

**SITE DATA**  
 PROPERTY OWNER: ECHO FARM APARTMENTS, LLC  
 PROJECT ADDRESS: 4010 CAROLINA BEACH ROAD  
 PIN NUMBER: R06500-004-001-000 & R06500-004-001-002  
 ZONING DISTRICT: MF-M  
 FLOOD AREA: THE TRACT IS NOT WITHIN ANY SPECIAL FLOOD HAZARD BOUNDARY REFERENCE NC FIRM MAP #3720312500J.  
 EFFECTIVE APRIL 1, 2006 (PER PRELIMINARY PLAT-SITE INVENTORY BY WITHERS & RAVENEL, DATED 11/06/06)  
 MAXIMUM ALLOWABLE BUILDING HEIGHT (BASED ON REQUIRED SETBACK USED): 45'  
 MAXIMUM PROPOSED BUILDING HEIGHT (AVG. EX. GROUND ELEV. TO HALFWAY BETWEEN HIGHEST PEAK & CORNER): 43.74' (BLDG #6)  
 BUILDING SETBACKS, REQUIRED (DUE TO BUILDING HEIGHT): FRONT-35', REAR-29', INTERIOR SIDE-24', CORNER LOT SIDE-34'  
 BUILDING SETBACKS, PROPOSED (MIN.): FRONT-36.65', INTERIOR SIDE-25'  
 SITE AREA: 475,805 SF = 10.92 ACRES ±  
 MAXIMUM ALLOWABLE DENSITY: 17 UNITS/ACRE x 10.92 ACRES = 185.64 UNITS, 186 UNITS  
 TOTAL UNITS: 184 (ONE BEDROOM)  
 PROPOSED BUILDING AREA (FOOTPRINT; EXCLUDES PORCHES, PATIOS, BALCONIES, & ROOF OVERHANGS): 50,677.28 SF  
 MAXIMUM ALLOWABLE LOT COVERAGE: 30%  
 PROPOSED LOT COVERAGE: 50,677.28 / 475,805 x 100% = 10.65%  
 NUMBER OF PROPOSED BUILDINGS: 10  
 BUILDING SIZE (AREA & UNITS ARE PER BUILDING):

BUILDING	SQUARE FOOTAGE (1ST STORY)	SQUARE FOOTAGE (2ND STORY)	SQUARE FOOTAGE (3RD STORY)	NUMBER OF UNITS (1 BEDROOM)
1-2	6,034.06	6,034.06	6,034.06	20
3-8	6,034.06	6,034.06	6,034.06	24
CLUBHOUSE	1,924.80	N/A	N/A	N/A
MAINTENANCE	480.00	N/A	N/A	N/A

TOTAL AMOUNT & PERCENT OF IMPERVIOUS SURFACE AREAS ON-SITE:

BEFORE DEVELOPMENT			AFTER DEVELOPMENT				
BUILDINGS	AREA (SF)	% OF SITE	BUILDINGS (INCLUDES ROOF OVERHANG)	EX. (SF)	PROPOSED (SF)	TOTAL (SF)	% OF SITE
BUILDINGS	5,450	1.15	BUILDINGS (INCLUDES ROOF OVERHANG)	0	59,250.00	59,250.00	12.45
DRIVEWAY	14,100	2.96	PARKING (CONVENTIONAL)	0	70,485.00	70,485.00	14.81
OTHER	954	0.20	PARKING (PERVIOUS; AFTER CREDIT)	0	10,835.00	10,835.00	2.28
TOTAL	20,504	4.31	SIDEWALK	0	13,726.00	13,726.00	2.89
			OTHER	0	5,722.00	5,722.00	1.20
			TOTAL	0	160,018.00	160,018.00	33.63

OFF STREET PARKING CALCULATIONS (RESIDENTIAL):

MIN. PARKING REQ. = 1.5 SPACES/UNIT x 184 UNITS = 276 SPACES  
 MAX. PARKING REQ. = 2.5 SPACES/UNIT x 184 UNITS = 460 SPACES  
 NUMBER OF PROPOSED PARKING SPACES = 289  
 MIN. NUMBER OF REQ. HANDICAPPED SPACES PER ADA STANDARDS FOR ACCESSIBLE DESIGN = 11  
 NUMBER OF PROPOSED HANDICAPPED SPACES = 17 SPACES  
 NUMBER OF REQ. BICYCLE PARKING SPACES = 20  
 NUMBER OF PROPOSED BICYCLE PARKING SPACES = 24

THE TRACT IS NOT WITHIN ANY SPECIAL HIGHWAY OVERLAY DISTRICT OR ANY OTHER ZONING OVERLAY DISTRICT PER THE CITY OF WILMINGTON ZONING MAPS (MAPS 3125-2 & 3125-4, DATED: MAY 8, 2015)  
 CAMA LAND USE CLASSIFICATION PER THE 2006 CAMA PLAN UPDATE LAND CLASSIFICATION MAP IS URBAN.

**CITY OF WILMINGTON STANDARD NOTES**

- PRIOR TO ANY CLEARING, GRADING OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING WILL BE INSTALLED AROUND PROTECTED TREES OR GROVES OF TREES AND NO CONSTRUCTION WORKERS, TOOLS, MATERIALS, OR VEHICLES ARE PERMITTED WITHIN THE TREE PROTECTION FENCING.
- NO LAND DISTURBANCE INCLUDING TREE REMOVAL IS TO OCCUR OUTSIDE THE LIMITS OF DISTURBANCE SHOWN ON THE PLANS.
- NO EQUIPMENT IS ALLOWED ON THE SITE UNTIL ALL TREE PROTECTION FENCING AND SILT FENCING HAS BEEN INSTALLED AND APPROVED.
- PROTECTIVE TREE FENCING IS TO BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.
- LAND CLEARING AND CONSTRUCTION CONTRACTORS SHALL RECEIVE ADEQUATE INSTRUCTION ON TREE PROTECTION REQUIREMENTS AND METHODS.
- ALL PAVEMENT MARKINGS IN PUBLIC RIGHTS-OF-WAY AND FOR DRIVEWAYS ARE TO BE THERMOPLASTIC AND MEET CITY AND/OR NCDOT STANDARDS.
- IT SHALL BE THE RESPONSIBILITY OF THE SUBDIVIDER TO ERECT OFFICIAL STREET NAME SIGNS AT ALL INTERSECTIONS ASSOCIATED WITH THE SUBDIVISION IN ACCORDANCE WITH THE TECHNICAL STANDARDS AND SPECIFICATIONS MANUAL CONTACT TRAFFIC ENGINEERING AT 341-7888 TO DISCUSS INSTALLATION OF TRAFFIC AND STREET NAME SIGNS. PROPOSED STREET NAMES MUST BE APPROVED PRIOR TO INSTALLATION OF STREET NAME SIGNS.
- TRAFFIC CONTROL DEVICES (INCLUDING SIGNS AND PAVEMENT MARKINGS) IN AREAS OPEN TO PUBLIC TRAFFIC ARE TO MEET MUTCD (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) STANDARDS.
- CALL TRAFFIC ENGINEERING AT 341-7888 TO ENSURE THAT ALL TRAFFIC SIGNAL FACILITIES AND EQUIPMENT ARE SHOWN ON THE PLAN. CALL TRAFFIC ENGINEERING AT 341-7888 FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION IN THE RIGHT OF WAY.
- ANY BROKEN OR MISSING SIDEWALK PANELS, DRIVEWAY APRON PANELS, OR CURB AND GUTTER SECTIONS SHALL BE REPLACED. CONTACT TRAFFIC ENGINEERING AT 341-7888 TO DISCUSS STREET LIGHTING OPTIONS.
- PROJECT SHALL COMPLY WITH CFPWA GROSS CONNECTION CONTROL REQUIREMENTS. WATER METER(S) CANNOT BE RELEASED UNTIL ALL REQUIREMENTS ARE MET AND THE STATE HAS GIVEN THEIR FINAL APPROVAL. CALL 332-6558 FOR INFORMATION.
- IF THE CONTRACTOR DESIRES CFPWA WATER FOR CONSTRUCTION HE SHALL APPLY IN ADVANCE FOR THIS SERVICE & MUST PROVIDE A REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTION DEVICE ON THE DEVELOPER'S SIDE OF THE WATER METER BOX.
- ANY IRRIGATION SYSTEM SUPPLIED BY CFPWA WATER SHALL COMPLY WITH THE CFPWA GROSS CONNECTION CONTROL REGULATIONS. CALL 332-6558 FOR INFORMATION.
- ANY BACKFLOW PREVENTION DEVICES REQUIRED BY CFPWA WILL NEED TO BE ON THE LIST OF APPROVED DEVICES BY USCFCCHR OR ASSE.
- ALL TRAFFIC CONTROL SIGNS & MARKINGS OFF THE RIGHT-OF-WAY ARE TO BE MAINTAINED BY THE PROPERTY OWNER IN ACCORDANCE WITH MUTCD STANDARDS.
- ALL PAVEMENT MARKINGS REGULATING TRAFFIC FLOW MUST BE THERMOPLASTIC.
- A UTILITY CUT PERMIT IS REQUIRED FOR EACH OPEN CUT OF A CITY STREET (CONTACT 341-5888 FOR MORE DETAILS). IN CERTAIN CASES, AN ENTIRE RESURFACING OF THE AREA BEING OPEN CUT MAY BE REQUIRED.
- TRAFFIC ENGINEERING MUST APPROVE OF PAVEMENT MARKING LAYOUT PRIOR TO ACTUAL STRIPING.
- A LANDSCAPING PLAN INDICATING THE LOCATION OF REQUIRED STREET TREES SHALL BE SUBMITTED TO THE CITY OF WILMINGTON TRAFFIC ENGINEERING DIVISION AND PARKS AND RECREATION DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO THE RECORDING OF THE FINAL PLAT.
- CONTACT THE NORTH CAROLINA ONE CALL CENTER PRIOR TO DOING ANY DIGGING. 1-800-632-4949.
- ALL PARKING STALL MARKINGS AND LANE ARROWS WITHIN THE PARKING AREAS SHALL BE WHITE.
- INSTALL REFLECTORS PER CITY AND NCDOT STANDARDS.

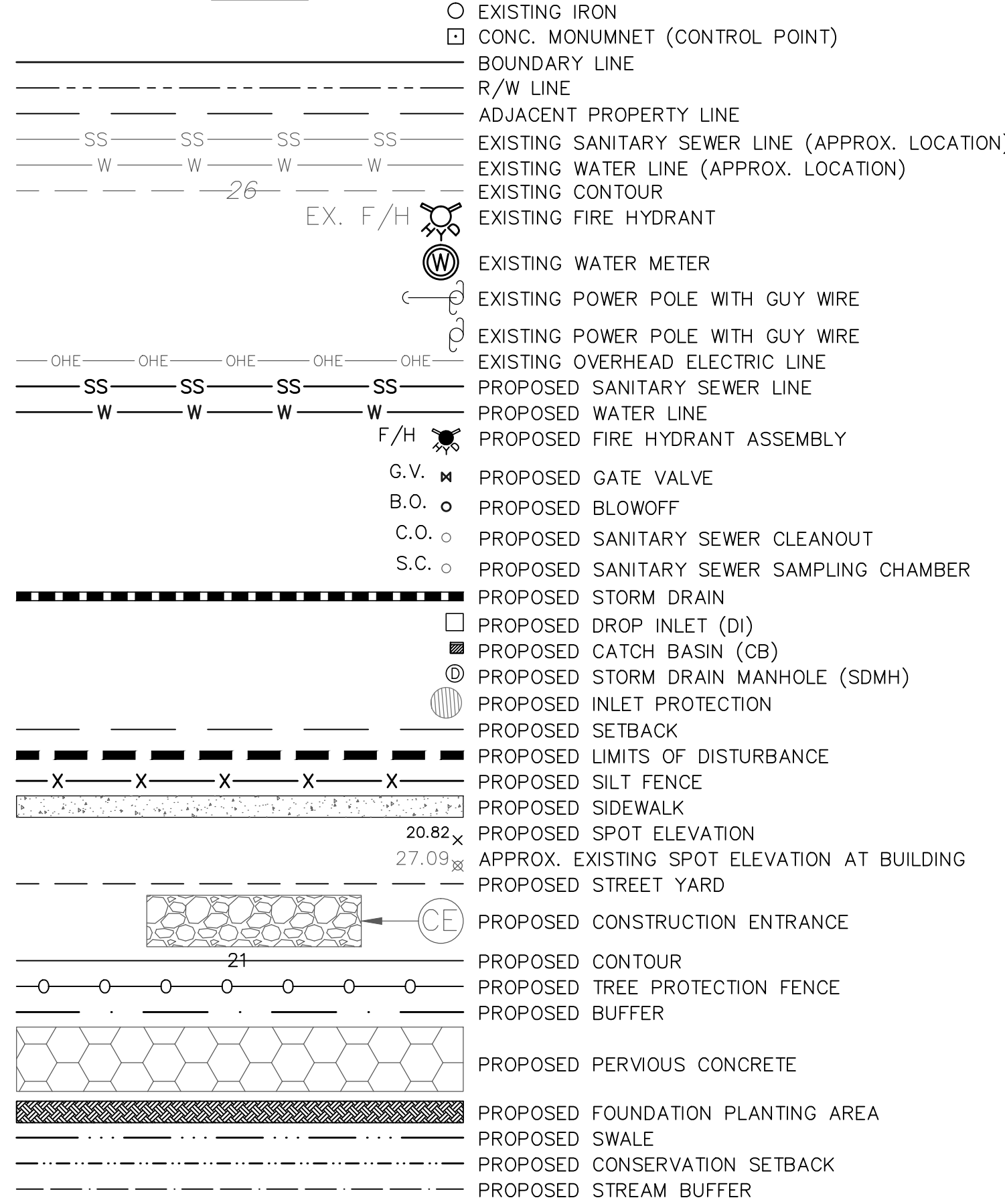
**FIRE AND LIFE SAFETY NOTES**

- PARKING AND LANDSCAPING CANNOT BLOCK FIRE HYDRANTS OR FDC'S. A 3-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF THE HYDRANT AND FDC.
- FIRE HYDRANTS CANNOT BE FURTHER THAN 8' FROM THE CURB.
- NEW HYDRANTS MUST BE BROUGHT INTO SERVICE PRIOR TO COMBUSTIBLE MATERIALS BEING DELIVERED TO THE JOB SITE.
- ALL WEATHER ACCESS ROAD MUST BE MAINTAINED AROUND CONSTRUCTION SITE AT ALL TIMES.
- PRIVATE UNDERGROUND FIRE LINES REQUIRE A SEPARATE UNDERGROUND FIRE LINE PERMIT FROM THE WILMINGTON FIRE & LIFE SAFETY DIVISION AT 910-343-0696.
- A MINIMUM OF 5' SHALL SEPARATE UNDERGROUND FIRE LINES OR PRIVATE WATER MAINS FROM OTHER UNDERGROUND UTILITIES.
- FDC'S CAN BE NO FURTHER THAN 150' FROM A FIRE HYDRANT.
- FDC'S CAN BE NO FURTHER THAN 40' FROM FIRE DEPARTMENT VEHICLE PLACEMENT.
- BUILDING CONSTRUCTION TYPE ACCORDING TO THE INTERNATIONAL BUILDING CODE IS V-B.
- TAMPER SWITCHES SHALL BE INSTALLED ON ALL VALVES THAT ARE CAPABLE OF TURNING THE WATER SUPPLY OFF TO THE SPRINKLER SYSTEMS.

**SITE INVENTORY NOTES**

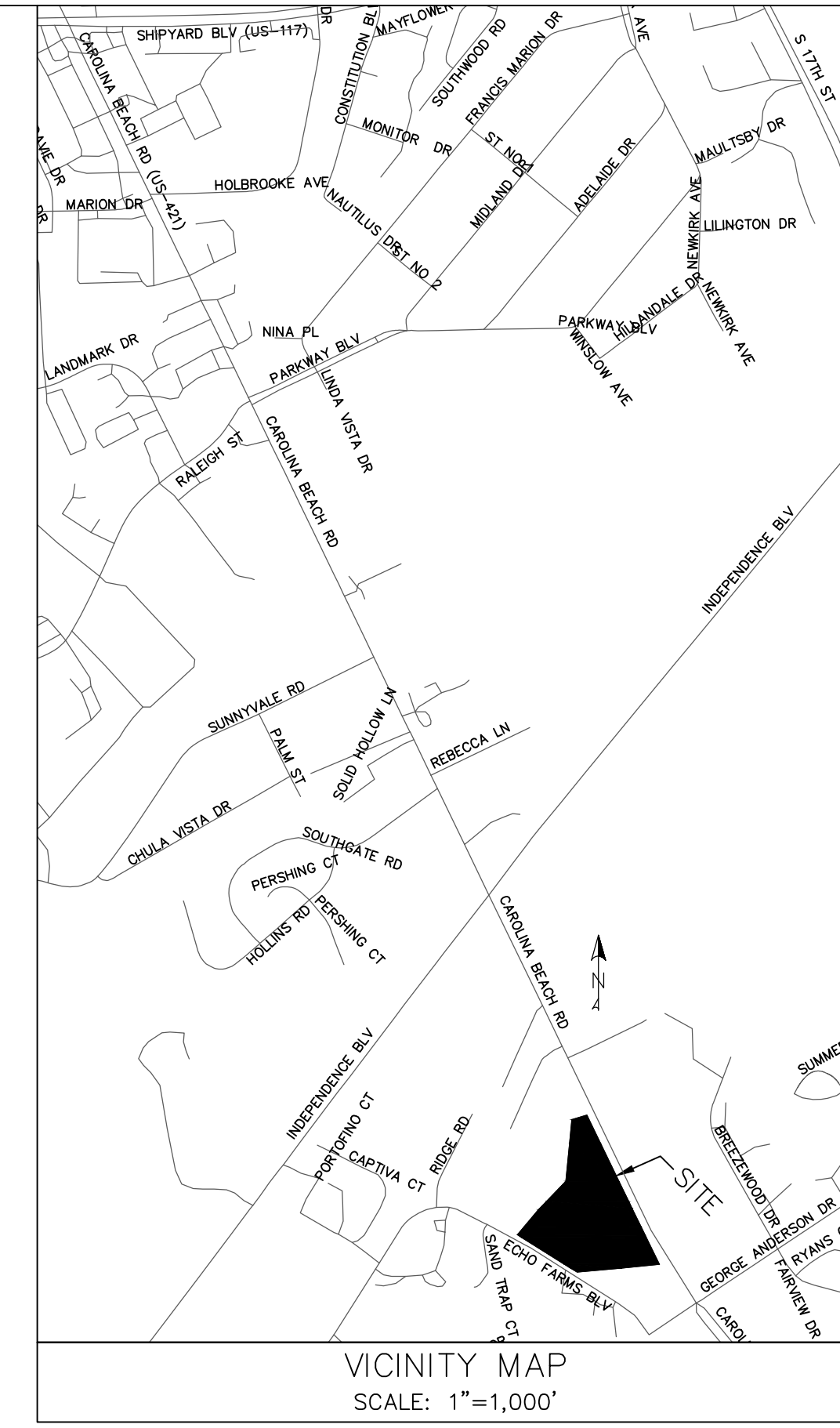
- SOIL TYPES: Jo (JOHNSTON), Le (LEON), Ly (LYNN HAVEN), & Kr (KUREB).
- THIS SITE IS NOT LOCATED WITHIN A CAMA AEC (PER ECS CAROLINAS, LLP).
- A 25' CONSERVATION SETBACK IS REQUIRED FROM THE WETLANDS WHICH IS CONSIDERED SWAMP FOREST (PER ECS CAROLINAS, LLP).
- THIS SITE IS NOT RECOGNIZED AS A LOCAL, STATE OR FEDERALLY HISTORIC OR ARCHEOLOGICAL SITE (PER ECS CAROLINAS, LLP).
- NO CEMETERIES, BURIAL SITES, OR BURIAL GROUNDS LOCATED ON THE SITE (PER ECS CAROLINAS, LLP).
- WETLANDS DELINEATED BY ECS CAROLINAS, LLP (SEE EXISTING CONDITIONS MAP).
- THE PROJECT WILL NOT ADVERSELY AFFECT THREATENED OR ENDANGERED SPECIES (OPINION PER ECS CAROLINAS, LLP). ECS CAROLINAS, LLP OBSERVED SUMMER HABITAT FOR THE NORTHERN LONG-EARED BAT ON THE SITE AND RECOMMENDS ANY PROPOSED CLEARING FOR THE SITE BE CONDUCTED DURING THE WINTER MONTHS.
- EXISTING VEGETATION HAS BEEN LOCATED AND IS LABELED (SEE EXISTING CONDITIONS MAP).
- THE SITE IS NOT LOCATED WITHIN THE 100-YEAR FLOOD PLAIN (PER ECS CAROLINAS, LLP).
- PRESENCE OR NON-PRESENCE OF EXISTING OR PROPOSED THROUGHFARES, BIKE ROUTES, PEDESTRIAN SIDEWALKS, OR TRAILS & TRANSIT FACILITIES (SEE EXISTING CONDITIONS MAP).
- THE TRACT IS WITHIN THE CAPE FEAR RIVER BASIN & DRAINS TO BARNARDS CREEK (C;Sw).
- THE SITE IS CLASSIFIED AS URBAN PER THE CAMA LAND CLASSIFICATION WITH AN OFF-SITE CONSERVATION AREA LOCATED TO THE NORTHWEST OF THE SITE (PER ECS CAROLINAS, LLP).

