

PROPERTY OWNER, DEVELOPER, AND APPLICANT INFORMATION

CAROVA CORPORATION (OWNER, DEVELOPER, AND PRIMARY APPLICANT)
 C/O GLENN GRAY, PRESIDENT
 P.O. DRAWER 4
 PORTSMOUTH, VA 23705

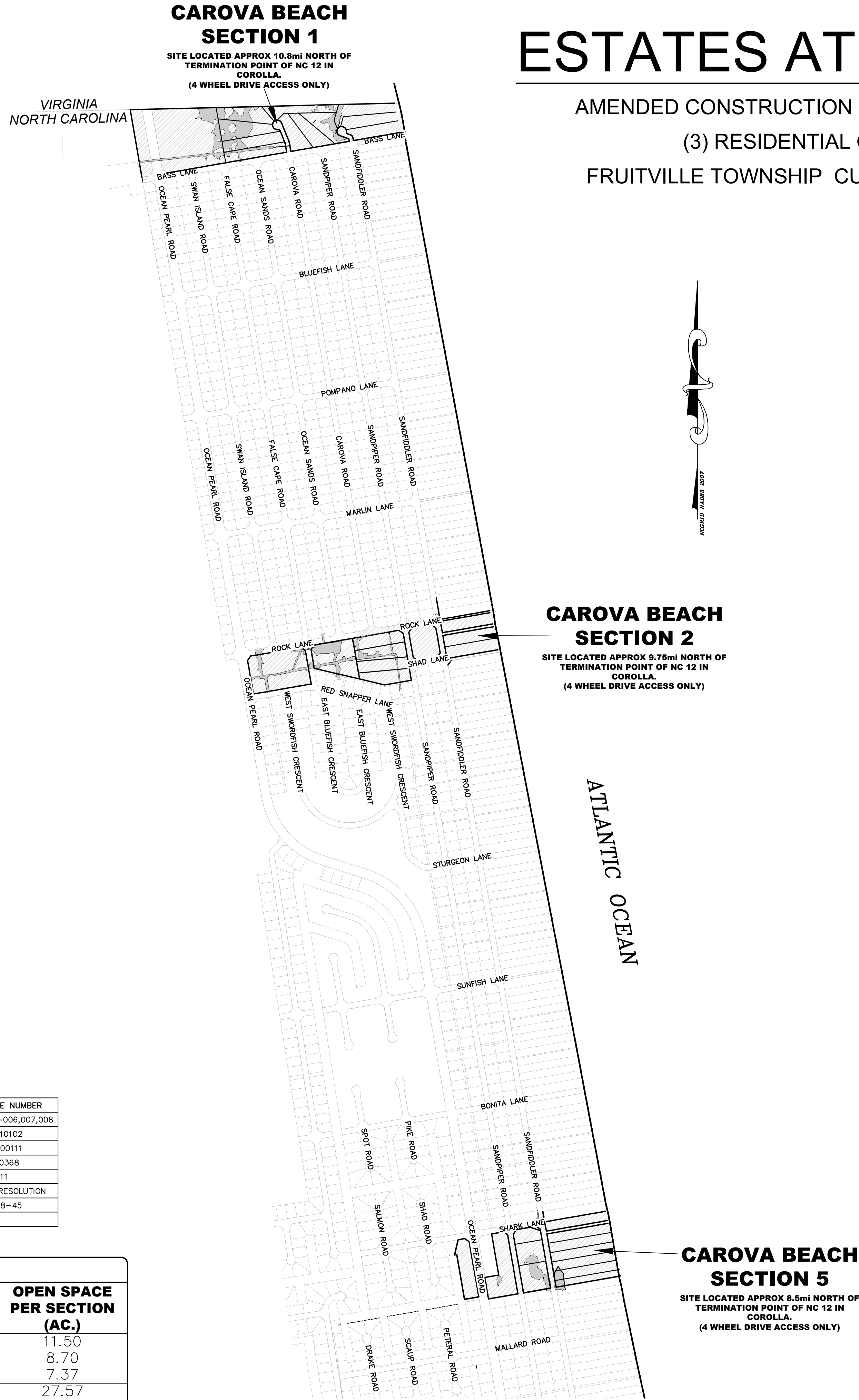
OCEAN SANDS CORPORATION (OWNER AND DEVELOPER, PRIMARY LOCAL CONTACT)
 C/O LARRY RIGGS, PRESIDENT
 P.O. BOX 400
 COROLLA, NC 27927

ERNEST BOWDEN (OWNER OF SINGLE EXISTING LOT ONLY)
 2155 SANDFIDDLER RD.
 COROLLA, NC 27927

THE FOLLOWING APPROVALS ARE REQUIRED PRIOR TO PROJECT CONSTRUCTION

PERMIT	AGENCY	SUBMISSION DATE	APPROVAL DATE	REFERENCE NUMBER
SEDIMENTATION AND EROSION CONTROL PERMIT	N.C.D.E.N.R. DIVISION OF LAND RESOURCES	12/30/2010	02/11/2011	CURRI-2011-006,007,008
STORMWATER MANAGEMENT PERMIT	N.C.D.E.N.R. DIVISION OF WATER QUALITY	12/30/2010	02/11/2011	SW7110102
SECTION 5 - 404 WETLAND FILL NWP 14	ARMY CORPS OF ENGINEERS	01/08/2010	04/06/2010	201000111
SECTION 5 - 401 WATER QUALITY CERTIFICATION No. 3704	N.C.D.E.N.R. DIVISION OF WATER QUALITY	01/08/2010	06/30/2010	10-0368
CAMA MAJOR PERMIT	N.C.D.E.N.R. DIVISION OF COASTAL MANAGEMENT	02/11/2011	07/14/2011	87-11
ROCK LN./SHARK LN./SHAD LN. - PORTIONS CLOSED	CURRITUCK COUNTY BOARD OF COMMISSIONERS	07/17/2008	02/02/2009	AMENDED RESOLUTION
PRELIMINARY PLAT/SPECIAL USE PERMIT	CURRITUCK COUNTY BOARD OF COMMISSIONERS	05/28/2009	09/08/2009	PB 08-45
PRE-CONSTRUCTION REVIEW APPROVAL	CURRITUCK COUNTY PLANNING DEPARTMENT	08/30/2011		

PROPOSED SUBDIVISIONS SUMMARY							
SECTION	TOTAL EXISTING LOT ACREAGE	NUMBER OF EXISTING LOTS	PROPOSED LOT SUMMARY		TOTAL PROPOSED LOT ACREAGE	OPEN SPACE PER SECTION (AC.)	
			RECOMBINATION	NEW TOTAL			
1	31.36 AC.	8	8	3	11	18.65 AC.	
2	22.04 AC.	4	4	4	8	8.70	
5	20.52 AC.	8	8	1	9	7.37	
TOTALS	73.92 AC.	20	20	8	28	44.59 AC.	



ESTATES AT CAROVA BEACH

AMENDED CONSTRUCTION DRAWINGS (REMOVE TWO CULVERTS)
 (3) RESIDENTIAL OPEN SPACE SUBDIVISIONS
 FRUITVILLE TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

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GENERAL	
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1 of 1	MARITIME FOREST MAP AND LANDSCAPING PLAN

BRSSELL PROFESSIONAL GROUP
 Engineers, Planners, Surveyors and Environmental Specialists

3655 North Carolina Highway 12
 P.O. Box 1048
 Corolla, North Carolina 27949
 (252) 261-3266
 (252) 261-3268
 FAX (252) 261-1760

COVER SHEET & SITE LOCATION

ESTATES AT CAROVA BEACH
 FRUITVILLE TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

OPEN SPACE SUBDIVISION

THIS DOCUMENT IS THE SOLE PROPERTY OF BRG, INC. OF KETTY PART OF THE MODIFICATION OF ANY DETAIL OR DESIGN IS NOT TO BE MADE WITHOUT THE EXPRESS WRITTEN CONSENT OF MARK S. BRISSELL, PRINCIPAL OF BRG, INC., CORP. 04/17/2012

NO.	DATE	DESCRIPTION	BY	CHKD.
1	05/27/09	REVISION PER REC. COMMENTS	MSB	MSB
2	06/10/11	REVISION PER REC. COMMENTS	MSB	MSB
3	06/10/11	REVISION PER REC. COMMENTS	MSB	MSB
4	06/10/11	REVISION PER REC. COMMENTS	MSB	MSB
5	06/10/11	REVISION PER REC. COMMENTS	MSB	MSB
6	06/10/11	REVISION PER REC. COMMENTS	MSB	MSB
7	06/10/11	REVISION PER REC. COMMENTS	MSB	MSB
8	06/10/11	REVISION PER REC. COMMENTS	MSB	MSB
9	06/10/11	REVISION PER REC. COMMENTS	MSB	MSB
10	06/10/11	REVISION PER REC. COMMENTS	MSB	MSB

DATE: 5-27-09 SCALE: 1" = 700'

DESIGNED: BPG CHECKED: MSB

DRAWN: WGG APPROVED: MSB

SHEET: 1 OF 25

CAD FILE: 416700B1

PROJECT NO: 4167

PRELIMINARY FOR REVIEW PURPOSES ONLY



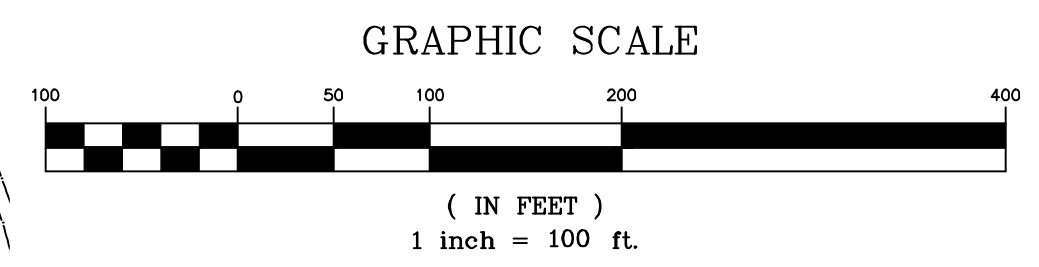
- NOTES**
- PROJECT NAME: ESTATES AT CAROVA BEACH SECTION 1 OPEN SPACE SUBDIVISION CURRITUCK COUNTY, NORTH CAROLINA
 - OWNER: CAROVA CORP. AND OCEAN SANDS CORP.
C/O LARRY RIGGS, PRESIDENT OCEAN SANDS CORP.
P.O. BOX 400
COROLLA, NC 27927
 - THESE PROPERTIES ARE IDENTIFIED ON THE CURRITUCK COUNTY TAX MAP #87A
P.I.N. NUMBERS: 087A-000-000A-0001 087A-000-000B-0001
087A-000-000B-0001 087A-000-000F-0001
087A-000-000C-0001 087A-000-000G-0001
087A-000-000D-0001 087A-000-000H-0001
 - SUBDIVISION RECORDED REFERENCES: D.B. 115, PG. 453
P.C. 2, SL. 113
 - TOTAL AREA OF EXISTING PARCELS: 1,365,964± SF 31.36± AC
 - THESE PROPERTIES LAY IN FLOOD HAZARD ZONES VE-16, VE-14, VE-12, AE-6 AND AE-5 AS SHOWN ON THE F.E.M.A. F.I.R.M. PANELS 9012J & 9022J EFFECTIVE DECEMBER 16, 2005. SUBJECT TO CHANGE BY F.E.M.A.
 - THESE PROPOSED PARCELS CONTAIN APPROXIMATELY 5.25 ACRES OF ACOE "404" JURISDICTIONAL WETLANDS. WETLANDS DELINEATED IN MARCH AND SEPTEMBER, 2007 BY ENVIRONMENTAL PROFESSIONALS OF KILL DEVIL HILLS, NORTH CAROLINA AND APPROVED BY U.S. ARMY CORP OF ENGINEERS, SAH-2008-02734. U.S.A.C.E. APPROVAL MAY BE REQUIRED PRIOR TO DEVELOPMENT OF CERTAIN AREAS ON THIS PROPERTY.
 - EXISTING RIGHT-OF-WAY WIDTHS: 60 FT. & 100 FT. (OCEAN PEARL RD. ONLY)
PROPOSED GRADED SAND TRAVELWAY WIDTH: 18 FT.
PROPOSED TRAVELWAY LENGTH: 798 LF.
 - 10 FT DRAINAGE AND UTILITY EASEMENT HEREBY RESERVED ALONG ALL SIDE PROPERTY LINES.
15 FT DRAINAGE AND UTILITY EASEMENT HEREBY RESERVED ALONG ALL REAR PROPERTY LINES.
20 FT DRAINAGE AND UTILITY EASEMENT HEREBY RESERVED ALONG ALL RIGHT-OF-WAYS.
 - PROPERTY ZONING: 'R02' (OUTER BANKS LIMITED ACCESS RESIDENTIAL DISTRICT)
ADJACENT PROPERTIES ZONING: 'R02'
 - LOTS WILL BE SERVICED BY PRIVATE ON-SITE WELL AND ON-SITE SEPTIC SYSTEMS.
 - ALL SURVEY DATA IS REFERENCED TO NAVD 1988.
 - AREA DETERMINED BY COORDINATE METHOD.
 - LOTS WILL BE FOR RESIDENTIAL USE ONLY.
 - AT ITS SEPTEMBER 6, 2005 MEETING, THE CURRITUCK COUNTY BOARD OF COMMISSIONERS VOTED TO APPROVE THE CLOSING OF PORTIONS OF THE RIGHTS OF WAY FOR SWAN ISLAND RD., FALSE CAPE RD., OCEAN SANDS RD., CAROVA RD., SANDPIPER RD. AND SANDFIDDLER RD. THESE AFOREMENTIONED CLOSURES WERE LOCATED COMPLETELY WITHIN THE SUBJECT PROPERTY OF THIS DEVELOPMENT.

DEVELOPMENT SUMMARY:

TOTAL EXISTING PARCEL AREAS:	1,365,964± SF	31.36± AC
TOTAL AREA PROPOSED RESIDENTIAL LOTS:	812,523± SF	18.65± AC
NUMBER OF PROPOSED LOTS:	11 LOTS	
NUMBER OF EXISTING LOTS:	8 LOTS	

OPEN SPACE SUMMARY:

OPEN SPACE REQUIRED:	476,242 SF	10.93 AC
OPEN SPACE PROVIDED:	520,467 SF	11.95 AC
SURPLUS OPEN SPACE PROVIDED:	44,225 SF	1.02 AC
OPEN SPACE UPLANDS:	456,862 SF	10.49 AC
UPLAND PERCENTAGE:	87.78 %	



PLAN LEGEND

	PROPERTY BOUNDARY
	ADJOINING PROPERTY BOUNDARY
	RIGHT OF WAY
	PROPOSED PARCEL BOUNDARY
	EASEMENT LINE
	EDGE OF EXISTING TRAVELWAY
	EXISTING FENCELINE
	EXISTING SHOULDERLINE
	EXISTING DRAINAGE DITCH
	FIRST LINE OF STABLE VEGETATION
	F.E.M.A. FLOOD ZONE BOUNDARY
	AOE "404" WETLAND BOUNDARY
	WETLAND AREA
	PROPOSED IMPROVED TRAVELWAY
	PROPOSED OPEN SPACE AREA

BISSELL PROFESSIONAL GROUP
Engineers, Planners, Surveyors
and Environmental Specialists

3017 North Creton Highway
Kitty Hawk, North Carolina 27949
FAX (252) 281-1760

OVERVIEW

ESTATES AT CAROVA BEACH
CURRITUCK COUNTY
NORTH CAROLINA

SECTION 1

REV. NO.	DATE	DESCRIPTION	BY	CHK
1	5/27/09	ISSUED FOR PERMITS	WJK	MSB
2	7/13/11	REVISED LOTS AND AREAS	WJK	MSB
3	7/27/14	REVISED LOTS AND AREAS	WJK	MSB

DATE: 5-27-09 SCALE: 1" = 100'

DESIGNED: BPG CHECKED: MSB

DRAWN: WJK APPROVED: MSB

SHEET: 2 OF 25

CAD FILE: 416700B1

PROJECT NO: 4167

NOW OR FORMERLY
STATE OF VIRGINIA
FALSE CAPE STATE PARK
PIN 2358135108000
DB 94, PG 52
4,232.51 AC.

NOW OR FORMERLY
STATE OF VIRGINIA
FALSE CAPE STATE PARK
PIN 2358135108000
DB 94, PG 52
4,232.51 AC.

VIRGINIA
NORTH CAROLINA

ZONE
AE
EL:6'

ZONE
AE
EL:6'

ZONE
AE
EL:6'

ZONE
AE
EL:6'

ZONE
AE
EL:6'

ZONE
AE
EL:6'

NOW OR FORMERLY
CAROVA CORP &
OCEAN SANDS CO.
CAROVA BEACH
SECTION 1, LOT H
PIN 087A-000-000H-0001
DB 115, PG 453
PC 2, SL 113
PARCEL AREA: 88,765 SF, 2.04 AC

NOW OR FORMERLY
CAROVA CORP &
OCEAN SANDS CO.
CAROVA BEACH
SECTION 1, LOT G
PIN 087A-000-000G-0001
DB 115, PG 453
PC 2, SL 113
PARCEL AREA: 200,145 SF, 4.59 AC

NOW OR FORMERLY
CAROVA CORP &
OCEAN SANDS CO.
CAROVA BEACH
SECTION 1, LOT F
PIN 087A-000-000F-0001
DB 115, PG 453
PC 2, SL 113
PARCEL AREA: 217,436 SF, 4.99

NOW OR FORMERLY
CAROVA CORP &
OCEAN SANDS CO.
CAROVA BEACH
SECTION 1, LOT E
PIN 087A-000-000E-0001
DB 115, PG 453
PC 2, SL 113
PARCEL AREA: 199,128 SF, 4.57 AC

NOW OR FORMERLY
CAROVA CORP &
OCEAN SANDS CO.
CAROVA BEACH
SECTION 1, LOT D
PIN 087A-000-000D-0001
DB 115, PG 453
PC 2, SL 113
PARCEL AREA: 180,820 SF, 4.15 AC

NOW OR FORMERLY
UNITED STATES FISH &
WILDLIFE SERVICES
U.S. DEPT. OF THE INTERIOR
CAROVA BEACH
TRACT 15, CURRITUCK NATIONAL
WILDLIFE REFUGE, H/284
PIN 0086-000-006A-0000
DB 733, PG 258
284± ACRES

NOW OR FORMERLY
JOSEPH HEFFERNAN
CAROVA BEACH
PORTION OF TRACT 15
PIN 0086-000-000B-0000
PC 1, SL 284

NOW OR FORMERLY
JOSEPH & DENISE
HEFFERNAN
CAROVA BEACH
SECTION 1, BLOCK 32, LOT 1
PIN 087A-034-0001-0001
DB 554, PG 260
PC 2, SL 113

NOW OR FORMERLY
WILLIAM HAYCOX
ERNEST DODSON
CAROVA BEACH
SECTION 1, BLOCK 25, LOT 24
PIN 087A-025-0024-0001
DB 313, PG 641
PC 2, SL 113

NOW OR FORMERLY
WILLIAM HAYCOX
ERNEST DODSON
CAROVA BEACH
SECTION 1, BLOCK 25, LOT 1
PIN 087A-025-0001-0001
DB 313, PG 641
PC 2, SL 113

NOW OR FORMERLY
ANDREW & SARAH
LLOYD
CAROVA BEACH
SECTION 1, BLOCK 24, LOT 24
PIN 087A-024-0024-0001
DB 749, PG 594
PC 2, SL 113

NOW OR FORMERLY
RICHARD & ELIZABETH
THIER
CAROVA BEACH
SECTION 1, BLOCK 24, LOT 1
PIN 087A-024-0001-0001
DB 114, PG 745
PC 2, SL 113

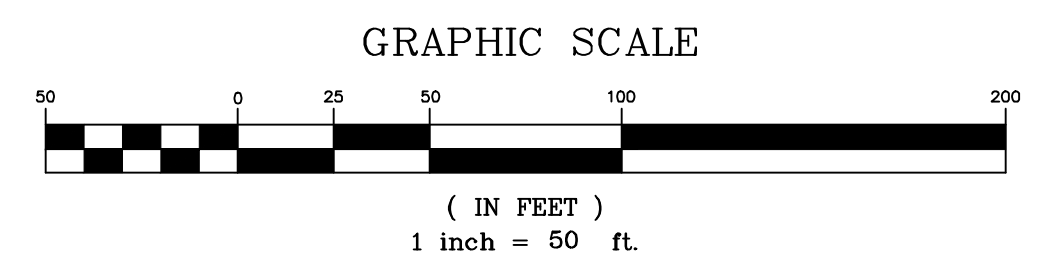
NOW OR FORMERLY
MITCHELL KNIGHT
AUSTIN BOYLES
CAROVA BEACH
SECTION 1, BLOCK 17, LOT 24
PIN 087A-017-0024-0001
DB 936, PG 382
PC 2, SL 113

NOW OR FORMERLY
CARLOS & JENNIFER
DILEO
CAROVA BEACH
SECTION 1, BLOCK 17, LOT 1
PIN 087A-017-0001-0001
DB 775, PG 533
PC 2, SL 113

NOW OR FORMERLY
JAMES & MIRIAM
CAROVA BEACH
SECTION 1, BLOCK 16, LOT 24
PIN 087A-016-0024-0001
DB 250, PG 699
PC 2, SL 113

PLAN LEGEND

- PROPERTY BOUNDARY
- ADJOINING PROPERTY BOUNDARY
- RIGHT OF WAY
- EDGE OF EXISTING TRAVELWAY
- EXISTING SHOULDER
- EXISTING DRAINAGE DITCH
- FIRST LINE OF STABLE VEGETATION
- EXISTING GRADE TOP OF BANK
- EXISTING GRADE TOE OF SLOPE
- F.E.M.A. FLOOD ZONE BOUNDARY
- ACOE "404" WETLAND BOUNDARY
- WETLAND AREA
- EXISTING GRADE CONTOUR
- EXISTING SPOT ELEVATION (ORIGINAL SURVEY)
- EXISTING SPOT ELEVATION (9-28-12 SURVEY)
- EXISTING FENCELINE
- OVERHEAD UTILITY LINE
- SOIL BOUNDARY
- BEACHES-NEWMAN ASSOCIATION
- COROLLA FINE SAND
- COROLLA-DUCKSTON COMPLEX
- NEWMAN-COROLLA COMPLEX
- EXISTING TREE 18" DIA OR LARGER TRUNK



BISSELL
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Kitty Hawk, North Carolina 27949
FAX (252) 281-1760

EXISTING FEATURES

ESTATES AT CAROVA BEACH
CURRITUCK COUNTY, NORTH CAROLINA
SECTION 1 WEST

NO.	DATE	BY	REVISIONS
1	5/27/09	BPG	ISSUE FOR PERMITS
2	7/17/09	MSB	REVISIONS TO PERMITS
3	7/17/09	MSB	REVISIONS TO PERMITS

DATE: 5-27-09 SCALE: 1" = 50'

DESIGNED: BPG CHECKED: MSB

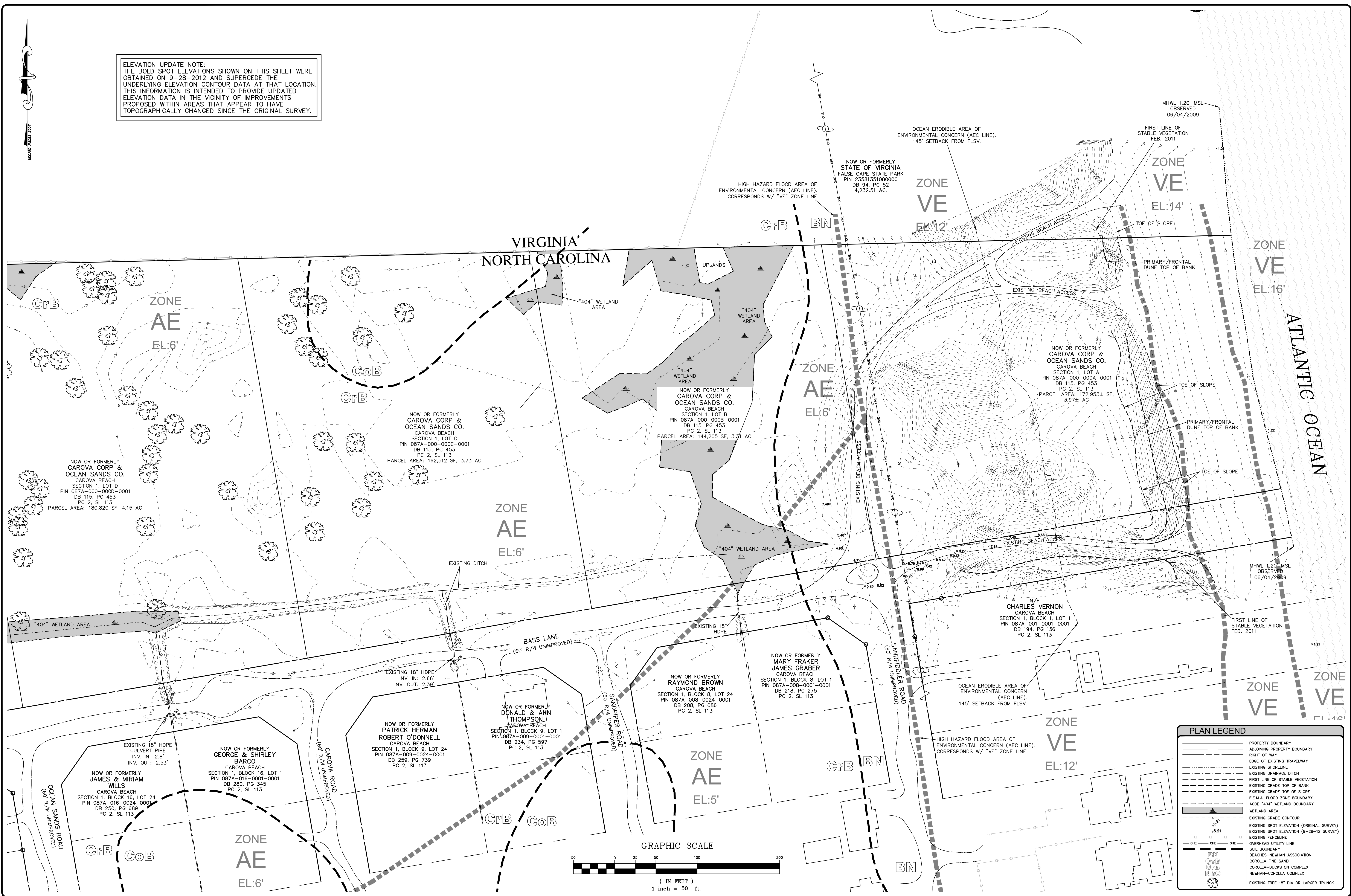
DRAWN: WJK APPROVED: MSB

SHEET: 3 OF 25

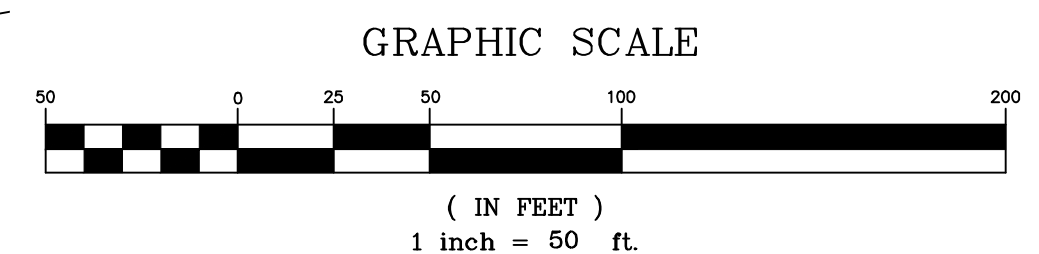
CAD FILE: 416700B1

PROJECT NO: 4167

ELEVATION UPDATE NOTE:
 THE BOLD SPOT ELEVATIONS SHOWN ON THIS SHEET WERE OBTAINED ON 9-28-2012 AND SUPERCEDE THE UNDERLYING ELEVATION CONTOUR DATA AT THAT LOCATION. THIS INFORMATION IS INTENDED TO PROVIDE UPDATED ELEVATION DATA IN THE VICINITY OF IMPROVEMENTS PROPOSED WITHIN AREAS THAT APPEAR TO HAVE TOPOGRAPHICALLY CHANGED SINCE THE ORIGINAL SURVEY.



