



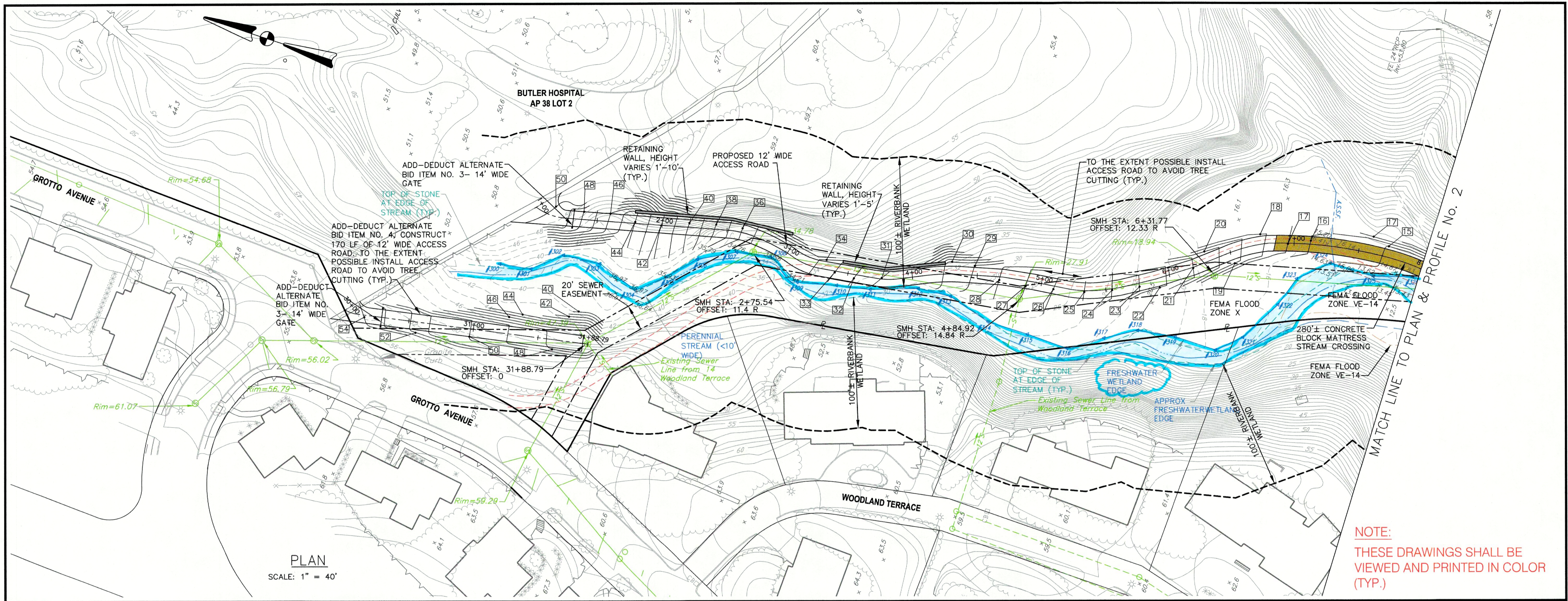
Crossman Engineering

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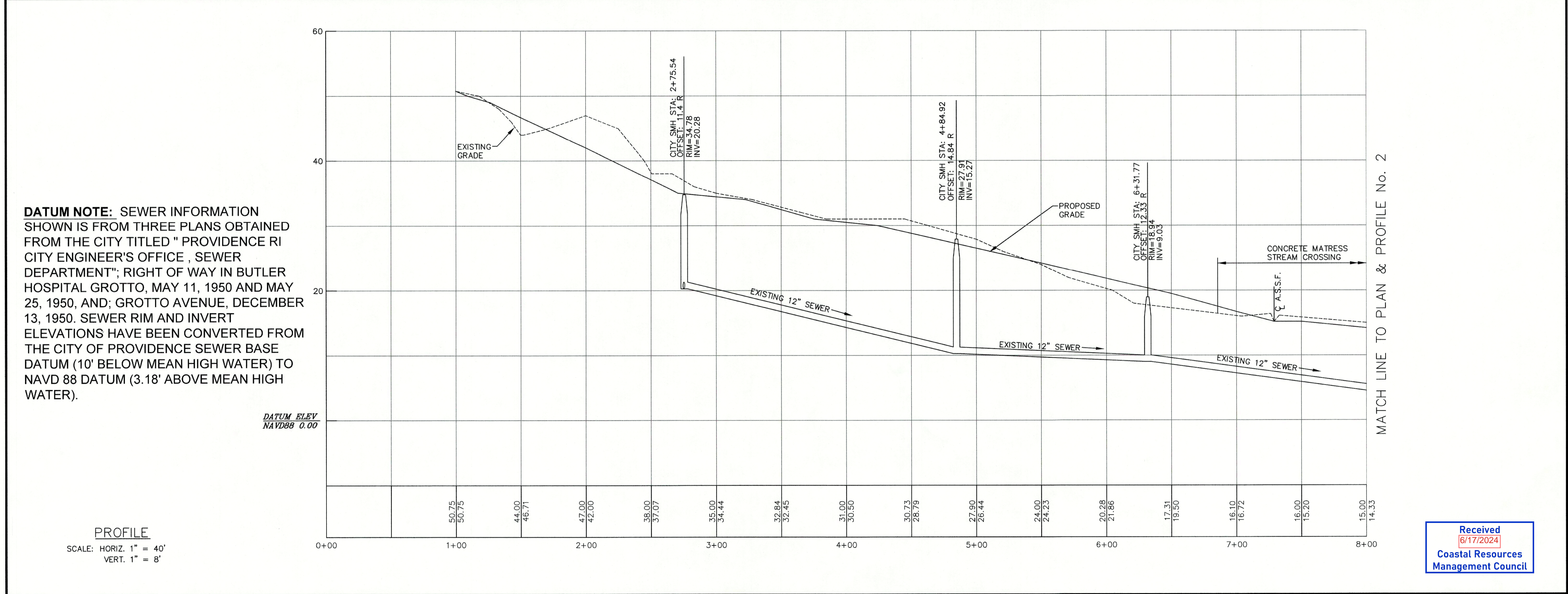
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NOTE:
THESE DRAWINGS SHALL BE VIEWED AND PRINTED IN COLOR (TYP.)



PROJECT TITLE:

SEWER SYSTEM MAINTENANCE ROAD
GROTTTO ROAD TO THE NARRAGANSETT BAY COMMISSION SEEKONK RIVER INTERCEPTOR PROVIDENCE, R.I.

PREPARED FOR:

CITY OF PROVIDENCE ENGINEERING DIVISION
700 ALLENS AVENUE
PROVIDENCE, R.I. 02905

DRAWING TITLE:

PLAN & PROFILE No. 1

DATE: DECEMBER 2021 SCALE: AS NOTED

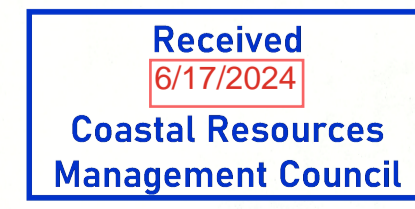
DWG. NAME: 2314-CO4-CONCEPT P&P-REV BASE.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	MARSH RESTORATION	9/28/22
2	MITIGATION	12/15/23

DRAWING NUMBER

C4.1
SHEET: 7 OF 14



MARSH RESTORATION NOTES:

THIS PROJECT INCLUDES RESTORATION OF THE UPPER PORTION OF THE SALT MARSH ABUTTING THE SEEKONK RIVER (AS SHOWN ON THE PLANS). THIS AREA IS APPROXIMATELY 0.50 ACRES IN SIZE AND WILL SERVE AS THE 2:1 REMEDIATION FOR THE 0.25 ACRE DISTURBANCE WITHIN THE BIOLOGICAL WETLAND AREAS FOR THE PROPOSED SEWER ACCESS ROAD PROJECT. THE PHRAGMITE LIMITS WILL BE DELINEATED FOR THE CONTRACTOR BY THE CITY PRIOR TO CONSTRUCTION. THE RESTORATION PLAN INCLUDES A THREE-STEP PROCESS. IN THE SHORT-TERM, THE FIRST STEP IS HERBICIDE TREATMENT OF THE PHRAGMITES BY PROFESSIONALS. SECOND IS THE REMOVAL OF THE DEAD STALKS, AND FINALLY, MONITORING AND ASSESSMENT OF THE SUCCESS OF THE REGROWTH OF NATIVE WETLAND VEGETATION OVER A MINIMUM FIVE-YEAR PERIOD OR AS STIPULATED BY THE CRMC. AFTER THE FIVE-YEAR PERIOD AND EVALUATION, THE PLANTING OF NATIVE VEGETATION WOULD BE PROPOSED IN AREAS WHERE NATIVE REGROWTH IS LACKING OR WHERE NATIVE SHRUBS COULD BE PLANTED ON THE UPLAND EDGE TO IMPROVE WILDLIFE HABITAT AND WATER QUALITY.

IN THE LONG-TERM, MONITORING OF THE PROJECT AREA WILL CONTINUE, BOTH FOR SPOT TREATMENT OF PHRAGMITES AS IT OCCURS, AS WELL AS THE SUCCESSFUL REVEGETATION OF THE FRESHWATER/BRACKISH WETLAND WITH NATIVE VEGETATION AND/OR PLANTED NATIVES.

WORK SCHEDULE:

UNDER THIS PROJECT SCOPE THE CONTRACTOR SHALL BE RESPONSIBLE FOR YEAR 1 WORK. YEAR 2 AND 3 WORK ARE ADD ALTERNATE BID ITEMS. YEAR 1 WORK SHALL BE CONDUCTED WITH THE CONSTRUCTION OF THE MAINTENANCE ACCESS ROAD. THE CONTRACTOR SHALL SUBMIT ADD ALTERNATE BID PRICING FOR YEAR 2 AND 3 WORK. THE CONTRACTOR'S RESPONSIBILITIES FOR YEAR 1 IS THE FULL SCOPE. IF CHOSEN AS AN ADD ALTERNATE, YEAR 2 INCLUDES THE FULL SCOPE, BUT YEAR 3 INCLUDES ONLY THE MONITORING AND ASSESSMENT. THE YEAR 3 PLANTS AND PLANT INSTALLATION IS NOT INCLUDED IN THE ADD ALTERNATE PRICING. ALL WORK FOR YEARS 1, 2, & 3 SHALL INCLUDE RETAINING APPROPRIATE PROFESSIONALS, QUALIFIED INVASIVE MANAGERS, HERBICIDE TREATMENT, AND SUBMITTAL OF REPORTS AS REQUIRED.

CONSTRUCTION (2024/2025)

YEAR 1 (2025) BASE BID ITEM: GOAL TO TREAT AND REMOVE 90+% OF THE INVASIVE PLANTS--
 -OBTAIN CRMC ASSENT FOR CITY OF PROVIDENCE GROTTO ROAD MARSH RESTORATION PROJECT
 -QUALIFIED INVASIVE MANAGERS WILL OBTAIN RIDEM HERBICIDE PERMIT (APRIL-MAY)
 -CONDUCT HERBICIDE TREATMENT OF PHRAGMITES BETWEEN AUGUST 15 AND SEPTEMBER 30

YEAR 2 (2026) ADD ALTERNATE BID ITEM NO. 1: GOAL IS REMOVAL OF 100% OF THE INVASIVE PLANTS
 -CUT AND MULCH/REMOVE DEAD PHRAGMITES STALKS RESULTING FROM YEAR 1
 -QUALIFIED INVASIVE MANAGERS WILL OBTAIN CURRENT HERBICIDE PERMIT FROM RIDEM
 -BEGIN MONITORING AND ASSESSMENT OF YEAR 1 TREATMENT DURING GROWING SEASON
 -QUALIFIED INVASIVE MANAGERS WILL SPOT TREAT PHRAGMITES REGROWTH BETWEEN AUGUST 15 AND SEPTEMBER 30
 -ANNUAL MONITORING REPORTS SUBMITTED TO CRMC (DECEMBER- YEAR 2)

YEAR 3 (2027) ADD ALTERNATE BID ITEM NO. 2: CUT AND MULCH/REMOVE DEAD PHRAGMITES STALKS FROM YEAR 2, AS NECESSARY
 -MONITOR AND ASSESSMENT OF YEAR 3, EVALUATING NATIVE WETLAND PLANT GROWTH AND AREAS NEEDING PLANTING OF NATIVE WETLAND PLANTS AND/OR PLANTING NATIVE SHRUBS TO STABILIZE AND PROVIDE WILDLIFE HABITAT
 -SPOT TREAT PHRAGMITES REGROWTH BETWEEN AUGUST 15 AND SEPTEMBER 30, AS NEEDED

YEAR 4 (2028) AND FORWARD (WORK TO BE CONDUCTED BY CITY):
 -CONTINUE MONITORING AND ASSESSMENT (ANNUAL SUBMISSION TO CRMC - DECEMBER), AS STIPULATED BY CRMC
 -SPOT TREAT PHRAGMITES REGROWTH BETWEEN AUGUST 15 AND SEPTEMBER 30, AS NEEDED
 -MONITOR SUCCESS OF NATIVE PLANTINGS

MINIMIZATION OF ADVERSE IMPACTS:

THE POTENTIAL IMPACT OF HERBICIDE DAMAGE FROM TREATMENT OF NON-TARGETED SPECIES WILL BE MANAGED BY ENLISTING THE SERVICES OF AN EXPERIENCED PROFESSIONAL CONTRACTOR, WHO HAS ACCESS TO APPROPRIATE EQUIPMENT, FORMULATION STANDARDS, AND WHO WILL RESPECT WEATHER CONDITIONS DURING TREATMENT PERIODS. HERBICIDES WILL BE SELECTED FOR THEIR KNOWN SAFETY IN AQUATIC ENVIRONMENTS.

HERBICIDE TREATMENT IN THE INITIAL TREATMENT YEAR CAN BE APPLIED AS A BROADCAST FOLIAR TREATMENT OF AN APPROPRIATE HERBICIDE WITH A LOW-VOLUME BACKPACK SPRAYER WITHOUT CONCERN FOR HARM TO NATIVE PLANTS THAT MAY BE EMBEDDED WITHIN THE INVASIVES. IN LATER YEARS, SPOT TREATMENT OF THE INVASIVES WILL BE REQUIRED TO AVOID DAMAGE TO THE REVEGETATING NATIVE PLANTS. NATIVE COASTAL WETLAND SPECIES ARE EXPECTED TO REVEGETATE IN ALL AREAS ONCE THE PHRAGMITES OVERSTORY IS REMOVED.

EVALUATING PROJECT SUCCESS:

THE MARSH RESTORATION WILL BE MONITORED FOR A MINIMUM THREE (3) YEAR PERIOD STARTING AFTER THE COMPLETION OF YEAR 1 OF THE HERBICIDE TREATMENT PHASE. THE EVALUATION WILL BE DOCUMENTED BY PHOTOGRAPHS PLUS TRAVERSE LINES WILL BE SETUP AND VEGETATIVE GROWTH WILL BE EVALUATED USING THE POINT INTERCEPT METHOD. EXPECTED IS MORE WADING BIRD FEEDING HABITAT; RESTORATION OF NATIVE WETLANDS, AND REDUCTION IN MOSQUITO BREEDING AREAS WITHIN THE PHRAGMITES STAND.

PRE-CONSTRUCTION MONITORING:

A BASELINE VEGETATIVE SURVEY DURING THE GROWING SEASON WILL BE PERFORMED IN YEAR 1 PRIOR TO HERBICIDE TREATMENT. A SUITABLE NUMBER OF TRANSECT LINES WILL BE ESTABLISHED ALONG THE SHORELINE AND THE POINT INTERCEPT METHOD WILL BE USED TO EVALUATE THE CURRENT VEGETATIVE COVER OF THE PHRAGMITES AREAS. THEN COMPARISONS TO THE REVEGETATION OF THE MARSH AFTER THE PHRAGMITES TREATMENT AND ELIMINATION WILL BE POSSIBLE DURING THE POST-CONSTRUCTION PHASE (YEARS 2+). PHOTO POINTS WILL BE ESTABLISHED, AND BASELINE PHOTOS TAKEN.

POST-CONSTRUCTION MONITORING:

MARSH RESTORATION MONITORING WILL BE PERFORMED FOR AT LEAST TWO GROWING SEASONS AFTER THE COMPLETION OF THE INITIAL CONSTRUCTION PORTION OF THE PROJECT AND ADDITIONAL YEARS, IF STIPULATED BY CRMC. PROTOCOL WILL HAVE ALREADY BEEN ESTABLISHED FOR THIS MONITORING PROGRAM. ONCE A YEAR, DURING THE GROWING SEASON, PHOTOGRAPHS WILL BE TAKEN FROM DESIGNATED POINTS IN THE MARSH TO DOCUMENT THE SUCCESS OF THE PROPOSED MARSH RESTORATION.

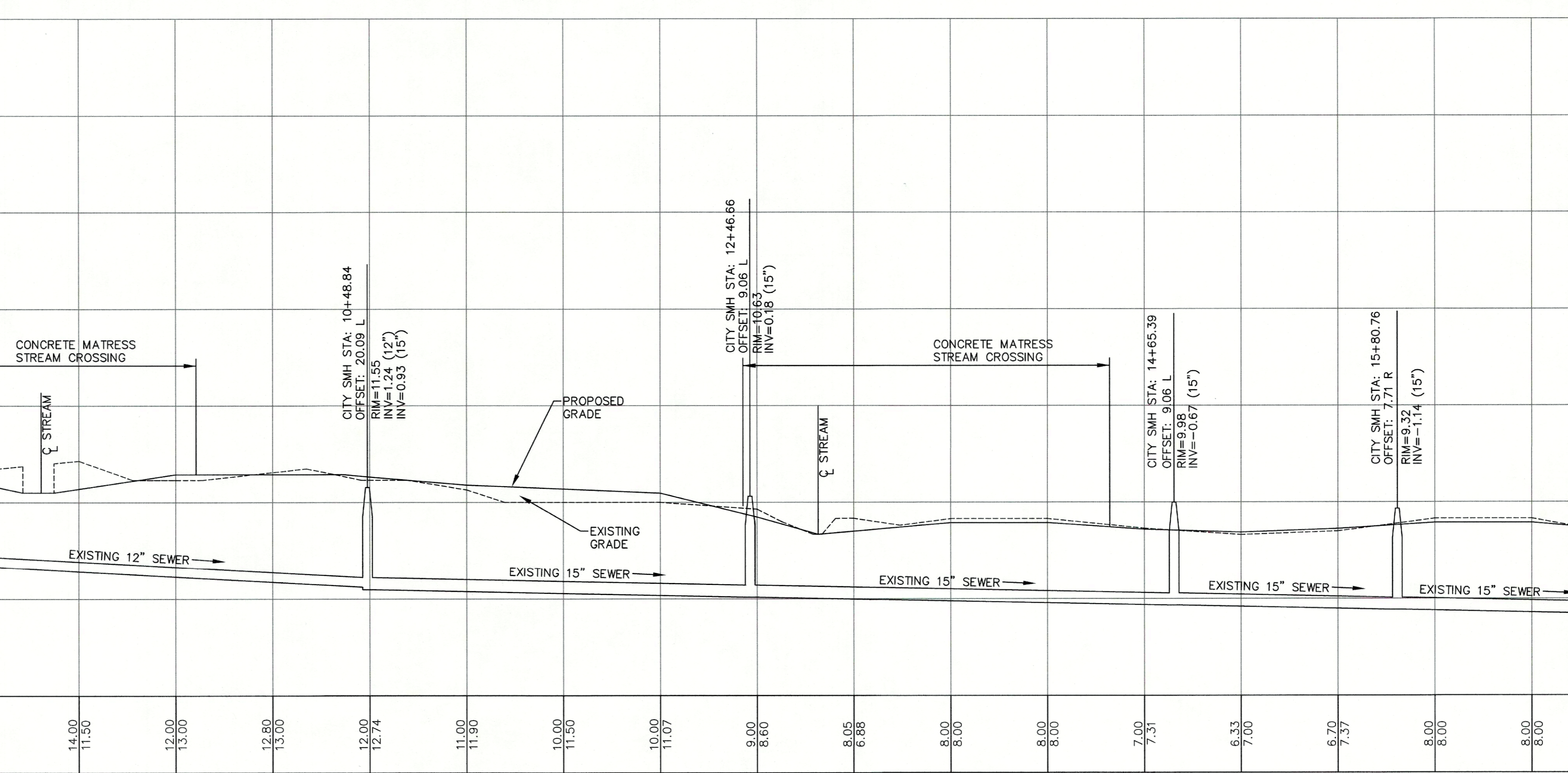
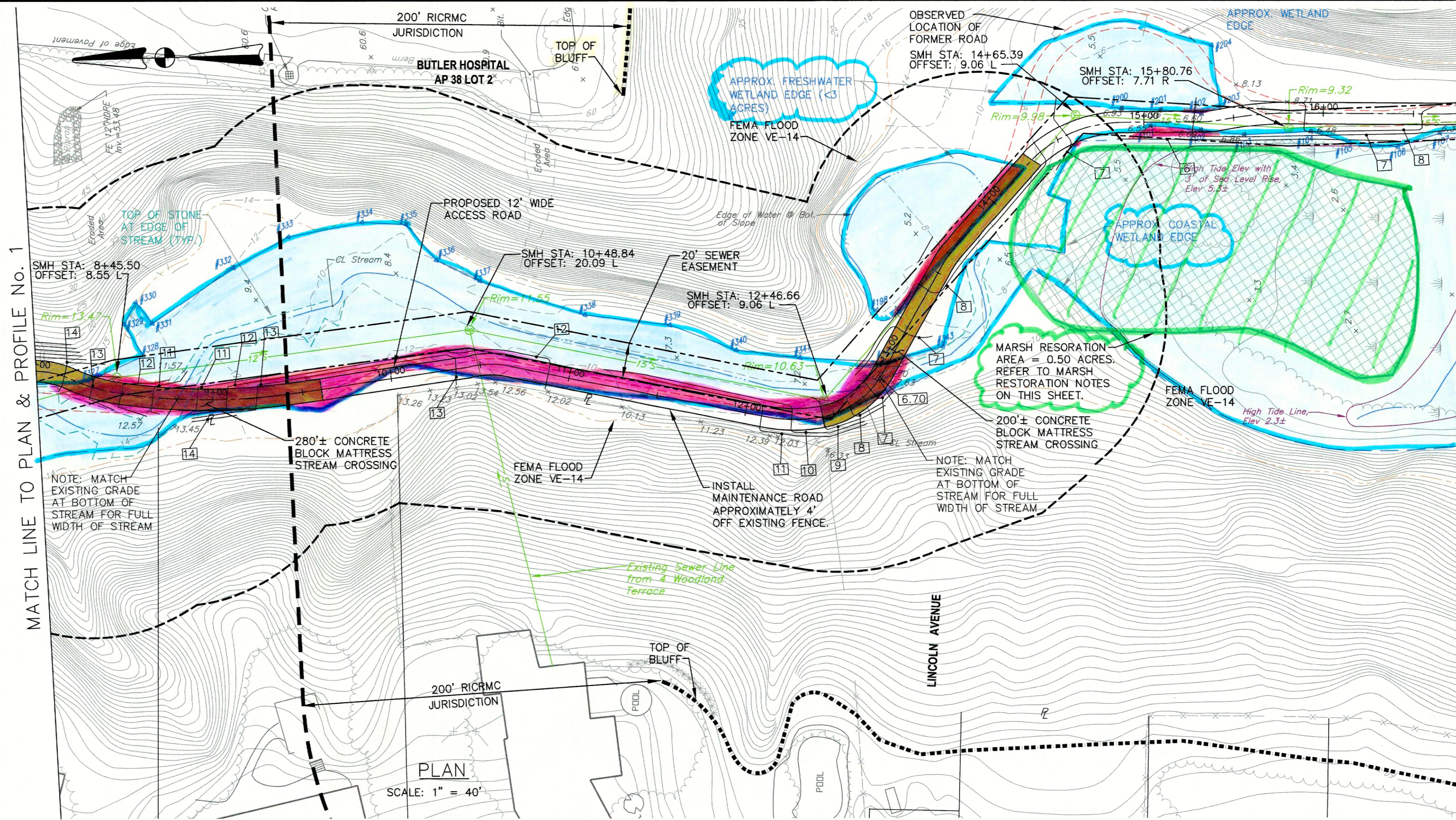
TRANSECTS WILL HAVE ALREADY BEEN SET UP IN THE MARSH AND A VEGETATIVE BASELINE ESTABLISHED. THE VEGETATIVE MONITORING WILL FOLLOW THE VEGETATION MONITORING PROTOCOL SET UP BY THE U.S. DEPARTMENT OF AGRICULTURE AND RECOMMENDED BY THE NATURAL RESOURCES CONSERVATION SERVICE. THE POINT INTERCEPT METHOD WILL BE USED TO EVALUATE VEGETATION IN THE SAMPLE PLOTS.

ALL MONITORING REPORTS WILL BE AVAILABLE TO THE CLIENTS AND CRMC AND SUBMITTED AS PART OF THE REPORTING REQUIREMENTS OF THE CRMC ASSENT IN DECEMBER OF EACH YEAR.

DATUM ELEV NAVD88 0.00

SUGGESTED NATIVE SHRUB PLANTINGS FOR UPLAND EDGES

SPECIES	PLANTING DETAIL
HIGHBUSH BLUEBERRY	1-GALLON POTS, 5-6 FEET ON-CENTER (VACCINIUM CORYMBOSUM)
INKBERRY (ILEX GLABRA)	1-GALLON POTS, 5-6 FEET ON-CENTER
LOWBUSH BLUEBERRY	1-GALLON POTS, 5-6 FEET ON-CENTER (VACCINIUM ANGUSTIFOLIUM)
RED-OSIER DOGWOOD	1-GALLON POTS, 5-6 FEET ON-CENTER (CORNUS STOLONIFERA)



NOTE: THESE DRAWINGS SHALL BE VIEWED AND PRINTED IN COLOR (TYP.)

