

# PRELIMINARY PLAN

## DELIA DRIVE TIVERTON, RHODE ISLAND

**OWNER/APPLICANT:**  
 ESTATE OF JOSEPH BARBOZA,  
 TIVERTON PROBATE COURT No. 285  
 RICHARD BARBOZA, EXECUTOR  
 890 SANFORD RD WESTPORT, MA 02790

**SURVEYOR:**  
 RALPH URBAN, PLS  
 PO BOX 1494, WESTPORT, MA 02790  
 (508) 636-8397

**ENGINEER:**  
 GORODETSKY ENGINEERING, LLC  
 162 NORTH MAIN STREET, FALL RIVER, MA 02720  
 (508) 324-1163

**WAIVERS REQUESTED AS FOLLOWS:**

TIVERTON CODE APPENDIX B - LAND DEVELOPMENT, SUBDIVISION REGULATIONS  
 III. STORM WATER DRAINAGE FACILITIES, CHAPTER e.  
 WAIVER REQUESTED DUE TO THE EXISTING TOPOGRAPHIC CONDITIONS - AREA UNDER  
 CONSIDERATION HAS EXISTING SLOPE OF APPROXIMATELY 0% -  
 TO CONSTRUCTED DRAINAGE FROM CATCH BASIN 2 TO FE #1 WITH APPROXIMATELY 0.8% SLOPE,  
 WHICH IS LESS THEN REQUIRED ONE PERCENT SLOPE.

**LEGEND**

- FIELD STONE WALL
- EASEMENT LINE
- PERIMETER BOUNDARY
- OFF SITE P/L
- WATER
- UTILITY
- SUBDRAN
- LIMIT OF DISTURBANCE/EROSION CONTROL LINE
- WETLAND EDGE LINE
- WETLAND EDGE 100 FT SETBACK LINE
- EROSION CONTROL FOR DRAINAGE STR-RES
- (284) PROPOSED CONTOUR
- -278- EXISTING CONTOUR

- ⊙ PROPOSED DRAINAGE MANHOLE
- ⊙ PROPOSED SUBDRAIN MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED DOUBLE CATCH BASIN
- ⊙ SOIL & WATER TABLE TEST PIT
- ⊙ LEDGE TEST PIT
- \* LIGHT POLE
- PROPOSED BOUND (TO BE SET)
- ⊙ EXISTING DRAINAGE MANHOLE
- ⊙ EXISTING CATCH BASIN
- ⊙ UTILITY POLE
- ⊙ EXISTING BOUND
- ⊙ BRONZE BAR
- ⊙ DRILL HOLE TO BE SET
- ⊙ SIGN
- ⊙ FLAG POLE
- ⊙ TRAFFIC SIGN
- ⊙ WELL
- ⊙ PROPOSED TREE
- ⊙ PROPOSED UTILITY CONNECTING APPURTENANCES
- EB - ELECTRIC POWER BOX
- C - CABLE
- T - TELEPHONE

**RIDEM WETLANDS PROGRAM NOTES:**

NO IMPERVIOUS SURFACE TREATMENTS (SUCH AS BITUMINOUS PAVEMENT RESURFACING) SHALL BE PERFORMED/APPLIED IN AREAS DESIGNATED AS "PERVIOUS" SURFACES WITHOUT A NEW PERMIT FROM DEM FRESHWATER WETLAND PROGRAM FOR SUCH WORK.

THE APPLICANT IS RESPONSIBLE FOR THE PROPER INSTALLATION, OPERATION, MAINTENANCE AND STABILITY OF ANY MITIGATIVE FEATURES, FACILITIES, AND SYSTEMS OF TREATMENT AND CONTROL, WHICH ARE INSTALLED OR USED TO PREVENT HARM TO ADJACENT WETLANDS UNTIL SUCH A TIME THIS RESPONSIBILITY IS ASSUMED BY ANOTHER PARTY OF ENTITY. IF THE MAINTENANCE OF THE STORMWATER FACILITIES ARE TO BE ASSUMED BY ANOTHER GROUP OR ENTITY (SUCH AS A HOME OWNER'S ASSOCIATION) A COVENANT OUTLINING THE SPECIFIC RESPONSIBILITIES OF THE PARTY MUST BE INCLUDED IN THE LAND DEED THAT RUNS WITH THE PROPERTY. A COPY OF THESE DOCUMENTS SHALL BE SENT THE RIDEM WETLANDS PROGRAM PRIOR TO OCCUPANCY OF THE DWELLINGS PROPOSED FOR THIS SITE, REFERENCING FILE #09-0241.

SHEET 1 OF 20

**TITLE PAGE**  
**DELIA DRIVE**  
**MAJOR SUBDIVISION**  
**PRELIMINARY PLAN**  
 MAP 3-5 BLOCK 118 CARD 18  
 NORTH LAKE ROAD  
 TIVERTON, R.I.

DATE: AUGUST 25, 2009  
 REVISED: 11/20/09; 02/18/10  
 APPLICANT:  
 RICHARD BARBOZA, EXECUTOR  
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**CONVENTIONAL ZONING REQUIREMENTS**

ZONING DISTRICT	LOT AREA	BLDG COVERAGE	LOT WIDTH	FRONT YARD	REAR YARD	SIDE YARD, EACH SIDE
R-80	80,000 SF	10%	200 FT	50 FT	80 FT	35 FT

**RURAL DEVELOPMENT ZONING REQUIREMENTS**  
 MIN. INDIVIDUAL LOT FRONTAGE ON A PUBLIC ROAD - 50 FT

ZONING DISTRICT	MINIMUM LOT AREA	MAXIMUM BUILDING COVERAGE	MINIMUM FRONT YARD SETBACK	MINIMUM SIDE YARD SETBACK	MINIMUM REAR YARD SETBACK
R-80	30,000 SF	4,750 SF	40 FT	20 FT	40 FT

**FLOOD ZONE DETERMINATION**  
 NO SFHA (FLOOD ZONE) WITHIN 250 FEET  
 COMMUNITY NAME ZONE PANEL DATE  
 440012 TOWN OF TIVERTON C 0008C SEPTEMBER 30, 1995

**ESTIMATED TRAFFIC FLOW**  
 AVERAGE DAILY TRIP ENDS (WEEKDAY)=  
 HOUSES: 12 UNITS X 9.6 TRIPS/DWELLING UNIT=115 TRIP-ENDS  
 DUPLEX 2 UNITS X 5.8 TRIPS/DWELLING UNIT=12 TRIP-ENDS  
 TOTAL=127 TRIP-ENDS

REFERENCE: ITE, TRIP GENERATION 1991.

**LIST OF ABUTTERS DELIA DRIVE SUBDIVISION**  
 LOCUS: BLOCK 118 CARD 18

BLOCK 118 CARD 16 WILLIAM S. RANDALL 5801 THOMAS DRIVE APT#1224 PANAMA CITY FL 32408	BLOCK 130 CARD 61 THOMAS MANDRIS, TRUSTEE COCOA BEACH FL 32931
BLOCK 118 CARD 17 TOWN OF TIVERTON 343 HIGHLAND RD TIVERTON RI 02878	BLOCK 130 CARD 55C PATRICK & KATHLEEN MICKEN 517 LAKE RD TIVERTON RI 02878
BLOCK 118 CARD 18A JOYCE BARBOZA 462 LAKE RD TIVERTON RI 02878	BLOCK 130 CARD 57 STEVEN & KAREN COX 497 LAKE RD TIVERTON RI 02878
BLOCK 118 CARD 18B MARC & DEBORAH PALLASCH 432 LAKE RD TIVERTON RI 02878	BLOCK 130 CARD 60 DEMETRIO COSTA 415 LAKE RD TIVERTON RI 02878
BLOCK 118 CARD 19 ROBERT & LORETTA ALMY 6310 HIDDEN MEADOW DR MARCY NY 13403	BLOCK 130 CARD 58B LISA CROMPTON 437 LAKE RD TIVERTON RI 02878
BLOCK 118 CARD 20 RICHARD & MARGARET BARBOZA 890 SANFORD RD WESTPORT, MA 02790	BLOCK 130 CARD 58C SARAH EVERHART SKEELS 15 JACQUELINE WAY TIVERTON RI 02878
BLOCK 118 CARD 22 CLIFFORD A. HANCOCK 554 LAKE RD TIVERTON RI 02878	BLOCK 130 CARD 58G GERALD HILL 22 JACQUELINE WAY TIVERTON RI 02878
	BLOCK 130 CARD 55D CHASSE RYD R & KATHLEEN 535 LAKE RD TIVERTON RI 02878

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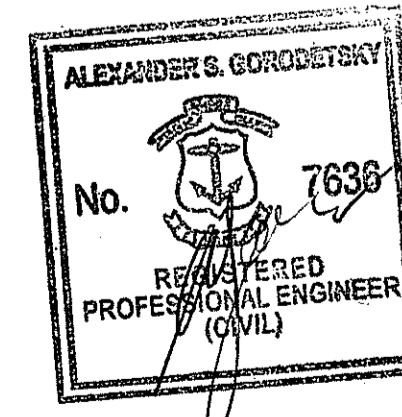
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**MAP 3-5 BLOCK 118 CARD 18**

SITE DEVELOPMENT DENSITY DETERMINATION		
TOTAL PARCEL AREA, TA	1,369,351 SQ.FT. 31.44 ACRES	
MINIMUM LOT SIZE FOR THE DISTRICT, LS	80,000 SQ.FT.	
	CONVENTIONAL DESIGN	RURAL DEVELOPMENT WAFFORDABLE UNITS
ROADWAY AREA, SQ.FT.	66,506 SQ.FT.	67,894 SQ.FT.
WETLAND AREA, SQ.FT. (INCL. 50 FT BUFFER)		
NORTH	157,086 SQ.FT.	157,086 SQ.FT.
SOUTH	70,897 SQ.FT.	70,900 SQ.FT.
WEST	7,436 SQ.FT.	7,436 SQ.FT.
<b>TOTAL UNSUITABLE LAND, UL</b>	<b>301,925 SQ.FT.</b>	<b>303,316 SQ.FT.</b>
TOTAL LAND AVAILABLE FOR DEVELOPMENT, TA-UL	1,067,426 SQ.FT.	1,066,035 SQ.FT.
MINIMUM REQUIRED OPEN SPACE AREA, 0.5x(TA-UL)		533,018 SQ.FT.
<b>PROVIDED OPEN SPACE (746,108 SQ.FT. TOTAL)</b>		571,075 SQ.FT.
TOTAL ALLOWABLE UNITS, TU=(TA-UL)/LS	13.34	13 EA
TOTAL UNITS PROPOSED		12 EA
DENSITY BONUS, UNITS (REQ'D PER ART. XXI Sect. 9)	2(DUPLEX)+1 SINGLE FAMILY	
TOTAL PROPOSED UNITS (INCL. AFFORDABLE)		14 EA
AREA WITHIN WATERSHED PROTECTION DISTRICT	718,740 SQ.FT.	6 EA
UNITS WITHIN WATERSHED PROTECTION DISTRICT		2 EA
DENSITY WITHIN WATERSHED PROTECTION DISTRICT	119,790 SQ.FT.	359,370 SQ.FT.

**NOTE:**

- THREE AFFORDABLE UNITS PROPOSED:  
 A. SINGLE FAMILY RESIDENCE - LOT 13  
 B. DUPLEX - LOT 4
- FINAL LOCATION OF AFFORDABLE UNITS MAY BE ESTABLISHED BY THE PLANNING BOARD



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FOR FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SET FORTH IN THE LETTER OF APPROVAL  
 DATED: MAR 11 2010 FILE # 09-0241-182  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Charles A. Hackett*

**STORM WATER CONTROL FACILITIES OPERATION AND MAINTENANCE PLAN:**

OPERATION AND MAINTENANCE OF THE STORM WATER MANAGEMENT FACILITIES SHALL BE RESPONSIBILITY OF THE CONDOMINIUM ASSOCIATION AND SHALL BE REFERENCED IN EACH UNIT'S DEED AND CHAIN OF TITLE.

**STREET SWEEPING**

1. STREET SWEEPING SHALL BE USING VACUUM-ASSISTED SWEEPER AT LEAST FOUR TIMES PER YEAR AND AT THE END OF THE FOLIAGE AND SNOW REMOVAL SEASON.

**SEDIMENT FOREBAY MAINTENANCE NOTES:**

1. FOREBAYS SHALL BE CLEANED FOUR TIMES PER YEAR AND INSPECTED MONTHLY.
2. ALL SEDIMENT AND HYDROCARBONS SHALL BE HANDLED AND DISPOSED IN ACCORDANCE WITH APPROPRIATE LOCAL, STATE AND FEDERAL GUIDELINES AND REGULATIONS.

**BIORETENTION AREAS MAINTENANCE NOTES:**

1. DURING THE SIX MONTHS IMMEDIATELY AFTER CONSTRUCTION, BIORETENTION FACILITIES SHOULD BE INSPECTED AT LEAST TWICE OR MORE FOLLOWING PRECIPITATION EVENTS OF AT LEAST 1.0 INCH TO ENSURE THAT THE SYSTEM IS FUNCTIONING PROPERLY. THEREAFTER, INSPECTIONS SHOULD BE CONDUCTED ON AN ANNUAL BASIS AND AFTER STORM EVENTS OF GREATER THAN OR EQUAL THE 1-YEAR PRECIPITATION EVENT.
2. MINOR SOIL EROSION GULLIES SHOULD BE REPAIRED WHEN THEY OCCUR. PRUNING OR REPLACEMENT OF WOODY VEGETATION SHOULD OCCUR WHEN DEAD OR DYING VEGETATION IS OBSERVED. SEPARATION OF HERBACEOUS VEGETATION ROOT SHOCK SHOULD OCCUR WHEN OVER-CROWDING IS OBSERVED, OR APPROXIMATELY ONCE EVERY 3 YEARS. THE MULCH LAYER SHOULD ALSO BE REPLENISHED (TO THE ORIGINAL DESIGN DEPTH) EVERY OTHER YEAR AS DIRECTED BY INSPECTION REPORTS. THE PREVIOUS MULCH LAYER SHOULD BE REMOVED, AND PROPERLY DISPOSED OF, OR ROTO-TILLED INTO THE SOIL SURFACE. IF AT LEAST 50 PERCENT VEGETATION COVERAGE IS NOT ESTABLISHED AFTER TWO YEARS, A REINFORCEMENT PLANTING SHOULD BE PERFORMED. IF THE SURFACE OF THE BIORETENTION SYSTEM BECOMES CLOGGED TO THE POINT THAT STANDING WATER IS OBSERVED ON THE SURFACE 48 HOURS AFTER PRECIPITATION EVENTS, THE SURFACE SHOULD BE ROTO-TILLED OR CULTIVATED TO BREAKUP ANY HARD-PACKED SEDIMENT AND THEN RE-VEGETATED. SEDIMENT SHALL BE CLEANED OUT OF THE SEDIMENT FOREBAYS WHEN IT ACCUMULATES TO A DEPTH OF MORE THAN 8 INCHES ( 1/2 THE DESIGN DEPTH). VEGETATION WITHIN THE SEDIMENT FOREBAY SHALL BE LIMITED TO A HEIGHT OF 18 INCHES. THE SEDIMENT CHAMBER OUTLET DEVICES SHALL BE CLEANED/REPAIRED WHEN DRAWDOWN TIMES EXCEED 36 HOURS. TRASH AND DEBRIS SHALL BE REMOVED AS NECESSARY.
3. BIORETENTION/RAIN GARDEN MAINTENANCE SCHEDULE

ACTIVITY	TIME OF YEAR	FREQUENCY
INSPECT & REMOVE TRASH	YEAR ROUND	MONTHLY
MULCH	SPRING	ANNUALLY
REMOVE DEAD VEGETATION	FALL AND SPRING	TWICE A YEAR
REPLACE DEAD VEGETATION	SPRING	ANNUALLY
PRUNE	SPRING OR FALL	ANNUALLY
REPLACE ENTIRE MEDIA & ALL VEGETATION	LATE SPRING/EARLY SUMMER	AS NEEDED

4. MINOR SOIL EROSION GULLIES SHOULD BE REPAIRED WHEN THEY OCCUR. PRUNING OR REPLACEMENT OF WOODY VEGETATION SHOULD OCCUR WHEN DEAD OR DYING VEGETATION IS OBSERVED. SEPARATION OF HERBACEOUS VEGETATION ROOT SHOCK SHOULD OCCUR WHEN OVER-CROWDING IS OBSERVED, OR APPROXIMATELY ONCE EVERY 3 YEARS. THE MULCH LAYER SHOULD ALSO BE REPLENISHED (TO THE ORIGINAL DESIGN DEPTH) EVERY OTHER YEAR AS DIRECTED BY INSPECTION REPORTS. THE PREVIOUS MULCH LAYER SHOULD BE REMOVED, AND PROPERLY DISPOSED OF, OR ROTO-TILLED INTO THE SOIL SURFACE. IF AT LEAST 50 PERCENT VEGETATION COVERAGE IS NOT ESTABLISHED AFTER TWO YEARS, A REINFORCEMENT PLANTING SHOULD BE PERFORMED. IF THE SURFACE OF THE BIORETENTION SYSTEM BECOMES CLOGGED TO THE POINT THAT STANDING WATER IS OBSERVED ON THE SURFACE 48 HOURS AFTER PRECIPITATION EVENTS, THE SURFACE SHOULD BE ROTO-TILLED OR CULTIVATED TO BREAKUP ANY HARD-PACKED SEDIMENT AND THEN RE-VEGETATED.

**DETENTION POND MAINTENANCE NOTES:**

1. ONCE DETENTION BASIN IS IN USE INSPECT IT AFTER EVERY MAJOR STORM FOR THE FIRST FEW MONTHS TO ENSURE IT IS STABILIZED AND IS FUNCTIONING PROPERLY. INSPECT BASIN FOR PONDING. IF PONDING OCCURS FOR MORE THAN 72 HOURS AND IS DUE TO THE CLOGGING (RESULTED FROM THE UPLAND SEDIMENT EROSION, EXCESSIVE COMPACTION OF SOILS, OR LOW SPOTS) IMMEDIATELY CORRECT THE CAUSE, OTHERWISE, PONDING MAY ELIMINATED BY OPENING AND PROPERLY ADJUSTING UNDERDRAIN VALVE.
2. DETENTION BASIN SHALL BE INSPECTED AT LEAST TWICE PER YEAR TO ENSURE PROPER OPERATION. DURING THE INSPECTIONS CHECK BASINS FOR THE FOLLOWING:
  - SIGNS OF DIFFERENTIAL SETTLEMENT AND CRACKING
  - EROSION
  - TREE GROWTH
  - CONDITION OF THE RIPRAP
  - SEDIMENT ACCUMULATION
  - HEALTH OF THE TURF
3. THE SIDE SLOPES AND EMBANKMENT SHALL BE MOWED AT LEAST FOUR TIMES ANNUALLY, AND ACCUMULATED TRASH AND DEBRIS REMOVED.
4. AT LEAST TWICE A YEAR EXAMINE THE OUTLET STRUCTURE FOR EVIDENCE OF CLOGGING OR OUTFLOW RELEASE VELOCITIES IN EXCESS OF DESIGN FLOW. REMOVE SEDIMENT/DEBRIS FROM THE SUMP OF THE OUTLET STRUCTURE.
5. SEDIMENT SHALL BE REMOVED FROM THE BASIN AS NECESSARY, BUT ONLY WHEN THE FLOOR IS COMPLETELY DRY. USE DEEP TILLING TO BREAK UP CLOGGED SURFACES AND REVEGETATE IMMEDIATELY. USE ONLY LIGHT EQUIPMENT TO REMOVE THE SEDIMENT IN ORDER NOT TO COMPACT UNDERLYING SOIL. INSPECT SOIL AND REPAIR ERODED AREAS MONTHLY. RE-MULCH VOID AREAS AS NEEDED. REMOVE LITTER AND DEBRIS MONTHLY. TREAT DISEASED VEGETATION AS NEEDED. REMOVE AND REPLACE DEAD VEGETATION TWICE PER YEAR (SPRING AND FALL).

**WATER QUALITY SWALE MAINTENANCE NOTES:**

REGULAR MAINTENANCE INCLUDES MOWING, FERTILIZING, LIMING, WATERING, PRUNING, AND WEED AND PEST CONTROL.

1. THE FIRST FEW MONTHS AFTER CONSTRUCTION AND TWICE A YEAR THEREAFTER INSPECT SWALES TO MAKE SURE VEGETATION IS ADEQUATE AND SLOPES ARE NOT ERODING. CHECK FOR RILLING AND GULLYING. REPAIR ERODED AREAS AND REVEGETATE.
2. VEGETATION IN DRY SWALES SHALL BE MOWED AS REQUIRED TO MAINTAIN GRASS HEIGHTS IN THE 4-6 IN RANGE, WITH MANDATORY MOWING ONCE GRASS HEIGHTS EXCEED 10 IN.
3. AT LEAST ONCE A YEAR REMOVE SEDIMENT AND DEBRIS MANUALLY.
4. RESEED SWALE AS NEEDED.
5. SEDIMENT BUILD-UP WITHIN THE BOTTOM OF THE CHANNEL OR FILTER STRIP SHALL BE REMOVED WHEN THE DEPTH OF THE SEDIMENT EXCEEDS 4.5 INCHES ( 25% OF THE ORIGINAL VOID VOLUME HAS BEEN EXCEEDED).
6. IN THE ABSENCE OF EVIDENCE OF CONTAMINATION, REMOVED DEBRIS MAY BE TAKEN TO A LANDFILL OR OTHER PERMITTED FACILITY.

**LEVEL SPREADER MAINTENANCE NOTES:**

1. LEVEL SPREADER SHALL BE INSPECTED EVERY RAINFALL UNTIL VEGETATION IS ESTABLISHED DOWNSTREAM, AND REPAIRS AS NECESSARY SHALL BE MADE PROMPTLY. AFTER AREA IS STABILIZED, INSPECTIONS SHALL BE MADE QUARTERLY. CONTRACTOR SHALL GUARANTEE REPAIRS AND RESEEDING FOR ONE YEAR AFTER PROJECT ACCEPTANCE.
2. SEDIMENT AND DEBRIS SHALL BE REMOVED MANUALLY, AT LEAST ONCE PER YEAR.
3. NO SNOW REMOVAL OR SNOW DUMPING SHALL BE ALLOWED OVER LEVEL-SPREADER AREA.
4. LEVEL SPREADER SHALL BE MAINTAINED IN A MANNER TO ACHIEVE SHEET FLOW.

**DEEP SUMP CATCH BASIN MAINTENANCE NOTES:**

1. INSPECTIONS SHALL BE PERFORMED A MINIMUM OF 4 TIMES A YEAR. UNITS SHALL BE CLEANED 4 TIMES A YEAR OR WHENEVER THE DEPTH OF SEDIMENT IS GREATER THAN OR EQUAL TO HALF THE SUMP DEPTH.
2. THE INLET GRATE SHALL NOT BE WELDED TO THE FRAME SO THAT THE SUMP CAN BE EASILY INSPECTED AND MAINTAINED.
3. ALL SEDIMENT AND HYDROCARBONS SHALL BE HANDLED AND DISPOSED IN ACCORDANCE WITH APPROPRIATE LOCAL, STATE AND FEDERAL GUIDELINES AND REGULATIONS.

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SHEET ii OF 20

**STORM WATER FACILITIES  
OPERATION & MANAGEMENT  
NOTES & INSTRUCTIONS**

**DELIA DRIVE  
MAJOR SUBDIVISION  
PRELIMINARY PLAN  
MAP 3-5 BLOCK 118 CARD 18  
NORTH LAKE ROAD  
TIVERTON, R.I.**

DATE: AUGUST 25, 2009

REVISED: 11/20/09; 02/18/10

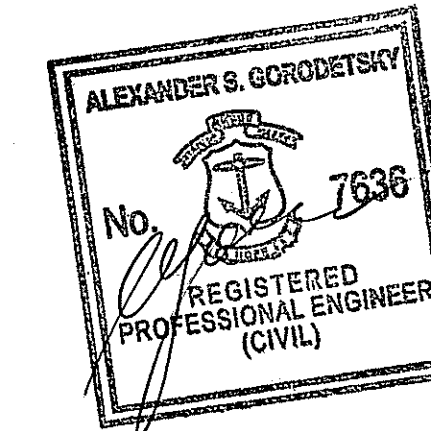
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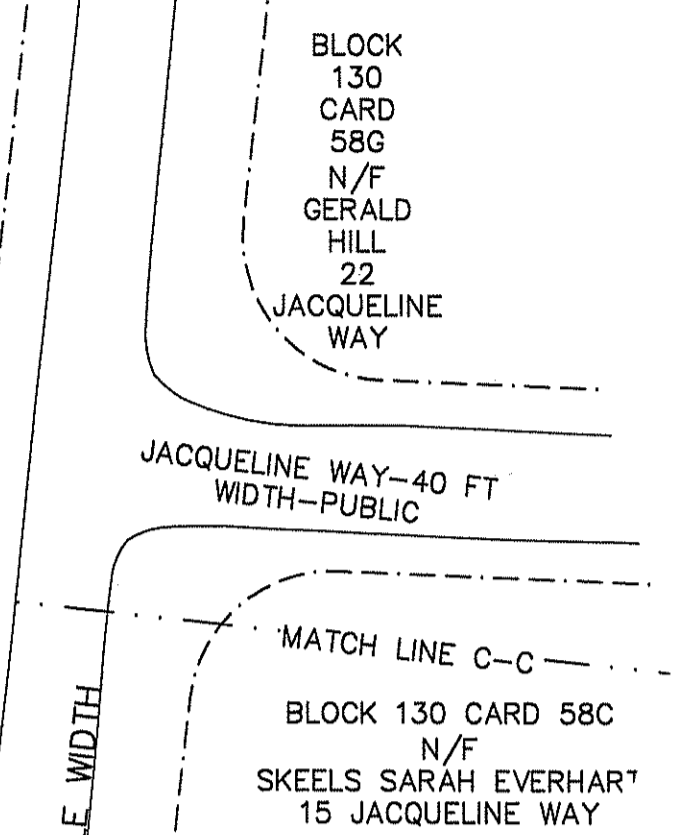
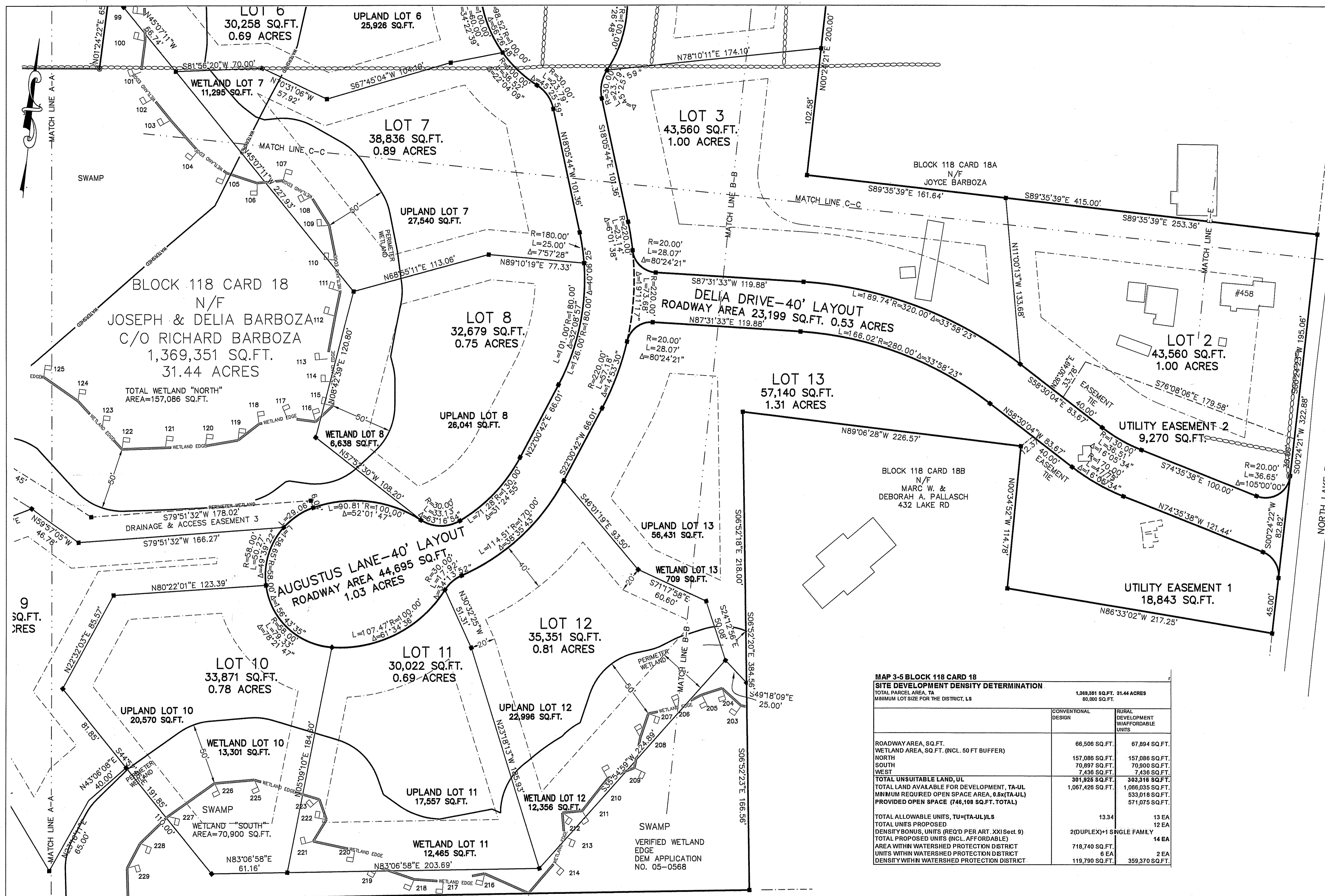
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OFFICE OF WATER RESOURCES  
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SPECIFIED IN THE LETTER OF APPROVAL  
MAR 11 2010 FILE # 09-0241  
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*Charles A. Harker*



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*Charles A. Harbo*

SHEET 1 OF 20  
 LOT LAYOUT  
 PLAN  
 DELIA DRIVE  
 MAJOR SUBDIVISION  
 PRELIMINARY PLAN  
 MAP 3-5 BLOCK 118 CARD 18  
 NORTH LAKE ROAD  
 TIVERTON, R.I.  
 SCALE: HORIZ. 1"=40'

DATE: AUGUST 25, 2009  
 REVISED: 11/20/09; 02/18/10  
 APPLICANT:  
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**MAP 3-5 BLOCK 118 CARD 18  
 SITE DEVELOPMENT DENSITY DETERMINATION**

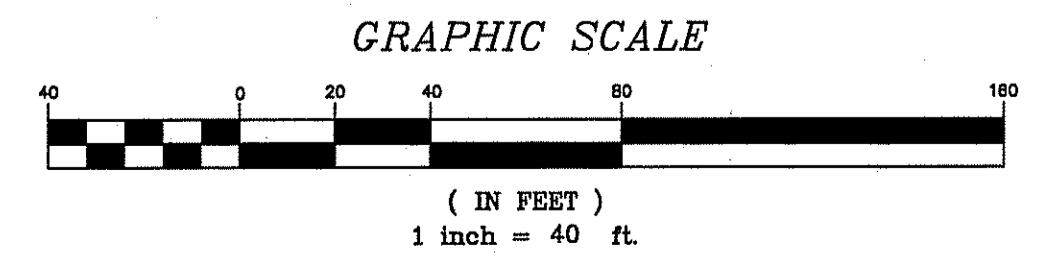
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WETLAND AREA, SQ. FT. (INCL. 50 FT BUFFER)		
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PROVIDED OPEN SPACE (746,168 SQ. FT. TOTAL)		571,075 SQ. FT.
TOTAL ALLOWABLE UNITS, TU=(TA-UL)/LS	1334	13 EA
TOTAL UNITS PROPOSED		12 EA
DENSITY BONUS, UNITS (REQ'D PER ART. XXI Sect 9)	2(DUPLX)+1(SNGLE FAMILY)	14 EA
TOTAL PROPOSED UNITS (INCL. AFFORDABLE)		
AREA WITHIN WATERSHED PROTECTION DISTRICT	718,740 SQ. FT.	6 EA
UNITS WITHIN WATERSHED PROTECTION DISTRICT	119,790 SQ. FT.	2 EA
DENSITY WITHIN WATERSHED PROTECTION DISTRICT		359,370 SQ. FT.