**LEGEND**



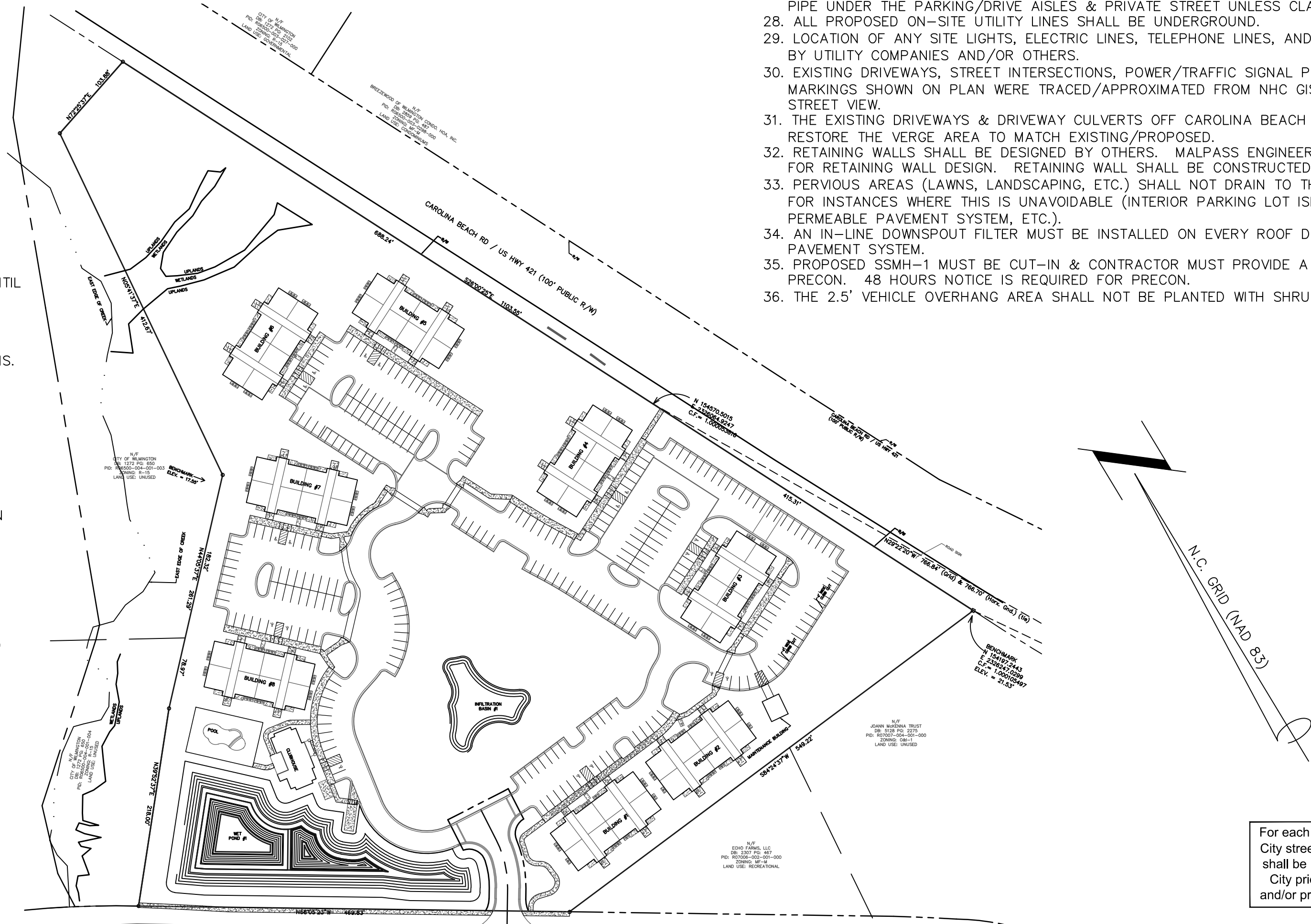
**NOTES**

- BOUNDARY & TOPOGRAPHICAL SURVEY BY BATEMAN CIVIL SURVEY COMPANY, 200 N. MAIN STREET, HOLLY SPRINGS, NC 27540. PHONE: 919-577-1080.
- ALL ELEVATIONS ARE IN FEET UNLESS OTHERWISE INDICATED.
- ALL CITY, STATE, & FEDERAL REGULATIONS SHALL BE FOLLOWED.
- PRIOR TO INSTALLATION OF WATER OR SANITARY SEWER MAINS CONTRACTOR SHALL NOTIFY THE ENGINEER WITH MALPASS ENGINEERING & SURVEYING, P.C. AT 910-392-5243.
- EXISTING SANITARY SEWER MAINS ARE OWNED BY CFPWA. PROPOSED PVC SANITARY SEWER MAINS SHALL BE AWWA C900 CLASS 150 (DR-18) UNLESS OTHERWISE INDICATED. PROPOSED DIP SANITARY SEWER MAINS SHALL CONFORM TO AWWA C151 CLASS 350 AND LINED WITH PROTECTO 401.
- EXISTING WATER MAINS ARE OWNED BY CFPWA. PROPOSED PVC WATER MAINS SHALL BE AWWA C900 CLASS 150 (DR-18) UNLESS OTHERWISE INDICATED. PROPOSED DIP WATER MAINS SHALL CONFORM TO AWWA C150 PRESSURE CLASS 350.
- DOMESTIC WATER MAIN SHALL BE PUBLIC FROM THE EXISTING WATER MAIN IN ECHO FARMS BLVD THROUGH THE WATER METER & PRIVATE AFTER THE WATER METER. FIRE LINE SHALL BE PUBLIC FROM THE EXISTING WATER MAIN IN ECHO FARMS BLVD TO THE BACKFLOW PREVENTER & PRIVATE BEGINNING AT THE BACKFLOW PREVENTER.
- PROPOSED SANITARY SEWER MAINS SHALL BE 8" & PROPOSED SEWER SERVICES SHALL BE 6". PROPOSED SEWER ON SITE SHALL BE PRIVATE & PROPOSED SEWER OFF-SITE SHALL BE PUBLIC.
- PROPOSED WATER & FIRE LINES SHALL BE 6". PROPOSED WATER & FIRE LINES ON SITE SHALL BE PRIVATE & PROPOSED WATER & FIRE LINES OFF-SITE SHALL BE PUBLIC.
- LIMITS OF DISTURBANCE = 417,407 SF = 9.59 ACRES.
- DISTURBED AREAS WITHIN ADJACENT RIGHTS-OF-WAY (EXCEPT FOR SWALE #1 & 2) & ON ADJACENT CITY OF WILMINGTON PROPERTY SHALL BE IMMEDIATELY SEEDED & STABILIZED WITH MULCH OR EXCELSIOR MAT PRIOR TO ANY RAINFALL EVENT. SEE SWALE #1 & 2 DETAIL FOR SEEDING & STABILIZATION OF SWALE #1 & 2.
- UPON COMPLETION OF ANY PHASE OF ACTIVITY SIDE SLOPES WILL BE SEEDED/STABILIZED IN ACCORDANCE WITH GROUND STABILIZATION CHART ON SHEET 10.
- SLOPE ON HANDICAP SPACES SHALL BE 1:50 OR FLATTER.
- PROPOSED OFF-SITE IMPERVIOUS SURFACE AREA IS 3,080 SF.
- TACTILE WARNING MATS ARE TO BE INSTALLED ON ALL WHEELCHAIR (HANDICAP) RAMPS.
- ANYTHING WITHIN THE SIGHT TRIANGLES SHALL NOT INTERFERE WITH CLEAR VISUAL SIGHT LINES FROM 30"-10'.
- ALL PARKING STALL MARKINGS AND LANE ARROWS WITHIN THE PARKING AREAS SHALL BE WHITE.
- ALL DEVELOPMENT SHALL BE IN ACCORDANCE WITH THE CITY OF WILMINGTON LAND DEVELOPMENT CODE & TECHNICAL STANDARDS MANUAL, EXCEPT WHERE EXEMPTED OR VARIANCES ARE OBTAINED.
- THE PROPOSED CURB IS 4" MEDIAN VERTICAL CURB & GUTTER, 4" VERTICAL CURB & GUTTER, VALLEY CURB, & REVERSE VALLEY CURB (SD 3-11).
- IT IS THE APPLICANT'S/DEVELOPER'S RESPONSIBILITY TO BE COMPLIANT WITH ALL APPLICABLE ADA REQUIREMENTS.
- ALL PLANTED & RETAINED LIVING MATERIAL REQUIRED TO MEET THE PROVISIONS OF THE CITY OF WILMINGTON LAND DEVELOPMENT CODE, SHALL BE PERPETUALLY PROTECTED & MAINTAINED TO PROFESSIONALLY ACCEPTED STANDARDS BY JOINT & SEVERAL RESPONSIBILITY OF THE OWNER, OCCUPANT, TENANT, & RESPECTIVE AGENTS OF THE PROPERTY ON WHICH THE MATERIAL IS LOCATED.
- STORM DRAIN MANHOLES, CATCH BASINS, & DROP INLETS SHALL BE SIZED APPROPRIATELY TO ACCOMMODATE OVERSIZED PIPES AND FRAME & GRATE.
- ALL DROP INLETS TO HAVE HEAVY DUTY 2'x3' FRAME & GRATE (GENERAL FOUNDRIES INC., ITEM #24364 OR EQUIVALENT).
- NO PIPE JOINTS SHALL BE INSIDE ANY INTERFERENCE MANHOLE.
- A RECORDED DRAINAGE EASEMENT SHALL BE PROVIDED FOR WET POND #1 & INFILTRATION BASIN #1 INCLUDING ACCESS TO THE NEAREST RIGHT-OF-WAY.
- ROOF DRAINS SHALL BE DIRECTED TO DRAIN BUILDING RUNOFF TO APPROPRIATE LOCATION (SEE DRAINAGE AREA MAP).
- DURING CONSTRUCTION WET POND #1 WILL SERVE AS A SEDIMENT BASIN. A FAIRCLOTH SKIMMER SHALL BE INSTALLED & CONNECTED TO THE OUTLET STRUCTURE (SEE SKIMMER DETAIL & CHART FOR SKIMMER & ORIFICE SIZE). THE FAIRCLOTH SKIMMER IS TEMPORARY. ONCE THE ENTIRE AREA DRAINING TO THE POND HAS BEEN STABILIZED THE SKIMMER SHALL BE REMOVED & THE ORIFICE PIPE (SEE POND DETAIL & CHART FOR SIZE) SHALL BE INSTALLED.
- A MINIMUM COVER OF 2 FEET FROM TOP OF PIPE TO BOTTOM OF STONE SHALL BE PROVIDED OVER STORM DRAIN PIPE UNDER THE PARKING/DRIVE AISLES & PRIVATE STREET UNLESS CLASS IV RCP IS USED.
- ALL PROPOSED ON-SITE UTILITY LINES SHALL BE UNDERGROUND.
- LOCATION OF ANY SITE LIGHTS, ELECTRIC LINES, TELEPHONE LINES, AND/OR NATURAL GAS LINES TO BE DETERMINED BY UTILITY COMPANIES AND/OR OTHERS.
- EXISTING DRIVEWAYS, STREET INTERSECTIONS, POWER/TRAFFIC SIGNAL POLES & OVERHEAD WIRES, AND PAVEMENT MARKINGS SHOWN ON PLAN WERE TRACED/APPROXIMATED FROM NHC GIS 2010 AERIAL, GOOGLE AERIAL, & GOOGLE STREET VIEW.
- THE EXISTING DRIVEWAYS & DRIVEWAY CULVERTS OFF CAROLINA BEACH ROAD TO THE SITE SHALL BE REMOVED. RESTORE THE VERGE AREA TO MATCH EXISTING/PROPOSED.
- RETAINING WALLS SHALL BE DESIGNED BY OTHERS. MALPASS ENGINEERING & SURVEYING, P.C. IS NOT RESPONSIBLE FOR RETAINING WALL DESIGN. RETAINING WALL SHALL BE CONSTRUCTED OF KEYSTONE BLOCK.
- PERVIOUS AREAS (LAWNS, LANDSCAPING, ETC.) SHALL NOT DRAIN TO THE PERMEABLE PAVEMENT SYSTEMS EXCEPT FOR INSTANCES WHERE THIS IS UNAVOIDABLE (INTERIOR PARKING LOT ISLAND, AREA BETWEEN BUILDING & PERMEABLE PAVEMENT SYSTEM, ETC.).
- AN IN-LINE DOWNSPOUT FILTER MUST BE INSTALLED ON EVERY ROOF DOWNSPOUT THAT DRAINS TO A PERMEABLE PAVEMENT SYSTEM.
- PROPOSED SSMH-1 MUST BE CUT-IN & CONTRACTOR MUST PROVIDE A BYPASS PLAN TO THE CFPWA PRIOR TO THE PRECON. 48 HOURS NOTICE IS REQUIRED FOR PRECON.
- THE 2.5' VEHICLE OVERHANG AREA SHALL NOT BE PLANTED WITH SHRUBS.



VICINITY MAP  
SCALE: 1"=1,000'

SHEET INDEX	
1	COVER SHEET
2	EXISTING PROTECTED TREES CHART
3	EXISTING CONDITIONS & DEMOLITION PLAN
4	EXISTING CONDITIONS & DEMOLITION PLAN
5	SITE INVENTORY
6	SITE INVENTORY
7	SITE PLAN
8	SITE PLAN
9	EROSION CONTROL, STORMWATER, & UTILITY PLAN
10	EROSION CONTROL, STORMWATER, & UTILITY PLAN
11	EROSION CONTROL & STORMWATER DETAIL SHEET
12	EROSION CONTROL & STORMWATER DETAIL SHEET
13	STORMWATER DETAIL SHEET
14	DRAINAGE AREA MAP
15	DETAIL SHEET
16	DETAIL SHEET
17	PLAN PROFILE
18	SANITARY SEWER DETAIL SHEET
19	SANITARY SEWER DETAIL SHEET
20	SANITARY SEWER DETAIL SHEET
21	WATER DETAIL SHEET
22	WATER DETAIL SHEET
L-1	TREE MITIGATION PLAN
L-2	TREE MITIGATION PLAN



WATER & SEWER CAPACITY	
EXISTING WATER CAPACITY:	2 HOUSES x 400 GPD/HOUSE = 800 GPD
EXISTING SEWER CAPACITY:	2 HOUSES x 360 GPD/HOUSE = 720 GPD
PROPOSED WATER CAPACITY:	184 UNITS x 400 GPD/UNIT + 50 PEOPLE x 10 GPD/PERSON = 74,100 GPD
PROPOSED SEWER CAPACITY:	184 UNITS x 240 GPD/UNIT + 50 PEOPLE x 10 GPD/PERSON = 44,660 GPD

TOTAL LENGTH OF PUBLIC SANITARY SEWER MAIN = 44.82 LF  
 TOTAL LENGTH OF PRIVATE SANITARY SEWER MAIN = 272.35 LF  
 TOTAL LENGTH OF PUBLIC WATER MAIN (DOMESTIC & FIRE LINE) = 38 LF  
 TOTAL LENGTH OF PRIVATE WATER LINE (DOMESTIC & FIRE LINE; INCLUDING LINES TO EACH BUILDING) = 4,354 LF

PRELIMINARY PLAT  
 NOT FOR RECORDATION,  
 CONVEYANCES, OR SALES

OPEN SPACE  
 TOP OF STORMWATER POND AREA = 22,178 SF  
 REQUIRED OPEN SPACE = 0.35 \* (475,805 - 22,178) = 158,769 SF = 3.64 ACRES  
 PROVIDED OPEN SPACE (INCLUDES ACTIVE & PASSIVE RECREATION AREA) = 161,723 SF = 3.71 ACRES  
 REQUIRED ACTIVE OR PASSIVE RECREATION AREA = 0.5 \* 158,769 = 79,385 SF = 1.82 ACRES  
 PROVIDED ACTIVE RECREATION AREA = 6,072 SF = 0.14 ACRES  
 PROVIDED PASSIVE RECREATION AREA = 82,718 SF = 1.90 ACRES  
 PROVIDED TOTAL RECREATION AREA = 88,790 SF = 2.04 ACRES

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

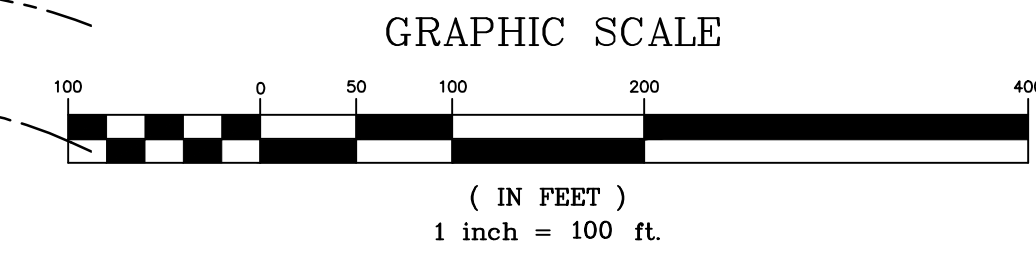
**Approved Construction Plan**

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_



REV NO.	DESCRIPTION	DATE
1	REVISED FOR SBI SUBMITTAL	9-2-15
2	REVISED FOR EROSION CONTROL SUBMITTAL	10-1-15
3	REVISED TO SHOW PRIVATE STREET	10-12-15
4	REVISED FOR PRELIMINARY BID	10-16-15
5	REVISED FOR SUBMITTAL	10-23-15
6	REVISED PER EROSION CONTROL COMMENTS	11-3-15
7	REVISED PER THE COMMENTS	11-19-15
REV NO.	DESCRIPTION	DATE

COVER SHEET  
 4010 CAROLINA BEACH ROAD  
**ECHO FARM APARTMENTS**  
 WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

**MALPASS ENGINEERING & SURVEYING, P.C.**  
 1134 SHIPYARD BOULEVARD  
 WILMINGTON, NORTH CAROLINA 28412  
 Phone 910-392-5243 Fax 910-392-5203 License No. C-2320

