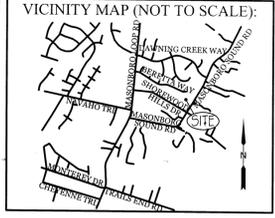


STORMWATER MANAGEMENT PLAN
APPROVED
 CITY OF WILMINGTON
 ENGINEERING DEPARTMENT
 DATE _____ PERMIT # _____
 SIGNED _____

Approved Construction Plan	
Name	Date
Planning	
Public Utilities	
Traffic	
Fire	

SITE DATA
 PARCEL ID: R07200-003-001-000
 CURRENT ZONING: R-15
 CAMA LAND USE CLASSIFICATION: WATERSHED RESOURCE PROTECTION
 PROJECT ADDRESS: 7920 MASONBORO SOUND RD. WILMINGTON, NC 28409
 CURRENT OWNER: HANOVER PARTNERS, LLC PO BOX 1377 WRIGHTSVILLE BEACH, NC 28480

TOTAL ACREAGE IN PROJECT BOUNDARY: 208,233.47 S.F. (4.78 AC.)
 TOTAL DISTURBED AREA: 2.9 AC.
 BUILDING HEIGHT: 35' MAX
 BUILDING SETBACKS:
 FRONT: REQUIRED= 30'
 SIDE: REQUIRED= 10' (15' CORNER LOT)
 REAR: REQUIRED= 25'
 ON-SITE IMPERVIOUS AREAS:
 CONCRETE SIDEWALKS & CURBING: 7,605 S.F.
 ASPHALT ROAD: 19,662 S.F.
 LOTS: 32,000 S.F. (4,000 S.F./ LOT)
 FUTURE OPEN SPACE IMPROVEMENTS: 2,000 S.F.
 TOTAL: 61,267 S.F. + 208,233 S.F. = 29.4%
 OFFSITE IMPERVIOUS AREAS:
 ASPHALT ROAD: 851 S.F.
 CONCRETE SIDEWALK: 979 S.F.
 TOTAL: 1,830 S.F.
 OPEN SPACE REQUIREMENT: (0.03 AC. per dwelling unit)
 0.24 AC (Min 50% active open space)
 0.25 AC (0.12 AC ACTIVE OPEN SPACE)
 PROVIDED:

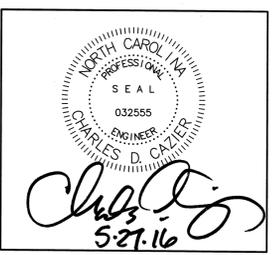


REVISIONS	

INTRACOASTAL ENGINEERING, PLLC
 5725 Oleander Dr. Unit E-7
 Wilmington, North Carolina 28403
 Phone: 910.859.8983
 Email: charlie@intracoastalengineering.com
 License Number: P-0662



