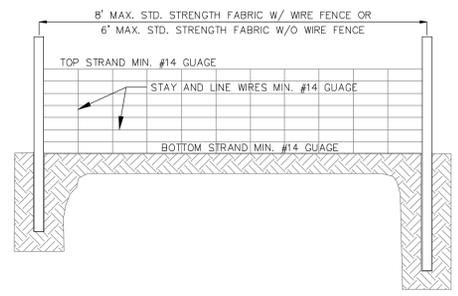


CONSTRUCTION ENTRANCE/EXIT
SD 13-03
NOT TO SCALE

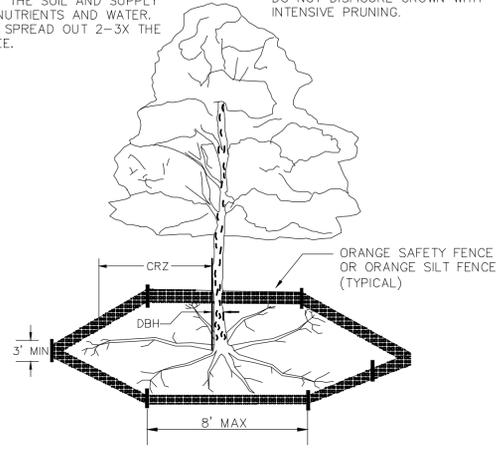


TEMPORARY SILT FENCE
NOT TO SCALE

SILT FENCE	DRAINAGE AREA		LENGTH (LF)	AC per 100 LF	1/4-AC per 100 LF "yes" or "no"
	SF	AC			
SF1	44588	1.02	502	0.20	yes
SF2	46432	1.07	1055	0.10	yes
SF3	9173	0.21	85	0.25	yes
SF4	4369	0.10	162	0.06	yes
SF5	9121	0.21	297	0.07	yes
SF8	1276	0.03	103	0.03	yes
SF9	1526	0.04	87	0.04	yes
SF10	4422	0.10	269	0.04	yes
SF11	44268	1.02	1158	0.09	yes
SF12	15435	0.35	357	0.09	yes
SF13	3396	0.06	148	0.05	yes
SF14	1951	0.04	52	0.09	yes

NOTE: THE CRITICAL ROOT ZONE (CRZ) OF A TREE IS WHERE THE MAJORITY OF A TREE'S ROOTS LAY. 85% OF MOST TREE ROOTS ARE FOUND IN THE TOP 24" OF THE SOIL AND SUPPLY THE MAJORITY OF NUTRIENTS AND WATER. GENERALLY, ROOTS SPREAD OUT 2-3X THE HEIGHT OF THE TREE.

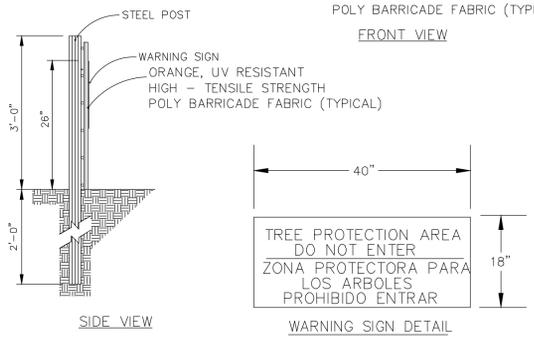
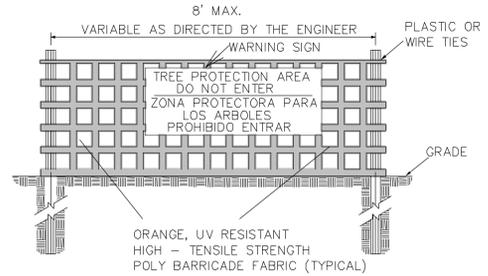
NOTE: CROWN OF THE TREE IS NEEDED FOR LEAF GROWTH TO PRODUCE OXYGEN, FILTER THE AIR, REDUCE WIND AND SOFTEN NOISE. DO NOT DISFIGURE CROWN WITH INTENSIVE PRUNING.



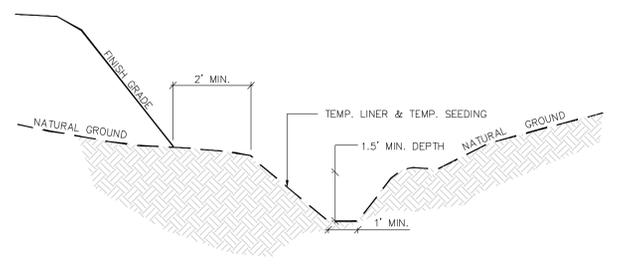
- NOTES:**
1. PROTECT CRITICAL ROOT ZONE (CRZ) OF TREES PRIOR TO CONSTRUCTION. CLEARLY MARK THE TREES AND ERECT A PROTECTIVE BARRIER AT THE CRZ. BARRIER SHALL BE MAINTAINED UNTIL CONSTRUCTION IS COMPLETE.
 2. CRZ RADIUS IS 1 FT PER INCH OF TREE DIAMETER AT BREAST HEIGHT (DBH).
 3. IF CONSTRUCTION OCCURS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

METHOD OF TREE PROTECTION DURING CONSTRUCTION

SD 15-09
NOT TO SCALE



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



Temporary Perimeter Dike Calculations

Perm Dike NUMBER	LENGTH (FT)	HIGH (FT)	LOW (FT)	ELEVATION DIFF. (FT)	SLOPE (%)	VELOCITY (FPS)	Lining	Manning n	TEMPORARY ROCK CHECK DAMS		
									CHECK DAM SPACING (FT)	NUMBER REQUIRED	NUMBER PROVIDED
1	156	12.00	7.00	5.00	3.21	0.70	GRASS	0.035	62	3	3

TEMPORARY CHANNEL LINER SPECIFICATION:

1. SEE TEMPORARY PERIMETER DIKE CHART FOR LINER TYPE AND CHECK DAM SPACING.
2. MIN. SHEAR STRENGTH: STRAW WITH NET (OR APPROVED EQUAL) - 1.45 LBS/FT²

* ALL RATINGS ABOVE ARE MINIMUM SHEAR STRENGTH REQUIREMENTS FOR THE LINER BASED ON UNVEGETATED CONDITIONS.