Developer: ECHO FARM APARTMENTS, LLC  
 10 S. CARDINAL DRIVE  
 WILMINGTON, NORTH CAROLINA 28403  
 PHONE: 910-251-5030

DATE: 7-22-15  
 SCALE: 1"=100'  
 DRAWN: JCB  
 CHECKED: JEM  
 PROJECT NO: 260  
 SHEET NO: 1  
 OF: 22



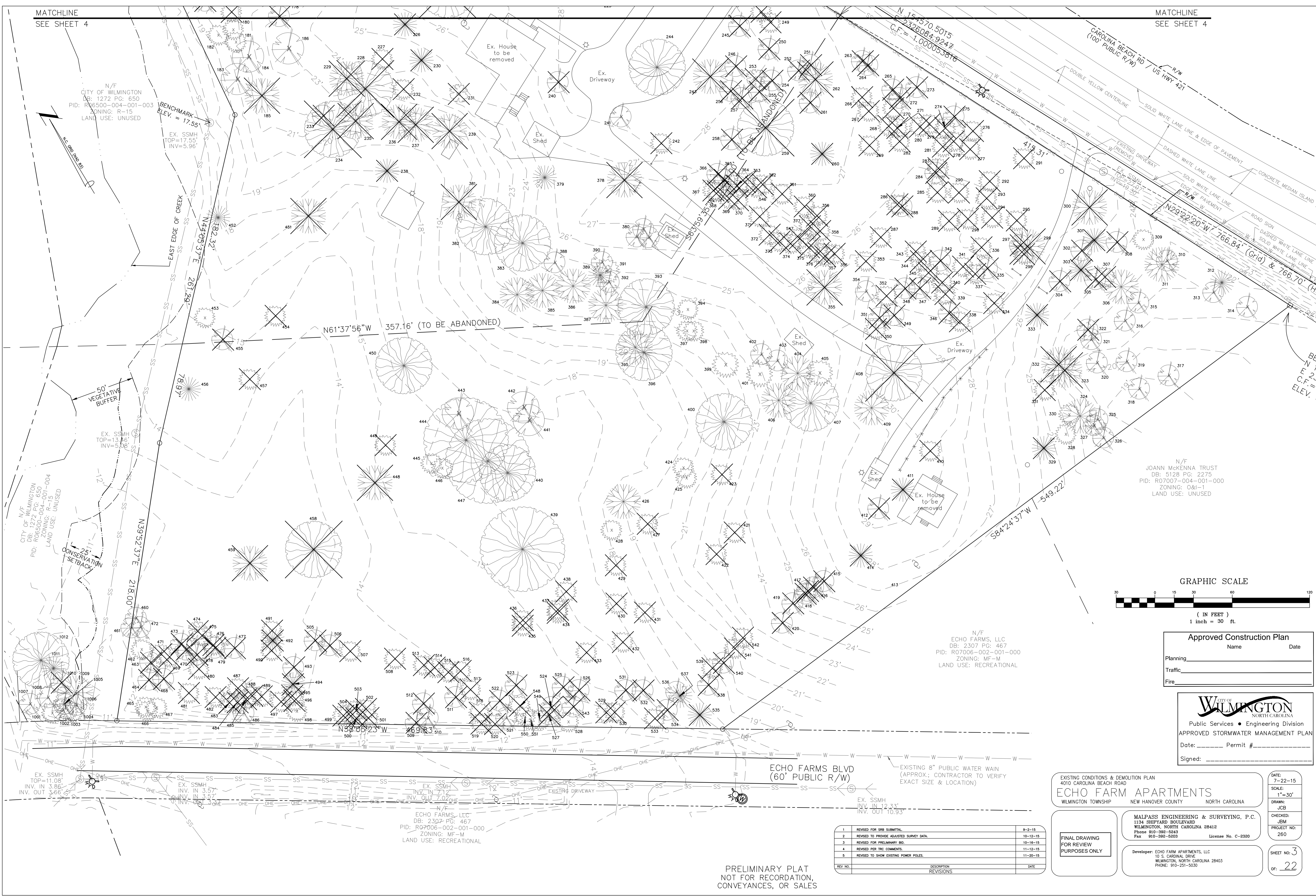
EXISTING PROTECTED TREES CHART					
NUMBER	TREE	REMOVAL	REASON FOR REMOVAL	MITIGATION REQUIRED	MITIGATION FACTOR
1	27" PINE	NO	--	--	--
2	10" TWIN OAK	NO	--	--	--
3	18" GUM	NO	--	--	--
4	17" PINE	NO	--	--	--
5	17" PINE	NO	--	--	--
6	24" POPULAR	NO	--	--	--
7	18" GUM	NO	--	--	--
8	18" GUM	NO	--	--	--
9	14" GUM	NO	--	--	--
10	16" PINE	NO	--	--	--
11	13" PINE	NO	--	--	--
12	21" PINE	NO	--	--	--
13	12" OAK	NO	--	--	--
14	12" OAK	NO	--	--	--
15	10" OAK	NO	--	--	--
16	14" PINE	NO	--	--	--
17	14" PINE	NO	--	--	--
18	20" PINE	NO	--	--	--
19	13" OAK	NO	--	--	--
20	12" PINE	NO	--	--	--
21	11" GUM	NO	--	--	--
22	9" OAK	NO	--	--	--
23	17" PINE	NO	--	--	--
24	10" OAK	NO	--	--	--
25	15" PINE	NO	--	--	--
26	11" OAK	NO	--	--	--
27	14" OAK	NO	--	--	--
28	18" PINE	NO	--	--	--
29	15" GUM	NO	--	--	--
30	18" PINE	NO	--	--	--
31	22" PINE	NO	--	--	--
32	18" GUM	NO	--	--	--
33	17" GUM	NO	--	--	--
34	12" GUM	NO	--	--	--
35	14" OAK	NO	--	--	--
36	14" PINE	NO	--	--	--
37	15" PINE	NO	--	--	--
38	13" PINE	NO	--	--	--
39	16" PINE	NO	--	--	--
40	11" OAK	NO	--	--	--
41	12" OAK	NO	--	--	--
42	19" PINE	NO	--	--	--
43	24" PINE	NO	--	--	--
44	14" POPULAR	NO	--	--	--
45	12" GUM	NO	--	--	--
46	19" GUM	NO	--	--	--
47	20" OAK	NO	--	--	--
48	24" PINE	NO	--	--	--
49	12" GUM	NO	--	--	--
50	10" OAK	NO	--	--	--
51	10" GUM	NO	--	--	--
52	10" GUM	NO	--	--	--
53	14" GUM	NO	--	--	--
54	18" OAK	NO	--	--	--
55	18" PINE	NO	--	--	--
56	29" POPULAR	NO	--	--	--
57	8" OAK	NO	--	--	--
58	8" GUM	NO	--	--	--
59	8" OAK	NO	--	--	--
60	19" PINE	NO	--	--	--
61	19" PINE	NO	--	--	--
62	16" GUM	NO	--	--	--
63	18" GUM	NO	--	--	--
64	20" OAK	NO	--	--	--
65	20" PINE	NO	--	--	--
66	14" PINE	NO	--	--	--
67	13" PINE	NO	--	--	--
68	19" PINE	NO	--	--	--
69	14" OAK	NO	--	--	--
70	20" PINE	NO	--	--	--
71	9" OAK	NO	--	--	--
72	11" OAK	NO	--	--	--
73	9" OAK	NO	--	--	--
74	16" PINE	NO	--	--	--
75	8" DOGWOOD	NO	--	--	--
76	17" PINE	NO	--	--	--
77	18" PINE	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--	--
78	11" OAK	NO	--	--	--
79	19" PINE	NO	--	--	--
80	20" PINE	NO	--	--	--
81	21" PINE	NO	--	--	--
82	15" PINE	NO	--	--	--
83	14" PINE	NO	--	--	--
84	10"-9" TWIN OAK	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
85	9" OAK	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
86	15" PINE	NO	--	--	--
87	9" OAK	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
88	15" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
89	17" PINE	NO	--	--	--
90	15" GUM	NO	--	--	--
91	21" PINE	NO	--	--	--
92	7" OAK	NO	--	--	--
93	16" PINE	NO	--	--	--
94	10" GUM	NO	--	--	--
95	32" OAK	NO	--	--	--
96	12" MAGNOLIA	NO	--	--	--
97	36" POPULAR	NO	--	--	--
98	12" OAK	NO	--	--	--
99	10" MAGNOLIA	NO	--	--	--
100	8" MAPLE	NO	--	--	--
101	17" MAGNOLIA	NO	--	--	--
102	16" OAK	NO	--	--	--
103	14" GUM	NO	--	--	--
104	20" PINE	NO	--	--	--
105	8" OAK	NO	--	--	--
106	17" PINE	NO	--	--	--
107	12" PINE	NO	--	--	--
108	16" PINE	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--	--
109	11" OAK	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
110	16" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
111	13" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
112	17" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
113	19" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
114	20" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
115	10" OAK	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
116	17" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
117	15" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
118	9" OAK	NO	--	--	--
119	15" PINE	NO	--	--	--
120	17" OAK	NO	--	--	--
121	21" PINE	NO	--	--	--
122	24" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	1/3 (50%)	--
123	15" OAK	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
124	17" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
125	9" OAK	NO	--	--	--
126	13" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
127	13" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
128	13" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
129	15" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
130	12" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
131	14" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
132	14" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
133	20" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
134	24" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
135	15" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
136	16" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
137	14" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
138	13" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
139	9" OAK	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
140	14" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
141	14" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
142	18" PINE	NO	--	--	--
143	16" PINE	NO	--	--	--
144	26" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	1/3 (50%)	--
145	24" PINE	NO	--	--	--
146	28" OAK	NO	--	--	--
147	18" PINE	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--	--
148	16" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
149	17" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
150	14" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
151	13" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
152	13" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
153	18" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
154	11" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
155	17" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
156	17" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
157	12" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
158	14" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
159	14" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
160	14" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
161	14" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
162	16" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
163	17" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
164	16" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
165	17" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
166	15" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
167	17" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
168	16" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--

EXISTING PROTECTED TREES CHART					
NUMBER	TREE	REMOVAL	REASON FOR REMOVAL	MITIGATION REQUIRED	MITIGATION FACTOR
169	16" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
170	20" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
171	15" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
172	10" OAK	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
173	12" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
174	12" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
175	12" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
176	15" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
177	12" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
178	18" OAK	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
179	20" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
180	14" PINE	NO	--	--	--
181	16" PINE	NO	--	--	--
182	14" PINE	NO	--	--	--
183	8" OAK	NO	--	--	--
184	22" OAK	NO	--	--	--
185	24" PINE	NO	--	--	--
186	19" OAK	NO	ESSENTIAL SITE IMPROVEMENTS	YES	1/3 (50%)
187	25" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	YES	1/3 (50%)
188	33" OAK	YES	ESSENTIAL SITE IMPROVEMENTS	YES	2/3 (100%)
189	15" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
190	18" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
191	17" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
192	12" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
193	15" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
194	12" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
195	10" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
196	10" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
197	10" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
198	12" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
199	20" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
200	21" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
201	26" MAGNOLIA	NO	--	--	--
202	14" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
203	11" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
204	12" GUM	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
205	12" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
206	17" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
207	16" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
208	20" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
209	13" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
210	21" OAK	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
211	10" DOGWOOD	YES	ESSENTIAL SITE IMPROVEMENTS	YES	2/3 (100%)
212	25" MAGNOLIA	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
213	18" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
214	10" OAK	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
215	17" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
216	15" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
217	14" OAK	NO	--	--	--
218	20" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
219	11" OAK	NO	--	--	--
220	12" OAK	NO	--	--	--
221	14" PINE	NO	--	--	--
222	14" OAK	NO	--	--	--
223	17" PINE	NO	--	--	--
224	25"-9" TWIN OAK	NO	--	--	--
225	32" PINE	NO	--	--	--
226	19" MAGNOLIA	YES	ESSENTIAL SITE IMPROVEMENTS	YES	2/3 (100%)
227	11" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
228	29" OAK	YES	ESSENTIAL SITE IMPROVEMENTS	YES	2/3 (100%)
229	29" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	YES	1/3 (50%)
230	16" CHERRY	YES	ESSENTIAL SITE IMPROVEMENTS	YES	2/3 (75%)
231	5" CHINABERRY	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
232	21" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
233	12" OAK	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
234	34" OAK	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
235	25" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
236	29" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
237	29" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
238	9" TALLOW	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
239	25" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	YES	1/3 (50%)
240	19" BIRCH	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
241	20" OAK	NO	--	--	--
242	20" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	EXEMPT	--
243	30" PINE	YES	ESSENTIAL SITE IMPROVEMENTS	YES	1/3 (50%)
244	18" OAK	NO	--	--	--
245	8" 9" A 10" OAK (3 TRE				



MATCHLINE  
SEE SHEET 4

MATCHLINE  
SEE SHEET 4



GRAPHIC SCALE



Approved Construction Plan

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

**CITY OF WILMINGTON**  
NORTH CAROLINA

Public Services • Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_

EXISTING CONDITIONS & DEMOLITION PLAN  
4010 CAROLINA BEACH ROAD  
**ECHO FARM APARTMENTS**  
WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

MALPASS ENGINEERING & SURVEYING, P.C.  
1134 SHIPYARD BOULEVARD  
WILMINGTON, NORTH CAROLINA 28412  
Phone 910-392-5243  
Fax 910-392-5203 License No. C-2320

Developer: ECHO FARM APARTMENTS, LLC  
10 S. CARDINAL DRIVE  
WILMINGTON, NORTH CAROLINA 28403  
PHONE: 910-251-5030

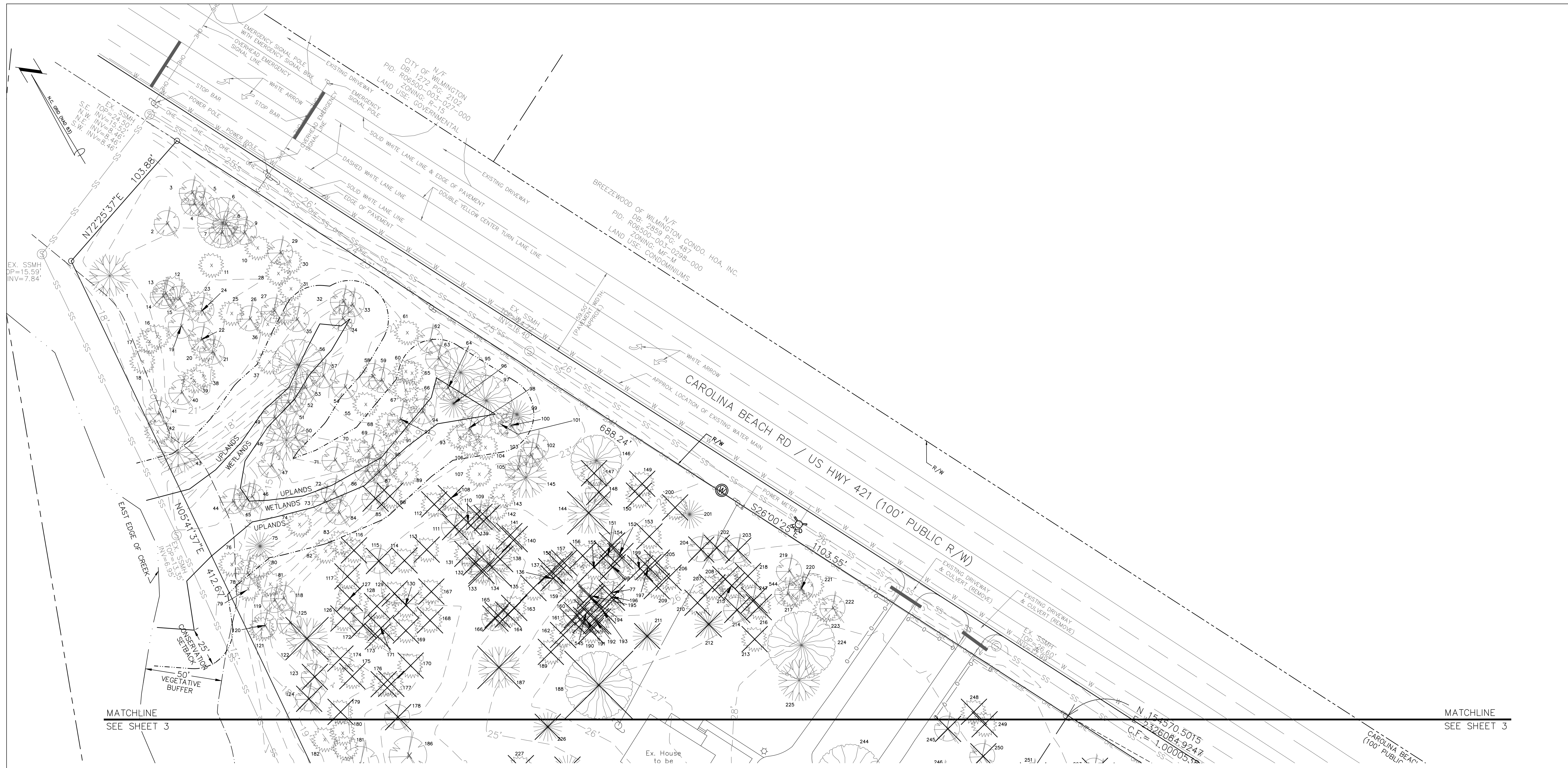
DATE: 7-22-15  
SCALE: 1"=30'  
DRAWN: JCB  
CHECKED: JEM  
PROJECT NO: 260

SHEET NO: 3  
OF: 22

REV NO.	DESCRIPTION	DATE
1	REVISED FOR SRB SUBMITTAL	8-2-15
2	REVISED TO PROVIDE ADJUSTED SURVEY DATA	10-12-15
3	REVISED FOR PRELIMINARY RIB	10-14-15
4	REVISED PER TRC COMMENTS	11-12-15
5	REVISED TO SHOW EXISTING POWER POLES	11-20-15

PRELIMINARY PLAT  
NOT FOR RECORDATION,  
CONVEYANCES, OR SALES



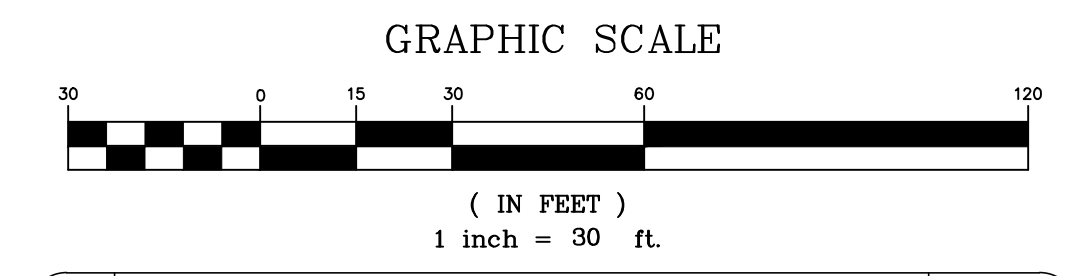


MATCHLINE  
SEE SHEET 3

MATCHLINE  
SEE SHEET 3

Approved Construction Plan		
Name	Date	
Planning		
Traffic		
Fire		

**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services • Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN  
Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_



REV NO.	DESCRIPTION	DATE
1	REVISED FOR SRB SUBMITTAL	9-2-15
2	REVISED TO PROVIDE ADJUSTED SURVEY DATA	10-12-15
3	REVISED FOR PRELIMINARY BID	10-16-15
4	REVISED PER TRC COMMENTS	11-12-15
5	REVISED TO SHOW EXISTING POWER POLES	11-20-15

EXISTING CONDITIONS & DEMOLITION PLAN  
4010 CAROLINA BEACH ROAD  
**ECHO FARM APARTMENTS**  
WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

FINAL DRAWING  
FOR REVIEW  
PURPOSES ONLY

MALPASS ENGINEERING & SURVEYING, P.C.  
1134 SHIPYARD BOULEVARD  
WILMINGTON, NORTH CAROLINA 28412  
Phone 910-392-6343  
Fax 910-392-5203 License No. C-2320

Developer: ECHO FARM APARTMENTS, LLC  
10 S. CARDINAL DRIVE  
WILMINGTON, NORTH CAROLINA 28403  
PHONE: 910-251-5030

DATE: 7-22-15  
SCALE: 1"=30'  
DRAWN: JCB  
CHECKED: JEM  
PROJECT NO: 260  
SHEET NO: 4  
OF: 22

PRELIMINARY PLAT  
NOT FOR RECORDATION,  
CONVEYANCES, OR SALES



MATCHLINE  
SEE SHEET 6

MATCHLINE  
SEE SHEET 6

N/F  
CITY OF WILMINGTON  
DB: 1272 PG: 650  
PID: R06500-004-001-003  
ZONING: R-15  
LAND USE: UNUSED

BENCHMARK  
ELEV. = 17.55'

EAST EDGE OF CREEK  
N47°05'37"E 261.29'

50' VEGETATIVE BUFFER  
METLANDS UPLANDS

N/F  
CITY OF WILMINGTON  
DB: 1272 PG: 650  
PID: R06500-004-001-004  
ZONING: R-15  
LAND USE: UNUSED

25' CONSERVATION SETBACK

N39°52'37"E 218.00'

BUILDING #8

POOL

CLUBHOUSE

WET POND

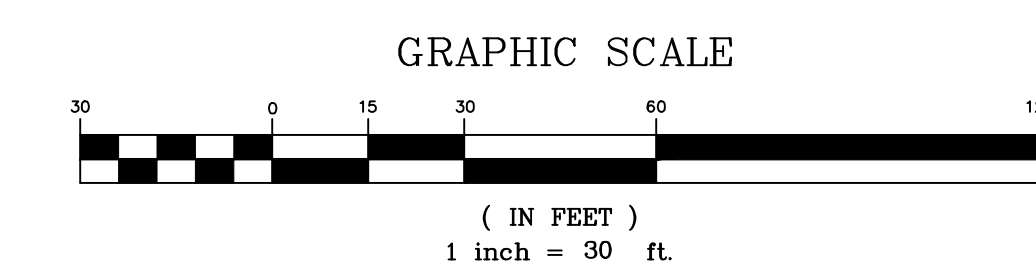
INFILTRATION BASIN #1

BUILDING #2

MAINTENANCE BUILDING

N/F  
JOANN McKENNA TRUST  
DB: 5128 PG: 2275  
PID: R07007-004-001-000  
ZONING: O&I-1  
LAND USE: UNUSED

N/F  
ECHO FARMS, LLC  
DB: 2307 PG: 467  
PID: R07006-002-001-000  
ZONING: MF-M  
LAND USE: RECREATIONAL



Approved Construction Plan  
Name \_\_\_\_\_ Date \_\_\_\_\_  
Planning \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_

**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services • Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN  
Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_

SITE INVENTORY  
4010 CAROLINA BEACH ROAD  
**ECHO FARM APARTMENTS**  
WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