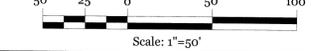
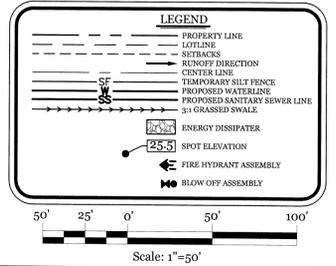
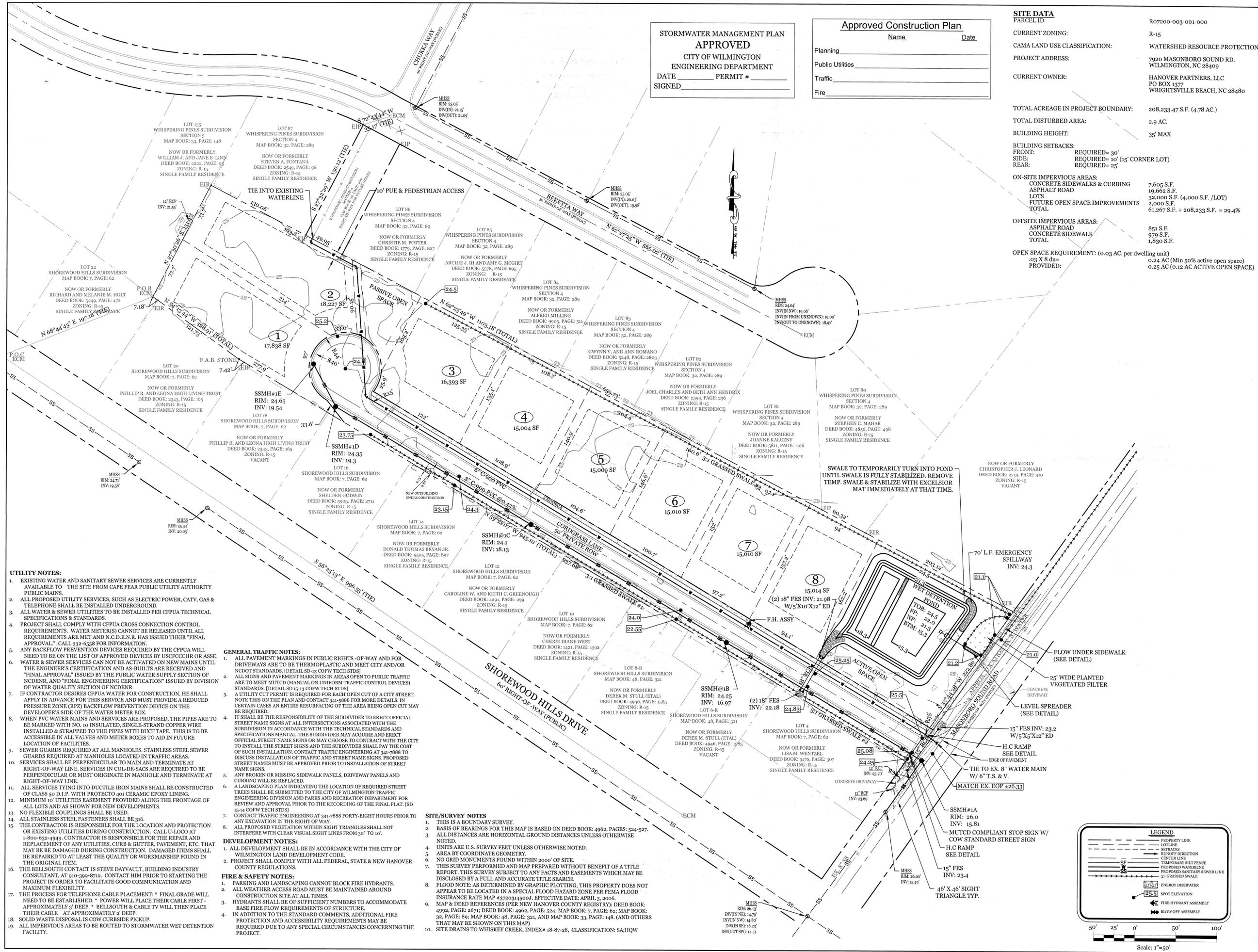
SITE, GRADING, DRAINAGE, UTILITY, AND STORMWATER PLAN
 FOR
MASONBORO TRACE
 WILMINGTON, NC

