

# BARCLAY WEST

## PHASE 1 INFRASTRUCTURE (Sanitary Sewer)

### Sewer Plans and Profiles

LOCATED IN THE CITY OF WILMINGTON  
 NEW HANOVER COUNTY, NORTH CAROLINA  
 DATE: FEBRUARY 2014  
 SCALE: 1"=200'

**OWNER / DEVELOPER:**  
 CAMERON PROPERTIES  
 P.O. BOX 3649  
 Wilmington, NC 28406  
 910-762-2676

#### Sanitary Sewer Design Totals:

- 8" Sanitary Sewer - 1,312 LF
- 10" Sanitary Sewer - 40 LF
- 12" Sanitary Sewer - 1,360 LF
- 14" Sanitary Sewer - 1,580 LF
- All Sanitary Sewers - 4,292 LF

#### STANDARD NOTES:

1. INFORMATION CONCERNING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EXACT ELEVATIONS AND LOCATIONS OF ALL EXISTING UTILITIES AT ALL CROSSINGS PRIOR TO COMMENCING TRENCH EXCAVATION. IF ACTUAL CLEARANCES ARE LESS THAN INDICATED ON PLAN, THE CONTRACTOR SHALL CONTACT THE DESIGN ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION. ANY CONDITION DISCOVERED OR EXISTING THAT WOULD NECESSITATE A MODIFICATION OF THESE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGN ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION.
2. NO CONSTRUCTION IS TO BEGIN BEFORE LOCATION OF EXISTING UTILITIES HAS BEEN DETERMINED. CALL "NO ONE-CALL" AT LEAST 48 HOURS BEFORE COMMENCING CONSTRUCTION.
3. ALL TREES WHICH ARE NOT REQUIRED TO BE CLEARED FOR CONSTRUCTION SHALL BE PRESERVED WHEREVER POSSIBLE UNLESS OTHERWISE DIRECTED.
4. CONTRACTOR SHALL ADJUST ALL MANHOLES, VALVE AND CURB BOXES TO THE FINAL GRADE UPON COMPLETION OF ALL CONSTRUCTION. ANY BOXES DAMAGED OR OTHERWISE DISTURBED BY THE CONTRACTOR SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
5. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST AND EROSION DURING CONSTRUCTION AT HIS EXPENSE. ROADS SHALL BE WATERED TO CONTROL DUST WHEN ORDERED BY THE ENGINEER.
6. NO GEOTECHNICAL TESTING HAS BEEN PERFORMED ON SITE. NO WARRANTY IS MADE FOR SUITABILITY OF SUBGRADE, AND UNDERCUT AND ANY REQUIRED REPLACEMENT WITH SUITABLE MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
7. EXTREME CARE SHALL BE TAKEN TO ENSURE MINIMUM SEPARATIONS AT ALL UTILITY CROSSINGS.
8. CONTRACTOR TO ENSURE THAT PAVEMENT IS PLACED SO AS TO DRAIN POSITIVELY TO THE CURB OUTLETS AND CATCH BASINS. ALL ROOF DRAIN DOWNSPOUTS TO BE DIRECTED TO THE STORM SEWER SYSTEM.
9. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS.
10. THIS PLAN IS FOR SITE GRADING, ROADWORK & SEWER INSTALLATION ONLY.
11. NO ENCUMBRANCES IN RW EXCEPT AS SHOWN.
12. AFFECTED NON-MUNICIPAL UTILITIES SHALL BE CONTACTED AND PROVIDED WITH PLANS AND OTHER PERTINENT INFORMATION, WHEN FEASIBLE, TO COORDINATE APPROPRIATE SCHEDULING AND PLACEMENT. AT THE MINIMUM THIS SHOULD INCLUDE BELL SOUTH AND DUKE ENERGY.
13. TEMPORARY PROJECT AREA LIMITS ARE AS SHOWN.
14. THIS PROPERTY IS ZONED RB, MF-M & O&I-1.
15. SEWER AND WATER TO BE PROVIDED BY CFPWA.
16. SITE WILL MEET ALL ZONING REQUIREMENTS.
17. ANY REGULATED TREES ON SITE TO BE PRESERVED AS SHOWN.
18. STRIPING AND LANES TO CITY STANDARDS (THERMOPLASTIC).
19. NO VEHICULAR ACCESS TO SITE EXCEPT AS SHOWN.
20. ALL UTILITIES UNDERGROUND.
21. LANDSCAPING PLAN BY OTHERS.

#### \*\*\*NOTE WELL:

1. EQUIPMENT CLEARANCE MINIMUM 16' FROM TRANSMISSION LINES TO BE MAINTAINED AT ALL TIMES. (REFERENCE: OSHA 1910.269)

#### LEGEND

- IRON IN EXIST. CONC. MON.
- EXISTING SANITARY SEWER & MANHOLE
- EXISTING WATERLINE
- E.I.P. = EXISTING IRON PIPE
- E.R. = EXISTING REBAR
- E.C.M. = EXISTING CONCRETE MONUMENT
- I.S. = IRON SET
- W/V = WATER VALVE
- W.M. = WATER METER
- F/H = FIRE HYDRANT
- P/P = POWER POLE
- C.P. = COMPUTED POINT
- X 49.0 INDICATES SPOT ELEVATION

#### SITE DATA TABLE:

PARCEL IDENTIFICATION:  
 RO6500-003-004-000  
 DB 5427 PG 622

#### SURVEY NOTES:

1. AREA COMPUTED BY COORDINATE METHOD.
2. ALL DISTANCES ARE HORIZONTAL GROUND.
3. PROPERTY SUBJECT TO ALL EASEMENTS OF RECORD.
4. THE UNDERGROUND UTILITIES SHOWN ON THIS SURVEY ARE LOCATED FROM FIELD SURVEY INFORMATION, AND EXISTING AS-BUILT DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THE SURVEYOR DOES CERTIFY THAT THE UTILITIES ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.
5. THIS MAP IS NOT FOR CONVEYANCE, RECORDATION, OR SALES.
6. PORTIONS OF THIS PROPERTY ARE LOCATED WITHIN A 100 YEAR FLOOD HAZARD AREA ACCORDING TO FLOOD INSURANCE RATE MAP COMMUNITY ID#3720312500J, DATED APRIL 3, 2006, PANEL 3125J.
7. THIS PROPERTY IS ZONED RB, MF-M & O&I-1.
8. SURVEYED IN 2013, AND 2014.
9. COMBINED GRID FACTOR = 1.00000.

