED AS AN ACCURATE BOUNDARY OR TOPOGRAPHIC SURVEY.

4. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOB SITE SAFETY. THE CONTRACTOR SHALL PROVIDE TEMPORARY FENCING AND/OR BARRIERS AROUND ALL OPEN EXCAVATED AREAS, AND CONDUCT ALL WORK IN ACCORDANCE WITH OSHA STANDARDS AND THE CITY OF PROVIDENCE REQUIREMENTS.
   4.1. ALL SAFETY REGULATIONS ARE TO BE STRICTLY FOLLOWED. METHODS OF CONSTRUCTION AND ERECTION OF STRUCTURAL MATERIAL ARE THE RESPONSIBILITY OF THE CONTRACTOR.
   4.2. ALL WORK SHALL CONFORM TO THE LATEST EDITION OF THE OSHA CODE, THE RHODE ISLAND STATE BUILDING CODE, AND THE REFERENCED STANDARDS INCLUDED HEREIN THAT ARE APPLICABLE TO THIS PROJECT.

5. EXISTING AND PROPOSED SITE FEATURES SHOWN ON THESE DRAWINGS HAVE BEEN DEVELOPED FOR REFERENCE FOR THE WETLAND PERMIT APPLICATION. ALL EXISTING CONDITIONS SHOWN SHALL BE CONSIDERED APPROXIMATE AND ARE INCOMPLETE UNLESS ACCOMPANIED BY SURVEY PLANS PERFORMED BY A RI REGISTERED LAND SURVEYOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE ABOVE REFERENCED PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED CONDITION. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY RMA ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED.

6. ALL CONSTRUCTION INDICATED ON THESE DRAWINGS SHALL BE PERFORMED IN ACCORDANCE WITH REGULATORY PERMITS ISSUED FOR THIS PROJECT.

7. ANY DISCREPANCIES ON THESE PLANS WITH REGARD TO DIMENSIONS OR CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF RMA, THE OWNER, AND/OR THE ENGINEER OF RECORD BEFORE PROCEEDING WITH THE AFFECTED PORTION OF WORK.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS. PLANS SHALL NOT BE SCALED FOR DIMENSIONS.

9. GEOTECHNICAL RELATED CONSTRUCTION SHALL BE PERFORMED UNDER THE SUPERVISION OF A QUALIFIED RI PROFESSIONAL ENGINEER.

10. HORIZONTAL COORDINATE SYSTEM: NAD 1983 STATE PLANE RHODE ISLAND FIPS 3800 FEET

11. VERTICAL COORDINATE SYSTEM: NAVD88

12. THE CONTRACTOR SHALL PROTECT ALL ADJACENT STRUCTURES AND UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF ALL DAMAGE TO ADJACENT STRUCTURES AND UTILITIES.

13. WHERE REFERENCE IS MADE TO ANY STANDARD SPECIFICATION, IT SHALL MEAN THE MOST RECENT SPECIFICATION, CODE, STANDARD, OR INTERIM SPECIFICATIONS OF THE ORGANIZATION REFERRED TO AND SHALL BE CONSIDERED A PART OF THESE CONTRACT DOCUMENTS TO THE EXTENT INDICATED. IN CASE OF CONFLICT, THE MORE RIGID REQUIREMENTS AND CODES SHALL GOVERN. THESE CODES INCLUDE, BUT ARE NOT LIMITED TO: AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).

14. THE CONTRACTOR SHALL MAINTAIN A SECURE SITE AND PROVIDE APPROPRIATE SAFETY MEASURES TO PREVENT ACCIDENTS. THE SAFETY MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO SIGNAGE, BARRICADES, FENCES, FLASHING WARNING LIGHTS, AND POLICING IF NECESSARY.

15. DRAWING AND SPECIFICATIONS, AS INSTRUMENTS OF PROFESSIONAL SERVICE, ARE AND SHALL REMAIN THE PROPERTY OF RMA ENVIRONMENTAL, LLC. DOCUMENTS ARE NOT TO BE USED, IN WHOLE OR IN PART, FOR OTHER PROJECTS OR PURPOSES OR BY ANY OTHER PARTIES THAN THOSE AUTHORIZED BY CONTRACT. USE OF THIS PLAN FOR ANY OTHER WORK IS AT THE SOLE RISK OF THE END USER.

16. PROJECT AREA IS MAPPED ON FEMA FLOOD INSURANCE RATE MAP 44003c0129J AND IS LOCATED WITHIN FEMA ZONE "A", AREAS INUNDATED DURING THE 100-YR AVERAGE RETURN INTERVAL STORM, NO FLOOD ELEVATION IS PROVIDED.UPLAND AREAS, INCLUDING THE UPPER APARTMENT BUILDING, ARE WITHIN ZONE "X", AREAS OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD AREA.

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS AS SHOWN IN THESE PLANS AND SPECIFICATIONS OR REGULATORY DOCUMENTS..
2. THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGES CONSTRUCTION AS AMENDED (LATEST REVISION), RHODE ISLAND STANDARD DETAILS AND THE CITY OF PROVIDENCE STANDARD DETAILS AND CONSTRUCTION STANDARDS ARE MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO. THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGES CONSTRUCTION MAY BE OBTAINED AT THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION.
3. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE CONDITIONS SHOWN HEREIN AND NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES IN DIMENSIONS AND/ OR SITE CONDITIONS PRIOR TO THE FABRICATION AND/OR ORDERING OF ANY CONSTRUCTION MATERIALS. THE CONTRACTOR SHALL NOT BEGIN CONSTRUCTION IN ANY SUCH AFFECTED AREA UNTIL THE DISCREPANCY HAS BEEN RESOLVED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
4. EXCAVATION AND PLACEMENT OF SLOPE STABILIZATION COMPONENTS SHALL REQUIRE SUPERVISION FROM A PROFESSIONAL GEOTECHICNAL ENGINEER. A PROFESSIONAL GEOTECHNICAL ENGINEER SHALL RE-EVALUATE MATERIAL PLACEMENT AND SLOPE STABILITY ONCE SCHEDULED HEIGHT IS ACHIEVED ALONG THE BANK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR BRINGING ALL ELEMENTS OF THE PROJECT IN CONFORMANCE WITH THESE PLANS AND SPECIFICATIONS. IF ANY MODIFICATIONS ARE REQUIRED IN ANY ELEMENT, THE CONTRACTOR SHALL SUBMIT PROPOSED CHANGES IN WRITING TO THE ENGINEER FOR REVIEW.
6. ALL SAFETY REGULATIONS ARE TO BE STRICTLY FOLLOWED. METHODS OF CONSTRUCTION AND ERECTION OF STRUCTURAL MATERIAL ARE THE RESPONSIBILITY OF THE CONTRACTOR.
7. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THE SURVEY SUPPORT NEEDED TO COMPLETE THE WORK, INCLUDING STAKEOUT, TO ENSURE THE WORK IS COMPLETED CONSISTENT WITH PROJECT PLANS AND ASSOCIATED REGULATORY APPROVALS. CONTRACTOR TO PRESERVE SURVEY BENCHMARKS.
8. THE CONTRACTOR SHALL PROTECT ALL WETLANDS AND ASSOCIATED RESOURCES FROM INTRUSION BY TURBID WATERS, CONSTRUCTION DEBRIS, CONSTRUCTION EQUIPMENT, OR PERSONNEL DURING ALL WORK ACTIVITIES.
9. DAMAGE TO ANY PROPERTY, PRIVATE OR OF PUBLIC TRUST, OCCURRING DURING THE CONSTRUCTION BY THE CONTRACTOR, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER AT THE EXPENSE OF THE CONTRACTOR.
10. ALL COMPONENTS SHALL BE INSTALLED PER EACH MANUFACTURER'S SPECIFICATIONS AND/OR STANDARD INDUSTRY PRACTICE AS APPLICABLE.
11. THE OWNER OR CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS, LICENSES, CERTIFICATES OF INSPECTION, AND PAY ALL LEGAL FEES IN CONNECTION WITH THE WORK OF THIS CONTRACT. FAILURE TO CONSIDER ANY CONDITION OF THE REGULATORY PERMITS AS A PART OF THE BID SHALL NOT RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY TO APPLY THOSE CONDITIONS TO HIS WORK AT NO ADDITIONAL COST TO THE OWNER.
12. EXCAVATION OR DISTURBANCE OF THE URETEK POLYMER INJECTED SOIL MASS SHALL BE MINIMIZED TO THE EXTENT PRACTICAL AND AUTHORIZATION FROM URETEK IS REQUIRED. WHERE NECESSARY, DISTURBANCE SHALL BE PERFORMED BY HAND VIA STRAIGHT CUTS THROUGH THE MATERIAL.. EXCAVATION SHALL NOT PULL AT THE MATERIAL. ALL EXCAVATED POLYMER MATERIAL SHALL BE DISPOSED OF OFF-SITE.

EROSION AND SEDIMENT CONTROL NOTES

1. SOIL EROSION AND SEDIMENTATION CONTROLS SHALL BE PROVIDED IN ACCORDANCE WITH THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK", AND TO THE SATISFACTION OF THE ENGINEER.
2. THE LIMITS OF WETLAND DISTURBANCE SHALL BE KEPT TO A MINIMUM WITHIN THE APPROVED AREA. ALL WETLAND AREAS OUTSIDE THE RIDEM APPROVED LIMITS SHALL NOT BE DISTURBED.
2. DUST SHALL BE CONTROLLED BY APPROVED METHODS PER REGULATORY APPROVALS.
2. THE CONTRACTOR SHALL PREVENT ANY UNSUITABLE MATERIALS ENTERING DOWNSTREAM WATERCOURSES AND STORMWATER DRAINAGE SYSTEMS.
3. EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSTALLED AT THE SITE PRIOR TO THE START OF CONSTRUCTION AND RECLAMATION ACTIVITIES AND BE PROPERLY MAINTAINED UNTIL ALL DISTURBED AREAS STABILIZED, INCLUDING:
   3.1. INSTALLATION OF A CONTINUOUS LINE OF TURBIDITY BARRIERS ALONG EDGES OF EXISTING WATER FEATURES AS NOTED IN THE PLANS.
   3.2. CONTINUOUS LINE OF STAKED WATTLES ALONG THE NORTHERN PROPERTY LINE AND LIMITS OF DISTURBED AREA REQUIRED FOR CONSTRUCTION OF THE WETLAND MITIGATION AREA.
4. SOIL STOCKPILES AND DEPOSITION AREAS FOR CONSTRUCTION MATERIALS SHALL BE LOCATED OUTSIDE WETLAND AREAS AND ASSOCIATED BUFFERS AND SHALL BE AS REQUIRED FOR USE.
5. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED AT MINIMUM AFTER EACH STORM EVENT OF 1 INCH OR GREATER DURING CONSTRUCTION TO INSURE THAT CHANNELS, DITCHES AND PIPES ARE CLEAR OF DEBRIS AND THAT THE EROSION CONTROL BARRIERS ARE INTACT. IDENTIFIED DEFICIENCIES SHALL BE CORRECTED IMMEDIATELY.
6. EROSION CONTROL BARRIERS SHALL BE MODIFIED OR EXPANDED AS FIELD CONDITIONS WARRANT.
7. THE CONTRACTOR SHALL MAINTAIN A SUFFICIENT RESERVE OF VARIOUS EROSION CONTROL MATERIALS ONSITE AT ALL TIMES FOR EMERGENCY PURPOSES.
8. ANY DEWATERING WASTE WATERS PUMPED FROM EXCAVATIONS SHALL BE CONVEYED BY HOSE TO AN UPLAND AREA AND DISCHARGED INTO STRAW BALE ENCLOSURES OR SEDIMENTATION BAGS OUTSIDE ALL WETLAND AND WETLAND BUFFER AREAS AS REQUIRED.
9. CONSTRUCTION SITE WASTE MATERIALS SHALL BE PROPERLY CONTAINED ONSITE AND DISPOSED OFF SITE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND STATE REGULATIONS.
10. THE CONTRACTOR SHALL MAINTAIN SURFACE DRAINAGE DURING CONSTRUCTION. STORMWATER SHALL BE MAINTAINED AWAY FROM WORK SITES WHILE PREVENTING AREAS OF EROSION.
11. ANTI-TRACKING PADS SHALL BE PROVIDED AT ALL POINTS OF EGRESS OR INGRESS AND SHALL BE MAINTAINED TO LIMIT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADS.
12. EROSION CONTROL BARRIERS SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF CONSTRUCTION OPERATIONS.
13. THE CONTRACTOR SHALL CLEAN AND MAINTAIN EROSION CONTROL BARRIER WHEN SEDIMENT ACCUMULATES TO ONE HALF THE HEIGHT OF THE WATTLES OR ONE THIRD THE HEIGHT OF SILT FENCE. MATERIAL COLLECTED FROM THE SILTATION BARRIERS SHALL BE REMOVED AS NECESSARY AND DISPOSED IN AN UPLAND AREA.
14. RIP-RAP OR OTHER ENERGY DISSIPATERS SHALL BE USED WHERE NECESSARY TO PREVENT SCOUR.

RIVER HYDRAULICS NOTES

THE HYDRAULIC ENGINEERING CENTER - RIVER ANALYSIS SYSTEM (HEC-RAS) WAS USED TO DEVELOP A TWO-DIMENSIONAL HYDRAULIC MODEL FOR THIS STUDY. THE HEC-RAS MODEL WAS PREPARED TO COMPUTE THE WATER SURFACE PROFILE AND VELOCITY ALONG HARDIG BROOK WITHIN THE PROJECT AREA

LOCAL WATER SURFACE PROFILES AT EACH REPRESENTATIVE CROSS SECTION ALONG HARDIG BROOK IN THE PROJECT LOCATION FOR THE MARCH BASEFLOW, SPRING FRESHET, 5- 10-, 50-, AND 100-YEAR RETURN FREQUENCY RIVERINE FLOOD EVENTS WERE DEVELOPED IN A MANNER CONSISTENT WITH CURRENT NFIP, FHWA, RIDEM AND RIDOT TECHNICAL STANDARDS. MODELING DETERMINED NO IMPACTS TO HARDIG BROOK WILL OCCUR FROM THE PROPOSED CONSTRUCTION.

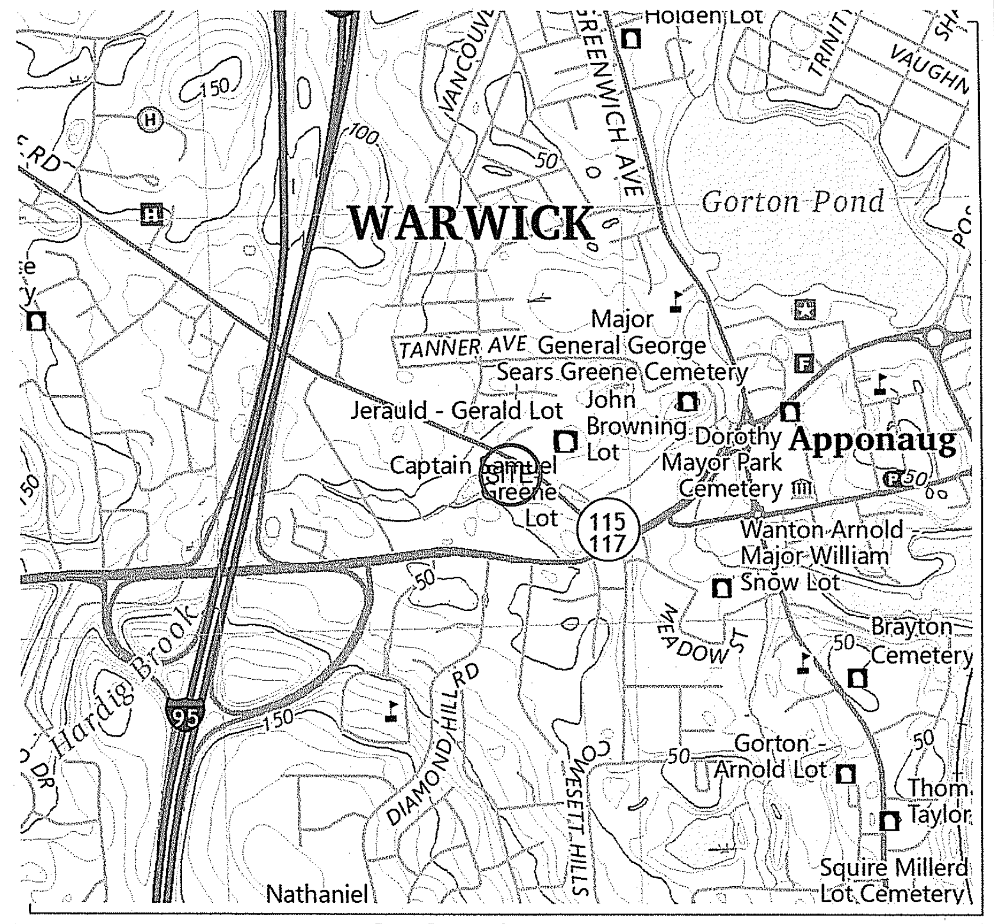
HARDIG BROOK NOTES

HARDIG BROOK AND ITS TRIBUTARIES ARE LISTED BY THE STATE OF RHODE ISLAND AS AN IMPAIRED WATERBODY CONTAINING FECAL COLIFORM POLLUTANTS.

PER THE RHODE ISLAND RULES AND REGULATIONS GOVERNING THE ADMINISTRATION AND ENFORCEMENT OF THE FRESHWATER WETLANDS ACT, 250-RICR-150-15-3.23H, HARDIG BROOK IS SITUATED WITHIN RIVER PROTECTION REGION 2 AND IS DESIGNATED A 150' BUFFER ZONE

LEGEND

━━━━━━	PARCEL BOUNDARY LINE
──────	ABUTTER PARCEL BOUNDARY LINE
– – – 100.00 – – –	TOPOGRAPHIC CONTOUR - EXISTING (EX)
— — — 100.00 — — —	TOPOGRAPHIC CONTOUR - EX Major
── 100.00 ──	GRADE CONTOUR - PROPOSED
──────	SITE FEATURE - EXISTING
─── — — ───	EXISTING TIMBER CRIBBING
──────	SITE FEATURE - PROPOSED
▨	STRUCTURE -EXISTING
☐	STRUCTURE - PROPOSED
∞∞∞∞∞	STONE WALL
─o──o──o─	SPLIT RAIL FENCE
──x────x──	WIRE FENCE
─── — — ───	EDGE OF PAVEMENT
──────	FEMA FLOOD ZONE BOUNDARY
──────	100-YR STORM MODELED INUNDATION AREA
══════	POND BOUNDARY
—··—··—··—	WETLAND EDGE
⌒⌒⌒⌒⌒	TREE LINE (APPROXIMATE)
━━━━━━	VEGETATION LINE (APPROXIMATE)
— — — —	SETBACKS
—— W —— W ——	UTILITY - WATERLINE
—— GAS —— GAS ——	UTILITY - GAS LINE
—— ETC —— ETC ——	UTILITY - ELECTRIC TELE. CABLE
——UGE ——	ELECTRIC -UNDERGROUND
—— OHE ——	ELECTRIC - OVERHEAD (OHE)
—— SAN ——	UTILITY - SANITATION / SEWER
—— SD ——	UTILITY - STORM DRAIN (SD)
——FO ——	FIBER OPTIC CABLE
—LOD ——LOD ——	LIMIT OF DISTURBANCE
—SED ——SED ——	TURBIDITY BARRIER
▬▬▬▬▬	SEDIMENT BARRIER
✿	TREE
MH	MANHOLE (MH:TYPE)
⚐	WETLAND FLAG LOCATION
X 5.10	SPOT GRADE - EXISTING
∞	UTILITY POLE
X 6.6	SPOT GRADE - PROPOSED
▤	STORM DRAIN (SD)



LOCUS MAP

NOT TO SCALE

McCUE
ENVIRONMENTAL

RMA
GeoEnvironmental
20 Main Street
Wickford, Rhode Island 02852
WWW.RMAHYDRO.COM

No.	Revision	Date	App.