DATE: 7-22-15  
SCALE: 1"=30'  
DRAWN: JCB  
CHECKED: JEM  
PROJECT NO: 260

FINAL DRAWING  
FOR REVIEW  
PURPOSES ONLY

MALPASS ENGINEERING & SURVEYING, P.C.  
1134 SHIPYARD BOULEVARD  
WILMINGTON, NORTH CAROLINA 28412  
Phone 910-392-6243  
Fax 910-392-5203 License No. C-2320

Developer: ECHO FARM APARTMENTS, LLC  
10 S. CARDINAL DRIVE  
WILMINGTON, NORTH CAROLINA 28403  
PHONE: 910-251-5030

SHEET NO: 5  
OF: 22

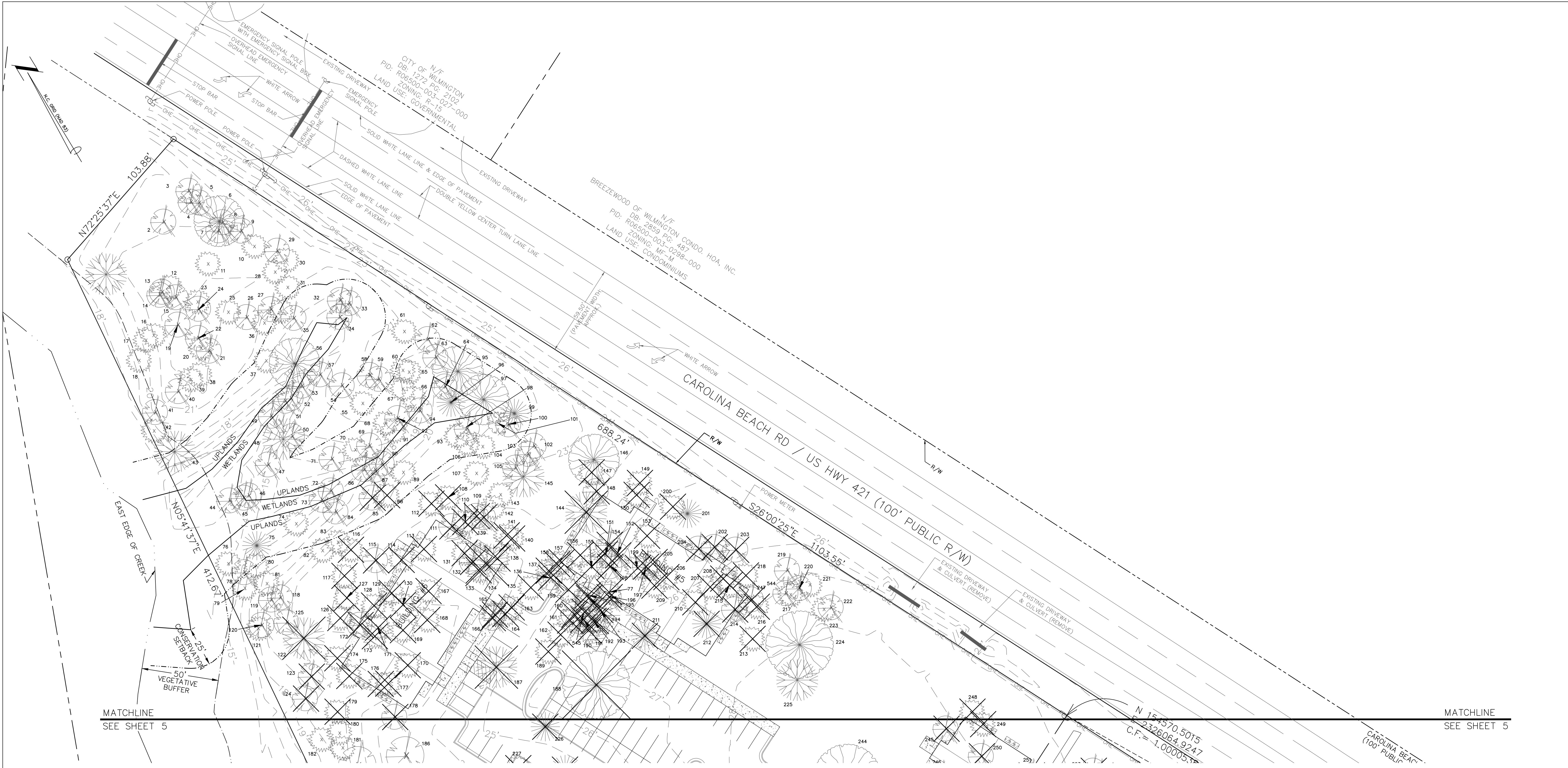
REV NO.	DESCRIPTION	DATE
1	REVISED FOR SR8 SUBMITTAL.	9-2-15
2	REVISED TO SHOW PRIVATE STREET.	10-12-15
3	REVISED FOR PRELIMINARY BID.	10-16-15
4	REVISED PER THE COMMENTS.	11-17-15
5	REVISED TO SHOW EXISTING OFF-SITE TREES ALONG/NEAR WET POND #1 OUTFALL PIPE.	11-20-15

ECHO FARMS BLVD  
(60' PUBLIC R/W)

N/F  
ECHO FARMS, LLC  
DB: 2307 PG: 467  
PID: R07006-002-001-000  
ZONING: MF-M  
LAND USE: RECREATIONAL

PRELIMINARY PLAT  
NOT FOR RECORDATION,  
CONVEYANCES, OR SALES





MATCHLINE  
SEE SHEET 5

MATCHLINE  
SEE SHEET 5

**Approved Construction Plan**

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

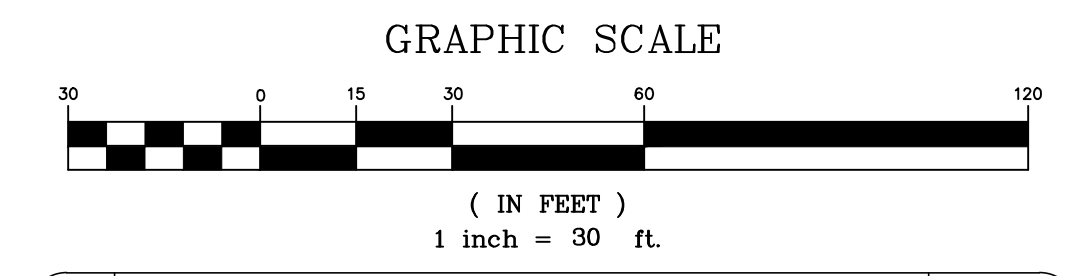
**CITY OF WILMINGTON**  
NORTH CAROLINA

Public Services • Engineering Division

**APPROVED STORMWATER MANAGEMENT PLAN**

Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_



REV. NO.	DESCRIPTION	DATE
1	REVISED FOR SRB SUBMITTAL	9-2-15
2	REVISED TO PROVIDE ADJUSTED SURVEY DATA	10-12-15
3	REVISED FOR PRELIMINARY R/D	10-16-15
4	REVISED PER THE COMMENTS	11-17-15
5	REVISED TO SHOW EXISTING POWER POLES	11-20-15

SITE INVENTORY  
4010 CAROLINA BEACH ROAD  
**ECHO FARM APARTMENTS**  
WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

**FINAL DRAWING FOR REVIEW PURPOSES ONLY**

**MALPASS ENGINEERING & SURVEYING, P.C.**  
1134 SHIPYARD BOULEVARD  
WILMINGTON, NORTH CAROLINA 28412  
Phone 910-392-6343 License No. C-2320  
Fax 910-392-5203

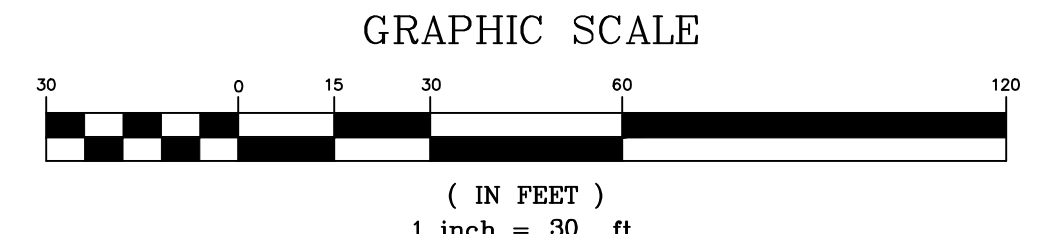
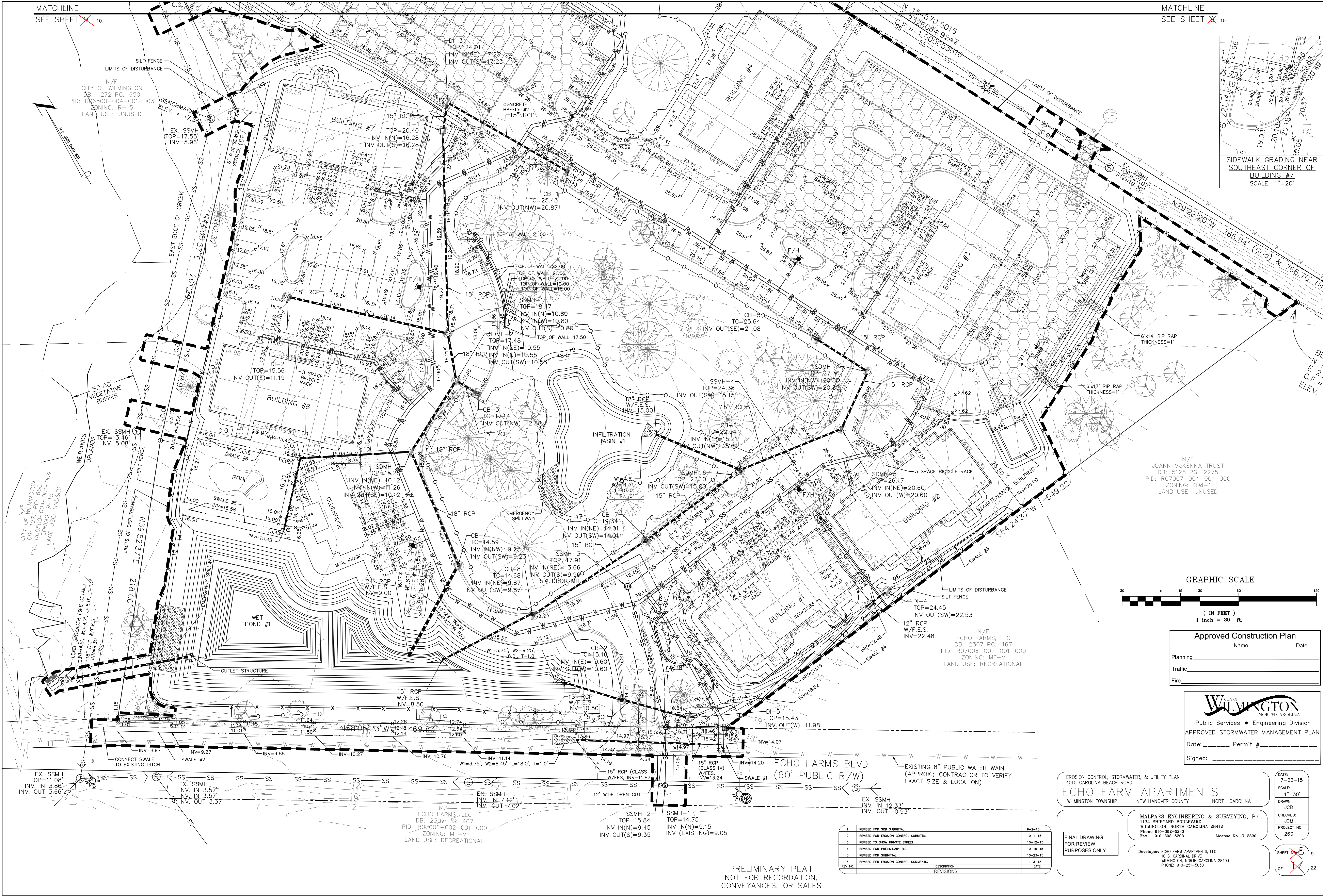
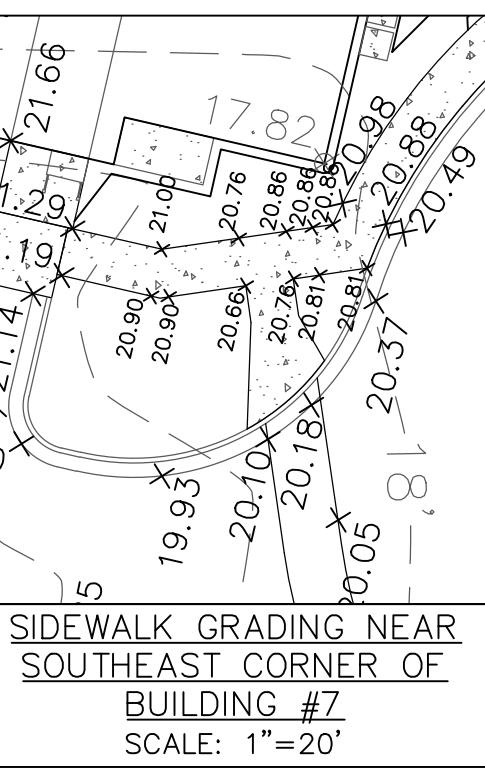
Developer: ECHO FARM APARTMENTS, LLC  
10 S. CARDINAL DRIVE  
WILMINGTON, NORTH CAROLINA 28403  
PHONE: 910-251-5030

DATE: 7-22-15  
SCALE: 1"=30'  
DRAWN: JCB  
CHECKED: JEM  
PROJECT NO: 260

SHEET NO: 6  
OF: 22

PRELIMINARY PLAT  
NOT FOR RECORDATION,  
CONVEYANCES, OR SALES





Approved Construction Plan

Name	Date
Planning	
Traffic	
Fire	

**WILMINGTON**  
NORTH CAROLINA  
Public Services • Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN  
Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_

EROSION CONTROL, STORMWATER, & UTILITY PLAN  
**ECHO FARM APARTMENTS**  
WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