Received 6/17/2024 Coastal Resources Management Council



Crossman Engineering

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PROJECT TITLE:
SEWER SYSTEM MAINTENANCE ROAD
 GROTTO ROAD TO THE NARRAGANSETT BAY COMMISSION SEEKONK RIVER INTERCEPTOR PROVIDENCE, R.I.

PREPARED FOR:
CITY OF PROVIDENCE ENGINEERING DIVISION
 700 ALLENS AVENUE PROVIDENCE, R.I. 02905

DRAWING TITLE:
PLAN & PROFILE No. 2

DATE: DECEMBER 2021 SCALE: AS NOTED
 DWG. NAME: 2314-C04-CONCEPT P&P-REV BASE.dwg

REVISIONS	NUMBER	REMARKS	DATE
1	MARSH RESTORATION	9/28/22	
2	MITIGATION	12/15/23	

DRAWING NUMBER
C4.2
 SHEET: 8 OF 14



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PROJECT TITLE:

SEWER SYSTEM MAINTENANCE ROAD
GROTTO ROAD TO THE NARRAGANSETT BAY COMMISSION SEEKONK RIVER INTERCEPTOR PROVIDENCE, R.I.

PREPARED FOR:

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700 ALLENS AVENUE
PROVIDENCE, R.I. 02905

DRAWING TITLE:

PLAN & PROFILE No. 3

DATE: DECEMBER 2021 SCALE: AS NOTED

DWG. NAME: 2314-C04-CONCEPT P&P-REV BASE.dwg

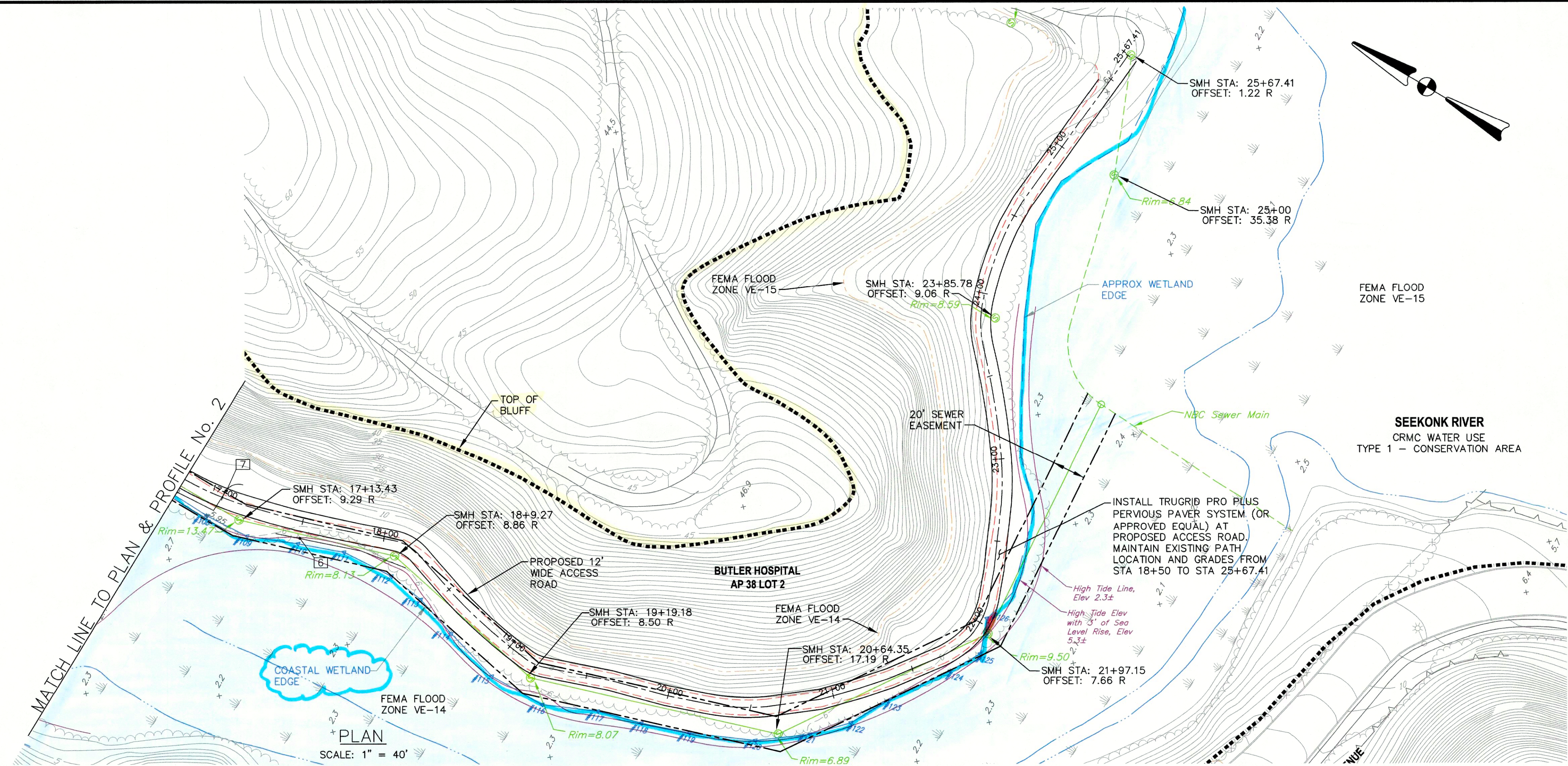
REVISIONS

NUMBER	REMARKS	DATE
1	MARSH RESTORATION	9/28/22
2	MITIGATION	12/15/23

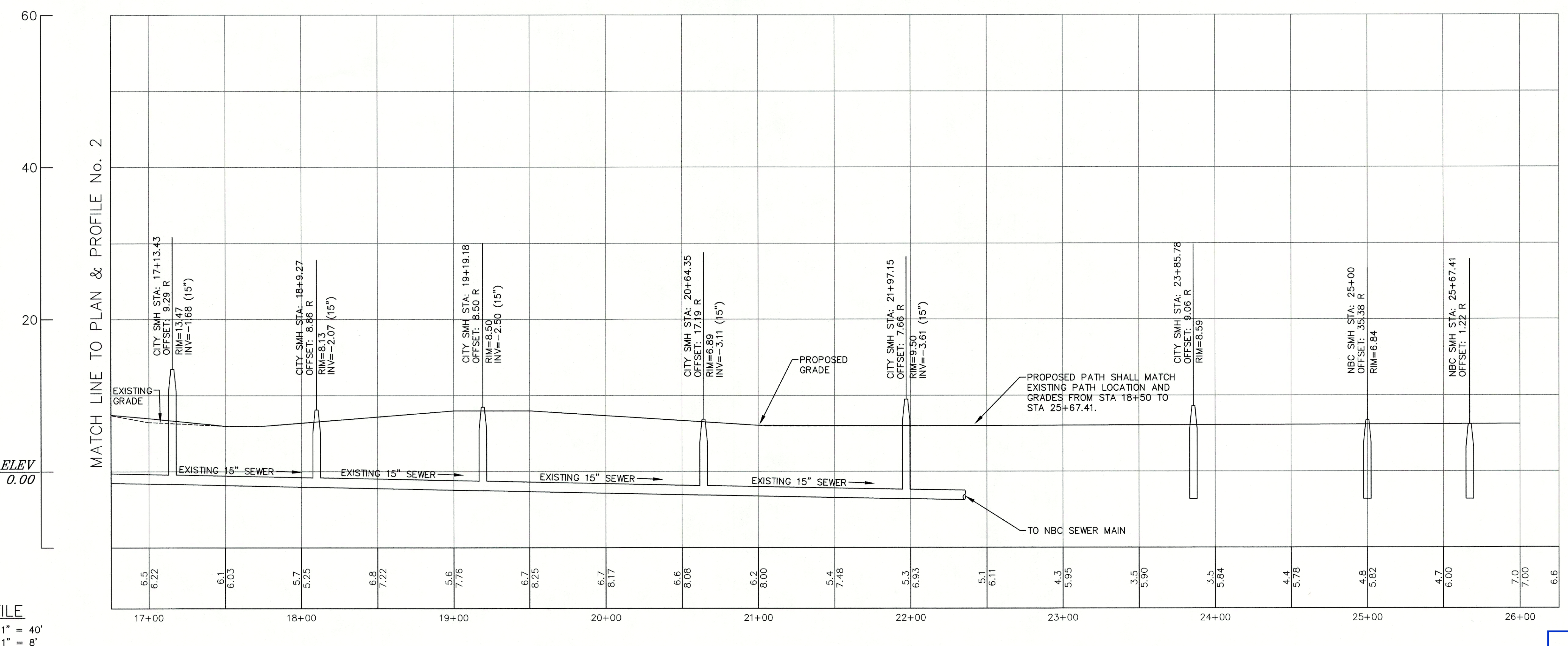
DRAWING NUMBER

C4.3

SHEET: 9 OF: 14



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SITE PLAN SET FOR SEWER SYSTEM MAINTENANCE ACCESS

GROTTO ROAD TO THE NARRAGANSETT BAY COMMISSION SEEKONK RIVER INTERCEPTOR PROVIDENCE, RHODE ISLAND

PREPARED FOR:

**CITY OF PROVIDENCE
ENGINEERING DIVISION
700 ALLENS AVENUE
PROVIDENCE, R.I. 02905**

ENGINEER AND SURVEYOR:



- Civil
- Transportation
- Environmental
- Site Planning
- Surveying
- Permitting
- Landscape Architecture

CROSSMAN ENGINEERING

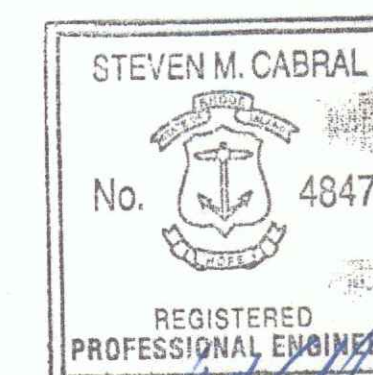
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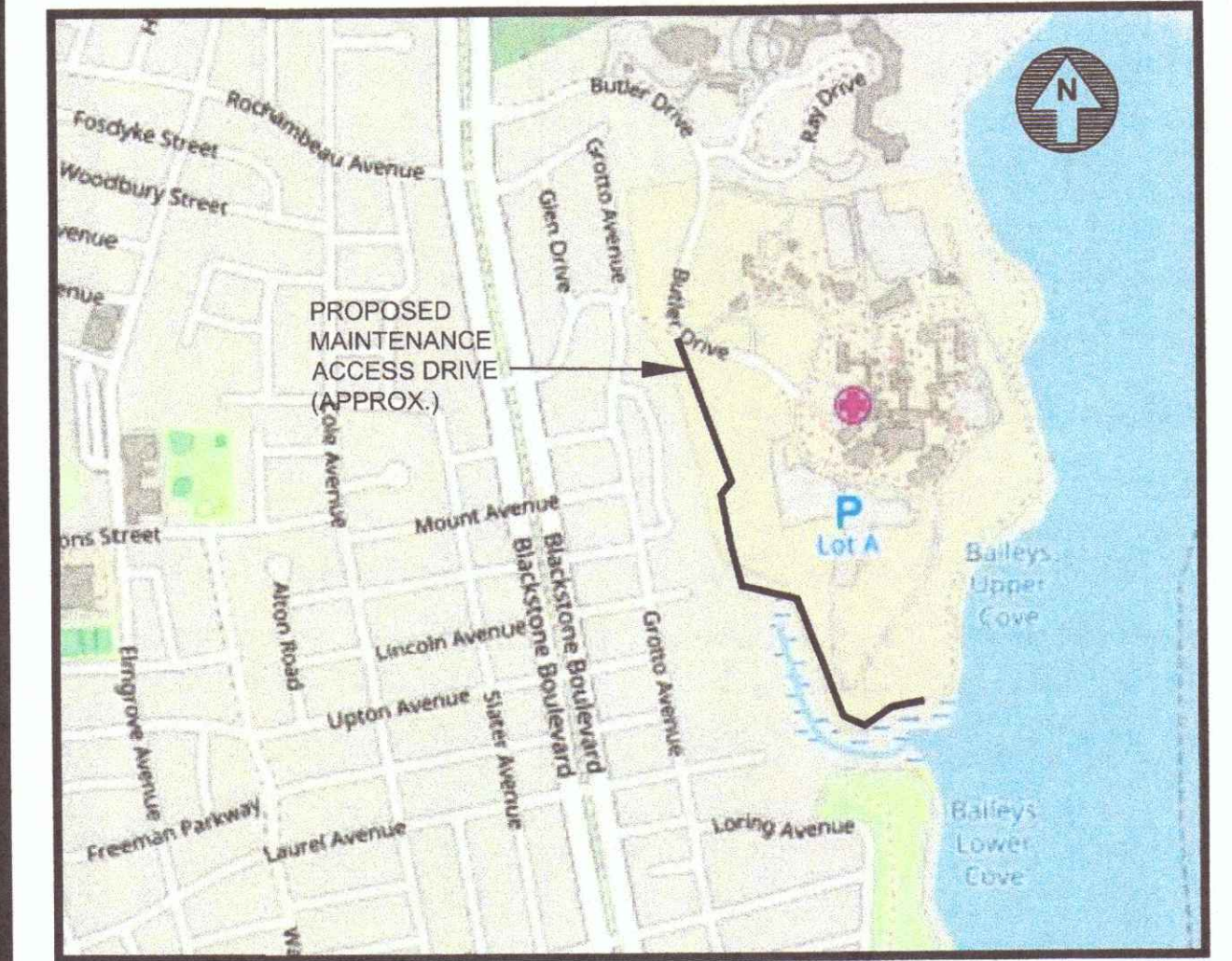
**DECEMBER 2021
SHEET 1 of 14**

WETLAND BIOLOGIST:

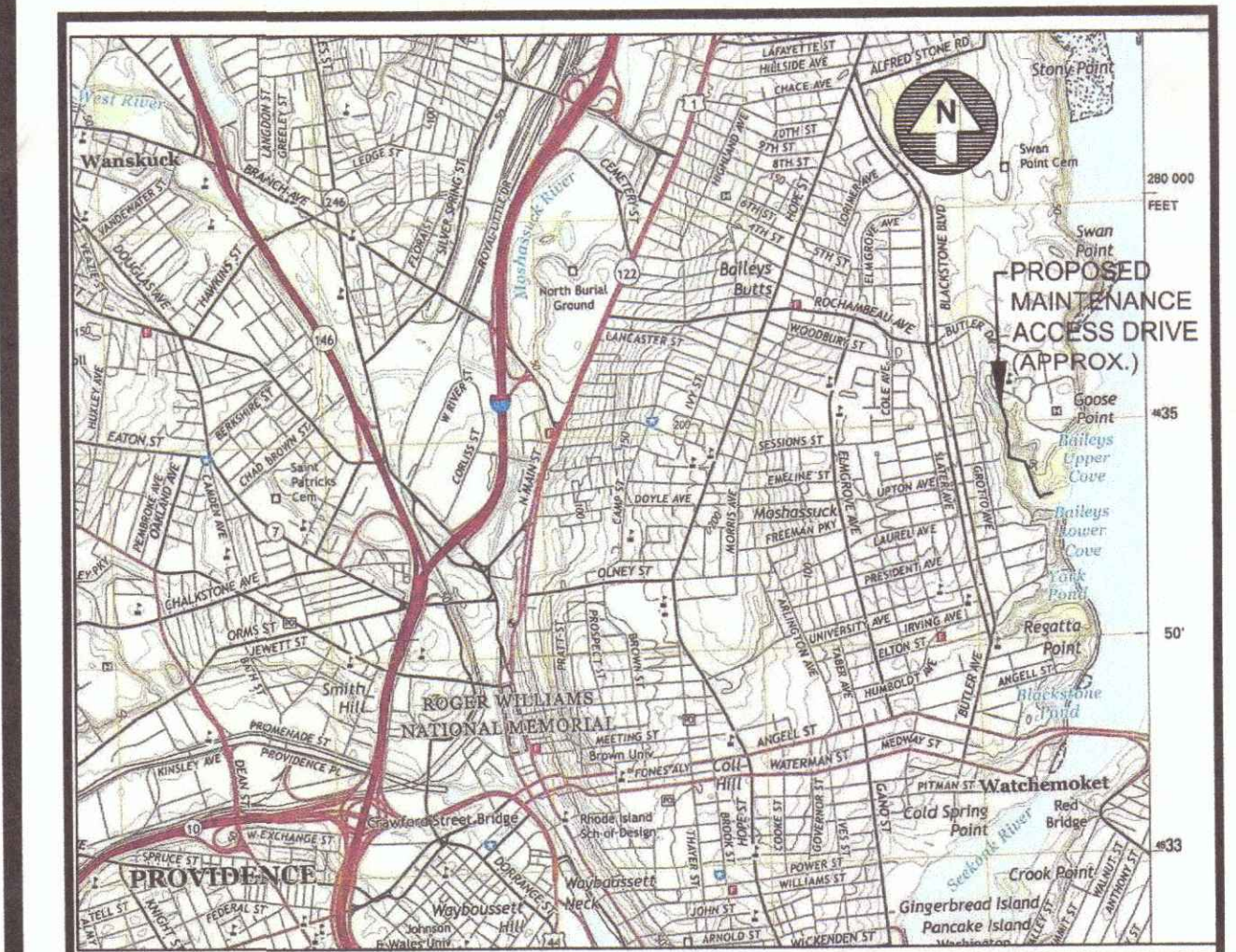
**APPLIED BIO-SYSTEMS, INC.
42 NORTH ROAD
WAKEFIELD, RI 02879**



Steven M. Cabral
12-15-23



LOCATION MAP
NOT TO SCALE



USGS MAP
NOT TO SCALE

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REVISIONS:

No.:	DATE:	DESCRIPTION:
1	9/28/22	MARSH RESTORATION
2	12/15/23	MITIGATION

GENERAL NOTES

- THE PLANS MAY NOT DEPICT ALL UNDERGROUND UTILITY SYSTEMS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING DRAINAGE AND UTILITIES, BOTH UNDERGROUND AND OVERHEAD, BEFORE EXCAVATION BEGINS IN ACCORDANCE WITH "DIG SAFE PROGRAM LAW" ENACTED BY THE R.I. LEGISLATURE AND BY CONTACTING THE INDIVIDUAL UTILITY COMPANIES. EXCAVATION SHALL BE IN ACCORDANCE WITH ALL STATUTES, ORDINANCES, RULES AND REGULATIONS OF ANY CITY, STATE OR FEDERAL AGENCY THAT MAY APPLY. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR IS ADVISED THAT UTILITIES SUCH AS BUT NOT LIMITED TO DRAINAGE, SEWERS, TRAFFIC SIGNAL AND STREET LIGHTING INFRASTRUCTURE ARE NOT PART OF THE DIG SAFE PROGRAM IN PROVIDENCE AND ARE NOT MARKED BY THE CITY OF PROVIDENCE. CONTRACTORS ARE URGED TO EXERCISE DUE DILIGENCE AND REVIEW HAND HOLES, MANHOLES, FIXTURES ACCESS PANELS AND OTHER VISUAL CLUES THAT UNDERGROUND UTILITIES EXIST IN THE WORK ZONE THAT MAY NOT BE LOCATED AND MARKED BY DIG SAFE. THIS EFFORT MAY REQUIRE OBSERVING UNDERGROUND STRUCTURES BY REMOVING MANHOLE AND HANDHOLD COVERS TO OBSERVED DEPTHS AND DIRECTION OF UTILITIES.
- SPECIFICATIONS TO GOVERN THIS PROJECT ARE IDENTIFIED WITHIN THE PROJECT MANUAL. FOR ALL EXCAVATION, PLACEMENT OF FILL, PIPE INSTALLATION, BITUMINOUS PAVEMENT, CUTTING INTO CATCHBASIN/MANHOLES, CONCRETE AND SAWCUTTING, THE CONTRACTOR SHALL PERFORM THE WORK IN FULL COMPLIANCE WITH THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AMENDED MARCH 2018, AND AS OTHERWISE AMENDED SINCE THIS PUBLICATION DATE, WITH LATEST REVISIONS UNLESS OTHERWISE SHOWN ON PLANS. THE "METHOD OF MEASUREMENT" AND "BASIS OF PAYMENT" WITHIN THE R.I.D.O.T. SPECIFICATIONS ARE NOT APPLICABLE. THESE SPECIFICATIONS CAN BE OBTAINED ON-LINE AT: [HTTP://WWW.DOT.RI.GOV/DOCUMENTS/DOINGBUSINESS/BLUEBOOK.PDF](http://www.dot.ri.gov/documents/doingbusiness/bluebook.pdf)

THIS DOCUMENT IS CONSIDERED ATTACHED AND WRITTEN IN FULL TO THIS DOCUMENT SET.

- FOR ALL EXCAVATION AND PLACEMENT OF FILL, THE CONTRACTOR SHALL PERFORM THE WORK IN FULL COMPLIANCE WITH THE R.I. STANDARD SPECIFICATION SECTION 202.

- RHODE ISLAND STANDARDS REFERENCED ARE ACCORDING TO THE STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS "RHODE ISLAND STANDARD DETAILS" DATED JUNE 19, 2019, AND AS OTHERWISE AMENDED SINCE THIS PUBLICATION DATE, WITH ALL REVISIONS AS PREPARED BY THE DEPARTMENT OF TRANSPORTATION.

THIS DOCUMENT IS CONSIDERED ATTACHED AND WRITTEN IN FULL TO THIS DOCUMENT SET.

- THE CONTRACTOR MUST VERIFY PRIOR TO CONSTRUCTION THAT ALL REQUIRED AUTHORIZATION TO PERFORM WORK HAS BEEN OBTAINED. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION OPERATIONS INCLUDING ALL ACTIONS OR OMISSIONS OF ANY SUBCONTRACTORS, AGENTS OR EMPLOYEES. THE CONTRACTOR MUST ENSURE THAT THE CONDITIONS OF ALL PERMITS, SPECIFICATIONS AND FEDERAL, STATE AND LOCAL REGULATIONS ARE STRICTLY ENFORCED. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ASPECTS OF ON-SITE SAFETY AND ANY DAMAGE TO EXISTING STRUCTURES.

- WORK SHOWN ON THE PLANS FOR WHICH THERE ARE NO PARTICULAR DETAILS OR SPECIFICATIONS DOES NOT RELIEVE THE CONTRACTOR FROM FURNISHING AND INSTALLING THE WORK THAT IS REQUIRED AND CUSTOMARY TO EXECUTE THE SCOPE OF WORK. THE CONTRACTOR SHALL THOROUGHLY EXAMINE THE CONTRACT DOCUMENTS AND PLANS AND INSPECT THE SITE. THE BID PRICE SHALL INCLUDE ALL LABOR, INCIDENTALS, TOOLS EQUIPMENT, TESTING, SERVICES, MATERIALS, ADMINISTRATION, AND SUPERVISION NECESSARY TO COMPLETE THE PROJECT. ANY CHANGES TO THE PROJECT OR THE INSTALLATION OF AN ITEM FOR WHICH NO PARTICULAR DETAIL OR SPECIFICATION WAS PROVIDED SHALL BE SUBMITTED FOR REVIEW BY AND MUST BE ACCEPTABLE TO THE ENGINEER AND OWNER.

- CONTRACTOR IS RESPONSIBLE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ANY WORK.

- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT PRIOR TO THE INITIATION OF WORK. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS, RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER AND OWNER SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH APPLICABLE STANDARDS OF THE INDUSTRY, STATE, FEDERAL, AND LOCAL REGULATIONS AND CODES.

- ALL DISTURBED AREAS SHALL BE REPLACED IN KIND UNLESS OTHERWISE SHOWN.

- THROUGHOUT THE SITE URBAN FILL AND/OR DEBRIS MAY BE ENCOUNTERED DURING EXCAVATION. THE CONTRACTOR SHALL INCLUDE REMOVAL AND LEGAL DISPOSAL OF THIS MATERIAL WITHIN THE REQUIRED EXCAVATION AREA, IN THE BID PRICE.

LAYOUT NOTE

THE LAYOUT SHOWN REPRESENTS A GRAPHICAL DESIGN, AND PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL ENGAGE A PROFESSIONAL LAND SURVEYOR (PLS) REGISTERED AND IN GOOD STANDING IN RHODE ISLAND TO SET AND VERIFY ALL LINES AND GRADES AND PROVIDE A BENCH MARK FOR CONSTRUCTION. ALL EXISTING UTILITY LOCATIONS AND ELEVATIONS ARE TO BE CONFIRMED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY ITEM FOUND WHICH DOES NOT MATCH THE PLANS SHALL BE BROUGHT TO THE ENGINEER'S AND OWNER'S ATTENTION PRIOR TO CONSTRUCTION FOR REVIEW. NO WORK SHALL PROCEED UNTIL AUTHORIZED BY THE ENGINEER.

EXISTING CONDITIONS NOTES

- THE CONTRACTOR SHALL NOTIFY THE PROPER UTILITY COMPANIES AND THE CITY TO OBTAIN THE LOCATION OF ALL UTILITIES PRIOR TO BEGINNING WORK. THE MARKED LOCATIONS SHALL BE PRESERVED BY THE CONTRACTOR DURING THE COURSE OF THE WORK, UNTIL SUCH TIME AS THE ARE NO LONGER NEEDED. VIDEO DOCUMENTATION IS ENCOURAGED AND THE VIDEO SHALL BE SHARED WITH THE ENGINEER AND OWNER.
- ALL UTILITIES INTERRUPTED OR INTERFERED WITH OR DAMAGED BY THE CONTRACTOR SHALL BE IMMEDIATELY AND PROPERLY RESTORED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL PROPERLY BED AND FULLY COMPACT ALL BACKFILL MATERIAL AROUND AND UNDER ALL EXISTING UTILITIES ENCOUNTERED OR CROSSED.
- UNDERGROUND UTILITIES REFERENCED THROUGHOUT THESE PLANS HAVE BEEN PROVIDED BASED ON THE INFORMATION AVAILABLE AND IS PROVIDED TO ASSIST THE CONTRACTOR AS TO PROBABLE LOCATIONS. THE CONTRACTOR SHALL WORK WITH THE UTILITY COMPANIES AS REQUIRED FOR ANY AND ALL CLARIFICATIONS AS REQUIRED TO EXECUTE THE WORK. THESE EFFORTS ARE CONSIDERED ADMINISTRATIVE AND ARE INCLUDED IN ALL BASE BID VALUES, REFER TO MAP REFERENCE.
- WETLAND LIMITS SHOWN IN THIS PLAN SET HAVE BEEN DELINEATED BY APPLIED BIOSYSTEMS INC. ON 5/23/18 AND 6/6/18 AND FIELD LOCATED BY CROSSMAN ENGINEERING.