Designed By:	Drawn by: ETS	Checked by:	JER
Scale: NTS	Date:	10.15.2024	

Project Title:

GRISTMILL APARTMENTS SLOPE STABILIZATION
126 TOLL GATE ROAD
WARWICK, RI 02886

Client/Owner:
MAPLEWOOD NAVCAP MAN, LLC.
2 ENTERPRISE DRIVE, SUITE 406
SHELTON, CT 06484

Issued for:
REGULATORY REVIEW AND PERMITTING

Drawing Title:
PROJECT NOTES
GRISTMILL APARTMENTS SLOPE STABILIZATION
126 TOLL GATE ROAD, WARWICK, RI

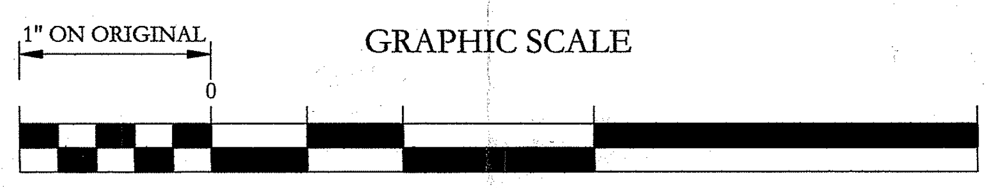
FEB 18 2025

JOSHUA E. ROSENBERG
No. 12640
10/15/24
REGISTERED
PROFESSIONAL ENGINEER
CIVIL

Drawing Number: N-1
Sheet 1 of 8
Project Number: 24135.00
Survey Index: - 246 - 318

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS
SPECIFIED IN THE LETTER OF APPROVAL
DATED: MAR 06 2025 FILE #: 24-0288
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Nancy L. Freeman

90% PERMIT DRAWINGS -
NOT FOR CONSTRUCTION



GRAPHIC SCALE

(in feet)
NTS

Watershed Parameters Summary

Drainage Area (acres)	2,484
Curve Number	75
Time of Concentration (min.)	292.4
Unit Hydrograph Gamma	400-484

Rainfall Estimates Kent County, RI

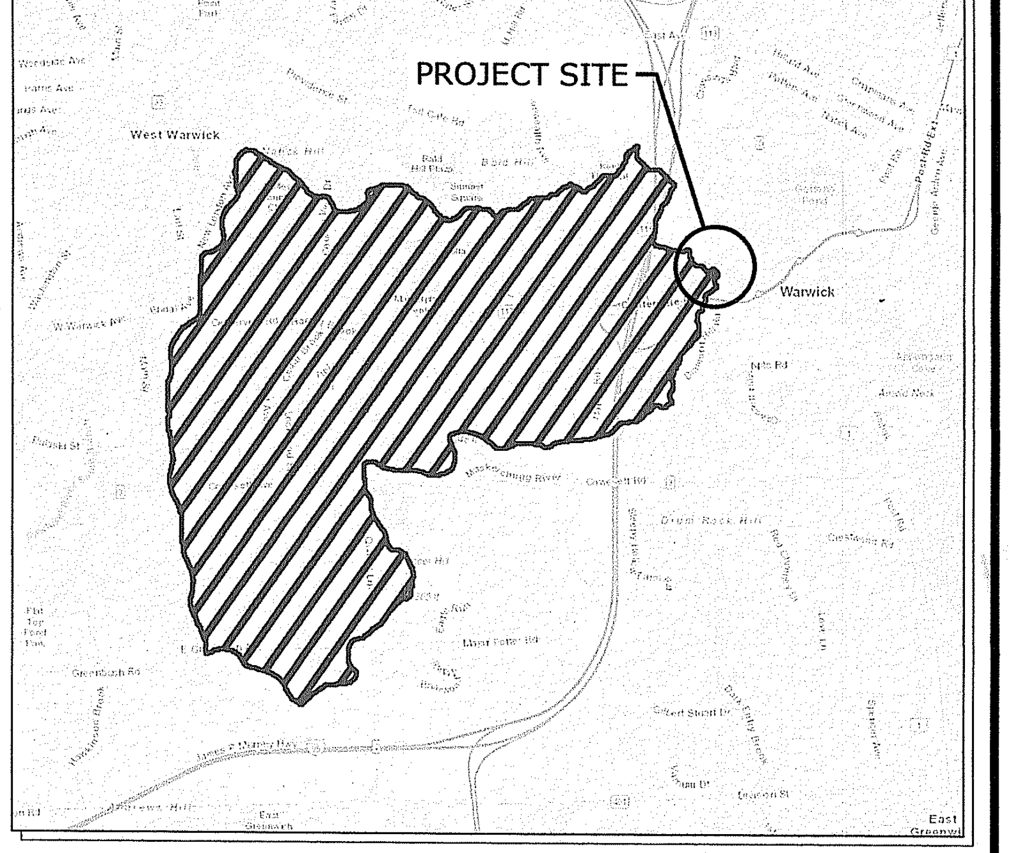
Storm Event (Average Recurrence Interval)	5-yr	10-yr	50-yr	100-yr
Rainfall depth (in)	4.1	4.8	7.3	8.7

1

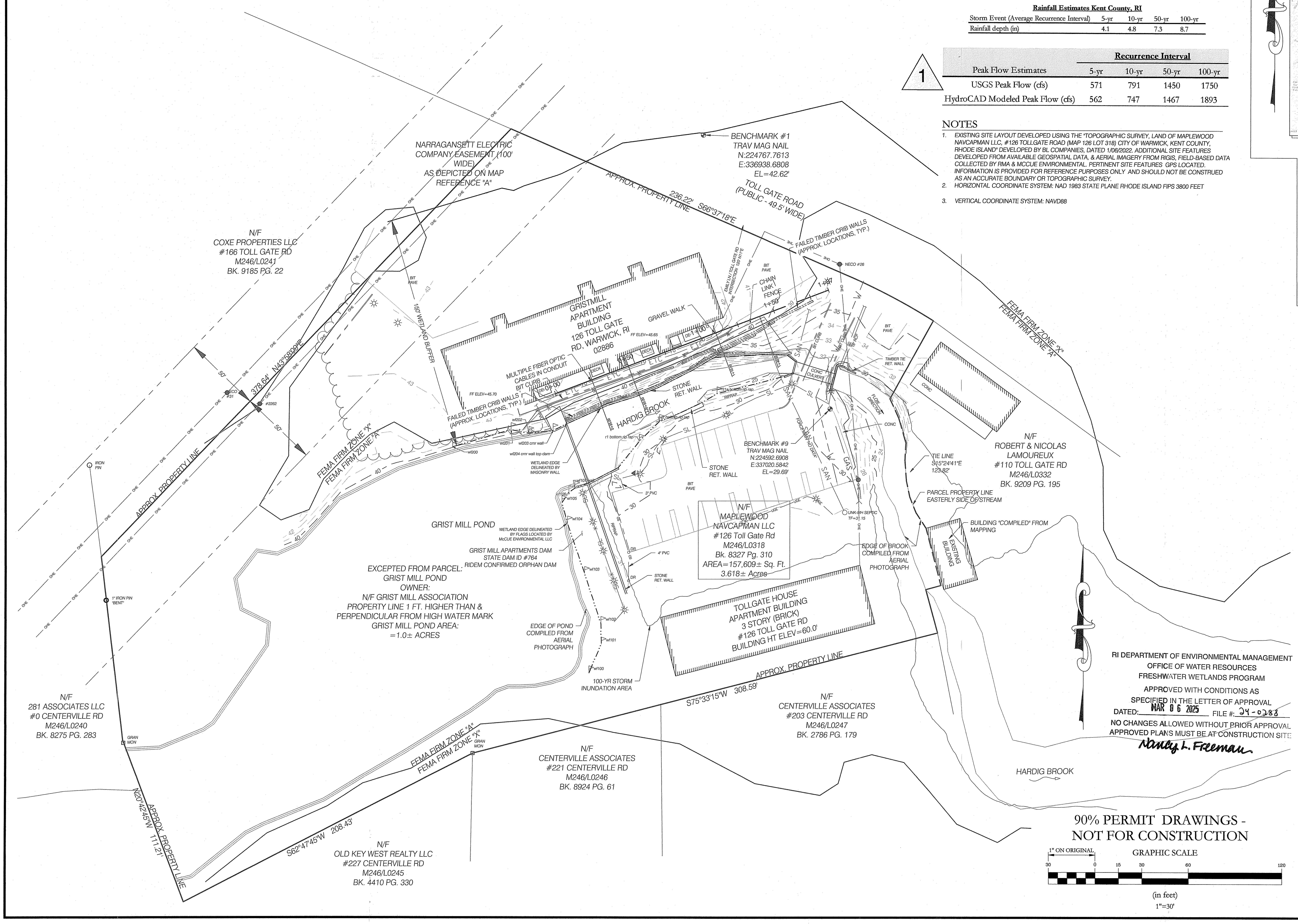
Peak Flow Estimates	Recurrence Interval 5-yr	10-yr	50-yr	100-yr
USGS Peak Flow (cfs)	571	791	1450	1750
HydroCAD Modeled Peak Flow (cfs)	562	747	1467	1893

NOTES

1. EXISTING SITE LAYOUT DEVELOPED USING THE "TOPOGRAPHIC SURVEY, LAND OF MAPLEWOOD NAVCAPMAN LLC, #126 TOLLGATE ROAD (MAP 126 LOT 318) CITY OF WARWICK, KENT COUNTY, RHODE ISLAND" DEVELOPED BY BL COMPANIES, DATED 1/06/2022. ADDITIONAL SITE FEATURES DEVELOPED FROM AVAILABLE GEOSPATIAL DATA, & AERIAL IMAGERY FROM RIGIS, FIELD-BASED DATA COLLECTED BY RMA & MCCUE ENVIRONMENTAL. PERTINENT SITE FEATURES GPS LOCATED. INFORMATION IS PROVIDED FOR REFERENCE PURPOSES ONLY AND SHOULD NOT BE CONSTRUED AS AN ACCURATE BOUNDARY OR TOPOGRAPHIC SURVEY.
2. HORIZONTAL COORDINATE SYSTEM: NAD 1983 STATE PLANE RHODE ISLAND FIPS 3800 FEET
3. VERTICAL COORDINATE SYSTEM: NAVD88



WATERSHED MAP
NOT TO SCALE



RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS
SPECIFIED IN THE LETTER OF APPROVAL
DATED: MAR 06 2025 FILE #: 24-0288
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90% PERMIT DRAWINGS -
NOT FOR CONSTRUCTION

McCUE
ENVIRONMENTAL

RMA
GeoEnvironmental
20 Main Street
Wickford, Rhode Island 02852
WWW.RMAHYDRO.COM

No.	Revision	Date	App.
01	UPDATED PER RIDEM COMMENTS DATED 12/30/2024	1.31.2025	JER

Designed By:
Drawn by: ETS
Checked by: JER
Scale: 1" = 30'
Date: 10.15.2024

Project Title:

GRISTMILL APARTMENTS SLOPE STABILIZATION
126 TOLL GATE ROAD
WARWICK, RI 02886

Client/Owner:
MAPLEWOOD NAVCAP MAN, LLC.
2 ENTERPRISE DRIVE, SUITE 406
SHELTON, CT 06484

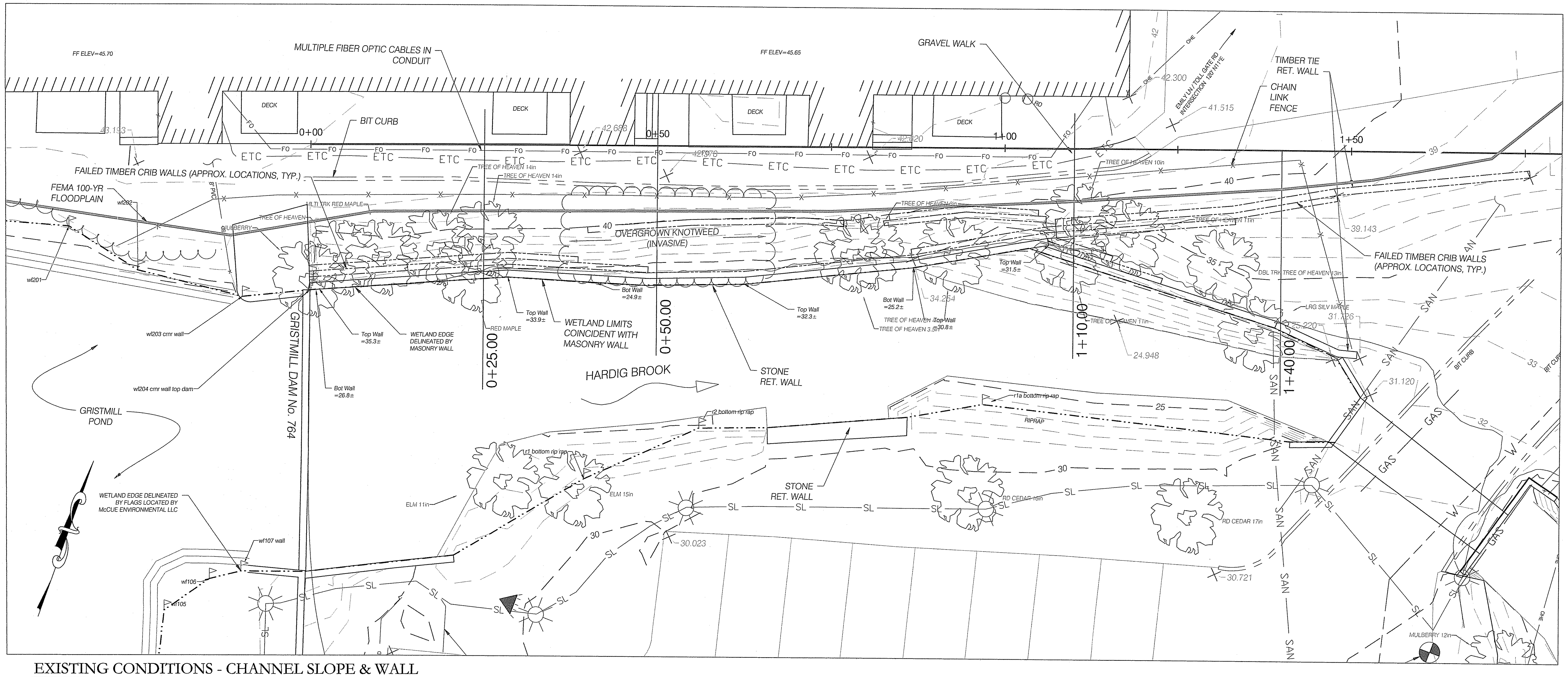
Issued for:
REGULATORY REVIEW AND PERMITTING

Drawing Title:
EXISTING SITE PLAN
GRISTMILL APARTMENTS SLOPE STABILIZATION
126 TOLL GATE ROAD, WARWICK, RI

Environmental Management
FEB 13 2025
Office of Water Resources

JOSHUA E. ROSENBERG
No. 12640
10/15/24
REGISTERED
PROFESSIONAL ENGINEER
CIVIL

Drawing Number: EX-1
Sheet 2 of 8
Project Number: 24135.00
Survey Index: - 246 - 318

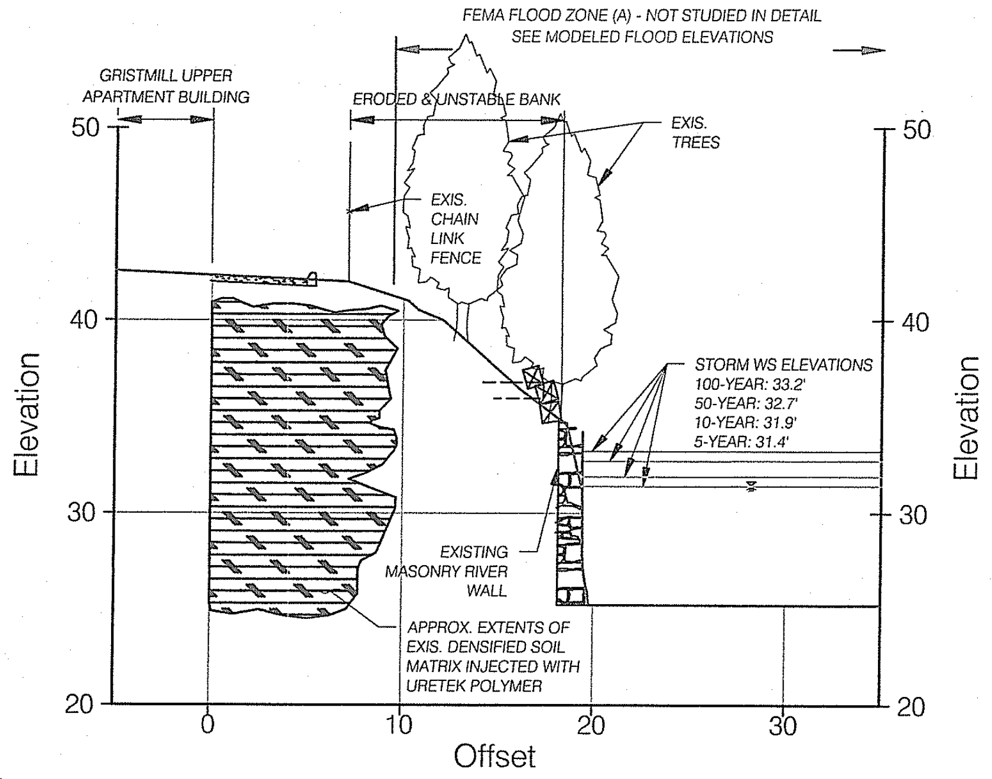


EXISTING CONDITIONS - CHANNEL SLOPE & WALL

1" = 10'

NOTES

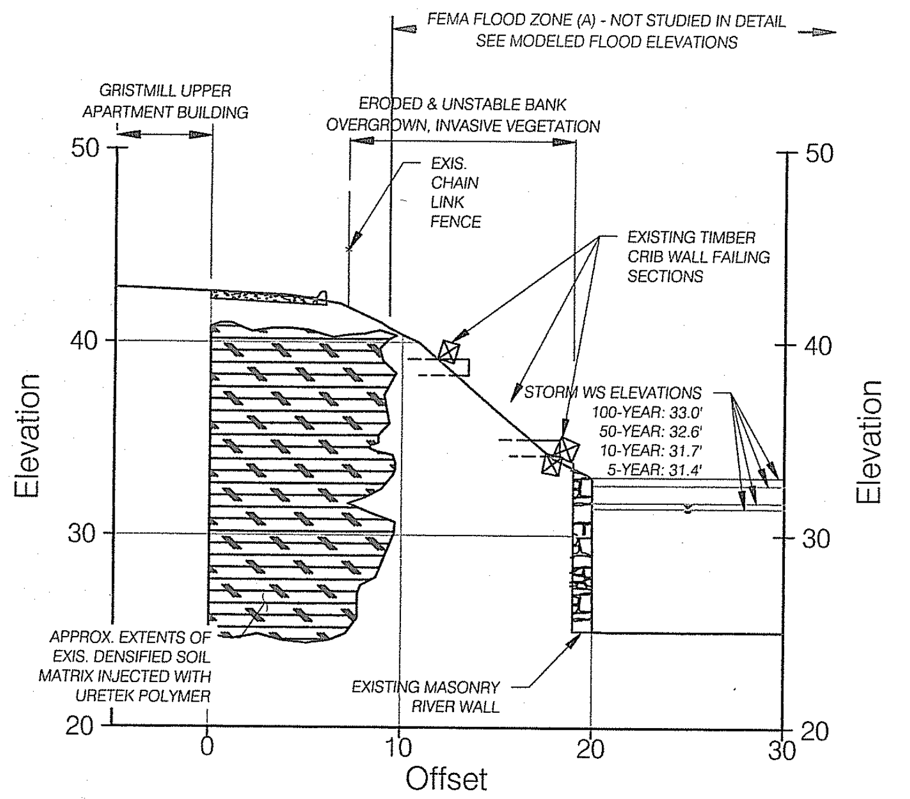
1. SEE N-1 & EX-1 FOR GENERAL SITE PLAN NOTES



1 0+25.00

EXISTING SLOPE PROFILE

1" = 10'