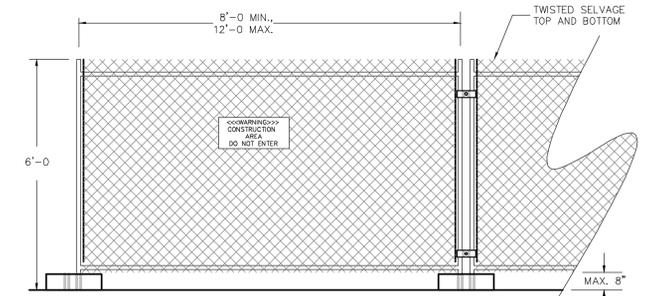
CONSTRUCTION SPECIFICATION:

1. GRADE THE SURFACE OF INSTALLATION AREAS SO THAT THE GROUND IS SMOOTH AND LOOSE.
2. WHEN SEEDING PRIOR TO INSTALLATION, FOLLOW THE STEPS FOR SEED BED PREPARATION, SOIL AMENDMENTS, AND SEEDING AS NOTED IN "SURFACE STABILIZATION 6.1" (GENERAL NOTES) AND AS PER INCENDR STANDARDS.
3. SPREAD SEED BEFORE TEMPORARY LINER IS INSTALLED.
4. LINER SHALL BE INSTALLED FROM TOP OF BANK TO TOP OF BANK ALONG DIKE WITHIN DENUDED LIMITS.

MAINTENANCE:

1. ALL EROSION CONTROL LINING SHALL BE INSPECTED EVERY SEVEN (7) DAYS OR AFTER EACH RAINFALL OCCURRENCE THAT EXCEEDS ONE-HALF (0.5) INCH.

TEMPORARY PERIMETER DIKE
NOT TO SCALE



- NOTES:**
1. CHAIN LINK FABRIC TO BE MIN. 11 GAUGE, GALVANIZED. NO RUSTED OR EXCESSIVELY MALFORMED FABRIC.
 2. FENCE BASES SHALL BE OF SUFFICIENT WEIGHT and/or SPREAD TO ADEQUATELY SUPPORT EACH PANEL.
 3. PANEL-TO-PANEL CONNECTIONS SHALL BE MADE AT A MIN. TWO LOCATIONS PER CONNECTION UNLESS OTHERWISE APPROVED.
 4. PROVIDE CONSTRUCTION WARNING SIGNAGE 50' O.C. ALONG FENCING INSTALLATION.

TEMPORARY CONSTRUCTION FENCING
NOT TO SCALE

SEEDBED PREPARATION:

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTRANCE AREA TO 6 INCHES DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW*).
5. CONTINUE TILLAGE UNTIL A WELL - PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDBED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 60% DAMAGED, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.
10. APPLY:
AGRICULTURAL LIMESTONE - 2 TONS/ACRE
FERTILIZER - 1000 LBS/ACRE (10-10-10)
SUPERPHOSPHATE - 500 LBS/ACRE (20%)
MULCH - 2 TONS/ACRE (SMALL GRAIN STRAW)
ANCHOR - ASPHALT EMULSION AT 450 GAL/ACRE

TREE PROTECTION NOTES:

1. NO LAND DISTURBANCE INCLUDING TREE REMOVAL IS TO OCCUR OUTSIDE THE LIMITS OF DISTURBANCE SHOWN ON THE PLANS. [18-457(b)]
2. PROTECTIVE FENCING IS TO BE PROPERLY MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT. [18-458]
3. LAND CLEARING AND CONSTRUCTION CONTRACTORS SHALL RECEIVE ADEQUATE INSTRUCTION ON TREE PROTECTION REQUIREMENTS AND METHODS. [18-457(d)]
4. ANY TREES AND/OR AREAS DESIGNATED TO BE PROTECTED MUST PROPERLY BARRICADED WITH FENCING AND PROTECTED THROUGHOUT CONSTRUCTION TO INSURE THAT NO CLEARING AND GRADING OR STAGING OF MATERIALS WILL OCCUR IN THOSE AREAS. [18-458]
5. NO EQUIPMENT IS ALLOWED ON THE SITE UNTIL ALL TREE PROTECTION FENCING AND SILT FENCING HAS BEEN INSTALLED AND APPROVED. [18-458]
6. REGULATED AND SIGNIFICANT TREES IN THE STREET YARD [18-456(c)] AND ANY TREES IN ANY REQUIRED BUFFERS [18-456(b)] ARE REQUIRED TO BE RETAINED.

TEMPORARY SEEDING			
GRASS TYPE	AMOUNT/1000 S.F.	TIME OF SEEDING	INITIAL
RYE GRASS	1-2 LBS.	APRIL - JUNE	25 LBS. 10-10-10
BROWNTOP MILLET	1-2 LBS	JUNE - AUGUST	25 LBS 10-10-10

PERMANENT SEEDING			
GRASS TYPE	AMOUNT/1000 S.F.	TIME OF SEEDING	INITIAL
BERMUDA COMMON	1-2 LBS.	APRIL - JUNE	25 LBS. 10-10-10
FESCUE, TALL (KENTUCKY 31)	5-7 LBS	JUNE - AUGUST FEB. - OCT.	25 LBS 10-10-10
SERICEA LESPEDEZA (SLOPES)	1-2 LBS	MARCH - APRIL	25 LBS 10-10-10