REVISIONS	
NO.	DATE
1	10/22/09
2	10/23/09
3	10/23/09
4	10/23/09
5	10/23/09
6	10/23/09
7	10/23/09
8	10/23/09
9	10/23/09
10	10/23/09



Blissell Professional Group
 3017 North Craton Highway
 Kitty Hawk, North Carolina 27949
 PHONE: (252) 281-1700
 FAX: (252) 281-1700

Blissell
 PROFESSIONAL GROUP
 Engineers, Planners, Surveyors
 and Environmental Specialists

EXISTING FEATURES
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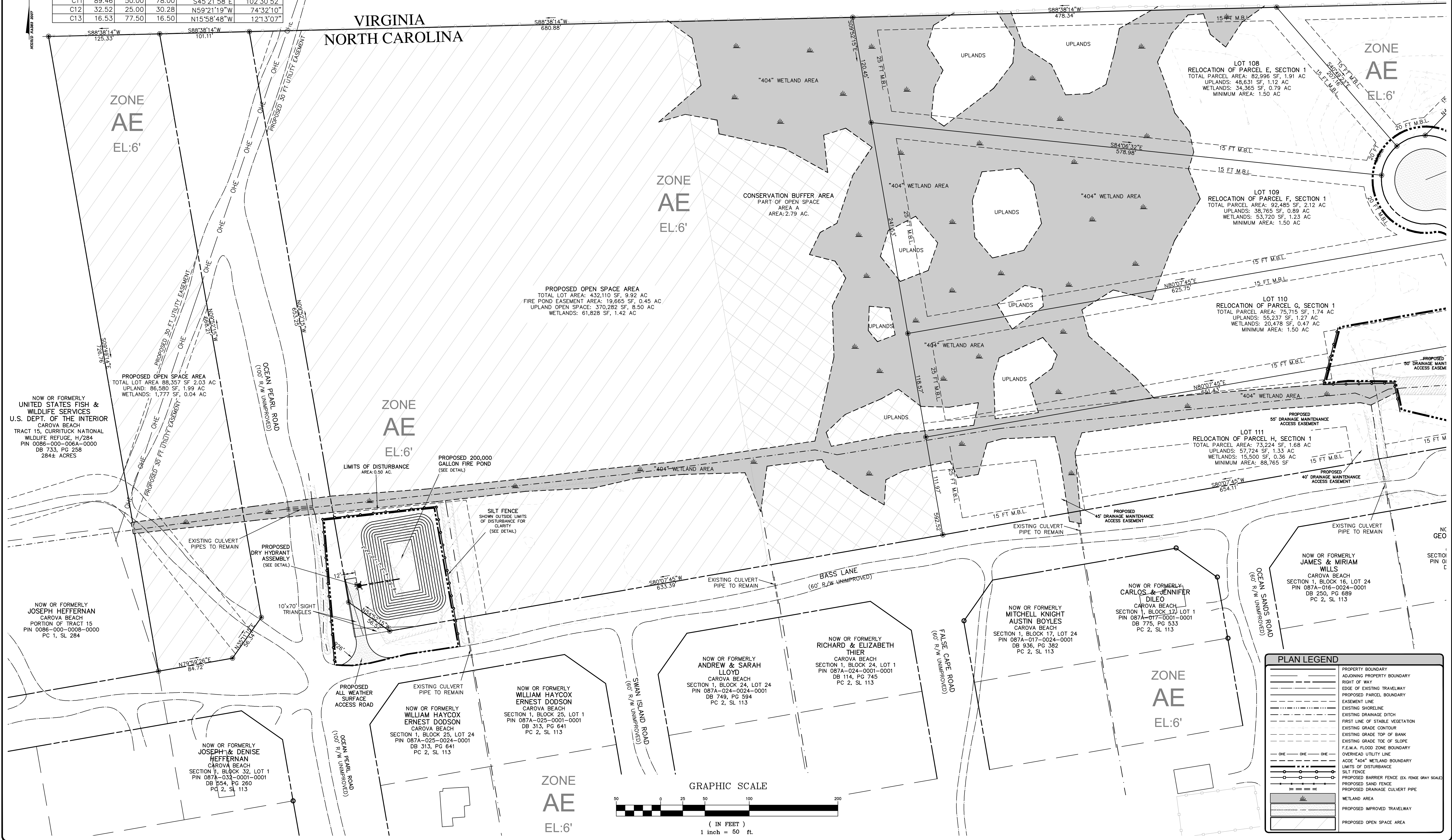
ESTATES AT CAROVA BEACH
 NORTH CAROLINA
 CURRITUCK COUNTY
 FRUITVILLE TOWNSHIP
SECTION 1 EAST

DATE:	5-27-09	SCALE:	1" = 50'
DESIGNED:	BPG	CHECKED:	MSB
DRAWN:	WGW	APPROVED:	MSB
SHEET:	4	OF	25
CAD FILE:	416700B1		
PROJECT NO.:	4167		

CURVE TABLE					
CURVE	LENGTH	RADIUS	CHORD	BEARING	DELTA
C1	48.23	45.00	45.96	N40°34'41"W	61°24'52"
C2	32.52	25.00	30.28	S34°01'06"E	74°32'02"
C3	19.19	50.00	19.07	N07°44'46"W	21°59'21"
C4	73.38	50.00	66.97	N60°46'59"W	84°05'06"
C5	42.47	50.00	41.21	S52°50'22"W	48°40'12"
C6	87.08	50.00	76.49	S21°23'26"E	99°47'23"
C7	26.12	122.50	26.07	N15°58'48"W	121°3'07"
C8	59.88	50.00	56.37	N56°23'57"W	68°37'23"
C9	35.00	50.00	34.29	S69°13'59"W	40°06'45"
C10	37.77	50.00	36.88	S27°32'02"W	43°17'09"
C11	89.46	50.00	78.00	S45°21'58"E	102°30'52"
C12	32.52	25.00	30.28	N59°21'19"W	74°32'10"
C13	16.53	77.50	16.50	N15°58'48"W	121°3'07"

LINE TABLE		
LINE	LENGTH	BEARING
L1	27.22	S09°52'15"E
L2	25.50	N71°17'07"W
L3	27.22	S09°52'15"E
L4	1.11	N22°05'22"W
L5	4.40	N22°05'22"W

NOW OR FORMERLY
STATE OF VIRGINIA
FALSE CAPE STATE PARK
PIN 23581351080000
DB 94, PG 52
4,232.51 AC.



NOW OR FORMERLY
UNITED STATES FISH &
WILDLIFE SERVICES
U.S. DEPT. OF THE INTERIOR
CAROVA BEACH
TRACT 15, CURRITUCK NATIONAL
WILDLIFE REFUGE, H/284
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284± ACRES

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PORTION OF TRACT 15
PIN 0086-000-0008-0000
PC 1, SL 284

NOW OR FORMERLY
JOSEPH & DENISE
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CAROVA BEACH
SECTION 1, BLOCK 32, LOT 1
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DB 554, PG 260
PC 2, SL 113

NOW OR FORMERLY
WILLIAM HAYCOX
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SECTION 1, BLOCK 25, LOT 24
PIN 087A-025-0024-0001
DB 313, PG 641
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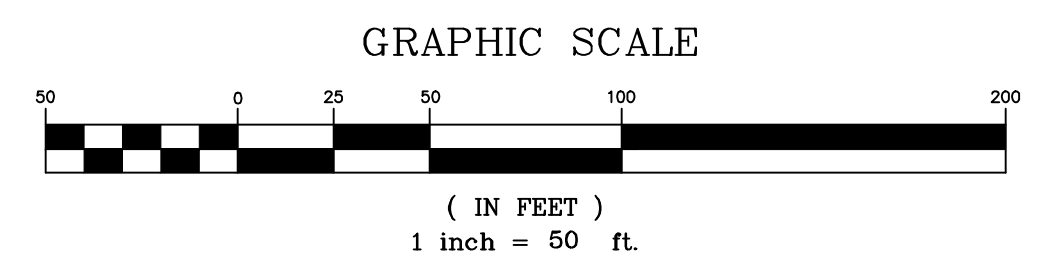
NOW OR FORMERLY
RICHARD & ELIZABETH
THIER
CAROVA BEACH
SECTION 1, BLOCK 24, LOT 1
PIN 087A-024-0001-0001
DB 114, PG 745
PC 2, SL 113

NOW OR FORMERLY
MITCHELL KNIGHT
AUSTIN BOYLES
CAROVA BEACH
SECTION 1, BLOCK 17, LOT 24
PIN 087A-017-0024-0001
DB 936, PG 382
PC 2, SL 113

NOW OR FORMERLY
CARLOS & JENNIFER
DILEO
CAROVA BEACH
SECTION 1, BLOCK 17, LOT 1
PIN 087A-017-0001-0001
DB 775, PG 533
PC 2, SL 113

NOW OR FORMERLY
JAMES & MIRIAM
WILLS
CAROVA BEACH
SECTION 1, BLOCK 16, LOT 24
PIN 087A-016-0024-0001
DB 250, PG 689
PC 2, SL 113

PLAN LEGEND	
[Symbol]	PROPERTY BOUNDARY
[Symbol]	ADJOINING PROPERTY BOUNDARY
[Symbol]	RIGHT OF WAY
[Symbol]	EDGE OF EXISTING TRAVELWAY
[Symbol]	PROPOSED PARCEL BOUNDARY
[Symbol]	EASEMENT LINE
[Symbol]	EXISTING SHORELINE
[Symbol]	EXISTING DRAINAGE DITCH
[Symbol]	FIRST LINE OF STABLE VEGETATION
[Symbol]	EXISTING GRADE CONTOUR
[Symbol]	EXISTING GRADE TOP OF BANK
[Symbol]	EXISTING GRADE TOE OF SLOPE
[Symbol]	F.E.M.A. FLOOD ZONE BOUNDARY
[Symbol]	OVERHEAD UTILITY LINE
[Symbol]	ACOE "404" WETLAND BOUNDARY
[Symbol]	LIMITS OF DISTURBANCE
[Symbol]	PROPOSED BARRIER FENCE (EX. FENCE GRAY SCALE)
[Symbol]	PROPOSED SAND FENCE
[Symbol]	PROPOSED DRAINAGE CULVERT PIPE
[Symbol]	WETLAND AREA
[Symbol]	PROPOSED IMPROVED TRAVELWAY
[Symbol]	PROPOSED OPEN SPACE AREA



PROPOSED SUBDIVISION PLAN

ESTATES AT CAROVA BEACH
FRUITVILLE TOWNSHIP
CURRITUCK COUNTY
NORTH CAROLINA
SECTION 1 WEST

NO.	DATE	BY	REVISIONS
1	5/27/09	BPG	ISSUE FOR PERMITS
2	6/22/09	BPG	REVISIONS TO PERMITS
3	7/27/09	BPG	REVISIONS TO PERMITS
4	8/11/09	BPG	REVISIONS TO PERMITS
5	8/11/09	BPG	ISSUE FOR PERMITS

DATE: 5-27-09 SCALE: 1" = 50'
DESIGNED: BPG CHECKED: MSB
DRAWN: WJK APPROVED: MSB
SHEET: 5 OF 25
CAD FILE: 416700B1
PROJECT NO.: 4167

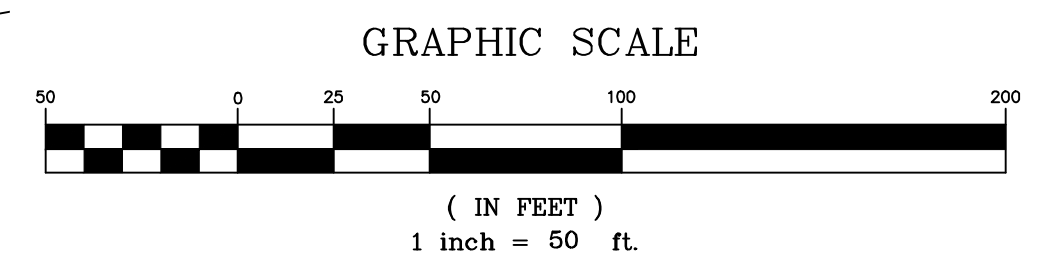
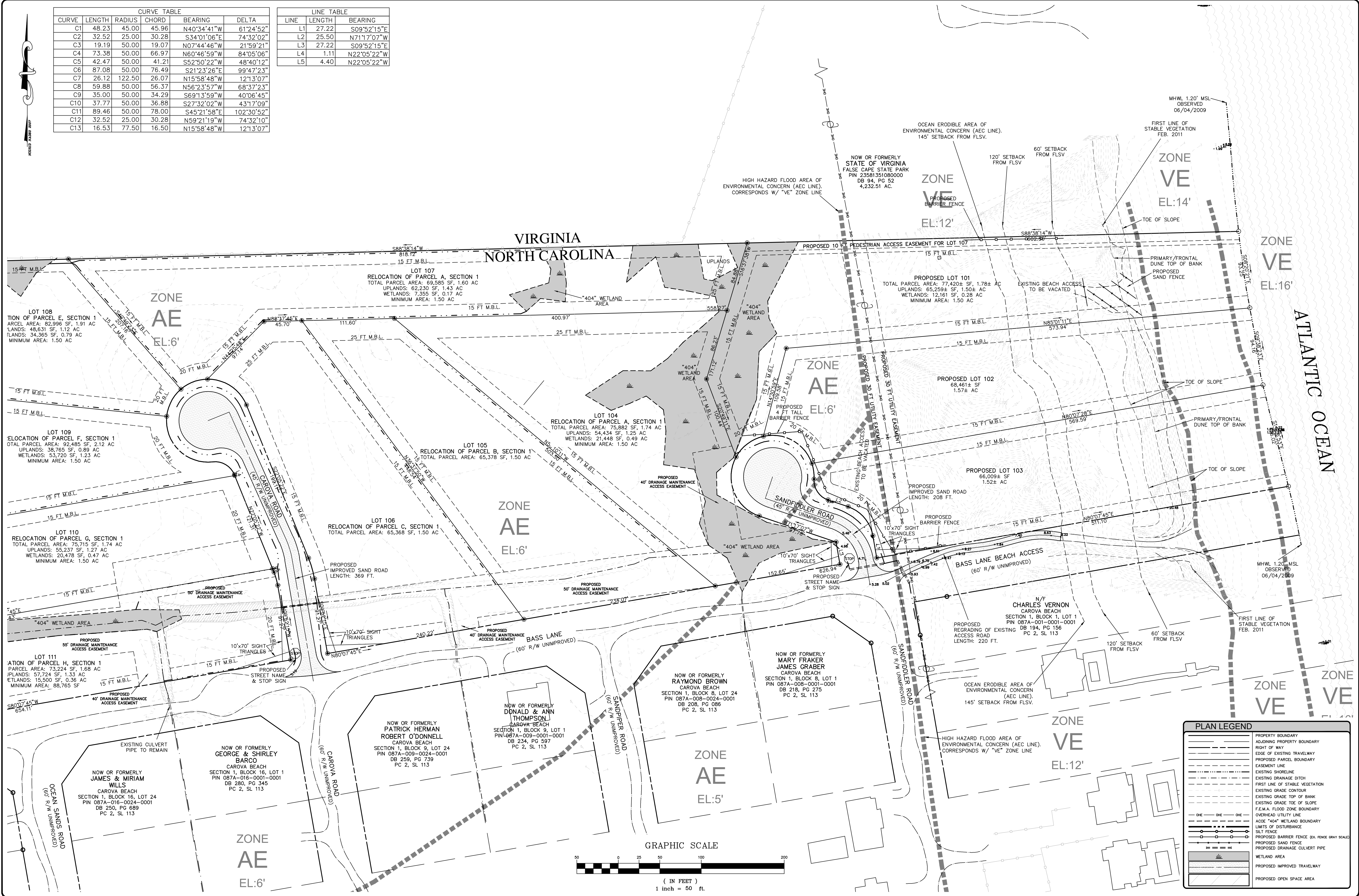
Blissell Professional Group
3017 North Croatan Highway
Kitty Hawk, North Carolina 27949
Phone: (252) 285-1760
Fax: (252) 285-1760

Blissell
PROFESSIONAL GROUP
Engineers, Planners, Surveyors
and Environmental Specialists

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CURVE TABLE					
CURVE	LENGTH	RADIUS	CHORD	BEARING	DELTA
C1	48.23	45.00	45.96	N40°34'41"W	61°24'52"
C2	32.52	25.00	30.28	S34°01'06"E	74°32'02"
C3	19.19	50.00	19.07	N07°44'46"W	21°59'21"
C4	73.38	50.00	66.97	N60°46'59"W	84°05'06"
C5	42.47	50.00	41.21	S52°50'22"W	48°40'12"
C6	87.08	50.00	76.49	S21°23'26"E	99°47'23"
C7	26.12	122.50	26.07	N15°58'48"W	12°13'07"
C8	59.88	50.00	56.37	N56°23'57"W	68°37'23"
C9	35.00	50.00	34.29	S69°13'59"W	40°06'45"
C10	37.77	50.00	36.88	S27°32'02"W	43°17'09"
C11	89.46	50.00	78.00	S45°21'58"E	102°30'52"
C12	32.52	25.00	30.28	N59°21'19"W	74°32'10"
C13	16.53	77.50	16.50	N15°58'48"W	12°13'07"

LINE TABLE		
LINE	LENGTH	BEARING
L1	27.22	S09°52'15"E
L2	25.50	N71°17'07"W
L3	27.22	S09°52'15"E
L4	1.11	N22°05'22"W
L5	4.40	N22°05'22"W



PLAN LEGEND	
[Symbol]	PROPERTY BOUNDARY
[Symbol]	ADJOINING PROPERTY BOUNDARY
[Symbol]	RIGHT OF WAY
[Symbol]	EDGE OF EXISTING TRAVELWAY
[Symbol]	PROPOSED PARCEL BOUNDARY
[Symbol]	EASEMENT LINE
[Symbol]	EXISTING SHORELINE
[Symbol]	EXISTING DRAINAGE DITCH
[Symbol]	FIRST LINE OF STABLE VEGETATION
[Symbol]	EXISTING GRADE CONTOUR
[Symbol]	EXISTING GRADE TOP OF BANK
[Symbol]	OVERHEAD UTILITY LINE
[Symbol]	F.E.M.A. FLOOD ZONE BOUNDARY
[Symbol]	ACOE "404" WETLAND BOUNDARY
[Symbol]	LIMITS OF DISTURBANCE
[Symbol]	SILT FENCE
[Symbol]	PROPOSED BARRIER FENCE (EX. FENCE GRAY SCALE)
[Symbol]	PROPOSED SAND FENCE
[Symbol]	PROPOSED DRAINAGE CULVERT PIPE
[Symbol]	WETLAND AREA
[Symbol]	PROPOSED IMPROVED TRAVELWAY
[Symbol]	PROPOSED OPEN SPACE AREA

Blissell Professional Group
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FAX: (252) 281-1700

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PROPOSED SUBDIVISION PLAN

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ESTATES AT CAROVA BEACH
NORTH CAROLINA
FRUITVILLE TOWNSHIP
CURRITUCK COUNTY

SECTION 1 EAST

NO.	DATE	BY	REVISIONS
1	5-27-09	WPK	ISSUE FOR PERMITS
2	7-14-09	WPK	REVISED PERMITS
3	7-29-09	WPK	REVISED PERMITS
4	10-29-09	WPK	REVISED PERMITS
5	11-20-09	WPK	REVISED PERMITS

DATE: 5-27-09 SCALE: 1" = 50'
DESIGNED: WPK CHECKED: MSB
DRAWN: WPK APPROVED: MSB

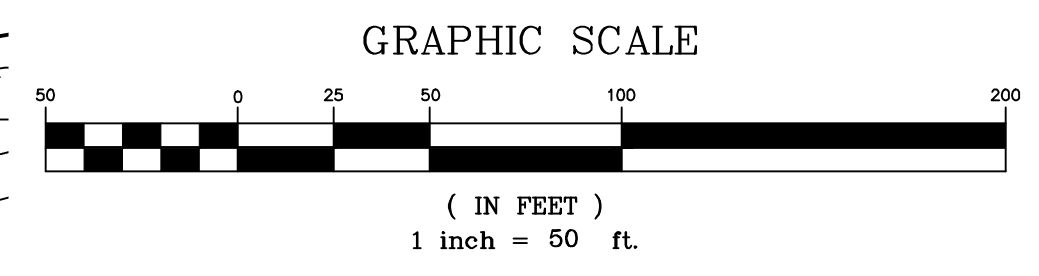
SHEET: 6 OF 25
CAD FILE: 416700B1
PROJECT NO.: 4167

ELEVATION UPDATE NOTE:
 THE BOLD SPOT ELEVATIONS SHOWN ON THIS SHEET WERE OBTAINED ON 9-28-2012 AND SUPERCEDE THE UNDERLYING ELEVATION CONTOUR DATA AT THAT LOCATION. THIS INFORMATION IS INTENDED TO PROVIDE UPDATED ELEVATION DATA IN THE VICINITY OF IMPROVEMENTS PROPOSED WITHIN AREAS THAT APPEAR TO HAVE TOPOGRAPHICALLY CHANGED SINCE THE ORIGINAL SURVEY.



PLAN LEGEND

- PROPERTY BOUNDARY
- ADJOINING PROPERTY BOUNDARY
- RIGHT OF WAY
- EDGE OF EXISTING TRAVELWAY
- EXISTING SHOULDER
- EXISTING DRAINAGE DITCH
- FIRST LINE OF STABLE VEGETATION
- EXISTING GRADE TOP OF BANK
- EXISTING GRADE TOE OF SLOPE
- FEMA FLOOD ZONE BOUNDARY
- ACOE "404" WETLAND BOUNDARY
- WETLAND AREA
- EXISTING GRADE CONTOUR
- EXISTING SPOT ELEVATION (ORIGINAL SURVEY)
- EXISTING SPOT ELEVATION (9-28-12 SURVEY)
- EXISTING FENCELINE
- OVERHEAD UTILITY LINE
- SOIL BOUNDARY
- BEACHES-NEWMAN ASSOCIATION
- COROLLA FINE SAND
- COROLLA-DUCKSTON COMPLEX
- NEWMAN-COROLLA COMPLEX
- EXISTING 18" DIA OR LARGER TRUNK



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EXISTING FEATURES

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ESTATES AT CAROVA BEACH
 CURRITUCK COUNTY
 SECTION 2 EAST

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHK
1	5-27-09	ISSUE FOR PERMITS	WJK	MSB
2	8-22-09	REVISED BASED ON COMMENTS	WJK	MSB
3	10-29-11	REVISED BASED ON COMMENTS	WJK	MSB
4	10-25-12	ADD UNIMPROVED SPOT ELEVATIONS	WJK	MSB

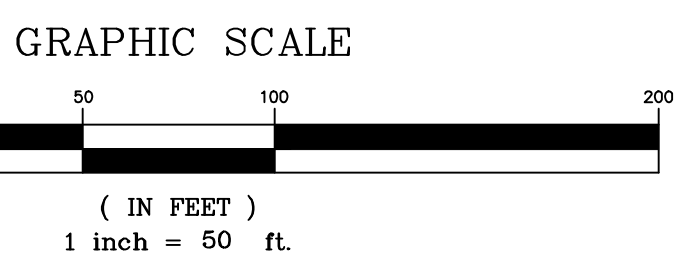
DATE: 5-27-09 SCALE: 1" = 50'
 DESIGNED: BPG CHECKED: MSB
 DRAWN: WJK APPROVED: MSB
 SHEET: 11 OF 25
 CAD FILE: 416700B1
 PROJECT NO.: 4167



NOW OR FORMERLY
STATE OF VIRGINIA
FALSE CAPE STATE PARK
PIN 2356151080000
DB 94, PG 52
4,232.51 AC.



