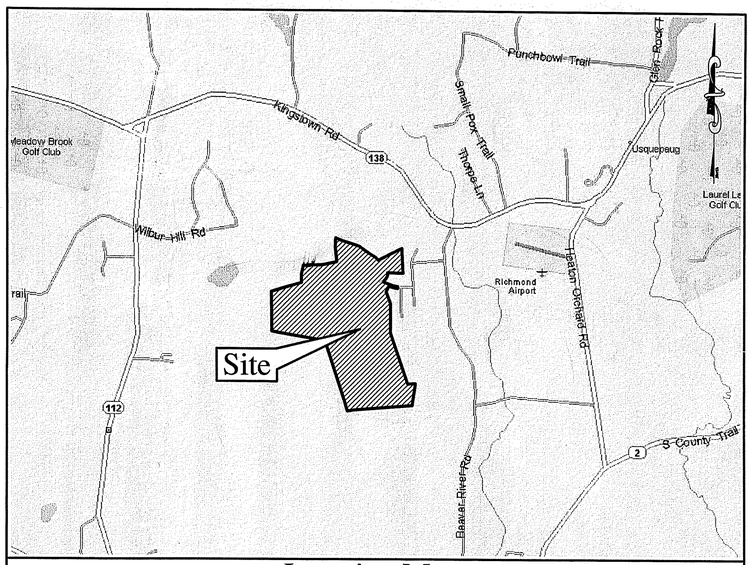
RIDEM Preliminary Determination Submission

Richmond Hills - Phase 3

Located on Ellen Brady Drive
Richmond, Rhode Island
Assessor's Plat 7D Lot 9

Sheet Index



Location Map SCALE: 1"=2000'±

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CHRISTOPHER A. DUHAMEL No. 1844 PROFESSIONAL LAND SURVEYOR

CHRISTOPHER A. DUHAMEL No. 5013 REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
0	9-14-07	RIDEM PD SUBMISSION	C.R.D.

COVER SHEET

Richmond Hills - Phase 3
ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

PREPARED BY
DiPrete Engineering Associates, Inc.
ENGINEERING, SURVEYING AND PLANNING CONSULTANTS
TWO STAFFORD COURT
CRANSTON, R.I. 02920
(401) 943-1000 FAX: (401) 464-6006

PREPARED FOR
Ralph Campanelli
ONE CAMPANELLI DRIVE
BRAINTREE, MASSACHUSETTS 02184
PHONE: (781) 843-8280

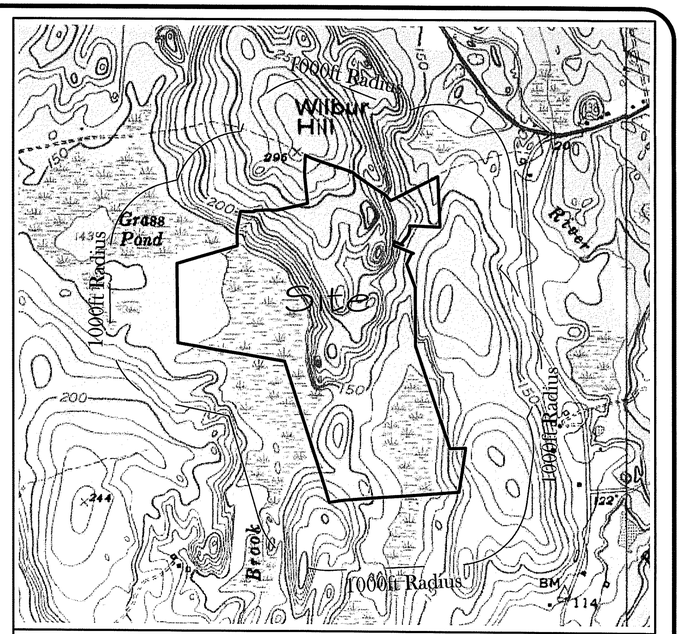
SEPTEMBER, 2007
DWN. BY: C.R.D.

SHEET 1 OF 28

Photo obtained from the RI-GIS Digital Orthophoto Quad Library Rhode Island Geographic Information System (RIGIS) and Massachusetts Institute of Technology (MIT), photo dated 2004.

SCALE: 1"=500'

0 250' 500' 1000'



USGS Topographic Map SCALE: 1"=1000'

Legend

- EXISTING TREE LINE
- PROPOSED TREE LINE
- ABUTTING PROPERTY LINE
- SOIL DIVISION LINE
- PROPERTY LINE
- EXISTING BUILDING
- STONEWALL EXISTING
- STONEWALL PROPOSED
- OVERHEAD WIRES
- UP 14 UTILITY POLE
- 242 TWO FOOT CONTOUR
- 240 TEN FOOT CONTOUR
- 1000 PROPOSED CONTOURS
- C69@ C68@ FLAGGED WETLAND LINE
- EXISTING GRAVEL CART PATHS
- ISDS PROPOSED ISDS
- PROPOSED SEPTIC TANK
- PROPOSED HOUSE
- PROPOSED WELLS
- SILT FENCE OR HAY BALES AT LIMIT OF DISTURBANCE
- LIMIT OF DISTURBANCE LINE
- PROPOSED DRAINAGE
- PROPOSED CATCHBASIN
- PROPOSED DOUBLE CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED FLARED END
- PROPOSED RIP RAP APRON
- PROPOSED DRYWELL SYSTEM
- PROPOSED PAVED DRIVEWAY
- PROPOSED DRAINAGE EASEMENT
- SETBACK LINE
- 50' PERIMETER WETLAND LINE
- 100' RIVERBANK WETLAND
- TEST HOLE
- LEDGE TEST
- DRAINAGE PIPE FLOW ARROW
- FLOOD PLAN AREA

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AERIAL 1/2 MILE RADIUS

Richmond Hills

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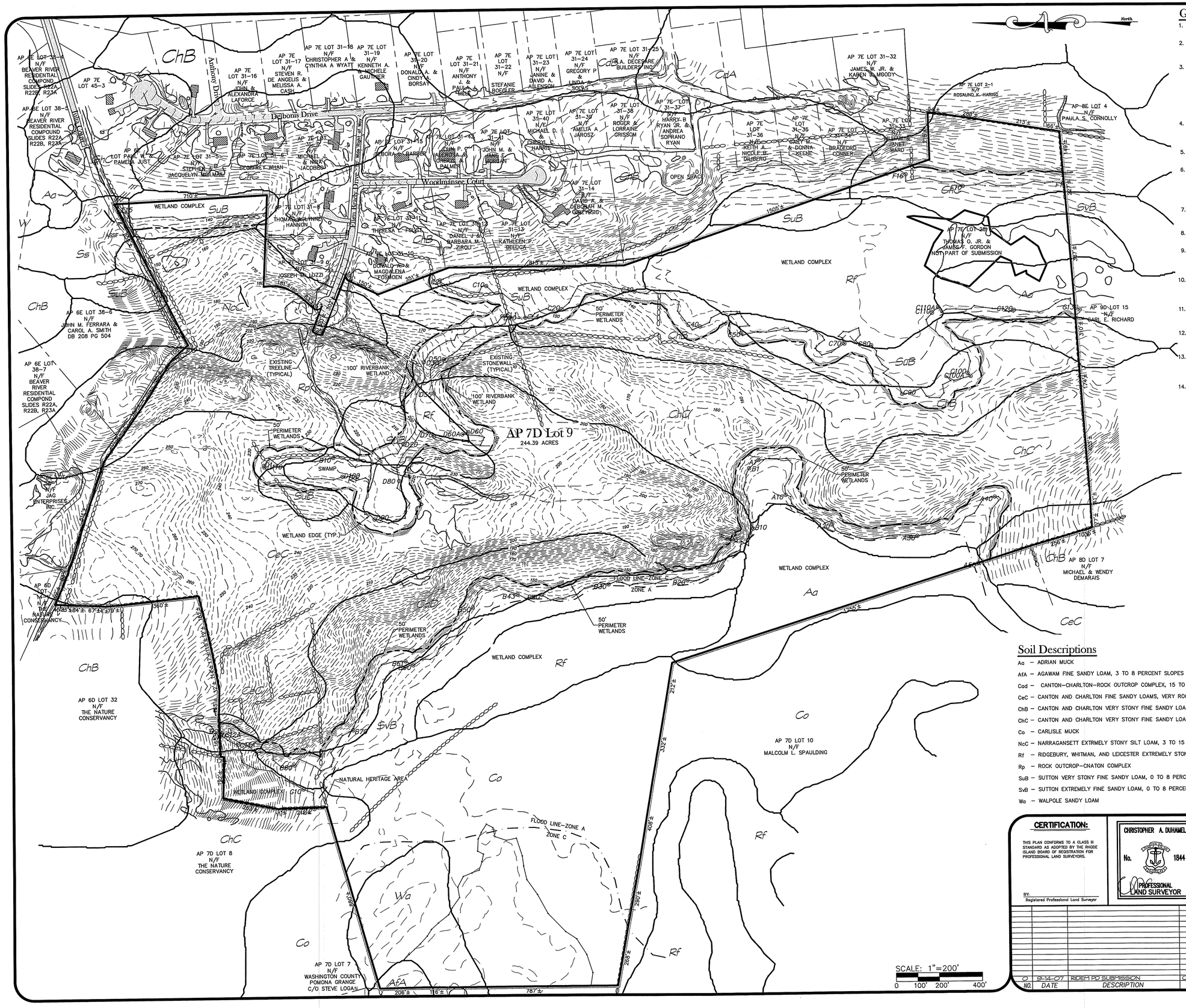

General Notes

1. SITE IS LOCATED ON TOWN OF RICHMOND ASSESSOR'S PLAT 7D LOT 9. THE AREA OF THE SITE IS 244.39 ACRES±. ZONING OF THE SITE IS RESIDENTIAL R2.
2. THE OWNER OF THE SITE IS DEL BONIS SAND AND GRAVEL CO., 310 RESERVOIR AVENUE, PROVIDENCE, RHODE ISLAND 02907. THE APPLICANT OF THE SITE IS RALPH CAMPANELLI, ONE CAMPANELLI DRIVE BRAINTREE, MASSACHUSETTS 02184.
3. THERE IS A 100 YEAR FLOOD PLAIN LOCATED ON THE SITE (ZONE A) ACCORDING TO F.E.M.A. FLOOD INSURANCE RATE MAP FOR THE TOWN OF RICHMOND, RHODE ISLAND COMMUNITY PANEL 440031 0020 B DATED NOVEMBER 5, 1980. THE SITE IS LOCATED WITHIN THE FOLLOWING FLOOD INSURANCE ZONES, THE BOUNDARIES OF WHICH, AS SHOWN APPROXIMATELY HEREON, HAVE BEEN DIGITIZED FROM THE ABOVE REFERENCED FLOOD INSURANCE RATE MAP:
   ZONE C – AREAS OF MINIMAL FLOODING.
   ZONE A – AREAS OF 100–YEAR FLOOD; BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS NOT DETERMINED.
4. BASED ON THE 100– YEAR FLOODPLAIN ANALYSIS ON THE SUBJECT PROJECT SITE, IT HAS BEEN DETERMINED THAT ALL CONSTRUCTION FOR THE PROPOSED SUBDIVISION LOTS IS ABOVE AND BEYOND THE 100–YEAR FLOOD PLAIN LINE AND ELEVATION, AND DOES NOT ADVERSELY IMPACT THE PROPOSED DEVELOPMENT AS SHOWN ON THE SITE PLANS.
5. PORTION OF THE SITE IS LOCATED WITHIN A NATURAL HERITAGE AREA (RIDEM) AT THE NORTH EAST CORNER OF SITE IN PROPOSED CONSERVATION OPEN SPACE
6. THE BOUNDARY LINES AS SHOWN ON THIS PLAN CONFORM TO CLASS 1 STANDARD GEOMETRY; HOWEVER THE PLAN ITSELF ONLY CONFORM TO A CLASS 3 STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS. THIS EXISTING CONDITIONS PLAN MAY NOT BE USED FOR CONVEYANCE PURPOSES. ONLY THE FINAL PLAN APPROVED BY THE PLANNING BOARD AND SUBSEQUENTLY RECORDED MAY BE USED FOR CONVEYANCE PURPOSES.
7. WETLANDS DELINEATED BY NATURAL RESOURCE SERVICES, INC.; P.O. BOX 311, HARRISVILLE, RHODE ISLAND 02830. FLAGS LOCATED BY DIPRETE ENGINEERING ASSOCIATES, INC.; TWO STAFFORD COURT, CRANSTON, RHODE ISLAND 02920, USING GPS SUBMETER TECHNOLOGY.
8. SOIL MAPPING OBTAINED FROM 'SOIL SURVEY OF RHODE ISLAND' PREPARED BY US DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE.
9. THE CONTRACTOR SHALL COORDINATE WITH ALL OF THE APPROPRIATE UTILITY COMPANIES FOR AGREEMENTS TO SERVICE THE PROPOSED BUILDING(S). THIS SHALL BE DONE PRIOR TO CONSTRUCTION. NO REPRESENTATIONS ARE MADE BY DIPRETE ENGINEERING ASSOCIATES, INC. THAT UTILITY SERVICE IS AVAILABLE.
10. ALL EXISTING UTILITIES SHOWN ARE FROM VISIBLE INFORMATION, DRAWINGS BY OTHERS, OR INFORMATION PROVIDED TO DIPRETE ENGINEERING ASSOCIATES, INC. AND ARE SUBJECT TO CHANGE. NO ONE SHOULD RELY ON THE UTILITY LOCATIONS SHOWN FOR CONSTRUCTION AND DIG SAFE SHOULD BE NOTIFIED PRIOR TO ANY WORK.
11. THIS SURVEY WAS CONDUCTED WITH A TITLE REPORT BY MORTGAGE GUARANTEE AND TITLE COMPANY FOR CAMPANELLI PROPERTIES OF RICHMOND DATED AUGUST 17, 2005, ORDER NUMBER 1088637 (AB–80812).
12. COORDINATES, IN U.S. SURVEY FEET, ARE REFERENCED TO THE RHODE ISLAND STATE PLANE COORDINATE SYSTEM, REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD 83), AS DETERMINED BY DEA'S SURVEY BY REAL TIME KINEMATIC G.P.S. OBSERVATIONS.
13. ELEVATIONS, IN U.S. SURVEY FEET, ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), AS DETERMINED BY DEA'S SURVEY BY REAL TIME KINEMATIC G.P.S. OBSERVATIONS. THE CONTOUR INTERVAL IS 2 FEET. TOPOGRAPHY AS DEPICTED IS ACCURATE TO WITHIN HALF THE CONTOUR INTERVAL.
14. PLANIMETRIC FEATURES, CONTOUR LINES, AND SPOT ELEVATIONS WERE STEREO COMPILED AT A SCALE OF 1"=40' BY COL–EAST,INC. P.O. BOX 347 HARRIMAN & WEST AIRPORT, NORTH ADAMS MA, SUB CONSULTANTS TO THE OWNER/DEVELOPER, FROM BLACK AND WHITE PHOTOGRAPHY TAKEN APRIL, 2003 AND FIT TO GROUND CONTROL POINTS SURVEYED BY DEA JANUARY, 2006. SURVEY PERFORMED ON THE GROUND BY DEA USING REAL TIME KINEMATIC G.P.S. OBSERVATIONS AND/OR TOTAL STATION SURVEY ON 9–5–06.

Soil Descriptions

Aa – ADRIAN MUCK
AfA – AGAWAM FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES
CaD – CANTON–CHARLTON–ROCK OUTCROP COMPLEX, 15 TO 35 PERCENT
CeC – CANTON AND CHARLTON FINE SANDY LOAMS, VERY ROCKY, 3 TO 15 PERCENT SLOPES
ChB – CANTON AND CHARLTON VERY STONY FINE SANDY LOAMS, 3 TO 8 PERCENT SLOPES
ChC – CANTON AND CHARLTON VERY STONY FINE SANDY LOAMS, 8 TO 15 PERCENT SLOPES
Co – CARLISLE MUCK
NcC – NARRAGANSETT EXTRMELY STONY SILT LOAM, 3 TO 15 PERCENT SLOPES
Rf – RIDGEBURY, WHITMAN, AND LEICESTER EXTREMELY STONY FINE SANDY LOAMS
Rp – ROCK OUTCROP–CNATON COMPLEX
SuB – SUTTON VERY STONY FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES
SvB – SUTTON EXTREMELY FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES
Wa – WALPOLE SANDY LOAM

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CERTIFICATION:

THIS PLAN CONFORMS TO A CLASS III STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS.

BY: Registered Professional Land Surveyor

CHRISTOPHER A. DUHAMEL No. 1844 PROFESSIONAL LAND SURVEYOR

NO.	DATE	DESCRIPTION	BY
0	9-14-07	RIDEM PD SUBMISSION	C.R.D

EXISTING CONDITIONS PLAN

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

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PHONE: (781) 843–8280

SEPTEMBER, 2007
DWN. BY: C.R.D.

SHEET 3 OF 28

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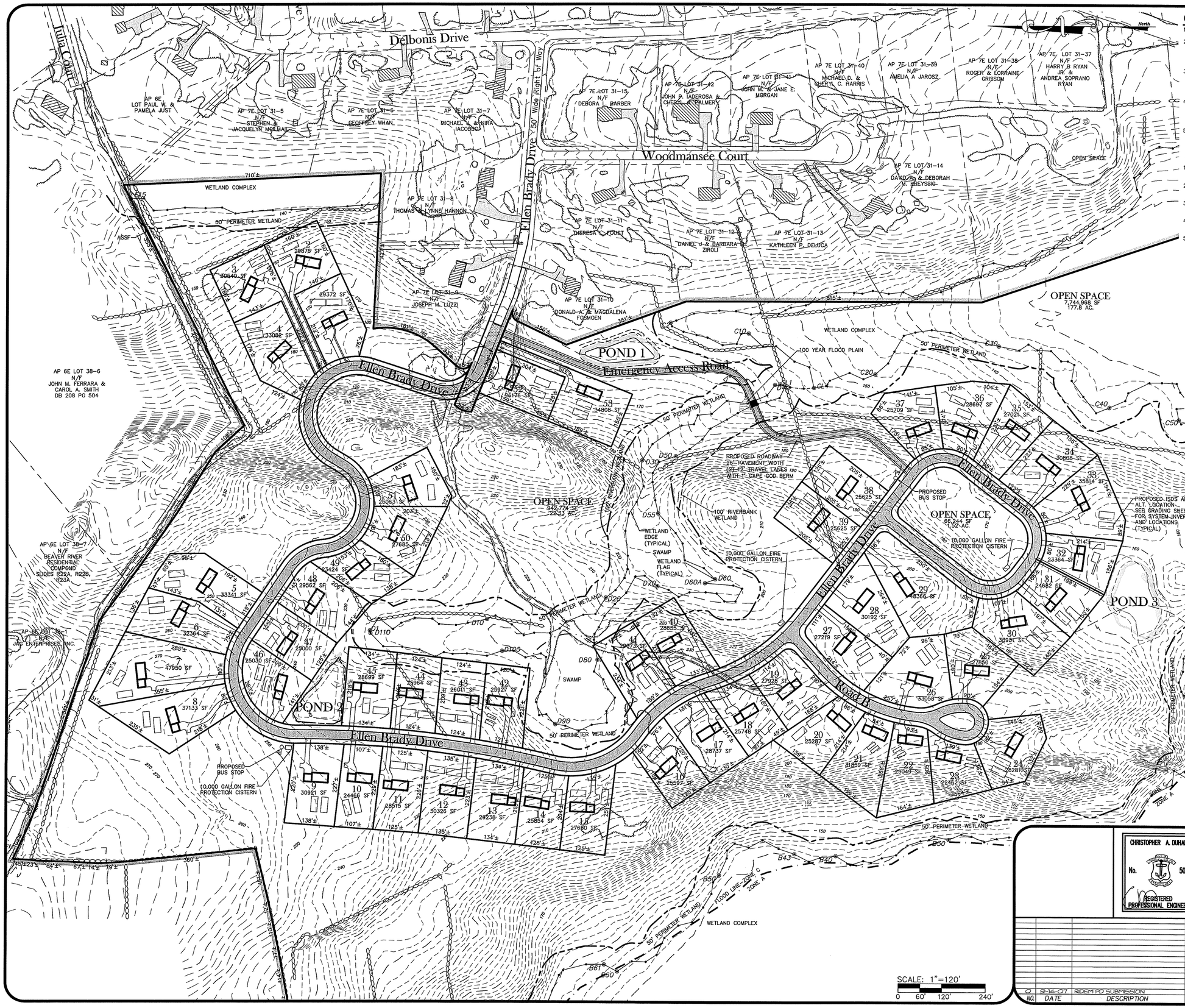

General Notes

1. PROPOSED HOMES ARE TO BE SERVICED BY PRIVATE WELLS AND ISDS.
2. THE DRAINAGE SYSTEM IS DESIGNED TO MEET THE TOWN OF RICHMOND LAND DEVELOPMENT AND SUBDIVISION REGULATIONS WITH THE USE OF CATCH BASINS, CULVERTS, AND DRAINAGE BASINS. THE STORMWATER MANAGEMENT SYSTEM MEETS THE RIDEM BEST MANAGEMENT PRACTICES.
3. PROPOSED RIGHT OF WAYS ARE TO BE 50' WIDE WITH 26' WIDE PAVEMENT (12' TRAVEL LANES WITH 1' WIDE CAPE COD BERM ON EACH SIDE). NO SIDEWALKS ARE PROPOSED. UNDERGROUND UTILITIES ARE PROPOSED. THE EMERGENCY ACCESS DRIVEWAY IS DESIGN WITH A 12' WIDE CHIP SEAL PAVEMENT AND A 20' GRAVEL BASE.
4. PROJECT TO BE COMPLETED IN 3 PHASES:
   PHASE 1 LOTS 1-10 & 46-53
   PHASE 2 LOTS 11-26 & 40-45
   PHASE 3 LOTS 27-39
5. PROPOSED DEVELOPMENT AREA IS NOT WITH IN A NATURAL HERITAGE SITE.

RIDEM Site Suitability Notes

1. THERE ARE NO KNOWN EXISTING OR PROPOSED PRIVATE WELLS WITHIN 200 FT. OF THE PROPOSED DEVELOPMENT EXCEPT WHERE SHOWN.
2. THERE ARE NO KNOWN EXISTING OR PROPOSED ISDS'S WITHIN 200 FT. OF THE DEVELOPMENT EXCEPT WHERE SHOWN.
3. THERE ARE NO KNOWN PUBLIC WELLS WITHIN 500 FT. OF THE PROPOSED DEVELOPMENT.
4. THERE ARE NO KNOWN EXISTING OR PROPOSED WELLS WITHIN 200 FT. OF A PROPOSED ISDS EXCEPT WHERE SHOWN.
5. RESIDENTIAL HOMES ARE TO BE SERVICED BY PRIVATE WELLS AND ISDS.

Dimensional Regulations (Conservation)

ZONING: R-2	
MINIMUM LOT AREA (SINGLE FAMILY)	10,000 S.F.
MINIMUM FRONTAGE	80 FT.
MINIMUM FRONT YARD SETBACK	25 FT.
MINIMUM SIDE YARD SETBACK	10 FT.
MINIMUM REAR YARD SETBACK	30 FT.

Development Data

GROSS AREA OF PARCEL	244.39 AC.
TOTAL SINGLE FAMILY LOTS	53 LOTS
TOTAL AREA OF BUILDABLE LOTS	35.45 AC.
AVERAGE LOT AREA	28,997 S.F.
AREA OF R.O.W.	6.76 AC.
LENGTH OF ROADWAY	5,889 LF
AREA OF OPEN SPACE	201.65 AC.
AREA OF ACCESS EASEMENT	0.53 AC.
LENGTH OF ACCESS EASEMENT	1318 LF

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OVERALL PLAN

Richmond Hills - Phase 3

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SHEET 4 OF 28

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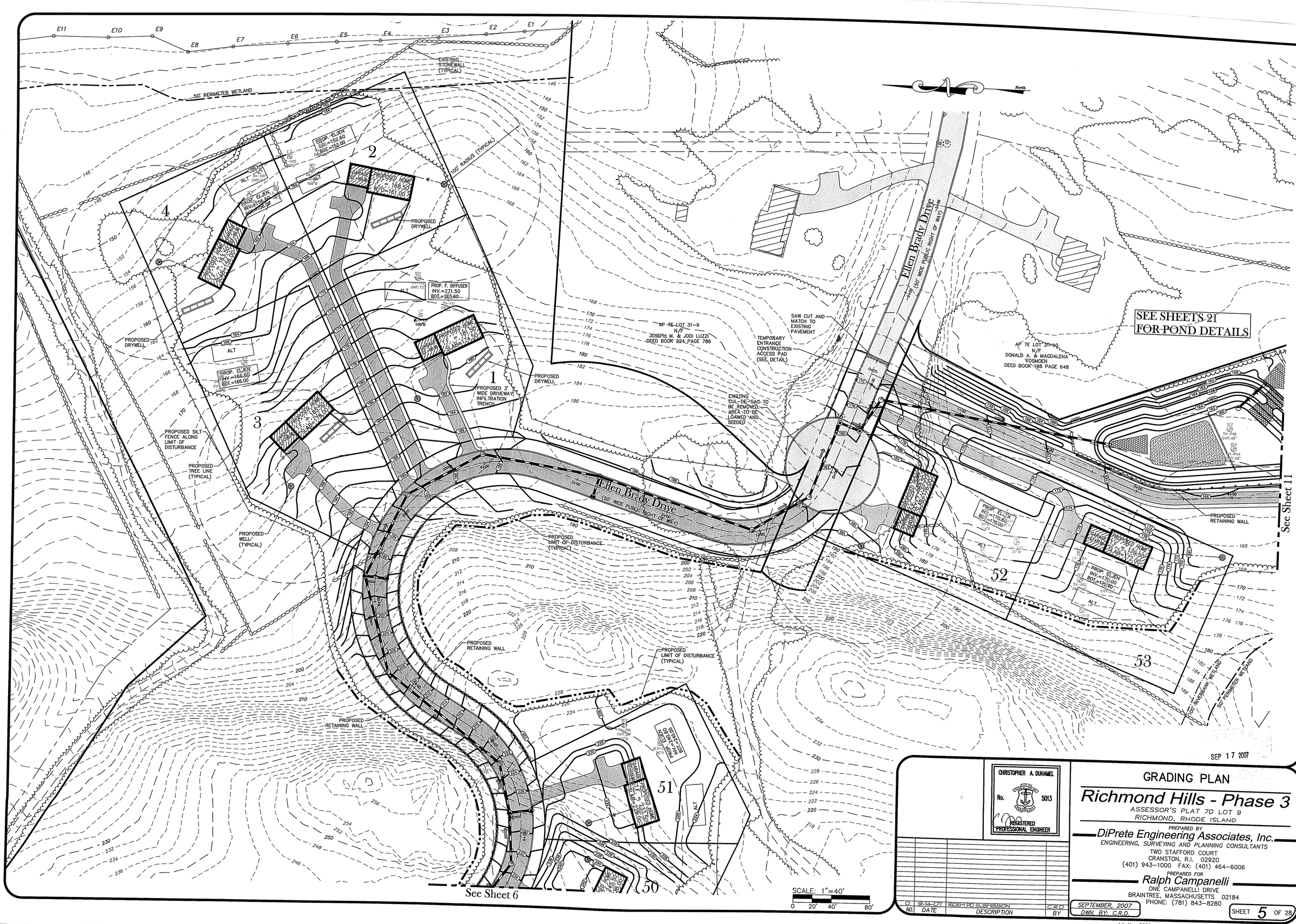

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GRADING PLAN

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SHEET 5 OF 28

See Sheet 5

North

PROPOSED LIMIT OF DISTURBANCE (TYPICAL)

EXISTING TREELINE (TYPICAL)

PROPOSED SILT FENCE ALONG LIMIT OF DISTURBANCE

PROPOSED TREE LINE (TYPICAL)

Ellen Brady Drive
(50' WIDE PUBLIC RIGHT OF WAY)

100' RADIUS CUL-DE-SAC (TYPICAL)

PROPOSED SILT FENCE ALONG LIMIT OF DISTURBANCE

EXISTING STONEWALL (TYPICAL)

50' PERIMETER WETLAND

PROPOSED RETAINING WALL

WETLAND EDGE (TYPICAL)

SWAMP

WETLAND FLAG (TYPICAL)