**CONVENTIONAL ZONING REQUIREMENTS**

ZONING DISTRICT	LOT AREA	BLDG COVERAGE	LOT WIDTH	FRONT YARD	REAR YARD	SIDE YARD EACH SIDE
R-80	80,000 SF	10%	200 FT	50 FT	80 FT	35 FT

**RURAL DEVELOPMENT ZONING REQUIREMENTS**  
 MIN. INDIVIDUAL LOT FRONTAGE ON A PUBLIC ROAD - 50 FT

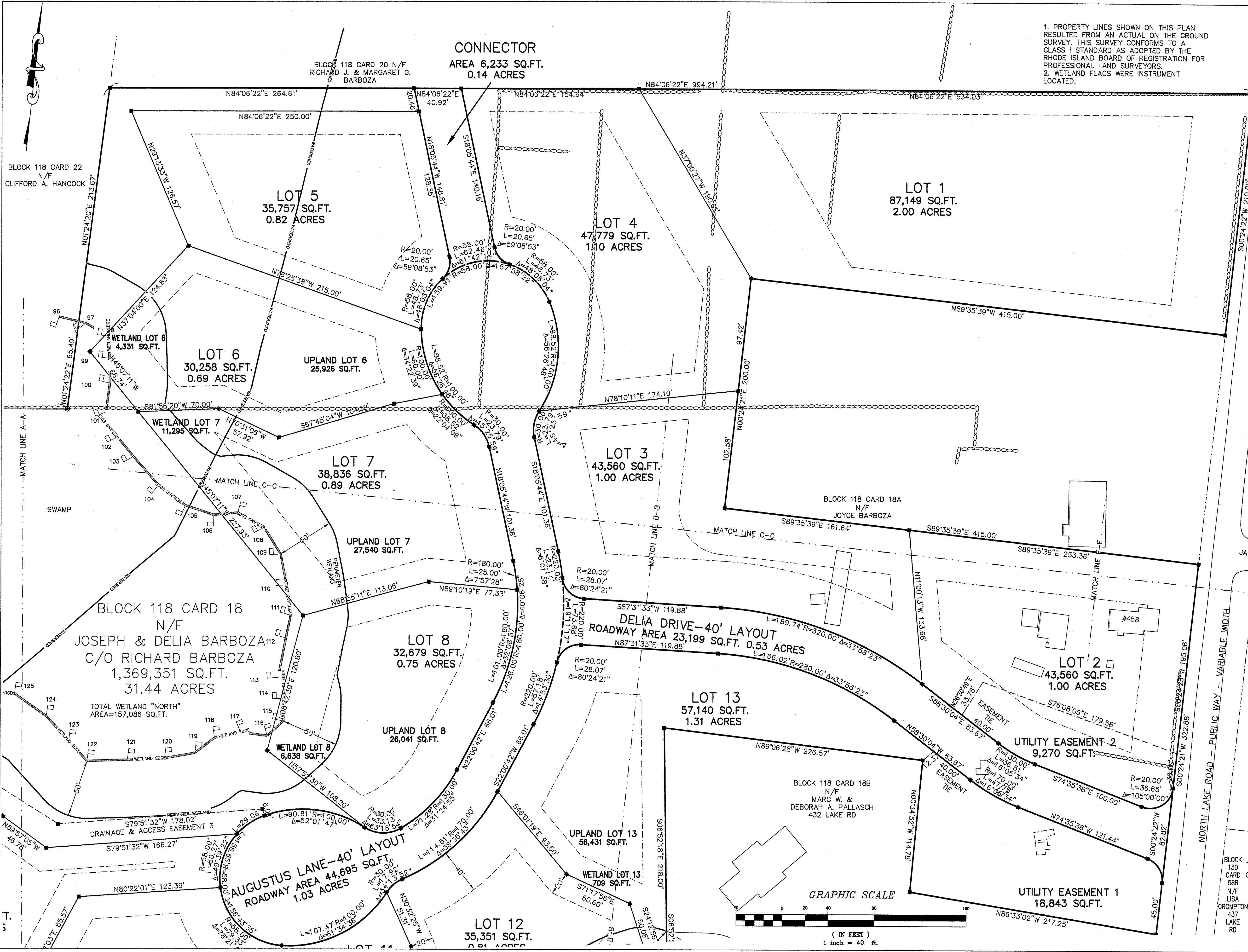
ZONING DISTRICT	MINIMUM LOT AREA	MAXIMUM BUILDING COVERAGE	MINIMUM FRONT YARD SETBACK	MINIMUM SIDE YARD SETBACK	MINIMUM REAR YARD SETBACK
R-80	30,000 SF	4,750 SF	40 FT	20 FT	40 FT



FLOOD ZONE DETERMINATION  
 NO SFHA (FLOOD ZONE) WITHIN 250 FEET  
 COMMUNITY NAME ZONE PANEL  
 440012 TOWN OF TIVERTON C 0008C  
 PANEL DATE  
 SEPTEMBER 30, 1995

1. PROPERTY LINES SHOWN ON THIS PLAN RESULTED FROM AN ACTUAL ON THE GROUND SURVEY. THIS SURVEY CONFORMS TO A CLASS I STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS.  
 2. WETLAND FLAGS WERE INSTRUMENT LOCATED.

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 2. WETLAND FLAGS WERE INSTRUMENT LOCATED.



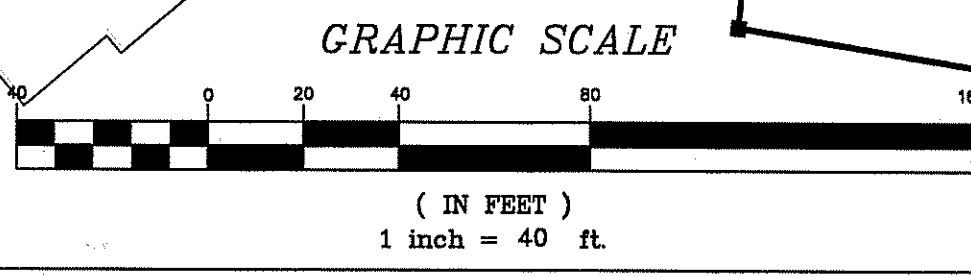
BLOCK 130 CARD 55C  
 N/F  
 MICKEN PATRICK & KATHLEEN  
 517 LAKE RD

BLOCK 130 CARD 57  
 N/F  
 STEVEN & KAREN COX  
 497 LAKE RD

BLOCK 130 CARD 58C  
 N/F  
 GERALD HILL  
 22 JACQUELINE WAY

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
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 DATED MAR 11 2010 FILE # 09-0241  
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 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**LOT LAYOUT PLAN**  
**DELIA DRIVE MAJOR SUBDIVISION PRELIMINARY PLAN**  
 MAP 3-5 BLOCK 118 CARD 18 NORTH LAKE ROAD TIVERTON, R.I.  
 SCALE: HORIZ. 1"=40'  
 DATE: AUGUST 25, 2009  
 REVISED: 11/20/09; 02/18/10  
 APPLICANT: RICHARD BARBOZA, EXECUTOR 890 SANFORD RD, WESTPORT, MA 02790  
 OWNER: ESTATE OF JOSEPH BARBOZA, TIVERTON PROBATE COURT No. 285 C/O RICHARD BARBOZA, EXECUTOR & APPLICANT  
 ENGINEER: GORODETSKY ENGINEERING, LLC 162 NORTH MAIN ST, FALL RIVER, MA 02720 (508) 324-1163  
 SURVEYOR: RALPH URBAN, PLS PO BOX 1494, WESTPORT, MA 02790 (508) 636-8397



BLOCK 118 CARD 22  
 N/F  
 CLIFFORD A. HANCOCK

BLOCK 118 CARD 20 N/F  
 RICHARD J. & MARGARET G. BARBOZA

BLOCK 118 CARD 18A  
 N/F  
 JOYCE BARBOZA

BLOCK 118 CARD 18B  
 N/F  
 MARC W. & DEBORAH A. PALLASCH  
 432 LAKE RD

BLOCK 130 CARD 58B  
 N/F  
 LISA CROMPTON  
 437 LAKE RD

MATCH LINE A-A

MATCH LINE C-C

MATCH LINE B-B

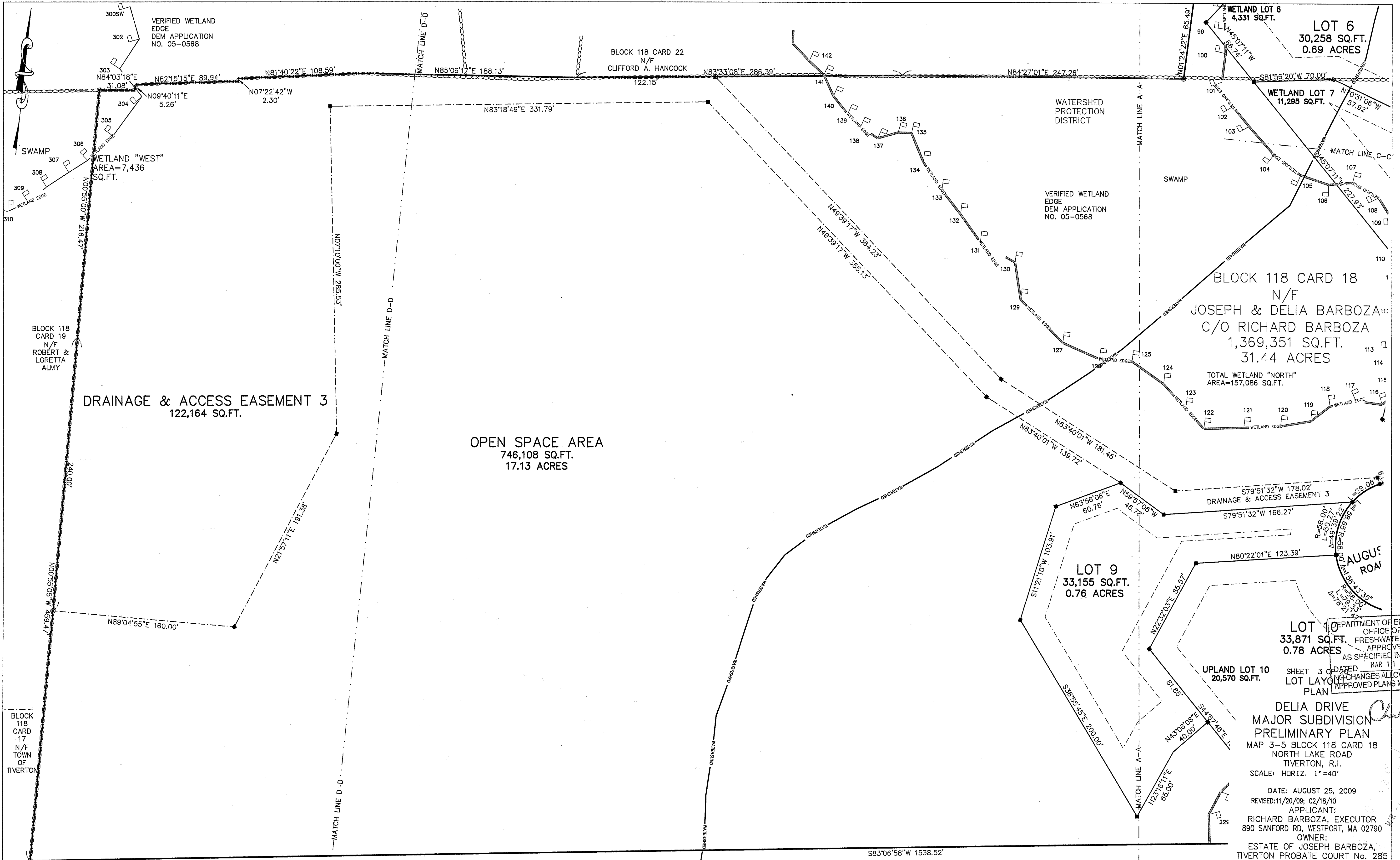
MATCH LINE C-C

NORTH LAKE ROAD - PUBLIC WAY - VARIABLE WIDTH

JACQUELINE WAY - 40 FT WIDTH - PUBLIC

SWAMP

T. 5



**DRAINAGE & ACCESS EASEMENT 3**  
122,164 SQ.FT.

**OPEN SPACE AREA**  
746,108 SQ.FT.  
17.13 ACRES

**BLOCK 118 CARD 18**  
N/F  
**JOSEPH & DELIA BARBOZA**  
C/O RICHARD BARBOZA  
1,369,351 SQ.FT.  
31.44 ACRES

TOTAL WETLAND "NORTH"  
AREA=157,086 SQ.FT.

**LOT 9**  
33,155 SQ.FT.  
0.76 ACRES

**LOT 10**  
33,871 SQ.FT.  
0.78 ACRES

**UPLAND LOT 10**  
20,570 SQ.FT.

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FILE # 09-0241  
MAR 11 2010  
SHEET 3 OF 4  
DATE: AUGUST 25, 2009  
REVISED: 11/20/09; 02/18/10  
APPLICANT:  
RICHARD BARBOZA, EXECUTOR  
890 SANFORD RD, WESTPORT, MA 02790  
OWNER:  
ESTATE OF JOSEPH BARBOZA,  
TIVERTON PROBATE COURT No. 285  
C/O RICHARD BARBOZA, EXECUTOR & APPLICANT  
ENGINEER:  
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MA 02720 (508) 324-1163  
SURVEYOR:  
RALPH URBAN, PLS  
PO BOX 1494, WESTPORT,  
MA 02790 (508) 636-8397

**DELIA DRIVE**  
**MAJOR SUBDIVISION**  
**PRELIMINARY PLAN**  
MAP 3-5 BLOCK 118 CARD 18  
NORTH LAKE ROAD  
TIVERTON, R.I.

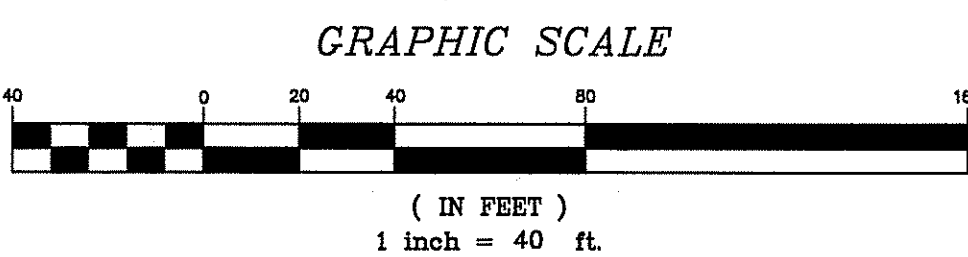
SCALE: HORIZ. 1"=40'

DATE: AUGUST 25, 2009  
REVISED: 11/20/09; 02/18/10

APPLICANT:  
RICHARD BARBOZA, EXECUTOR  
890 SANFORD RD, WESTPORT, MA 02790

OWNER:  
ESTATE OF JOSEPH BARBOZA,  
TIVERTON PROBATE COURT No. 285  
C/O RICHARD BARBOZA, EXECUTOR & APPLICANT

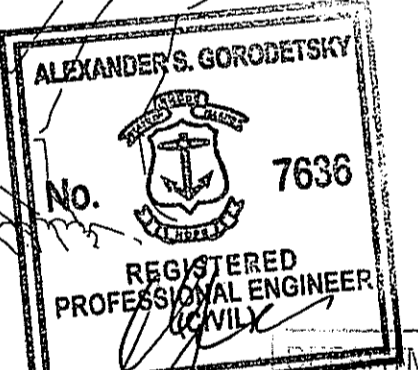
ENGINEER:  
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162 NORTH MAIN ST, FALL RIVER,  
MA 02720 (508) 324-1163  
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- WETLAND FLAGS WERE INSTRUMENT LOCATED.

*Charles A. Gorodetsky*

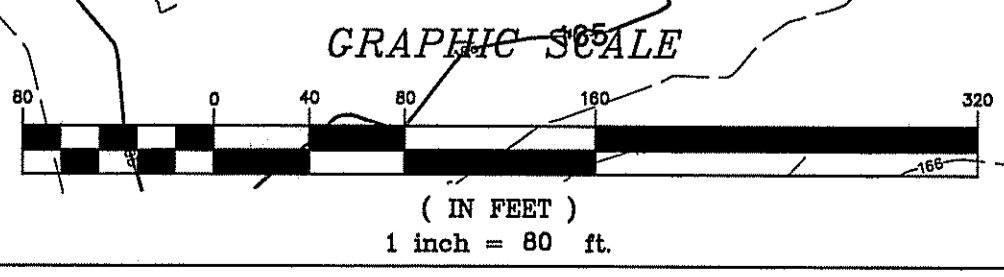
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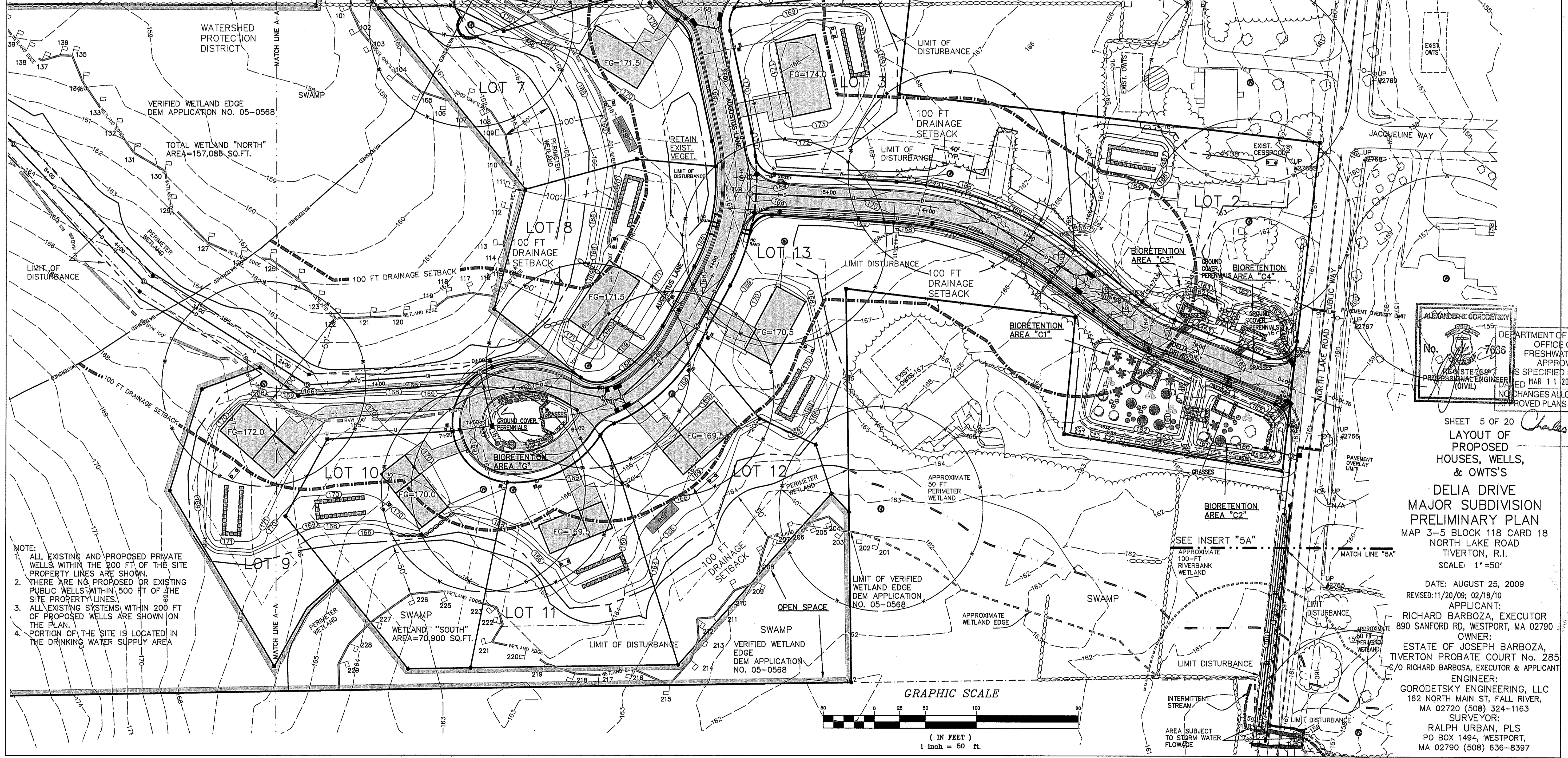
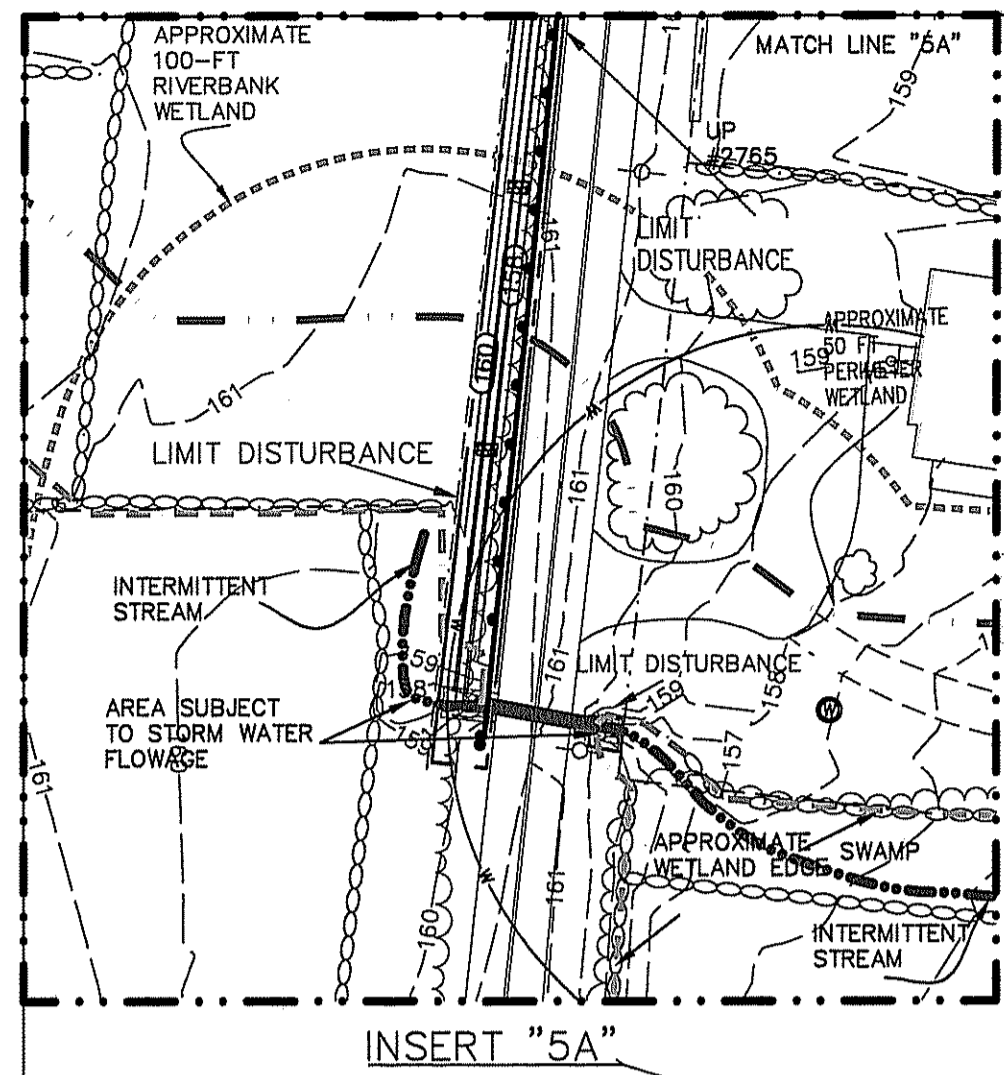


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 EXISTING CONDITIONS APPROVED WITHOUT PRIOR APPROVAL  
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 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

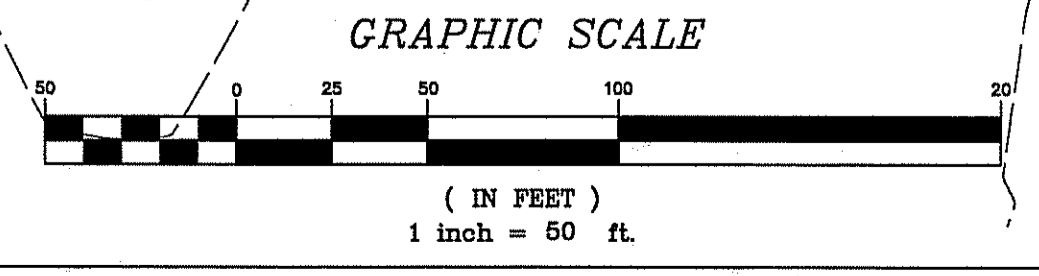
DELIA DRIVE  
 MAJOR SUBDIVISION  
 PRELIMINARY PLAN  
 MAP 3-5 BLOCK 118 CARD 18  
 NORTH LAKE ROAD  
 TIVERTON, R.I.  
 SCALE: 1"=80'