VIRGINIA
NORTH CAROLINA



PLAN LEGEND	
	PROPERTY BOUNDARY
	ADJOINING PROPERTY BOUNDARY
	RIGHT OF WAY
	EDGE OF EXISTING TRAVELWAY
	PROPOSED PARCEL BOUNDARY
	EXISTING DRAINAGE DITCH
	PROPOSED DRAINAGE DITCH
	PROPOSED CULVERT PIPE
	PROPOSED RIP RAP CHECK DAM
	FIRST LINE OF STABLE VEGETATION
	EXISTING GRADE TOP OF BANK
	EXISTING GRADE CONTOUR
	PROPOSED FINISHED GRADE CONTOUR
	LIMITS OF DISTURBANCE
	PROPOSED SILT FENCE
	PROPOSED BARRIER FENCE (EX. FENCE GRAY SCALE)
	PROPOSED SAND FENCE
	OVERHEAD UTILITY LINE
	ACCE "404" WETLAND BOUNDARY
	WETLAND AREA
	PROPOSED IMPROVED TRAVELWAY

Bissell Professional Group
3017 North Cretan Highway
Kitty Hawk, North Carolina 27949
PHONE: 252-398-1100
FAX: 252-398-1700

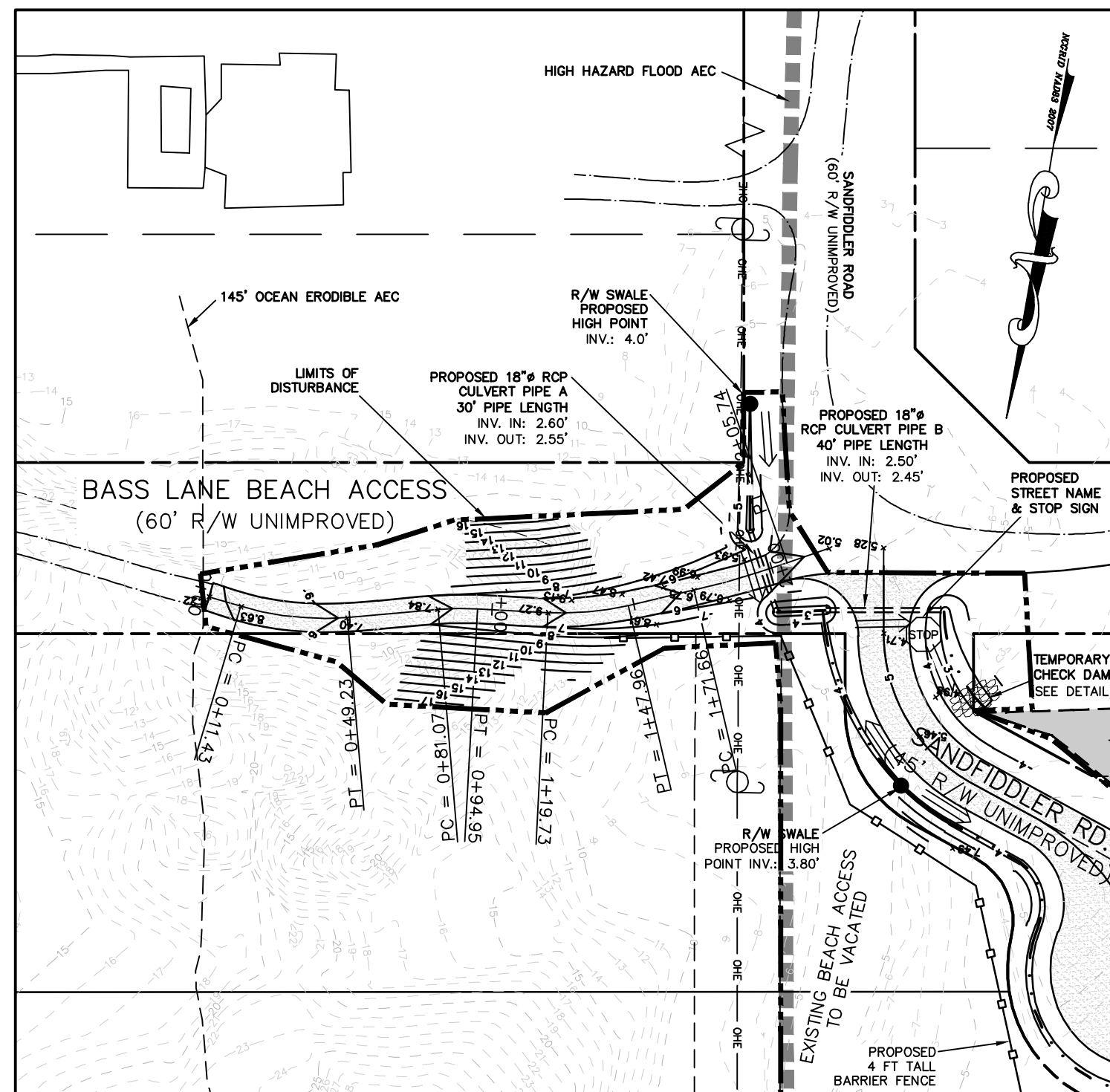
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GRADING, DRAINAGE &
EROSION CONTROL PLAN
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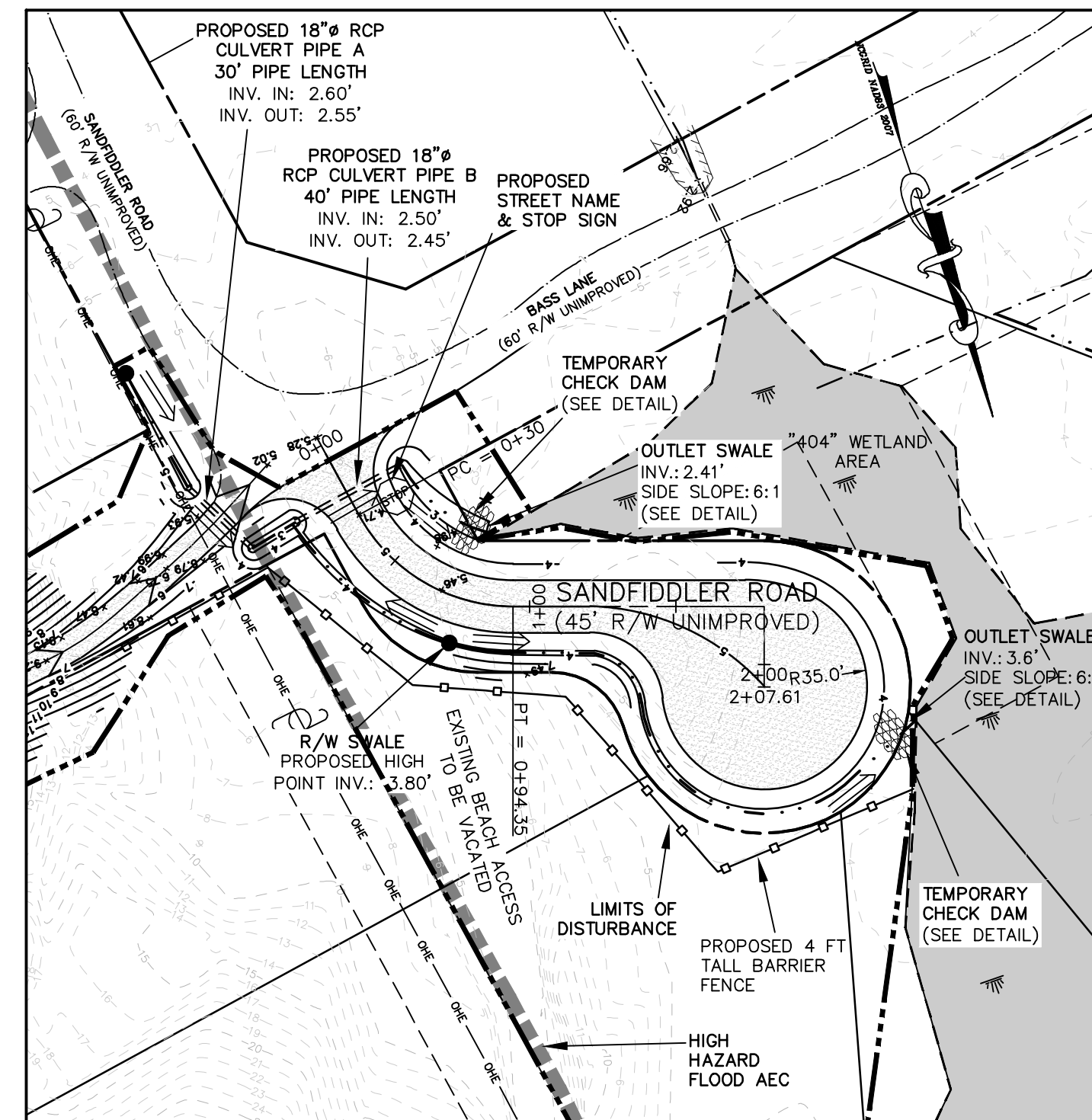
ESTATES AT CAROVA BEACH
FRUITVILLE TOWNSHIP
CURRITUCK COUNTY
NORTH CAROLINA
SECTION 1

NO.	DATE	DESCRIPTION
1	05/22/05	PRELIMINARY
2	06/22/05	REVISED PER COMMENTS
3	07/22/05	REVISED PER COMMENTS
4	08/22/05	REVISED PER COMMENTS
5	09/22/05	REVISED PER COMMENTS
6	10/22/05	REVISED PER COMMENTS
7	11/22/05	REVISED PER COMMENTS

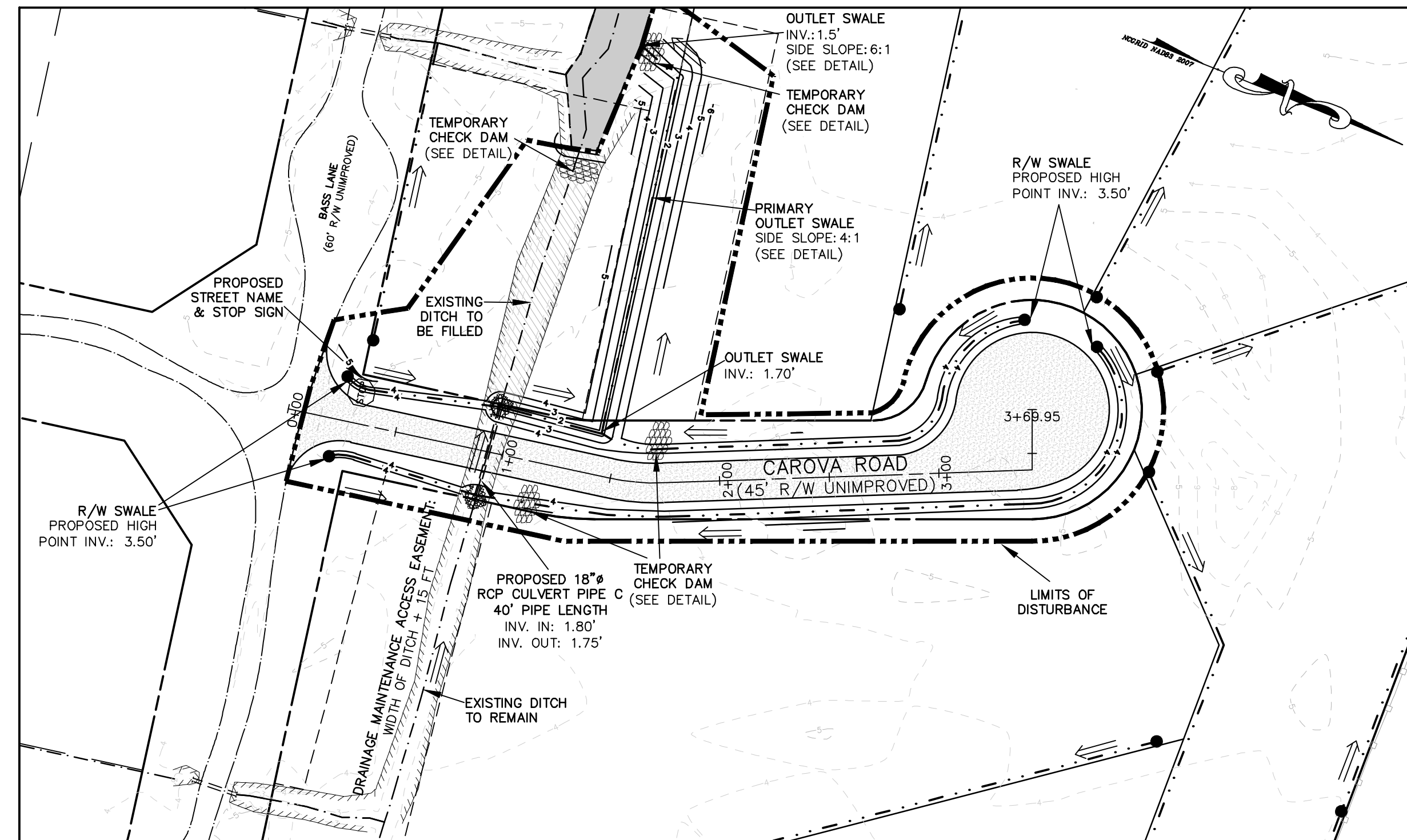
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DESIGNED:	BPG	CHECKED:	MSB
DRAWN:	WGW	APPROVED:	MSB
SHEET:	7	OF	25
CAD FILE:	416700B1	PROJECT NO.:	4167



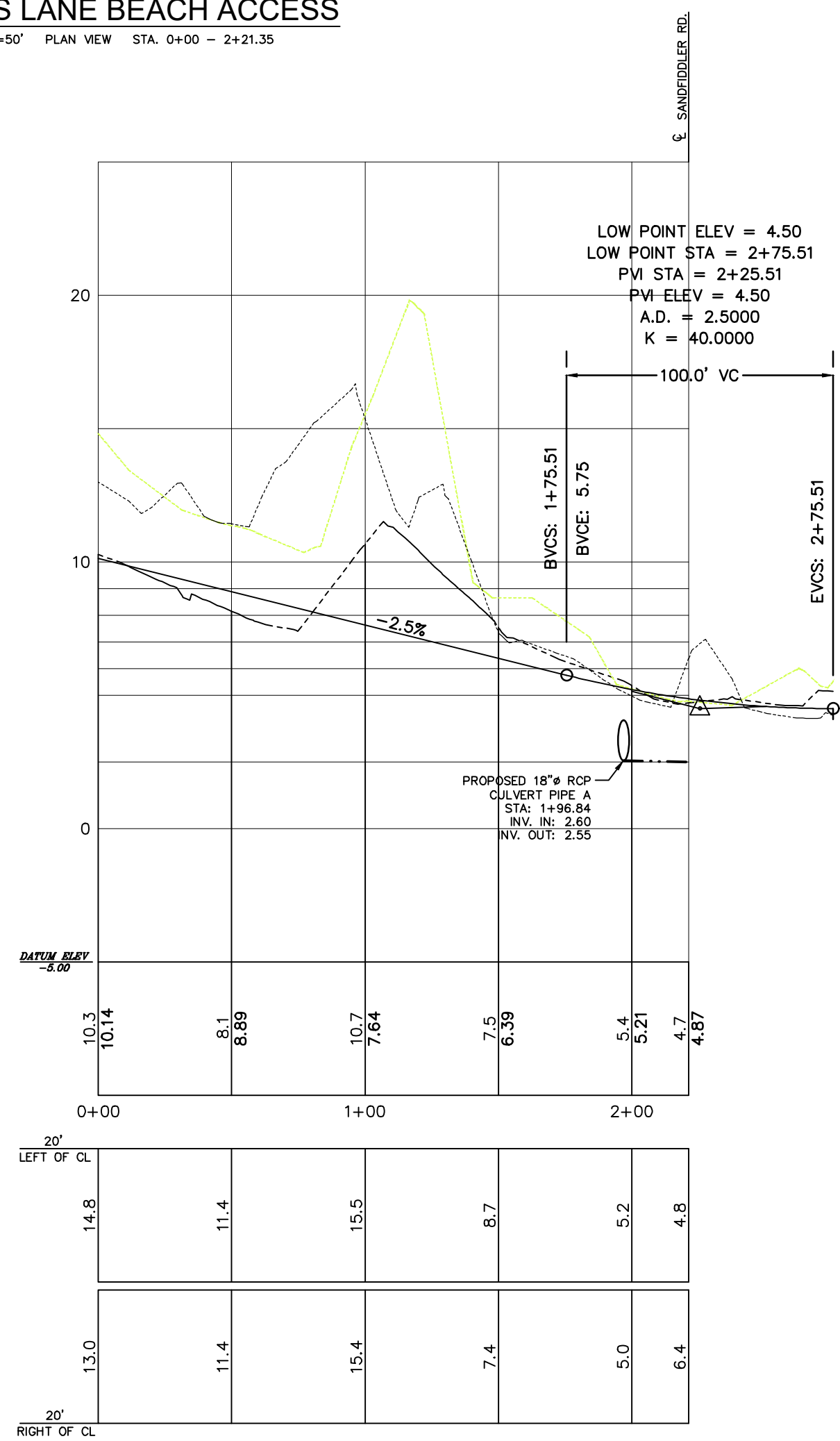
BASS LANE BEACH ACCESS
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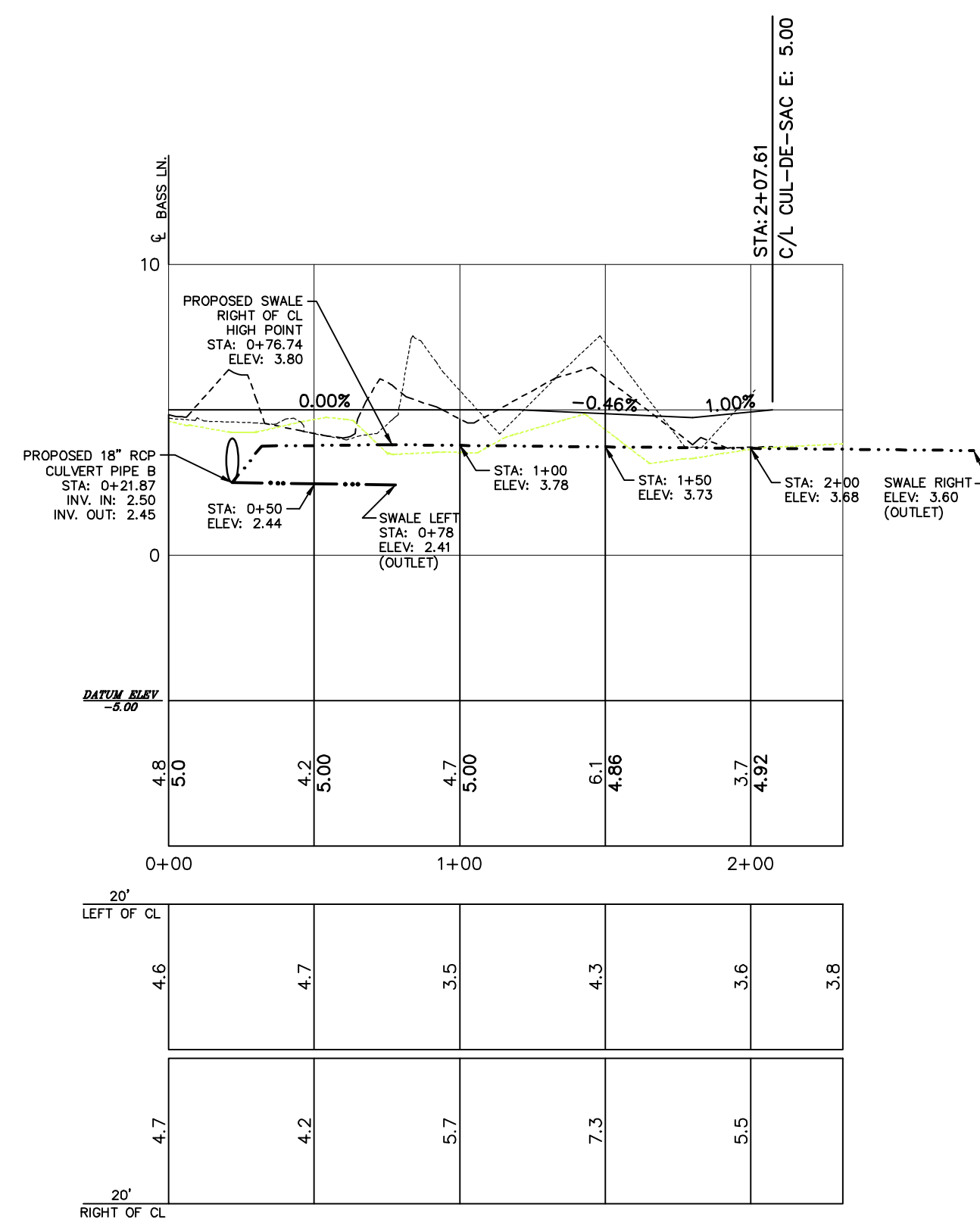
SANDFIDDLER ROAD
SCALE: 1"=50' PLAN VIEW STA. 0+00 - 2+07.61



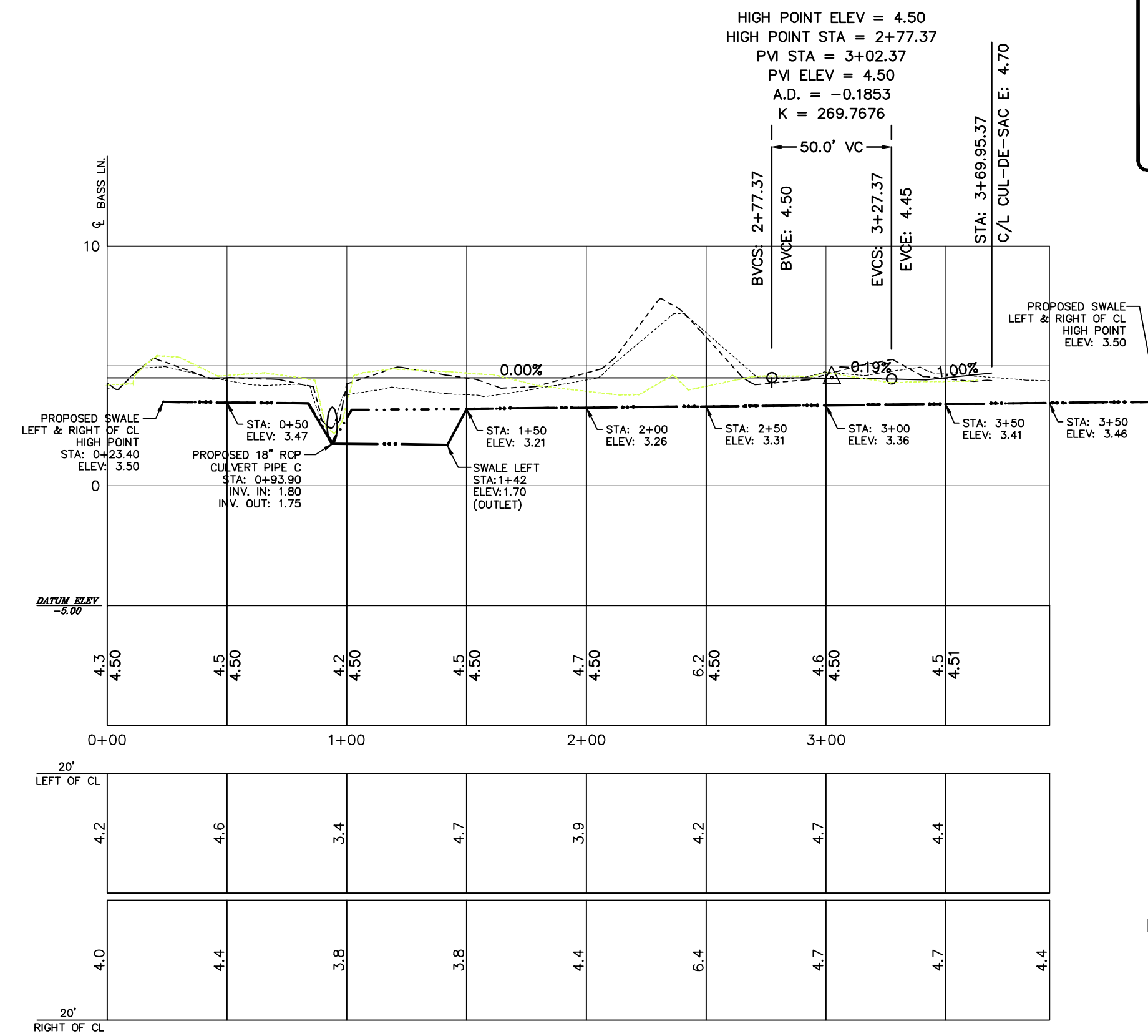
CAROVA ROAD
SCALE: 1"=50' PLAN VIEW STA. 0+00 - 3+69.95



BASS LANE BEACH ACCESS
SCALE: 1"=5 V - 1"=50H PLAN VIEW STA. 0+00 - 2+21.35



SANDFIDDLER ROAD
SCALE: 1"=5 V - 1"=50H PLAN VIEW STA. 0+00 - 2+07.61



CAROVA ROAD
SCALE: 1"=5 V - 1"=50H PLAN VIEW STA. 0+00 - 3+69.21

PLAN LEGEND

- PROPERTY BOUNDARY
- RIGHT OF WAY
- PROPOSED LOT BOUNDARY
- ADJOINING PROPERTY BOUNDARY
- ROADWAY CENTERLINE
- EDGE OF EXISTING TRAVELWAY
- EXISTING SHOULDER
- EXISTING GRADE CONTOUR (ELEV. AS NOTED)
- EXISTING GRADE TOP OF BANK
- EXISTING GRADE TOP OF SLOPE
- FIRST LINE OF STABLE VEGETATION
- PROPOSED FINISHED GRADE CONTOUR
- PROPOSED SAND FENCE
- PROPOSED DRAINAGE SWALE WITH HIGH POINT AND FLOW DIRECTION NOTATION
- PROPOSED CULVERT PIPE
- PROPOSED RIP RAP OUTLET PROTECTION
- WETLAND AREA
- PROPOSED IMPROVED TRAVELWAY

PROFILE LEGEND

- PROPOSED ROADWAY GRADE LINE CENTER
- PROPOSED R/W SWALE GRADE LINE (LEFT OF CL)
- PROPOSED R/W SWALE GRADE LINE (RIGHT OF CL)
- EXISTING GRADE CL
- EXISTING GRADE LEFT OF CL
- EXISTING GRADE RIGHT OF CL

REVISIONS

NO.	DATE	DESCRIPTION
1	5/27/09	ISSUE FOR PERMITS
2	6/22/09	REVISIONS TO PERMITS
3	7/20/09	REVISIONS TO PERMITS
4	7/20/09	REVISIONS TO PERMITS
5	7/20/09	REVISIONS TO PERMITS



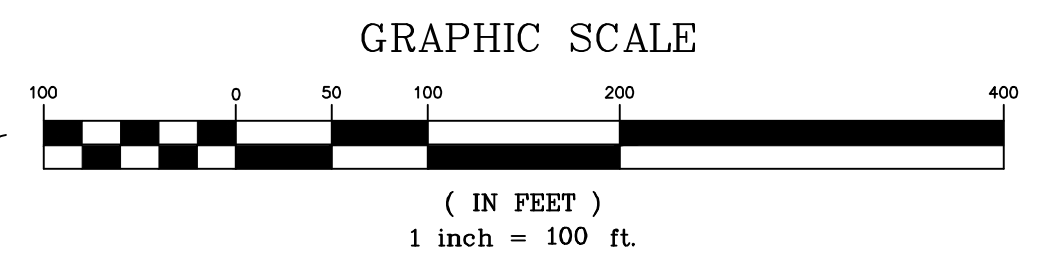
- NOTES**
- PROJECT NAME: ESTATES AT CAROVA BEACH SECTION 2 OPEN SPACE SUBDIVISION CURRITUCK COUNTY, NORTH CAROLINA
 - OWNER: CAROVA CORP. AND OCEAN SANDS CORP. C/O LARRY RIGGS, PRESIDENT OCEAN SANDS CORP. P.O. BOX 400 COROLLA, NC 27927
 - THESE PROPERTIES ARE IDENTIFIED ON THE CURRITUCK COUNTY TAX MAP #87A P.I.N. NUMBERS: 087A-000-000A-0002 087A-000-000A-0003 087A-000-000B-0002 087A-000-000B-0003
 - SUBDIVISION RECORDED REFERENCES: D.B. 115, PG. 453 P.C. 2, SL. 125 P.C. 2, SL. 137
 - TOTAL AREA OF EXISTING PARCELS: 960,051± SQ FT. 22.04± AC.
 - THESE PROPERTIES LAY IN FLOOD HAZARD ZONES VE-16, VE-14, VE-12, AE-5, AND ZONE X AS SHOWN ON THE F.E.M.A. F.I.R.M. PANELS 9012J & 9022J EFFECTIVE DECEMBER 16, 2005. SUBJECT TO CHANGE BY F.E.M.A.
 - THESE PROPOSED PARCELS CONTAIN APPROXIMATELY 2.50 ACRES OF ACCE "404" JURISDICTIONAL WETLANDS. WETLANDS DELINEATED IN MARCH AND SEPTEMBER, 2007 BY ENVIRONMENTAL PROFESSIONALS OF KILL DEVIL HILLS, NORTH CAROLINA AND APPROVED BY U.S. ARMY CORP OF ENGINEERS ON 10/16/2008, SAW-2008-02735. U.S.A.C.E. APPROVAL MAY BE REQUIRED PRIOR TO DEVELOPMENT OF CERTAIN AREAS ON THIS PROPERTY.
 - EXISTING RIGHT-OF-WAY WIDTHS: 60 FT. & 100 FT. (OCEAN PEARL RD. ONLY) PROPOSED GRADED SAND TRAVELWAY WIDTH: 18 FT. TOTAL TRAVELWAY LENGTH TO BE MAINTAINED: 2,072 L.F. EXISTING BEACH ACCESS RIGHT-OF-WAY WIDTH: 40' FT. PROPOSED RELOCATED BEACH ACCESS RIGHT-OF-WAY WIDTH: 45'
 - 10 FT DRAINAGE AND UTILITY EASEMENT HEREBY RESERVED ALONG ALL SIDE PROPERTY LINES. 15 FT DRAINAGE AND UTILITY EASEMENT HEREBY RESERVED ALONG ALL REAR PROPERTY LINES. 20 FT DRAINAGE AND UTILITY EASEMENT HEREBY RESERVED ALONG ALL RIGHT-OF-WAYS.
 - PROPERTY ZONING: 'RO2' (OUTER BANKS LIMITED ACCESS RESIDENTIAL DISTRICT) ADJACENT PROPERTIES ZONING: 'RO2'
 - LOTS WILL BE SERVICED BY PRIVATE ON-SITE WELL AND ON-SITE SEPTIC SYSTEMS.
 - ALL SURVEY DATA IS REFERENCED TO NAVD 1988.
 - AREA DETERMINED BY COORDINATE METHOD.
 - LOTS WILL BE FOR RESIDENTIAL USE ONLY.