DATE: 7-22-15  
SCALE: 1"=30'  
DRAWN: JCB  
CHECKED: JEM  
PROJECT NO: 260

MALPASS ENGINEERING & SURVEYING, P.C.  
1134 SHIPYARD BOULEVARD  
WILMINGTON, NORTH CAROLINA 28412  
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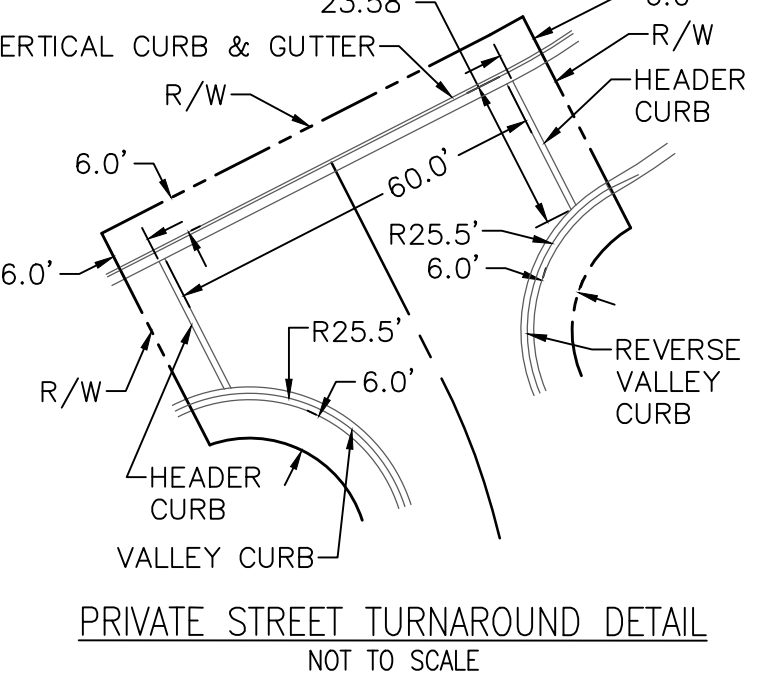
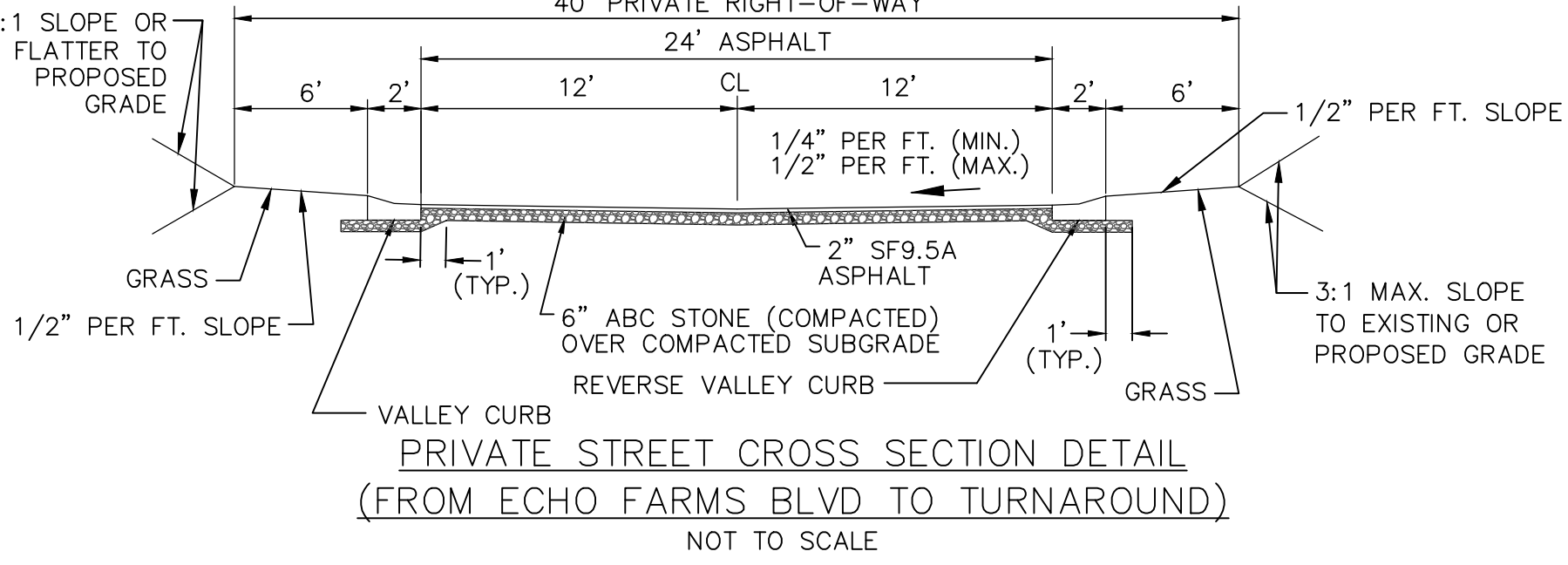
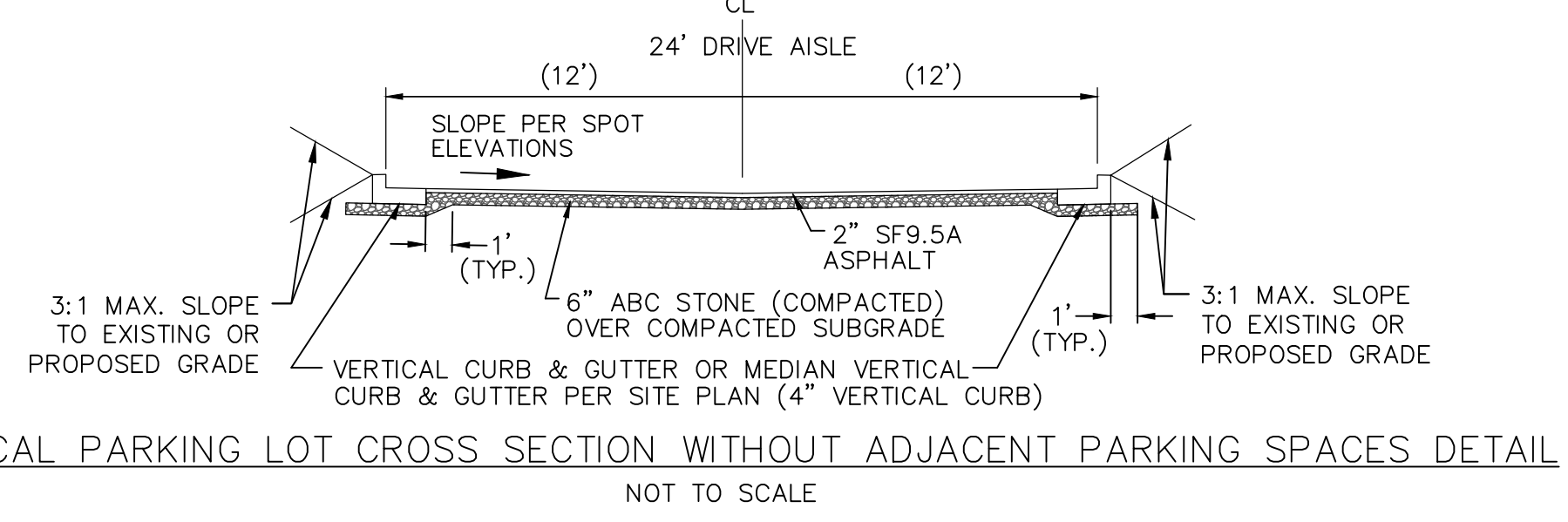
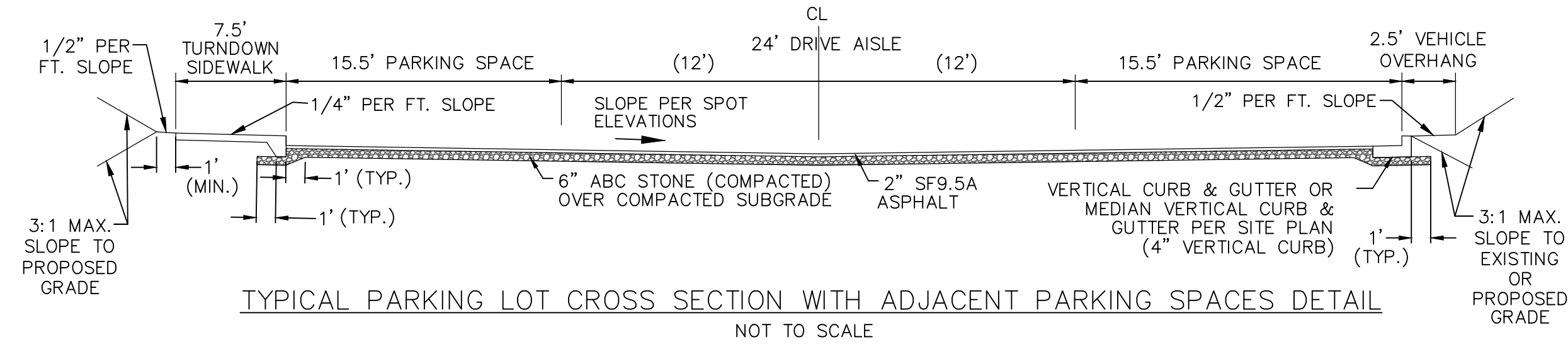
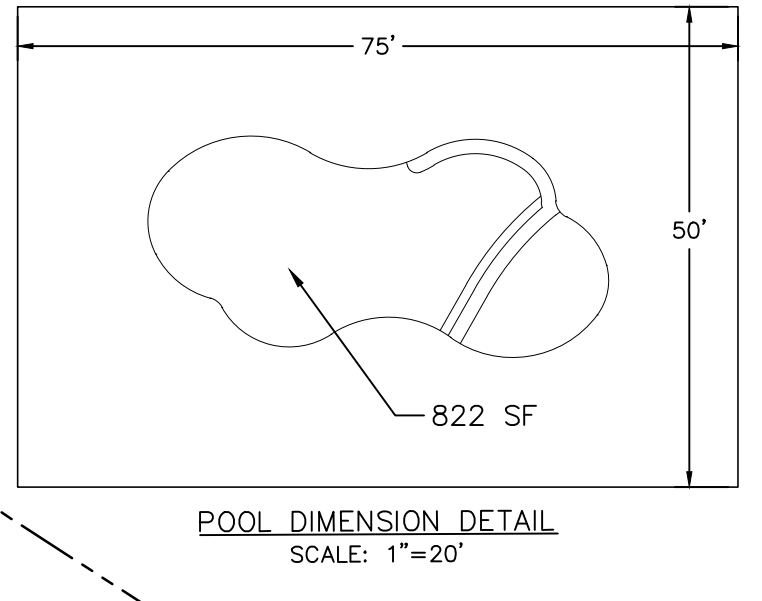
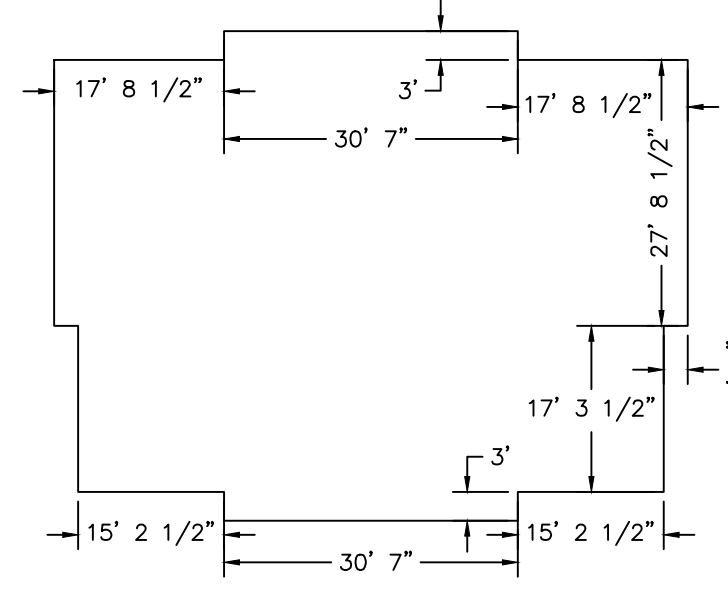
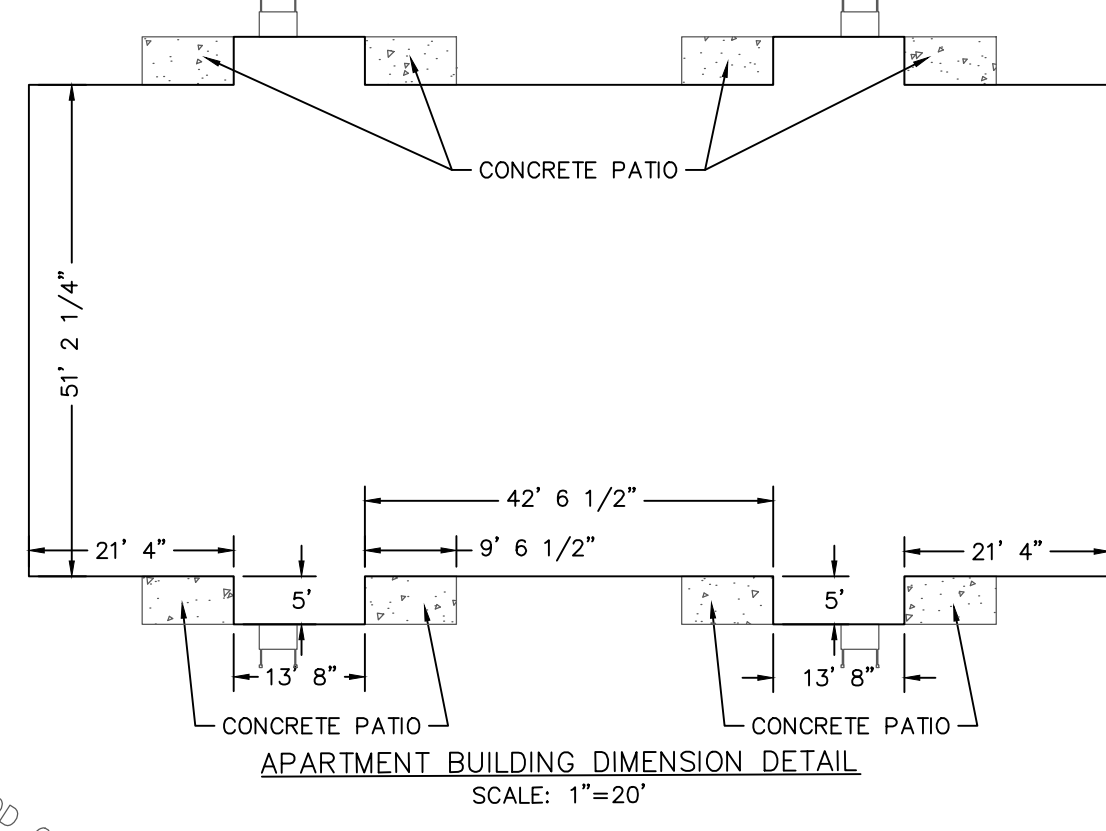
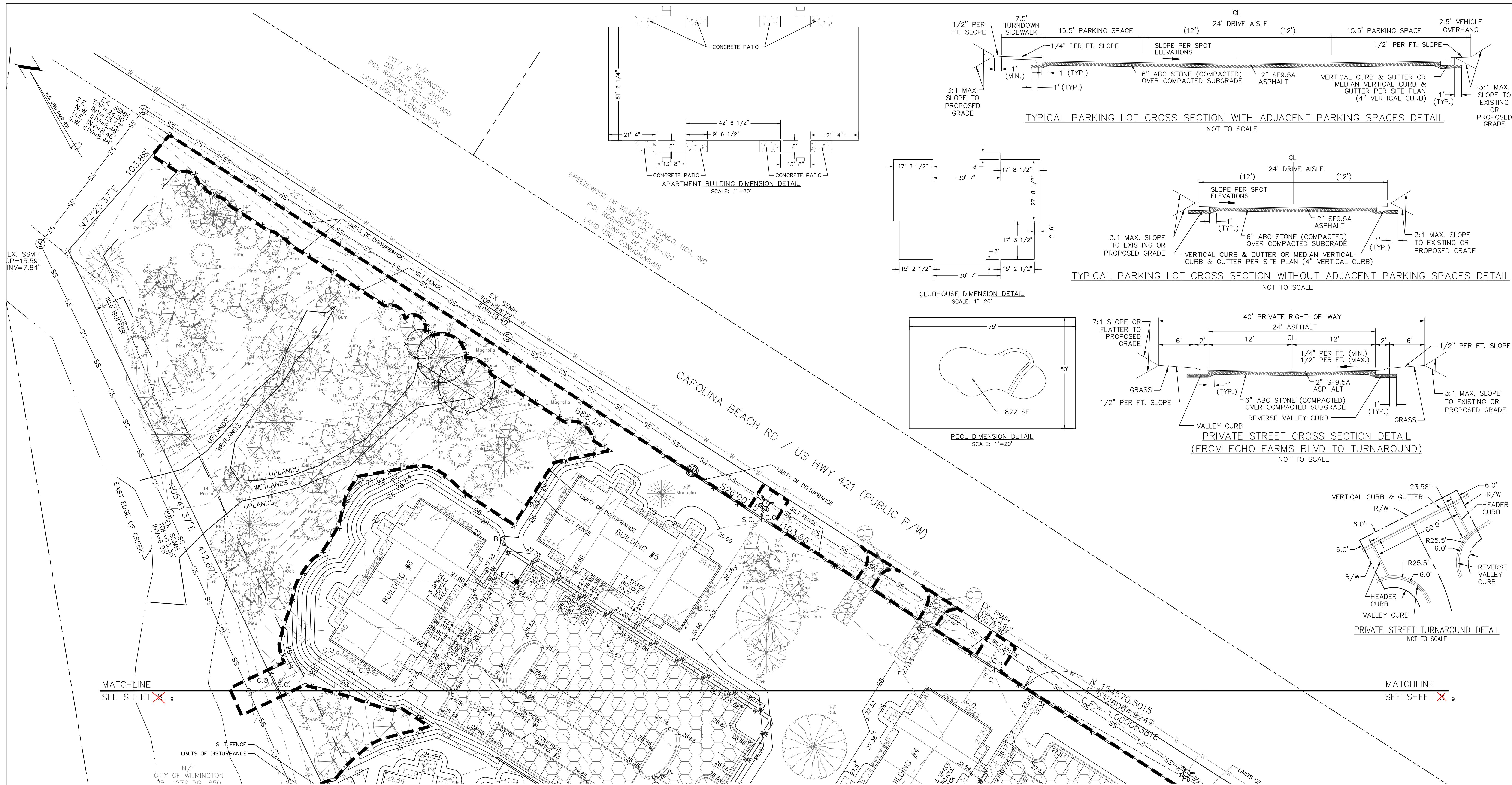
FINAL DRAWING FOR REVIEW PURPOSES ONLY

REV. NO.	DESCRIPTION	DATE
1	REVISED FOR SRB SUBMITTAL	9-2-15
2	REVISED FOR EROSION CONTROL SUBMITTAL	10-1-15
3	REVISED TO SHOW PRIVATE STREET	10-16-15
4	REVISED FOR PRELIMINARY I.D.	10-16-15
5	REVISED FOR SUBMITTAL	10-23-15
6	REVISED PER EROSION CONTROL COMMENTS	11-3-15

SHEET 9 OF 9

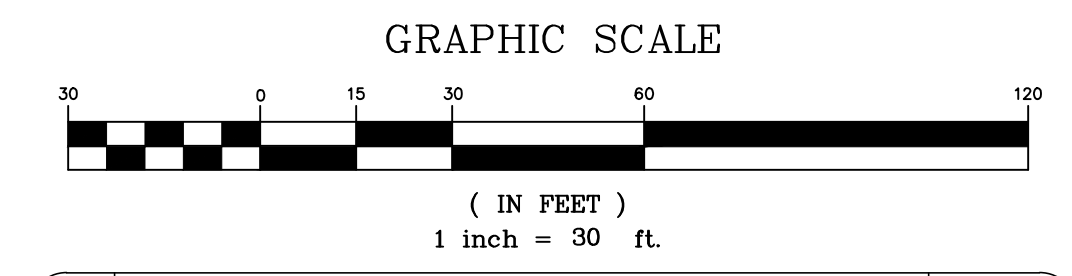
PRELIMINARY PLAT  
NOT FOR RECORDATION,  
CONVEYANCES, OR SALES





**Approved Construction Plan**  
 Name \_\_\_\_\_ Date \_\_\_\_\_  
 Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

**CITY OF WILMINGTON**  
 NORTH CAROLINA  
 Public Services • Engineering Division  
**APPROVED STORMWATER MANAGEMENT PLAN**  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
 Signed: \_\_\_\_\_



REV. NO.	DESCRIPTION	DATE
1	REVISED FOR SRB SUBMITTAL.	9-2-15
2	REVISED FOR EROSION CONTROL SUBMITTAL.	10-1-15
3	REVISED TO PROVIDE ADJUSTED SURVEY DATA.	10-12-15
4	REVISED FOR PRELIMINARY BID.	10-16-15
5	REVISED FOR SUBMITTAL.	10-23-15
6	REVISED PER EROSION CONTROL COMMENTS.	11-3-15

EROSION CONTROL, STORMWATER, & UTILITY PLAN  
 4010 CAROLINA BEACH ROAD  
**ECHO FARM APARTMENTS**  
 WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

**MALPASS ENGINEERING & SURVEYING, P.C.**  
 1134 SHIPYARD BOULEVARD  
 WILMINGTON, NORTH CAROLINA 28412  
 Phone 910-392-6243 License No. C-2320  
 Fax 910-392-5203

Developer: ECHO FARM APARTMENTS, LLC  
 10 S. CARDINAL DRIVE  
 WILMINGTON, NORTH CAROLINA 28403  
 PHONE: 910-251-5030

DATE: 7-22-15  
 SCALE: 1"=30'  
 DRAWN: JCB  
 CHECKED: JEM  
 PROJECT NO: 260  
 SHEET NO: 10  
 OF: 22

PRELIMINARY PLAT  
 NOT FOR RECORDATION,  
 CONVEYANCES, OR SALES



**Permanent Seeding**  
 Specifications #6.11 – Specifications  
 (Specifications are as per the "Erosion and Sediment Control Planning and Design Manual" of the state of North Carolina)  
 Table 6.11p – Seeding No. 1CP for: Well-to Poorly Drained soils with Good Moisture Retention; Low Maintenance  
 Seeding mixture  
 Species Rate (lb/acre)  
 Tall fescue 50  
 Pensacola Bahiagrass 50  
 Sericea lespedeza 30  
 Kobe lespedeza 10

**Seeding Notes**  
 1. From Sept. 1 – Mar. 1, use unscarified sericea seed  
 2. On poorly drained sites omit sericea and increase Kobe to 30 lb/acre.  
 3. Where a neat appearance is desired, omit sericea and increase Kobe to 40 lb/acre.

**Nurse plants**  
 Between Apr. 15 & Aug. 15, add 10 lb/acre German millet or 15 lb/acre Sudangrass. Prior to May 1 or after Aug. 15, add 25 lb/acre rye (grain).

**Seeding dates**  
 Best Possible  
 Early spring: Feb. 15 – Mar. 20 Feb. 15 – Apr. 30  
 Fall: Sept. 1 – Sept. 30 Sept. 1 – Oct. 31

**Soil amendments** – Apply lime and fertilizer according to soil tests, or apply 3,000–5,000 lb/acre ground agricultural limestone (use the lower rate on sandy soils) and 1,000 lb/acre 10–10–10 fertilizer.  
 Mulch – Apply 4,000 lb/acre grain straw or equivalent cover of another suitable mulch. Anchor straw by tacking with asphalt, netting, or by crimping with a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

**Maintenance** – If growth is less than fully adequate, referitize in the second year, according to soil tests or topdress with 500 lb/acre 10–10–10 fertilizer. Mow as needed when sericea is omitted from the mixture. Reseed, fertilize, and mulch damaged areas immediately.

**Table 6.11q – Seeding No. 2CP for: Well-to Poorly Drained soils with Good Moisture Retention; High Maintenance**  
 Seeding mixture  
 Species Rate (lb/acre)  
 Tall fescue (blend of two or three improved varieties) 200  
 Rye (grain) 25

**Seeding dates**  
 Best: Sept. 15 – Oct. 15  
 Possible: Sept. 1 – Oct. 31 or Feb. 15 – Apr. 30

**Soil amendments** – Apply lime and fertilizer according to soil tests, or apply 3,000–5,000 lb/acre ground agricultural limestone (use the lower rate on sandy soils) and 1,000 lb/acre 10–10–10 fertilizer.  
 Mulch – Apply 4,000 lb/acre grain straw or equivalent cover of another suitable mulch. Anchor straw by tacking with asphalt, netting, or by crimping with a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

**Maintenance** – Fertilize according to soil tests or apply 40 lb/acre nitrogen in Jan. or Feb., 40 lb in Sept., and 40 lb in Nov., from a 12–4–8, 16–4–8, or similar turf fertilizer. Avoid fertilizer applications during warm weather, as this increases stand losses to disease. Reseed, fertilize, and mulch damaged areas immediately. Mow to a height of 2.5–3.5 inches as needed.

**Table 6.11r – Seeding No. 3CP for: Dry Sands to Sandy Loams; High Maintenance, Fine Turf**  
 Seeding mixture  
 Species Rate (bu/1,000 ft<sup>2</sup>)  
 Tifway or Tifway II Minimum: 3  
 hybrid Bermudagrass Rapid cover: 10

**Seeding Notes**  
 1. Sprig or sod (Practice 6.12, Sodding). Moisture is essential during initial establishment. Sod must be kept well watered for 2–3 weeks, but can be planted earlier or later than sprigs.  
 2. Common Bermuda can be seeded or sprigged but does not produce a high-quality turf. It is also less cold tolerant than the hybrids, more weed prone, and a pest in flower beds and specimen plantings.

**Planting dates**  
 Apr. – July

**Soil amendments** – Apply lime and fertilizer according to soil tests, or apply 3,000 lb/acre ground agricultural limestone and 500 lb/acre 10–10–10 fertilizer, or 50 lb/acre nitrogen from turf-type slow-release fertilizer. Add 25–50 lb/acre nitrogen at 2- to 3-week intervals through midsummer.  
 Sprigging – Plant sprigs in furrows with a tractor-drawn transplanter, or broadcast by hand.  
 Furrows should be 4–6 inches deep and 2 ft apart. Place sprigs about 2 ft apart in the row with one end at or above ground level (Figure 6.11a).  
 Broadcast at rates shown above, and press sprigs into the top 1/2–2 inches of soil with a disk set straight so that sprigs are not brought back toward the surface.

**Mulch** – Do not mulch.  
 Maintenance – Water as needed and mow to 3/4- to 1-inch height. Topdress with 40 lb/acre nitrogen in Apr., 50 lb in May, 50 lb in June, 30 lb in July, and 25–50 lb in Aug.