REVNO.	DESCRIPTIONS	DATE
H	QTY OF WILMINGTON TRC SUBMITTAL 3	07/10/2015
G	NEW HANOVER COUNTY EROSION CONTROL SUBMITTAL 2	06/11/2015
F	CAPE FEAR PUBLIC UTILITY AUTHORITY SUBMITTAL	06/11/2015
E	QTY OF WILMINGTON TREE REMOVAL	06/05/2015
D	QTY OF WILMINGTON TRC SUBMITTAL 2	05/29/2015
C	QTY OF WILMINGTON STORMWATER SUBMITTAL	05/20/2015
B	NEW HANOVER COUNTY EROSION CONTROL SUBMITTAL	05/13/2015
A	QTY OF WILMINGTON TRC SUBMITTAL	04/08/2015

FINAL DRAWINGS
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CONSTRUCTION



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RIVERLIGHTS
by Newland COMMUNITIES
NORTH AMERICA SEKISUI HOUSE, LLC

RIVERLIGHTS MARINA VILLAGE
SEDIMENT & EROSION CONTROL
DETAILS

DATE: 08APR15
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DRAWN: EEM
DESIGNED: EEM
CHECKED: RMC
PROJ. MGR.: NJL

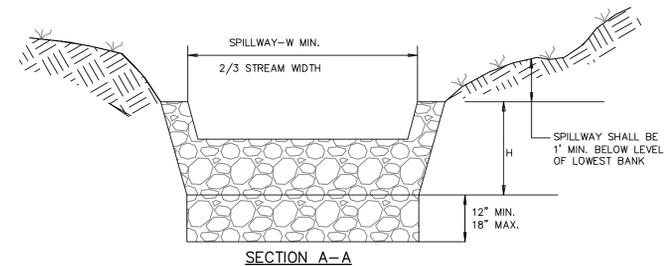
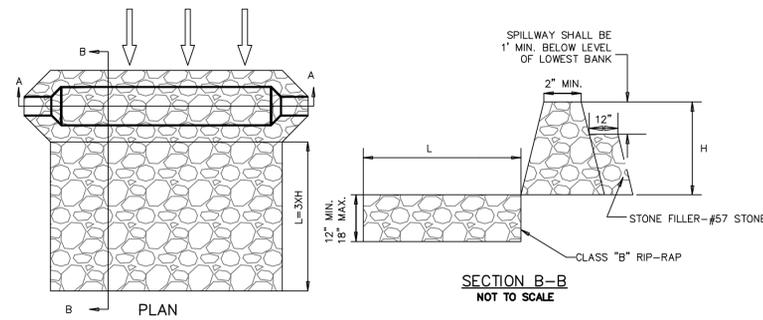
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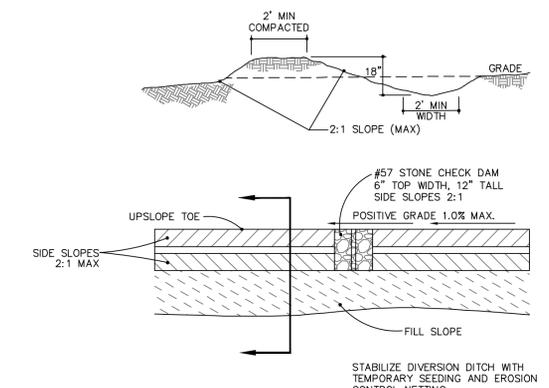
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NOT FOR CONSTRUCTION

REVISION: H

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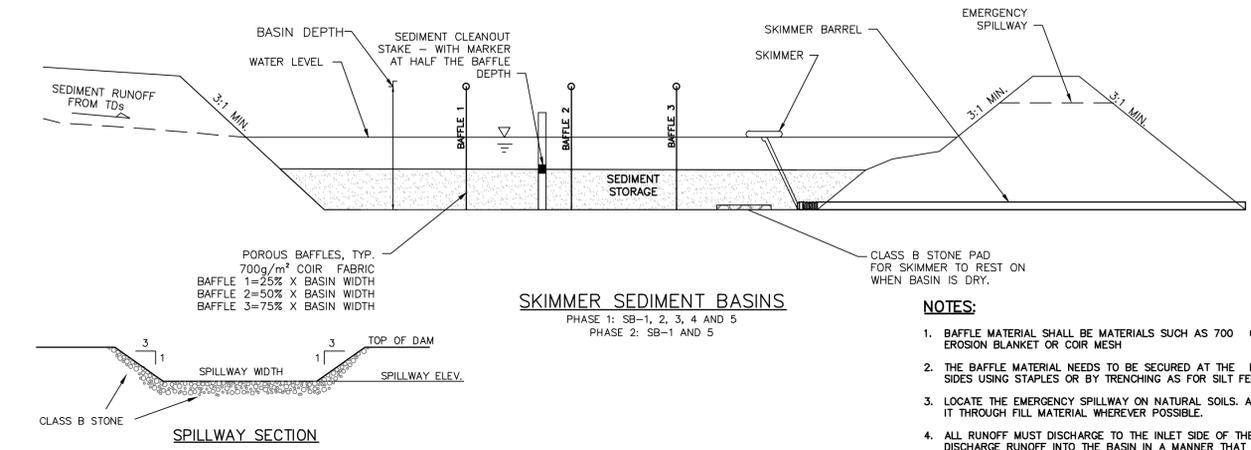
SECTION A-A
DITCH CHECK DAM
SD 13-04
NOT TO SCALE



TEMPORARY DIVERSION DITCH
NOT TO SCALE

DITCH	DA	A441 DA	LENGTH	d	HIGH	LOW	SLOPE	SLOPE	LINING
1	0.72	0.00	108	0.58	18.60	8.00	0.0209	8.09%	EXCESSOR
2	0.58	0.00	180	0.48	22.20	8.00	0.0201	2.61%	EXCESSOR
3	0.22	0.00	126	0.58	22.00	8.00	0.0469	6.66%	EXCESSOR
4	2.06	0.00	366	1.22	22.00	8.00	0.0058	0.58%	EXCESSOR