MAP REFERENCES

- SEWER PLANS ON RECORD AT THE PROVIDENCE DPW OFFICE TITLED; RIGHT OF WAY IN BUTLER HOSPITAL GROTT, SHEET 86 PREPARED MAY 11, 1950 AND SHEET 87 PREPARED MAY 25, 1950 (ENGR BOOK; 3238, INSP BOOK: 1779 AND DRAWER 169), AND SHEET 103 PREPARED DECEMBER 13, 1950.
- SANITARY SEWER PLAN ON BUTLER HOSPITAL LAND, PLAN NUMBER 060234 DATED AUGUST 21, 1950, CITY OF PROVIDENCE PUBLIC WORKS DEPARTMENT, SCALE 1"=100' (759/23).

FLOOD ZONE NOTE

AREAS ONSITE ARE WITHIN THE ZONE VE (SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD, COASTAL FLOOD ZONE WITH VELOCITY HAZARD (WAVE ACTION), BASE FLOOD ELEVATIONS DETERMINED) AND WITHIN THE ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 2% ANNUAL CHANCE FLOOD) ON THE FLOOD INSURANCE RATE MAP, PROVIDENCE COUNTY, RHODE ISLAND (ALL JURISDICTIONS) PANEL 309 OF 451, MAP NUMBER 44007C0309K, MAP REVISED OCTOBER 2, 2015.

MAINTENANCE AND PROTECTION OF TRAFFIC NOTES- GROTTO ROAD & BUTLER HOSPITAL PROPERTY

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND PROTECTION OF PEDESTRIAN AND VEHICULAR TRAFFIC INCLUDING POLICE PROTECTION. IN THE EVENT POLICE DETAILS ARE NOT AVAILABLE, FLAGGERS WILL BE PROVIDED. ALL TEMPORARY CONSTRUCTION SIGNS, BARRICADES AND LANE CLOSURES SHALL BE IN CONFORMANCE WITH THE LATEST REVISIONS OF MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)
- TEMPORARY CONSTRUCTION SIGNS AND ALL APPLICABLE TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF WORK IN ANY AREA OPEN TO TRAFFIC.
- THE PRIVATE VEHICLES OF CONSTRUCTION WORKERS WILL NOT BE PARKED IN ANY ROADWAY RIGHT-OF-WAY UNLESS APPROVED BY THE PROVIDENCE DPW.
- ALL MAINTENANCE AND PROTECTION OF TRAFFIC CONTROL SETUPS, SIGNS, CHANNELING DEVICES, ETC., SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 EDITION, INCLUDING REVISION 2, MAY 2012, AND SUBSEQUENT ADDENDA.
- SIGN MOUNTINGS SHALL BE IN ACCORDANCE WITH THE STATE D.O.T. SPECIFICATIONS FOR TEMPORARY CONSTRUCTION SIGNS.
- THE CONTRACTOR SHALL INCLUDE POLICE DETAILS REQUIRED FOR WORK WITHIN THE CITY RIGHT-OF-WAY, WITHIN THE CONTRACT PRICE.
- AS REQUIRED, ROAD OPENING PERMITS SHALL BE COORDINATED AND OBTAINED BY THE CONTRACTOR.
- COORDINATION WITH THE PROVIDENCE DEPARTMENT OF PUBLIC WORKS IS REQUIRED TO REVIEW ALL WORK IMPACTING SIDEWALKS AND/OR PEDESTRIAN TRAFFIC WITHIN THE CITY R.O.W. THE CONTRACTOR IS RESPONSIBLE FOR ALL SIGNAGE, DETOURS AND TEMPORARY FENCING AROUND SITE REQUIRED DURING CONSTRUCTION. DPW APPROVALS WILL BE REQUIRED FOR SIDEWALK WORK.
- THE CONTRACTOR IS RESPONSIBLE TO COORDINATE LANE CLOSURE SIGNAGE, CONES, BARRELS AND/OR BARRIERS AS NECESSARY FOR TRAFFIC PROTECTION AND WORK-ZONE SAFETY.

PLAN NOTES

- THE PURPOSE OF THIS PLAN SET IS TO CONSTRUCT A MAINTENANCE ACCESS ROAD THAT WOULD REPLACE THE ORIGINAL MAINTENANCE ROAD THAT IS IMPASSABLE. THE NEW MAINTENANCE ROAD WOULD ALLOW THE CITY TO REGULARLY INSPECT THE EXISTING SEWER MAIN FROM GROTTO AVENUE TO THE NBC INTERCEPTOR AT THE EDGE OF THE SEEKONK RIVER. WHEN THE NEW MAINTENANCE ROAD IS COMPLETED, UPON COMPLETION OF THE MAINTENANCE ROAD, THE EXISTING SEWER MAIN WILL BE FLUSHED AND EXAMINED FOR DEFECTS USING A CLOSED CIRCUIT VIDEO CAMERA. VIDEO DOCUMENTATION SHALL BE PROVIDED TO THE ENGINEER AND OWNER IN A MEDIUM ACCEPTABLE TO BOTH. DEFECTS SHALL BE DOCUMENTED IN WRITING AND REFERENCES TIED BACK TO ANY VIDEO AND PHOTOGRAPHIC REFERENCE/KEY POINTS. A PROGRAM FOR REPAIR OR RESTORATION WILL BE FORMULATED BY THE CITY. NON-INVASIVE REPAIRS SUCH AS PIPE LINING WITH A SYNTHETIC LINING MATERIAL WILL BE CONSIDERED IF APPLICABLE FOR PIPE REPAIR AND/OR EXTENDING THE LIFE OF THE SEWER MAIN.
- THE ELEVATIONS SHOWN IN THIS PLAN SET ARE BASED UPON THE NAVD 88 VERTICAL DATUM. THE EXISTING SEWER INVERT ELEVATIONS SHOWN ON SHEETS C4.1, C4.2 AND C4.3 HAVE BEEN CONVERTED FROM THE PROVIDENCE SEWER BASE SHOWN ON THE 1950 SEWER PLANS TO NAVD 88 (NAVD 88 = PROV SEWER BASE + 3.18).
- THE PROPOSED MAINTENANCE ACCESS ROAD WILL BE PASSABLE DURING CURRENT HIGH TIDE CONDITIONS AND WITH FUTURE HIGH TIDE CONDITIONS WITH A POTENTIAL 3' RISE IN SEA LEVELS. THE PROPOSED MAINTENANCE ACCESS ROAD WILL NOT BE USED/PASSABLE DURING SIGNIFICANT FLOOD EVENTS (INUNDATION BY THE 1% ANNUAL CHANCE FLOOD, COASTAL FLOOD WITH WAVE ACTION). IT IS NOT THE INTENT TO USE THE MAINTENANCE ACCESS DURING THESE SIGNIFICANT FLOOD EVENTS.
- WETLAND FLAGS WERE DELINEATED BY APPLIED BIO-SYSTEMS, INC, AND FIELD LOCATED BY CROSSMAN ENGINEERING.
- THE CONTRACTOR IS RESPONSIBLE FOR ANY DEWATERING AND/OR SUPPORT OF EXCAVATION DESIGN, INSTALLATION, OPERATION, MATERIALS, AND LABOR AS REQUIRED TO COMPLETE THIS PROJECT. DEWATERING AND/OR SUPPORT OF EXCAVATION SHALL BE INCLUDED IN THE BASE BID PRICE. NO EXTRA COST BEYOND THE BID PRICE SHALL BE PROVIDED TO THE CONTRACTOR.

ALTERNATE BID ITEM NOTES

- DEDUCT-ALTERNATE BID ITEM NO. 1: INCLUDES INSTALLING TWO BOLLARDS (WITH REFLECTIVE COVERS) WITH A LOOP ATTACHMENT, TO ACCEPT 2" STAINLESS STEEL CHAIN, ON EACH SIDE OF THE NEW MAINTENANCE ACCESS ROAD, AT TWO LOCATIONS. CHAIN AND REFLECTIVE COVERS SHALL BE PART OF THE ALTERNATE BID COST. THIS TASK WILL BE CONDUCTED IN LIEU OF INSTALLING THE STAINLESS STEEL GATES AND POSTS PROPOSED AT TWO LOCATIONS. CONTRACTOR SHALL PROVIDE A SEPARATE FEE FOR THIS ALTERNATE BID ITEM THAT WILL BE DEDUCTED FROM THE BASE BID PRICE.
- DEDUCT-ALTERNATE BID ITEM NO. 2: ACCESS ROAD AND GATE OFF GROTTO AVENUE. INCLUDES EARTHWORK, AND ALL EQUIPMENT, MATERIAL, AND LABOR NEEDED TO COMPLETE THE TASK, TO INSTALL APPROXIMATELY 170 LINEAR FEET OF ACCESS ROAD OFF GROTTO AVENUE. CONTRACTOR SHALL PROVIDE A SEPARATE FEE FOR THIS ALTERNATE BID ITEM THAT WILL BE DEDUCTED FROM THE BASE BID PRICE.
- ADD ALTERNATE BID ITEM NO. 3: INCLUDES CLEANING, INSPECTING, AND EPOXY LINING THE EXISTING SEWER LINE WITHIN THE PROJECT LIMITS AS NEEDED. PRICE SHALL INCLUDE BYPASS FOR EXISTING SEWER LINE. CONTRACTOR SHALL PROVIDE A SEPARATE FEE FOR THIS ALTERNATE BID ITEM THAT WILL BE ADDED TO THE BASE BID PRICE. CONTRACTOR SHALL SUBMIT MATERIALS AND METHODS TO ENGINEER AND OWNER FOR APPROVAL.

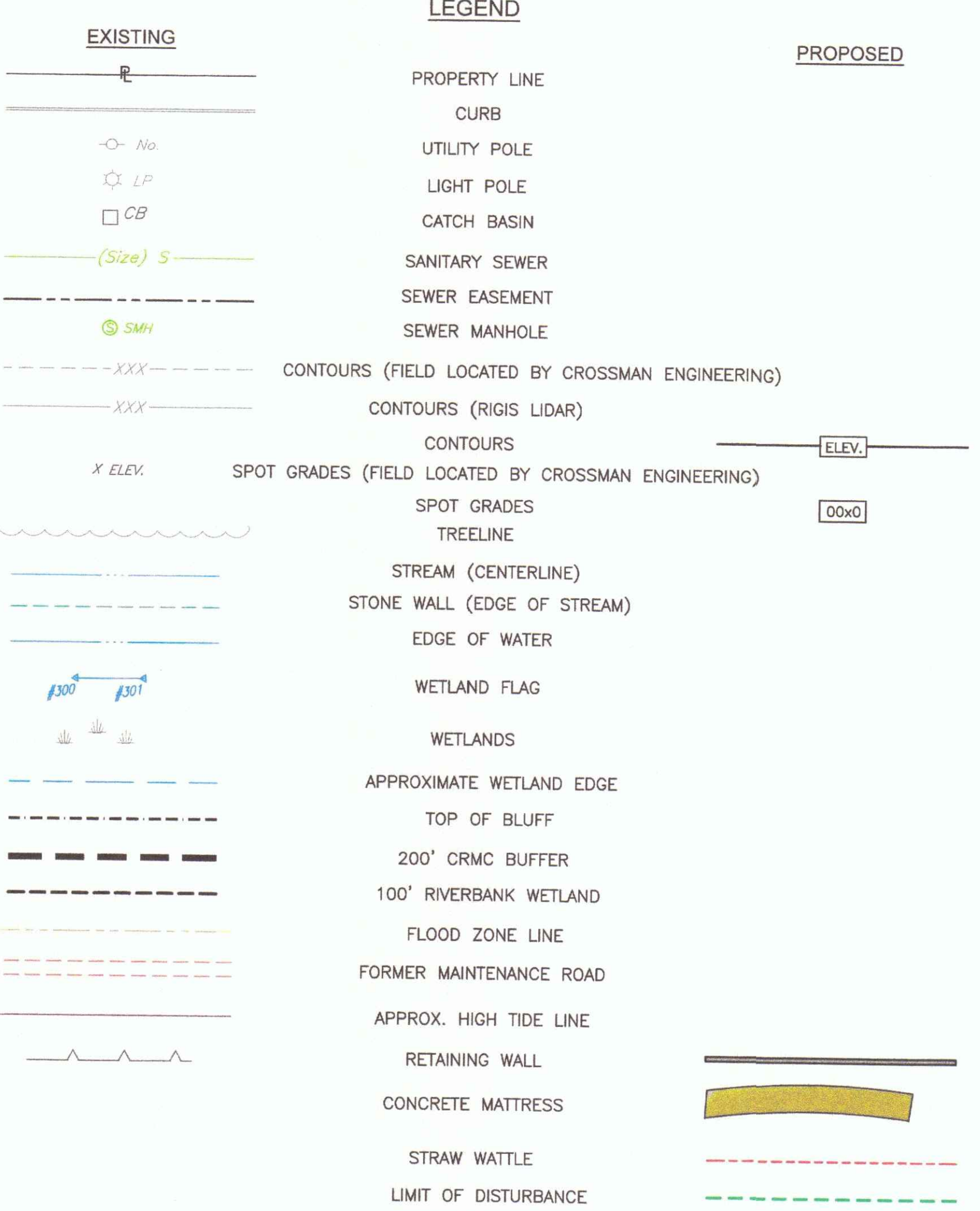
TIDE INFORMATION:

THE LIDAR SURVEY ELEVATIONS ARE BASED UPON THE NAVD88 DATUM. BELOW IS TIDAL ELEVATION INFORMATION FOR THE PROVIDENCE STATE PIER OBTAINED FROM NOAA MARINE CHART 13224 THAT WAS CONVERTED TO NAVD88 USING THE NOAA ONLINE VERTICAL DATUM TRANSFORMATION APPLICATION:

MEAN HIGHER HIGH WATER (MHHW) ~ 2.3
MEAN HIGH WATER (MHW) ~ 2.1
MEAN LOW WATER (MLW) ~ -2.3
MEAN LOWER LOW WATER (MLLW) ~ -2.5

GENERAL SOIL EROSION AND SEDIMENT CONTROL NOTES

- STRAW WATTLE, SILT FENCE, OR APPROVED ALTERNATE EROSION CONTROL DEVICE SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, MAINTAINED ON A REGULAR BASIS, AND SHALL BE PLACED TO PREVENT SEDIMENTATION INTO THE WETLANDS, STREAM, RIVER, OR ONTO ADJACENT PROPERTY.
- THE CONTRACTOR SHALL REPLACE AND/OR RESEED ANY VEGETATION THAT DOES NOT DEVELOP/SURVIVE WITHIN THE PERIOD OF TWO YEARS OF PROJECT COMPLETION AND HE SHALL DO SO AT NO ADDITIONAL EXPENSE TO THE OWNER.
- ALL STRAW WATTLE, SILT FENCE, OR TEMPORARY EROSION CONTROL PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED AND ACCEPTED BY THE CITY.
- TREES AND OTHER EXISTING VEGETATION SHALL BE RETAINED WHENEVER FEASIBLE; THE AREA BEYOND THE DRIPLINE, OUTSIDE THE LIMIT OF DISTURBANCE, SHALL BE FENCED OR ROPED OFF TO PROTECT TREES FROM CONSTRUCTION EQUIPMENT.
- AREAS DAMAGED DURING CONSTRUCTION SHALL BE RESODED, RESEED, OR OTHERWISE RESTORED AT THE CONTRACTOR'S EXPENSE.
- STOCKPILES ARE NOT ALLOWED UNLESS WRITTEN AUTHORIZATION IS OBTAINED FROM CITY.
- DURING CONSTRUCTION THE CONTRACTOR SHALL INSPECT THE SITE TO MAINTAIN THE EROSION CONTROLS, AS APPROVED AND PRESCRIBED BY CRMC, SWPPP PLANS, OR OTHER. ANY SEDIMENT MIGRATING BEYOND THE LIMIT OF DISTURBANCE SHALL BE REMOVED BY HAND IMMEDIATELY UPON OBSERVATION.



DUST CONTROL NOTES

ON AN AS-NEEDED BASIS OR AS DIRECTED BY THE ENGINEER OR OWNER, THE CONTRACTOR SHALL UTILIZE THE FOLLOWING METHOD (AS RECOMMENDED BY THE "R.I. SOIL EROSION AND SEDIMENT CONTROL HANDBOOK", ISSUED 1989, REVISED 2014) TO CONTROL DUST:

A. THE EXPOSED SOIL SURFACE SHOULD BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST.

THE METHOD SHOULD BE REPEATED AS NEEDED, AND SPECIAL ATTENTION MUST BE GIVEN TO THE ACCESS DRIVES.

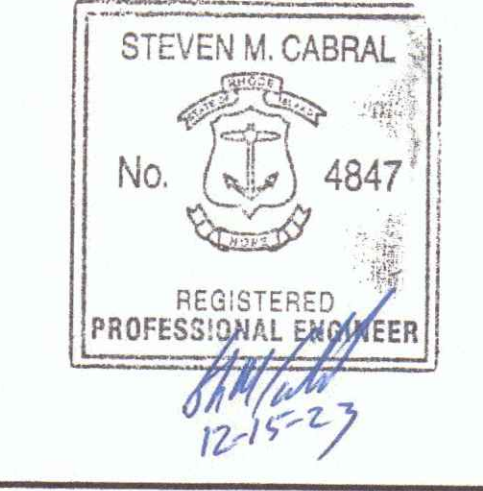
INSPECTION/MAINTENANCE NOTES

- PRIOR TO COMMENCING CLEARING AND GRUBBING OPERATIONS, MULCH WATTLE SHALL BE PLACED SO AS TO PREVENT SEDIMENT FROM ENTERING EXISTING DRAINAGE SYSTEM AND ADJUTING PROPERTIES.
- EXTREME CARE SHALL BE EXERCISED SO AS TO PREVENT ANY UNSUITABLE MATERIAL FROM ENTERING THE DRAINAGE SYSTEM.
- ALL DISTURBED AREAS WHICH BECOME SUBJECT TO EROSION TENDENCIES WHETHER THEY BE NEWLY FILLED OR EXCAVATED SHALL RECEIVE SLOPE PROTECTION - SUCH AS STRAW MULCH AND/OR EROSION CONTROL BLANKETS.
- DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUNOFF FLOW DURING PERIODS OF RAINFALL.
- DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL MAINTENANCE, INSPECTIONS, AND REPORTS. THE CONTRACTOR SHALL INSPECT / REPLACE EROSION CONTROLS DAILY DURING CONSTRUCTION, FOLLOWING RAINFALL AND WEEKLY DURING NON CONSTRUCTION PERIODS.
- ADDITIONAL MULCH WATTLE OR SANDBAGS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER OR OWNER.
- THE "R.I. SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" PREPARED BY THE RHODE ISLAND STATE CONSERVATION COMMITTEE, ISSUED 1989 (REVISED 2014, OR AS FURTHER AMENDED), MUST BE UTILIZED BY THE CONTRACTOR AS A GUIDE. THIS DOCUMENT IS CONSIDERED ATTACHED AND WRITTEN IN FULL TO THIS DOCUMENT SET.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL DUST CONTROL AND FOR THE ENTIRE PROJECT DURATION, INCLUDING TEMPORARY SHUT-DOWN PERIODS, MUST MONITOR AND REPAIR, AS NEEDED, ALL SLOPES TO ENSURE A STABLE SITE CONDITION.
- THE CONTRACTOR IS RESPONSIBLE FOR DEWATERING AS REQUIRED FOR CONSTRUCTION. CONTRACTOR SHALL COORDINATE DEWATERING METHODS AND LOCATIONS WITH OWNER, ENGINEER, AND CRMC PRIOR TO COMMENCING.

[HTTP://WWW.DOT.RI.GOV/DOCUMENTS/ABOUT/PROTECTING/STORMWATER/SOIL_EROSION_SEDIMENT_CONTROL_HANDBOOK.PDF](http://www.dot.ri.gov/documents/about/protecting/stormwater/soil_erosion_sediment_control_handbook.pdf)

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PROJECT TITLE:
SEWER SYSTEM MAINTENANCE ROAD
 GROTTO ROAD TO THE NARRAGANSETT BAY COMMISSION SEEKONK RIVER INTERCEPTOR PROVIDENCE, R.I.

PREPARED FOR:
CITY OF PROVIDENCE ENGINEERING DIVISION
 700 ALLENS AVENUE
 PROVIDENCE, R.I. 02905

DRAWING TITLE:
GENERAL NOTES AND LEGEND

DATE: DECEMBER 2021 SCALE: NO SCALE

DWG. NAME: 2314-C01-NOTE.dwg

REVISIONS	NUMBER	REMARKS	DATE
1	MARSH RESTORATION	9/28/22	
2	MITIGATION	12/15/23	

DRAWING NUMBER

C1

SHEET: 2 OF 14





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SEWER SYSTEM MAINTENANCE ROAD

GROTTO ROAD TO THE NARRAGANSETT BAY COMMISSION SEEKONK RIVER INTERCEPTOR PROVIDENCE, R.I.

PREPARED FOR:

CITY OF PROVIDENCE ENGINEERING DIVISION
 700 ALLENS AVENUE
 PROVIDENCE, R.I. 02905

DRAWING TITLE:

EXISTING CONDITIONS PLAN No. 1

DATE: DECEMBER 2021 SCALE: 1"=40'

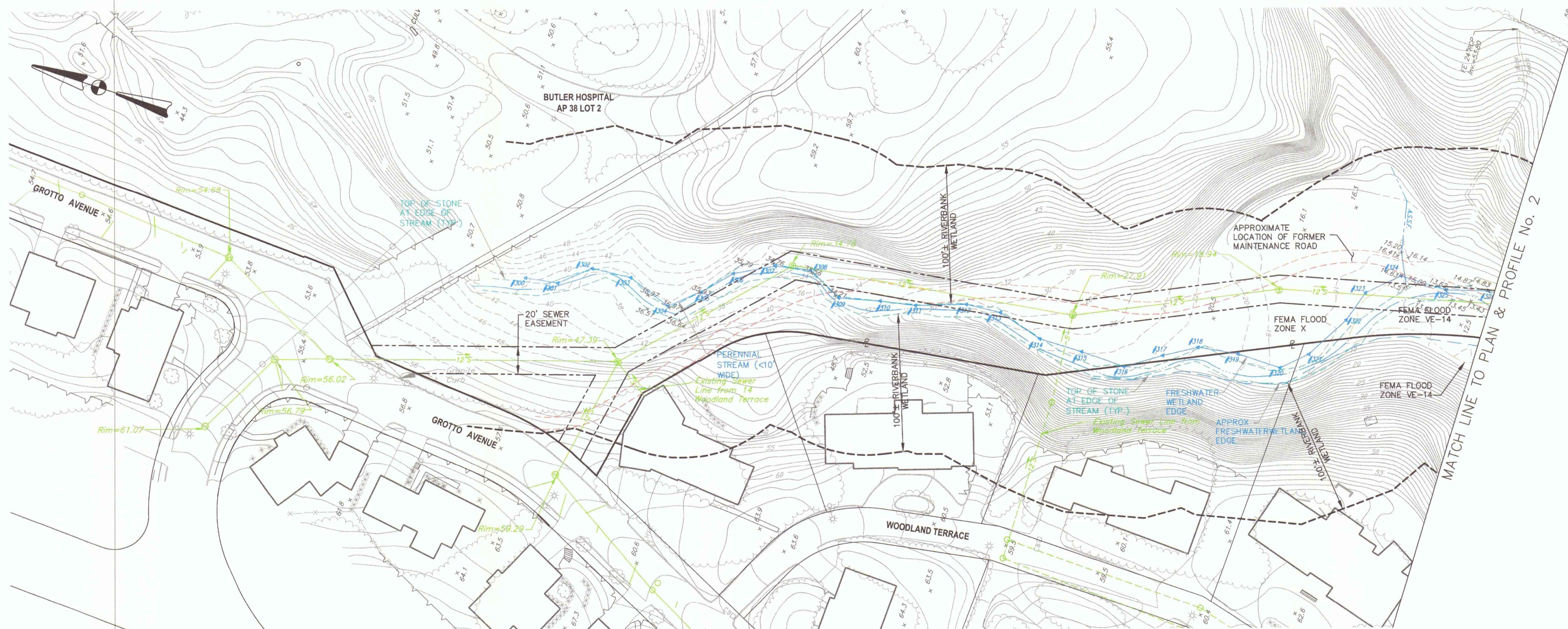
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NUMBER	REMARKS	DATE
1	MARSH RESTORATION	9/28/22
2	MITIGATION	12/15/23

DRAWING NUMBER

C2.1

SHEET: 3 OF 14



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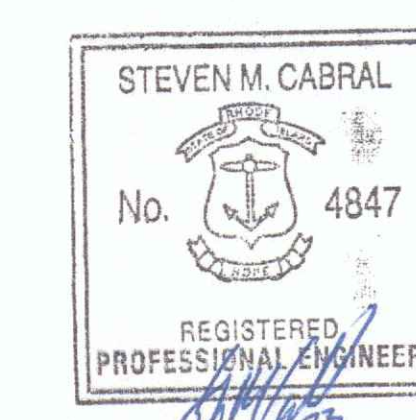
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PROJECT TITLE:
SEWER SYSTEM MAINTENANCE ROAD
GROTTO ROAD TO THE NARRAGANSETT BAY COMMISSION SEEKONK RIVER INTERCEPTOR PROVIDENCE, R.I.