PROPOSED DOUBLE SILT FENCE/HAYBALES AT LIMIT OF DISTURBANCE

SEDIMENT FOREBAY

POND 2

SEE SHEETS 22 FOR POND DETAILS

See Sheet 7

PROPOSED WELL (TYPICAL)

PROPOSED RETAINING WALL

10,000 GALLON FIRE PROTECTION CISTERN

PROPOSED LIMIT OF DISTURBANCE (TYPICAL)

SCALE: 1"=40'
0 20' 40' 80'

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SHEET 6 OF 28

North

EXISTING TREELINE (TYPICAL)

50' PERIMETER WETLAND

SWAMP

PROPOSED DOUBLE SILT FENCE/HAYBALES AT LIMIT OF DISTURBANCE

EXISTING STONEWALL (TYPICAL)

100' RADIUS (TYPICAL)

WETLAND FLAG (TYPICAL)

WETLAND EDGE (TYPICAL)

PROPOSED RETAINING WALL

See Sheet 6

See Sheet 8

Ellen Brady Drive
(50' WIDE PUBLIC RIGHT OF WAY)

PROPOSED TREE LINE (TYPICAL)

PROPOSED SILT FENCE ALONG LIMIT OF DISTURBANCE

PROPOSED WELL (TYPICAL)

EXISTING TREELINE (TYPICAL)

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SCALE: 1"=40'
0 20' 40' 80'

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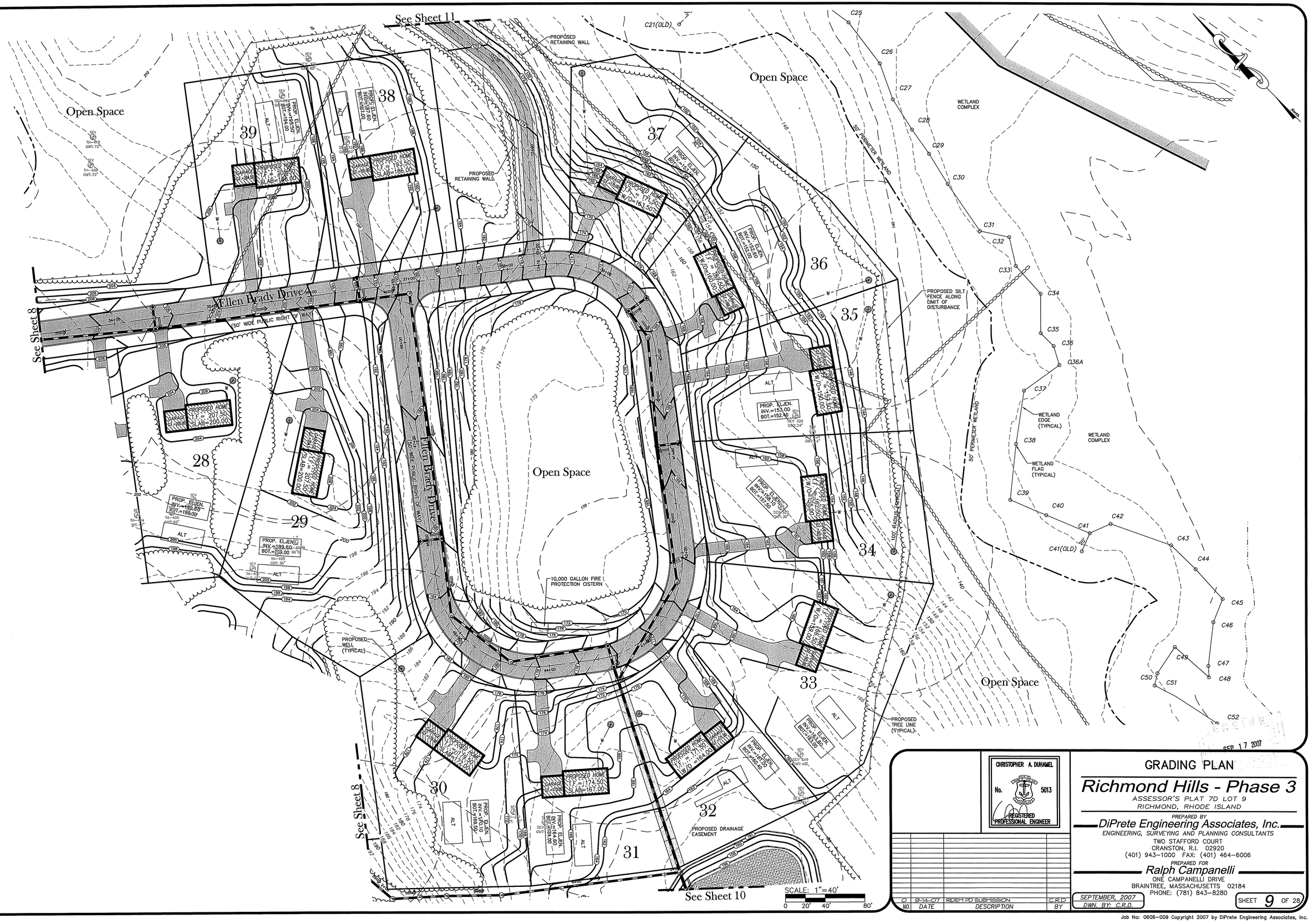

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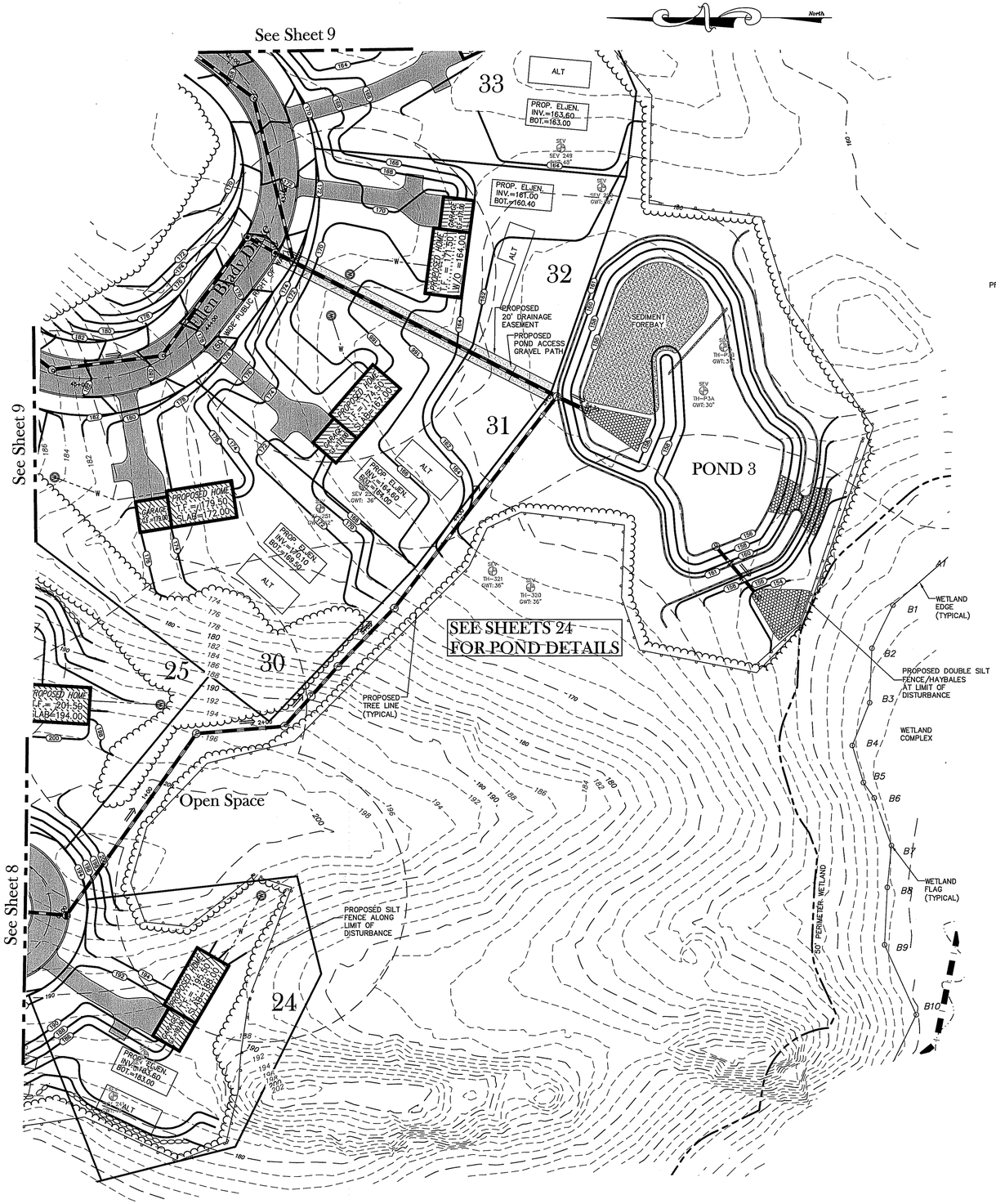

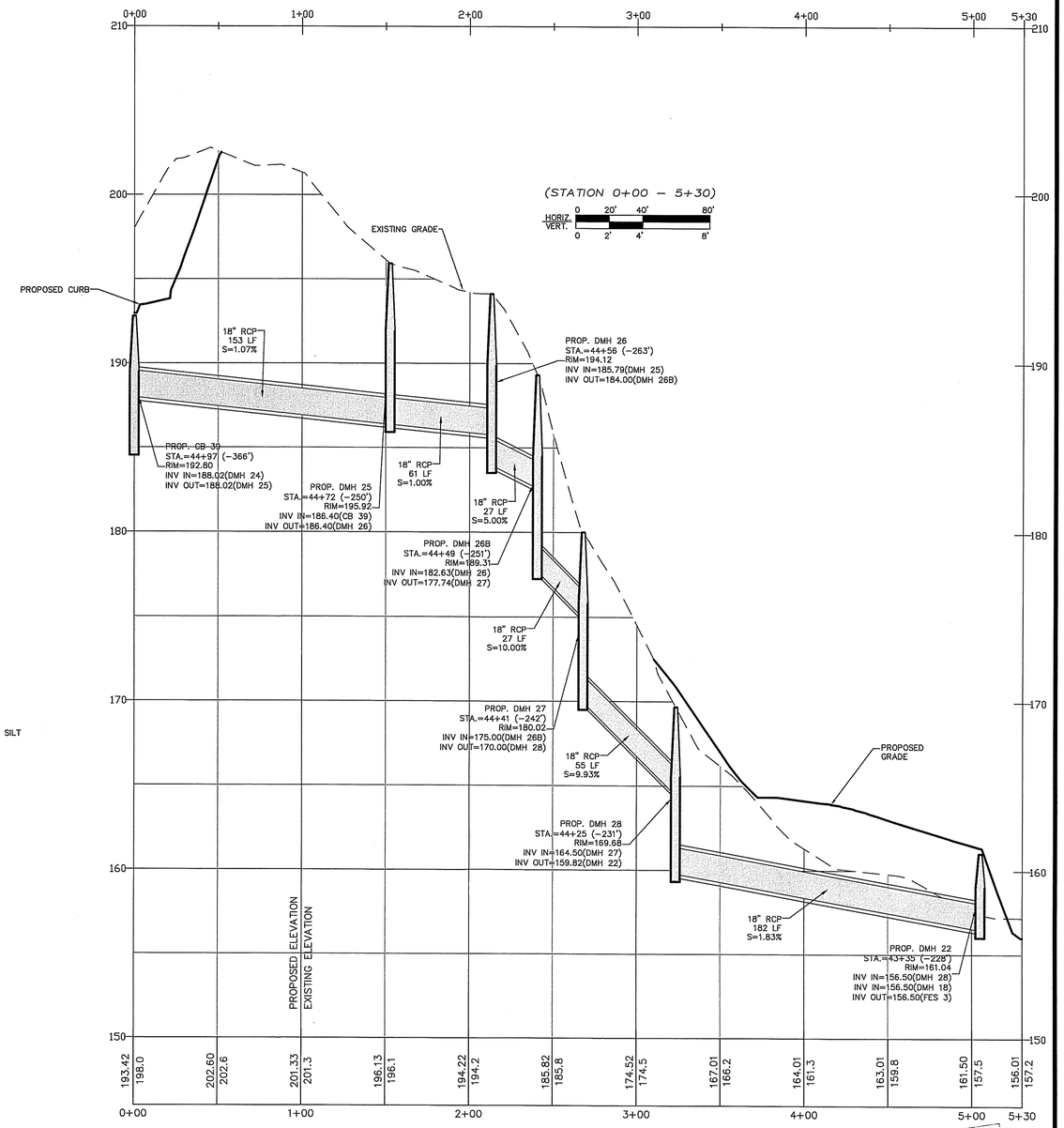

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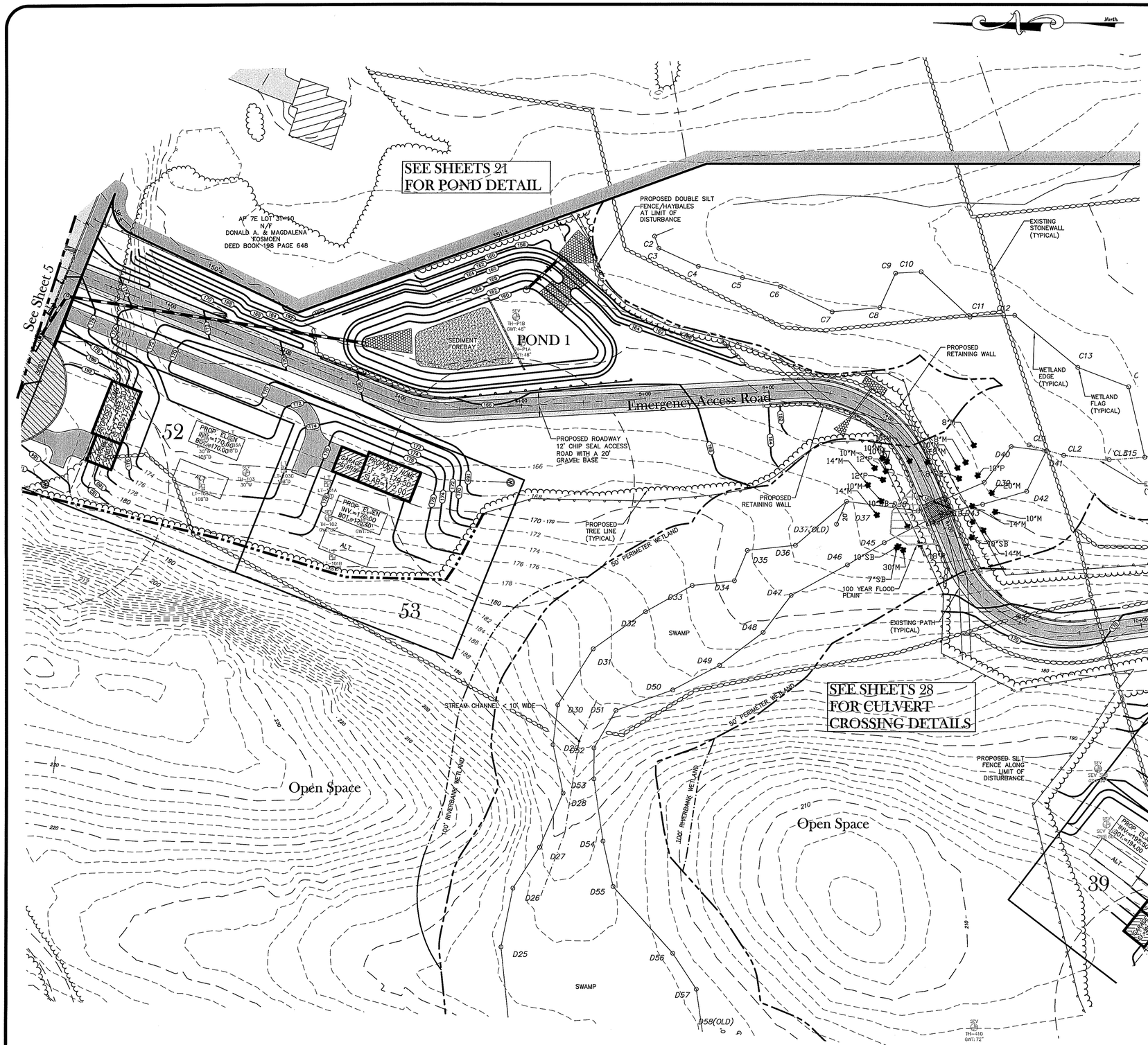

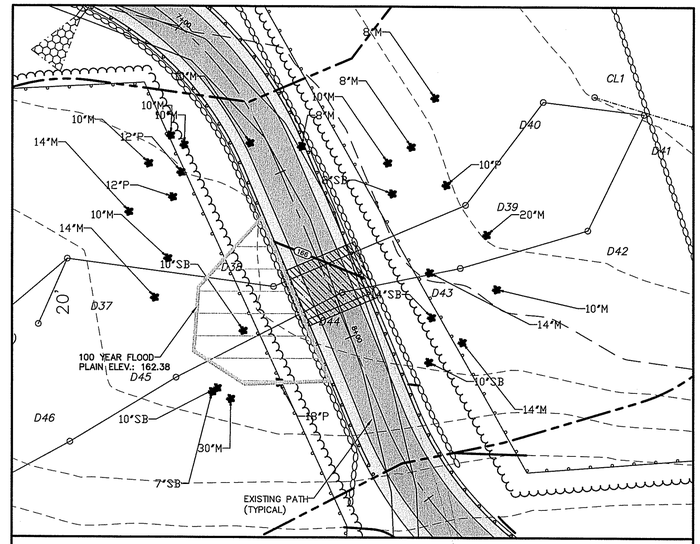

Tree Detail SCALE: 1"=20'

Tree Descriptions

M – MAPLE
P – PINE
SB – SILVERBIRCH

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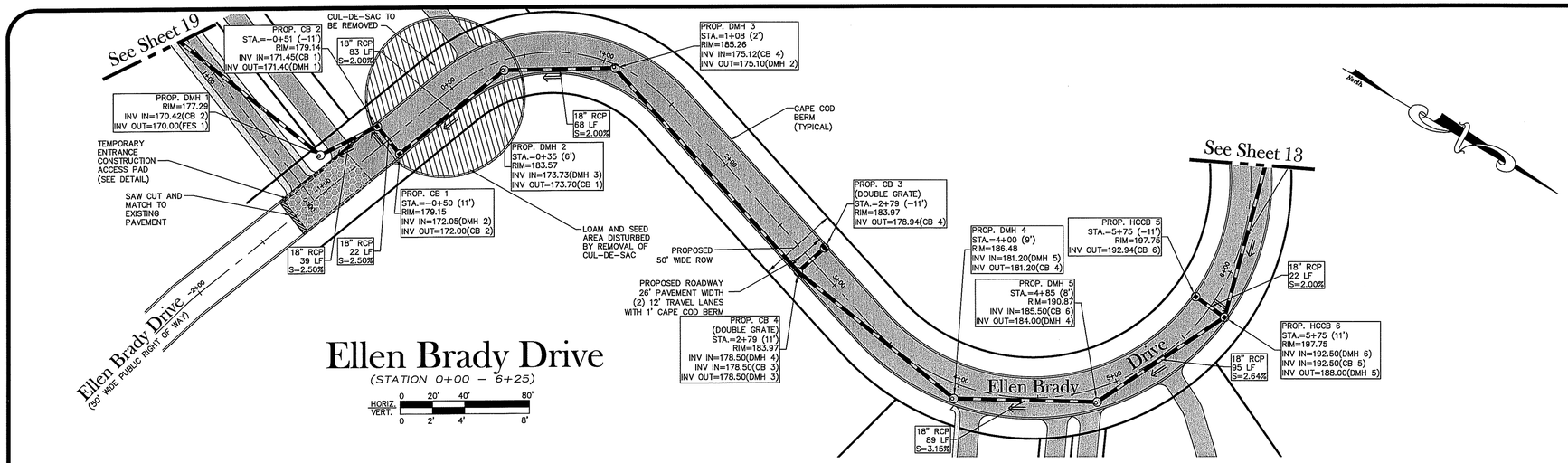
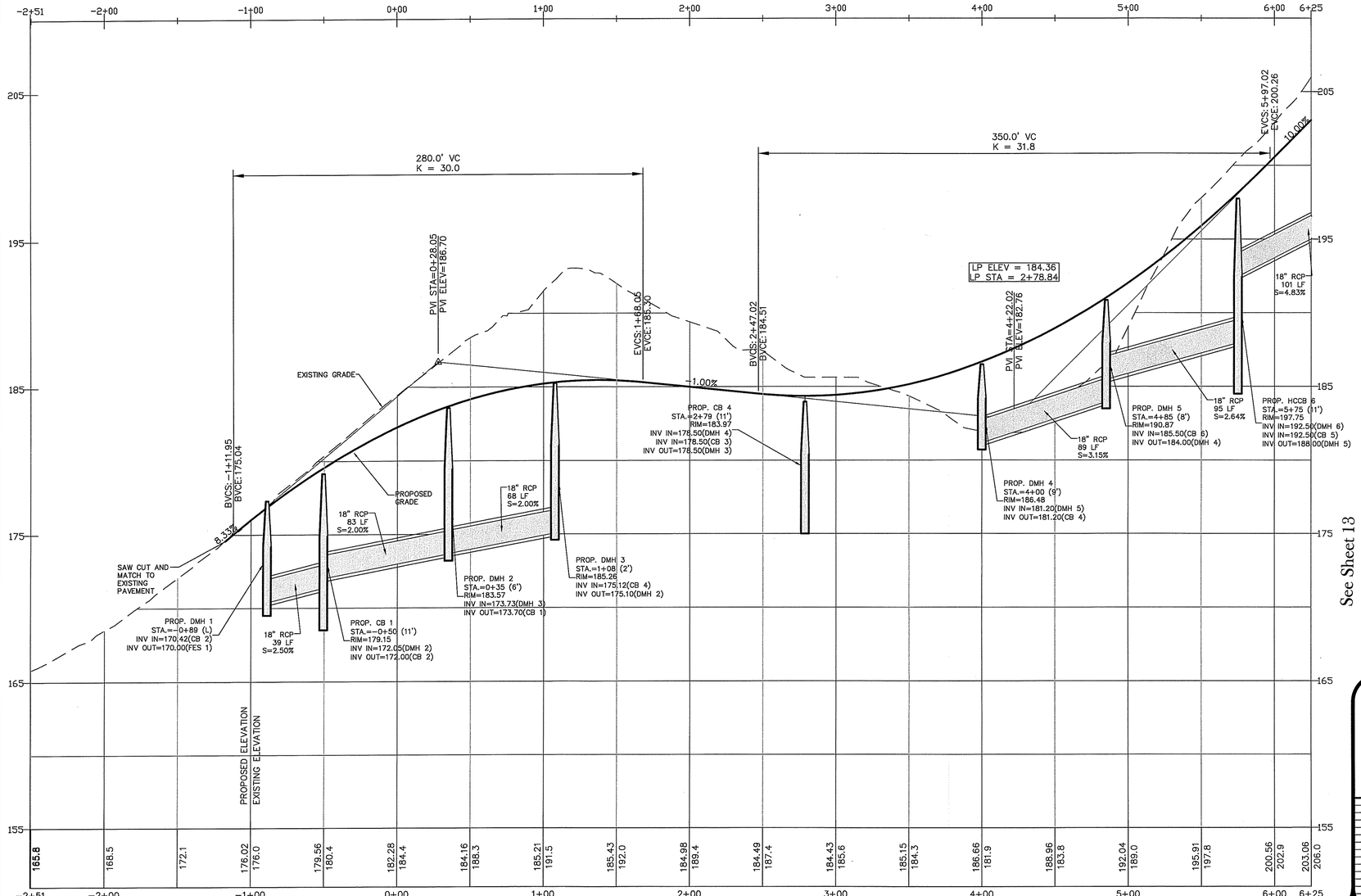
SHEET 11 OF 28





See Sheet 18

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PLANNING

CHRISTOPHER A. DUHAMEL
No. 5013
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
0	9-14-07	RIDEM PD SUBMISSION	C.R.D

PLAN & PROFILE OF ELLEN BRADY DRIVE (STA: 0+00-6+25)

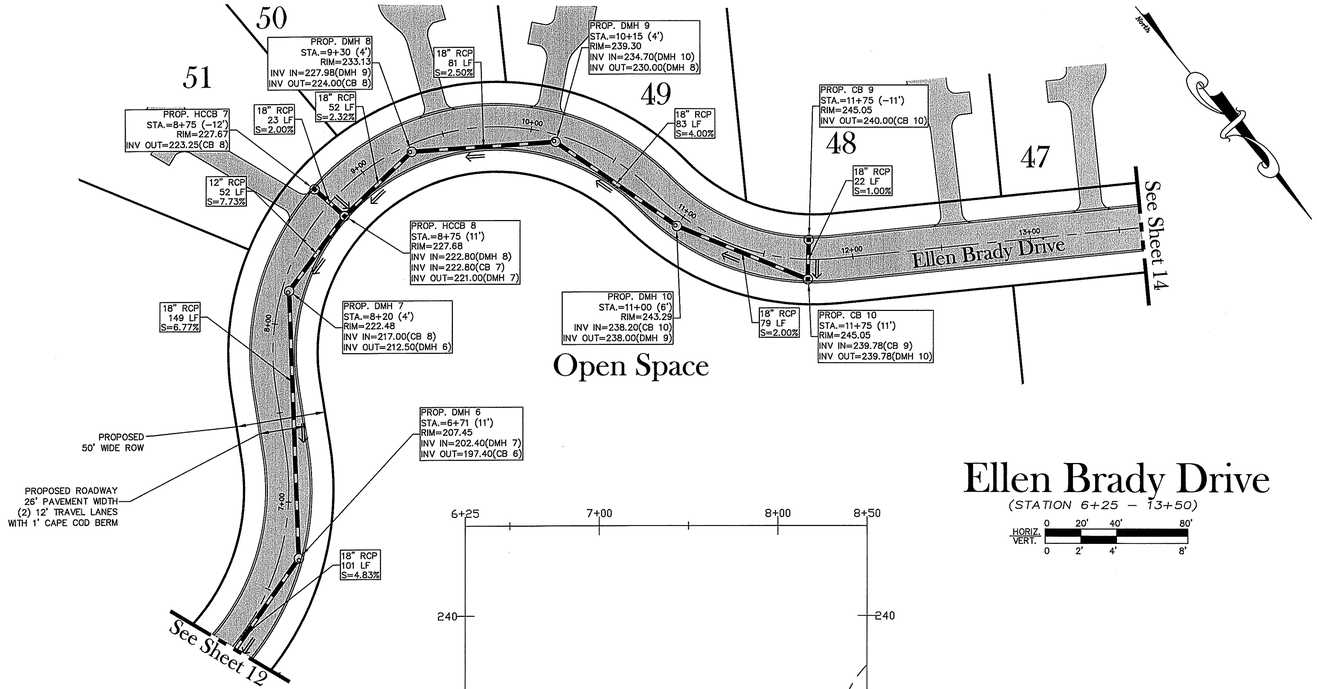
Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

PREPARED BY
DiPrete Engineering Associates, Inc.
ENGINEERING, SURVEYING AND PLANNING CONSULTANTS
TWO STAFFORD COURT
CRANSTON, R.I. 02920
(401) 943-1000 FAX: (401) 464-6006

PREPARED FOR
Ralph Campanelli
ONE CAMPANELLI DRIVE
BRAINTREE, MASSACHUSETTS 02184
PHONE: (781) 843-8280

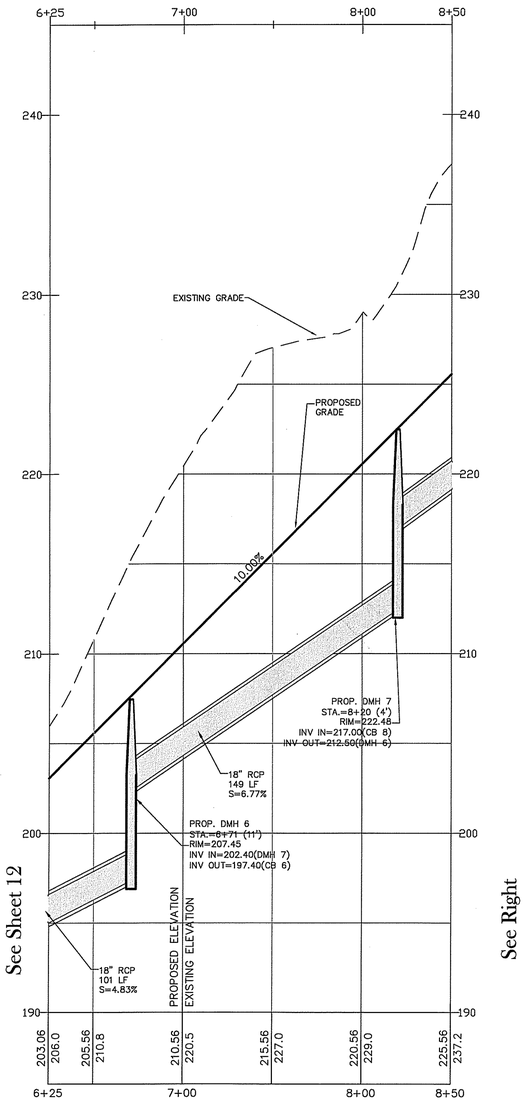
SEPTEMBER, 2007
DWN. BY: C.R.D.