DITCH	MANNING	VELOCITY (FT/S)	SHEAR STRESS	CHECK DAM SPACING (FT)	NUMBER REQUIRED	NUMBER PROVIDED
1	0.066	2.09	1.79	30	3	3
2	0.066	1.36	0.79	77	2	2
3	0.066	1.58	1.13	45	3	3
4	0.066	1.19	0.49	366	1	2



SKIMMER SEDIMENT BASINS
PHASE 1: SB-1, 2, 3, 4 AND 5
PHASE 2: SB-1 AND 5

Skimmer No.	Drainage Area (ac)	Rational C	Time of Co. n. (min)	I10 Intensity (in/hr)	Q10 Peak Flow (cfs)	Required SA (325 x Q10) (sf)	Provided SA (sf)	Required Vol (1800cf/ac x DA) (cf)	Basin Depth (ft)	Provided Vol (cf)	Weir Width (ft)
TSB-1	1.13	0.85	5.00	7.23	6.94	2,257	2,736	2,034	1.50	3,627	6.0
TSB-2	2.48	0.85	5.00	7.23	15.21	4,943	4,948	4,455	1.50	6,426	6.0
TSB-3	2.71	0.85	5.00	7.23	16.65	5,413	6,000	4,878	1.50	7,981	6.0

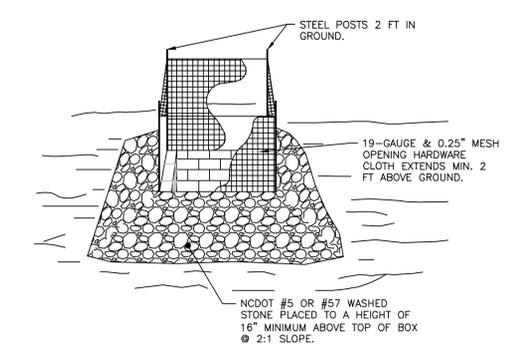
FAIRCLOTH SKIMMER SIZE CALCULATION - PHASE 1

Skimmer No.	Dewatering Time (days)	Skimmer Outflow (cf/day)	Skimmer Size (in)	Orifice Diameter (in)	Orifice Radius (in)	Barrel Outflow (gpm)	Barrel Pipe (in)
TSB-1	3	1,209	1.5	1.1	0.6	6.3	4.0
TSB-2	3	2,142	2.0	1.5	0.8	11.1	4.0
TSB-3	3	2,660	2.0	1.7	0.8	13.8	4.0

Faircloth Skimmer Selection Table

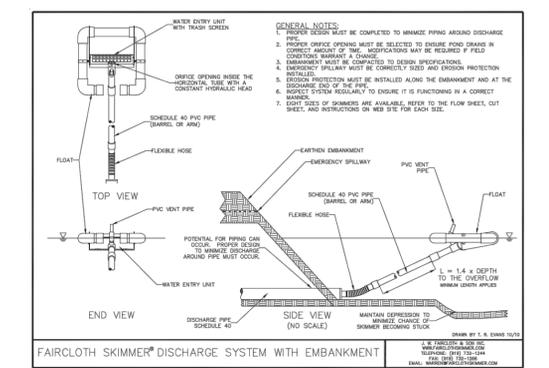
Skimmer Size (in)	Outflow Qmax (cf/day)	Head (ft)
1.5	1,728	0.125
2	3,283	0.167
2.5	6,234	0.208
3	9,774	0.250
4	20,109	0.333
5	32,832	0.333
6	51,840	0.417
8	97,978	0.500

- NOTES:
- Q10 Peak Flow were taken from Rational Method.
 - Required Surface Areas and Volumes were taken from NCDENR Sediment & Erosion Manual.
 - Faircloth Skimmer Selection Table taken from Table 4-2. NCDOT Level III-A Design of Sediment & Erosion Control Plans Manual



- NOTES:
- DRIVE 5-FOOT STEEL POSTS (1.25 lb/ft steel) 2 FEET INTO THE GROUND SURROUNDING THE INLET. SPACE POSTS EVENLY AROUND THE PERIMETER OF THE INLET, A MAXIMUM OF 4 FEET APART.
 - SURROUND THE POSTS WITH AT LEAST 19-GAUGE HARDWARE CLOTH TO THE STEEL POSTS AT THE TOP, MIDDLE, AND BOTTOM FOR A MIN. 2 FEET ABOVE THE GROUND. PLACING A 2-FOOT FLAP OF THE WIRE MESH UNDER THE GRAVEL FOR ANCHORING AND REMOVAL IS RECOMMENDED.
 - UNIFORMLY GRADE A SHALLOW DEPRESSION APPROACHING THE INLET. THE TOP ELEVATION OF THE STRUCTURE MUST BE AT LEAST 12-INCHES LOWER THAN THE SURROUNDING GROUND ELEVATION DOWNSLOPE FROM THE INLET TO ENSURE THAT STORM FLOWS GET INTO THE INTENDED INLET; UNLESS OTHER SEDIMENT-CONTROL DEVICES ARE INSTALLED TO PREVENT OFF-SITE SEDIMENT-RUNOFF.