DATE: AUGUST 25, 2009  
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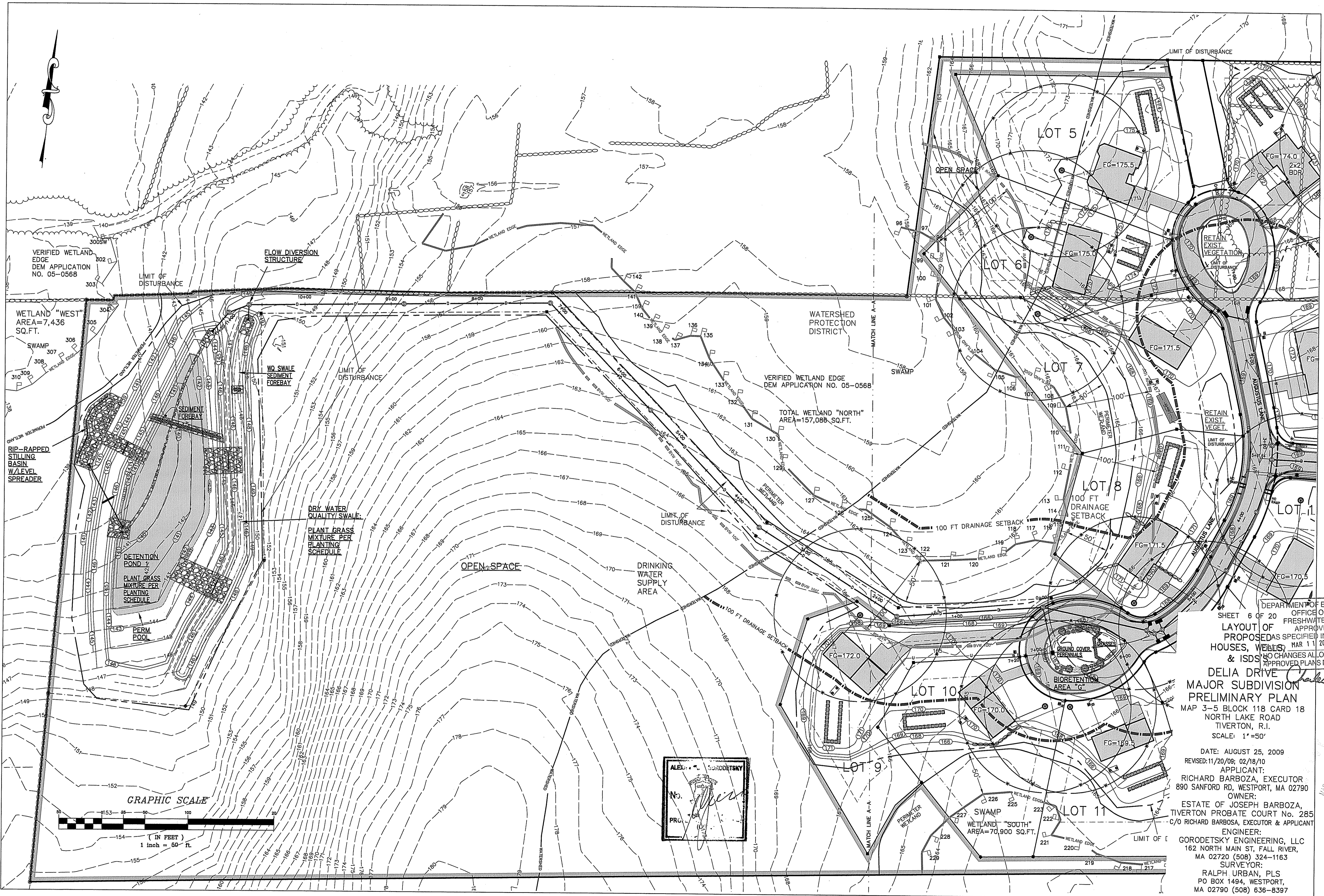


- NOTE:
1. ALL EXISTING AND PROPOSED PRIVATE WELLS WITHIN THE 200 FT OF THE SITE PROPERTY LINES ARE SHOWN.
  2. THERE ARE NO PROPOSED OR EXISTING PUBLIC WELLS WITHIN 500 FT OF THE SITE PROPERTY LINES.
  3. ALL EXISTING SYSTEMS WITHIN 200 FT OF PROPOSED WELLS ARE SHOWN ON THE PLAN.
  4. PORTION OF THE SITE IS LOCATED IN THE DRINKING WATER SUPPLY AREA



ALEXANDER G. GORODETSKY  
 No. 7636  
 REGISTERED PROFESSIONAL ENGINEER (CIVIL)  
 DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
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 FRESHWATER WETLANDS PROGRAM  
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SHEET 5 OF 20  
 LAYOUT OF  
 PROPOSED  
 HOUSES, WELLS,  
 & OWTS'S  
 DELIA DRIVE  
 MAJOR SUBDIVISION  
 PRELIMINARY PLAN  
 MAP 3-5 BLOCK 118 CARD 18  
 NORTH LAKE ROAD  
 TIVERTON, R.I.  
 SCALE: 1"=50'  
 DATE: AUGUST 25, 2009  
 REVISED: 11/20/09, 02/18/10  
 APPLICANT:  
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 MA 02790 (508) 636-8397



VERIFIED WETLAND  
EDGE  
DEM APPLICATION  
NO. 05-0568

FLOW DIVERSION  
STRUCTURE

WETLAND "WEST"  
AREA=7,436  
SQ.FT.

WATERSHED PROTECTION  
DISTRICT

VERIFIED WETLAND EDGE  
DEM APPLICATION NO. 05-0568

TOTAL WETLAND "NORTH"  
AREA=157,088 SQ.FT.

DRY WATER  
QUALITY SWALE  
PLANT GRASS  
MIXTURE PER  
PLANTING  
SCHEDULE

OPEN SPACE

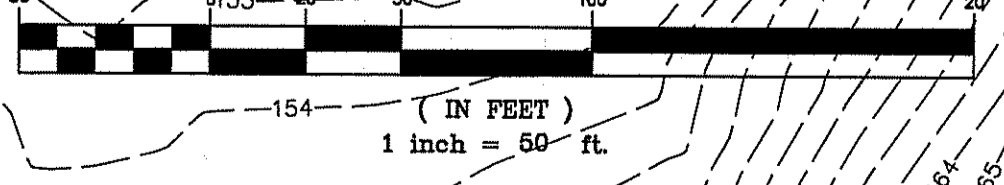
DRINKING  
WATER  
SUPPLY  
AREA

RIP-RAPPED  
STILLING  
BASIN  
W/LEVEL  
SPREADER

DETECTION  
POND 1  
PLANT GRASS  
MIXTURE PER  
PLANTING  
SCHEDULE

PERM  
POOL

GRAPHIC SCALE

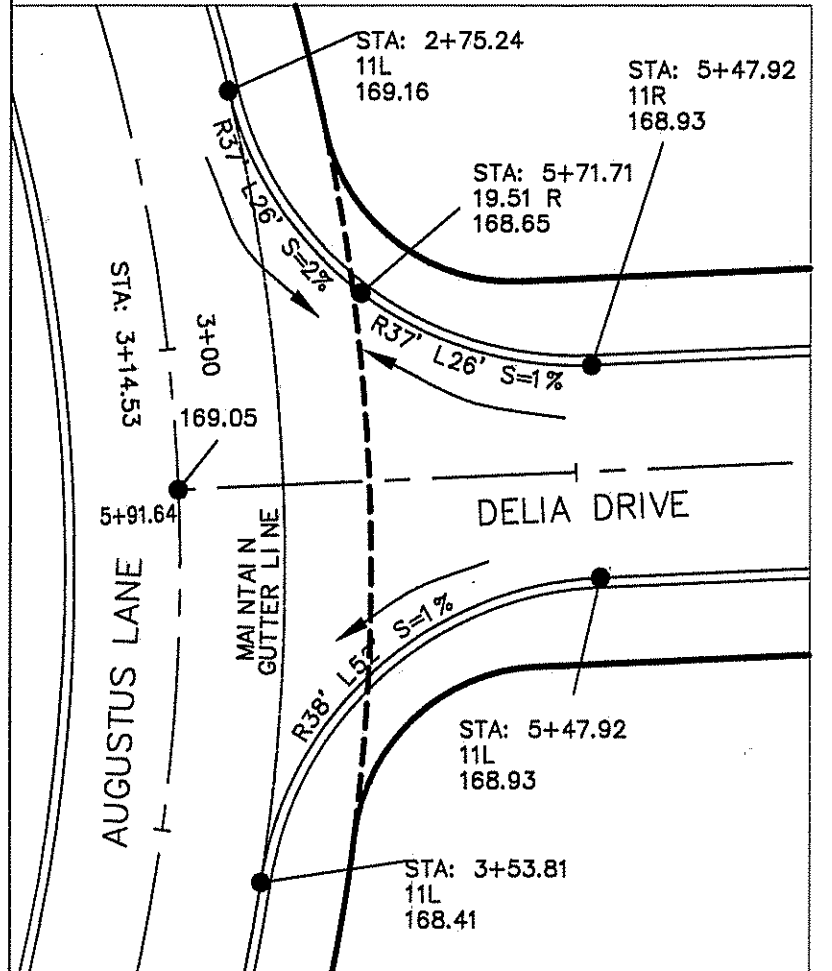
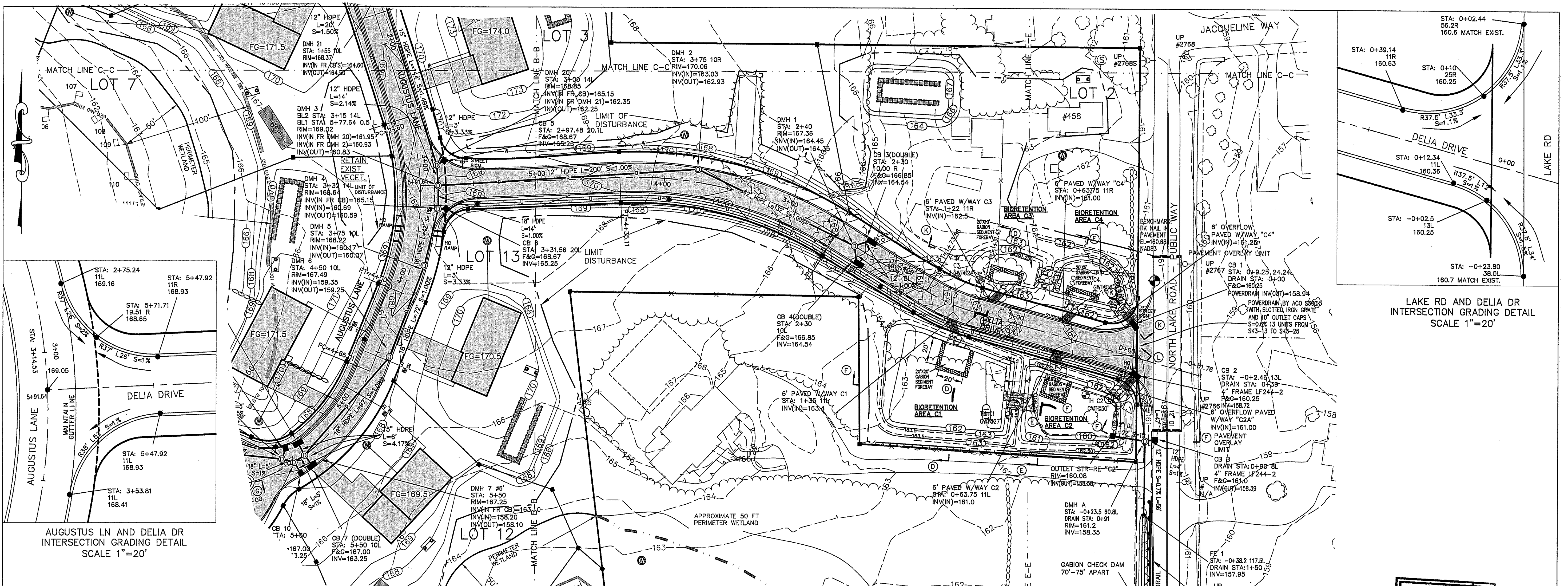


DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
LAYOUT OF PROPOSED AS SPECIFIED IN THE LETTER OF APPROVAL  
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MAR 11 2010 FILE # 09-0241  
& ISDS NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
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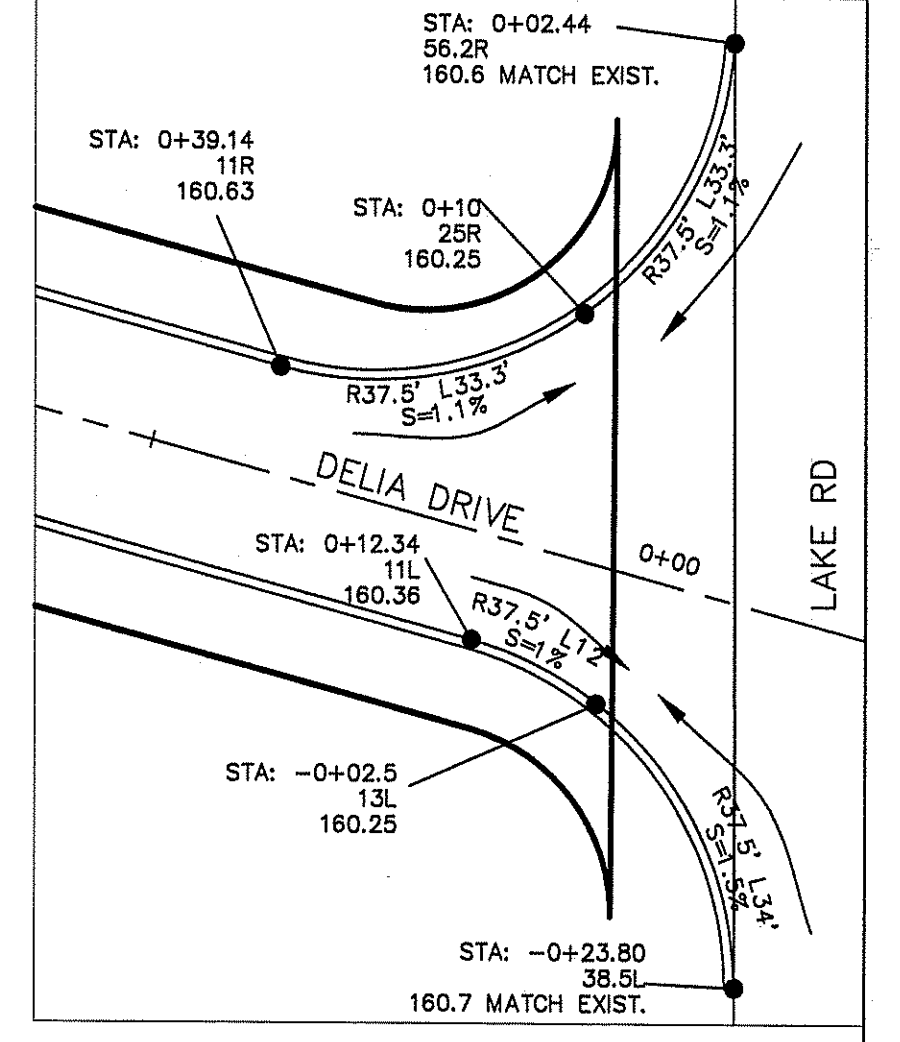
DELIA DRIVE  
MAJOR SUBDIVISION  
PRELIMINARY PLAN  
MAP 3-5 BLOCK 118 CARD 18  
NORTH LAKE ROAD  
TIVERTON, R.I.  
SCALE: 1"=50'

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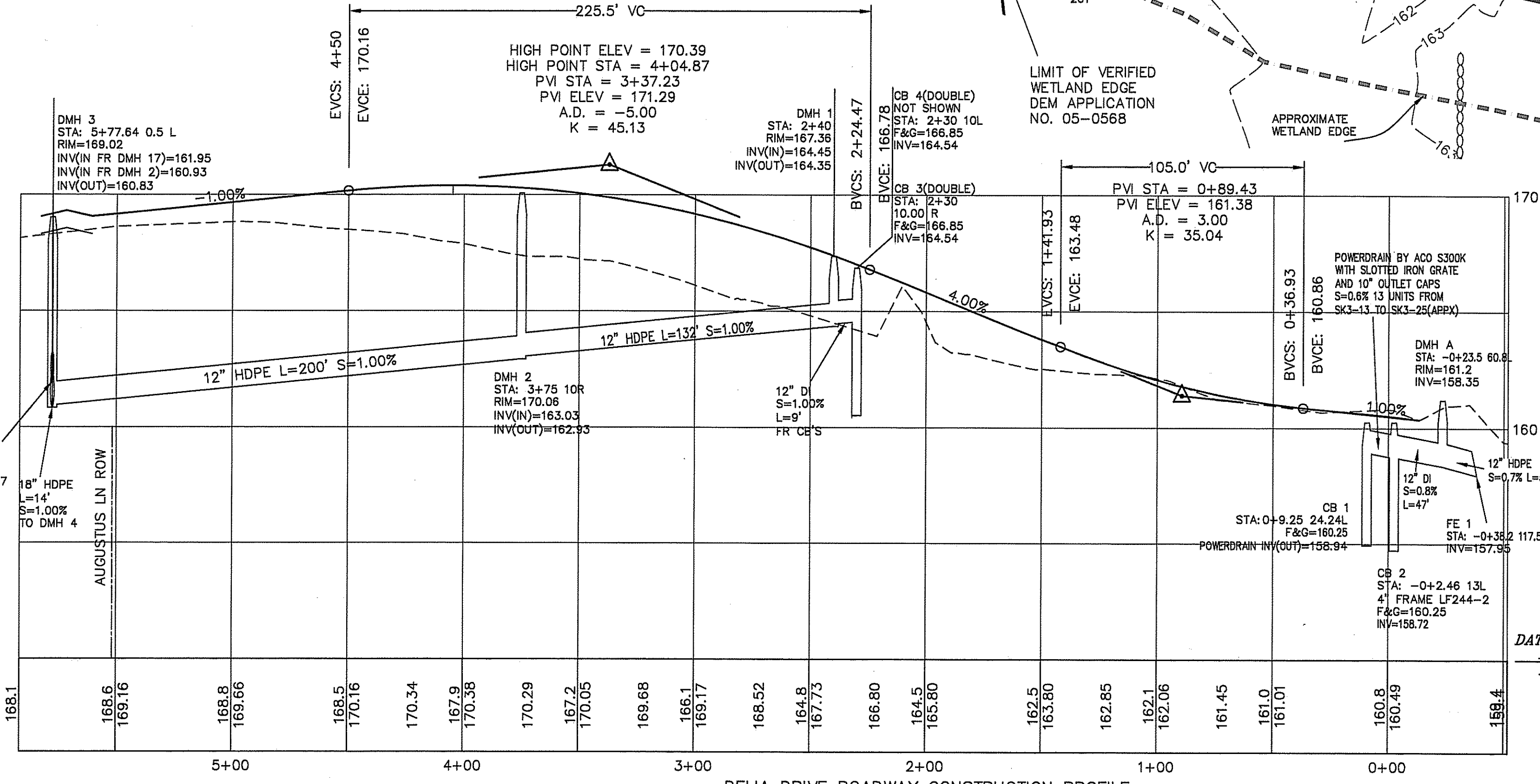
MAR 9 2010



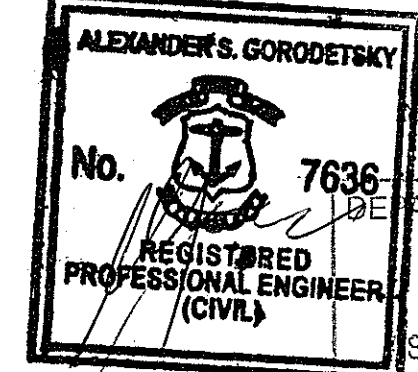
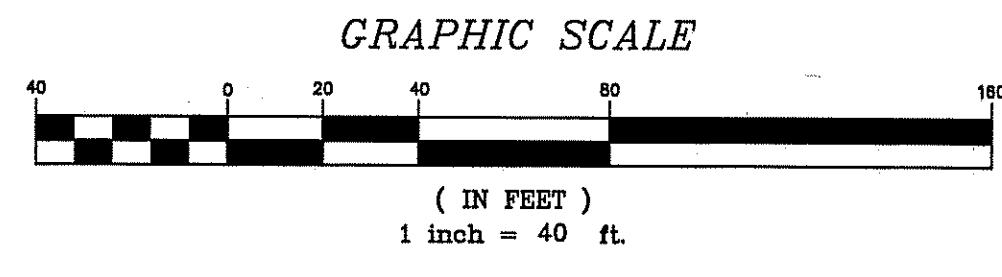
AUGUSTUS LN AND DELIA DR INTERSECTION GRADING DETAIL SCALE 1"=20'



LAKE RD AND DELIA DR INTERSECTION GRADING DETAIL SCALE 1"=20'

