

NOTES

- ASBUILT SURVEY PROVIDED BY ARNOLD V. CARSON PLS., P.C.
- CONTRACTOR SHALL OVERLAY EXISTING CONCRETE DRIVE ISLES AND PARKING AREAS THAT ARE TO REMAIN WITH 1" OF 5/8" ASPHALT OVERLAY ON TOP OF EXISTING GRADES.
- CONTRACTOR & DEVELOPER SHALL CONTACT PERVIOUS CONCRETE MANUFACTURER FOR PROPER INSTALLATION OF PERVIOUS CONCRETE.
- CONTRACTOR SHALL ENSURE THE PATH FROM EACH HANDICAP PARKING SPACE TO THE UNITS ASSOCIATED WITH THE RESPECTIVE SPACE MEETS ADA SPECIFICATIONS.
- MALPASS ENGINEERING & SURVEYING, P.C. IS NOT RESPONSIBLE FOR ANY WATER OR SEWER LINE LOCATIONS OR SEPARATIONS.
- MALPASS ENGINEERING & SURVEYING, P.C. IS NOT RESPONSIBLE FOR WALL, FENCE, OR GATE DESIGNS.
- OLD BOILER ROOM IN COMMUNITY BUILDING SHALL BE UPFITTED TO HOUSE BICYCLE & SCOTTER STORAGE (MINIMUM OF 35 SPACES).
- PARKING SPACES SHALL BE NO CLOSER THAN 15' TO BUILDING ENTRY (EXCLUDING VEHICLE OVERHANG).
- SANITARY SEWER MANHOLE LOCATIONS WERE TAKEN FROM AN AUGUST 10, 1939 PLAN TITLED "U.S.H.A. PROJECT NO. NC 1-1R" & ARE APPROXIMATE, UNLESS NOTED AS "ASBUILT". ALL SANITARY SEWER INVERTS EXCEPT RUN THRU SITE ALONG MARTIN ST. & SIZES WERE TAKEN FROM ABOVE REFERENCED PLAN AND ARE APPROXIMATE. SEWER SERVICE LOCATIONS & SIZES WERE TAKEN FROM ABOVE REFERENCED PLAN & ARE APPROXIMATE. SANITARY SEWER LOCATIONS, INVERTS, & SIZES SHALL BE FIELD VERIFIED AS NECESSARY.
- NO EQUIPMENT IS ALLOWED ON THE SITE UNTIL ALL TREE PROTECTION FENCING AND SILT FENCING HAS BEEN INSTALLED AND APPROVED.
- NO LAND DISTURBANCE INCLUDING TREE REMOVAL IS TO OCCUR OUTSIDE THE LIMITS OF DISTURBANCE SHOWN ON THE PLANS.
- PROTECTIVE 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.
- IF AN IRRIGATION SYSTEM IS TO BE INSTALLED, IT SHALL BE EQUIPPED WITH A RAIN SENSOR.
- INTERIOR LANDSCAPING ISLANDS ADJACENT TO CURB CUTS SHALL BE DEPRESSED TO RECEIVE FLOOD FROM PARKING LOT.
- ALL GATES USED FOR VEHICULAR INGRESS AND/OR EGRESS SHALL BE SIREN ACTIVATED.
- REPLACE SANITARY SEWER & WATER MAIN WITH D.I.P. 10' ON EITHER SIDE OF STORM DRAIN CROSSING.
- DOWNSPOUT PIPING SHOWN ON PLAN IS FOR INFORMATIONAL PURPOSES ONLY. DOWNSPOUT PIPING (SIZE, LOCATION, ETC) SHALL BE DESIGNED BY OTHERS. HOWEVER, DOWNSPOUTS SHALL DISCHARGE INTO INFILTRATION BASINS, INFILTRATION TRENCHES, AND PERVIOUS CONCRETE SECTIONS AS SHOWN ON PLAN. THE DOWNSPOUT PIPING THAT DISCHARGES TO PERVIOUS CONCRETE SHALL MATCH THE TOP OF PERVIOUS CONCRETE ELEVATION AT THE DISCHARGE POINT.
- THE PROPOSED LIMITS OF DISTURBANCE AREA SHALL INCLUDE ALL THE AREA WITHIN THE LIMITS OF DISTURBANCE LINE EXCEPT FOR THE BUILDING FOOTPRINTS AND STODPS FOR BUILDINGS #1-22 & 25.
- EXISTING STORM DRAIN PIPES SHOWN ON PLAN THAT WERE NOT SURVEYED (SEE LEGEND FOR LINE TYPE) WERE TAKEN FROM AN AUGUST 10, 1939 PLAN TITLED "U.S.H.A. PROJECT NO. NC 1-1R" WITH A REVISION DATE OF MAY 1, 1961. LOCATION OF THESE STORM DRAIN PIPES & INVERTS ARE APPROXIMATE. SIZES AND SIZES ARE BASED ON THE ABOVE REFERENCED PLAN.
- LOCATION OF TREE PROTECTION FENCING SHOWN ON PLAN IS APPROXIMATE. TREE PROTECTION FENCING SHALL BE INSTALLED IN ACCORDANCE WITH DETAIL SD 15-09 ON SHEET 21, EXCEPT WHERE SITE IMPROVEMENTS ARE TO OCCUR AS SHOWN ON PLAN.
- SILT FENCE SHALL BE INSTALLED AS SHOWN ON THE PLAN & ANYWHERE ELSE SEDIMENT HAS THE ABILITY TO LEAVE THE SITE.
- HANDICAP RAMPS SHALL BE PROVIDED AT ALL PARKING AREAS TO SIDEWALK CONNECTIONS INTERNAL TO THE SITE.
- ANY PARKING SPACE LESS THAN 8'5" IN WIDTH BY 18' IN LENGTH SHALL BE SIGNED ALERTING DRIVERS TO THE LIMITED SIZE.
- CONSTRUCTION ENTRANCE AT GREENFIELD STREET DRIVEWAY SHALL BE INSTALLED ONLY IF ASPHALT IS REMOVED AND DRIVEWAY IS USED AS AN ENTRANCE. CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT THE PROPOSED DRIVEWAY AT GREENFIELD STREET (WESTERN DRIVEWAY).
- ROOF LEADER PIPING SHALL HAVE A CLEANOUT AT EACH BEND.
- PROPOSED SIDEWALK ADJACENT TO PARKING SPACES #1-8, 21-213, 229-296, & 303-304 SHALL BE TURNOFF SIDEWALK.
- LANDSCAPING ISLANDS WITH CURB CUTS SHALL BE GRASS & DEPRESSED.
- DISTURBED AREAS WITHIN RIGHT-OF-WAY OF GREENFIELD ST. & SOUTH FRONT ST. SHALL BE IMMEDIATELY SEEDED & STABILIZED WITH MULCH PRIOR TO ANY RAINFALL EVENT.
- FENCES & GATES MUST BE APPROVED BY ZONING PRIOR TO INSTALLATION.
- LANDSCAPING AND PARKING SHALL NOT BLOCK OR IMPEDE THE FDC OR FIRE HYDRANTS. A 3-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF THE HYDRANT AND FIRE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH & OBTAINING NECESSARY RIGHT-OF-WAY PERMITS (STREET CUT, STREET/LANE CLOSURE, SIDEWALK CLOSURE, ETC) FROM THE CITY OF WILMINGTON FOR WORK WITHIN THEIR RIGHT-OF-WAY.
- CONTRACTOR TO REPAIR ANY DISTURBED AREAS (ASPHALT, STONE, CURB, SIDEWALK, GRASS PLAZA, ETC) WITHIN SOUTH FRONT ST, GREENFIELD ST, OR SOUTH THIRD ST TO PRE-CONSTRUCTION CONDITIONS OR BETTER.
- THE PROPOSED MAINTENANCE/ACCESS EASEMENT SHOWN ON SHEET 20 FOR PERMEABLE PAVEMENT SYSTEM #1 SHALL BE GRANTED IN FAVOR OF THE CITY OF WILMINGTON FOR STORMWATER ENFORCEMENT.
- THE DEVELOPER SHALL HAVE THE PERMEABLE PAVEMENT OPERATION AND MAINTENANCE AGREEMENT IT ENTERED INTO WITH THE CITY OF WILMINGTON RECORDED WITH THE COUNTY REGISTER OF DEEDS SO AS TO APPEAR IN THE CHAIN OF TITLE OF ALL SUBSEQUENT PURCHASERS.
- PROPOSED CURB ADJACENT TO PARKING SPACES #39 & 340 SHALL BE MEDIAN VERTICAL CURB & GUTTER (SD 3-1D). PROPOSED CURB ADJACENT TO PARKING SPACE #31 SHALL BE 4" MEDIAN VERTICAL CURB & GUTTER. 4" MEDIAN VERTICAL CURB & GUTTER SHALL BE MEDIAN VERTICAL CURB & GUTTER WITH THE TOP OF THE CURB ONLY 4" ABOVE THE PAVEMENT. PROPOSED CURB FROM PERMEABLE PAVEMENT SYSTEM #1 TO RIVER ROCK WAY SHALL BE VERTICAL CURB (SD 3-1D).
- ANY WATER OR SANITARY SEWER TAPS TO THE SITE THAT ARE NOT USED SHALL BE ABANDONED.

LEGEND

- EXISTING SIDEWALK (TO REMAIN)
- EXISTING SIDEWALK (TO BE REMOVED)
- EXISTING CONCRETE (TO BE REMOVED)
- EXISTING TREE
- EXISTING TREE (TO BE REMOVED)
- EXISTING SANITARY SEWER
- EXISTING WATER LINE
- EXISTING CURB INLET
- EXISTING FIRE HYDRANT
- EXISTING POWER/TRAFFIC POLE
- EXISTING NO PARKING SIGN
- EXISTING RAILROAD ARM
- EXISTING CONTOUR
- EXISTING STORM DRAIN PIPE (NOT SURVEYED, APPROX. LOCATION BASED ON 1939 PLAN)

SITE INVENTORY NOTES

- SOILS ON SITE PER THE NEW HANOVER COUNTY SOIL SURVEY ARE B_h (BAYMEADE) AND U_r (URBAN LAND).
- THIS PROPERTY IS NOT IMPACTED BY ANY ACP PER LAND MANAGEMENT GROUP, INC.
- THERE ARE NO CONSERVATION OVERLAY RESOURCES AFFECTING THIS PROPERTY PER LAND MANAGEMENT GROUP, INC.
- THIS SITE IS LOCATED WITHIN THE WILMINGTON NATIONAL REGISTER DISTRICT PER LAND MANAGEMENT GROUP, INC.
- NO INDIVIDUAL CEMETERIES, BURIAL SITES, OR BURIAL GROUNDS WERE IDENTIFIED ON THIS SITE PER LAND MANAGEMENT GROUP, INC.
- THERE ARE NO SIGNIFICANT FOREST RESOURCES OR ASSOCIATED FOREST HABITAT REMAINING ON THIS SITE PER LAND MANAGEMENT GROUP, INC.
- THERE IS NO EVIDENCE OF ENDANGERED SPECIES OR HABITAT ISSUES ON THIS SITE PER LAND MANAGEMENT GROUP, INC.
- THIS TRACT IS WITHIN A FLOOD AREA ZONE "X" & AE EL 9 ACCORDING TO FEMA FLOOD INSURANCE RATE MAP, COMMUNITY-PANEL NUMBER 372031700 K DATE 6/2/06 (INFORMATION PROVIDED BY ARNOLD V. CARSON PLS., P.C.)
- RESEARCH ON THE CITY OF WILMINGTON'S TRANSPORTATION PLANNING WEBSITE RESULTED IN NO FINDINGS OF PROPOSED THROUGHFARES, BIKE ROUTES, PEDESTRIAN SIDEWALKS OR TRAILS, OR TRANSIT FACILITIES AFFECTING THIS PROJECT.
- THE TRACT IS WITHIN THE CAPE FEAR RIVER BASIN & BRAINS TO GREENFIELD CREEK (SCSW).
- CAMA LAND USE CLASSIFICATION PER THE 2006 CAMA PLAN UPDATE LAND CLASSIFICATION MAP IS URBAN (495,553.24 SF = 1.1376 ACRES) & CONSERVATION AREA (74,677.67 SF = 1.714 ACRES)

SITE DATA (EXISTING CONDITIONS PRIOR TO REDEVELOPMENT)

PROPERTY OWNER: SOUTH FRONT LLC
 PROJECT ADDRESS: 1400 S. 2ND ST.
 PIN NUMBER: 805413-035-002-000
 ZONING DISTRICT: M-F-H
 FLOOD AREA: CITY OF WILMINGTON ZONING MAP (MAP 3117-4) & AE EL 9 ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP, COMMUNITY-PANEL NUMBER 372031700 K DATE 6/2/06 (INFORMATION PROVIDED BY ARNOLD V. CARSON PLS., P.C.)
 BUILDING SETBACKS: REQUIRED FRONT-30', REAR-25', INTERIOR SIDE-20', CORNER LOT SIDE-30'
 BUILDING SETBACKS: REQUIRED FRONT-15', REAR-15', INTERIOR SIDE-18.74', CORNER LOT SIDE-19.95'
 TOTAL SITE AREA: 570,230.91 SF = 13.09 ACRES
 EXISTING BUILDING AREA: 103,444.75 SF = 2.37 ACRES
 EXISTING BUILDING LOT COVERAGE: 103,444.75 / 570,230.91 * 100% = 18.14%
 BUILDING AREA: 261 (1) BEDROOM-133 UNITS, 2 BEDROOM-96 UNITS, 3 BEDROOM-32 UNITS
 NUMBER OF EXISTING BUILDINGS: RESIDENTIAL-24 (94,437.06 SF), NON-RESIDENTIAL-1 (9,007.69 SF)
 NUMBER OF EXISTING BUILDINGS TO REMAIN: RESIDENTIAL-22 (80,477.50 SF), NON-RESIDENTIAL-1 (9,007.69 SF)
 BUILDING SIZE, EXISTING:

BUILDING	SQUARE FOOTAGE	NUMBER OF EXISTING UNITS	NUMBER OF BEDROOMS (1/2/3)	USE (RESIDENTIAL/NONRESIDENTIAL)	KEEP/REMOVE	BUILDING ADDRESS
1	3,883.30	10	4/3/3	RESIDENTIAL	KEEP	1402-1 S. 2ND ST.
2	3,591.65	10	4/6/0	RESIDENTIAL	KEEP	1402-2 S. 2ND ST.
3	3,577.82	10	4/6/0	RESIDENTIAL	KEEP	1402-3 S. 2ND ST.
4	3,907.51	10	4/3/3	RESIDENTIAL	KEEP	1402-4 S. 2ND ST.
5	2,792.76	8	4/4/0	RESIDENTIAL	KEEP	1402-5 S. 2ND ST.
6	3,907.93	10	4/3/3	RESIDENTIAL	KEEP	1402-6 S. 2ND ST.
7	3,578.27	10	4/6/0	RESIDENTIAL	KEEP	1402-7 S. 2ND ST.
8	3,581.33	10	4/6/0	RESIDENTIAL	KEEP	1402-8 S. 2ND ST.
9	3,907.93	10	4/3/3	RESIDENTIAL	KEEP	1402-9 S. 2ND ST.
10	2,790.11	8	4/4/0	RESIDENTIAL	KEEP	1402-10 S. 2ND ST.
11	2,789.50	8	4/4/0	RESIDENTIAL	KEEP	1402-11 S. 2ND ST.
12	2,787.83	8	4/4/0	RESIDENTIAL	KEEP	1402-12 S. 2ND ST.
13	3,891.30	10	4/3/3	RESIDENTIAL	KEEP	1402-13 S. 2ND ST.
14	3,661.98	10	4/3/3	RESIDENTIAL	KEEP	1402-14 S. 2ND ST.
15	3,673.34	10	4/5/1	RESIDENTIAL	KEEP	1402-15 S. 2ND ST.
16	3,886.97	10	4/3/3	RESIDENTIAL	KEEP	1402-16 S. 2ND ST.
17	4,550.24	12	4/6/2	RESIDENTIAL	KEEP	1402-17 S. 2ND ST.
18	3,914.72	10	4/6/2	RESIDENTIAL	KEEP	1402-18 S. 2ND ST.
19	3,895.71	10	4/3/3	RESIDENTIAL	KEEP	1402-19 S. 2ND ST.
20	3,691.50	10	4/5/1	RESIDENTIAL	KEEP	1402-20 S. 2ND ST.
21	3,652.35	10	4/5/1	RESIDENTIAL	KEEP	1402-21 S. 2ND ST.
22	3,914.72	10	4/3/3	RESIDENTIAL	KEEP	1402-22 S. 2ND ST.
23	6,314.94	25	25/0/0	RESIDENTIAL	REMOVE	1402-23 S. 2ND ST.
24	7,644.62	20	20/0/0	RESIDENTIAL	REMOVE	1402-24 S. 2ND ST.
25	9,007.69	-	-	NONRESIDENTIAL	KEEP	1400 S. 2ND ST.
TOTAL	103,444.75	261	133/96/32			

NUMBER OF STORIES & SQUARE FEET PER FLOOR: 2 STORIES (SEE ABOVE CHART); SAME FOR BOTH STORIES
 TOTAL AMOUNT & PERCENT OF IMPERVIOUS SURFACE AREAS:

BEFORE DEVELOPMENT	AREA (SF)	% OF SITE
BUILDINGS	103,444.75	18.14
BUILDING STODPS	13,769.99	2.41
PARKING & DRIVE ISLES	84,212.36	14.77
SIDEWALKS	62,388.64	10.94
OTHER	6,148.10	1.08
TOTAL	269,963.84	47.34

OFF STREET PARKING CALCULATIONS:
 EXISTING PARKING SPACES APPROXIMATELY 192 SPACES BASED ON INFORMATION PROVIDED BY WHA
 EXISTING OPEN SPACE: 297,251.90 SF = 6.824 ACRES (SEE EXISTING OPEN & RECREATION SPACE MAP)
 THIS SITE IS NOT WITHIN A SPECIAL HIGHWAY OVERLAY DISTRICT OR ANY OTHER ZONING OVERLAY DISTRICT
 PER THE CITY OF WILMINGTON ZONING MAP (MAP 3117-4)
 WITHIN CITY OF WILMINGTON 1945 CDPRPATE LIMITS

APPROVED CONSTRUCTION PLAN

Name: _____ Date: _____

Planning: _____
 Traffic: _____
 Fire: _____

WILMINGTON
 NORTH CAROLINA
 Public Services • Engineering Division
 APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____
 Signed: _____

GRAPHIC SCALE
 1 inch = 50 ft.

INDEX

- 1 OF 5 EXISTING CONDITIONS MAP
- 2A OF 5 SITE PLAN
- 2B OF 5 GRADING & EROSION CONTROL PLAN
- 2C OF 5 GRADING & EROSION CONTROL PLAN
- 2D OF 5 DRAINAGE AREA MAP
- 2E OF 5 PARKING DIMENSION PLAN
- 2F OF 5 PARKING DIMENSION PLAN
- 2G OF 5 STORMWATER DETAIL SHEET
- 2H OF 5 DETAIL SHEET
- 2I OF 5 DETAIL SHEET
- 2J OF 5 DETAIL SHEET
- 2K OF 5 DETAIL SHEET
- 2L OF 5 DETAIL SHEET
- 2M OF 5 WATER & SEWER DETAIL SHEET
- 3 OF 5 EXISTING OPEN SPACE MAP
- 4 OF 5 PROPOSED OPEN SPACE, INTERIOR SHADING, & STREET YARD MAP
- 4A OF 5 LANDSCAPE ADDENDUM PLAN
- 5 OF 5 EXISTING IMPERVIOUS AREA TO REMAIN & NEW IMPERVIOUS AREA MAP
- L1 LANDSCAPE PLAN
- L2 LANDSCAPE PLAN

LEGEND

- EXISTING SIDEWALK (TO REMAIN)
- EXISTING SIDEWALK (TO BE REMOVED)
- EXISTING CONCRETE (TO BE REMOVED)
- EXISTING TREE
- EXISTING TREE (TO BE REMOVED)
- EXISTING SANITARY SEWER
- EXISTING WATER LINE
- EXISTING CURB INLET
- EXISTING FIRE HYDRANT
- EXISTING POWER/TRAFFIC POLE
- EXISTING NO PARKING SIGN
- EXISTING RAILROAD ARM
- EXISTING CONTOUR
- EXISTING STORM DRAIN PIPE (NOT SURVEYED, APPROX. LOCATION BASED ON 1939 PLAN)

TABLE LOCATING LOCATION OF DISCOUNT PROPERTY CORNERS FROM SAME AS INDICATED BY BOOK 5510, PAGE 918

- ① BASE CONTROL POINT
- ② CURVE CONTROL POINT
- ③ S20°41'44" W 0.20'
- ④ S24°35'04" W 0.07'
- ⑤ S01°43'37" W 0.18'
- ⑥ S36°20'37" W 0.06'
- ⑦ S52°29'42" W 0.18'
- ⑧ S77°51'07" W 0.09'
- ⑨ S85°56'56" E 0.36'
- ⑩ S09°29'24" W 0.17'

NOTE: THE ABOVE FIGURES WERE DERIVED FROM AN ASBUILT SURVEY USING CONTROL POINTS AS SHOWN ON THE ABOVE SUBMISSION AS THE CONTROL BASE. BEARINGS AND DISTANCES OTHERWISE SHOWN HEREON ARE FROM BOOK 5510.

VICINITY MAP
 SCALE: 1" = 1000'

FINAL DRAWING FOR REVIEW PURPOSES ONLY

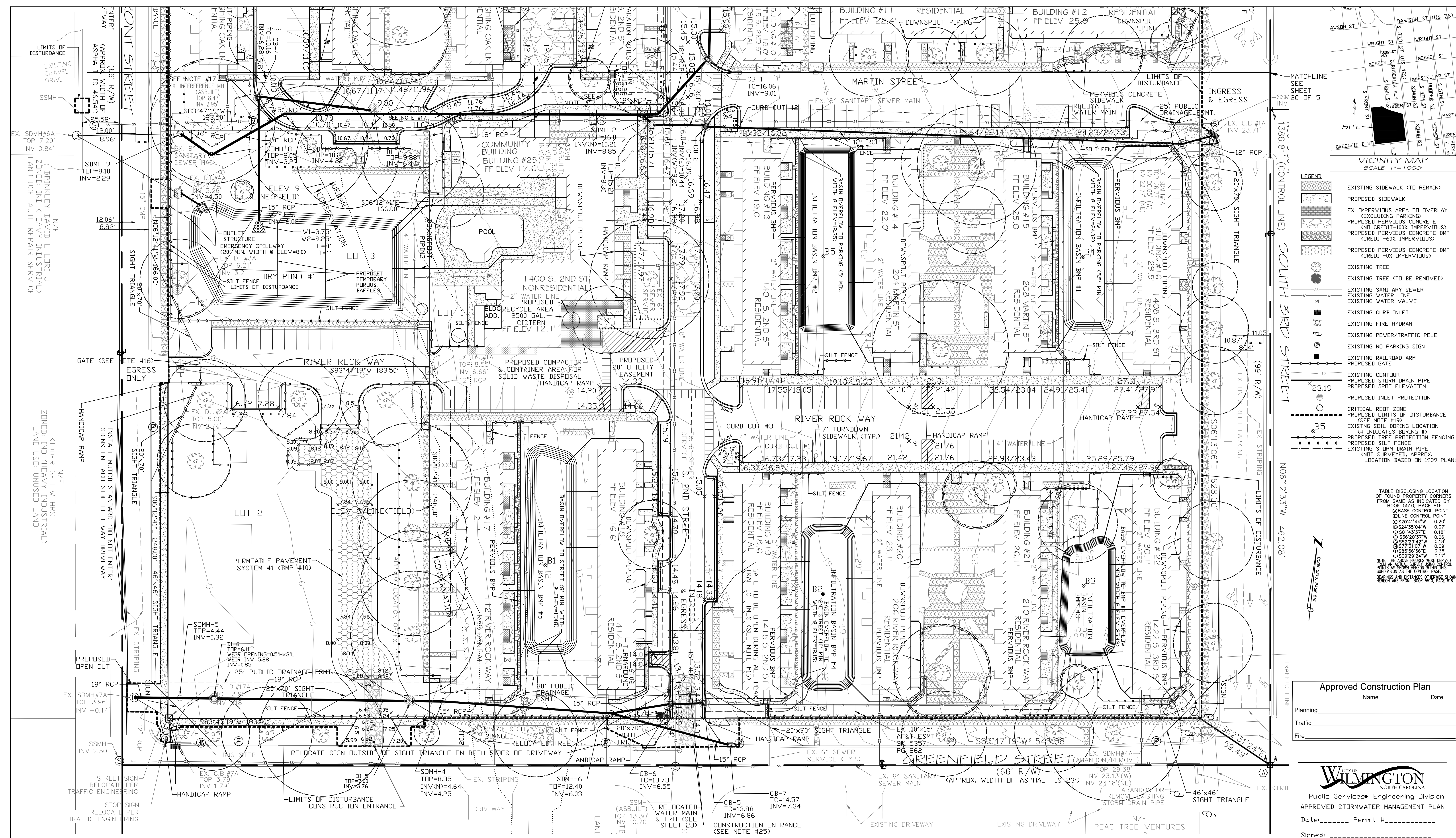
EXISTING CONDITIONS MAP
 1-19-11
 SCALE: 1" = 50'
 DRAWN: JCB
 CHECKED: JEM
 PROJECT NO: 198
 SHEET NO: 1
 OF: 5

OWNER: SOUTH FRONT LLC
 10 S CAROLINA DR
 WILMINGTON, NC 28403
 PHONE: 910-251-5030

MALPASS ENGINEERING & SURVEYING, P.C.
 1134 SHIPPARD BOULEVARD
 WILMINGTON, NORTH CAROLINA 28412
 Phone 910-392-6843
 Fax 910-392-6203 License No. C-2320

REV. NO. DESCRIPTION REVISIONS

1	REVISED PER CITY OF WILMINGTON, TRC.	3-10-11
2	REVISED TO ADJUST SAV CUT LINES AT GREENFIELD STREET DRIVEWAY.	4-21-11
3	REVISED PER CITY OF WILMINGTON.	5-13-11
4	REVISED PER CLIENT.	6-7-11
5	REVISED PER CITY OF WILMINGTON.	7-25-11
6	REVISED TO NOT SHOW PROPOSED GATES.	8-4-11
7	REVISED TO SHOW ADDITIONAL SIDEWALK BEING REMOVED.	8-11-11
8	REVISED PER CITY OF WILMINGTON, TRAFFIC.	8-11-11
9	REVISED TO ADJUST EXISTING SIDEWALK TO REMAIN & TO BE REMOVED.	8-22-12
10	REVISED TO ADJUST EXISTING SIDEWALK TO REMAIN & TO BE REMOVED.	8-13-12
11	REVISED PER CITY OF WILMINGTON ENGINEERING.	8-19-12
12	REVISED PER CLIENT.	6-7-17
13	REVISED PER TRC COMMENTS.	6-30-17



- LEGEND**
- EXISTING SIDEWALK (TO REMAIN)
 - PROPOSED SIDEWALK
 - EX. IMPERVIOUS AREA TO OVERLAY (EXCLUDING PARKING)
 - PROPOSED PERVIOUS CONCRETE (NO CREDIT-100% IMPERVIOUS)
 - PROPOSED PERVIOUS CONCRETE BMP (CREDIT-60% IMPERVIOUS)
 - PROPOSED PERVIOUS CONCRETE BMP (CREDIT-0% IMPERVIOUS)
 - EXISTING TREE (TO BE REMOVED)
 - EXISTING TREE (TO REMAIN)
 - EXISTING SANITARY SEWER
 - EXISTING WATER LINE
 - EXISTING CURB INLET
 - EXISTING FIRE HYDRANT
 - EXISTING POWER/TRAFFIC POLE
 - EXISTING NO PARKING SIGN
 - EXISTING RAILROAD ARM
 - PROPOSED GATE
 - EXISTING CONTOUR
 - PROPOSED STORM DRAIN PIPE
 - PROPOSED SPOT ELEVATION
 - PROPOSED INLET PROTECTION
 - CRITICAL ROOT ZONE
 - PROPOSED LIMITS OF DISTURBANCE (SEE NOTE #19)
 - EXISTING SOIL BORING LOCATION (4' INDICATES BORING #)
 - PROPOSED TREE PROTECTION FENCING
 - PROPOSED SILT FENCE
 - EXISTING STORM DRAIN PIPE (NOT SURVEYED, APPROX. LOCATION BASED ON 1939 PLAN)

TABLE DISCLOSING LOCATION OF FOUND PROPERTY CORNERS FROM SAME AS INDICATED BY BOOK 5510, PAGE 816

BASE CONTROL POINT	@LINE CONTROL POINT	BEARING	DISTANCE
52074144	W	0.20	
52435104	W	0.07	
50143337	E	0.18	
53620337	W	0.06	
58529567	W	0.18	
5773107	W	0.09	
58529567	W	0.16	
50529224	W	0.17	

NOTE: ALL CORNERS WERE PERFORMED FROM AN ADJACENT SURVEY USING CONTROL POINTS AS SHOWN ON THE SUBDIVISION AS THE CONTROL BASE. BEARINGS AND DISTANCES OTHERWISE SHOWN HEREIN ARE FROM BOOK 5510, PAGE 816.

Approved Construction Plan

Name _____ Date _____

Planning _____

Traffic _____

Fire _____

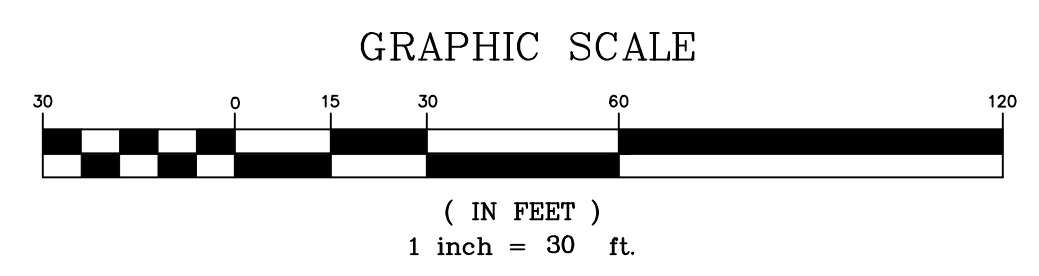
WILMINGTON
NORTH CAROLINA

Public Services • Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____

Signed: _____



NOTE: HANDICAP RAMPS SHALL BE PROVIDED AT ALL PARKING AREAS TO SIDEWALK CONNECTIONS INTERNAL TO THE SITE. PARKING SPACES LESS THAN 8.5' IN WIDTH BY 18' IN LENGTH SHALL BE SIGNED ALERTING DRIVERS TO THE LIMITED SIZE.

REV. NO.	DESCRIPTION	DATE
1	REVISED TO LABEL PERVIOUS CONCRETE BMP	3-16-11
2	REVISED PER CITY OF WILMINGTON TO SHOW GREENFIELDS BY DRIVEWAY AS CITY STANDARD & ADJUST PARKING SPACES 8.5'-10.0'. REMOVE STORM PIPE ALONG SOUTHERN PORTION OF SITE.	4-21-11
3	REVISED PER CITY OF WILMINGTON.	5-13-11
4	REVISED PER CLIENT TO ADJUST LAYOUT TO ADD GUARD HOUSE.	6-7-11
5	REVISED PER CITY OF WILMINGTON TO NOT SHOW PROPOSED FENCING & ADJUST PARKING.	7-5-11
6	REVISED PER CITY OF WILMINGTON.	7-25-11
7	REVISED PER NCCOT TO ADD SIGNS.	8-4-11
8	REVISED PER CITY OF WILMINGTON ENGINEERING DEPARTMENT.	8-11-11
9	REVISED PER CITY OF WILMINGTON FIRE & LIFE SAFETY.	8-11-11
10	REVISED TO ADD IMPERVIOUS AREA, REMOVE EXISTING IMPERVIOUS AREA, & SHOW EXISTING IMPERVIOUS AREA TO OVERLAY.	5-22-12
11	REVISED TO ADD IMPERVIOUS AREA, REMOVE EXISTING IMPERVIOUS AREA, & SHOW EXISTING IMPERVIOUS AREA TO OVERLAY.	8-13-12
12	REVISED PER CITY OF WILMINGTON ENGINEERING.	9-19-12
13	REVISED PER CLIENT TO ADD DRIVEWAY OFF GREENFIELD ST. & RELOCATE 3 PARKING SPACES.	6-7-17
14	REVISED PER TRC COMMENTS.	6-30-17

GRADING & EROSION CONTROL PLAN
1400 S. 2ND STREET

SOUTH FRONT 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 910-392-5243 Fax 910-392-5203 License No. C-2320

Owner: SOUTH FRONT LLC
10 S. CAROLINA DR.
WILMINGTON, NC 28403
PHONE: 910-251-5030

DATE: 3-10-11
SCALE: 1"=30'
DRAWN: JCB
CHECKED: JEM
PROJECT NO: 19B
SHEET NO: 2B
OF: 5

G:\AutoCAD\2015\198\mesbitcourt1-23-17.dwg

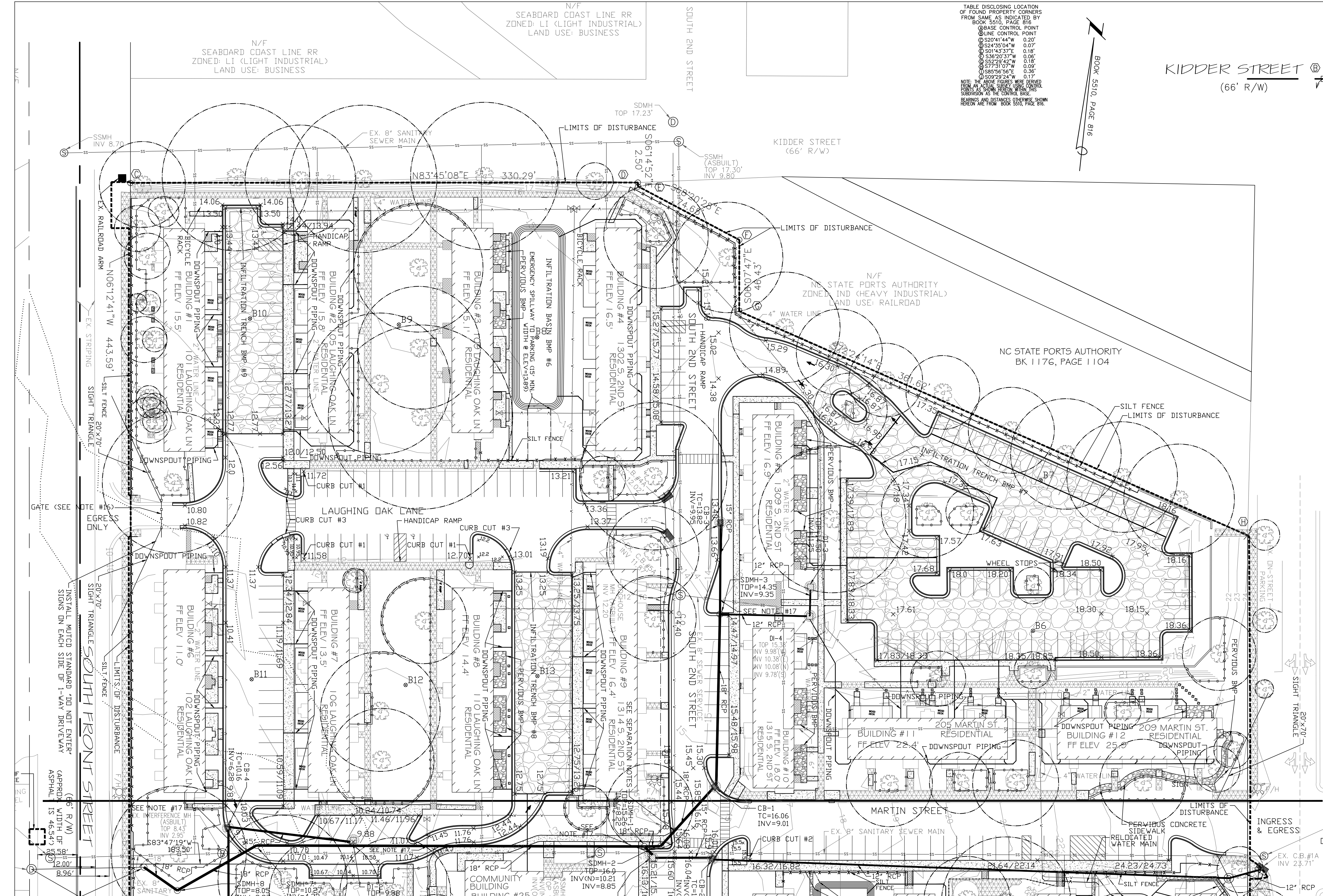
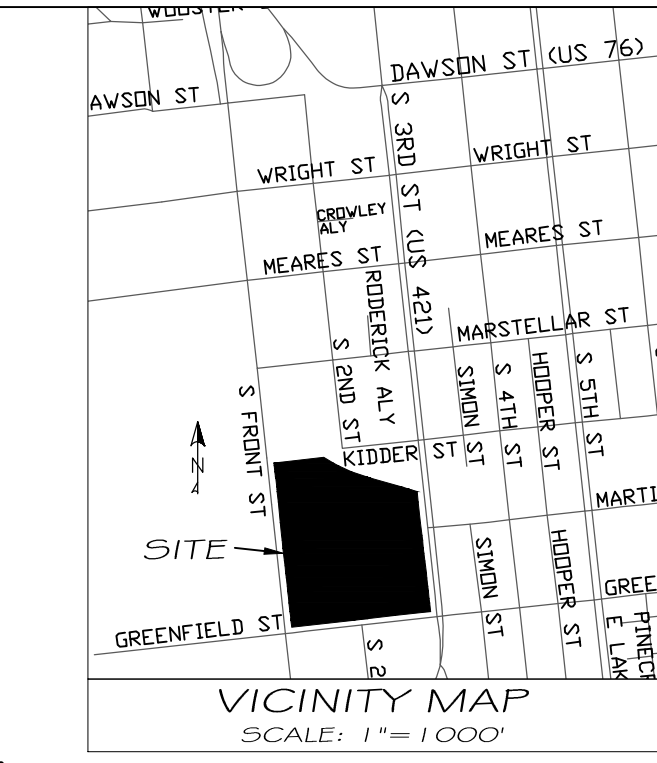


TABLE DISCLOSING LOCATION OF FOUND PROPERTY CORNERS FROM SAME AS INDICATED BY BOOK 5510, PAGE 816

BASE CONTROL POINT	LINE CONTROL POINT
① S20°41'44"W 0.20'	① S20°41'44"W 0.07'
② S24°35'04"W 0.07'	② S24°35'04"W 0.07'
③ S01°43'37"E 0.18'	③ S01°43'37"E 0.08'
④ S36°20'37"W 0.06'	④ S36°20'37"W 0.06'
⑤ S22°29'42"W 0.18'	⑤ S22°29'42"W 0.09'
⑥ S28°56'54"E 0.36'	⑥ S28°56'54"E 0.17'
⑦ S09°29'24"W 0.17'	⑦ S09°29'24"W 0.17'

NOTE: THE PROPERTY CORNERS WERE PROVIDED FROM AN Aerial Survey Using Control Subdivision AS THE CONTROL BASE. DIMENSIONS AND DISTANCES SHOWN HEREIN ARE FROM BOOK 5510, PAGE 816.