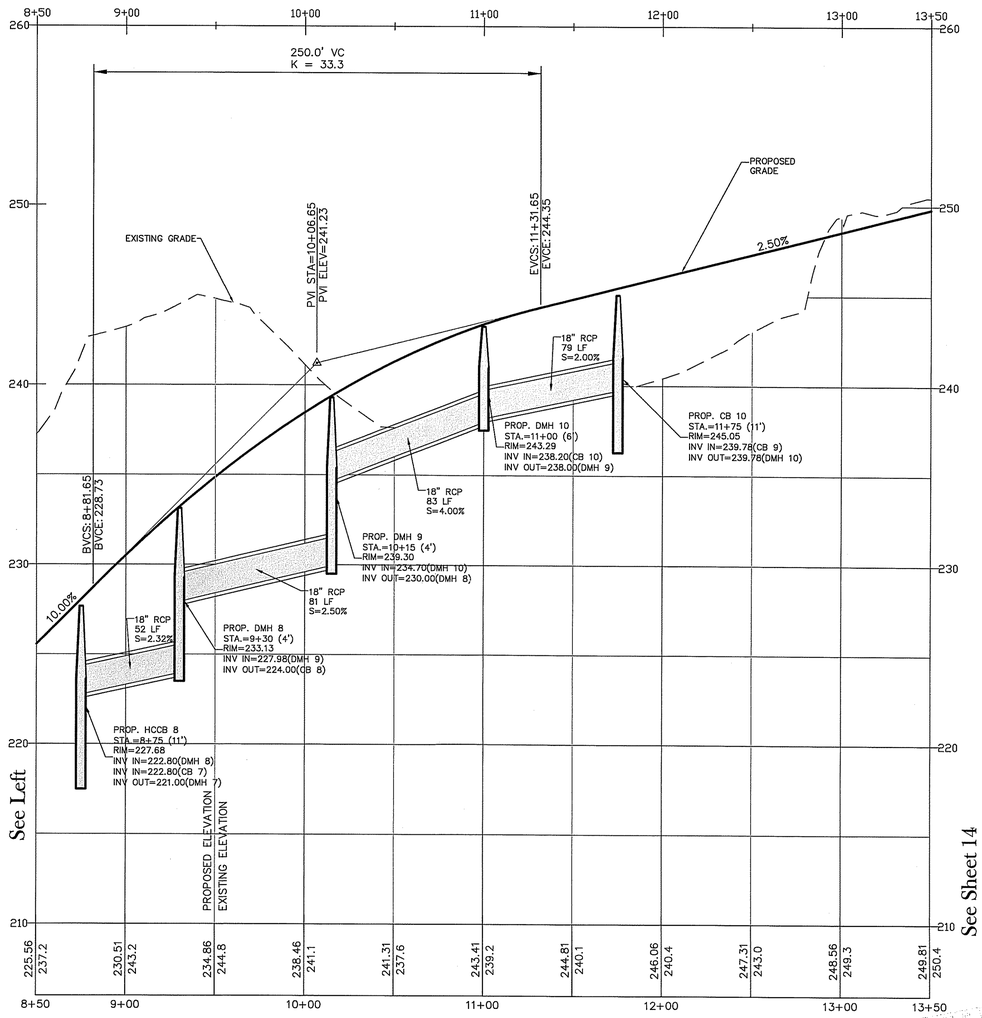


Ellen Brady Drive

(STATION 6+25 – 13+50)

HORIZ. 0 20' 40' 80'
VERT. 0 2' 4' 8'





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CHRISTOPHER A. DUHAMEL
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PLAN & PROFILE OF ELLEN BRADY DRIVE (STA: 6+25–13+50)

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

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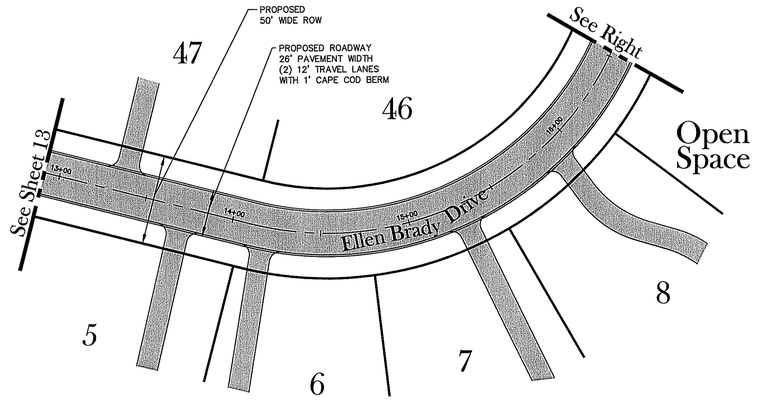
NO.	DATE	DESCRIPTION	BY
0	9-14-07	RIDEM PD SUBMISSION	C.R.D.

SEPTEMBER, 2007
DWN. BY: C.R.D.

SHEET 13 OF 28



Ellen Brady Drive

(STATION 13+50 – 21+00)

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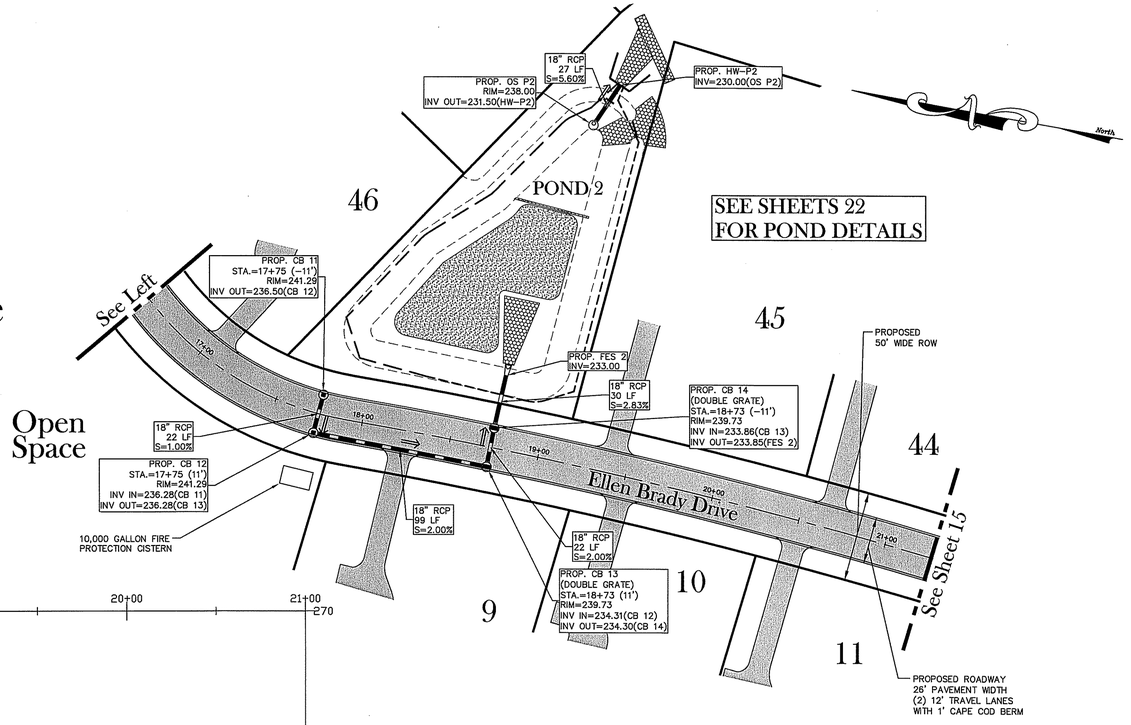
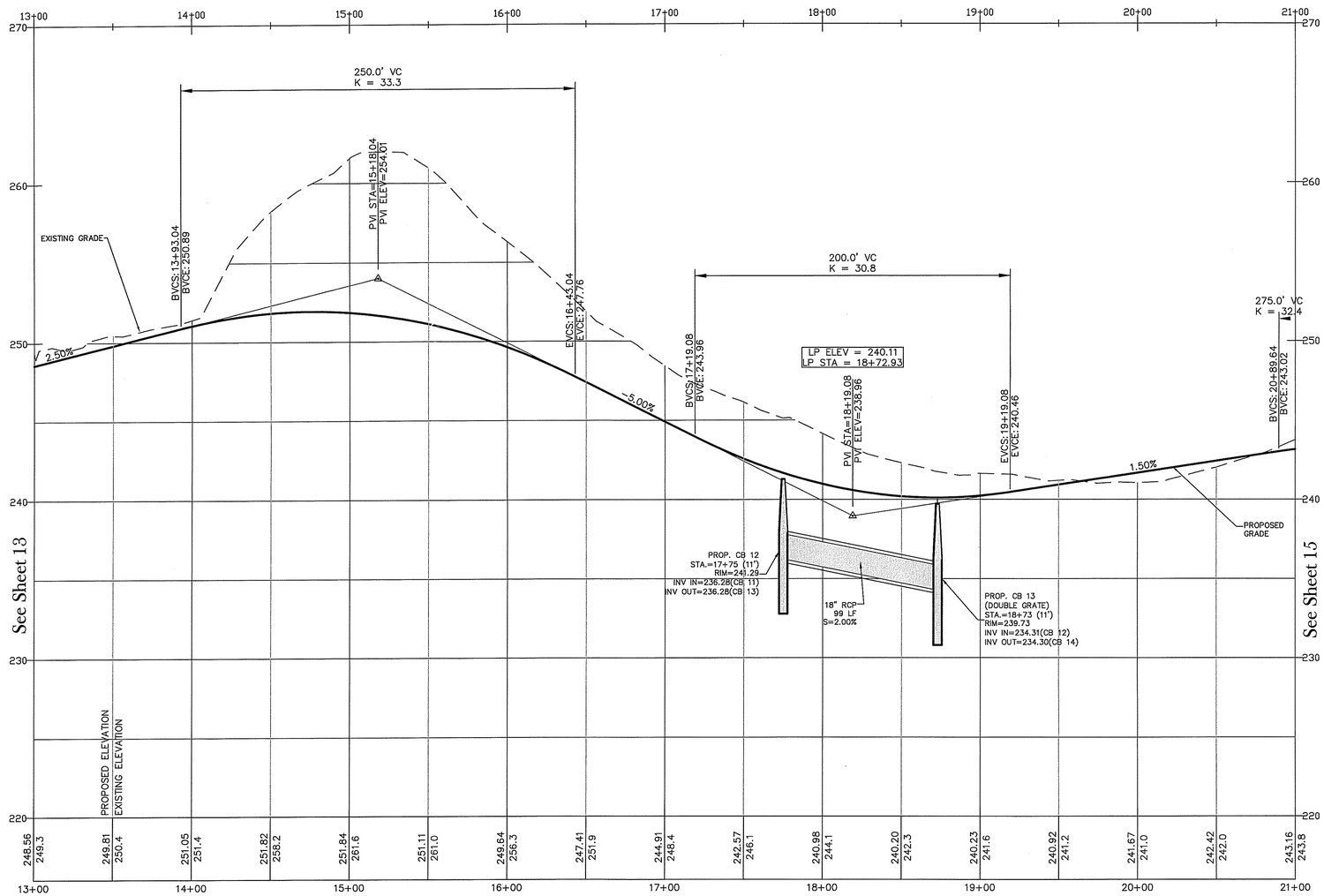
VERT. 0 2' 4' 8'





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PLAN & PROFILE OF ELLEN BRADY DRIVE (STA.:13+50–21+00)

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

PREPARED BY
DiPrete Engineering Associates, Inc.
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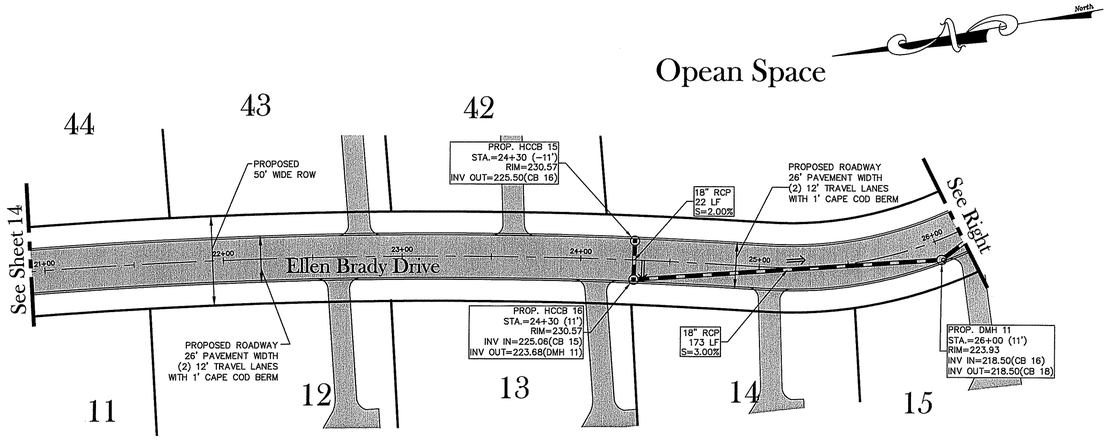
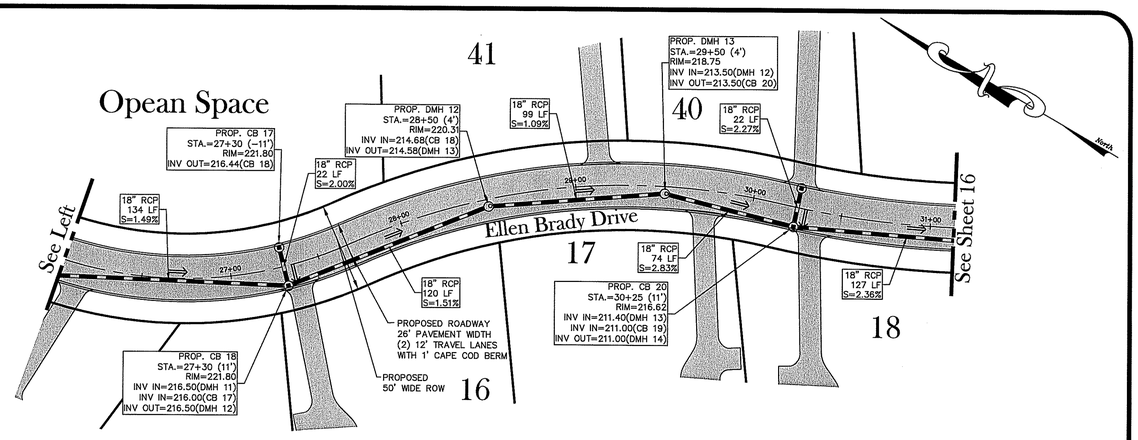
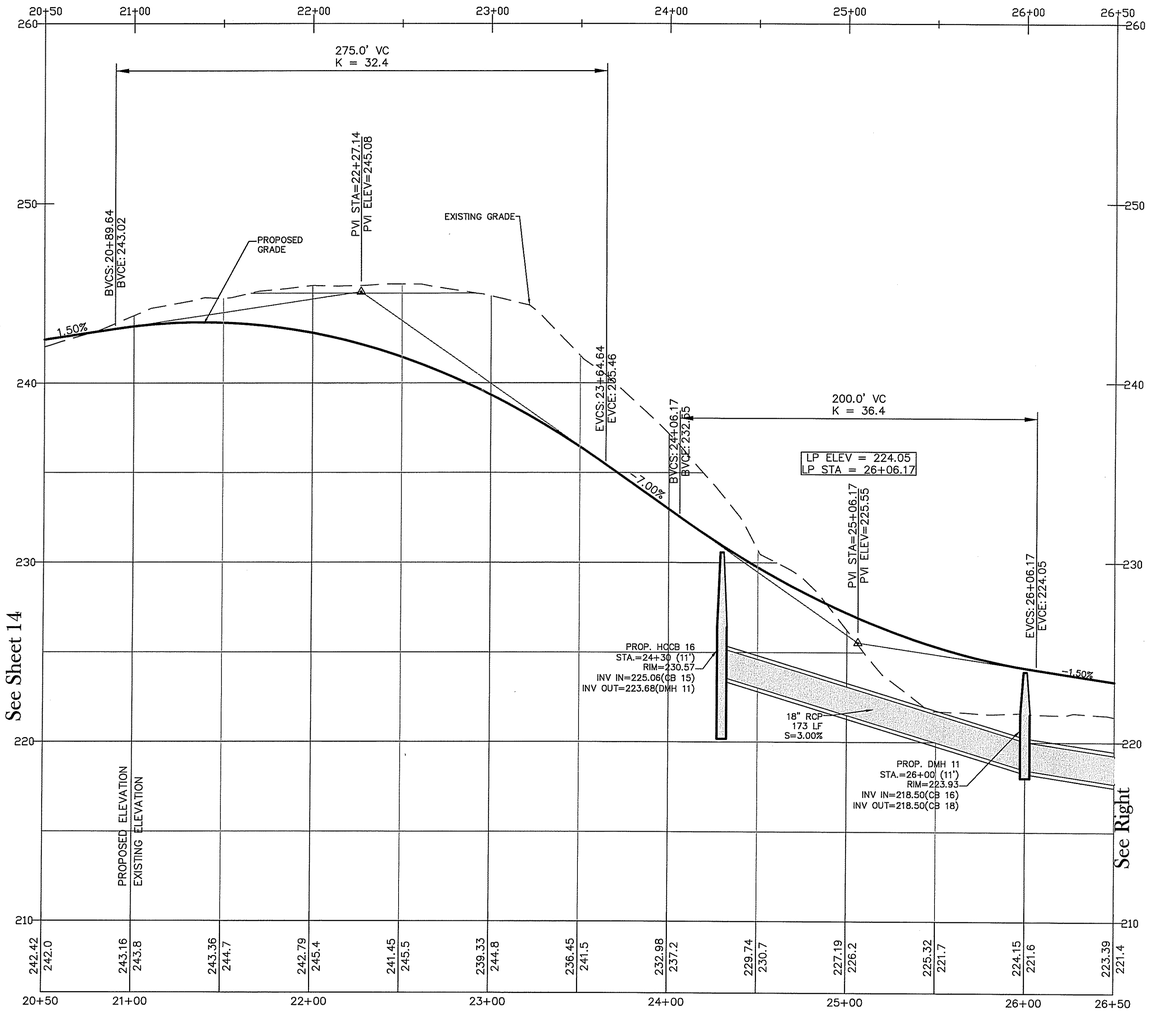


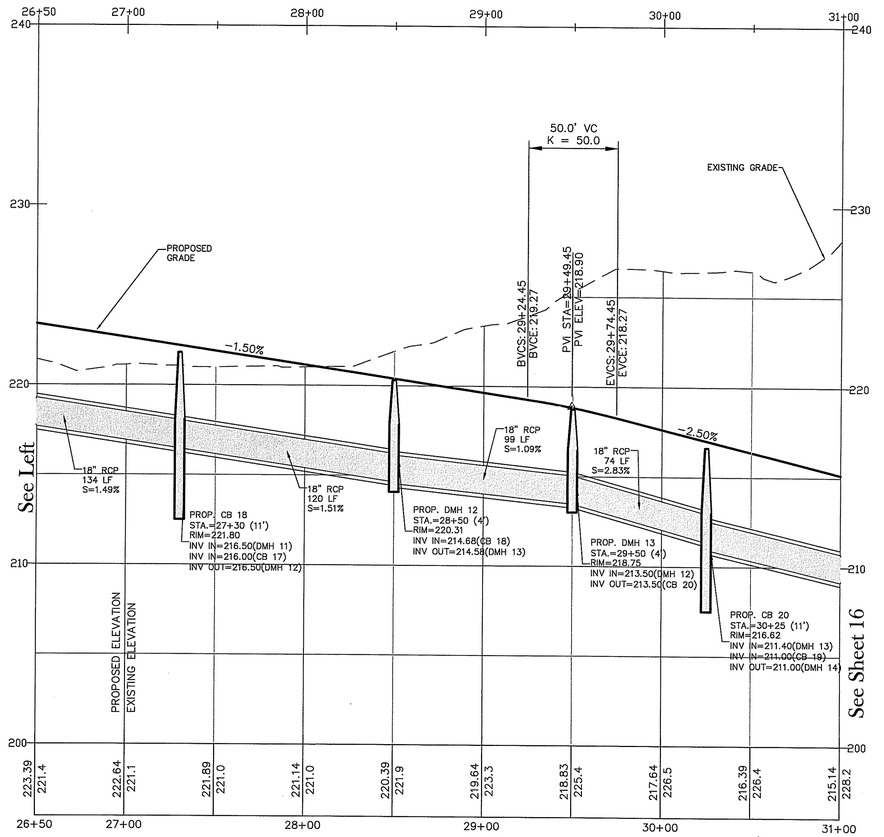


Ellen Brady Drive

(STATION 21+00 – 31+00)

HORIZ. 0 20' 40' 80'
VERT. 0 2' 4' 8'





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NO.	DATE	DESCRIPTION	BY
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PLAN & PROFILE OF ELLEN BRADY DRIVE (STA.: 21+00–31+00)

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

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SEPTEMBER, 2007
DWN. BY: C.R.D.

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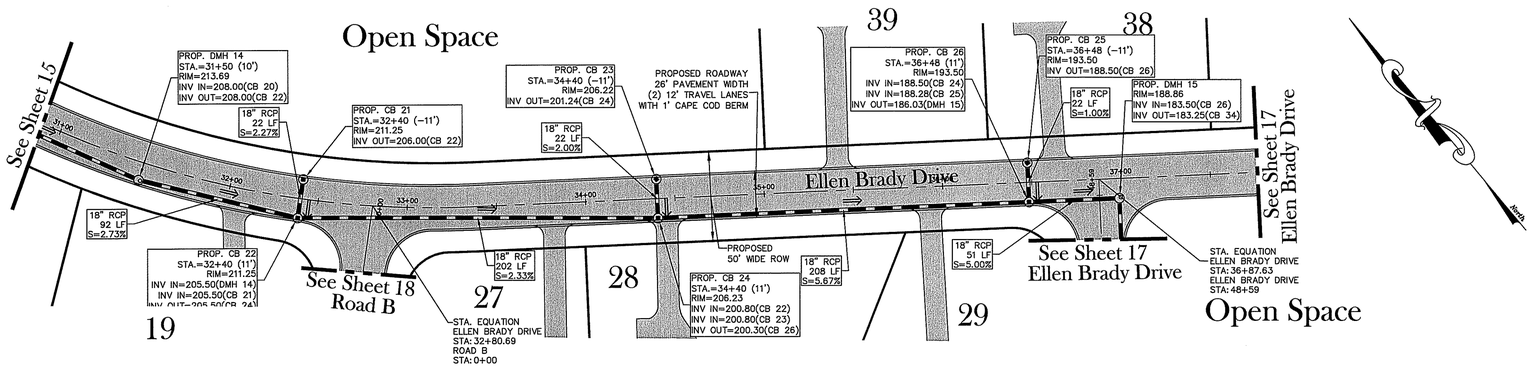
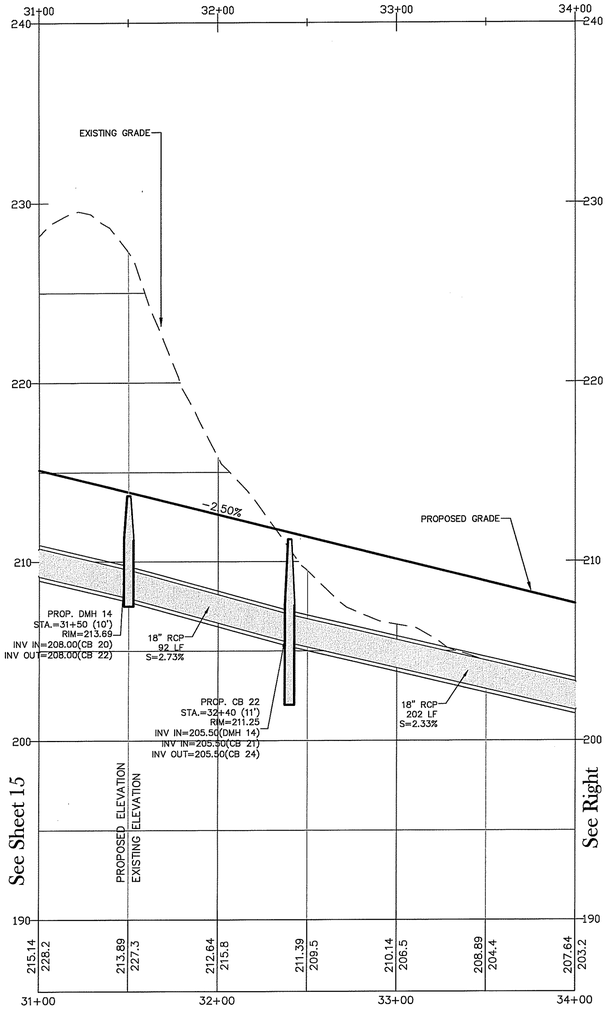
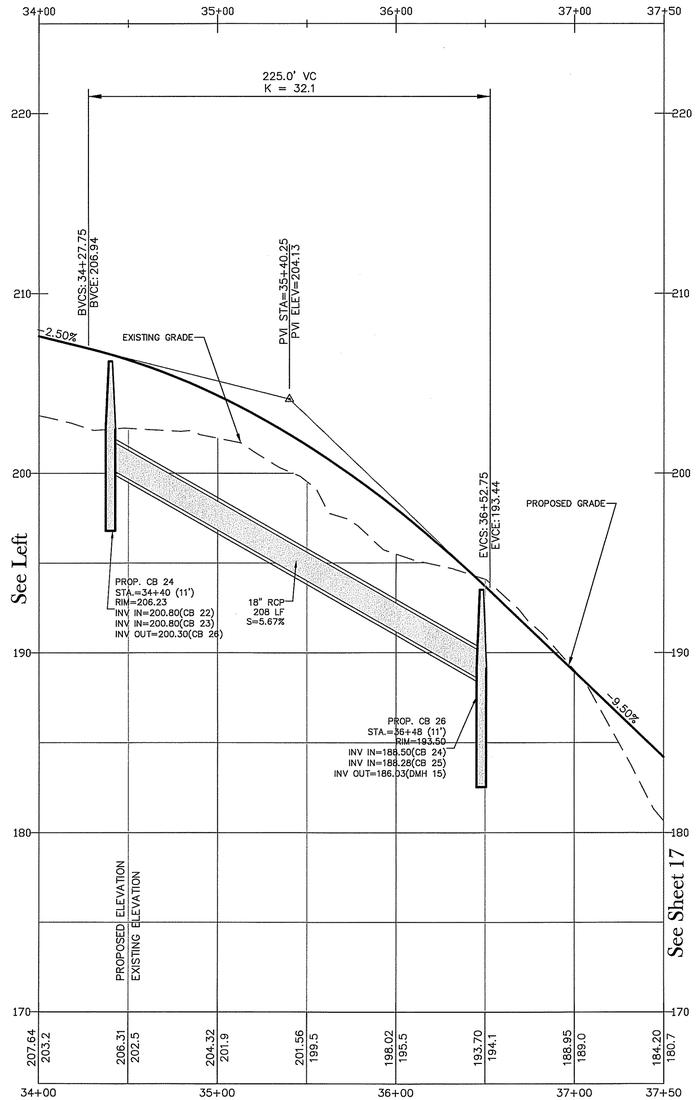


Ellen Brady Drive

(STATION 31+00 – 37+50)

HORIZ. 0 20' 40' 80'
VERT. 0 2' 4' 8'





CHRISTOPHER A. DUHAMEL
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REGISTERED PROFESSIONAL ENGINEER

PLAN & PROFILE OF ELLEN BRADY DRIVE (STA.:31+00–37+50)

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

PREPARED BY
DiPrete Engineering Associates, Inc.
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TWO STAFFORD COURT
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PREPARED FOR
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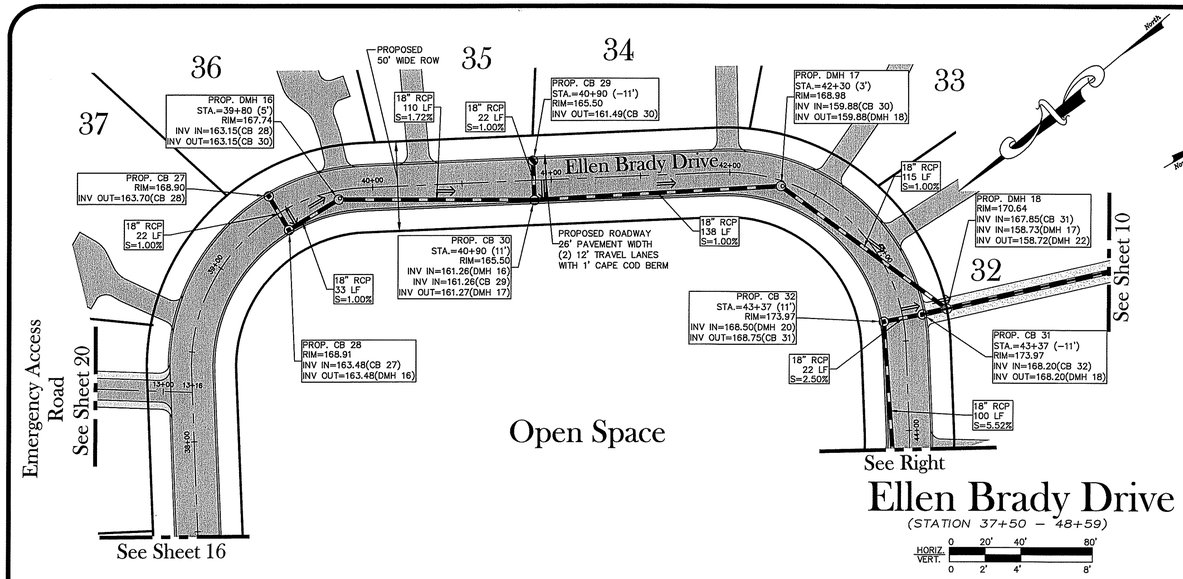
PHONE: (781) 843-8280

NO.	DATE	DESCRIPTION	BY
0	9-14-07	RIDEM PD SUBMISSION	C.R.D.