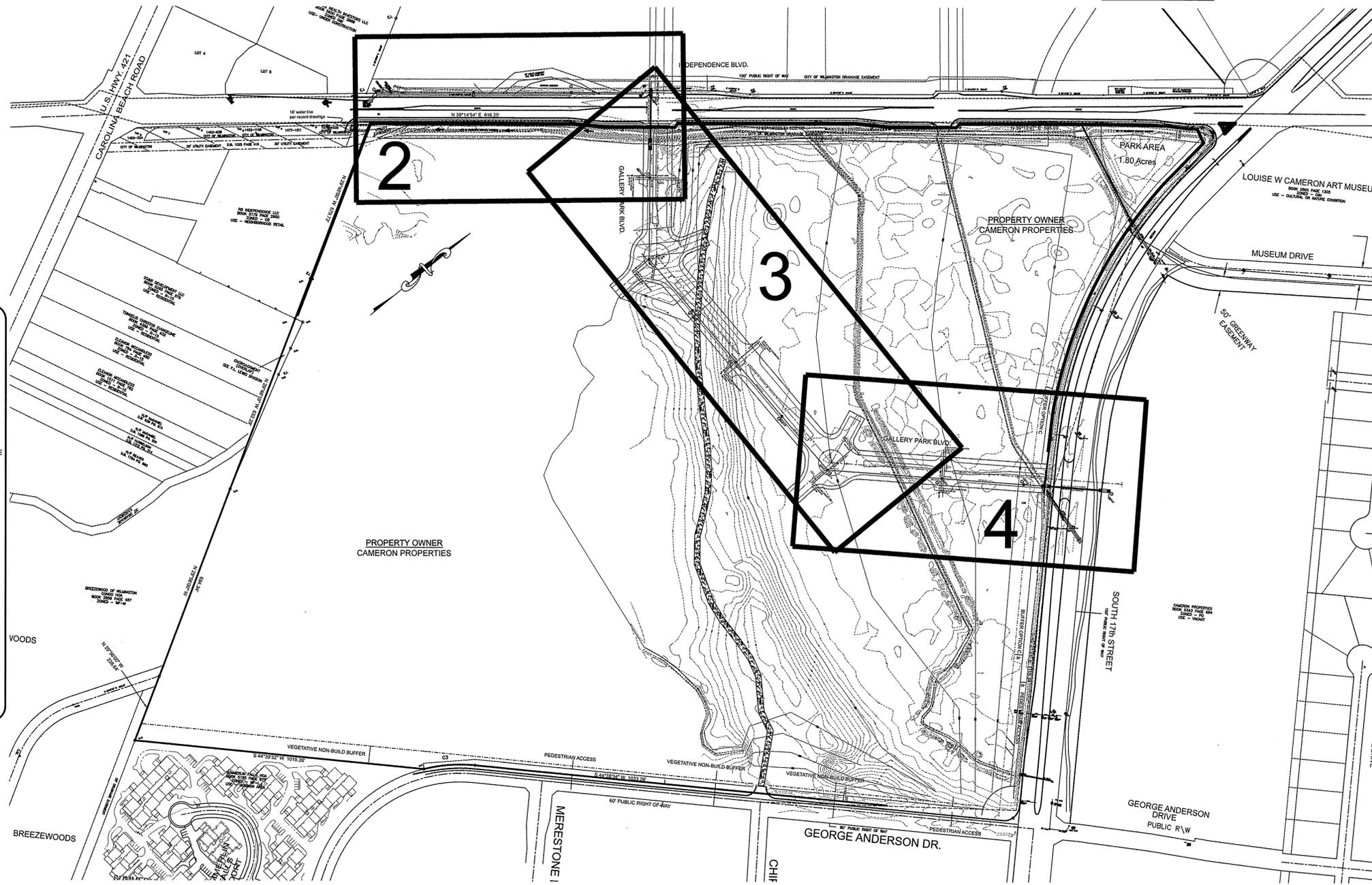
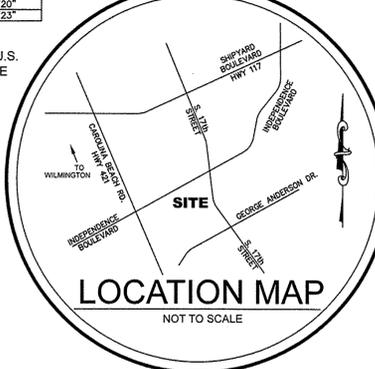
SHEET No.	DESCRIPTION	DRAWING No.
1 OF 4	COVER SHEET and GENERAL NOTES	12498 PI-Sewer
2 OF 4	PLAN SHEET-2	12498 PI-Sewer
3 OF 4	PLAN SHEET-3	12498 PI-Sewer
4 OF 4	PLAN SHEET-4	12498 PI-Sewer

SHEET No.	DESCRIPTION	DRAWING No.
1 OF 4	COVER SHEET and GENERAL NOTES	12498-SHT1
2 OF 4	Plans & Profiles	12498-SHT2
3 OF 4	Plans & Profiles	12498-SHT3
4 OF 4	Plans & Profiles	12498-SHT4
SSD-1	CFPWA SEWER CONSTRUCTION STANDARD DETAILS	CFPWA
SSD-2	CFPWA SEWER CONSTRUCTION STANDARD DETAILS	CFPWA
SSD-3	CFPWA SEWER CONSTRUCTION STANDARD DETAILS	CFPWA

SEWER SYSTEM		TOTAL SEWER:
<b>BARCLAY WEST-PHASE 1 INFRASTRUCTURE</b>		
PHASE 1 SEWER	1580 LF 14" SEWER MAIN	1580 LF 14" SEWER MAIN TOTAL
	1003 LF 14" SEWER MAIN	1560 LF 14" SEWER MAIN TOTAL
	40 LF 10" SEWER MAIN	40 LF 10" SEWER MAIN TOTAL
	577 LF 8" SEWER MAIN	1312 LF 8" SEWER MAIN TOTAL
	1360 LF 12" SEWER MAIN	
	597 LF 8" SEWER MAIN	
ADDITIONAL FOR FUTURE CONNECTIONS		
	40 LF 10" SEWER STUB-OUT MAINS	
	725 LF 8" SEWER STUB-OUT MAINS	

LINE	BEARING	DISTANCE	CURVE	RADIUS	ARC	CHORD	CHORD BEARING	DELTA ANGLE
L1	N 44°59'01" E	120.61	C1	17197.38'	82.91'	82.91'	N 39°08'21" E	0°18'34"
L2	N 39°14'39" E	106.50	C2	18022.79'	889.26'	877.99'	S 24°48'05" E	31°47'20"
L3	N 39°14'39" E	136.50	C3	8333.81'	180.03'	176.18'	S 34°59'00" W	19°19'23"
L4	N 08°15'42" W	11.22						
L5	N 08°15'42" W	5.22						
L6	N 44°54'38" E	120.57						
L7	N 39°14'56" E	230.01						
L8	N 10°53'27" W	15.61						
L9	N 40°15'35" E	220.01						
L10	N 49°12'00" E	80.65						
L11	S 75°08'29" E	56.86						
L12	S 06°14'19" E	201.77						
L13	S 43°48'23" E	182.20						
L14	S 43°48'23" E	73.89						
L15	S 45°21'24" E	40.22						
L16	N 46°59'37" W	33.63						
L17	N 43°20'43" E	207.10						
L18	N 51°18'15" E	101.11						
L19	N 43°20'43" E	98.61						

NOTE:  
 404 WETLANDS DO NOT EXIST ON SITE PER U.S. CORPS OF ENGINEERS DETERMINATION. SEE ACTION SAW-2012-01938. DETERMINATION EXPIRATION DATE 01-18-2018.