KIDDER STREET (66' R/W)



- LEGEND
- EXISTING SIDEWALK (TO REMAIN)
 - PROPOSED SIDEWALK
 - EX. IMPERVIOUS AREA TO OVERLAY (EXCLUDING PARKING)
 - PROPOSED PERVIOUS CONCRETE (NO CREDIT-100% IMPERVIOUS)
 - PROPOSED PERVIOUS CONCRETE BMP (CREDIT-60% IMPERVIOUS)
 - PROPOSED PERVIOUS CONCRETE BMP (CREDIT-0% IMPERVIOUS)
 - EXISTING TREE
 - EXISTING TREE (TO BE REMOVED)
 - EXISTING SANITARY SEWER
 - EXISTING WATER LINE
 - EXISTING WATER VALVE
 - EXISTING CURB INLET
 - EXISTING FIRE HYDRANT
 - EXISTING POWER/TRAFFIC POLE
 - EXISTING NO PARKING SIGN
 - EXISTING RAILROAD ARM
 - PROPOSED GATE
 - EXISTING CONTOUR
 - PROPOSED STORM DRAIN PIPE
 - PROPOSED SPOT ELEVATION
 - PROPOSED INLET PROTECTION
 - CRITICAL ROOT ZONE
 - PROPOSED LIMITS OF DISTURBANCE (SEE NOTE #19)
 - EXISTING SOIL BORING LOCATION (# INDICATES BORING #)
 - PROPOSED TREE PROTECTION FENCING
 - PROPOSED SILT FENCE
 - EXISTING STORM DRAIN PIPE (NOT SURVEYED, APPROX. LOCATION BASED ON 1939 PLAN)

Approved Construction Plan

Name: _____ Date: _____

Planning: _____

Traffic: _____

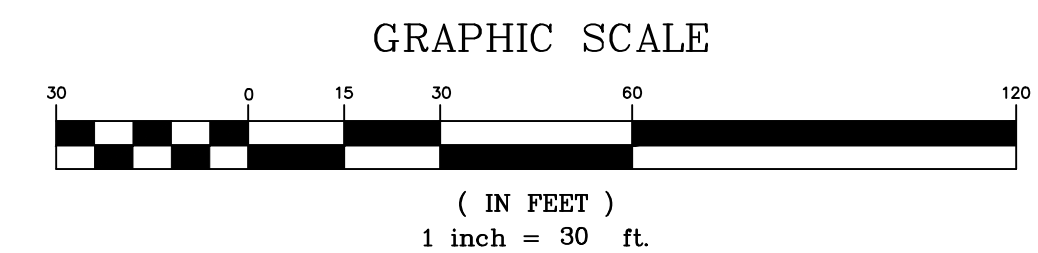
Fire: _____

City of WILMINGTON, NORTH CAROLINA
Public Services • Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____

Signed: _____

NOTE: HANDICAP RAMPS SHALL BE PROVIDED AT ALL PARKING AREAS TO SIDEWALK CONNECTIONS INTERNAL TO THE SITE. PARKING SPACES LESS THAN 8.5' IN WIDTH BY 18' IN LENGTH SHALL BE SIGNED ALERTING DRIVERS TO THE LIMITED SIZE.



REV NO.	DESCRIPTION	DATE
1	REVISED TO LABEL PERVIOUS CONCRETE BMP.	3-16-11
2	REVISED PER CITY OF WILMINGTON TO ADJUST PARKING SPACES #133-210.	4-21-11
3	REVISED PER CITY OF WILMINGTON.	6-13-11
4	REVISED PER CLIENT TO ADJUST LAYOUT TO ADD GUARD HOUSE.	6-7-11
5	REVISED PER CITY OF WILMINGTON TO NOT SHOW PROPOSED FENCING & ADJUST PARKING.	7-5-11
6	REVISED PER CITY OF WILMINGTON.	7-25-11
7	REVISED PER NCDOT TO ADD SIGNS.	8-4-11
8	REVISED PER CITY OF WILMINGTON ENGINEERING DEPARTMENT.	8-11-11
9	REVISED PER CITY OF WILMINGTON FIRE & LIFE SAFETY.	8-12-11
10	REVISED TO ADD IMPERVIOUS AREA, REMOVE EXISTING IMPERVIOUS AREA, & SHOW EXISTING IMPERVIOUS AREA TO OVERLAY.	5-22-12
11	REVISED TO ADD IMPERVIOUS AREA, REMOVE EXISTING IMPERVIOUS AREA, & SHOW EXISTING IMPERVIOUS AREA TO OVERLAY.	8-13-12
12	REVISED PER CITY OF WILMINGTON ENGINEERING.	8-13-12
13	REVISED PER CLIENT TO ADD DRIVEWAY OFF GREENFIELD ST. & RELOCATE 3 PARKING SPACES.	6-7-17
14	REVISED PER TRC COMMENTS.	6-30-17

GRADING & EROSION CONTROL PLAN
1400 S. 2ND STREET
WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

SOUTH FRONT APARTMENTS

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

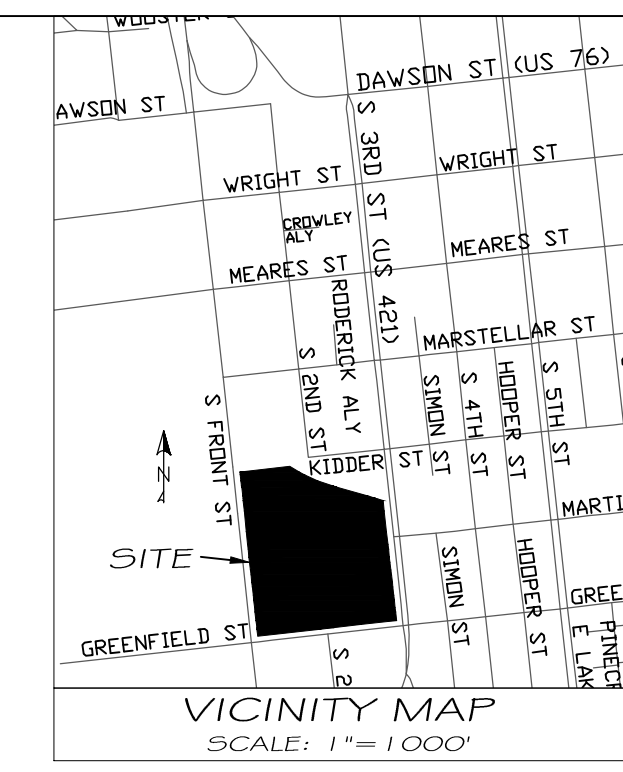
Owner: SOUTH FRONT LLC
10 S. CAROLINA DR.
WILMINGTON, NC 28403
PHONE: 910-251-5030

DATE: 3-10-11
SCALE: 1" = 30'
DRAWN: JCB
CHECKED: JEM
PROJECT NO: 198
SHEET NO: 20
OF: 5

TABLE DISCLOSING LOCATION OF FOUND PROPERTY CORNERS FROM SAME AS INDICATED BY BOOK 5510, PAGE 616

BASE CONTROL POINT	0.00
LINE CONTROL POINT	0.20
20294144"W	0.20
32433504"W	0.07
30143377"E	0.18
53429337"W	0.08
5229242"W	0.18
5773107"W	0.08
5852479"E	0.36
5029224"W	0.17

NOTE: THESE PROPERTY CORNERS FROM AN ANNUAL SURVEY USING CONTROL POINTS AND ARE SHOWN FOR CONTROL SUBDIVISION AS THE CONTROL BASE. AS SHOWN, THESE CORNERS SHOWN HEREIN ARE FROM BOOK 5510, PAGE 616.



LEGEND

[Symbol]	EXISTING SIDEWALK (TO REMAIN)
[Symbol]	PROPOSED SIDEWALK
[Symbol]	EX. IMPERVIOUS AREA TO OVERLAY (EXCLUDING PARKING)
[Symbol]	PROPOSED PERVIOUS CONCRETE BMP (CREDIT-60% IMPERVIOUS)
[Symbol]	PROPOSED PERVIOUS CONCRETE BMP (CREDIT-0% IMPERVIOUS)
[Symbol]	EXISTING TREE
[Symbol]	EXISTING TREE (TO BE REMOVED)
[Symbol]	EXISTING POWER/TRAFFIC POLE
[Symbol]	EXISTING NO PARKING SIGN
[Symbol]	EXISTING RAILROAD ARM
[Symbol]	PROPOSED GATE
[Symbol]	DRAINAGE AREA
[Symbol]	DRAINAGE FLOW ARROW
[Symbol]	INLET PROTECTION
[Symbol]	PROPOSED INFILTRATION TRENCH

NOTE: ALL RUNOFF WITHIN THE DESIGNATED DRAINAGE AREA FOR EACH BMP MUST BE DIRECTED TO THAT BMP.

BMP & INLET DRAINAGE AREAS	AREA (ACRES)
INFILTRATION BASIN BMP #1	0.412
INFILTRATION BASIN BMP #2	0.73
INFILTRATION BASIN BMP #3	0.417
INFILTRATION BASIN BMP #4	0.55
INFILTRATION BASIN BMP #5	0.45
INFILTRATION BASIN BMP #6	0.43
INFILTRATION TRENCH BMP #7	1.19
INFILTRATION TRENCH BMP #8	0.266
INFILTRATION TRENCH BMP #9	0.41
PERMEABLE PAVEMENT SYSTEM #1 BMP #10	0.116
EX. CB.#1A	0.54
EX. CB.#4A	0.16
EX. CB.#5A	0.20
EX. D.I.#1A	0.38
EX. D.I.#2A	0.40
EX. D.I.#3A	0.03
EX. D.I.#4A	0.21
CB-1	0.33
CB-2	0.40
CB-3	0.52
CB-4	0.29
CB-5	1.16
CB-6	0.16
CB-7	0.27
DI-1	0.13
DI-2	0.57
DI-3	0.09
DI-4	0.17
DI-5	0.46
DI-6	0.57
DRY POND #1	1.46

Approved Construction Plan

Name: _____ Date: _____

Planning: _____

Traffic: _____

Fire: _____

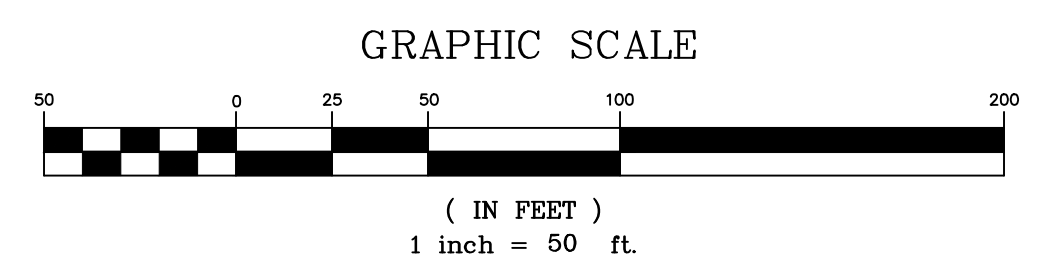
CITY OF WILMINGTON
NORTH CAROLINA

Public Services • Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit #: _____

Signed: _____



REV. NO.	DESCRIPTION	DATE
1	REVISED TO LABEL DRAINAGE AREAS.	3-16-11
2	REVISED PER CITY OF WILMINGTON TO SHOW GREENFIELD ST. DRIVEWAY AS CITY STANDARD & ADJUST PARKING SPACES #13-218 & #17-323. MERGED STORM PIP. ALONG SOUTHERN PORTION OF SITE.	4-20-11
3	REVISED PER CITY OF WILMINGTON.	5-10-11
4	REVISED PER CLIENT TO ADJUST LAYOUT TO ADD GUARD HOUSE.	6-7-11
5	REVISED PER CITY OF WILMINGTON TO NOT SHOW PROPOSED FENCING & ADJUST PARKING.	7-5-11
6	REVISED PER CITY OF WILMINGTON.	7-25-11
7	REVISED PER CITY OF WILMINGTON ENGINEERING DEPARTMENT.	8-11-11
8	REVISED PER CITY OF WILMINGTON FIRE & LIFE SAFETY.	8-12-11
9	REVISED TO ADD IMPERVIOUS AREA, REMOVE EXISTING IMPERVIOUS AREA, & SHOW EXISTING IMPERVIOUS AREA TO OVERLAY.	9-22-12
10	IMPERVIOUS AREA TO OVERLAY, & ADJUST DRAINAGE AREAS.	8-13-12
11	REVISED PER CITY OF WILMINGTON ENGINEERING.	8-13-12
12	REVISED PER CLIENT TO ADD DRIVEWAY OFF GREENFIELD ST. & RELOCATE 3 PARKING SPACES.	8-7-17
13	REVISED PER TRC COMMENTS.	6-30-17

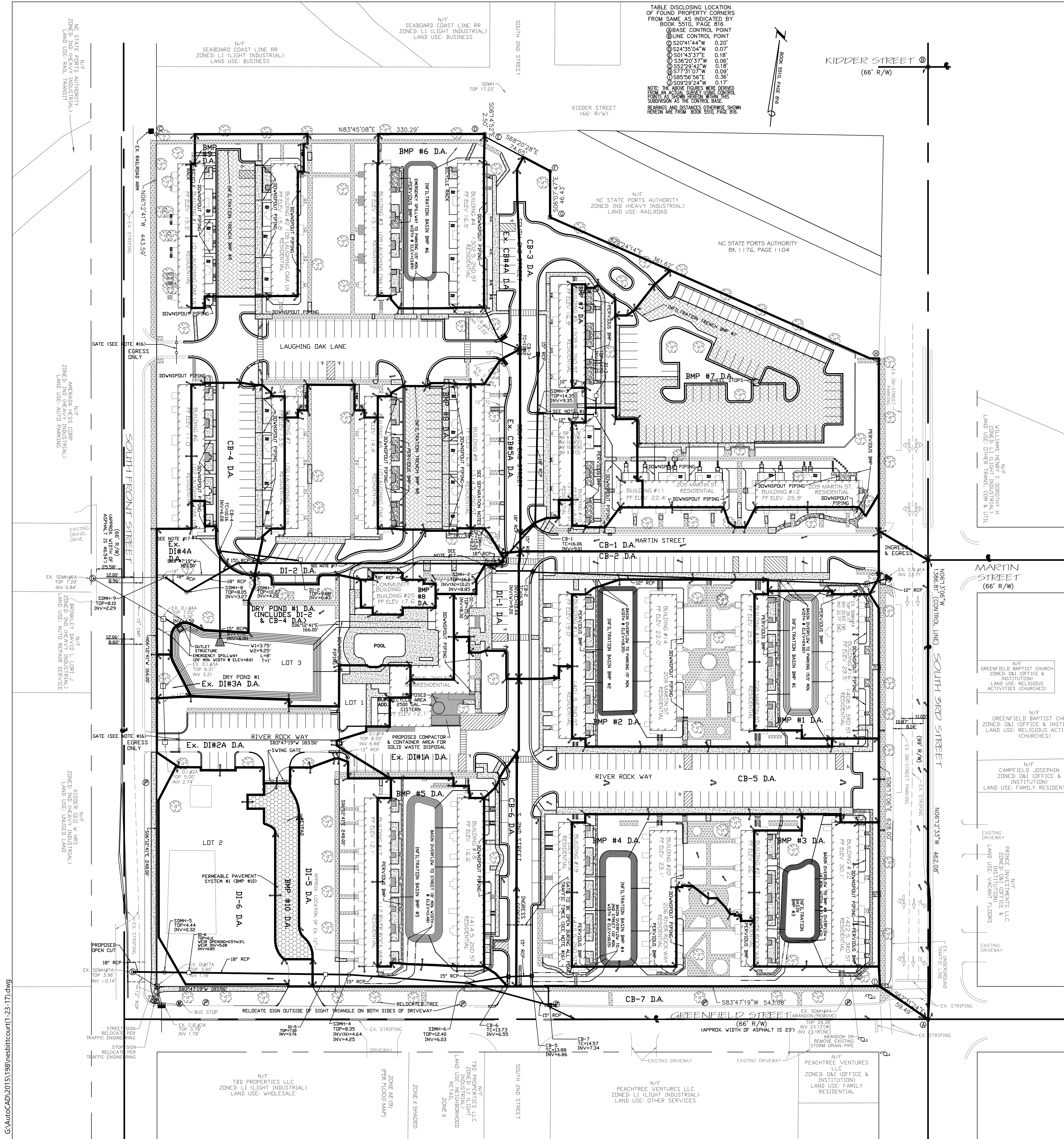
DRAINAGE AREA MAP
1400 S. 2ND STREET
SOUTH FRONT APARTMENTS
WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

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

Owner: SOUTH FRONT LLC
10 S. CAROLINA DR.
WILMINGTON, NC 28403
PHONE: 910-251-5030

DATE: 3-10-11
SCALE: 1"=50'
DRAWN: JCB
CHECKED: JEM
PROJECT NO: 198
SHEET NO: 20
OF: 5



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TABLE DISCLOSING LOCATION OF FOUND PROPERTY CORNERS FROM SAME AS INDICATED BY BOOK 5510, PAGE 616

①	BASE CONTROL POINT
②	LINE CONTROL POINT
③	⑤204144" W 0.20'
④	⑤3243504" W 0.07'
⑤	⑤014337" E 0.18'
⑥	⑤3243504" W 0.07'
⑦	⑤522942" W 0.18'
⑧	⑤773107" W 0.09'
⑨	⑤824396" E 0.36'
⑩	⑤092924" W 0.17'

NOTE: ALL PROPERTY CORNERS SHOWN HEREON ARE FROM BOOK 5510, PAGE 616.

KIDDER STREET (66' R/W)

MARTIN STREET (66' R/W)

MARTIN STREET (66' R/W)

MARTIN STREET (66' R/W)

MARTIN STREET (66' R/W)

MARTIN STREET (66' R/W)

MARTIN STREET (66' R/W)

MARTIN STREET (66' R/W)

MARTIN STREET (66' R/W)

INTERIOR LANDSCAPING ISLANDS

LANDSCAPE ISLAND	TOTAL AREA (SF)	IMPERVIOUS AREA (SF)	PERCENT IMPERVIOUS
LI-1	220.81	0	0
LI-2	408.44	99.64	14.60
LI-3	430.72	59.19	13.74
LI-4	582.56	0	0
LI-5	395.17	0	0
LI-6	327.08	0	0
LI-7	322.98	0	0
LI-8	326.54	44.83	13.73
LI-9	374.69	0	0
LI-10	541.93	37.34	6.89
LI-11	216.61	0	0
LI-12	216.21	0	0
LI-13	378.93	0	0
LI-14	345.10	0	0
LI-15	436.98	0	0
LI-16	302.57	0	0
LI-17	996.09	0	0
LI-18	475.55	0	0
LI-19	352.38	0	0
LI-20	250.18	0	0
LI-21	220.63	0	0
LI-22	216.61	0	0
LI-23	216.61	0	0
LI-24	330.54	47.30	14.31
LI-25	241.40	0	0
LI-26	218.44	0	0
LI-27	282.14	0	0
LI-28	218.06	0	0
LI-29	218.06	0	0
LI-30	543.08	36.43	10.62
LI-31	216.66	0	0
LI-32	349.39	0	0
LI-33	419.94	60.15	14.32
LI-34	396.56	48.82	12.31
LI-35	934.05	4.15	0.44
LI-36	376.81	0	0
LI-37	330.01	0	0
LI-38	255.45	0	0
LI-39	356.27	0	0
LI-40	224.71	0	0
LI-41	223.65	0	0
LI-42	218.59	0	0

PARKING SPACE SIZE CHART

SPACE #	DIMENSION
1-8	8.5' x 22'
9-22	8.5' x 18' (INCLUDES 2' OVERHANG)
23	9' x 18' (INCLUDES 2' OVERHANG)
24-42	8.5' x 18' (INCLUDES 2' OVERHANG)
43	9' x 18' (INCLUDES 2' OVERHANG)
44-60	8.5' x 18' (INCLUDES 2' OVERHANG)
61	9' x 18' (INCLUDES 2' OVERHANG)
62-75	8.5' x 18' (INCLUDES 2' OVERHANG)
76-77	9' x 18' (INCLUDES 2' OVERHANG)
78-108	8.5' x 18' (INCLUDES 2' OVERHANG)
109-131	8.5' x 18' (INCLUDES 2' OVERHANG)
132	9' x 18' (INCLUDES 2' OVERHANG)
133-143	8.5' x 18' (MIN)
144-210	8.5' x 18'
211-231	8.5' x 18'
232-247	8.5' x 18' (INCLUDES 2' OVERHANG)
248	9' x 18' (INCLUDES 2' OVERHANG)
249-290	8.5' x 18' (INCLUDES 2' OVERHANG)
291-294	8.5' x 18'
295-296	9' x 18'
297-302	8.5' x 18'
303	9' x 18'
304-316	8.5' x 18'
317-320	8.5' x 18'
321	8.5' x 18' (INCLUDES 2.5' OVERHANG)
322-338	8.5' x 18' (INCLUDES 3' OVERHANG)
339-340	8.5' x 23'

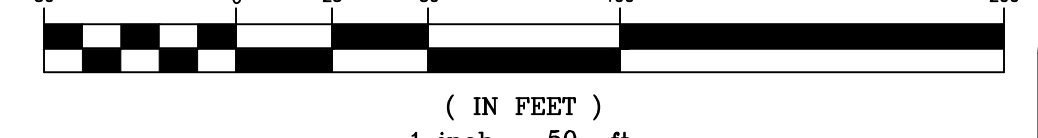
LEGEND

- EXISTING SIDEWALK (TO REMAIN)
- PROPOSED SIDEWALK
- EX. IMPERVIOUS AREA TO OVERLAY (EXCLUDING PARKING)
- PROPOSED PERVIOUS CONCRETE BMP (CREDIT-60% IMPERVIOUS)
- PROPOSED PERVIOUS CONCRETE BMP (CREDIT-0% IMPERVIOUS)
- EXISTING TREE
- EXISTING TREE (TO BE REMOVED)
- EXISTING POWER/TRAFFIC POLE
- EXISTING NO PARKING SIGN
- EXISTING RAILROAD ARM
- PROPOSED GATE
- PROPOSED LANDSCAPE ISLAND



NOTE: HANDICAP RAMPS SHALL BE PROVIDED AT ALL PARKING AREAS TO SIDEWALK CONNECTIONS INTERNAL TO THE SITE. PARKING SPACES LESS THAN 8.5' IN WIDTH BY 18' IN LENGTH SHALL BE SIGNED ALERTING DRIVERS TO THE LIMITED SIZE.

GRAPHIC SCALE



REV. NO.	DESCRIPTION	DATE
1	REVISED PER CITY OF WILMINGTON TO SHOW GREENFIELD ST. DRIVEWAY AS CITY STANDARD & ADJUST PARKING SPACES #13-210 & 317-324	4-21-11
2	REVISED PER CITY OF WILMINGTON.	5-13-11
3	REVISED PER CLIENT TO ADJUST LAYOUT TO ADD GUARD HOUSE.	6-7-11
4	REVISED PER CITY OF WILMINGTON TO NOT SHOW PROPOSED FENCING & ADJUST PARKING.	7-5-11
5	REVISED PER CITY OF WILMINGTON.	7-25-11
6	REVISED PER NCMT TO ADD SIGN.	8-4-11
7	REVISED PER CITY OF WILMINGTON FIRE & LIFE SAFETY.	8-12-11
8	REVISED PER CLIENT TO ADD DRIVEWAY OFF GREENFIELD ST. & RELOCATE 3 PARKING SPACES.	8-7-17
9	REVISED PER TRC COMMENTS.	8-30-17

PARKING DIMENSION PLAN
1400 S. 2ND STREET
SOUTH FRONT APARTMENTS
WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

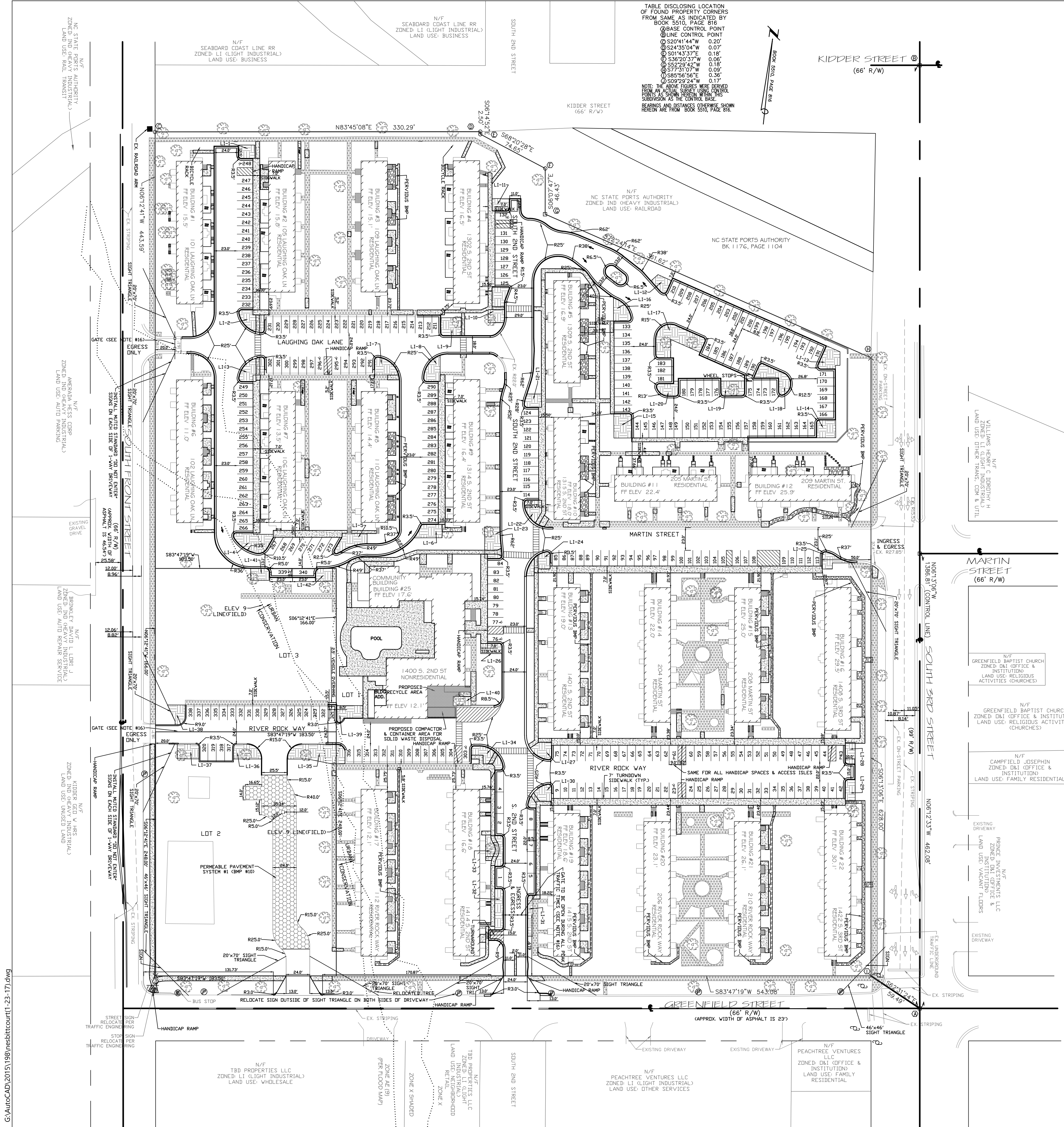
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SCALE: 1"=50'
DRAWN: JCB
CHECKED: JEM
PROJECT NO: 198

FINAL DRAWING FOR REVIEW PURPOSES ONLY

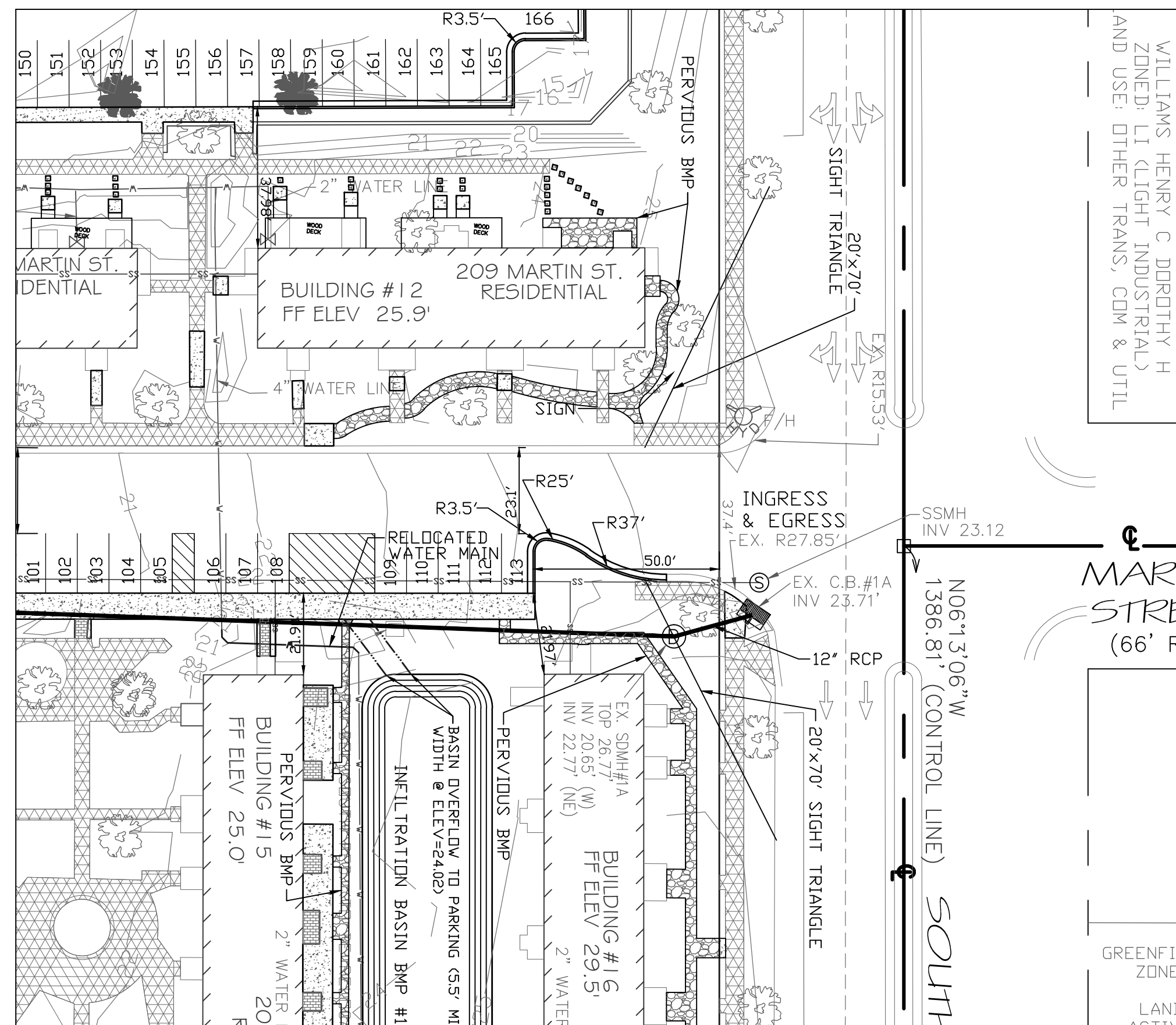
MALPASS ENGINEERING, P.C.
1134 SHIPYARD BOULEVARD
WILMINGTON, NORTH CAROLINA 28412
Phone 910-392-6343
Fax 910-392-5203 License No. C-2320