**Table 6.11s – Seeding No. 4CP for: Well-Drained Sandy Loams to Dry Sands, Coastal Plain and Eastern Edge of Piedmont; Low-to-Medium-Care Lawns**  
 Seeding mixture  
 Species Rate (lb/acre (seed) or 33 bu/acre (sprigs))  
 Centipedegrass 10–20 (seed) or 33 bu/acre (sprigs)

**Seeding dates**  
 Mar. – June  
 (Sprigging can be done through July where water is available for irrigation.)

**Soil amendments** – Apply lime and fertilizer according to soil tests, or apply 300 lb/acre 10–10–10 fertilizer.  
 Sprigging – Plant sprigs in furrows with a tractor-drawn transplanter, or broadcast by hand.  
 Furrows should be 4–6 in ches deep and 2 ft apart. Place sprigs about 2 ft apart in the row with one end at or above ground level (Figure 6.11a).  
 Broadcast at rates shown above, and press sprigs into the top 1/2–2 inches of soil with a disk set straight so that sprigs are not brought back toward the surface.  
 Mulch – Do not mulch.  
 Maintenance – Fertilize very sparingly – 20 lb/acre nitrogen in spring with no phosphorus. Centipedegrass cannot tolerate high pH or excess fertilizer.

**Table 6.11t – Seeding No. 5CP for: Well-Drained Sandy Loams to Dry Sands; Low Maintenance**  
 Seeding mixture  
 Species Rate (lb/acre)  
 Pensacola Bahiagrass 50  
 Sericea lespedeza 30  
 Common Bermudagrass 10  
 German millet 10

**Seeding Notes**  
 1. Where a neat appearance is desired, omit sericea.  
 2. Use common Bermuda only on isolated sites where it cannot become a pest. Bermudagrass may be replaced with 5 lb/acre centipedegrass.

**Seeding dates**  
 Apr. 1 – July 15

**Soil amendments** – Apply lime and fertilizer according to soil tests, or apply 3,000 lb/acre ground agricultural limestone and 500 lb/acre 10–10–10 fertilizer.  
 Mulch – Apply 4,000 lb/acre grain straw or equivalent cover of another suitable mulch. Anchor by tacking with asphalt, roving, or netting or by crimping with a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.  
 Maintenance – Referitize the following Apr. with 50 lb/acre nitrogen. Repeat as growth requires. May be mowed only once a year. Where a neat appearance is desired, omit sericea and mow as often as need.

**Table 6.11v – Seeding No. 7CP for: Grass-lined Channels; Coastal Plain, Lower Piedmont, and Dry Soils in the Central Piedmont**  
 Seeding mixture  
 Species Rate (lb/acre)  
 Common Bermudagrass 40–80 (1–2 lb/1,000 ft<sup>2</sup>)

**Seeding dates**  
 Coastal Plain: Apr. – July  
 Piedmont: Apr. 15 – June 30

**Soil amendments** – Apply lime and fertilizer according to soil tests, or apply 3,000 lb/acre ground agricultural limestone and 500 lb/acre 10–10–10 fertilizer.  
 Mulch – Use jute, excelsior matting, or other effective channel lining material to cover the bottom of channels and ditches. The lining should extend above the highest calculated depth of flow. On channel side slopes above this height, and in drainages not requiring temporary linings, apply 4,000 lb/acre grain straw and anchor straw by stapling netting over the top.  
 Mulch and anchoring materials must not be allowed to wash down slopes where they can clog drainage devices.  
 Maintenance – A minimum of 3 weeks is required for establishment. Inspect and repair mulch frequently. Referitize the following Apr. with 50 lb/acre nitrogen.  
 Refer to Appendix 8.02 for botanical names.

**Temporary Seeding**  
 Specifications #6.10 – Specifications  
 (Specifications are as per the "Erosion and Sediment Control Planning and Design Manual" of the state of North Carolina)  
 Table 6.10a – Temporary Seeding Recommendations for Late Winter and Early Spring  
 Seeding Mixture  
 Species Rate (lb/acre)  
 Rye (grain) 120  
 Annual lespedeza (Kobs in Piedmont and Coastal Plain, Korean in Mountains) 50

Omit annual lespedeza when duration of temporary cover is not to extend beyond June.

**Seeding dates**  
 Mountains – Above 2500 ft: Feb. 15–May 15  
 Below 2500 ft: Feb. 1–May 1  
 Piedmont – Jan. 1–May 1  
 Coastal Plain – Dec. 1–Apr. 15

**Soil amendments** – Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10–10–10 fertilizer.  
 Mulch – Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.  
 Maintenance – Referitize if growth is not fully adequate. Reseed, referitize and mulch immediately following erosion or other damage.

**Table 6.10b Temporary Seeding Recommendations for Summer**  
 Seeding mixture  
 Species Rate (lb/acre)  
 German millet 40

In the Piedmont and Mountains, a small-stemmed Sudangrass may be substituted at a rate of 50 lb/acre.

**Seeding dates**  
 Mountains – May 15–Aug. 15  
 Piedmont – May 1–Aug. 15  
 Coastal Plain – Apr. 15–Aug. 15

**Soil amendments** – Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10–10–10 fertilizer.  
 Mulch – Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.  
 Maintenance – Referitize if growth is not fully adequate. Reseed, referitize and mulch immediately following erosion or other damage.

**Table 6.10c Temporary Seeding Recommendations for Fall**  
 Seeding mixture  
 Species Rate (lb/acre)  
 Rye (grain) 120

**Seeding dates**  
 Mountains – Aug. 15–Dec. 30  
 Coastal Plain and Piedmont – Aug. 15–Dec. 30

**Soil amendments** – Follow soil tests or apply 2,000 lb/acre ground agricultural limestone and 1,000 lb/acre 10–10–10 fertilizer.  
 Mulch – Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.  
 Maintenance – Repair and referitize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

**Table 6.10d Temporary Seeding Recommendations for Spring**  
 Seeding mixture  
 Species Rate (lb/acre)  
 Rye (grain) 120

**Seeding dates**  
 Mountains – May 15–Aug. 15  
 Piedmont – May 1–Aug. 15  
 Coastal Plain – Apr. 15–Aug. 15

**Soil amendments** – Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10–10–10 fertilizer.  
 Mulch – Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.  
 Maintenance – Repair and referitize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

**Table 6.10e Temporary Seeding Recommendations for Summer**  
 Seeding mixture  
 Species Rate (lb/acre)  
 German millet 40

In the Piedmont and Mountains, a small-stemmed Sudangrass may be substituted at a rate of 50 lb/acre.

**Seeding dates**  
 Mountains – May 15–Aug. 15  
 Piedmont – May 1–Aug. 15  
 Coastal Plain – Apr. 15–Aug. 15

**Soil amendments** – Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10–10–10 fertilizer.  
 Mulch – Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.  
 Maintenance – Repair and referitize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

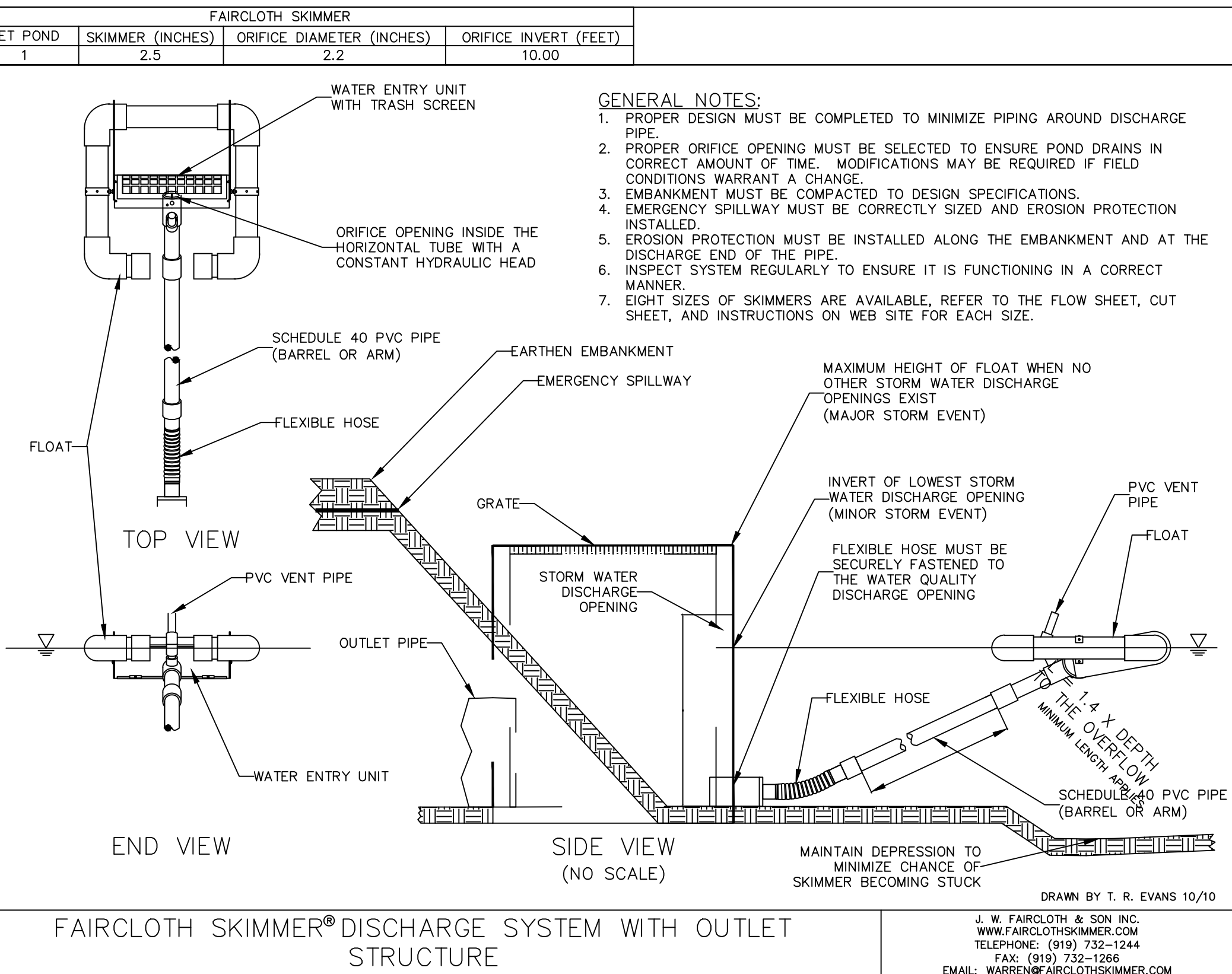
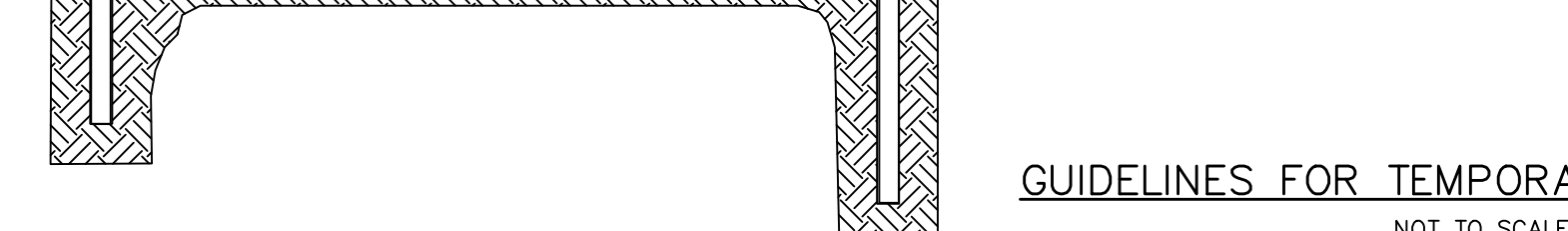
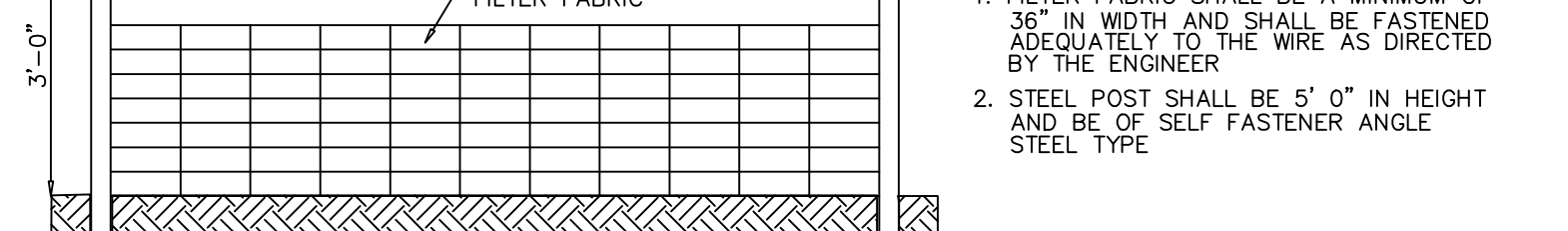
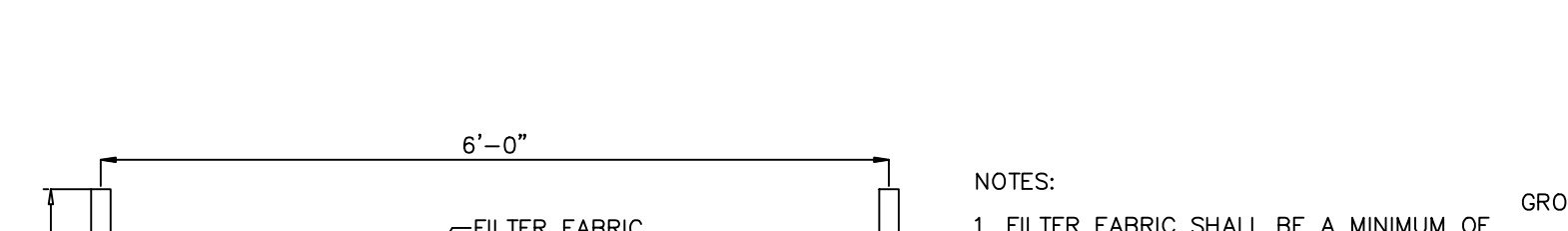
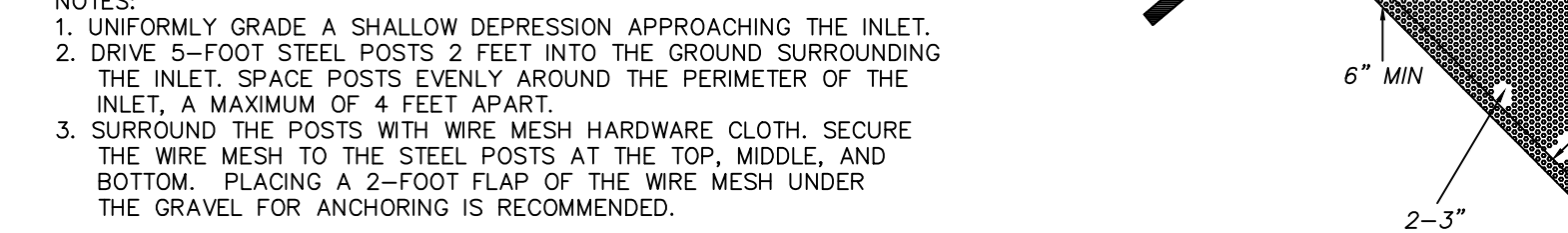
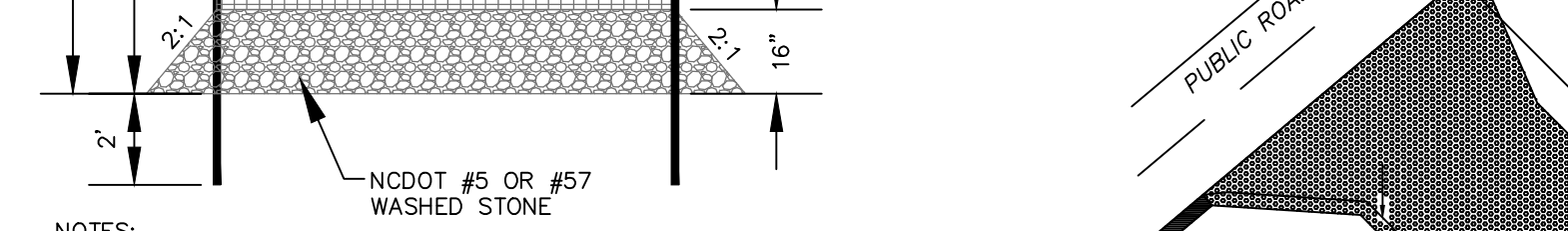
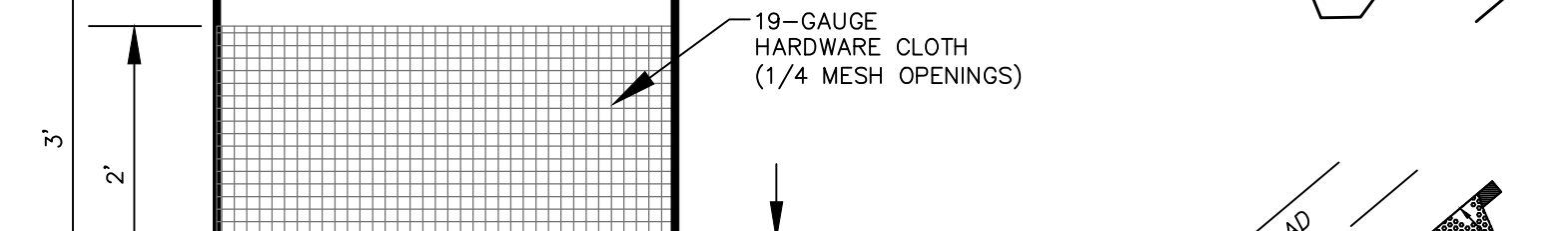
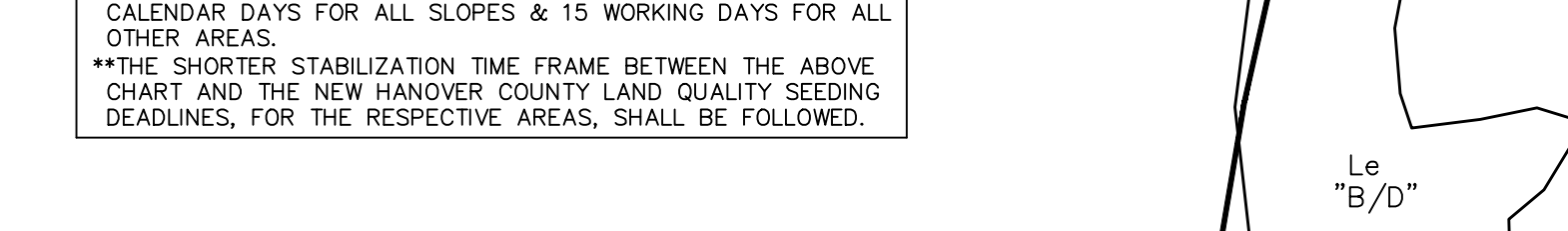
**Table 6.10f Temporary Seeding Recommendations for Fall**  
 Seeding mixture  
 Species Rate (lb/acre)  
 Rye (grain) 120

**Seeding dates**  
 Mountains – Aug. 15–Dec. 30  
 Coastal Plain and Piedmont – Aug. 15–Dec. 30

**Soil amendments** – Follow soil tests or apply 2,000 lb/acre ground agricultural limestone and 1,000 lb/acre 10–10–10 fertilizer.  
 Mulch – Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.  
 Maintenance – Repair and referitize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

SITE AREA DESCRIPTION	GROUND STABILIZATION	
	STABILIZATION TIME FRAME	STABILIZATION TIME FRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HOW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10 FEET OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50 FEET IN LENGTH
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE (EXCEPT FOR PERIMETERS AND HOW ZONES)

\*NEW HANOVER COUNTY LAND QUALITY SEEDING DEADLINES: 21 CALENDAR DAYS FOR ALL SLOPES & 15 WORKING DAYS FOR ALL OTHER AREAS.  
 \*\*THE SHORTER STABILIZATION TIME FRAME BETWEEN THE ABOVE CHART AND THE NEW HANOVER COUNTY LAND QUALITY SEEDING DEADLINES, FOR THE RESPECTIVE AREAS, SHALL BE FOLLOWED.