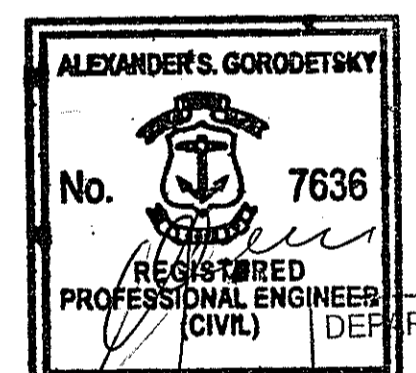
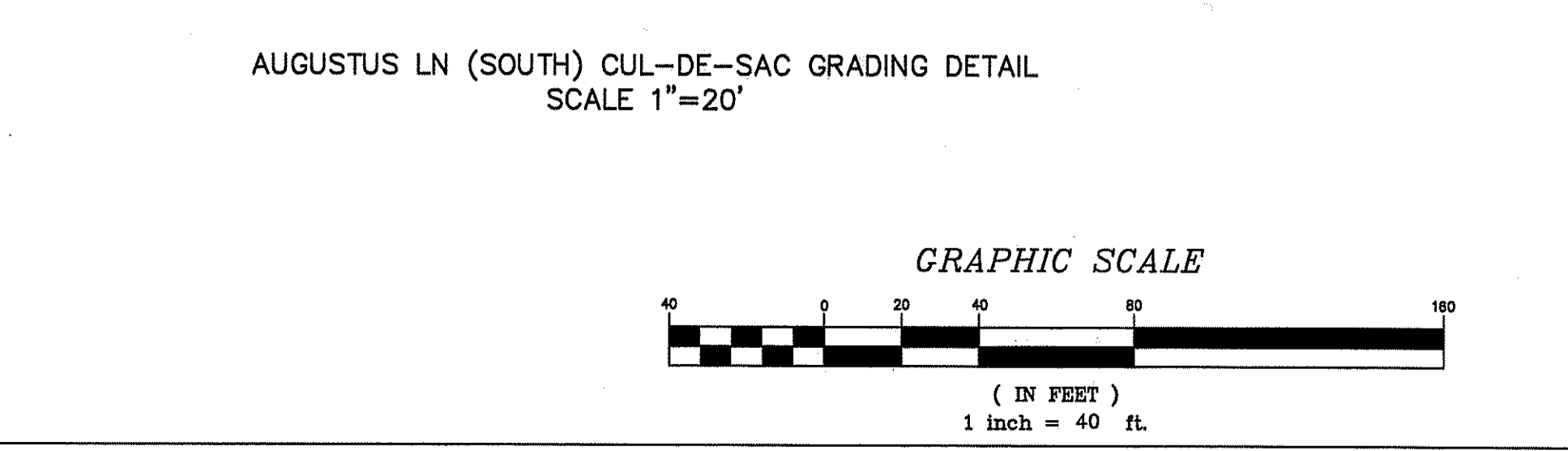
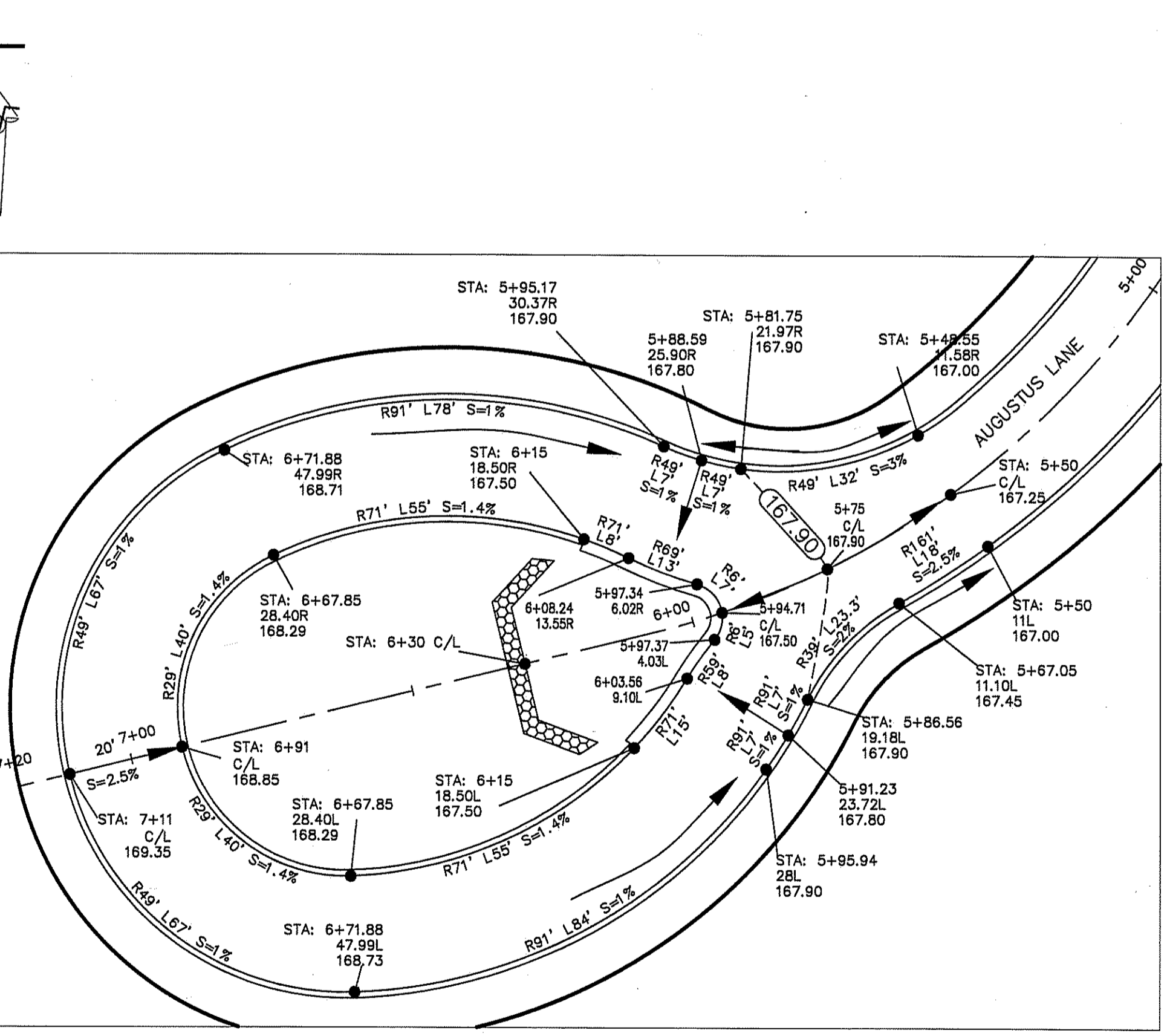
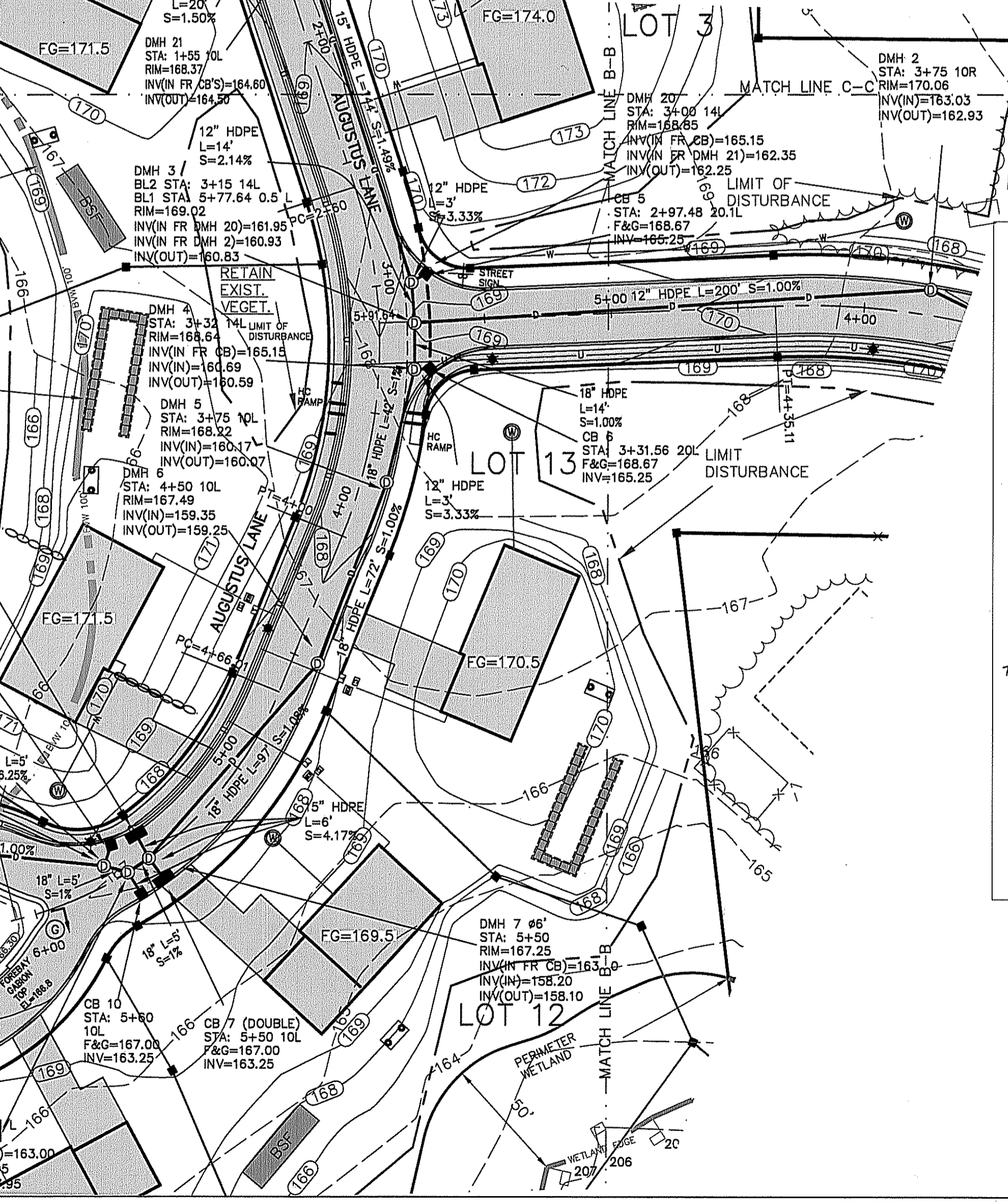
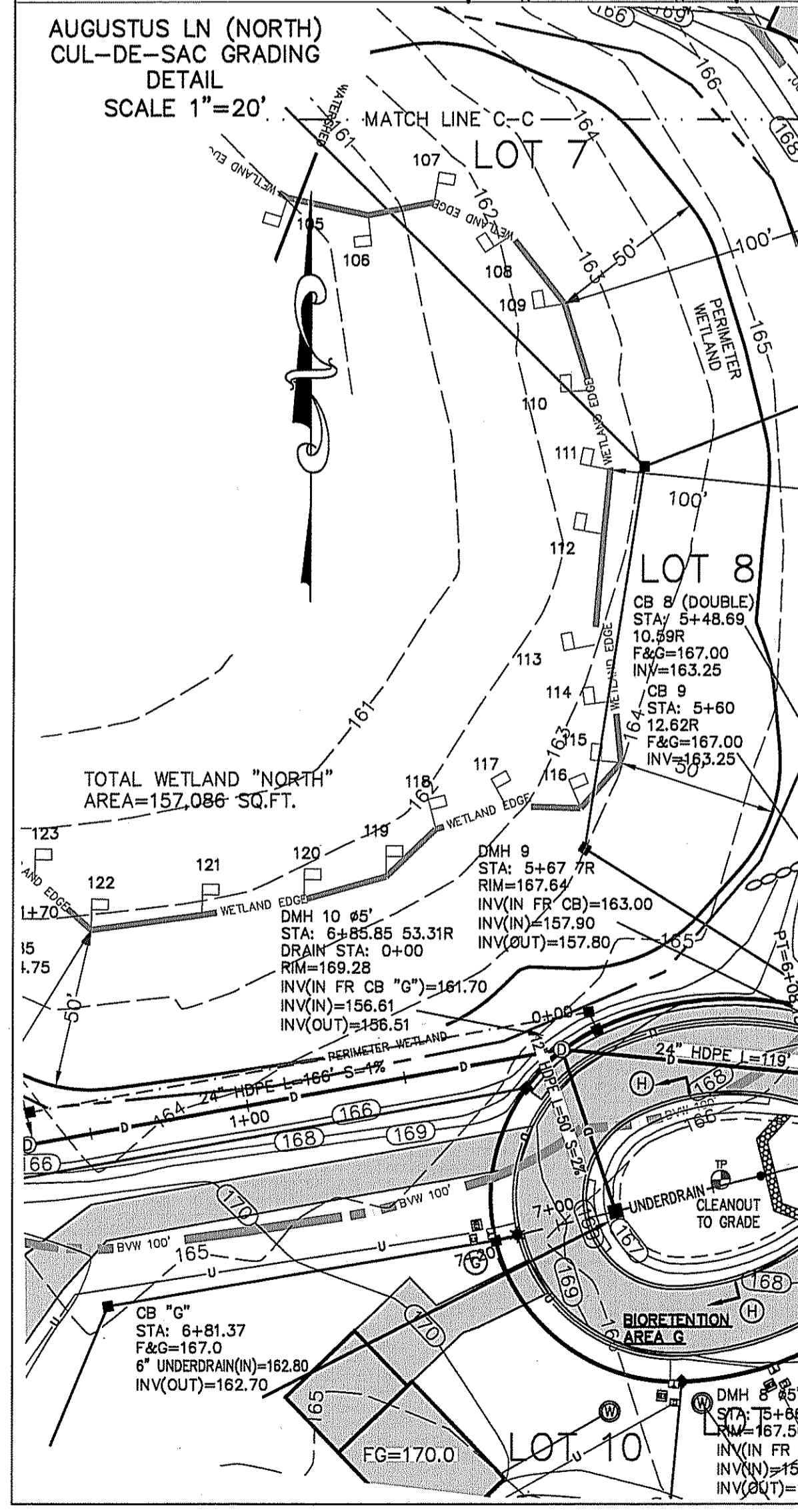
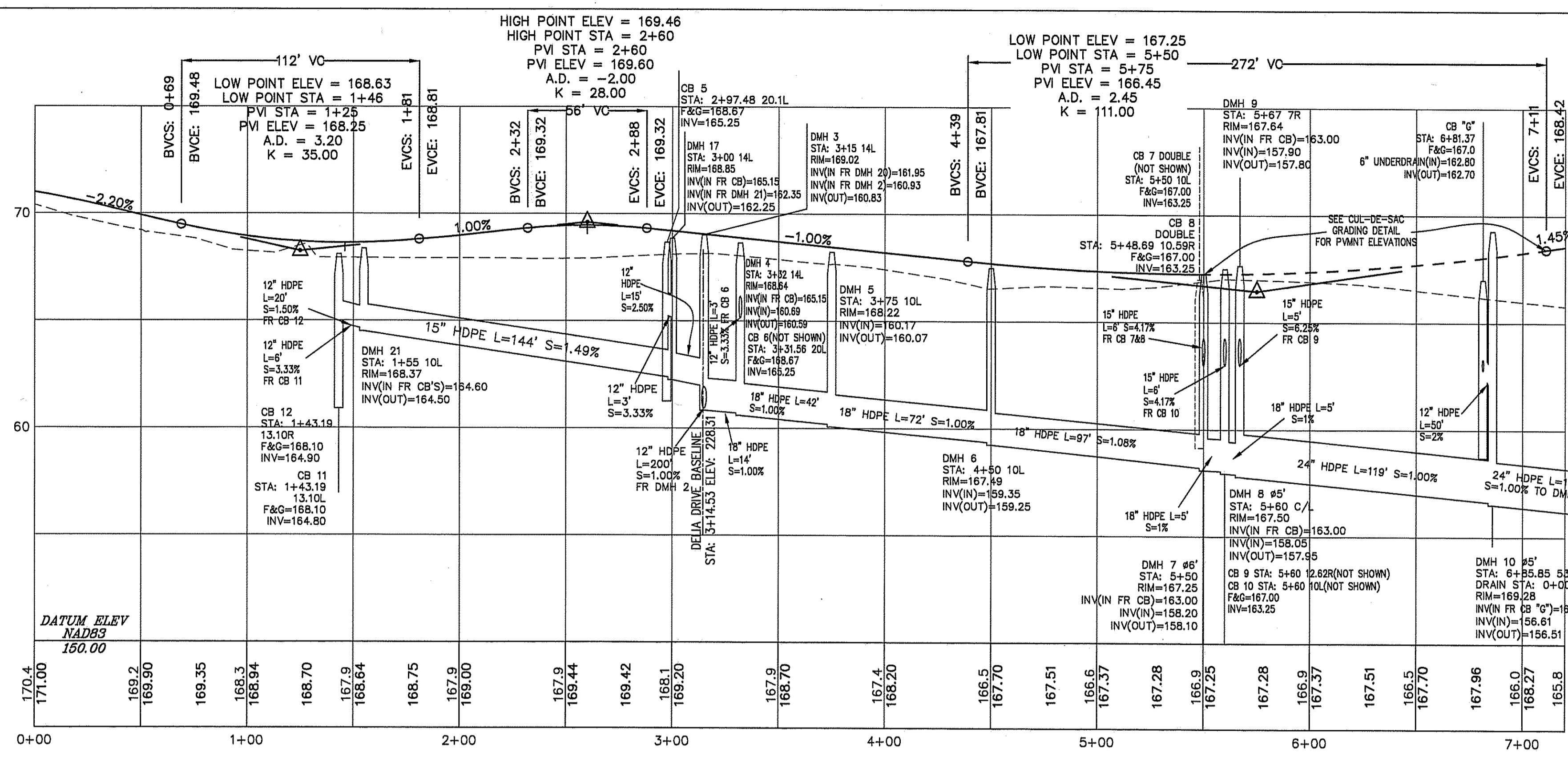
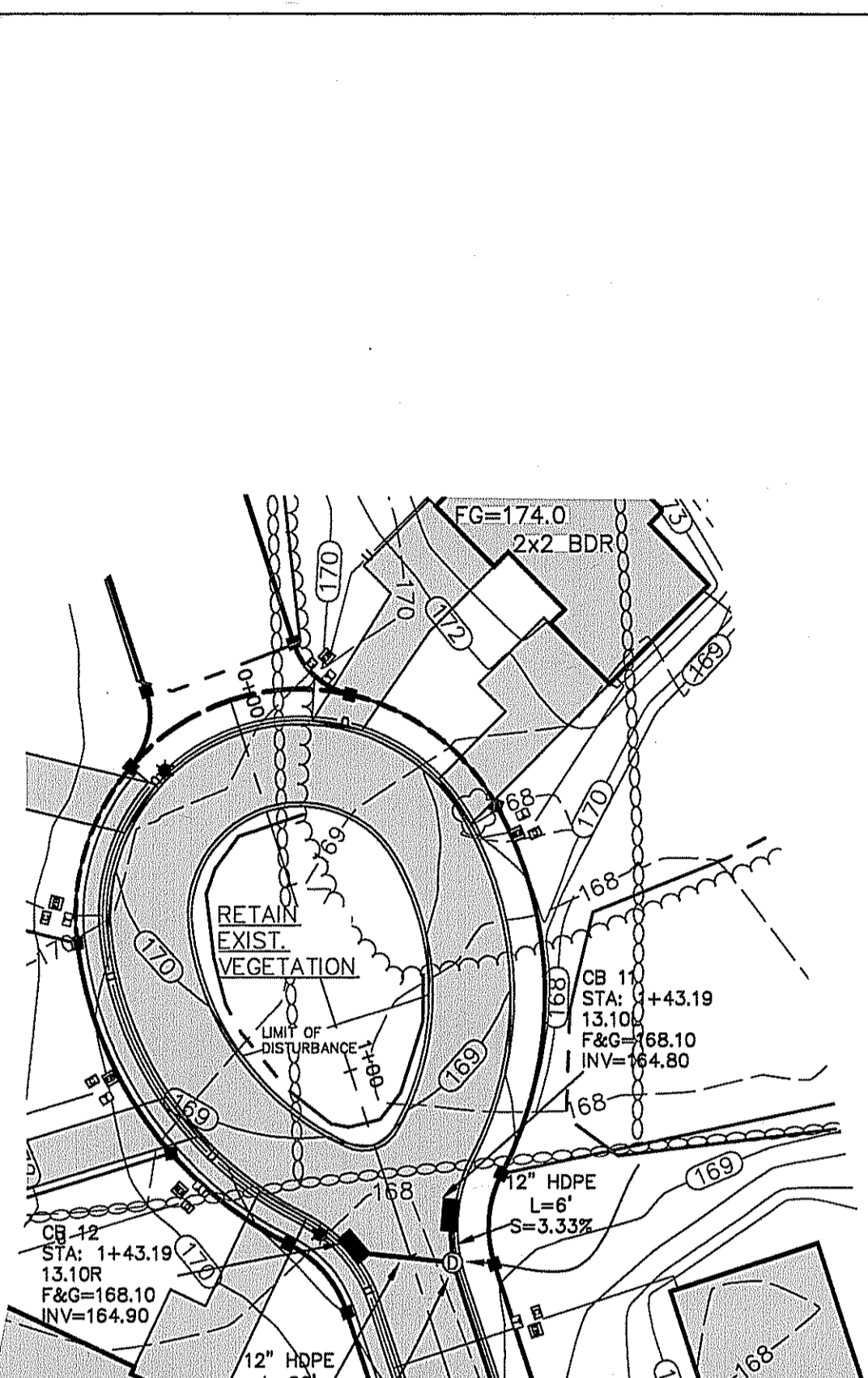
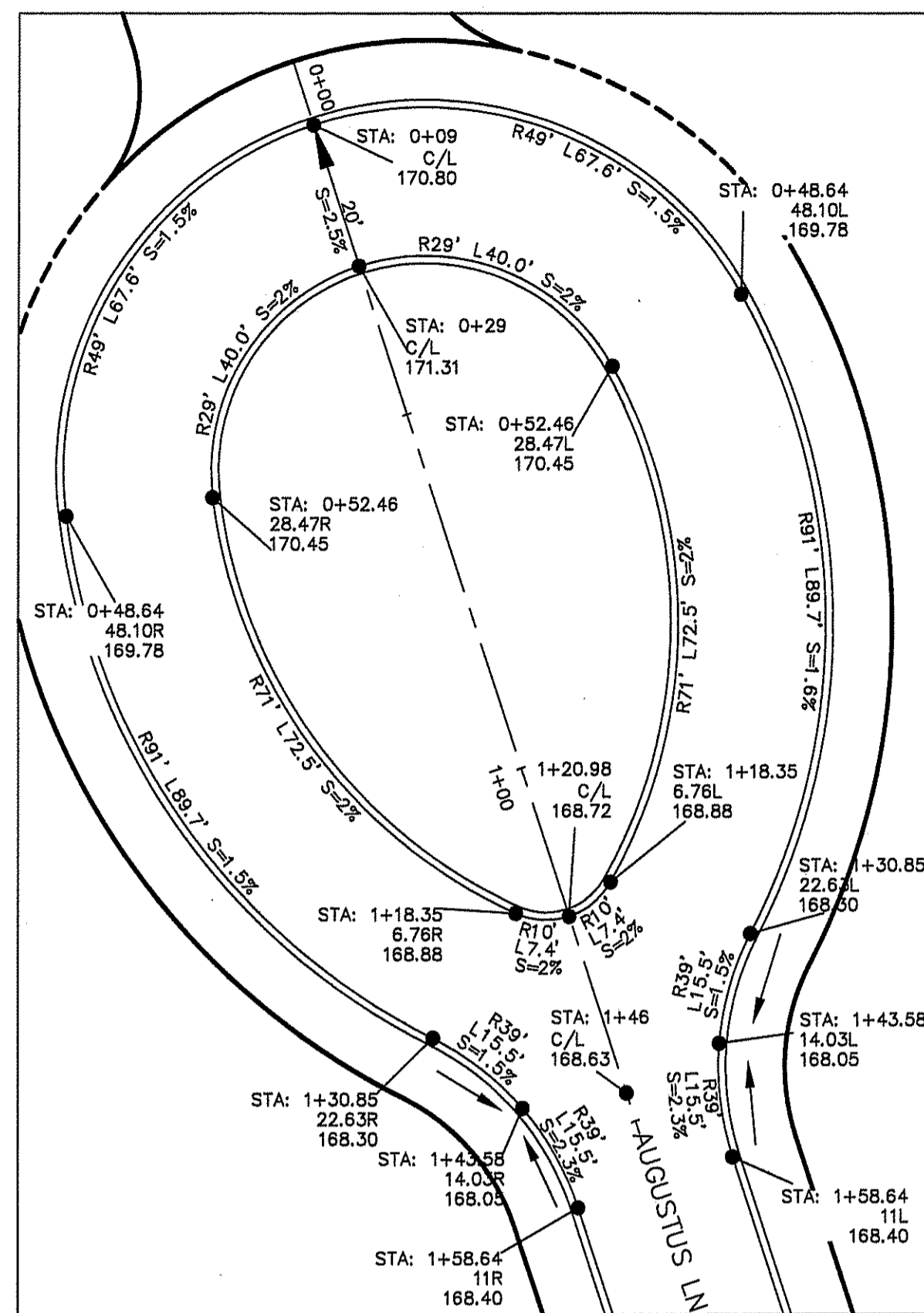


DELIA DRIVE ROADWAY CONSTRUCTION PROFILE



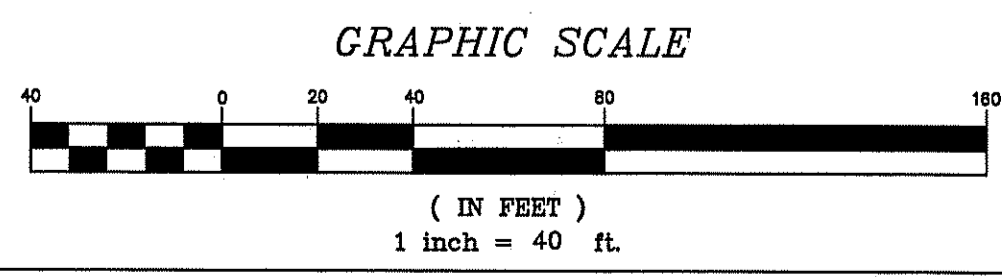
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
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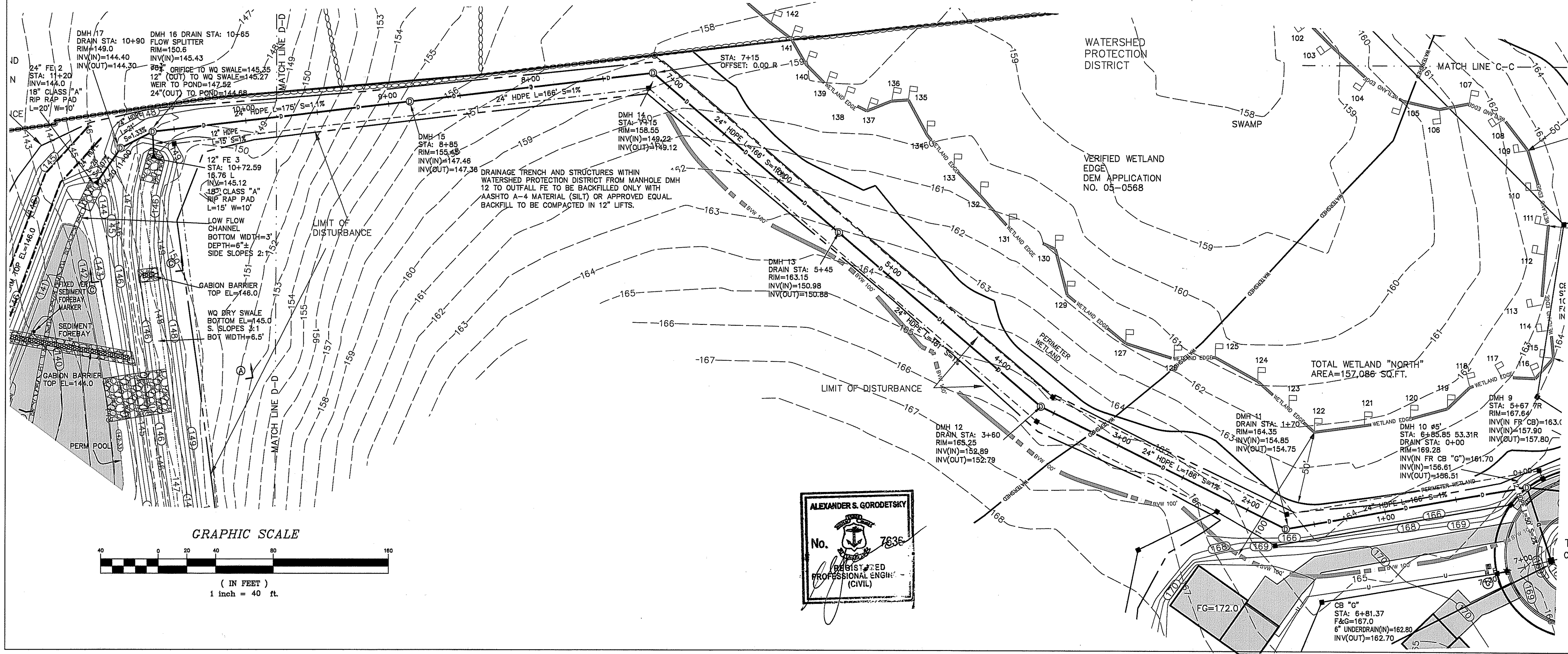
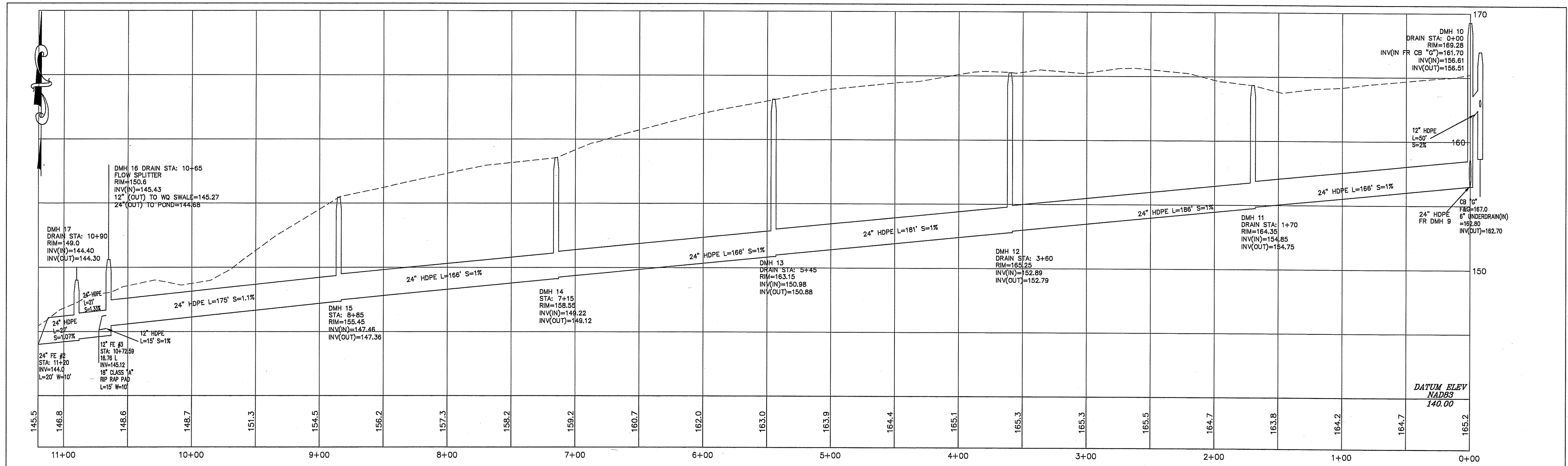
SHEET OF 20  
DELIA DRIVE ROADWAY CONSTRUCTION PLAN, PROFILE & DETAILS  
DELIA DRIVE MAJOR SUBDIVISION PRELIMINARY PLAN  
MAP 3-5 BLOCK 118 CARD 18 NORTH LAKE ROAD TIVERTON, R.I.  
SCALE: HORIZ. 1"=40' VERT. 1"=4' AND AS NOTED  
DATE: AUGUST 25, 2009  
REVISED: 11/20/09; 02/18/10  
APPLICANT: RICHARD BARBOZA, EXECUTOR 890 SANFORD RD, WESTPORT, MA 02790  
OWNER: ESTATE OF JOSEPH BARBOZA, TIVERTON PROBATE COURT NO. 285 C/O RICHARD BARBOZA, EXECUTOR & APPLICANT  
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SHEET 8 OF 8 DATED MAR 1 2010 FILE # 09-0241  
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AUGUSTUS LN (SOUTH) CUL-DE-SAC GRADING DETAIL  
ROADWAY CONSTRUCTION PLAN, PROFILE & DETAILS  
DELIA DRIVE MAJOR SUBDIVISION PRELIMINARY PLAN  
MAP 3-5 BLOCK 118 CARD 18 NORTH LAKE ROAD TIVERTON, R.I.  
SCALE: HORIZ. 1"=40' VERT. 1"=4'  
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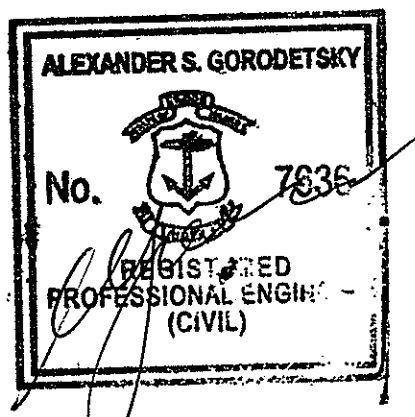
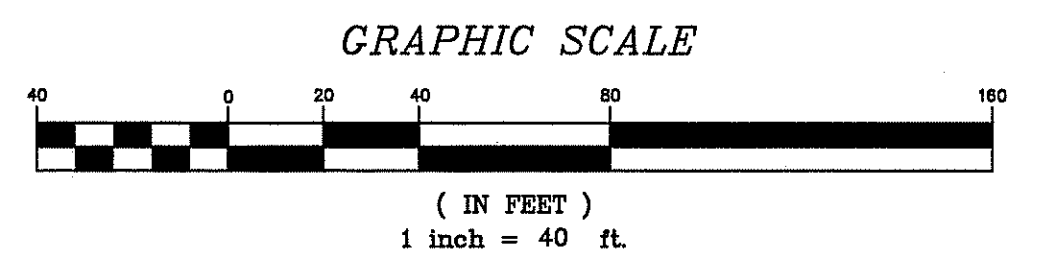
SHEET 9 OF 20

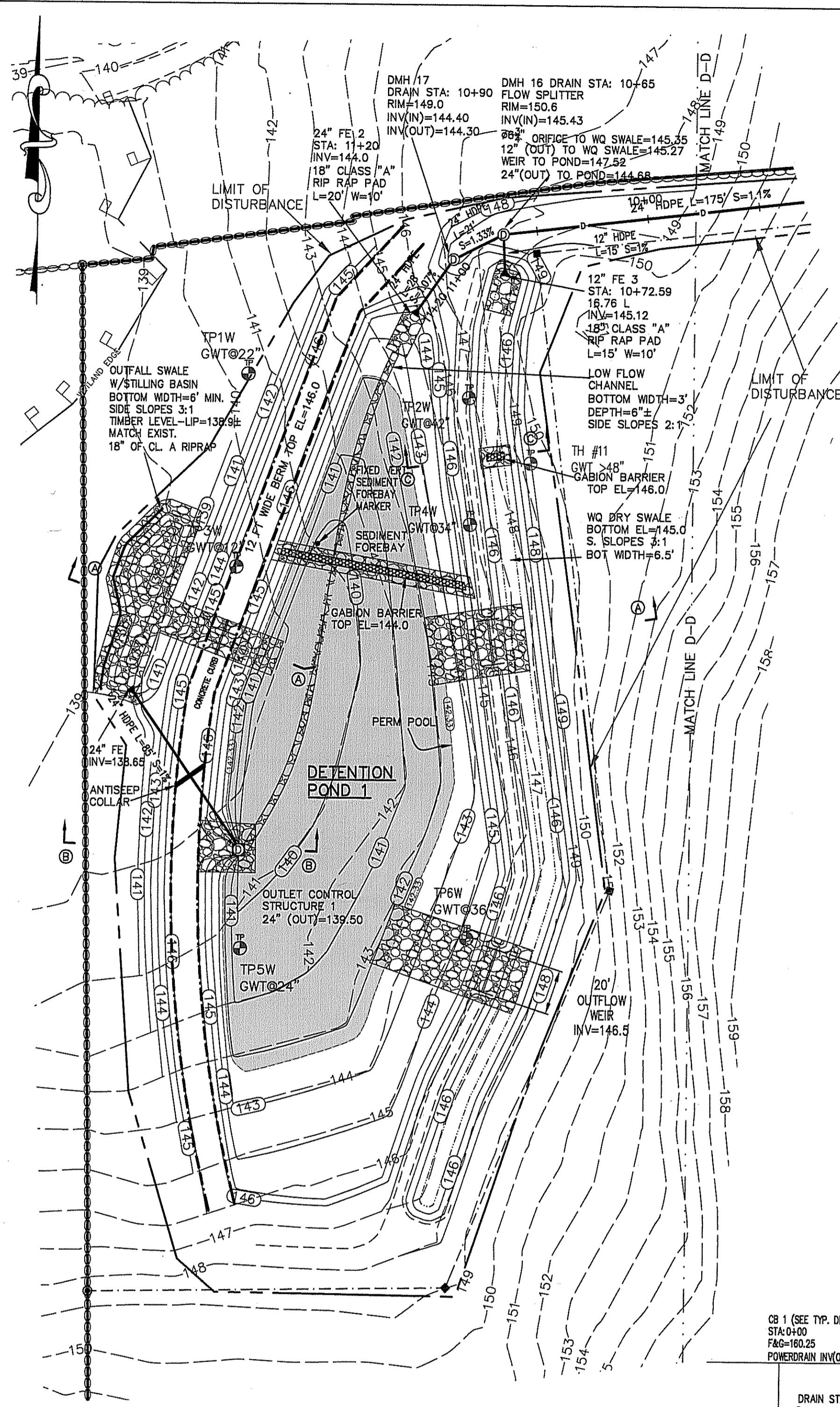
**DRAINAGE CONSTRUCTION PLAN & PROFILE**