#### GENERAL NOTES:

1. PRIOR TO ANY CLEARING, GRADING OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING WILL BE INSTALLED AROUND PROTECTED TREES OR GROVES OF TREES AND NO CONSTRUCTION WORKERS, TOOLS, MATERIALS, OR VEHICLES ARE PERMITTED WITHIN THE TREE PROTECTION FENCING.
2. ANY TREES AND/OR AREAS DESIGNATED TO BE PROTECTED MUST BE PROPERLY BARBED WITH FENCING AND PROTECTED THROUGHOUT CONSTRUCTION TO INSURE THAT NO CLEARING, GRADING OR STAGING OF MATERIALS WILL OCCUR IN THOSE AREAS.
3. NO EQUIPMENT IS ALLOWED ON SITE UNTIL ALL TREE PROTECTION FENCING AND SILT FENCING IS INSTALLED AND APPROVED. PROTECTIVE FENCING IS TO BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT AND CONTRACTORS SHALL RECEIVE ADEQUATE INSTRUCTION ON TREE PROTECTION METHODS.
4. ALL PAVEMENT MARKINGS IN PUBLIC RIGHTS-OF-WAY AND FOR DRIVEWAYS ARE TO BE THERMOPLASTIC AND MEET CITY AND/OR NCDOT STANDARDS.
5. ONCE STREETS ARE OPEN TO TRAFFIC, CONTACT TRAFFIC ENGINEERING TO REQUEST INSTALLATION OF TRAFFIC AND STREET NAME SIGNS. PROPOSED STREET NAMES MUST BE APPROVED PRIOR TO INSTALLATION OF STREET NAME SIGNS.
6. TRAFFIC CONTROL DEVICES (INCLUDING SIGNS AND PAVEMENT MARKINGS) IN AREAS OPEN TO PUBLIC TRAFFIC ARE TO MEET MUTCD (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) STANDARDS.
7. CONTACT TRAFFIC ENGINEERING AT 341-7888 TO ENSURE THAT ALL TRAFFIC SIGNAL FACILITIES AND EQUIPMENT ARE SHOWN ON THE PLAN.
8. CALL TRAFFIC ENGINEERING AT 341-7888 FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION IN THE RIGHT-OF-WAY.
9. TRAFFIC ENGINEERING MUST APPROVE OF PAVEMENT MARKING PRIOR TO ACTUAL STRIPING.
10. ALL PARKING STALL MARKINGS & LANE ARROWS WITHIN THE PARKING AREAS SHALL BE WHITE.
11. ALL TRAFFIC CONTROL SIGNS AND MARKINGS OFF THE RIGHT-OF-WAY ARE TO BE MAINTAINED BY THE OWNER.
12. STOP SIGNS AND STREET SIGNS TO REMAIN IN PLACE DURING CONSTRUCTION.
13. TACTILE WARNING MATS WILL BE INSTALLED ON ALL WHEELCHAIR RAMPS.
14. A UTILITY CUT PERMIT IS REQUIRED FOR EACH OPEN CUT OF A CITY STREET.
15. ANY BROKEN OR MISSING SIDEWALK PANELS OR CURBING WILL BE REPLACED.
16. CONTACT THE CITY AT 341-7888 TO DISCUSS STREET LIGHTING OPTIONS.
17. WATER AND SEWER SERVICE SHALL MEET CAPE FEAR PUBLIC UTILITY AUTHORITY (CFPUA) DETAILS AND SPECIFICATIONS.
18. PROJECT SHALL COMPLY WITH CAPE FEAR PUBLIC UTILITY AUTHORITY CROSS CONNECTION CONTROL REQUIREMENTS. WATER METERS CANNOT BE RELEASED UNTIL ALL REQUIREMENTS ARE MET AND THE STATE HAS GIVEN THEIR FINAL APPROVAL. CALL 343-3810 FOR INFORMATION.
19. IF THE CONTRACTOR DESIRES CFPWA WATER FOR CONSTRUCTION HE SHALL APPLY IN ADVANCE FOR THIS SERVICE AND MUST PROVIDE A REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTION DEVICE ON THE DEVELOPER'S SIDE OF THE WATER METER BOX.
20. ANY IRRIGATION SYSTEM SUPPLIED BY CFPWA WATER SHALL COMPLY WITH CFPWA CROSS CONNECTION CONTROL REGULATIONS. CALL 343-3910 FOR INFORMATION.
21. ANY IRRIGATION SYSTEM SHALL BE CONTROLLED BY A RAIN AND FREEZER SENSOR.
22. ANY BACKFLOW PREVENTION DEVICES REQUIRED BY CFPWA WILL NEED TO BE ON THE LIST OF APPROVED DEVICES BY USFPCO/HR OR ASSE.
23. CONTRACTOR TO FIELD VERIFY EXISTING WATER AND SEWER SERVICE LOCATIONS, SIZES AND MATERIALS PRIOR TO CONSTRUCTION. ENGINEER TO BE NOTIFIED OF ANY CONFLICTS.
24. CONTRACTOR SHALL MAINTAIN ALL-WEATHER ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES DURING CONSTRUCTION.
25. UNDERGROUND FIRE LINES MUST BE PERMITTED AND INSPECTED BY THE WILMINGTON FIRE DEPARTMENT FROM THE PUBLIC RIGHT-OF-WAY TO THE BUILDING. CONTACT THE WILMINGTON FIRE DEPARTMENT DIVISION OF FIRE AND LIFE SAFETY AT 910-41096.
26. NO OBSTRUCTIONS ARE PERMITTED IN THE SPACE BETWEEN THIRTY (30) INCHES AND TEN (10) FEET ABOVE THE GROUND WITHIN THE TRIANGULAR SIGHT DISTANCE.
27. CONTACT THE NORTH CAROLINA ONE CALL CENTER AT 1-800-632-4949 PRIOR TO ANY DIGGING, CLEARING OR GRADING.
28. ANY PVC MAINS ARE TO BE MARKED WITH NO. 10 INSULATED COPPER WIRE INSTALLED THE ENTIRE LENGTH AND STAPPED TO THE PIPE WITH DUCT TAPE, AND STRIPPED TO BARE WIRE AND SECURED TO ALL VALVES AND FITTINGS, ACCESSIBLE IN ALL VALVE AND METER BOXES. ALL WATER MAINS ARE TO HAVE A MINIMUM OF 3 COVER.

#### MORE GENERAL NOTES:

1. CLEARING AND GRUBBING OF SITE TO INCLUDE REMOVAL OF EXISTING CURB, ASPHALT, INLETS, AND ANY OTHER STRUCTURES INCLUDING TREES, STUMPS AND DEBRIS EXISTING ON SITE. TREES NOT REQUIRED TO BE CLEARED FOR CONSTRUCTION SHALL REMAIN UNLESS OTHERWISE DIRECTED. ANY REGULATED TREES TO BE REMOVED ARE FOR ESSENTIAL SITE IMPROVEMENTS.
2. MINIMUM UTILITIES SEPARATION SHALL BE MAINTAINED AS FOLLOWS:
  - a) HORIZONTAL CLEARANCE OF 10 FEET BETWEEN SANITARY SEWER OR STORM SEWERS AND ATER MAINS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A 10' LATERAL SEPARATION, IN WHICH CASE:
    - 1) THE WATER MAIN IS LAID IN A SEPARATE TRENCH WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER, OR
    - 2) THE WATER MAIN IS LAID IN THE SAME TRENCH AS THE SEWER WITH THE WATER MAIN LOCATED AT ONE SIDE ON A BENCH OF UNDISTURBED EARTH, AND WITH THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER, OR
    - 3) WHERE VERTICAL CLEARANCE IS LESS THAN 18" BETWEEN SANITARY SEWER AND WATER OR WHERE SEWER LINE CROSSES ABOVE WATER MAIN, BOTH PIPES SHALL BE DUCTILE IRON PIPE FOR A MINIMUM OF 10' EITHER SIDE OF CROSSING.
    - 4) WHERE VERTICAL CLEARANCE IS LESS THAN 24" BETWEEN SANITARY SEWER AND STORM DRAIN, SANITARY SEWER SHALL BE DUCTILE IRON PIPE FOR A MINIMUM OF 10' EITHER SIDE OF CROSSING.
    - 5) WHERE VERTICAL CLEARANCE IS LESS THAN 12" BETWEEN WATER MAIN AND STORM DRAIN, WATER MAIN SHALL BE DUCTILE IRON PIPE FOR A MINIMUM OF 10' EITHER SIDE OF CROSSING.
3. SEE DETAIL SHEETS FOR TYPICAL UTILITIES HOOKUPS.
4. CONTRACTOR TO COORDINATE STAGING OF CONSTRUCTION ACTIVITIES WITH THE OWNER ARCHITECT TO FACILITATE ONGOING BUSINESS ACTIVITIES.
5. CONTRACTOR TO COORDINATE REMOVAL & RELOCATION OF LIGHTING & OTHER NON-MUNICIPAL UTILITIES SUCH AS ELECTRICAL & TELEPHONE CONNECTIONS WITH THE AFFECTED AGENCIES AND THE OWNER AND ARCHITECT.

#### NOTE WELL:

THESE PLANS ARE FOR THE CONSTRUCTION & INSTALLATION OF THE SEWER MAINS & STUB-OUTS ONLY. NO IMPERVIOUS SURFACES TO BE CONSTRUCTED AT THIS TIME. PROPOSED ROADS & RIGHTS OF WAY LINEWORK ARE FOR GEOGRAPHICAL REPRESENTATION ONLY.