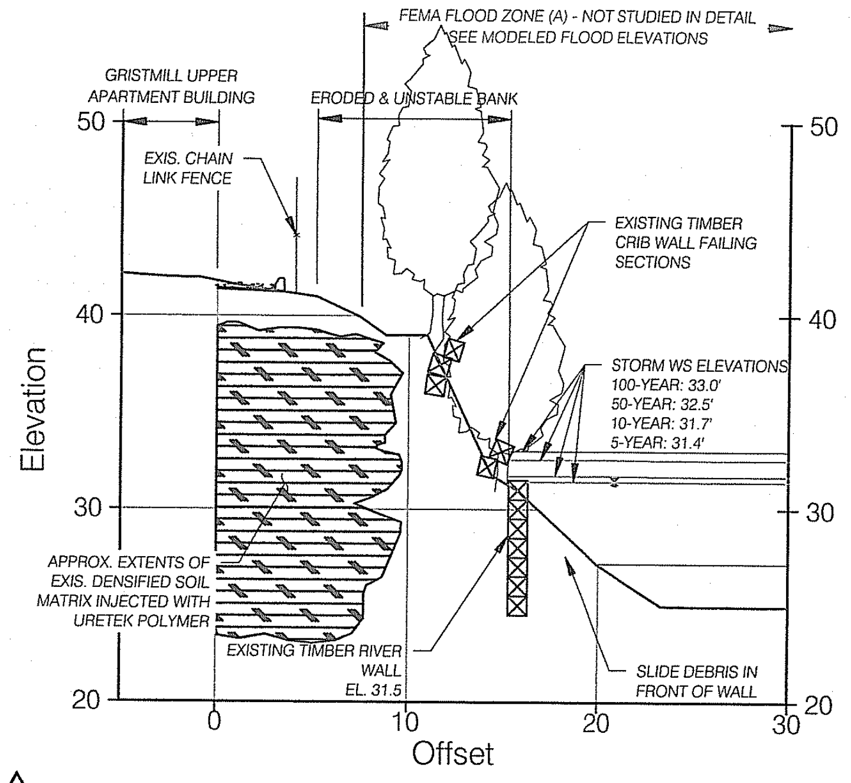


1 0+50.00

EXISTING SLOPE PROFILE

1" = 10'

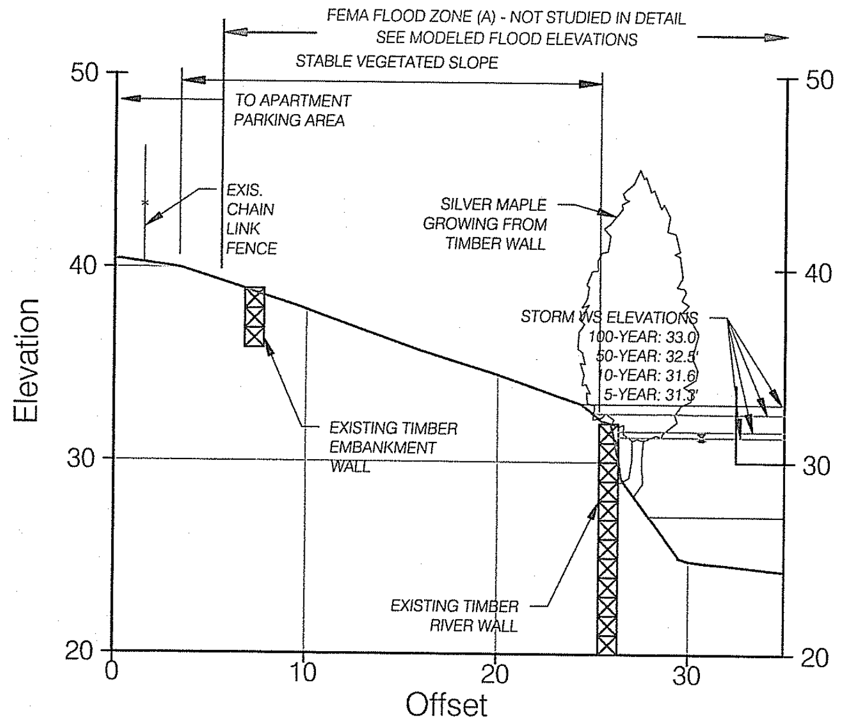
PLAIN (ZONE A)



1 1+10.00

EXISTING SLOPE PROFILE

1" = 10'



1 1+40.00

EXISTING SLOPE PROFILE

1" = 10'

LEGEND

▨ URETEK INJECTED POLYMER ZONE

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS
SPECIFIED IN THE LETTER OF APPROVAL
DATED: MAR 06 2025 FILE #: 24-0288
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Nancy L. Freeman

90% PERMIT DRAWINGS -
NOT FOR CONSTRUCTION

1" ON ORIGINAL

GRAPHIC SCALE

10 0 5 10 20 40

(in feet)
1"=10'

McCUE ENVIRONMENTAL

RMA GeoEnvironmental
20 Main Street
Wickford, Rhode Island 02852
WWW.RMAHYDRO.COM

No.	Revision	Date	App.
01	UPDATED PER RIDEM COMMENTS DATED 12/30/2024	1.31.2025	JER

Designed By: Drawn by: ETS Checked by: JER
Scale: 1" = 10' Date: 10.15.2024

Project Title:

GRISTMILL APARTMENTS SLOPE STABILIZATION
126 TOLL GATE ROAD
WARWICK, RI 02886

Client/Owner:

MAPLEWOOD NAVCAP MAN, LLC.
2 ENTERPRISE DRIVE, SUITE 406
SHELTON, CT 06484

Issued for:

REGULATORY REVIEW AND PERMITTING

Drawing Title:

EXISTING CONDITIONS PLAN AND SECTIONS
GRISTMILL APARTMENTS SLOPE STABILIZATION
126 TOLL GATE ROAD, WARWICK, RI

...ironmental Management
FEB 13 2025
Office of Water Resources

JOSHUA E. ROSENBERG
No. 12640
REGISTERED PROFESSIONAL ENGINEER CIVIL
10/15/24

Drawing Number: EX-2

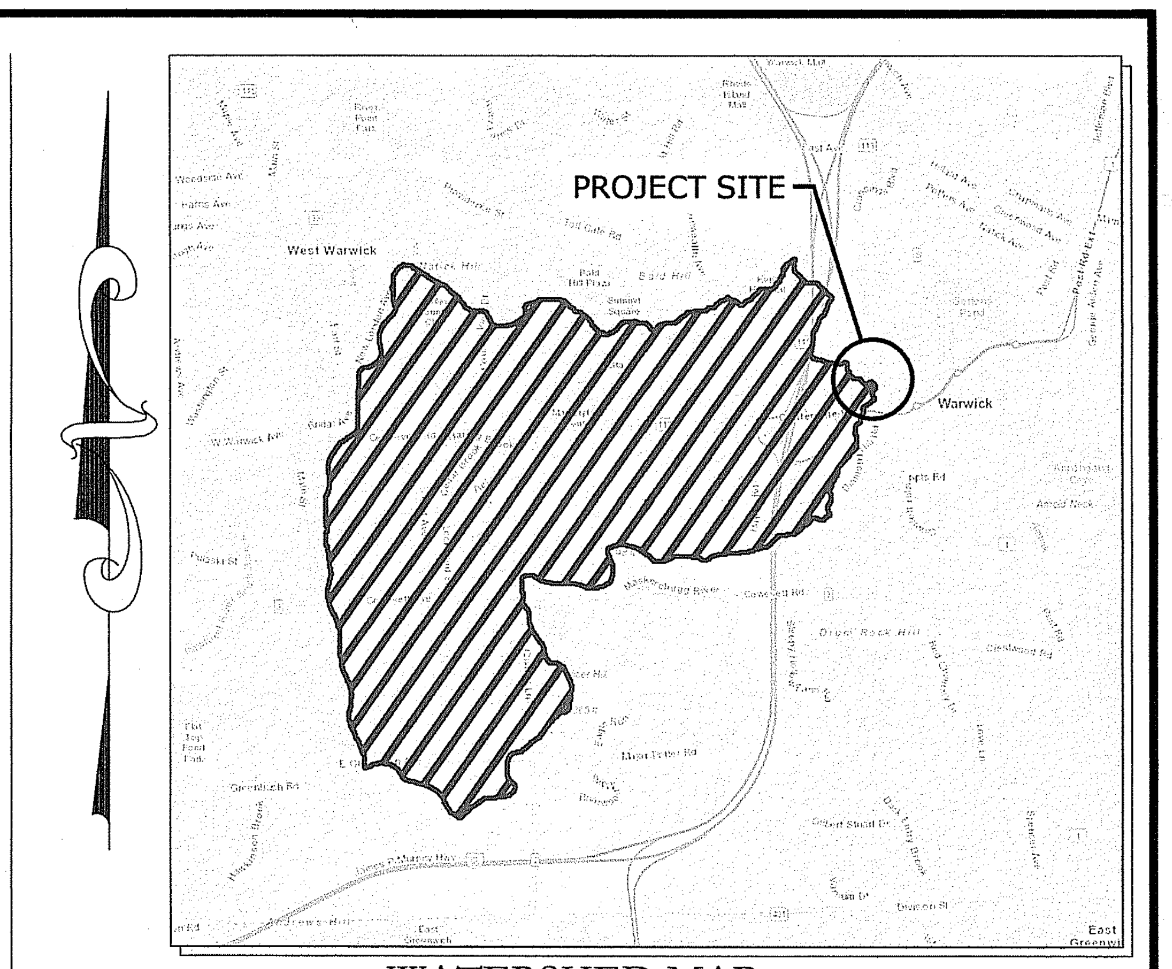
Sheet 3 of 8

Project Number: 24135.00

Survey Index: - 246 - 318

NOTES

1. SEE N-1 & EX-1 FOR GENERAL SITE PLAN NOTES
2. SEE N-2 & N-3 FOR PROPOSED DETAILS AND INSTALLATION NOTES



WATERSHED MAP
NOT TO SCALE

McCUE
ENVIRONMENTAL

RMA GeoEnvironmental
20 Main Street
Wickford, Rhode Island 02852
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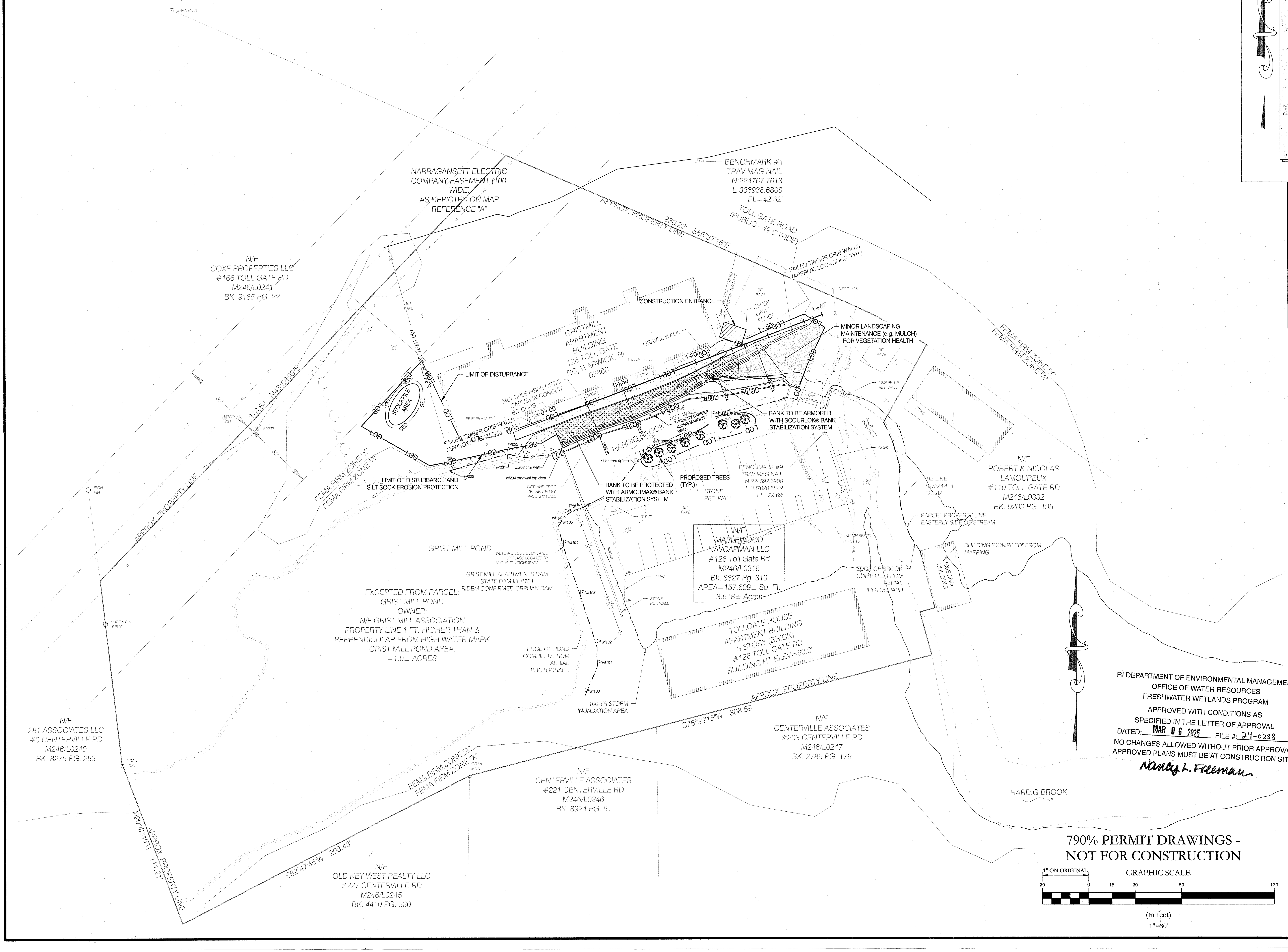

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NOT FOR CONSTRUCTION

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS
SPECIFIED IN THE LETTER OF APPROVAL
DATED: MAR 0 6 2025 FILE #: 24-0288
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Nancy L. Freeman

No.	Revision	Date	App.

Designed By:
Drawn by: ETS
Checked by: JER
Scale: 1" = 30'
Date: 10.15.2024

Project Title:

GRISTMILL APARTMENTS SLOPE STABILIZATION

126 TOLL GATE ROAD
WARWICK, RI 02886

Client/Owner:
MAPLEWOOD NAVCAP MAN, LLC.
2 ENTERPRISE DRIVE, SUITE 406
SHELTON, CT 06484

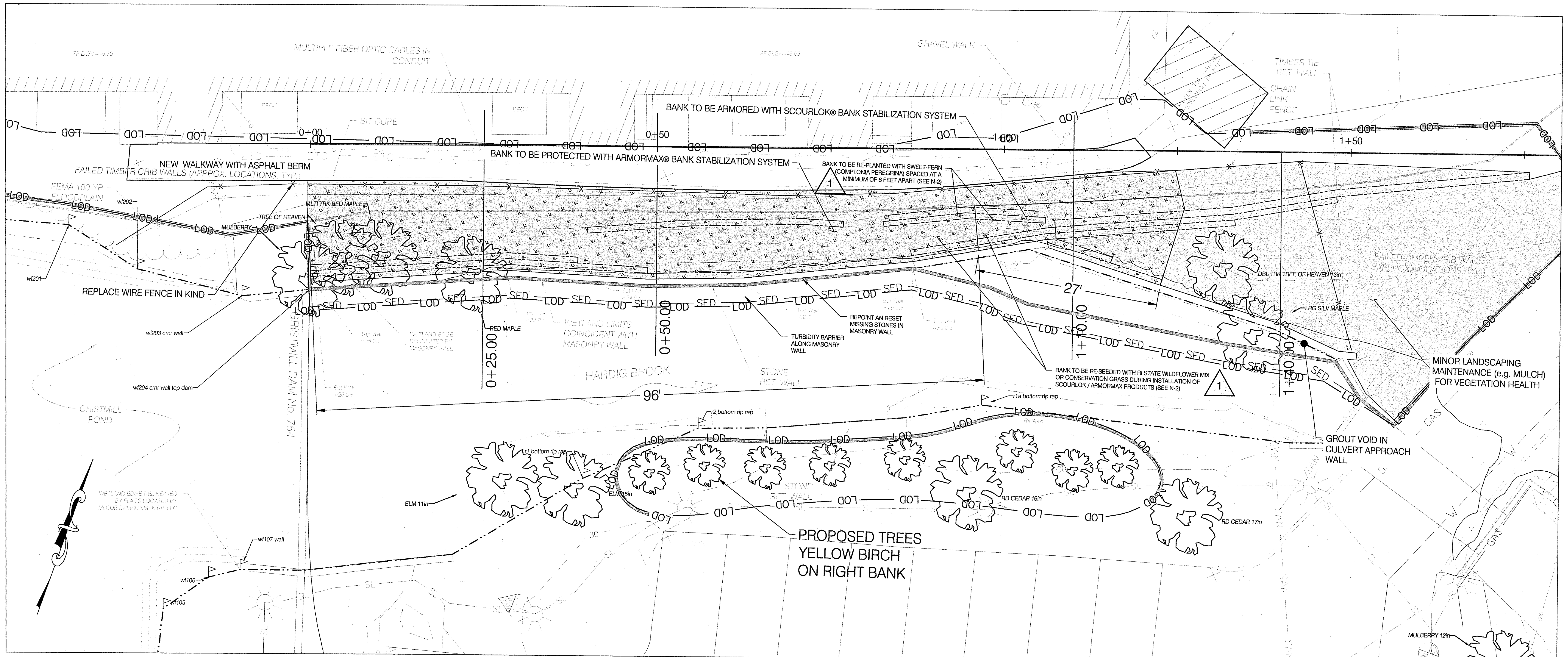
Issued for:
REGULATORY REVIEW AND PERMITTING

Drawing Title:
PROPOSED SITE PLAN
GRISTMILL APARTMENTS SLOPE STABILIZATION
126 TOLL GATE ROAD, WARWICK, RI

Environmental Management
FEB 1 3 2025
Office of Water Resources

JOSHUA E. ROSENBERG
No. 12640
10/15/24
REGISTERED
PROFESSIONAL ENGINEER
CIVIL

Drawing Number: PR-1
Sheet 4 of 8
Project Number: 24135.00
Survey Index: - 246 - 318



PROPOSED CONDITIONS - CHANNEL SLOPE & WALL

1" = 10'