DEVELOPMENT SUMMARY:

TOTAL PARCEL AREAS BEFORE R/W RELOCATION:	960,051± SF	22.04± AC
TOTAL PARCEL AREAS AFTER R/W RELOCATION:	972,231± SF	22.32± AC
TOTAL AREA PROPOSED RESIDENTIAL LOTS:	573,362± SF	13.16± AC
NUMBER OF PROPOSED LOTS:	8 LOTS	
NUMBER OF EXISTING LOTS:	4 LOTS	

△ OPEN SPACE SUMMARY:

OPEN SPACE REQUIRED:	364,938 SF	8.38 AC
OPEN SPACE PROVIDED:	398,870 SF	9.16 AC
SURPLUS OPEN SPACE PROVIDED:	33,932 SF	0.78 AC
OPEN SPACE UPLANDS:	316,845 SF	7.27 AC
UPLAND PERCENTAGE:	79.44%	



PLAN LEGEND

	PROPERTY BOUNDARY
	ADJOINING PROPERTY BOUNDARY
	RIGHT OF WAY
	PROPOSED PARCEL BOUNDARY
	EASEMENT LINE
	EDGE OF EXISTING TRAVELWAY
	EXISTING FENCELINE
	EXISTING SHORELINE
	EXISTING DRAINAGE DITCH
	FIRST LINE OF STABLE VEGETATION
	F.E.M.A. FLOOD ZONE BOUNDARY
	ACCE "404" WETLAND BOUNDARY
	WETLAND AREA
	PROPOSED IMPROVED TRAVELWAY
	PROPOSED OPEN SPACE AREA

Bissell Professional Group
3012 North Coastal Highway
Kitty Hawk, North Carolina 27949
FAX (252) 261-1760

BISSELL
PROFESSIONAL GROUP
Engineers, Planners, Surveyors
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OVERVIEW

ESTATES AT CAROVA BEACH
CURRITUCK COUNTY
FRUITVILLE TOWNSHIP
NORTH CAROLINA

SECTION 2

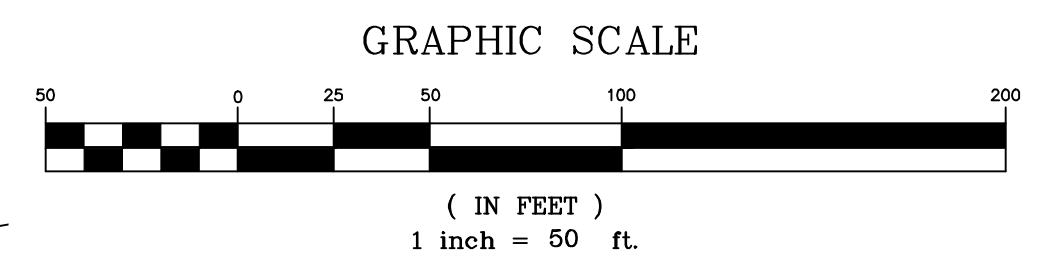
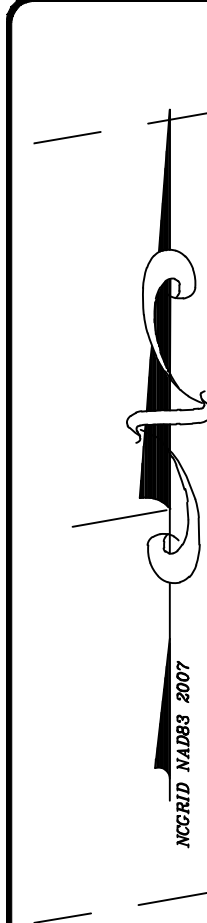
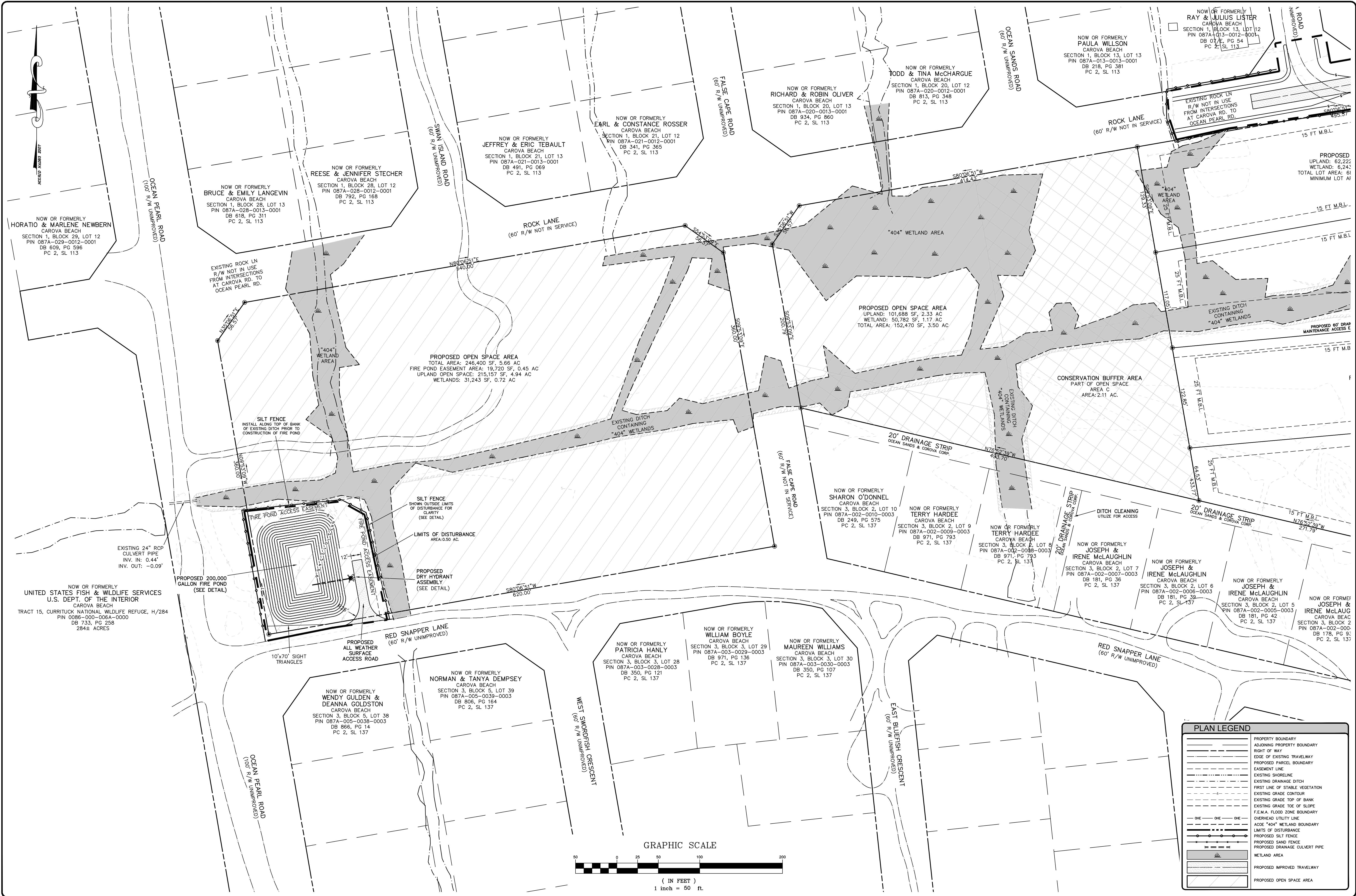
PROJECT NO. 416700B1

4167

REV. NO.	DATE	DESCRIPTION	BY	CHK
1	5-27-09	ISSUED FOR PERMITS	HNG	MSB
2	7-13-09	ISSUED FOR PERMITS	HNG	MSB
3	10-27-09	REVISED TO MATCH FINAL PLAN	HNG	MSB

DATE: 5-27-09 SCALE: 1" = 100'
DESIGNED: HNG CHECKED: MSB
DRAWN: WGK APPROVED: MSB
SHEET: 9 OF 25
CAD FILE: 416700B1
PROJECT NO.: 4167

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PLAN LEGEND	
	PROPERTY BOUNDARY
	ADJOINING PROPERTY BOUNDARY
	RIGHT OF WAY
	EDGE OF EXISTING TRAVELWAY
	PROPOSED PARCEL BOUNDARY
	EASEMENT LINE
	EXISTING SHORELINE
	EXISTING DRAINAGE DITCH
	FIRST LINE OF STABLE VEGETATION
	EXISTING GRADE CONTOUR
	EXISTING GRADE TOP OF BANK
	EXISTING GRADE TOP OF SLOPE
	F.E.M.A. FLOOD ZONE BOUNDARY
	OVERHEAD UTILITY LINE
	A.C.D.E. "404" WETLAND BOUNDARY
	LIMITS OF DISTURBANCE
	PROPOSED SILT FENCE
	PROPOSED SAND FENCE
	PROPOSED DRAINAGE CULVERT PIPE
	WETLAND AREA
	PROPOSED IMPROVED TRAVELWAY
	PROPOSED OPEN SPACE AREA

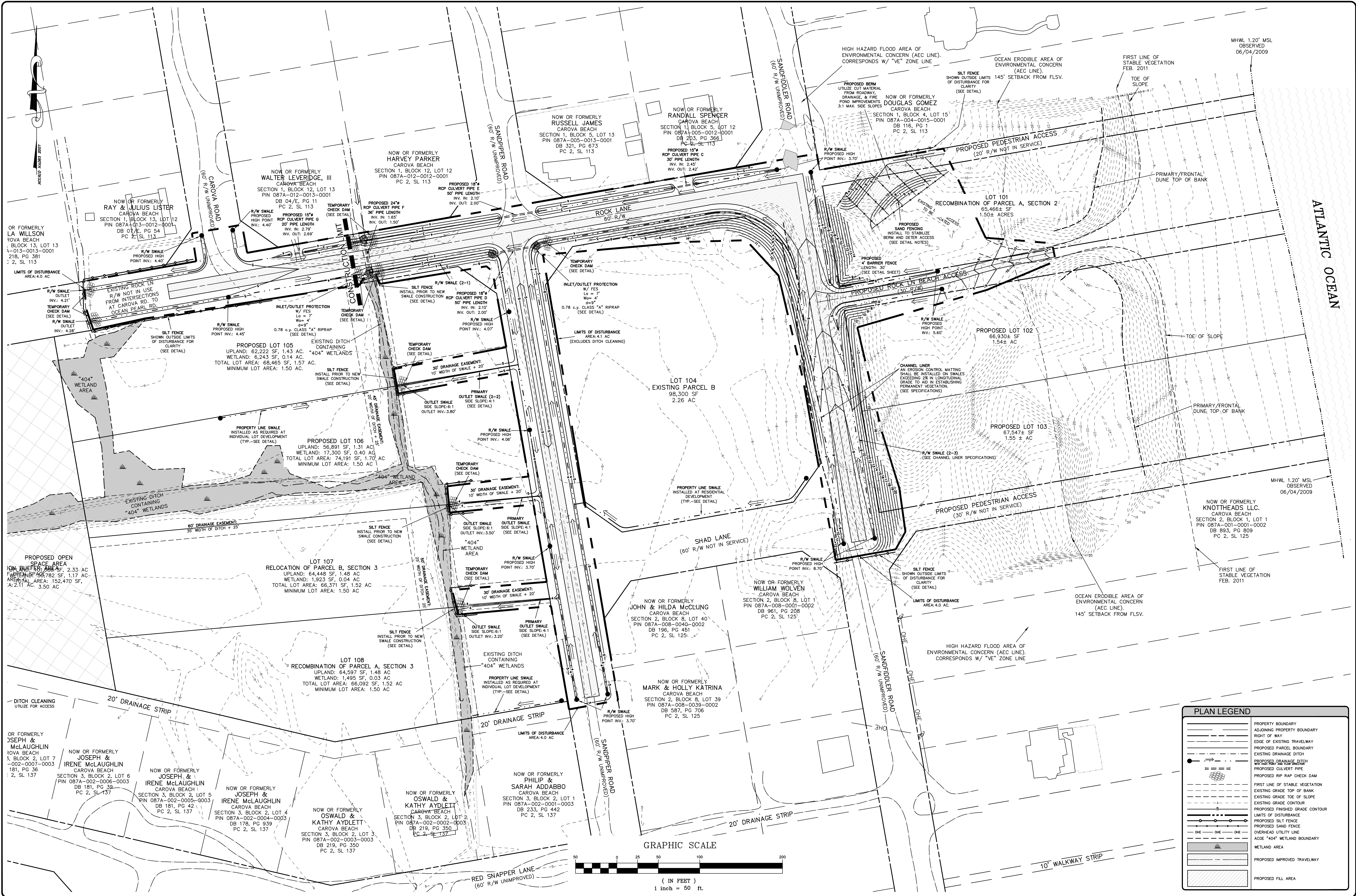
BisSELL Professional Group
 3017 North Cretan Highway
 Kitty Hawk, North Carolina 27949
 PHONE: (252) 285-1700
 FAX: (252) 285-1700

PROPOSED SUBDIVISION PLAN
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ESTATES AT CAROVA BEACH
 CURRITUCK COUNTY
 FRUITVILLE TOWNSHIP
 NORTH CAROLINA
SECTION 2 WEST

NO.	DATE	BY	DESCRIPTION
1	5-27-09	BPG	PRELIMINARY
2	7-17-09	BPG	FINAL

DATE:	5-27-09	SCALE:	1" = 50'
DESIGNED:	BPG	CHECKED:	MSB
DRAWN:	WGW	APPROVED:	MSB
SHEET:	12	OF	25
CAD FILE:	416700B1		
PROJECT NO.:	4167		



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GRADING, DRAINAGE, & EROSION CONTROL PLAN

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ESTATES AT CAROVA BEACH
 NORTH CAROLINA
 CURRITUCK COUNTY
 FRUITVILLE TOWNSHIP
 SECTION 2 EAST

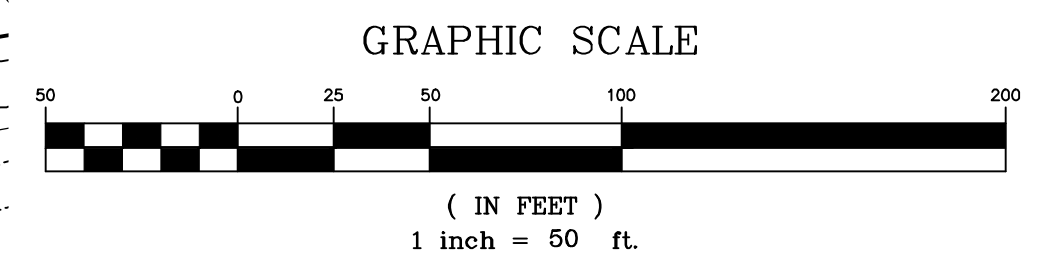
REVISIONS

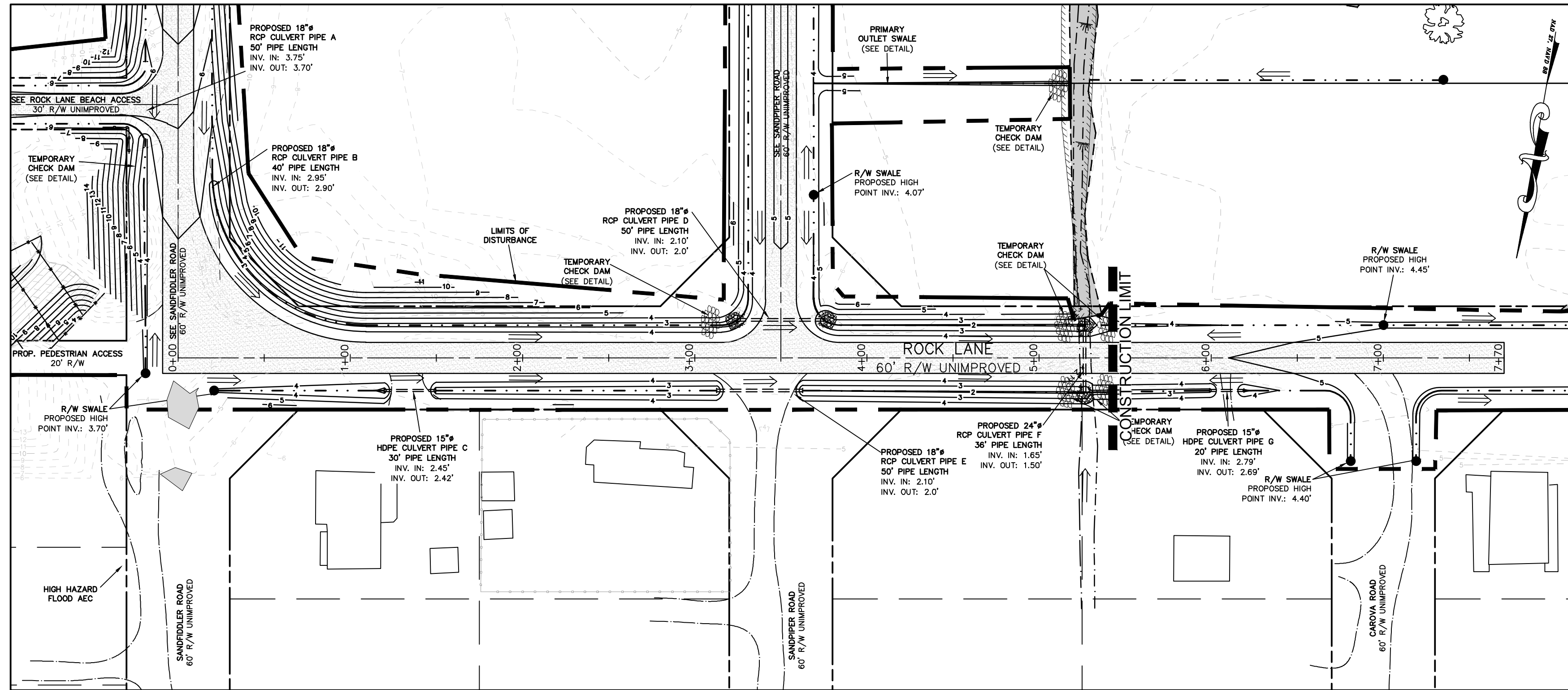
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3	07/02/09	REVISIONS TO PERMITS
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5	07/02/09	REVISIONS TO PERMITS
6	07/02/09	REVISIONS TO PERMITS
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9	07/02/09	REVISIONS TO PERMITS
10	07/02/09	REVISIONS TO PERMITS

DATE:	DMK	SCALE:	1" = 50'
DESIGNED:	BPG	CHECKED:	MSB
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SHEET:	14	OF	25
CAD FILE:	416700B1		
PROJECT NO.:	4167		

PLAN LEGEND

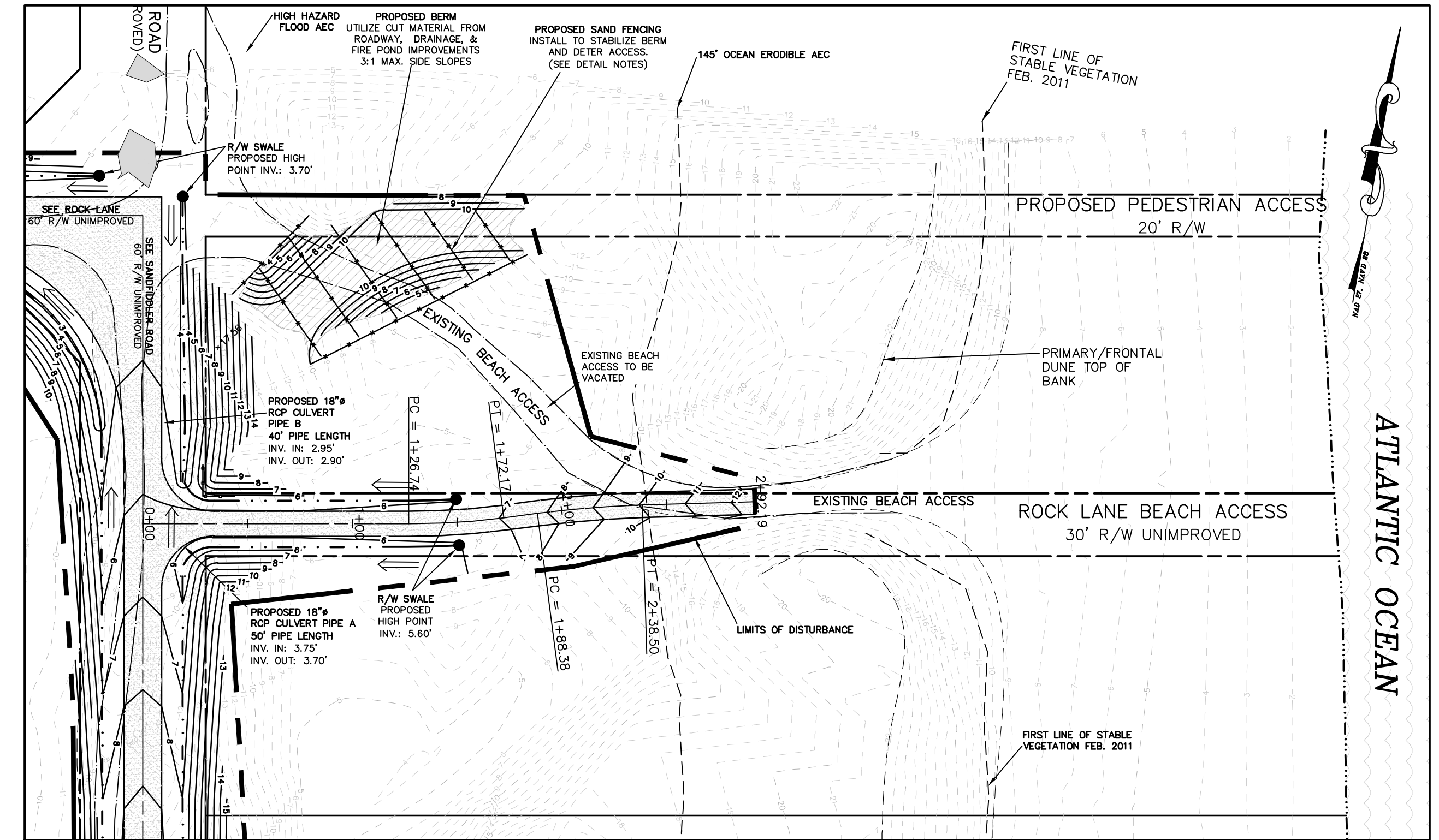
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[Symbol]	ADJOINING PROPERTY BOUNDARY
[Symbol]	RIGHT OF WAY
[Symbol]	EDGE OF EXISTING TRAVELWAY
[Symbol]	PROPOSED PARCEL BOUNDARY
[Symbol]	EXISTING DRAINAGE DITCH
[Symbol]	PROPOSED DRAINAGE DITCH
[Symbol]	PROPOSED CULVERT PIPE
[Symbol]	PROPOSED RIP RAP CHECK DAM
[Symbol]	FIRST LINE OF STABLE VEGETATION
[Symbol]	EXISTING GRADE TOP OF BANK
[Symbol]	EXISTING GRADE TOE OF SLOPE
[Symbol]	EXISTING GRADE CONTOUR
[Symbol]	PROPOSED FINISHED GRADE CONTOUR
[Symbol]	LIMITS OF DISTURBANCE
[Symbol]	PROPOSED SILT FENCE
[Symbol]	PROPOSED SAND FENCE
[Symbol]	OVERHEAD UTILITY LINE
[Symbol]	ACADEMIC "404" WETLAND BOUNDARY
[Symbol]	WETLAND AREA
[Symbol]	PROPOSED IMPROVED TRAVELWAY
[Symbol]	PROPOSED FILL AREA