PREPARED FOR:
CITY OF PROVIDENCE ENGINEERING DIVISION
700 ALLENS AVENUE
PROVIDENCE, R.I. 02905

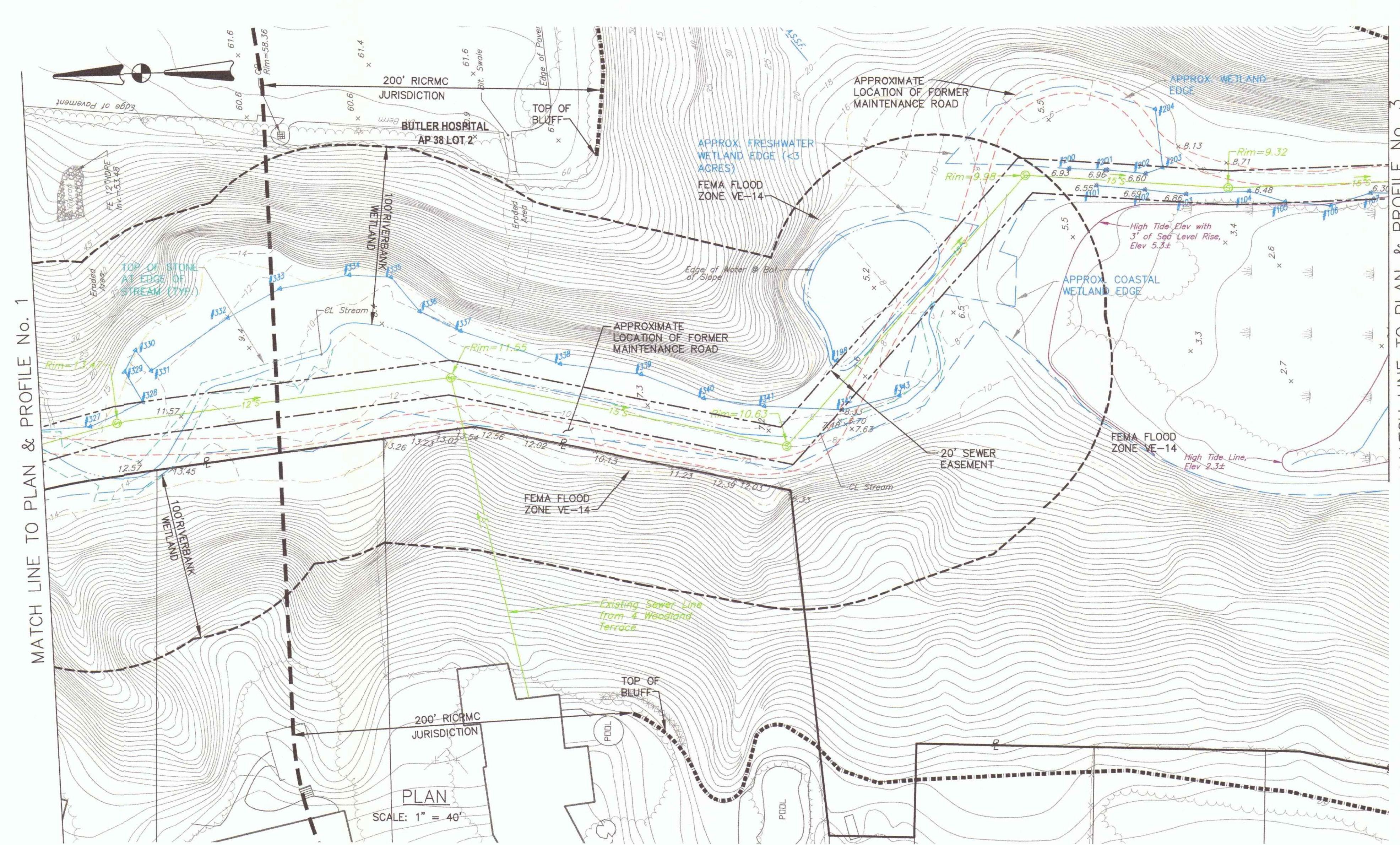
DRAWING TITLE:
EXISTING CONDITIONS PLAN No. 2

DATE: DECEMBER 2021 SCALE: 1"=40'
DWG. NAME: 2314-C02-EX CONDITIONS.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	MARSH RESTORATION	9/28/22
2	MITIGATION	12/15/23

DRAWING NUMBER:
C2.2
SHEET: 4 OF 14



MATCH LINE TO PLAN & PROFILE No. 1

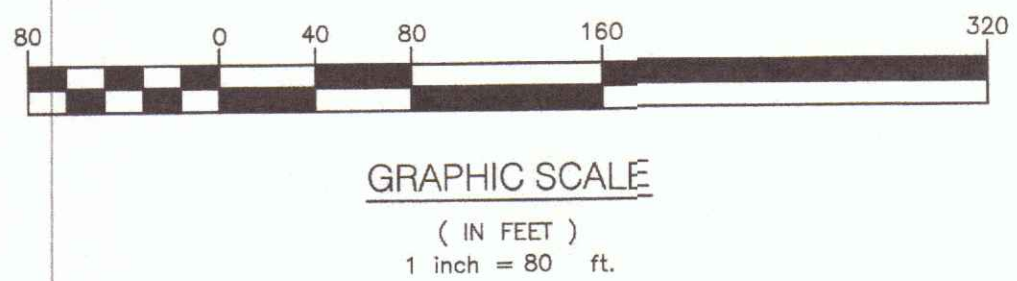
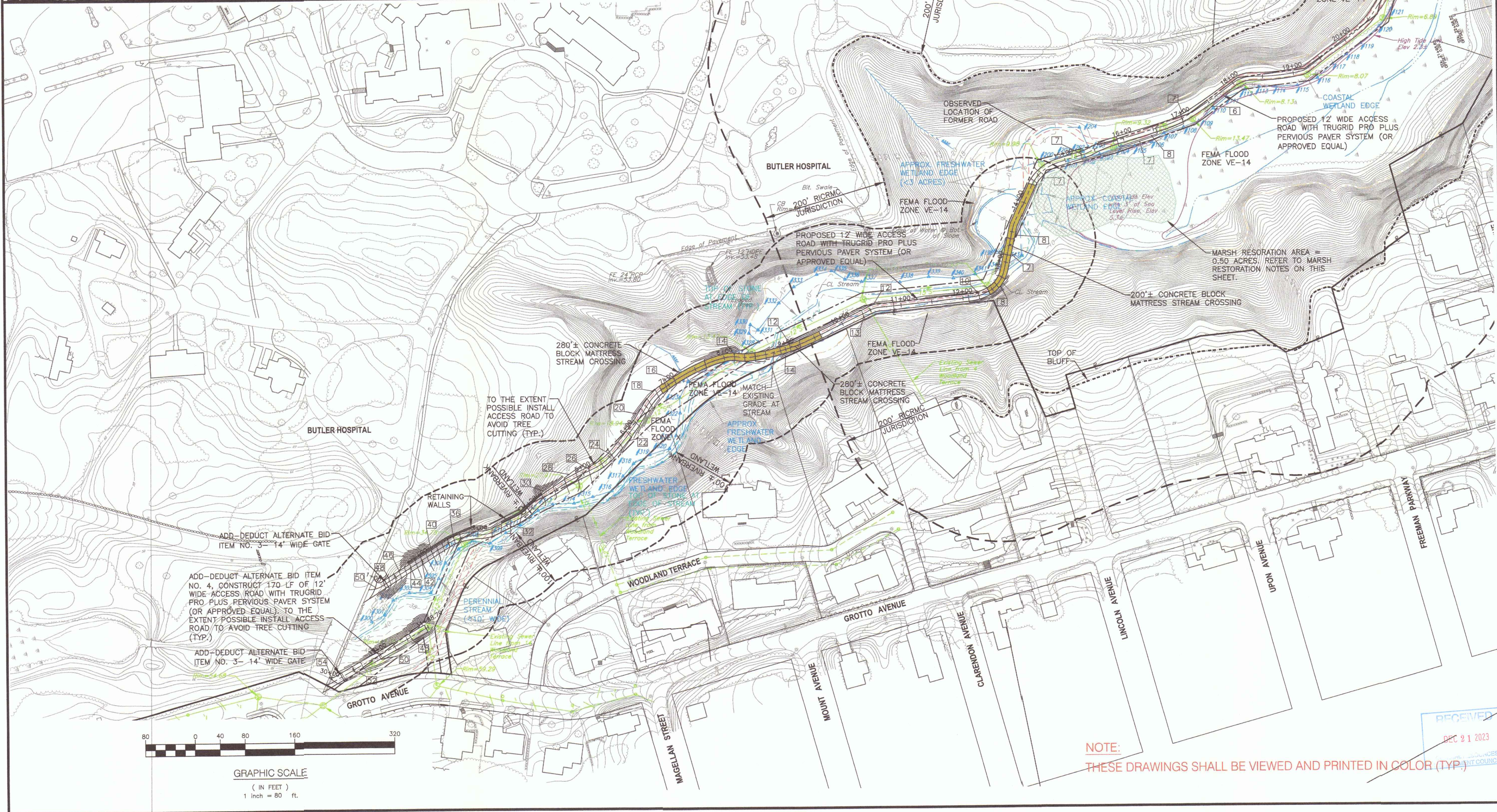
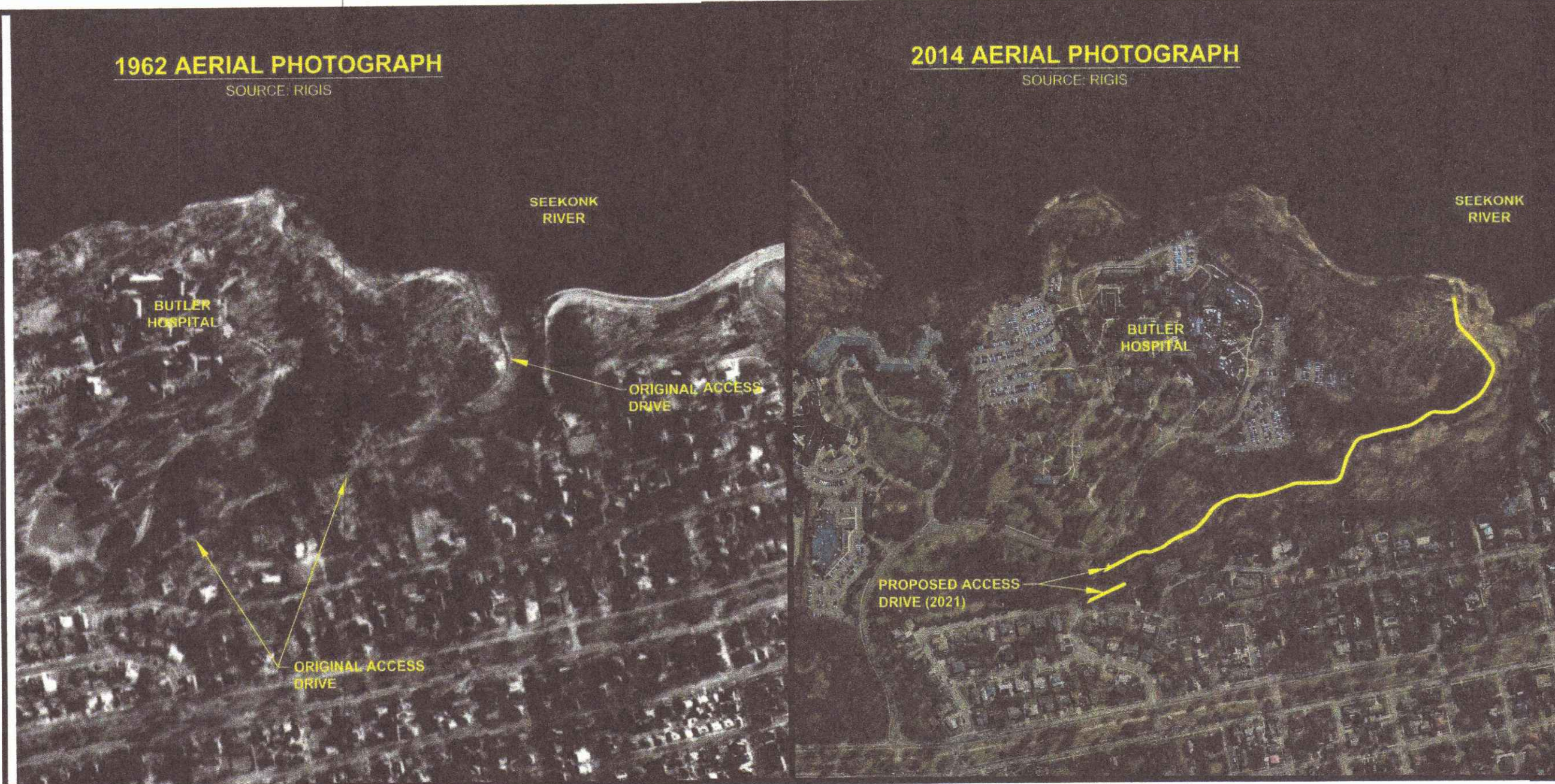
MATCH LINE TO PLAN & PROFILE No. 3

NOTE:
THESE DRAWINGS SHALL BE VIEWED AND PRINTED IN COLOR (TYP.)



1962 AERIAL PHOTOGRAPH
SOURCE: RIGIS

2014 AERIAL PHOTOGRAPH
SOURCE: RIGIS



NOTE:
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SEEKONK RIVER
CRM WATER USE
TYPE 1 - CONSERVATION AREA

- Civil
- Transportation
- Environmental
- Site Planning
- Surveying
- Permitting
- Landscape Architecture

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STEVEN M. CABRAL



REGISTERED PROFESSIONAL ENGINEER
12-15-23

PROJECT TITLE:
SEWER SYSTEM MAINTENANCE ROAD
GROTTO ROAD TO THE NARRAGANSETT BAY COMMISSION SEEKONK RIVER INTERCEPTOR PROVIDENCE, R.I.

PREPARED FOR:
CITY OF PROVIDENCE ENGINEERING DIVISION
700 ALLENS AVENUE
PROVIDENCE, R.I. 02905

DRAWING TITLE:
OVERALL SITE PLAN

DATE: DECEMBER 2021 SCALE: 1" = 80'

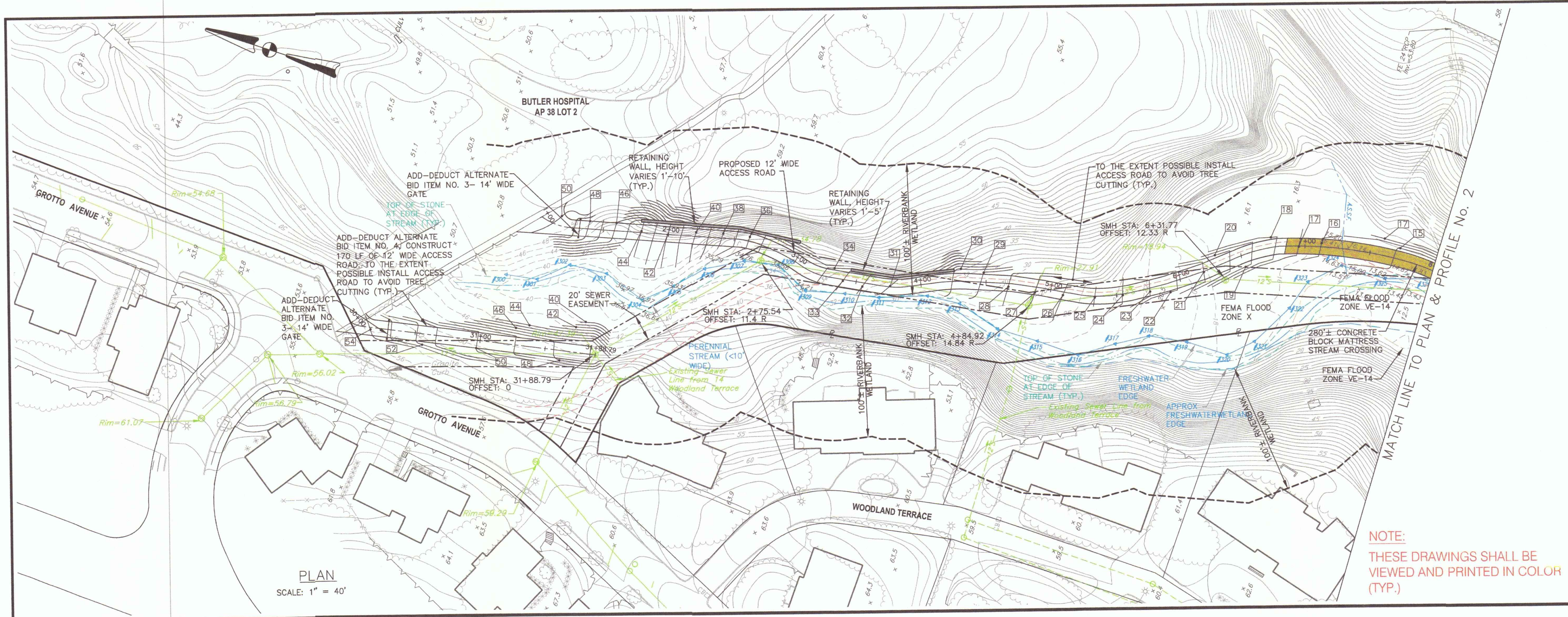
DWG. NAME: 2314-C03-CONCEPT OVERALL SITE.dwg

REVISIONS

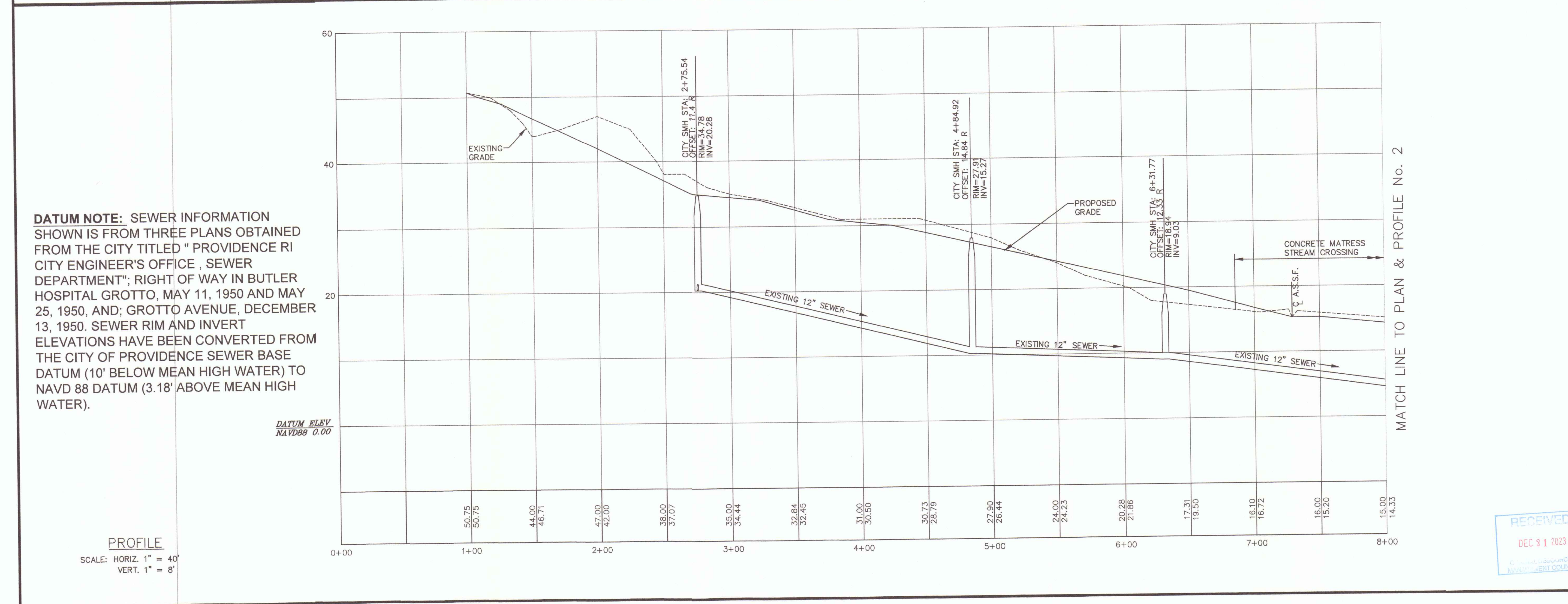
NUMBER	REMARKS	DATE
1	MARSH RESTORATION	9/28/22
2	MITIGATION	12/15/23

DRAWING NUMBER
C3
SHEET: 6 OF 14

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WATER & SEWER DEPARTMENT

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STEVEN M. CABRAL
 No. 4847
 REGISTERED PROFESSIONAL ENGINEER
 12-15-23

PROJECT TITLE:
SEWER SYSTEM MAINTENANCE ROAD
 GROTTO ROAD TO THE NARRAGANSETT BAY COMMISSION SEEKONK RIVER INTERCEPTOR PROVIDENCE, R.I.

PREPARED FOR:
CITY OF PROVIDENCE ENGINEERING DIVISION
 700 ALLENS AVENUE PROVIDENCE, R.I. 02905

DRAWING TITLE:
PLAN & PROFILE No. 1

DATE: DECEMBER 2021 **SCALE:** AS NOTED

DWG. NAME: 2314-C04-CONCEPT P&P-REV BASE.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	MARSH RESTORATION	9/28/22
2	MITIGATION	12/15/23

DRAWING NUMBER
C4.1
 SHEET: 7 OF 14

MARSH RESTORATION NOTES:

THIS PROJECT INCLUDES RESTORATION OF THE UPPER PORTION OF THE SALT MARSH ABUTTING THE SEEKONK RIVER (AS SHOWN ON THE PLANS). THIS AREA IS APPROXIMATELY 0.50 ACRES IN SIZE AND WILL SERVE AS THE 2:1 REMEDIATION FOR THE 0.25 ACRE DISTURBANCE WITHIN THE BIOLOGICAL WETLAND AREAS FOR THE PROPOSED SEWER ACCESS ROAD PROJECT. THE PHRAGMITE LIMITS WILL BE DELINEATED FOR THE CONTRACTOR BY THE CITY PRIOR TO CONSTRUCTION. THE RESTORATION PLAN INCLUDES A THREE-STEP PROCESS. IN THE SHORT-TERM, THE FIRST STEP IS HERBICIDE TREATMENT OF THE PHRAGMITES BY PROFESSIONALS. SECOND IS THE REMOVAL OF THE DEAD STALKS AND FINALLY, MONITORING AND ASSESSMENT OF THE SUCCESS OF THE REGROWTH OF NATIVE WETLAND VEGETATION OVER A MINIMUM FIVE-YEAR PERIOD OR AS STIPULATED BY THE CRMC. AFTER THE FIVE-YEAR PERIOD AND EVALUATION, THE PLANTING OF NATIVE VEGETATION WOULD BE PROPOSED IN AREAS WHERE NATIVE REGROWTH IS LACKING OR WHERE NATIVE SHRUBS COULD BE PLANTED ON THE UPLAND EDGE TO IMPROVE WILDLIFE HABITAT AND WATER QUALITY.

IN THE LONG-TERM, MONITORING OF THE PROJECT AREA WILL CONTINUE, BOTH FOR SPOT TREATMENT OF PHRAGMITES AS IT OCCURS, AS WELL AS THE SUCCESSFUL REVEGETATION OF THE FRESHWATER/BRACKISH WETLAND WITH NATIVE VEGETATION AND/OR PLANTED NATIVES.

WORK SCHEDULE:

UNDER THIS PROJECT SCOPE THE CONTRACTOR SHALL BE RESPONSIBLE FOR YEAR 1 WORK. YEAR 2 AND 3 WORK ARE ADD ALTERNATE BID ITEMS. YEAR 1 WORK SHALL BE CONDUCTED WITH THE CONSTRUCTION OF THE MAINTENANCE ACCESS ROAD. THE CONTRACTOR SHALL SUBMIT ADD ALTERNATE BID PRICING FOR YEAR 2 AND 3 WORK. THE CONTRACTOR'S RESPONSIBILITIES FOR THE YEAR 1 IS THE FULL SCOPE. IF CHOSEN AS AN ADD ALTERNATE; YEAR 2 INCLUDES THE FULL SCOPE, BUT YEAR 3 INCLUDES ONLY THE MONITORING AND ASSESSMENT. THE YEAR 3 PLANTS AND PLANT INSTALLATION IS NOT INCLUDED IN THE ADD ALTERNATE PRICING. ALL WORK FOR YEARS 1, 2, & 3 SHALL INCLUDE RETAINING APPROPRIATE PROFESSIONALS, QUALIFIED INVASIVE MANAGERS, HERBICIDE TREATMENT, AND SUBMITTAL OF REPORTS AS REQUIRED.