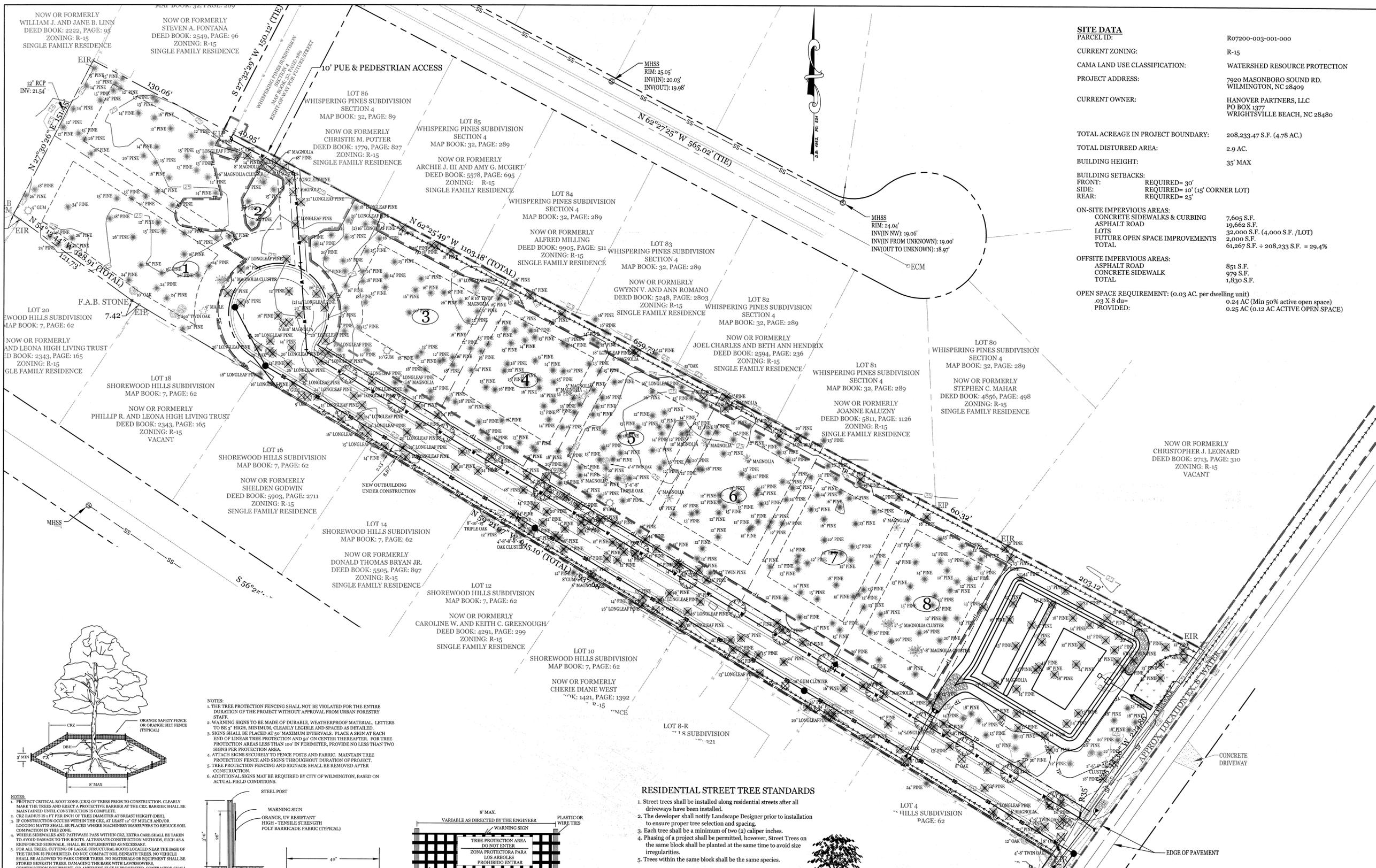


CLIENT INFORMATION:
 HANOVER PARTNERS, LLC
 PO BOX 1377
 WRIGHTSVILLE BEACH, NC 28480
 PH. 910-332-8528

DRAWN: JAE SHEET SIZE: 24x36
 CHECKED: CDC DATE: 5/27/2016
 APPROVED: CDC SCALE: 1" = 50'
 PROJECT NUMBER: 2015-052

DRAWING NUMBER: **C-1**
 1 OF 11





SITE DATA

PARCEL ID: R07200-003-001-000

CURRENT ZONING: R-15

CAMA LAND USE CLASSIFICATION: WATERSHED RESOURCE PROTECTION

PROJECT ADDRESS: 7220 MASONBORO SOUND RD. WILMINGTON, NC 28409

CURRENT OWNER: HANOVER PARTNERS, LLC PO BOX 1377 WRIGHTSVILLE BEACH, NC 28480

TOTAL ACREAGE IN PROJECT BOUNDARY: 208,233.47 S.F. (4.78 AC.)

TOTAL DISTURBED AREA: 2.9 AC.

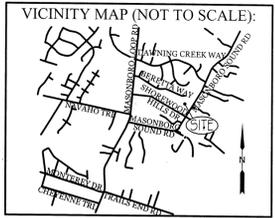
BUILDING HEIGHT: 35' MAX

BUILDING SETBACKS:
 FRONT: REQUIRED= 30'
 SIDE: REQUIRED= 10' (15' CORNER LOT)
 REAR: REQUIRED= 25'

ON-SITE IMPERVIOUS AREAS:
 CONCRETE SIDEWALKS & CURBING: 7,605 S.F.
 ASPHALT ROAD: 19,662 S.F.
 LOTS: 32,000 S.F. (4,000 S.F./LOT)
 FUTURE OPEN SPACE IMPROVEMENTS: 2,000 S.F.
 TOTAL: 61,267 S.F. ± 208,233 S.F. = 29.4%

OFFSITE IMPERVIOUS AREAS:
 ASPHALT ROAD: 851 S.F.
 CONCRETE SIDEWALK: 979 S.F.
 TOTAL: 1,830 S.F.