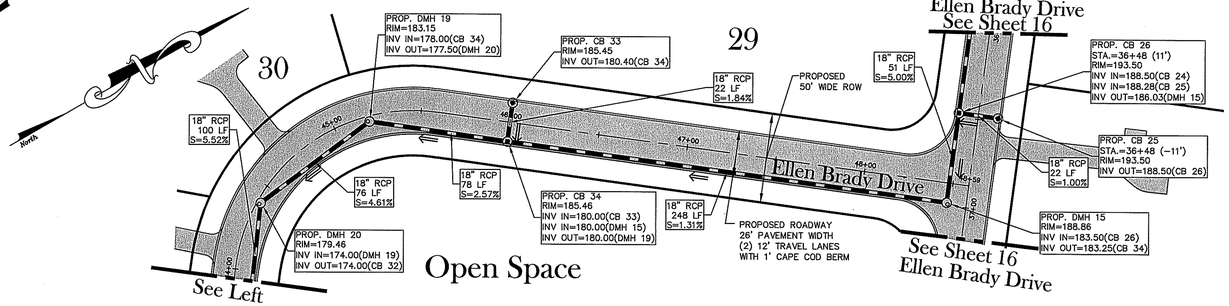
SEPTEMBER, 2007
DWN. BY: C.R.D.

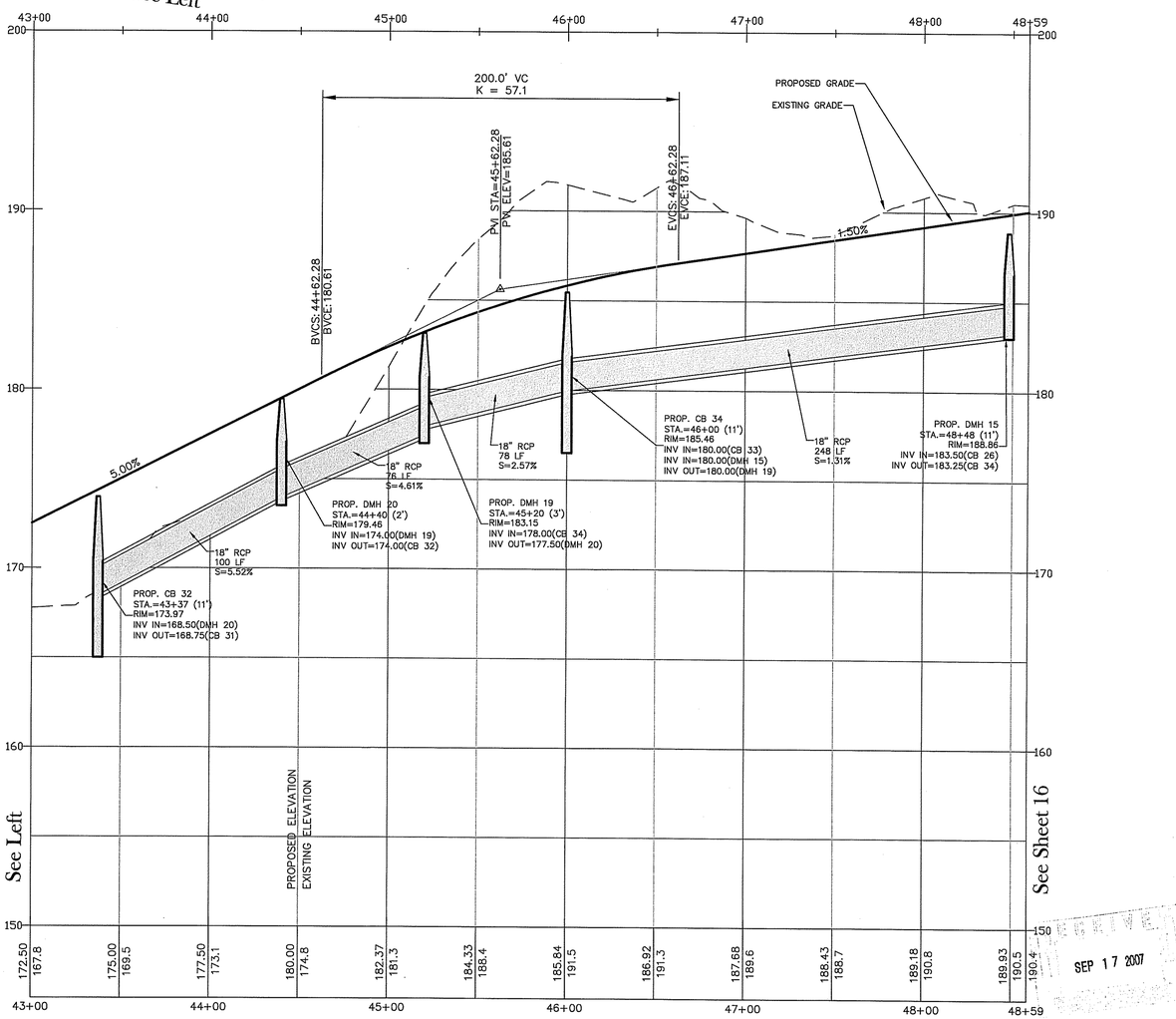


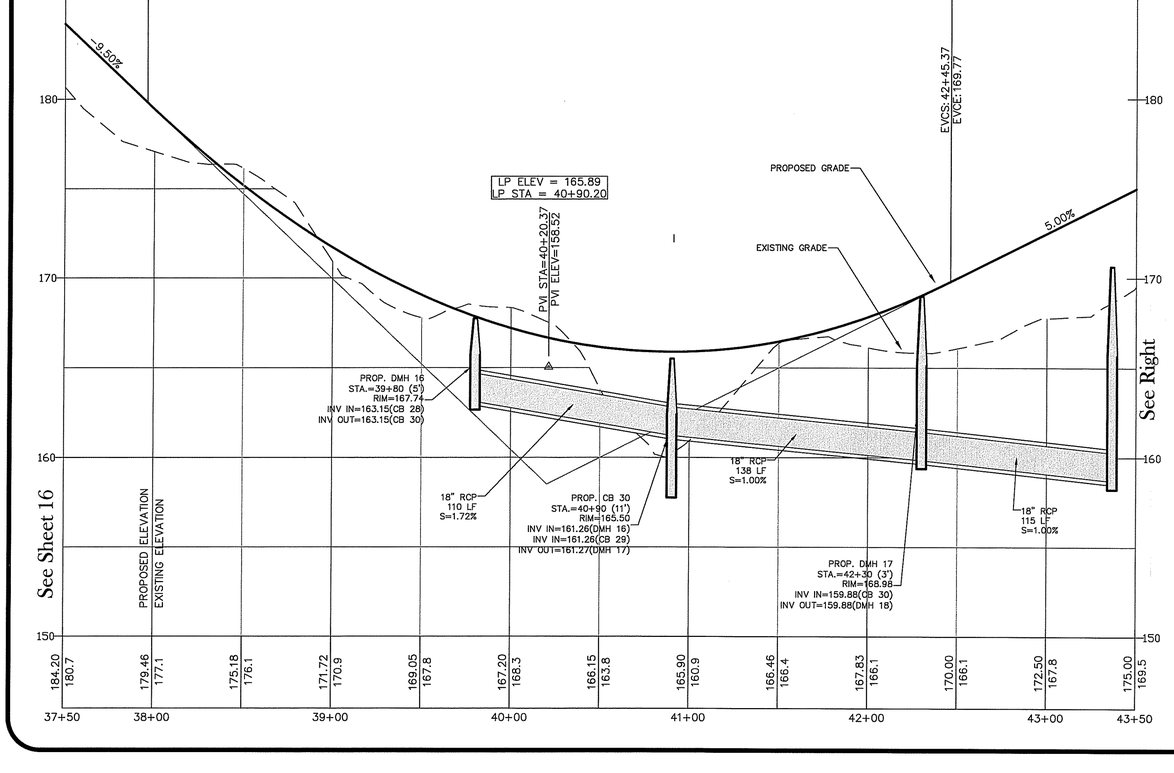
Ellen Brady Drive

(STATION 37+50 – 48+59)

HORIZ. 0 20' 40' 80'
VERT. 0 2' 4' 8'







CHRISTOPHER A. DUHAMEL
No. 5013
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
0	9-14-07	RIDEM PD SUBMISSION	C.R.D

PLAN & PROFILE OF ELLEN BRADY DRIVE (STA: 37+50–48+59)

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

PREPARED BY
DiPrete Engineering Associates, Inc.
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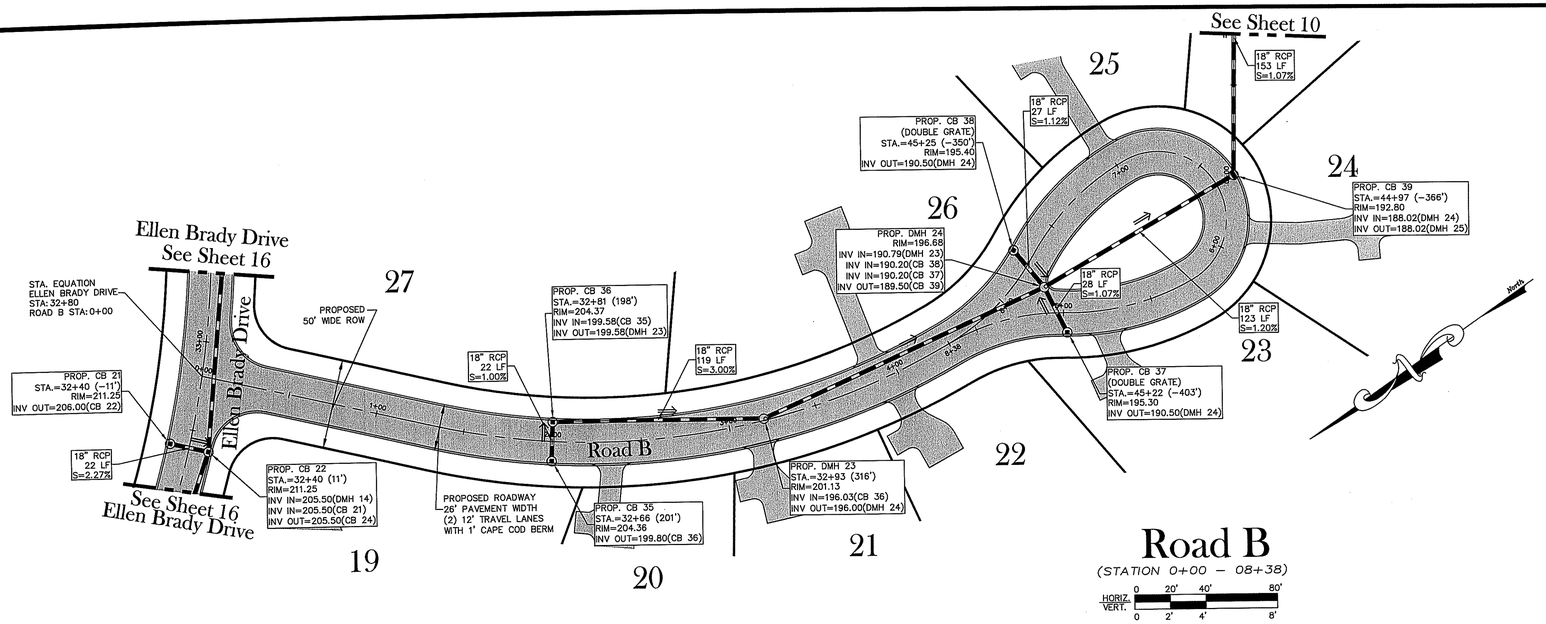
SEPTEMBER, 2007
DWN. BY: C.R.D.

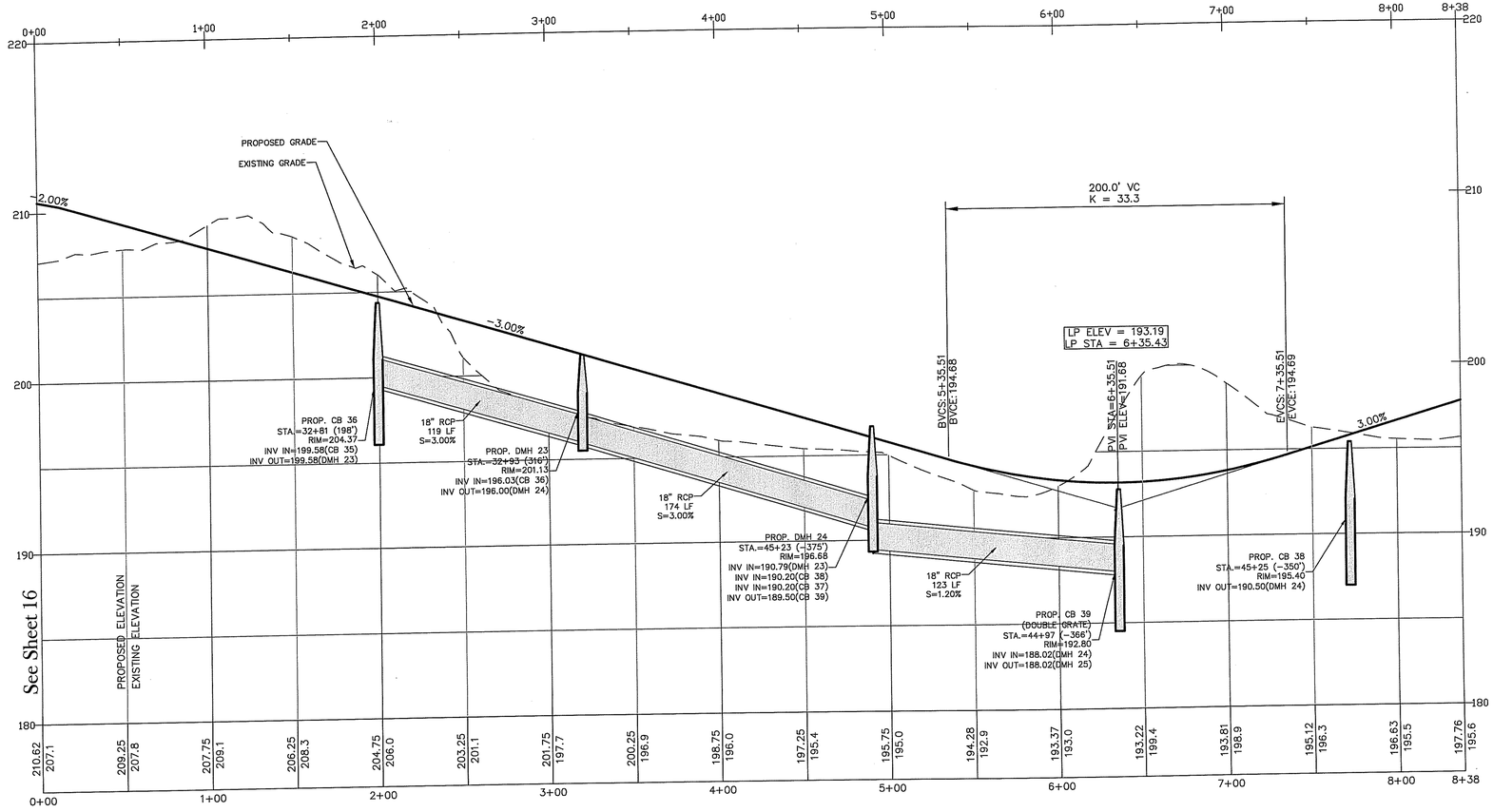
SHEET 17 OF 28



Road B

(STATION 0+00 – 08+38)

HORIZ. 0 20' 40' 80'
VERT. 0 2' 4' 8'



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CHRISTOPHER A. DUHAMEL
No. 5013
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
0	9-14-07	RIDEM PD SUBMISSION	C.R.D.

SEPTEMBER, 2007
DWN. BY: C.R.D.

PLAN & PROFILE OF ROAD B (STA: 0+00–8+38)

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

PREPARED BY
DiPrete Engineering Associates, Inc.
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TWO STAFFORD COURT
CRANSTON, R.I. 02920
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PREPARED FOR
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ONE CAMPANELLI DRIVE
BRAINTREE, MASSACHUSETTS 02184
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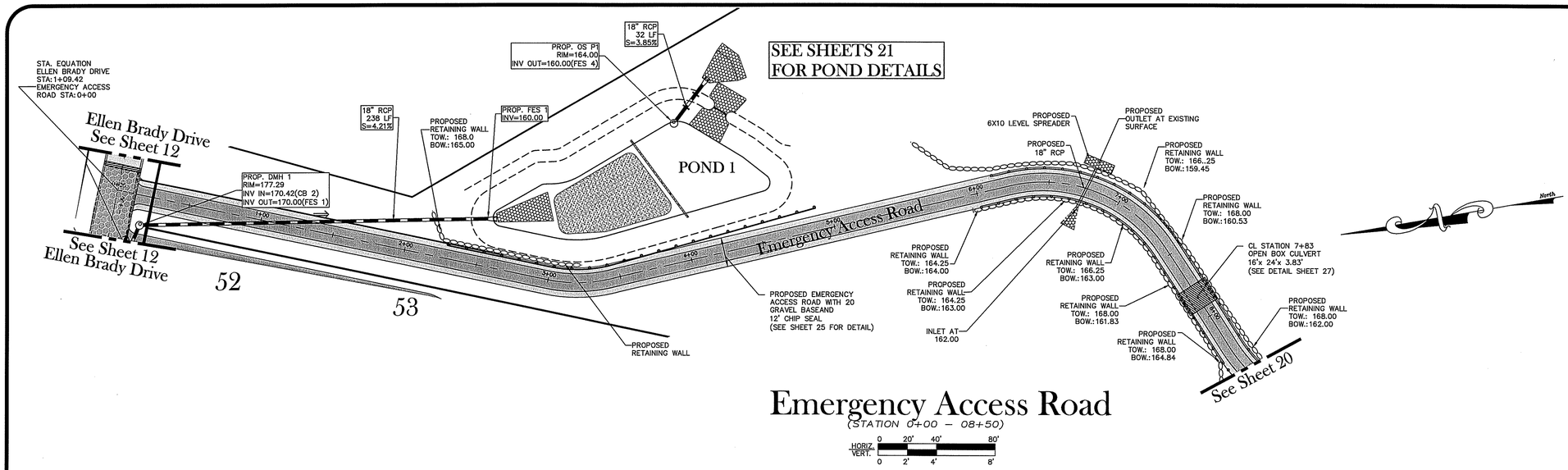
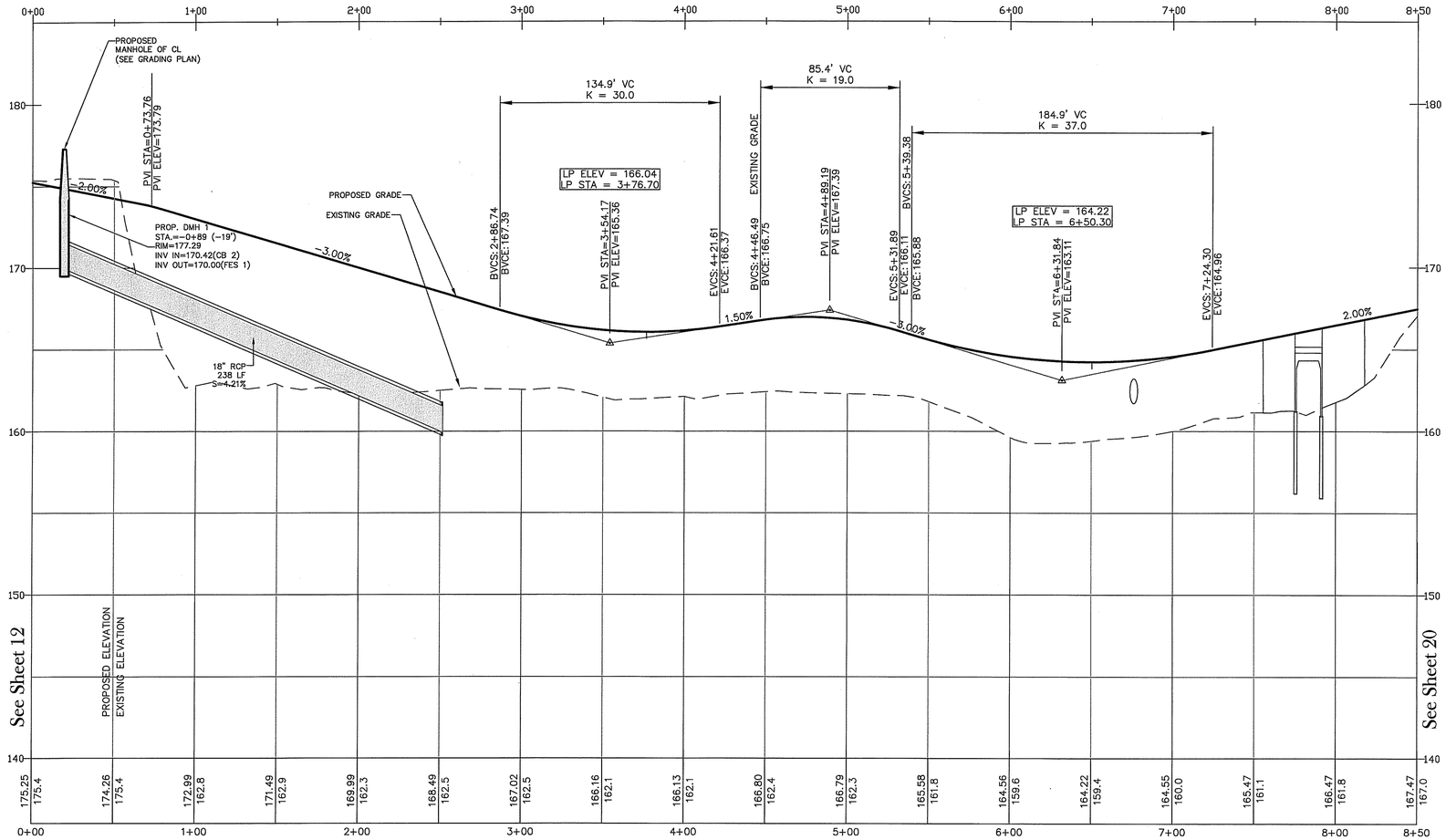
SHEET 18 OF 28



Emergency Access Road

(STATION 0+00 – 08+50)

HORIZ. 0 20' 40' 80'
VERT. 0 2' 4' 8'



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NO.	DATE	DESCRIPTION	BY
0	9-14-07	RIDEM PD SUBMISSION	C.R.D

PLAN & PROFILE OF EMERGENCY ACCESS ROAD (STA: 0+00–8+50)

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

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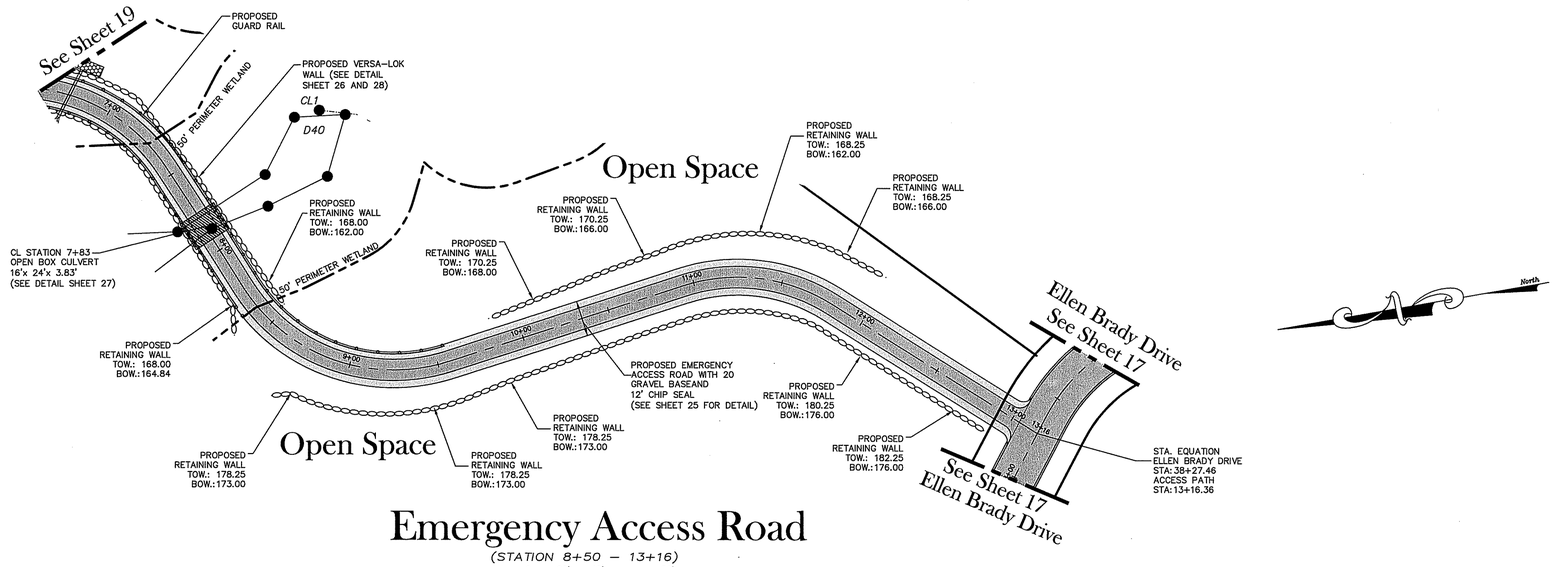
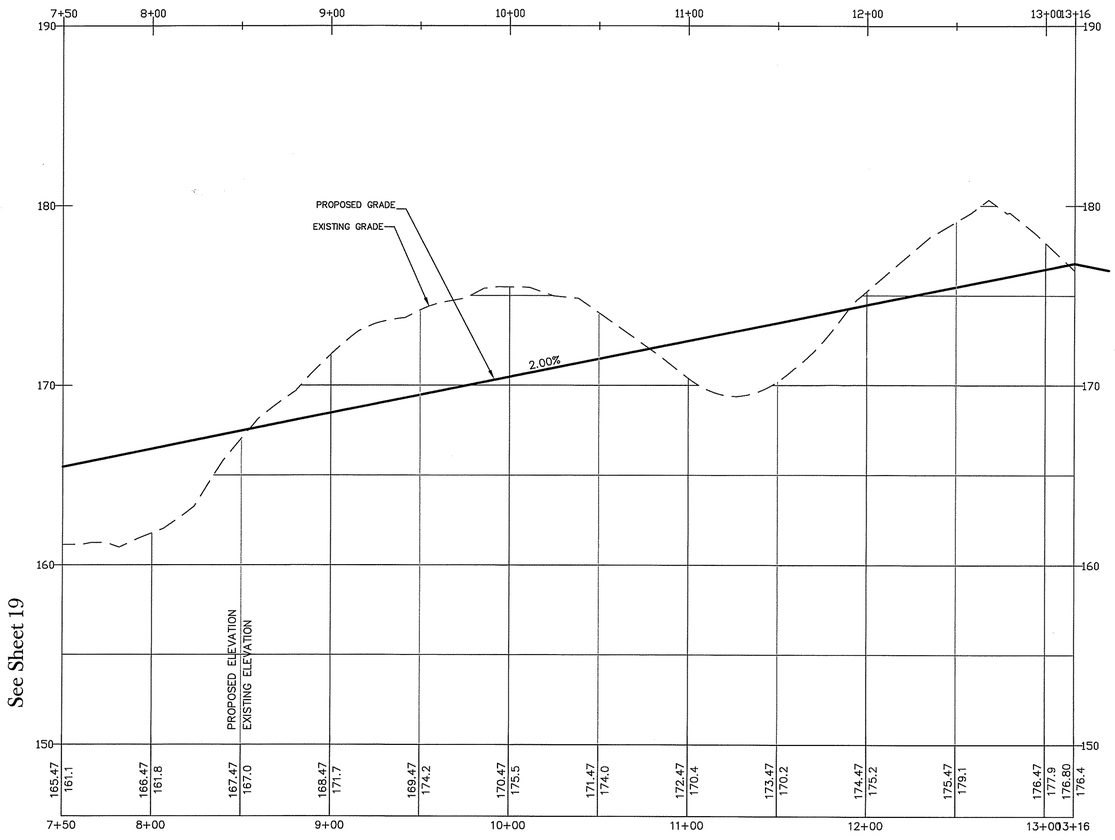