Owner: SOUTH FRONT LLC
10 S. CARDINAL DR.
WILMINGTON, NC 28403
PHONE: 910-251-5030

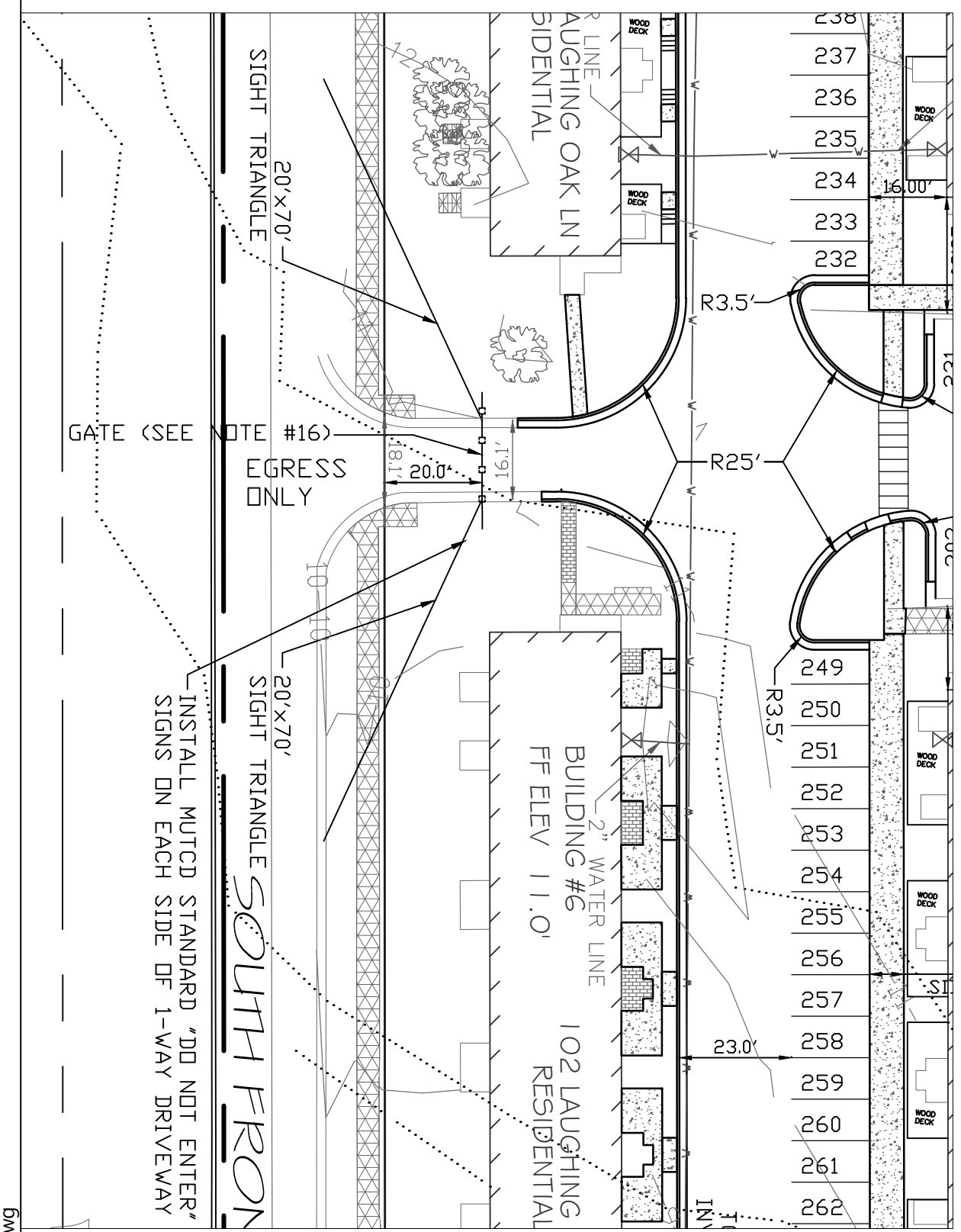
SHEET NO: 2E
OF: 5



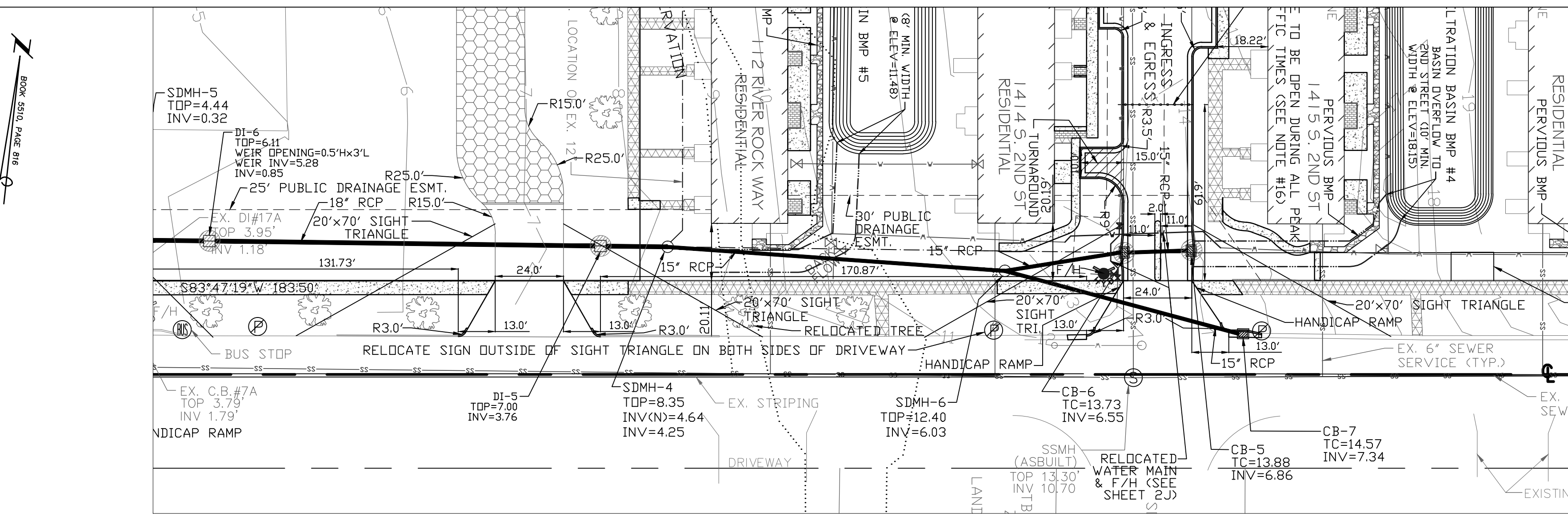
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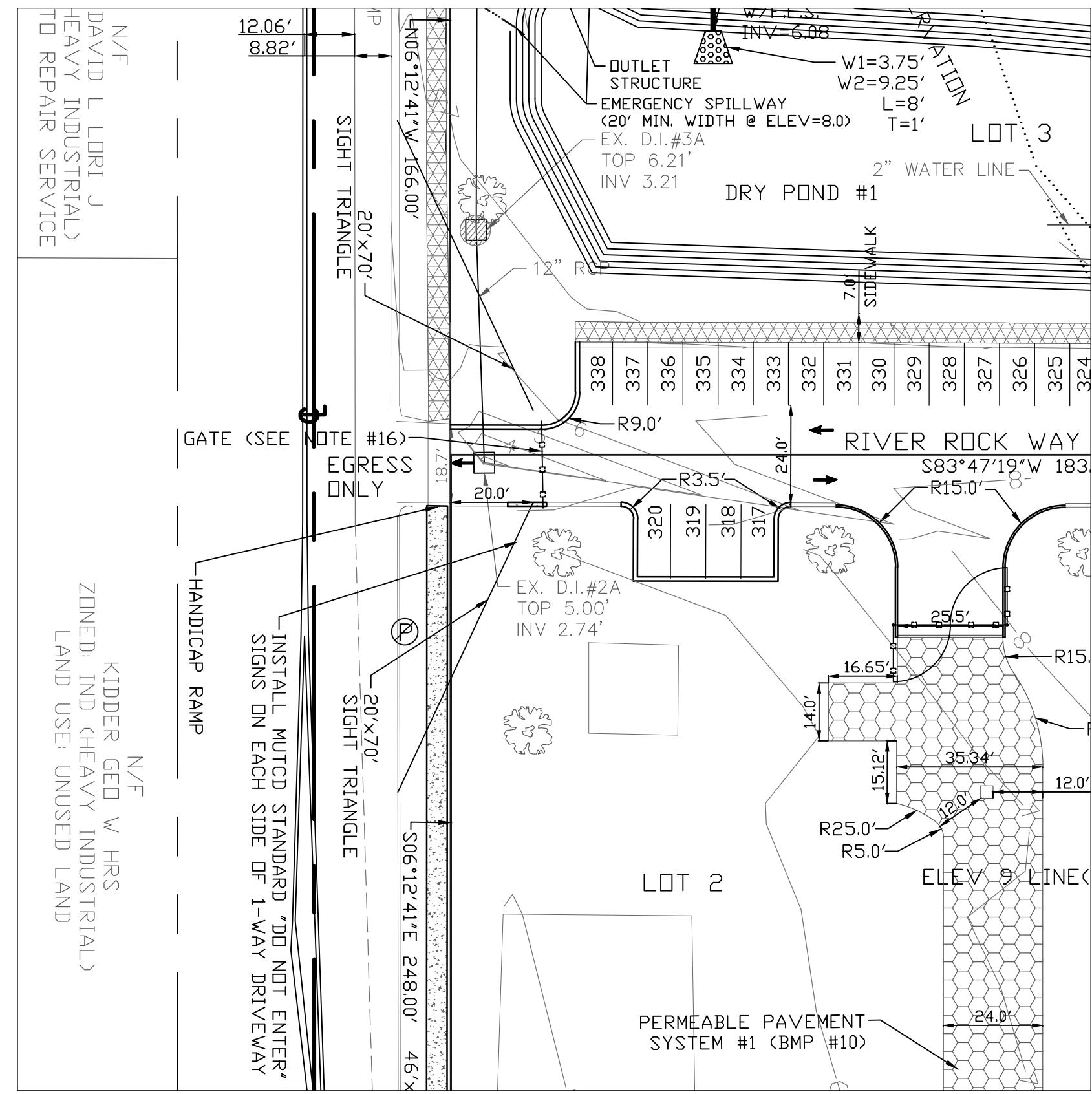
S. 3RD STREET & MARTIN STREET-INGRESS & EGRESS
SCALE: 1"=30'



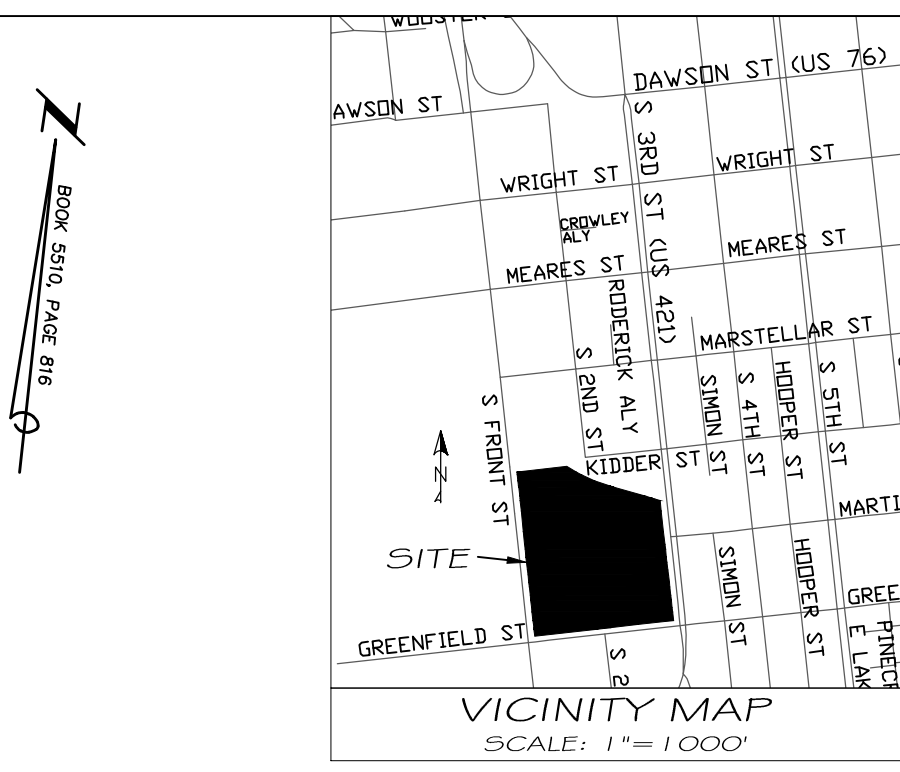
S. FRONT STREET & LAUGHING OAK LANE-EGRESS ONLY
SCALE: 1"=30'



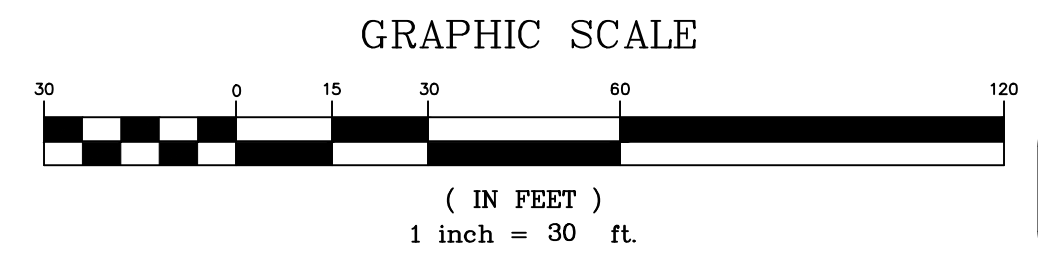
GREENFIELD STREET & S. 2ND STREET-INGRESS & EGRESS
SCALE: 1"=30'



S. FRONT STREET & RIVER ROCK WAY-EGRESS ONLY
SCALE: 1"=30'



- LEGEND**
- EXISTING SIDEWALK (TO REMAIN)
 - PROPOSED SIDEWALK
 - EX. IMPERVIOUS AREA TO OVERLAY (EXCLUDING PARKING)
 - PROPOSED PERVIOUS CONCRETE (NO CREDIT-100% IMPERVIOUS)
 - PROPOSED PERVIOUS CONCRETE BMP (CREDIT-60% IMPERVIOUS)
 - PROPOSED PERVIOUS CONCRETE BMP (CREDIT-0% IMPERVIOUS)
 - EXISTING TREE
 - EXISTING TREE (TO BE REMOVED)
 - EXISTING SANITARY SEWER
 - EXISTING WATER LINE
 - EXISTING WATER VALVE
 - EXISTING CURB INLET
 - EXISTING FIRE HYDRANT
 - EXISTING POWER/TRAFFIC POLE
 - EXISTING NO PARKING SIGN
 - EXISTING RAILROAD ARM
 - PROPOSED GATE
 - EXISTING CONTOUR
 - PROPOSED UTILITY EASEMENT
 - PROPOSED STORM DRAIN PIPE
 - PROPOSED INLET PROTECTION
 - EXISTING STORM DRAIN PIPE (NOT SHOWN)
 - APPROX. LOCATION BASED ON



REV NO.	DESCRIPTION	DATE
1	REVISED PER CITY OF WILMINGTON TO SHOW GREENFIELD ST. DRIVEWAY AS CITY STANDARD & ADJUST PARKING SPACES #13-210 & 317-324. ADDED STORM PIPE ALONG SOUTHERN PORTION OF SITE.	4-21-11
2	REVISED PER CITY OF WILMINGTON.	5-13-11
3	REVISED PER CLIENT TO ADJUST LAYOUT TO ADD GUARD HOUSE.	6-7-11
4	REVISED PER CITY OF WILMINGTON TO NOT SHOW PROPOSED FENCING & ADJUST PARKING.	7-5-11
5	REVISED PER CITY OF WILMINGTON.	7-25-11
6	REVISED PER NC DOT TO ADD SIGNS.	8-4-11
7	REVISED PER CITY OF WILMINGTON FIRE & LIFE SAFETY.	8-12-11
8	REVISED PER CLIENT TO ADD DRIVEWAY OFF GREENFIELD ST. & RELOCATE 3 PARKING SPACES.	8-7-17
9	REVISED PER TRC COMMENTS.	8-30-17

PARKING DIMENSION PLAN
1400 S. 2ND STREET
SOUTH FRONT APARTMENTS
WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

FINAL DRAWING FOR REVIEW PURPOSES ONLY

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

Owner: SOUTH FRONT LLC
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PHONE: 910-251-5030

DATE: 3-10-11
SCALE: 1"=30'
DRAWN: JCB
CHECKED: JEM
PROJECT NO: 19B
SHEET NO: 2F
OF: 5

Approved Construction Plan

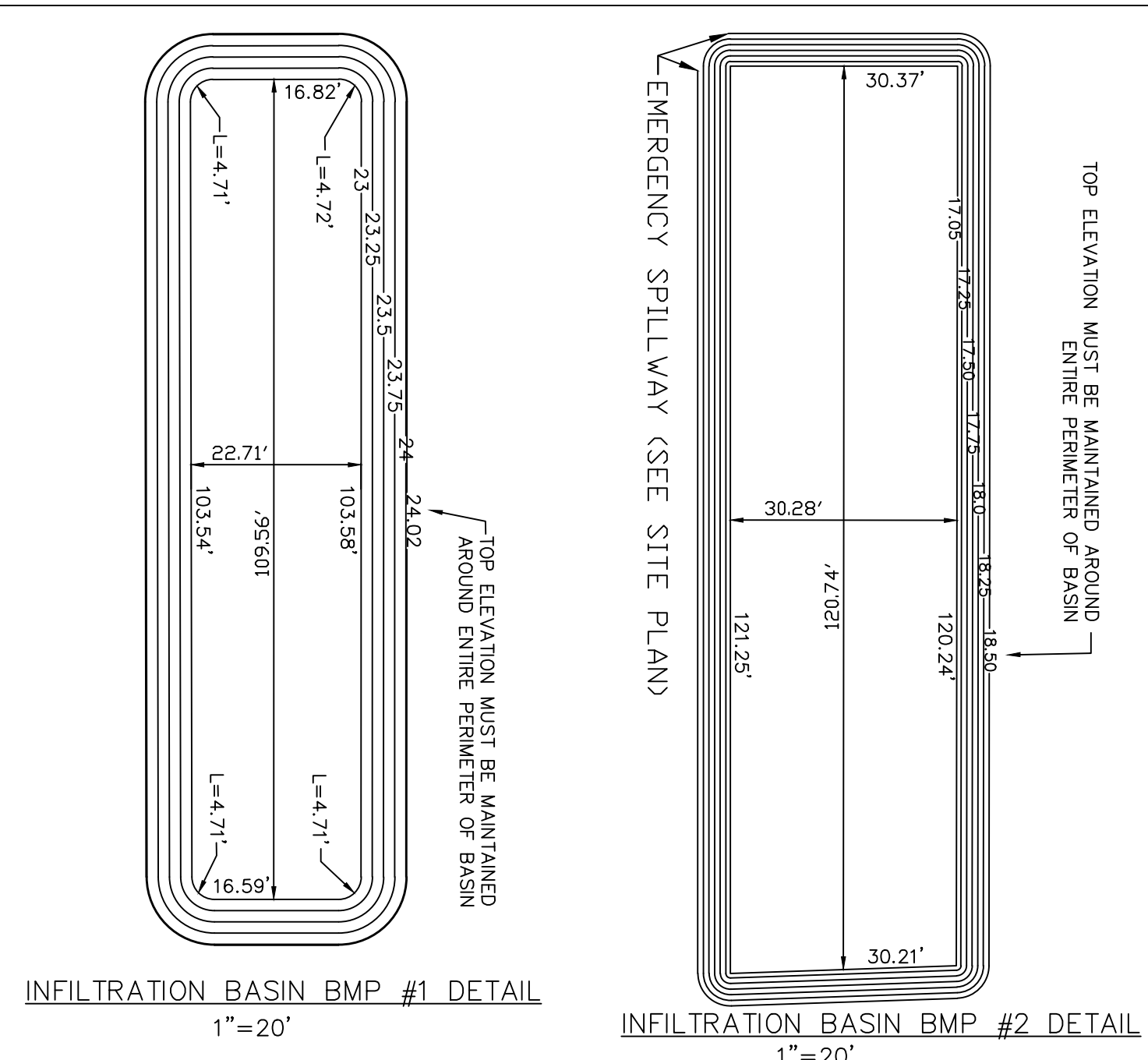
Name _____ Date _____

Planning _____

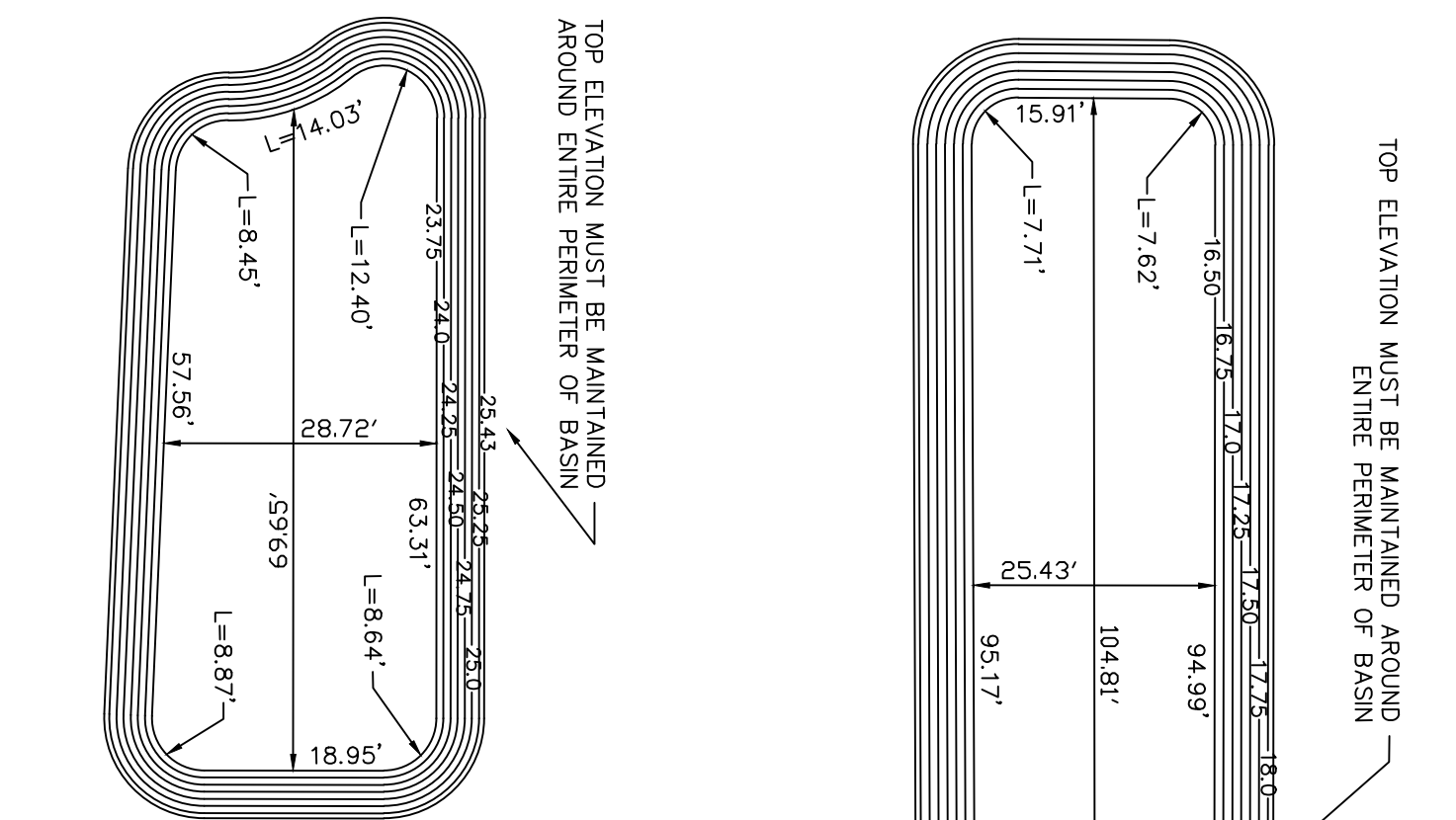
Traffic _____

Fire _____

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



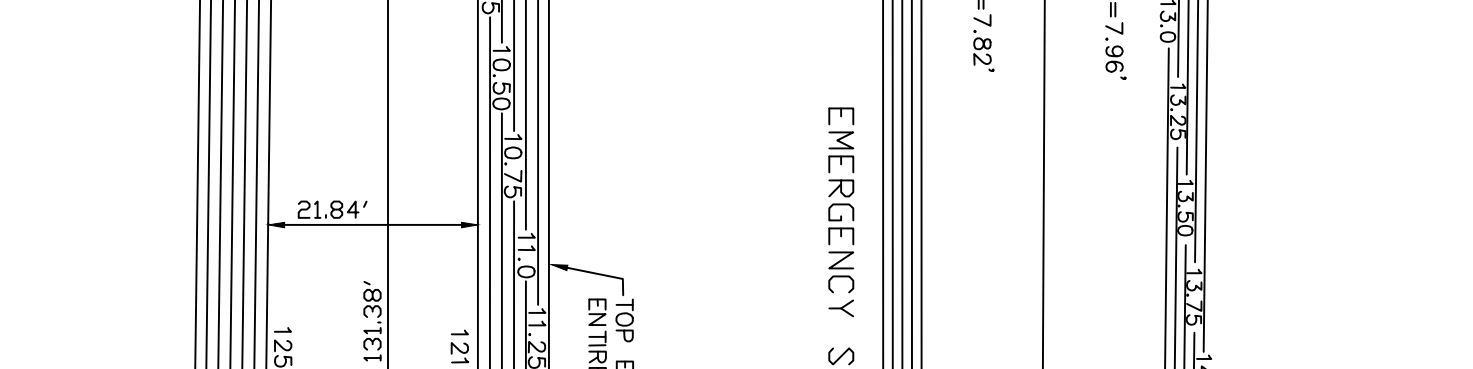
INFILTRATION BASIN BMP #1 DETAIL
1"=20'



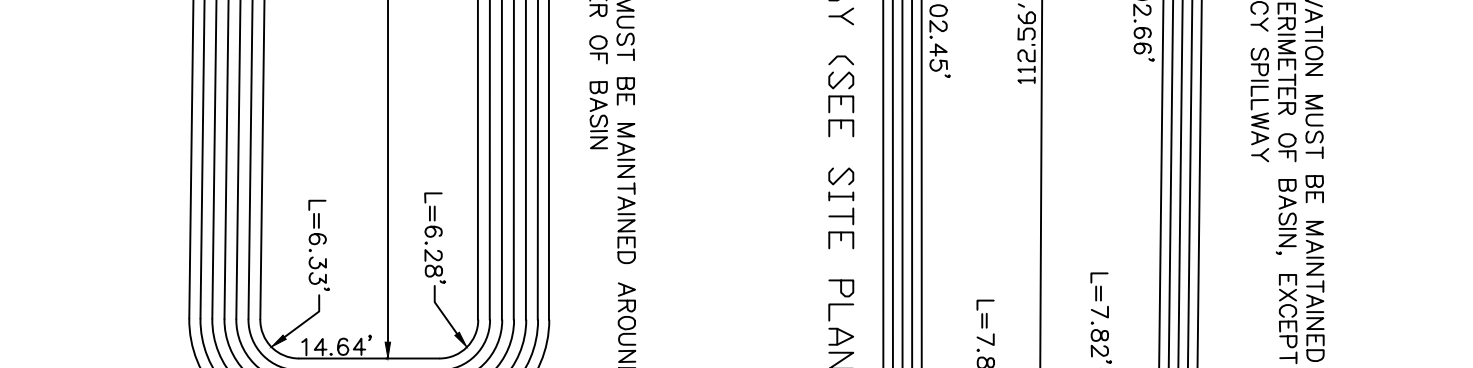
INFILTRATION BASIN BMP #2 DETAIL
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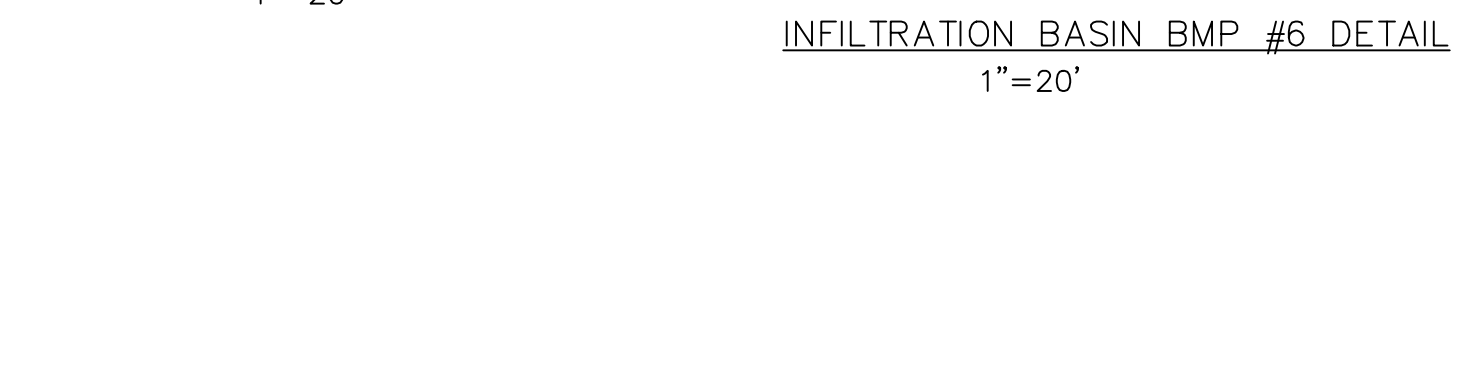
INFILTRATION BASIN BMP #3 DETAIL
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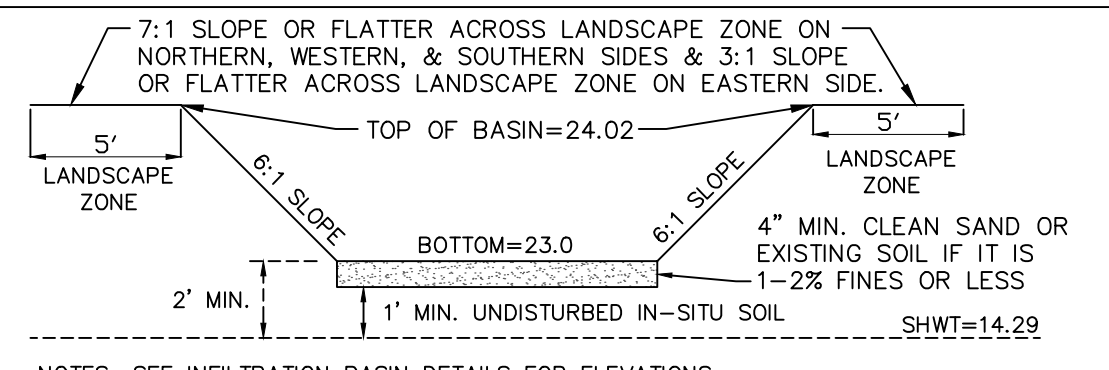
INFILTRATION BASIN BMP #4 DETAIL
1"=20'



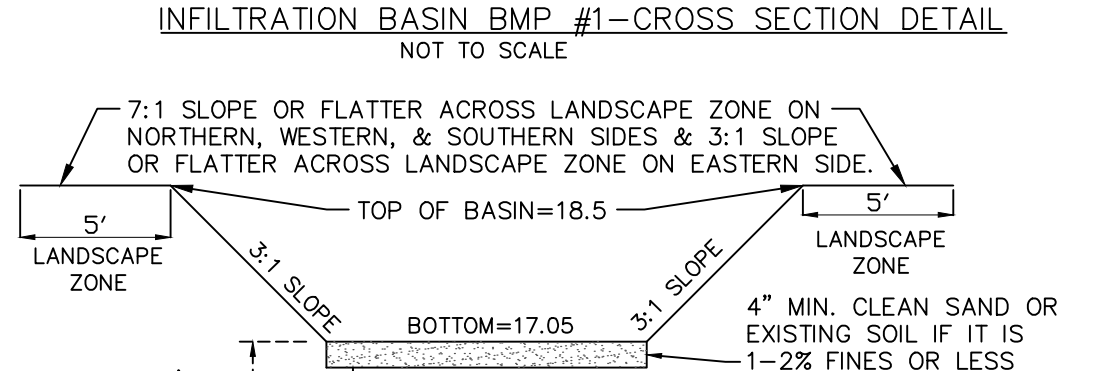
INFILTRATION BASIN BMP #5 DETAIL
1"=20'



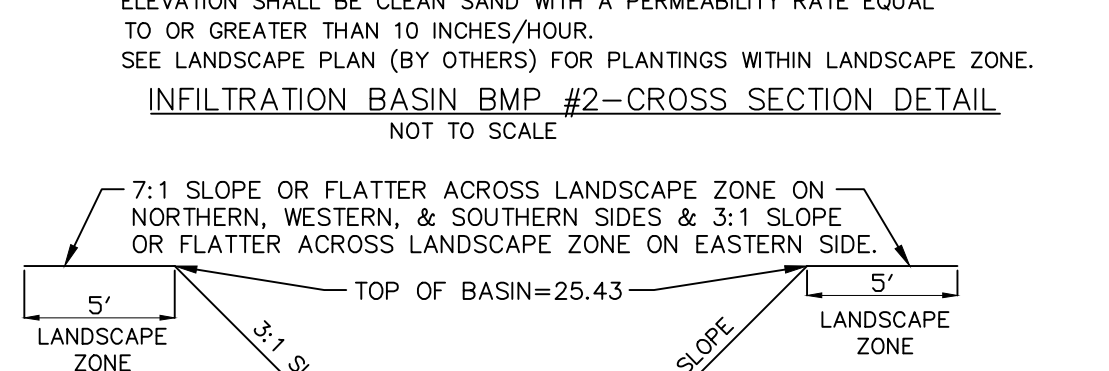
INFILTRATION BASIN BMP #6 DETAIL
1"=20'



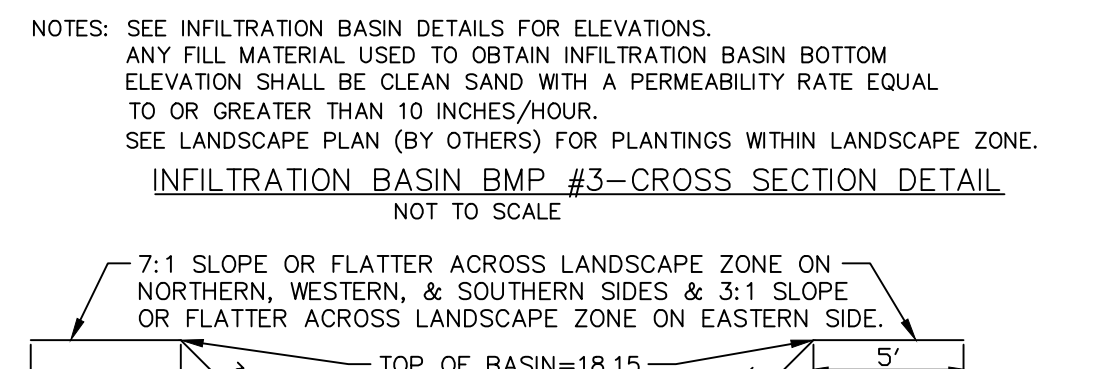
NOTES: SEE INFILTRATION BASIN DETAILS FOR ELEVATIONS. ANY FILL MATERIAL USED TO OBTAIN INFILTRATION BASIN BOTTOM ELEVATION SHALL BE CLEAN SAND WITH A PERMEABILITY RATE EQUAL TO OR GREATER THAN 10 INCHES/HOUR. SEE LANDSCAPE PLAN (BY OTHERS) FOR PLANTINGS WITHIN LANDSCAPE ZONE.



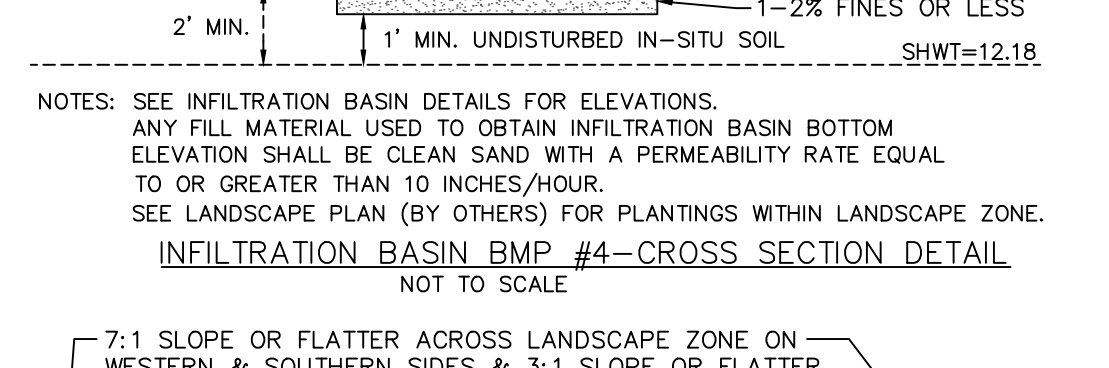
NOTES: SEE INFILTRATION BASIN DETAILS FOR ELEVATIONS. ANY FILL MATERIAL USED TO OBTAIN INFILTRATION BASIN BOTTOM ELEVATION SHALL BE CLEAN SAND WITH A PERMEABILITY RATE EQUAL TO OR GREATER THAN 10 INCHES/HOUR. SEE LANDSCAPE PLAN (BY OTHERS) FOR PLANTINGS WITHIN LANDSCAPE ZONE.



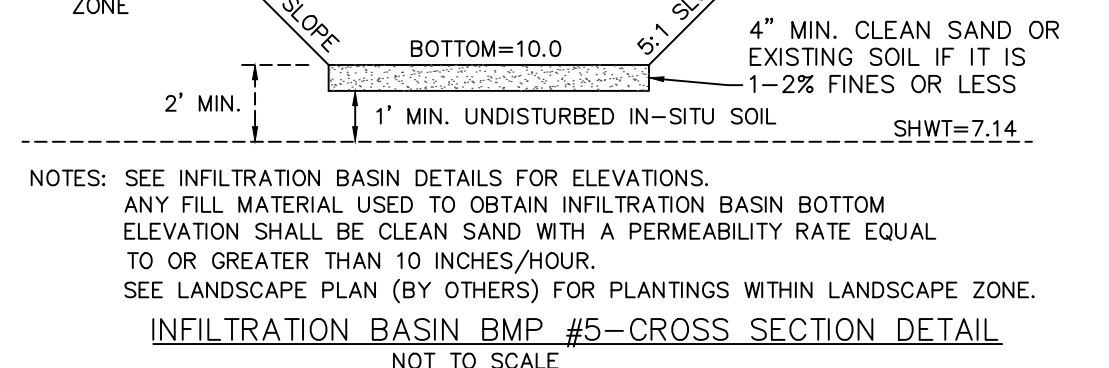
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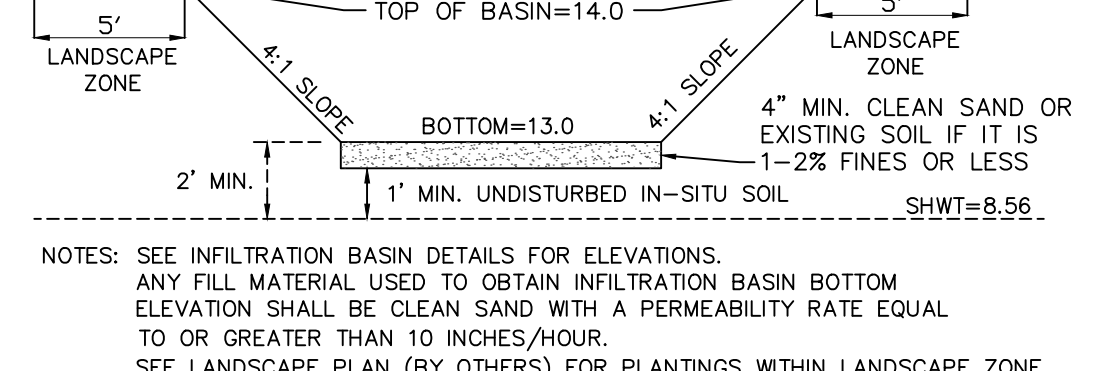
NOTES: SEE INFILTRATION BASIN DETAILS FOR ELEVATIONS. ANY FILL MATERIAL USED TO OBTAIN INFILTRATION BASIN BOTTOM ELEVATION SHALL BE CLEAN SAND WITH A PERMEABILITY RATE EQUAL TO OR GREATER THAN 10 INCHES/HOUR. SEE LANDSCAPE PLAN (BY OTHERS) FOR PLANTINGS WITHIN LANDSCAPE ZONE.



NOTES: SEE INFILTRATION BASIN DETAILS FOR ELEVATIONS. ANY FILL MATERIAL USED TO OBTAIN INFILTRATION BASIN BOTTOM ELEVATION SHALL BE CLEAN SAND WITH A PERMEABILITY RATE EQUAL TO OR GREATER THAN 10 INCHES/HOUR. SEE LANDSCAPE PLAN (BY OTHERS) FOR PLANTINGS WITHIN LANDSCAPE ZONE.



NOTES: SEE INFILTRATION BASIN DETAILS FOR ELEVATIONS. ANY FILL MATERIAL USED TO OBTAIN INFILTRATION BASIN BOTTOM ELEVATION SHALL BE CLEAN SAND WITH A PERMEABILITY RATE EQUAL TO OR GREATER THAN 10 INCHES/HOUR. SEE LANDSCAPE PLAN (BY OTHERS) FOR PLANTINGS WITHIN LANDSCAPE ZONE.



NOTES: SEE INFILTRATION BASIN DETAILS FOR ELEVATIONS. ANY FILL MATERIAL USED TO OBTAIN INFILTRATION BASIN BOTTOM ELEVATION SHALL BE CLEAN SAND WITH A PERMEABILITY RATE EQUAL TO OR GREATER THAN 10 INCHES/HOUR. SEE LANDSCAPE PLAN (BY OTHERS) FOR PLANTINGS WITHIN LANDSCAPE ZONE.