TEMP. STORM DRAIN INLET PROTECTION
NOT TO SCALE



SKIMMER DETAIL WITH EMBANKMENT
NOT TO SCALE

REVNO.	DESCRIPTIONS	DATE
H	CITY OF WILMINGTON TRC SUBMITTAL 3	07/10/2015
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A	CITY OF WILMINGTON TRC SUBMITTAL	04/08/2015

FINAL DRAWINGS SEAL
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NORTH CAROLINA PROFESSIONAL ENGINEER
W. COLAS J. LAURETTA
035107
7/10/15

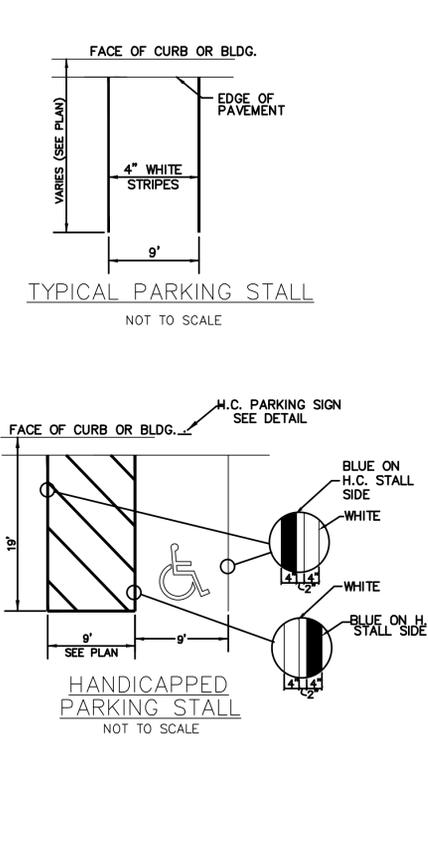
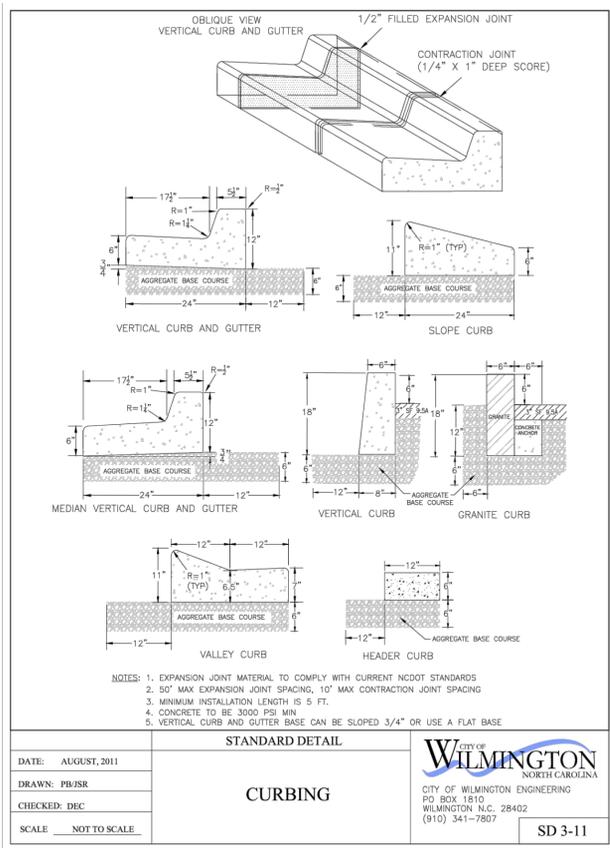
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RIVERLIGHTS
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NORTH AMERICA SEKISUI HOUSE, LLC

RIVERLIGHTS MARINA VILLAGE
SEDIMENT & EROSION CONTROL DETAILS

DATE: 08APR15
MCE PROJ. # 2735-0124
DRAWN: EEM
DESIGNED: EEM
CHECKED: RMC
PROJ. MGR.: NJL
STATUS: FINAL DESIGN
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SCALE: HORIZONTAL: ---
VERTICAL: ---
MAC FILE NUMBER: CE-502
DRAWING NUMBER: 27
REVISION: H