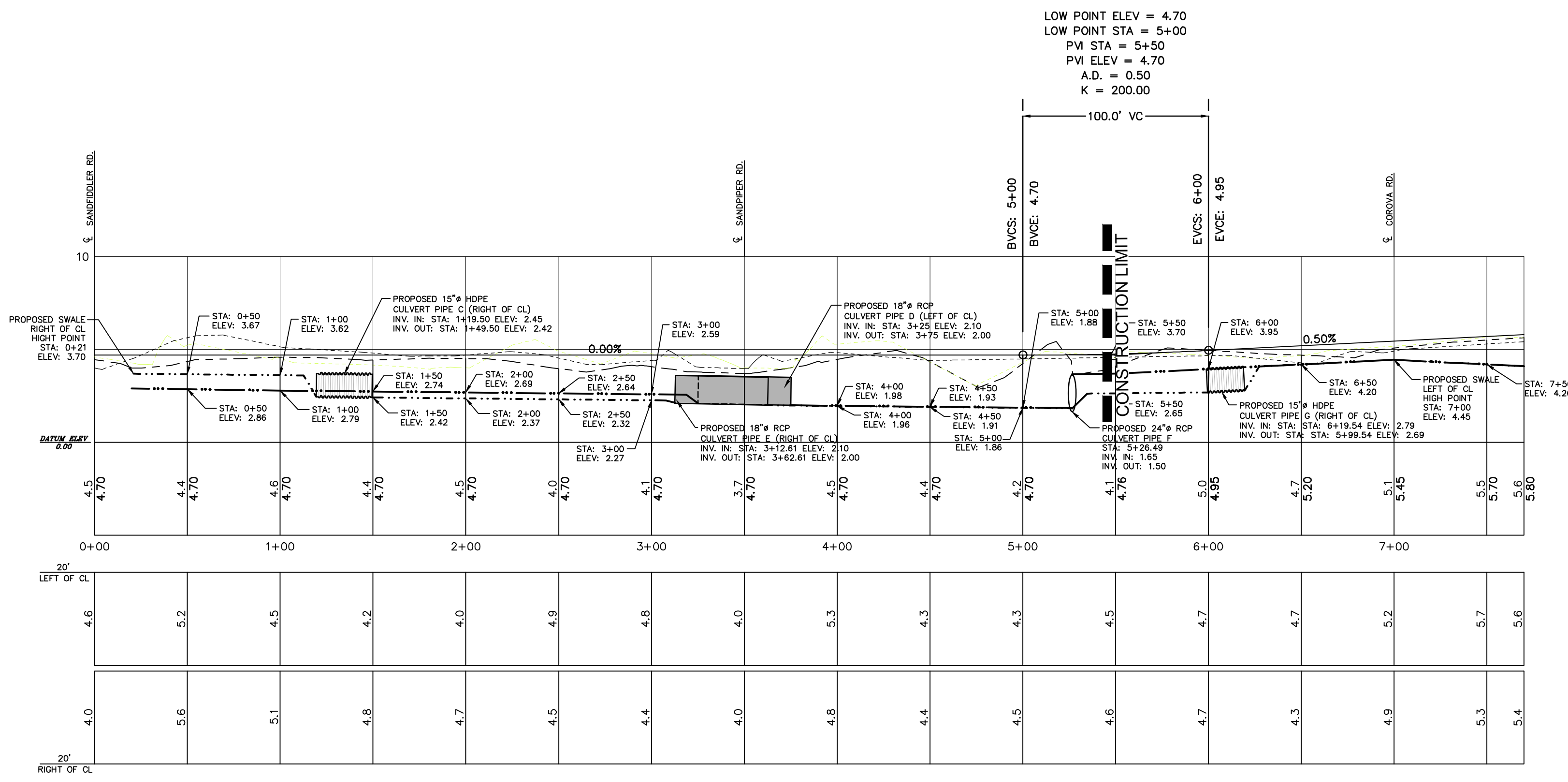
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SCALE: 1"=50' PLAN VIEW STA. 0+00 - 7+70



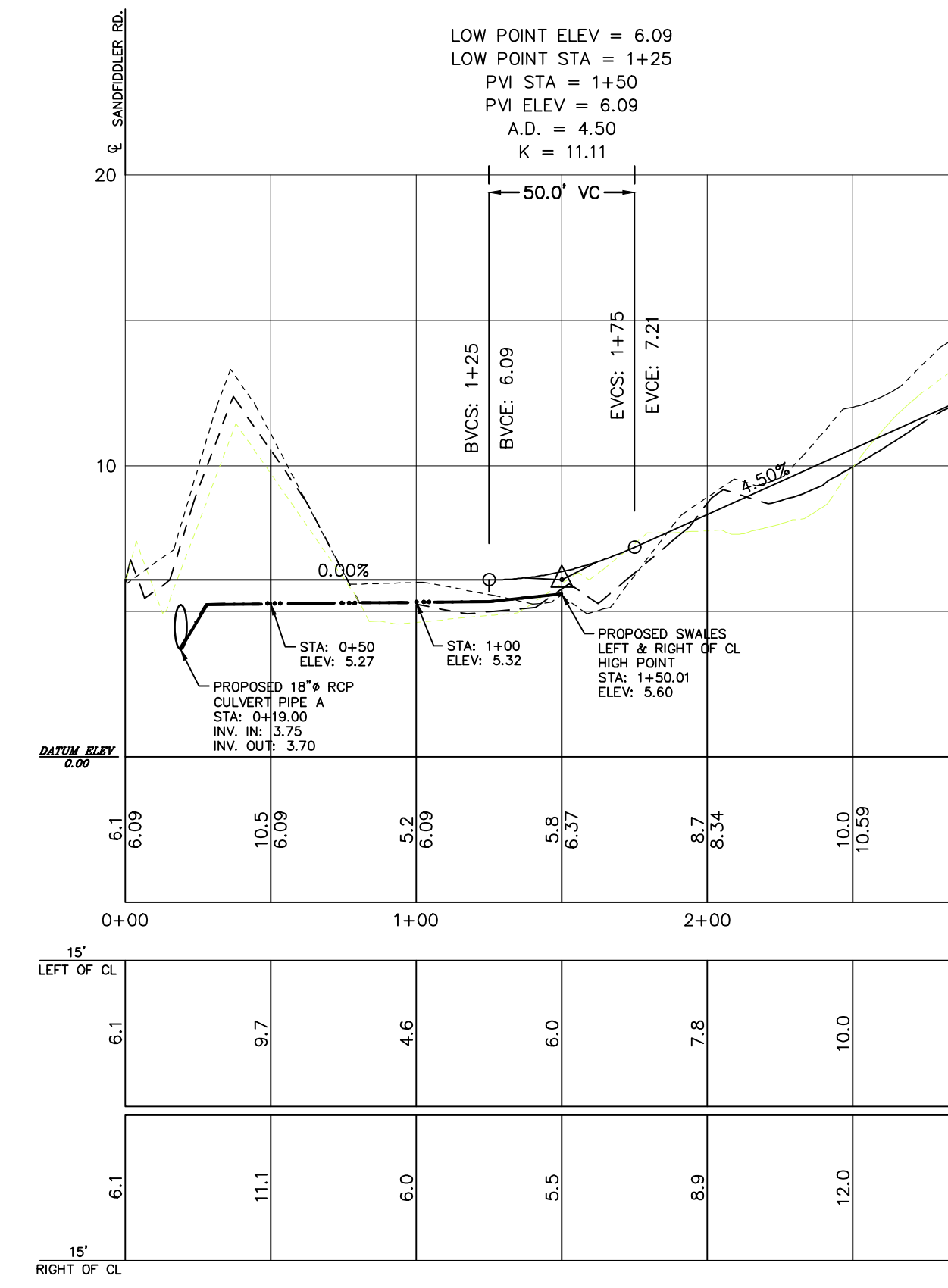
ROCK LANE BEACH ACCESS

SCALE: 1"=50' PLAN VIEW STA. 0+00 - 2+92.19



ROCK LANE

SCALE: 1"=5 V - 1"=50'H PLAN VIEW STA. 0+00 - 7+70.00



ROCK LANE BEACH ACCESS

SCALE: 1"=5 V - 1"=50'H PLAN VIEW STA. 0+00 - 2+92.19

PLAN LEGEND

[Symbol]	PROPERTY BOUNDARY
[Symbol]	PROPOSED LOT BOUNDARY
[Symbol]	ADJOINING PROPERTY BOUNDARY
[Symbol]	ROADWAY CENTERLINE
[Symbol]	RIGHT OF WAY
[Symbol]	EDGE OF EXISTING TRAVELWAY
[Symbol]	EXISTING SHORELINE
[Symbol]	EXISTING GRADE TOE OF SLOPE
[Symbol]	EXISTING GRADE TOP OF BANK
[Symbol]	FIRST LINE OF STABLE VEGETATION
[Symbol]	PROPOSED FINISHED GRADE CONTOUR
[Symbol]	PROPOSED SAND FENCE
[Symbol]	PROPOSED DRAINAGE SWALE WITH HIGH POINT AND FLOW DIRECTION NOTATION
[Symbol]	PROPOSED CULVERT PIPE
[Symbol]	PROPOSED RIP RAP OUTLET PROTECTION
[Symbol]	WETLAND AREA
[Symbol]	PROPOSED IMPROVED TRAVELWAY

PROFILE LEGEND

[Symbol]	PROPOSED ROADWAY GRADE LINE CENTER
[Symbol]	PROPOSED R/W SWALE GRADE LINE (LEFT OF CL)
[Symbol]	PROPOSED R/W SWALE GRADE LINE (RIGHT OF CL)
[Symbol]	EXISTING GRADE CL
[Symbol]	EXISTING GRADE LEFT OF CL
[Symbol]	EXISTING GRADE RIGHT OF CL

BISSELL PROFESSIONAL GROUP
 Engineers, Planners, Surveyors and Environmental Specialists
 3017 North Cretan Highway
 Kitty Hawk, North Carolina 27949
 TEL: (252) 285-1700 FAX: (252) 285-1760

ROCK LANE & ROCK LANE BEACH ACCESS

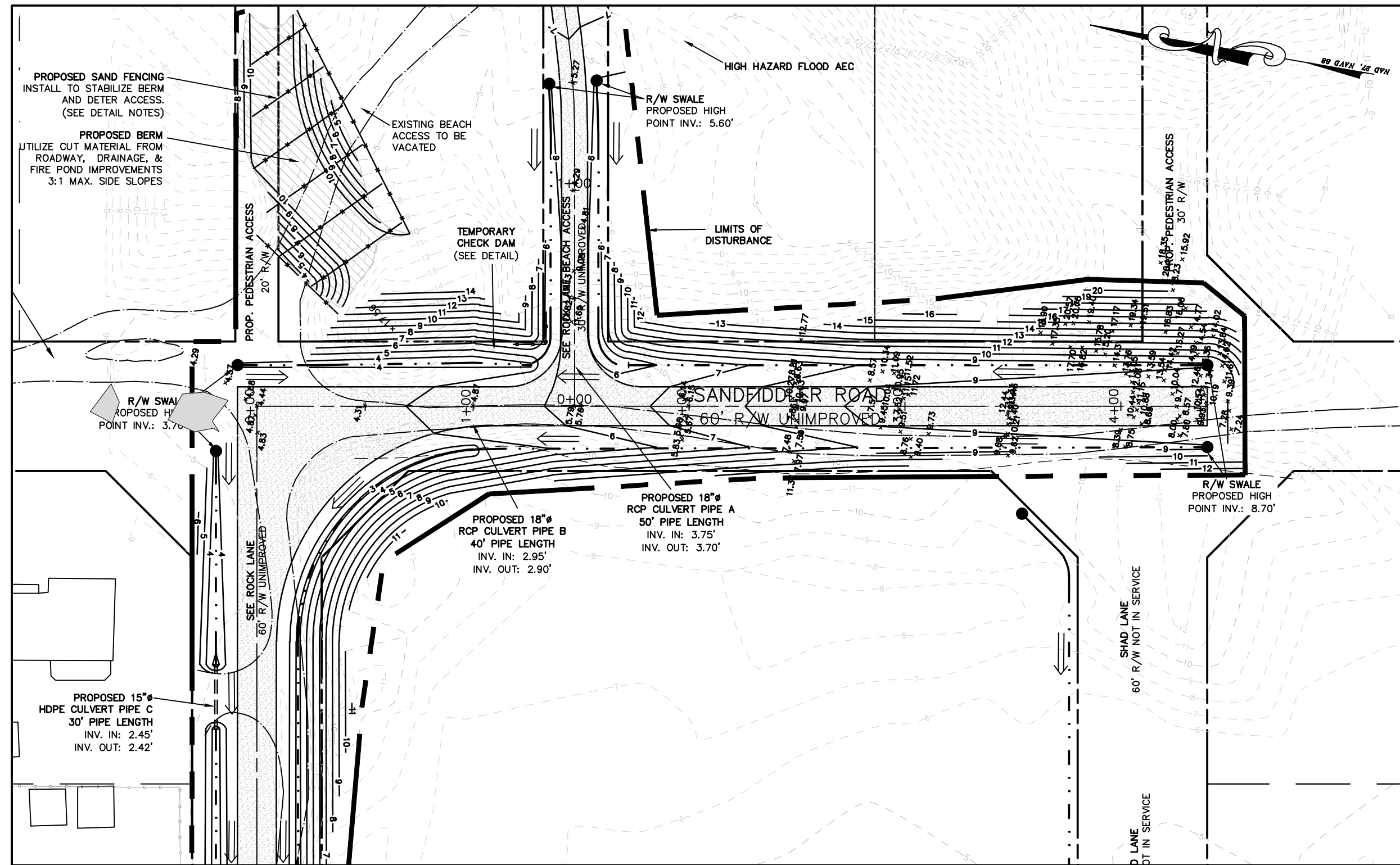
ESTATES AT CAROVA BEACH
 NORTH CAROLINA
 FRUITVILLE TOWNSHIP CURRITUCK COUNTY

SECTION 2

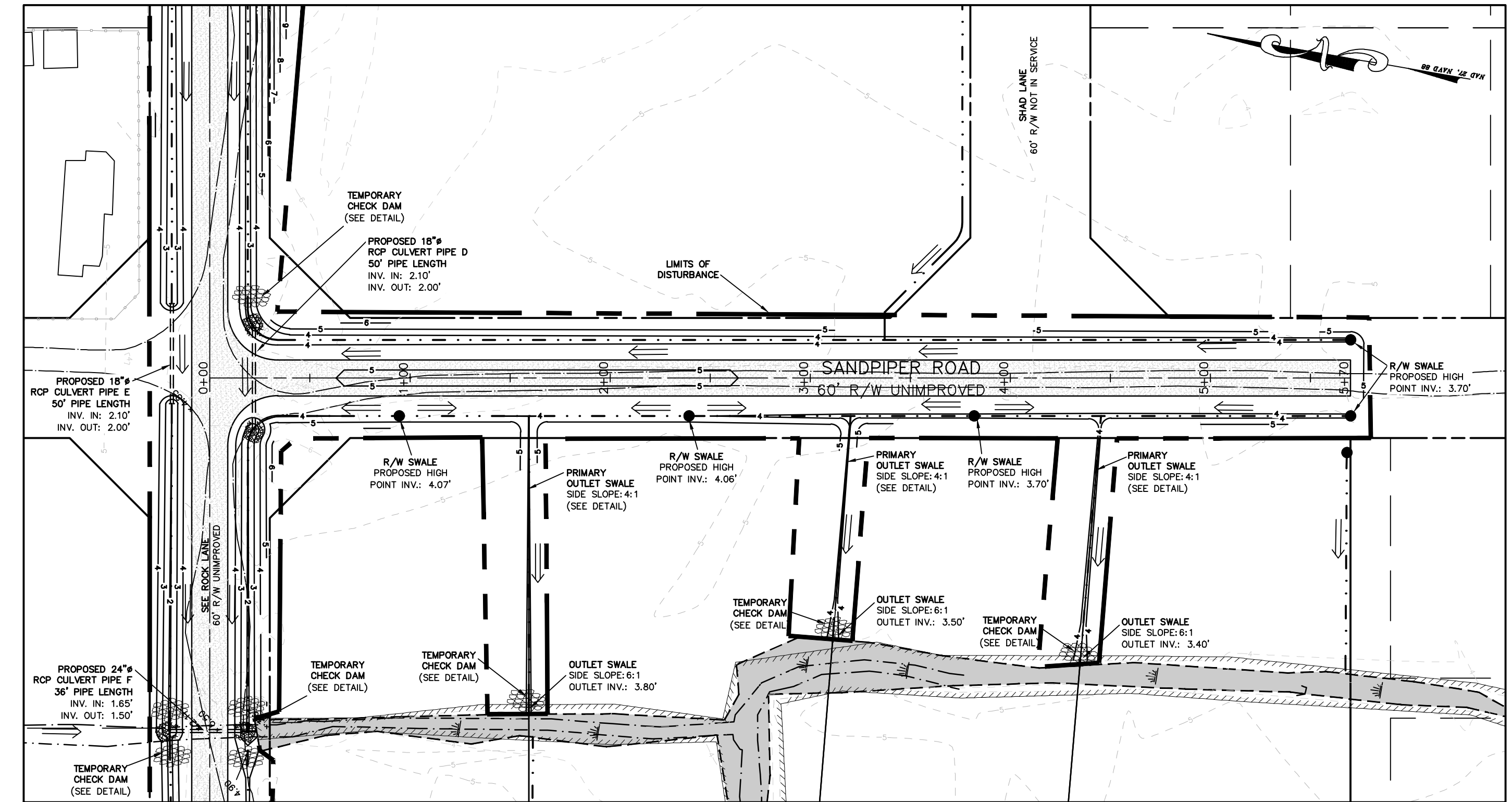
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1	5/27/09	BPG	ISSUE FOR PERMITS
2	6/22/09	BPG	REVISED PER PERMITS
3	7/27/09	BPG	REVISED PER PERMITS
4	10/29/09	BPG	REVISED PER PERMITS
5	11/23/09	BPG	REVISED PER PERMITS

DATE:	5-27-09	SCALE:	1" = 50'
DESIGNED:	BPG	CHECKED:	MSB
DRAWN:	WGW	APPROVED:	MSB

SHEET: **15** OF **25**
 CAD FILE: 416700B1
 PROJECT NO: 4167

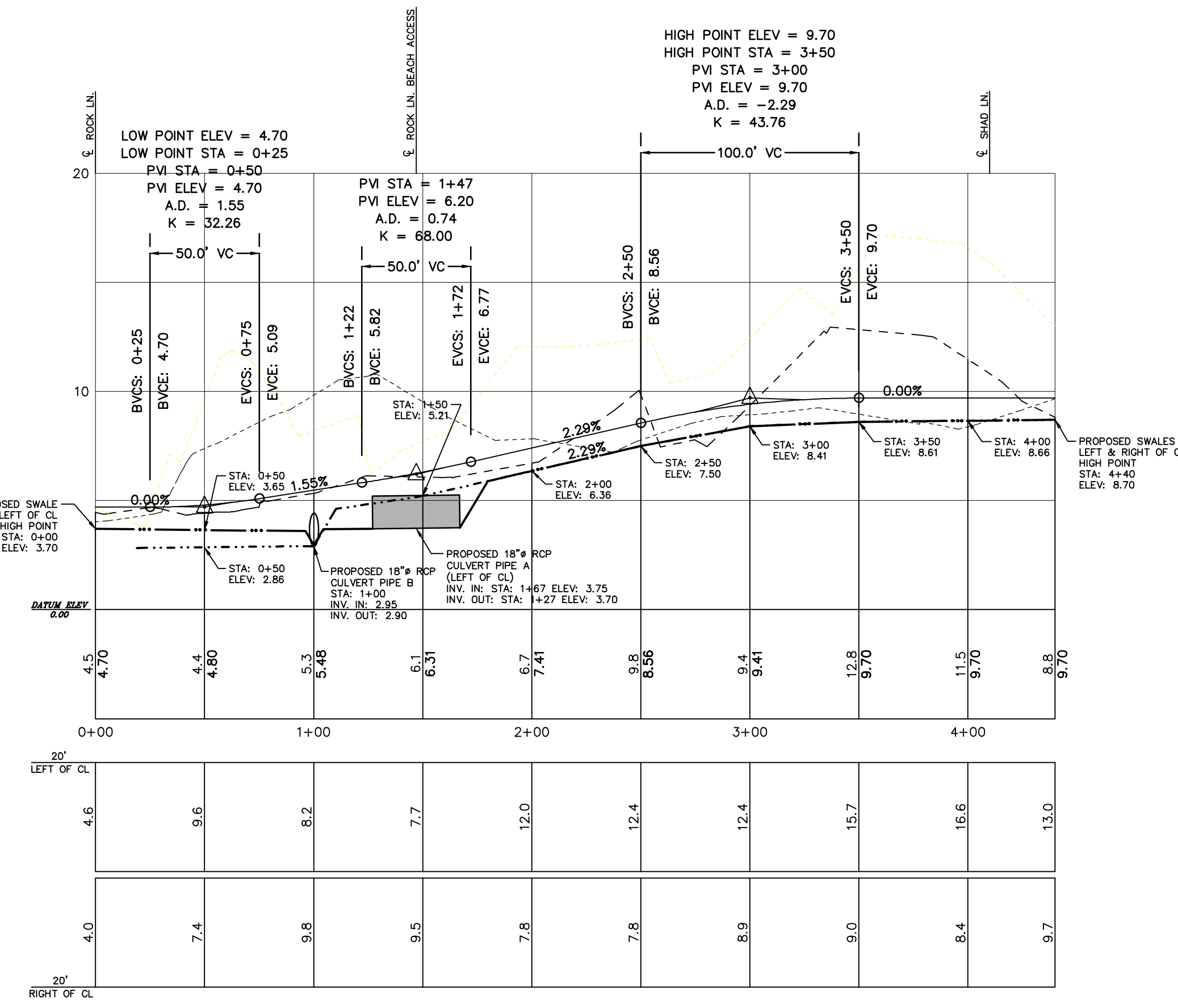


SANDFIDDLER ROAD
SCALE: 1"=50' PLAN VIEW STA. 0+00 - 4+40

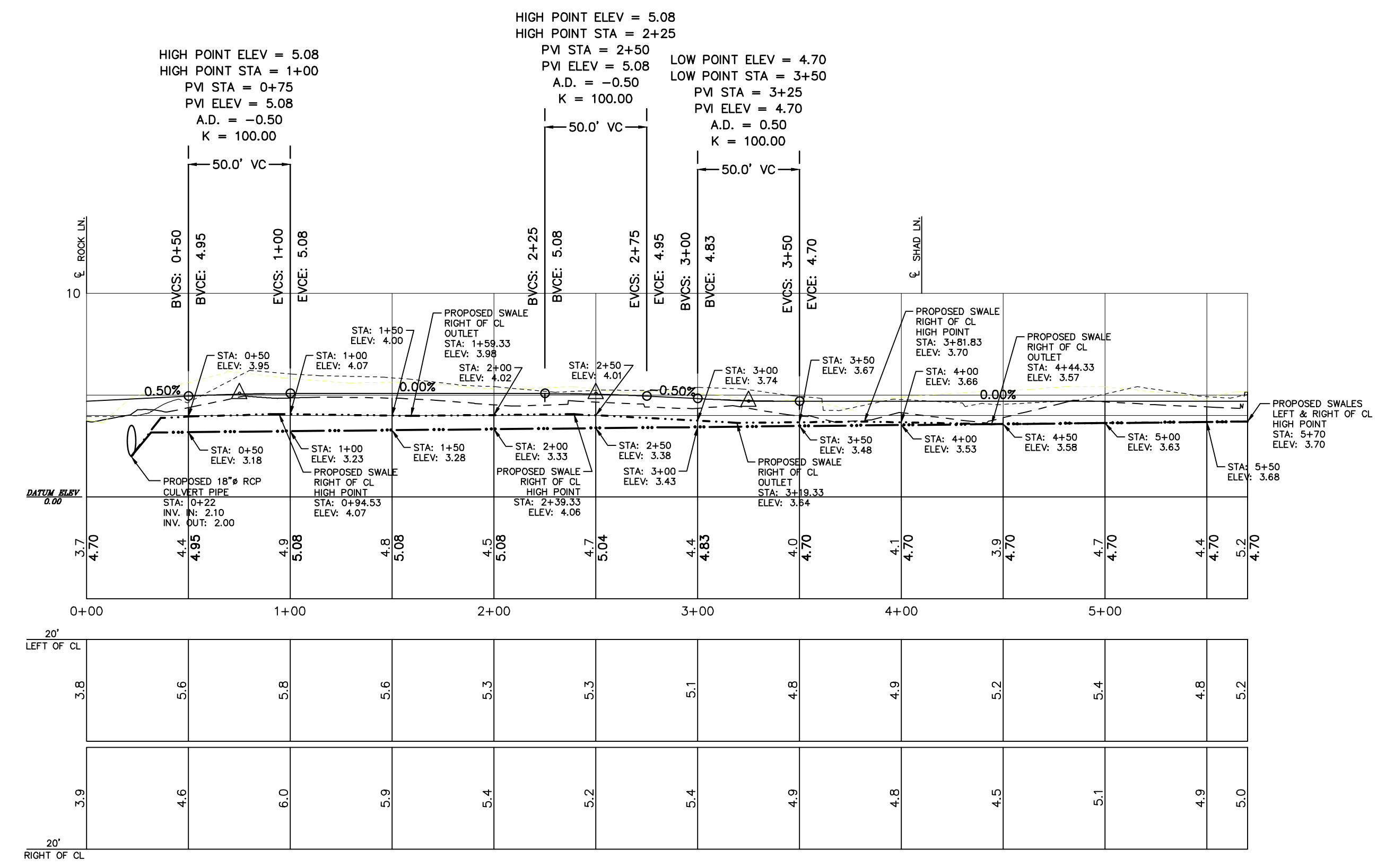


SANDPIPER ROAD
SCALE: 1"=50' PLAN VIEW STA. 0+00 - 5+70

PLAN LEGEND	
[Symbol]	PROPERTY BOUNDARY
[Symbol]	PROPOSED LOT BOUNDARY
[Symbol]	ADJOINING PROPERTY BOUNDARY
[Symbol]	ROADWAY CENTERLINE
[Symbol]	RIGHT OF WAY
[Symbol]	EDGE OF EXISTING TRAVELWAY
[Symbol]	EXISTING SHORELINE
[Symbol]	EXISTING GRADE CONTOUR (ELEV. AS NOTED)
[Symbol]	EXISTING GRADE TOE OF SLOPE
[Symbol]	EXISTING GRADE TOP OF BANK
[Symbol]	FIRST LINE OF STABLE VEGETATION
[Symbol]	PROPOSED FINISHED GRADE CONTOUR
[Symbol]	PROPOSED SAND FENCE
[Symbol]	PROPOSED DRAINAGE SWALE WITH HIGH POINT AND FLOW DIRECTION NOTATION
[Symbol]	PROPOSED CULVERT PIPE
[Symbol]	PROPOSED RIP RAP OUTLET PROTECTION
[Symbol]	WETLAND AREA
[Symbol]	PROPOSED IMPROVED TRAVELWAY



SANDFIDDLER RD.
SCALE: 1"=5 V - 1"=50H PLAN VIEW STA. 0+00 - 4+40.00



SANDPIPER RD.
SCALE: 1"=5 V - 1"=50H PLAN VIEW STA. 0+00 - 5+70.00

PROFILE LEGEND	
[Symbol]	PROPOSED ROADWAY GRADE LINE CENTER
[Symbol]	PROPOSED R/W SWALE GRADE LINE (LEFT OF CL)
[Symbol]	PROPOSED R/W SWALE GRADE LINE (RIGHT OF CL)
[Symbol]	EXISTING GRADE CL
[Symbol]	EXISTING GRADE LEFT OF CL
[Symbol]	EXISTING GRADE RIGHT OF CL

NO.	DATE	BY	CHKD.	REVISIONS
1	5/27/09	BPG	MSB	ISSUE FOR PERMITS
2	6/22/09	BPG	MSB	REVISED PER COMMENTS
3	7/20/09	BPG	MSB	REVISED PER COMMENTS
4	7/28/09	BPG	MSB	FINAL AEC SNOO DENCE FOR ISSUING