**DELIA DRIVE MAJOR SUBDIVISION PRELIMINARY PLAN**  
 MAP 3-5 BLOCK 118 CARD 18  
 NORTH LAKE ROAD  
 TIVERTON, R.I.

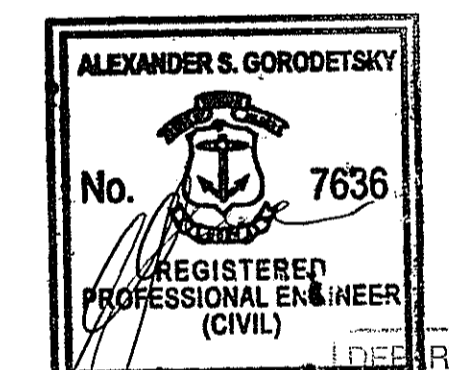
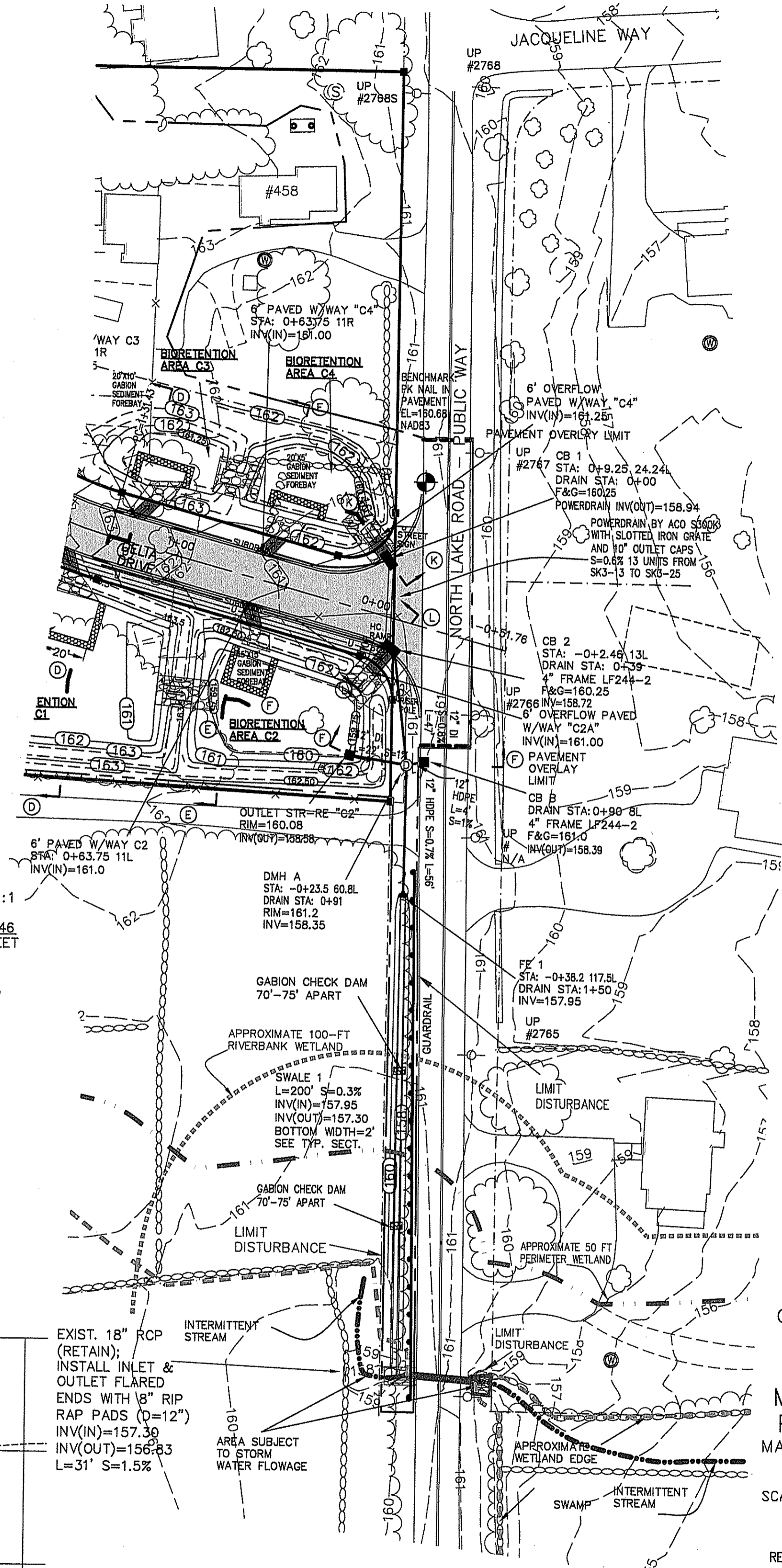
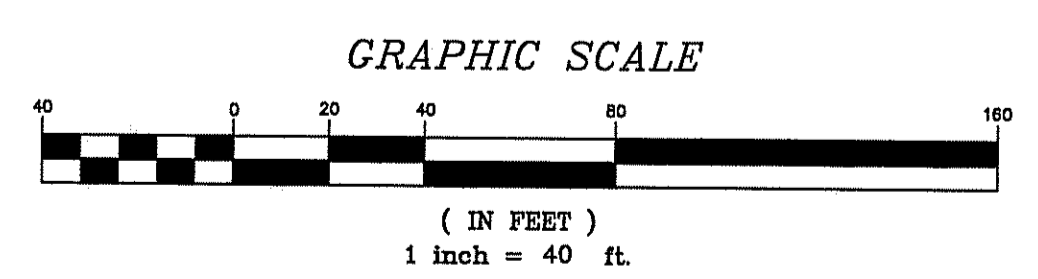
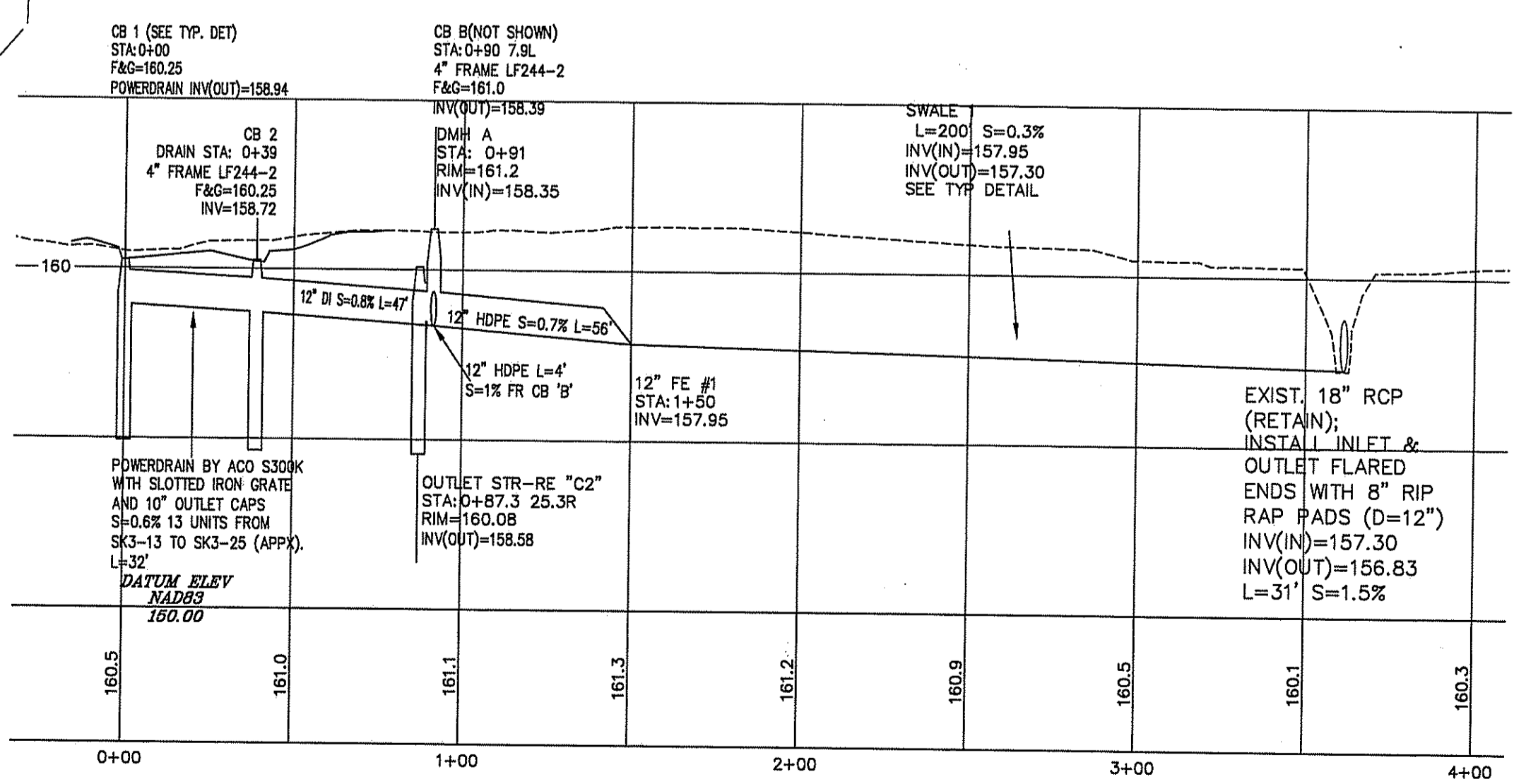
SCALE: HORIZ. 1"=40' VERT. 1"=4'  
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 MA 02790 (508) 636-8397





- SWALE 1 CONSTRUCTION NOTE:**
- FOR THE EROSION AND GROUND WATER FLOW CONTROL ON THE SLOPES OF THE SWALE 1 A BIODEGRADABLE MATTING CAPABLE OF STABILIZING 1:1 SLOPES SUCH AS ANTI-WASH GEOJUTE® AS PROVIDED BOOM ENVIRONMENTAL PRODUCTS 1 COFFIN AVENUE - NEW BEDFORD, MA 02746 1-800-770-8008 OR APPROVED EQUIVALENT SHALL BE USED. SEE SHEET 18 & 19 FOR DETAILS.
  - SWALE SHALL BE CONSTRUCTED DURING DRY SEASON LOW FLOW PERIOD, WHEN THE GROUND WATER TABLE IS AT THE LOWEST ELEVATION.

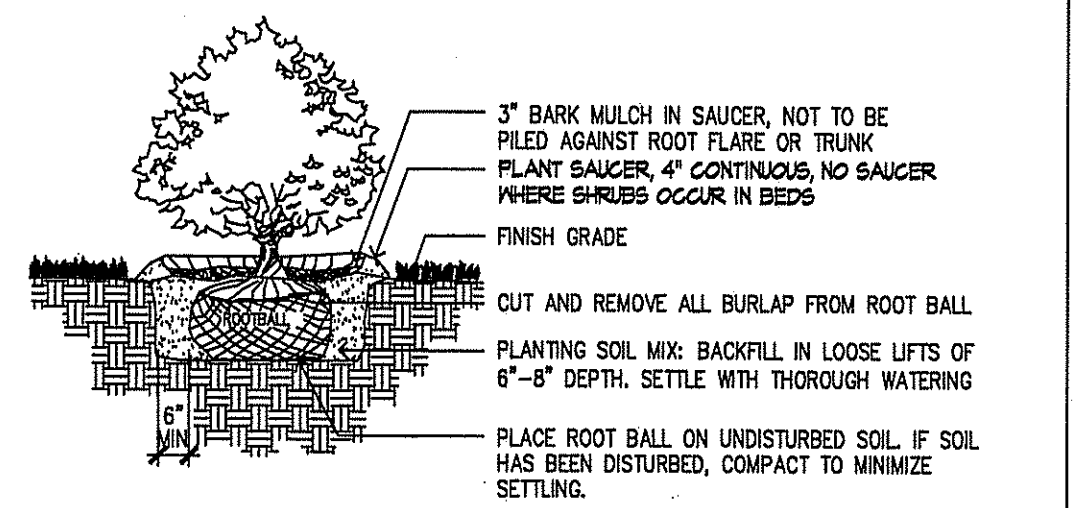
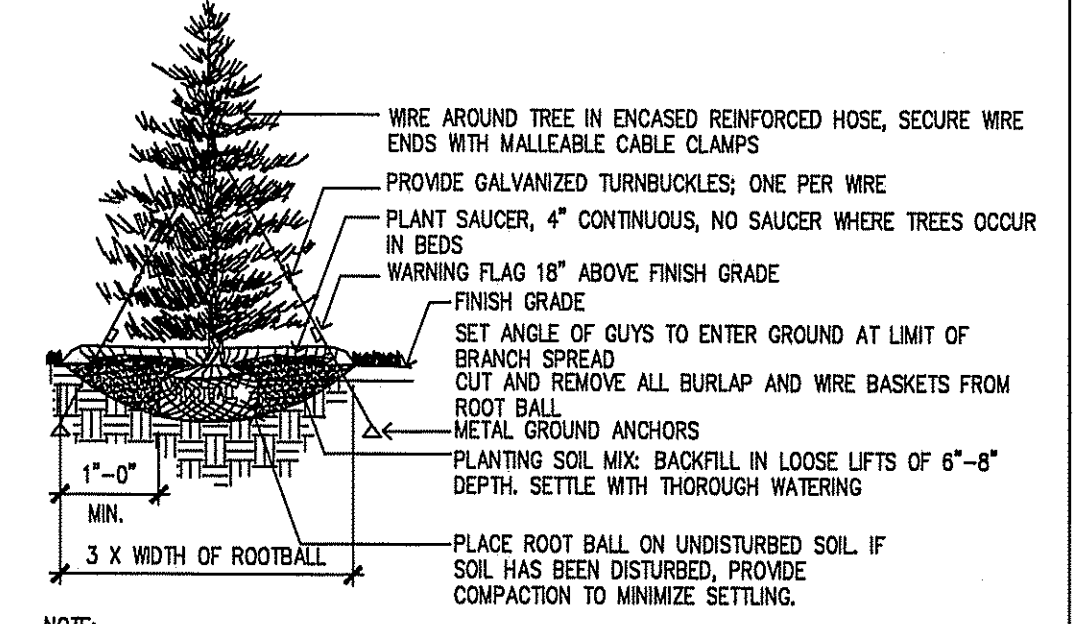
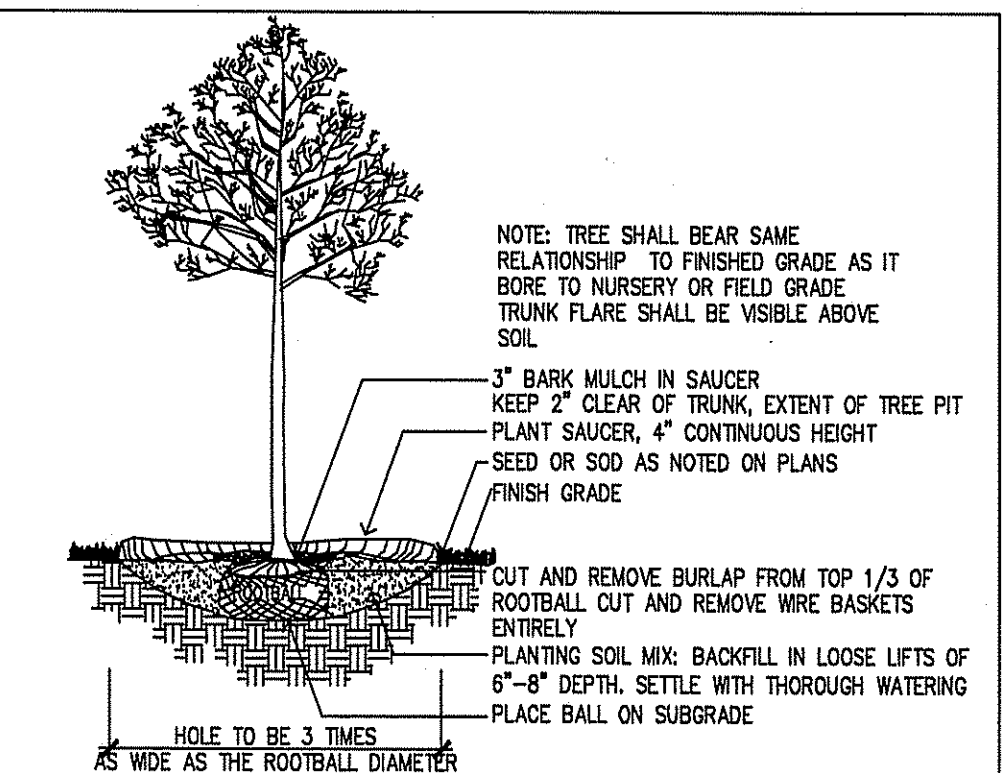
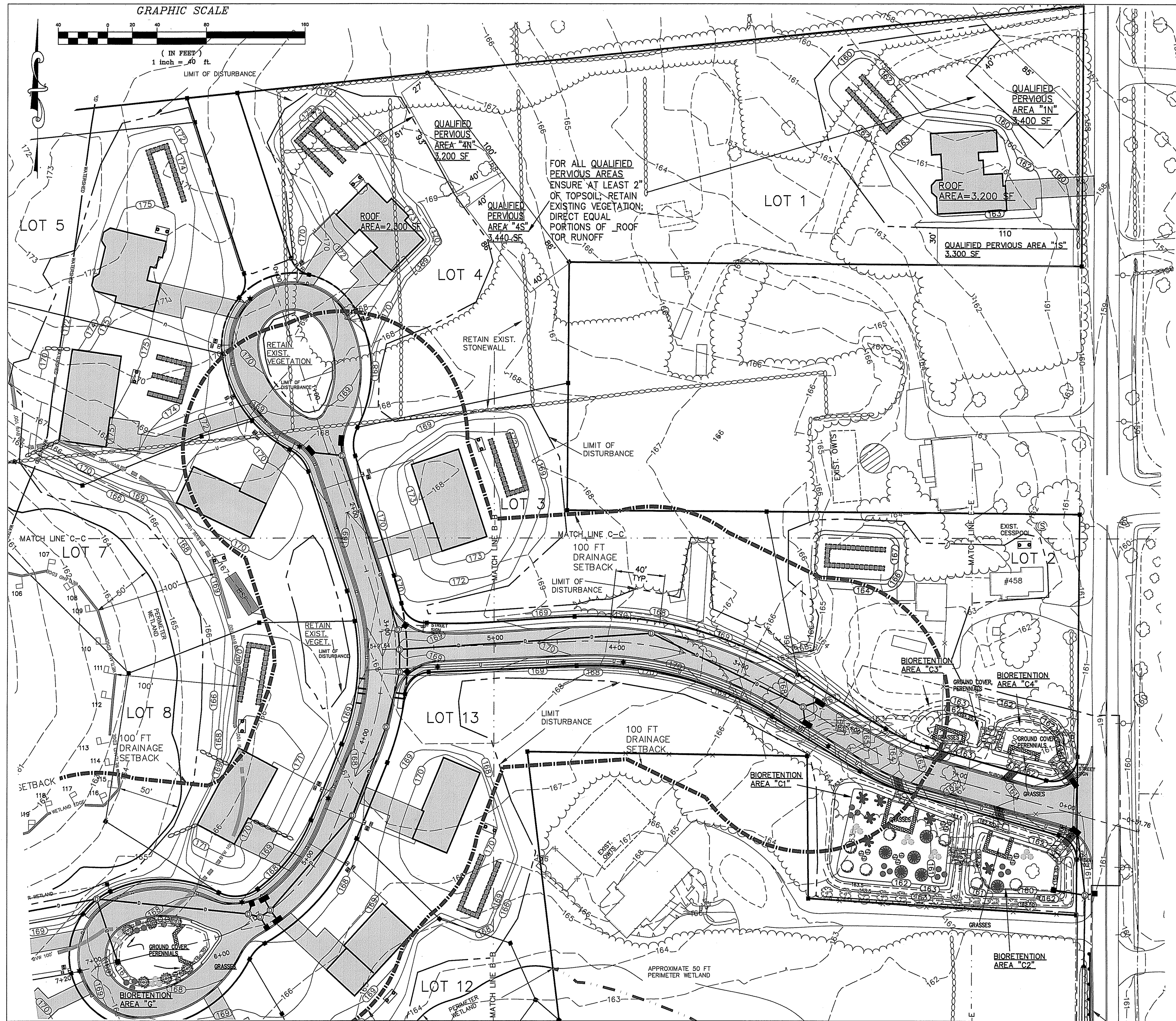


DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
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PROFILE

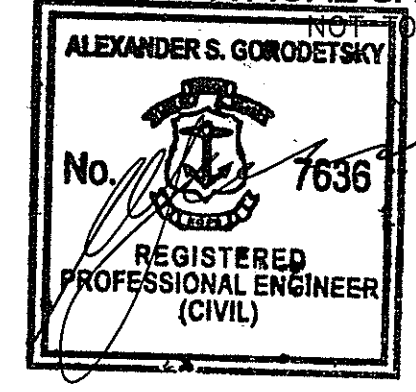
DELIA DRIVE  
MAJOR SUBDIVISION  
PRELIMINARY PLAN  
MAP 3-5 BLOCK 118 CARD 18  
NORTH LAKE ROAD  
TIVERTON, R.I.  
SCALE: HORIZ. 1"=40' VERT. 1"=4'

DATE: AUGUST 25, 2009  
REVISED: 11/20/09; 02/18/10  
APPLICANT:  
RICHARD BARBOZA, EXECUTOR  
890 SANFORD RD, WESTPORT, MA 02790  
OWNER:  
ESTATE OF JOSEPH BARBOZA,  
TIVERTON PROBATE COURT No. 285  
C/O RICHARD BARBOZA, EXECUTOR & APPLICANT  
ENGINEER:  
GORODETSKY ENGINEERING, LLC  
162 NORTH MAIN ST, FALL RIVER,  
MA 02720 (508) 324-1163  
SURVEYOR:  
RALPH URBAN, PLS  
PO BOX 1494, WESTPORT,  
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SHEET 12 OF 20 *Charles A. Hurd*  
**LANDSCAPING PLAN**  
**DELIA DRIVE MAJOR SUBDIVISION PRELIMINARY PLAN**  
 MAP 3-5 BLOCK 118 CARD 18 NORTH LAKE ROAD TIVERTON, R.I.  
 SCALE: 1" = 40' AND AS NOTED  
 DATE: AUGUST 25, 2009  
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- TREES**
- EASTERN ARBOR VITAE
  - AMERICAN HOLLY
  - RIVER BIRCH
  - SWAMP OAK
  - TUPELO
- SHRUBS**
- BUTTONBUSH
  - SWAMP AZALEA
  - WINTERBERRY

**CONSTRUCTION SPECIFICATIONS FOR BIORETENTION AREAS**

**MATERIAL SPECIFICATIONS**

THE ALLOWABLE MATERIALS TO BE USED IN BIORETENTION AREA ARE DETAILED IN TABLE BELOW

**PLANTING SOIL**

THE SOIL SHOULD BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHOULD BE MIXED OR DUMPED WITHIN THE BIORETENTION AREA THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHOULD BE FREE OF NOXIOUS WEEDS.

THE BIORETENTION SYSTEM SHALL UTILIZE PLANTING SOIL HAVING A COMPOSITION AS FOLLOWS:

SAND: 85-88%

SOIL FINES: 8 TO 12% (NO MORE THAN 2% CLAY)

ORGANIC MATTER\*: 3 TO 5%

ADD 20% (BY VOLUME) OF WELL AGED (3 MONTHS), WELL AERATED, LEAF COMPOST (OR APPROVED EQUIVALENT) TO THE ABOVE PLANTING SOIL MIXTURE.

WHERE SOIL FINES CONTENT IS LESS THAN 12%, ADD A CORRESPONDING % OF LEAF COMPOST.

THE PLANTING SOIL SHOULD BE TESTED AND SHOULD MEET THE FOLLOWING CRITERIA:

PH RANGE 5.2 - 7.0

MAGNESIUM 35 LB./AC

PHOSPHORUS P205 75 LB./AC

POTASSIUM K20 85 LB./AC

SOLUBLE SALTS NOT TO EXCEED 500 PPM

ALL BIORETENTION AREAS SHOULD HAVE A MINIMUM OF ONE TEST. EACH TEST SHOULD CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, PHOSPHORUS, AND POTASSIUM AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE'S STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHOULD BE PERFORMED FOR EACH LOCATION WHERE THE TOP SOIL WAS EXCAVATED.

ALL TESTING RESULTS SHOULD COME FROM THE SAME TESTING FACILITY.

SHOULD THE PH FALL OUT OF THE ACCEPTABLE RANGE, IT MAY BE MODIFIED (HIGHER) WITH LIME OR (LOWER) WITH IRON SULFATE PLUS SULFUR.

**MULCH LAYER SPECIFICATIONS**

MULCH AROUND INDIVIDUAL PLANTS ONLY. SHREDDED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCHES. BARK DUST MULCHES AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE.

SHREDDED MULCH MUST BE WELL AGED (6-12 MONTHS) FOR ACCEPTANCE.

MIX APPROXIMATELY 1/2 THE SPECIFIED MULCH LAYER INTO THE PLANTING SOIL TO A DEPTH OF APPROXIMATELY 4 INCHES TO HELP FOSTER A HIGHLY ORGANIC SURFACE LAYER.

**COMPACTION**

IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF THE BIORETENTION AREA AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF BIORETENTION AREA IS EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND STORAGE VOLUMES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE. COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS A CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE PERFORMED TO REFRACTURE THE SOIL PROFILE THROUGH THE 12-IN COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH. TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT, WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12IN OR GREATER. DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

**PLANT INSTALLATION**

THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE.

ROOT STOCK OF THE PLANT MATERIAL SHOULD BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE DIAMETER OF THE PLANTING PIT SHOULD BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHOULD BE BRACED USING 2 IN X 2 IN STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL. GRASSES AND LEGUME SEED SHOULD BE TILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHOULD BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER.

**PLANTING SPECIFICATIONS**

THE PLANTING SOIL SPECIFICATIONS SHOULD ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL.

ONLY ADD FERTILIZER IF COMPOST OR MULCH IS USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1,000 SQUARE FEET.

**UNDERDRAINS**

UNDERDRAINS SHOULD BE PLACED ON A MINIMUM 3'-0" WIDE SECTION OF FILTER CLOTH. PIPE IS PLACED NEXT, FOLLOWED BY THE GRAVEL BEDDING. THE ENDS OF UNDERDRAIN PIPES NOT TERMINATING IN AN OBSERVATION WELL SHOULD BE CAPPED.

THE MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHOULD BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1,000 SQUARE FEET OF SURFACE AREA).