OPEN SPACE REQUIREMENT: (0.03 AC. per dwelling unit) 0.24 AC (Min 50% active open space)
 PROVIDED: 0.25 AC (0.12 AC ACTIVE OPEN SPACE)



REVISIONS

NO.	DATE	DESCRIPTION

INTRACOASTAL ENGINEERING, PLLC

5725 Oleander Dr. Unit E-7
 Wilmington, North Carolina 28403
 Phone: 910.859.8983
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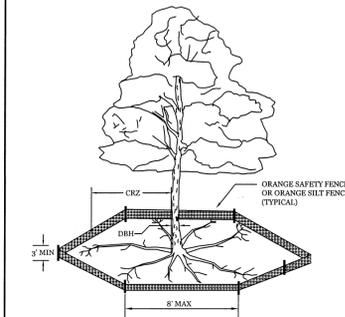
TREE REMOVAL, TREE PROTECTION, AND STREET TREES PLAN FOR MASONBORO TRACE WILMINGTON, NC

CHARLES D. CALVER
 PROFESSIONAL ENGINEER
 NORTH CAROLINA
 032555
 5-21-16

CLIENT INFORMATION:
 HANOVER PARTNERS, LLC
 PO BOX 1377
 WRIGHTSVILLE BEACH, NC 28480
 PH. 910-332-8528

DRAWN: JAE	SHEET SIZE: 24x36
CHECKED: CDC	DATE: 5/27/2016
APPROVED: CDC	SCALE: 1" = 40'
PROJECT NUMBER: 2015-052	

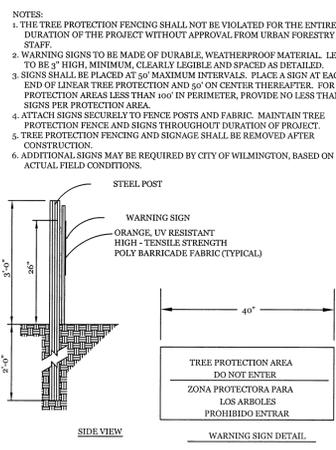
DRAWING NUMBER: **C-3** 3 OF 11



NOTES:

- PROTECT 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.
- CRZ RADIUS IS 1 FT PER INCH OF TREE DIAMETER AT BREAST HEIGHT (DBH).
- 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.
- WHERE SIDEWALKS AND PATHWAYS PASS WITHIN CRZ, EXTRA CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE ROOTS. ALTERNATE CONSTRUCTION METHODS SUCH AS REINFORCED SIDEWALK SHALL BE IMPLEMENTED AS NECESSARY.
- 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.
- 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 1 YEAR FOR TREE MITIGATION.
- THE CRITICAL ROOT ZONE (CRZ) OF A TREE IS WHERE THE MAJORITY OF A TREE'S ROOTS LAY. 85% OF MOST TREE ROOTS ARE FOUND IN THE TOP 24" OF THE SOIL AND SUPPLY THE MAJORITY OF NUTRIENTS AND WATER. GENERALLY, ROOTS SPREAD OUT 2-3X THE HEIGHT OF THE TREE.
- CROWN OF THE TREE IS NEEDED FOR LEAF GROWTH TO PRODUCE, OXYGEN, FILTER THE AIR, REDUCE WIND AND SOFTEN NOISE. DO NOT DISBURSE CROWN WITH INTENSIVE PRUNING.

TREE PROTECTION DETAIL (SD 15-09)
 NOT TO SCALE

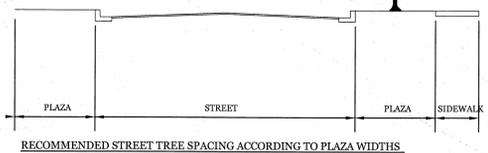


STREET TREE LIST

SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	TYPE	SIZE
	16	LIQUIDAMBAR STYRACIFLUA	SWEET GUM	LARGE SHADE TREE	2.5" CAL.

RESIDENTIAL STREET TREE STANDARDS

- Street trees shall be installed along residential streets after all driveways have been installed.
- The developer shall notify Landscape Designer prior to installation to ensure proper tree selection and spacing.
- Each tree shall be a minimum of two (2) caliper inches.
- Planting of a project shall be permitted, however, Street Trees on the same block shall be planted at the same time to avoid size irregularities.
- Trees within the same block shall be the same species.



RECOMMENDED STREET TREE SPACING ACCORDING TO PLAZA WIDTHS

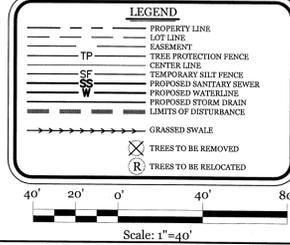
4'-6"	6'-8"	GREATER THAN 8'
ex. CREPE MYRTLE	ex. JAPANESE MAPLE	ex. DARLINGTON OAK
HOLLY	ZELKOVA	RED MAPLE
25'-30' SPACING	35'-40' SPACING	50' SPACING