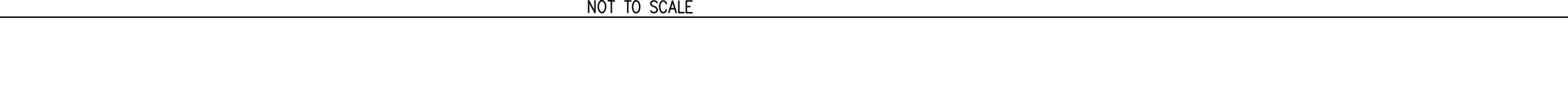
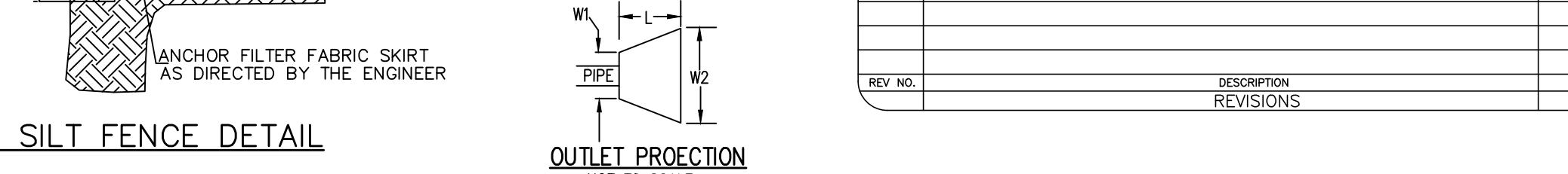
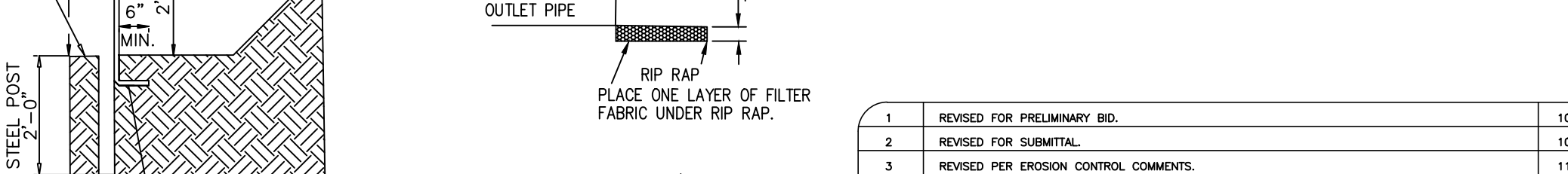
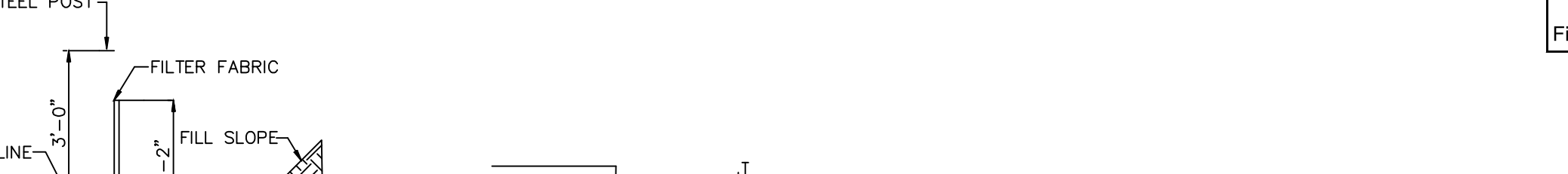
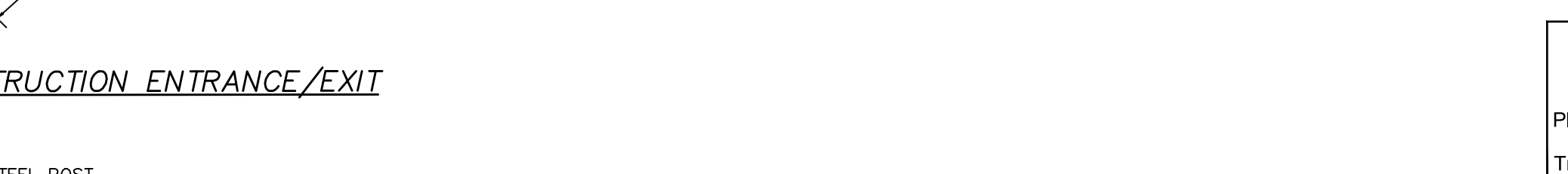
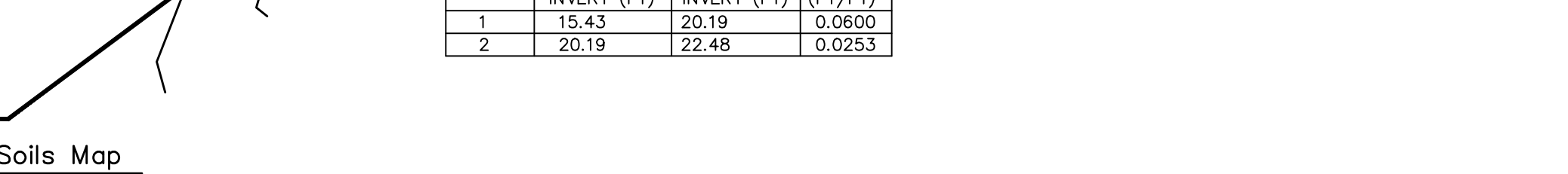


SWALE #1			
SECTION	DOWNSTREAM INVERT (FT)	UPSTREAM INVERT (FT)	SLOPE (FT/FT)
1	12.98	13.81	0.072
2	13.81	14.20	0.0153

SWALE #2			
SECTION	DOWNSTREAM INVERT (FT)	UPSTREAM INVERT (FT)	SLOPE (FT/FT)
1	8.97	9.27	0.0071
2	9.27	9.88	0.0108
3	9.88	10.27	0.0072
4	10.27	10.76	0.0082
5	10.76	11.14	0.0068
6	11.14	11.89	0.0084
7	11.89	12.01	0.0104

SWALE #3			
SECTION	DOWNSTREAM INVERT (FT)	UPSTREAM INVERT (FT)	SLOPE (FT/FT)
1	24.45	25.00	0.0051

SWALE #4			
SECTION	DOWNSTREAM INVERT (FT)	UPSTREAM INVERT (FT)	SLOPE (FT/FT)
1	15.43	20.19	0.0600
2	20.19	22.48	0.0253



**MAINTENANCE PLAN**  
 1. ALL EROSION CONTROL MEASURES WILL BE CHECKED EVERY 7 DAYS OR AFTER EACH RAIN PRODUCING 1/2 INCHES OR MORE WHICH EVER COMES FIRST.  
 2. SEDIMENT WILL BE REMOVED FROM BEHIND SILT FENCES WHERE SEDIMENT IS 0.5 FEET DEEP AND REPAIR FABRIC IF TORN, LEAKING OR FALLING.  
 3. ALL POINTS OF EGRESS WILL HAVE CONSTRUCTION ENTRANCES THAT WILL BE PERIODICALLY TOP-DRESSED WITH AN ADDITIONAL 2 INCHES OF #4 STONE TO MAINTAIN PROPER DEPTH. THEY WILL BE MAINTAINED IN A CONDITION TO MAINTAIN PROPER DEPTH. THEY WILL BE MAINTAINED IN A CONDITION TO MAINTAIN PROPER DEPTH. THEY WILL BE MAINTAINED IN A CONDITION TO MAINTAIN PROPER DEPTH.  
 4. CHECK SEDIMENT BASINS AFTER PERIODS OF SIGNIFICANT RUNOFF. REMOVE SEDIMENT AND RESTORE THE BASIN TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT ACCUMULATES TO ONE-HALF THE DESIGN DEPTH. CHECK THE EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. MAKE ALL NECESSARY REPAIRS IMMEDIATELY. REMOVE ALL TRASH AND OTHER DEBRIS FROM THE RISER AND POOL AREA. GRAVEL WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS PROPERLY OR IF THE ROCK IS DISLOGGED.  
 5. INSPECT TEMPORARY SEDIMENT TRAPS AFTER EACH SIGNIFICANT RAINFALL. REMOVE SEDIMENT AND RESTORE THE TRAP TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-HALF THE DESIGN DEPTH OF THE TRAP. PLACE THE SEDIMENT THAT IS REMOVED IN THE DESIGNATED DISPOSAL AREA AND REPLACE THE CONTAMINATED PART OF THE GRAVEL FACING. CHECK THE STRUCTURE FOR DAMAGE FROM EROSION OR PIPING. PERIODICALLY CHECK THE DEPTH OF THE SPILLWAY TO ENSURE IT IS A MINIMUM OF 1.5 FT BELOW THE LOW POINT OF THE EMBANKMENT. IMMEDIATELY FILL ANY SETTLEMENT OF THE EMBANKMENT TO SLIGHTLY ABOVE GRADE. ANY RIPRAP DISPLACED FROM THE SPILLWAY MUST BE REPLACED IMMEDIATELY. AFTER ALL SEDIMENT-PRODUCING AREAS HAVE BEEN PERMANENTLY STABILIZED, REMOVE THE STRUCTURE AND ALL UNSTABLE SEDIMENT. SMOOTH THE AREA TO BLEND WITH THE ADJOINING AREAS AND STABILIZE PROPERLY.  
 6. INSPECT RIPRAP OUTLET STRUCTURES AFTER HEAVY RAINS TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS TAKEN PLACE OR IF STONES HAVE BEEN DISLOGGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE. RIPRAP SHOULD BE INSPECTED PERIODICALLY FOR SCOUR OR DISLOGGED STONES. CONTROL OF WEED AND BRUSH GROWTH MAY BE NEEDED IN SOME LOCATIONS.  
 7. ROCK DAMS: CHECK SEDIMENT AFTER EACH RAINFALL. REMOVE SEDIMENT AND RESTORE ORIGINAL VOLUME WHEN SEDIMENT ACCUMULATES TO ABOUT ONE-HALF THE DESIGN VOLUME. CHECK THE STRUCTURE FOR EROSION, PIPING, AND ROCK DISPLACEMENT AFTER EACH SIGNIFICANT RAINSTORM AND REPAIR IMMEDIATELY.  
 8. INSPECT ALL MULCHES PERIODICALLY AND AFTER RAINSTORMS TO CHECK FOR RILL EROSION, DISLOCATION, OR FAILURE. WHERE EROSION IS OBSERVED, APPLY ADDITIONAL MULCH. IF WASHOUT OCCURS, REPAIR THE SLOPE GRADE, RESEED, AND REINSTALL MULCH. CONTINUE INSPECTIONS UNTIL VEGETATION IS FIRMLY ESTABLISHED.  
 9. INSPECT CHECK DAMS AND CHANNELS FOR DAMAGE AFTER EACH RUNOFF EVENT. ANTICIPATE SUBMERGENCE AND DEPOSITION ABOVE THE CHECK DAM AND EROSION FROM HIGH FLOWS AROUND THE EDGES OF THE DAM. CORRECT ALL DAMAGE IMMEDIATELY. IF SIGNIFICANT EROSION OCCURS BETWEEN DAMS, INSTALL A PROTECTIVE RIPRAP LINING IN THAT PORTION OF THE CHANNEL. REMOVE SEDIMENT ACCUMULATED 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.  
 10. INSPECT Baffles AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY. BE SURE TO MAINTAIN ACCESS TO THE Baffles. SHOULD THE FABRIC OF A Baffle COLLAPSE, TEAR, DECOMPOSE, OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY. REMOVE SEDIMENT DEPOSITS WHEN IT REACHES OR EXCEEDS LARGE FLOWS FROM CARRYING SEDIMENT OVER THE DAM. REMOVE ALL MULCHES PERIODICALLY AND AFTER RAINSTORMS TO CHECK FOR RILL EROSION, DISLOCATION, OR FAILURE. WHERE EROSION IS OBSERVED, APPLY ADDITIONAL MULCH. IF WASHOUT OCCURS, REPAIR THE SLOPE GRADE, RESEED, AND REINSTALL MULCH. CONTINUE INSPECTIONS UNTIL VEGETATION IS FIRMLY ESTABLISHED.  
 11. INSPECT CHECK DAMS AND CHANNELS FOR DAMAGE AFTER EACH RUNOFF EVENT. ANTICIPATE SUBMERGENCE AND DEPOSITION ABOVE THE CHECK DAM AND EROSION FROM HIGH FLOWS AROUND THE EDGES OF THE DAM. CORRECT ALL DAMAGE IMMEDIATELY. IF SIGNIFICANT EROSION OCCURS BETWEEN DAMS, INSTALL A PROTECTIVE RIPRAP LINING IN THAT PORTION OF THE CHANNEL. REMOVE SEDIMENT ACCUMULATED 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.  
 12. INSPECT Baffles AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY. BE SURE TO MAINTAIN ACCESS TO THE Baffles. SHOULD THE FABRIC OF A Baffle COLLAPSE, TEAR, DECOMPOSE, OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY. REMOVE SEDIMENT DEPOSITS WHEN IT REACHES OR EXCEEDS LARGE FLOWS FROM CARRYING SEDIMENT OVER THE DAM. REMOVE ALL MULCHES PERIODICALLY AND AFTER RAINSTORMS TO CHECK FOR RILL EROSION, DISLOCATION, OR FAILURE. WHERE EROSION IS OBSERVED, APPLY ADDITIONAL MULCH. IF WASHOUT OCCURS, REPAIR THE SLOPE GRADE, RESEED, AND REINSTALL MULCH. CONTINUE INSPECTIONS UNTIL VEGETATION IS FIRMLY ESTABLISHED.  
 13. INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE. CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED. WHEN THE AREA PROTECTED IS PERMANENTLY STABILIZED, REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH THE NATURAL GROUND LEVEL AND APPROPRIATELY STABILIZE IT.  
 14. INSPECT SKIMMER SEDIMENT BASINS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (ONE-HALF INCH OR GREATER) RAINFALL EVENT AND ITS ORIGINAL DIMENSIONS WHEN SEDIMENT ACCUMULATES TO ONE-HALF THE HEIGHT OF THE FIRST Baffle. SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. MAKE ALL NECESSARY REPAIRS IMMEDIATELY. REMOVE ALL TRASH AND OTHER DEBRIS FROM THE SKIMMER AND POOL AREAS. FREEZING WEATHER CAN RESULT IN ICE FORMING IN THE BASIN. SOME SPECIAL PRECAUTIONS SHOULD BE TAKEN IN THE WINTER TO PREVENT THE SKIMMER FROM PLUGGING WITH ICE.  
 15. ALL SEEDING AREAS WILL BE FERTILIZED, RESEEDING AS NECESSARY, AND MULCHED ACCORDING TO SPECIFICATIONS IN THE VEGETATION PLAN TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER. SEE GROUND STABILIZATION CHART FOR STABILIZATION TIME FRAME.

**Table 6.10g Temporary Seeding Recommendations for Summer**  
 Seeding mixture  
 Species Rate (lb/acre)  
 German millet 40

In the Piedmont and Mountains, a small-stemmed Sudangrass may be substituted at a rate of 50 lb/acre.

**Seeding dates**  
 Mountains – May 15–Aug. 15  
 Piedmont – May 1–Aug. 15  
 Coastal Plain – Apr. 15–Aug. 15

**Soil amendments** – Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10–10–10 fertilizer.  
 Mulch – Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.  
 Maintenance – Referitize if growth is not fully adequate. Reseed, referitize and mulch immediately following erosion or other damage.

**Table 6.10h Temporary Seeding Recommendations for Fall**  
 Seeding mixture  
 Species Rate (lb/acre)  
 Rye (grain) 120

**Seeding dates**  
 Mountains – Aug. 15–Dec. 30  
 Coastal Plain and Piedmont – Aug. 15–Dec. 30

**Soil amendments** – Follow soil tests or apply 2,000 lb/acre ground agricultural limestone and 1,000 lb/acre 10–10–10 fertilizer.  
 Mulch – Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.  
 Maintenance – Repair and referitize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

**Table 6.10i Temporary Seeding Recommendations for Spring**  
 Seeding mixture  
 Species Rate (lb/acre)  
 Rye (grain) 120

**Seeding dates**  
 Mountains – May 15–Aug. 15  
 Piedmont – May 1–Aug. 15  
 Coastal Plain – Apr. 15–Aug. 15

**Soil amendments** – Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10–10–10 fertilizer.  
 Mulch – Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.  
 Maintenance – Repair and referitize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

**Table 6.10j Temporary Seeding Recommendations for Summer**  
 Seeding mixture  
 Species Rate (lb/acre)  
 German millet 40

In the Piedmont and Mountains, a small-stemmed Sudangrass may be substituted at a rate of 50 lb/acre.

**Seeding dates**  
 Mountains – May 15–Aug. 15  
 Piedmont – May 1–Aug. 15  
 Coastal Plain – Apr. 15–Aug. 15

**Soil amendments** – Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10–10–10 fertilizer.  
 Mulch – Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.  
 Maintenance – Repair and referitize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

**Table 6.10k Temporary Seeding Recommendations for Fall**  
 Seeding mixture  
 Species Rate (lb/acre)  
 Rye (grain) 120

**Seeding dates**  
 Mountains – Aug. 15–Dec. 30  
 Coastal Plain and Piedmont – Aug. 15–Dec. 30

**Soil amendments** – Follow soil tests or apply 2,000 lb/acre ground agricultural limestone and 1,000 lb/acre 10–10–10 fertilizer.  
 Mulch – Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.  
 Maintenance – Repair and referitize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extend temporary cover beyond June 15, overseed with 50 lb/acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

**Table 6.10l Temporary Seeding Recommendations for Spring**  
 Seeding mixture  
 Species Rate (lb/acre)  
 Rye (grain) 120

**Seeding dates**  
 Mountains – May 15–Aug. 15  
 Piedmont – May 1–Aug. 15  
 Coastal Plain – Apr. 15–Aug. 15

**Soil amendments** – Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750







MATCHLINE  
SEE SHEET L-2

MATCHLINE  
SEE SHEET L-2

N/F  
CITY OF WILMINGTON  
DB: 1272 PG: 650  
PID: R06500-004-001-003  
ZONING: R-15  
LAND USE: UNUSED

BENCHMARK  
ELEV. = 17.55'

EAST EDGE OF CREEK

50.00'  
VEGETATIVE  
BUFFER

N/F  
CITY OF WILMINGTON  
DB: 1272 PG: 650  
PID: R06500-004-001-004  
ZONING: R-15  
LAND USE: UNUSED

WETLANDS  
UPLANDS

WET  
POND #1

CLUBHOUSE

6" SEWER  
SERVICE (TYP.)

BUILDING #7

BUILDING #4

BUILDING #3

BUILDING #2

BUILDING #1

INFILTRATION  
BASIN #1

CONCRETE  
BAFFLE #1

CONCRETE  
BAFFLE #2

CONCRETE  
BAFFLE #3

CONCRETE  
BAFFLE #4

CONCRETE  
BAFFLE #5

CONCRETE  
BAFFLE #6

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BAFFLE #25

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BAFFLE #26

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BAFFLE #27

CONCRETE  
BAFFLE #28

CONCRETE  
BAFFLE #29

CONCRETE  
BAFFLE #30

N 15°45'0.5015  
2326064.9247  
C.F. = 1.000053816

N 29°22'20"W  
766.84' (Grid) & 766.70' (H)

N 39°52'37"E  
218.00'

N 58°06'23"W  
469.83'

S 84°24'37"W  
549.22'

N 15°45'0.5015  
2326064.9247  
C.F. = 1.000053816

N 29°22'20"W  
766.84' (Grid) & 766.70' (H)

N 39°52'37"E  
218.00'

N 58°06'23"W  
469.83'

N/F  
JOANN McKENNA TRUST  
DB: 5128 PG: 2275  
PID: R07007-004-001-000  
ZONING: O&I-1  
LAND USE: UNUSED

TREE MITIGATION PLANTINGS			
SYMBOL	QTY	BOTANICAL NAME / COMMON NAME	CALIPER
	9	DIOSPYROS VIRGINIANA / COMMON PERSIMMON	2" (MIN.)
	166	ILEX VOMITORIA / YAUPON HOLLY	2" (MIN.)
	83	PINUS PALUSTRIS / LONGLEAF PINE	PLUGS