**MISCELLANEOUS**

THE BIORETENTION FACILITY MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

**DRY WATER QUALITY SWALE PLANTING SCHEDULE**

PLANT SLOPES, TOP OF BERM, APPROACHES, AND BOTTOM OF THE SWALE WITH THE EQUAL MIX OF THE FOLLOWING GRASSES: KENTUCKY BLUE GRASS, TALL FESCUE, SMOOTH BROME, AND BUFFALO GRASS

**DETENTION POND 1 PLANTING SCHEDULE**

PLANT BERM (OUTER SIDE SLOPES & TOP) WITH THE EQUAL MIX OF THE FOLLOWING GRASSES: KENTUCKY BLUE GRASS, TALL FESCUE, SMOOTH BROME, AND BUFFALO GRASS

PLANT INSIDE DETENTION POND EQUAL MIX OF AT LEAST FOUR OF THE FOLLOWING HERBACEOUS PLANTS: ARROWHEAD, BROOMSEDE, SEDGES, CREEPING RED FESCUE, FOWL BLUEGRASS, SOFTSTEM BULRUSH, SWITCHGRASS, TUFTED HAIRGRASS.

**MATERIALS SPECIFICATIONS FOR BIORETENTION**

PARAMETER	SPECIFICATION	SIZE	NOTES
PLANTING SOIL	SAND 85-88% SOIL FINES 8 - 12% (≤ 2% CLAY) ORGANICS 3 - 5%	N/A	USDA SOIL TYPES LOAMY SAND OR SANDY LOAM
MULCH	SHREDDED HARDWOOD MULCH	N/A	AGED 6 MONTHS, MINIMUM
GEOTEXTILE	CLASS 'C' APPARENT OPENING SIZE (ASTM-D-4751) GRAB TENSILE STRENGTH (ASTM-D-4632) BURST STRENGTH (ASTM-D-4833)	N/A	FOR USE OVER UNDERDRAINS (EXTEND 1 - 1.5 FT EACH SIDE) AND AS NECESSARY ON SIDES OF BIORETENTION BASIN
SAND (2'-4" LAYER OVER CHOKER STONE)	AASHTO M-6 OR ASTM C-33	0.02" to 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO ROCK DUST CAN BE USED FOR SAND.
CHOKER STONE LAYER (4' LAYER PEA GRAVEL)	AASHTO M43 (ASTM D 448) NO. 8 OR 89 GRAVEL	0.375" to 0.75"	
UNDERDRAIN GRAVEL	AASHTO M-43	1.0"	DOUBLE-WASHED AND CLEAN OF FINES
UNDERDRAIN PIPING	ASTM D 1785 OR AASHTO M-278	4 TO 6" RIGID SCHEDULE 40 PVC	3/8 PERF. @ 6' ON CENTER, 4 HOLES PER RAW, MINIMUM OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES

**BIORETENTION AREA C1 PLANTING SCHEDULE**

ALONG THE SOUTHERN PROPERTY LINE PLANT 15 FT APART EASTERN ARBOR VITAE. PLANT 15 FT APART IN SIMILAR AND MIXED CLUSTERS AT THE LOCATIONS SHOWN ON THE PLAN THE FOLLOWING TREES: RIVER BIRCH, SWAMP OAK, TUPELO  
FILL SPACE BETWEEN THE TREES AT THE LOCATIONS SHOWN ON THE PLAN WITH THE FOLLOWING SHRUBS: BUTTONBUSH, SWAMP AZALEA, AND WINTERBERRY ON 5 FT TO 10 FT ON CENTER IN CLUSTERS - THREE OF EACH PLANT IN A CLUSTER

INSIDE BIORETENTION AREA CONTOUR ELEVATION 162 PLANT 30" APART RANDOMLY EQUAL MIX OF FOLLOWING: BLUE FLAG IRIS, CREEPING RED FESCUE, FOWL BLUE GRASS, MARSH HIBISCUS

INSIDE SEDIMENT FOREBAY PLANT EQUAL MIX OF RED FESCUE, TALL FESCUE, AND KENTUCKY BLUE GRASS

**BIORETENTION AREA C2 PLANTING SCHEDULE**

PLANT 15 FT APART IN MIXED CLUSTERS AT THE LOCATIONS SHOWN ON THE PLAN THE FOLLOWING TREES: RIVER BIRCH, SWAMP OAK, TUPELO  
FILL SPACE BETWEEN THE TREES AT THE LOCATIONS SHOWN ON THE PLAN WITH THE FOLLOWING SHRUBS: BUTTONBUSH, SWAMP AZALEA, AND WINTERBERRY ON 5 FT TO 10 FT ON CENTER IN CLUSTERS - THREE OF EACH PLANT IN A CLUSTER

INSIDE BIORETENTION AREA CONTOUR ELEVATION 161 PLANT 30" APART RANDOMLY EQUAL MIX OF FOLLOWING: BLUE FLAG IRIS, CREEPING RED FESCUE, FOWL BLUE GRASS, MARSH HIBISCUS

INSIDE SEDIMENT FOREBAYS PLANT EQUAL MIX OF RED FESCUE, TALL FESCUE, AND KENTUCKY BLUE GRASS

**BIORETENTION AREA C3 AND C4 PLANTING SCHEDULE**

PLANT 30" APART RANDOMLY EQUAL MIX OF FOLLOWING: BLUE FLAG IRIS, CREEPING RED FESCUE, FOWL BLUE GRASS, MARSH HIBISCUS

INSIDE SEDIMENT FOREBAY PLANT EQUAL MIX OF RED FESCUE, TALL FESCUE, AND KENTUCKY BLUE GRASS

**BIORETENTION AREA "G" PLANTING SCHEDULE**

PLANT 15 FT APART AMERICAN HOLLY *ILEX OPACA* - 6 EA. (NATIVE PLANT PRESENT ON SITE) ALONG THE EDGE OF PAVEMENT AT THE LOCATIONS SHOWN ON THE PLAN

FILL SPACE BETWEEN THE TREES AT THE LOCATIONS SHOWN ON THE PLAN WITH THE FOLLOWING SHRUBS: BUTTONBUSH, SWAMP AZALEA, AND WINTERBERRY ON 5 FT TO 10 FT ON CENTER IN CLUSTERS - THREE OF EACH PLANT IN A CLUSTER

FILL SPACE BETWEEN TREES AND SHRUBS WITH THE EQUAL RANDOMIZED MIX OF THE OF THE FOLLOWING MIX OF FOLLOWING

GROUND COVERS, GRASSES AND PERENNIALS PLANTED 2.5 FT APART AT OR ABOVE ELEVATION 167.0:

GROUND COVERS: COREOPSIS, PHLOX PURPLE

GRASSES: TUSsock SEDGE, HAY SCENTED FERN

PERENNIALS: BLUE FLAG IRIS, BLACK EYED SUSAN, DAYLILIES YELLOW.

MAINTAIN THE FOLLOWING DISTANCES FOR THE TREES AND SHRUBS:

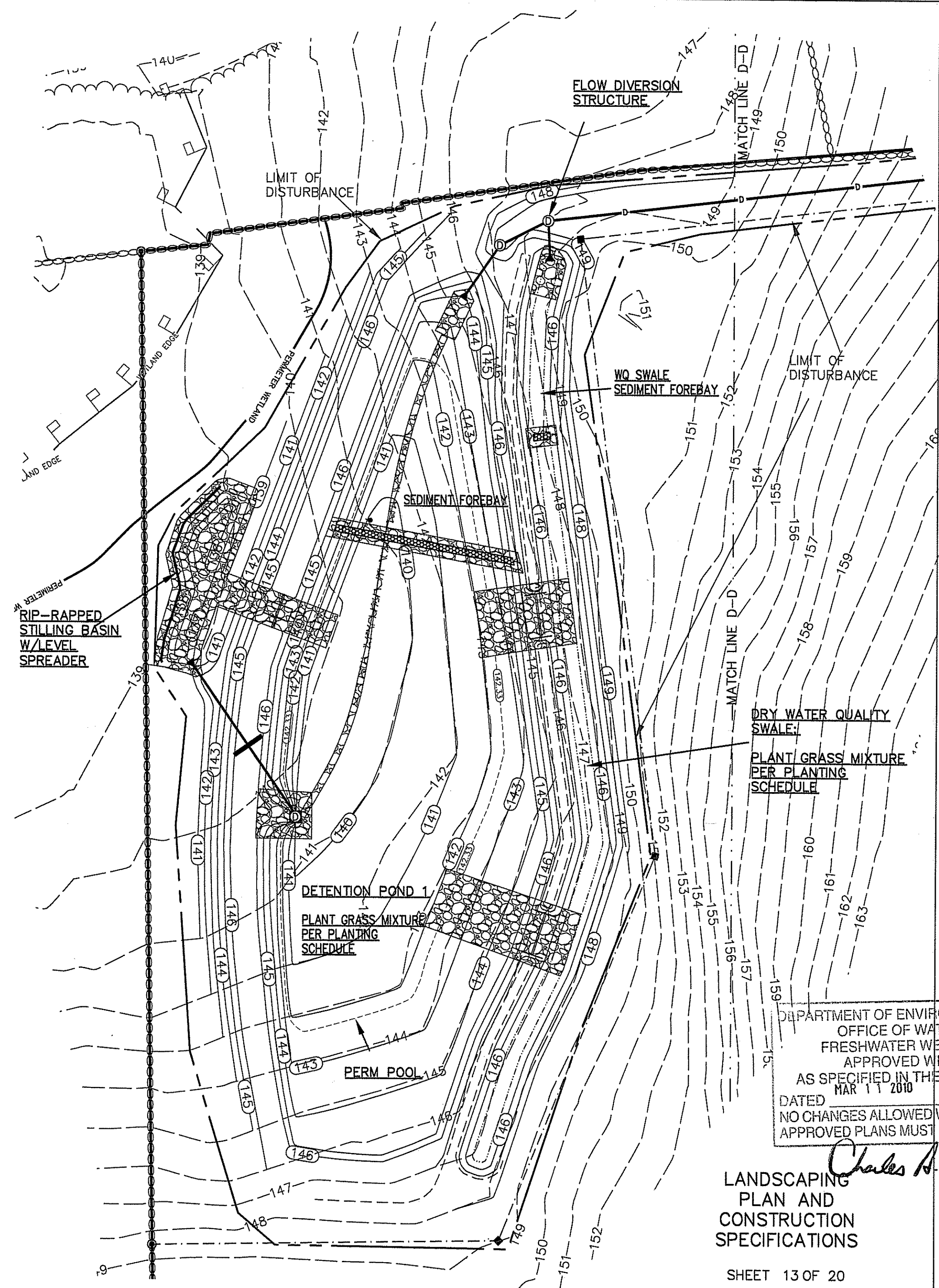
25 FT MIN. FROM OUTLET STRUCTURE;

15 FT MIN. FROM PERF UNDERDRAIN PIPE;

PLANT TREES AND SHRUBS AT OR ABOVE ELEVATION 167.0

INSIDE BIORETENTION AREA CONTOUR ELEVATION 166.3 PLANT 30" APART RANDOMLY EQUAL MIX OF FOLLOWING: BLUE FLAG IRIS, CREEPING RED FESCUE, FOWL BLUE GRASS, MARSH HIBISCUS

INSIDE SEDIMENT FOREBAY PLANT EQUAL MIX OF RED FESCUE, TALL FESCUE, AND KENTUCKY BLUE GRASS

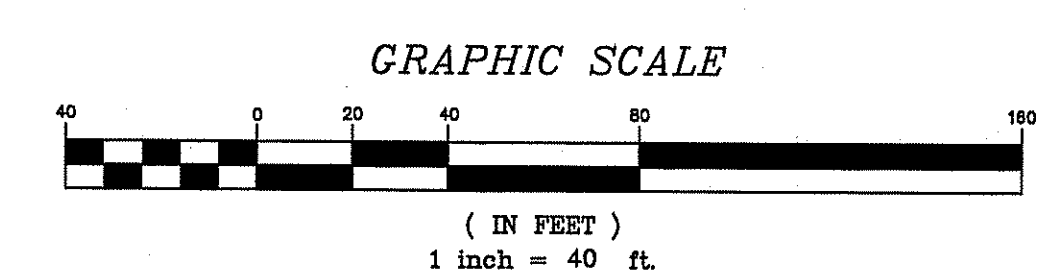
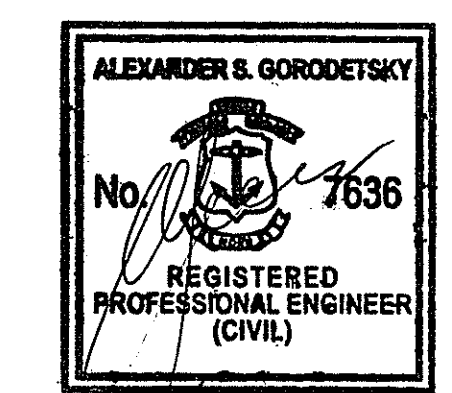


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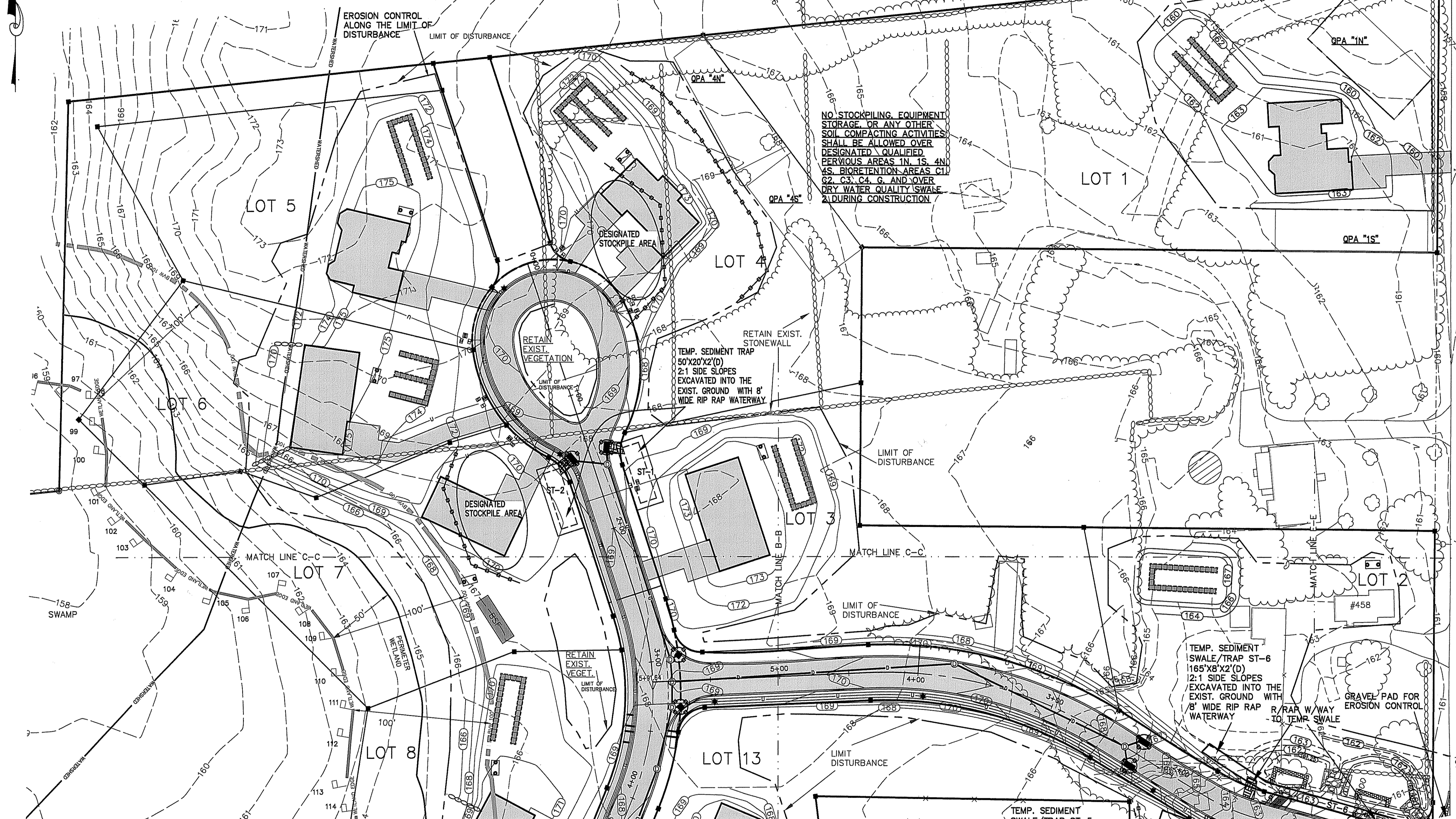
LANDSCAPING  
PLAN AND  
CONSTRUCTION  
SPECIFICATIONS

SHEET 13 OF 20

DELIA DRIVE  
MAJOR SUBDIVISION  
PRELIMINARY PLAN  
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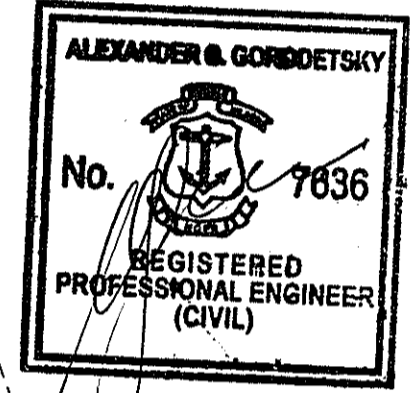




NO STOCKPILING, EQUIPMENT STORAGE, OR ANY OTHER SOIL COMPACTING ACTIVITIES SHALL BE ALLOWED OVER DESIGNATED QUALIFIED PERVIOUS AREAS IN 1S, 4N, 4S, BIORETENTION AREAS C1, C2, C3, C4, G, AND OVER DRY WATER QUALITY SWALES DURING CONSTRUCTION.

TEMP. SEDIMENT TRAP 50'X20'X2'(D) 2:1 SIDE SLOPES EXCAVATED INTO THE EXIST. GROUND WITH 8' WIDE RIP RAP WATERWAY

TEMP. SEDIMENT SWALE/TRAP ST-6 165'X8'X2'(D) 2:1 SIDE SLOPES EXCAVATED INTO THE EXIST. GROUND WITH 8' WIDE RIP RAP WATERWAY TO TEMP. SWALE



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SHEET 15 OF 20 *Charles A. Barboza*

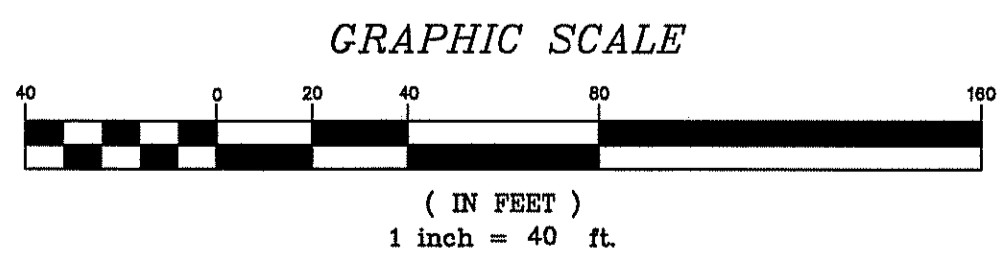
CONSTRUCTION  
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SEDIMENTATION  
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**RIDEM WETLANDS PROGRAM NOTES:**

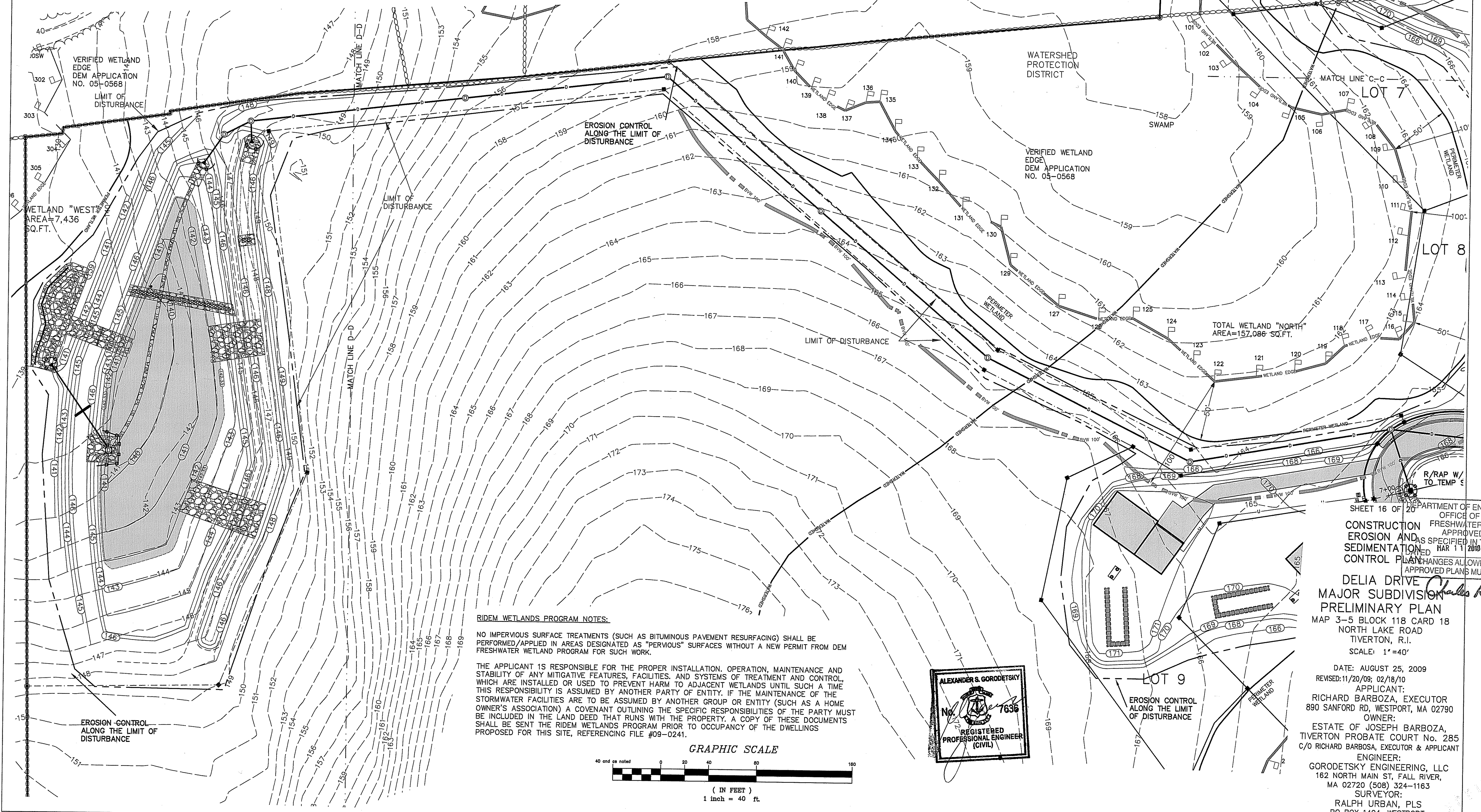
NO IMPERVIOUS SURFACE TREATMENTS (SUCH AS BITUMINOUS PAVEMENT RESURFACING) SHALL BE PERFORMED/APPLIED IN AREAS DESIGNATED AS "PERVIOUS" SURFACES WITHOUT A NEW PERMIT FROM DEM FRESHWATER WETLAND PROGRAM FOR SUCH WORK.

THE APPLICANT IS RESPONSIBLE FOR THE PROPER INSTALLATION, OPERATION, MAINTENANCE AND STABILITY OF ANY MITIGATIVE FEATURES, FACILITIES, AND SYSTEMS OF TREATMENT AND CONTROL, WHICH ARE INSTALLED OR USED TO PREVENT HARM TO ADJACENT WETLANDS UNTIL SUCH A TIME THIS RESPONSIBILITY IS ASSUMED BY ANOTHER PARTY OF ENTITY. IF THE MAINTENANCE OF THE STORMWATER FACILITIES ARE TO BE ASSUMED BY ANOTHER GROUP OR ENTITY (SUCH AS A HOME OWNER'S ASSOCIATION) A COVENANT OUTLINING THE SPECIFIC RESPONSIBILITIES OF THE PARTY MUST BE INCLUDED IN THE LAND DEED THAT RUNS WITH THE PROPERTY. A COPY OF THESE DOCUMENTS SHALL BE SENT THE RIDEM WETLANDS PROGRAM PRIOR TO OCCUPANCY OF THE DWELLINGS PROPOSED FOR THIS SITE, REFERENCING FILE #09-0241.



**CONSTRUCTION MANAGEMENT AND EROSION CONTROL NOTES:**

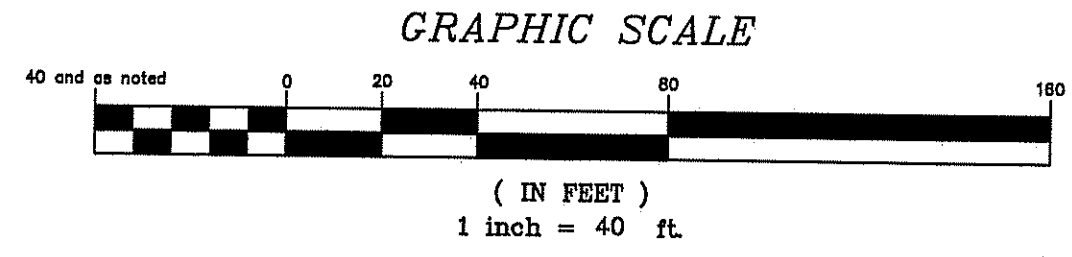
1. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED PRIOR TO STUMP REMOVAL AND CONSTRUCTION. STABILIZATION OF ALL REGRADED AREAS AND SOIL STOCKPILE AREAS WILL BE INITIATED AND MAINTAINED DURING ALL PHASES OF CONSTRUCTION. ALL EXPOSED AREAS NOT BUILT UPON OR PAVED SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF THE GRADING OPERATION BY STRAW MULCH APPLICATION. STRAW MULCH SHALL BE USED TO MINIMIZE EROSION DURING THE CONSTRUCTION AND THE GROWING PERIOD APPLIED AT THE RATE OF 2.5 TONS PER ACRE TO THE EXPOSED AREAS. MULCH TO BE CRIMPED INTO THE SOIL.
2. ALL EROSION CONTROL MEASURES ARE TO BE MAINTAINED AND UPGRADED AS REQUIRED TO ACHIEVE PROPER SEDIMENT CONTROL DURING CONSTRUCTION.
3. ADDITIONAL CONTROL MEASURES WILL BE INSTALLED DURING CONSTRUCTION PERIOD IF DEEMED NECESSARY BY THE TOWN OF TIVERTON AUTHORIZED AGENT.
4. CATCH BASINS SHALL BE PROTECTED WITH HAY BALE FILTERS THROUGHOUT THE CONSTRUCTION PERIOD UNTIL ALL DISTURBED AREAS ARE THOROUGHLY STABILIZED. ALL CATCH BASINS, WHEN CONSTRUCTED SHALL BE SET WITH THEIR FRAME AND GRATES AND THE PAVEMENT GRADE. ALL CATCH BASINS SHALL BE PERIODICALLY INSPECTED AND CLEANED DURING THE CONSTRUCTION PROCESS WITH FINAL CLEANING OF THE BASIN BEING REQUIRED AT THE COMPLETION OF THE PROJECT. SILTATION CONTROLS "SILT SACKS" SHALL BE INSTALLED INSIDE THE CATCH BASINS LOCATED IN THE PAVED AREAS.
5. THE CONTRACTOR SHALL ESTABLISH A HAY BALE EROSION CONTROL LINE ABOUT TEN FEET FROM TOE OF SLOPE OF PROPOSED FILL AREAS PRIOR TO BEGINNING FILL INSTALLATION. STABILIZATION OF SLOPES IN FILL AREAS (USING MULCH OR GRASS) SHALL BE INITIATED WITHIN FOURTEEN DAYS OF COMMENCEMENT OF FILL INSTALLATION.
6. STOCKPILES OF SOIL SHALL BE SURROUNDED BY A HAY BALE SEDIMENT BARRIER. SOIL STOCKPILES TO BE LEFT BARE FOR MORE THAN 14 DAYS SHALL BE STABILIZED WITH TEMPORARY VEGETATION OR HAY MULCH.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL AND WIND EROSION THROUGHOUT THE LIFE OF THE PROJECT. DUST CONTROL SHALL INCLUDE, BUT IS NOT LIMITED TO SPRINKLING OF WATER ON EXPOSED SOILS AND HAUL ROADS (CALCIUM CHLORIDE MAY BE USED FOR DUST CONTROL IF DIRECTED BY THE TOWN OF TIVERTON AUTHORIZED AGENT). CONTRACTOR SHALL CONTROL DUST TO PREVENT HAZARD TO THE TRAFFIC ON ADJACENT ROADWAYS.
8. IF FINAL GRADING IS TO BE DELAYED FOR MORE THAN FOURTEEN DAYS AFTER LAND DISTURBANCES CEASE, TEMPORARY VEGETATION OR HAY MULCH AT THE RATE OF 2 TONS PER ACRE SHALL BE USED TO STABILIZE SOILS.
9. CONTRACTOR SHALL BE ASSIGNED THE RESPONSIBILITY OF IMPLEMENTING THIS CONSTRUCTION MANAGEMENT MEASURES. THIS RESPONSIBILITY INCLUDES THE INSTALLATION AND MAINTENANCE OF CONTROL MEASURES, INFORMING ALL PARTIES ENGAGED ON THE CONSTRUCTION SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, AND NOTIFYING THE PROPER TOWN AGENCY OF ANY TRANSFER OF THIS RESPONSIBILITY.
10. ALL PIPE OUTFALL SHALL BE OPERATIONAL DURING CONSTRUCTION



**RIDEM WETLANDS PROGRAM NOTES:**

NO IMPERVIOUS SURFACE TREATMENTS (SUCH AS BITUMINOUS PAVEMENT RESURFACING) SHALL BE PERFORMED/APPLIED IN AREAS DESIGNATED AS "PERVIOUS" SURFACES WITHOUT A NEW PERMIT FROM DEM FRESHWATER WETLAND PROGRAM FOR SUCH WORK.