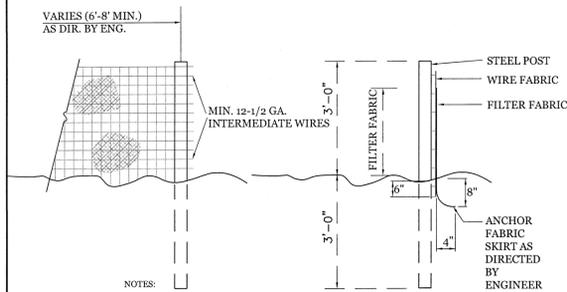
RESIDENTIAL STREET TREE STANDARDS NTS

STORMWATER MANAGEMENT PLAN APPROVED
 CITY OF WILMINGTON
 ENGINEERING DEPARTMENT
 DATE: _____ PERMIT # _____
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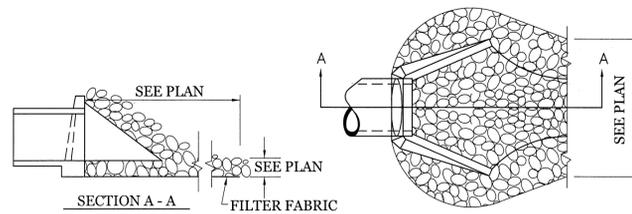




- NOTES:
- FENCE FABRIC SHALL BE A MIN. OF 32" IN WIDTH AND SHALL HAVE A MIN. OF SIX LINE WIRES WITH 12" STAY SPACING.
 - FABRIC SHALL BE FOR EROSION CONTROL AND MIN. OF 36" IN WIDTH. FABRIC SHALL BE FASTENED ADEQUATELY TO THE WIRE FABRIC AS DIRECTED BY THE ENGINEER.
 - STEEL POST SHALL BE 5'-0" IN HEIGHT AND BE OF THE SELF-FASTENER STEEL ANGLE TYPE.

TEMPORARY SILT FENCE

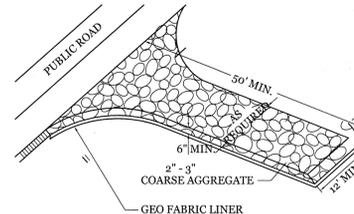
NTS



- NOTES:
- CLASS "B" RIP RAP TO BE USED FOR ALL ENERGY DISSIPATOR AREAS.

ENERGY DISSIPATOR

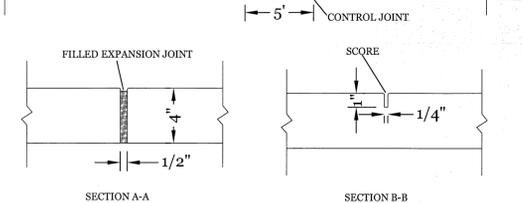
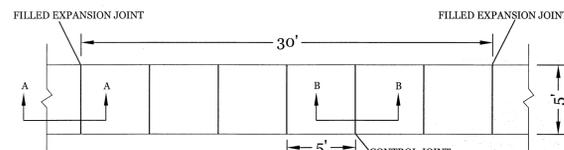
NTS



- NOTE:
- CONSTRUCTION ENTRANCE TO BE 12" OR ENTIRE WIDTH OF ENTRANCE, WHICHEVER IS GREATER.

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

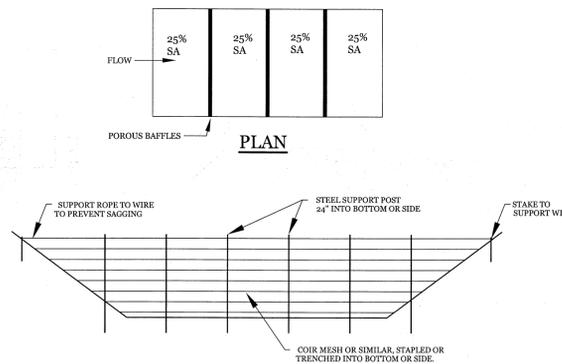
NTS



- NOTES:
- JOINT MATERIAL TO COMPLY WITH CURRENT NCDOT STANDARDS.
 - SANITARY SEWER CLEAN-OUTS, WATER METERS, MANHOLES, AND VALVE LIDS TO BE LOCATED OUTSIDE SIDEWALK WHERE FEASIBLE.
 - MINIMUM SIDEWALK WIDTH TO BE 6' MINIMUM IF PLACED AT BACK OF CURB.
 - CONCRETE FOR ALL SIDEWALKS (EXCEPT ANY PORTION CONTAIN WITHIN A DRIVEWAY APRON) SHALL BE CLASS "A" - 3,000 PSI.
 - MINIMUM REPLACEMENT FOR REPAIRS IS 5' X 5' PANEL.
 - 4" STONE BASE MAY BE REQUIRED FOR POOR SOIL CONDITIONS.
 - MINIMUM DEPTH FOR TUNNELING BELOW SIDEWALK IS 12".
 - MAX ADJACENT GROUND SLOPE WITHOUT RAILING IS 2:1.
 - MIN GRADE FOR PROPER DRAINAGE IS 1/4" IN AT LEAST 1' DIRECTION. MAX CROSS SLOPE IS 2%.
 - MAX LONGITUDINAL SLOPE IS 8.3%, 10% IF LIMITED BY EXISTING CONDITIONS, OR NO GREATER THAN THE SLOPE OF THE EXISTING ADJACENT ROAD.