#### BENCHMARK LOCATIONS AND ELEVATIONS

LOCATION:	ELEVATION
1. EX. CONCRETE MONUMENT AT INTERSECTION OF S. 17th STREET & MUSEUM DRIVE.	42.58

REV. NO.	REVISIONS	DATE

Cover Sheet and General Notes

## BARCLAY WEST

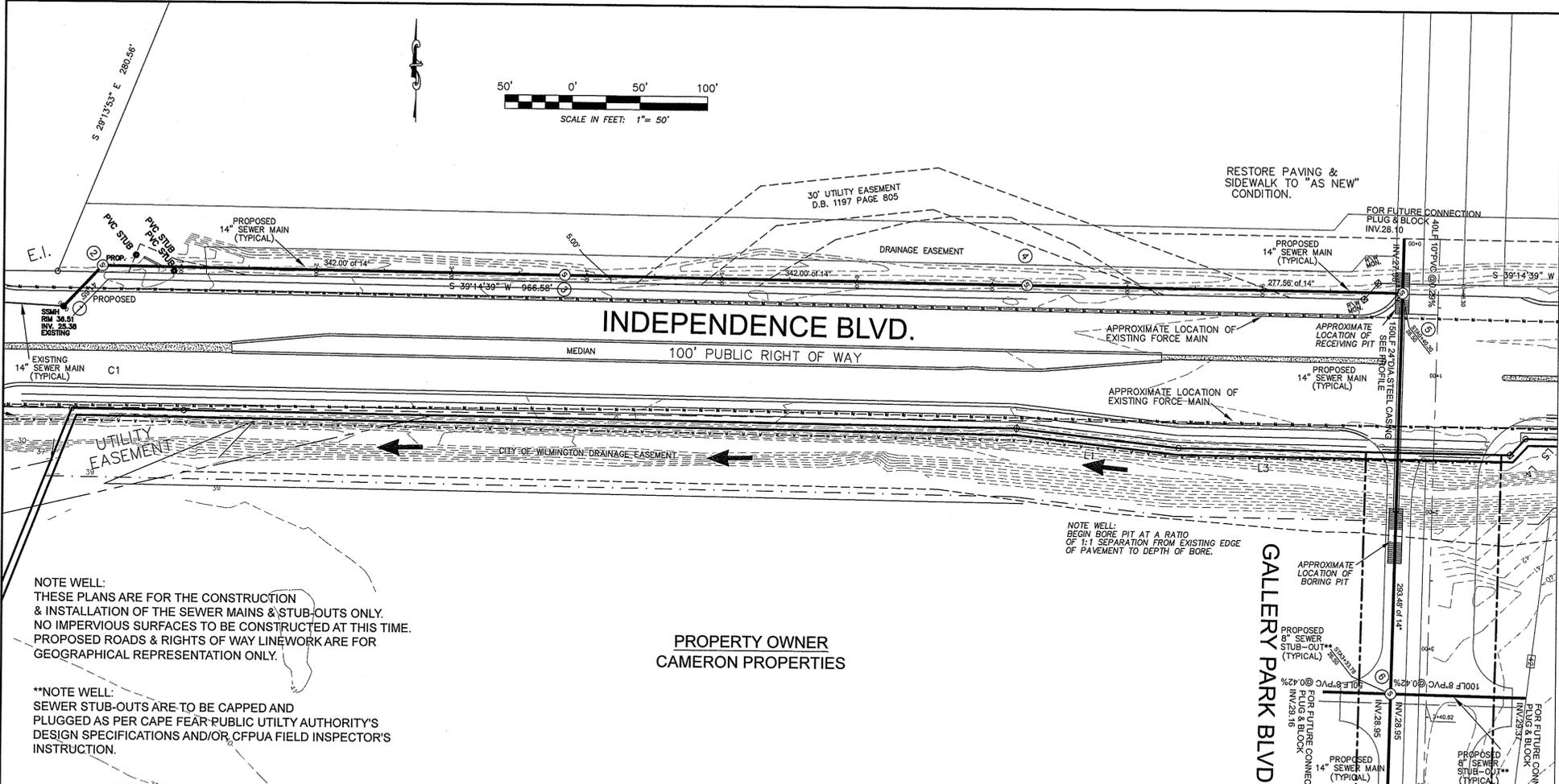
PHASE 1 INFRASTRUCTURE (SANITARY SEWER)

LOCATED IN THE CITY OF WILMINGTON NEW HANOVER COUNTY, NORTH CAROLINA

OWNER: CAMERON PROPERTIES  
 P.O. BOX 3649  
 WILMINGTON, N.C. 28406 PH 910-762-2676

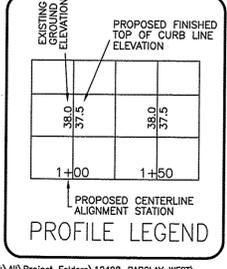
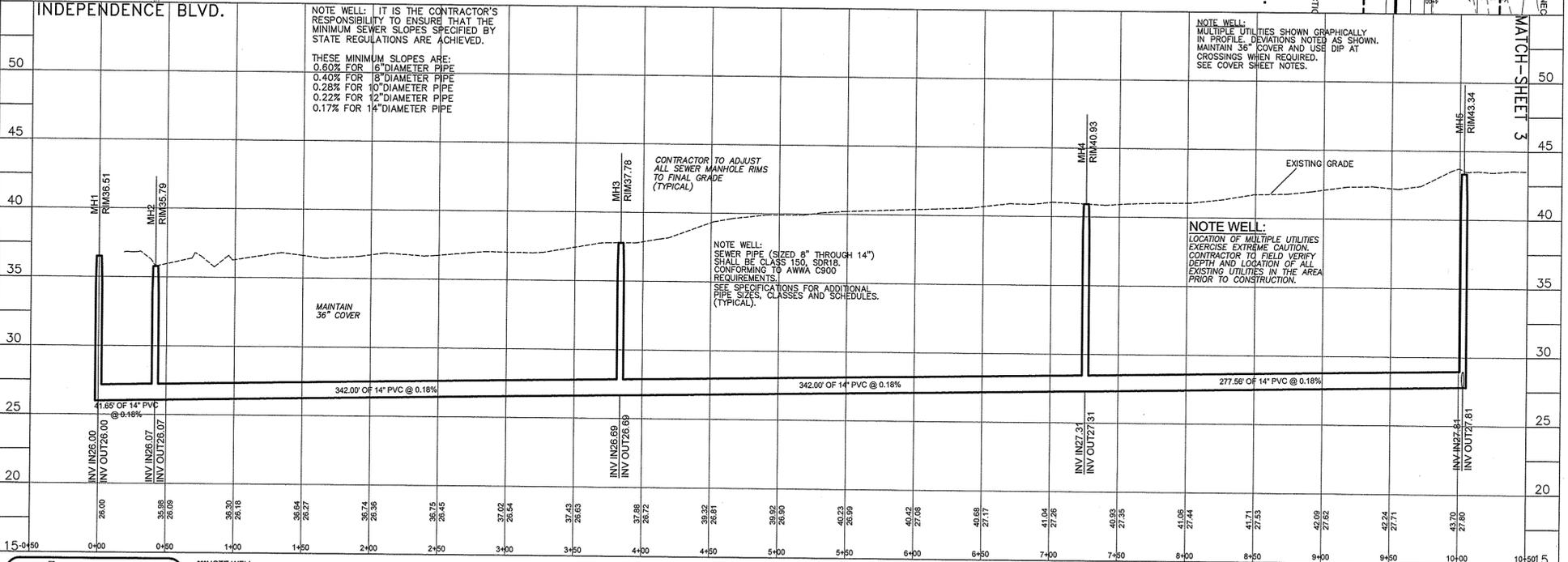
HANOVER DESIGN SERVICES, P.A.  
 LAND SURVEYORS, ENGINEERS & LAND PLANNERS  
 1123 FLORAL PARKWAY  
 WILMINGTON, N.C. 28403  
 PHONE: (910) 343-8002

Date: 2-26-14  
 Scale: 1"=200'  
 Drawn: DBB  
 Checked: DSH  
 Project No: 12498 PI-SEWER  
 Sheet No: 1  
 Of: 4



NOTE WELL:  
 THESE PLANS ARE FOR THE CONSTRUCTION & INSTALLATION OF THE SEWER MAINS & STUB-OUTS ONLY. NO IMPERVIOUS SURFACES TO BE CONSTRUCTED AT THIS TIME. PROPOSED ROADS & RIGHTS OF WAY LINENWORK ARE FOR GEOGRAPHICAL REPRESENTATION ONLY.