GENERAL NOTES

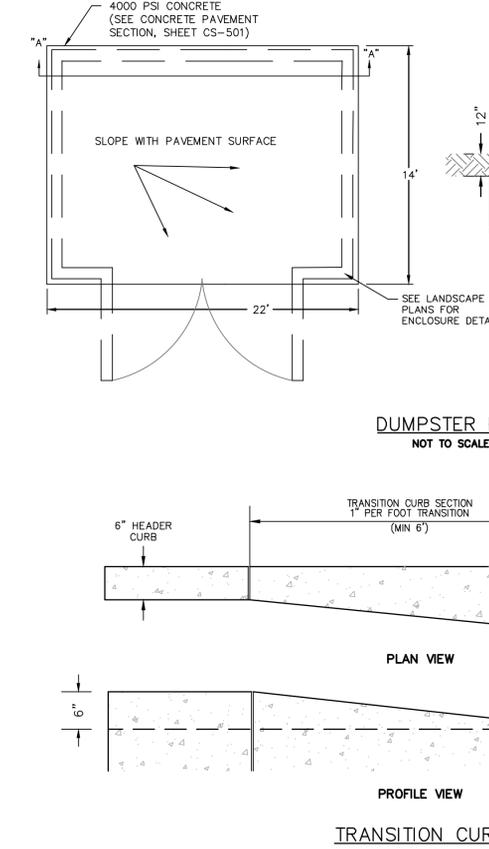
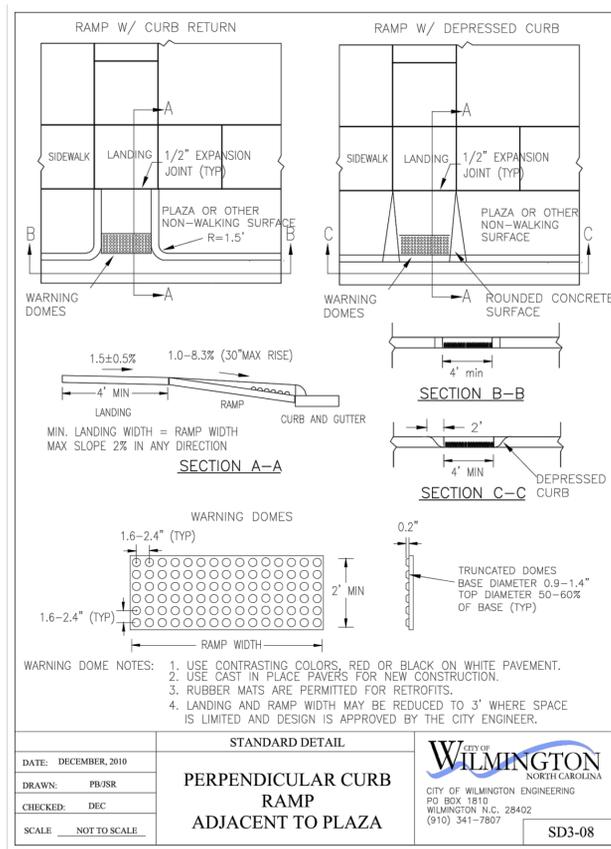
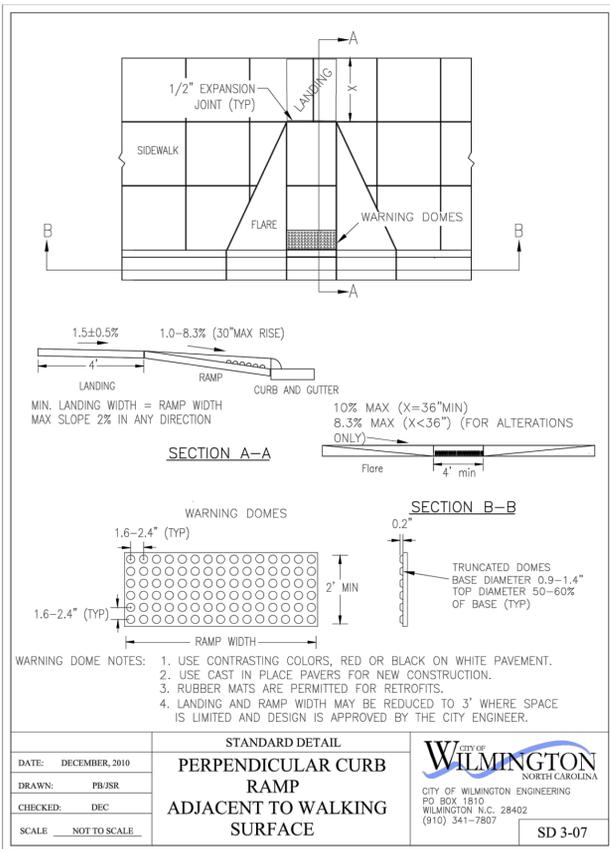
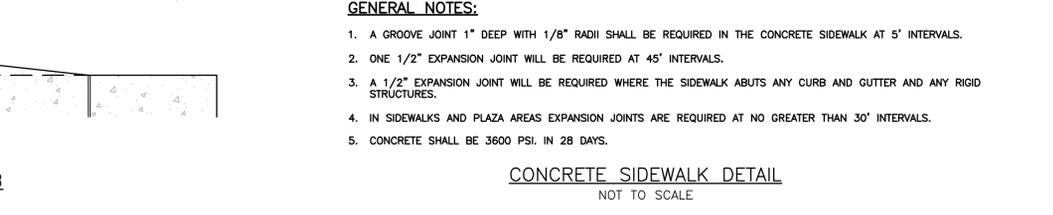
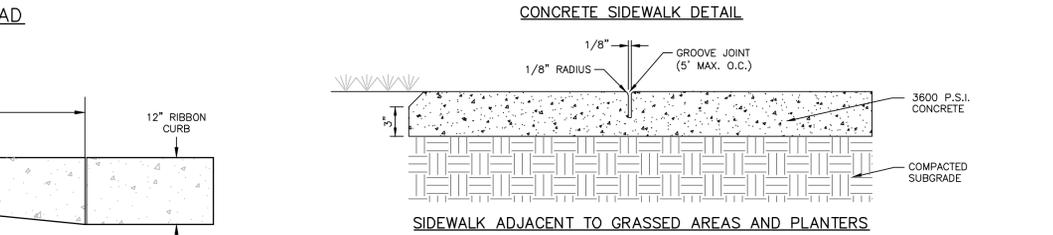
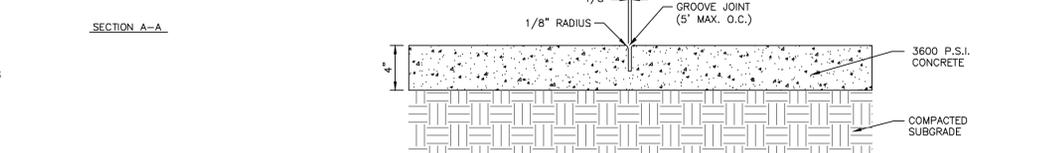
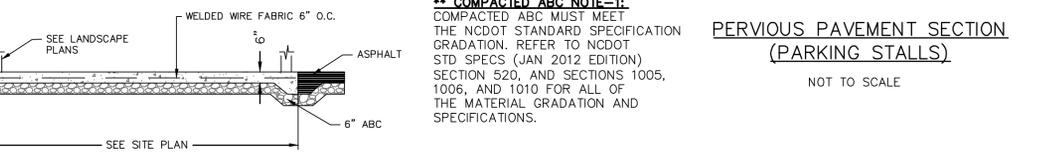
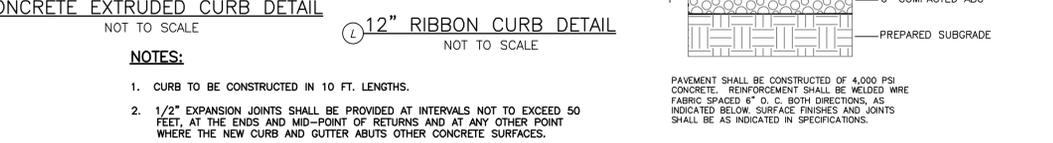
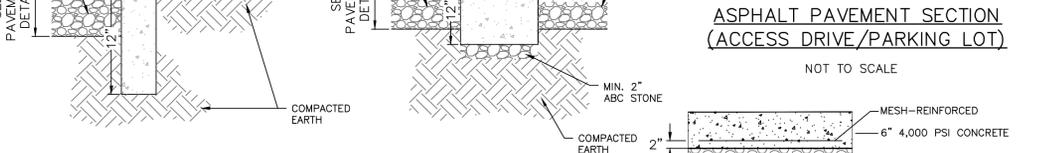
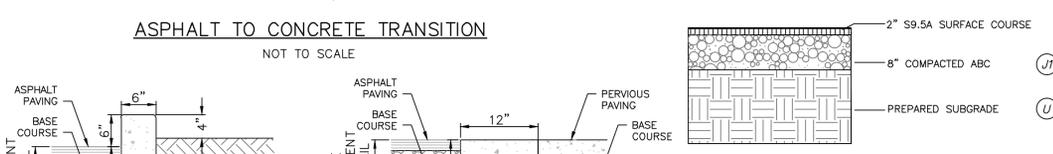
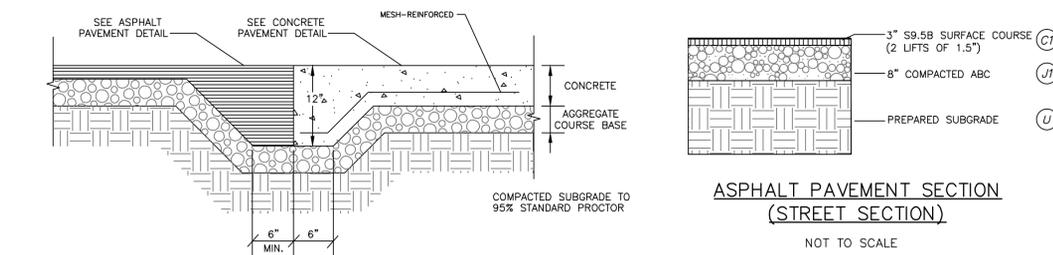
1. IN ACCORDANCE WITH N.C.G.S. 136-44.14, ALL STREET CURBS BEING CONSTRUCTED OR RECONSTRUCTED SHALL PROVIDE WHEELCHAIR RAMPS FOR THE PHYSICALLY HANDICAPPED ON EACH SIDE OF ANY STREET OR ROAD, WHERE CURBS AND SIDEWALKS ARE PROVIDED AND AT OTHER MAJOR POINTS OF PEDESTRIAN FLOW.
2. WHEELCHAIR RAMPS SHALL BE LOCATED AS INDICATED IN DETAIL DRAWINGS; HOWEVER, EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. MAY AFFECT PLACEMENT.
3. CURB RAMPS SHALL HAVE DETECTABLE WARNINGS EXTENDING THE FULL WIDTH OF THE RAMP AND A MINIMUM OF 2'-FT. IN LENGTH.