NOTES

1. SEE N-1 & EX-1 FOR GENERAL SITE PLAN NOTES
2. SEE N-2 & N-3 FOR PROPOSED DETAILS AND INSTALLATION NOTES

FIGURE OF REVEGETATED BANKS ARMORED WITH PROPEX PRODUCTS

LEGEND

▨	SCOURLOK PRODUCT
▨	ARMORMAX PRODUCT
▨	LANDSCAPE MAINTENANCE AREA
❀	PROPOSED TREE
❀	EXISTING TRESS TO BE PROTECTED
▨	SWEET-FERN (COMPTONIA PEREGRINA) AND PROPOSED RI STATE WILDFLOWER MIX OR CONSERVATION GRASS MIX △1

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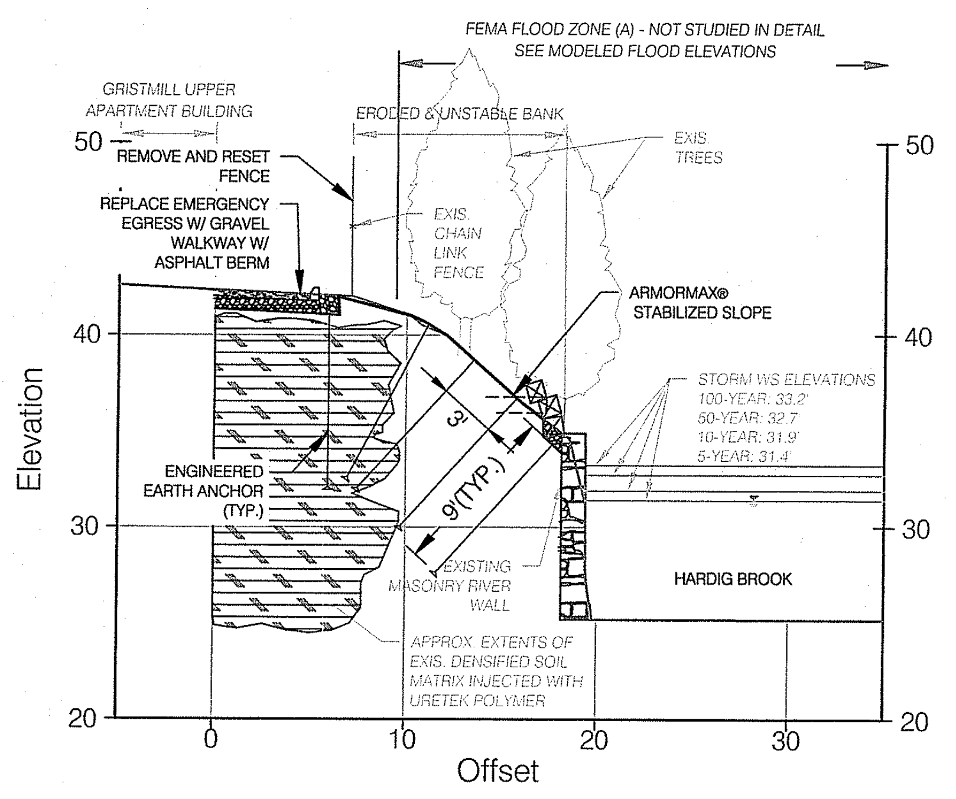
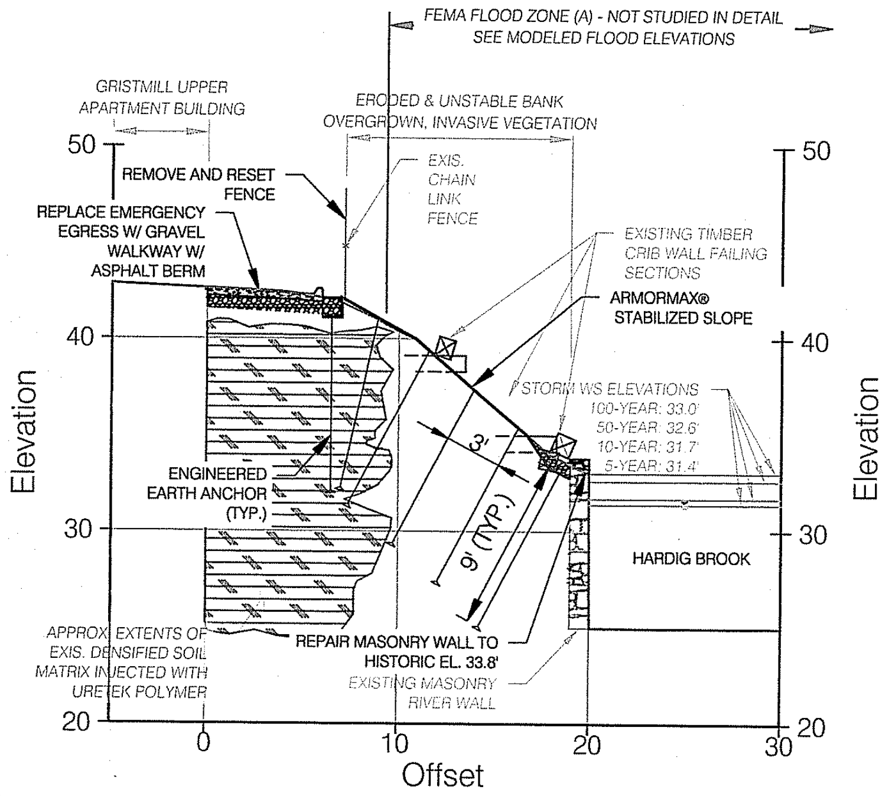


△1 0+25.00

PROPOSED SLOPE PROFILE

1" = 10'



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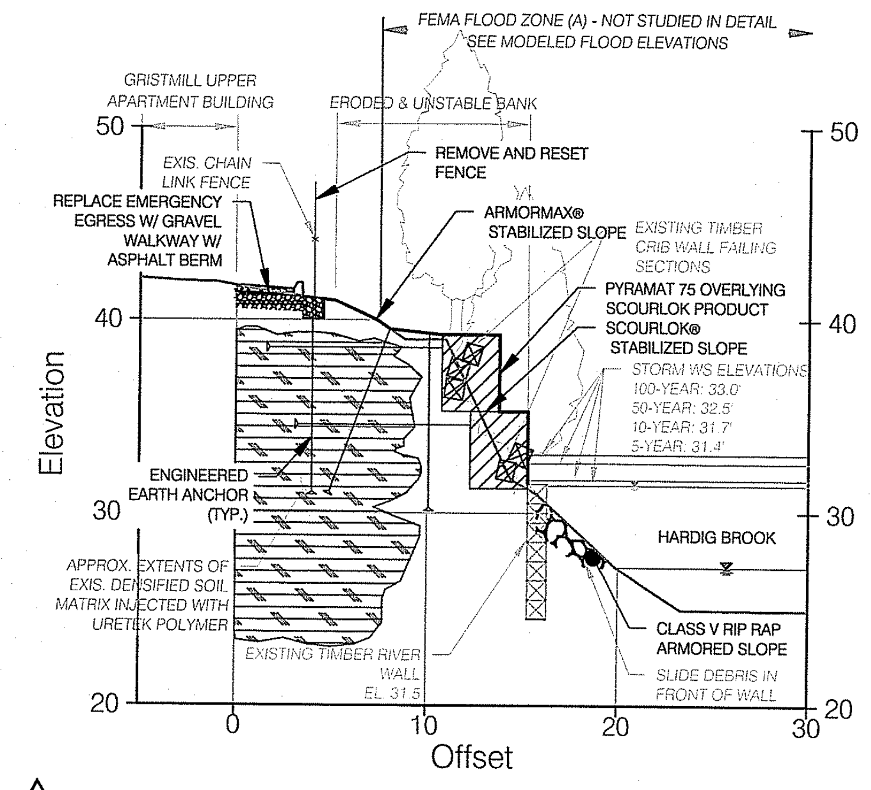

△1 1+10.00

PROPOSED SLOPE PROFILE

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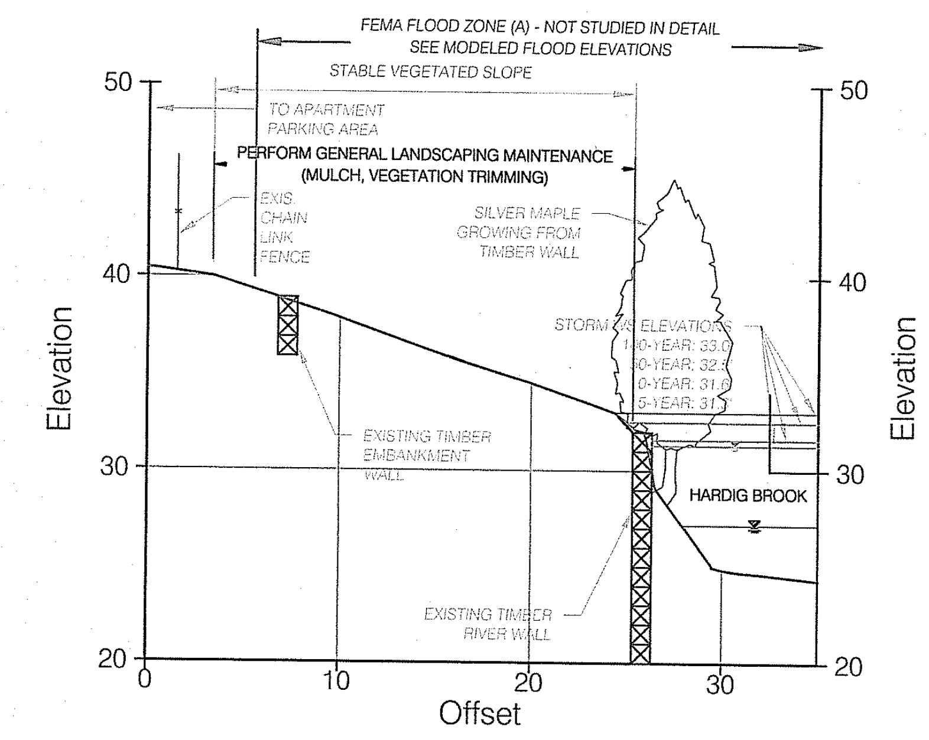

△1 1+40.00

PROPOSED SLOPE PROFILE

1" = 10'

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Nancy L. Freeman

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1" ON ORIGINAL

GRAPHIC SCALE

10 0 5 10 20 40

(in feet)
1"=10'

01	UPDATED PER RIDEM COMMENTS DATED 12/30/2024	1.31.2025	JER
No.	Revision	Date	App.

Designed By:	Drawn by: ETS	Checked by:	JER
Scale:	1" = 10'	Date:	10.15.2024

Project Title:

GRISTMILL APARTMENTS SLOPE STABILIZATION
126 TOLL GATE ROAD
WARWICK, RI 02886

Client/Owner:

MAPLEWOOD NAVCAP MAN, LLC.
2 ENTERPRISE DRIVE, SUITE 406
SHELTON, CT 06484

Issued for:

REGULATORY REVIEW AND PERMITTING

Drawing Title:

PROPOSED CONDITIONS PLAN AND SECTIONS
GRISTMILL APARTMENTS SLOPE STABILIZATION
126 TOLL GATE ROAD, WARWICK, RI

RI Environmental Management
FEB 13 2025
Office of Water Resources

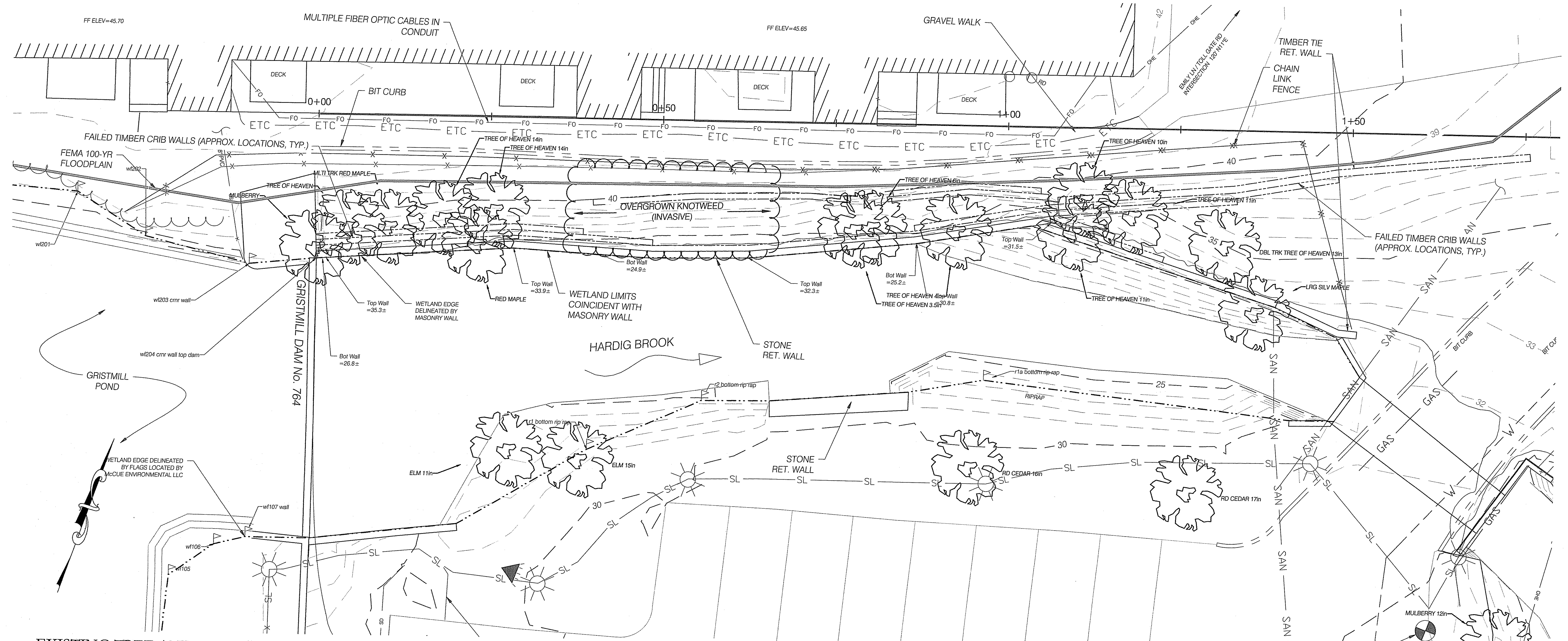
JOSHUA E. ROSENBERG
No. 12640
10/15/24
REGISTERED PROFESSIONAL ENGINEER CIVIL

Drawing Number: PR-2

Sheet 5 of 8

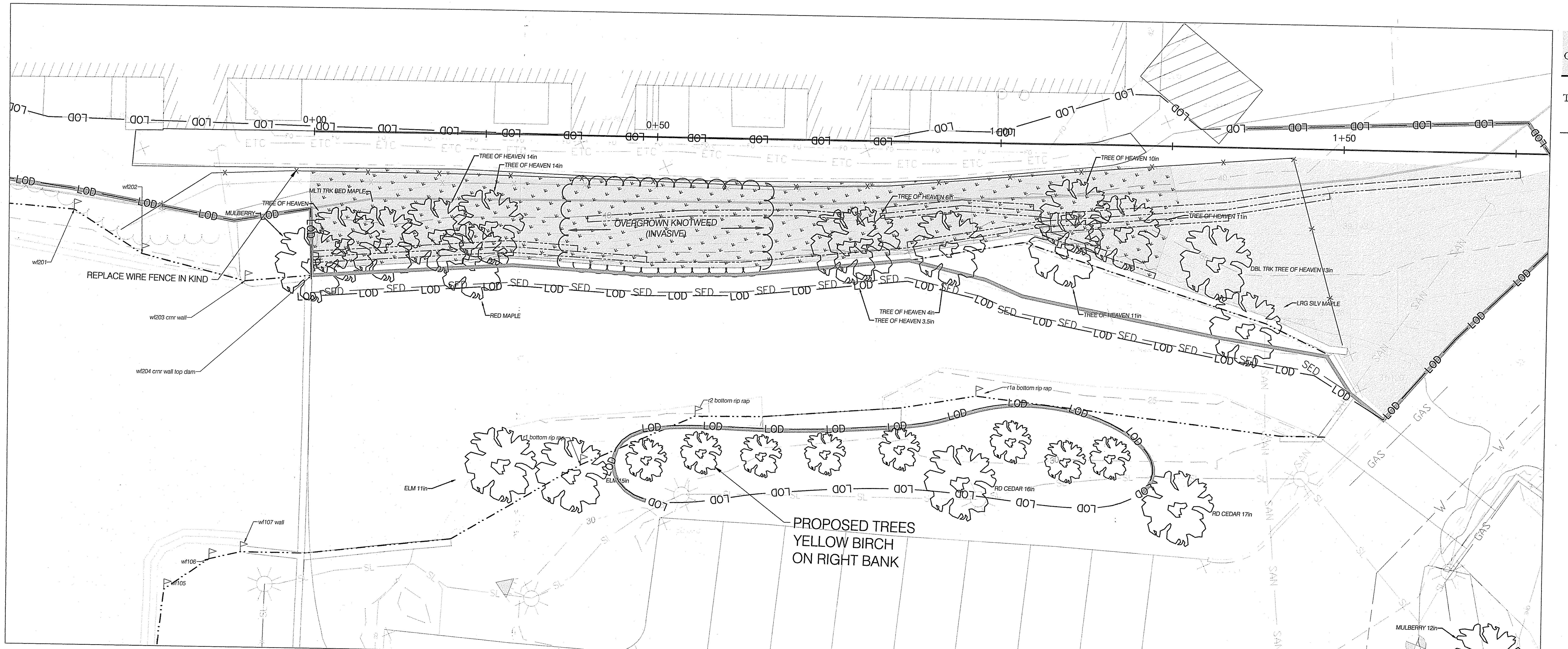
Project Number: 24135.00

Survey Index: - 246 - 318



EXISTING TREE AND VEGETATION PLAN

1" = 10'



PROPOSED TREE AND VEGETATION PLAN

1" = 10'

NOTES

1. SEE N-1 & EX-1 FOR GENERAL SITE PLAN NOTES

LEGEND

EXISTING TREES

EXISTING VEGETATION

Proposed Tree Removal Schedule

Common Name *Genus species*	Number of specimens	Specimens' Diameter at Breast Height	
Tree of Heaven *Ailanthus altissima*	8	14 in. 14 in. 6 in. 4 in.	3.5 in. 10 in. 11 in. 11 in.