Emergency Access Road

(STATION 8+50 – 13+16)

HORIZ. 0 20' 40' 80'
VERT. 0 2' 4' 8'



See Sheet 19

See Sheet 17

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REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
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PLAN & PROFILE OF EMERGENCY ACCESS ROAD (STA: 8+50–13+16)

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

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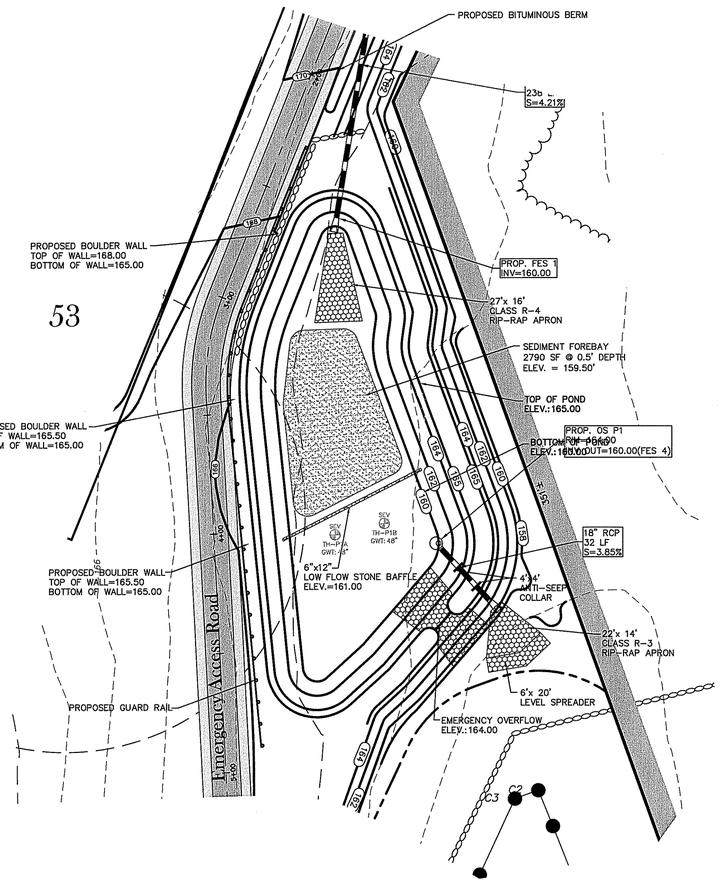
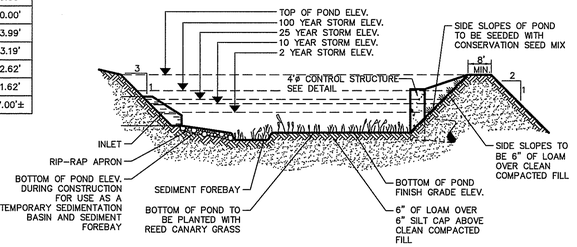


SCALE: 1"=30'

0 15' 30' 60'

POND 1 DETAIL

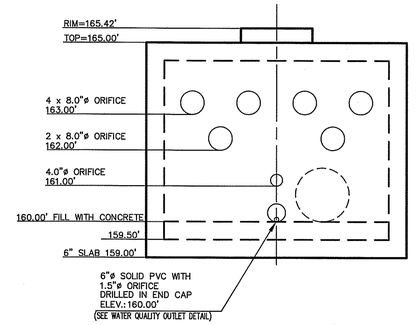
DESCRIPTION	POND 1
TOP OF POND ELEVATION	165.00'
BOTTOM OF POND ELEVATION FOR SEDIMENT FOREBAY	159.50'
BOTTOM OF POND	160.00'
100 YEAR STORM ELEVATION	163.99'
25 YEAR STORM ELEVATION	163.19'
10 YEAR STORM ELEVATION	162.62'
2 YEAR STORM ELEVATION	161.62'
SEASONAL HIGH GWT ELEVATION	157.00'±



DETENTION POND 1 – TYPICAL CROSS SECTION

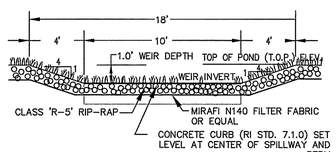
NOT TO SCALE

Description	POND 1
Rim Elevation	165.42'
Top Elevation	165.00'
Orifice #3 Size & Invert	4x8.0"ø, 163.00'
Orifice #2 Size & Invert	2x8.0"ø, 162.00'
Orifice #1 Size & Invert	4.0"ø, 161.00'
Water Quality Orifice Size & Invert	1.5"ø, 160.00'
Outlet Size & Invert	18", 160.00'
Fill With Concrete to Elevation	160.00'
Bottom of Structure	159.00'



DETENTION BASIN OUTLET (POND 1)

SCALE 1"=2'



NOTES:
1. FOLLOWING PLACEMENT OF FILTER FABRIC AND RIP RAP, VOIDS SHALL BE FILLED WITH LOAM AND SEEDED ALONG WITH DETENTION BASIN.

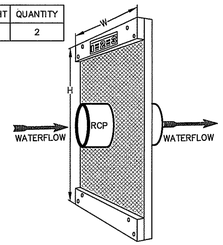
2. CONTRACTOR TO VERIFY ELEVATIONS ALONG TOP OF CURB AFTER SPILLWAY AREA IS COMPACTED TO 95% PROCTOR.

LOCATION	T.O.P. ELEVATION	WEIR INVERT
POND 1	165.00	164.00

EMERGENCY SPILLWAY DETAIL

NOT TO SCALE

LOCATION	WIDTH	HEIGHT	QUANTITY
POND 1	4'	4'	2



NOTE:
AGRI DRAIN CORP. OR EQUAL

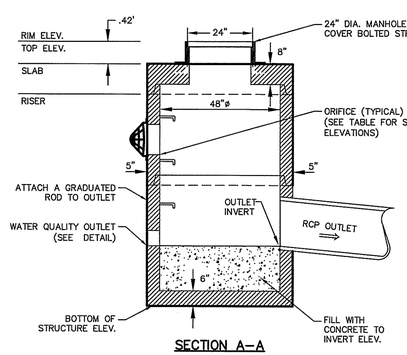
INSTALLATION NOTES:
1. UNROLL THE ANTI-SEEP AND ATTACH THE BOARDS TO THE EDGES TO FORM A SQUARE. (USE THE BOARDS AND NAILS PROVIDED.)(4'X4' & LARGER)

2. CUT A ROUND HOLE IN THE CENTER OF THE RUBBER THAT IS SMALLER THAN THE PIPE SIZE (APPROX. 25% SMALLER). THIS WILL ALLOW THE RUBBER TO STRETCH OVER THE PIPE WHEN THE ANTI-SEEP IS INSTALLED ON THE PIPE. THIS SHOULD PROVIDE A NEARLY WATERPROOF SEAL BETWEEN THE PIPE AND THE ANTI-SEEP.

3. SLIP THE PIPE THROUGH THE ANTI-SEEP. INSPECT THE SEAL BETWEEN THE PIPE AND THE ANTI-SEEP, CAREFULLY BACKFILL AND COMPACT WITH SUITABLE SOIL.

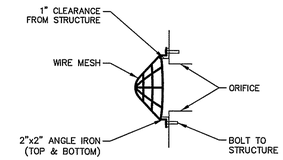
ANTI-SEEP COLLAR

NOT TO SCALE



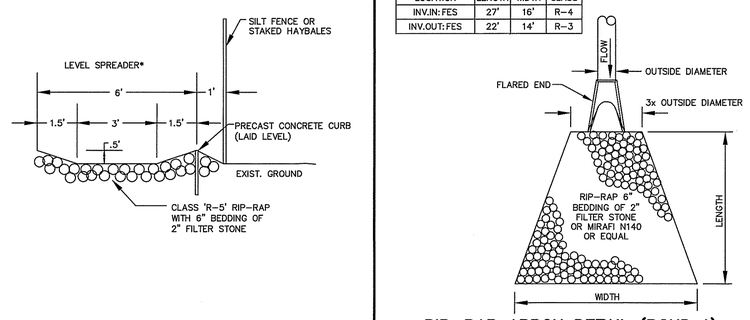
SECTION A-A

NOTE:
ALL 2" WEEP HOLES USED TO PLACE STRUCTURE MUST BE FILLED WITH CONCRETE.



TRASH RACK DETAIL

LOCATION	LENGTH	WIDTH	CLASS
INV.IN:FES	27'	16'	R-4
INV.OUT:FES	22'	14'	R-3

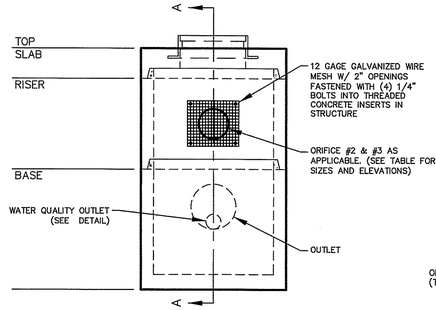


LEVEL SPREADER

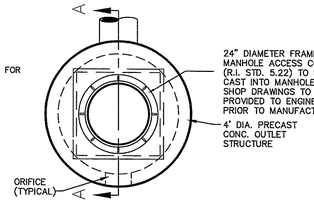
NOT TO SCALE

RIP-RAP APRON DETAIL (POND 1)

NOT TO SCALE



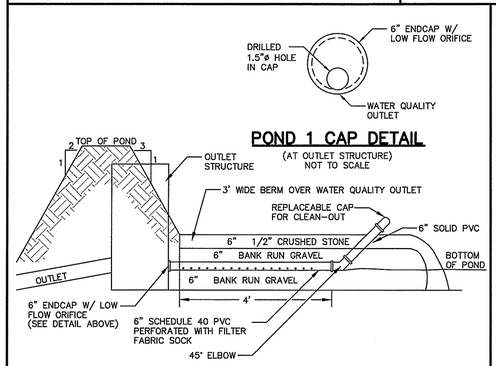
FRONT VIEW



TOP VIEW

4' DIA. OUTLET STRUCTURE

NOT TO SCALE

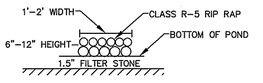


POND 1 CAP DETAIL

(AT OUTLET STRUCTURE)
NOT TO SCALE

POND 1 WATER QUALITY OUTLET

NOT TO SCALE



6"-12" LOW FLOW BAFFLE

NOT TO SCALE

RECEIVED
SEP 17 2007

CHRISTOPHER A. DUHAMEL
No. 5013
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
0	9-14-07	RIDEM PD SUBMISSION	C.R.D

POND 1 DETAIL

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

PREPARED BY
DiPrete Engineering Associates, Inc.
ENGINEERING, SURVEYING AND PLANNING CONSULTANTS
TWO STAFFORD COURT
CRANSTON, R.I. 02920
(401) 943-1000 FAX: (401) 464-6006

PREPARED FOR
Ralph Campanelli
ONE CAMPANELLI DRIVE
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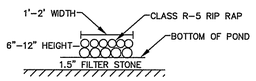
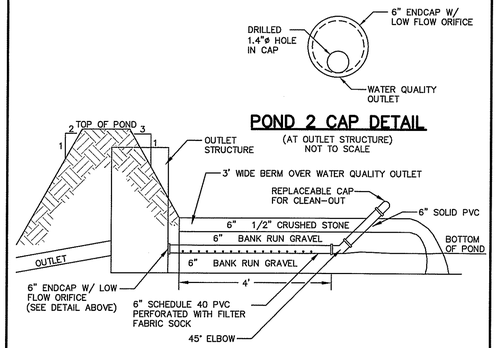
PHONE: (781) 843-8280

SEPTEMBER, 2007
DWN. BY: C.R.D.



6"–12" LOW FLOW BAFFLE

NOT TO SCALE



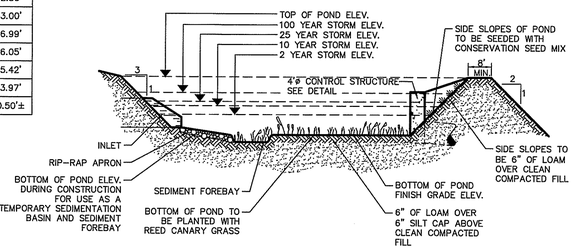
POND 2 CAP DETAIL

POND 2 WATER QUALITY OUTLET

NOT TO SCALE

DESCRIPTION	POND 2
TOP OF POND ELEVATION	238.00'
BOTTOM OF POND ELEVATION FOR SEDIMENT FOREBAY	232.50'
BOTTOM OF POND	233.00'
100 YEAR STORM ELEVATION	236.99'
25 YEAR STORM ELEVATION	236.05'
10 YEAR STORM ELEVATION	235.42'
2 YEAR STORM ELEVATION	233.97'
SEASONAL HIGH GWT ELEVATION	230.50'±

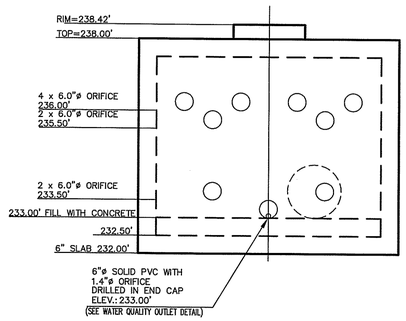
*NOTE: GROUNDWATER TABLE REGULATED BY SUBDRAINS



DETENTION POND – TYPICAL CROSS SECTION

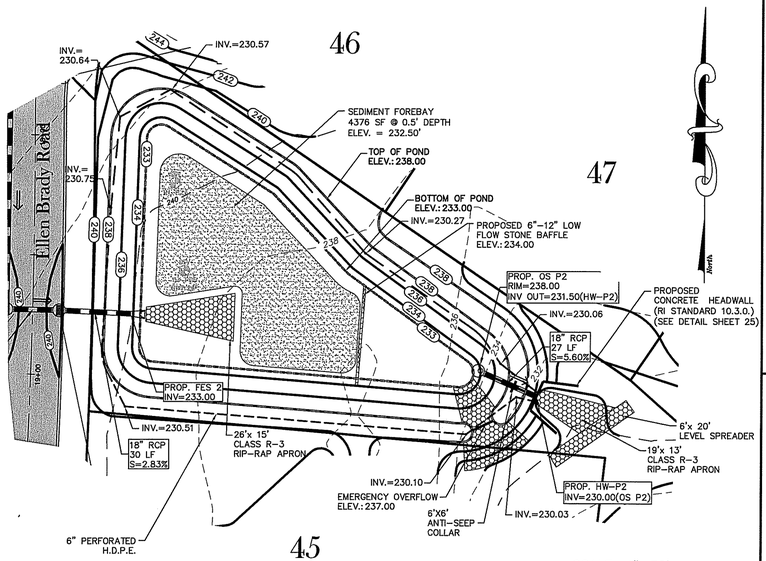
NOT TO SCALE

Description	POND 2
Rim Elevation	238.42'
Top Elevation	238.00'
Orifice #3 Size & Invert	4x6.0"ø, 236.00'
Orifice #2 Size & Invert	2x6.0"ø, 235.50'
Orifice #1 Size & Invert	6.0"ø, 233.50'
Water Quality Orifice Size & Invert	1.4"ø, 233.00'
Outlet Size & Invert	18", 233.00'
Fill With Concrete to Elevation	233.00'
Bottom of Structure	232.00'



DETENTION BASIN OUTLET (POND 2)

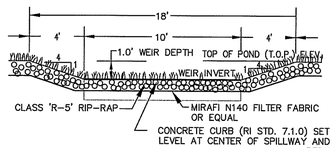
SCALE 1"=2'



POND 2 DETAIL

SCALE: 1"=30'

0 15' 30' 60'



NOTES:
1. FOLLOWNG PLACEMENT OF FILTER FABRIC AND RIP RAP, VOIDS SHALL BE FILLED WITH LOAM AND SEEDED ALONG WITH DETENTION BASIN.

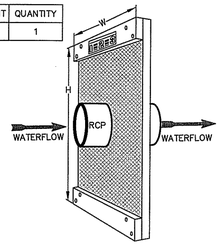
2. CONTRACTOR TO VERIFY ELEVATIONS ALONG TOP OF CURB AFTER SPILLWAY AREA IS COMPACTED TO 95% PROCTOR.

LOCATION	T.O.P. ELEVATION	WEIR INVERT
POND 2	238.00	237.00

EMERGENCY SPILLWAY DETAIL

NOT TO SCALE

LOCATION	WIDTH	HEIGHT	QUANTITY
POND 2	6'	6'	1



NOTE:
AGRI DRAIN CORP. OR EQUAL

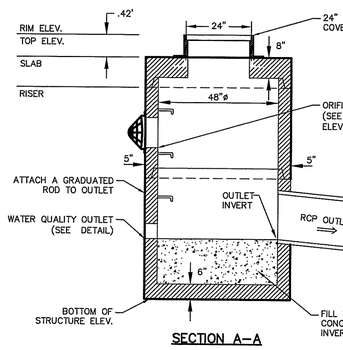
INSTALLATION NOTES:
1. UNROLL THE ANTI-SEEP AND ATTACH THE BOARDS TO THE EDGES TO FORM A SQUARE. (USE THE BOARDS AND NAILS PROVIDED.)(4'X4' & LARGER)

2. CUT A ROUND HOLE IN THE CENTER OF THE RUBBER THAT IS SMALLER THAN THE PIPE SIZE (APPROX.. 25% SMALLER). THIS WILL ALLOW THE RUBBER TO STRETCH OVER THE PIPE WHEN THE ANTI-SEEP IS INSTALLED ON THE PIPE. THIS SHOULD PROVIDE A NEARLY WATERPROOF SEAL BETWEEN THE PIPE AND THE ANTI-SEEP.

3. SLIP THE PIPE THROUGH THE ANTI-SEEP. INSPECT THE SEAL BETWEEN THE PIPE AND THE ANTI-SEEP, CAREFULLY BACKFILL AND COMPACT WITH SUITABLE SOIL.

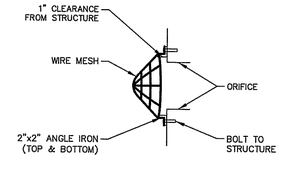
ANTI-SEEP COLLAR

NOT TO SCALE



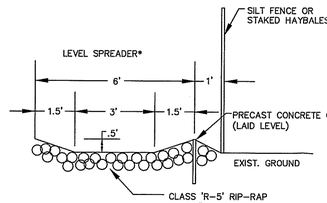
SECTION A–A

NOTE:
ALL 2" WEEP HOLES USED TO PLACE STRUCTURE MUST BE FILLED WITH CONCRETE.



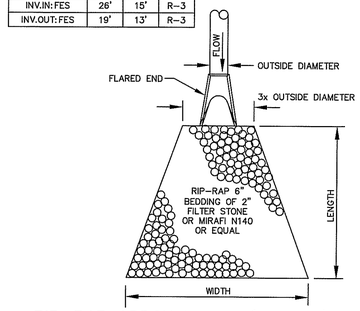
TRASH RACK DETAIL

LOCATION	LENGTH	WIDTH	CLASS
INV.IN:FES	26'	15'	R-3
INV.OUT:FES	19'	13'	R-3



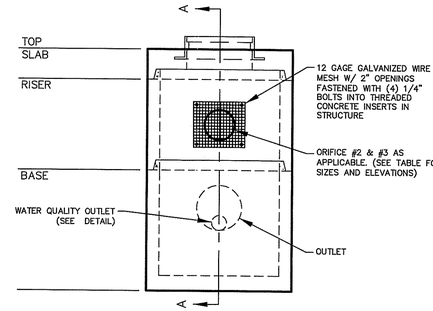
LEVEL SPREADER

NOT TO SCALE



RIP-RAP APRON DETAIL (POND 2)

NOT TO SCALE

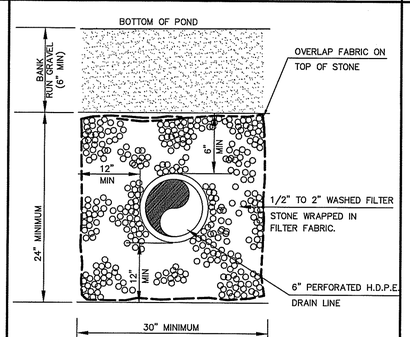


4' DIA. OUTLET STRUCTURE

NOT TO SCALE

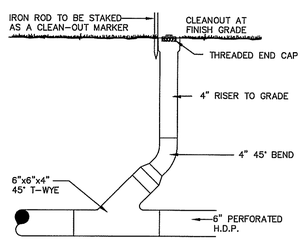
DETENTION POND 2 SUBDRAIN: CONSTRUCTION, MAINTENANCE, & INSPECTION NOTES

1. SUBDRAIN AND COMBINATION DRAIN AREA TO BE STAKED, MARKED, AND REMAIN UNDISTURBED PRIOR TO CONSTRUCTION. THERE IS TO BE NO CONSTRUCTION TRAFFIC ON SUBDRAIN AREA PRIOR TO CONSTRUCTION.
2. STAKE CENTERLINE OF SUBDRAINS.
3. EXCAVATE TRENCH. IF NECESSARY, PUMP GROUNDWATER TO DEWATERING BASIN. THE TRENCH SHALL BE A MINIMUM OF 36" IN WIDTH.
4. PLACE FILTER FABRIC ALONG THE BOTTOM AND SIDES OF TRENCH AND FILL WITH 1/2" TO 2" DIAMETER WASHED FILTER STONE. THE DEPTH OF STONE BELOW THE INVERT OF THE SUBDRAIN SHALL BE A MINIMUM OF 12".
5. PLACE 6" PERFORATED H.D.P.E. SUBDRAIN AT THE INVERT ELEVATION ALONG WITH CLEAN-OUTS AS INDICATED ON THE PLANS. BACKFILL SIDES AND TOP OF SUBDRAIN WITH FILTER STONE. THERE SHALL BE A MINIMUM OF 12" OF FILTER STONE ON BOTH SIDES OF THE SUBDRAIN. A MINIMUM OF 6" OF FILTER STONE SHALL COVER THE SUBDRAIN.
6. OVERLAP FILTER FABRIC ON THE TOP OF THE FILTER STONE. BACKFILL WITH A MINIMUM OF 6" BANK RUN GRAVEL TO FINISH GRADE.
7. MONITORING WATER LEVELS WITHIN THE CLEAN-OUTS AT VARIOUS TIME INTERVALS AFTER A RAINFALL EVENT WILL INDICATE THE EFFECTIVENESS OF THE SYSTEM. IF WATER IS STANDING IN SUBDRAIN AFTER A STORM EVENT, SYSTEM FAILURE HAS OCCURED AND WILL REQUIRE FLUSHING MAINTENANCE, REPAIR OR REPLACEMENT OF THE SUBDRAIN BY THE HOMEOWNER'S ASSOCIATION.
8. CONTRACTOR TO PROVIDE AS-BUILT PLANS OF THE DETENTION BASIN, SHOWING THE FIELD-LOCATED SUBDRAIN LOCATIONS, INVERTS, AND SIZES.
9. IF AS-BUILT PLANS INDICATE THAT THE SUBDRAINS ARE NOT INSTALLED AS SHOWN ON THE CONSTRUCTION PLANS AND DETAILS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECONSTRUCTING SUBDRAINS ACCORDING TO DESIGN PLANS.



POND 2 SUBDRAIN DETAIL

NOT TO SCALE



SUBDRAIN CLEANOUT DETAIL

NOT TO SCALE

RECEIVED
SEP 17 2007

CHRISTOPHER A. DUHAMEL
No. 5013
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
0	9-14-07	RIDEM PD SUBMISSION	C.R.D.

POND 2 DETAIL

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

PREPARED BY
DiPrete Engineering Associates, Inc.
ENGINEERING, SURVEYING AND PLANNING CONSULTANTS
TWO STAFFORD COURT
CRANSTON, R.I. 02920
(401) 943-1000 FAX: (401) 464-6006

PREPARED FOR
Ralph Campanelli
ONE CAMPANELLI DRIVE
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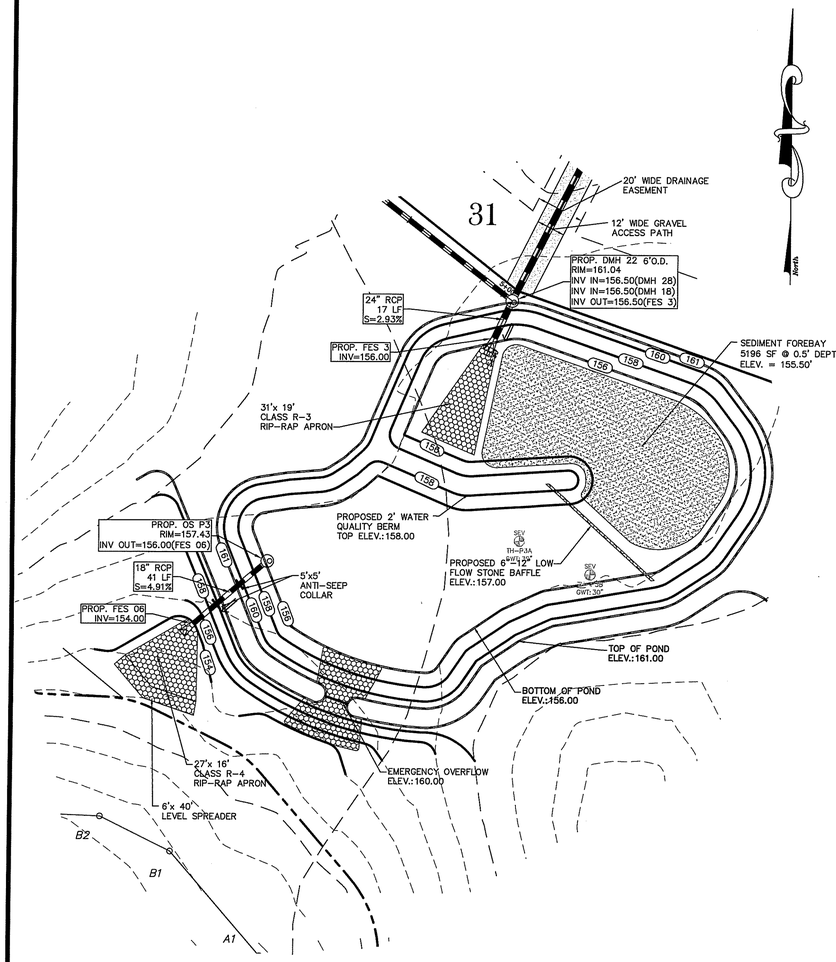
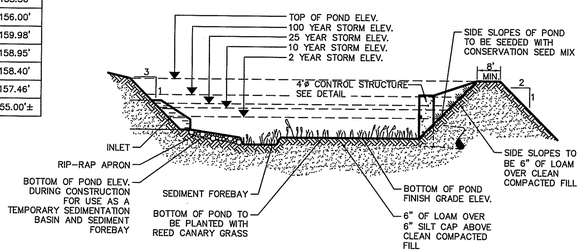
PHONE: (781) 843-8280

SEPTEMBER, 2007
DWN. BY: C.R.D.