\*\*NOTE WELL:  
 SEWER STUB-OUTS ARE TO BE CAPPED AND PLUGGED AS PER CAPE FEAR PUBLIC UTILITY AUTHORITY'S DESIGN SPECIFICATIONS AND/OR C.F.P.U.A. FIELD INSPECTOR'S INSTRUCTION.



NOTE WELL:  
 CONTRACTOR TO COORDINATE MATERIALS AND CONSTRUCTION METHODOLOGIES WITH THE CAPE FEAR PUBLIC UTILITY AUTHORITY PRIOR TO COMMENCING. PLEASE CONTACT C.F.P.U.A. AT (910) 332-6550. DEVELOPER'S INSPECTOR TO BE NOTIFIED PRIOR TO INSTALLATION AND TESTING.

- \*\*\*NOTE WELL:  
 1. EQUIPMENT CLEARANCE MINIMUM 16' FROM TRANSMISSION LINES TO BE MAINTAINED AT ALL TIMES. (REFERENCE: OSHA 1910.269)

NOTE:  
 404 WETLANDS DO NOT EXIST ON SITE PER U.S. CORPS OF ENGINEERS DETERMINATION. SEE ACTION SAW-2012-01938. DETERMINATION EXPIRATION DATE 01-18-2018.

STATION 0+00 THROUGH 10+50  
 INDEPENDENCE BLVD.

REV. NO.	REVISIONS	DATE

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PLANS & PROFILES  
**BARCLAY WEST**  
 PHASE 1 INFRASTRUCTURE (SANITARY SEWER)  
 LOCATED IN THE CITY OF WILMINGTON  
 NEW HANOVER COUNTY, NORTH CAROLINA

OWNER: CAMERON PROPERTIES  
 P.O. BOX 3649  
 WILMINGTON, N.C. 28406 PH 910-762-2676

HANOVER DESIGN SERVICES, P.A.  
 LAND SURVEYORS, ENGINEERS & LAND PLANNERS  
 1123 FLORAL PARKWAY  
 WILMINGTON, N.C. 28403  
 PHONE: (910) 343-8002

Date: 2-26-13  
 Scale: HORIZ: 1"= 50'  
 VERT: 1"= 5'  
 Drawn: DBB  
 Checked: GW  
 Project No: 12498 P1-SEWER  
 Sheet No: 2  
 Of: 4



**\*\*NOTE WELL:**  
SEWER STUB-OUTS ARE TO BE CAPPED AND PLUGGED AS PER CAPE FEAR PUBLIC UTILITY AUTHORITY'S DESIGN SPECIFICATIONS AND/OR C.F.P.U.A. FIELD INSPECTOR'S INSTRUCTION.

PROPERTY OWNER  
CAMERON PROPERTIES

GALLERY PARK BLVD.

PROPERTY OWNER  
CAMERON PROPERTIES

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**NOTE WELL:**  
MULTIPLE UTILITIES SHOWN GRAPHICALLY IN PROFILE. DEVIATIONS NOTED AS SHOWN. MAINTAIN 36" COVER AND USE DIP AT CROSSINGS WHEN REQUIRED. SEE COVER SHEET NOTES.

**NOTE WELL:**  
IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE MINIMUM SEWER SLOPES SPECIFIED BY STATE REGULATIONS ARE ACHIEVED.  
  
THESE MINIMUM SLOPES ARE:  
0.60% FOR 6" DIAMETER PIPE  
0.40% FOR 8" DIAMETER PIPE  
0.25% FOR 10" DIAMETER PIPE  
0.22% FOR 12" DIAMETER PIPE  
0.17% FOR 14" DIAMETER PIPE

**NOTE WELL:**  
LOCATION OF MULTIPLE UTILITIES EXERCISE EXTREME CAUTION. CONTRACTOR TO FIELD VERIFY DEPTH AND LOCATION OF ALL EXISTING UTILITIES IN THE AREA PRIOR TO CONSTRUCTION.

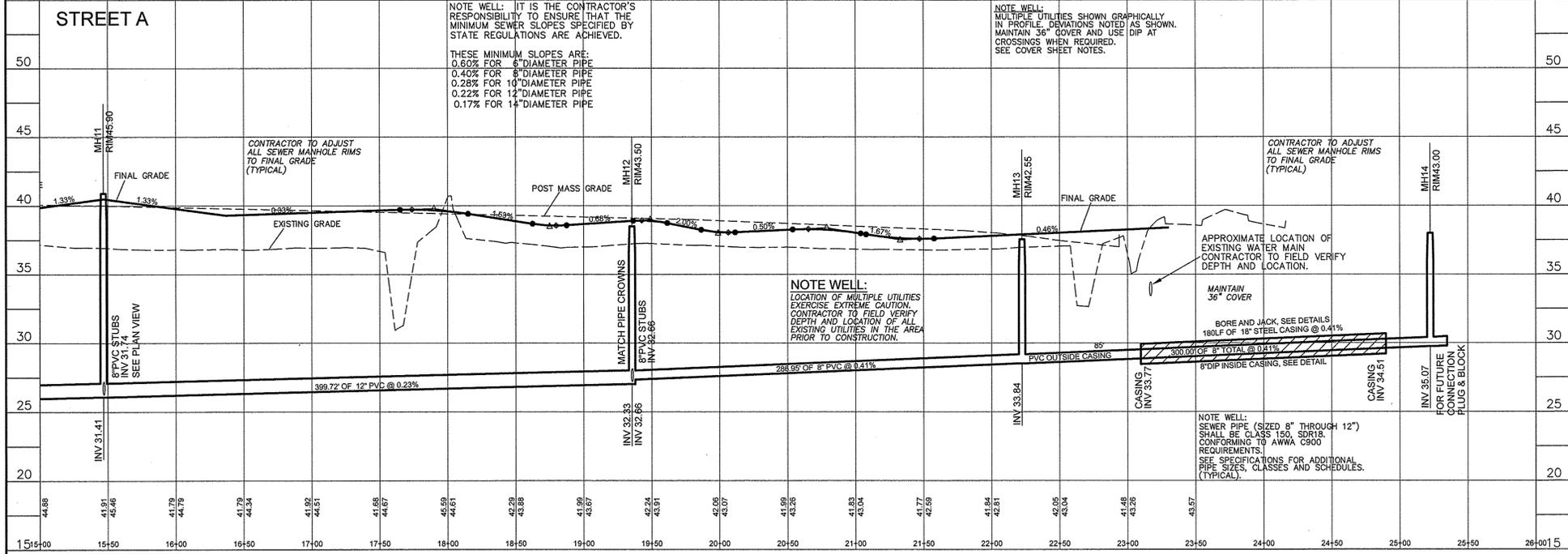
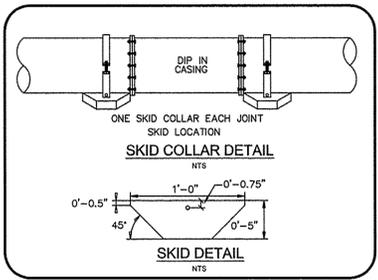
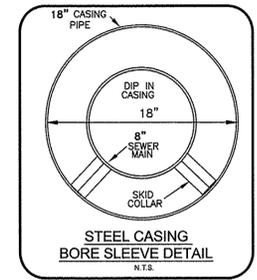
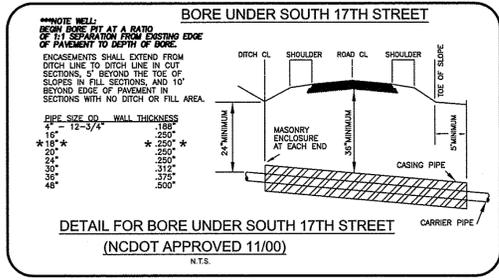
APPROXIMATE LOCATION OF EXISTING WATER MAIN. CONTRACTOR TO FIELD VERIFY DEPTH AND LOCATION.