CONSTRUCTION (2024/2025)

YEAR 1 (2025) BASE BID ITEM: GOAL TO TREAT AND REMOVE 90+% OF THE INVASIVE PLANTS--
 -OBTAIN CRMC ASSENT FOR CITY OF PROVIDENCE GROTTO ROAD MARSH RESTORATION PROJECT
 -QUALIFIED INVASIVE MANAGERS WILL OBTAIN RIDEM HERBICIDE PERMIT (APRIL-MAY)
 -CONDUCT HERBICIDE TREATMENT OF PHRAGMITES BETWEEN AUGUST 15 AND SEPTEMBER 30

YEAR 2 (2026) ADD ALTERNATE BID ITEM NO. 1: GOAL IS REMOVAL OF 100% OF THE INVASIVE PLANTS
 -CUT AND MULCH/REMOVE DEAD PHRAGMITES STALKS RESULTING FROM YEAR 1
 -QUALIFIED INVASIVE MANAGERS WILL OBTAIN CURRENT HERBICIDE PERMIT FROM RIDEM
 -BEGIN MONITORING AND ASSESSMENT OF YEAR 1 TREATMENT DURING GROWING SEASON
 -QUALIFIED INVASIVE MANAGERS WILL SPOT TREAT PHRAGMITES REGROWTH BETWEEN AUGUST 15 AND SEPTEMBER 30
 -ANNUAL MONITORING REPORTS SUBMITTED TO CRMC (DECEMBER- YEAR 2)

YEAR 3 (2027) ADD ALTERNATE BID ITEM NO. 2: CUT AND MULCH/REMOVE DEAD PHRAGMITES STALKS FROM YEAR 2, AS NECESSARY
 -MONITOR AND ASSESSMENT OF YEAR 3, EVALUATING NATIVE WETLAND PLANT GROWTH AND AREAS NEEDING PLANTING OF NATIVE WETLAND PLANTS AND/OR PLANTING NATIVE SHRUBS TO STABILIZE AND PROVIDE WILDLIFE HABITAT
 -SPOT TREAT PHRAGMITES REGROWTH BETWEEN AUGUST 15 AND SEPTEMBER 30, AS NEEDED

YEAR 4 (2028) AND FORWARD (WORK TO BE CONDUCTED BY CITY):
 -CONTINUE MONITORING AND ASSESSMENT (ANNUAL SUBMISSION TO CRMC - DECEMBER), AS STIPULATED BY CRMC
 -SPOT TREAT PHRAGMITES REGROWTH BETWEEN AUGUST 15 AND SEPTEMBER 30, AS NEEDED
 -MONITOR SUCCESS OF NATIVE PLANTINGS

MINIMIZATION OF ADVERSE IMPACTS:

THE POTENTIAL IMPACT OF HERBICIDE DAMAGE FROM TREATMENT OF NON-TARGETED SPECIES WILL BE MANAGED BY ENLISTING THE SERVICES OF AN EXPERIENCED PROFESSIONAL CONTRACTOR, WHO HAS ACCESS TO APPROPRIATE EQUIPMENT, FORMULATION STANDARDS, AND WHO WILL RESPECT WEATHER CONDITIONS DURING TREATMENT PERIODS. HERBICIDES WILL BE SELECTED FOR THEIR KNOWN SAFETY IN AQUATIC ENVIRONMENTS.

HERBICIDE TREATMENT IN THE INITIAL TREATMENT YEAR CAN BE APPLIED AS A BROADCAST FOLIAR TREATMENT OF AN APPROPRIATE HERBICIDE WITH A LOW-VOLUME BACKPACK SPRAYER WITHOUT CONCERN FOR HARM TO NATIVE PLANTS THAT MAY BE EMBEDDED WITHIN THE INVASIVES. IN LATER YEARS, SPOT TREATMENT OF THE INVASIVES WILL BE REQUIRED TO AVOID DAMAGE TO THE REVEGETATING NATIVE PLANTS. NATIVE COASTAL WETLAND SPECIES ARE EXPECTED TO REVEGETATE IN ALL AREAS ONCE THE PHRAGMITES OVERSTORY IS REMOVED.

EVALUATING PROJECT SUCCESS:

THE MARSH RESTORATION WILL BE MONITORED FOR A MINIMUM THREE (3) YEAR PERIOD STARTING AFTER THE COMPLETION OF YEAR 1 OF THE HERBICIDE TREATMENT PHASE. THE EVALUATION WILL BE DOCUMENTED BY PHOTOGRAPHS PLUS TRAVERSE LINES WILL BE SETUP AND VEGETATIVE GROWTH WILL BE EVALUATED USING THE POINT INTERCEPT METHOD. EXPECTED IS MORE WADING BIRD FEEDING HABITAT; RESTORATION OF NATIVE WETLANDS, AND REDUCTION IN MOSQUITO BREEDING AREAS WITHIN THE PHRAGMITES STAND.

PRE-CONSTRUCTION MONITORING:

A BASELINE VEGETATIVE SURVEY DURING THE GROWING SEASON WILL BE PERFORMED IN YEAR 1 PRIOR TO HERBICIDE TREATMENT. A SUITABLE NUMBER OF TRANSECT LINES WILL BE ESTABLISHED ALONG THE SHORELINE AND THE POINT INTERCEPT METHOD WILL BE USED TO EVALUATE THE CURRENT VEGETATIVE COVER OF THE PHRAGMITES AREAS. THEN COMPARISONS TO THE REVEGETATION OF THE MARSH AFTER THE PHRAGMITES TREATMENT AND ELIMINATION WILL BE POSSIBLE DURING THE POST-CONSTRUCTION PHASE (YEARS 2+). PHOTO POINTS WILL BE ESTABLISHED, AND BASELINE PHOTOS TAKEN.

POST-CONSTRUCTION MONITORING:

MARSH RESTORATION MONITORING WILL BE PERFORMED FOR AT LEAST TWO GROWING SEASONS AFTER THE COMPLETION OF THE INITIAL CONSTRUCTION PORTION OF THE PROJECT AND ADDITIONAL YEARS, IF STIPULATED BY CRMC. PROTOCOL WILL HAVE ALREADY BEEN ESTABLISHED FOR THIS MONITORING PROGRAM. ONCE A YEAR, DURING THE GROWING SEASON, PHOTOGRAPHS WILL BE TAKEN FROM DESIGNATED POINTS IN THE MARSH TO DOCUMENT THE SUCCESS OF THE PROPOSED MARSH RESTORATION.

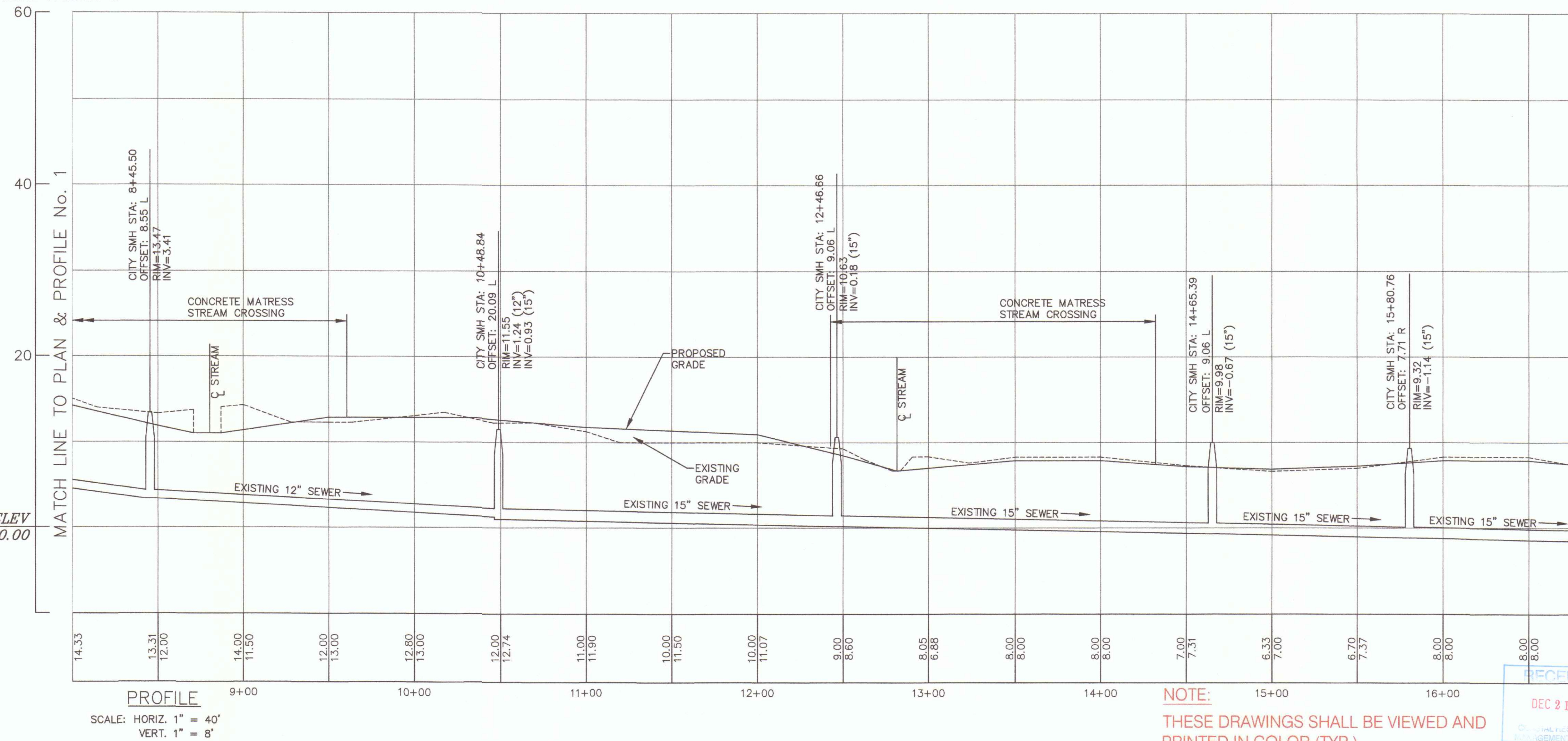
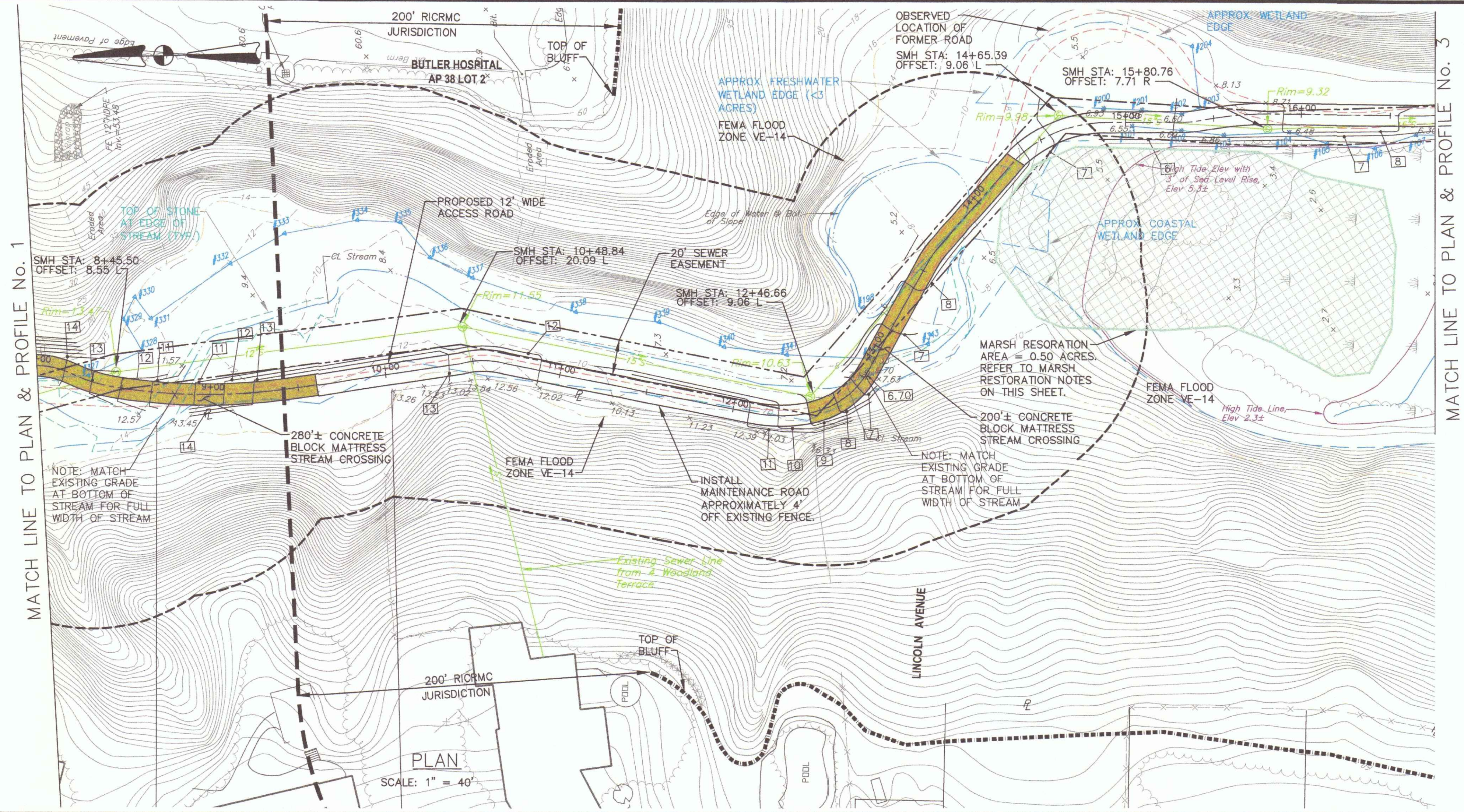
TRANSECTS WILL HAVE ALREADY BEEN SET UP IN THE MARSH AND A VEGETATIVE BASELINE ESTABLISHED. THE VEGETATIVE MONITORING WILL FOLLOW THE VEGETATION MONITORING PROTOCOL SET UP BY THE U.S. DEPARTMENT OF AGRICULTURE AND RECOMMENDED BY THE NATURAL RESOURCES CONSERVATION SERVICE. THE POINT INTERCEPT METHOD WILL BE USED TO EVALUATE VEGETATION IN THE SAMPLE PLOTS.

ALL MONITORING REPORTS WILL BE AVAILABLE TO THE CLIENTS AND CRMC AND SUBMITTED AS PART OF THE REPORTING REQUIREMENTS OF THE CRMC ASSENT IN DECEMBER OF EACH YEAR.

DATUM ELEV
NAVD88 0.00

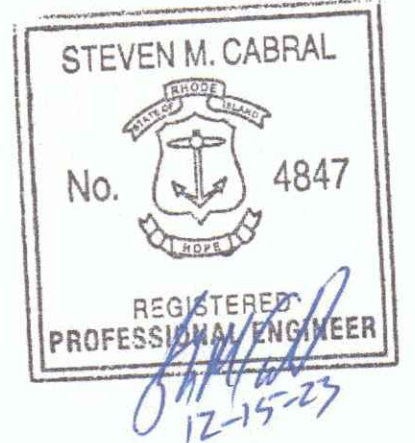
SUGGESTED NATIVE SHRUB PLANTINGS FOR UPLAND EDGES

SPECIES	PLANTING DETAIL
HIGHBUSH BLUEBERRY (VACCINIUM CORYMBOSUM)	1-GALLON POTS, 5-6 FEET ON-CENTER
INKBERRY (ILEX GLABRA)	1-GALLON POTS, 5-6 FEET ON-CENTER
LOWBUSH BLUEBERRY (VACCINIUM ANGUSTIFOLIUM)	1-GALLON POTS, 5-6 FEET ON-CENTER
RED-OSIER DOGWOOD (CORNUS STOLONIFERA)	1-GALLON POTS, 5-6 FEET ON-CENTER



Crossman Engineering
 Rhode Island: 151 Centerville Road, Warwick, RI 02886, Phone (401) 738-6660
 Massachusetts: 103 Commonwealth Avenue, North Attleboro, MA 02763, Phone (508) 695-1700
 Email: cei@crossmaneng.com

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PROJECT TITLE:
SEWER SYSTEM MAINTENANCE ROAD
 GROTTO ROAD TO THE NARRAGANSETT BAY COMMISSION SEEKONK RIVER INTERCEPT PROVIDENCE, R.I.

PREPARED FOR:
CITY OF PROVIDENCE ENGINEERING DIVISION
 700 ALLENS AVENUE PROVIDENCE, R.I. 02905

DRAWING TITLE:
PLAN & PROFILE No. 2

DATE: DECEMBER 2021 SCALE: AS NOTED

DWG. NAME: 2314-C04-CONCEPT P&P-REV BASE.dwg

REVISIONS	NUMBER	REMARKS	DATE
1	MARSH RESTORATION	9/28/22	
2	MITIGATION	12/15/23	

DRAWING NUMBER
C4.2
 SHEET: 8 OF 14





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PREPARED FOR:

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 700 ALLENS AVENUE PROVIDENCE, R.I. 02905

DRAWING TITLE:

PLAN & PROFILE No. 3

DATE: DECEMBER 2021 SCALE: AS NOTED

DWG. NAME: 2314-C04-CONCEPT P&P-REV BASE.dwg

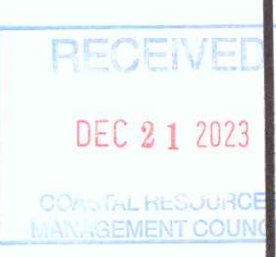
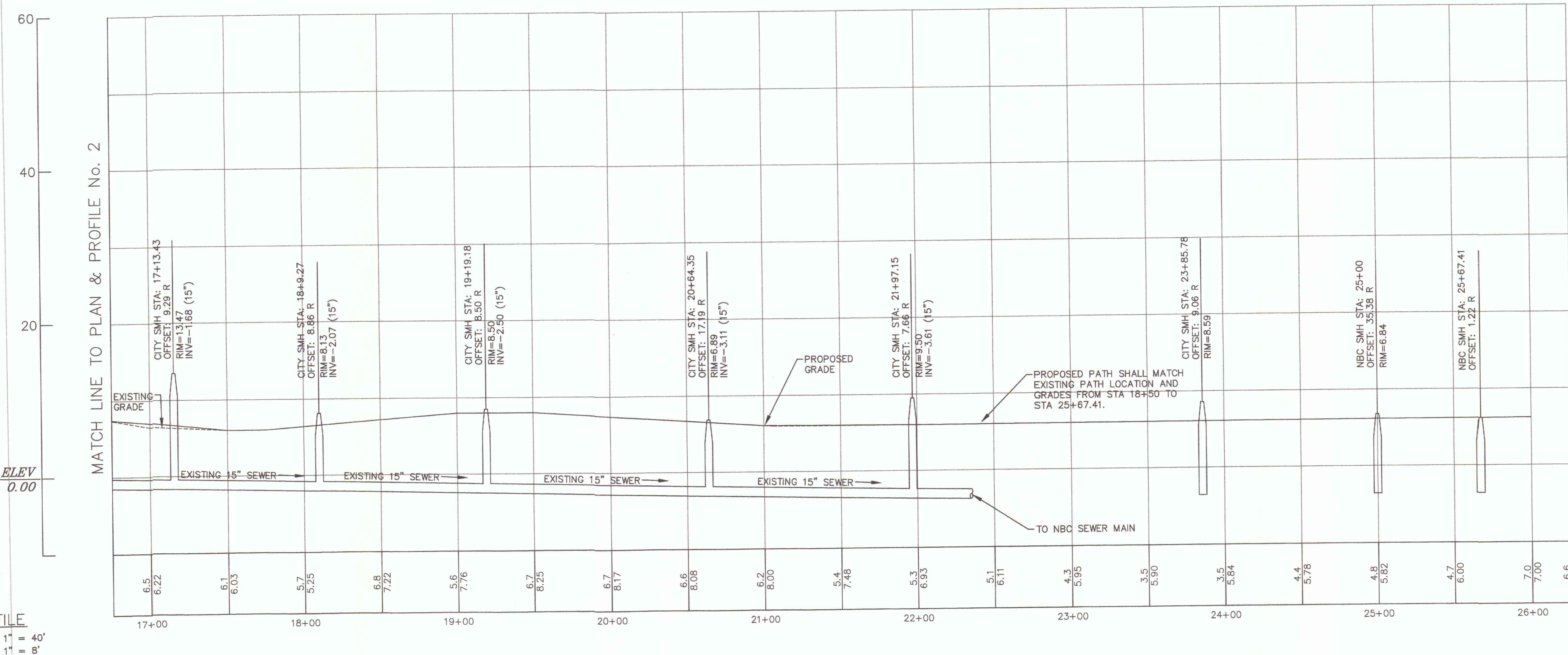
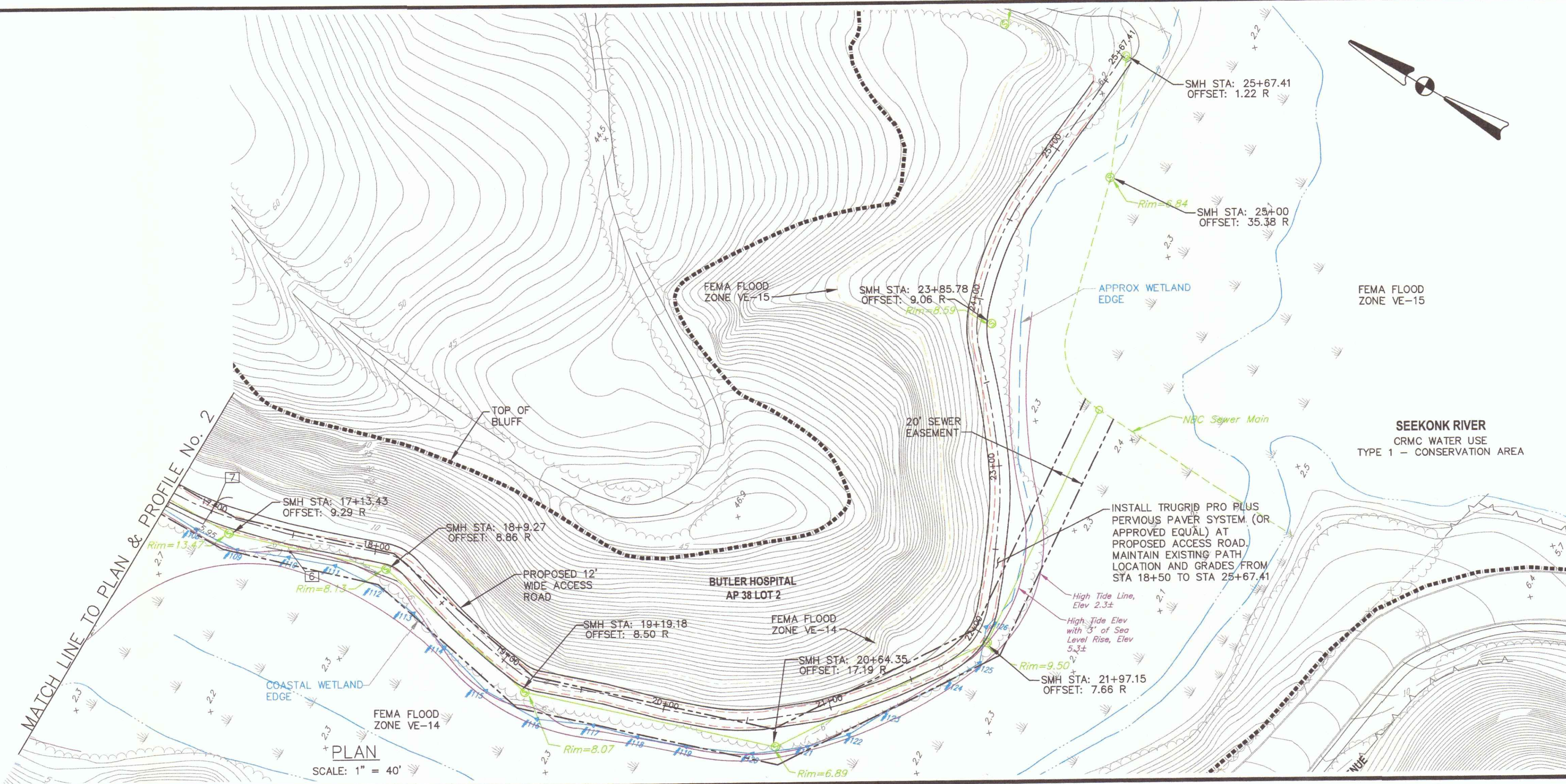
REVISIONS

NUMBER	REMARKS	DATE
1	MARSH RESTORATION	9/28/22
2	MITIGATION	12/15/23

DRAWING NUMBER

C4.3
 SHEET: 9 OF 14

NOTE:
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PREPARED FOR:

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700 ALLENS AVENUE
PROVIDENCE, R.I. 02905

DRAWING TITLE:

STABILIZATION AND SOIL EROSION & SEDIMENT CONTROL PLAN No. 1

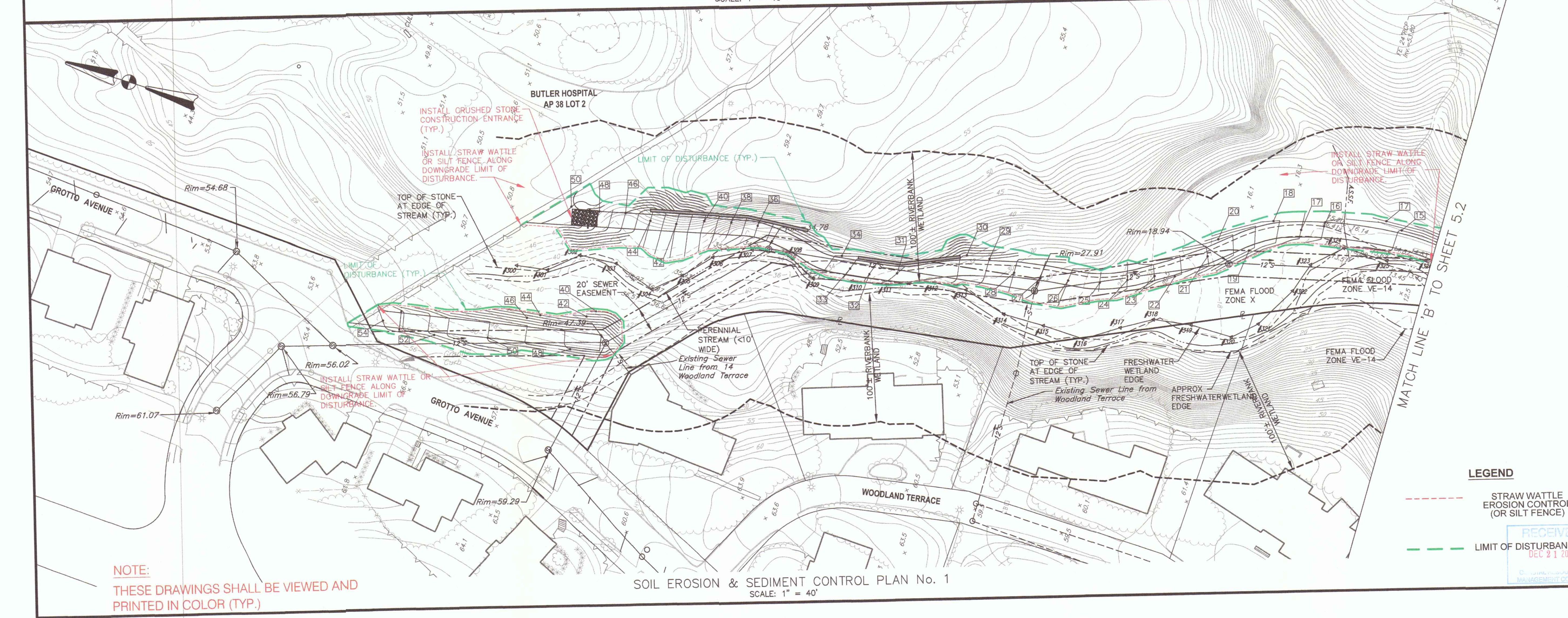
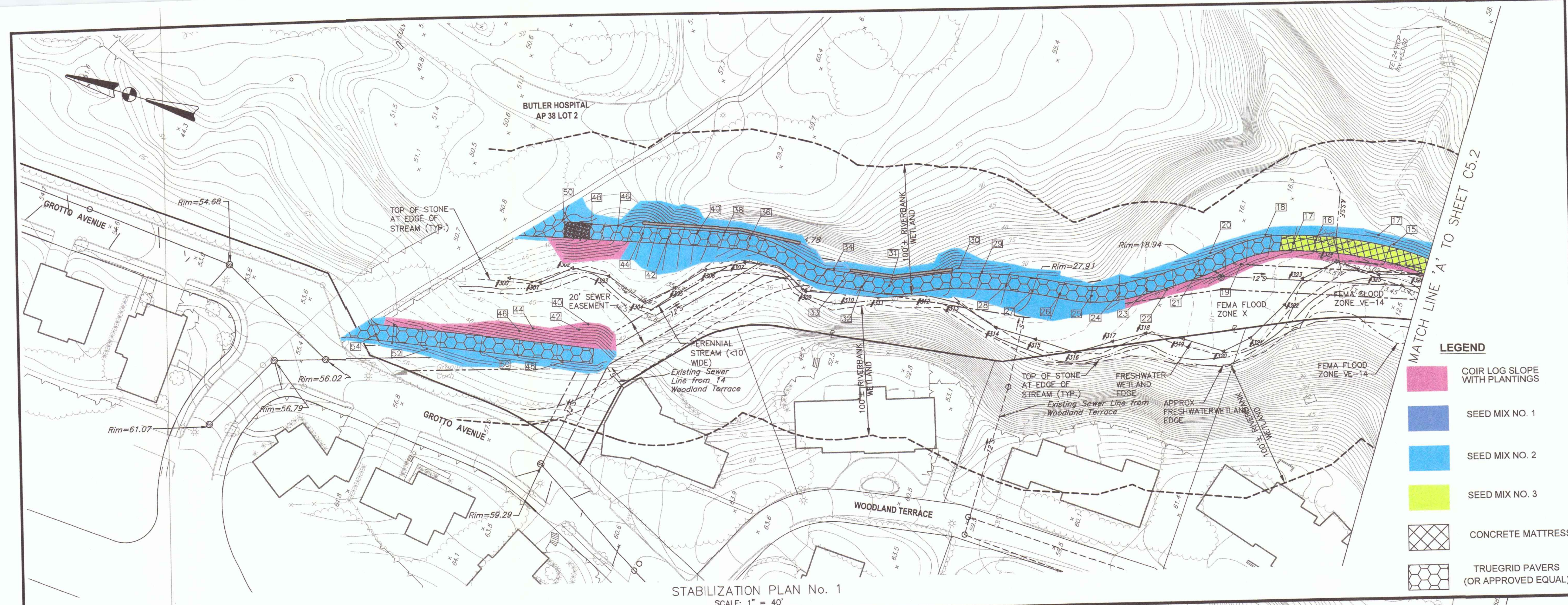
DATE: DECEMBER 2021 SCALE: 1"=40'

DWG. NAME: 2314-C05-SESCP.dwg

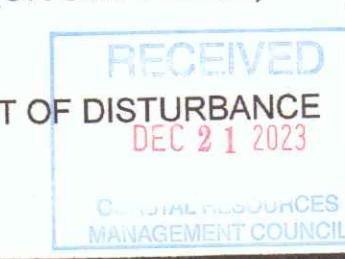
REVISIONS	NUMBER	REMARKS	DATE
1	MARSH RESTORATION	9/28/22	
2	MITIGATION	12/15/23	

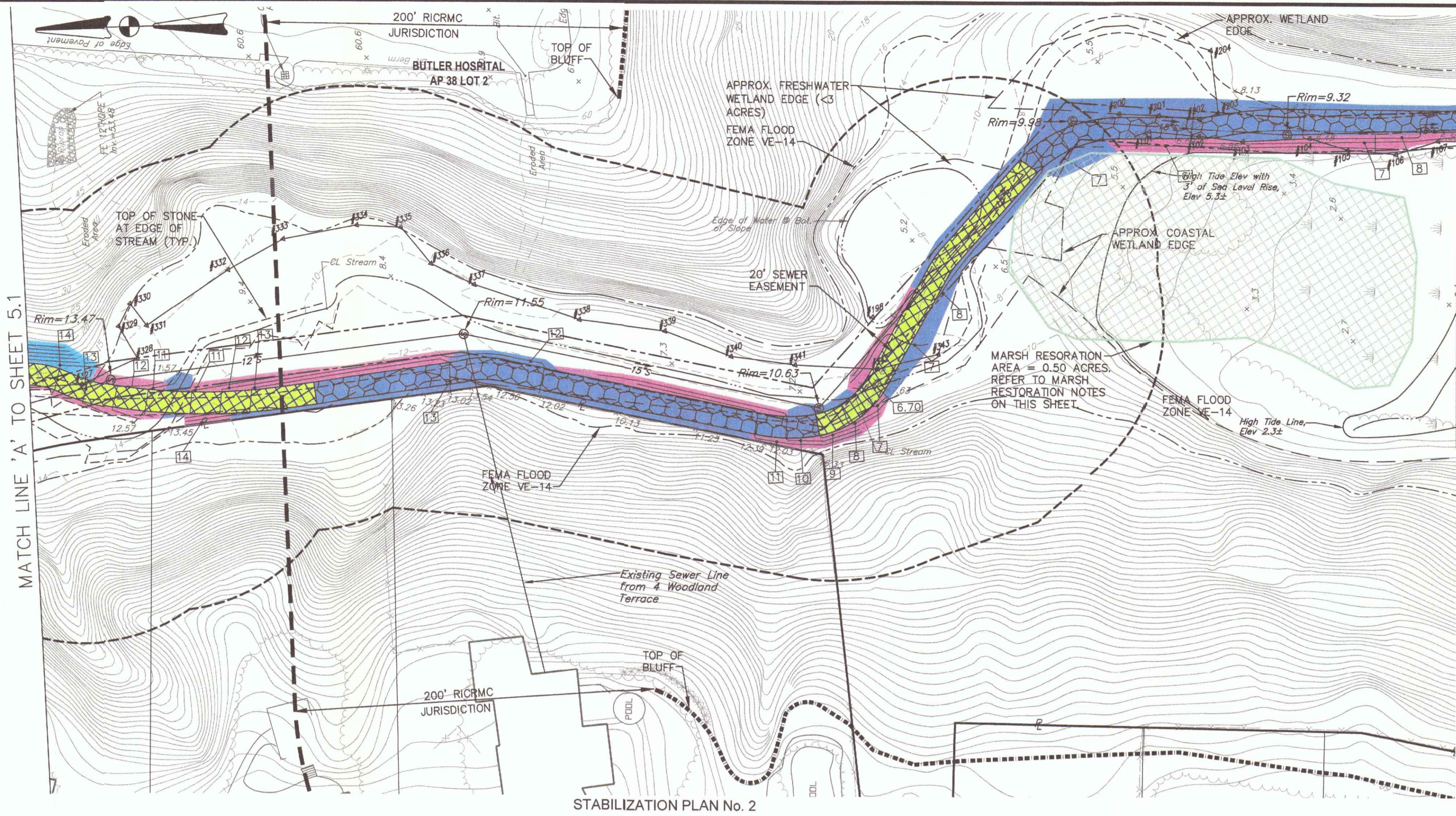
DRAWING NUMBER

C5.1
SHEET: 10 OF 14



NOTE:
THESE DRAWINGS SHALL BE VIEWED AND PRINTED IN COLOR (TYP.)





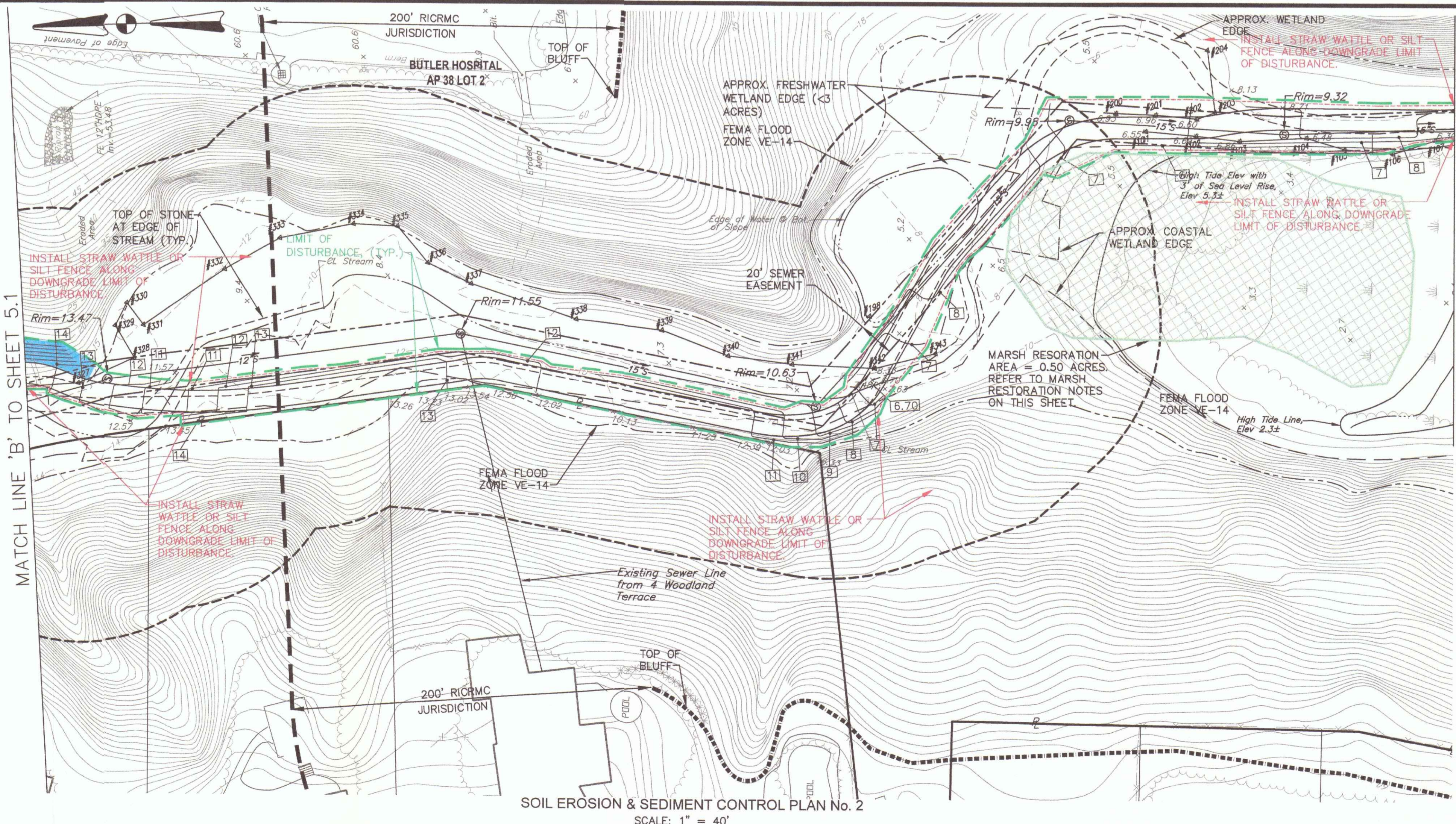
MATCH LINE 'A' TO SHEET 5.1

MATCH LINE 'A' TO SHEET 5.3

- LEGEND**
- COIR LOG SLOPE WITH PLANTINGS
 - SEED MIX NO. 1
 - SEED MIX NO. 2
 - SEED MIX NO. 3
 - CONCRETE MATTRESS
 - TRUEGRID PAVERS (OR APPROVED EQUAL)

STABILIZATION PLAN No. 2
SCALE: 1" = 40'

NOTE:
THESE DRAWINGS SHALL BE VIEWED AND PRINTED IN COLOR (TYP.)



MATCH LINE 'B' TO SHEET 5.1

MATCH LINE 'B' TO SHEET 5.3

- LEGEND**
- STRAW WATTLE EROSION CONTROL (OR SILT FENCE)
 - LIMIT OF DISTURBANCE

SOIL EROSION & SEDIMENT CONTROL PLAN No. 2
SCALE: 1" = 40'

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER

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PREPARED FOR:
CITY OF PROVIDENCE ENGINEERING DIVISION 700 ALLENS AVENUE PROVIDENCE, R.I. 02905

DRAWING TITLE:
STABILIZATION AND SOIL EROSION & SEDIMENT CONTROL PLAN No. 2

DATE: DECEMBER 2021 SCALE: 1"=40'

DWG. NAME: 2314-C05-SESCP.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	MARSH RESTORATION	9/28/22
2	MITIGATION	12/15/23

DRAWING NUMBER
C5.2
SHEET: 11 OF 14



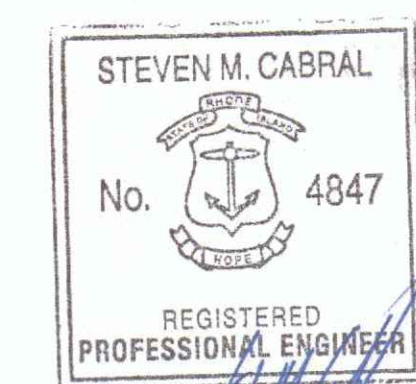


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PREPARED FOR:

**CITY OF PROVIDENCE ENGINEERING DIVISION
 700 ALLENS AVENUE
 PROVIDENCE, R.I. 02905**

DRAWING TITLE:

STABILIZATION AND SOIL EROSION & SEDIMENT CONTROL PLAN No. 3

DATE: DECEMBER 2021 SCALE: AS NOTED

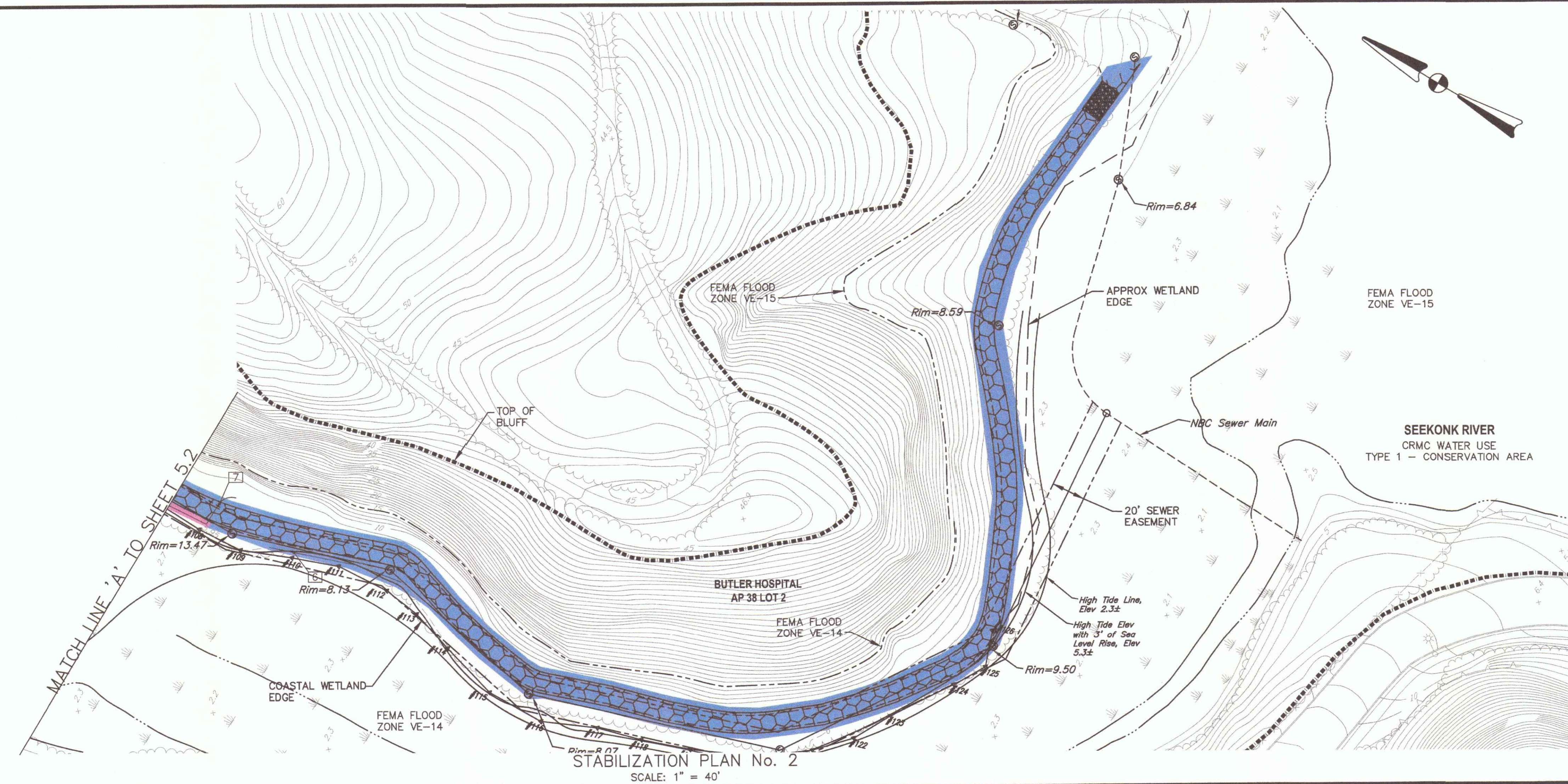
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REVISIONS NUMBER	REMARKS	DATE
1	MARSH RESTORATION	9/28/22
2	MITIGATION	12/15/23

DRAWING NUMBER

C5.3

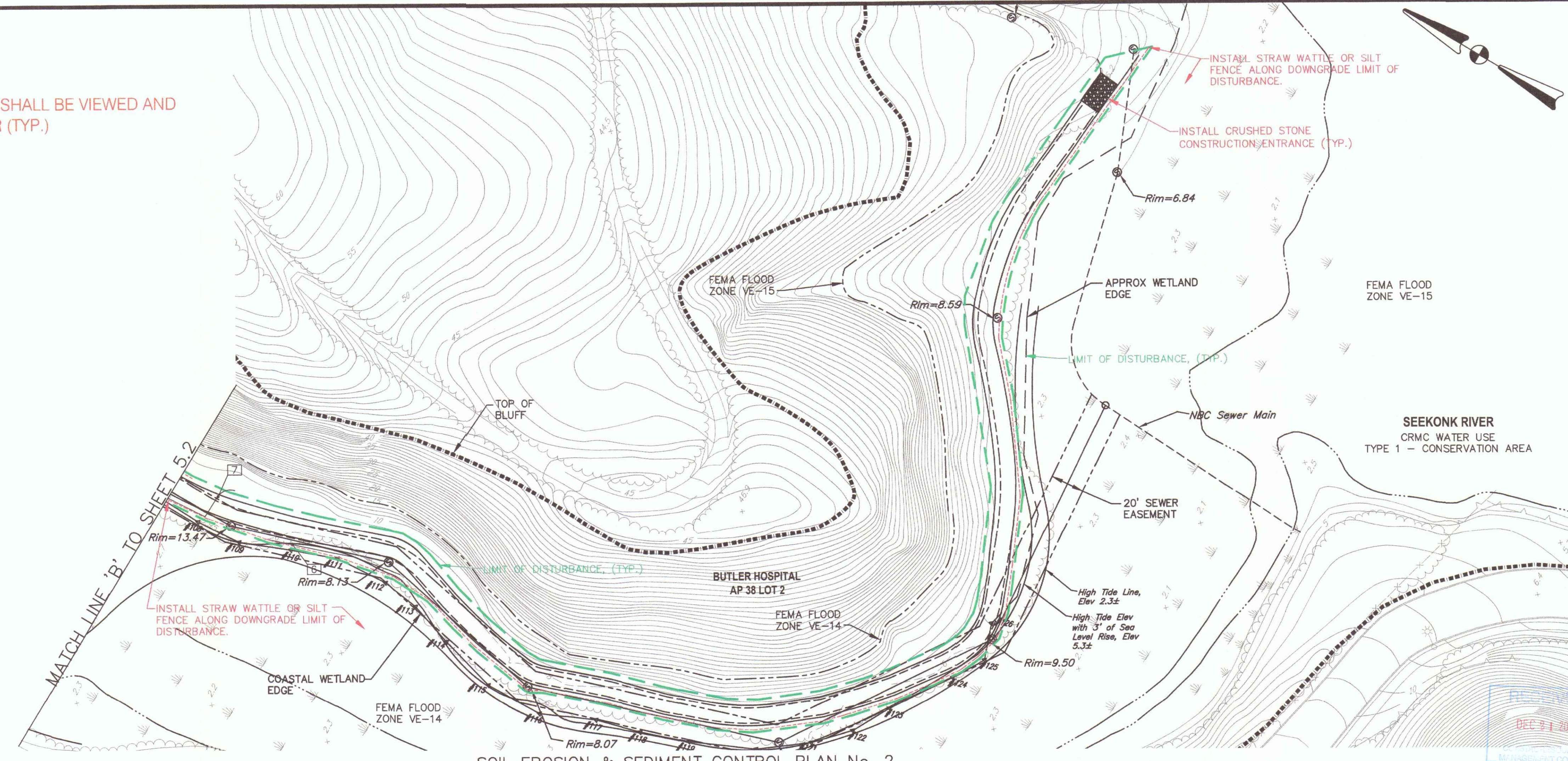
SHEET: 12 OF 14



STABILIZATION PLAN No. 2
 SCALE: 1" = 40'

- LEGEND**
- COIR LOG SLOPE WITH PLANTINGS
 - SEED MIX NO. 1
 - SEED MIX NO. 2
 - SEED MIX NO. 3
 - CONCRETE MATTRESS
 - TRUEGRID PAVERS (OR APPROVED EQUAL)

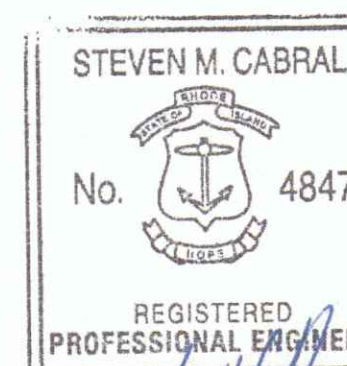
NOTE:
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SOIL EROSION & SEDIMENT CONTROL PLAN No. 2
 SCALE: 1" = 40'

- LEGEND**
- STRAW WATTLE EROSION CONTROL (OR SILT FENCE)
 - LIMIT OF DISTURBANCE

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PREPARED FOR:

CITY OF PROVIDENCE
 ENGINEERING DIVISION
 700 ALLENS AVENUE
 PROVIDENCE, R.I. 02905

DRAWING TITLE:

MISCELLANEOUS DETAIL SHEET No. 1

DATE: DECEMBER 2021 SCALE: AS NOTED

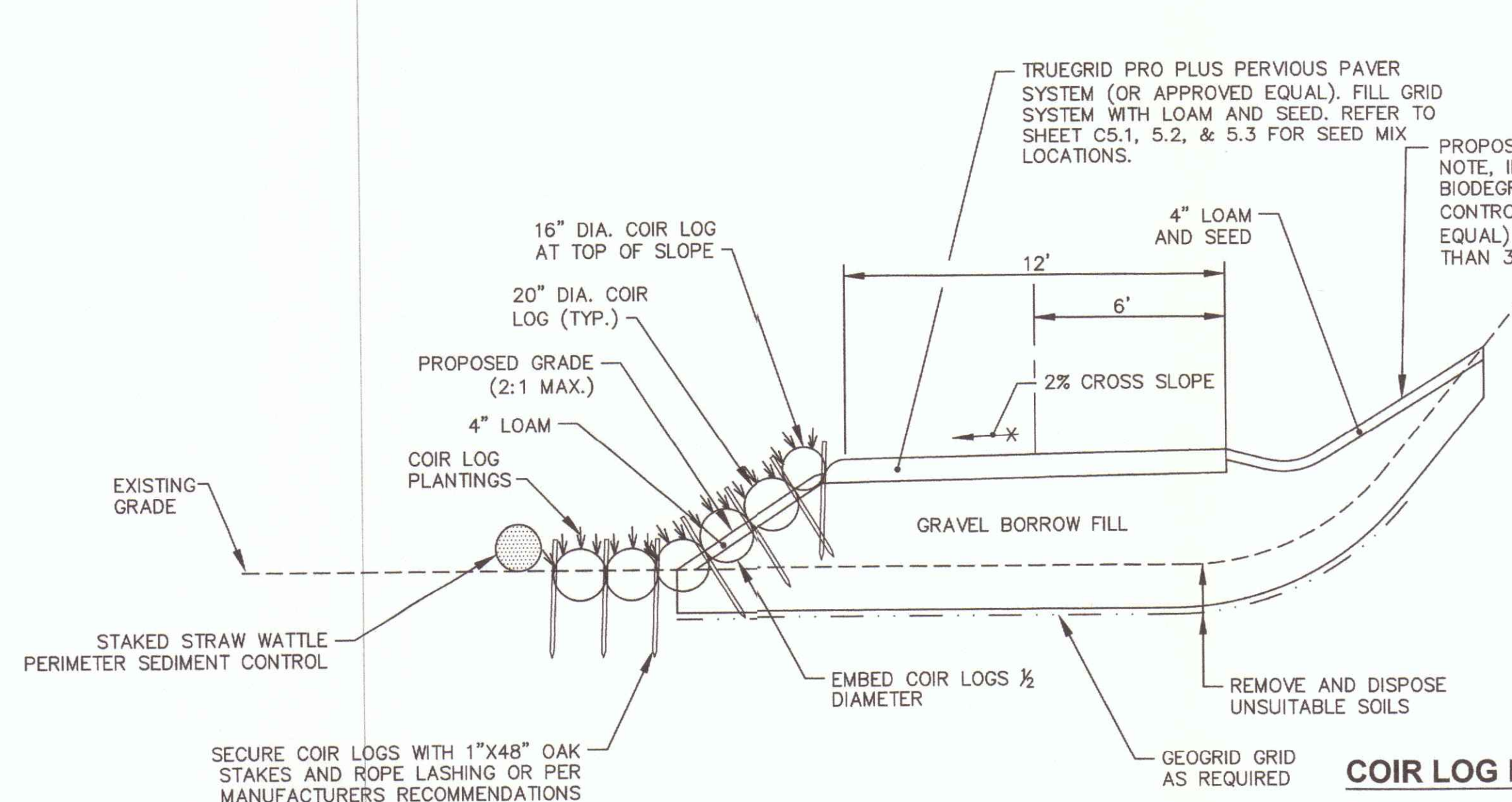
DWG. NAME: 2314-C06-DETAIL 1.dwg

REVISIONS	NUMBER	REMARKS	DATE
1	MARSH RESTORATION	9/28/22	
2	MITIGATION	12/15/23	

DRAWING NUMBER

C6

SHEET: 13 OF: 14

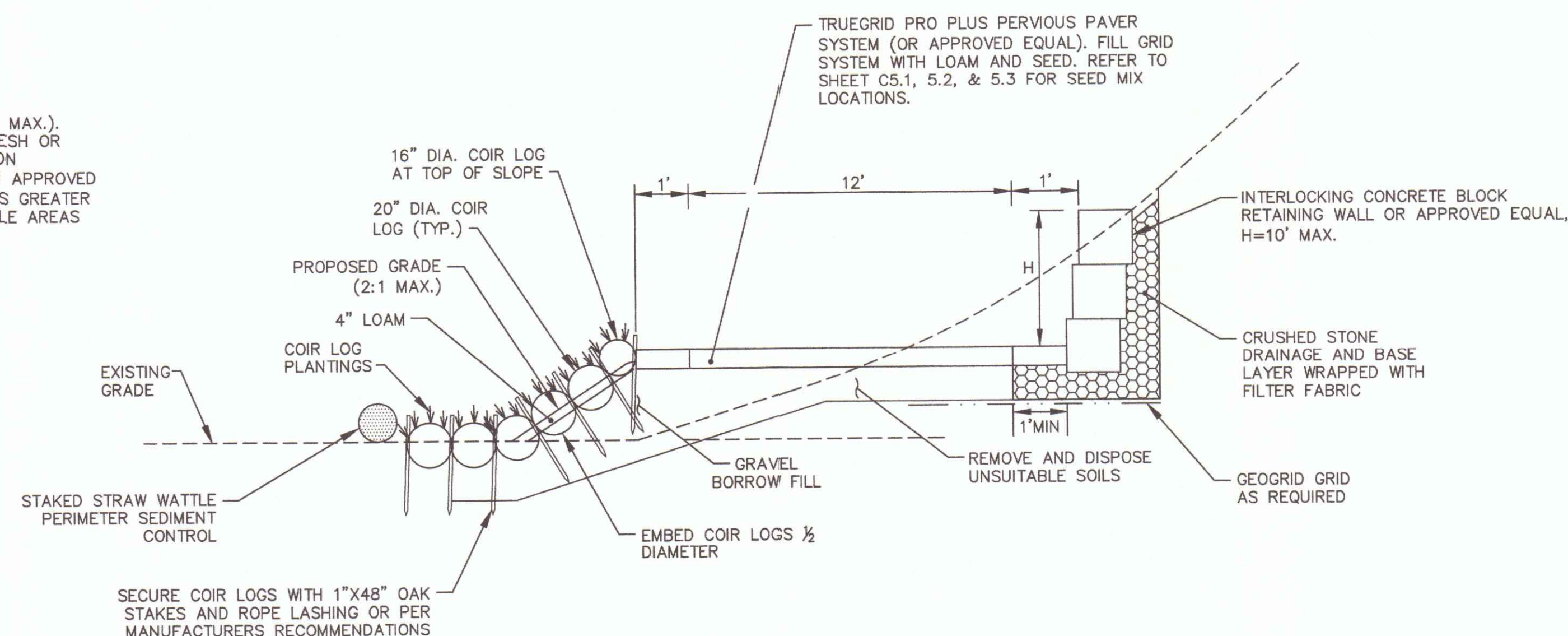


TYPICAL DRIVEWAY SECTION

NOT TO SCALE

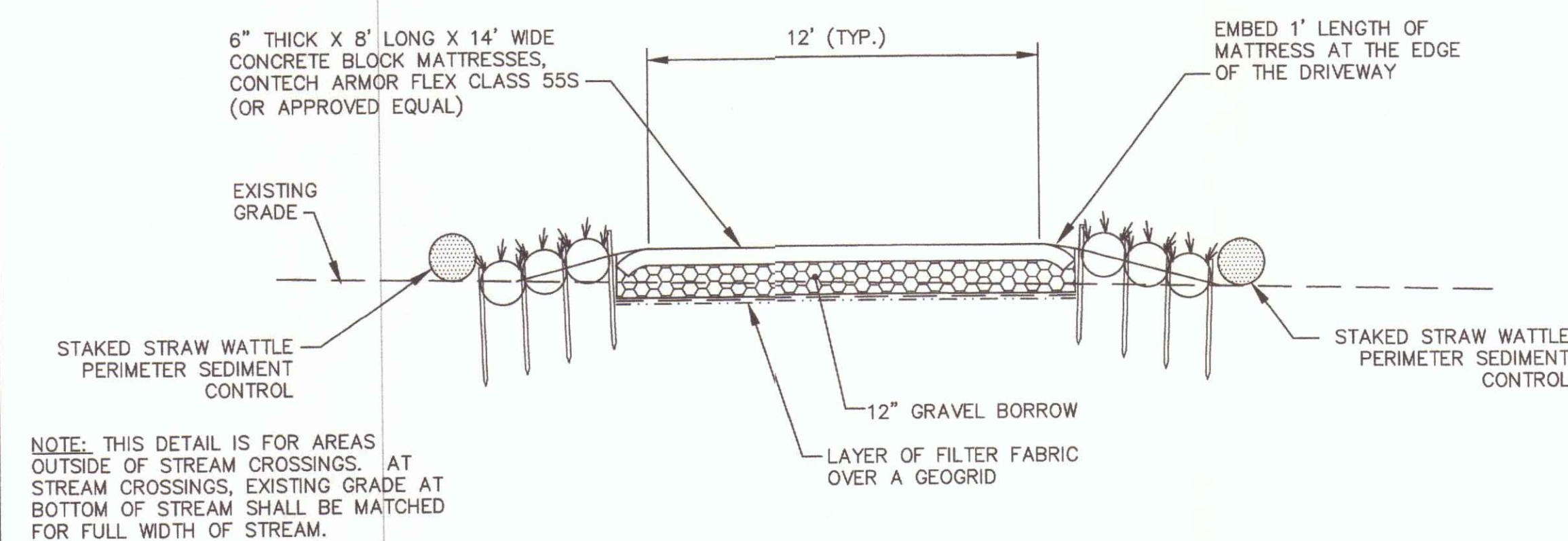
COIR LOG NOTES:

1. COIR LOGS SHALL BE COCONUT FIBER FILLED 20\"/>



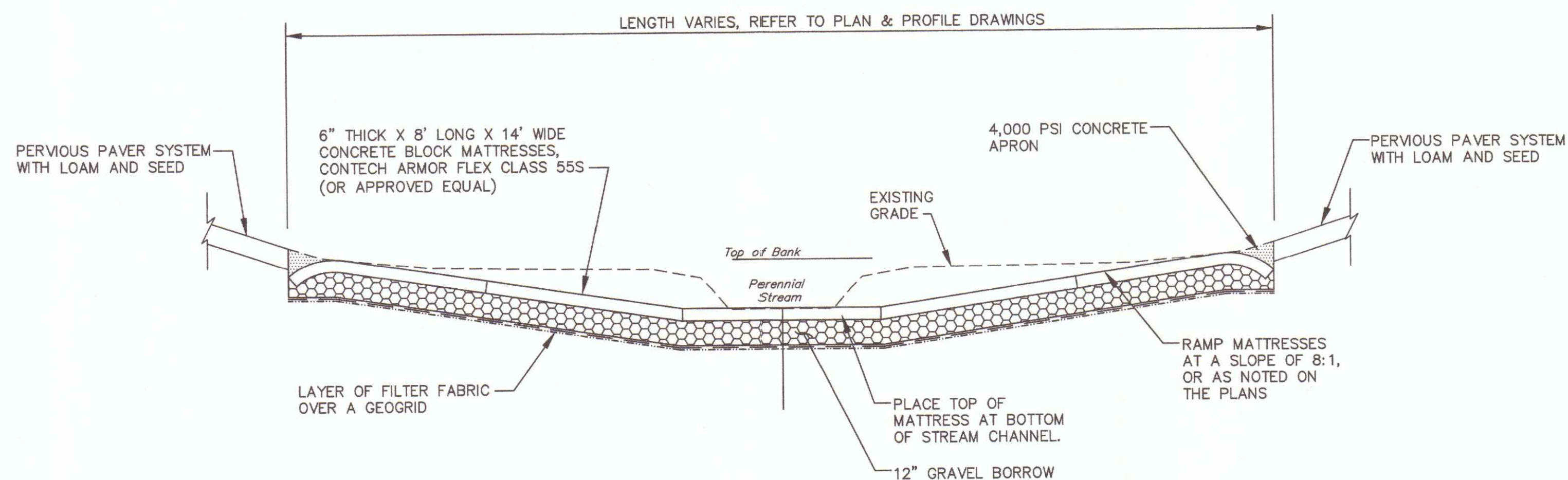
TYPICAL DRIVEWAY SECTION WITH RETAINING WALLS

NOT TO SCALE



TYPICAL SECTION OF MATTRESS INSTALLATION

NOT TO SCALE

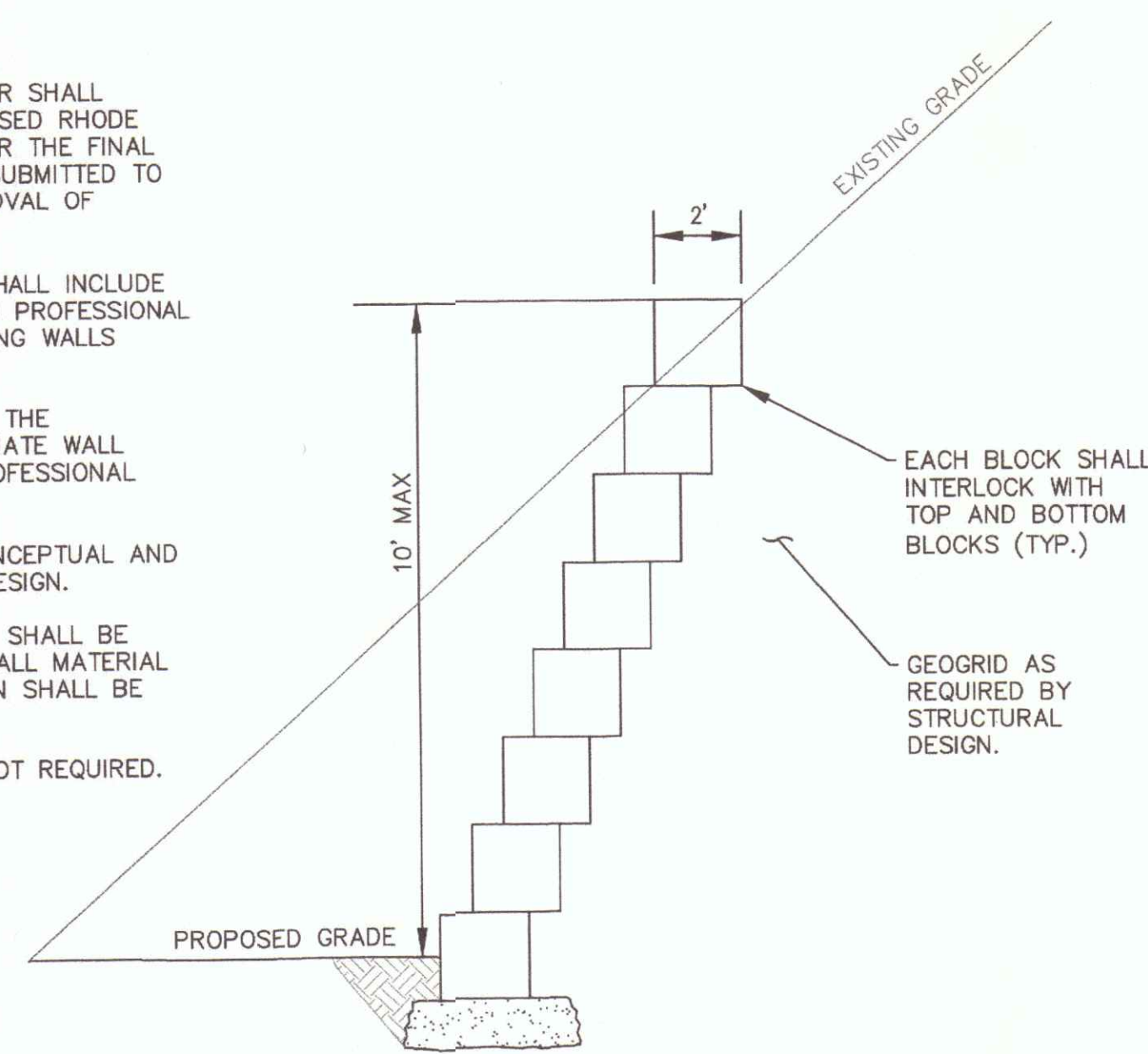


TYPICAL PROFILE OF MATTRESS INSTALLATION AT A STREAM CROSSING

NOT TO SCALE

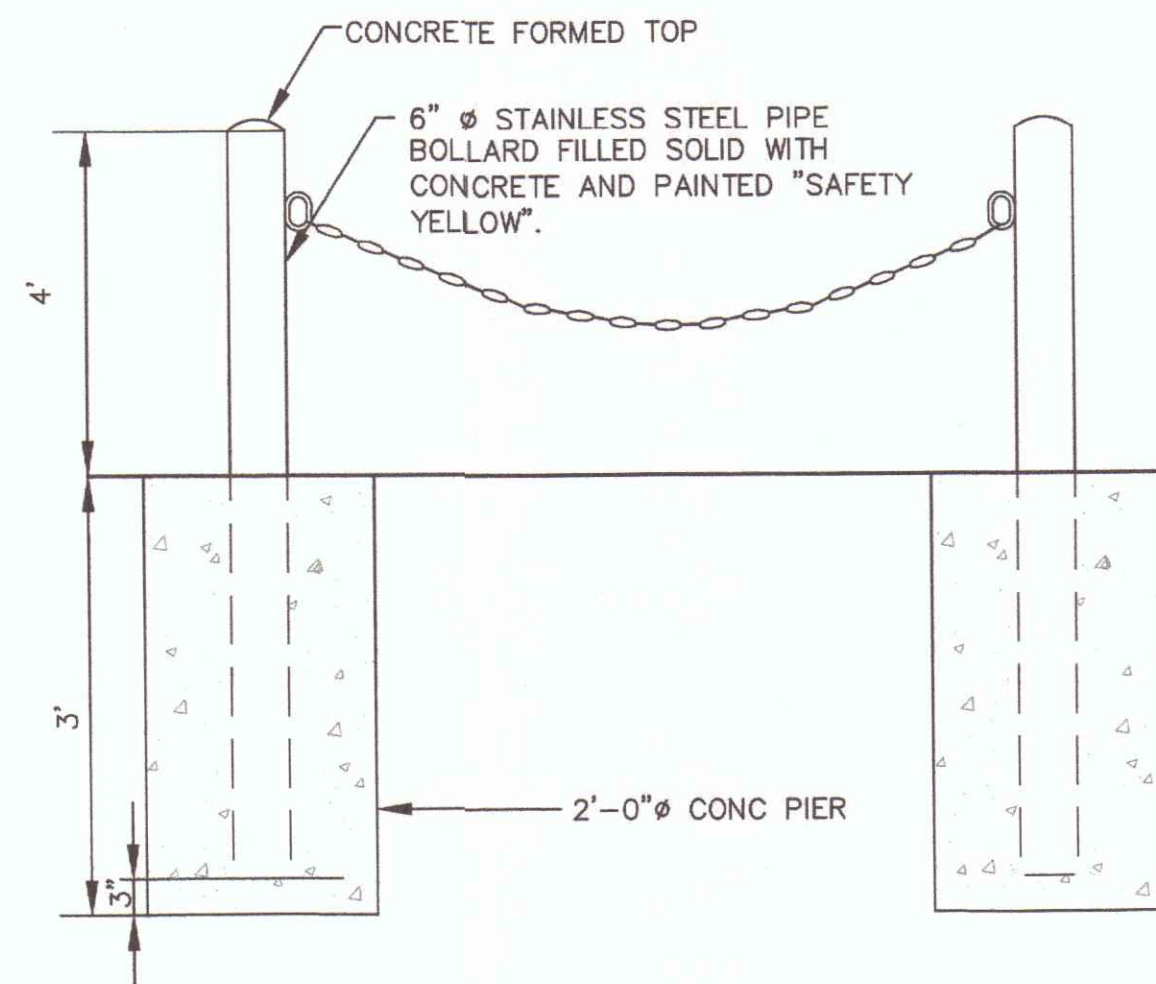
NOTES:

1. THE CONTRACTOR'S WALL SUPPLIER SHALL RETAIN THE SERVICES OF A LICENSED RHODE ISLAND STRUCTURAL ENGINEER FOR THE FINAL WALL DESIGN. DESIGN SHALL BE SUBMITTED TO OWNER AND ENGINEER FOR APPROVAL OF MATERIALS.
2. THE CONTRACTOR'S BID PRICE SHALL INCLUDE THE SERVICE OF A RHODE ISLAND PROFESSIONAL ENGINEER TO DESIGN THE RETAINING WALLS PROPOSED FOR THIS PROJECT.
3. UPON APPROVAL BY THE OWNER, THE CONTRACTOR MAY SUBMIT ALTERNATE WALL DESIGNS BY A RHODE ISLAND PROFESSIONAL ENGINEER FOR USE ON THE SITE.
4. THE WALL SECTION SHOWN IS CONCEPTUAL AND DOES NOT REPRESENT A FINAL DESIGN.
5. GEOGRID MAY BE REQUIRED AND SHALL BE DETERMINED BY WALL DESIGNER. ALL MATERIAL REQUIRED FOR WALL INSTALLATION SHALL BE INCLUDED IN THE BID PRICE.
6. DECORATIVE FACE WALLS ARE NOT REQUIRED.



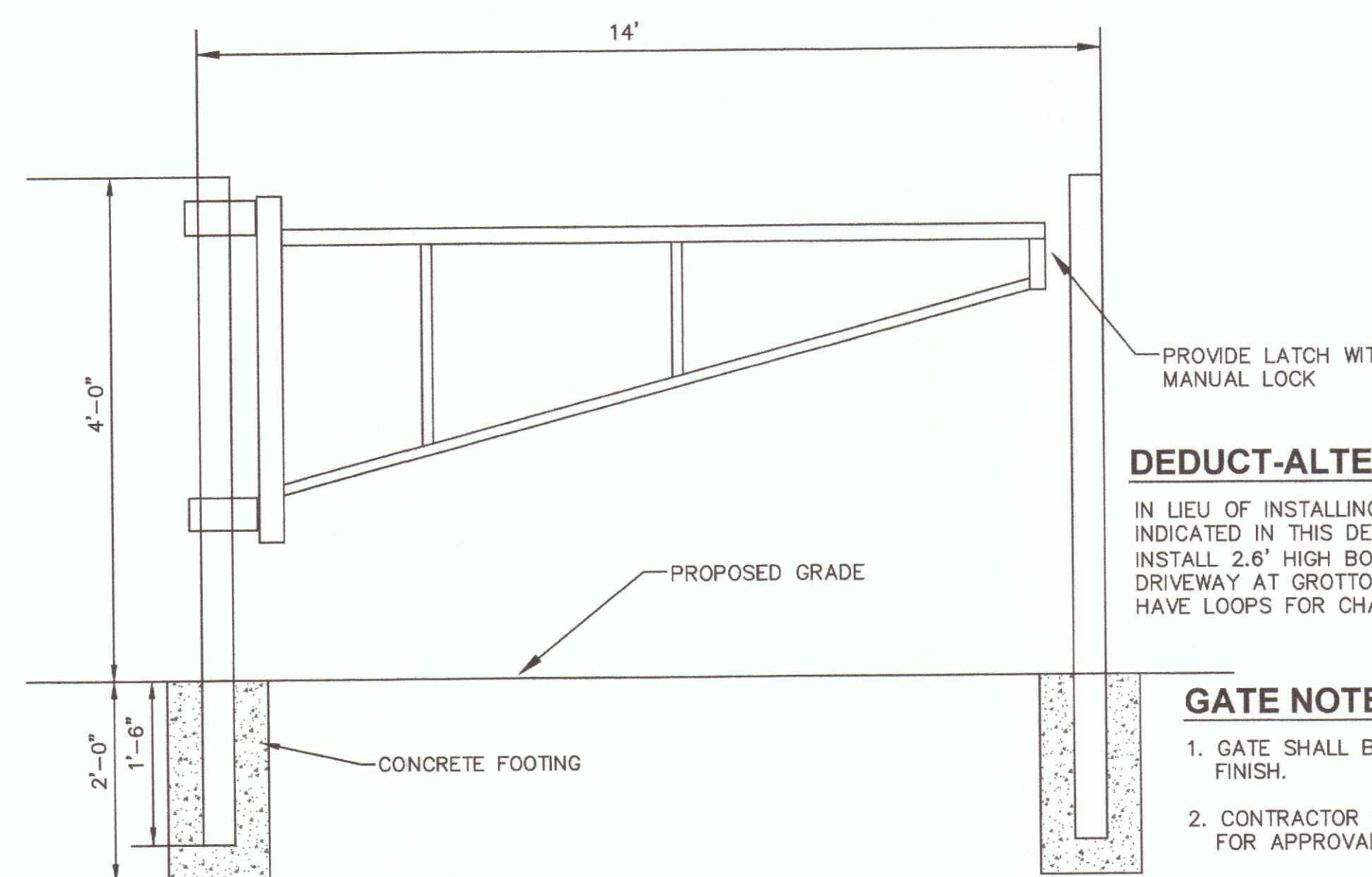
CONCRETE BLOCK RETAINING WALL

NOT TO SCALE



DEDUCT ALTERNATE BID ITEM NO. 1 BOLLARD DETAIL

NOT TO SCALE



PROPOSED GATE DETAIL-GROTTO AVENUE

NOT TO SCALE

DEDUCT-ALTERNATE BID ITEM NO. 1:

IN LIEU OF INSTALLING THE PROPOSED GATE AS INDICATED IN THIS DETAIL, THE CONTRACTOR SHALL INSTALL 2.6' HIGH BOLLARDS ON EACH SIDE OF THE DRIVEWAY AT GROTTO AVENUE. THE BOLLARDS SHALL HAVE LOOPS FOR CHAIN-ATTACHMENT.