POND 3 DETAIL

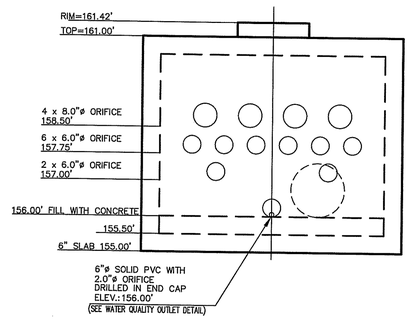
DESCRIPTION	POND 3
TOP OF POND ELEVATION	161.00'
BOTTOM OF POND ELEVATION FOR SEDIMENT FOREBAY	155.50'
BOTTOM OF POND	156.00'
100 YEAR STORM ELEVATION	159.98'
25 YEAR STORM ELEVATION	158.95'
10 YEAR STORM ELEVATION	158.40'
2 YEAR STORM ELEVATION	157.46'
SEASONAL HIGH GWT ELEVATION	155.00'±



DETENTION POND – TYPICAL CROSS SECTION

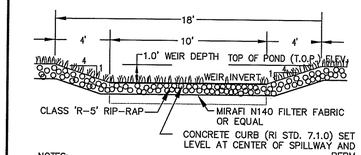
NOT TO SCALE

Description	POND 3
Rim Elevation	161.42'
Top Elevation	161.00'
Orifice #3 Size & Invert	4x8.0"ø, 158.50'
Orifice #2 Size & Invert	6x6.0"ø, 157.75.00'
Orifice #1 Size & Invert	2x6.0"ø, 157.00'
Water Quality Orifice Size & Invert	2.0"ø, 156.00'
Outlet Size & Invert	18", 156.00'
Fill With Concrete to Elevation	156.00'
Bottom of Structure	155.00'



DETENTION BASIN OUTLET (POND 3)

SCALE 1"=2'



NOTES:
1. FOLLOWING PLACEMENT OF FILTER FABRIC AND RIP RAP, VOIDS SHALL BE FILLED WITH LOAM AND SEEDED ALONG WITH DETENTION BASIN.

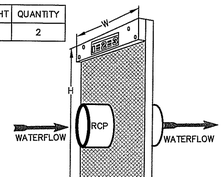
2. CONTRACTOR TO VERIFY ELEVATIONS ALONG TOP OF CURB AFTER SPILLWAY AREA IS COMPACTED TO 95% PROCTOR.

LOCATION	T.O.P. ELEVATION	WEIR INVERT
POND 3	161.00	160.00

EMERGENCY SPILLWAY DETAIL

NOT TO SCALE

LOCATION	WIDTH	HEIGHT	QUANTITY
POND 3	5'	5'	2



NOTE:
AGRI DRAIN CORP. OR EQUAL

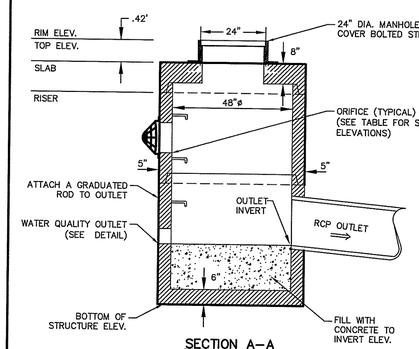
INSTALLATION NOTES:
1. UNROLL THE ANTI-SEEP AND ATTACH THE BOARDS TO THE EDGES TO FORM A SQUARE. (USE THE BOARDS AND NAILS PROVIDED.)(4"X4" & LARGER)

2. CUT A ROUND HOLE IN THE CENTER OF THE RUBBER THAT IS SMALLER THAN THE PIPE SIZE (APPROX. 25% SMALLER). THIS WILL ALLOW THE RUBBER TO STRETCH OVER THE PIPE WHEN THE ANTI-SEEP IS INSTALLED ON THE PIPE. THIS SHOULD PROVIDE A NEARLY WATERPROOF SEAL BETWEEN THE PIPE AND THE ANTI-SEEP.

3. SLIP THE PIPE THROUGH THE ANTI-SEEP. INSPECT THE SEAL BETWEEN THE PIPE AND THE ANTI-SEEP, CAREFULLY BACKFILL AND COMPACT WITH SUITABLE SOIL.

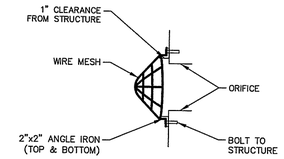
ANTI-SEEP COLLAR

NOT TO SCALE



SECTION A-A

NOTE:
ALL 2" WEEP HOLES USED TO PLACE STRUCTURE MUST BE FILLED WITH CONCRETE.

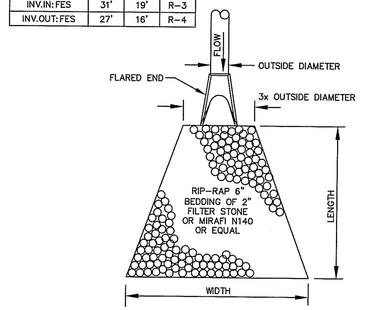


TRASH RACK DETAIL

LEVEL SPREADER

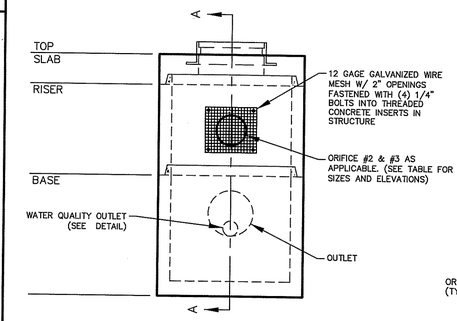
NOT TO SCALE

LOCATION	LENGTH	WIDTH	CLASS
INV.IN:FES	31'	19'	R-3
INV.OUT:FES	27'	16'	R-4

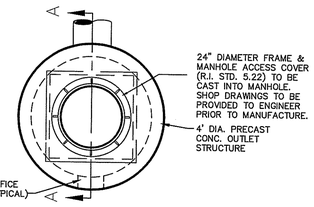


POND 3 RIP-RAP APRON DETAIL

NOT TO SCALE



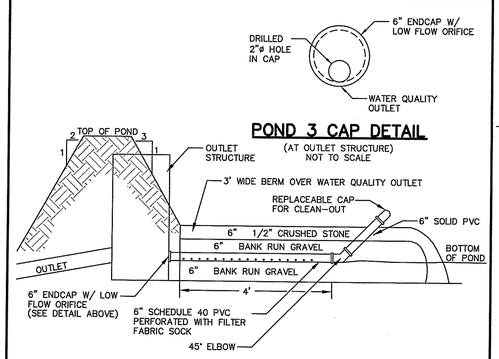
FRONT VIEW



TOP VIEW

4' DIA. OUTLET STRUCTURE

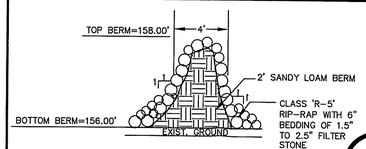
NOT TO SCALE



POND 3 CAP DETAIL

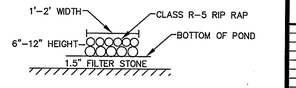
POND 3 WATER QUALITY OUTLET

NOT TO SCALE



2' WATER QUALITY BERM DETAIL

NOT TO SCALE



6"-12" LOW FLOW BAFFLE

NOT TO SCALE

RECEIVED
SEP 17 2007

CHRISTOPHER A. DUHAMEL
No. 5013
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
2	9-14-07	RIDEM PD SUBMISSION	C.R.D.

SEPTEMBER, 2007
DWN. BY: C.R.D.

POND 3 DETAIL

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

PREPARED BY
DiPrete Engineering Associates, Inc.
ENGINEERING, SURVEYING AND PLANNING CONSULTANTS
TWO STAFFORD COURT
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PREPARED FOR
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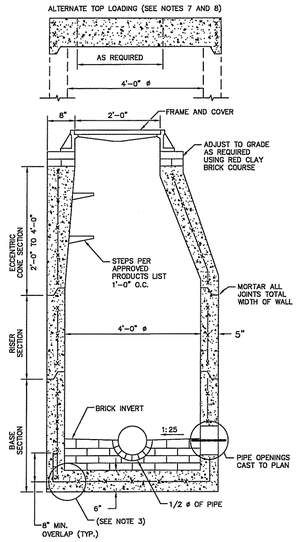
ONE CAMPANELLI DRIVE
BRAINTREE, MASSACHUSETTS 02184
PHONE: (781) 843-8280

SHEET 23 OF 28

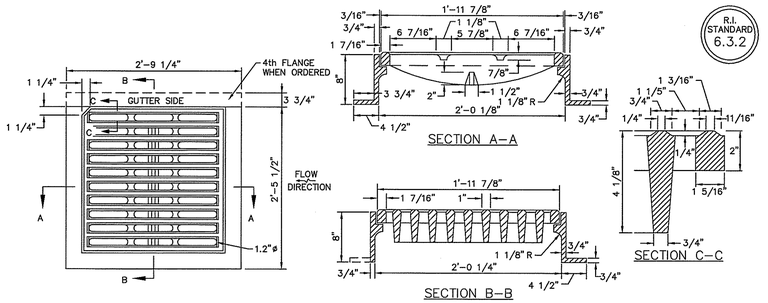


NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
2. CIRCUMFERENTIAL STEEL REINFORCEMENT REQUIRED = 0.12 SQ. IN. / LIN. FT. MINIMUM.
3. STEEL REINFORCEMENT FOR BASE SECTION BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN/LIN. FT. (BOTH WAYS).
4. ONE POUR MONOLITHIC BASE 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

NOT TO SCALE

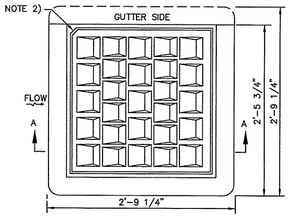
R.I. STANDARD 4.2.0



SQUARE FRAME AND GRATE (BICYCLE SAFE)

NOT TO SCALE

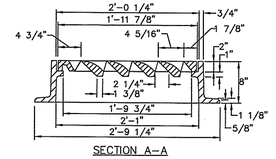
R.I. STANDARD 6.3.2



HIGH CAPACITY FRAME AND GRATE (BICYCLE SAFE)

NOT TO SCALE

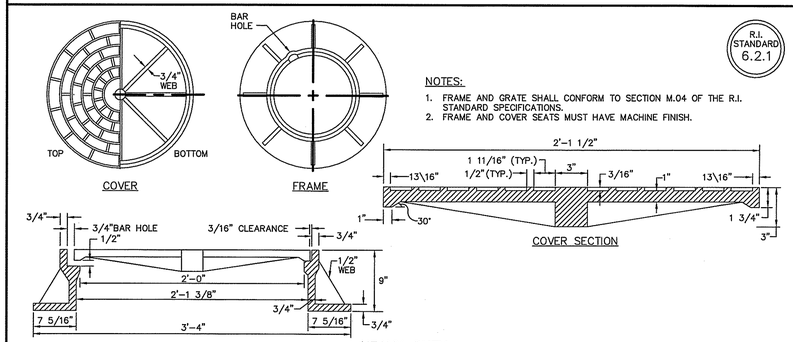
R.I. STANDARD 6.3.4



NOTES:
1. FRAME AND COVER SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS.
2. THIS CORNER LEFT FOR "LEFT" GRATE, DIAGONALLY OPPOSITE CORNER FOR "RIGHT" GRATE TO FIT IN KEYED FRAME.

HIGH CAPACITY FRAME AND GRATE (BICYCLE SAFE)

NOT TO SCALE



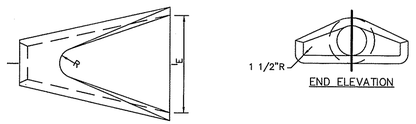
NOTES:
1. FRAME AND GRATE SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS.
2. FRAME AND COVER SEATS MUST HAVE MACHINE FINISH.

HEAVY-DUTY ROUND FRAME AND COVER

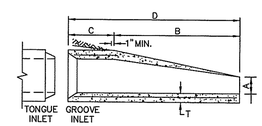
NOT TO SCALE

R.I. STANDARD 6.2.1

DIMENSIONS								REINFORCEMENT
DIA.	A	B	C	D	E	R	T	ONE LAYER REINFORCEMENT IN CENTER OF WALL MIN. AREA OF EACH WAY (SQ. IN./FT.)
1'-0"	4"	2'-0"	4'-9 7/8"	6'-0 7/8"	2'-0"	9"	2"	0.048
1'-3"	6"	2'-3"	3'-10"	6'-1"	2'-6"	11"	2 1/4"	0.054
1'-6"	9"	2'-3"	3'-10"	6'-1"	3'-0"	12"	2 1/2"	0.060
2'-0"	9 1/2"	3'-7 1/2"	2'-8"	6'-1 1/2"	4'-0"	1'-2"	3"	0.072
2'-6"	1'-0"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"	1'-3"	3 1/2"	0.084
3'-0"	1'-3"	5'-3"	2'-10 3/4"	6'-1 3/4"	6'-0"	1'-8"	4"	0.096
3'-6"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	1'-10"	4 1/2"	0.108
4'-0"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	1'-10"	5"	0.120
4'-6"	2'-3"	5'-5"	2'-11"	8'-4"	7'-6"	2'-0"	5 1/2"	0.132
5'-0"	2'-6"	5'-0"	3'-3"	8'-3"	8'-0"	2'-0"	6"	0.144



R.I. STANDARD 2.3.0



PRECAST CONCRETE FLARED END SECTION

NOT TO SCALE

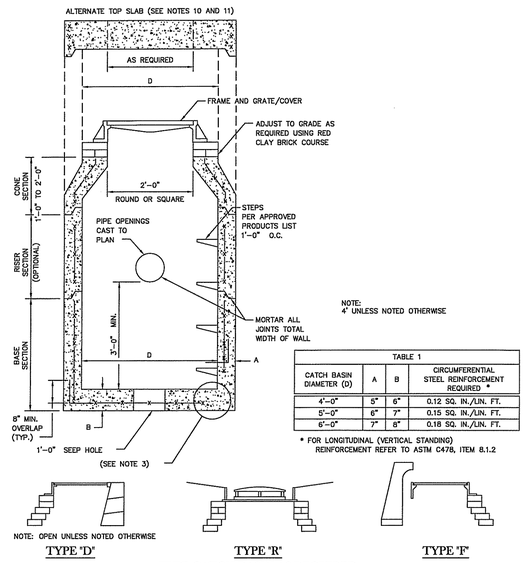


TABLE 1			
CATCH BASIN DIAMETER (D)	A	B	CIRCUMFERENTIAL STEEL REINFORCEMENT REQUIRED *
4'-0"	5"	6"	0.12 SQ. IN./LIN. FT.
5'-0"	6"	7"	0.15 SQ. IN./LIN. FT.
6'-0"	7"	8"	0.18 SQ. IN./LIN. FT.

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

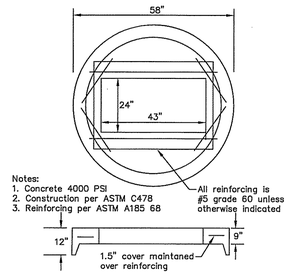
TYPE CATCH BASIN AS REQUIRED

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", OR 6'-0" ROUND CATCH BASIN

NOT TO SCALE

R.I. STANDARD 4.4.0

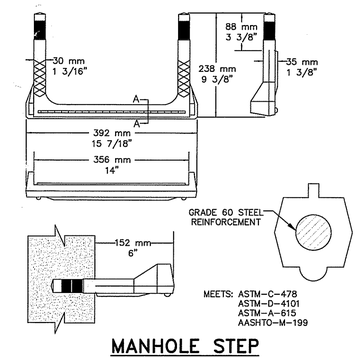


Notes:
1. Concrete 4000 PSI
2. Construction per ASTM C478
3. Reinforcing per ASTM A185 68

H-20 WHEEL LOAD

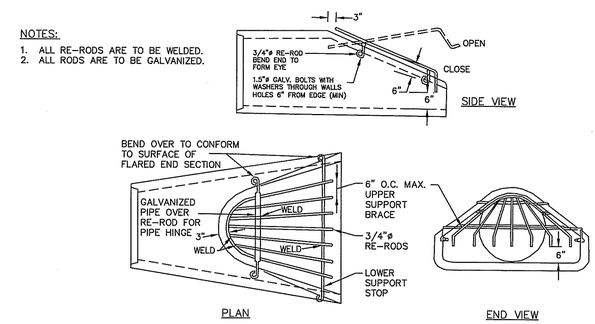
4' DIA. DOUBLE OPENING SLAB COVER FIORE CONCRETE PRODUCTS (OR EQUAL)

NOT TO SCALE



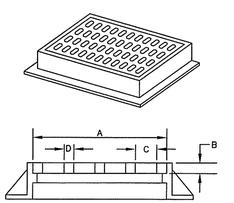
MANHOLE STEP

NOT TO SCALE



GRATING FOR FLARED END

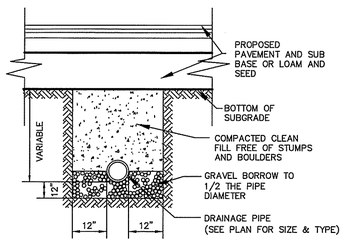
NOT TO SCALE



CAT. NO.	A	B	C	D	WT. (LBS)
R-4853-A	24"x45"	3"	1 1/2"x 6 1/2"	1 1/4"	520

DOUBLE FRAME & GRATE NEEHAH FOUNDRY CORP. (OR EQUAL)

NOT TO SCALE



NOTE:
DRAINAGE PIPE TO BE RCP CLASS III UNLESS OTHERWISE NOTED

DRAINAGE TRENCH DETAIL

NOT TO SCALE

RECEIVED
SEP 17 2007

Preliminary Submission

CHRISTOPHER A. DUHAMEL
No. 5013
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
2	9-14-07	RIDEM PD SUBMISSION	C.R.D.

DETAIL SHEET

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

PREPARED BY
DiPrete Engineering Associates, Inc.
ENGINEERING, SURVEYING AND PLANNING CONSULTANTS
TWO STAFFORD COURT
CRANSTON, R.I. 02920
(401) 943-1000 FAX: (401) 464-6006

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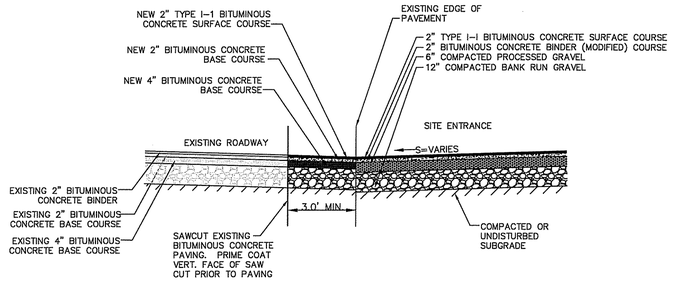
SEPTEMBER, 2007
DWN. BY: C.R.D.

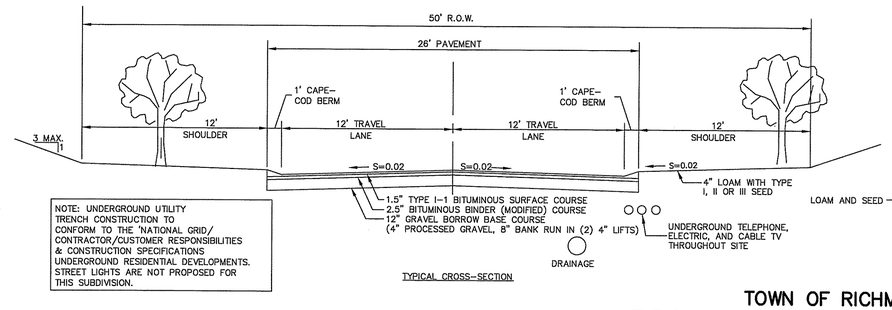
SHEET 24 OF 28



MINIMUM COMPACTION FOR GRAVEL SUB-BASE OR SUBGRADE: 95% MODD PROCTOR

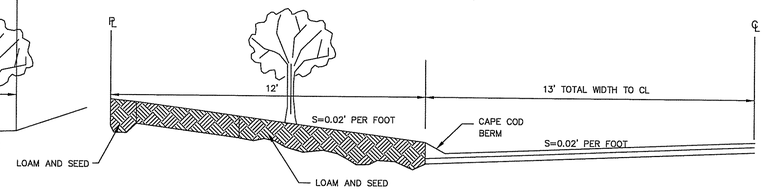
SAWCUT & MATCH PAVEMENT DETAIL

N.T.S.



NOTE: UNDERGROUND UTILITY TRENCH CONSTRUCTION TO CONFORM TO THE 'NATIONAL GRID/ CONTRACTOR/CUSTOMER RESPONSIBILITIES & CONSTRUCTION SPECIFICATIONS UNDERGROUND RESIDENTIAL DEVELOPMENTS. STREET LIGHTS ARE NOT PROPOSED FOR THIS SUBDIVISION.

TYPICAL CROSS-SECTION



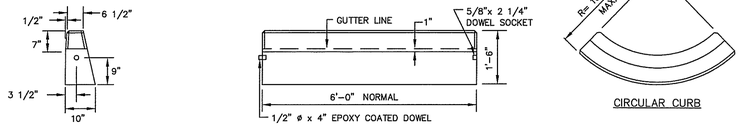
TYPICAL SHOULDER DETAIL

TOWN OF RICHMOND
TYPICAL ROAD & SHOULDER CONSTRUCTION

N.T.S.

NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
2. MINIMUM LENGTH OF STRAIGHT OR CIRCULAR FILLER PIECES TO BE 3'-0".
3. EXPOSED SURFACES TO HAVE A SPONGE FLOAT FINISH.
4. CIRCULAR CURB IS REQUIRED ON CURVES WITH RADII OF 160'-0" OR LESS. STRAIGHT CURB TO BE USED ON CURVES OF MORE THAN 160'-0" RADIUS.
5. EXPOSED EDGES TO HAVE A 3/4 CHAMFER.

R.I. STANDARD 7.1.0

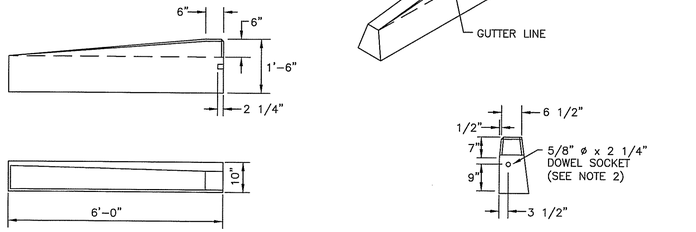


PRECAST CONCRETE CURB

NOT TO SCALE

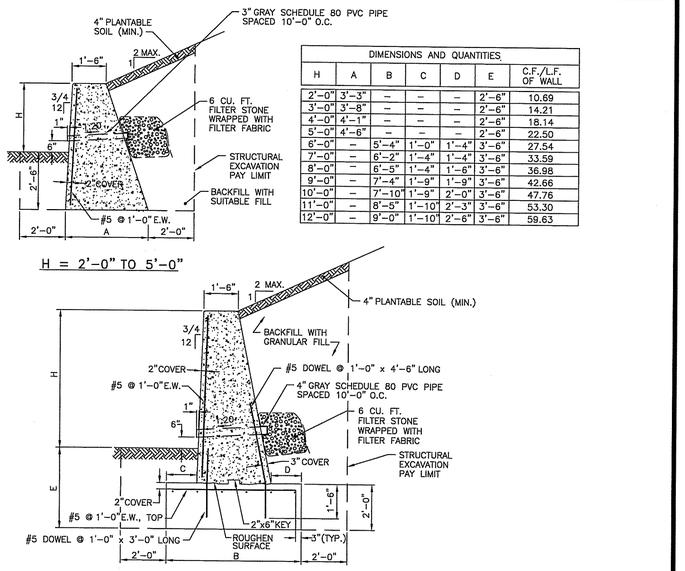
NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
2. DRAWING SHOWS TRANSITION CURB FOR ONE DIRECTION. FOR OTHER DIRECTION USE OPPOSITE HAND AND INCLUDE A 1/2"ø x 4" EPOXY COATED DOWEL.
3. EXPOSED SURFACES TO HAVE A SPONGE FLOAT FINISH.
4. EXPOSED EDGES TO HAVE A 3/4" CHAMFER.

R.I. STANDARD 7.1.2



6'-0" PRECAST CONCRETE TRANSITION CURB

NOT TO SCALE



DIMENSIONS AND QUANTITIES						
H	A	B	C	D	E	C.F./L.F. OF WALL
2'-0"	3'-3"	–	–	–	2'-6"	10.69
3'-0"	3'-8"	–	–	–	2'-6"	14.21
4'-0"	4'-1"	–	–	–	2'-6"	18.14
5'-0"	4'-6"	–	–	–	2'-6"	22.50
6'-0"	–	5'-4"	1'-0"	1'-4"	3'-6"	27.54
7'-0"	–	6'-2"	1'-4"	1'-4"	3'-6"	33.59
8'-0"	–	6'-5"	1'-4"	1'-8"	3'-6"	36.98
9'-0"	–	7'-4"	1'-9"	1'-9"	3'-6"	42.66
10'-0"	–	7'-10"	1'-9"	2'-0"	3'-6"	47.76
11'-0"	–	8'-5"	1'-10"	2'-3"	3'-6"	53.30
12'-0"	–	9'-0"	1'-10"	2'-6"	3'-6"	59.63

NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 808 OF THE R.I. STANDARD SPECIFICATIONS.
2. USE 1/2" PREFORMED JOINT FILLER AND BEVEL EXPOSED EDGES WITH 3/4" CHAMFER.
3. SEAL BACKFACE WITH 1/4"x1/2" JOINT SEALANT.
4. SURFACE RUB EXPOSED FACE AND TOP.
5. ALL REINFORCING TO BE EPOXY COATED.
6. PROVIDE EXPANSION JOINTS EVERY 25'-0" IN STEMS.
7. WALL MANUFACTURER OR TYPE MAY BE SUBSTITUTED WITH APPROVAL OF ENGINEER.
8. SHOP DRAWINGS STAMPED BY A PROFESSIONAL ENGINEER TO BE PROVIDED PRIOR TO CONSTRUCTION.

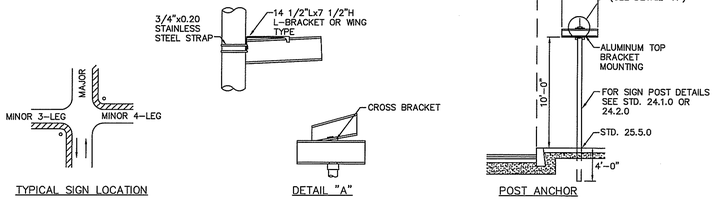
POND 2 CONCRETE HEAD WALL

NOT TO SCALE

R.I. STANDARD 10.3.0

NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION T.15 OF THE R.I. STANDARD SPECIFICATIONS.
2. EACH SIGN SHALL HAVE LEGEND ON BOTH SIDES.
3. POSTS SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE BACK OF SIDEWALK, UNLESS SPACE DOES NOT PERMIT.
4. IF SIGNS ARE ON THEIR OWN SUPPORT POST, THE POST SHALL BE LOCATED NEARER TO THE MAJOR STREET AND WITHIN 5'-0" OF THE P.T. OF THE CURVE.