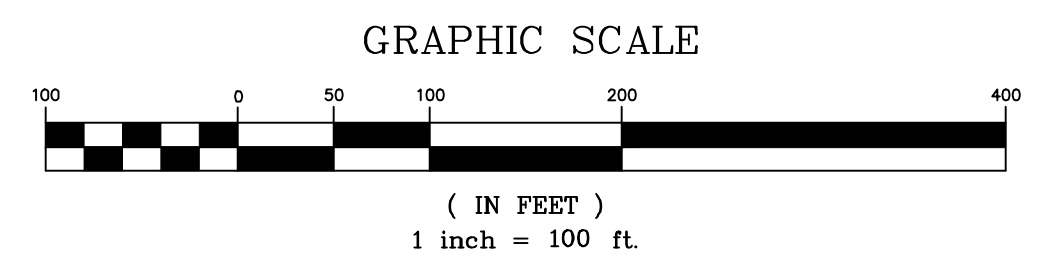
- NOTES**
- PROJECT NAME: ESTATES AT CAROVA BEACH SECTION 5 OPEN SPACE SUBDIVISION CURRITUCK COUNTY, NORTH CAROLINA
 - OWNERS: CAROVA CORP. AND OCEAN SANDS CORP.
C/O LARRY RIGGS, PRESIDENT OCEAN SANDS CORP.
P.O. BOX 400
COROLLA, NC 27927
ERNEST BOWDEN (NORTHERN 100 FT OF PARCEL A ONLY)
2155 SANDFOODLER RD.
COROLLA, NC 27927
 - THESE PROPERTIES ARE IDENTIFIED ON THE CURRITUCK COUNTY TAX MAP #87A P.L.N. NUMBERS: 087A-000-001A-0005 087A-000-000A-0009
087A-000-002A-0005 087A-000-000B-0009
087A-000-000B-0005 087A-000-000C-0009
087A-000-000C-0005 087A-000-000D-0009
 - SUBDIVISION RECORDED REFERENCES: D.B. 115, PG. 453
P.C. 2, SL. 139
P.C. 3, SL. 45
ERNEST BOWDEN RECORDED REFERENCE: D.B. 353, PG. 652
 - TOTAL AREA OF EXISTING PARCELS (INCLUDING E. BOWDEN LOT): 894,002± SF 20.52± AC
 - THESE PROPERTIES LAY IN FLOOD HAZARD ZONES VE-16, VE-14, VE-12 AND AE-5 AS SHOWN ON THE F.E.M.A. F.I.R.M. PANELS 9012J & 9022J EFFECTIVE DECEMBER 16, 2005. SUBJECT TO CHANGE BY F.E.M.A.
 - THESE PROPOSED PARCELS CONTAIN APPROXIMATELY 1.26 ACRES OF ACOE "404" JURISDICTIONAL WETLANDS. WETLANDS DELINEATED IN MARCH AND SEPTEMBER, 2007 BY ENVIRONMENTAL PROFESSIONALS OF KILL DEVIL HILLS, NORTH CAROLINA AND APPROVED BY U.S. ARMY CORP OF ENGINEERS ON 10/16/2008, SAW-2008-02736. U.S.A.C.E. APPROVAL MAY BE REQUIRED PRIOR TO DEVELOPMENT OF CERTAIN AREAS ON THIS PROPERTY.
 - EXISTING RIGHT-OF-WAY WIDTHS: 60 FT., 20 FT. (SHARK LANE BEACH ACCESS ONLY) & 100 FT. (OCEAN PEARL RD. ONLY)
PROPOSED GRADED SAND TRAVELWAY WIDTH: 18 FT.
TOTAL TRAVELWAY TO BE MAINTAINED: 1,312 LF.
 - 10 FT DRAINAGE AND UTILITY EASEMENT HEREBY RESERVED ALONG ALL SIDE PROPERTY LINES. 15 FT DRAINAGE AND UTILITY EASEMENT HEREBY RESERVED ALONG ALL REAR PROPERTY LINES. 20 FT DRAINAGE AND UTILITY EASEMENT HEREBY RESERVED ALONG ALL RIGHT-OF-WAYS.
 - PROPERTY ZONING: "R02" (OUTER BANKS LIMITED ACCESS RESIDENTIAL DISTRICT)
ADJACENT PROPERTIES ZONING: "R02"
 - LOTS WILL BE SERVED BY PRIVATE ON-SITE WELL AND ON-SITE SEPTIC SYSTEMS AS APPROVED BY THE LOCAL HEALTH DEPARTMENT.
 - ALL SURVEY DATA IS REFERENCED TO NAVD 1988.
 - AREA DETERMINED BY COORDINATE METHOD.
 - LOTS WILL BE FOR RESIDENTIAL USE ONLY.
 - LOTS 106 & 107 ARE TRANSFER LOTS AND PER THE CURRITUCK COUNTY UNIFIED DEVELOPMENT ORDINANCE, ARE NOT REQUIRED TO MEET THE MINIMUM LOT SIZE REQUIREMENT.
 - LOTS 105 & 106 REQUIRE RECORDED DEED NOTIFICATION REGARDING COMPLIANCE WITH WETLAND REGULATIONS.

DEVELOPMENT SUMMARY: (INCLUDING E. BOWDEN PARCEL)

TOTAL PARCEL AREAS BEFORE R/W RELOCATION:	894,002± SF	20.52± AC
TOTAL PARCEL AREAS AFTER R/W RELOCATION:	875,859± SF	20.11± AC
TOTAL AREA PROPOSED RESIDENTIAL LOTS:	639,034± SF	14.67± AC
NUMBER OF PROPOSED LOTS:	10 LOTS	
NUMBER OF EXISTING LOTS:	8 LOTS	

OPEN SPACE SUMMARY:

OPEN SPACE REQUIRED:	273,990 SF	6.29 AC
OPEN SPACE PROVIDED:	236,825 SF	5.44 AC
SURPLUS OPEN SPACE PROVIDED:	-37,165 SF	-0.85 AC
OPEN SPACE UPLANDS:	233,328 SF	5.36 AC
UPLAND PERCENTAGE:	98.52%	



PLAN LEGEND

	PROPERTY BOUNDARY
	ADJOINING PROPERTY BOUNDARY
	RIGHT OF WAY
	PROPOSED PARCEL BOUNDARY
	EASEMENT LINE
	EDGE OF EXISTING TRAVELWAY
	EXISTING FENCELINE
	EXISTING SHOULDERLINE
	EXISTING DRAINAGE DITCH
	FIRST LINE OF STABLE VEGETATION
	F.E.M.A. FLOOD ZONE BOUNDARY
	ACOE "404" WETLAND BOUNDARY
	WETLAND AREA
	PROPOSED IMPROVED TRAVELWAY
	PROPOSED OPEN SPACE AREA

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	5-27-09	WJK	ISSUE FOR PERMITS
2	6-22-09	WJK	REVISIONS
3	7-13-09	WJK	REVISIONS
4	7-13-09	WJK	REVISIONS
5	7-13-09	WJK	REVISIONS
6	7-13-09	WJK	REVISIONS
7	7-13-09	WJK	REVISIONS
8	7-13-09	WJK	REVISIONS
9	7-13-09	WJK	REVISIONS
10	7-13-09	WJK	REVISIONS

DATE: 5-27-09 SCALE: 1" = 100'

DESIGNED: WJK CHECKED: MSB

DRAWN: WJK APPROVED: MSB

SHEET: 17 OF 25

CAD FILE: 416700B1

PROJECT NO: 4167

OVERVIEW

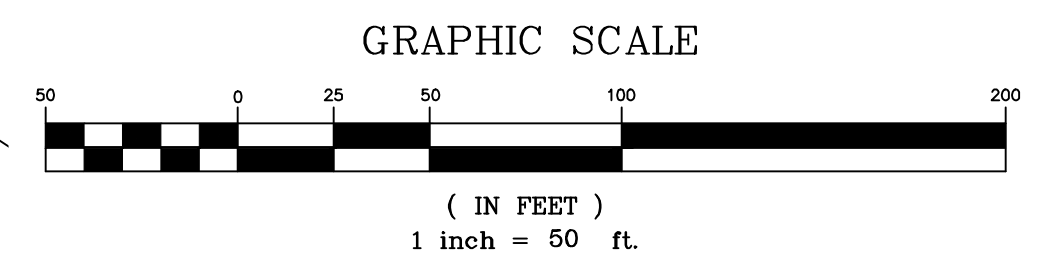
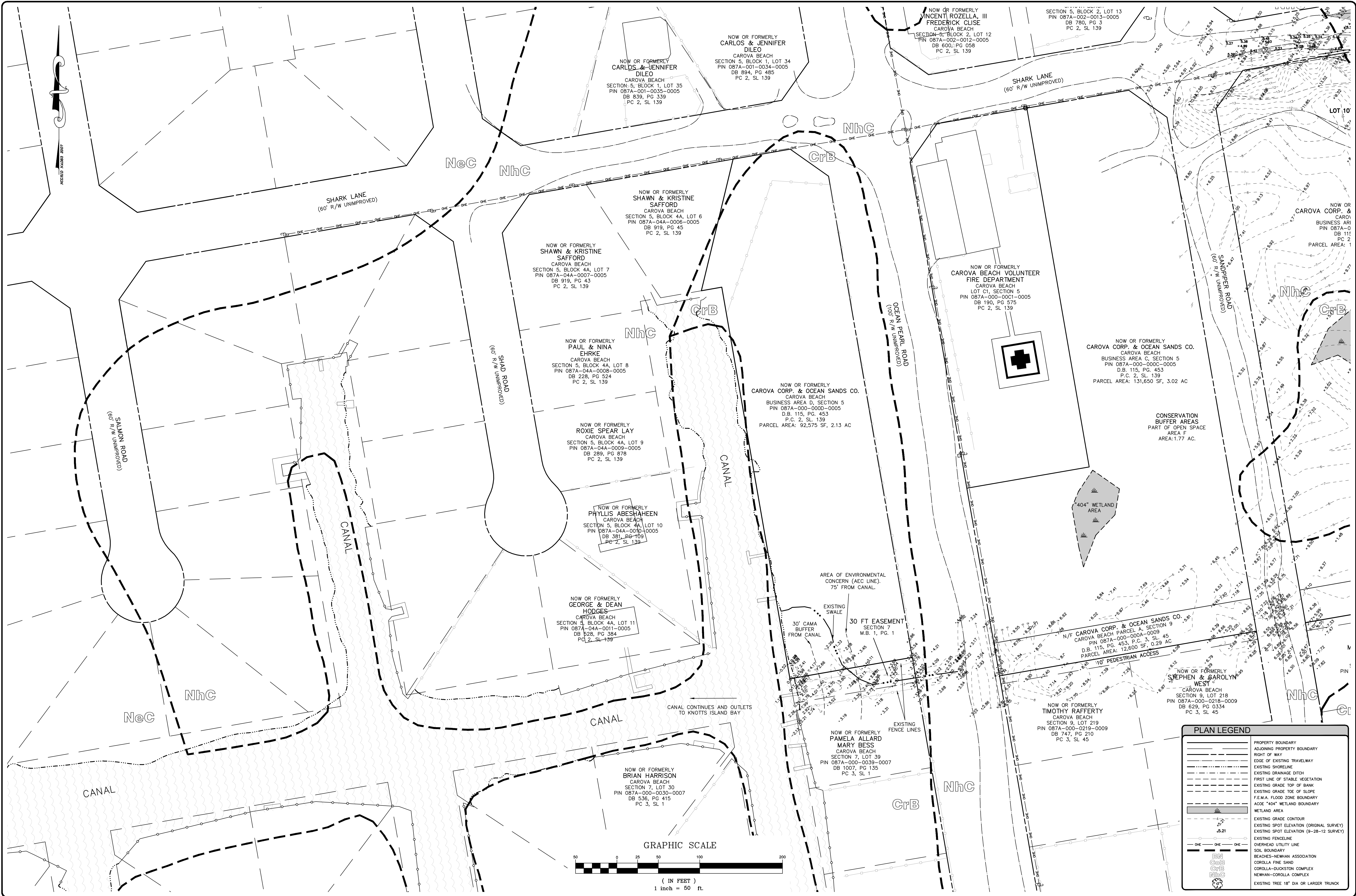
ESTATES AT CAROVA BEACH
CURRITUCK COUNTY
NORTH CAROLINA

FRUITVILLE TOWNSHIP
SECTION 5

BISSELL PROFESSIONAL GROUP
3612 North Ocean Highway
Kitty Hawk, North Carolina 27949
FAX (252) 281-1760

BISSELL PROFESSIONAL GROUP
Engineers, Planners, Surveyors
and Environmental Specialists

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PLAN LEGEND	
	PROPERTY BOUNDARY
	ADJOINING PROPERTY BOUNDARY
	RIGHT OF WAY
	EDGE OF EXISTING TRAVELWAY
	EXISTING DRAINAGE DITCH
	FIRST LINE OF STABLE VEGETATION
	EXISTING GRADE TOP OF BANK
	EXISTING GRADE TOP OF SLOPE
	FEMA FLOOD ZONE BOUNDARY
	404 WETLAND BOUNDARY
	WETLAND AREA
	EXISTING GRADE CONTOUR
	EXISTING SPOT ELEVATION (ORIGINAL SURVEY)
	EXISTING SPOT ELEVATION (9-28-12 SURVEY)
	EXISTING FENCELINE
	OVERHEAD UTILITY LINE
	SOIL BOUNDARY
	BEACHES-NEUMAN ASSOCIATION
	COROLLA FINE SAND
	COROLLA-DUCKSTON COMPLEX
	NEUMAN-COROLLA COMPLEX
	EXISTING TREE 18" DIA OR LARGER TRUNK

DATE: 5-27-09
 DESIGNED: BPG
 DRAWN: WJK
 SHEET: 18 OF 25
 CAD FILE: 416700B1
 PROJECT NO: 4167

SCALE: 1" = 50'
 CHECKED: MSB
 APPROVED: MSB

REVISIONS

NO.	DATE	DESCRIPTION
1	5/27/09	ISSUE FOR PERMITS
2	7/23/09	REVISED PER COMMENTS
3	10/29/09	REVISED PER COMMENTS
4	1/22/10	REVISED PER COMMENTS

PROJECT: FRUITVILLE TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA SECTION 5 WEST

EXISTING FEATURES

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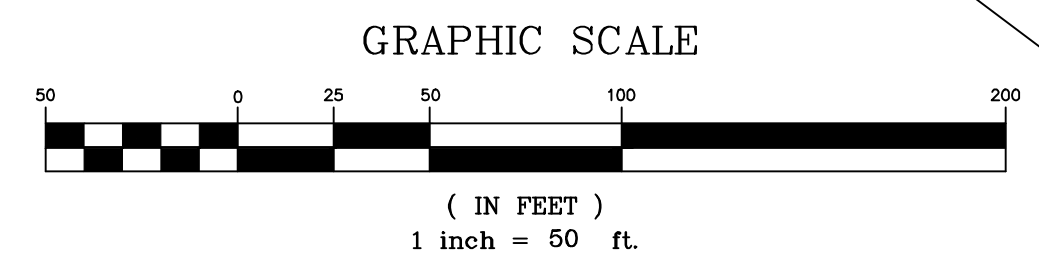
Bissell Professional Group
 3017 North Craton Highway
 Kitty Hawk, North Carolina 27949
 Phone: (252) 281-1700
 Fax: (252) 281-1700

ELEVATION UPDATE NOTE:
 THE BOLD SPOT ELEVATIONS SHOWN ON THIS SHEET WERE OBTAINED ON 9-28-2012 AND SUPERCEDE THE UNDERLYING ELEVATION CONTOUR DATA AT THAT LOCATION. THIS INFORMATION IS INTENDED TO PROVIDE UPDATED ELEVATION DATA IN THE VICINITY OF IMPROVEMENTS PROPOSED WITHIN AREAS THAT APPEAR TO HAVE TOPOGRAPHICALLY CHANGED SINCE THE ORIGINAL SURVEY.



PLAN LEGEND

- PROPERTY BOUNDARY
- ADJOINING PROPERTY BOUNDARY
- RIGHT OF WAY
- EDGE OF EXISTING TRAVELWAY
- EXISTING SHORELINE
- EXISTING DRAINAGE DITCH
- FIRST LINE OF STABLE VEGETATION
- EXISTING GRADE TOP OF BANK
- EXISTING GRADE TOE OF SLOPE
- F.E.M.A. FLOOD ZONE BOUNDARY
- ACOE "404" WETLAND BOUNDARY
- WETLAND AREA
- EXISTING GRADE CONTOUR
- EXISTING SPOT ELEVATION (ORIGINAL SURVEY)
- EXISTING GRADE TOE OF SLOPE
- OVERHEAD UTILITY LINE
- SOL BOUNDARY
- BEACHES-NEWMAN ASSOCIATION
- COROLLA FINE SAND
- COROLLA-DUCKSTON COMPLEX
- NEWMAN-COROLLA COMPLEX
- EXISTING TREE 18" DIA OR LARGER TRUNK



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 3017 North Ocean Highway
 Kitty Hawk, North Carolina 27949
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BISSELL
 PROFESSIONAL GROUP

Engineers, Planners, Surveyors
 and Environmental Specialists

EXISTING FEATURES

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ESTATES AT CAROVA BEACH
 CURRITUCK COUNTY
 SECTION 5 EAST

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	5-27-09	WJK	ISSUE FOR PERMITS
2	6-22-09	WJK	REVISED PERMITS
3	7-27-09	WJK	REVISED PERMITS
4	10-27-09	WJK	REVISED PERMITS
5	11-13-12	WJK	REVISED PERMITS
6	11-13-12	WJK	REVISED PERMITS

DATE: 5-27-09 SCALE: 1" = 50'

DRAWN: WJK CHECKED: MSB

DATE: 5-27-09

DESIGNED: WJK APPROVED: MSB

SHEET: 19 OF 25

CAD FILE: 416700B1

PROJECT NO: 4167



BISSELL
 PROFESSIONAL GROUP
 Engineers, Planners, Surveyors
 and Environmental Specialists

PROPOSED SUBDIVISION PLAN
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ESTATES AT CAROVA BEACH
 NORTH CAROLINA
 CURRITUCK COUNTY
 SECTION 5 WEST

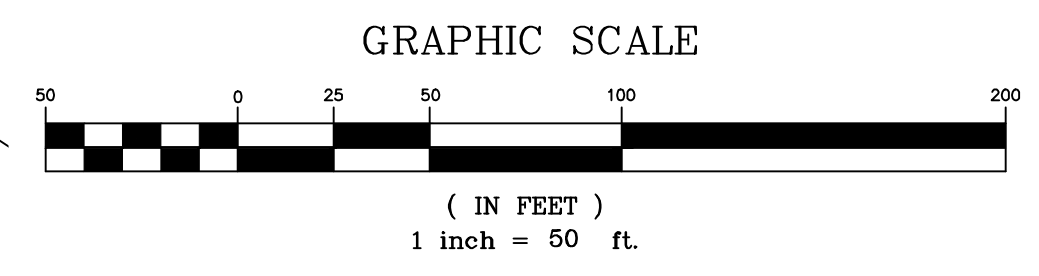
REVISIONS

NO.	DATE	DESCRIPTION
1	5/27/09	ISSUED FOR PERMITS
2	7/17/11	REVISED PER COMMENTS
3	8/24/11	REVISED PER COMMENTS

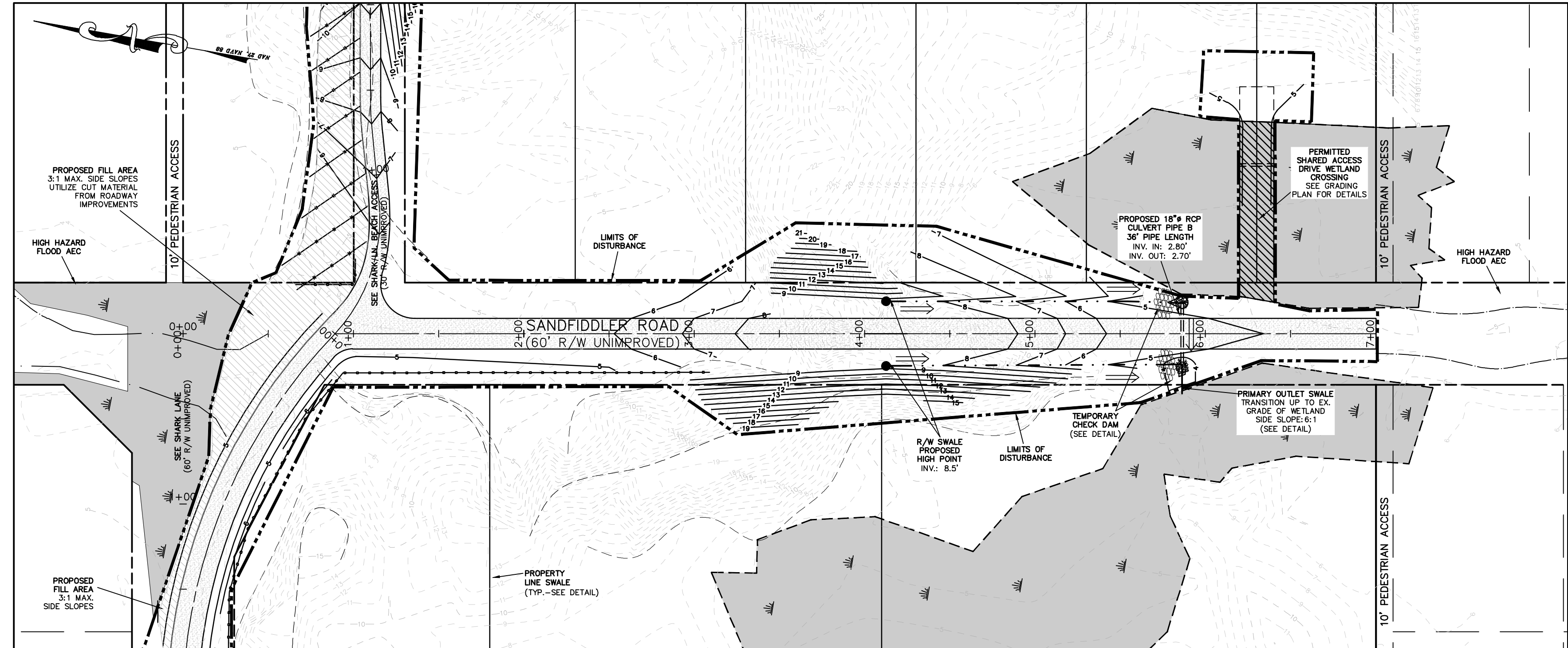
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DRAWN:	WGW	APPROVED:	MSB
SHEET:	20	OF	25
CAD FILE:	416700B1		
PROJECT NO.:	4167		

PLAN LEGEND

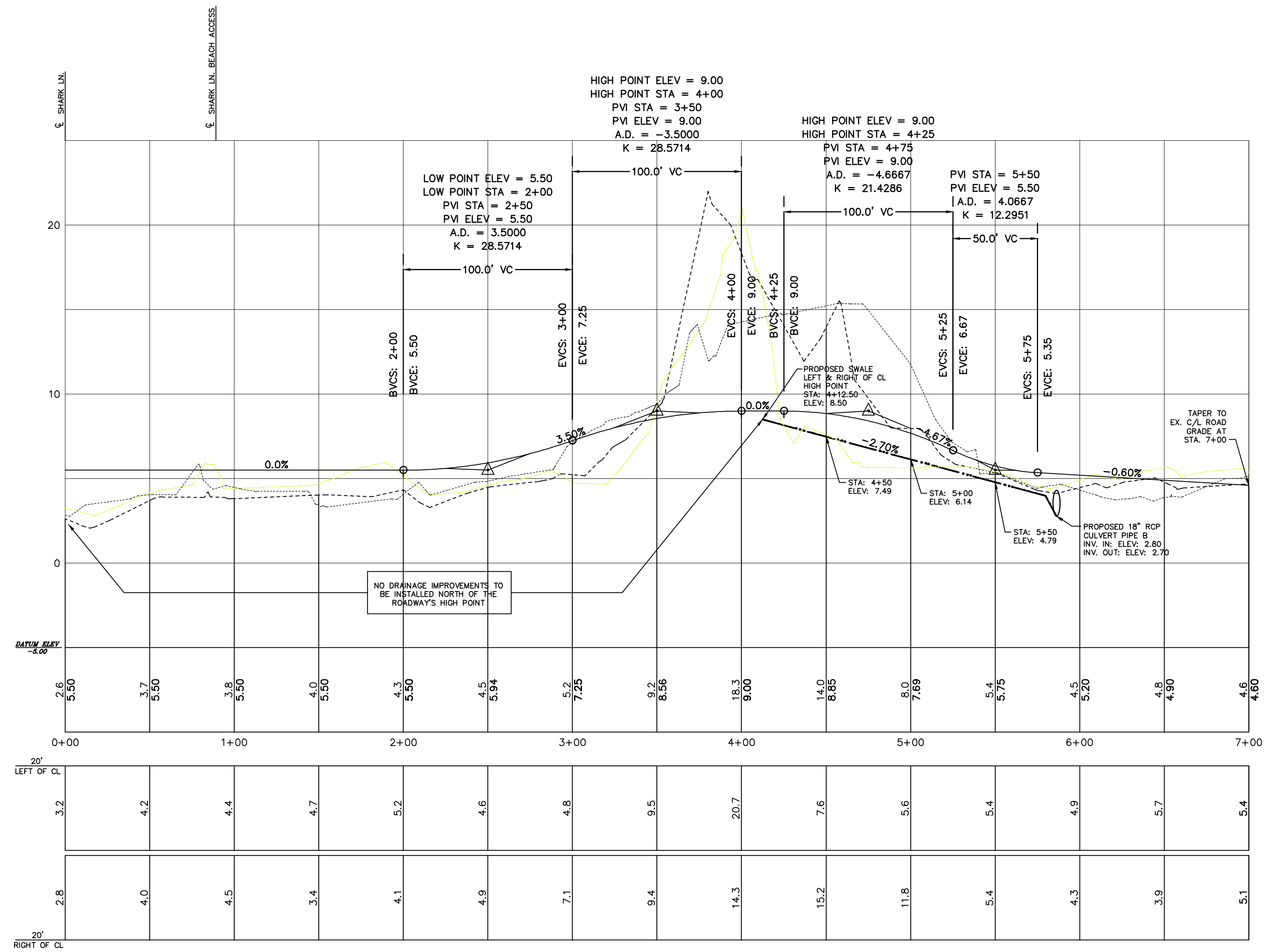
	PROPERTY BOUNDARY
	ADJOINING PROPERTY BOUNDARY
	RIGHT OF WAY
	EDGE OF EXISTING TRAVELWAY
	PROPOSED PARCEL BOUNDARY
	EASEMENT LINE
	EXISTING SHORELINE
	EXISTING DRAINAGE DITCH
	FIRST LINE OF STABLE VEGETATION
	EXISTING GRADE CONTOUR
	EXISTING GRADE TOP OF BANK
	EXISTING GRADE TOE OF SLOPE
	F.E.M.A. FLOOD ZONE BOUNDARY
	OVERHEAD UTILITY LINE
	ACOE "404" WETLAND BOUNDARY
	LIMITS OF DISTURBANCE
	PROPOSED SALT FENCE
	PROPOSED SAND FENCE
	PROPOSED DRAINAGE CULVERT PIPE
	WETLAND AREA
	PROPOSED IMPROVED TRAVELWAY
	PROPOSED OPEN SPACE AREA



PLAN LEGEND	
	PROPERTY BOUNDARY
	PROPOSED LOT BOUNDARY
	ADJOINING PROPERTY BOUNDARY
	ROADWAY CENTERLINE
	RIGHT OF WAY
	EDGE OF EXISTING TRAVELWAY
	EXISTING SHORELINE
	EXISTING GRADE CONTOUR (ELEV. AS NOTED)
	EXISTING GRADE TOP OF SLOPE
	FIRST LINE OF STABLE VEGETATION
	PROPOSED FINISHED GRADE CONTOUR
	PROPOSED SAND FENCE
	PROPOSED DRAINAGE SWALE WITH HIGH POINT AND FLOW DIRECTION NOTATION
	PROPOSED CULVERT PIPE
	PROPOSED RIP RAP OUTLET PROTECTION
	WETLAND AREA
	PROPOSED IMPROVED TRAVELWAY