Proposed Tree Removal Mitigation Schedule

Common Name *Genus species*	Number of specimens	Approximate Location
Yellow Birch *Betula alleghaniensis*	8	Proposed along South/right bank

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LEGEND

PROPOSED TREE

EXISTING TREES TO BE PROTECTED

EXISTING TREES TO BE REMOVED

EXISTING VEGETATION TO BE REMOVED

▨ SWEET-FERN (COMPTONIA PEREGRINA) AND PROPOSED RI STATE WILDFLOWER MIX OR CONSERVATION GRASS MIX △1

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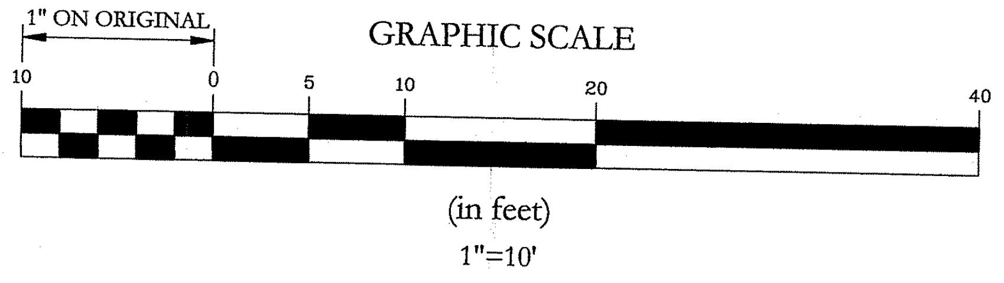

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126 TOLL GATE ROAD
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2 ENTERPRISE DRIVE, SUITE 406
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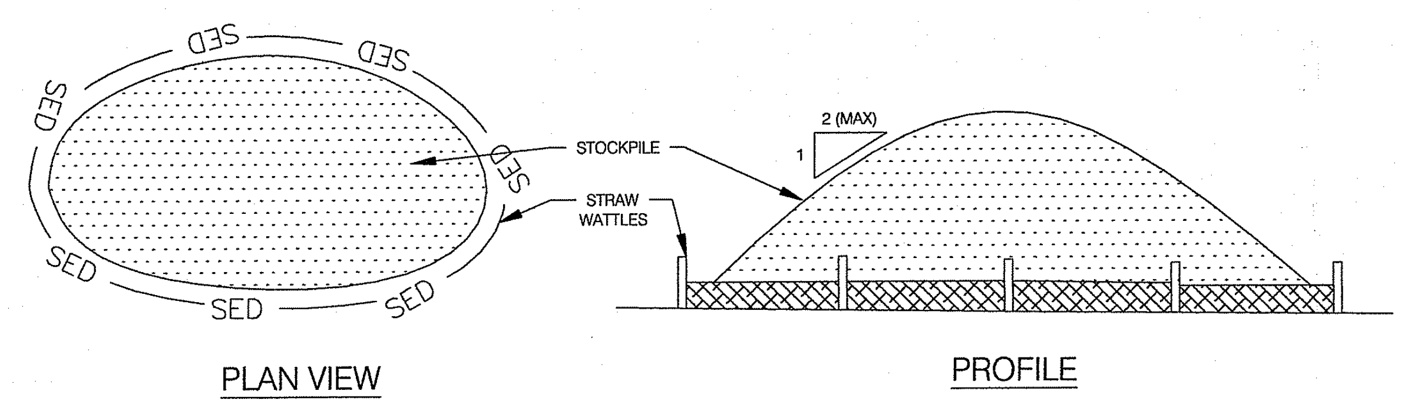
TREE AND VEGETATION PLANS
GRISTMILL APARTMENTS SLOPE STABILIZATION
126 TOLL GATE ROAD, WARWICK, RI

Environmental Management
FEB 13 2025
Office of Water Resources

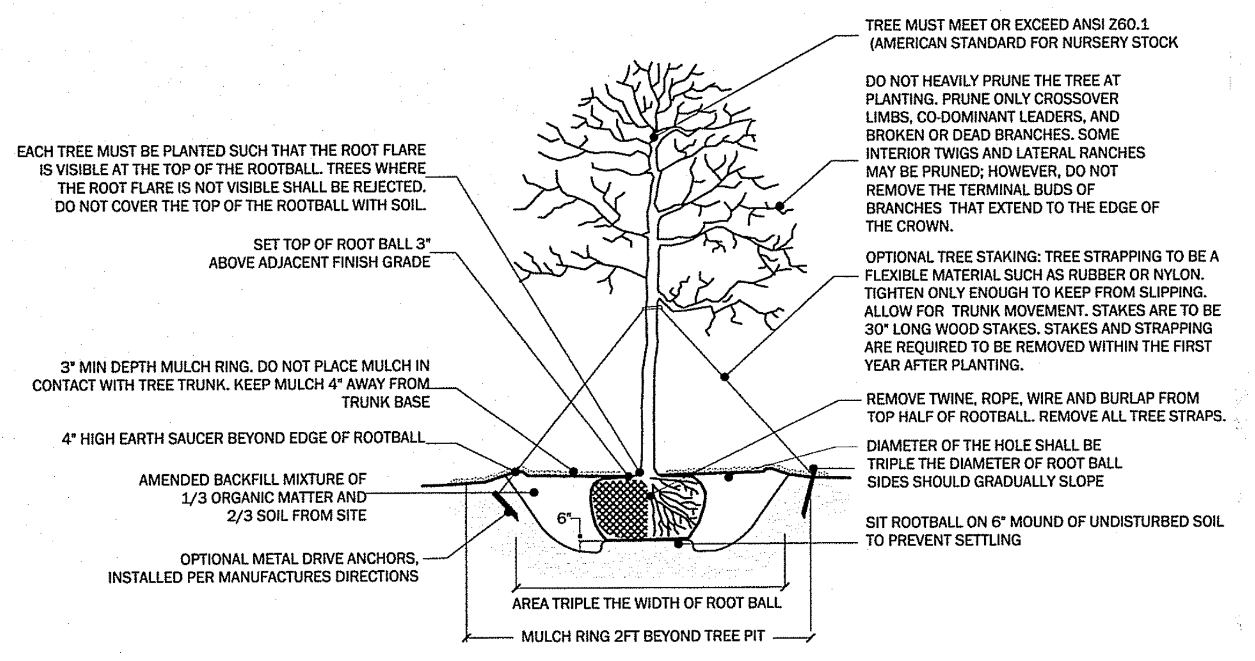
JOSHUA E. ROSENBERG
No. 12640
10/15/24
REGISTERED PROFESSIONAL ENGINEER CIVIL

Drawing Number: TR-1
Sheet 6 of 8
Project Number: 24135.00
Survey Index: - 246 - 318



STOCKPILE AREA DETAIL

NOT TO SCALE

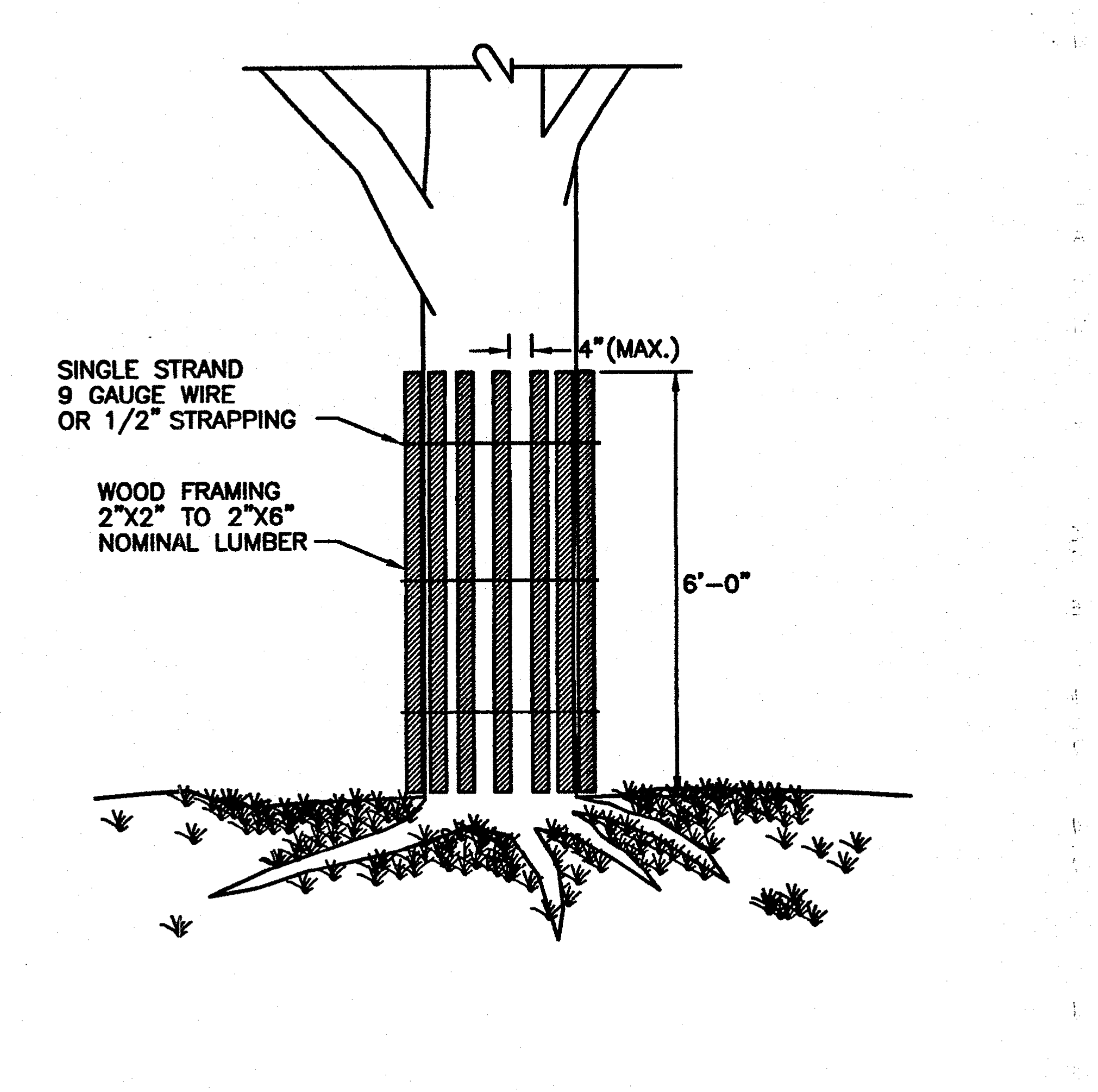


SECTION: TREE PLANTING DETAIL

CROSS SECTION

TREE PLANTING NOTES

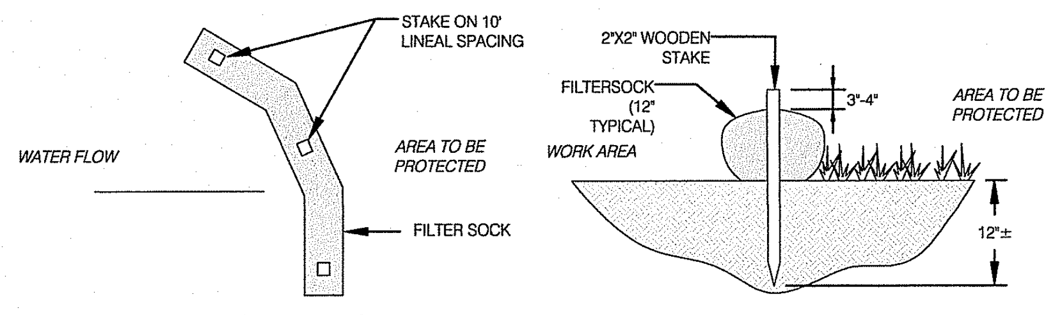
1. SEE PROPOSED TREE SCHEDULE ON TR-1



NOTE:
SHALL BE IN ACCORDANCE WITH SECTION L.11 OF THE STANDARD SPECIFICATIONS.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS			TREE PROTECTION DEVICE	R.I. STANDARD 51.1.0
NO.	BY	DATE	CHIEF ENGINEER TRANSPORTATION · CHIEF DESIGN ENGINEER TRANSPORTATION · JUNE 15, 1998 ISSUE DATE	

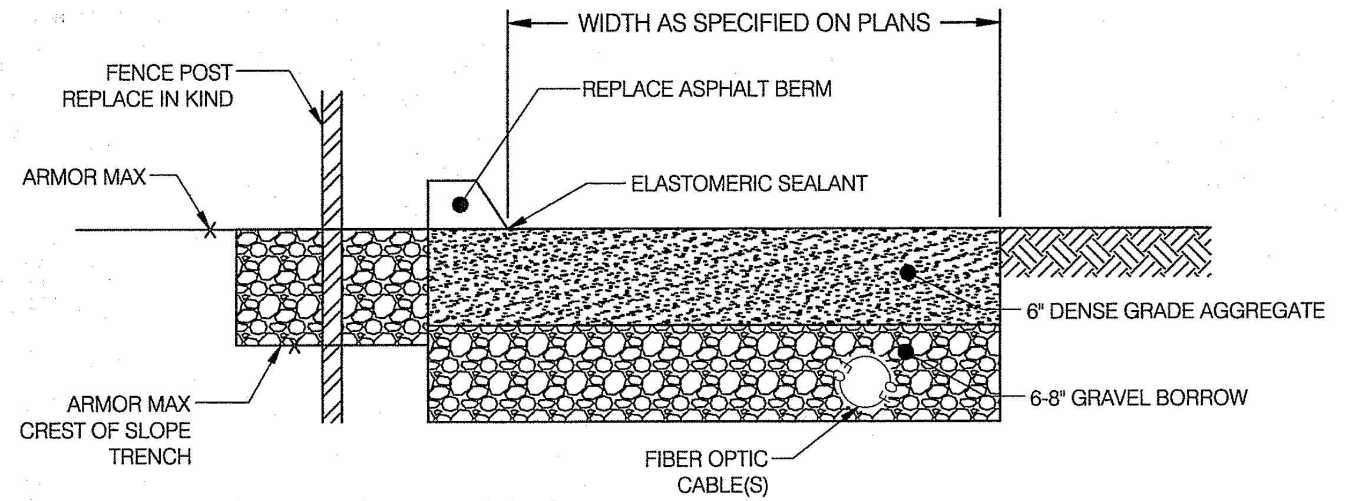


FILTERSOCK NOTES

1. COMPOST / SOIL / ROCK / SEED FILL TO MEET APPLICATION REQUIREMENTS
2. COMPOST MATERIAL TO BE REMOVED OR DISPERSED ON SITE AS DETERMINED BY ENGINEER.

FILTERSOCK DETAIL

NOT TO SCALE



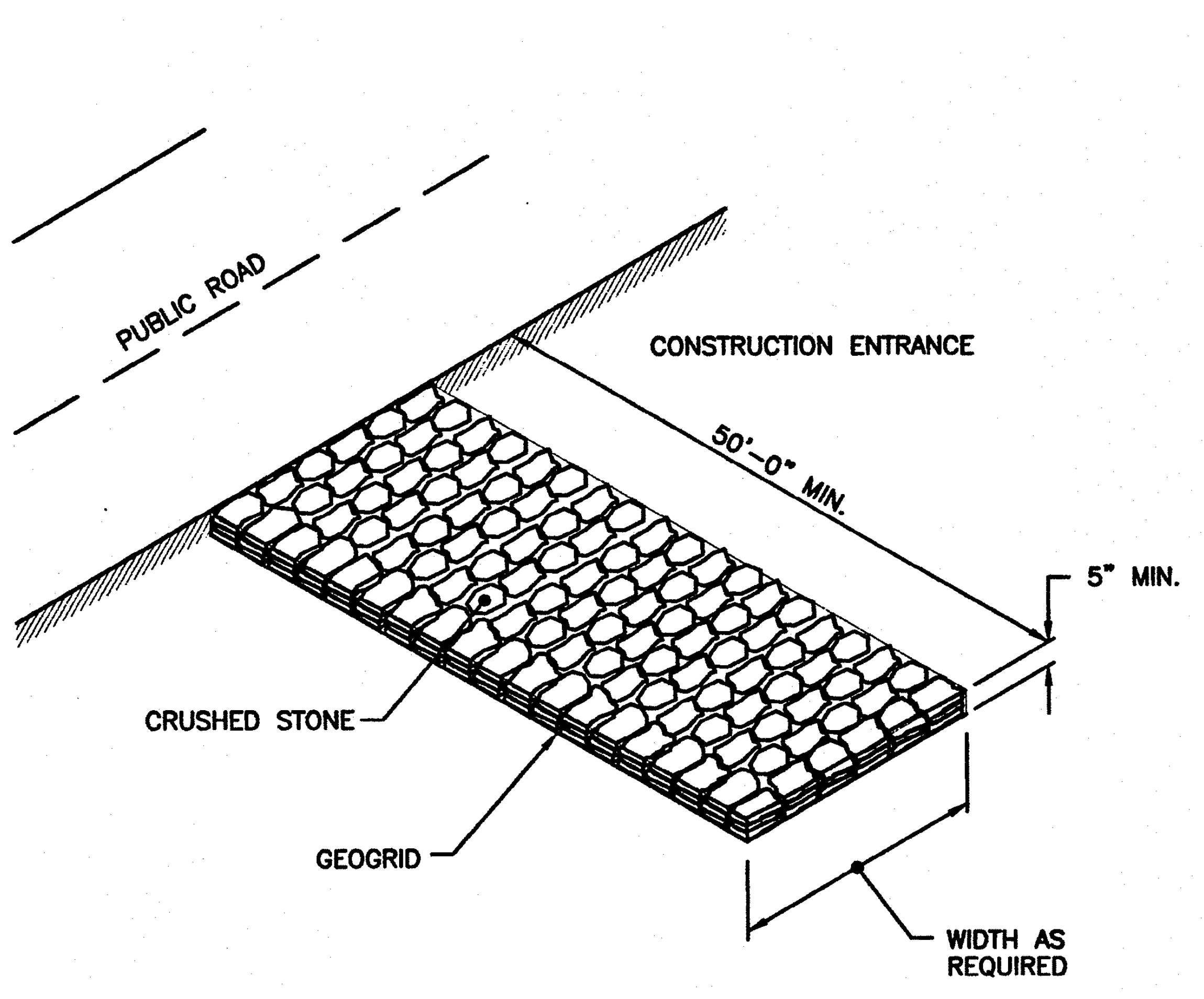
EGRESS WALKWAY NOTES

1. *SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.*
2. *FIBER OPTIC CABLES SHOULD BE PLACED ON BEDDING IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND BACKFILLED WITH GRAVEL BORROW ABOVE THE PIPE OR UTILITY. GRAVEL BORROW SHOULD BE PLACED IN LIFTS ON THE SIDES AND ABOVE THE UTILITIES AND COMPACTED TO AT LEAST 92 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D- 1557 (MODIFIED PROCTOR TEST). COMPACTION SHOULD BE PERFORMED WITH HAND-OPERATED EQUIPMENT WITH LIFT THICKNESS DEPENDING ON THE SIZE OF EQUIPMENT USED.*
3. *MATERIAL GRADATIONS FOR THE DENSE GRADE AGGREGATE AND GRAVEL BORROW SHALL COMPLY WITH THE MATERIAL SPECIFACTIONS PROVIDED BELOW.*

PROPOSED WALKWAY DETAIL

NOT TO SCALE

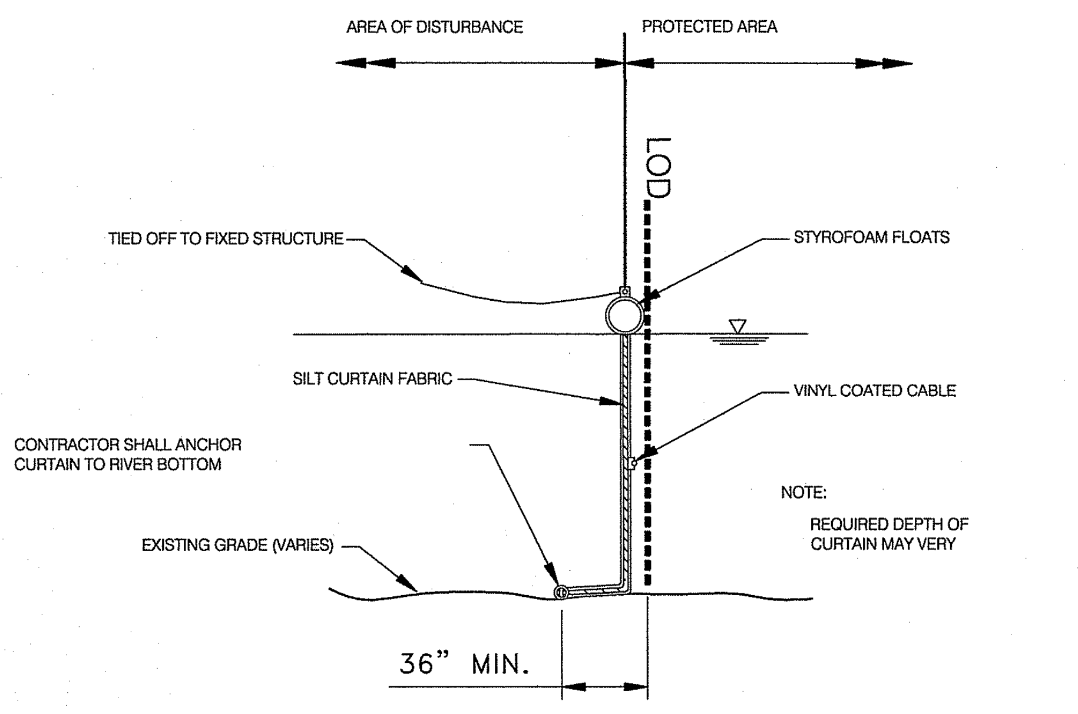
Gravel Borrow		Dense Grade Aggregate	
Sieve Size	% Passing	Sieve Size	% Passing
3"	100	2.5"	100
1/2"	50-85	1 1/2"	80-100
3/8"	45-80	1/2"	50-80
No. 4	40-75	No. 10	15-45
No. 40	0-45	No. 40	4-30
No. 200	0-5	No. 200	0-10