PERVIOUS CONCRETE BMP LOCATION	SHWT ELEVATION (FT)	BOTTOM OF CONCRETE ELEVATION (FT)
EAST OF BUILDING #16	19.44	24.0
EAST OF BUILDING #15	14.29	22.5
EAST OF BUILDING #13	15.02	21.75
EAST OF BUILDING #22	19.07	22.0
EAST OF BUILDING #21	15.04	22.4
SOUTH OF BUILDING #20	15.71	21.9
EAST OF BUILDING #19	12.18	21.0
EAST OF BUILDING #17	7.14	23.14
NORTH, EAST, & SOUTH OF BUILDING #12	16.08	22.0
EAST OF BUILDINGS #5 & 10	12.50	214.50
EAST OF BUILDING #3	8.56	214.0
EAST OF BUILDING #8	8.64	212.0

NOTE: -USED SAME DEPTH FROM EXISTING GRADE AS SOIL BORING B4 TO GENERATE SHWT ELEVATION FOR EAST OF BUILDING #16. -USED SAME DEPTH FROM EXISTING GRADE AS SOIL BORING B3 TO GENERATE SHWT ELEVATION FOR EAST OF BUILDING #22. -USED SAME DEPTH FROM EXISTING GRADE AS SOIL BORING B2 TO GENERATE SHWT ELEVATION FOR SOUTH OF BUILDING #20. -USED SAME DEPTH FROM EXISTING GRADE AS SOIL BORING B4 TO GENERATE SHWT ELEVATION FOR NORTH, EAST, & SOUTH OF BUILDING #12. -USED SAME DEPTH FROM EXISTING GRADE AS SOIL BORING B6 TO GENERATE SHWT ELEVATION FOR EAST OF BUILDINGS #5 & 10.

INFILTRATION BASIN BMP #1	ELEV. (FT)	AREA (SQ. FT.)	INCREMENTAL VOLUME (CU. FT.)	CUMULATIVE VOLUME (CU. FT.)
23.0	2,480.01	0	0	
23.25	2,876.15	669.52	669.62	
23.50	3,286.44	770.32	1,439.84	
23.75	3,710.86	874.66	2,314.50	
24.0	4,149.41	982.53	3,297.03	
24.02	4,185.11	83.35	3,380.38	

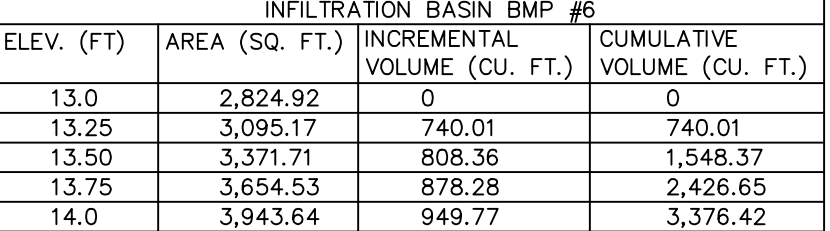
INFILTRATION BASIN BMP #2	ELEV. (FT)	AREA (SQ. FT.)	INCREMENTAL VOLUME (CU. FT.)	CUMULATIVE VOLUME (CU. FT.)
17.05	3,656.11	0	0	
17.25	3,838.48	749.46	749.46	
17.50	4,069.62	988.51	1,737.97	
17.75	4,304.30	1,046.74	2,784.71	
18.0	4,542.51	1,105.85	3,890.56	
18.25	4,784.26	1,165.85	5,056.41	
18.50	5,029.54	1,226.72	6,283.13	

INFILTRATION BASIN BMP #3	ELEV. (FT)	AREA (SQ. FT.)	INCREMENTAL VOLUME (CU. FT.)	CUMULATIVE VOLUME (CU. FT.)
23.75	2,011.26	0	0	
24.0	2,157.19	521.06	521.06	
24.25	2,306.66	557.98	1,079.04	
24.50	2,459.65	595.79	1,674.83	
24.75	2,616.19	634.48	2,309.31	
25.0	2,776.25	674.05	2,983.36	
25.25	2,939.85	714.51	3,697.87	
25.43	3,059.83	539.97	4,237.84	

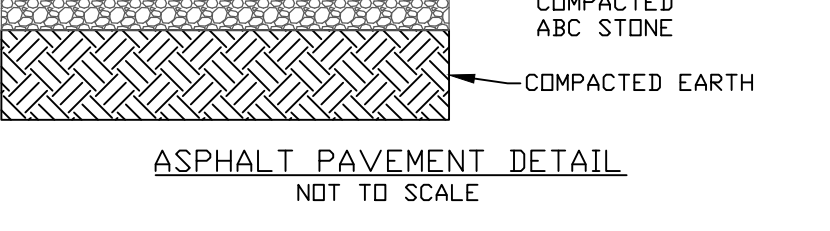
INFILTRATION BASIN BMP #4	ELEV. (FT)	AREA (SQ. FT.)	INCREMENTAL VOLUME (CU. FT.)	CUMULATIVE VOLUME (CU. FT.)
16.50	2,644.62	0	0	
16.75	2,853.71	691.04	691.04	
17.0	3,128.32	751.50	1,442.54	
17.25	3,378.45	813.35	2,255.89	
17.50	3,634.11	876.57	3,132.46	
17.75	3,895.29	941.17	4,073.63	
18.0	4,161.99	1,007.16	5,080.79	
18.15	4,324.66	636.50	5,717.29	

INFILTRATION BASIN BMP #5	ELEV. (FT)	AREA (SQ. FT.)	INCREMENTAL VOLUME (CU. FT.)	CUMULATIVE VOLUME (CU. FT.)
10.0	2,863.92	0	0	
10.25	3,244.66	763.55	763.55	
10.50	3,634.82	859.91	1,623.46	
10.75	4,035.01	958.73	2,582.19	
11.0	4,445.00	1,060.00	3,642.19	
11.25	4,864.82	1,163.73	4,805.92	
11.48	5,259.72	1,164.32	5,970.24	

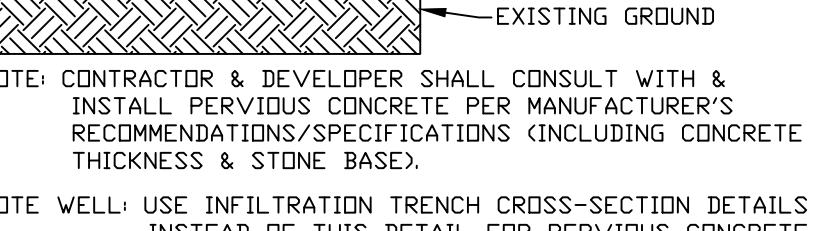
INFILTRATION BASIN BMP #6	ELEV. (FT)	AREA (SQ. FT.)	INCREMENTAL VOLUME (CU. FT.)	CUMULATIVE VOLUME (CU. FT.)
13.0	2,824.92	0	0	
13.25	3,095.17	740.01	740.01	
13.50	3,371.71	803.36	1,543.37	
13.75	3,654.53	878.28	2,421.65	
14.0	3,943.64	949.77	3,371.42	



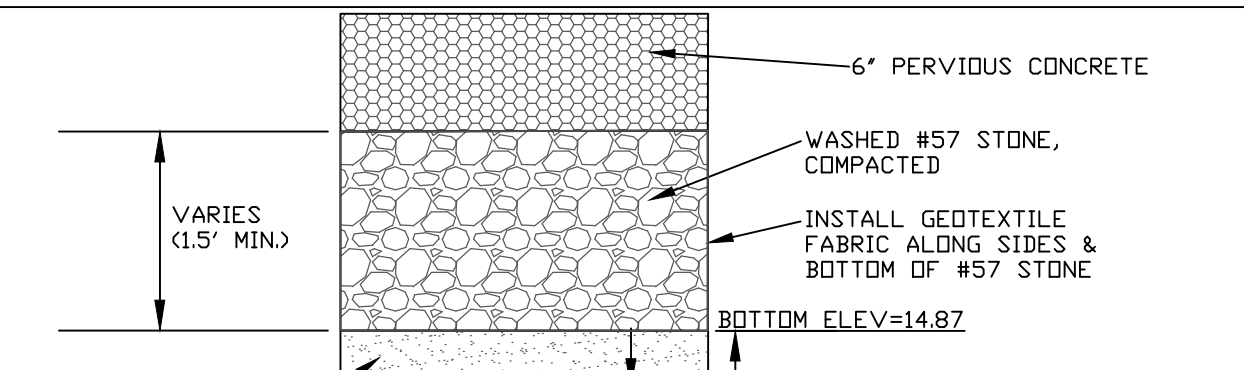
NOTE: CONTRACTOR & DEVELOPER SHALL CONSULT WITH & INSTALL PERVIOUS CONCRETE PER MANUFACTURER'S RECOMMENDATIONS/SPECIFICATIONS (INCLUDING CONCRETE THICKNESS & STONE BASE).



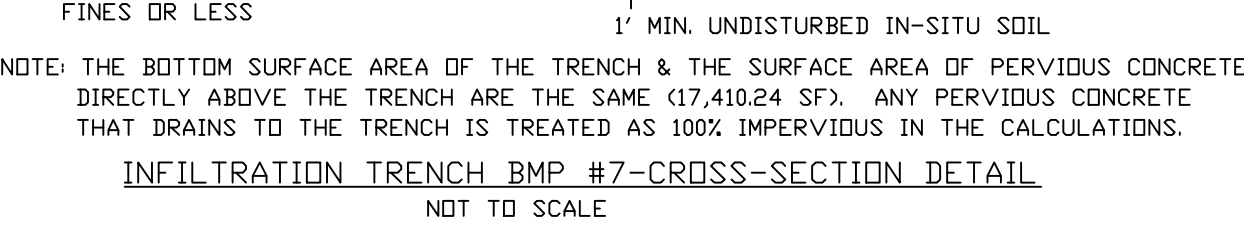
NOTE WELL: USE INFILTRATION TRENCH CROSS-SECTION DETAILS INSTEAD OF THIS DETAIL FOR PERVIOUS CONCRETE LOCATED WITHIN INFILTRATION TRENCH LOCATIONS. USE PERMEABLE PAVEMENT SYSTEM #1 (BMP #10) CROSS SECTION DETAIL INSTEAD OF THIS DETAIL FOR PERMEABLE PAVEMENT SYSTEM #1.



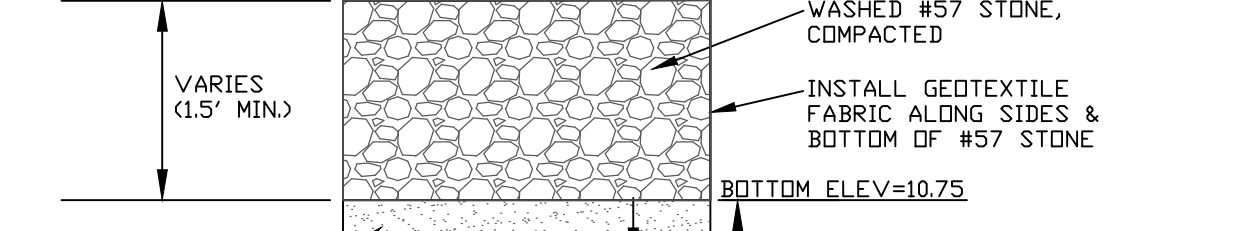
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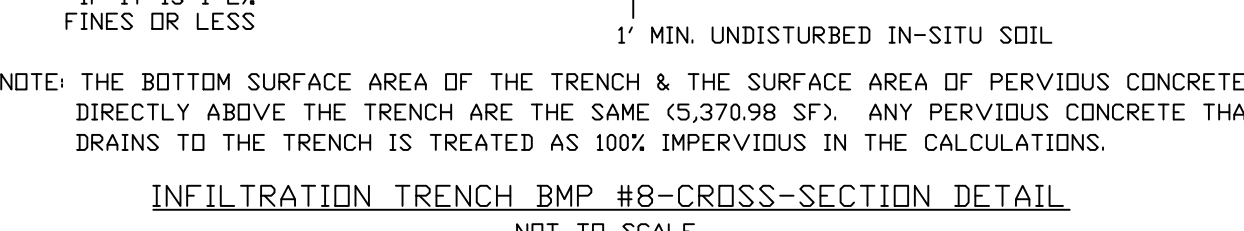
NOTE: THE BOTTOM SURFACE AREA OF THE TRENCH & THE SURFACE AREA OF PERVIOUS CONCRETE DIRECTLY ABOVE THE TRENCH ARE THE SAME (17,410.24 SF). ANY PERVIOUS CONCRETE THAT DRAINS TO THE TRENCH IS TREATED AS 100% IMPVIOUS IN THE CALCULATIONS.



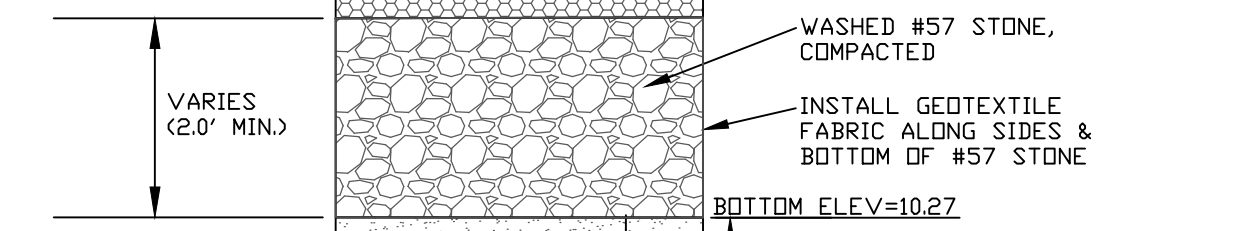
NOTE: THE BOTTOM SURFACE AREA OF THE TRENCH & THE SURFACE AREA OF PERVIOUS CONCRETE DIRECTLY ABOVE THE TRENCH ARE THE SAME (5,370.98 SF). ANY PERVIOUS CONCRETE THAT DRAINS TO THE TRENCH IS TREATED AS 100% IMPVIOUS IN THE CALCULATIONS.



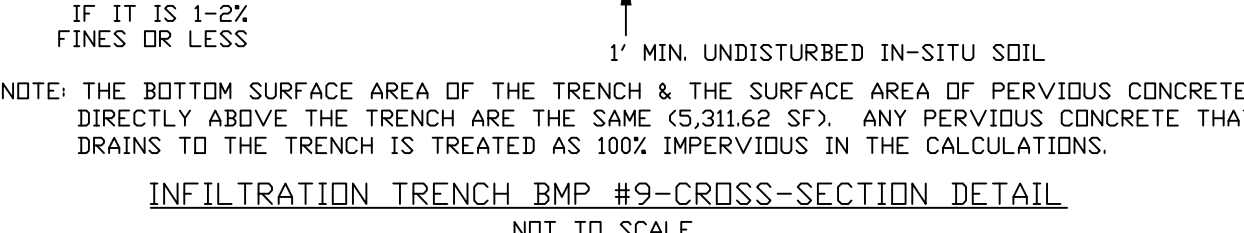
NOTE: THE BOTTOM SURFACE AREA OF THE TRENCH & THE SURFACE AREA OF PERVIOUS CONCRETE DIRECTLY ABOVE THE TRENCH ARE THE SAME (5,316.62 SF). ANY PERVIOUS CONCRETE THAT DRAINS TO THE TRENCH IS TREATED AS 100% IMPVIOUS IN THE CALCULATIONS.



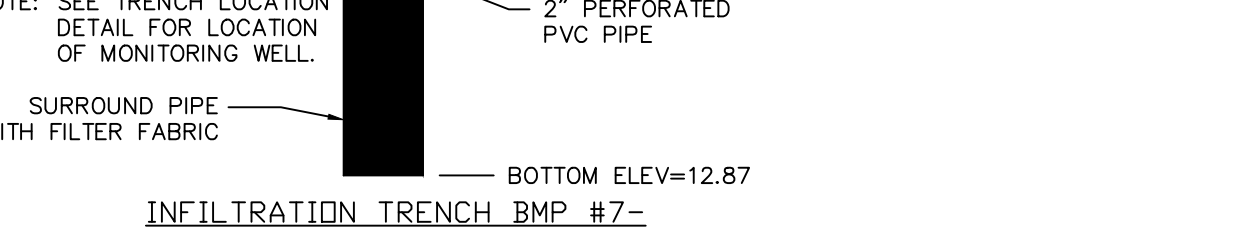
NOTE: CONTRACTOR & DEVELOPER SHALL CONSULT WITH & INSTALL PERVIOUS CONCRETE PER MANUFACTURER'S RECOMMENDATIONS/SPECIFICATIONS (INCLUDING CONCRETE THICKNESS & STONE BASE).



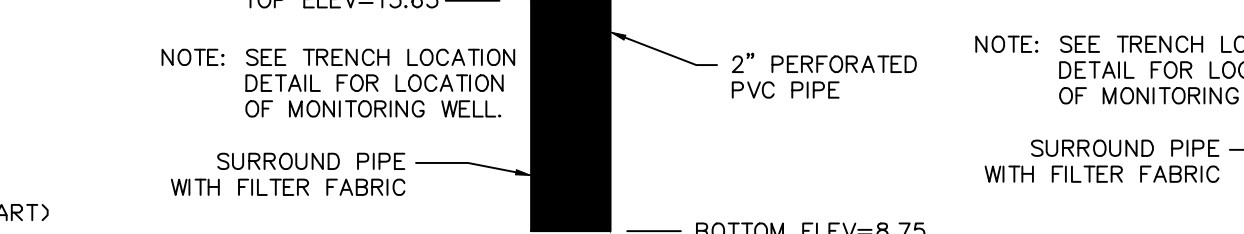
NOTE: SEE TRENCH LOCATION DETAIL FOR LOCATION OF MONITORING WELL.



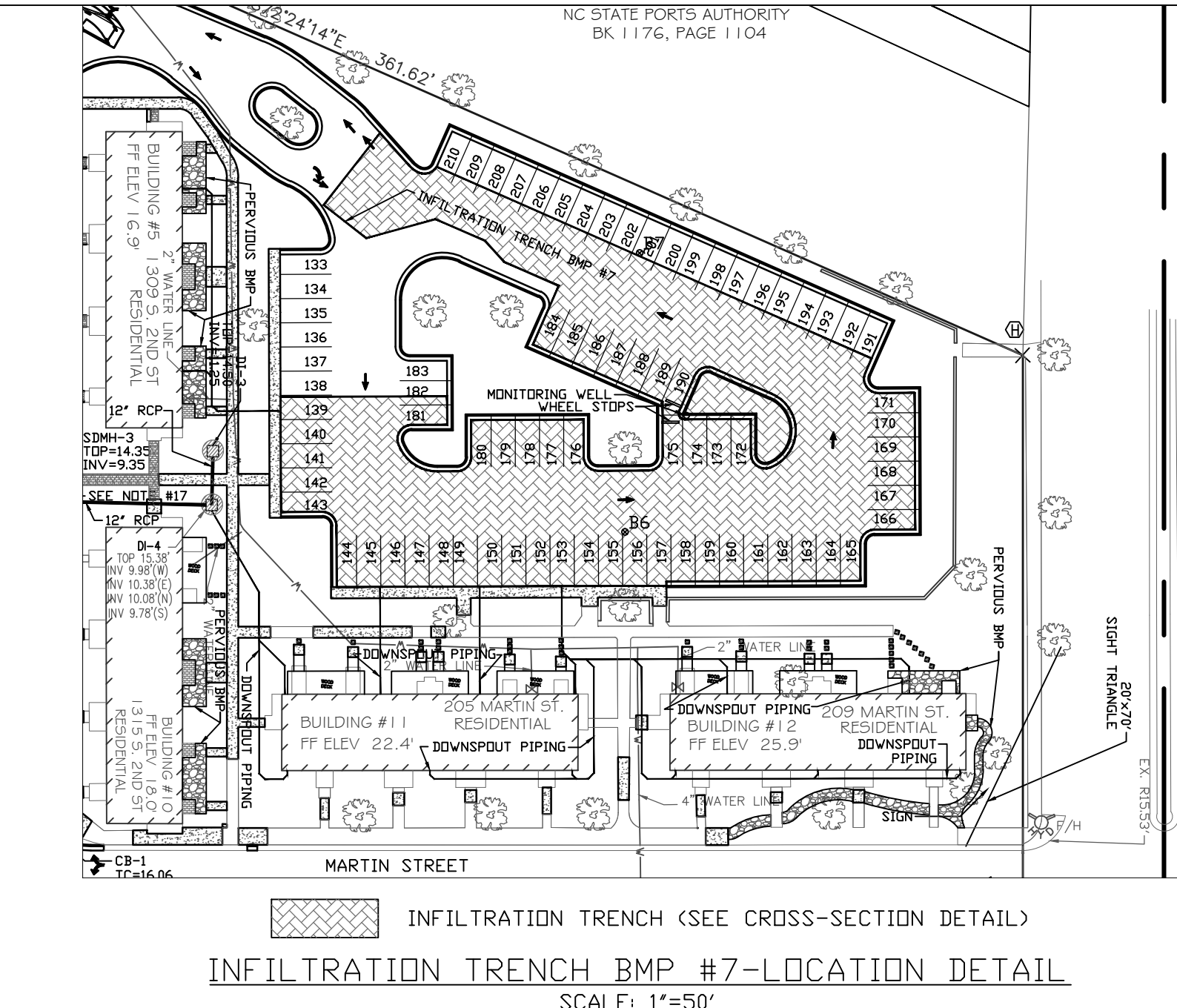
NOTE: SEE TRENCH LOCATION DETAIL FOR LOCATION OF MONITORING WELL.



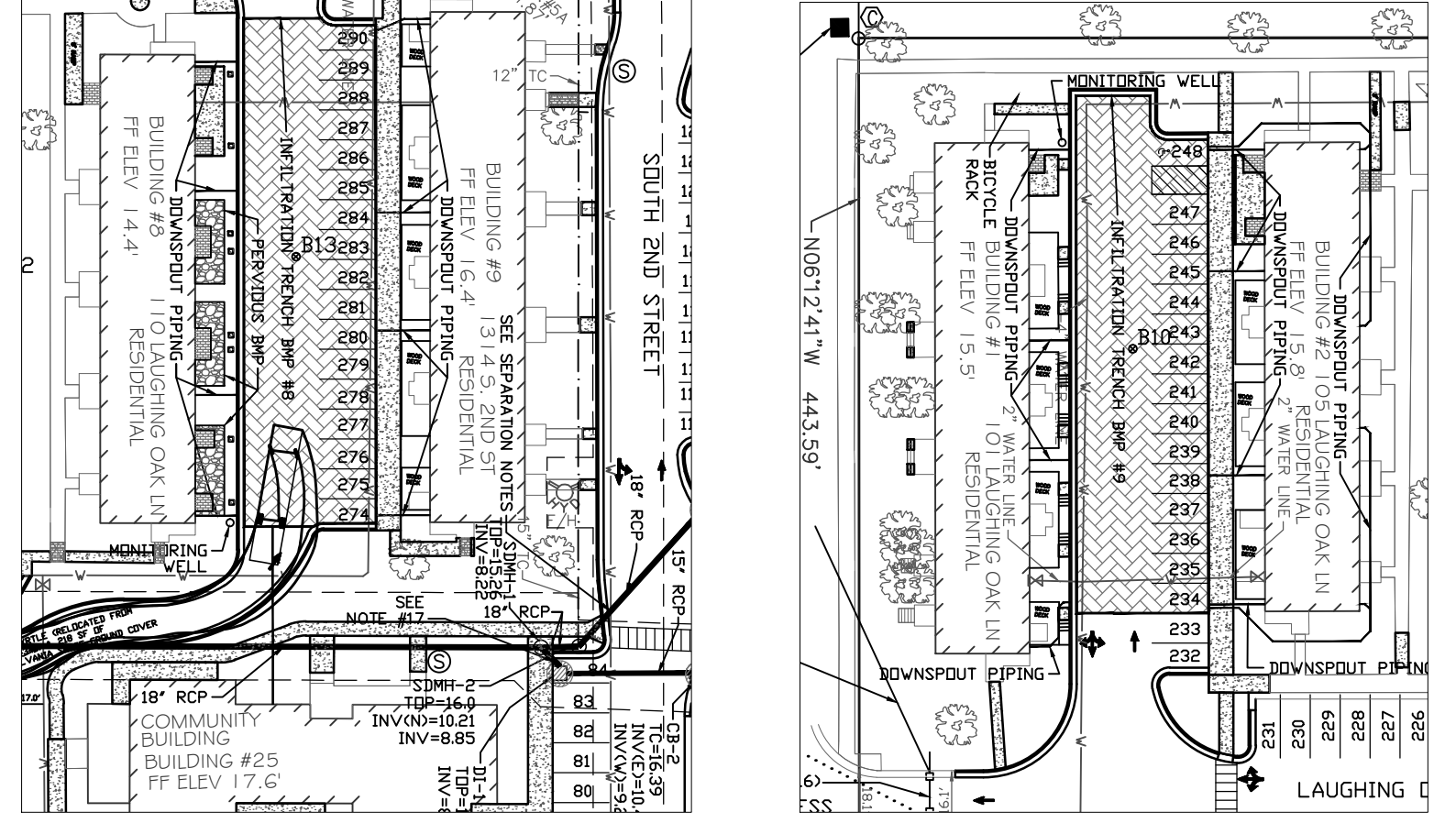
NOTE: SEE TRENCH LOCATION DETAIL FOR LOCATION OF MONITORING WELL.



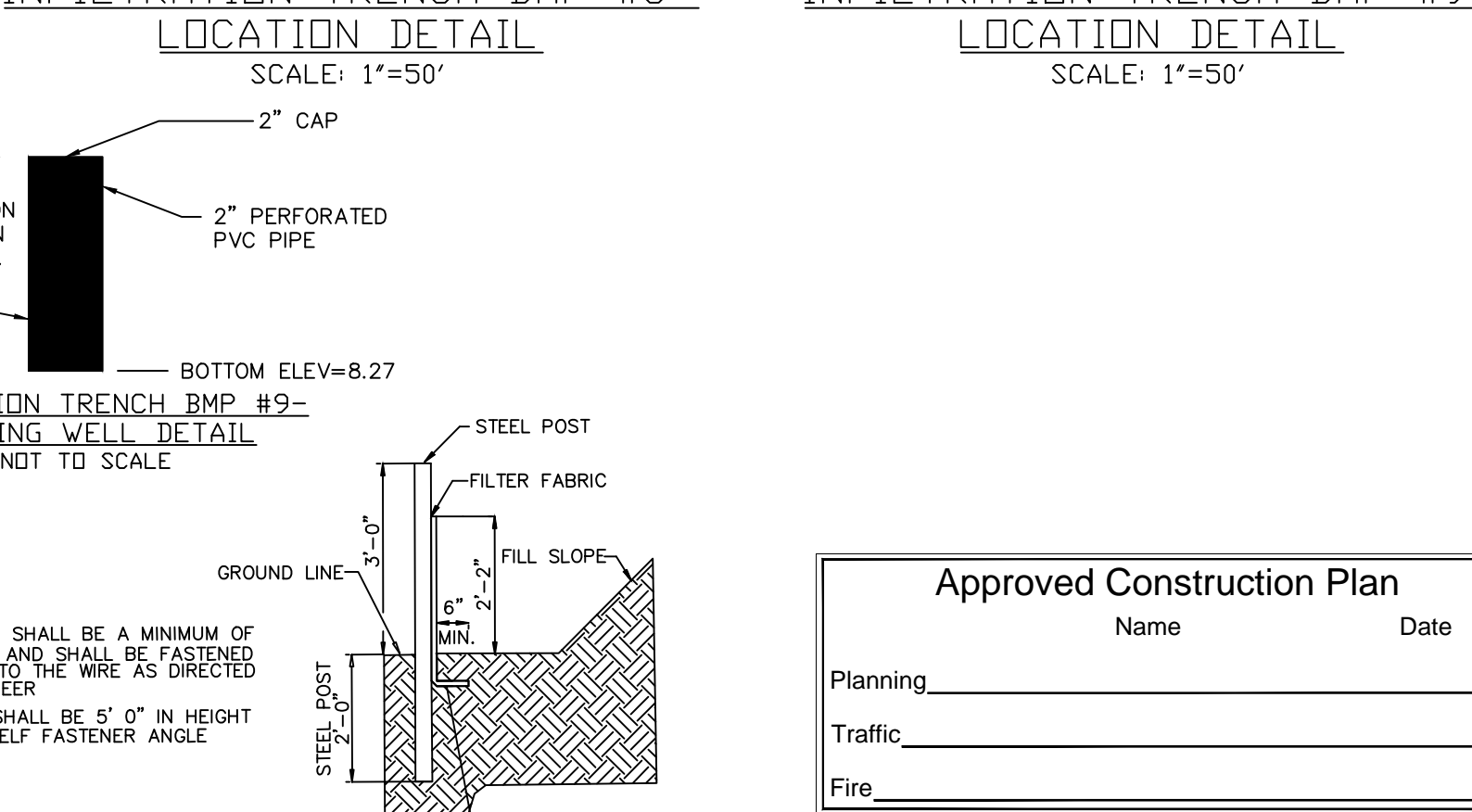
NOTES: 1. FILTER FABRIC SHALL BE A MINIMUM OF 36" IN WIDTH AND SHALL BE FASTENED SECURELY TO THE WIRE AS DIRECTED BY THE ENGINEER. 2. STEEL POST SHALL BE 5" 0" IN HEIGHT AND BE OF SELF-FASTENER ANGLE STEEL TYPE.



INFILTRATION TRENCH BMP #7-LOCATION DETAIL
SCALE: 1"=50'



INFILTRATION TRENCH BMP #8-LOCATION DETAIL
SCALE: 1"=50'



INFILTRATION TRENCH BMP #9-LOCATION DETAIL
SCALE: 1"=50'

Approved Construction Plan

Name _____ Date _____

Planning _____

Traffic _____

Fire _____

City of Wilmington
Public Services Engineering Division
APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____

Signed: _____

STORMWATER DETAIL SHEET

SOUTH FRONT APARTMENTS
WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

FINAL DRAWING FOR REVIEW PURPOSES ONLY

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

Owner: SOUTH FRONT LLC
1510-A SOUTH THIRD STREET
WILMINGTON, NC 28401
PHONE: 910-251-5030

DATE: 1-11-11
SCALE: N.T.S.
DRAWN: JCB
CHECKED: JEM
PROJECT NO: 19B
SHEET NO: 20
OF: 5

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. 10P for: Well-to Poorly Drained soils with Good Moisture Retention; Low Maintenance
 Seeding mixture
 Species Rate (lb/acre)
 Tall fescue 80
 Pensacola Bahiagrass 50
 Sericea lespedeza 30
 Koble lespedeza 10

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

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 (Kobe in Piedmont and Coastal Plain, Korean in Mountains) 50

Seeding Notes
 Dmit 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 - Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

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	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.

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 riving 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, refertilize 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 6.11a - 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. 31
 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 riving 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 6.10b Temporary Seeding Recommendations For Summer
 Seeding mixture
 Species Rate (lb/acre)
 German millet 40

Seeding Notes
 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 - Refertilize if growth is not fully adequate. Reseed, refertilize 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 refertilize 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 Koble (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

Table 6.11r - Seeding No. 3CP for: Dry Sands to Sandy Loams; High Maintenance, Fine Turf
 Seeding mixture
 Species Rate (bu/1,000 ft²)
 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 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 6.10r Temporary Seeding Recommendations For Low Maintenance
 Seeding mixture
 Species Rate (lb/acre)
 Centipedegrass 10-20 bu/acre (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.
 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 - 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. 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)
 Centipedegrass 10-20 bu/acre (seed) or 33 bu/acre (sprigs)

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.

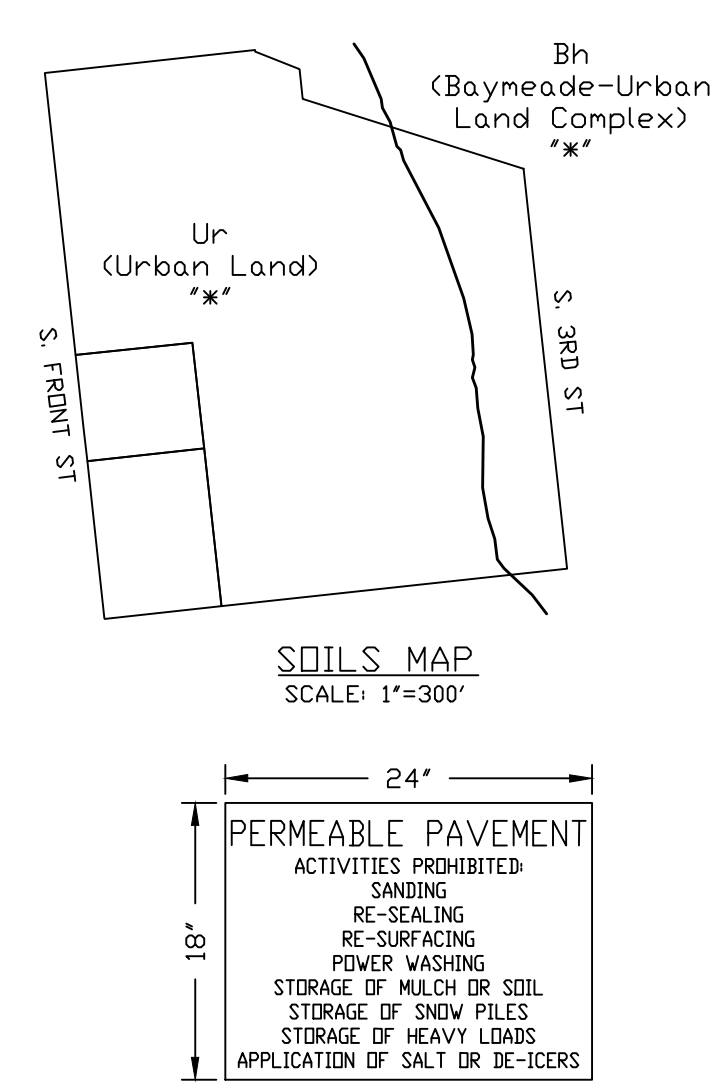
Seeding dates
 Apr. 1 - July 15

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, riving, 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 - Refertilize 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 needed.

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 ft²)

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. Refertilize the following Apr. with 50 lb/acre nitrogen.