R.I. STANDARD 24.6.1



STREET SIGN MOUNTING DETAIL

NOT TO SCALE

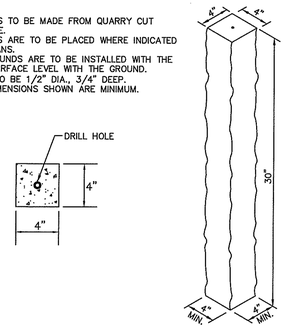
STANDARD 27.1.0

SIGN NUMBER		R1-1			
LEGEND		STOP			
COLOR	BACKGROUND	RED			
	COPY	WHITE			
SIGN DIMENSION	WIDTH	24"	30"	36"	48"
	HEIGHT	24"	30"	36"	48"

REGULATORY SIGNS

NOT TO SCALE

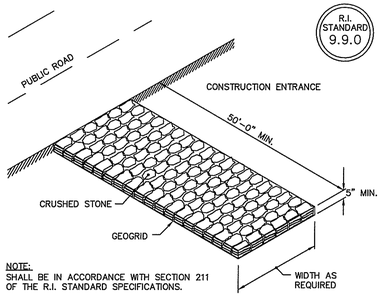
NOTES:
1. BOUNDS TO BE MADE FROM QUARRY CUT GRANITE.
2. BOUNDS ARE TO BE PLACED WHERE INDICATED ON PLANS.
3. ALL BOUNDS ARE TO BE INSTALLED WITH THE TOP SURFACE LEVEL WITH THE GROUND.
4. HOLE TO BE 1/2" DIA., 3/4" DEEP.
5. ALL DIMENSIONS SHOWN ARE MINIMUM.



GRANITE BOUND

NOT TO SCALE

R.I. STANDARD 9.9.0



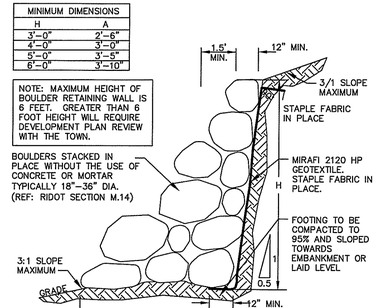
NOTE:
SHALL BE IN ACCORDANCE WITH SECTION 211 OF THE R.I. STANDARD SPECIFICATIONS.

CONSTRUCTION ACCESS

NOT TO SCALE

MINIMUM DIMENSIONS	
H	A
3'-0"	2'-6"
4'-0"	3'-0"
5'-0"	3'-5"
6'-0"	3'-10"

NOTE: MAXIMUM HEIGHT OF BOULDER RETAINING WALL IS 6 FEET. GREATER THAN 6 FOOT HEIGHT WILL REQUIRE DEVELOPMENT PLAN REVIEW WITH THE TOWN.



NOTES:
1. WALL MANUFACTURER OR TYPE MAY BE SUBSTITUTED WITH APPROVAL OF ENGINEER.
2. SHOP DRAWINGS STAMPED BY A PROFESSIONAL ENGINEER TO BE PROVIDED PRIOR TO CONSTRUCTION.

BOULDER RETAINING WALL

NOT TO SCALE

RECEIVED
SEP 17 2007

CHRISTOPHER A. DUHAMEL
No. 5013
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
0	9-14-07	RIDEM PD SUBMISSION	C.R.D.

DETAIL SHEET

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

PREPARED BY
DiPrete Engineering Associates, Inc.
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SEPTEMBER, 2007
DWN. BY: C.R.D.

SHEET 25 OF 28

1. SPECIFICATION AND INSTALLATION OF EACH CISTERN AND DRY HYDRANT SHALL BE IN COMPLIANCE WITH NFPA 1142 STANDARD ON WATER SUPPLIES FOR SUBURBAN AND RURAL FIRE FIGHTING (1999 EDITION).

2. MAINTENANCE OF THE CISTERNS AND DRY HYDRANTS SHALL BE THE RESPONSIBILITY OF THE SUBDIVISION ASSOCIATION.

3. THE DESIGN OF A CISTERN SHOULD BE TROUBLE–FREE AND LAST A LIFETIME.

4. THE CISTERN CAPACITY SHOULD BE 10,000 gallons (37,850 L) MINIMUM, AVAILABLE THROUGH THE SUCTION PIP–ING SYSTEM.

5. THE SUCTION PIPING SYSTEM SHOULD BE CAPABLE OF DELIVERING 1000 gpm (3800 L/min) FOR THREE QUARTERS OF THE CISTERN CAPACITY.

6. THE DESIGN OF THE CISTERN SHOULD BE SUBMITTED TO THE AUTHORITY HAVING JURISDICTION FOR APPROVAL PRIOR TO CON–STRUCTION. ALL PLANS SHOULD BE SIGNED BY AN ACCEPTABLE REG–ISTERED PROFESSIONAL ENGINEER.

7. THE ENTIRE CISTERN SHOULD BE RATED FOR HIGHWAY LOADING, UNLESS SPECIFICALLY EXEMPTED BY THE AUTHORITY HAVING JURISDICTION.

8. ALL DRAWINGS ARE FOR ESTIMATING PURPOSES ONLY AND ARE NOT INTENDED FOR USE AS DESIGN.

9. EACH CISTERN SHOULD BE SITED TO THE PARTICULAR LOCA–TION BY A REGISTERED ENGINEER AND APPROVED BY THE AUTHOR–ITY HAVING JURISDICTION.

10. PRECAST CONCRETE SHOULD ACHIEVE A 28–DAY STRENGTH OF 5000 psig (34,500 kPag).

11. THE CONCRETE SHOULD BE PORTLAND CEMENT TYPE II PER ASTM C150–81. STEEL REINFORCEMENT PER ASTM A–615 GRADE 60. DESIGN LOADING TO CONFORM TO AASHTO HS–20. TANK JOINTS TO BE SEALED WITH BUTYL RUBBER JOINT SEAL AND EXTERIOR OF TANK COATED WITH BITUMINOUS WATERPROOFING.

12. ALL SUCTION AND FILL PIPING SHOULD BE AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM) SCHEDULE 40 STEEL. ALL VENT PIPING SHOULD BE ASTM SCHEDULE 40 PVC WITH GLUED JOINTS.

13. ALL PVC PIPING SHOULD HAVE GLUED JOINTS.

14. THE 8 in. x 5 in. (20.3 cm x 12.7 cm) ECCENTRIC REDUCER IS AVAILABLE FROM SUPPLIERS.

15. THE FINAL SUCTION CONNECTION SHOULD BE A MINIMUM OF 4 1/2 in. (11.4 cm) NATIONAL STANDARD MALE FITTING W/CAP.

16. THE FILLER PIPE SHOULD HAVE ONE (1) 4–1/2" NATIONAL STANDARD MALE FITTING.

17. THE ENTIRE CISTERN SHOULD BE COMPLETED AND INSPECTED BEFORE ANY BACKFILLING IS DONE.

18. ALL BACKFILL MATERIAL SHOULD BE SCREENED GRAVEL WITH NO STONES LARGER THAN 1 1/2 in (38 mm) AND SHOULD BE COM–PACTED TO 95 PERCENT PER ASTM 1557.

19. BEDDING FOR THE CISTERN SHOULD CONSIST OF A MINI–MUM OF 12 in. OF 3/4–in. TO 1 1/2–in. CRUSHED, WASHED STONE, COMPACTED. NO FILL SHOULD BE USED UNDER STONE.

20. FILLER PIPE WITH 4" STORZ COUPLING AND LOCKING CAP SHOULD BE 36 in. (91.4 cm) ABOVE FINAL BACKFILL GRADE.

21. SUCTION PIPE CONNECTION SHOULD BE 20 in. TO 24 in. (51 cm TO 61 cm) ABOVE THE LEVEL OF THE GRAVEL WHERE VEHI–CLE WHEELS WILL BE LOCATED WHEN CISTERN IS IN USE.

22. SUCTION PIPE SHOULD BE SUPPORTED EITHER TO TOP OF TANK OR TO A LEVEL BELOW FROST.

23. BASE SHOULD BE DESIGNED SO THAT CISTERN WILL NOT FLOAT WHEN EMPTY.

24. PERIMETER OF TANK AT FLOOR/WALL JOINT SHOULD BE SEALED WITH 8–in. (20.3–cm) PVC WATERSTOP.

25. AFTER BACKFILLING, TANK SHOULD BE PROTECTED BY FENC–ING OR LARGE STONES, AS DEEMED NECESSARY BY LOCAL FIRE DISTRICT.

26. BACKFILL OVER THE TANK SHOULD BE:
(A) 24" MINIMUM CLEAN FILL OVER 2" STYROFOAM INSULATION ON TOP OF CISTERN.
(B) ALL BACKFILL SHOULD EXTEND 10 ft (3.1 m) BEYOND THE EDGE OF THE CISTERN, AND THEN HAVE A MAXIMUM 3:1 SLOPE, LOAMED AND SEEDED.

27. BOTTOM OF SUCTION PIPE TO PUMPER CONNECTION SHOULD NOT EXCEED 14 ft (4.25 m) VERTICAL DISTANCE.

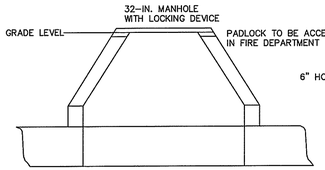
28. PITCH OF SHOULDER AND VEHICLE PAD FROM EDGE OF PAVEMENT TO PUMPER SUCTION CONNECTION SHOULD BE 1 TO 6 PERCENT DOWNGRADE.

29. SHOULDER AND VEHICLE PAD SHOULD BE OF SUFFICIENT LENGTH TO PERMIT CONVENIENT ACCESS TO SUCTION CONNECTION WHEN PUMPER IS SET AT 45 DEGREES TO ROAD.

30. ALL CONSTRUCTION, BACKFILL, AND GRADING MATERIAL SHOULD BE IN ACCORDANCE WITH PROPER CONSTRUCTION PRACTICES AND ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION.

31. ALL HORIZONTAL SUCTION PIPING SHOULD SLOPE SLIGHTLY UPHILL TOWARD PUMPER CONNECTION.

32. AS A CONDITION OF FINAL APPROVAL NO CERTIFICATE OF OCCUPANCY WILL BE ISSUED UNTIL THE FIRE SUPPRESSION CISTERN IS CONSTRUCTED AND FUNCTIONAL.



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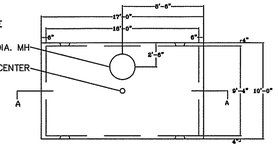
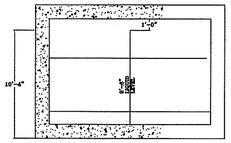
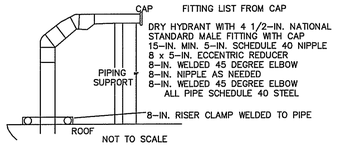


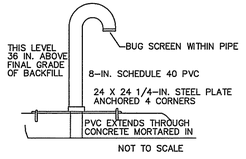
CISTERN TANK CONSTRUCTION PLAN VIEW
NOT TO SCALE


CISTERN TANK CONSTRUCTION CROSS SECTION VIEW
NOT TO SCALE



NOT TO SCALE

UPPER SECTION PIPE DETAIL



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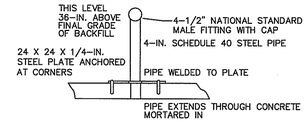
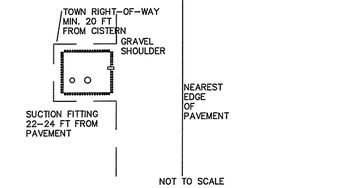
VENT PIPE DETAIL

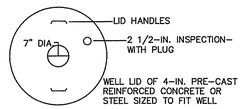


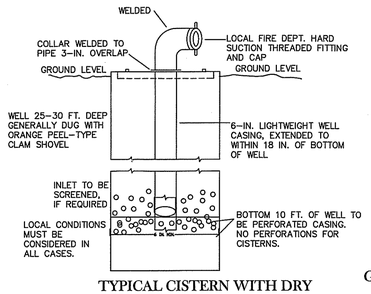
FILL PIPE DETAIL



NOT TO SCALE

CISTERN SITE

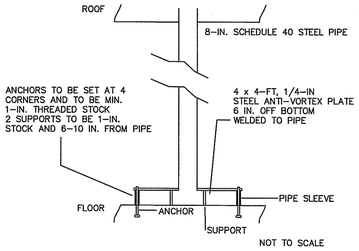




TYPICAL CISTERN WITH DRY HYDRANT INSTALLED

FIRE PROTECTION CISTERNS

NOT TO SCALE



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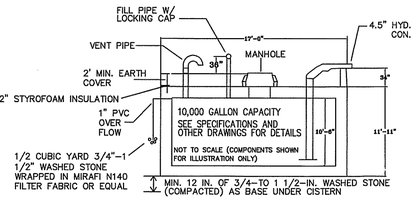
LOWER SECTION PIPE DETAIL

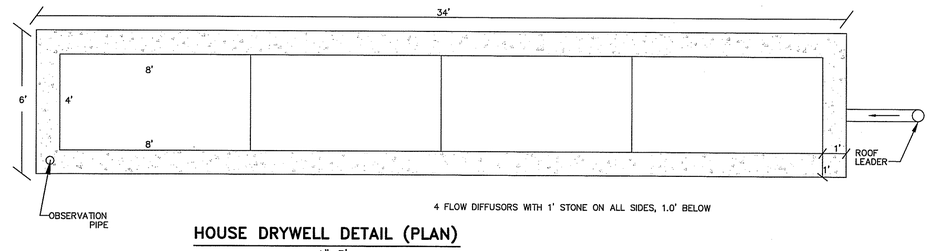


CISTERN AND PIPING

GENERAL NOTES:

1. EACH CISTERN SHALL BE EQUIPPED WITH A DRY HYDRANT FITTED WITH A 4–1/2 INCH NATIONAL STANDARD MALE FITTING, WITH CAP. SPECIFICATION AND INSTALLATION OF EACH CISTERN AND DRY HYDRANT SHALL BE IN COMPLIANCE WITH NFPA 1142 STANDARD ON WATER SUPPLIES FOR SUBURBAN AND RURAL FIRE FIGHTING (1999 EDITION).

2. MAINTENANCE OF THE CISTERNS AND DRY HYDRANTS SHALL BE THE RESPONSIBILITY OF THE HOME–OWNERS ASSOCIATION.



4 FLOW DIFFUSORS WITH 1' STONE ON ALL SIDES, 1.0' BELOW

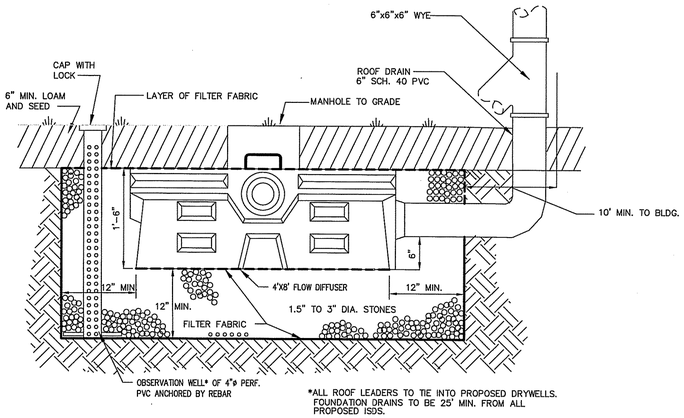
HOUSE DRYWELL DETAIL (PLAN)

1"=3'

NOTES:

1. DRYWELLS REQUIRED FOR LOTS 1,2,3,& 4.
2. NO STONE BETWEEN CONSECUTIVE DRYWELLS.

*SCHEDULE OF INSPECTION FOR OBSERVATION WELL: MONITORING WATER LEVELS WITHIN THE PIPE AT VARIOUS TIME INTERVALS AFTER A RAINFALL EVENT WILL INDICATE THE INFILTRATION ABILITY AND PERFORMANCE OF THE SYSTEM. IF WATER IS STANDING IN A PIPE MORE THAN 3 DAYS AFTER A STORM EVENT, SYSTEM FAILURE HAS OCCURED AND WILL REQUIRE REPAIR OR REPLACEMENT OF DRYWELL BY THE HOMEOWNER.



*ALL ROOF LEADERS TO TIE INTO PROPOSED DRYWELLS. FOUNDATION DRAINS TO BE 25' MIN. FROM ALL PROPOSED ISDS.

HOUSE DRYWELL DETAIL

NOT TO SCALE

Lot #	Elevation				Separation Distance (ft.)
	Prop. Ground	Top of Drywell Facility	Bottom of Drywell Facility (w/ 12" stone)	Seasonal High GWT	
1	181.00	180.50	178.00	175.18	2.8
2	167.00	166.50	164.00	159.00	5.0
3	183.00	182.50	180.00	178.00	2.0
4	161.00	160.50	158.00	153.80	4.2

GENERAL NOTES

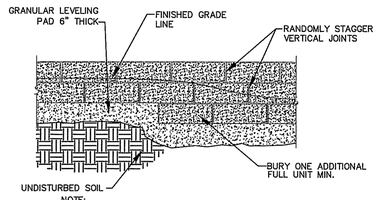
1. STRIP VEGETATION AND ORGANIC SOIL FROM WALL FOOTING.
2. BENCH CUT ALL EXCAVATED SLOPES.
3. DO NOT OVER EXCAVATE UNLESS DIRECTED BY SITE SOIL ENGINEER TO REMOVE UNSUITABLE SOIL.
4. SITE SOILS ENGINEER SHALL VERIFY FOUNDATION SOILS AS BEING COMPETENT PER THE DESIGN STANDARDS AND PARAMETERS.
5. LEVELING PAD SHALL CONSIST OF COMPACTED COARSE SAND OR CRUSHED GRAVEL, 6" THICK MIN.
6. CONTRACTOR MAY OPT FOR A LEAN CONCRETE PAD. CONCRETE PAD SHALL BE UNREINFORCED, 3" THICK MAXIMUM.
7. MINIMUM EMBEDMENT OF WALL BELOW FINISH GRADE SHALL BE 6" FOR WALL HEIGHTS UNDER 4 FT. AND 12" FOR WALLS OVER 4 FT. UNLESS SHOWN DIFFERENTLY.
8. FOR UNITS TO BE EMBEDDED, COMPACT FILL IN FRONT OF UNITS AT THE SAME TIME FILL BEHIND UNITS IS COMPACTED.
9. DRAINAGE AGGREGATE SHALL BE INSTALLED DIRECTLY BEHIND THE WALL WITHIN 12" OF THE TOP OF THE WALL. DRAINAGE AGGREGATE SHALL NOT EXTEND BELOW FINAL GRADE IN FRONT OF WALL.
10. COMPACTION SHALL BE TO 95% OF MAXIMUM STANDARD PROCTOR DENSITY.(ASTM D–698)
11. COMPACTION TESTS SHALL BE TAKEN AS THE WALL IS INSTALLED. THE MINIMUM NUMBER OF TESTS SHALL BE DETERMINED BY THE SITE SOILS ENGINEER.
12. COMPACTION WITHIN 3 FT. OF WALL SHALL BE LIMITED TO HAND OPERATED EQUIPMENT.
13. SEE ELEVATION DRAWINGS FOR GEOSYNTHETIC TYPE, LENGTH AND LOCATION REQUIRED.
14. GEOSYNTHETIC SHALL BE PLACED WITH STRONGEST DIRECTION PERPENDICULAR TO WALL. FOLLOW GEOSYNTHETIC MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WRITTEN SPECIFICATIONS.
15. CONTRACTOR SHALL DIRECT SURFACE RUNOFF TO AVOID DAMAGING WALL WHILE UNDER CONSTRUCTION.
16. ANY SURFACE DRAINAGE FEATURES, FINISH GRADING, PAVEMENT, OR TURF SHALL BE INSTALLED IMMEDIATELY AFTER WALL IS COMPLETED.
17. FOLLOW APPLICABLE PROVISIONS OF THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WRITTEN SPECIFICATIONS.
18. VERSA–LOK RETAINING WALL OVER 5' IN HEIGHT OR WITHIN 20' OF A PROPOSED BUILDING TO BE DESIGNED BY A PROFESSIONAL ENGINEER IN THE STATE OF RHODE ISLAND, INSTALLATION SUPERVISED, AND INSTALLATION CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED IN RHODE ISLAND. THESE DETAILS ARE PROVIDED FOR REFERENCE ONLY. SHOP DRAWINGS TO BE SUBMITTED BY A PROFESSIONAL ENGINEER LICENSED IN RHODE ISLAND PRIOR TO CONSTRUCTION ON ALL WALLS OVER 5'. SHOP DRAWINGS TO BE DONE BY A R.I. PROFESSIONAL ENGINEER.

NOTES:
1. WALL MANUFACTURER OR TYPE MAY BE SUBSTITUTED WITH APPROVAL OF ENGINEER.
2. SHOP DRAWINGS STAMPED BY A PROFESSIONAL ENGINEER TO BE PROVIDED PRIOR TO CONSTRUCTION.

IF CONDITIONS ARE DIFFERENT THAN THOSE STATED IN THESE DRAWINGS AND SPECIFICATIONS, THE CONTRACTOR MUST CONTACT GEOSYNTHETIC ENGINEER PRIOR TO PROCEEDING WITH THE CONSTRUCTION OF THE WALL.

VERSA–LOK RETAINING WALL GREATER THAN 4' HEIGHT

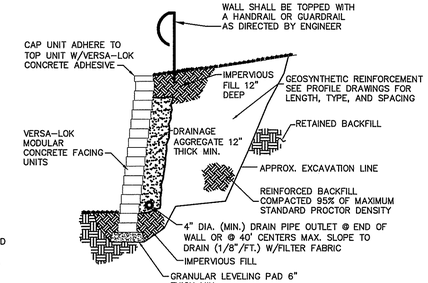
SEE DETAIL SHEET 28



STEPPING BASE DETAIL

SCALE: NONE

1. SHOP DRAWINGS TO BE SUBMITTED FOR ALL WALLS OVER 5' IN HEIGHT OR WITHIN 20' OF A BUILDING BY A LICENSED GEOSYTH. ENGINEER.



TYPICAL SECTION–REINFORCED RETAINING WALL

MODULAR CONCRETE UNIT
SCALE: NONE

RECEIVED
SEP 17 2007
PLANNING BOARD

CHRISTOPHER A. DUHAMEL
No. 5013
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
0	9-14-07	RIDEM PD SUBMISSION	C.R.D.

DETAIL SHEET

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

PREPARED BY
DiPrete Engineering Associates, Inc.
ENGINEERING, SURVEYING AND PLANNING CONSULTANTS
TWO STAFFORD COURT
CRANSTON, R.I. 02920
(401) 943–1000 FAX: (401) 464–6006

PREPARED FOR
Ralph Campanelli
ONE CAMPANELLI DRIVE
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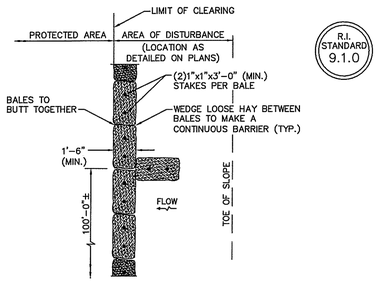
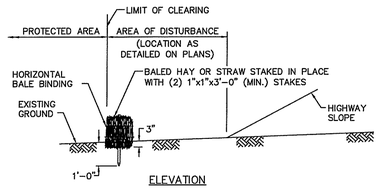
PHONE: (781) 843–8280

SEPTEMBER, 2007
DWN. BY: C.R.D.



R.I. STANDARD 9.1.0

PLAN



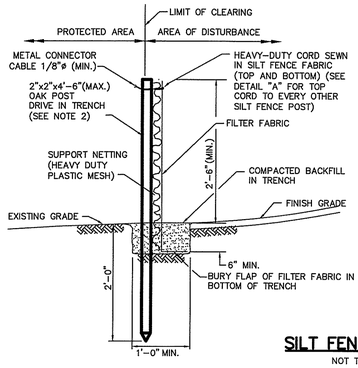
ELEVATION

NOTES:

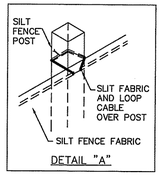
1. SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE R.I. STANDARD SPECIFICATIONS.
2. TO BE USED WHERE THE EXISTING GROUND SLOPES AWAY FROM THE HIGHWAY EMBANKMENT AS CALLED FOR ON PLANS.
3. AT APPROXIMATE 100'–0" INTERVALS A BALE OF HAY IS TO BUTT PERPENDICULARLY.

BALED HAY EROSION CHECK

NOT TO SCALE



1. SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE R.I. STANDARD SPECIFICATIONS.
2. 2"x2"x4'–6"(MAX.) OAK POSTS FOR SILT FENCE SHALL BE LOCATED 8'–0" (MAX.) O.C. IN WETLAND AREAS AN 4'–0"D (MAX.) O.C. IN WETLAND RAVINE. GULLY OR DROP–OFF AREAS AS SHOWN ON PLANS.
3. 1"x1"x4'–6"(MIN.) POSTS PERMITTED FOR PRE–FABRICATED SILT FENCE.
4. SILT FENCE SHALL BE INSTALLED BEFORE ANY GRUBBING OR EARTH EXCAVATION TAKES PLACE.