CONSTRUCTION NOTES

1. CONSTRUCTION SHALL CONFORM WITH CONSTRUCTION STANDARDS OF THE GOVERNING BODY WHICH HAS JURISDICTION OF THE PARTICULAR STREET.
2. WHEELCHAIR RAMPS SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE WITH THE SURFACE HAVING A ROUGH, NON-SKID TYPE FINISH.
3. A 1/2"-IN. EXPANSION JOINT SHALL BE REQUIRED WHERE THE CONCRETE WHEELCHAIR RAMP JOINS ANY RIGID PAVEMENT OR STRUCTURE.
4. IN NO CASE SHALL THE WIDTH OF A CURB RAMP OR CURB CUT BE LESS THAN 40"-IN. (3'-FT, 4'-IN.), NOT INCLUDING THE FLARED SIDES.
5. TRANSITIONS FROM RAMPS TO WALKS, GUTTERS OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
6. THE MAXIMUM SLOPE ON THE CURB RAMP RUN IS 1:12.
7. THE MAXIMUM CROSS SLOPE OF THE CURB RAMP IS 1:50.
8. MAXIMUM SLOPES OF ADJOINING GUTTERS, ROAD SURFACE IMMEDIATELY ADJACENT TO THE CURB RAMP, OR ACCESSIBLE ROUTE SHALL NOT EXCEED 1:20.
9. ANY RAISED ISLANDS IN CROSSINGS SHALL BE CUT THROUGH LEVEL WITH THE STREET OR HAVE CURB RAMPS AT BOTH SIDES AND A LEVEL AREA AT LEAST 48"-IN. LONG BETWEEN THE CURB RAMPS.
10. DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9"-IN., A HEIGHT OF NOMINAL 0.2"-IN. AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35"-IN. AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT.

ADDITIONAL NOTES

1. STOP BARS SHALL BE USED WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL, STOP SIGN OR OTHER LEGAL REQUIREMENT.
2. PARKING SHALL BE ELIMINATED A MINIMUM OF 20 FEET BACK OF THE PEDESTRIAN CROSSWALK.
3. ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION. THIS DOCUMENT IS AVAILABLE FROM THE SUPERINTENDENT OF DOCUMENTS, U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C. 20402.
4. CURB RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARED SIDES.
5. THE BOTTOM OF DIAGONAL (CORNER TYPE) CURB RAMPS AT MARKED CROSSINGS SHALL HAVE 48"-IN. MINIMUM CLEAR SPACE WITHIN THE MARKINGS.
6. IF DIAGONAL CURB RAMPS HAVE FLARED SIDES, THEY SHALL HAVE AT LEAST A 24"-IN. LONG SEGMENT OF STRAIGHT CURB LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING.



- GENERAL NOTES:**
1. A GROOVE JOINT 1" DEEP WITH 1/8" RADI SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' INTERVALS.
 2. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 45' INTERVALS.
 3. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK ABUTS ANY CURB AND GUTTER AND ANY RIGID STRUCTURES.
 4. IN SIDEWALKS AND PLAZA AREAS EXPANSION JOINTS ARE REQUIRED AT NO GREATER THAN 30' INTERVALS.
 5. CONCRETE SHALL BE 3600 PSI. IN 28 DAYS.