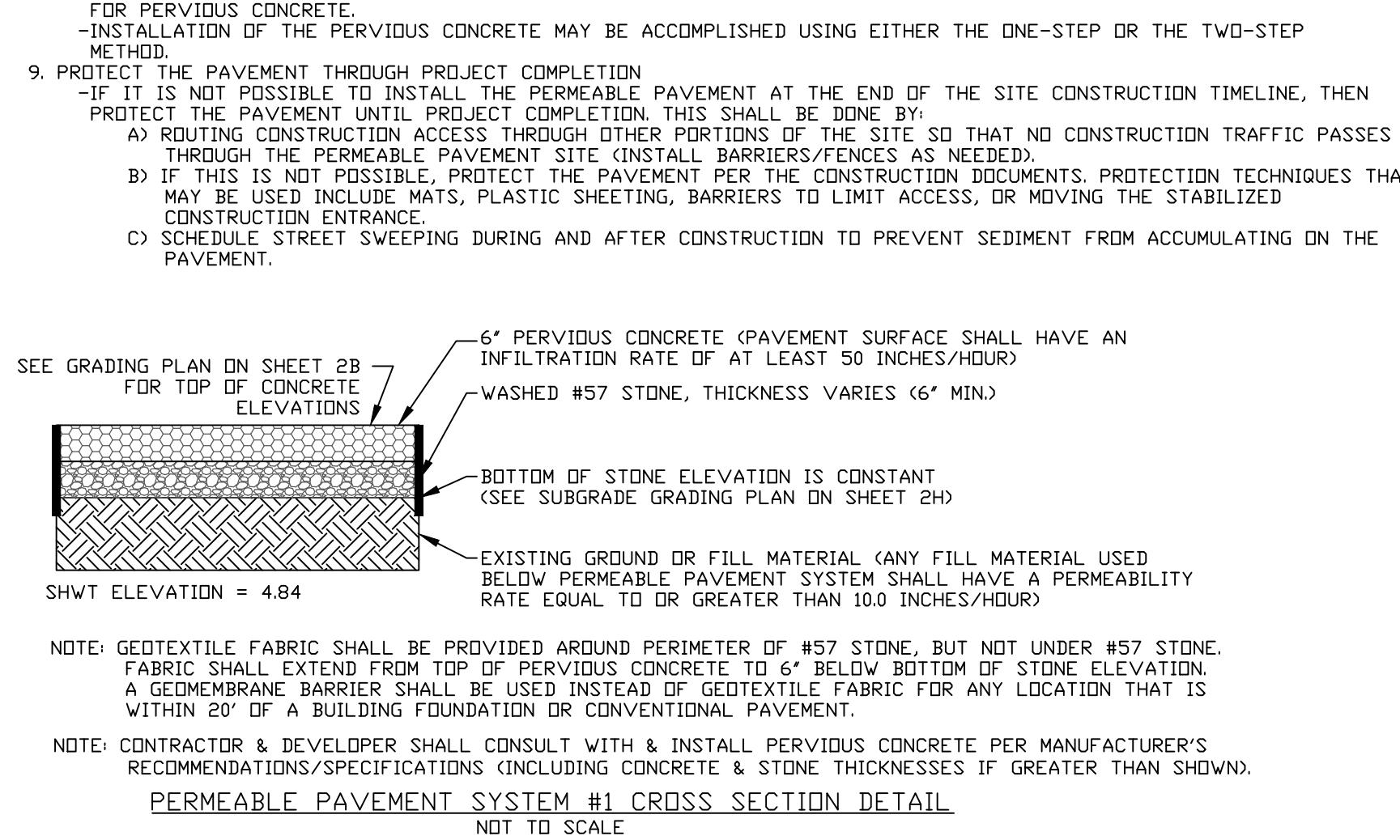
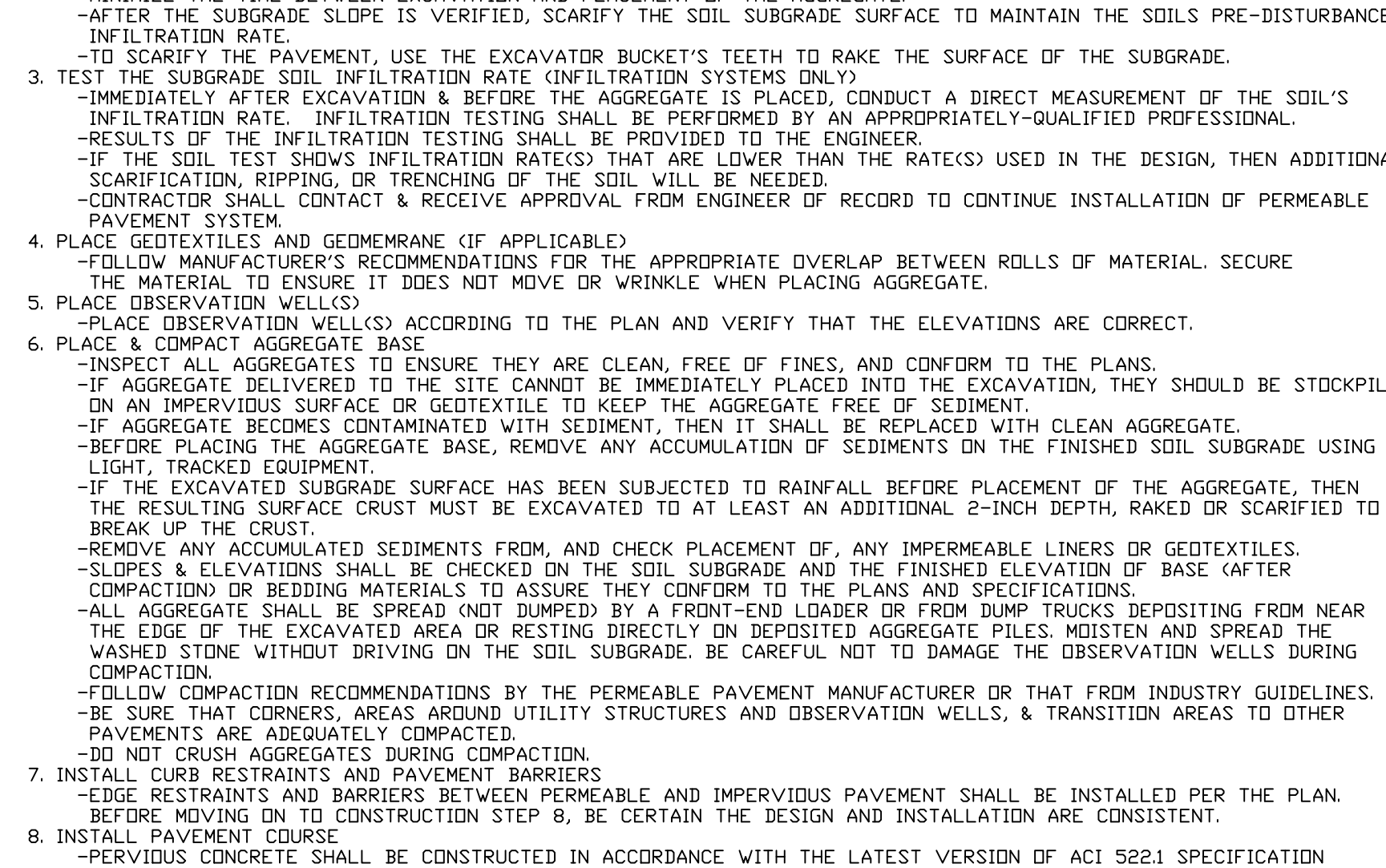
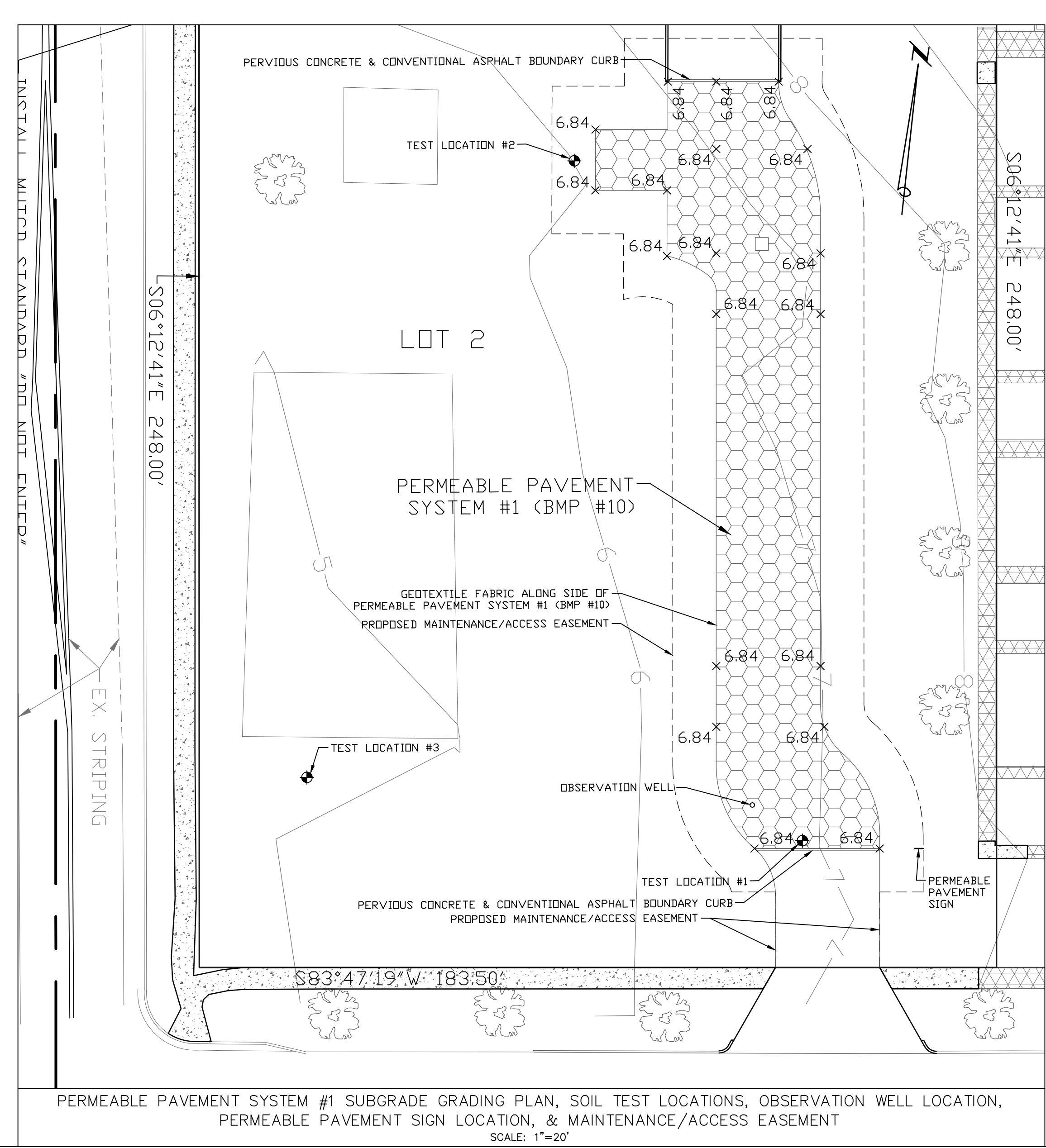


CONSTRUCTION SEQUENCE FOR INSTALLATION OF PERMEABLE PAVEMENT (MOSTLY FROM NCDCE STORMWATER DESIGN MANUAL C-5)

- ENSURE ACCEPTABLE CONDITIONS FOR CONSTRUCTION
 - PERVIOUS SURFACES MUST BE GRADED TO DRAIN AWAY FROM THE PERMEABLE PAVEMENT, EXCEPT WHERE THIS IS UNAVOIDABLE, SUCH AS PARKING LOT ISLANDS, AREA BETWEEN BUILDINGS & PARKING LOT, & REDEVELOPMENT PROJECTS.
 - IMPERVIOUS AREAS THAT WILL DRAIN TO THE PERMEABLE PAVEMENT ARE COMPLETED.
 - AREAS ADJACENT TO THE PERMEABLE PAVEMENT ARE STABILIZED (VEGETATION, MULCH, STRAW, SEED, SOD, FIBER BLANKETS, ETC.) IN ORDER TO PREVENT EROSION & POSSIBLE CONTAMINATION WITH SEDIMENTS.
 - CONSTRUCTION ACCESS TO OTHER PORTIONS OF THE SITE IS ESTABLISHED SO THAT NO CONSTRUCTION TRAFFIC PASSES THROUGH THE PERMEABLE PAVEMENT SITE DURING INSTALLATION.
 - WEATHER FORECAST CALLS FOR A WINDOW OF DRY WEATHER TO PREVENT EXCESS COMPACTION OR SMEARING OF SOIL SUBGRADE WHILE IT IS EXPOSED.
- EXCAVATE PERMEABLE PAVEMENT AREA & PREPARE SUBGRADE SURFACE
 - EXCAVATE IN DRY SUBGRADE CONDITIONS & AVOID EXCAVATING IMMEDIATELY AFTER STORMS WITHOUT A SUFFICIENT DRYING PERIOD.
 - DO NOT ALLOW EQUIPMENT TO CROSS THE PAVEMENT AREA AFTER EXCAVATION HAS BEGUN.
 - OPERATE EXCAVATION EQUIPMENT FROM OUTSIDE THE EXCAVATION AREA OR FROM UNEXCAVATED PORTIONS OF THE AREA USING AN EXCAVATION STAGING PLAN.
 - USE EQUIPMENT WITH TRACKS RATHER THAN TIRES TO MINIMIZE SOIL COMPACTION WHEN EQUIPMENT ON THE SUBGRADE SURFACE IS UNAVOIDABLE.
 - DIG THE FINAL 9 TO 12 INCHES BY USING THE TEETH OF THE EXCAVATOR BUCKET TO LOOSEN SOIL & DO NOT SMEAR THE SUBGRADE SOIL SURFACE. FINAL GRADING OR SMOOTHING OF THE SUBGRADE SHOULD BE DONE BY HAND IF POSSIBLE.
 - THE FINAL SUBGRADE SLOPE SHALL NOT EXCEED 2:01. THE FINAL SUBGRADE SHOULD BE SURVEYED BEFORE PROCEEDING WITH INSTALLATION.
 - MINIMIZE THE TIME BETWEEN EXCAVATION AND PLACEMENT OF THE AGGREGATE.
 - AFTER THE SUBGRADE SLOPE IS VERIFIED, SCARIFY THE SOIL SUBGRADE SURFACE TO MAINTAIN THE SOILS PRE-DISTURBANCE INFILTRATION RATE.
 - TO SCARIFY THE PAVEMENT, USE THE EXCAVATOR BUCKET'S TEETH TO RAKE THE SURFACE OF THE SUBGRADE.
- TEST THE SUBGRADE SOIL INFILTRATION RATE (INFILTRATION SYSTEMS ONLY)
 - IMMEDIATELY AFTER EXCAVATION IS COMPLETED, CONDUCT A DIRECT MEASUREMENT OF THE SOIL'S INFILTRATION RATE. INFILTRATION TESTING SHALL BE PERFORMED BY AN APPROPRIATELY-QUALIFIED PROFESSIONAL.
 - RESULTS OF THE INFILTRATION TESTING SHALL BE PROVIDED TO THE ENGINEER.
 - IF THE SOIL TEST SHOWS INFILTRATION RATES THAT ARE LOWER THAN THE RATES(S) USED IN THE DESIGN, THEN ADDITIONAL SCARIFICATION, RIPPING, OR TRENCHING OF THE SOIL WILL BE NEEDED.
 - CONTRACTOR SHALL CONTACT & RECEIVE APPROVAL FROM ENGINEER OF RECORD TO CONTINUE INSTALLATION OF PERMEABLE PAVEMENT SYSTEM.
- PLACE GEOTEXTILES AND GEDMEMBRANE (IF APPLICABLE)
 - FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR THE APPROPRIATE OVERLAP BETWEEN ROLLS OF MATERIAL. SECURE THE MATERIAL TO ENSURE IT DOES NOT MOVE OR WRINKLE WHEN PLACING AGGREGATE.
- PLACE OBSERVATION WELLS(S) ACCORDING TO THE PLAN AND VERIFY THAT THE ELEVATIONS ARE CORRECT.
- PLACE & COMPACT AGGREGATE BASE
 - INSPECT ALL AGGREGATES TO ENSURE THEY ARE CLEAN, FREE OF FINES, AND CONFORM TO THE PLANS.
 - IF AGGREGATE DELIVERED TO THE SITE CANNOT BE IMMEDIATELY PLACED INTO THE EXCAVATION, THEY SHOULD BE STOCKPILED ON AN IMPERVIOUS SURFACE OR GEOTEXTILE TO KEEP THE AGGREGATE FREE OF SEDIMENT.
 - IF AGGREGATE BECOMES CONTAMINATED WITH SEDIMENT, THEN IT SHALL BE REPLACED WITH CLEAN AGGREGATE.
 - BEFORE PLACING THE AGGREGATE BASE, REMOVE ANY ACCUMULATION OF SEDIMENTS ON THE FINISHED SOIL SUBGRADE USING LIGHT, TRACKED EQUIPMENT.
 - IF THE EXCAVATED SUBGRADE SURFACE HAS BEEN SUBJECTED TO RAINFALL BEFORE PLACEMENT OF THE AGGREGATE, THEN THE RESULTING SURFACE CRUST MUST BE EXCAVATED TO AT LEAST AN ADDITIONAL 2-INCH DEPTH, RAKED OR SCARIFIED TO BREAK UP THE CRUST.
 - REMOVE ANY ACCUMULATED SEDIMENTS FROM, AND CHECK PLACEMENT OF, ANY IMPERMEABLE LINERS OR GEOTEXTILES.
 - SLOPES & ELEVATIONS SHALL BE CHECKED ON THE SOIL SUBGRADE AND THE FINISHED ELEVATION OF BASE (AFTER COMPACTING) SHALL BE VERIFIED AND THEY SHALL CONFORM TO THE PLANS AND SPECIFICATIONS.
 - ALL AGGREGATE SHALL BE SPREAD (NOT DUMPED) BY A FRONT-END LOADER OR FROM DUMP TRUCKS DEPOSITING FROM NEAR THE EDGE OF THE EXCAVATED AREA OR RESTING DIRECTLY ON DEPOSITED AGGREGATE PILES. MOISTEN AND SPREAD THE WASHED STONE WITHOUT DRIVING ON THE SOIL SUBGRADE. BE CAREFUL NOT TO DAMAGE THE OBSERVATION WELLS DURING COMPACTION.
 - FOLLOW COMPACTION RECOMMENDATIONS BY THE PERMEABLE PAVEMENT MANUFACTURER OR THAT FROM INDUSTRY GUIDELINES.
 - BE SURE THAT CORNERS, AREAS AROUND UTILITY STRUCTURES AND OBSERVATION WELLS, & TRANSITION AREAS TO OTHER PAVEMENT TYPES ARE ADEQUATELY COMPACTED.
 - DO NOT CRUSH AGGREGATES DURING COMPACTION.
- INSTALL CURB RESTRAINTS AND PAVEMENT BARRIERS
 - EDGE RESTRAINTS AND BARRIERS BETWEEN PERMEABLE AND IMPERVIOUS PAVEMENT SHALL BE INSTALLED PER THE PLAN.
 - BEFORE MOVING ON TO CONSTRUCTION STEP 8, BE CERTAIN THE DESIGN AND INSTALLATION ARE CONSISTENT.
- INSTALL PAVEMENT COURSE
 - PERVIOUS CONCRETE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST VERSION OF ACI 522.1 SPECIFICATION FOR PERVIOUS CONCRETE.
 - INSTALLATION OF THE PERVIOUS CONCRETE MAY BE ACCOMPLISHED USING EITHER THE ONE-STEP OR THE TWO-STEP METHOD.
- PROTECT THE PAVEMENT THROUGH PROJECT COMPLETION
 - IF IT IS NOT POSSIBLE TO INSTALL THE PERVIOUS PAVEMENT AT THE END OF THE SITE CONSTRUCTION TIMELINE, THEN PROTECT THE PAVEMENT UNTIL PROJECT COMPLETION. THIS SHALL BE DONE BY:
 - ROUTING CONSTRUCTION ACCESS THROUGH OTHER PORTIONS OF THE SITE, SO THAT NO CONSTRUCTION TRAFFIC PASSES THROUGH THE PERVIOUS PAVEMENT SITE. (INSTALL BARRIERS/FENCES AS NEEDED)
 - IF THIS IS NOT POSSIBLE, PROTECT THE PAVEMENT PER THE CONSTRUCTION DOCUMENTS. PROTECTION TECHNIQUES THAT MAY BE USED INCLUDE MATS, PLASTIC SHEETING, BARRIERS TO LIMIT ACCESS, OR MOVING THE STABILIZED PAVEMENT.
 - SCHEDULE STREET SWEEPING DURING AND AFTER CONSTRUCTION TO PREVENT SEDIMENT FROM ACCUMULATING ON THE PAVEMENT.

MAINTENANCE PLAN

- ALL EROSION CONTROL MEASURES WILL BE CHECKED EVERY 7 DAYS OR AFTER EACH RAIN PRODUCING 1/2 INCHES OR MORE WHICH EVER COMES FIRST.
- SEDIMENT WILL BE REMOVED FROM BEHIND SILT FENCES WHERE SEDIMENT IS 0.5 FEET DEEP AND REPAIR FABRIC IF TORN, LEAKING OR FALLING.
- 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. THE PERMEABLE PAVEMENT SHALL BE MAINTAINED IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE SITE. IMMEDIATELY REMOVE OBJECTIONABLE MATERIAL SPILLED, WASHED, OR TRACKED ONTO THE CONSTRUCTION ENTRANCE OR ROADWAYS.
- 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 BASIN AND POOL AREA. GRAVEL WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS PROPERLY OR IF THE ROCK IS DISLOADED.
- 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 DESIGNED DISPOSAL AREA AND REPLACE THE CONTAMINATED PART OF THE GRAVEL FACINGS. 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 FOLLOW UP ANY SETTLEMENT OF THE EMBANKMENT TO SLIGHTLY ABOVE GRADE. ANY RIPRAP DISPLACED FROM THE SPILLWAY MUST BE REPLACED IMMEDIATELY. AFTER EACH SIGNIFICANT RAINFALL, AREAS HAVE BEEN PERMANENTLY STABILIZED, REMOVE THE STRUCTURE AND ALL UNSTABLE SEDIMENT. SMOOTH THE AREA TO BLEND WITH THE ADJOINING AREAS.
- 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 DISLOADED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.
- RIP RAP SHOULD BE INSPECTED PERIODICALLY FOR SCOUR OR DISLOADED STONES. CONTROL OF WEED AND BRUSH GROWTH MAY BE NEEDED IN SOME LOCATIONS.
- ROCK DAM: 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 RAINFALL AND REPAIR IMMEDIATELY.
- INSPECT ALL MULCHES PERIODICALLY AND AFTER RAINFALLS TO CHECK FOR RILL EROSION, DISLOCATION, OR FAILURE. WHERE EROSION IS OBSERVED, IMMEDIATELY REPLACE WASHED MULCH. IF WASHOUT OCCURS, REPAIR THE SLOPE, RESEED, AND REINSTALL MULCH. CONTINUE INSPECTIONS UNTIL VEGETATION IS FULLY ESTABLISHED.
- INSPECT TRAPS AND CHANNELS FOR DAMAGE AFTER EACH RAINFALL 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 LINER 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.
- INSPECT BARRIERS AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY. BE SURE TO MAINTAIN ACCESS TO THE CHANNEL VEGETATION. REMOVE WASHED MULCH FROM THE BARRIERS. TAKE CARE TO AVOID DAMAGING THE BARRIERS DURING CLEANOUT. SEDIMENT DEPTH SHOULD NEVER EXCEED HALF THE DESIGNED STORAGE DEPTH. AFTER THE CONTRIBUTING DAMAGE AREA HAS BEEN STABILIZED, REMOVE ALL BARRIERS, MULCH, AND UNSTABLE SEDIMENT DEPOSITS, BRING THE AREA TO GRADE, AND STABILIZE IT.
- INSPECT INLETS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT. SEDIMENT WILL BE REMOVED FROM HARDWARE, CLOTH AND GRAVEL INLET PROTECTION, BLOCK AND GRAVEL INLET PROTECTION, ROCK DOUGHNUT INLET PROTECTION AND ROCK PIPE INLET PROTECTION WHEN THE DESIGNED STORAGE CAPACITY HAS BEEN HALF FILLED WITH SEDIMENT. ROCK WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS AS DESIGNED. DEBRIS WILL BE REMOVED FROM THE ROCK AND HARDWARE CLOTH TO ALLOW PROPER DRAINAGE. TAKE CARE NOT TO DAMAGE OR UNDERCUT THE WIRE MESH DURING SEDIMENT REMOVAL. SILT SACKS WILL BE EMPLOYED ONCE A WEEK AND AFTER EVERY RAIN EVENT. SEDIMENT WILL BE REMOVED FROM AROUND BEAVER DAMS, DAM SACKS AND SOCKS ONCE A WEEK AND AFTER EVERY RAIN EVENT.
- 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 TYPICAL 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.
- INSPECT SKIMMER SEDIMENT BASINS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (ONE-HALF INCH OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY. REMOVE SEDIMENT AND RESTORE THE BASIN TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT ACCUMULATES TO ONE-HALF THE HEIGHT OF THE FIRST BAFFLE. REMOVE SEDIMENT FROM THE BOTTOM OF THE BASIN. DO NOT UNDERNEATH IT CAN BE EXCAVATED. EXCAVATE THE SEDIMENT FROM THE ENTIRE BASIN, NOT JUST AROUND THE SKIMMER OR THE FIRST CELL. MAKE SURE VEGETATION GROWING IN THE BOTTOM OF THE BASIN DOES NOT HOLD DOWN THE SKIMMER. REPAIR THE BARRIERS IF THEY ARE DAMAGED. RE-ANCHOR THE BARRIERS IF WATER IS FLOWING UNDERNEATH OR AROUND THEM. IF THE SKIMMER IS CLOGGED WITH TRASH AND THERE IS WATER IN THE BASIN, USUALLY JERKING ON THE ROPE WILL MAKE THE SKIMMER BOB UP AND DOWN AND DISLODGE THE DEBRIS AND RESTORE FLOW. IF THIS DOES NOT WORK, PULL THE SKIMMER OVER TO ONE SIDE OF THE BASIN AND REMOVE THE DEBRIS. ALSO CHECK THE ORIFICE INSIDE THE SKIMMER TO SEE IF IT IS CLOGGED; IF SO REMOVE THE DEBRIS. IF THE SKIMMER ARM OR BARREL PIPE IS CLOGGED, THE ORIFICE CAN BE REMOVED AND THE OBSTRUCTION CLEARED WITH A PLUMBER'S SNAKE OR BY FLUSHING WITH WATER. BE SURE AND REPLACE THE ORIFICE BEFORE REPOSITIONING THE SKIMMER. CHECK THE FABRIC LINED SPILLWAY FOR DAMAGE AND MAKE ANY REQUIRED REPAIRS WITH FABRIC THAT SPANS THE FULL WIDTH OF THE SPILLWAY. 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 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.
- ALL SEEDED AREAS WILL BE FERTILIZED, RESEED AS NECESSARY, AND MULCHED ACCORDING TO SPECIFICATIONS IN THE VEGETATIVE PLAN TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER. SEE GROUND STABILIZATION CHART FOR STABILIZATION TIME FRAME.



SOIL TEST RESULTS PER APPLIED RESOURCE MANAGEMENT, PC

TEST LOCATION	EXISTING GROUND (FILL SURFACE) ELEVATION (FEET)**	SHWT (INCHES BELOW NATURAL SURFACE / INCHES BELOW EXISTING FILL SURFACE)**	SHWT ELEVATION (FEET)**	HYDRAULIC CONDUCTIVITY RATE (INCHES PER HOUR)**
TEST LOCATION 1	5.94	<12\"/>		
TEST LOCATION 2	5.94	<12\"/>		
TEST LOCATION 3	4.58	<12\"/>		

* INFORMATION PROVIDED BY BATEMAN CIVIL SURVEY COMPANY, PC.
 ** INFORMATION PROVIDED BY APPLIED RESOURCE MANAGEMENT, PC.
 *** CALCULATED BASED ON INFORMATION PROVIDED BY OTHERS.

Approved Construction Plan

Name: _____ Date: _____

City of WILMINGTON, NORTH CAROLINA
 Public Services Engineering Division
 APPROVED STORMWATER MANAGEMENT PLAN

Planning: _____
 Traffic: _____
 Fire: _____

Date: _____ Permit #: _____
 Signed: _____

DETAIL SHEET
SOUTH FRONT APARTMENTS
 WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

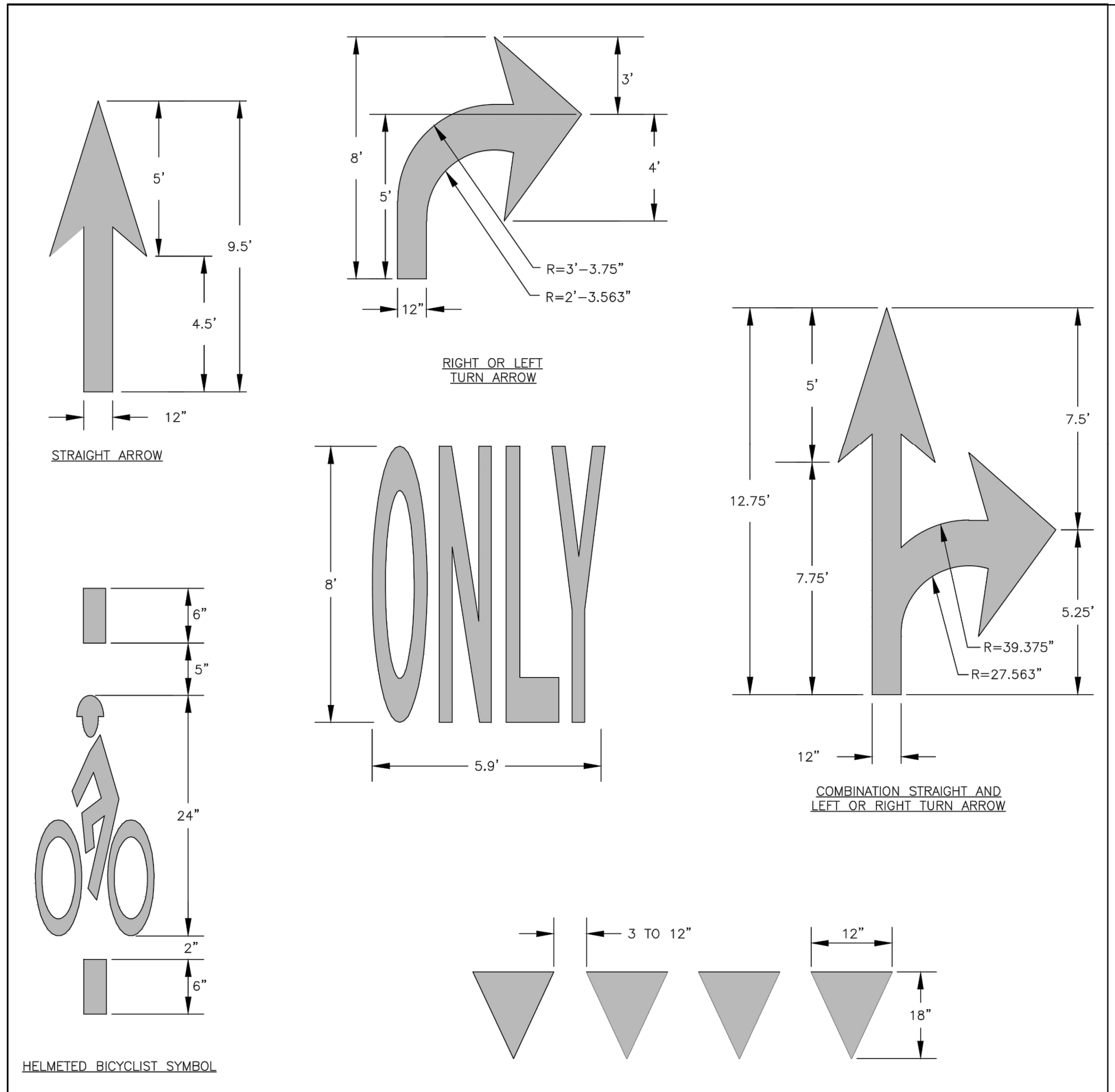
FINAL DRAWING FOR REVIEW PURPOSES ONLY

DATE: 3-4-11
 SCALE: N.T.S.
 DRAWN: JCB
 CHECKED: JEM
 PROJECT NO: 19B
 SHEET NO: 2H
 OF: 5

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

Owner: SOUTH FRONT LLC
 1510-A SOUTH THIRD STREET
 WILMINGTON, NC 28401
 PHONE: 910-251-5030

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GENERAL NOTES

1-PAVEMENT MARKINGS, SYMBOLS AND DIMENSIONS SHALL BE DESIGNED PER MUTCD WITH APPROVAL FROM CITY TRAFFIC ENGINEERING, AND INSTALLED IN ACCORDANCE WITH NCDOT DIVISION 12 SPECIFICATIONS. SEE SD 11-01.

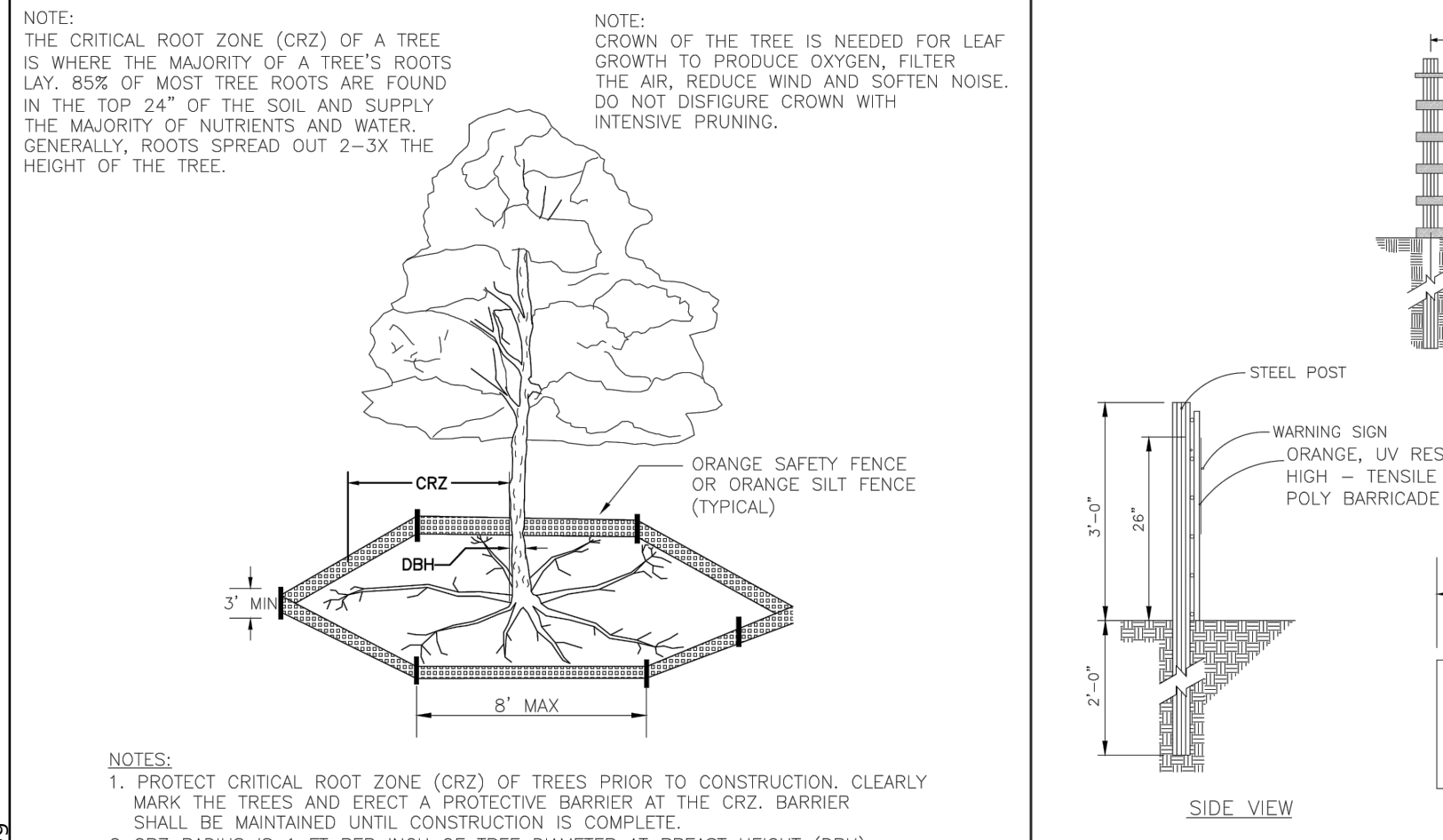
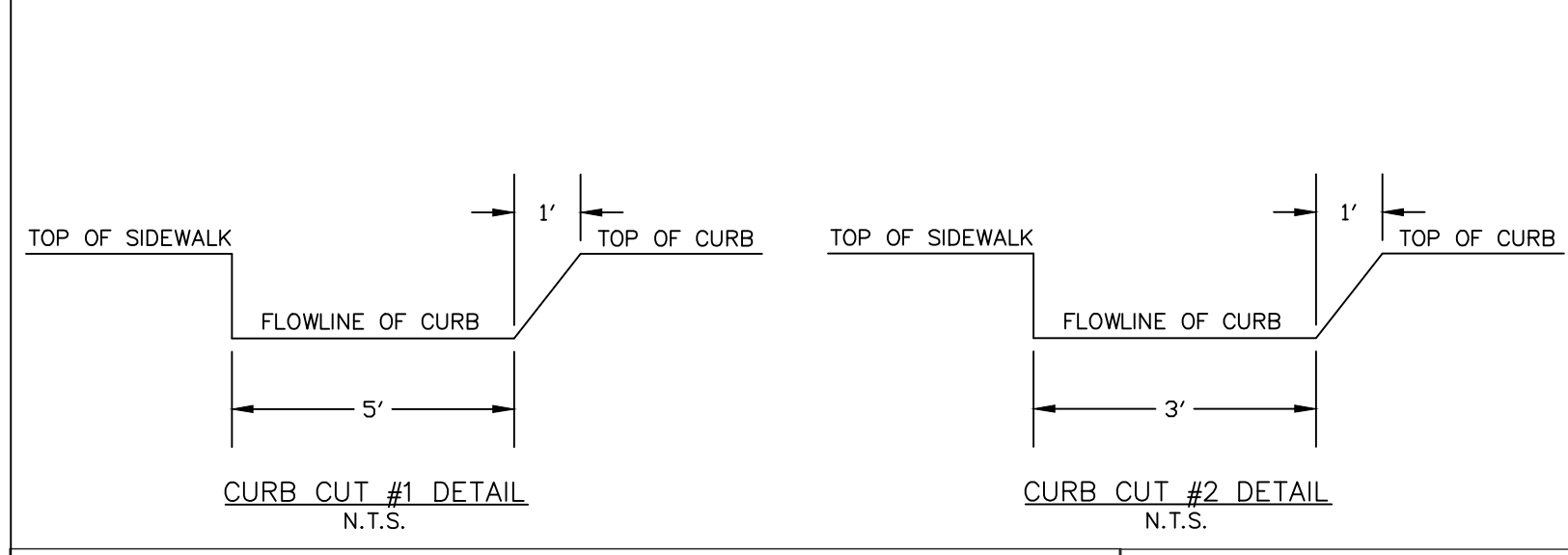
STANDARD DETAIL

GUIDELINES FOR PAVEMENT MARKINGS AND SYMBOLS

DATE: OCTOBER, 2012
 DRAWN BY: JSR
 CHECKED BY: BDR, P.E.
 SCALE: NOT TO SCALE

CITY OF WILMINGTON
 NORTH CAROLINA
 CITY OF WILMINGTON ENGINEERING
 PO BOX 1510
 WILMINGTON, NC 28402
 (910) 341-7807

SD 11-03



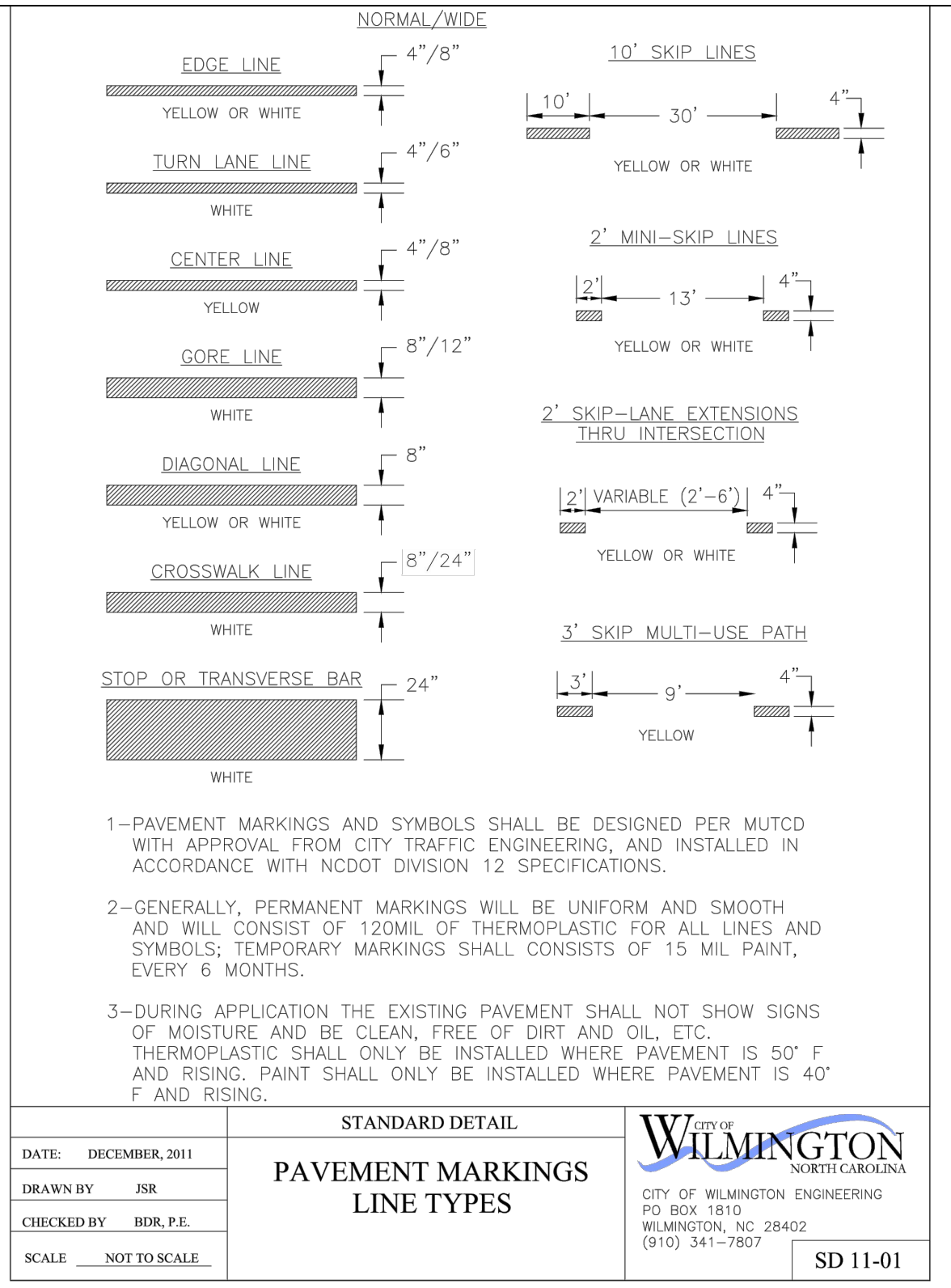
STANDARD DETAIL

TREE PROTECTION DURING CONSTRUCTION

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

CITY OF WILMINGTON
 NORTH CAROLINA
 CITY OF WILMINGTON ENGINEERING
 PO BOX 1510
 WILMINGTON, NC 28402
 (910) 341-7807

SD 15-09



1-PAVEMENT MARKINGS AND SYMBOLS SHALL BE DESIGNED PER MUTCD WITH APPROVAL FROM CITY TRAFFIC ENGINEERING, AND INSTALLED IN ACCORDANCE WITH NCDOT DIVISION 12 SPECIFICATIONS.