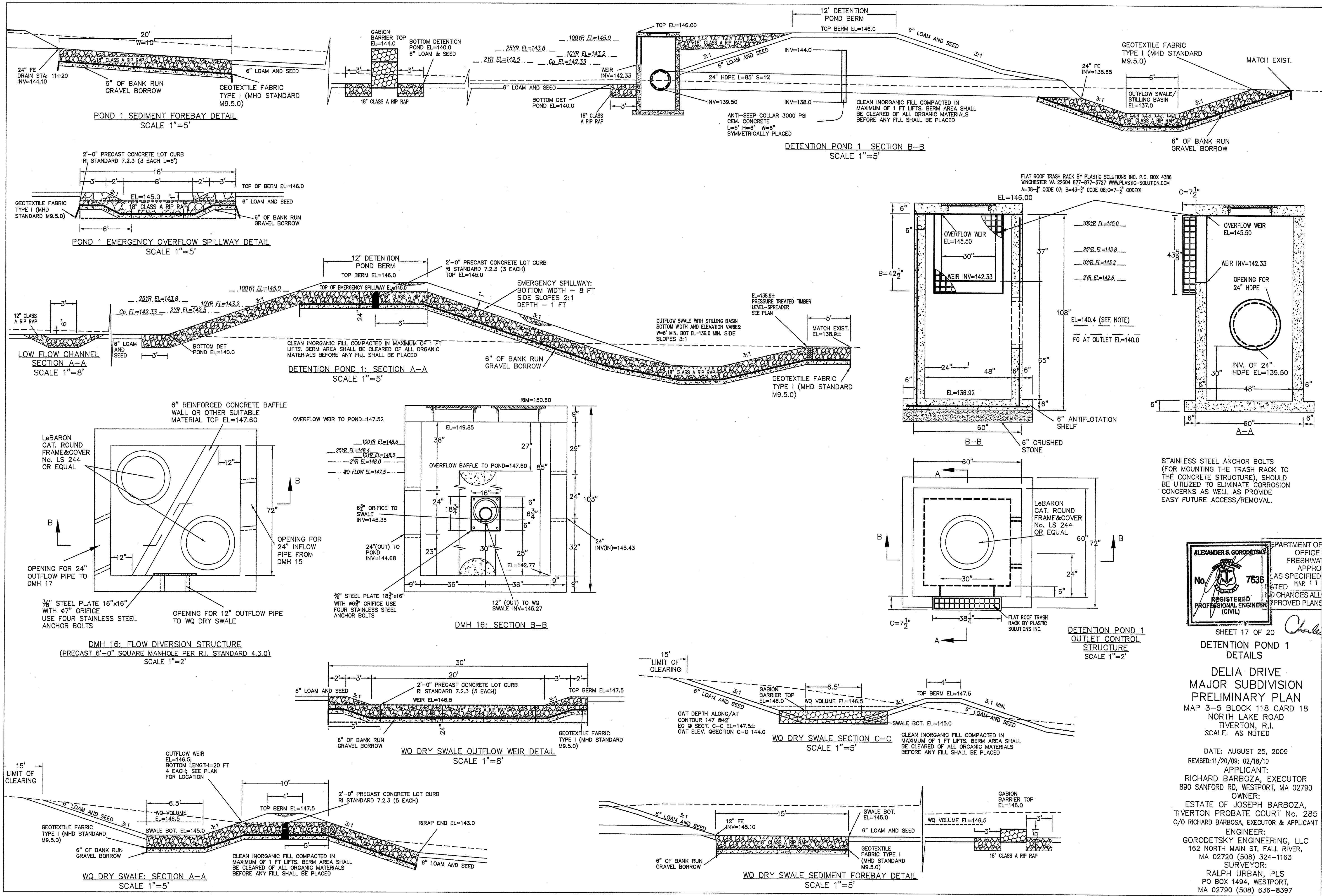
THE APPLICANT IS RESPONSIBLE FOR THE PROPER INSTALLATION, OPERATION, MAINTENANCE AND STABILITY OF ANY MITIGATIVE FEATURES, FACILITIES, AND SYSTEMS OF TREATMENT AND CONTROL, WHICH ARE INSTALLED OR USED TO PREVENT HARM TO ADJACENT WETLANDS UNTIL SUCH A TIME THIS RESPONSIBILITY IS ASSUMED BY ANOTHER PARTY OF ENTITY. IF THE MAINTENANCE OF THE STORMWATER FACILITIES ARE TO BE ASSUMED BY ANOTHER GROUP OR ENTITY (SUCH AS A HOME OWNER'S ASSOCIATION) A COVENANT OUTLINING THE SPECIFIC RESPONSIBILITIES OF THE PARTY MUST BE INCLUDED IN THE LAND DEED THAT RUNS WITH THE PROPERTY. A COPY OF THESE DOCUMENTS SHALL BE SENT THE RIDEM WETLANDS PROGRAM PRIOR TO OCCUPANCY OF THE DWELLINGS PROPOSED FOR THIS SITE, REFERENCING FILE #09-0241.



SHEET 16 OF 26 DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
CONSTRUCTION EROSION AND SEDIMENTATION CONTROL PLAN APPROVED WITH CONDITIONS SPECIFIED IN THE LETTER OF APPROVAL DATED 11/11/2009 FILE # 09-0241  
PLAN CHANGES ALLOWED WITHOUT PRIOR APPROVAL APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**DELIA DRIVE MAJOR SUBDIVISION PRELIMINARY PLAN**  
MAP 3-5 BLOCK 118 CARD 18  
NORTH LAKE ROAD  
TIVERTON, R.I.  
SCALE: 1"=40'

DATE: AUGUST 25, 2009  
REVISED: 11/20/09; 02/18/10  
APPLICANT:  
RICHARD BARBOZA, EXECUTOR  
890 SANFORD RD, WESTPORT, MA 02790  
OWNER:  
ESTATE OF JOSEPH BARBOZA,  
TIVERTON PROBATE COURT No. 285  
C/O RICHARD BARBOZA, EXECUTOR & APPLICANT  
ENGINEER:  
GORODETSKY ENGINEERING, LLC  
162 NORTH MAIN ST, FALL RIVER,  
MA 02720 (508) 324-1163  
SURVEYOR:  
RALPH URBAN, PLS  
PO BOX 1494, WESTPORT,  
MA 02790 (508) 636-8397



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED MAR 11 2010 FILE # 09-0241  
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APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**ALEXANDER S. GORODETSKY**  
REGISTERED PROFESSIONAL ENGINEER (CIVIL)  
No. 7636

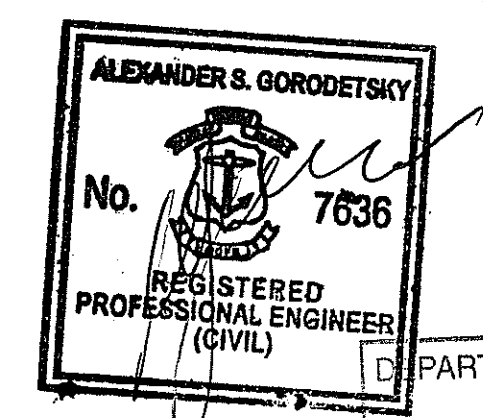
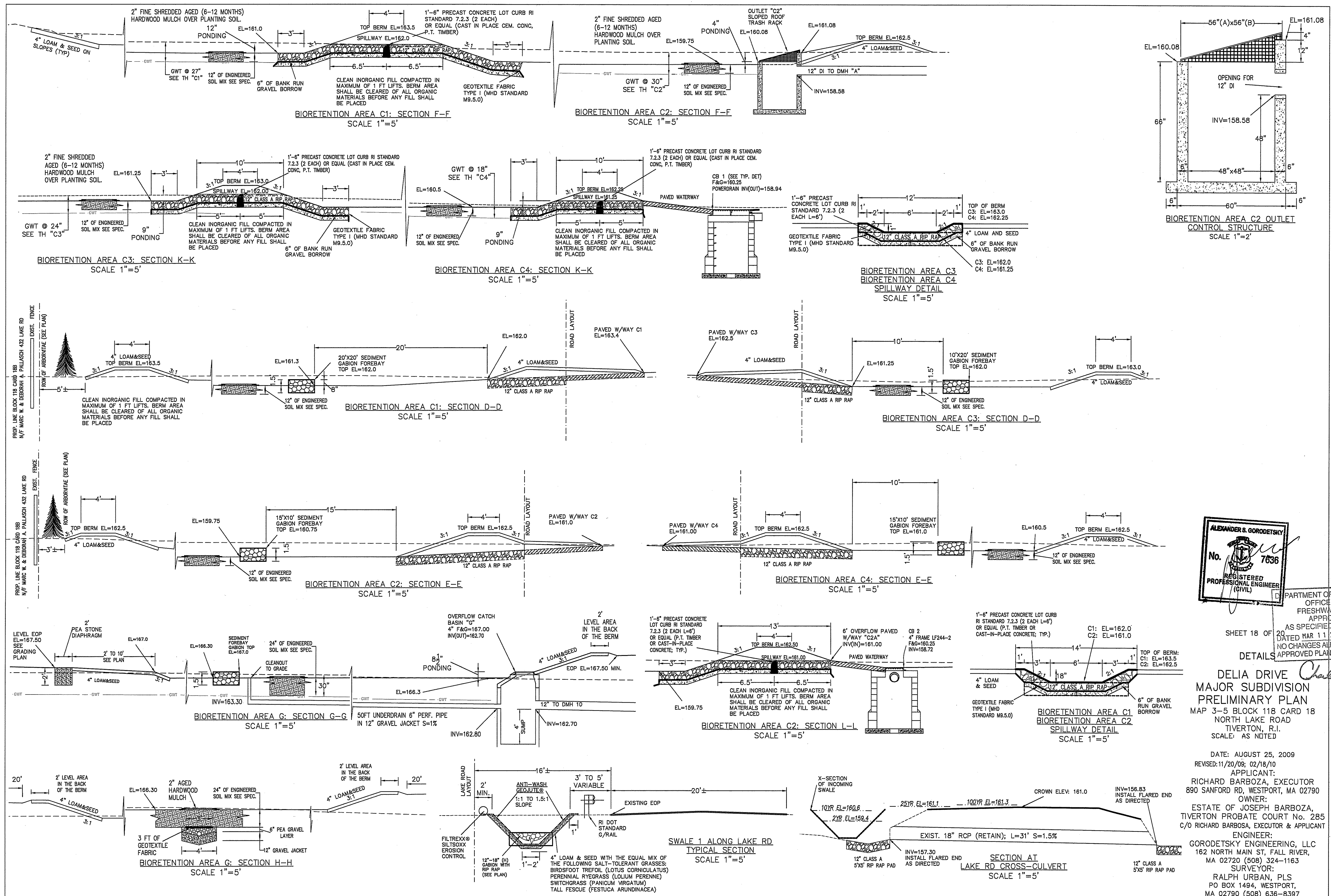
Charles A. Barboza

SHEET 17 OF 20

**DETENTION POND 1 DETAILS**

**DELIA DRIVE MAJOR SUBDIVISION PRELIMINARY PLAN**  
MAP 3-5 BLOCK 118 CARD 18  
NORTH LAKE ROAD  
TIVERTON, R.I.  
SCALE: AS NOTED

DATE: AUGUST 25, 2009  
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APPLICANT:  
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 PO BOX 1494, WESTPORT,  
 MA 02790 (508) 636-8397

*Charles A. Herbert*

MAR 9 2010

**GEOTECHNICAL SUPPLY INCORPORATED**  
**BOOM**  
 ENVIRONMENTAL PRODUCTS

1.800.770.Boom

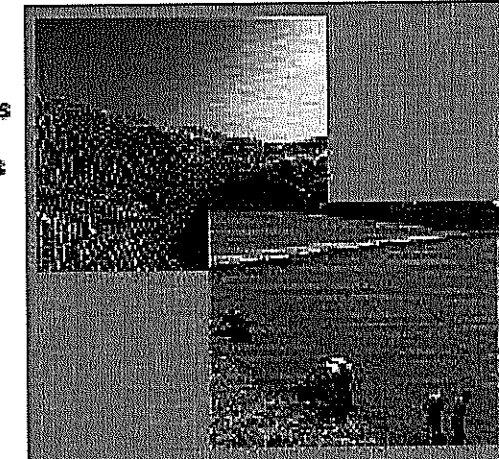
**Environmental Products**

The Green Absorbents From Recycled to Reusable®  
 Award-Winning Absorbents  
 Spill Kits  
 Spill Containment Systems  
 Oil Containment Booms  
 Turbidity Curtains  
 Stormwater Management  
 Wastewater Management  
 Safety Storage Equipment

**Anti-Wash GEOJUTE®**

**Solutions to a Multitude of Erosion Control Problems**

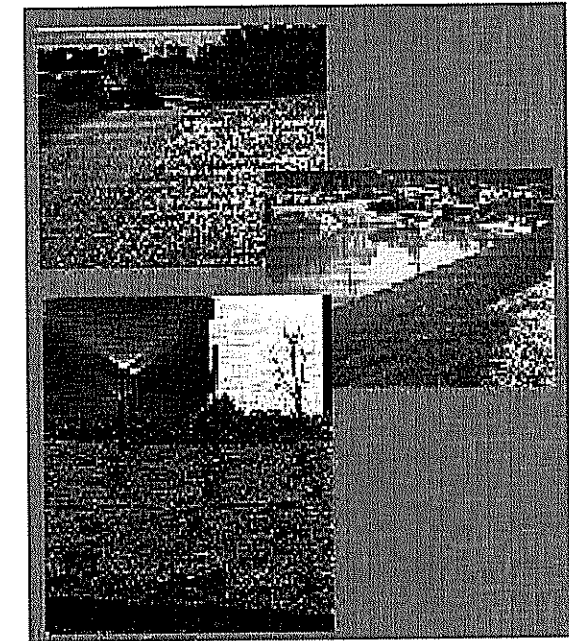
- Used to solve erosion control problems for over 30 years
- Easy and economical to install
- Totally biodegradable within 2 years
- Highly absorbent - up to five times its own weight in water
- Holds all ground surfaces to hold soil and seed in place
- Helps prevent undercutting
- No synthetic nettings to interfere with mowers
- No synthetic nettings to injure or trap birds or animals
- Acts as a soil nutrient - puts back two tons of rich organic matter per acre
- Accepts hydroseeding before AND after installation
- Open weave construction allows overseeding after installation and after initial vegetation is established
- Ideal for bio-engineering applications
- Earthtone color blends in with all habitats
- Natural fiber - jute - undyed and unbleached, without toxins
- Applicable to all climates and soil conditions
- Applicable to most any terrain; used with any grass or ground cover
- Has been successfully used on slopes up to 1:1
- Anchored with staples
- Approved by most state DOT



**Geotechnical Products**

- The Green Geotextiles®  
 Geotextiles  
 Non Woven Geotextiles  
 Woven Geotextiles  
 Agricultural Fabrics  
 Horticultural Fabrics  
 Erosion Control Blankets  
 Geomembranes & Liners  
 Geogrids and Geocells  
 Drainage Systems

**Unlimited Applications and Uses, Including:**



- Golf course construction and maintenance
- Embankments and slopes
- Civic beautification
- Landfills
- Highway construction
- Landscape improvement
- Sod stabilization
- Lakes and stream banks
- Mining reclamation
- Nurseries
- Military bases
- Industrial and commercial development
- Farm and agricultural
- Hydroseeding
- Ski slopes
- Beach and sand dune stabilization
- Pipeline construction
- Wetland reclamation
- Drainage ditches

**ANTI-WASHGEOJUTE**

1. Prepare the soil by grading or raking area free of clods and large stones. Do not compact. If using fertilizer, add it to soil before grading.
2. Seeds and mulch (if required) should be distributed evenly over the prepared soil.
3. ANTI-WASHGEOJUTE should be applied by unrolling down the slope or in the direction of water flow. Always bring ANTI-WASHGEOJUTE down to level area before termination, fold 6" under, and secure with staples.
4. Secure ANTI-WASHGEOJUTE at the top of the slope by toeing it in 6" deep. Reinforce with a row of at least five (5) staples, spacing each about a foot apart, and covering with soil.
5. Place staples 18" to 24" apart throughout to secure matting to ground. All staples must be driven flush with soil surface.
6. Always overlap the edges 2" to 6". At the end of each roll, fold back 4" to 8" over the start of the next roll. Securely staple the two layers to the ground.

Remember to lay ANTI-WASHGEOJUTE loosely.  
 Do Not Stretch!

**Waterway Installation**



1. Always lay jute in the direction of water flow.
2. Extra staples are needed in waterways. Staples must be driven flush with soil surface.
3. Check slots should be placed every 25' to 50', depending on the velocity of the water flow. A row of staples should be placed every 25' to 50', depending on the velocity of the water flow. A row of staples should be placed every 25' to 50', depending on the velocity of the water flow.
4. Provide drains as needed.

**Helpful Hints**

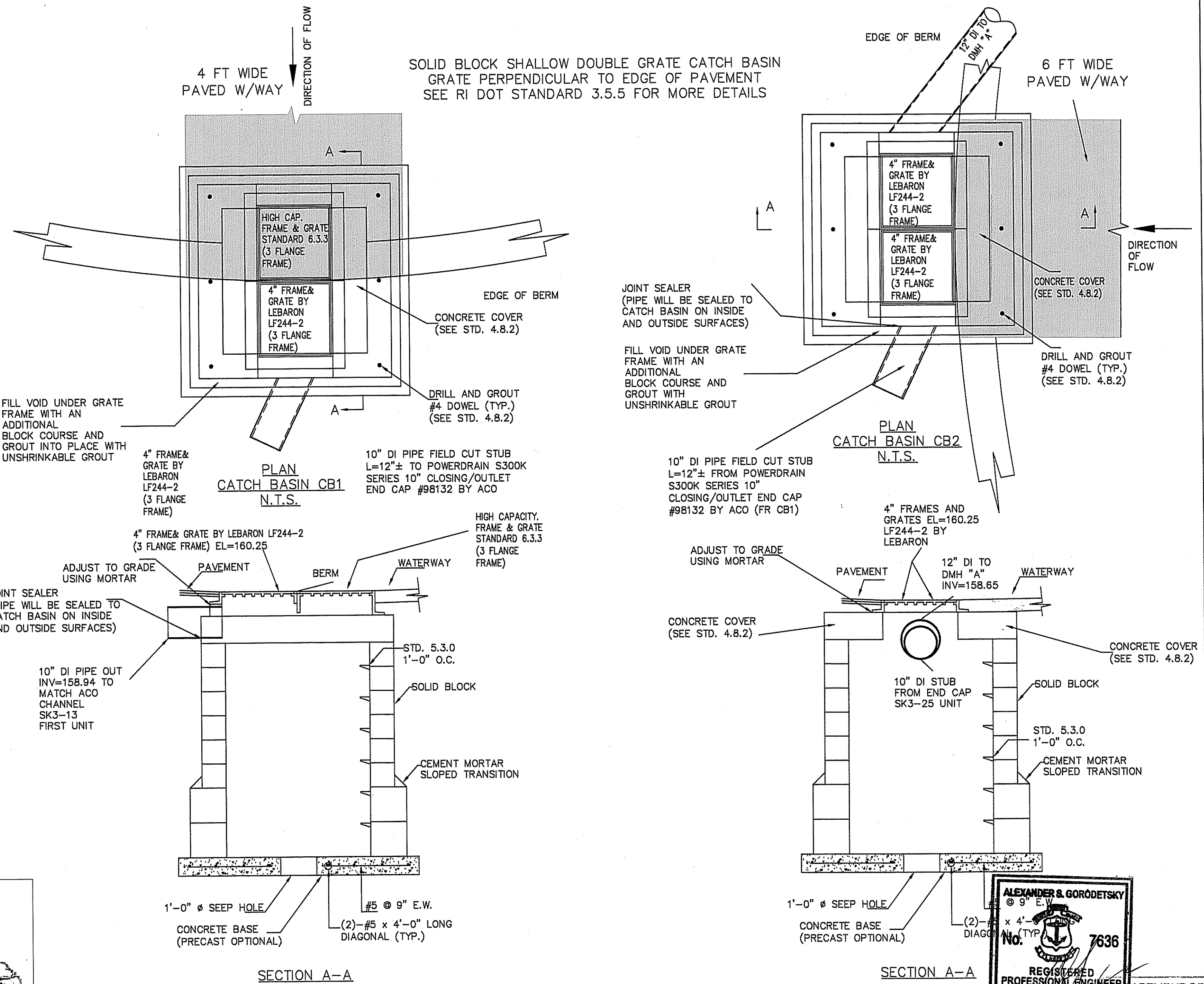
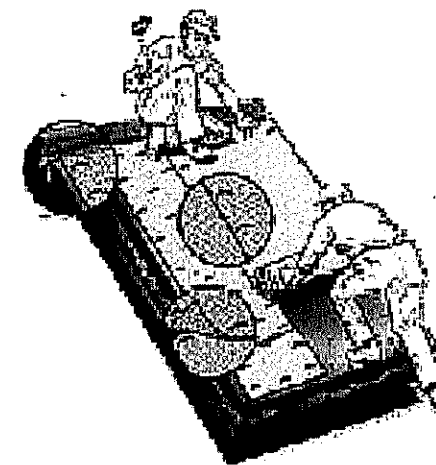
- Keep dry in storage
- Remember to lay ANTI-WASH/GEOJUTE loosely; **DO NOT STRETCH!**
- Check slots may be needed on steep slopes to prevent subsurface movement of soil during prolonged or heavy rains.

**To establish a slot:**

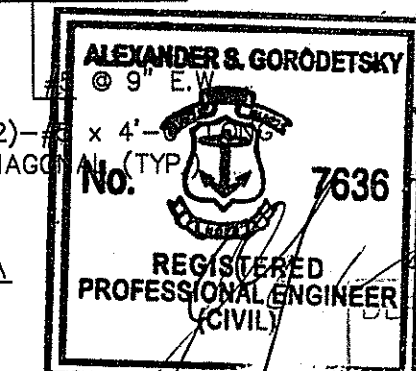
1. Dig 6" deep trench perpendicular to water flow.
2. Roll ANTI-WASH/GEOJUTE in two or three folds (see diagram) and set into trench.
3. Staple fabric securely in bottom of trench and continue rolling down hill.

- Because ANTI-WASH/GEOJUTE has 60 to 65% of open area, additional seed can be broadcast over the matting to cover bare spots that may appear due to improper seeding or poor germination.
- Recommended usage: Approximately 200 staples per 100 sq. yds.

Always check with state or contracting agency for installation specifications or special requirements



- NOTES:**
1. SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
  2. 1/2" CEMENT MORTAR COAT REQUIRED ON ALL INSIDE AND OUTSIDE SURFACES.
  3. 8" HIGH FRAME MAY BE SUBSTITUTED WITH A 4" HIGH FRAME AS NEEDED. SHOP DRAWINGS ARE REQUIRED.
  4. ADJUST DOWEL LOCATION BASED ON PIPE CONFIGURATION, IF REQUIRED.
  5. PIPE COVER AS SHOWN.
  6. USE 8" WALLS UP TO 6'-0" DEPTH, USE 1'-0" WALLS UP TO 8'-0" DEPTH.
  7. TWO SINGLE FRAMES WITH THREE FLANGES AND TWIN GRATES MAY BE SUBSTITUTED FOR THE DOUBLE FRAME WITH TWIN GRATES.



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SHEET 19 OF 26 SPECIFIED  
 DATED HAR 11 2010 FILE # 09-0241

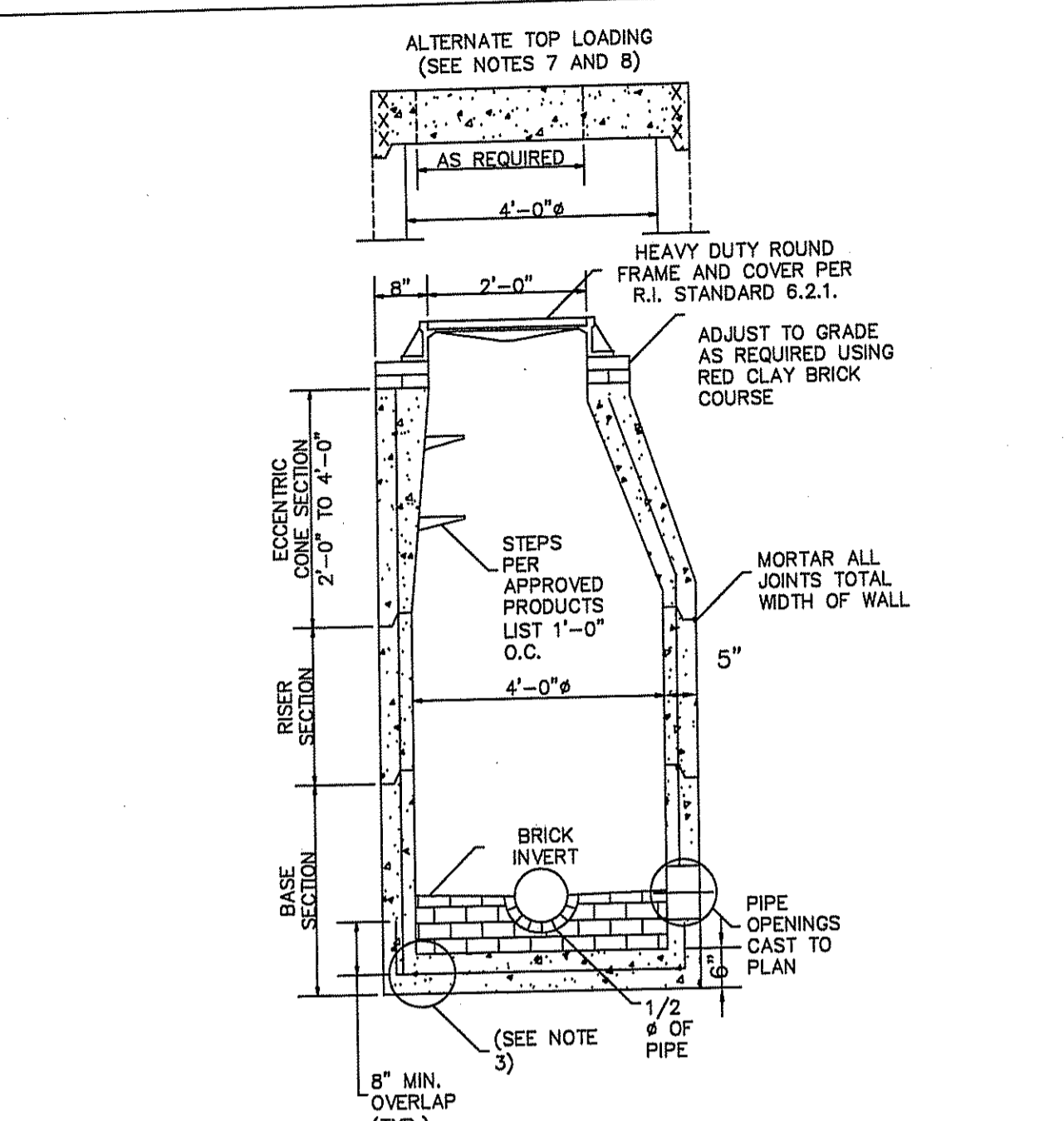
DETAILS SO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
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*Charles A. Hurd*