**NOTE WELL:**  
SEWER PIPE (SIZED 8" THROUGH 12") SHALL BE CLASS 150, SDR18, CONFORMING TO AWWA C900 REQUIREMENTS. SEE SPECIFICATIONS FOR ADDITIONAL PIPE SIZES, CLASSES AND SCHEDULES. (TYPICAL).

**NOTE:**  
404 WETLANDS DO NOT EXIST ON SITE PER U.S. CORPS OF ENGINEERS DETERMINATION. SEE ACTION SA-W-2012-01938. DETERMINATION EXPIRATION DATE 01-18-2018.

Sewer: INDEPENDENCE BLVD.									
MH-ID	MH-Rim	Invert	Size	Slope	MH-ID	MH-Rim	Invert	Length	
1	36.51	26.00	14"	0.20%	2	35.79	26.07	41.65	
2	35.79	26.07	14"	0.18%	3	37.78	26.69	342.00	
3	37.78	26.69	14"	0.18%	4	40.93	27.31	342.00	
4	40.93	27.31	14"	0.18%	5	43.34	27.81	277.56	
								Total	8"
								Total	14"
								Total	576.78

Sewer: GALLERY PARK BLVD.									
MH-ID	MH-Rim	Invert	Size	Slope	MH-ID	MH-Rim	Invert	Length	
5	43.40	27.81	14"	0.18%	6	42.80	28.28	293.48	
6	42.80	28.28	14"	0.18%	7	44.60	28.73	283.30	
7	44.60	28.73	12"	0.23%	8	45.65	29.27	233.89	
8	45.65	29.27	12"	0.23%	9	45.40	29.81	233.89	
9	45.40	29.81	12"	0.23%	10	45.55	30.38	246.43	
10	45.55	30.38	12"	0.23%	11	45.90	30.94	246.43	
11	45.90	30.94	12"	0.23%	12	43.50	31.86	399.72	
12	43.50	31.86	8"	0.42%	13	42.55	33.04	286.95	
13	42.55	33.04	8"	0.42%	14	43.00	15.34	300.00	
								Total	8"
								Total	12"
								Total	1536.36
								Total	14"
								Total	576.78



**PROFILE LEGEND**

EXISTING GROUND ELEVATION	PROPOSED FINISHED TOP OF CURB LINE ELEVATION
38.0	38.0
37.5	37.5
1+00	1+50

**\*\*NOTE WELL:**  
1. EQUIPMENT CLEARANCE MINIMUM 16' FROM TRANSMISSION LINES TO BE MAINTAINED AT ALL TIMES. (REFERENCE: OSHA 1910.269)

**NOTE WELL:**  
CONTRACTOR TO COORDINATE MATERIALS AND CONSTRUCTION METHODOLOGIES WITH THE CAPE FEAR PUBLIC UTILITY AUTHORITY PRIOR TO COMMENCING. PLEASE CONTACT C.F.P.U.A. AT (910) 332-6550. DEVELOPER'S INSPECTOR TO BE NOTIFIED PRIOR TO INSTALLATION AND TESTING.

STATION 15+00 THROUGH 26+00  
GALLERY PARK BLVD.

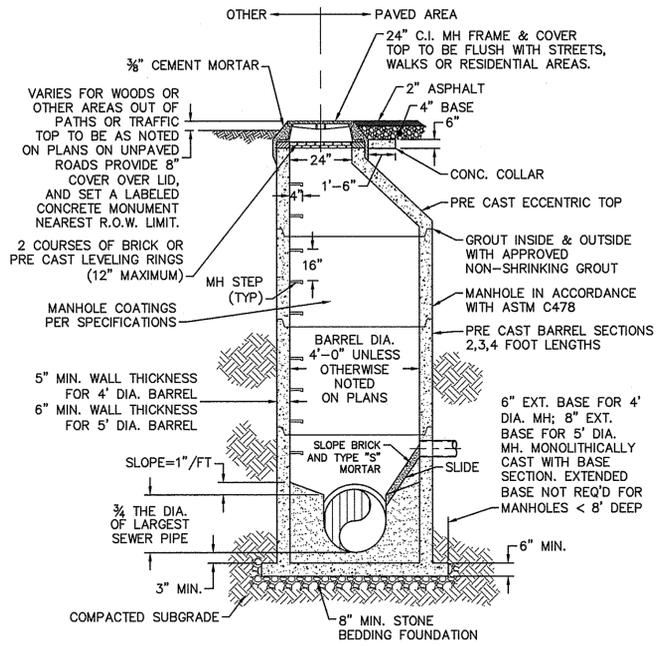
REV. NO.	REVISIONS	DATE

PLANS & PROFILES  
**BARCLAY WEST**  
PHASE 1 INFRASTRUCTURE (SANITARY SEWER)  
LOCATED IN THE CITY OF WILMINGTON, NEW HANOVER COUNTY, NORTH CAROLINA

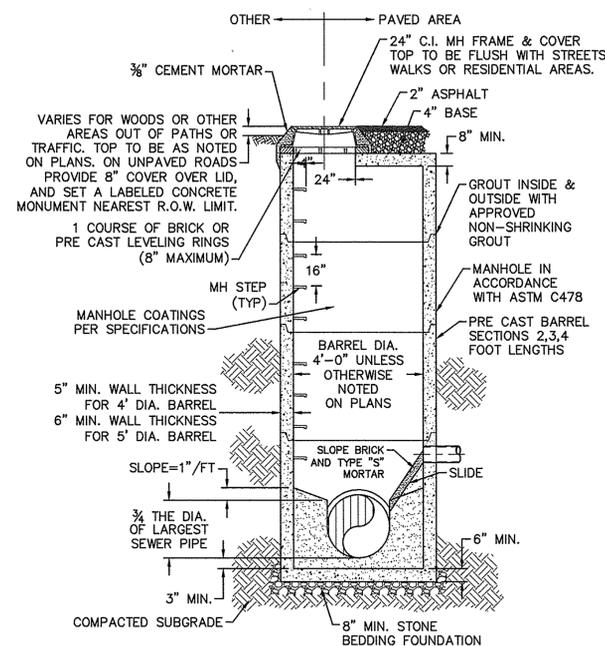
OWNER: CAMERON PROPERTIES  
P.O. BOX 3849  
WILMINGTON, N.C. 28406 PH 910-762-2676

HANOVER DESIGN SERVICES, P.A.  
LAND SURVEYORS, ENGINEERS & LAND PLANNERS  
1123 FLORAL PARKWAY  
WILMINGTON, N.C. 28403  
PHONE: (910) 343-8002

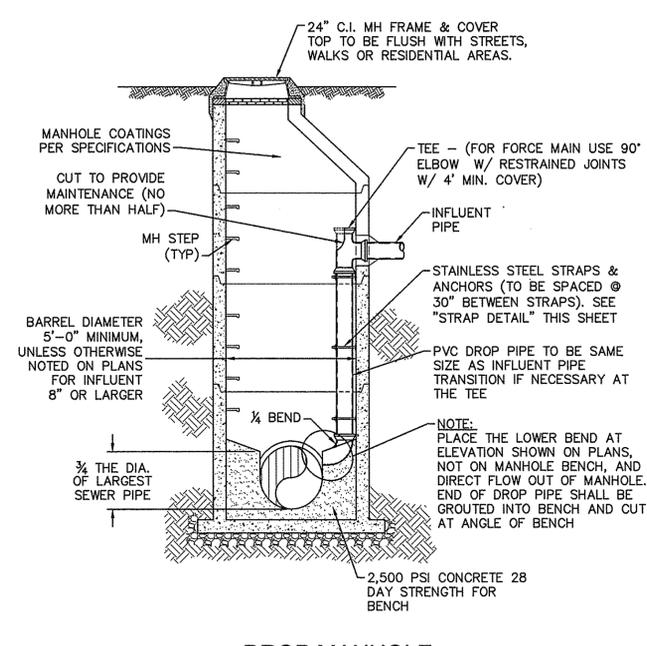
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Scale: HORIZ: 1"=50'  
VERT: 1"=5'  
Drawn: DBB  
Checked: GW  
Project No: 12498 PI-SEWER  
Sheet No: 4  
Of: 4