2-GENERALLY, PERMANENT MARKINGS WILL BE UNIFORM AND SMOOTH AND WILL CONSIST OF 120MIL OF THERMOPLASTIC FOR ALL LINES AND SYMBOLS; TEMPORARY MARKINGS SHALL CONSIST OF 15 MIL PAINT, EVERY 6 MONTHS.

3-DURING APPLICATION THE EXISTING PAVEMENT SHALL NOT SHOW SIGNS OF MOISTURE AND BE CLEAN, FREE OF DIRT AND OIL, ETC. THERMOPLASTIC SHALL ONLY BE INSTALLED WHERE PAVEMENT IS 50° F AND RISING. PAINT SHALL ONLY BE INSTALLED WHERE PAVEMENT IS 40° F AND RISING.

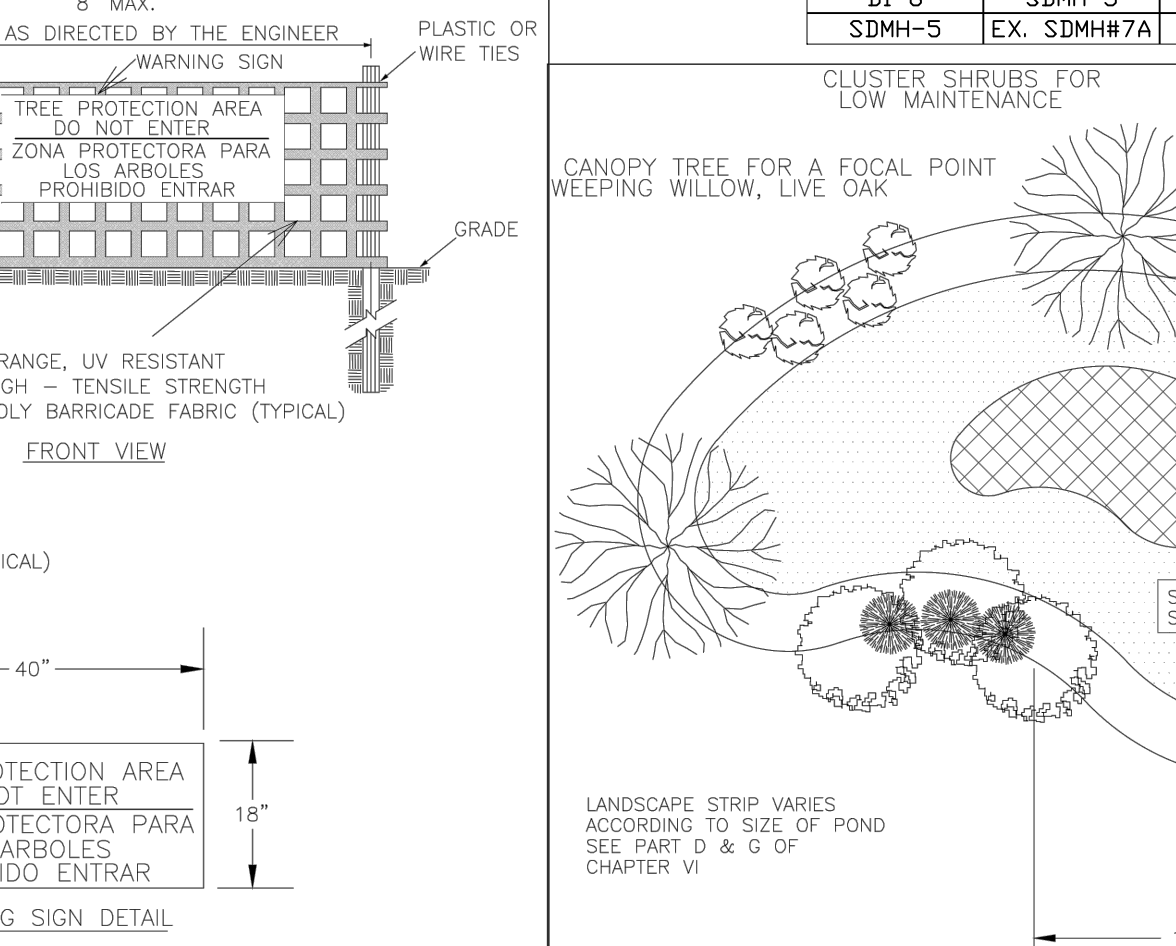
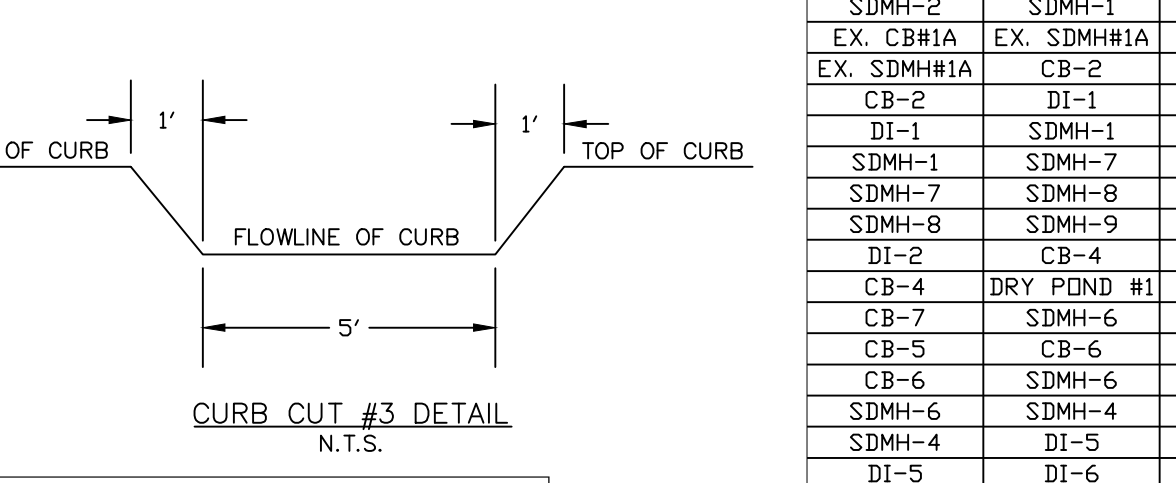
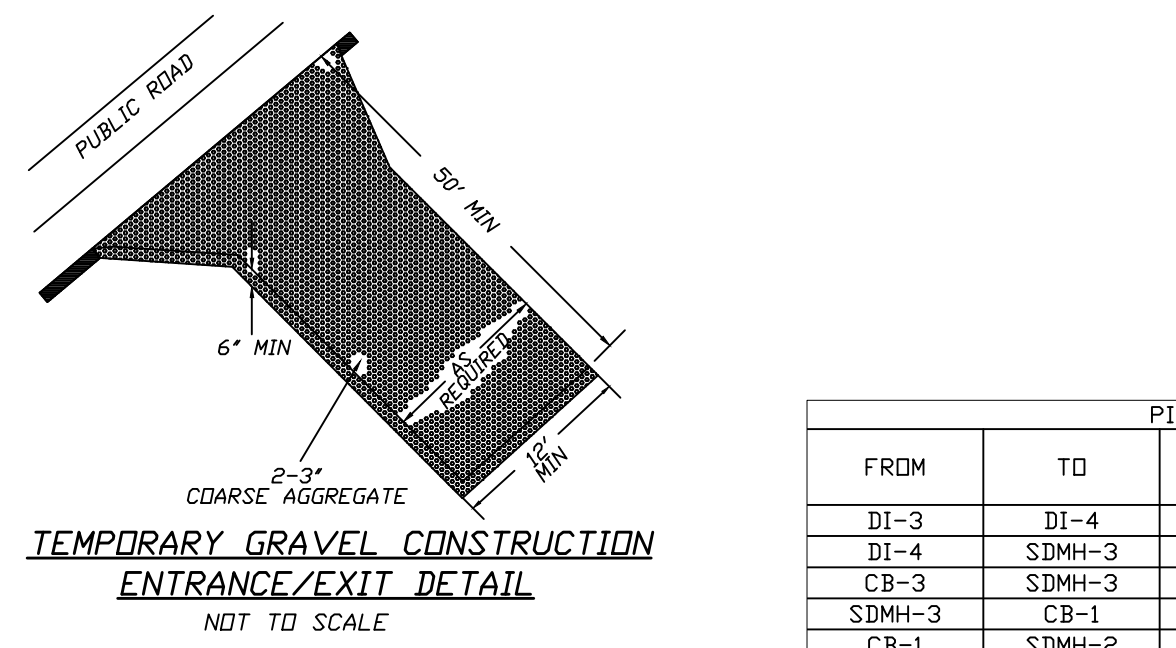
STANDARD DETAIL

PAVEMENT MARKINGS LINE TYPES

DATE: DECEMBER, 2011
 DRAWN BY: JSR
 CHECKED BY: BDR, P.E.
 SCALE: NOT TO SCALE

CITY OF WILMINGTON
 NORTH CAROLINA
 CITY OF WILMINGTON ENGINEERING
 PO BOX 1510
 WILMINGTON, NC 28402
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SD 11-01



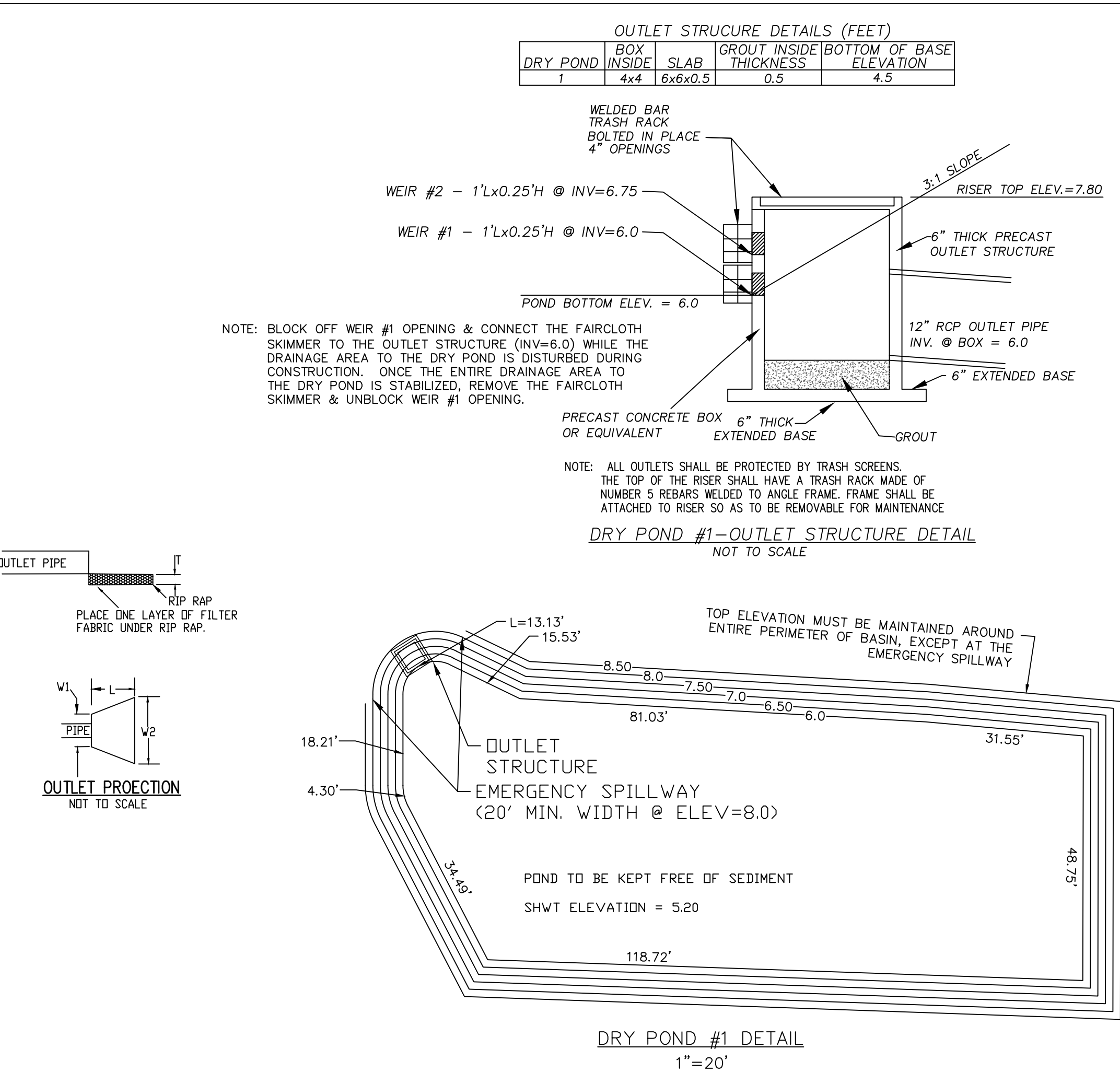
STANDARD DETAIL

TYPICAL STORM WATER FACILITY LANDSCAPING PLAN

DATE: JULY 2003
 DRAWN BY: JSR
 CHECKED BY: RDG, P.E.
 SCALE: NOT TO SCALE

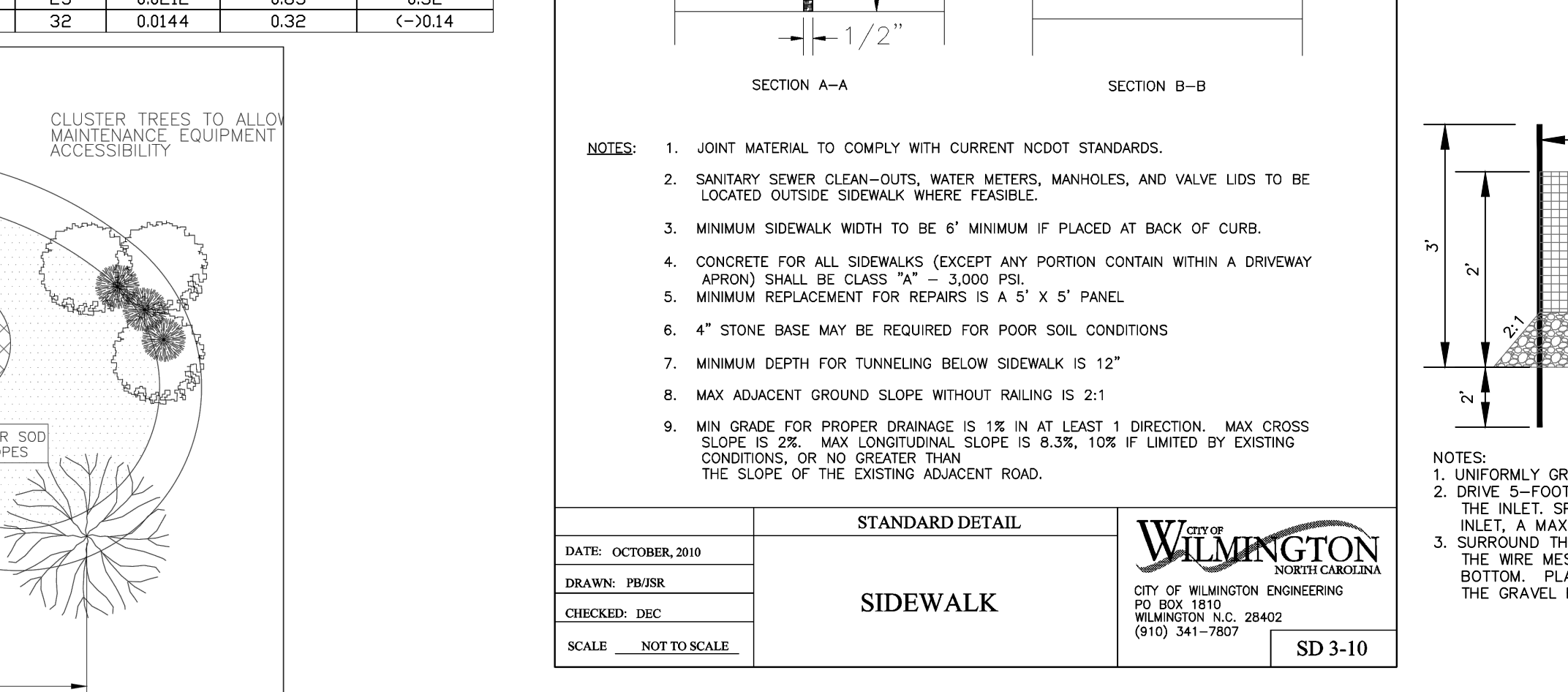
CITY OF WILMINGTON
 NORTH CAROLINA
 CITY OF WILMINGTON ENGINEERING
 PO BOX 1510
 WILMINGTON, NC 28402
 (910) 341-7807

SD 15-16



PIPE SYSTEM - PROPOSED PIPES

FROM	TO	SIZE (IN)	LENGTH (FT)	SLOPE (FT/FT)	U.S. INVERT (EL)	D.S. INVERT (EL)
DI-3	DI-4	12	17	0.06882	11.25	10.08
DI-4	SDMH-3	12	57	0.0111	9.98	9.35
CB-3	SDMH-3	15	59	.01017	9.95	9.35
SDMH-3	CB-1	18	112	0.00304	9.35	9.01
CB-1	SDMH-2	18	51	0.00314	9.01	8.85
SDMH-2	SDMH-1	18	11	0.0573	8.85	8.22
EX. CB#1A	EX. SDMH#1A	12	22	0.0427	23.71	22.77
EX. SDMH#1A	CB-2	12	371	0.0275	20.65	10.44
CB-2	DI-1	15	37	0.0243	9.20	8.30
DI-1	SDMH-1	15	8	0.01	8.30	8.22
SDMH-1	SDMH-7	18	253	0.0158	8.22	4.22
SDMH-7	SDMH-8	18	60	0.0158	4.22	3.27
SDMH-8	SDMH-9	18	27	0.0363	3.27	2.29
DI-2	CB-4	15	80	0.0024	6.47	6.28
CB-4	DRY POND #1	15	86	0.0023	6.28	6.08
CB-7	SDMH-6	15	86	0.0152	7.34	6.03
CB-5	CB-6	15	21	0.0148	6.86	6.55
CB-6	SDMH-6	15	42	0.0124	6.55	6.03
SDMH-6	SDMH-4	15	119	0.0150	6.03	4.25
SDMH-4	DI-5	18	24	0.0204	4.25	3.76
DI-5	DI-6	18	138	0.0211	3.76	0.32
DI-6	SDMH-5	18	25	0.0212	0.85	0.32
SDMH-5	EX. SDMH#7A	18	32	0.0144	0.32	<-0.14



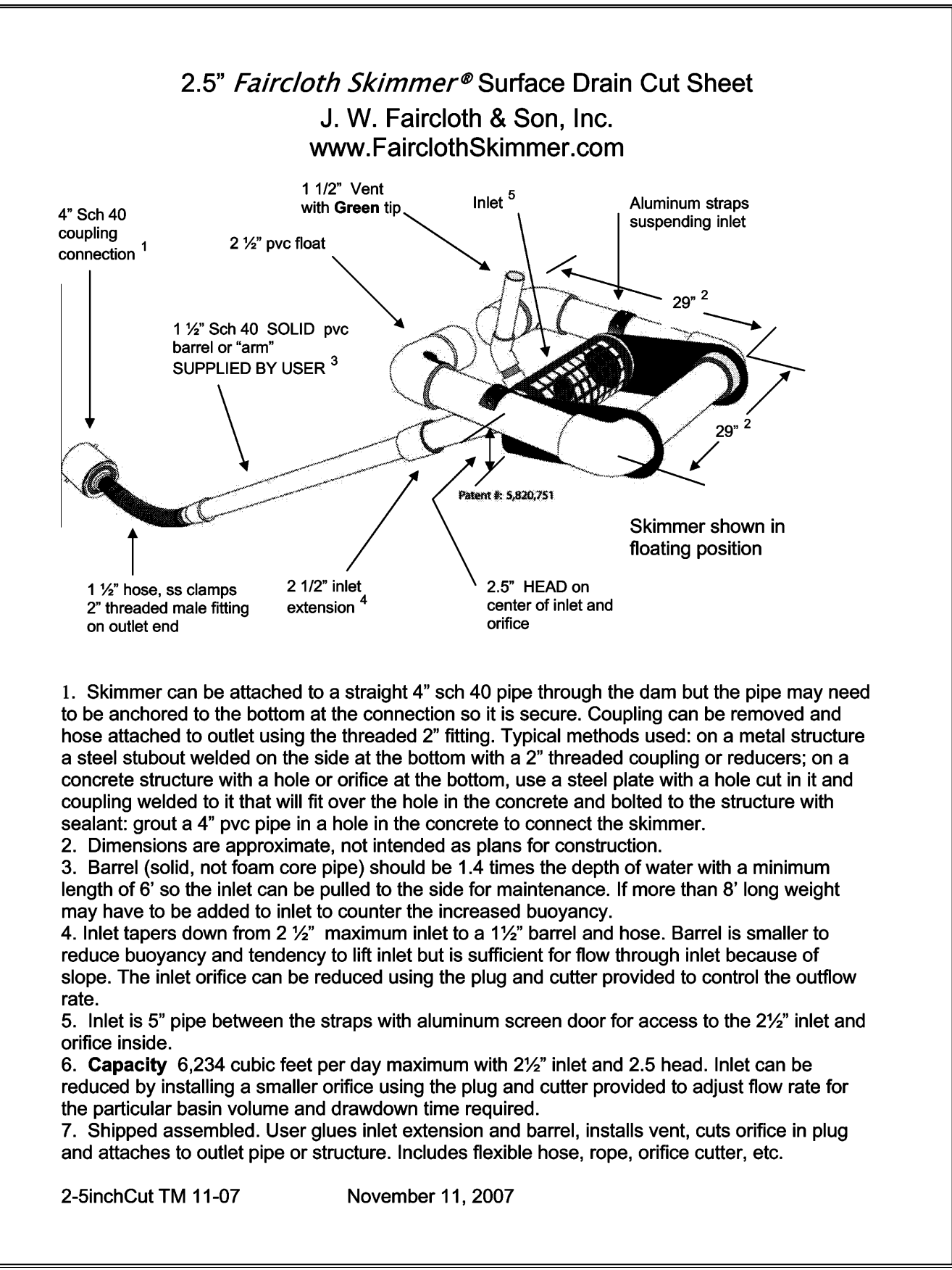
STANDARD DETAIL

SIDEWALK

DATE: OCTOBER, 2010
 DRAWN: PRB/SR
 CHECKED: DEC
 SCALE: NOT TO SCALE

CITY OF WILMINGTON
 NORTH CAROLINA
 CITY OF WILMINGTON ENGINEERING
 PO BOX 1510
 WILMINGTON, NC 28402
 (910) 341-7807

SD 3-10



1. Skimmer can be attached to a straight 4" sch 40 pipe through the dam but the pipe may need to be anchored to the bottom at the connection so it is secure. Coupling can be removed and hose attached to outlet using the threaded 2" fitting. Typical methods used: on a metal structure a steel stubout welded on the side at the bottom with a 2" threaded coupling or reducers; on a concrete structure with a hole or orifice at the bottom, use a steel plate with a hole cut in it and coupling welded to it that will fit over the hole in the concrete and bolted to the structure with sealant; grout a 4" pvc pipe in a hole in the concrete to connect the skimmer.

2. Dimensions are approximate, not intended as plans for construction.

3. Barrel (solid, not foam core pipe) should be 1.4 times the depth of water with a minimum length of 6' so the inlet can be pulled to the side for maintenance. If more than 8' long weight may have to be added to inlet to counter the increased buoyancy.

4. Inlet tapers down from 2 1/2" maximum inlet to a 1 1/2" barrel and hose. Barrel is smaller to reduce buoyancy and tendency to lift inlet but is sufficient for flow through inlet because of slope. The inlet orifice can be reduced using the plug and cutter provided to control the outflow rate.

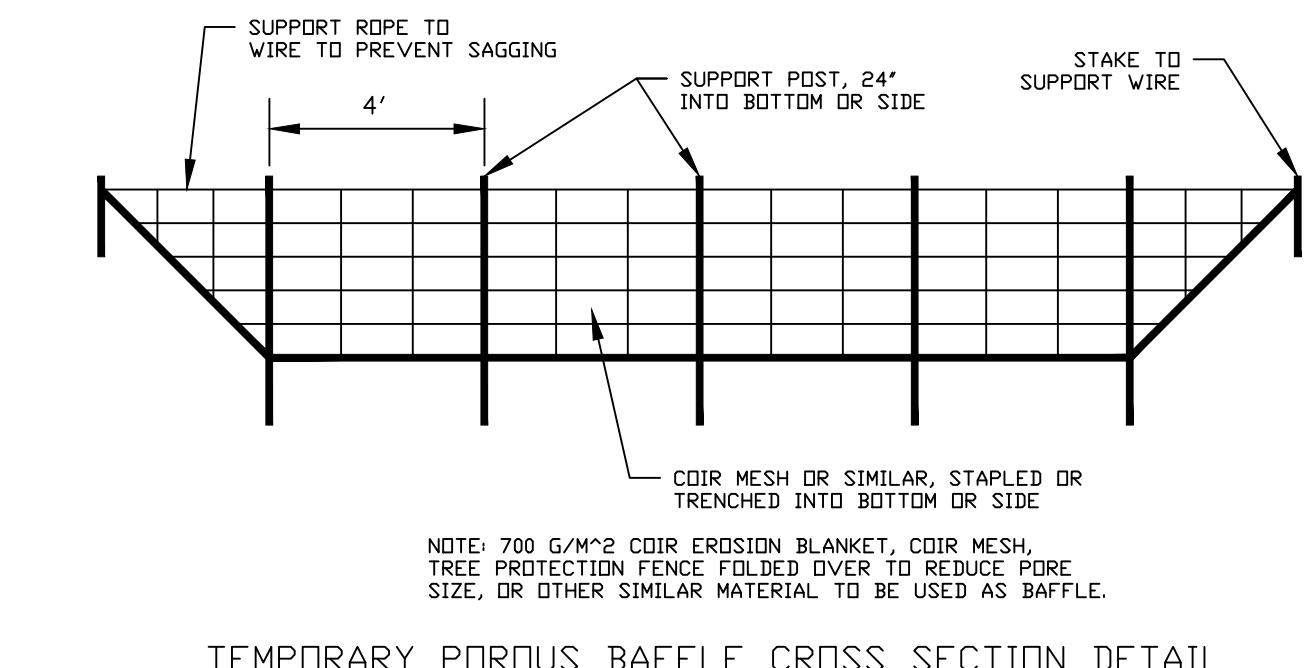
5. Inlet is 5" pipe between the straps with aluminum screen door for access to the 2 1/2" inlet and orifice inside.

6. Capacity 6,234 cubic feet per day maximum with 2 1/2" inlet and 2.5 head. Inlet can be reduced by installing a smaller orifice using the plug and cutter provided to adjust flow rate for the particular basin volume and drawdown time required.

7. Shipped assembled. User glues inlet extension and barrel, installs vent, cuts orifice in plug and attaches to outlet pipe or structure. Includes flexible hose, rope, orifice cutter, etc.

NOTE: SEE DRY POND #1-OUTLET STRUCTURE DETAIL FOR SKIMMER DRIFICE INVERT AND TIMELINE FOR INSTALLATION OF SKIMMER.

DRY POND	SKIMMER (IN.)	DRIFICE DIAMETER (IN.)
1	2.5	0.90



TEMPORARY POROUS BAFFLE CROSS SECTION DETAIL

NOTE: 700 G/M² COIR EROSION BLANKET, COIR MESH, TREE PROTECTION FENCE FOLDED OVER TO REDUCE PORE SIZE, OR OTHER SIMILAR MATERIAL TO BE USED AS BAFFLE.

Approved Construction Plan

Name: _____ Date: _____

Planning: _____
 Traffic: _____
 Fire: _____

CITY OF WILMINGTON
 NORTH CAROLINA
 Public Services • Engineering Division
 APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit # _____

Signed: _____

DETAIL SHEET

SOUTH FRONT APARTMENTS

WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

FINAL DRAWING FOR REVIEW PURPOSES ONLY

DATE: 3-10-11
 SCALE: N.T.S.
 DRAWN: JCB
 CHECKED: JEM
 PROJECT NO: 19B
 SHEET NO: 21
 OF: 5

MALPASS ENGINEERING, P.C.
 1134 SHIPYARD BOULEVARD
 WILMINGTON, NORTH CAROLINA 28412
 Phone 910-392-6843
 Fax 910-392-5203 License No. C-2320

Owner: SOUTH FRONT LLC
 1510-A SOUTH THIRD STREET
 WILMINGTON, NC 28401
 PHONE: 910-251-5030

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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR CONCRETE CATCH BASIN 12" THRU 54" PIPE

GENERAL NOTES:
 USE CLASS "B" CONCRETE THROUGHOUT.
 PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
 OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
 USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
 IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
 USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
 FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.
 CONSTRUCT WITH PIPE CHAINS MATCHING.
 CHAMFER ALL EXPOSED CORNERS 1".
 DRAWINGS NOT TO SCALE.

SECTION X-X
 SECTION Y-Y
 SECTION J-J
 SECTION M-M
 DETAIL SHOWING METHOD OF RISER CONSTRUCTION

ENGLISH STANDARD DRAWING FOR CONCRETE CATCH BASIN 12" THRU 54" PIPE

SHEET 1 OF 2
840.02

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR FRAME, GRATES, AND HOOD FOR USE ON STANDARD CATCH BASIN

DETAIL SHOWING TYPES OF GRATES USE ACCORDING TO WATER FLOW.

SECTION A-A
 SECTION B-B
 SECTION A-A
 SECTION A-A

ENGLISH STANDARD DRAWING FOR FRAME, GRATES, AND HOOD FOR USE ON STANDARD CATCH BASIN

SHEET 2 OF 2
840.03

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR CONCRETE CATCH BASIN 12" THRU 54" PIPE

PLAN OF TOP SLAB
 SECTION S-S
 SECTION R-R
 DOWEL
 ELEVATION

EXPANSION JOINTS
 STD. 840.03 FRAME, GRATE & HOOD
 CURB AND GUTTER WITH CATCH BASIN ON STEEP GRADES
 USE ON FLAT GRADES 2% AND UNDER
 EXPANSION JOINT
 DEPRESSIONED GUTTER LINE
 ELEVATION
 NORMAL CURB AND GUTTER ON LIGHT GRADES
 EXPANSION JOINT
 NORMAL GUTTER LINE
 USE ON GRADES OVER 2%
 DEPRESSIONED GUTTER LINE
 ELEVATION
 NORMAL CURB AND GUTTER ON STEEP GRADES

DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN (BASED ON MIN. HEIGHT, H, WITH NO RISER)																			
PIPE	DIMENSIONS OF BOX AND PIPE			COVER			CONC. IN BOX			DEDUCTIONS FOR ONE PIPE									
	D	A	B	C	G	E	F	NO.	LENGTH		NO.	LENGTH	NO.	LENGTH	TOTAL	TOP SLAB	BOTTOM SLAB	ONE PIPE	C.M.
12"	3'-0"	2'-2"	2'-2"	2'-0"	2'-0"	2'-0"	2'-0"	2	2'-0"	2	2'-0"	2	2'-0"	0.225	0.222	0.222	0.015	0.028	0.036
15"	3'-0"	2'-2"	2'-2"	2'-0"	2'-0"	2'-0"	2'-0"	2	2'-0"	2	2'-0"	2	2'-0"	0.235	0.222	0.222	0.023	0.036	0.049
18"	3'-0"	2'-2"	2'-2"	2'-0"	2'-0"	2'-0"	2'-0"	2	2'-0"	2	2'-0"	2	2'-0"	0.235	0.222	0.222	0.033	0.049	0.068
24"	3'-0"	2'-2"	2'-2"	2'-0"	2'-0"	2'-0"	2'-0"	2	2'-0"	2	2'-0"	2	2'-0"	0.235	0.222	0.222	0.039	0.068	0.095
30"	3'-0"	2'-2"	2'-2"	2'-0"	2'-0"	2'-0"	2'-0"	2	2'-0"	2	2'-0"	2	2'-0"	0.235	0.222	0.222	0.049	0.095	0.127
36"	3'-0"	2'-2"	2'-2"	2'-0"	2'-0"	2'-0"	2'-0"	2	2'-0"	2	2'-0"	2	2'-0"	0.235	0.222	0.222	0.061	0.127	0.178
42"	3'-0"	2'-2"	2'-2"	2'-0"	2'-0"	2'-0"	2'-0"	2	2'-0"	2	2'-0"	2	2'-0"	0.235	0.222	0.222	0.078	0.178	0.243
48"	3'-0"	2'-2"	2'-2"	2'-0"	2'-0"	2'-0"	2'-0"	2	2'-0"	2	2'-0"	2	2'-0"	0.235	0.222	0.222	0.100	0.243	0.317
54"	3'-0"	2'-2"	2'-2"	2'-0"	2'-0"	2'-0"	2'-0"	2	2'-0"	2	2'-0"	2	2'-0"	0.235	0.222	0.222	0.128	0.317	0.401

* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

ENGLISH STANDARD DRAWING FOR CONCRETE CATCH BASIN 12" THRU 54" PIPE

SHEET 2 OF 2
840.02

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR CONCRETE DROP INLET 12" THRU 30" PIPE

PLAN
 WITH GRATE & FRAME REMOVED
 SECTION X-X
 SECTION Y-Y
 DOWEL

GENERAL NOTES:
 USE CLASS "B" CONCRETE THROUGHOUT.
 PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
 OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
 USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
 IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
 CONSTRUCT WITH PIPE CHAINS MATCHING.
 SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.
 INSTALL 2" WEEP HOLES AS DIRECTED BY THE ENGINEER.
 INSTALL STONE DRAINING OF A MINIMUM OF 1 CUBIC FOOT OF NO. 75M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.
 CHAMFER ALL EXPOSED CORNERS 1".
 DRAWING NOT TO SCALE.

DIMENSIONS AND QUANTITIES FOR DROP INLET (BASED ON MIN. HEIGHT, H)																			
PIPE	DIMENSIONS OF BOX & PIPE			COVER			CONC. IN BOX			DEDUCTIONS FOR ONE PIPE									
	D	A	B	C	G	E	F	NO.	LENGTH		NO.	LENGTH	NO.	LENGTH	TOTAL	TOP SLAB	BOTTOM SLAB	ONE PIPE	C.M.
12"	3'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2	2'-0"	2	2'-0"	2	2'-0"	0.222	0.222	0.222	0.015	0.028	0.036
15"	3'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2	2'-0"	2	2'-0"	2	2'-0"	0.222	0.222	0.222	0.023	0.036	0.049
18"	3'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2	2'-0"	2	2'-0"	2	2'-0"	0.222	0.222	0.222	0.033	0.049	0.068
24"	3'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2	2'-0"	2	2'-0"	2	2'-0"	0.222	0.222	0.222	0.039	0.068	0.095
30"	3'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2	2'-0"	2	2'-0"	2	2'-0"	0.222	0.222	0.222	0.049	0.095	0.127

ENGLISH STANDARD DRAWING FOR CONCRETE DROP INLET 12" THRU 30" PIPE

SHEET 1 OF 1
840.14

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR FRAME, GRATES, AND HOOD FOR USE ON STANDARD CATCH BASIN

PLAN
 FRAME, GRATE, & HOOD ASS'Y
 SECTION AA
 SECTION BB
 SECTION LL
 SECTION MM
 SECTION NN
 SECTION PP
 SECTION HH
 SECTION JJ
 SECTION KK
 HOOD ELEVATION
 SECTION RR

NOTE: USE TYPE "E", "F" AND "G" GRATE UNLESS OTHERWISE NOTED.