STANDARD SIDEWALK DETAIL (SD 3-10)

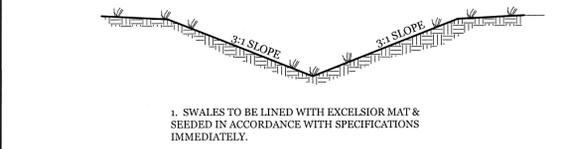
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CROSS SECTION

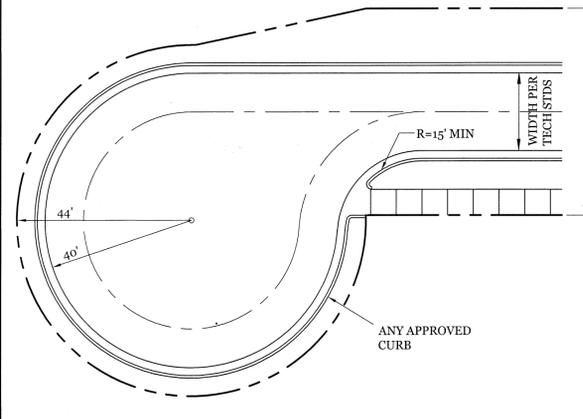
POROUS BAFFLE DETAIL

NTS



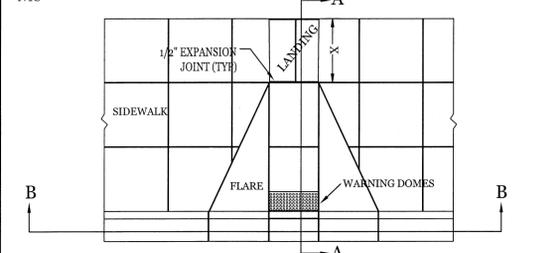
TYPICAL 3:1 GRASS SWALE

NTS



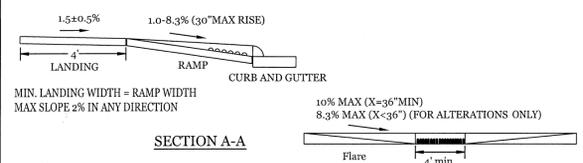
CIRCULAR OFFSET CUL-DE-SAC DETAIL

NTS



FAIRCLOTH SKIMMER DETAIL

NTS



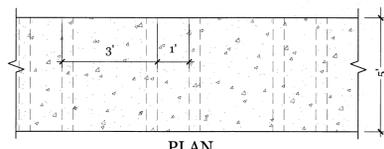
WHEEL CHAIR RAMP DETAIL

NTS

- NOTES:
- SKIMMER TO BE USED IN WET PONDS AND REMOVED AFTER SITE IS PERMANENTLY STABLE.