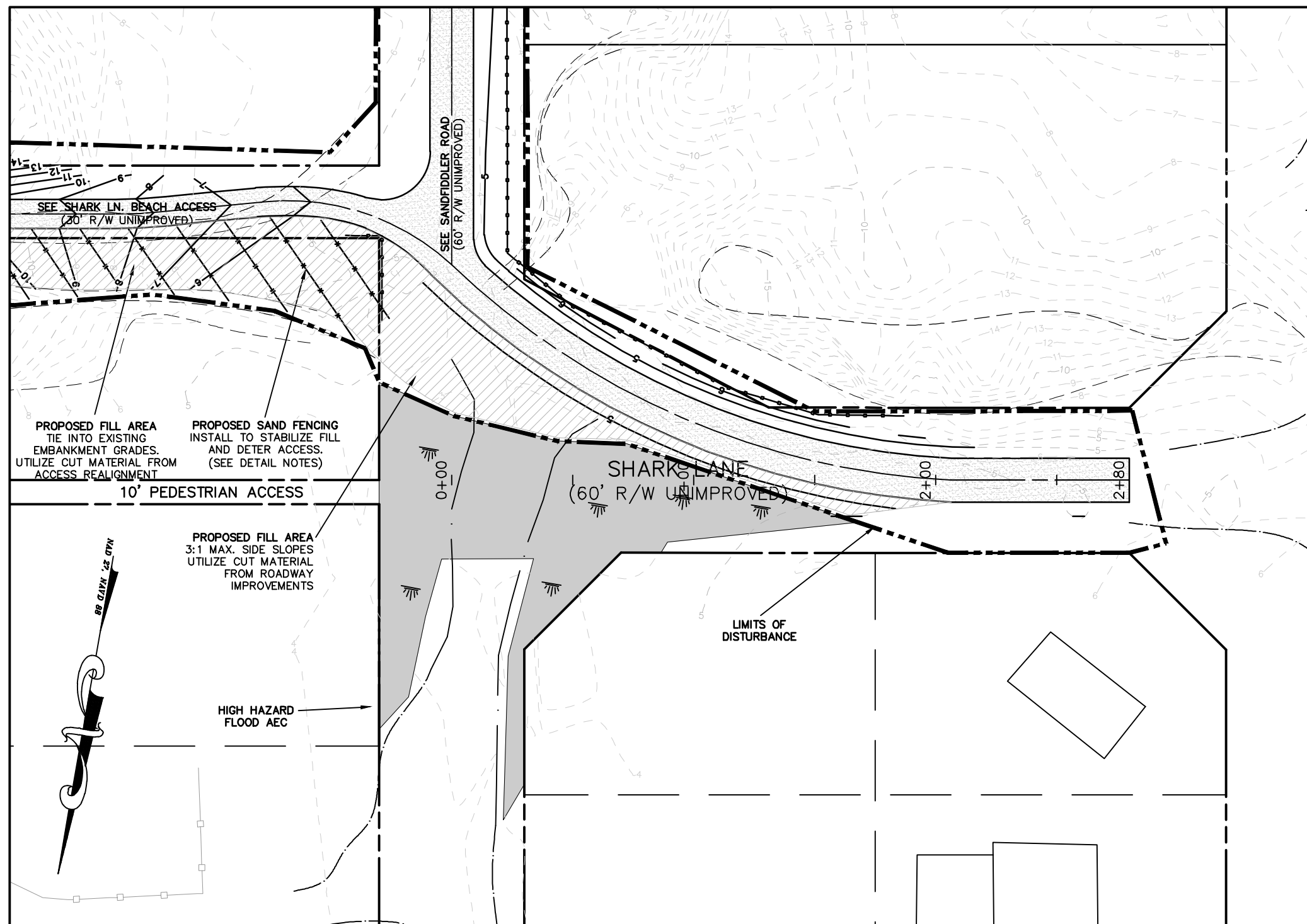
SANDFIDDLER ROAD
SCALE: 1"=50' PLAN VIEW STA. 0+00 - 7+00



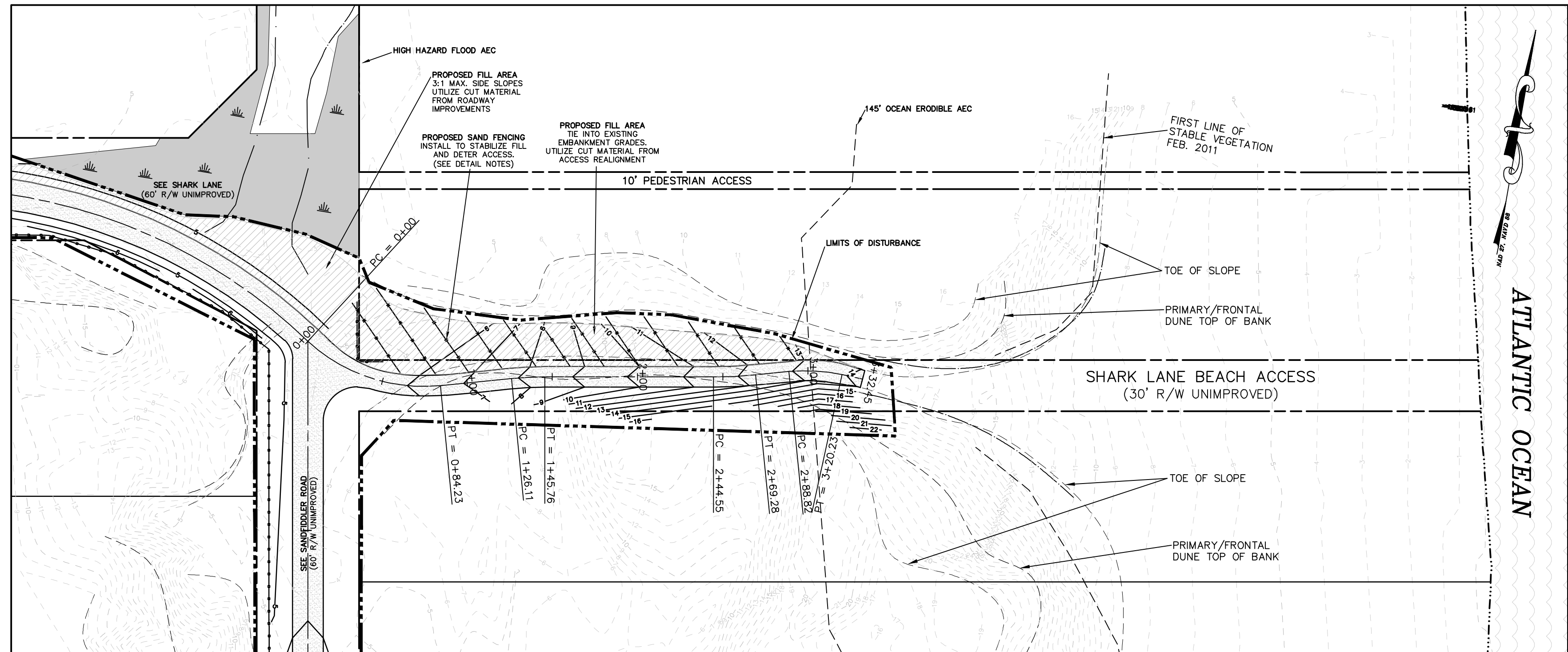
PROFILE LEGEND	
	PROPOSED ROADWAY GRADE LINE CENTER
	PROPOSED R/W SWALE GRADE LINE (LEFT OF CL)
	PROPOSED R/W SWALE GRADE LINE (RIGHT OF CL)
	EXISTING GRADE CL
	EXISTING GRADE LEFT OF CL
	EXISTING GRADE RIGHT OF CL

SANDFIDDLER ROAD
SCALE: 1"=5' V - 1"=50' H PLAN VIEW STA. 0+00 - 7+00.00

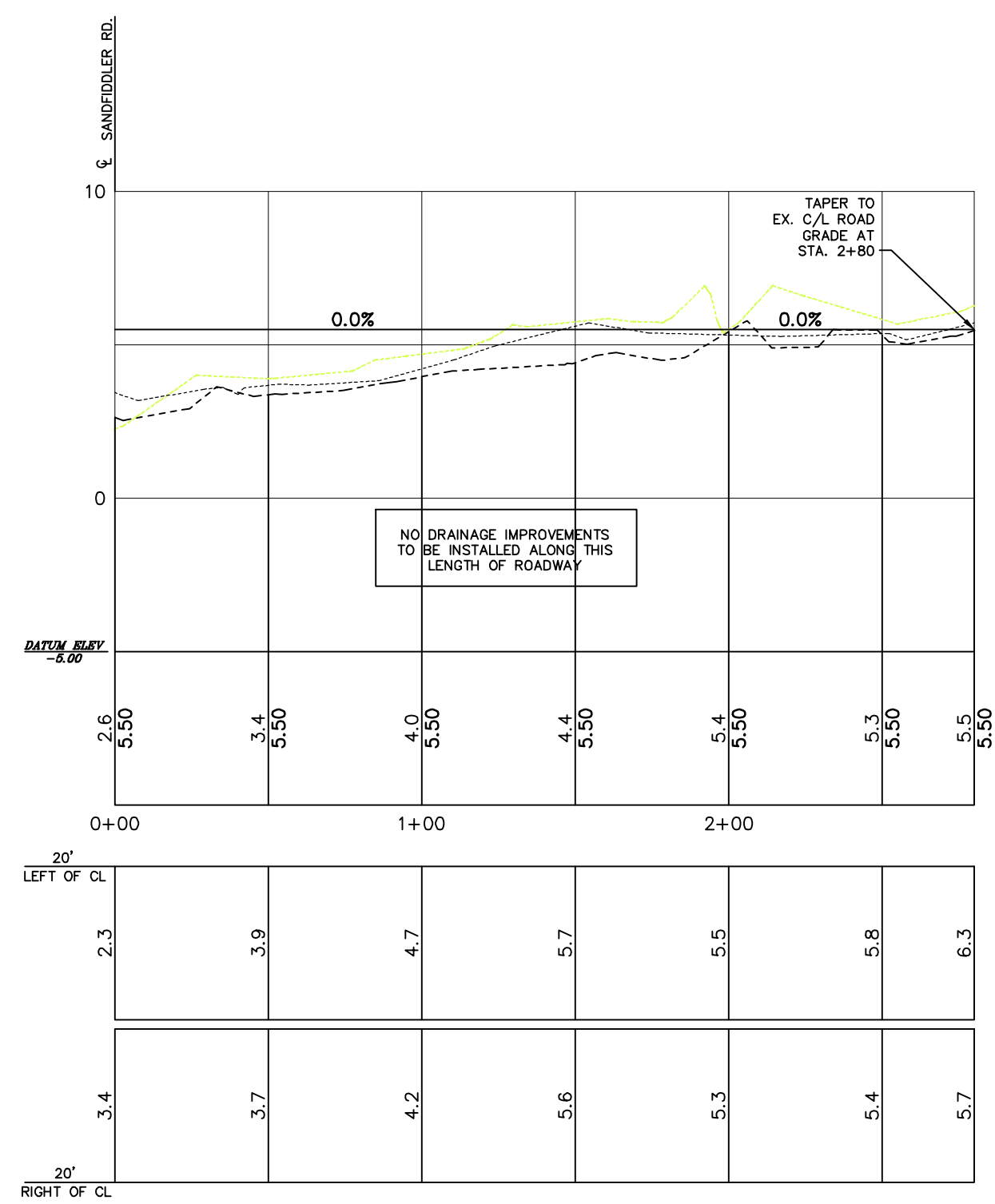
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NO. 2	DATE: 6-22-09
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NO. 7	DATE: 8-10-09
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NO. 9	DATE: 8-10-09
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NO. 16	DATE: 8-10-09
NO. 17	DATE: 8-10-09
NO. 18	DATE: 8-10-09
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NO. 21	DATE: 8-10-09
NO. 22	DATE: 8-10-09
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NO. 46	DATE: 8-10-09
NO. 47	DATE: 8-10-09
NO. 48	DATE: 8-10-09
NO. 49	DATE: 8-10-09
NO. 50	DATE: 8-10-09



SHARK LANE
SCALE: 1"=50' PLAN VIEW STA. 0+00 - 2+80.00



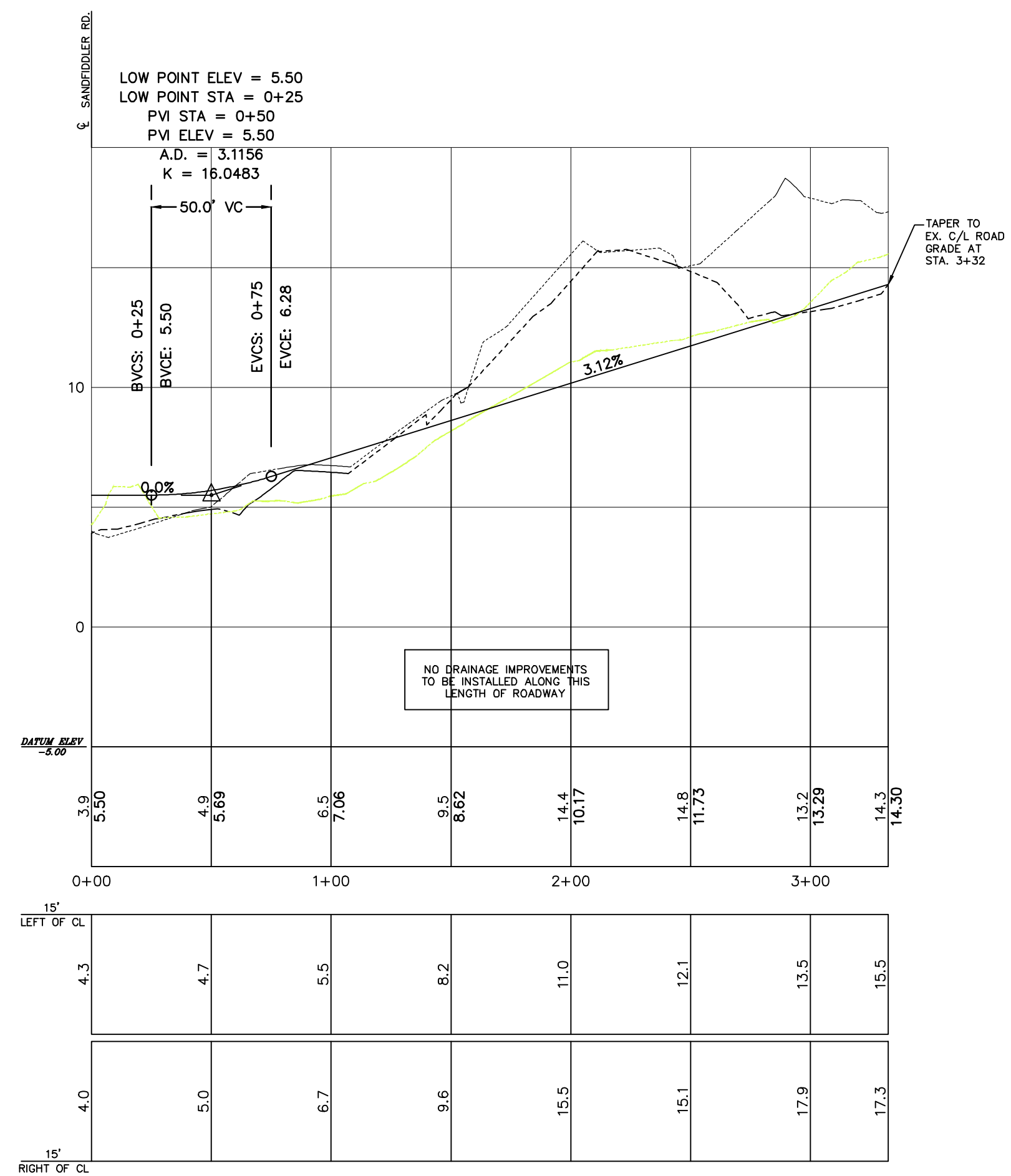
SHARK LANE BEACH ACCESS
SCALE: 1"=50' PLAN VIEW STA. 0+00 - 3+32.45



SHARK LANE
SCALE: 1"=5' V - 1"=50' H PLAN VIEW STA. 0+00 - 2+80.00

PLAN LEGEND	
[Symbol]	PROPERTY BOUNDARY
[Symbol]	PROPOSED LOT BOUNDARY
[Symbol]	ADJOINING PROPERTY BOUNDARY
[Symbol]	ROADWAY CENTERLINE
[Symbol]	RIGHT OF WAY
[Symbol]	EDGE OF EXISTING TRAVELWAY
[Symbol]	EXISTING SHORELINE
[Symbol]	EXISTING GRADE CONTOUR (ELEV. AS NOTED)
[Symbol]	EXISTING GRADE TOE OF SLOPE
[Symbol]	EXISTING GRADE TOP OF BANK
[Symbol]	FIRST LINE OF STABLE VEGETATION
[Symbol]	PROPOSED FINISHED GRADE CONTOUR
[Symbol]	PROPOSED SAND FENCE
[Symbol]	PROPOSED DRAINAGE SWALE WITH HIGH POINT AND FLOW DIRECTION NOTATION
[Symbol]	PROPOSED CULVERT PIPE
[Symbol]	PROPOSED RIP RAP OUTLET PROTECTION
[Symbol]	WETLAND AREA
[Symbol]	PROPOSED IMPROVED TRAVELWAY

PROFILE LEGEND	
[Symbol]	PROPOSED ROADWAY GRADE LINE CENTER
[Symbol]	PROPOSED R/W SWALE GRADE LINE (LEFT OF CL)
[Symbol]	PROPOSED R/W SWALE GRADE LINE (RIGHT OF CL)
[Symbol]	EXISTING GRADE CL
[Symbol]	EXISTING GRADE LEFT OF CL
[Symbol]	EXISTING GRADE RIGHT OF CL



SHARK LANE BEACH ACCESS
SCALE: 1"=5' V - 1"=50' H PLAN VIEW STA. 0+00 - 3+32.45

Bissell Professional Group
3017 North Creston Highway
Kitty Hawk, North Carolina 27849
FAX (252) 285-1760



SHARK LANE & SHARK LANE BEACH ACCESS
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ESTATES AT CAROVA BEACH
NORTH CAROLINA
FRUITVILLE TOWNSHIP CURRITUCK COUNTY

REVISIONS		
NO.	DATE	DESCRIPTION
1	5-27-09	ISSUE FOR PERMITS
2	7-17-09	REVISION PER COMMENTS
3	7-29-09	REVISION PER COMMENTS
4	8-10-09	REVISED PER COMMENTS
5	10-27-09	REVISED PER COMMENTS

DATE: 5-27-09 SCALE: 1"=50'
DESIGNED: BPG CHECKED: MSB
DRAWN: WGW APPROVED: MSB
SHEET: 24 OF 25
CAD FILE: 416700B1
PROJECT NO: 4167

GENERAL PROJECT NOTES:

- PROJECT NAME: ESTATES AT CAROVA BEACH - SECTIONS 1, 2, & 5
CAROVA BEACH, CURRITUCK COUNTY, NORTH CAROLINA
- DEVELOPER: CAROVA CORPORATION & OCEAN SANDS CORPORATION
C/O LARRY RIGGS, PRESIDENT OCEAN SANDS CORP.
P.O. BOX 400
COROLLA, NC 27927
- PROJECT DESCRIPTION: 28 LOT RESIDENTIAL SUBDIVISION
- NEAREST RECEIVING STREAM: KNOTTS ISLAND CHANNEL AND BAY
- STREAM CLASSIFICATION: S6 - PASQUOTANK RIVER BASIN
- PROJECT DISTURBANCE TABULATION:

TOTAL PROPOSED DISTURBED AREA SECTION 1:	2.3 AC.
TOTAL PROPOSED DISTURBED AREA SECTION 2:	4.5 AC.
TOTAL PROPOSED DISTURBED AREA SECTION 5:	2.2 AC.
TOTAL PROPOSED DISTURBED AREA:	9.0 AC.

NOTE:
All areas have been calculated utilizing properties within the Autocad software.

NOTE:
All excavated material occurring during the course of construction will remain on-site for the utilization of roadway preparation and earthen embankment construction.

NOTE:
The angle of graded slopes and fills shall be no greater than the angle that can be retained by vegetative cover or other adequate erosion control devices or structures. In any event, slopes left exposed will, WITHIN 21 CALENDAR DAYS OF COMPLETION of any phase of grading, be planted or otherwise provided with temporary or permanent ground cover, devices, or structures sufficient to restrain erosion. A permanent ground cover for all disturbed areas must be provided WITHIN 15 WORKING DAYS OF 90 CALENDAR DAYS (whichever is shorter) following completion of construction of development.

NOTE:
These properties contain approximately 9.00 acres of ACOE "404" jurisdictional wetlands.

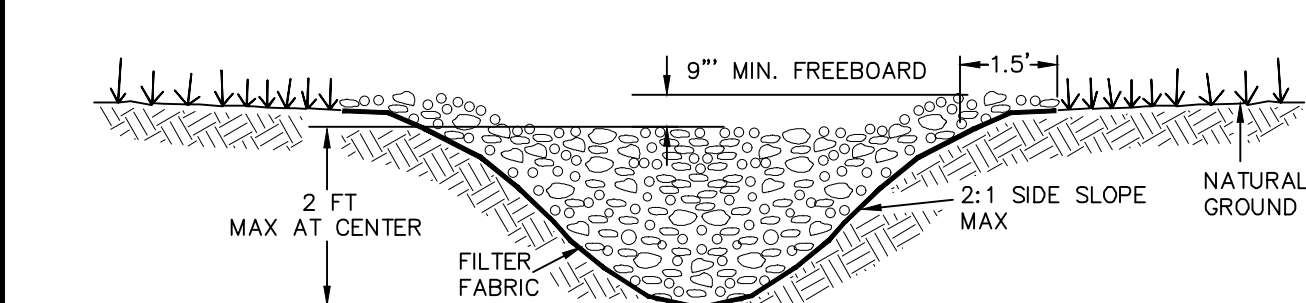
SEDIMENTATION AND EROSION CONTROL NOTES:

A. NARRATIVE AND SITE DATA
The project will consist of the construction of roadway and drainage infrastructure improvements to service the proposed 28 lot Carova Beach Subdivision Sections 1, 2 & 5 that are to be located in Carova Beach, Currituck County, North Carolina. Per the Currituck County Unified Development Ordinance, the roadway improvements will consist of grading and stabilization without the use of impervious surface materials.

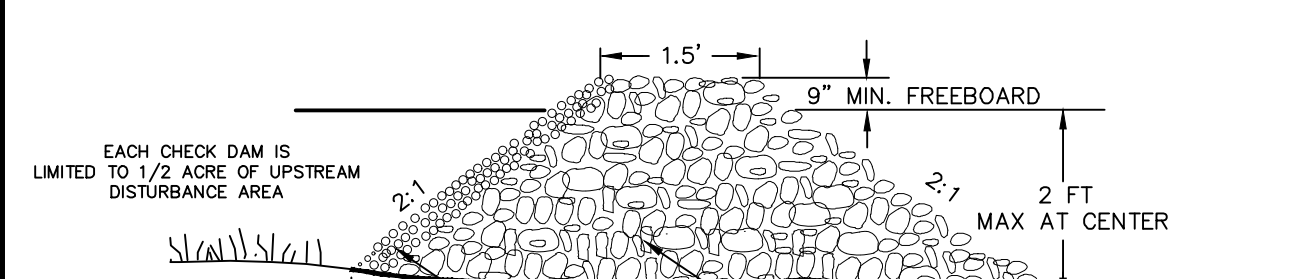
The existing topography for all three sections is relatively flat in the western and central portions, transitioning into a dune area on the landward side of the primary frontal dune and continuing back westward to the ocean. The central and western portions of each site contain large wetland areas connected by a drainage ditch that flows westward where it ultimately empties into Knotts Island Channel or Bay, a tributary to the Currituck Sound. The exception to this is Section Five which appears to contain undrained, isolated wetland areas. The ground elevations along the developable portions of each section of property range from approximately 4 ft to 20+ ft m.s.l., with the higher elevations concentrated in the dune area. All of the sites are currently undeveloped and encompassed by thick, woody vegetation, with the exception of the dune area being sparsely vegetated with grasses and low scrub brush. Land use in the vicinity consists of single family detached residential development.

B. MAINTENANCE:
1. CHECK TEMPORARY EROSION CONTROL DEVICES AFTER EACH SIGNIFICANT RAINFALL AND/OR BI-WEEKLY. REPAIR AND REMOVE SEDIMENT BUILD-UP AS NECESSARY.
2. CHECK STABILIZED AREAS AFTER EACH SIGNIFICANT RAINFALL EVENT. RILLS AND GULLIES MUST BE REPAIRED, RE-SEEDED AND MULCHED AS SOON AS POSSIBLE. TEMPORARY DIVERSIONS MAY BE NECESSARY UNTIL NEW PLANTS DEVELOP. BARE SPOTS MUST BE RELIEM, FERTILIZED, MULCHED AND RESEEDED AS PROMPTLY AS POSSIBLE. YEARLY REFERTILIZATION MAY BE REQUIRED TO MAINTAIN PRODUCTIVE STANDS.
3. PERFORM ROUTINE MAINTENANCE (INCLUDING MOWING AND CLEANING OF ROADWAY SWALE) ONCE FINAL STABILIZATION HAS OCCURRED.

C. NOTE:
THE INTENT OF THIS PLAN IS TO:
-- MINIMIZE THE EXTENT AND DURATION OF DISTURBED SOIL EXPOSURE.
-- PROTECT DISTURBED AREAS FROM STORMWATER RUNOFF.
-- STABILIZE DISTURBED AREAS AS SOON AS POSSIBLE.
-- MAINTAIN LOW RUNOFF VELOCITIES (AND PROTECT AREAS WHERE THIS IS NOT POSSIBLE).
-- RETAIN SEDIMENT ON SITE WITH SILT FENCING AND SILT DAMS. THIS PLAN REPRESENTS MINIMUM SEDIMENTATION AND EROSION CONTROL MEASURES. ADDITIONAL MEASURES AND DEVICES MAY BE REQUIRED AS CONSTRUCTION PROCEEDS.