ALIGN FRAME WITH INSIDE EDGE OF WALL TO ALLOW FOR VERTICAL ADJUSTMENT

ENGLISH STANDARD DRAWING FOR FRAME, GRATES, AND HOOD FOR USE ON STANDARD CATCH BASIN

SHEET 1 OF 2
840.03

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR DROP INLET FRAME AND GRATES FOR USE WITH STD. DWS. 840.14 AND 840.15

SECTION G-G
 SECTION H-H
 PLAN OF FRAME
 CAST IRON
 PLAN OF GRATING
 CAST IRON
 SECTION E-E
 SECTION F-F

ENGLISH STANDARD DRAWING FOR DROP INLET FRAME AND GRATES FOR USE WITH STD. DWS. 840.14 AND 840.15

SHEET 1 OF 1
840.16

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR CONCRETE DROP INLET 12" THRU 30" PIPE

PLAN
 WITH GRATE & FRAME REMOVED
 SECTION X-X
 SECTION Y-Y
 DOWEL

ENGLISH STANDARD DRAWING FOR CONCRETE DROP INLET 12" THRU 30" PIPE

SHEET 1 OF 1
840.14

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR DROP INLET FRAME AND GRATES FOR USE WITH STD. DWS. 840.14 AND 840.15

SECTION G-G
 SECTION H-H
 PLAN OF FRAME
 CAST IRON
 PLAN OF GRATING
 CAST IRON
 SECTION E-E
 SECTION F-F

ENGLISH STANDARD DRAWING FOR DROP INLET FRAME AND GRATES FOR USE WITH STD. DWS. 840.14 AND 840.15

SHEET 1 OF 1
840.16

Approved Construction Plan

Name _____ Date _____

Planning _____
 Traffic _____
 Fire _____

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

REV. NO.	DESCRIPTION	DATE

DETAIL SHEET
SOUTH FRONT APARTMENTS
 WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

FINAL DRAWING FOR REVIEW PURPOSES ONLY

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

Owner: SOUTH FRONT LLC
 1510-A SOUTH THIRD STREET
 WILMINGTON, NC 28401
 PHONE: 910-251-5030

SHEET NO: 2K
 OF: 5

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR ANCHORAGE FOR FRAMES BRICK/CONCRETE/PRECAST CONCRETE

NOTE: CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.

MASONRY ANCHOR 3/8" DIA. BOLT WITH PLATE

CONCRETE ANCHOR 3/8" DIA. BENT BAR

PRECAST CONCRETE ANCHOR 3/8" DIA. BENT BAR

FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

ENGLISH STANDARD DRAWING FOR ANCHORAGE FOR FRAMES BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1 840.25

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR TRAFFIC BEARING JUNCTION BOX FOR USE WITH PIPES 42" AND UNDER

GENERAL NOTES:
 USE STANDARD OR JUMBO BRICK FOR WALL CONSTRUCTION. SOLID CONCRETE BRICK OR BLOCK ARE OPTIONAL WALL CONSTRUCTION MATERIAL.
 PRECAST UNITS MADE OF CLASS "AA" CONCRETE MAY BE USED IN LIEU OF BRICK MASONRY CONSTRUCTION. SUBMIT DESIGN OF PRECAST UNITS FOR APPROVAL PRIOR TO CONSTRUCTION.
 INCLUDE ALL ADJUSTMENTS TO WALLS, SLABS OR REINFORCING MATERIAL IN THE UNIT PRICE BID FOR EACH UNIT.
 INSTALL OPTIONAL MANHOLE IN POSITION AS DIRECTED BY THE ENGINEER. CUT OR BEND ALL REBAR CROSSING THIS OPENING TO ALLOW 2" MINIMUM CONCRETE COVERAGE. ENCLOSE THE OPENING WITH 8 "A" BARS TIED TO THE REBAR MAT AND SET SO A MINIMUM OF 3" CONCRETE COVER IS ATTAINED. REFERENCE STD. NO. 840.54 FOR MANHOLE INFORMATION.
 PROVIDE JUNCTION BOXES WITH MANHOLES OVER 3'-6" IN DEPTH WITH STEPS PLACED ON 12" CENTERS. REFERENCE STD. NO. 840.66.
 SPACE DOWEL "C" BARS AT A MAXIMUM OF 12" CENTERS.
 MAXIMUM DEPTH OF THIS UNIT AS SHOWN IS 12".
 CONSTRUCT THE JUNCTION BOX IN ACCORDANCE WITH SECTIONS 830, 832, 834 AND 840 OF THE STANDARD SPECIFICATIONS.

BAR	QTY	SIZE	LENGTH	WEIGHT
A	8	#5	1'-2"	9.7
B	14	#5	6'-3"	80.3
C	26	#4	1'-6"	26.1
Y	14	#5	8'-11 1/2"	101.5
STEEL TOTAL WEIGHT				217.6
CU. YDS. CLASS "AA" CONCL.				2.6
CU. YDS. BRICK/FT. HT. (8")				0.53
CU. YDS. BRICK/FT. HT. (12")				0.84

ENGLISH STANDARD DRAWING FOR TRAFFIC BEARING JUNCTION BOX FOR USE WITH PIPES 42" AND UNDER

SHEET 2 OF 2 840.34

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR BRICK JUNCTION BOX (WITH OPTIONAL MANHOLE) 12" THRU 66" PIPE

GENERAL NOTES:
 CHAMFER ALL EXPOSED CORNERS 1".
 USE CLASS "B" CONCRETE THROUGHOUT.
 USE #4 BAR DOWELS AT 12" CENTERS.
 MORTAR JOINTS 1/2" ± 1/8" THICK.
 CONCAVE TOO ALL EXPOSED JOINTS.
 USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
 JUMBO BRICK WILL BE PERMITTED. CONCRETE BRICK OR 4" SOLID CONCRETE BLOCKS MAY BE USED IN LIEU OF CLAY BRICK.
 FOR 8'-0" IN HEIGHT OR LESS, USE 8" WALL. OVER 8'-0" IN HEIGHT, USE 12" WALL TO 6'-0" FROM TOP OF WALL, AND 8" WALL FOR THE REMAINING 6'-0". ADJUST DIMENSIONS AND QUANTITIES ACCORDINGLY.
 IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD NO. 840.00.
 PROVIDE ALL JUNCTION BOXES OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTERS IN ACCORDANCE WITH STD. NO. 840.66.
 ADJUST THE STEEL, CONCRETE AND BRICK MASONRY QUANTITIES TO INCLUDE THE ADDITION OF THE MANHOLE (I.E. DIAGONAL BARS SHORTENED AROUND OPENING IN TOP SLAB, BRICK MASONRY HEIGHT BRICK MASONRY, OPENING IN TOP SLAB.)
 MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.

DIMENSIONS OF BOX AND PIPE				REINFORCEMENT BARS		TOP SLAB DIMENSIONS		CURT YARDS		DEDUCTIONS FOR ONE PIPE CU.YDS.	
PIPE	SPAN	WIDTH	HEIGHT	NO.	LENGTH	E	F	CONC.	BRICK MASONRY	FT. HT. CU. YDS.	R.C.
12"	2'-0"	2'-0"	2'-3"	12	3'-11"	3'-4"	3'-4"	0.412	0.591	0.263	0.020
15"	2'-0"	2'-0"	2'-6"	12	3'-11"	3'-4"	3'-4"	0.412	0.657	0.263	0.031
18"	2'-4"	2'-4"	2'-9"	14	3'-5"	3'-8"	3'-8"	0.498	0.814	0.296	0.044
24"	3'-0"	3'-0"	3'-3"	16	4'-11"	4'-4"	4'-4"	0.695	1.178	0.362	0.078
30"	3'-4"	3'-4"	3'-9"	18	4'-5"	4'-8"	4'-8"	0.807	1.481	0.395	0.122
36"	4'-0"	4'-0"	4'-3"	20	5'-11"	5'-4"	5'-4"	1.053	1.959	0.461	0.176
42"	4'-8"	4'-8"	4'-9"	22	5'-9"	6'-0"	6'-0"	1.333	2.503	0.527	0.240
48"	5'-4"	5'-4"	5'-3"	26	6'-5"	6'-8"	6'-8"	1.646	2.940	0.560	0.313
54"	5'-10"	5'-10"	5'-9"	28	6'-11"	7'-2"	7'-2"	1.902	3.502	0.609	0.396
60"	6'-6"	6'-6"	6'-3"	30	7'-7"	7'-10"	7'-10"	2.272	4.113	0.658	0.489
66"	7'-1"	7'-1"	6'-9"	32	8'-2"	8'-5"	8'-5"	2.624	4.778	0.708	0.598

ENGLISH STANDARD DRAWING FOR BRICK JUNCTION BOX (WITH OPTIONAL MANHOLE) 12" THRU 66" PIPE

SHEET 1 OF 1 840.32

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR MANHOLE FRAME AND COVER

SOLID COVER SHOWN PERFORATED. PERFORATED AVAILABLE IF SPECIFIED.
 STATE USE OF SYSTEM ON COVER (I.E.: SEWER, STORM DRAIN, ELECTRICAL)

MINIMUM WEIGHTS - LBS.
 FRAME - 180
 COVER - 120
 TOTAL - 300

ENGLISH STANDARD DRAWING FOR MANHOLE FRAME AND COVER

SHEET 1 OF 1 840.54

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR TRAFFIC BEARING JUNCTION BOX FOR USE WITH PIPES 42" AND UNDER

NOTE 1: CONSTRUCT SECTION "B" OF THE PROPOSED WALL 8" THICK, AND SECTION "A" 12" THICK.
 NOTE 2: IF PROPOSED STRUCTURE EXCEEDS 12'-0" VERTICAL HEIGHT A DESIGN WILL BE REQUIRED FOR APPROVAL.
 NOTE 3: USE SINGLE MAT REINFORCING STEEL EXCEPT DOUBLE MAT STEEL MAY BE USED IN LIEU OF HOOK BARS IN BASE SLAB.

ENGLISH STANDARD DRAWING FOR TRAFFIC BEARING JUNCTION BOX FOR USE WITH PIPES 42" AND UNDER

SHEET 1 OF 2 840.34

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR DRAINAGE STRUCTURE STEPS

NOTES:
 INSTALL ALL STEPS PROTRUDING 4" FROM INSIDE FACE OF STRUCTURE WALL.
 STEPS DIFFERING IN DIMENSIONS, CONFIGURATION, OR MATERIALS FROM THOSE SHOWN MAY ALSO BE USED PROVIDED THE CONTRACTOR HAS FURNISHED THE ENGINEER WITH DETAILS OF THE PROPOSED STEPS AND HAS RECEIVED WRITTEN APPROVAL FROM THE ENGINEER FOR THE USE OF SUCH STEPS.

ENGLISH STANDARD DRAWING FOR DRAINAGE STRUCTURE STEPS

SHEET 1 OF 1 840.66

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR TRAFFIC BEARING JUNCTION BOX FOR USE WITH PIPES 42" AND UNDER

ENGLISH STANDARD DRAWING FOR TRAFFIC BEARING JUNCTION BOX FOR USE WITH PIPES 42" AND UNDER

SHEET 2 OF 2 840.34

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR MANHOLE FRAME AND COVER

ENGLISH STANDARD DRAWING FOR MANHOLE FRAME AND COVER

SHEET 1 OF 1 840.54

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

DETAIL SHEET

SOUTH FRONT APARTMENTS
 WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

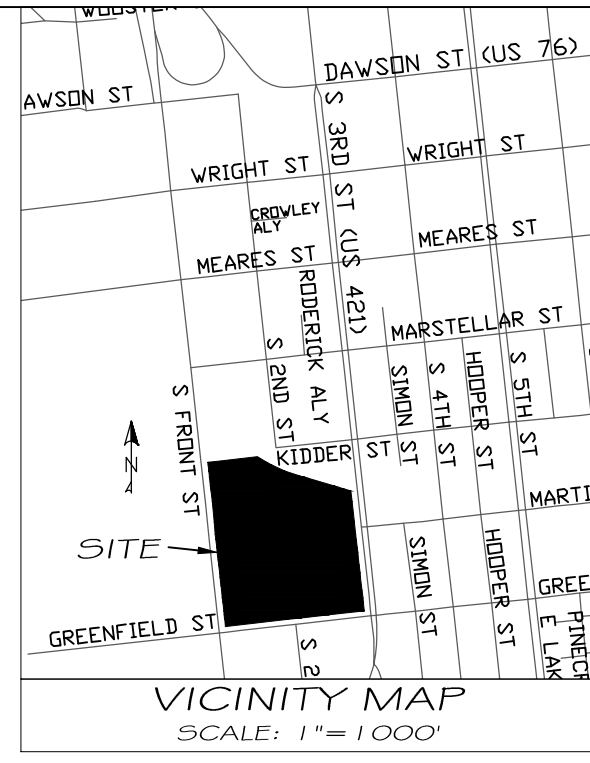
DATE: 6-30-17
 SCALE: N.T.S.
 DRAWN: JCB
 CHECKED: JEM
 PROJECT NO: 19B

FINAL DRAWING FOR REVIEW PURPOSES ONLY

Owner: SOUTH FRONT LLC
 1510-A SOUTH THIRD STREET
 WILMINGTON, NC 28401
 PHONE: 910-251-5030

SHEET NO: 2L
 OF: 5

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LEGEND

- EXISTING OPEN SPACE (ACTIVE RECREATION SPACE)
- EXISTING OPEN SPACE (RECREATION SPACE)
- EXISTING OPEN SPACE
- EXISTING TREE
- EXISTING TREE (TO BE REMOVED)

OPEN SPACE (EXISTING)

OPEN SPACE A	= 19,879.75 SF = 0.456 ACRES
OPEN SPACE B	= 11,017.57 SF = 0.253 ACRES
OPEN SPACE C	= 12,114.65 SF = 0.278 ACRES (RECREATION SPACE)
OPEN SPACE D	= 11,095.94 SF = 0.255 ACRES
OPEN SPACE E	= 11,659.14 SF = 0.268 ACRES
OPEN SPACE F	= 12,391.43 SF = 0.284 ACRES (RECREATION SPACE)
OPEN SPACE G	= 10,975.49 SF = 0.252 ACRES
OPEN SPACE H	= 19,514.74 SF = 0.448 ACRES
OPEN SPACE I	= 9,475.42 SF = 0.218 ACRES (ACTIVE RECREATION SPACE)
OPEN SPACE J	= 6,539.46 SF = 0.150 ACRES
OPEN SPACE K	= 16,836.26 SF = 0.387 ACRES (RECREATION SPACE)
OPEN SPACE L	= 10,859.97 SF = 0.249 ACRES
OPEN SPACE M	= 7,816.72 SF = 0.179 ACRES (RECREATION SPACE)
OPEN SPACE N	= 10,820.32 SF = 0.248 ACRES
OPEN SPACE O	= 15,782.47 SF = 0.362 ACRES
OPEN SPACE P	= 8,764.59 SF = 0.201 ACRES (RECREATION SPACE)
OPEN SPACE Q	= 14,284.64 SF = 0.328 ACRES
OPEN SPACE R	= 3,375.13 SF = 0.078 ACRES
OPEN SPACE S	= 41,859.63 SF = 0.961 ACRES
OPEN SPACE T	= 42,189.57 SF = 0.969 ACRES (ACTIVE RECREATION SPACE)

TOTAL EXISTING OPEN SPACE = 297,251.89 SF = 6.824 ACRES
 % OF SITE AS EXISTING OPEN SPACE = 297,251.89 / 570,230.91 * 100% = 52.13%

TOTAL EXISTING OPEN SPACE AS RECREATION SPACE = 109,588.64 SF = 2.516 ACRES
 % OF EXISTING OPEN SPACE AS RECREATION SPACE = 109,588.64 / 297,251.89 * 100% = 36.87%

EXISTING ACTIVE RECREATION SPACE INSIDE = 9,007.69 SF = 0.207 ACRES
 TOTAL EXISTING ACTIVE RECREATION SPACE = 9,007.69 + 42,189.57 + 9,475.42 = 60,672.68 SF = 1.393 ACRES
 % OF EXISTING ACTIVE RECREATION SPACE INSIDE = 9,007.69 / 60,672.68 * 100% = 14.85%

TOTAL EXISTING RECREATION SPACE = 109,588.64 + 9,007.69 = 118,596.33 SF = 2.722 ACRES
 % OF EXISTING RECREATION SPACE AS ACTIVE OR PASSIVE = 60,672.68 / 118,596.33 * 100% = 51.16%



Approved Construction Plan

Name	Date
Planning	
Traffic	
Fire	

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

GRAPHIC SCALE

(IN FEET)
 1 inch = 50 ft.

REV NO.	DESCRIPTION	DATE
1	REVISED PER CITY OF WILMINGTON TRC.	3-4-11
2	REVISED TO ADJUST TREES TO BE REMOVED.	4-21-11
3	REVISED TO MATCH OPEN SPACE L.	5-15-11
4	REVISED PER CLIENT.	6-7-11

EXISTING OPEN SPACE MAP
 1400 S. 2ND STREET
SOUTH FRONT APARTMENTS
 WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

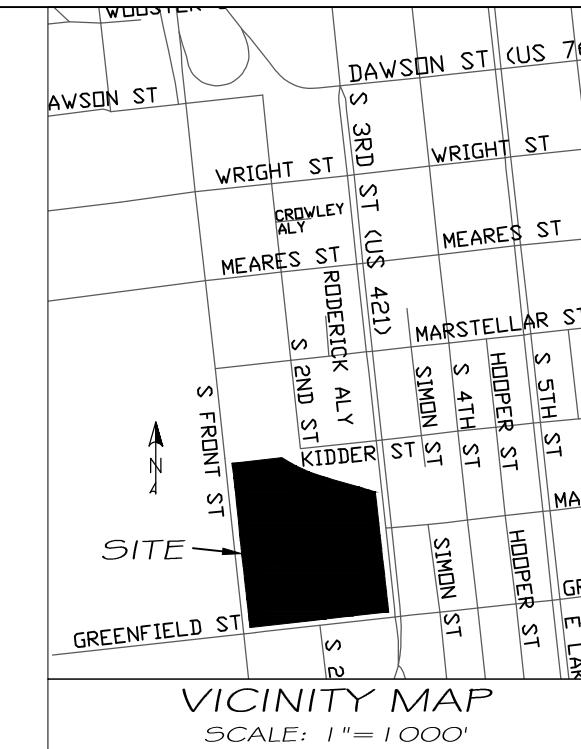
FINAL DRAWING FOR REVIEW PURPOSES ONLY

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

Owner: SOUTH FRONT LLC
 10 S. CAROLINA DR.
 WILMINGTON, NC 28403
 PHONE: 910-251-5030

DATE: 1-11-11
 SCALE: 1"=50'
 DRAWN: JCB
 CHECKED: JEM
 PROJECT NO: 19B
 SHEET NO: 3
 OF: 5

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- LEGEND**
- OPEN SPACE (ACTIVE RECREATION SPACE)
 - OPEN SPACE (RECREATION SPACE)
 - OPEN SPACE
 - INTERIOR SHADING
 - STREET YARD
 - EXISTING TREE
 - EXISTING TREE (TO BE REMOVED)

STREET YARD ALONG SOUTH 3RD STREET
 STREET FRONTAGE = 658' - 38.67' = 589.33 FT
 REQUIRED STREET YARD = 18' * 589.33 = 10,607.94 SF
 PROVIDED STREET YARD = 6,923.35 + 3,727.86 = 10,651.21 SF
 IMPERVIOUS AREA = 421.27 + 1,172.58 = 1,593.85 SF
 PERCENT IMPERVIOUS = 1,593.85 / 10,651.21 SF * 100% = 14.97%

STREET YARD ALONG GREENFIELD STREET
 STREET FRONTAGE = 726.58' - 25.0' - 20.53' - 24.0' = 657.05 FT
 REQUIRED STREET YARD = 18' / 2 * 657.05 = 5,913.45 SF
 PROVIDED STREET YARD = 1,193.28 + 1,765.56 + 3,115.12 = 6,073.96 SF
 IMPERVIOUS AREA = 329.06 + 841.3' = 4,131.9 SF
 PERCENT IMPERVIOUS = 4,131.9 / 6,073.96 SF * 100% = 6.80%

STREET YARD ALONG SOUTH FRONT STREET
 STREET FRONTAGE = 857.59' - 21.15' - 19.45' - 9' = 807.99 FT
 REQUIRED STREET YARD = 18' / 2 * 807.99 = 7,271.91 SF
 PROVIDED STREET YARD = 1,871.06 + 3,371.96 + 2,039.23 = 7,282.25 SF
 IMPERVIOUS AREA = 570.55 + 436.44 + 1,066.99 SF
 PERCENT IMPERVIOUS = 1,066.99 / 7,282.25 SF * 100% = 13.83%

OPEN SPACE
 REQUIRED OPEN SPACE = 0.35 * 570,230.91 = 199,580.82 SF = 4.581 ACRES

OPEN SPACE A = 19,663.76 SF = 0.451 ACRES (RECREATION SPACE)
OPEN SPACE B = 10,822.16 SF = 0.248 ACRES
OPEN SPACE C = 11,938.62 SF = 0.274 ACRES
OPEN SPACE D = 11,239.47 SF = 0.258 ACRES
OPEN SPACE E = 7,354.18 SF = 0.169 ACRES (ACTIVE RECREATION SPACE)
OPEN SPACE F = 16,069.09 SF = 0.369 ACRES
OPEN SPACE G = 11,463.36 SF = 0.263 ACRES
OPEN SPACE H = 7,608.59 SF = 0.173 ACRES
OPEN SPACE I = 8,958.71 SF = 0.206 ACRES (ACTIVE RECREATION SPACE)
OPEN SPACE J = 16,533.37 SF = 0.380 ACRES (ACTIVE RECREATION SPACE)
OPEN SPACE K = 9,834.09 SF = 0.226 ACRES (ACTIVE RECREATION SPACE)
OPEN SPACE L = 1,427.22 SF = 0.033 ACRES
OPEN SPACE M = 11,072.23 SF = 0.254 ACRES
OPEN SPACE N = 1,613.95 SF = 0.037 ACRES
OPEN SPACE O = 1,617.30 SF = 0.037 ACRES
OPEN SPACE P = 19,188.84 SF = 0.441 ACRES
OPEN SPACE Q = 8,369.66 SF = 0.191 ACRES (ACTIVE RECREATION SPACE)
OPEN SPACE R = 3,868.96 SF = 0.089 ACRES (RECREATION SPACE)
OPEN SPACE S = 23,011.09 SF = 0.528 ACRES (RECREATION SPACE)

TOTAL PROVIDED OPEN SPACE = 200,854.21 SF = 4.611 ACRES
% OF SITE AS OPEN SPACE = 200,854.21 / 570,230.91 * 100% = 35.22%

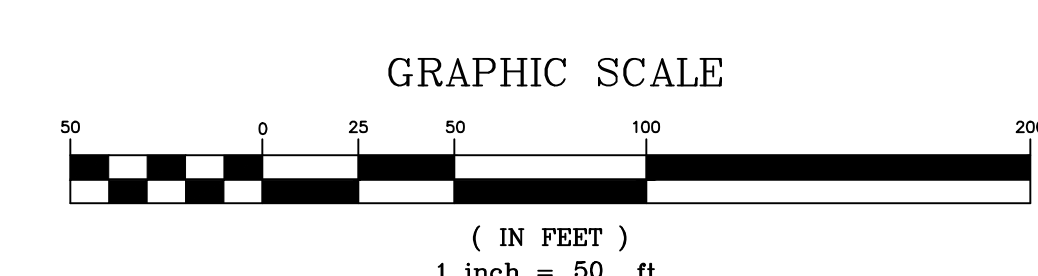
TOTAL OPEN SPACE AS RECREATION SPACE = 97,793.78 SF = 2.245 ACRES
% OF OPEN SPACE AS RECREATION SPACE = 97,793.78 / 200,854.21 * 100% = 48.69%

ACTIVE RECREATION SPACE INSIDE = 9,007.69 SF = 0.207 ACRES
TOTAL ACTIVE RECREATION SPACE = 9,007.69 + 7,354.18 + 8,958.71 + 16,533.37 + 9,834.09 + 8,569.62 = 60,257.66 SF = 1.383 ACRES
% OF ACTIVE RECREATION SPACE INSIDE = 9,007.69 / 60,257.66 * 100% = 14.95%

TOTAL RECREATION SPACE = 97,793.78 + 9,007.69 = 106,801.47 SF = 2.452 ACRES
% OF RECREATION SPACE AS ACTIVE = 60,257.66 / 106,801.47 * 100% = 56.42%

INTERIOR SHADING
 PARKING FACILITY AREA = 183,971.91 SF
 REQUIRED INTERIOR SHADING (IS) = 82 * 183,971.91 SF = 96,794.38 SF

- IS-1 = 507.99 SF
 - IS-2 = 707.00 SF
 - IS-3 = 707.00 SF
 - IS-4 = 984.34 SF
 - IS-5 = 707.00 SF
 - IS-6 = 482.68 SF
 - IS-7 = 707.00 SF
 - IS-8 = 560.71 SF
 - IS-9 = 4,304.30 SF
 - IS-10 = 542.14 SF
 - IS-11 = 1,385.44 SF
 - IS-12 = 562.58 SF
 - IS-13 = 632.26 SF
 - IS-14 = 1,382.55 SF
 - IS-15 = 4,289.90 SF
 - IS-16 = 695.48 SF
 - IS-17 = 380.18 SF
 - IS-18 = 663.01 SF
 - IS-19 = 672.92 SF
 - IS-20 = 694.46 SF
 - IS-21 = 834.52 SF
 - IS-22 = 764.72 SF
 - IS-23 = 208.22 SF
 - IS-24 = 358.53 SF
 - IS-25 = 871.70 SF
 - IS-26 = 607.93 SF
 - IS-27 = 587.28 SF
 - IS-28 = 816.58 SF
 - IS-29 = 706.12 SF
 - IS-30 = 343.97 SF
 - IS-31 = 478.42 SF
 - IS-32 = 302.30 SF
 - IS-33 = 705.69 SF
 - IS-34 = 6,050.36 SF
 - IS-35 = 768.36 SF
 - IS-36 = 549.21 SF
 - IS-37 = 697.11 SF
 - IS-38 = 768.36 SF
 - IS-39 = 549.21 SF
 - IS-40 = 697.11 SF
 - IS-41 = 925.70 SF
 - IS-42 = 537.30 SF
 - IS-43 = 587.81 SF
 - IS-44 = 990.61 SF
 - IS-45 = 833.93 SF
 - IS-46 = 946.82 SF
 - IS-47 = 353.50 SF
 - IS-48 = 353.50 SF
- TOTAL PROVIDED INTERIOR SHADING** = 40,554.09 SF



APPROVED CONSTRUCTION PLAN

Name: _____ Date: _____

Planning: _____

Traffic: _____

Fire: _____

WILMINGTON
 NORTH CAROLINA

Public Services • Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

Date: _____ Permit #: _____

Signed: _____

FINAL DRAWING FOR REVIEW PURPOSES ONLY

PROPOSED OPEN SPACE, INTERIOR SHADING, & STREET YARD MAP

SOUTH FRONT APARTMENTS

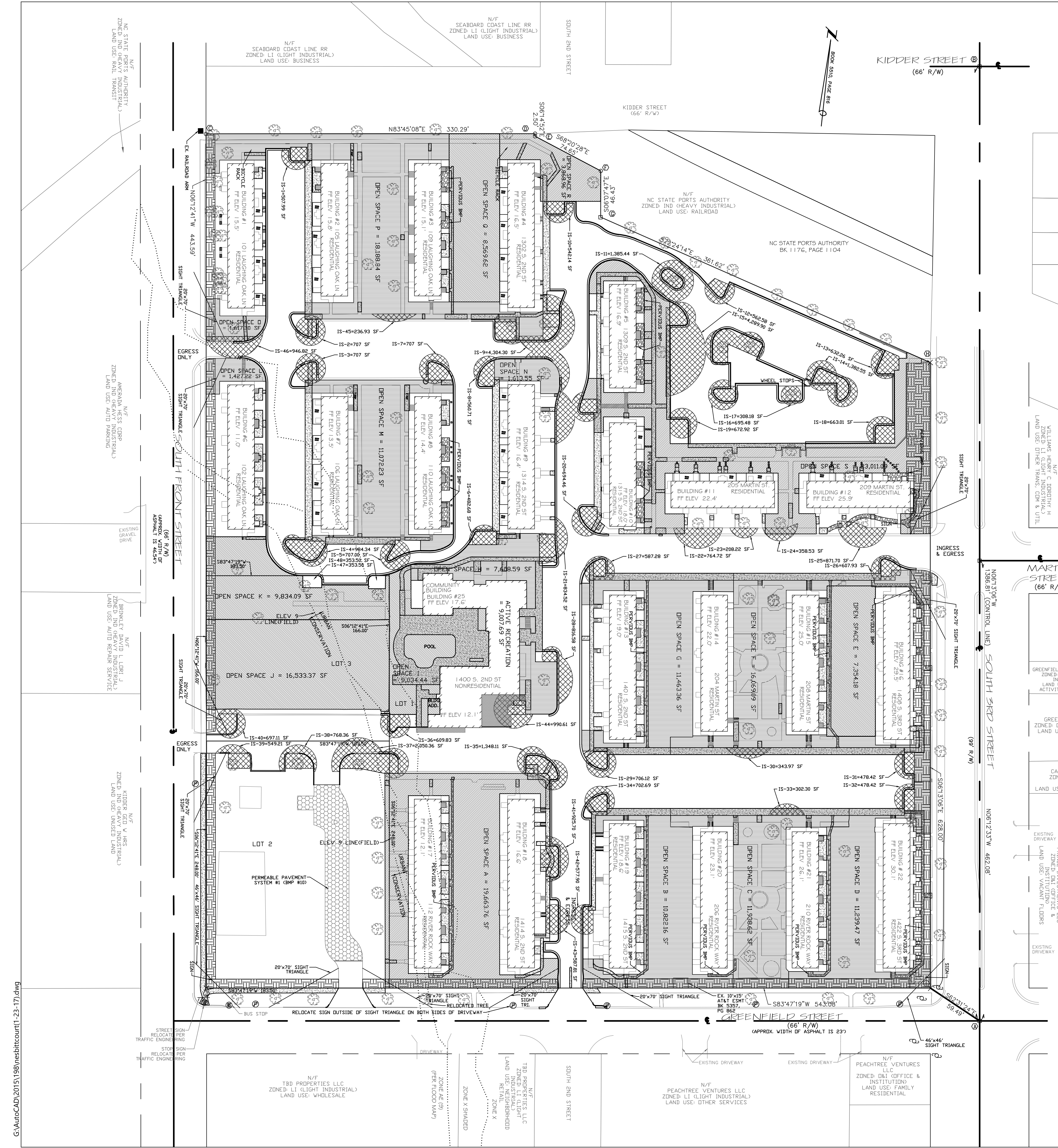
WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

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

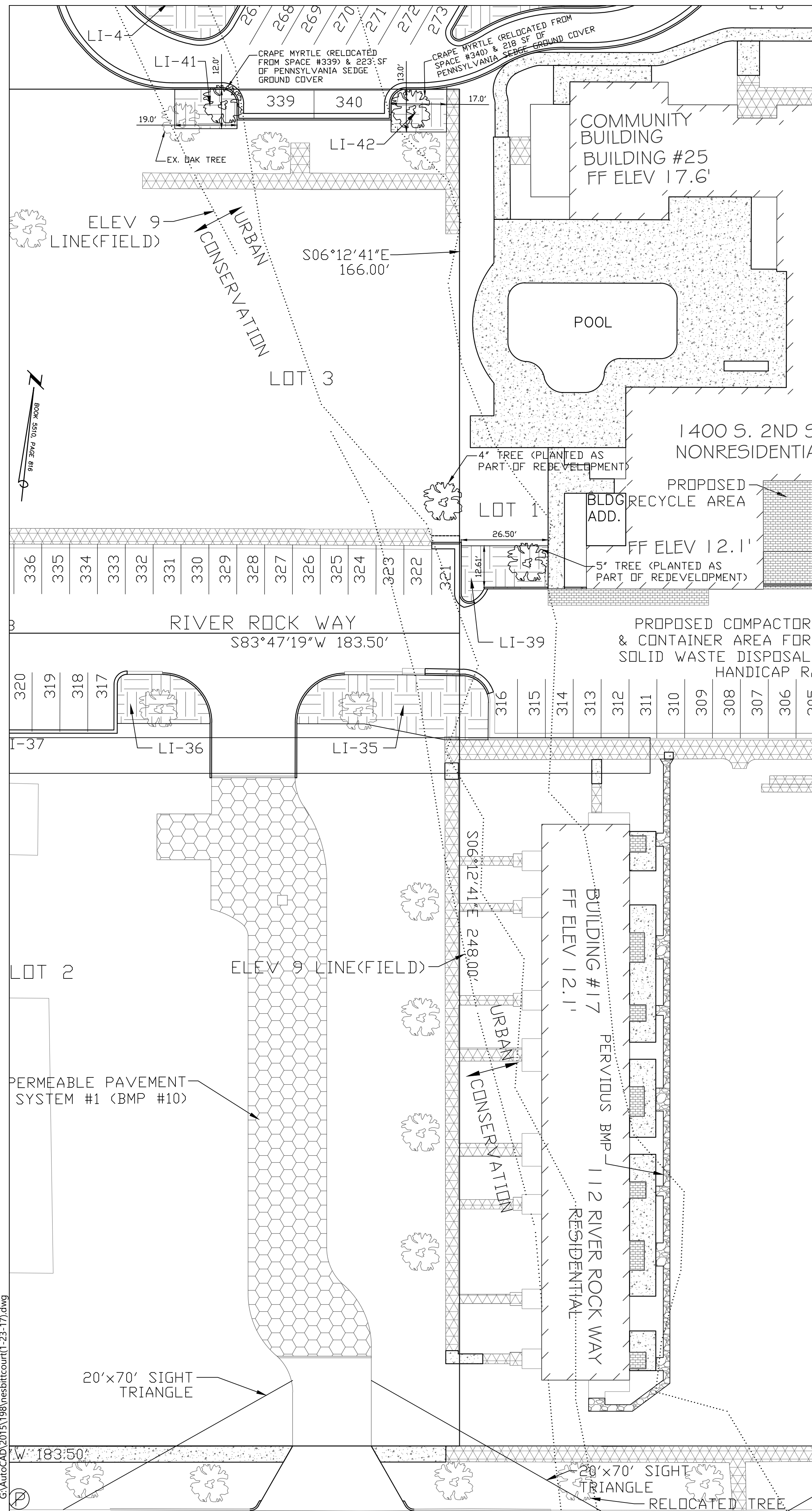
Owner: SOUTH FRONT LLC
 10 S. CAROLINA DR.
 WILMINGTON, NC 28403
 PHONE: 910-251-5030

DATE: 1-11-11
 SCALE: 1"=50'
 DRAWN: JCB
 CHECKED: JEM
 PROJECT NO: 19B
 SHEET NO: 4
 OF: 5

REV NO.	DESCRIPTION	DATE
1	REVISED PER CITY OF WILMINGTON TRC.	3-10-11
2	REVISED PER CITY OF WILMINGTON TO SHOW GREENFIELD ST. DRIVEWAY AS CITY STANDARD. REVISED TO ADJUST STREET YARD & OPEN SPACE AREAS.	4-21-11
3	REVISED PER CITY OF WILMINGTON.	5-13-11
4	REVISED PER CLIENT TO ADJUST LAYOUT TO ADD GARAGE HOUSE.	6-7-11
5	REVISED PER CITY OF WILMINGTON TO NOT SHOW PROPOSED FENCING & ADJUST PARKING.	7-2-11
6	REVISED PER CITY OF WILMINGTON.	7-25-11
7	REVISED PER CITY OF WILMINGTON FIRE & LIFE SAFETY.	8-12-11
8	REVISED PER CLIENT TO ADD DRIVEWAY OFF GREENFIELD ST. & RELOCATE 3 PARKING SPACES.	6-7-17
9	REVISED PER TRC COMMENTS.	6-30-17



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STREET YARD ALONG SOUTH 3RD STREET
 STREET FRONTAGE = 658 - 38.67 = 589.33 FT
 REQUIRED STREET YARD = 18 * 589.33 = 10,607.94 SF
 PROVIDED STREET YARD = 6,923.35 + 3,727.86 = 10,651.21 SF
 IMPERVIOUS AREA = 421.27 + 1,172.58 = 1,593.85 SF
 PERCENT IMPERVIOUS = 1,593.85 / 10,651.21 SF * 100% = 14.97%

STREET YARD ALONG GREENFIELD STREET
 STREET FRONTAGE = 726.58 - 25.0 = 657.05 FT
 REQUIRED STREET YARD = 18 / 2 * 657.05 = 5,913.45 SF
 PROVIDED STREET YARD = 1,193.28 + 1,765.56 + 3,115.12 = 6,073.96 SF
 IMPERVIOUS AREA = 329.06 + 84.13 = 413.19 SF
 PERCENT IMPERVIOUS = 413.19 / 6,073.96 SF * 100% = 6.80%

STREET YARD ALONG SOUTH FRONT STREET
 STREET FRONTAGE = 857.59 - 21.15 - 19.45 - 9 = 807.99 FT
 REQUIRED STREET YARD = 18 / 2 * 807.99 = 7,271.91 SF
 PROVIDED STREET YARD = 1,871.06 + 3,371.96 + 2,039.23 = 7,282.25 SF
 IMPERVIOUS AREA = 570.55 + 436.44 = 1,006.99 SF
 PERCENT IMPERVIOUS = 1,006.99 / 7,282.25 SF * 100% = 13.83%

LANDSCAPE ADDENDUM PLAN

QTY	BOTANICAL NAME / COMMON NAME	CONT
441 sf	Carex pensylvanica / Pennsylvania Sedge	seed