NOTE:
SHALL BE IN ACCORDANCE WITH SECTION 211 OF THE R.I. STANDARD SPECIFICATIONS.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS			CONSTRUCTION ACCESS	R.I. STANDARD 9.9.0
NO.	BY	DATE	CHIEF ENGINEER TRANSPORTATION · CHIEF DESIGN ENGINEER TRANSPORTATION · JUNE 15, 1998 ISSUE DATE	



TURBIDITY BARRIER DETAIL

NOT TO SCALE

GROUT FOR VOID IN TIMBER WALL

1. *GROUT FOR THE VOID IN THE TIMBER WALL, WITH A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI, SHALL CONSIST OF ONE PART PORTLAND CEMENT AND THREE PARTS OF SAND, THOROUGHLY MIXED WITH WATER TO PRODUCE GROUT HAVING A THICK, CREAMY CONSISTENCY. THE MINIMUM AMOUNT OF WATER SHOULD BE USED TO PREVENT EXCESS SHRINKAGE OF THE GROUT AFTER PLACEMENT. THE CEMENT, SAND, AND MIXING SHALL CONFORM TO THIS SECTION AND AS APPROVED BY THE ENGINEER..*

1. *PORTLAND CEMENT: ASTM C 150, TYPE II FOR ALL WORK UNLESS OTHERWISE SPECIFIED. USE ONE BRAND OF CEMENT THROUGHOUT PROJECT.*
2. *NORMAL WEIGHT AGGREGATES: ASTM C 33, AND AS HEREIN SPECIFIED. USE ¾" MAXIMUM SIZE FOR ALL CONCRETE, UNLESS OTHERWISE DIRECTED OR SPECIFIED. PROVIDE AGGREGATES FROM A SINGLE SOURCE FOR EXPOSED CONCRETE.*
3. *WATER: CLEAN, POTABLE AND FREE FROM FOREIGN MATERIALS IN AMOUNTS HARMFUL TO CONCRETE AND EMBEDDED STEEL. PROVIDE WATER WHICH MEETS ACI/ASTM REQUIREMENTS FOR CONCRETE MIX WATER.*
4. *THE GROUT MAY BE DELIVERED TO THE PLACE OF FINAL DEPOSIT BY ANY MEANS THAT WILL ENSURE UNIFORMITY AND PREVENT SEGREGATION OF THE GROUT. IF PENETRATION OF GROUT IS OBTAINED BY GRAVITY FLOW INTO THE INTERSTICES, THE GROUT WILL BE SPADED OR RODDED INTO THE OPENING TO COMPLETELY FILL THE VOID. PRESSURE GROUTING SHALL NOT UNSEAT THE WALL OR BACKFILL, AND AFTER PLACING BY THIS METHOD, THE GROUT SHALL BE SPADED OR RODDED INTO THE VOID.*

1

VEGETATION ESTABLISHMENT NOTES

1. *GENERAL*
   - 1.1. *THE CONTRACTOR SHALL INSTALL ALL PLANT MATERIAL IN CONFORMANCE WITH THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.*
   - 1.2. *ALL PLANT MATERIAL SHALL MEET THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION (FORMERLY THE AMERICAN ASSOCIATION OF NURSERYMEN) STANDARDS FOR NURSERY STOCK, LATEST EDITION, AND ITS AMENDMENTS. PLANT ONLY DURING SEASONS NORMAL TO THE PARTICULAR VARIETY.*
   - 1.3. *SEED MIX SHALL CONFORM TO APPROVED CONSERVATION MIX OR RI STATE WILDFLOWER MIX*
   - 1.4. *PLUG PLANTINGS SHALL CONSIST OF SWEET-FERN (COMPTONIA PEREGRINA) PLANTED 6' O.C.*
   - 1.5. *SPECIFIED VARIETIES, SIZES, AND QUANTITIES OF PROPOSED PLANT MATERIAL IS SUBJECT TO AVAILABILITY. ALL PLANT SUBSTITUTIONS AND/OR CHANGES IN PLANT LOCATION OR SIZE MUST BE APPROVED BY THE OWNER'S REPRESENTATIVE.*
   - 1.6. *IRRIGATE AS NECESSARY TO ESTABLISH AND MAINTAIN VEGETATION UNTIL 75% OF SEEDED AREA HAS ESTABLISHED AND HAS REACHED A HEIGHT OF 2 INCHES. FREQUENT, LIGHT IRRIGATION WILL NEED TO BE APPLIED TO SEEDED AREAS IF NATURAL RAINFALL EVENTS HAVE NOT OCCURRED WITHIN 2 WEEKS OF SEEDING.*
   - 1.7. *CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING VEGETATED AREA THROUGH ONE GROWING SEASON*
   - 1.8. *WATER AND/OR IRRIGATE PLANTED AREAS AS NEEDED TO ESTABLISH AND MAINTAIN PERMANENT VEGETATION UNTIL THE DESIRED VEGETATIVE DENSITY HAS BEEN ACHIEVED.*
   - 1.9. *CONTRACTOR SHALL PROVIDE A ONE (1) YEAR WARRANTY ON ALL NEW PLANTINGS. SHOULD NEW PLANT MATERIAL DIE (OR DECLINE TO THE POINT WHERE PLANT IS EXPECTED TO DIE) WITHIN THIS WARRANTY PERIOD (OTHER THAN DUE TO PEST OR HUMAN DAMAGE, NATURAL DISASTER, OR NEGLECT), CONTRACTOR SHALL REMOVE THE PLANT AND REPLACE SAID PLANT MATERIAL WITH NEW PLANTINGS IN ACCORDANCE WITH THE SIZE AND VARIETY SPECIFIED. ALL REPLACEMENT PLANT MATERIAL SHALL CARRY A NEW ONE (1) YEAR WARRANTY STARTING FROM THE DATE OF REPLACEMENT.*
   - 1.10. *FINAL LOCATIONS OF ALL NEW PLANTINGS SHALL BE ADJUSTED AS NECESSARY BASED ON FINAL AS-BUILT LOCATIONS OF ALL EXISTING UTILITIES AND OTHER SITE IMPROVEMENTS.*
2. *ARMORMAX AND SCOURLOK SEED MIX ESTABLISHMENT NOTES*
   - 2.1. *ESTABLISH PERMANENT VEGETATION, WHERE FEASIBLE, TO ASSIST IN THE LONG-TERM PERFORMANCE OF THE ENGINEERED EARTH ARMORING SOLUTION AND THE CONTROL OF EROSION.*
   - 2.2. *CONTRACTOR SHALL SEED THE ENTIRE GRASSWAY AND DISTURBED AREAS*
   - 2.3. *PREPARE SEEDBED BELOW PYRAMAT /ARMORMAX® 75 PRODUCT BY LOOSENING 50 TO 75 MM (2 TO 3 IN) OF SOIL ABOVE FINAL GRADE. APPLY SEED IN AN AMOUNT EQUIVALENT TO 60% OF THE TOTAL MIXTURE REQUIRED TO BE INSTALLED ON THE SOIL SURFACE, TO SCARIFIED SURFACE PRIOR TO INSTALLATION OF THE PYRAMAT/ARMORMAX® 75. SELECT AND APPLY SOIL AMENDMENTS AND FERTILIZER, TO SCARIFIED SURFACE PRIOR TO INSTALLATION OF THE ARMORMAX® 75. A SITE SPECIFIC SOIL TEST SHOULD BE PERFORMED TO HELP DETERMINE WHAT SOIL AMENDMENTS, SUCH AS LIME AND FERTILIZER, NEED TO BE INCORPORATED INTO THE SOIL TO PROMOTE HEALTHY VEGETATION.*
   - 2.4. *THE INSTALLED PYRAMAT / ARMORMAX® 75 SHALL BE SOIL FILLED AND SEEDED WITH THE REMAINING 40% OF THE SEED MIXTURE. DO NOT PLACE EXCESSIVE SOIL ABOVE MATERIAL. ONCE SOIL FILL AND ADDITIONAL SEED IS IN PLACE, SURFICIAL PROTECTION SHOULD BE ACCOMPLISHED BY INSTALLING LANDLOK® S2 EROSION CONTROL BLANKET (ECB), OR APPROVED EQUIVALENT, ATOP THE SEED LAYER. LANDLOK® S2 ECB IS TO BE SECURED USING 6" LI-SHAPED STAPLES WITH A FREQUENCY OF 2.0 STAPLES PER SQUARE METER (1.7 STAPLES PER SQUARE YARD).*
3. *ARMORMAX PLUG PLANTING NOTES*
   - 3.1. *CUT AN "X" SHAPED OPENING IN THE ARMORMAX 75 APPROXIMATELY THE ANTICIPATED FULL-GROWN DIAMETER OF THE PLANTS/TREES.*
   - 3.2. *AFTER PLACING THE PLANTS/TREES, COMPACT THE SOIL AND SECURE THE ARMORMAX 75 FLAPS DOWN WITH PINS PLACED ON APPROXIMATELY 3 - 4 INCH (75 - 100 MM) CENTERS FOLLOWED BY ADDITIONAL PINS ON EACH FREE EDGE.*
   - 3.3. *MINIMUM SPACING ON THE OUTSIDE DIAMETER OF PLANTING CUTS SHALL BE 5 FT (1.5 M) TYPICAL.*
4. *SCOURLOK PLUG PLANTING NOTES*
   - 4.1. *CUT AN "X" SHAPED OPENING IN THE HPTRM ON THE SCOURLOK CELL. THE SIZE OF THE "X" SHOULD MATCH EITHER THE ANTICIPATED FULL-GROWN DIAMETER OF THE PLANT OR THE SIZE OF THE PLANTING CONTAINER, WHICHEVER IS LARGER.*
   - 4.2. *AFTER INSTALLATION OF THE PLANTING, COMPACT THE SOIL AROUND THE PLANT AND SECURE THE HPTRM FLAPS DOWN WITH PINS PLACED ON APPROXIMATELY 3 TO 4 INCH (75 - 100 MM) CENTERS FOLLOWED BY ADDITIONAL PINS ON EACH FREE EDGE, AS SHOWN IN THE DETAIL BELOW.*
   - 4.3. *IF THE DIAMETER OF THE CUT IS 1 FT (300 MM) OR LESS, PLANTINGS CAN BE PLACED IN EVERY CELL, WHICH IS EVERY 3 FT (0.9 M).*
   - 4.4. *IF THE DIAMETER OF THE CUT IS LARGER THAN 1 FT (300 MM), PLANTINGS SHOULD SPACED AT 6 FT (1.8 M) OR EVERY OTHER CELL.*
   - 4.5. *NO CUT SHOULD BE LARGER THAN 2 FT (600 MM).*

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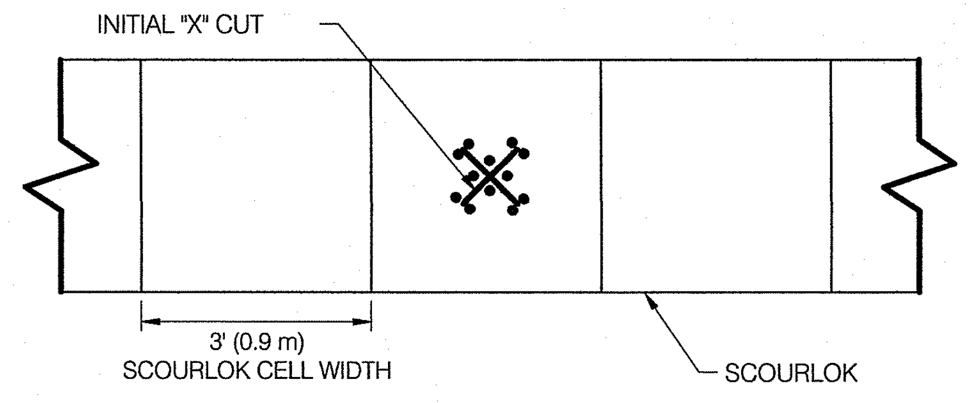
1" ON ORIGINAL

0

(in feet)
AS NOTED



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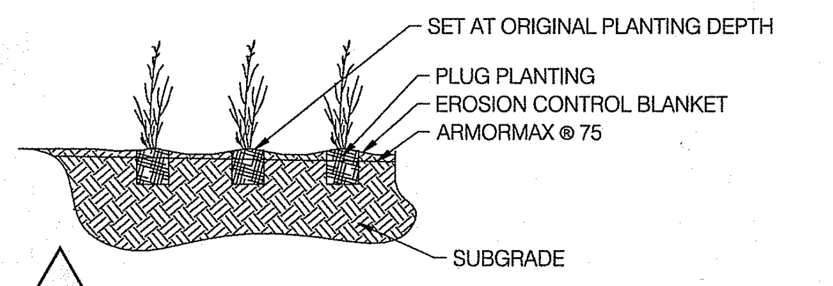
SCOURLOK PLANTING DETAIL

NOT TO SCALE



1

PLUG PLANTING DETAIL

NOT TO SCALE

NOTE: SEE ARMORMAX TYPICAL VEGETATION ESTABLISHMENT DETAIL (N-3) FOR PRODUCT TOP DRESSING AND SEEDBED DETAILS

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GRISTMILL APARTMENTS SLOPE STABILIZATION
126 TOLL GATE ROAD, WARWICK, RI

RI Environmental Management
FEB 13 2025
Office of Water Resources

JOSHUA E. ROSENBERG
No. 12640
10/15/24
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Drawing Number: N-2
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SCOURLOK NOTES

1. INSTALL ALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. A PRECONSTRUCTION MEETING WITH THE CONSTRUCTION TEAM AND A REPRESENTATIVE FROM PROPEX IS REQUIRED PRIOR START OF CONSTRUCTION
3. A PROPEX REPRESENTATIVE IS REQUIRED TO BE PRESENT ON SITE AT THE START OF CONSTRUCTION AS DETERMINED NECESSARY BY THE MANUFACTURER
4. EXISTING BANK TO BE CLEARED AND GRUBBED OF VEGETATION, DEBRIS AND DELETERIOUS MATERIALS (EXCLUDING TREES SCHEDULED TO REMAIN)
5. FINAL GRADE PRIOR TO INSTALLATION OF BANK STABILIZATION PRODUCTS SHALL BE SMOOTH, FREE OF ROCKS, STICKS, AND EXISTING VEGETATION. SURFACE SHALL BE FINE RAKED AND SCARIFIED PRIOR TO INSTALLATION.
6. FURNISH AND INSTALL SCOURLOK ENGINEERED BANK STABILIZATION IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS

1. ALL COMPONENTS OF THE ENGINEERED EARTH ARMORING SOLUTION SHALL BE FURNISHED BY A SINGLE MANUFACTURER AS A COMPLETE SYSTEM.
2. SCOURLOK PRODUCT TO CONSIST OF A RIGID CELL, NONWOVEN GEOTEXTILE LINING, HIGH PERFORMANCE TURF REINFORCEMENT MAT (PYRAMAT), SECURING PINS, AND ENGINEERED EARTH ANCHORS (B2 OR B3 ANCHORS AS DETERMINED BY THE ENGINEER).

SUBGRADE PREPARATION

7. EXCAVATE A SHALLOW, LEVEL TRENCH AT LEAST 0.9 M (3 FT.) WIDE AND 15 TO 23 CM (6 TO 9 IN) DEEP BELOW FINISHED GRADE USING AN EXCAVATOR WITH SMOOTH BUCKET TO REDUCE DISTURBANCE AT THE DEFINED SUBGRADE ELEVATION.
8. THE CUT-SLOPE EXCAVATION WIDTH SHALL NOT EXCEED THE LINES AND GRADES SHOWN ON THE PLANS, AND CARE SHALL BE TAKEN TO AVOID ENCROACHMENT NEAR BORDERING PROPERTIES.
9. DELETERIOUS MATERIAL (OVERLY WET SOIL, UNCONTROLLED LOOSE FILL, CONSTRUCTION DEBRIS, ORGANICS, ETC.) ENCOUNTERED DURING THIS EXCAVATION SHALL BE OVER-EXCAVATED, REMOVED, AND REPLACED WITH COMPACTED GRANULAR FILL OR APPROVED BACKFILL SOIL. COMPACT THE SUBGRADE AS SPECIFIED BY THE ENGINEER.
10. IF SPECIFIED BY THE ENGINEER, A PERFORATED DRAINAGE PIPE SHALL BE INSTALLED AT THE BACK OF THE TRENCH AND CONNECTED TO A PRESCRIBED OUTLET FOR DRAINING GROUNDWATER.
11. GRANULAR SOIL IS DEFINED AS:
12. CLASSIFIED AS GM, GW, SM, SW, GW-GM, SW-SM REFERENCING THE USCS (UNIFIED SOIL CLASSIFICATION SYSTEM).
13. CONTAINS MAXIMUM PARTICLE SIZE OF 3.8 CM (1-1/2 IN) AND LESS THAN 12 PERCENT FINES PASSING 0.074 MM (NO. 200 SIEVE).
14. INERT EARTH MATERIAL WITH LESS THAN 3 PERCENT ORGANICS OR OTHER DELETERIOUS SUBSTANCES (WOOD, METAL, PLASTIC, WASTE, ETC).

OR

15. MEETS THE UNTREATED BASE GRADING REQUIREMENTS FOR 3.8 CM (1-1/2 IN) MAXIMUM NOMINAL SIZE CRUSHED AGGREGATE PER TYPICAL STATE CONSTRUCTION STANDARDS.
16. FOR CLAY SUBGRADE SOILS, LINE THE TRENCH WITH MIRAFI 180N NONWOVEN GEOTEXTILE. PLACE A 10 CM (4 IN) THICK LOOSE LIFT OF GRANULAR SOIL ON TOP OF THE FILTER FABRIC AND COMPACT IT TO AT LEAST 90 PERCENT OF THE SPECIFIED MODIFIED PROCTER DRY DENSITY PER ASTM D 1557. SMOOTH THE SURFACE OF THE COMPACTED SOIL TO PROVIDE A LEVEL PAD NEEDED FOR THE FIRST UNIT.

INSTALLATION

17. INSTALL THE ENGINEERED BANK STABILIZATION AT ELEVATION AND ALIGNMENT INDICATED.
18. STARTING WITH THE LOWEST PORTION OF THE ALIGNMENT, LOWER THE FIRST UNIT ONTO THE FOUNDATION LAYER AND EXPAND INTO PLACE. AT EACH TERMINUS OF THIS LOWEST SECTION OF THE ALIGNMENT, CURVE THE TURN THE UNIT INTO THE SLOPE SO THE ENDS OF THIS RUN CAN BE BURIED.
19. GRADUAL CURVES CAN BE CREATED DUE TO THE SYSTEM FLEXIBILITY. CURVING IS DONE DURING SETUP AND ALL CURVED UNITS MUST BE SET OUT AND JOINED BEFORE FILLING. EACH OF THE 4.6 M (15 FT) LONG UNITS CAN BE CURVED A MAXIMUM OF 30 CM (12 IN) FROM THE TANGENT LINE SET BY THE PREVIOUS UNIT. TIGHTER CONCAVE OR CONVEX CURVES CAN BE ACHIEVED AS SHOWN BELOW.
20. CONCAVE CURVES ARE FORMED BY REMOVING A SINGLE REAR FACING PANELS AND CREATING A TRIANGULAR UNIT.