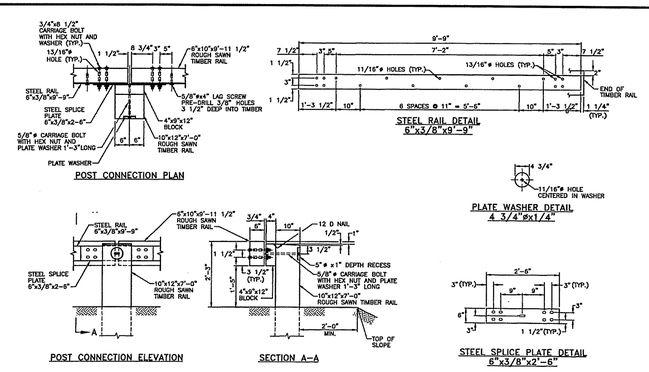


DETAIL "A"

R.I. STANDARD 9.2.0

SILT FENCE DETAIL

NOT TO SCALE



R.I. STANDARD 34.4.0

STEEL BACKED–TIMBER GUARDRAIL DETAIL

NOT TO SCALE

MAINTENANCE: SHORT TERM / LONG TERM

1. ALL DISTURBED SLOPES EITHER NEWLY CREATED OR CURRENTLY EXPOSED SHALL BE SEEDED, PROTECTED AND MAINTAINED BY THE CONTRACTOR FOLLOWING THE FINAL GRADING AND CONSTRUCTION. THE CONTRACTOR SHALL CHECK REGULARLY ALL SEEDED AREAS TO SEE THAT A GOOD STAND IS MAINTAINED.
2. THE CONTRACTOR MUST REPAIR OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR AND SHALL DO SO AT NO ADDITIONAL EXPENSE.
3. ALL HAY BALES, TEMPORARY TREATMENTS (HAY, STRAW, ETC.) AND TEMPORARY PROTECTION SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION AND SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.
4. THE CONTRACTOR SHALL MAINTAIN ALL TOPSOIL STOCKPILES AND SEDIMENT BARRIERS THROUGHOUT CONSTRUCTION. EXTREME CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENTS DO NOT SPILL OVER THE SEDIMENT BARRIER.
5. THE CONTRACTOR SHALL CHECKED THE HAY BALES OR SILT FENCE ON A WEEKLY BASIS AND AFTER EACH STORM FOR UNDERMINING OR DETERIORATION. CONTRACTOR SHALL REPAIR OR REPLACE THE HAY BALES AS NECESSARY. CONTRACTOR SHALL CLEAN THE ACCUMULATED SEDIMENT IF HALF OF THE ORIGINAL HEIGHT OF THE BALES BECOMES FILLED IN WITH SEDIMENTS.
6. THE CONTRACTOR SHALL MAINTAIN THE STONE STABILIZATION PAD AT THE SITE ENTRANCE. THE MAINTENANCE SHALL INCLUDE TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND OR AS DIRECTED BY THE ENGINEER. ALL SEDIMENTS SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT OF WAY MUST BE REMOVED IMMEDIATELY BY THE CONTRACTOR.
7. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AND INSPECTION OF THE POND DURING AND UP TO A YEAR AFTER COMPLETION OF CONSTRUCTION. MAINTENANCE SHALL INCLUDE RESEEDING ANY UNDEVELOPED AREAS AFTER A FULL GROWING SEASON AT NO ADDITIONAL EXPENSE, REMOVING ACCUMULATED SILT OVER 3" IN THE POND, AND MAINTAINING THE GRASS TO A GROWING HEIGHT BETWEEN 2" – 10". EXCAVATION OF SILT SHALL BE MANUAL WITH SHOVEL AND WHEELBARROW ONLY.
8. THE CONTRACTOR SHALL INSPECT RIP RAP APRONS AFTER EACH STORM AND REPAIR AS NECESSARY.
9. THE CONTRACTOR SHALL MAINTAIN THE DRAINAGE SYSTEM THROUGHOUT CONSTRUCTION. THE ACCUMULATED SEDIMENTS IN THE OUTLET STRUCTURE SHALL BE REMOVED AND OUTLET PIPE FLUSHED BY THE CONTRACTOR AT THE END OF CONSTRUCTION.
10. THE HOME OWNER'S ASSOCIATION (H.A.) IS RESPONSIBLE FOR THE LONG TERM MAINTENANCE OF THE DETENTION PONDS. THE DRAINAGE SYSTEM SHALL BE CHECKED SEMIANNUALLY AND ACCUMULATED SEDIMENTS SHALL BE REMOVED WHEN THEY EXCEED 3" DEPTH OR EVERY 10 YEARS, WHICHEVER COMES FIRST.
11. THE HOME OWNER'S ASSOCIATION (H.A.) SHALL CHECK THE RIP–RAP APRONS AND EMERGENCY OUTLETS AFTER MAJOR STORMS AND AN ANNUAL BASIS. REPAIRS SHALL BE PERFORMED IMMEDIATELY AS CONDITIONS WARRANT.
12. THE DETENTION PONDS SHALL BE MAINTAINED BY THE HOME OWNER'S ASSOCIATION (H.A.) AFTER THE FIRST YEAR. THE H.A. SHALL MAINTAIN A GOOD VEGETATIVE COVER (GRASS BETWEEN 2"–10" OR VEGETATION AS SPECIFIED). BOTTOM OF PONDS SHALL BE INSPECTED ON A BIANNUAL BASIS AND ACCUMULATED SEDIMENTS SHALL BE REMOVED WHEN THEY REACH A 3" DEPTH OR EVERY 10 YEARS, WHICHEVER COMES FIRST.
13. THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR THE MAINTENANCE PROGRAM DURING THE CONSTRUCTION PHASE. THE SUPERINTENDENT SHALL SEE THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN.
14. AFTER THE FIRST YEAR AND ACCEPTANCE BY THE TOWN, THE HOME OWNER'S ASSOCIATION SHALL HAVE OVERALL RESPONSIBILITY FOR IMPLEMENTING THE MAINTENANCE PROGRAM.
15. CONSTRUCTION OF DRAINAGE PONDS SHALL BE SUPERVISED BY A PROFESSIONAL ENGINEER. A REPORT AND PLAN OF AS–BUILT CONSTRUCTION SHALL BE MADE AVAILABLE TO THE TOWN ENGINEER.

SEQUENCE AND STAGING OF LAND DISTURBING ACTIVITIES

1. SURVEY AND STAKE CENTERLINE OF THE PROPOSED ROAD, BASIN, AND LIMIT OF SEDIMENTATION BARRIERS.
2. PLACE SEDIMENTATION BARRIERS (HAY BALES OR SILT FENCE) AS SHOWN ON THE PLANS AND STAKED OUT IN THE FIELD. IN NO CASE IS THE LIMIT OF WORK TO EXTEND BEYOND THE SEDIMENTATION BARRIERS.
3. BEGIN BASIN AND ROAD WORK (CLEARING AND GRUBBING, EXCAVATING AND GRADING, ETC.). TOPSOIL TO BE STRIPPED AND STOCKPILED IN APPROVED AREAS. THE STOCKPILES ARE TO BE PROTECTED BY A ROW OF SEDIMENTATION BARRIER AND COVERED OR TEMPORARILY SEEDED. NO RUNOFF IS TO BE DISCHARGED TO THE DETENTION AREAS UNTIL THE PAVEMENT IS INSTALLED AND DISTURBED AREAS ARE STABILIZED WITH VEGETATION.
4. INSTALL UTILITIES AND DRAINAGE AREA. PROTECT DISCHARGE AREA FROM ALL RUNOFF UNTIL ALL DISTURBED AREAS ARE STABILIZED. IMMEDIATELY PLACE EROSION CONTROLS AT THE DISCHARGE POINT AND SEED THE BASIN AND DISTURBED AREAS.
5. BEGIN ROAD CONSTRUCTION.
6. BEGIN LAYOUT OF HOUSES AND GRADING ALONG WITH 7.
7. BEGIN LANDSCAPING WHILE HOMES ARE UNDER CONSTRUCTION. FINISH HOMES AND ROAD CONSTRUCTION.
8. FINISH LANDSCAPING AND PERMANENT STABILIZATION. SWEEP THE ROADWAY TO REMOVE SEDIMENTS.
9. REPAIR DRAINAGE OUTLETS AND PONDS AS REQUIRED. THE TREE LIMBS, LEAVES, BOULDERS, ETC. SHALL BE REMOVED FROM THE BOTTOM OF THE BASIN BEFORE APPLICATION OF TOPSOIL.
10. REMOVE ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING VEGETATIVE ESTABLISHMENT OF ALL DISTURBED AREAS.
11. CONSTRUCTION TO COMMENCE DURING 2008.
12. PRIOR TO COMMENCING INDIVIDUAL LOT CONSTRUCTION THE PROPOSED LIMITS OF CLEARING SHALL BE SURVEYED AND FLAGGED TO LIMIT TREE CLEARING.

ESTABLISHMENT OF VEGETATIVE COVER

1. SLOPES SHALL NOT BE LEFT UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS THE INACTIVE WINTER SEASON.
2. ALL DISTURBED SLOPES EITHER NEWLY CREATED OR CURRENTLY EXPOSED SHALL BE SEEDED OR PROTECTED.
3. THE TOPSOIL SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS AND SHALL CONFORM WITH RHODE ISLAND'S STANDARD SPECIFICATION, M.20.
4. THE SEEDING DESIGN MIX SHALL BE COMPRISED OF TH FOLLOWING:

TYPE	LBS/AC.
CREEPING RED FESCUE	75
KENTUCKY BLUE GRASS	15
COLONIAL BENT GRASS	5
PERENNIAL RYE GRASS	5

5. EARLY SPRING OR LATE SUMMER SEEDING IS RECOMMENDED. LIME AND FERTILIZATION AS REQUIRED BY SOIL TESTING TO COMPLIMENT OR UPGRADE EXISTING CONDITIONS. THE SEED MIX SHALL BE INOCULATED WITHIN 24 HOURS, BEFORE MIXING AND PLANTING WITH APPROPRIATE INOCULUM FOR EACH VARIETY.
6. TEMPORARY TREATMENTS SHALL CONSIST OF HAY, STRAW OR FIBER MULCH OR PROTECTIVE COVERS SUCH AS A MAT OR A FIBER LINING. SIDE SLOPES OF PONDS SHALL BE TREATED WITH NORTH AMERICAN GREEN S150 EROSION CONTROL BLANKETS OR APPROVED EQUAL. THEY SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER. HAY OR STRAW APPLICATION SHALL BE IN THE AMOUNT OF 2 TONS/ACRE.
7. ALL HAY BALES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.
8. ALL FILL SHALL BE THOROUGHLY COMPACTED UPON PLACEMENT IN STRICT CONFORMANCE WITH THE RHODE ISLAND STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 202.
9. STOCKPILES OF TOPSOIL SHALL NOT BE LOCATED NEAR WATERWAY. THEY SHALL HAVE SIDE SLOPES NO GREATER THAN 2:1 AND SHALL BE TEMPORARILY SEEDED AND/OR STABILIZED. STOCKPILES SHALL BE SURROUNDED BY HAY BALES.
10. THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR PLAN IMPLEMENTATION AND FOR SEEING THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN. THE CONTRACTOR MUST REPAIR AND/OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR AND SHALL DO SO AT NO ADDITIONAL EXPENSE.
11. ALL AREAS DISTURBED BY POND CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING. PERMANENTLY SEEDED AREAS SHALL BE PROTECTED DURING ESTABLISHMENT WITH MULCH. ALL SEEDED AREAS WILL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHALL BE FERTILIZED AND RESEEDED AS NECESSARY.
12. REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENTATION CONTROL HANDBOOK" PREPARED BY THE USDA SOIL CONSERVATION SERVICE 1989, AS A GUIDE.
13. TEMPORARY HAY MULCH TO BE TACKED IN PLACE WITH NYLON MESH NETTING.
14. MAXIMUM GRADED SLOPE WITHIN SUBDIVISION TO BE 3:1, UNLESS OTHERWISE SHOWN.

STRUCTURAL MEASURES

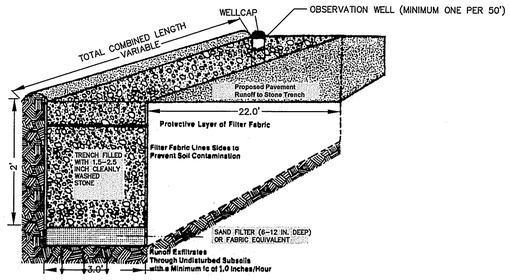
1. A POND DETENTION SYSTEM IS USED TO CONTROL RUNOFF. DISCHARGE OUTLETS ARE PROTECTED WITH RIP–RAP APRONS AND/OR LEVEL SPREADERS.
2. A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED IN THE BASIN IMMEDIATELY AFTER GRADING. THE SEEDING EXTEND TO AT LEAST THE DESIGN TOP WIDTH AND INCLUDE ANY OTHER AREAS DISTURBED BY CONSTRUCTION ACTIVITIES. ACTIVITIES SHALL BE CONFINED TO WITHIN THE LIMIT OF WORK AS SHOWN ON THE PLANS.
3. VIGOROUS VEGETATION SHALL BE MAINTAINED BY APPLYING LIME AND FERTILIZER. BARE OR ERODED AREAS SHALL BE IMMEDIATELY REPAIRED AND RESEEDED BY THE CONTRACTOR.
4. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AND INSPECTION OF THE DETENTION BASIN DURING AND UP TO A YEAR AFTER COMPLETION OF CONSTRUCTION. THE HOME OWNER'S ASSOCIATION (H.A.) IS RESPONSIBLE THEREAFTER. ANY UNDEVELOPED VEGETATION COVER IN THE BASIN WITHIN A A YEAR OF THE PROJECT COMPLETION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL RESEED ANY UNSTABILIZED AREAS AFTER A FULL GROWING SEASON AT NO ADDITIONAL EXPENSE TO THE OWNER.
5. THE GRASS IN THE BASIN SHALL BE ALLOWED TO GROW BETWEEN 2" – 10".
6. THE PERMANENT DETENTION BASINS SHALL BE INSTALLED. COVER WITH TOP SOIL AT THE END OF CONSTRUCTION.
7. THE DETENTION POND SHALL BE BUILT TO CONTROL RUNOFF FOR 2 THROUGH 100 YEAR STORM FREQUENCIES.
8. SIDE SLOPES OF THE BASIN SHALL BE SEEDED. THE SIDE SLOPES SHALL BE 3:1 MAXIMUM UNLESS OTHERWISE SHOWN.
9. ALL EMBANKMENTS OF THE BASIN SHALL BE THOROUGHLY COMPACTED UPON PLACEMENT IN STRICT CONFORMANCE WITH R.I. STANDARD SPECIFICATION SECTION 202.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SEDIMENTATION BASIN DURING CONSTRUCTION AND THE DETENTION POND UP TO THE ACCEPTANCE BY THE OWNER. THE HOME OWNER ASSOCIATION (H.A.) IS RESPONSIBLE THEREAFTER. THE H.A. SHALL INSPECT THE POND SEMIANNUALLY AND AFTER MAJOR STORMS.
11. A GRADUATED GAGE IS TO BE SET WITHIN THE POND TO MONITOR ACCUMULATED SEDIMENTS (SEE "MAINTENANCE" NOTE 12).
12. RIP RAP APRONS SHALL BE INSTALLED AT THE OUTLETS OF THE DETENTION POND. THE EMERGENCY SPILLWAY SHALL BE PROTECTED BY RIP RAP DOWNSTREAM AND UPSTREAM.
13. RIP RAP APRONS SHALL BE INSPECTED SEMIANNUALLY AND AFTER MAJOR STORMS. IF REPAIRS ARE NEEDED, THEY SHALL BE ACCOMPLISHED IMMEDIATELY.
14. THE CONSTRUCTION SUPERINTENDENT SHALL HAVE THE OVERALL RESPONSIBILITY FOR STRUCTURAL MEASURE IMPLEMENTATION AND FOR SEEING THAT APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN. 15.
15. REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" PREPARED BY USDA SOIL CONSERVATION SERVICE 1989, AS A GUIDE.

NON–STRUCTURAL MEASURES

1. CONSTRUCTION TRAFFIC SHALL BE LIMITED TO ACCESS ROADS, DRAINAGE EASEMENTS AND AREAS TO BE GRADED.
2. A STONE STABILIZATION PAD IS LOCATED AT THE SITE ENTRANCE TO REDUCE THE TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT OF WAY.
3. THE CONTRACTOR SHALL MAINTAIN THE ENTRANCE. THE MAINTENANCE SHALL INCLUDE TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND OR AS DIRECTED BY THE ENGINEER. ALL SEDIMENTS SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT OF WAY, MUST BE REMOVED IMMEDIATELY BY THE CONTRACTOR.
4. TOPSOIL SHALL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED FOR LATER USE. STOCK PILE LOCATION SHALL BE SUBJECT TO APPROVAL BY THE PROJECT ENGINEER. A SEDIMENT BARRIER SHOULD SURROUND ALL TOPSOIL STOCKPILES.
5. HAY BALES OR SILT FENCE SHALL BE INSTALLED DOWNSTREAM OUTSIDE THE LIMITS OF ANY PROPOSED CONSTRUCTION AS SHOWN ON THE SITE PLANS AND PRIOR TO THE COMMENCEMENT OF THE PROPOSED ALTERATION.
6. THE CONTRACTOR SHALL MAINTAIN HAY BALES. INSPECTION SHALL BE MADE AFTER EACH STORM EVENT AND REPAIRED OR REPLACED AS WARRANTED. THE CONTRACTOR SHALL CLEAN THE ACCUMULATED SEDIMENT IF HALF OF THE ORIGINAL HEIGHT OF THE BALES BECOMES FILLED WITH SEDIMENT.
7. THE CONTRACTOR SHALL CHECK THE HAY BALES OR SILT FENCE WEEKLY FOR UNDERMINING OR DETERIORATION.
8. THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR PLAN IMPLEMENTATION OF NON–STRUCTURAL MEASURES AND FOR SEEING THAT APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN.
9. REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" PREPARED BY THE USDA SOIL CONSERVATION SERVICE 1989, AS A GUIDE.

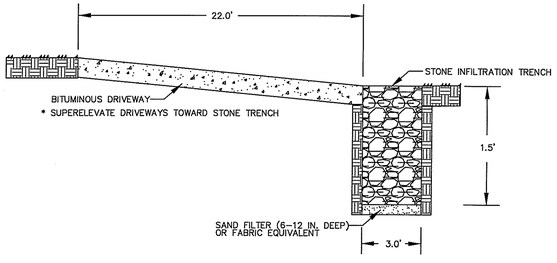
NOTE: ALL DRIVEWAY TRENCHES ARE 3.0 FT WIDE BY 1.5 FT DEEP

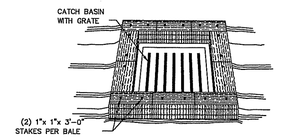
ALL DRIVEWAY TRENCHES MUST HAVE A MINIMUM SEPARATION OF 2' FROM THE GROUNDWATER TABLE.



LOT 1 DRIVEWAY TRENCH DETAIL

NOT TO SCALE





NOTES:

1. SHALL BE IN ACCORDANCE WITH SECTION 209 OF THE R.I. STANDARD SPECIFICATIONS.
2. THIS INLET PROTECTION CAN ALSO BE USED WHEN CONSTRUCTION SEQUENCING REQUIRES A CATCH BASIN TO BE EXPOSED TO SEDIMENT FROM THE SUBGRADE. THIS WILL BE ACHIEVED BY INSTALLING THE BALED HAY AS SHOWN ON THIS DETAIL INTO THE SUBGRADE.
3. THE PERIMETER CONFIGURATION OF THE BALED HAY WILL VARY DEPENDING ON THE PARTICULAR TYPE OF CATCH BASIN INLET BEING CONSTRUCTED. THE ENGINEER WILL PROVIDE SPECIFIC DIRECTION IN SUCH CASES.

BALED HAY CATCH BASIN INLET PROTECTION

NOT TO SCALE

R.I. STANDARD 9.8.0

CHRISTOPHER A. DUHAMEL
No. 5013
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
0	9-14-07	RIDEM PD SUBMISSION	C.R.D.

DETAIL SHEET

Richmond Hills - Phase 3

ASSESSOR'S PLAT 7D LOT 9
RICHMOND, RHODE ISLAND

PREPARED BY
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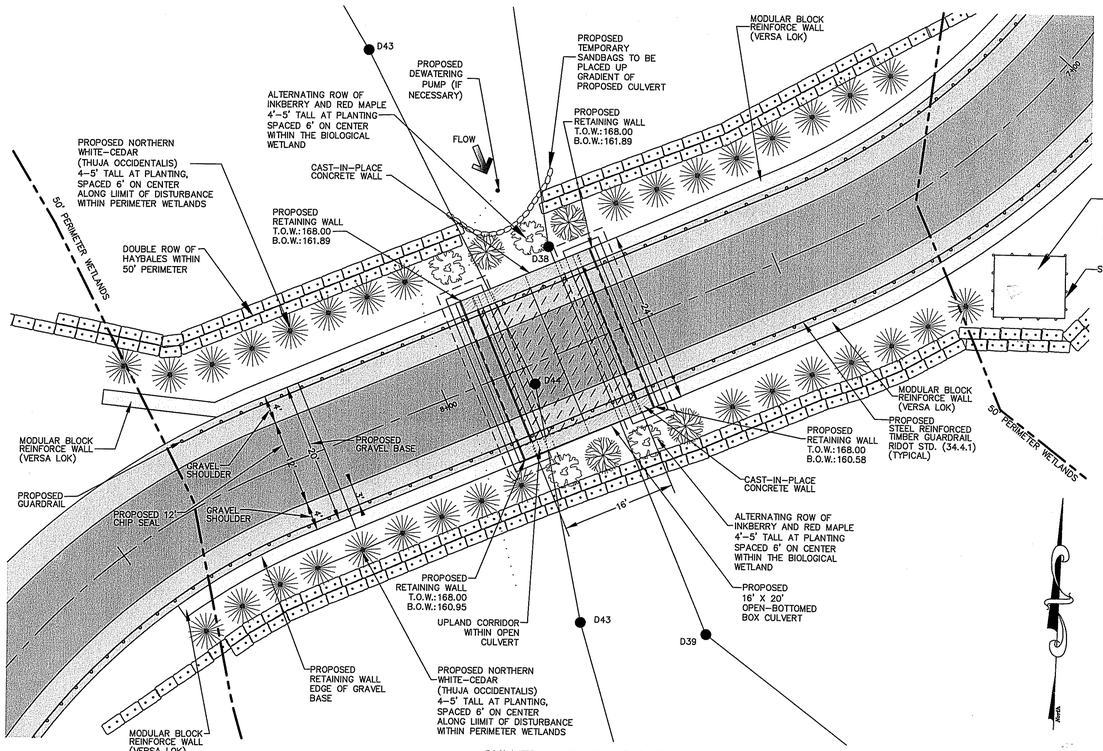
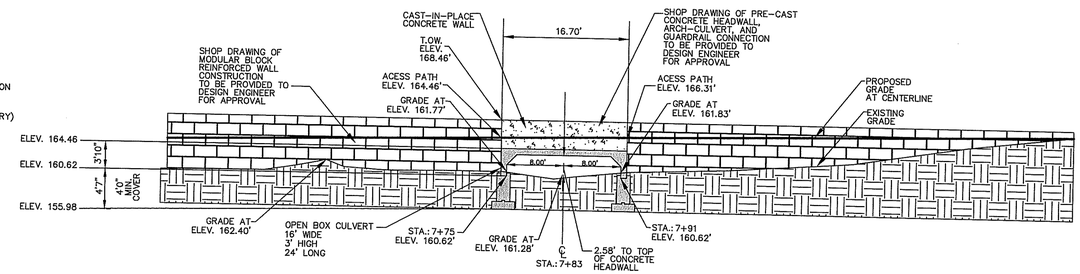
DWN. BY: C.R.D.



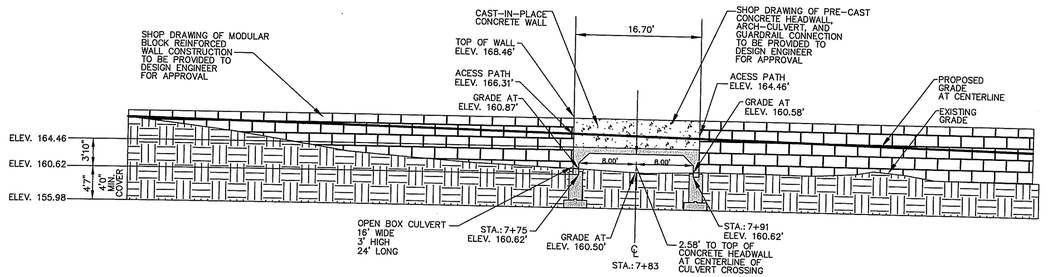
CULVERT CROSSING DETAIL & PLANTING DETAIL

1"=20'



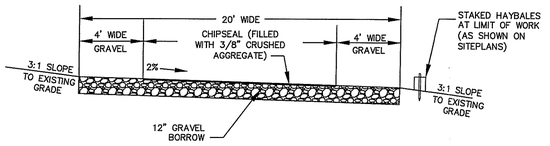
CULVERT CROSSING DETAIL NORTH ELEVATION (LOOKING SOUTH)

1"=10'



CULVERT CROSSING DETAIL SOUTH ELEVATION (LOOKING NORTH)

1"=10'



CROSS-SECTION OF EMERGENCY ACCESS ROAD

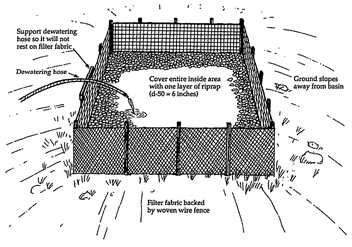
NOT TO SCALE

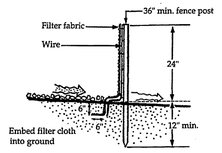
NOTES:
EMULSION: THE CRS-2L WITH POLYMER RUBBER MODIFICATION CONFORMING TO THE SPECIFICATIONS OF ASTM D2397 AND AASHTO M208. SHALL BE APPLIED AT A RATE OF .25 TO .45 GALLONS PER SQUARE YARD.
STONE: THE STONE SHALL BE 3/8" CRUSHED AGGREGATE PRE-TREATED WITH ASPHALT AND APPLIED AT A RATE OF 20 TO 25 LBS. PER SQ. YD. THE STONE SHALL BE SUPPLIED BY THE CONTRACTOR AND SHALL MEET THE FOLLOWING GRADATION.

SIEVE SIZE	PERCENT PASSING %, BY WEIGHT
1/2"	100
3/8"	85-100
#4	10-30
#8	0-10
#16	0-5

CHIPSEAL SPECIFICATIONS

NOT TO SCALE



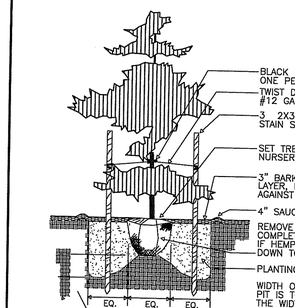


SEDIMENT SCREEN DETAIL

NOT TO SCALE

SEQUENCE OF CULVERT CONSTRUCTION

1. SURVEY AND STAKE CENTERLINE OF THE PROPOSED EMERGENCY ACCESS ROAD AND CULVERT CROSSING. THE DRAINAGE STRUCTURES AND PIPES, AND THE LIMIT OF DISTURBANCE.
2. PLACE SEDIMENTATION BARRIERS (HAY BALES OR SILT FENCE) AS SHOWN ON THE PLANS AND STAKED OUT IN THE FIELD. IN NO CASE IS THE LIMIT OF WORK TO EXTEND BEYOND THE SEDIMENTATION BARRIERS.
3. CULVERT CROSSING WORK TO BE PERFORMED DURING THE DRY SEASON WHEN THE WETLAND IS AT ITS DRIEST.
4. BEGIN CULVERT CROSSING WORK: UTILIZE THE EXISTING GRAVEL ROAD TO ALLOW EQUIPMENT TO ACCESS UPLAND SIDE OF PROJECT. INSTALL DEWATERING PUMP UPSTREAM (IF NECESSARY). REMOVE TREES AND BRUSH WITHIN LIMIT OF CULVERT CROSSING. INSTALL WATERMAIN. EXCAVATE FOR CULVERT FOOTINGS, REMOVE EXISTING CULVERT, ADD TEMPORARY BYPASS CULVERT, AND POUR CULVERT FOOTINGS. BACKFILL FOOTING EXCAVATION WITH EXCEPTION TO BEARING KEYWAY. PERFORM WETLAND REPLICATION WORK UNDER AND AROUND CULVERT STRUCTURE. INSTALL REINFORCED CONCRETE RETAINING WALLS. BACKFILL AROUND CULVERT STRUCTURE.
5. BEGIN ROAD, AND DRAINAGE WORK (CLEARING AND GRUBBING, EXCAVATING AND GRADING, ETC.). TOPSOIL TO BE STRIPPED AND STOCKPILED IN APPROVED AREAS. THE STOCKPILES ARE TO BE PROTECTED BY A ROW OF SEDIMENTATION BARRIER AND COVERED OR TEMPORARILY SEEDED. DIVERT ALL THE RUNOFF FROM DISTURBED AREAS TO THE PROPOSED BASINS.
6. INSTALL UTILITIES, AND DRAINAGE PIPES. IMMEDIATELY PLACE THE RIP RAP AND EROSION CONTROLS AT THE DISCHARGE POINTS AND SEED THE BASINS AND DISTURBED AREAS.
7. CLEAN CULVERT SPAN AS REQUIRED. THE TREE LIMBS, LEAVES, BOULDERS, ETC. SHALL BE REMOVED FROM THE BOTTOM OF THE CHANNEL BEFORE THE APPLICATION OF TOPSOIL. PLACE TOPSOIL IN BOTTOM OF CHANNEL AND BRING TO PERMANENT BOTTOM ELEVATION.
8. REMOVE ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING VEGETATIVE ESTABLISHMENT OF ALL DISTURBED AREAS.
9. CONSTRUCTION TO COMMENCE DURING 2008, SUBJECT TO NECESSARY APPROVALS.
10. ALL WORK ON THE CULVERT CROSSING IS TO TAKE PLACE DURING PERIODS OF LOW FLOW DURING DRY SEASON.
11. CONTRACTOR TO PROVIDE SHOP DRAWING OF GEOTECHNICAL ENGINEERING ANALYSIS FOR CULVERT, RETAINING WALLS AND FOOTINGS PRIOR TO CONSTRUCTION.



EVERGREEN TREE PLANTING DETAIL

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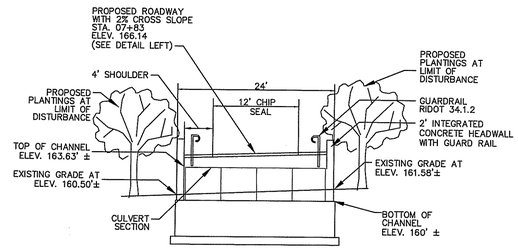

CULVERT CROSSING CROSS SECTION (LOOKING WEST)

1"=10'

SEP 17 2007

CHRISTOPHER A. DUHAMEL
No. 5013
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
0	9-04-07	RIDEM FWW SUBMISSION	C.R.D.

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AUGUST, 2007
DWN. BY: C.R.D.

SHEET 28 OF 28