FRONT VIEW
NOT TO SCALE



SECTION VIEW
NOT TO SCALE

TEMPORARY STONE CHECK DAM CONSTRUCTION

TEMPORARY STONE CHECK DAM CONSTRUCTION SPECIFICATIONS:
1. CLEAR, GRUB, AND STRIP THE AREA UNDER THE EMBANKMENT OF ALL VEGETATION AND ROOT MAT. REMOVE ALL SURFACE SOIL CONTAINING HIGH AMOUNTS OF ORGANIC MATTER AND STOCKPILE OR DISPOSAL OF IT PROPERLY. HAUL ALL OBJECTIONABLE MATERIAL TO THE DESIGNATED DISPOSAL AREA.
2. PLACE STONE TO THE LINES AND DIMENSIONS SHOWN IN THE PLAN ON A FILTER FABRIC FOUNDATION.
3. KEEP THE CENTER STONE SECTION AT LEAST 9 INCHES BELOW NATURAL GROUND LEVEL WHERE THE DAM ABUTS THE CHANNEL BANKS.
4. EXTEND STONE AT LEAST 1.5 FEET BEYOND THE DITCH BANK TO KEEP WATER FROM CUTTING AROUND THE ENDS OF THE CHECK DAM.
5. ALL CUT AND FILL SLOPES SHOULD BE 2:1 OR FLATTER.
6. PROTECT THE CHANNEL AFTER THE LOWEST CHECK DAM FROM HEAVY FLOW THAT COULD CAUSE EROSION.
7. MATERIAL USED IN THE STONE SECTION SHOULD BE A WELL-GRADED MIXTURE OF STONE WITH A 450 SIZE OF 9 INCHES (CLASS B EROSION CONTROL STONE IS RECOMMENDED) AND A MAXIMUM STONE SIZE OF 14 INCHES. THE STONE MAY BE MACHINE PLACED AND THE SMALLER STONES WORKED INTO THE VOIDS OF THE LARGER STONES. THE STONE SHOULD BE HARD, ANGULAR, AND HIGHLY WEATHER-RESISTANT.
8. STABILIZE THE EMBANKMENT AND ALL DISTURBED AREAS ABOVE THE SEDIMENT POOL AND DOWNSTREAM FROM THE TRAP IMMEDIATELY AFTER CONSTRUCTION.
9. ENSURE THAT OTHER PARTS OF THE CHANNEL, SUCH AS CULVERT ENTRANCES BELOW THE CHECK DAMS, ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.

MAINTENANCE OF TEMPORARY STONE CHECK DAMS:

INSPECT CHECK DAMS AND CHANNELS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (2" OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY. CLEAN OUT SEDIMENT, STRAW, LIMBS, OR OTHER DEBRIS WHEN NEEDED.

REMOVE SEDIMENT ACCUMULATION BEHIND THE DAMS AS NEEDED TO PREVENT DAMAGE TO CHANNEL VEGETATION. ALLOW THE CHANNEL TO DRAIN THROUGH THE STONE CHECK DAM, AND PREVENT LARGE FLOWS FROM CARRYING SEDIMENT OVER THE DAM. ADD STONES TO DAMS AS NEEDED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION.

NOTE

WHEN A TEMPORARY CHECK DAM IS TO BE INSTALLED WHERE A PROPOSED SWALE JOINS AN EXISTING WETLAND, THE CHECK DAM MUST BE INSTALLED PRIOR TO ANY UPSTREAM SWALE CONSTRUCTION.

WHEN A TEMPORARY CHECK DAM IS TO BE INSTALLED WITHIN AN EXISTING SWALE THAT IS PROPOSED TO BE FILLED, THE CHECK DAM MUST BE INSTALLED PRIOR TO UPSTREAM DITCH FILLING.

CONSTRUCTION SEQUENCE SCHEDULE

CONSTRUCTION ACTIVITY
Construction Access— Construction entrance, construction routes, equipment & parking areas

Sediment Traps & Barriers
Basin traps, sediment fences, & outlet protection

Runoff Control—
Diversion, perimeter dikes, water bars, and outlet protection

Runoff Conveyance System—
Stables streambanks, storm drains, channels, inlet & outlet protection, slope drains

Land Clearing & Grading—
Site preparation— cutting, filling & grading, sediment traps, barrier, diversions, drains, surface roughening

Surface Stabilization—
Temporary & permanent seeding, mulching, sodding, riprap.

Building Construction—
Buildings, utilities, paving.

Landscaping & Final Stabilization—
Topsoiling, trees & shrubs, permanent seeding, mulching, sodding, riprap

SCHEDULE CONSIDERATION

First land-disturbing activity—Stabilize bare areas immediately with gravel & temporary vegetation as construction takes place.

Install principal basins after construction site is accessed. Install additional traps and barriers as needed during grading.

Install key practices after principal sediments traps and before land grading. Install additional runoff-control conveyance measures during grading.

Where necessary, stabilize streambanks as early as possible. Install principal runoff conveyance system with runoff-control measures. Install remainder of system after grading.

Begin major clearing and grading after principal key runoff-control measures area installed. Clear borrow & disposal areas as needed. Install additional control measures as grading progresses. Mark trees & buffer areas for preservation.

Apply temporary or permanent stabilization measures immediately on all disturbed areas where work is delayed or complete.

Install necessary erosion & sedimentation control practices as work takes place.

Stabilize all open areas, including borrow & spoil areas. Remove & stabilize all temporary control measures.

LAND GRADING CONSTRUCTION SPECIFICATIONS

1. Construct & maintain all erosion & sedimentation control practices & measures in accordance with the approved sedimentation control plan and construction schedule.

2. Remove good topsoil from areas to be graded and filled, and preserve it for use in finishing the grading of all critical areas.

3. Scarify areas to be topsoiled to a minimum depth of 2 inches before placing topsoil.

4. Clear & grub areas to be filled to remove trees, vegetation, roots, or other objectionable material that would affect the planned stability of fill.

5. Ensure that fill material is free of brush, rubbish, rocks, logs, stumps, building debris, and other materials inappropriate for constructing stable fills.

6. Place all fill in layers not to exceed 9 inches in thickness, and compact the layers as required to reduce erosion, slippage, settlement, or other related problems.

7. Do not incorporate frozen material or soft, mucky, or highly compressible materials into fill slopes.

8. Do not place fill on a frozen foundation, due to possible subsidence and slippage.

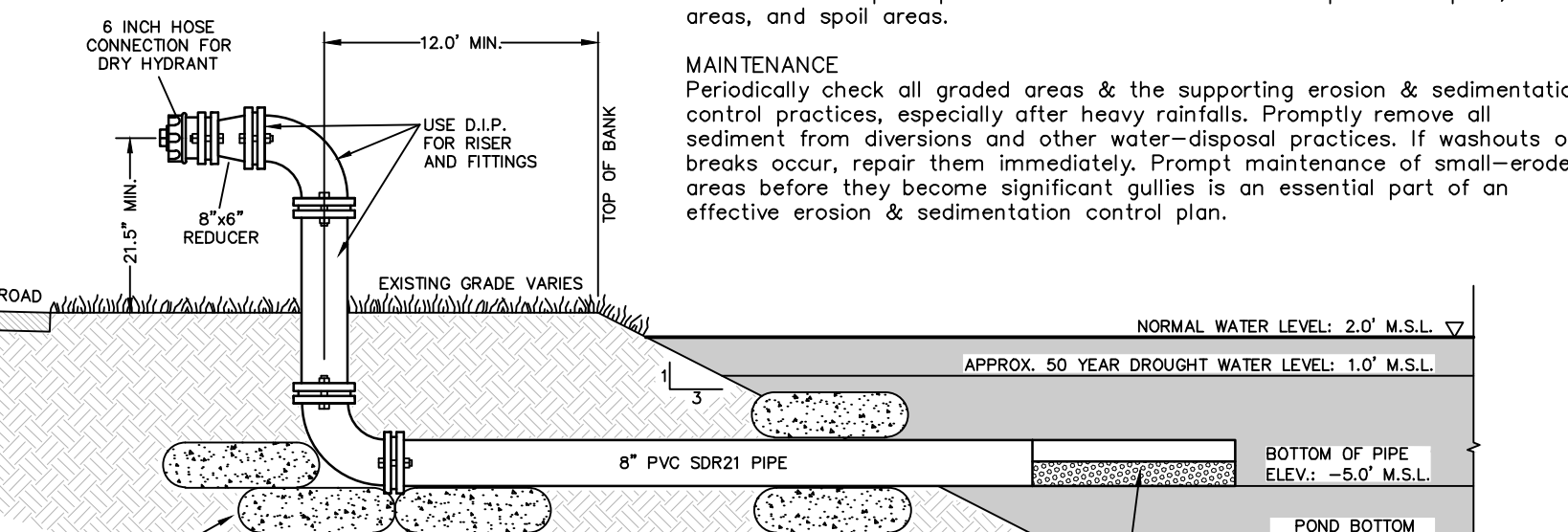
9. Keep diversions and other water conveyance measures free of sediment during all phases of development.

10. Handle seeps or springs encountered during construction in accordance with approved methods.

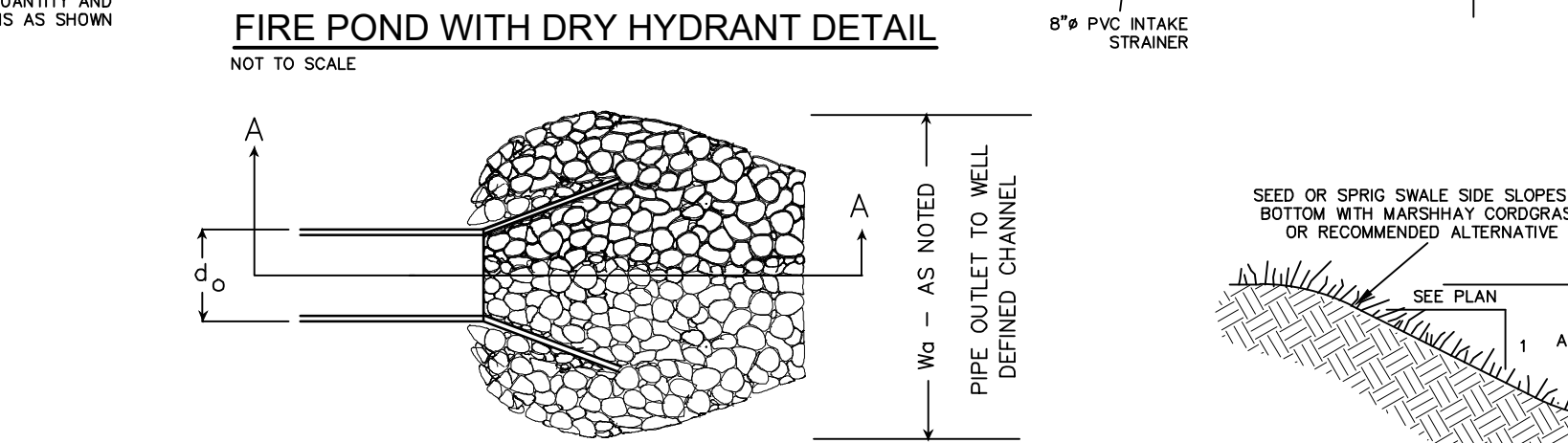
11. Provide a groundcover (temporary or permanent), device or structure to restrain erosion on exposed slopes within 21 calendar days, following completion of any phase of grading; and, a permanent groundcover for all disturbed areas within 15 working days or 90 calendar days (whichever is shorter) following completion of construction or development.

12. Provide adequate protection from erosion for all topsoil stockpiles, borrow areas, and spoil areas.

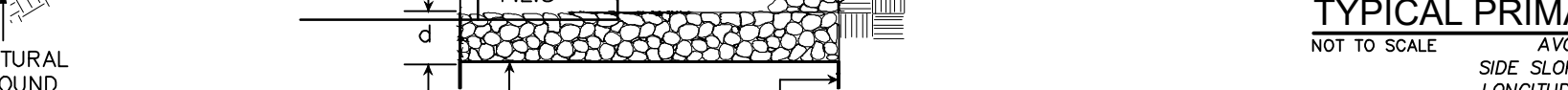
MAINTENANCE
Periodically check all graded areas & the supporting erosion & sedimentation control practices, especially after heavy rainfalls. Promptly remove all sediment from diversions and other water-disposal practices. If washouts or breaks occur, repair them immediately. Prompt maintenance of small-eroded areas before they become significant gullies is an essential part of an effective erosion & sedimentation control plan.



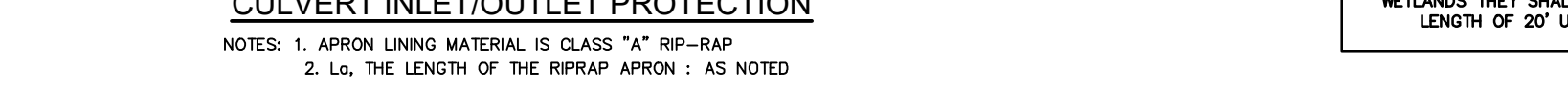
FIRE POND WITH DRY HYDRANT DETAIL
NOT TO SCALE



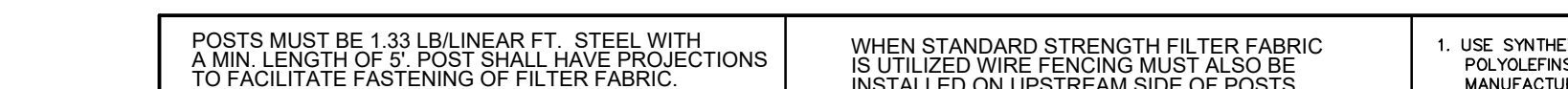
TYPICAL PRIMARY OUTLET SWALE
NOT TO SCALE



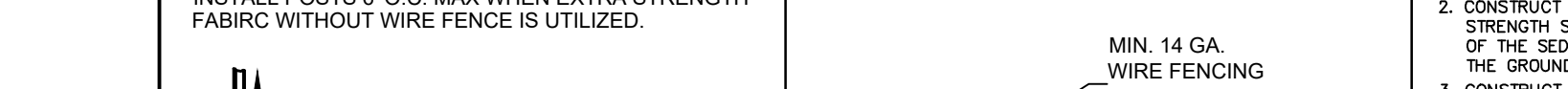
TYPICAL PROPERTY LINE SWALE
NOT TO SCALE



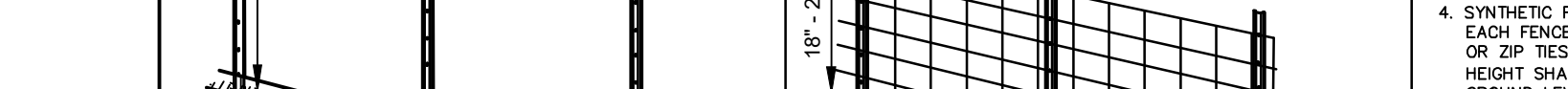
TYPICAL RIGHT OF WAY SWALE
NOT TO SCALE



TYPICAL 45 FT RIGHT OF WAY ROADWAY SECTION
NOT TO SCALE



TYPICAL 60 FT RIGHT OF WAY ROADWAY SECTION
NOT TO SCALE



TYPICAL SILT FENCING DETAIL
NOT TO SCALE



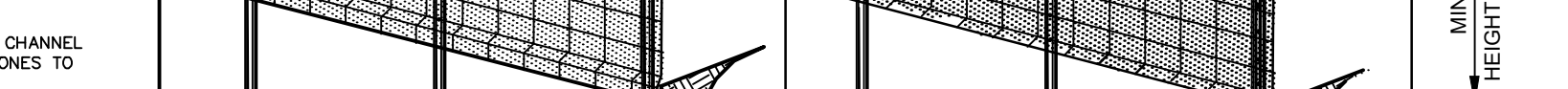
TYPICAL PRIMARY OUTLET SWALE
NOT TO SCALE



TYPICAL PROPERTY LINE SWALE
NOT TO SCALE



TYPICAL RIGHT OF WAY SWALE
NOT TO SCALE



TYPICAL 45 FT RIGHT OF WAY ROADWAY SECTION
NOT TO SCALE



TYPICAL 60 FT RIGHT OF WAY ROADWAY SECTION
NOT TO SCALE

TEMPORARY SEEDING

The purpose of the temporary seeding is to stabilize areas of loose, windblown sand and to prepare the site for a permanent groundcover.

TEMPORARY SEEDING SPECIFICATIONS FOR AREAS OF LOOSE, WINDBLOWN SAND
Seeding Recommendations for cool season
SEEDING DATES— November 1 to March 30

Species
AMERICAN BEACH GRASS

Planting Guidelines—
Plant sprigs upright in sand and about 8 inches deep. Keep roots moist during planting operation. Firmly pack soil around plant. Space approximately 1 to 1 1/2 feet apart in rows approx. 2 feet apart. Lay rows parallel to the ocean if building sand dunes. Approximately 1,000 plants will cover 2,000 sq. ft. Use closer spacing for areas of higher wind and sand movement.

Fertilization—
Use fertilizer with high nitrogen content, preferably a 30-10-0 ratio broadcast in March at 4 lbs. per 1,000 sq. ft., then 3lbs. in June and 3lbs. in September. Less preferable but still effective is a 16-8-8 lawn mixture at 6 lbs. per 1,000 sq. ft. in March, June and again in September.

Mulch—
It is not necessary to use mulch EXCEPT where noted on plan.

Maintenance—
Refertilize during the second year with 3 lbs of 30-10-0 in March or 6 lbs. of 16-8-8. Do not overfertilize. The ideal condition is to maintain a fairly open stand with about 2/3 to 3/4 of the sand surface under vegetative cover.

Seeding Recommendations for warm season
It is not recommended to plant American Beach Grass during warm weather periods (April 1st through October 31st).

PERMANENT SEEDING
The purpose of permanent seeding is to reduce erosion and decrease sediment yield from disturbed areas, and to permanently stabilize such areas in a manner that is economical, adapts to site conditions, and allows selection of the most appropriate plant materials. These areas must be seeded or planted within 21 CALENDAR DAYS after final grade is reached, unless temporary stabilization is applied.

PERMANENT SEEDING SPECIFICATIONS FOR AREAS OF LOOSE, WINDBLOWN SAND
Seeding Recommendations for cool season
SEEDING DATES— November 1 to March 30

Species
SEA OATS (used a perennial cover to replace American Beach Grass)

Planting Guidelines—
Plant seeds 2 to 3 inches deep in dune sand. Water frequently prior to sprouting in the spring. Sea Oats may be introduced into the row middles of American Beach Grass plantings.

Fertilization—
Use fertilizer with high nitrogen content, preferably a 30-10-0 ratio broadcast in March at 4 lbs. per 1,000 sq. ft., then 3lbs. in June and 3lbs. in September. Less preferable but still effective is a 16-8-8 lawn mixture at 6 lbs. per 1,000 sq. ft. in March, June and again in September.

Mulch—
It is not necessary to use mulch EXCEPT where noted on plan.

Maintenance—
Refertilize during the second year with 3 lbs of 30-10-0 in March or 6 lbs. of 16-8-8. Do not overfertilize.

Seeding Recommendations for warm season
It is not recommended to plant Sea Oats during warm weather periods (April 1st through October 31st).

PERMANENT SEEDING SPECIFICATIONS FOR REVEGETATING DITCH AND CHANNEL BANKS

Seeding Recommendations for cool season
SEEDING DATES— November 1 to March 30

Species
MARSHYAY CORDGRASS

Planting Guidelines—
Plant seed approx. 1 1/2 inches deep. Moisture is essential during initial establishment.

Fertilization—
An 8-8-8 fertilizer blend can be mixed with seeds at the time of planting.

Sprigging—
Plant seed should be made in late winter and early spring. Plants shall be placed in 3 to 4 foot rows with plants 2 to 4 feet apart in the row. Depth of planting is approx. 4 inches. Use 5 or more inches for drier locations. In large-scale roadside plantings on sand flats use first year broadcast fertilizer as on American Beach Grass.

Mulch—
It is not necessary to use mulch EXCEPT where noted on plan. (See channel liner specifications)

Maintenance—
Water as needed and mow to 4 to 6 inch height.

RECOMMENDED ALTERNATIVE GRASS SPECIES FOR DUNE STABILIZATION
BITTER PANICUM — good perennial for frontal dune areas, lacks density as a ground cover.

PANICORUM — upright bunchgrass 3 to 4 feet tall occurring in scattered clumps in dune areas.

SEACOST BLUESTEM — grows in 1 to 1 1/2 feet tall bunches, well adapted to dunes.

LONGWAVE VIRGINIA WILDRYE — cool season perennial, prefers moist areas and dune valleys.

HAIRAWN MUHLY — bunchgrass grows to almost 3 feet, found in dune valleys and flats where the sand has more moisture, excellent for borders or first line rows in salt wind barrier plantings.

SEASHORE PASPALUM — not suitable for dry dune land, prefers very wet sites, makes a very dense, flat sod when mowed.

SEEDING SPECIFICATIONS SOURCE:
"Succosalt Plants Of The Carolinas For Conservation And Beautification" by Karl E. Groat, Plant Materials Specialist, Published by U.S. Department of Agriculture - Soil Conservation Service, February 1973.

CHANNEL LINER SPECIFICATIONS:
All newly constructed swales having a longitudinal slope exceeding 2.0% shall be lined with a protective covering to minimize erosion and protect seed until permanent vegetation is established.

Covering shall be composed of a bio or photo degradable material to minimize long term environmental impacts.

Mulching with straw or other organic materials can be utilized only when it will not impede the establishment of permanent vegetation. Mulches must be properly anchored which may be difficult in the dune environment. An example is straw mulch with jute netting stapled or pinned in place.

Prematurely rolled erosion control products (RECP) are highly recommended for this application. RECP's shall be installed according to manufacturer specifications for channel linings. An example is a woven straw or wooden fiber Excelsior matting.

SAND FENCE CONSTRUCTION SPECIFICATIONS:

1. Install sand fences perpendicular to the direction of the prevailing wind. However, fencing will still be very effective as much as 22 1/2 degrees from perpendicular. See plan for general orientation.

2. Commercial sand fences usually consist of wooden slats wired together with spaces between the slats. The distance between slats is approximately equal to the slat width (about 1 1/2 inches). Other materials such as discarded Christmas trees have been used to capture sand, but trees must be securely fastened in place and spaced to touch each other in the row.

3. Erect sand fences in parallel rows 20 to 40 feet apart and 2 to 4 feet high, the number of rows installed depends on the degree of protection needed. When fences are approximately two-thirds full, erect another series of fences as needed.

4. In dune building, when the elevation of other mature dunes in the area is almost reached, or when the building process slows significantly, stabilize the dune immediately with appropriate vegetation.

SAND FENCE MAINTENANCE:
Maintain sand fences, and erect additional fences as needed until the eroding area has been permanently stabilized, or in the case of dune building, until the dune has reached the desired height and is properly vegetated.

Mulch—
It is not necessary to use mulch EXCEPT where noted on plan. (See channel liner specifications)

Maintenance—
Water as needed and mow to 4 to 6 inch height.

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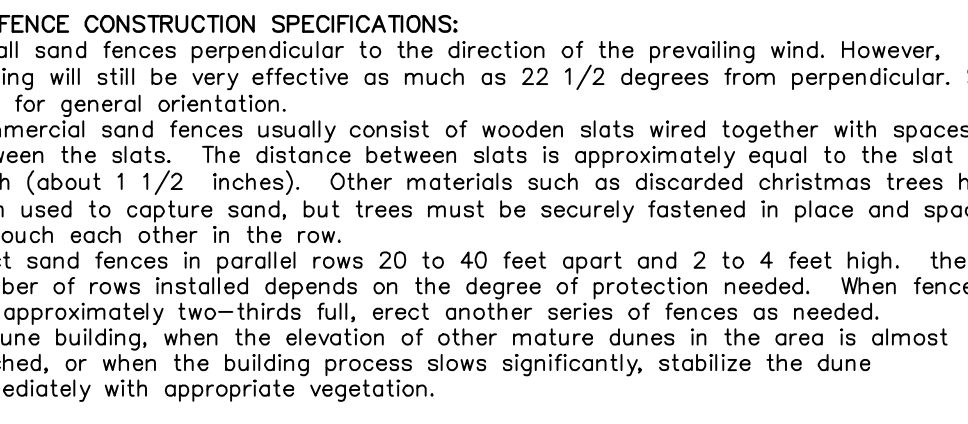
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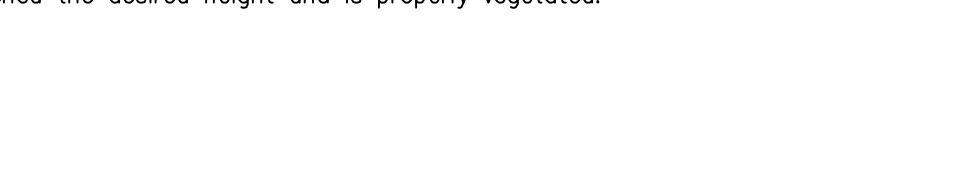
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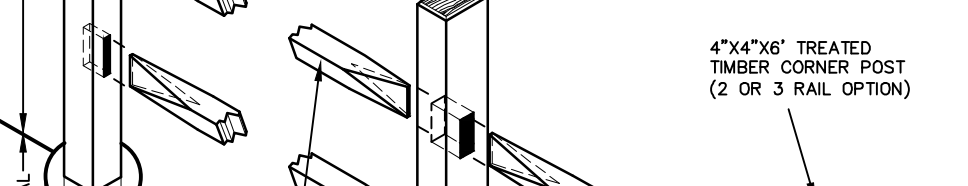
TYPICAL SPLIT RAIL BARRIER FENCE
NOT TO SCALE



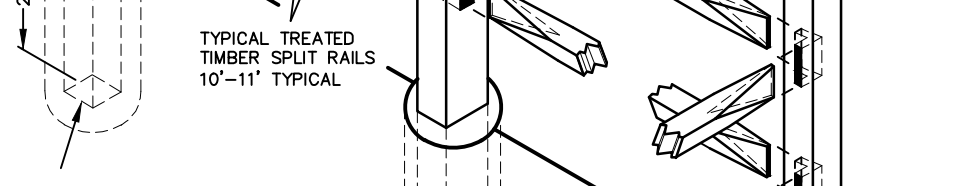
TYPICAL PRIMARY OUTLET SWALE
NOT TO SCALE



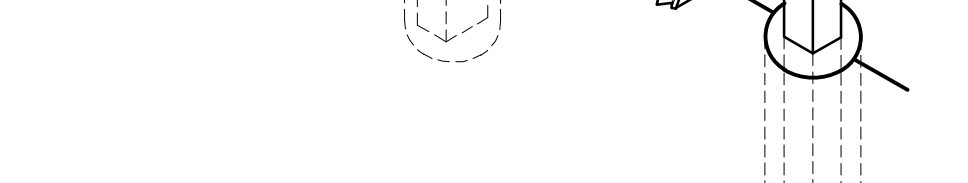
TYPICAL PROPERTY LINE SWALE
NOT TO SCALE



TYPICAL RIGHT OF WAY SWALE
NOT TO SCALE



TYPICAL 45 FT RIGHT OF WAY ROADWAY SECTION
NOT TO SCALE



TYPICAL 60 FT RIGHT OF WAY ROADWAY SECTION
NOT TO SCALE

BASSELL PROFESSIONAL GROUP
3072 North Eolian Highway
Kitty Hawk, North Carolina 27949
TEL: 252-751-7600 FAX: 252-781-7600

CONSTRUCTION NOTES & DETAILS

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ESTATES AT CAROVA BEACH
FRUITVILLE TOWNSHIP
CURRITUCK COUNTY
NORTH CAROLINA

OPEN SPACE SUBDIVISION

NO.	DATE	REVISIONS	BY	CHK
1	5-27-09	REVISIONS	BPG	MSB
2	6-22-09	REVISIONS	BPG	MSB
3	6-22-09	REVISIONS	BPG	MSB
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DATE