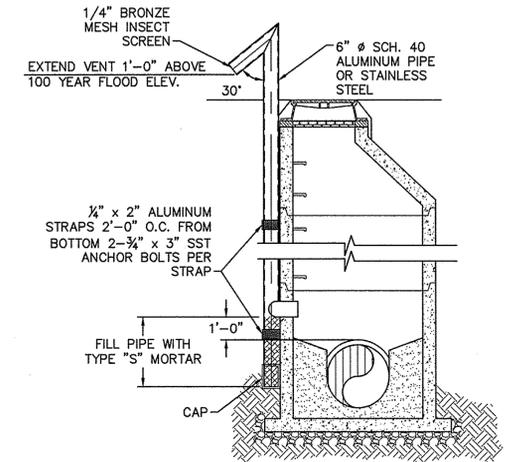
**PRECAST CONCRETE OFFSET MANHOLE TYPICAL**  
(LESS THAN 30° DROP)  
NOT TO SCALE



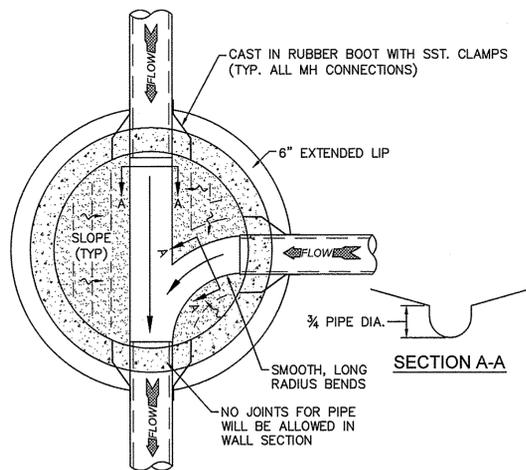
**PRECAST CONCRETE FLAT TOP MANHOLE TYPICAL**  
(LESS THAN 30° DROP)  
NOT TO SCALE



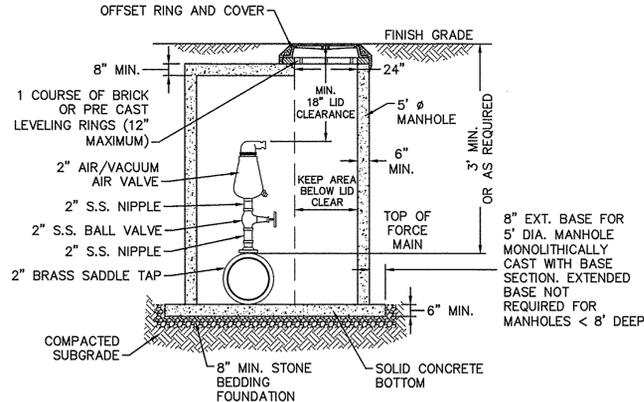
**DROP MANHOLE**  
(MORE THAN 30° DROP)  
NOT TO SCALE



**STANDARD VENT MANHOLE**  
NOT TO SCALE

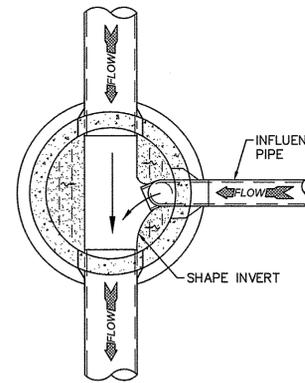


**MANHOLE FLOOR PLAN**  
NOT TO SCALE

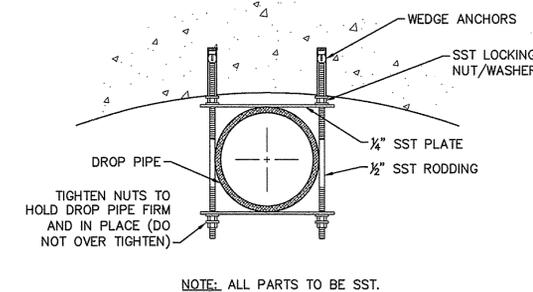


- NOTES:**
1. CONTRACTOR TO INSTALL VALVE AND MANHOLE AT SUFFICIENT DEPTH TO ALLOW FOR ACCESS.
  2. FORCE MAIN TO BE OFFSET IN MANHOLE TO KEEP AREA BELOW LID CLEAR.
  3. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.
  4. USE CAST IN RUBBER BOOT WITH SST. CLAMPS FOR ALL MH CONNECTIONS, INCLUDING FORCE MAIN.

**AIR / VACUUM AND AIR RELEASE COMBINATION VALVE**  
NOT TO SCALE



**DROP MANHOLE FLOOR PLAN**  
NOT TO SCALE



**STRAP DETAIL**  
NOT TO SCALE

**CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD SEWER NOTES:**

1. SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
2. SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE AT RIGHT-OF-WAY LINE. SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN MANHOLE AND TERMINATE AT RIGHT-OF-WAY LINE.
3. ALL SERVICES TYING INTO DUCTILE IRON MAINS SHALL BE CONSTRUCTED OF CLASS 50, DIP, WITH PROTECTO 401 CERAMIC EPOXY LINING.
4. MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE FRONTAGE OF ALL LOTS AND AS SHOWN FOR NEW DEVELOPMENTS.
5. NO FLEXIBLE COUPLINGS SHALL BE USED.
6. ALL STAINLESS STEEL FASTENERS SHALL BE 316.

**STANDARD SEWER NOTES**  
(REQUIRED ON ALL SEWER PLAN AND PROFILE SHEETS)

**GENERAL NOTES:**

1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
4. THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
5. THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

**THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04**

**CFPUA SANITARY SEWER**

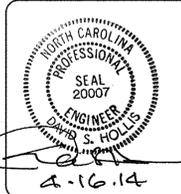
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1/9/12  
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DRAWN BY:  
CFPUA  
CHECKED BY:  
CFPUA  
PROJECT NO.:

**STANDARD DETAILS**

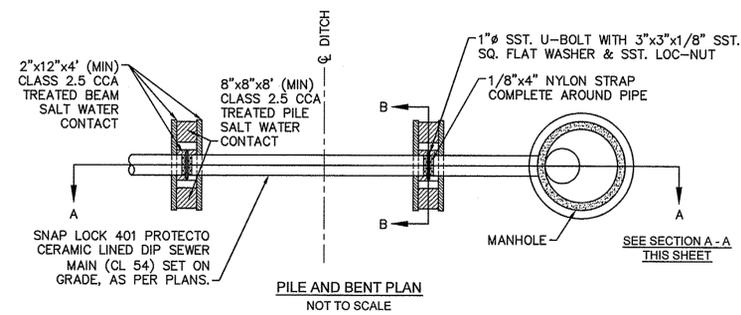
**CAPE FEAR PUBLIC UTILITY AUTHORITY**  
235 GOVERNMENT CENTER DRIVE  
WILMINGTON, NC 28403  
OFFICE: (910)332-6560

**SHEET NO:**  
**SSD-1**

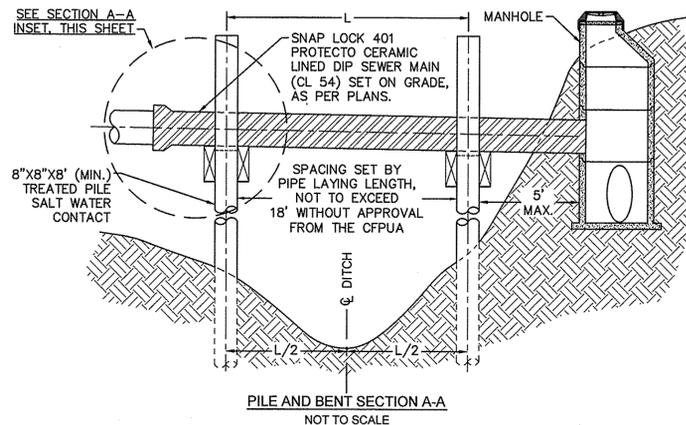
REV:	DESCRIPTION:	DATE:
1	AIR / VACUUM AND AIR RELEASE COMBINATION VALVE REVISED	10/26/12
2	STANDARD SEWER NOTE #6 REVISED	12/10/12