1. BEGIN THE PROCESS BY REMOVING THE SPIRALS ON EACH SIDE OF THE PANEL AND CUT ALONG THE GEOTEXTILE INSIDE THE UNIT, JUST UNDER THE ROW OF STAPLES.
2. REMOVE THE RIGID CELL PANEL AND REAPPLY THE SPIRALS AT EACH CORNER TO SECURE THE INTERNAL PANELS.
3. OVERLAP THE CORNER SPIRALS AND INSERT THE JOINING PINS IN ORDER TO COMPLETE THE TRIANGULAR CELL.
4. ZIP-TIE THE EXCESS GEOTEXTILE LINER TO THE RIGID CELL PANEL TO KEEP IT OUT OF THE WAY DURING FILLING.

21. CONVEX CURVES ARE FORMED BY REMOVING A SINGLE FRONT FACING PANEL AND CREATING A TRIANGULAR UNIT.

1. BEGIN THE PROCESS BY CUTTING THE EXTERIOR HPTRM DOWN THE MIDDLE OF THE CELL TO EXPOSE THE RIGID CELL PANEL AND GEOTEXTILE LINING.
2. REMOVE THE SPIRALS ON EACH SIDE OF THE PANEL AND CUT ALONG THE GEOTEXTILE INSIDE THE UNIT, JUST UNDER THE ROW OF STAPLES.
3. REMOVE THE RIGID CELL PANEL AND REAPPLY THE SPIRALS AT EACH CORNER TO SECURE THE INTERNAL PANELS.
4. OVERLAP THE CORNER SPIRALS AND INSERT THE JOINING PINS IN ORDER TO COMPLETE THE TRIANGULAR CELL.
5. ZIP-TIE THE EXCESS GEOTEXTILE LINER TO THE RIGID CELL PANEL TO KEEP IT OUT OF THE WAY DURING FILLING.
6. SHINGLE THE EXTERIOR HPTRM IN THE DIRECTION OF FLOW AND TRIM EXCESS MATERIAL IN ORDER TO MAINTAIN A 15 CM (6 IN) OVERLAP.
7. USING STAINLESS STEEL HOG RINGS, SECURE THE OVERLAP TO THE RIGID CELL, LEAVING A MINIMUM OF 7.5 CM (3 IN) BEYOND THE HOG RINGS.

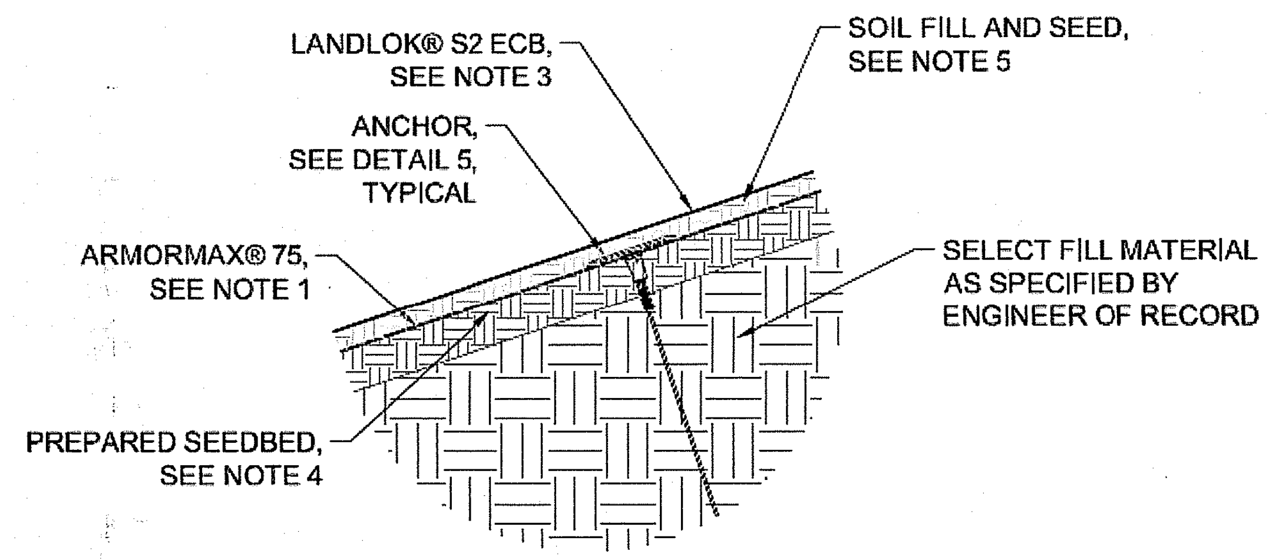
22. ENGINEERED EARTH ANCHORS SHALL BE UTILIZED WITH THE SYSTEM EVERY 3' O.C. (ONE ANCHOR PER UNIT) TO PROVIDE ADDITIONAL RESISTANCE TO LATERAL MOVEMENT. ANCHORS TO BE EMBEDDED 6' (MIN.) INTO THE SUBGRADE.

1. WITH THE UNIT SET IN PLACE, EXPANDED, AND FILLED APPROXIMATELY HALFWAY, MARK THE LOCATION OF ANCHORS ON THE SLOPE BEHIND THE UNITS. ANCHOR LOCATIONS SHOULD ALIGN WITH THE INTERMEDIATE DIVIDING WALLS OF THE UNIT.
2. CUT A HOLE IN THE GEOTEXTILE LINER NEAR THE INTERMEDIATE DIVIDING WALL TO THREAD THE ANCHOR HEAD FROM THE INSIDE OF THE UNIT TOWARD THE MARKED LOCATION ON THE SLOPE BEHIND THE UNIT. THE HOLE SHOULD BE CUT APPROXIMATELY 1 FT (0.3 M) FROM THE TOP OF THE UNIT.
3. PLACE THE DRIVE ROD INTO THE ANCHOR HEAD AND DRIVE ANCHOR NEAR HORIZONTAL INTO REAR EXCAVATION AT THE MARKED LOCATIONS. REMOVE ANCHOR DRIVE ROD AND SET ANCHOR.
4. ON THE INSIDE OF THE UNIT, APPLY LIGHT FORCE TO ENSURE THE ANCHOR TOP PLATE IS SET AGAINST THE WALLS OF THE UNIT AND THE LOCKING MECHANISM OF THE ANCHOR IS SET.

23. PLACE A 15 CM (6 IN) THICK FILL MATERIAL APPROVED BY THE ENGINEER WITHIN THE UNITS. CHECK AND ADJUST THE UNITS TO ENSURE A LEVEL PLACEMENT. IF JOINING THE UNITS TOGETHER IN SERIES, DO NOT FILL THE END CELL MORE THAN 15 CM (6 IN) PRIOR TO JOINING UNITS.
24. INSTALL REMAINING FILL IN LIFTS NO MORE THAN 0.6 M (2 FT). FILL THE UNITS AND BACKFILL BEHIND THE UNITS SIMULTANEOUSLY SO AS TO BALANCE THE EARTH PRESSURES. WHEN NORMAL WATER LEVELS ARE PRESENT, FACE UNITS SHOULD BE FILLED WITH GRANULAR, SELF-CONSOLIDATING MATERIAL. COMPACT INFILL AND BACKFILL TO THE SPECIFIED MODIFIED PROCTOR DRY DENSITY PER THE ENGINEER'S RECOMMENDATION, BUT NEVER LESS THAN 87% OF THE MAXIMUM DRY DENSITY PER ASTM 1557.
25. FOR VEGETATION ESTABLISHMENT ON THE FACE OF THE UNITS, FILL THE POCKET BETWEEN THE HPTRM AND THE CELL WITH SEED AND GROWTH MEDIA. THIS CAN CONSIST OF TOPSOIL, OR OTHER ORGANIC MATERIAL, AND SEED IN ACCORDANCE WITH THE PROVIDED VEGETATION ESTABLISHMENT NOTES PLACE A MINIMUM OF 2 CM (1 IN) OF TOPSOIL/SEED MIX ON THE TOP OF THE FILLED UNIT.
26. PULL THE REMAINING PORTION OF THE HPTRM TIGHTLY ACROSS THE TOP OF THE FILLED UNIT. FASTEN THE HPTRM TOP COVER TO THE BACK OF THE UNIT WALLS AS WELL AS THE INTERMEDIATE WALLS WITH STAINLESS STEEL HOG RINGS. TURN DOWN EXCESS HPTRM ALONG THE BACK SIDE OF THE UNIT PRIOR TO PLACING FILL BEHIND UNIT.
27. UNITS CAN BE JOINED BY CONNECTING THE SPIRALS FROM ONE UNIT TO ANOTHER.
28. ALIGN THE UNITS, OVERLAPPING THE SPIRALS AND INSERT THE JOINING PIN TO PERMANENTLY ATTACHED TO EACH OTHER.
29. WHEN JOINING FACING UNITS, THE HPTRM IS TO BE SPLICED TOGETHER. SHINGLE THE EXTERIOR HPTRM IN THE DIRECTION OF FLOW AND TRIM EXCESS MATERIAL IN ORDER TO MAINTAIN A 15 CM (6 IN) OVERLAP. USING STAINLESS STEEL HOG RINGS, SECURE THE OVERLAP TO THE RIGID CELL, LEAVING A MINIMUM OF 7.5 CM (3 IN) BEYOND THE HOG RINGS.
30. REPEAT STEPS A. THROUGH K. FOR EACH SUBSEQUENT UNIT. INCORPORATE A SETBACK WITH UNIT TO PROVIDE THE DESIRED OVERALL SLOPE ANGLE
31. REFER TO THE VEGETATION ESTABLISHMENT NOTES FOR THE VEGETATION ESTABLISHMENT METHOD OVERLYING THE SCOURLOK PRODUCT.
32. REVIEW SCOURLOK BANK ANNUALLY AND FOLLOWING ALL LARGE STORM EVENTS. REPAIR AS NEEDED.

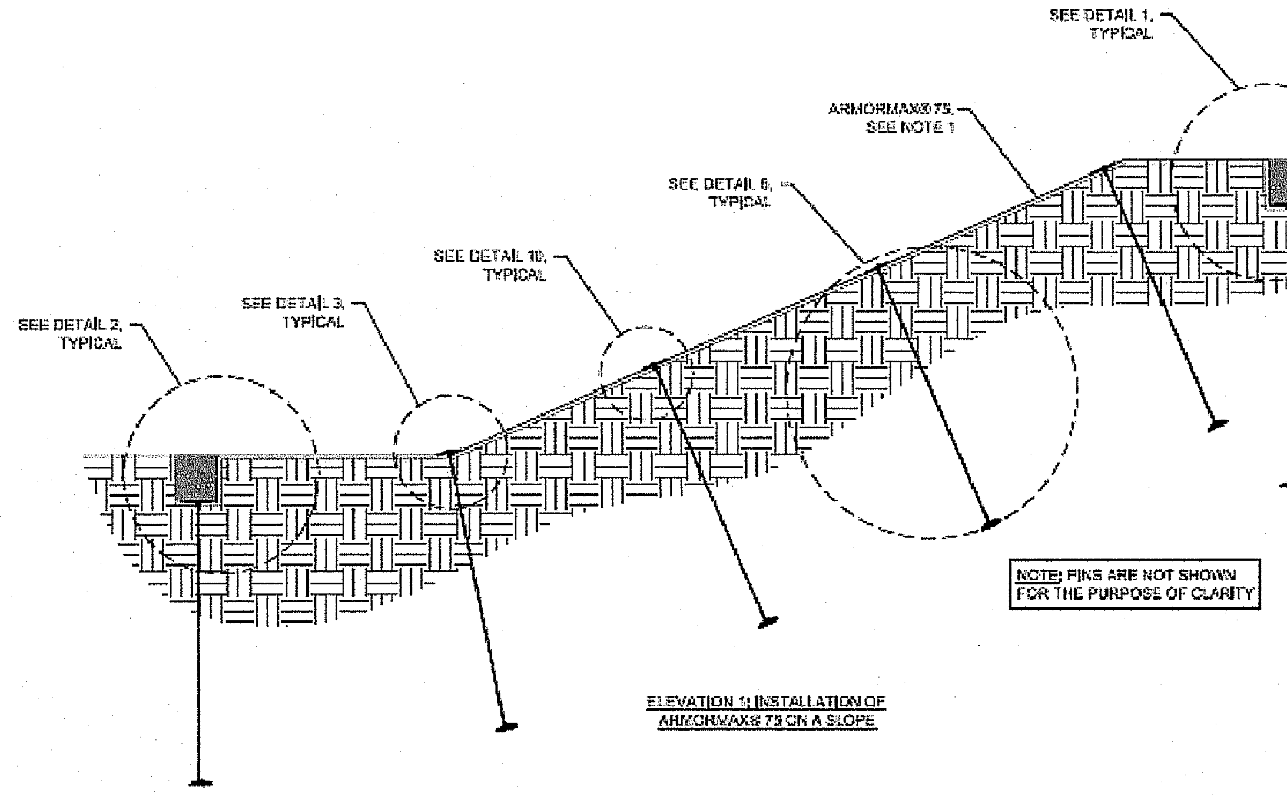
ARMORMAX NOTES

1. INSTALL ALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. A PRECONSTRUCTION MEETING WITH THE CONSTRUCTION TEAM AND A REPRESENTATIVE FROM PROPEX IS REQUIRED PRIOR START OF CONSTRUCTION
3. A PROPEX REPRESENTATIVE IS REQUIRED TO BE PRESENT ON SITE AT THE START OF CONSTRUCTION AS DETERMINED NECESSARY BY THE MANUFACTURER
4. EXISTING BANK TO BE CLEARED AND GRUBBED OF VEGETATION, DEBRIS AND DELETERIOUS MATERIALS (EXCLUDING TREES SCHEDULED TO REMAIN)
5. FINAL GRADE PRIOR TO INSTALLATION OF BANK STABILIZATION PRODUCTS SHALL BE SMOOTH, FREE OF ROCKS, STICKS, AND EXISTING VEGETATION. SURFACE SHALL BE FINE RAKED AND SCARIFIED PRIOR TO INSTALLATION.
6. FURNISH AND INSTALL ARMORMAX ENGINEERED BANK STABILIZATION PRODUCT IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS
    a. ALL COMPONENTS OF THE ENGINEERED EARTH ARMORING SOLUTION SHALL BE FURNISHED BY A SINGLE MANUFACTURER AS A COMPLETE SYSTEM.
    b. ARMORMAX PRODUCT TO CONSIST OF A HIGH PERFORMANCE TURF REINFORCEMENT MAT (PYRAMAT), SECURING PINS, AND ENGINEERED EARTH ANCHORS (B2 OR B3 ANCHORS AS DETERMINED BY THE ENGINEER).
7. CONSTRUCT A PERIMETER TRENCH AROUND THE AREA(S) LIMITS TO BE TREATED WITH THE ENGINEERED EARTH ARMORING SOLUTION AS FOLLOWS:
    a. EXCAVATE A CREST OF SLOPE (COS) TRENCH AT LEAST 3 FT. (900 MM) HORIZONTAL OVER THE SLOPE'S CREST WHEN POSSIBLE. TRENCH DIMENSIONS SHALL BE 12 IN. (300 MM) WIDE BY 12 IN. (300 MM) DEEP.
    b. EXCAVATE A TOE OF SLOPE (TOS) TRENCH AT LEAST 3 FT. (900 MM) HORIZONTAL OVER THE SLOPE'S CREST WHEN POSSIBLE. TRENCH DIMENSIONS SHALL BE 12 IN. (300 MM) WIDE BY 12 IN. (300 MM) DEEP.
    c. EXCAVATE A SIDE TRENCH PERPENDICULAR TO THE CONTOURS AT EACH END OF THE AREA TO BE TREATED (LONGITUDINAL LIMITS). TRENCH DIMENSIONS SHALL BE 6 IN. (150 MM) MINIMUM WIDE BY 6 IN. (150 MM) MINIMUM DEEP.
8. BEGINNING AT THE LOWER ELEVATION END (DOWN GRADIENT) AREA, PLACE THE INITIAL END OF THE FIRST ROLL OF HPTRM INTO THE COS TRENCH AND SECURE WITH SECURING PINS AND ENGINEERED EARTH ANCHORS. THE SECURING PINS SHALL BE PLACED AT 12 IN. (300 MM) INTERVALS IN BETWEEN THE ENGINEERED EARTH ANCHORS AT 4 FT. (1.2 M) INTERVALS.
9. UNROLL THE HPTRM DOWN THE SLOPE.
10. THE SECURING PINS PROVIDE FOR TEMPORARY TIE-DOWN OF THE HPTRM TO AID WITH THE INSTALLATION OF THE ENGINEERED EARTH ANCHORS AND WHERE APPLICABLE THE ESTABLISHMENT OF VEGETATION. SECURE THE HPTRM INITIALLY WITH THE SECURING PINS DRIVEN FLUSH WITH THE HPTRM ALONG A 1' O.C. GRID.
11. THE HPTRM SHOULD MAINTAIN SOLID CONTACT WITH UNDERLYING SOIL AND BE INSTALLED IN A MANNER THAT MINIMIZES GAPS WITH THE UNDERLYING SUBSTRATE.
12. INSTALL THE ENGINEERED EARTH ANCHORS AT THE DEPTH, SPACING AND LOADING BASED ON THE ENGINEERED EARTH ARMORING SLOPE STABILITY OR EROSION CONTROL REQUIREMENTS TO PERMANENTLY SECURE THE HPTRM. INCREASED ANCHORING FREQUENCY MAY BE REQUIRED BASED ON THE MANUFACTURER'S REQUIRED BASELINE ESTABLISHMENT TESTS. SHALL BE COORDINATED WITH THE MANUFACTURER. SPACING OF ENGINEERED EARTH ANCHORS TO OCCUR AT A MAXIMUM OF 4' O.C. EARTH ANCHORS TO BE EMBEDDED 6-9' DEEP.
13. ENGINEERED EARTH ANCHORS TO BE INSTALLED IN A CHECKERBOARD PATTERN.
14. POSITION ADJACENT UP GRADIENT ROLLS IN SAME MANNER, OVERLAPPING DOWN GRADIENT ROLLS A MINIMUM OF 3 IN. (75 MM) UNTIL THE ARMORING LIMITS ARE COMPLETED. OVERLAPPING EDGE OF HPTRM TO FACE IN THE DOWNSTREAM DIRECTION.
15. SECURE THE OVERLAPS WITH SECURING PINS AT 12 IN. (300 MM) INTERVALS IN BETWEEN THE ENGINEERED EARTH ANCHORS PLACED AT INTERVALS BASED ON THE ENGINEERED EARTH ARMORING SURFICIAL SLOPE STABILITY OR EROSION CONTROL REQUIREMENTS (4' O.C. OR SHORTER).
16. SECURE THE HPTRM END IN THE TOS AND SIDE (LONGITUDINAL LIMITS) TRENCHES WITH SECURING PINS AND ENGINEERED EARTH ANCHORS. THE SECURING PINS SHALL BE PLACED AT 12 IN. (300 MM) INTERVALS IN BETWEEN THE ENGINEERED EARTH ANCHORS AT 4 FT. (1.2 M) INTERVALS.
17. BACKFILL AND COMPACT THE TRENCHES WITH SPECIFIED SOIL OR AS DIRECTED BY THE EARTHWORK TECHNICAL SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER OF RECORD.
18. ALTERNATE INSTALLATION METHODS MUST BE APPROVED BY THE ENGINEER OF RECORD AND MANUFACTURER PRIOR TO EXECUTION.
19. REFER TO THE VEGETATION ESTABLISHMENT NOTES FOR THE VEGETATION ESTABLISHMENT METHOD OVERLYING THE ARMORMAX PRODUCT.
20. REVIEW ANNUALLY AND FOLLOWING ALL LARGE STORM EVENTS. REPAIR AS NEEDED.