**DELIA DRIVE  
 MAJOR SUBDIVISION  
 PRELIMINARY PLAN**

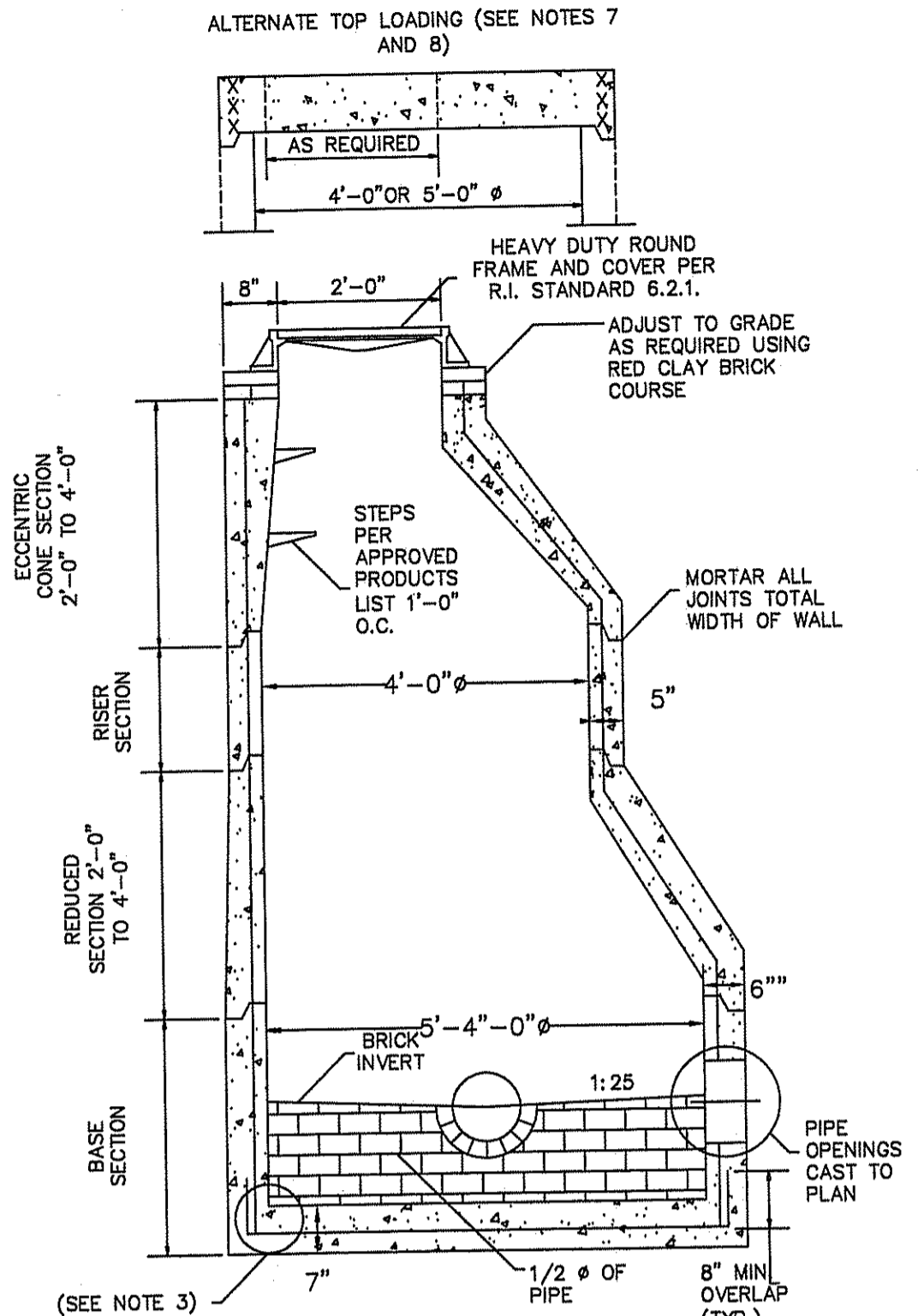
MAP 3-5 BLOCK 118 CARD 18  
 NORTH LAKE ROAD  
 TIVERTON, R.I.  
 SCALE: AS NOTED

DATE: AUGUST 25, 2009  
 REVISED: 11/20/08; 02/18/10  
 APPLICANT:  
 RICHARD BARBOZA, EXECUTOR  
 890 SANFORD RD, WESTPORT, MA 02790  
 OWNER:  
 ESTATE OF JOSEPH BARBOZA, 285  
 TIVERTON PROBATE COURT No. 285  
 C/O RICHARD BARBOZA, EXECUTOR & APPLICANT  
 ENGINEER:  
 GORODETSKY ENGINEERING, LLC  
 162 NORTH MAIN ST, FALL RIVER,  
 MA 02720 (508) 324-1163  
 SURVEYOR:  
 RALPH URBAN, PLS  
 PO BOX 1494, WESTPORT,  
 MA 02790 (508) 636-8397



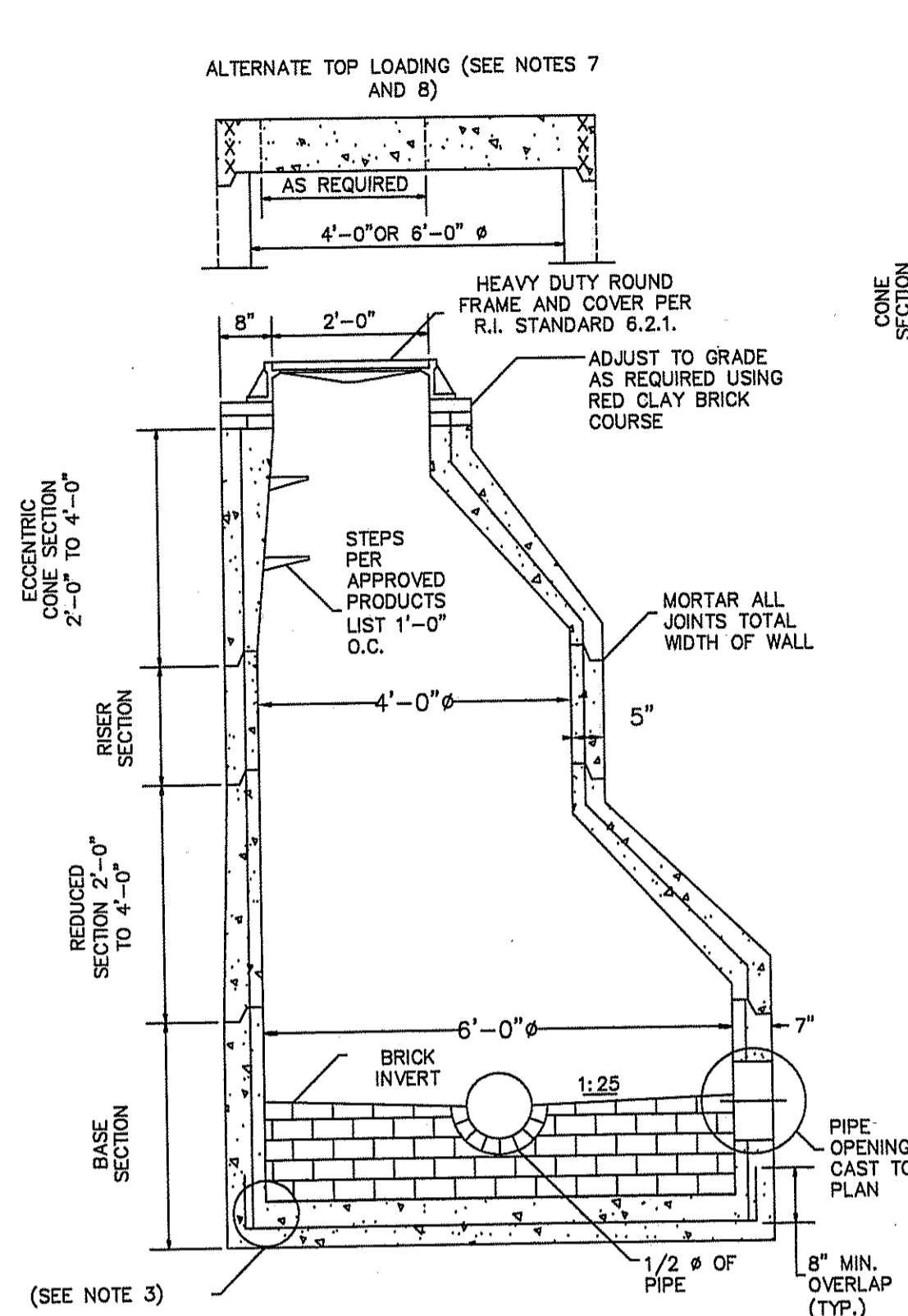
- NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
  2. CIRCUMFERENTIAL STEEL REINFORCEMENT REQUIRED = 0.12 SQ. IN./LIN. FT. MINIMUM.
  3. STEEL REINFORCEMENT FOR BASE SECTION BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN./LIN. FT. (BOTH WAYS).
  4. ONE POUR MONOLITHIC BASE SECTION.
  5. ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW-CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.
  6. STEPS SHALL CONFORM TO STD. 5.3.0. AND SHALL BE INSTALLED AT THE CASTING PLANT.
  7. ALTERNATE TOP SLAB IS STEEL REINFORCED TO MEET OR EXCEED H-25 LOADING (SEE STD. 4.7.2)
  8. ALTERNATE TOP SLAB IS ONLY FOR USE WHEN REDUCING SECTION DOES NOT FIT BECAUSE OF STRUCTURE DEPTH.
  9. REFER TO STD. 5.2.0. FOR MAXIMUM PIPE SIZES.

PRECAST 4'-0" ROUND MANHOLE  
N.T.S.  
SEE R.I. STANDARD 4.2.0 FOR DETAILS



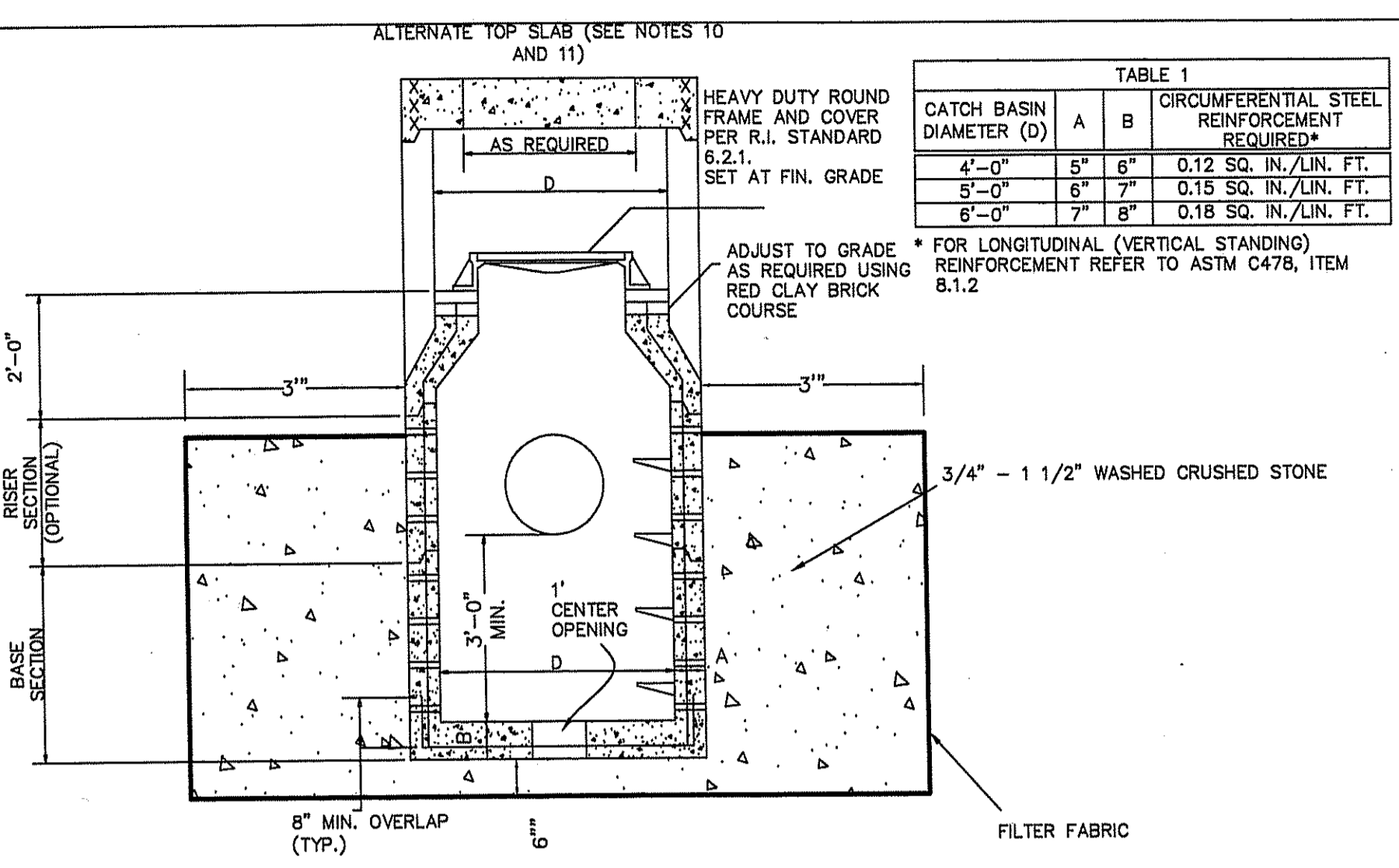
- NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
  2. CIRCUMFERENTIAL STEEL REINFORCEMENT REQUIRED = 0.15 SQ. IN./LIN. FT. MINIMUM.
  3. STEEL REINFORCEMENT FOR BASE SECTION BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN./LIN. FT. (BOTH WAYS).
  4. ONE POUR MONOLITHIC BASE SECTION.
  5. ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW-CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.
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  8. ALTERNATE TOP SLAB IS ONLY FOR USE WHEN REDUCING SECTION DOES NOT FIT BECAUSE OF STRUCTURE DEPTH.
  9. REFER TO STD. 5.2.0. FOR MAXIMUM PIPE SIZES.

PRECAST 5'-0" ROUND MANHOLE  
N.T.S.  
SEE R.I. STANDARD 4.2.1 FOR DETAILS



- NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
  2. CIRCUMFERENTIAL STEEL REINFORCEMENT REQUIRED = 0.15 SQ. IN./LIN. FT. MINIMUM.
  3. STEEL REINFORCEMENT FOR BASE SECTION BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN./LIN. FT. (BOTH WAYS).
  4. ONE POUR MONOLITHIC BASE SECTION.
  5. ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW-CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.
  6. STEPS SHALL CONFORM TO STD. 5.3.0. AND SHALL BE INSTALLED AT THE CASTING PLANT.
  7. ALTERNATE TOP SLAB IS STEEL REINFORCED TO MEET OR EXCEED H-25 LOADING (SEE STD. 4.7.2)
  8. ALTERNATE TOP SLAB IS ONLY FOR USE WHEN REDUCING SECTION DOES NOT FIT BECAUSE OF STRUCTURE DEPTH.
  9. REFER TO STD. 5.2.0. FOR MAXIMUM PIPE SIZES.

PRECAST 6'-0" ROUND MANHOLE  
N.T.S.  
SEE R.I. STANDARD 4.2.2 FOR DETAILS

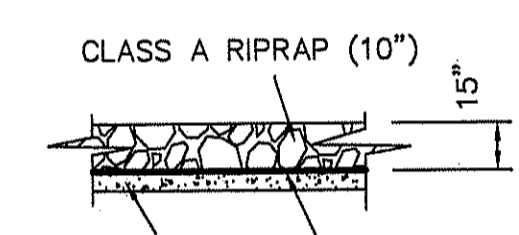


- NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
  2. SEE TABLE 1 FOR STEEL REINFORCEMENT REQUIREMENTS.
  3. STEEL REINFORCEMENT FOR BASE SECTION BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN./LIN. FT. (BOTH WAYS).
  4. STEPS SHALL CONFORM TO STD. 5.3.0. AND SHALL BE INSTALLED AT THE CASTING PLANT.
  5. ONE POUR MONOLITHIC BASE SECTION.
  6. ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW-CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.
  7. CORBEL MADE OF RED CLAY BRICK WILL BE PERMITTED FOR THE "CONE SECTION" OF THE 4'-0" CATCH BASIN ONLY.
  8. FOR CATCH BASIN TYPES "D" AND "F" STEPS MUST BE INSTALLED ON THE CURB SIDE OF THE STRUCTURE.
  9. THE CENTERLINE OF THE OPENING MUST BE WITHIN 2'-0" FROM THE STEPS.
  10. ALTERNATE TOP SLAB IS STEEL REINFORCED TO MEET OR EXCEED H-25 LOADING (SEE STD. 4.7.2)
  11. ALTERNATE TOP SLAB IS ONLY FOR USE WHEN REDUCING SECTION DOES NOT FIT BECAUSE OF STRUCTURE DEPTH.
  12. REFER TO STD. 5.2.0. FOR MAXIMUM PIPE SIZES.

PRECAST 4'-0" 5'-0" 6'-0" ROUND LEACHING CATCH BASIN  
N.T.S.  
SEE R.I. STANDARD 4.4.0 FOR DETAILS

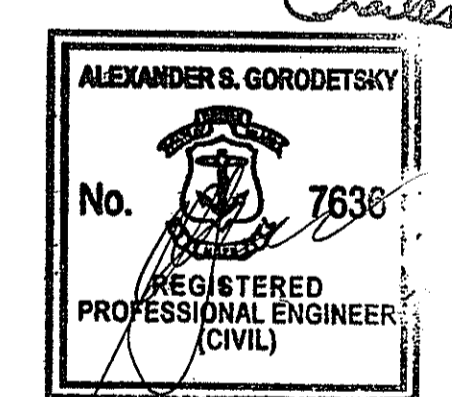
CATCH BASIN DIAMETER (D)	CIRCUMFERENTIAL STEEL REINFORCEMENT REQUIRED*	
	A	B
4'-0"	5"	6"
5'-0"	6"	7"
6'-0"	7"	8"

\* FOR LONGITUDINAL (VERTICAL STANDING) REINFORCEMENT REFER TO ASTM C478, ITEM 8.1.2



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT,  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
DATED **MAR 11 2010** FILE # **09-0241**  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
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*Charles A. ...*



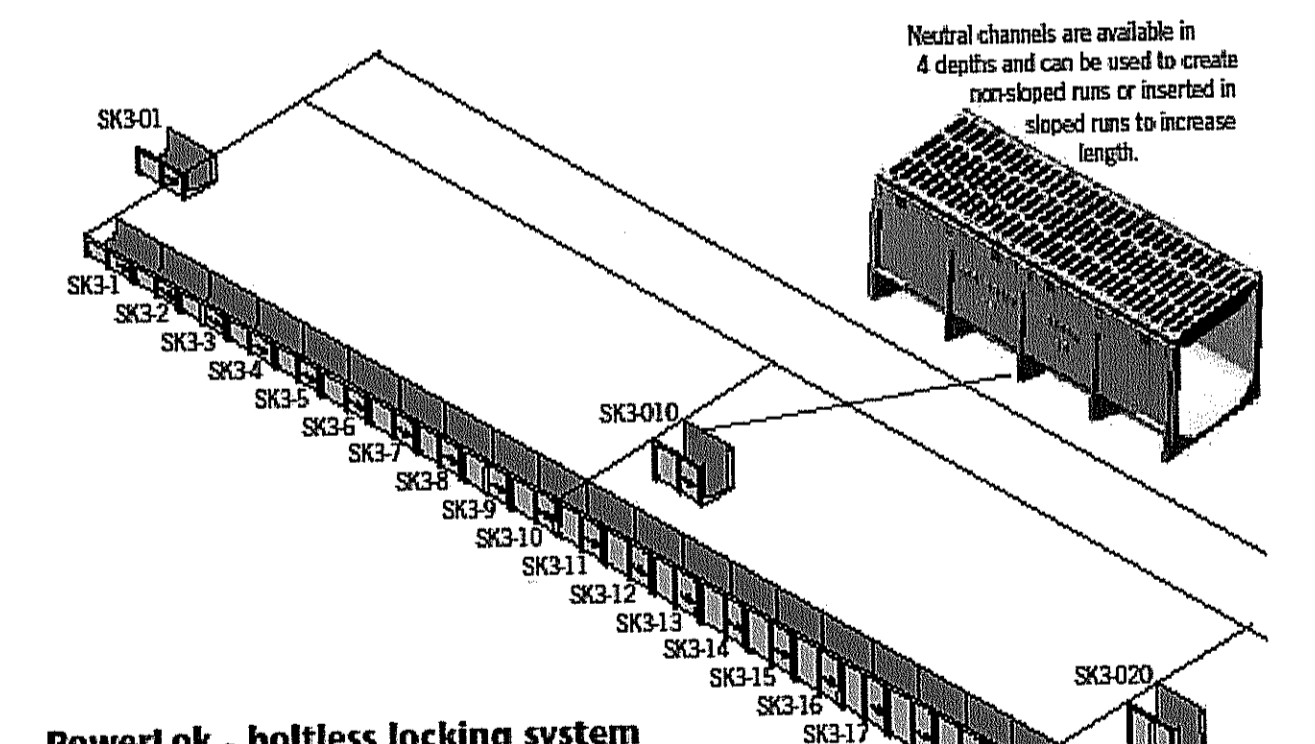
SHEET 20 OF 20  
DETAILS

DELIA DRIVE  
MAJOR SUBDIVISION  
PRELIMINARY PLAN  
MAP 3-5 BLOCK 118 CARD 18  
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SCALE: AS NOTED

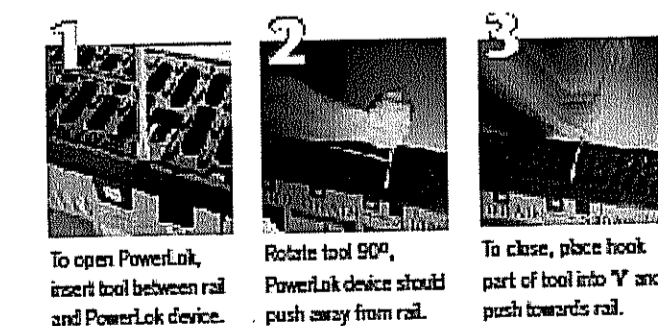
DATE: AUGUST 25, 2009  
REVISED: 11/20/09; 02/18/10  
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PowerDrain - S300K

System layout

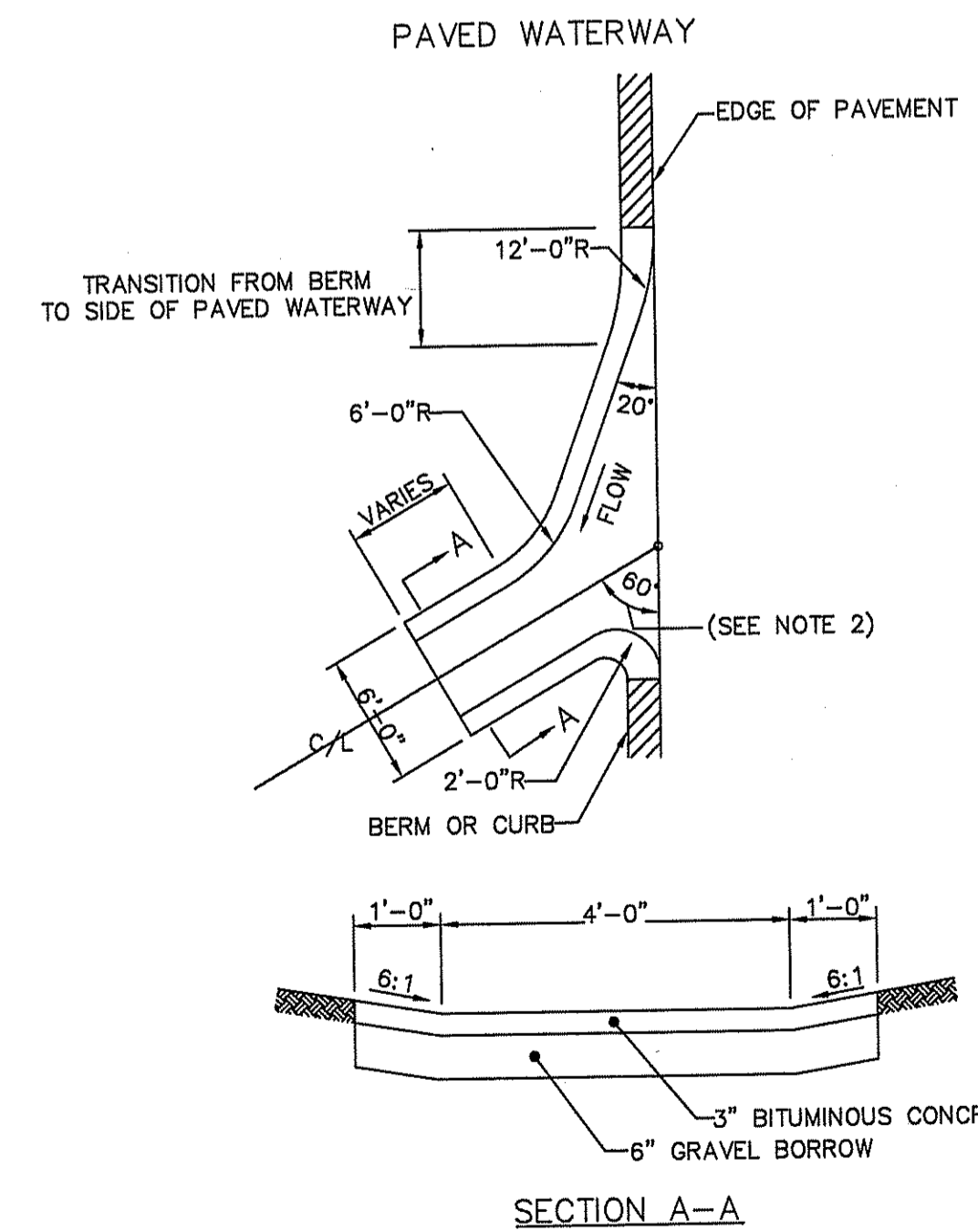


PowerLock - boltless locking system

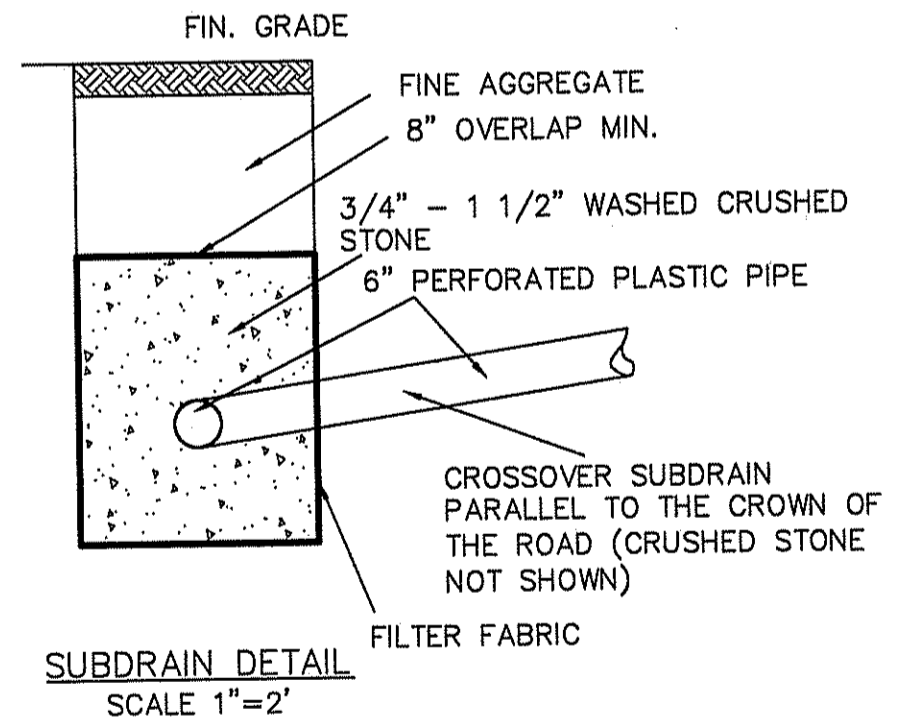


Description	Length in (meters)	Weight lbs	Slot size (in)	Intake area inches <sup>2</sup>	Locking Type
Slotted Iron	19.69" (0.5m)	60.0	0.75 x 0.32	63.2	PowerLock

\* Ductile iron to ASTM A 536-84 - grade 65-45-12



- NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 711 OF THE R.I. STANDARD SPECIFICATIONS.
  2. WHEN PAVED WATERWAY IS USED AT A LOW POINT THIS ANGLE SHALL BE 90°.



- 4" SEALED TOP FOR LONGITUDINAL SUBDRAINS (COMPACTED EARTH); APPROPRIATE SURFACE TREATMENT FOR CROSS SUBDRAINS; CROSSOVER SUBDRAIN CONNECTIONS TO THE LONGITUDINAL SUBDRAINS SHALL BE MADE IN THE FORM OF AN INVERTED "Y" (WHERE SHOWN) TO PROVIDE FOR A POSITIVE DRAINAGE FROM THE CENTER OF THE ROAD INTO LONGITUDINAL SUBDRAIN; USE HANCOR PIPE OR APPROVED EQUAL