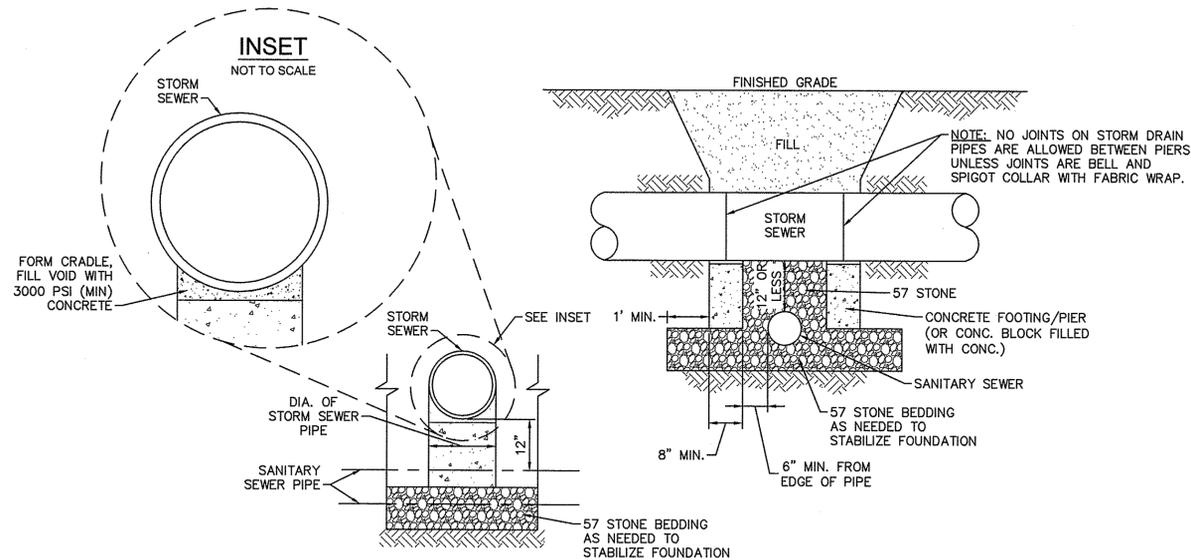
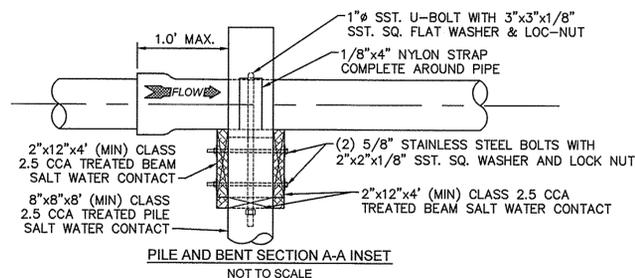
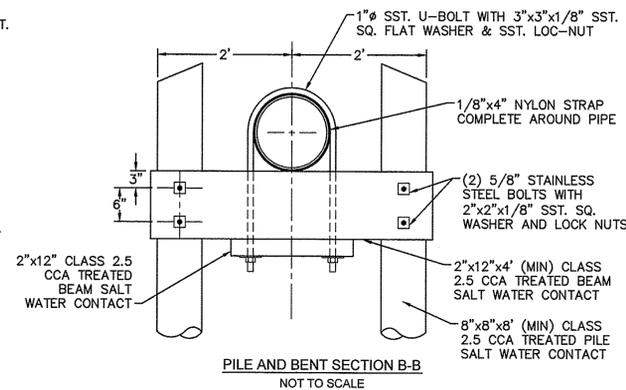




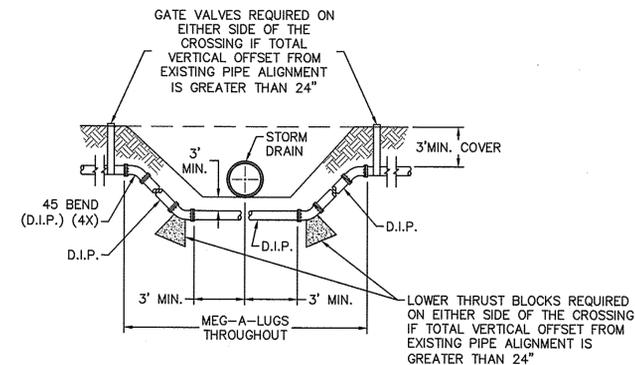
- NOTES:**
- PILES AND PILE DRIVING SHALL CONFORM TO NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, JANUARY 2002, SECTIONS 445, 450, 1082-2 & 1084-2.
  - CENTERLINE OF BOLTS TO BE A MINIMUM OF 3" FROM OUTSIDE EDGE OF TIMBER. BOLTS TO BE A MINIMUM OF 3" CENTERLINE TO CENTERLINE.
  - ALL STAINLESS STEEL SHALL BE 316. STAINLESS STRAP TO BE COLD FORMED.
  - PILE SHALL NOT OBSTRUCT FLOW OR CAUSE EROSION OF DITCH/STREAM BANK.
  - MIN. CLASS 54 DIP-ENGINEER MUST DESIGN LOADING.
  - DESIGN SHALL BE APPROVED BY CFPUA.



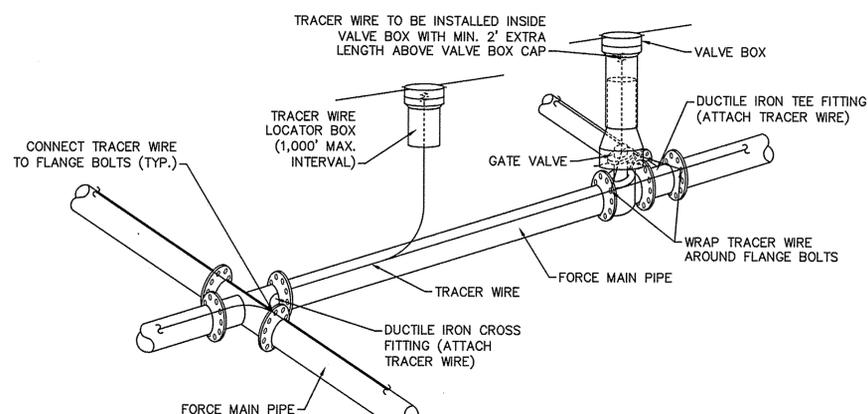
**PILE AND BENT DETAIL**  
NOT TO SCALE



**STRUCTURAL BRIDGING DETAIL FOR STORMWATER OVER GRAVITY SEWER INSTALLATIONS WITH LESS THAN 12" SEPARATION**  
NOT TO SCALE



**FORCE MAIN DITCH AND STORM DRAIN CROSSING**  
NOT TO SCALE



- NOTES:**
- TRACER WIRE SHALL BE #10 COPPER SOLID CORE COPPER WIRE WITH GAS AND OIL RESISTANT INSULATION.
  - WIRE SHALL BE STRAPPED TO ALL PVC FORCE MAIN PIPING WITH DUCT TAPE AT 12-FT. INTERVALS.
  - SECURE WIRE TO ALL TEE AND CROSS FITTINGS.
  - ALL WIRE SPLICES SHALL HAVE WATER PROOF WIRE CONNECTIONS.

**TRACER WIRE DETAIL**  
NOT TO SCALE

- GENERAL NOTES:**
- NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
  - THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
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REV:	DESCRIPTION:	DATE:

**CFPUA SANITARY SEWER**

**STANDARD DETAILS**

CAPE FEAR PUBLIC UTILITY AUTHORITY  
235 GOVERNMENT CENTER DRIVE  
WILMINGTON, NC 28403  
OFFICE: (910)332-6560

DATE: 1/9/12  
SCALE: N/A  
DRAWN BY: CFPUA  
CHECKED BY: CFPUA  
PROJECT NO.:  
**SHEET NO: SSD-3**