GATE NOTES:

1. GATE SHALL BE STAINLESS STEEL WITH BLACK FINISH.
2. CONTRACTOR SHALL SUBMIT GATE TO OWNER FOR APPROVAL.
3. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

DEC 21 2023

NOTES:

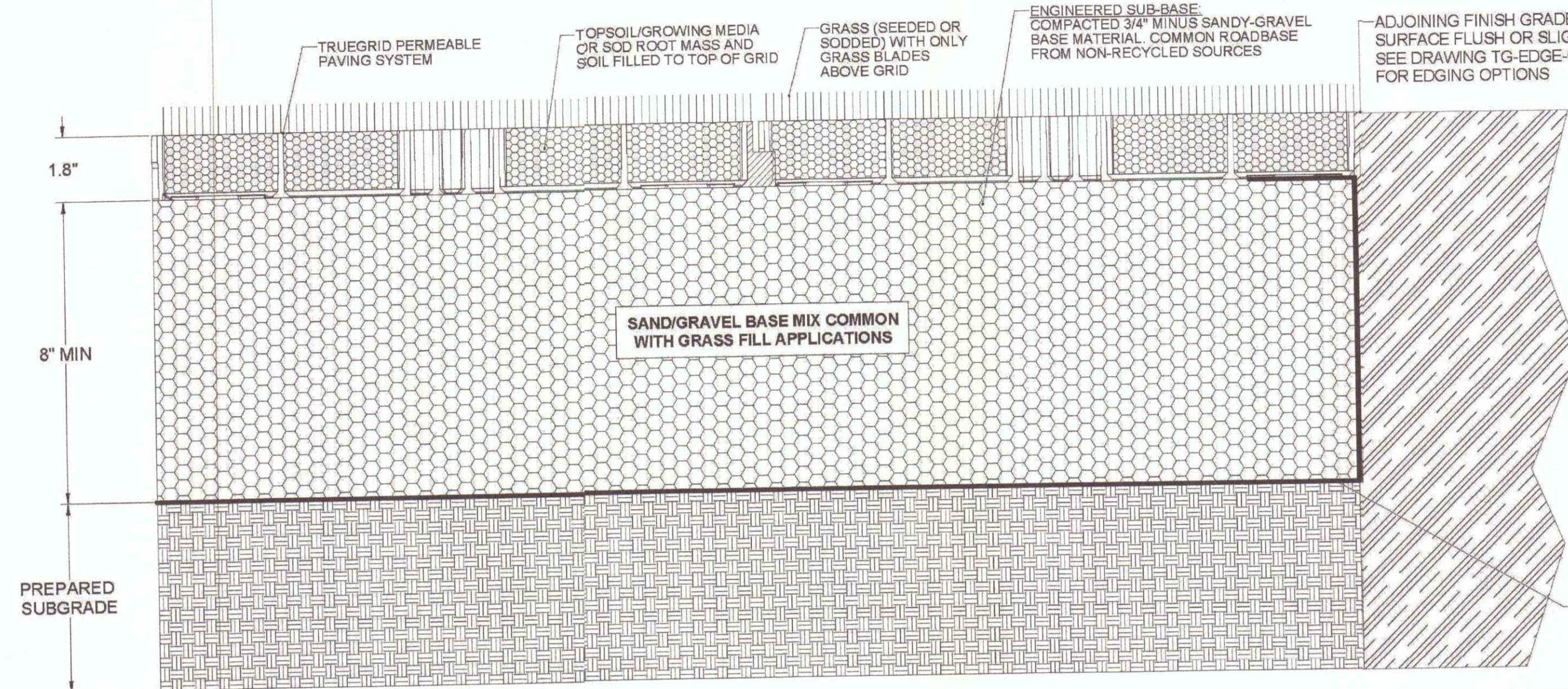
- SUB-BASE DEPTH AND PREPARATION IS DEPENDENT ON SITE CONDITIONS PLUS LOADING REQUIREMENTS.
- TRUEGRID PRO PLUS PRODUCTS ARE SUFFICIENTLY RATED FOR H-20 (HS-20) LOADING AND GREATER.
- SEEDING METHOD: FILL SOIL/GROWING MEDIA TO TOP OF GRID. APPLY SEEDING OR HYDROSEEDING PER MANUFACTURERS' (BY OTHERS) REQUIRED APPLICATION RATES.
- SOD INSTALLATION METHOD: FILL TOPSOIL/GROWING MEDIA HALF-WAY (~1") WITHIN TRUEGRID AND PRESS IN SOD SO THAT TOP OF GRID IS AT SOIL/ROOT LEVEL AND ONLY THE GRASS BLADES EXTEND ABOVE THE GRID.
- GEOGRID MESH OR GEOFABRIC MAY BE REQUIRED BETWEEN SUBGRADE & SUBBASE FOR CERTAIN SOILS AND SITE SPECIFIC REQUIREMENTS.
- NO STAKING NECESSARY WITH TRUEGRID PRO PLUS WHEN SLOPE IS BELOW 20 DEGREES. ASSESS PROJECT, AS NEEDED.
- TRUEGRID PRO PLUS IS ADA COMPLIANT WITH PROPER FILL MATERIAL.
- ALTERNATIVE ENGINEERED SUB-BASE MIXES CAN BE USED PROVIDED THEY PROMOTE GRASS GROWTH, HAVE ADEQUATE VOID SPACE FOR DRAINAGE, AND PROVIDE REQUIRED STRUCTURAL SUPPORT.
- THIS CROSS SECTION IS FOR INFORMATION ONLY.

TRUEGRID BLOCK REFERENCE VIEW
PREASSEMBLED & DELIVERED IN 4' X 4' SHEET. RECONFIGURED AS NEEDED NO EXTRA TOOLING OR ACCESSORIES REQUIRED.



ADJOINING FINISH GRADE TRUEGRID SURFACE FLUSH OR SLIGHTLY RECESSED SEE DRAWING TG-EDGE-OPTS FOR EDGING OPTIONS

GEOGRID MESH OR GEOFABRIC OPTION LOCATION SEE NOTE #5



APPLICATION:
HEAVY LOAD PARKING LOT, FIRE LANES, EQUIPMENT YARD, SERVICE ROADS.

GRASS FILL HEAVY LOAD TRUEGRID PRO PLUS

- NOTES:**
- PERVIOUS PAVEMENT SHALL BE TRUEGRID, OR APPROVED EQUAL.
 - IN THE BASE BID PRICE, CONTRACTOR SHALL RETAIN THE SERVICES OF A GEOTECHNICAL ENGINEER TO APPROVE THE SUBBASE. COMPACTION REQUIRED TO PREPARE THE SUBBASE UNDER THE MAINTENANCE ACCESS ROAD SHALL ALSO BE INCLUDED IN THE BASE BID PRICE.

MANUFACTURED IN NORTH AMERICA
1-855-355-GRID (4743)

CLIENT / PROJECT		APPROVAL INFORMATION	
UNLESS OTHERWISE SPECIFIED SUBSEQUENT REVISIONS SHALL BE THE PROPERTY OF TRUEGRID. THE DESIGNER'S RESPONSIBILITY IS TO OBTAIN NECESSARY PERMITS AND TO OBTAIN APPROVAL FROM THE LOCAL AUTHORITY FOR THE USE OF THE INFORMATION SHOWN HEREON WITHOUT SPECIFIC AGREEMENT IN WRITING BY TRUEGRID.			
DATE: 12/22/2021	BY: J. Tully	DATE: 12/22/2021	BY: J. Tully
PROJECT: TRUEGRID GRASS FILL INSTALLATION HEAVY LOAD	SCALE: 1/16" = 1'-0"	SHEET: 01	TOTAL SHEETS: 01

SEEDING NOTES

- LOAM SHALL BE SPREAD TO A MINIMUM DEPTH OF 6" OVER ALL AREAS DESIGNATED ON PLANS.
- SHAPE AND SMOOTH THE SURFACE TO THE LINES AND GRADES AS SHOWN ON PLANS.
- FERTILIZE WITH 10-10-10 OR EQUIVALENT ANALYSIS. AT LEAST 40% OF THE FERTILIZER NITROGEN SHALL BE IN A SLOW RELEASE FORM. INCORPORATE THE FERTILIZER INTO THE TOP 3 TO 4 INCHES OF THE PLANTING SOIL. APPLY AT THE RATE OF 8 POUNDS PER 1,000 SQUARE FEET AT SEEDING.
- LIME: SPREAD EVENLY AND WORK INTO THE SOIL DURING PREPARATION OF SEED BED AT THE RATE OF ONE TON PER ACRE. INCORPORATE INTO THE SOIL BY DICING OR OTHER APPROVED METHOD. DISTRIBUTE LIME UNIFORM AND WORK INTO TOP 4 INCHES OF TOP SOIL (MINIMUM) AND UNIFORMLY BLEND BY DICING OR ROTOTILLING.
- APPLICATION OF SEED:
 - RATE OF APPLICATION OF SEED AS INDICATED ON PLANS.
 - SEEDING SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS, AND ONLY DURING THE FOLLOWING DATES:
 - SPRING SEEDING: MARCH 15 TO MAY 31
 - FALL SEEDING: AUGUST 15 TO OCTOBER 15
 - THE CONTRACTOR SHALL KEEP ALL SEEDING AREAS WATERED AND IN GOOD CONDITION, RESEEDING IF AND WHEN NECESSARY FOR AN 8 WEEK PERIOD OR UNTIL A GOOD, HEALTHY, UNIFORM GROWTH IS ESTABLISHED OVER THE ENTIRE AREA. THE CONTRACTOR SHALL ALSO MAINTAIN THESE AREAS IN AN APPROVED CONDITION UNTIL PROVISIONAL ACCEPTANCE.
 - DURING THIS PERIOD, WATER TURF AS NECESSARY TO MAINTAIN AN ADEQUATE SUPPLY OF MOISTURE WITHIN THE ROOT ZONE. AN ADEQUATE SUPPLY OF MOISTURE IS EQUIVALENT OF ONE INCH OF ABSORBED WATER PER WEEK THAT IS DELIVERED AT WEEKLY INTERVALS IN THE FORM OF NATURAL RAIN OR IS AUGMENTED AS REQUIRED BY PERIODIC WATERING.
 - OVERSEED WHEN NECESSARY TO PROMOTE GRASS GROWTH.
 - REPLANT AREAS VOID OF TURF ONE SQUARE FOOT OR LARGER.
- SEED:
 - SEED ALL AREAS DESIGNATED ON PLAN AS WELL AS ALL DISTURBED EXISTING AREAS WITH THE FOLLOWING SEED MIX:

SEED MIX No. 1
(WITHIN FLOOD ZONE AND TIDAL AREAS)

TYPE	% BY WEIGHT
TIOGA DEERTONGUE	21.48
VIRGINIA WILD RYE	19.97
NIAGARA BIG BLUESTEM	16.10
JAPANESE MILLET	14.93
FOX SEDGE	9.63
CAVE-IN-ROCK SWITCHGRASS	7.84
PARTRIDGE PEA	4.00
OXEYE SUNFLOWER	1.00
BLUE VERVAIN	1.49
SOFT RUSH	0.97
AUTUMN BENTGRASS	0.79
WILD BERGAMOT	0.10
SWAMP MILKWEED	0.10
BONESET	0.06
NARROWLEAF MOUNTAINMINT	0.10
NEW ENGLAND ASTER	0.08
JOE PYE WEED	0.08

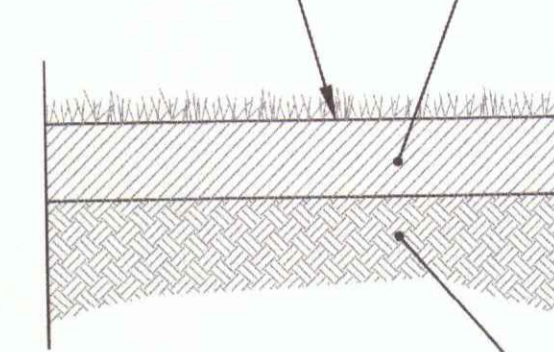
APPLICATION RATE = 200 lbs. / ACRE

SEED MIX No. 2
(SLOPE MIX & AREAS OUTSIDE OF FLOOD/TIDAL AREAS)

TYPE	% BY WEIGHT
CREeping RED FESCUE	70
BIRDFOOT TREFLOIL	15
PERENNIAL RYE GRASS	15

APPLICATION RATE = 200 lbs. / ACRE

PROVIDE 6" GOOD QUALITY FERTILE LOAM OR REUSE EXISTING AND PROVIDE ADDITIONAL LOAM AS REQUIRED



LOAM-SEED DETAIL
NOT TO SCALE

SEED MIX No. 3
(CONCRETE MATRESS LOCATIONS)

TYPE	% BY WEIGHT
GRAND PRIX 3 WAY	45
FALCON IV IT TALL FESCUE	45
REDTOP	10

APPLICATION RATE = 200 lbs. / ACRE

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
12-15-23

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SEWER SYSTEM MAINTENANCE ROAD
GROTTO ROAD TO THE NARRAGANSETT BAY COLLECTION SEEKONK RIVER INTERCEPTOR
PROVIDENCE, R.I.

PREPARED FOR:
CITY OF PROVIDENCE ENGINEERING DIVISION
700 ALLENS AVENUE
PROVIDENCE, R.I. 02905

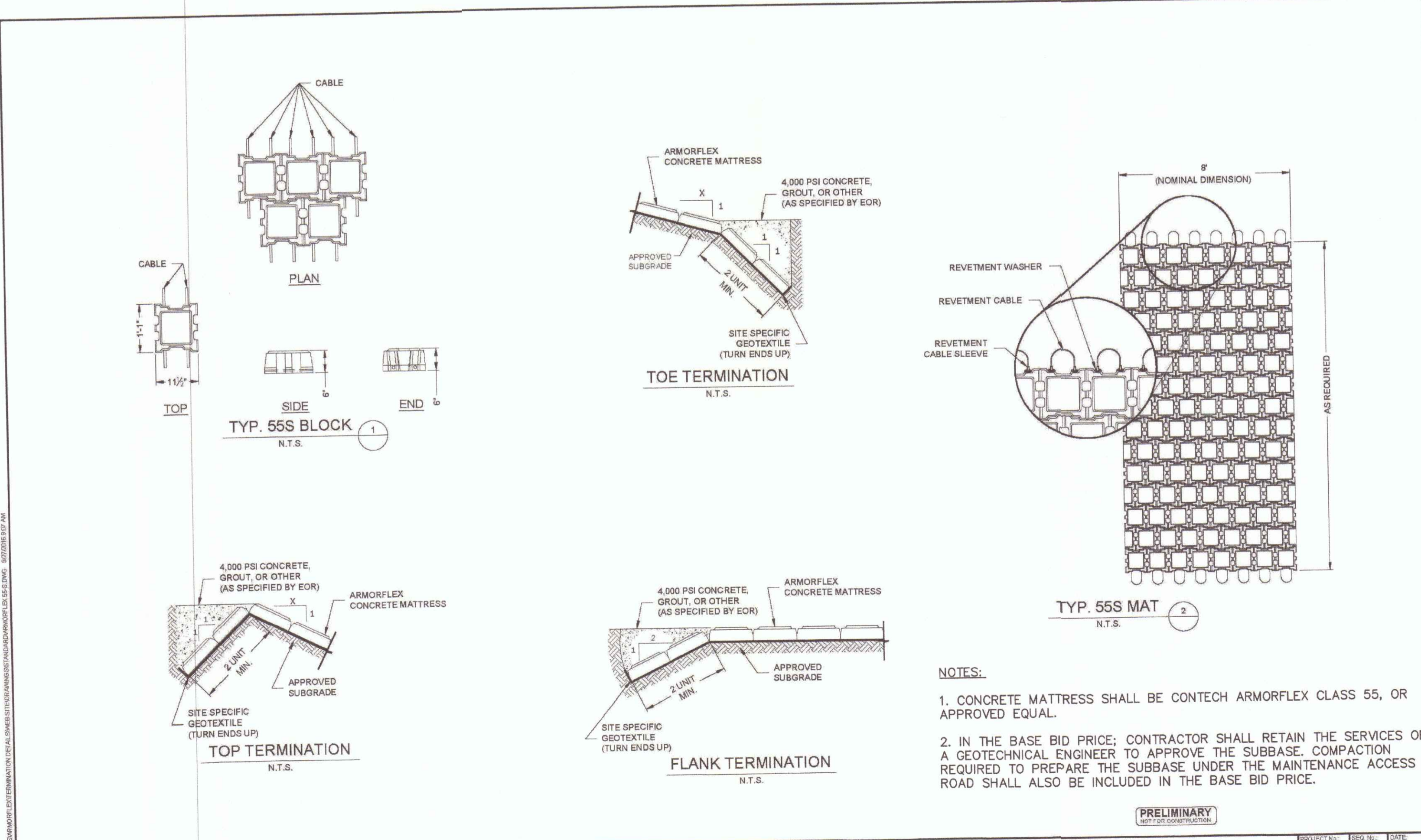
DRAWING TITLE:
MISCELLANEOUS DETAIL SHEET No. 2

DATE: DECEMBER 2021 SCALE: AS NOTED
DWG. NAME: 2314-C07-DETAIL 2.dwg

REVISIONS	NUMBER	REMARKS	DATE
	1	MARSH RESTORATION	9/28/22
	2	MITIGATION	12/15/23

DRAWING NUMBER:
C7
SHEET: 14 OF 14

RECEIVED
DEC 21 2023
PROVIDENCE PLANNING AND MANAGEMENT CONSULTANTS

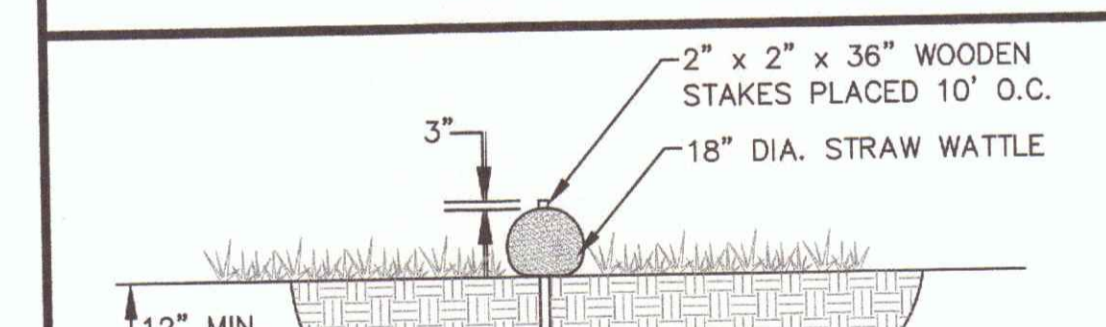


- NOTES:**
- CONCRETE MATRESS SHALL BE CONTECH ARMORFLEX CLASS 55, OR APPROVED EQUAL.
 - IN THE BASE BID PRICE, CONTRACTOR SHALL RETAIN THE SERVICES OF A GEOTECHNICAL ENGINEER TO APPROVE THE SUBBASE. COMPACTION REQUIRED TO PREPARE THE SUBBASE UNDER THE MAINTENANCE ACCESS ROAD SHALL ALSO BE INCLUDED IN THE BASE BID PRICE.

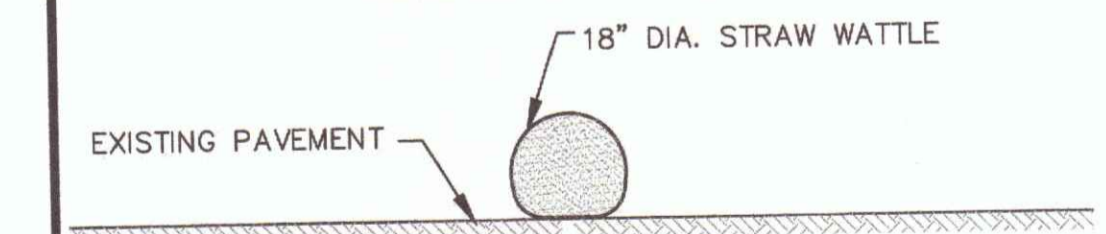
PRELIMINARY

ARMORFLEX CLASS 55 SMALL
STANDARD TERMINATION DETAILS

<p>CONTECH ENGINEERED SOLUTIONS LLC www.conotechES.com 8025 Centre Pointe Dr., Suite 400, West Chester, OH 48080 800-338-1122 513-645-7000 513-645-7899 FAX</p>	<p>ARMORTEC CONTECH PROPOSAL (UNAWARDED)</p>	<table border="1"> <tr> <td>PROJECT:</td> <td>ISS. NO.:</td> <td>DATE:</td> </tr> <tr> <td>DESIGNED:</td> <td>BY:</td> <td>9/22/2018</td> </tr> <tr> <td>CHECKED:</td> <td>APPROVED:</td> <td></td> </tr> <tr> <td>SHEET NO.:</td> <td>CT1</td> <td>OF CT2</td> </tr> </table>	PROJECT:	ISS. NO.:	DATE:	DESIGNED:	BY:	9/22/2018	CHECKED:	APPROVED:		SHEET NO.:	CT1	OF CT2
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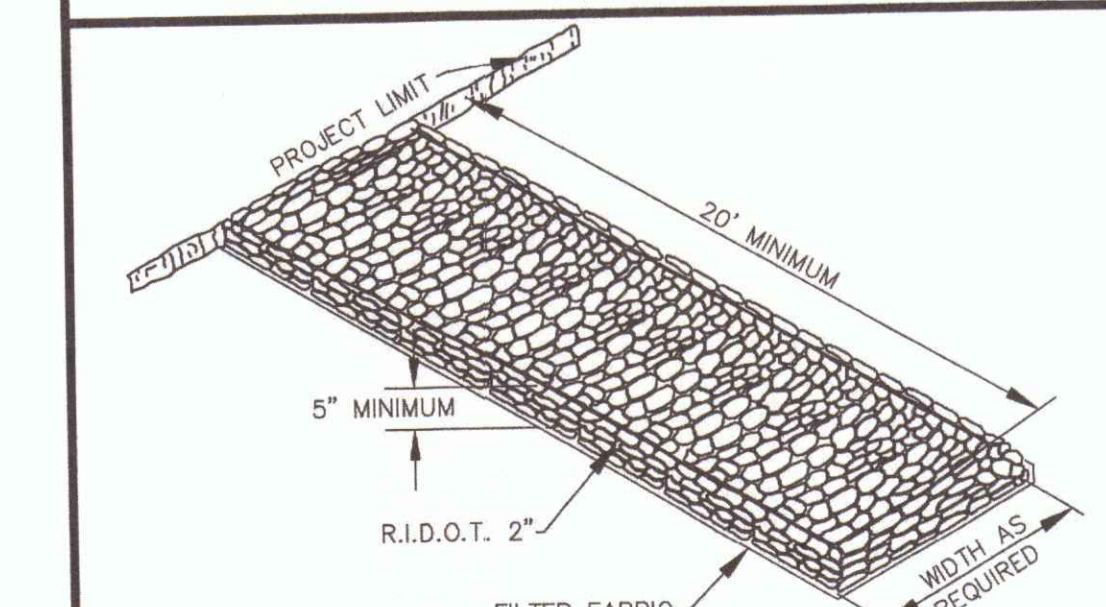
STRAW WATTLE SECTION



STRAW WATTLE PAVEMENT OPTION

- NOTE**
- SILT FENCE MAY BE USED IN LIEU OF STRAW WATTLE.
 - CONTRACTOR IS RESPONSIBLE TO BECOME FAMILIAR WITH THE STRAW WATTLE PRODUCT AND SHALL COORDINATE INSTALLATION SCHEDULES AND METHODS WITH THE ENGINEER PRIOR TO PLACEMENT.
 - ONCE ALL AREAS ARE STABILIZED, COMPOST MATERIAL TO BE DISPERSED ON SITE AS DETERMINED BY ENGINEER.

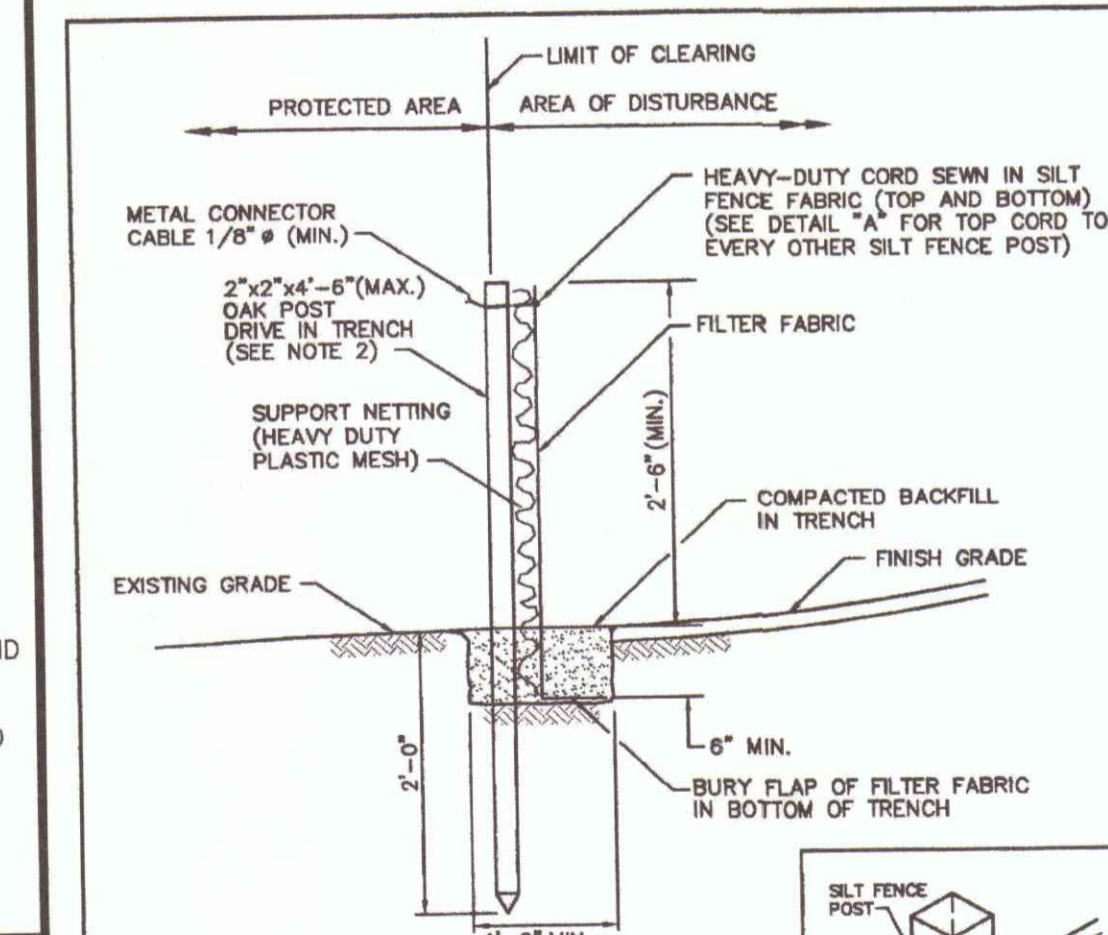
STRAW WATTLE DETAIL
NOT TO SCALE



CONSTRUCTION ENTRANCE DETAIL
NOT TO SCALE



STRAW WATTLE DETAIL
NOT TO SCALE



SILT FENCE DETAIL
NOT TO SCALE

- NOTES:**
- SHALL BE IN ACCORDANCE WITH SECTION 208 OF THE R.I. STANDARD SPECIFICATIONS.
 - 2"x2"x4'-6" (MAX.) OAK POSTS FOR SILT FENCE SHALL BE LOCATED 8'-0" (MAX.) O.C. IN WETLAND AREAS AND 4'-0" (MAX.) O.C. IN WETLAND RAVINE, GULLY OR DROP-OFF AREAS AS SHOWN ON PLANS.
 - 1"x1"x4'-6" (MIN.) POSTS PERMITTED FOR PRE-FABRICATED SILT FENCE.
 - SILT FENCE SHALL BE INSTALLED BEFORE ANY GRUBBING OR EARTH EXCAVATION TAKES PLACE.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION
JUNE 15, 1998
R.I. STANDARD 9.2.0

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