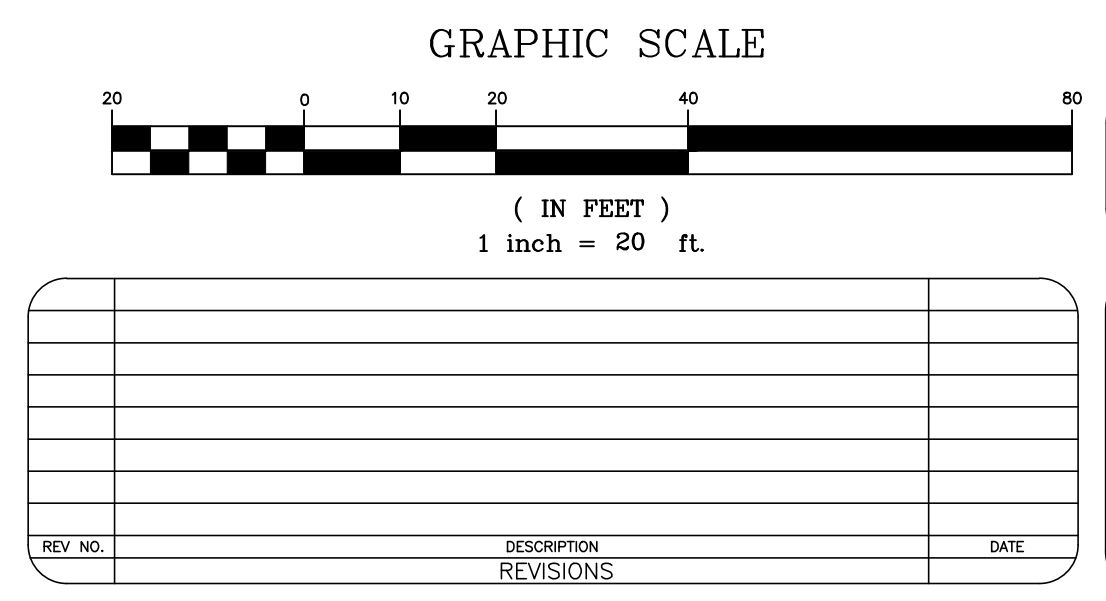
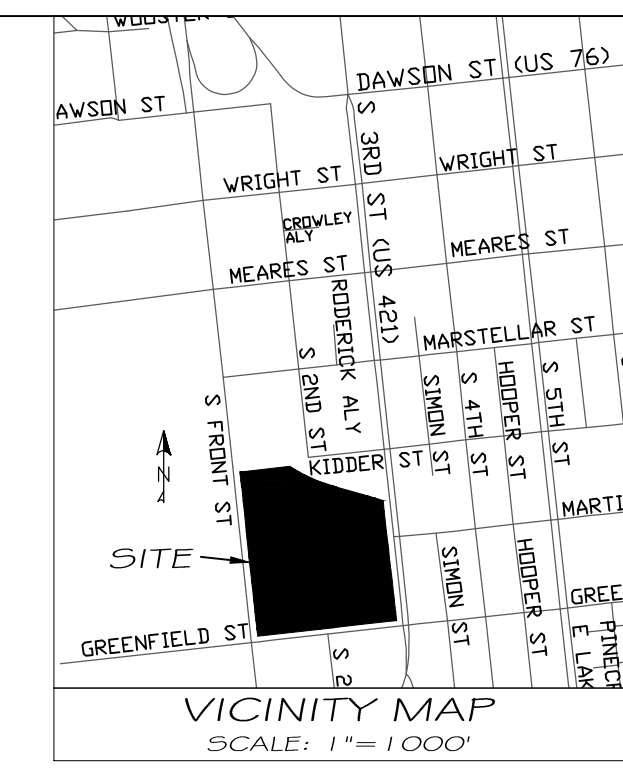
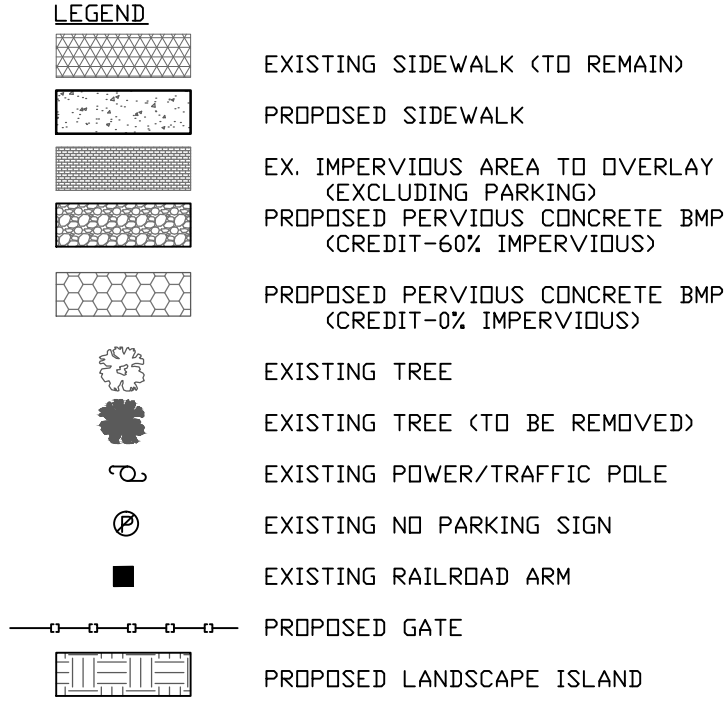
INTERIOR LANDSCAPING ISLANDS

LANDSCAPE ISLAND	TOTAL AREA (SF)	IMPERVIOUS AREA (SF)	PERCENT IMPERVIOUS
LI-1	220.81	0	0
LI-2	408.44	59.64	14.60
LI-3	430.72	59.19	13.74
LI-4	582.56	0	0
LI-5	395.17	0	0
LI-6	327.08	0	0
LI-7	322.98	0	0
LI-8	326.54	44.83	13.73
LI-9	374.69	0	0
LI-10	541.93	37.34	6.89
LI-11	216.61	0	0
LI-12	216.21	0	0
LI-13	378.93	0	0
LI-14	345.10	0	0
LI-15	436.98	0	0
LI-16	302.57	0	0
LI-17	996.09	0	0
LI-18	475.55	0	0
LI-19	352.38	0	0
LI-20	250.18	0	0
LI-21	228.63	0	0
LI-22	293.82	0	0
LI-23	515.42	71.34	13.85
LI-24	330.54	47.30	14.31
LI-25	241.40	0	0
LI-26	218.44	0	0
LI-27	282.14	0	0
LI-28	218.06	0	0
LI-29	218.06	0	0
LI-30	543.08	36.43	10.62
LI-31	216.66	0	0
LI-32	349.39	0	0
LI-33	419.94	60.15	14.32
LI-34	396.56	48.82	12.31
LI-35	934.05	4.15	0.44
LI-36	376.81	0	0
LI-37	330.01	0	0
LI-38	255.45	0	0
LI-39	358.27	0	0
LI-40	224.71	0	0
LI-41	223.65	0	0
LI-42	218.59	0	0

INTERIOR SHADING
 PARKING FACILITY AREA = 183,971.91 SF
 REQUIRED INTERIOR SHADING (IS) = 0.2 * 183,971.91 SF = 36,794.38 SF

IS-1 = 507.99 SF
 IS-2 = 707.00 SF
 IS-3 = 707.00 SF
 IS-4 = 984.24 SF
 IS-5 = 707.00 SF
 IS-6 = 482.68 SF
 IS-7 = 707.00 SF
 IS-8 = 560.71 SF
 IS-9 = 4,304.30 SF
 IS-10 = 542.14 SF
 IS-11 = 1,385.44 SF
 IS-12 = 562.59 SF
 IS-13 = 632.26 SF
 IS-14 = 1,382.55 SF
 IS-15 = 4,689.50 SF
 IS-16 = 695.48 SF
 IS-17 = 380.18 SF
 IS-18 = 663.01 SF
 IS-19 = 672.92 SF
 IS-20 = 694.46 SF
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 IS-25 = 871.70 SF
 IS-26 = 607.93 SF
 IS-27 = 587.28 SF
 IS-28 = 816.58 SF
 IS-29 = 706.12 SF
 IS-30 = 343.97 SF
 IS-31 = 478.42 SF
 IS-32 = 478.42 SF
 IS-33 = 302.30 SF
 IS-34 = 702.69 SF
 IS-35 = 1,348.11 SF
 IS-36 = 609.83 SF
 IS-37 = 2,050.36 SF
 IS-38 = 768.36 SF
 IS-39 = 549.21 SF
 IS-40 = 697.11 SF
 IS-41 = 925.70 SF
 IS-42 = 577.90 SF
 IS-43 = 587.81 SF
 IS-44 = 990.61 SF
 IS-45 = 236.93 SF
 IS-46 = 946.82 SF
 IS-47 = 353.50 SF
 IS-48 = 353.50 SF

TOTAL PROVIDED INTERIOR SHADING = 40,554.09 SF



Approved Construction Plan

Name _____ Date _____

Planning _____

Traffic _____

Fire _____

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

LANDSCAPE ADDENDUM PLAN
 1400 S. 2ND STREET
SOUTH FRONT APARTMENTS
 WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

DATE: 6-30-17
 SCALE: 1" = 20'
 DRAWN: JCB
 CHECKED: JEM
 PROJECT NO: 19B

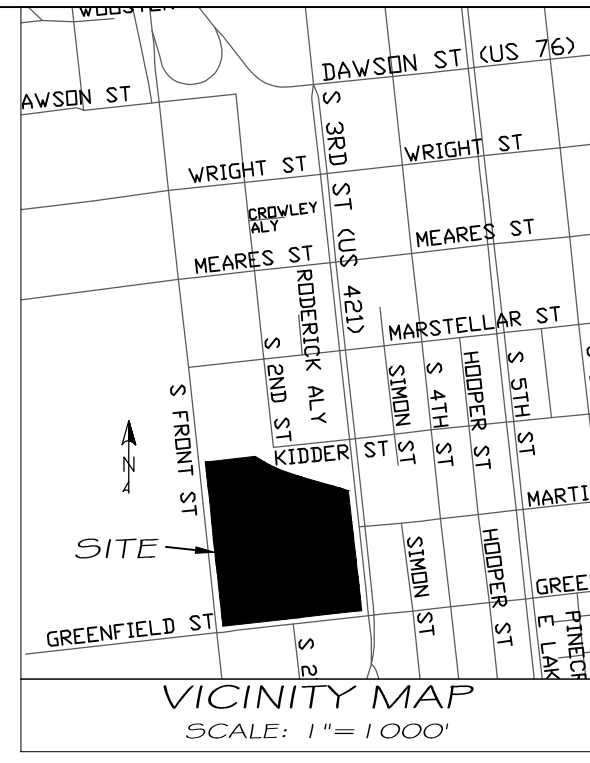
MALPASS ENGINEERING, P.C.
 1134 SHIPYARD BOULEVARD
 WILMINGTON, NORTH CAROLINA 28412
 Phone 910-392-6843 License No. C-2320
 Fax 910-392-5203

Owner: SOUTH FRONT LLC
 10 S. CARDINAL DR.
 WILMINGTON, NC 28403
 PHONE: 910-251-5030

FINAL DRAWING FOR REVIEW PURPOSES ONLY

SHEET No: 4A
 OF: 5

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- LEGEND**
- EXISTING IMPERVIOUS AREA TO REMAIN
 - EXISTING IMPERVIOUS AREA TO OVERLAY
 - NEW IMPERVIOUS AREA (100% IMPERVIOUS)
 - NEW PERVIOUS AREA-BMP (60% IMPERVIOUS)
 - NEW PERVIOUS AREA-BMP (0% IMPERVIOUS)
 - EXISTING TREE

POST DEVELOPMENT

EXISTING IMPERVIOUS AREA TO REMAIN ON-SITE
 BUILDINGS = 89,485.19 SF
 BUILDING STOODS = 12,612.10 SF
 PARKING & DRIVE ISLES = 64,606.13 SF
 SIDEWALKS, CONCRETE/BRICK SURFACES = 20,977.95 SF
 OTHER = 6,005.68 SF

TOTAL EXISTING IMPERVIOUS AREA TO REMAIN ON-SITE = 193,687.05 SF

NEW IMPERVIOUS AREA ON-SITE
 BUILDINGS = 192.01 SF
 BUILDING STOODS = 5,169.62 SF
 PERVIOUS BUILDING STOODS = 0.6 * 1,667.39 = 1,000.44 SF
 PARKING & DRIVE ISLES = 75,898.10 SF
 SIDEWALKS = 24,031.33 SF
 PERVIOUS SIDEWALKS = 0.6 * 4,176.88 = 2,506.13 SF
 OTHER = 6,049.35 SF

TOTAL NEW IMPERVIOUS AREA ON-SITE = 114,846.98 SF

TOTAL IMPERVIOUS AREA ON-SITE (EXISTING & NEW) = 308,534.03 SF

50% OF TOTAL IMPERVIOUS AREA (EXISTING & NEW) = 0.5 * 308,534.03 = 154,267.01 SF

TOTAL ON-SITE IMPERVIOUS AREA TREATED IN INFILTRATION BASINS, TRENCHES, & PERMEABLE PAVEMENT SYSTEM #1 = 118,149.22 SF

NEW IMPERVIOUS AREA OFF-SITE
 DRIVEWAYS = 1,495 SF
 SIDEWALKS = 2,370 SF

TOTAL NEW IMPERVIOUS AREA OFF-SITE = 3,865 SF

IMPERVIOUS AREAS ON LOTS 2 & 3

LOT 2
 CURRENT IMPERVIOUS AREA = 9,965 SF
 CURRENT IMPERVIOUS AREA (TO BE REMOVED) = 1,319 SF
 PROPOSED IMPERVIOUS AREA (NEW) = 1,168 SF
 TOTAL IMPERVIOUS AREA = 9,814 SF

LOT 3
 CURRENT IMPERVIOUS AREA = 5,823 SF
 CURRENT IMPERVIOUS AREA (TO BE REMOVED) = 212 SF
 PROPOSED IMPERVIOUS AREA (NEW) = 753 SF
 TOTAL IMPERVIOUS AREA = 6,364 SF

OFF-SITE
 CURRENT IMPERVIOUS AREA (TO BE REMOVED) = 135 SF
 PROPOSED IMPERVIOUS AREA (NEW) = 704 SF

Approved Construction Plan

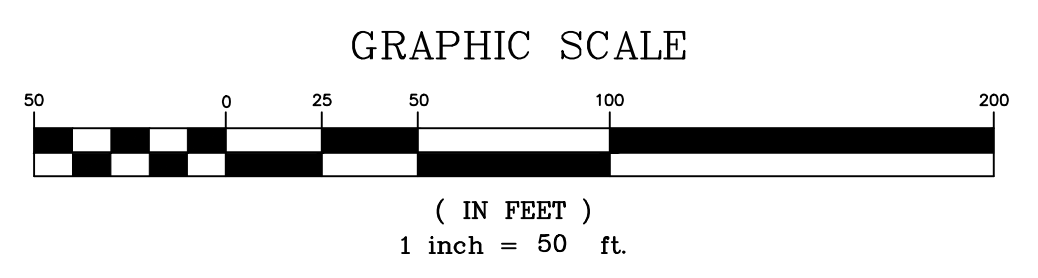
Name _____ Date _____

Planning _____

Traffic _____

Fire _____

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



REV. NO.	DESCRIPTION	DATE
1	REVISED PER CITY OF WILMINGTON TRC.	3-10-11
2	REVISED PER CITY OF WILMINGTON TO SHOW GREENFIELD ST. DRIVEWAY AS CITY STANDARD & ADJUST POST DEVELOPMENT IMPERVIOUS AREAS.	4-21-11
3	REVISED PER CITY OF WILMINGTON.	5-13-10
4	REVISED PER CLIENT TO ADJUST LAYOUT TO ADD GUARD HOUSE.	6-7-11
5	REVISED PER CITY OF WILMINGTON TO NOT SHOW PROPOSED FENCING & ADJUST PARKING.	7-5-11
6	REVISED PER CITY OF WILMINGTON.	7-25-11
7	REVISED PER CITY OF WILMINGTON ENGINEERING DEPARTMENT.	8-11-11
8	REVISED PER CITY OF WILMINGTON FIRE & LIFE SAFETY.	8-12-11
9	REVISED TO ADD IMPERVIOUS AREA, REMOVE EXISTING IMPERVIOUS AREA, & SHOW EXISTING IMPERVIOUS AREA TO OVERLAY.	5-22-12
10	IMPERVIOUS AREA TO OVERLAY.	8-8-12
11	REVISED PER CITY OF WILMINGTON ENGINEERING.	8-19-12
12	REVISED PER CLIENT TO ADD DRIVEWAY OFF GREENFIELD ST. & RELOCATE 3 PARKING SPACES.	8-7-12
13	REVISED PER TRC COMMENTS.	8-30-12

EXISTING IMPERVIOUS AREA TO REMAIN & NEW IMPERVIOUS AREA MAP

SOUTH FRONT APARTMENTS

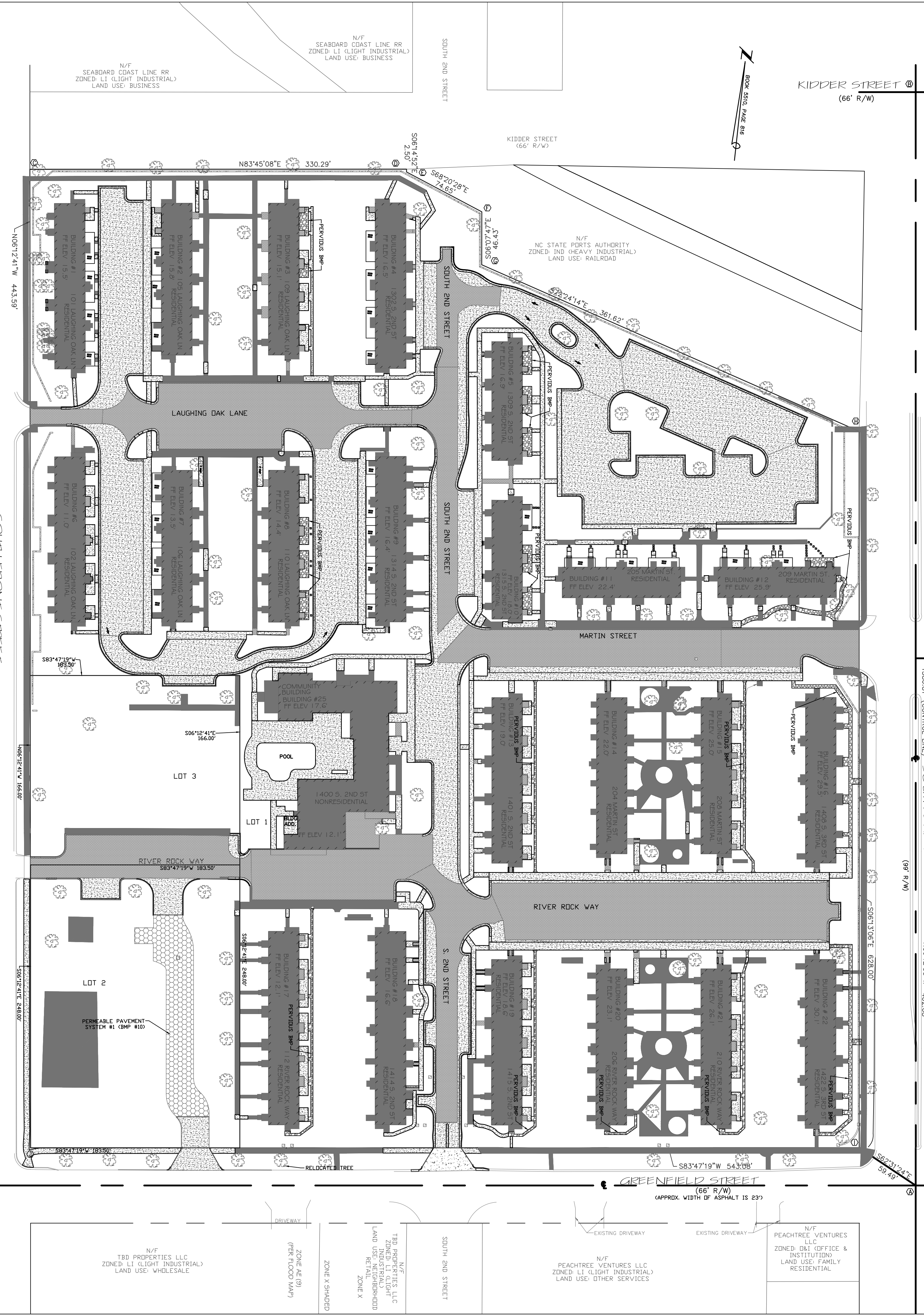
WILMINGTON TOWNSHIP NEW HANOVER COUNTY NORTH CAROLINA

FINAL DRAWING FOR REVIEW PURPOSES ONLY

MALPASS ENGINEERING & SURVEYING, P.C.
 1134 SHIPYARD BOULEVARD
 WILMINGTON, NORTH CAROLINA 28412
 Phone 910-392-5343 License No. C-2320
 Fax 910-392-5203

Owner: SOUTH FRONT LLC
 10 S. CAROLINA DR.
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 PHONE: 910-251-5030

DATE: 1-19-11
 SCALE: 1"=50'
 DRAWN: JCB
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 SHEET NO: 5
 OF: 5



N/C STATE PORTS AUTHORITY
 ZONED: MD (HEAVY INDUSTRIAL)
 LAND USE: RAIL TRANSPORT

N/C SEABOARD COAST LINE RR
 ZONED: LI (LIGHT INDUSTRIAL)
 LAND USE: BUSINESS

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 ZONED: LI (LIGHT INDUSTRIAL)
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N/C STATE PORTS AUTHORITY
 ZONED: MD (HEAVY INDUSTRIAL)
 LAND USE: RAILROAD

N/C WILLIAMS HEIGHTS PROPERTY #4
 ZONED: LI (LIGHT INDUSTRIAL)
 LAND USE: OTHER TRANS. COM & UTIL.

N/C GREENFIELD BAPTIST CHURCH
 ZONED: D1 (OFFICE & INSTITUTION)
 LAND USE: RELIGIOUS ACTIVITIES (CHURCHES)

N/C GREENFIELD BAPTIST CHURCH
 ZONED: D1 (OFFICE & INSTITUTION)
 LAND USE: RELIGIOUS ACTIVITIES (CHURCHES)

N/C CAMPFIELD JOSEPHIN
 ZONED: D1 (OFFICE & INSTITUTION)
 LAND USE: FAMILY RESIDENTIAL

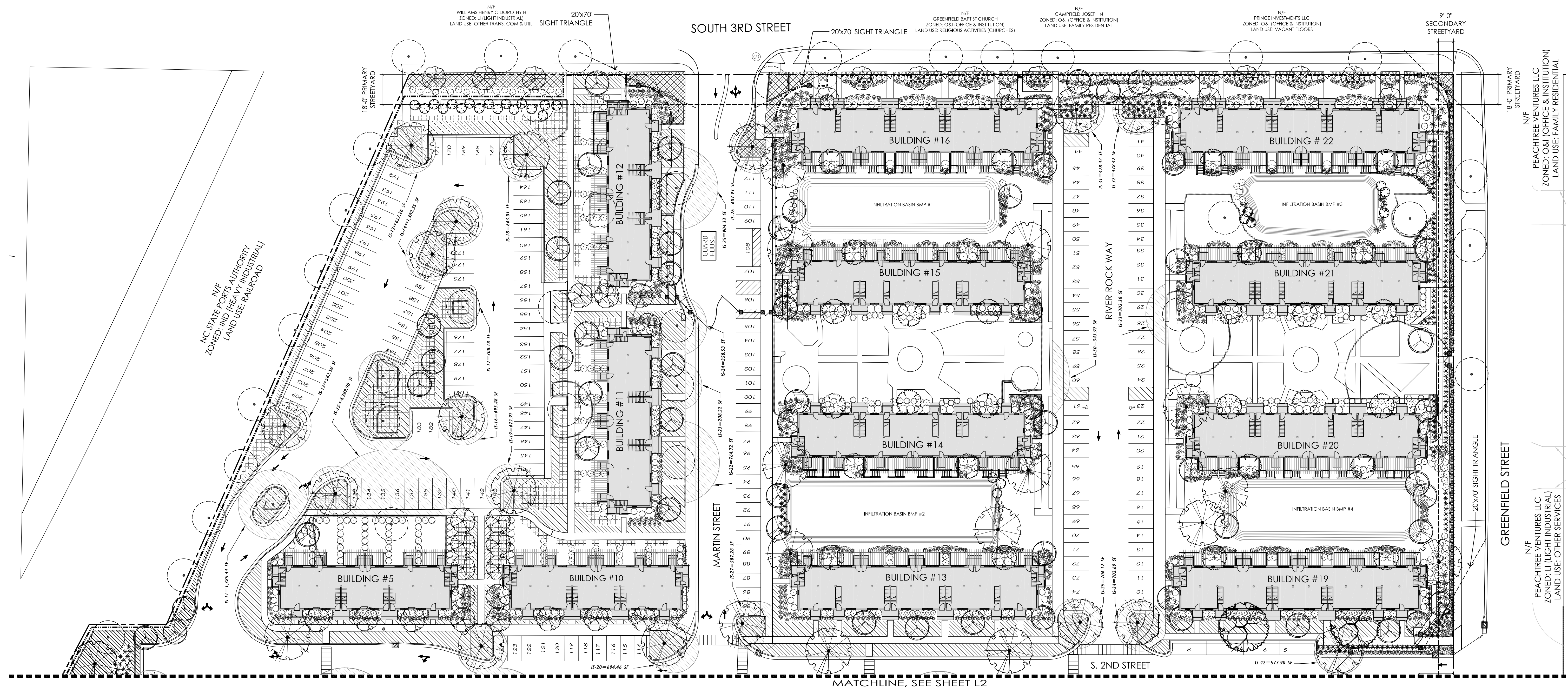
N/C PRINCE INN FURNITURE LLC
 ZONED: D1 (OFFICE & INSTITUTION)
 LAND USE: FURNITURE CLERS

N/C TBD PROPERTIES LLC
 ZONED: LI (LIGHT INDUSTRIAL)
 LAND USE: WHOLESALE

N/C TBD PROPERTIES LLC
 ZONED: LI (LIGHT INDUSTRIAL)
 LAND USE: WHOLESALE

N/C PEACHTREE VENTURES LLC
 ZONED: LI (LIGHT INDUSTRIAL)
 LAND USE: OTHER SERVICES

N/C PEACHTREE VENTURES LLC
 ZONED: D1 (OFFICE & INSTITUTION)
 LAND USE: FAMILY RESIDENTIAL



SITE DATA
 PROPERTY OWNER: SOUTH FRONT LLC
 PROJECT ADDRESS: 1400 S. 2ND ST.
 PIN NUMBER: R05413-035-002-000
 ZONING DISTRICT: MF-H
 FLOOD AREA: ZONE "X" & AE EL 9 ACCORDING TO FEMA FLOOD INSURANCE RATE MAP, COMMUNITY-PANEL NUMBER 3720311700 K DATE 6/2/06 (INFORMATION PROVIDED BY ARNOLD W. CARSON PLS, PC)
 BUILDING SETBACKS, REQUIRED: FRONT-30', REAR-25', INTERIOR SIDE-20', CORNER LOT SIDE-30'
 BUILDING SETBACKS, EXISTING TO REMAIN (PHASE 1): FRONT-19.97', REAR-21.48', INTERIOR SIDE-24.13', CORNER LOT SIDE-19.95'
 BUILDING SETBACKS, PROPOSED (PHASE 2): REAR-25', CORNER LOT SIDE-30'
 TOTAL SITE AREA: 570,230.91 SF = 13.09 ACRES
 TOTAL ON-SITE AREA TO BE DISTURBED: 461,346.49 SF = 10.59 ACRES
 TOTAL AREA TO BE DISTURBED: 469,040 SF = 10.77 ACRES
 EXISTING BUILDING AREA: 103,444.75 SF = 2.37 ACRES
 AFTER DEVELOPMENT BUILDING AREA: 89,485.19 SF = 2.05 ACRES
 EXISTING BUILDING LOT COVERAGE: 103,444.75 / 570,230.91 * 100% = 18.14%
 AFTER DEVELOPMENT BUILDING LOT COVERAGE: 89,485.19 / 570,230.91 * 100% = 15.69%
 NUMBER OF PROPOSED UNITS: 216 (1 BEDROOM-184 UNITS, 2 BEDROOM-32 UNITS)
 NUMBER OF EXISTING BUILDINGS: RESIDENTIAL-24 (94,437.06 SF), NONRESIDENTIAL-1 (9,007.69 SF)
 NUMBER OF EXISTING BUILDINGS TO REMAIN: RESIDENTIAL-22 (80,477.50 SF), NONRESIDENTIAL-1 (9,007.69 SF)
TREES PER DISTURBED ACRE
10.77 AC * 15 = 161.55 TREES REQUIRED
501 TREES PROVIDED
INTERIOR SHADING
 PARKING FACILITY AREA = 177,763.17 SF
REQUIRED INTERIOR SHADING (IS) = 0.2 * 177,763.17 SF = 35,552.64 SF
PROVIDED INTERIOR SHADING = 39,740.96 SF

STREET YARD ALONG SOUTH 3RD STREET
 STREET FRONTAGE: 628 - 38.67 = 589.33 FT
 REQUIRED STREET YARD: 18 * 589.33 = 10,607.94 SF
 PROVIDED STREET YARD: 7,059.29 + 3,727.86 = 10,787.15 SF
 IMPERVIOUS AREA: 915.37 + 640.43 = 1,555.80 SF
 PERCENT IMPERVIOUS: 1,555.80 / 10,787.15 SF * 100% = 14.42%
REQUIRED PLANTING: 10,787.15 SF / 600 = 17.9 * 6 = 108 TREES
17.9 * 6 = 108 SHRUBS
PROVIDED PLANTING: 21 TREES, 286 SHRUBS (INCLUDING 4 EXISTING TREES)

STREET YARD ALONG GREENFIELD STREET
 STREET FRONTAGE = 726.58 - 25.0 - 20.53 = 681.05 FT
 REQUIRED STREET YARD = 18 / 2 * 681.05 = 6,129.45 SF
 PROVIDED STREET YARD = 3,174.83 + 3,115.12 = 6,289.95 SF
 IMPERVIOUS AREA = 443.75 SF
 PERCENT IMPERVIOUS = 443.75 / 6,289.95 SF * 100% = 7.06%
REQUIRED PLANTING: 6,289.95 SF / 600 = 10.5 * 6 = 63 SHRUBS
10.5 * 6 = 63 SHRUBS
PROVIDED PLANTING: 12 TREES, 275 SHRUBS

STREET YARD ALONG SOUTH FRONT STREET
 STREET FRONTAGE = 857.59 - 21.15 - 19.45 - 9 = 807.99 FT
 REQUIRED STREET YARD = 18 / 2 * 807.99 = 7,271.91 SF
 PROVIDED STREET YARD = 1,871.06 + 3,371.96 + 2,039.23 = 7,282.25 SF
 IMPERVIOUS AREA = 963.13 SF
 PERCENT IMPERVIOUS = 963.13 / 7,282.25 SF * 100% = 13.23%
REQUIRED PLANTING: 7,282.25 SF / 600 = 12.1 * 6 = 73 SHRUBS
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PROVIDED PLANTING: 9 TREES, 257 SHRUBS (INCLUDING 5 EXISTING TREES)

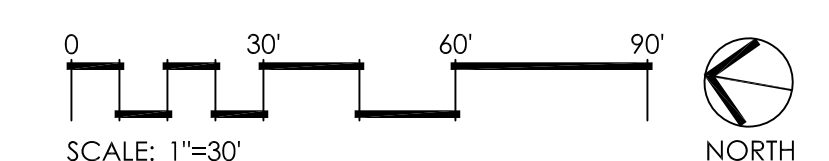
FOUNDATION PLANTING
REQUIRED FOUNDATION PLANTING = 3,313 LF * 20' HT * 12% = 7,951 SF
PROVIDED FOUNDATION PLANTING = 10,808 SF

PLANT SCHEDULE

TREES	QTY	BOTANICAL NAME / COMMON NAME	CONT	SIZE
	22	Acer palmatum 'Green Seedling' / Green Seedling Japanese Maple	15 gal	
	30	Cornus florida / Eastern Dogwood	65 gal	
	98	Existing Tree To / Remain	Existing	
	174	Lagerstroemia x 'Natchez' / Crape Myrtle	B & B	8-10' H
	36	Myrica cerifera / Wax Myrtle	25 gal	
	35	Myrica cerifera / Wax Myrtle	B & B	8-10' H
	59	Quercus virginiana / Southern Live Oak	Field Dug	16-20' H
	47	x Cupressocyparis leylandii / Leylandi Cypress	25 gal	
SHRUBS	QTY	BOTANICAL NAME / COMMON NAME	CONT	SIZE
	382	Aspidistra elatior / Cast Iron Plant	1 gal	
	68	Ligustrum japonicum / Japanese Privet	3 gal	
	708	Loropetalum chinense rubrum 'Burgundy' / Burgundy Loropetalum	3 gal	
	228	Nandina domestica / Heavenly Bamboo	3 gal	
	336	Podocarpus macrophyllus maki / Shrubby Yew	7 gal	

PLANT SCHEDULE

GRASSES	QTY	BOTANICAL NAME / COMMON NAME	CONT
	44	Lomandra longifolia 'Breeze' / Dwarf Mat Rush	1 gal
	2,160	Lomandra longifolia 'Nyalia' / Nyalia Breeze Grass	3 gal
	155	Miscanthus sinensis 'Adagio' / Adagio Eulalia Grass	3 gal
	294	Miscanthus sinensis 'Cosmopolitan' / Cosmopolitan Silver Grass	3 gal
	9	Miscanthus sinensis 'Gracillimus' / Maiden Grass	3 gal
	440	Muhlenbergia capillaris / Pink Muhly	3 gal
GROUND COVERS	QTY	BOTANICAL NAME / COMMON NAME	CONT
	742	Carex pendula / Hanging Sedge	1 gal@ 36" oc
	49,025 sf	Carex pennsylvanica / Pennsylvania Sedge	seed
	6,826	Dryopteris erythrosora / Autumn Fern	4"pot@ 12" oc
	15,249	Ophiopogon japonicus / Mondo Grass	4"pot@ 8" oc

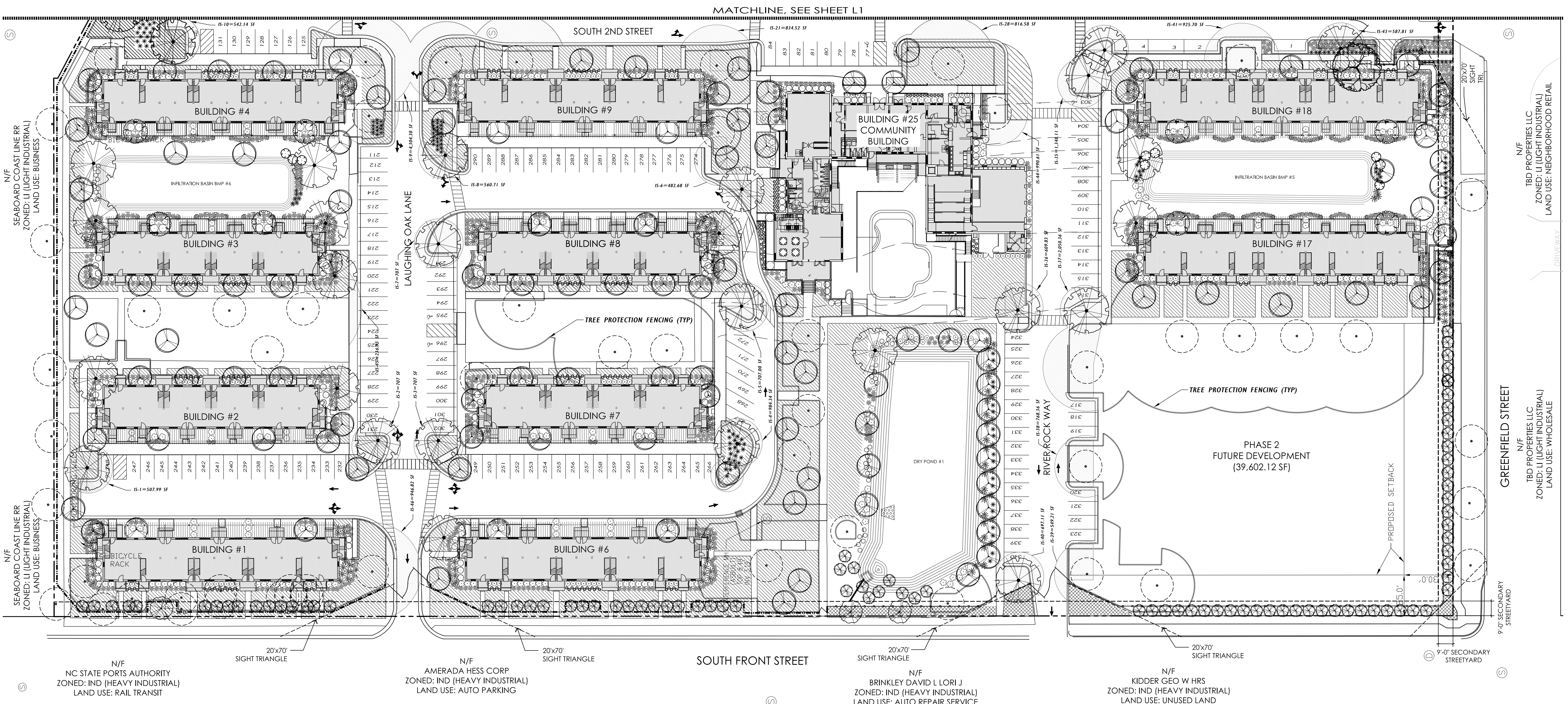


REVISIONS	NO.	DATE	DESCRIPTION

PROJECT
SOUTH FRONT APARTMENTS
 1402 SOUTH SECOND STREET
 WILMINGTON, NC 28401

CLIENT
BILTMARK BUILDERS
 1510A SOUTH THIRD STREET
 WILMINGTON, NC 28401

SHEET DESCRIPTION:
 SITE LANDSCAPE PLAN
 DATE: 07-08-11
 DESIGNED BY: JC
 DRAWN BY: GD
 CHECKED BY: JC/TM



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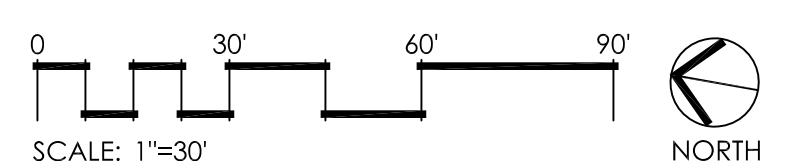
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