ARMORMAX TYPICAL VEGETATION ESTABLISHMENT DETAIL

NTS



ARMORMAX TYPICAL INSTALLATION SECTION

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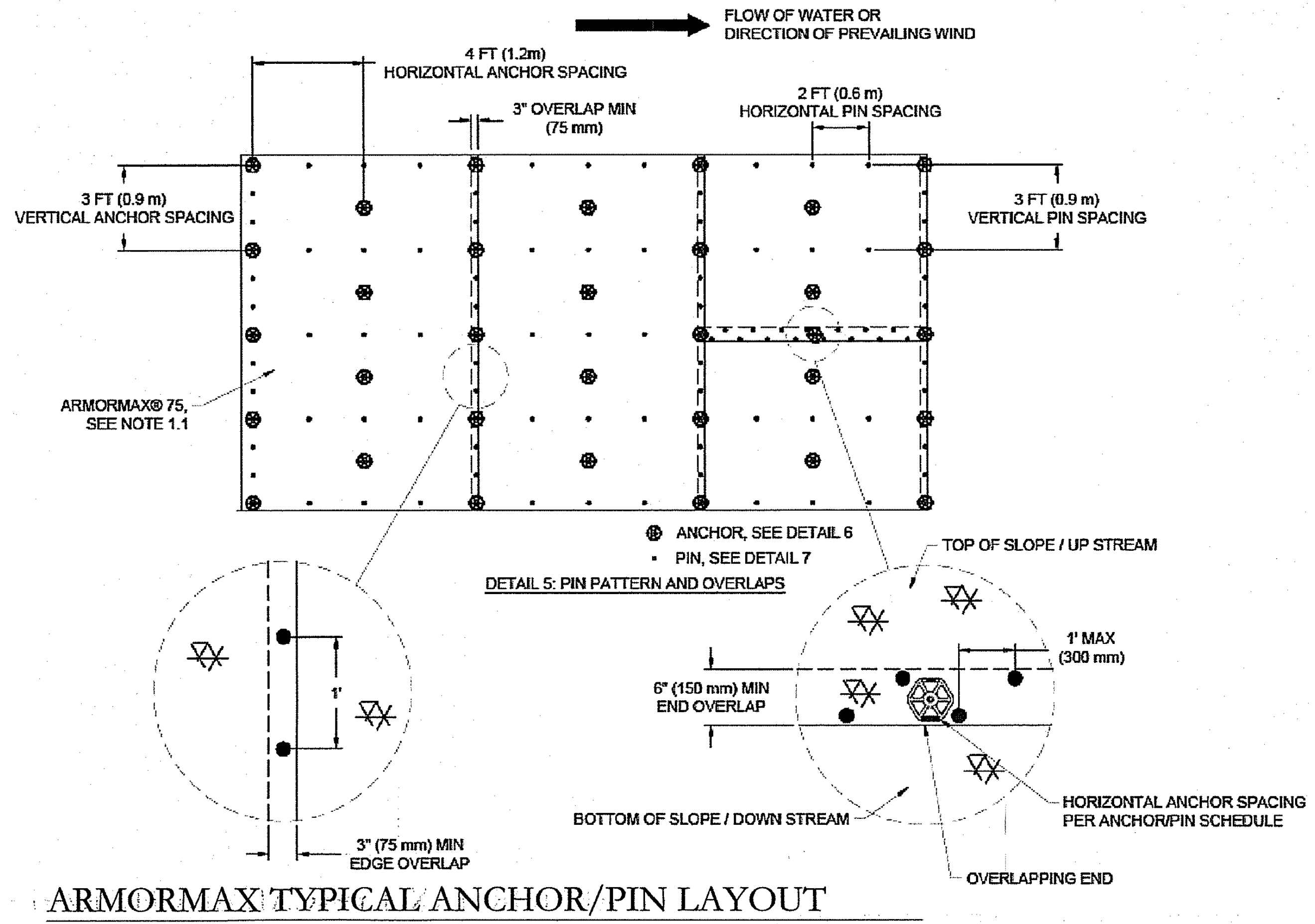

ARMORMAX TYPICAL ANCHOR/PIN LAYOUT

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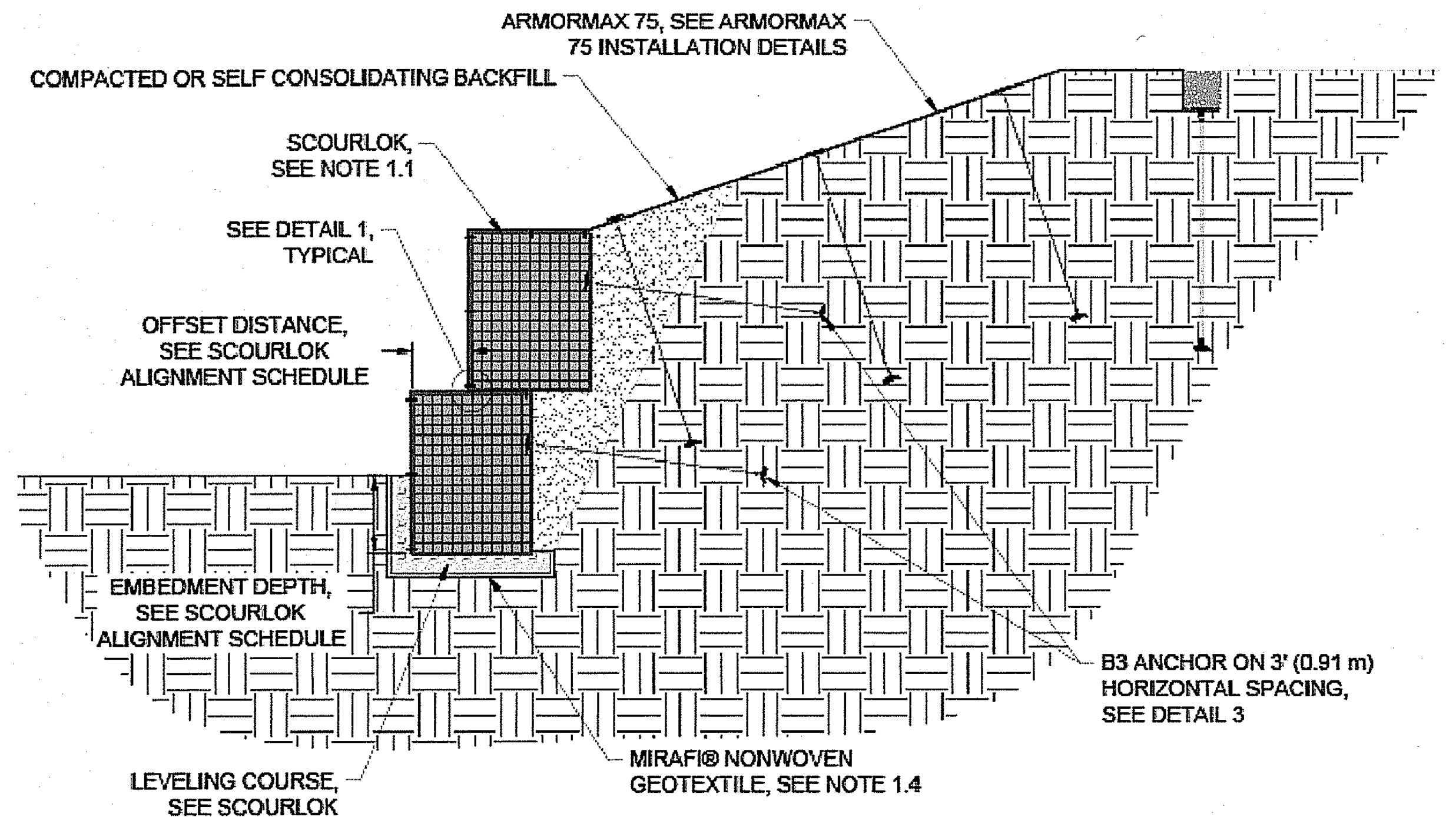

SCOURLOK TYPICAL INSTALLATION SECTION

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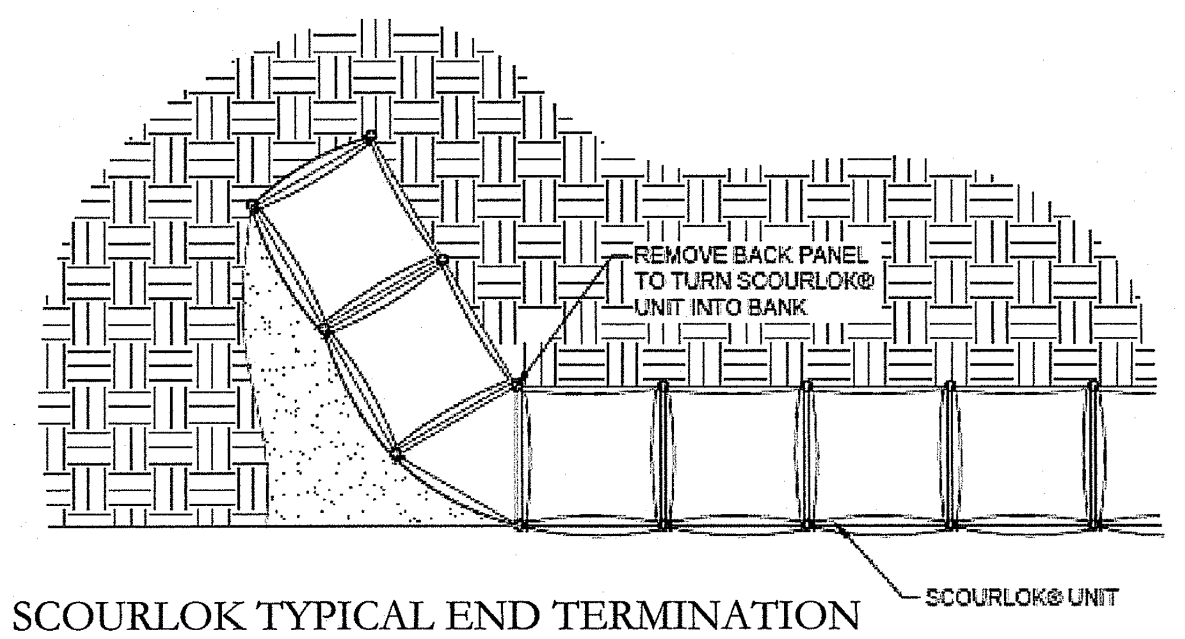
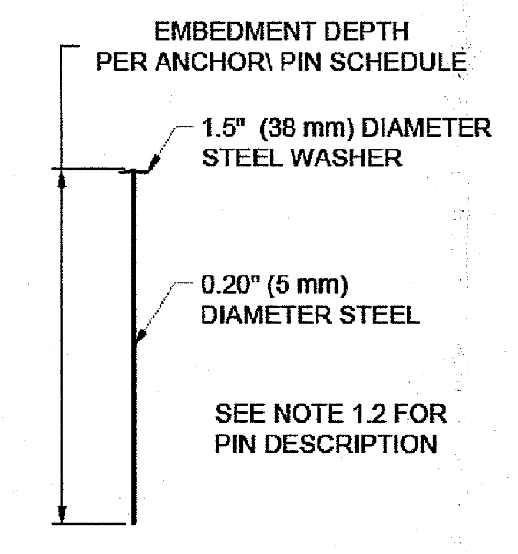


SCOURLOK TYPICAL END TERMINATION

NTS



ARMORMAX TYPICAL PIN DETAIL

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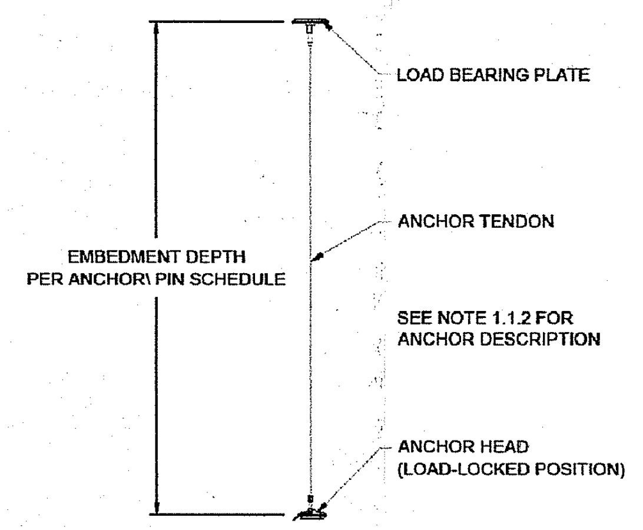
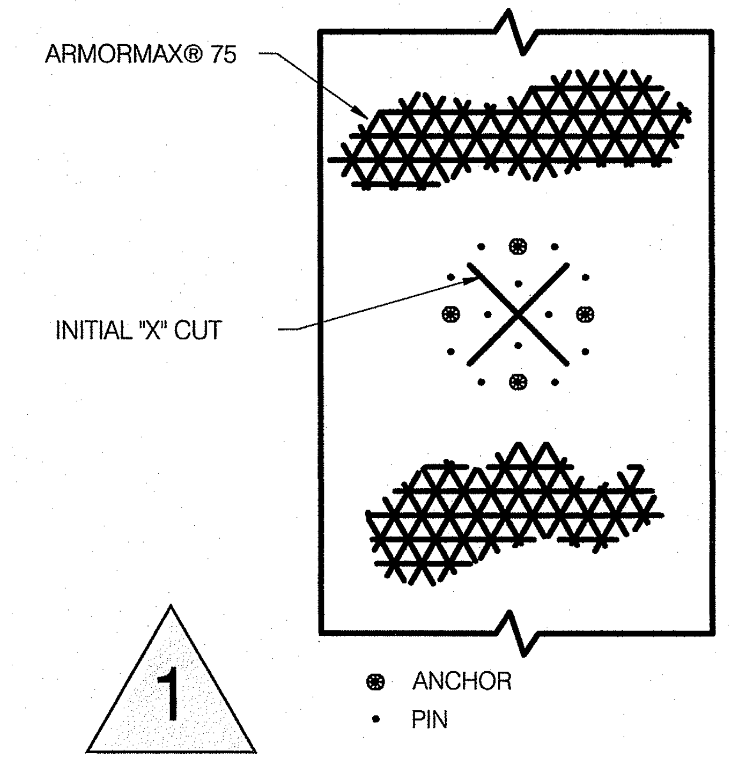


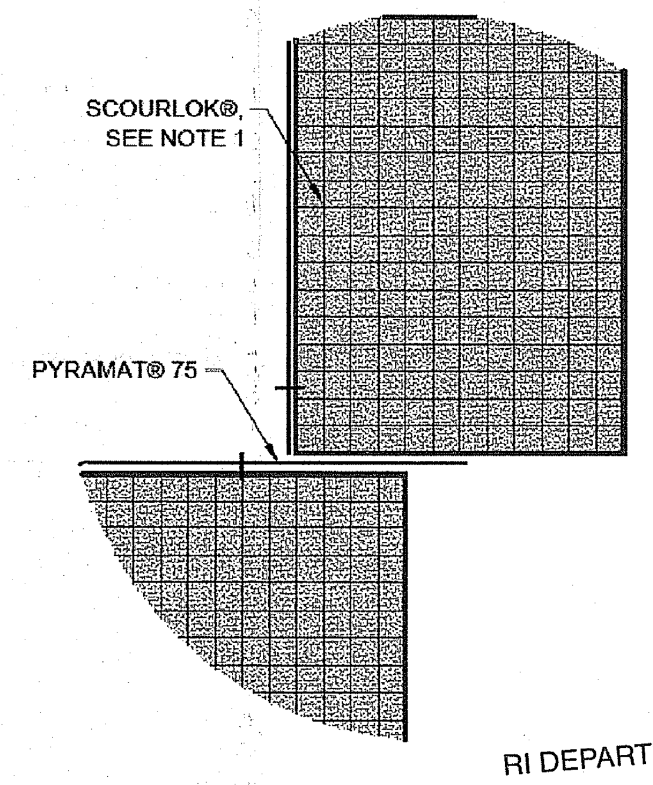
ARMORMAX TYPICAL ENGINEERED EARTH ANCHOR DETAIL

NTS



ARMORMAX PLUG PLANTING DETAIL

NTS



SCOURLOK TYPICAL TIER PLACEMENT

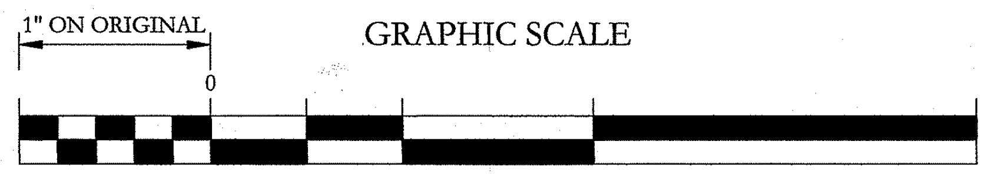
NTS

SCOURLOK ALIGNMENT SCHEDULE	
SCOURLOK OFFSET DISTANCE	1.5 ft
SCOURLOK EMBEDMENT DEPTH	MIN 1.0 ft
LEVELING COURSE DEPTH	MIN 0.5 ft

ANCHOR/PIN SCHEDULE

SECURING DEVICE	ANCHOR	PIN
HORIZONTAL ANCHOR SPACING	4'	2'
VERTICAL ANCHOR SPACING	3'	3'
EMBEDMENT DEPTH	9'	1.5'

90% PERMIT DRAWINGS - NOT FOR CONSTRUCTION



GRAPHIC SCALE

(in feet)
AS NOTED

McCUE
ENVIRONMENTAL

RMA
GeoEnvironmental
20 Main Street
Wickford, Rhode Island 02852
WWW.RMAHYDRO.COM

No.	Revision	Date	App.
01	UPDATED PER RIDEM COMMENTS DATED 12/30/2024	1.31.2025	JER

Designed By:
Drawn by: ETS
Checked by: JER
Scale: AS NOTED
Date: 10.15.2024

Project Title:
GRISTMILL APARTMENTS SLOPE STABILIZATION
126 TOLL GATE ROAD
WARWICK, RI 02886

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS
SPECIFIED IN THE LETTER OF APPROVAL
DATED: MAR 06 2025 FILE #: 24-0288
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Nancy L. Freeman

Client/Owner:
MAPLEWOOD NAVCAP MAN, LLC.
2 ENTERPRISE DRIVE, SUITE 406
SHELTON, CT 06484

Issued for:
REGULATORY REVIEW AND PERMITTING

Drawing Title:
PROJECT DETAILS
GRISTMILL APARTMENTS SLOPE STABILIZATION
126 TOLL GATE ROAD, WARWICK, RI

RI Environmental Management
FEB 13 2025
Office of Water Resources

JOSHUA E. ROSENBERG
No. 12640
10/15/24
REGISTERED
PROFESSIONAL ENGINEER
CIVIL

Drawing Number: N-3
Sheet 8 of 8
Project Number: 24135.00
Survey Index: - 246 - 318