N/F  
ECHO FARMS, LLC  
DB: 2307 PG: 467  
PID: R07006-002-001-000  
ZONING: MF-M  
LAND USE: RECREATIONAL

Approved Construction Plan

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

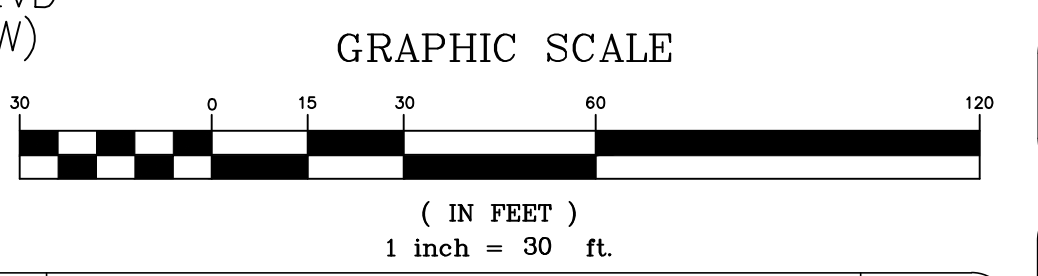
**CITY OF WILMINGTON**  
NORTH CAROLINA

Public Services • Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_



REV. NO.	DESCRIPTION / REVISIONS	DATE

PRELIMINARY PLAT  
NOT FOR RECORDATION,  
CONVEYANCES, OR SALES

N/F  
ECHO FARMS, LLC  
DB: 2307 PG: 467  
PID: R07006-002-001-000  
ZONING: MF-M  
LAND USE: RECREATIONAL

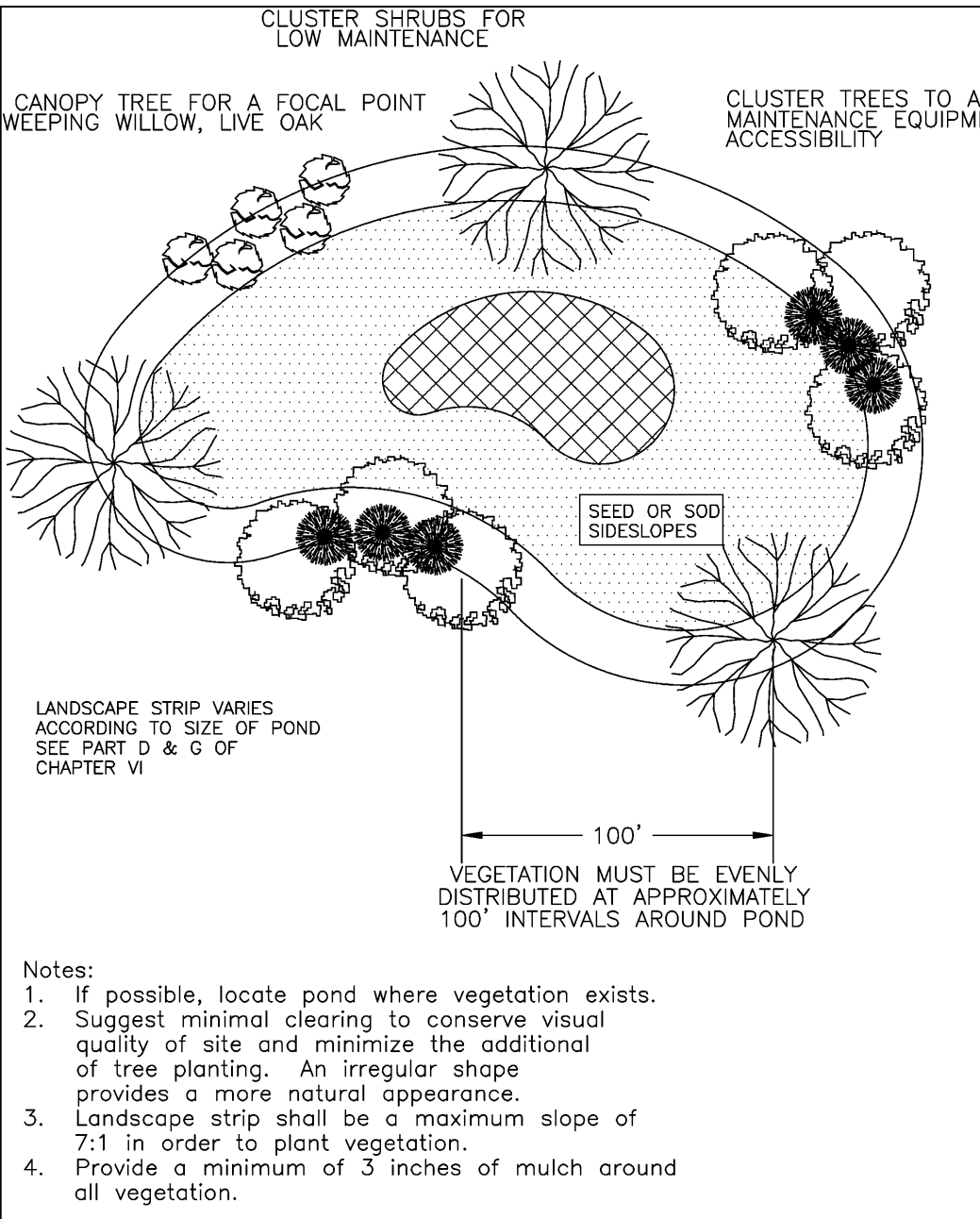
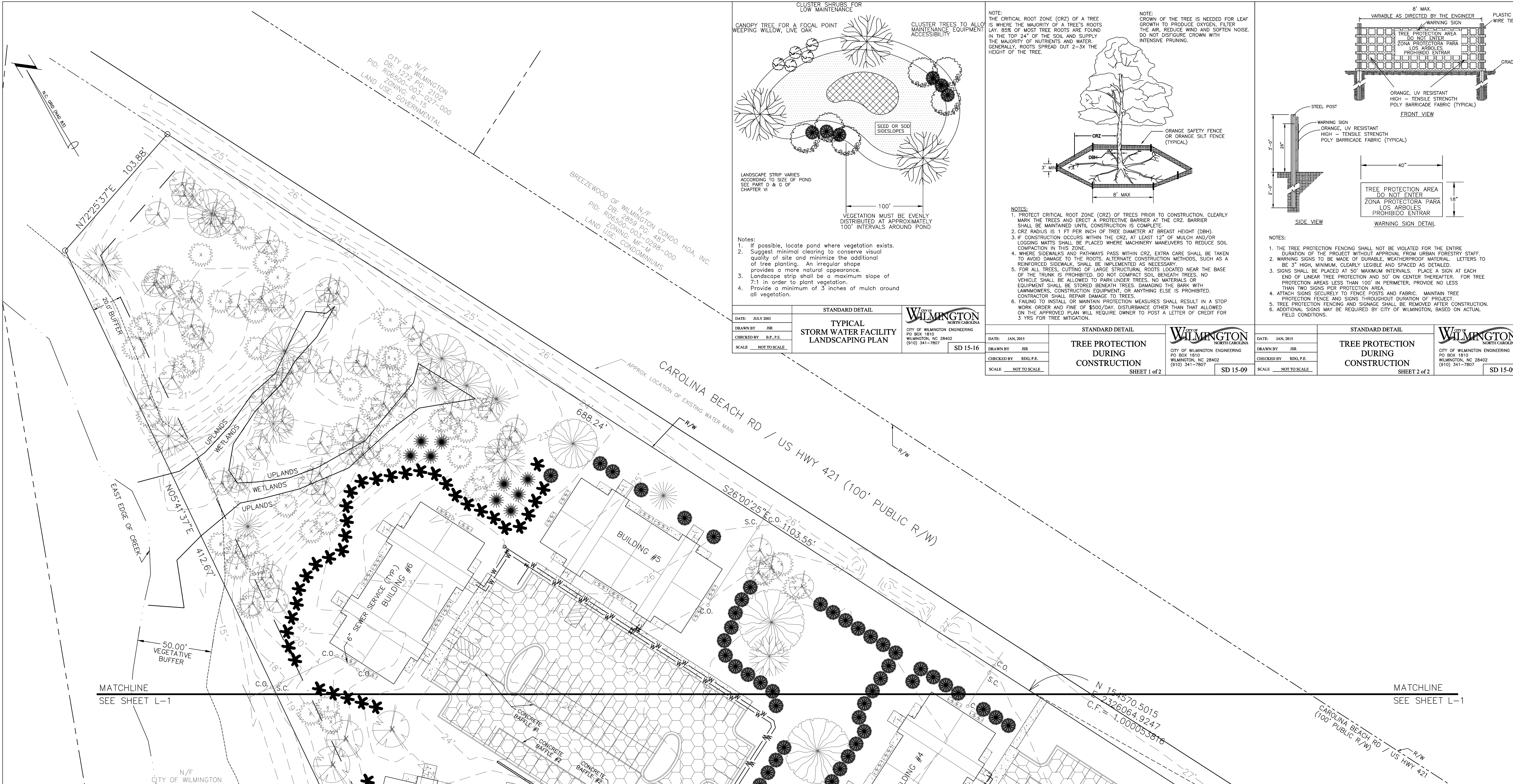
TREE MITIGATION PLAN  
4010 CAROLINA BEACH ROAD  
**ECHO FARM APARTMENTS**  
WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

MALPASS ENGINEERING & SURVEYING, P.C.  
1134 SHIPYARD BOULEVARD  
WILMINGTON, NORTH CAROLINA 28412  
Phone 910-392-5243  
Fax 910-392-5203 License No. C-2320

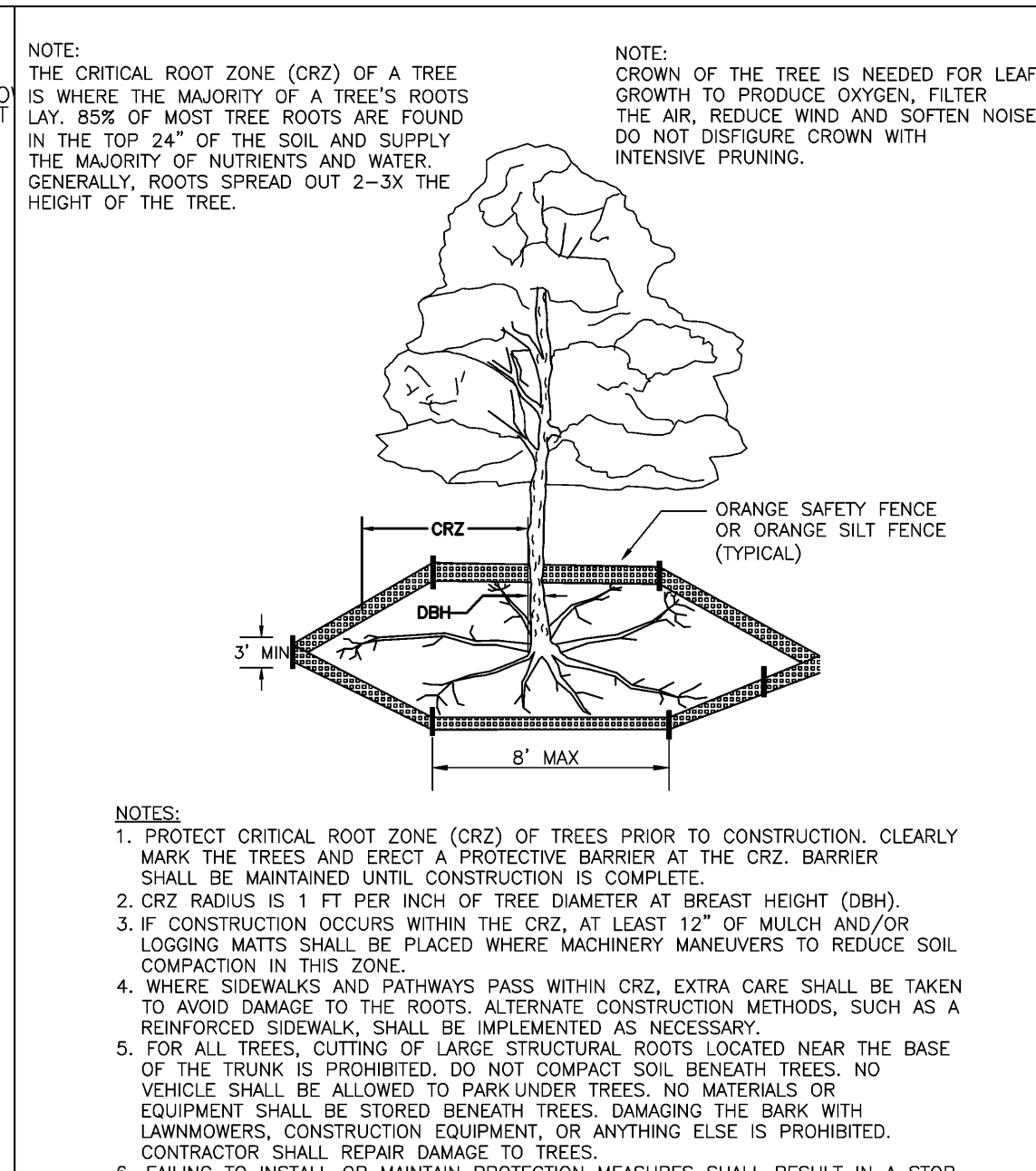
Developer: ECHO FARM APARTMENTS, LLC  
10 S. CARDINAL DRIVE  
WILMINGTON, NORTH CAROLINA 28403  
PHONE: 910-251-5030

DATE: 11-16-15  
SCALE: 1"=30'  
DRAWN: JCB  
CHECKED: JEM  
PROJECT NO: 260  
SHEET NO: L-1

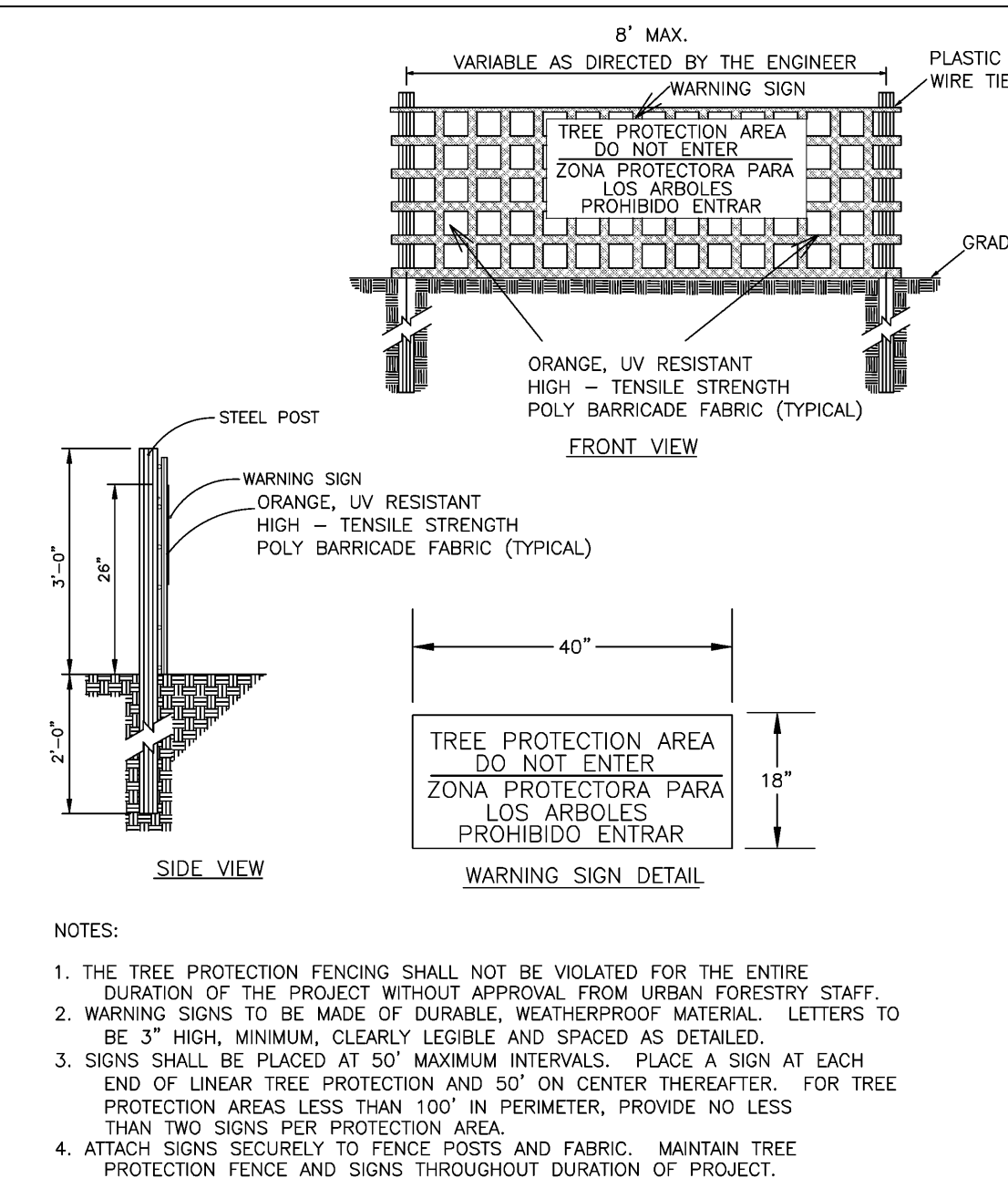




Notes:  
 1. If possible, locate pond where vegetation exists.  
 2. Suggest minimal clearing to conserve visual quality of site and minimize the additional of tree planting. An irregular shape provides a more natural appearance.  
 3. Landscape strip shall be a maximum slope of 7:1 in order to plant vegetation.  
 4. Provide a minimum of 3 inches of mulch around all vegetation.



Notes:  
 1. PROJECT CRITICAL ROOT ZONE (CRZ) OF TREES PRIOR TO CONSTRUCTION. CLEARLY MARK THE TREES AND ERECT A PROTECTIVE BARRIER AT THE CRZ. BARRIER SHALL BE MAINTAINED UNTIL CONSTRUCTION IS COMPLETE.  
 2. CRZ RADIUS IS 1 FT PER INCH OF TREE DIAMETER AT BREAST HEIGHT (DBH).  
 3. IF CONSTRUCTION OCCURS WITHIN THE CRZ, AT LEAST 12" OF MULCH AND/OR LOGGING MATS SHALL BE PLACED WHERE MACHINERY MANEUVERS TO REDUCE SOIL COMPACTION IN THIS ZONE.  
 4. WHERE SIDEWALKS AND PATHWAYS PASS WITHIN CRZ, EXTRA CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE ROOTS. ALTERNATE CONSTRUCTION METHODS, SUCH AS A REINFORCED SIDEWALK, SHALL BE IMPLEMENTED AS NECESSARY.  
 5. FOR ALL TREES, CUTTING OF LARGE STRUCTURAL ROOTS LOCATED NEAR THE BASE OF THE TRUNK IS PROHIBITED. DO NOT COMPACT SOIL BENEATH TREES. NO VEHICLE SHALL BE ALLOWED TO PARK UNDER TREES. NO MATERIALS OR EQUIPMENT SHALL BE STORED BENEATH TREES. DAMAGING THE BARK WITH LAWNMOWERS, CONSTRUCTION EQUIPMENT, OR ANYTHING ELSE IS PROHIBITED. CONTRACTOR SHALL REPAIR DAMAGE TO TREES.  
 6. FAILING TO INSTALL OR MAINTAIN PROTECTION MEASURES SHALL RESULT IN A STOP WORK ORDER AND FINE OF \$500/DAY. DISTURBANCE OTHER THAN THAT ALLOWED ON THE APPROVED PLAN WILL REQUIRE OWNER TO POST A LETTER OF CREDIT FOR 3 YRS FOR TREE MITIGATION.



Notes:  
 1. THE TREE PROTECTION FENCING SHALL NOT BE VIOLATED FOR THE ENTIRE DURATION OF THE PROJECT WITHOUT APPROVAL FROM URBAN FORESTRY STAFF.  
 2. WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL. LETTERS TO BE 3" HIGH, MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED.  
 3. SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER. FOR TREE PROTECTION AREAS LESS THAN 100' IN PERIMETER, PROVIDE NO LESS THAN TWO SIGNS PER PROTECTION AREA.  
 4. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC. MAINTAIN TREE PROTECTION FENCE AND SIGNS THROUGHOUT DURATION OF PROJECT.  
 5. TREE PROTECTION FENCING AND SIGNS SHALL BE REMOVED AFTER CONSTRUCTION.  
 6. ADDITIONAL SIGNS MAY BE REQUIRED BY CITY OF WILMINGTON, BASED ON ACTUAL FIELD CONDITIONS.

DATE: JULY 2003  
 DRAWN BY: JSR  
 CHECKED BY: B.F.P.E.  
 SCALE: NOT TO SCALE

DATE: JAN 2015  
 DRAWN BY: JSR  
 CHECKED BY: RDG, P.E.  
 SCALE: NOT TO SCALE

DATE: JAN 2015  
 DRAWN BY: JSR  
 CHECKED BY: RDG, P.E.  
 SCALE: NOT TO SCALE

APPROVED CONSTRUCTION PLAN

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Planning: \_\_\_\_\_

Traffic: \_\_\_\_\_

Fire: \_\_\_\_\_

**CITY OF WILMINGTON**  
NORTH CAROLINA

Public Services • Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_

GRAPHIC SCALE

( IN FEET )  
1 inch = 30 ft.

REV. NO.	DESCRIPTION / REVISIONS	DATE

DATE: 11-16-15  
 SCALE: 1" = 30'  
 DRAWN: JCB  
 CHECKED: JEM  
 PROJECT NO: 260

MALPASS ENGINEERING & SURVEYING, P.C.  
 1134 SHIPYARD BOULEVARD  
 WILMINGTON, NORTH CAROLINA 28412  
 Phone 910-392-6343  
 Fax 910-392-5203 License No. C-2320

Developer: ECHO FARM APARTMENTS, LLC  
 10 S. CARDINAL DRIVE  
 WILMINGTON, NORTH CAROLINA 28403  
 PHONE: 910-251-5030

SHEET NO:  
**L-2**

PRELIMINARY PLAT  
NOT FOR RECORDATION,  
CONVEYANCES, OR SALES