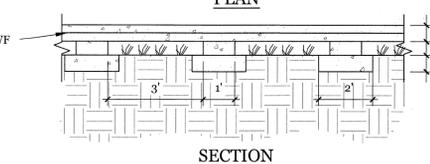
FAIRCLOTH SKIMMER DETAIL

NTS



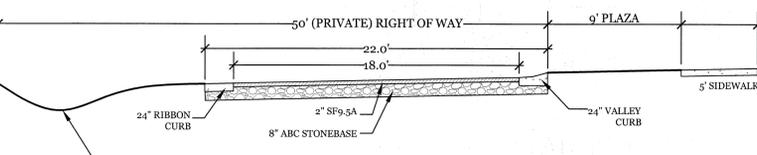
LEVEL SPREADER DETAIL

NTS



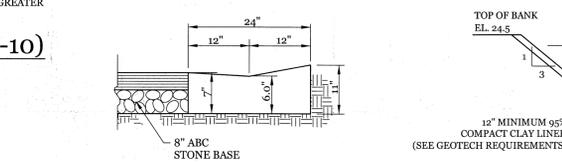
FLOW UNDER SIDEWALK DETAIL

NTS



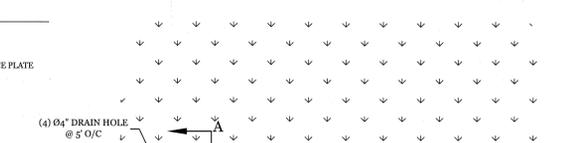
PRIVATE RD. SECTION

NTS



VALLEY CURB DETAIL

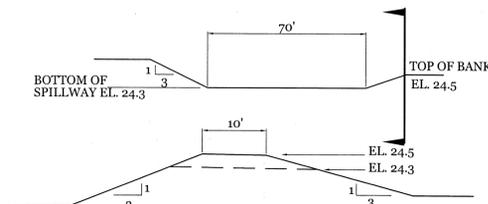
NTS



- POND SLOPE TO BE SEED IN ACCORDANCE TO SEEDING SPECIFICATIONS
- 6:1 VEGETATED SLOPE TO BE PLANTED WITH WETLAND SPECIES I.E. PICKEREL WEED, DUCK POTATO, SWAMP ROSE, BLUE FLAG, & CARDINAL FLOWER. (OR ENGINEER APPROVED ALTERNATIVE)
- VEGETATED SHELF SHALL BE PLANTED WITH PLYMS OR POTS AT 24" O.C. IN A CHECKERBOARD PATTERN.
- A PUMP WILL BE PROVIDED TO DRAIN THE BASIN FOR MAINTENANCE AND EMERGENCIES

DETENTION POND & FOREBAY SECTION

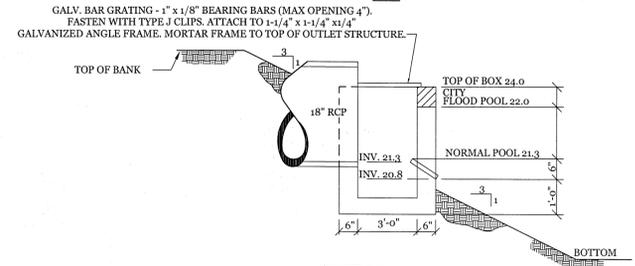
NTS



SEDIMENT BASIN EMERGENCY SPILLWAY DETAIL

NTS

- NOTES:
- WIDTH OF SPILLWAY TO BE PROTECTED WITH RIPRAP FOR THE FIRST 50'. REMAINING LENGTH OF CHANNEL TO BE STABILIZED WITH EXCELSIOR MAT AND SEEDING IN ACCORDANCE WITH SPECIFICATIONS.

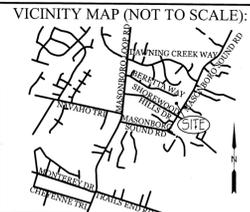


DETENTION POND OUTLET STRUCTURE

NTS

SITE WORK NOTES:

- THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING CONDITIONS BOTH ON AND ADJACENT TO THE SITE.
- CLEARING: CONTRACTOR SHALL REMOVE ALL TREES AND VEGETATION WITHIN LIMITS OF CONSTRUCTION UNLESS OTHERWISE DESIGNATED TO REMAIN.
- GRUBBING AND STRIPPING: CONTRACTOR SHALL RAKE AND REMOVE ROOTS, STUMPS, VEGETATION, DEBRIS, EXISTING STRUCTURES ABOVE AND BELOW GRADE, ORGANIC MATERIAL OR ANY OTHER UNSUITABLE MATERIAL WITHIN LIMITS OF CONSTRUCTION.
- MUCKING: CONTRACTOR SHALL COORDINATE WITH OWNER AND THEIR GEOTECHNICAL REPRESENTATIVE TO COORDINATE REMOVAL OF ANY SOFT AREAS.
- DISPOSAL: CLEARED, GRUBBED, STRIPPED OR OTHER WASTE MATERIAL SHALL BE REMOVED FROM SITE AND DISPOSED OF IN A PROPERLY PERMITTED FACILITY.
- FILL AND COMPACTION SHOULD COMPLY WITH GEOTECHNICAL RECOMMENDATIONS.
- THE CONTRACTOR SHALL NOTE THAT THE GRADING PLAN MAY NOT REPRESENT A BALANCED EARTHWORK CONDITION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CUT AND FILL QUANTITIES AND COMPLETE INSTALLATION TO SPECIFIED GRADES.
- THE CONTRACTOR SHALL FURNISH SUITABLE BORROW MATERIAL FROM AN OFF-SITE PROPERLY PERMITTED FACILITY AS REQUIRED.
- INFORMATION CONCERNING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EXACT ELEVATIONS AND LOCATIONS OF ALL EXISTING UTILITIES AT ALL CROSSINGS PRIOR TO COMMENCING TRENCH EXCAVATION. IF ACTUAL CLEARANCES ARE LESS THAN INDICATED ON PLAN, THE CONTRACTOR SHALL CONTACT THE DESIGN ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION. ANY CONDITION DISCOVERED OR EXISTING THAT WOULD NECESSITATE A MODIFICATION OF THESE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGN ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION.
- NO CONSTRUCTION IS TO BEGIN BEFORE LOCATION OF EXISTING UTILITIES HAS BEEN DETERMINED. CALL "NO ONE-CALL" AT LEAST 48 HOURS BEFORE COMMENCING CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. BEFORE COMMENCING ANY EXCAVATIONS IN OR ALONG ROADWAYS OR RIGHT-OF-WAYS, PUBLIC AREAS OR IN PRIVATE EASEMENTS, THE CONTRACTOR SHALL NOTIFY ALL APPROPRIATE PERSONNEL OF THEIR INTENT TO EXCAVATE, IN WRITING, NOT LESS THAN 10 DAYS PRIOR TO EXCAVATING.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE DISCONNECTION/ RECONNECTION AND/OR THE RELOCATION OF ALL EXISTING UTILITIES WITH APPROPRIATE PERSONNEL.
- CONTRACTOR SHALL ADJUST ALL MANHOLES, VALVE & CURB BOXES TO FINAL GRADE UPON COMPLETION OF ALL CONSTRUCTION. ANY BOXES DAMAGED OR OTHERWISE DISTURBED BY THE CONTRACTOR SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
- EXISTING SURVEYING PERFORMED BY MILES O. MCCALL - PROFESSIONAL LAND SURVEYOR (L-3518)
- THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AT THE SITE. FURTHERMORE THE CONTRACTOR SHALL REPORT ALL DISCREPANCIES OR QUESTIONS TO THE ENGINEER PRIOR TO INSTALLATION.
- THE CONTRACTOR SHALL PROVIDE ANY AND ALL LAYOUT REQUIRED TO CONSTRUCT HIS WORK UNLESS OTHERWISE DIRECTED BY OWNER.
- ALL SERVICE CONNECTIONS SHALL BE INSTALLED TO MEET ALL LOCAL, STATE, AND CFPWA CODES. METERS, TAPS, MATERIALS, WORKMANSHIP AND ALL FEES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL COMPLY WITH ALL REQUIREMENTS.
- ALL BACKFILL FROM UTILITY INSTALLATION MUST BE COMPACTED OR AMENDED TO PROVIDE TRAFFIC BEARING CAPACITY. GEOTECHNICAL ENGINEER TO BE CONSULTED AT CONTRACTORS COST AS NECESSARY.
- ALL AREAS SHALL BE GRADED FOR POSITIVE DRAINAGE. CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO INSTALLATION. ALL AREAS SHALL BE SLOPED TO DRAIN AWAY FROM BUILDINGS AT ALL TIMES.
- CONCRETE FOR WALKS, CURBS AND DRIVES SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI @ 28 DAYS - AIR ENTRAINED.
- FIELD TESTING SHALL BE DONE BY AN INDEPENDENT TESTING LABORATORY PAID FOR BY THE OWNER. FURTHER TESTING REQUIRED DUE TO A FAILED TEST WILL BE PAID FOR BY THE CONTRACTOR.
- ALL SIDEWALKS SHALL BE FREE OF CRACKS, BREAKS, OR ANY OTHER DEFECT PRIOR TO RECEIVING A CERTIFICATE OF OCCUPANCY.



REVISIONS

NO.	DATE	DESCRIPTION

INTRACOASTAL ENGINEERING, PLLC
 5725 Oleander Dr. Unit E-7
 Wilmington, North Carolina 28403
 Phone: 910.859.8983
 Email: charlie@intracoastalengineering.com
 License Number: P-0662

DETAILS FOR **MASONBORO TRACE** WILMINGTON, NC

NORTH CAROLINA PROFESSIONAL SEAL
 032555
 ENGINEER
 CHARLES D. CZIZER

CLIENT INFORMATION:
 HANOVER PARTNERS, LLC
 PO BOX 1377
 WRIGHTSVILLE BEACH, NC 28480
 PH. 910-332-8528

STORMWATER MANAGEMENT PLAN
APPROVED
 CITY OF WILMINGTON
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 DATE _____ PERMIT # _____
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Approved Construction Plan

Name	Date
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Public Utilities	
Traffic	
Fire	

DRAWN: JAE	SHEET SIZE: 24x36
CHECKED: CDC	DATE: 5/27/2016
APPROVED: CDC	SCALE: NTS
PROJECT NUMBER: 2015-052	

DRAWING NUMBER: **C-5**