S:\2725\0124 Marina Village\Drawings\DETAILS-027350124.dwg, 7/10/2015 11:42:40 AM, rbaurens

REVNO.	DESCRIPTIONS	REVISIONS	DATE
H	CITY OF WILMINGTON TRC SUBMITTAL 3		07/10/2015
G	NEW HANOVER COUNTY EROSION CONTROL SUBMITTAL 2		06/11/2015
F	CAPE FEAR PUBLIC UTILITY AUTHORITY SUBMITTAL		06/11/2015
E	CITY OF WILMINGTON TREE REMOVAL		06/05/2015
D	CITY OF WILMINGTON TRC SUBMITTAL 2		05/29/2015
C	CITY OF WILMINGTON STORMWATER SUBMITTAL		05/20/2015
B	NEW HANOVER COUNTY EROSION CONTROL SUBMITTAL		05/13/2015
A	CITY OF WILMINGTON TRC SUBMITTAL		04/08/2015

FINAL DRAWINGS SEAL
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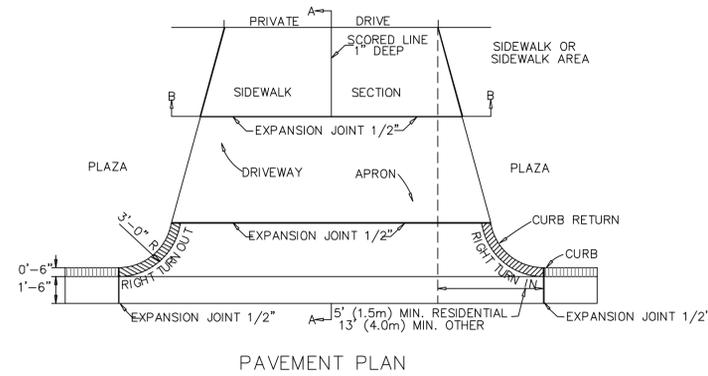
NORTH CAROLINA PROFESSIONAL ENGINEER
WILKELAS J. LAMBERTA
035107

MCKIM & CREED
243 North Front Street
Wilmington, North Carolina 28401
Phone: (910)343-1048, Fax: (910)251-8282
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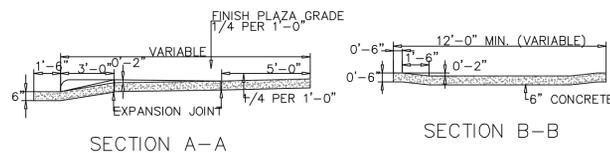
RIVERLIGHTS
Newland COMMUNITIES
NORTH AMERICA SEKISUI HOUSE, LLC

RIVERLIGHTS MARINA VILLAGE
SITE DETAILS

DATE: 08APR15	SCALE: HORIZONTAL	MAC FILE NUMBER: CS-501
MCE PROJ. # 2735-0124	DESIGNED: EEM	DRAWING NUMBER: 28
CHECKED: RMC	PROJ. MGR.: NJL	REVISION: H
STATUS: FINAL DESIGN		NOT FOR CONSTRUCTION

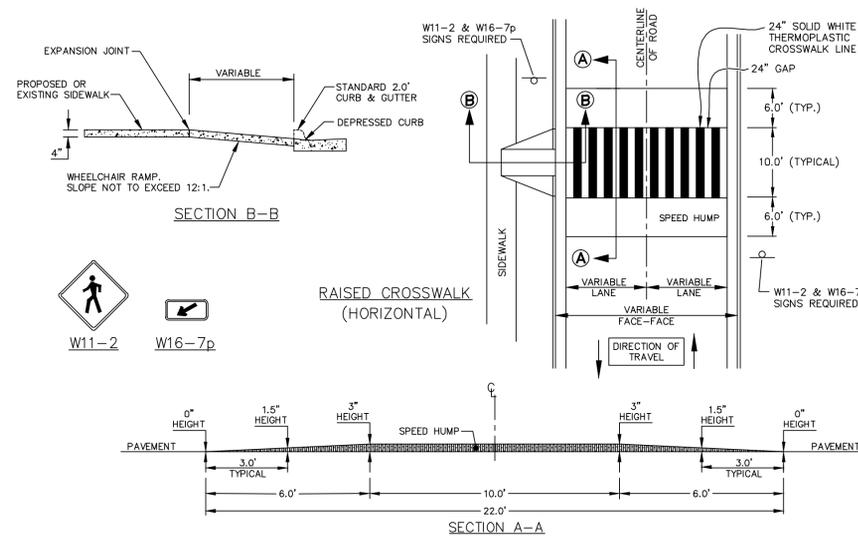


PAVEMENT PLAN



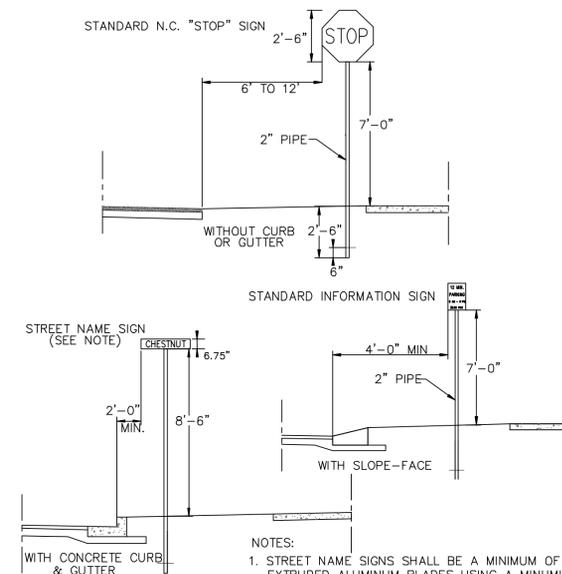
STANDARD DRIVEWAY DETAIL

SD 8-02
NOT TO SCALE



RAISED CROSSWALK (HORIZONTAL)

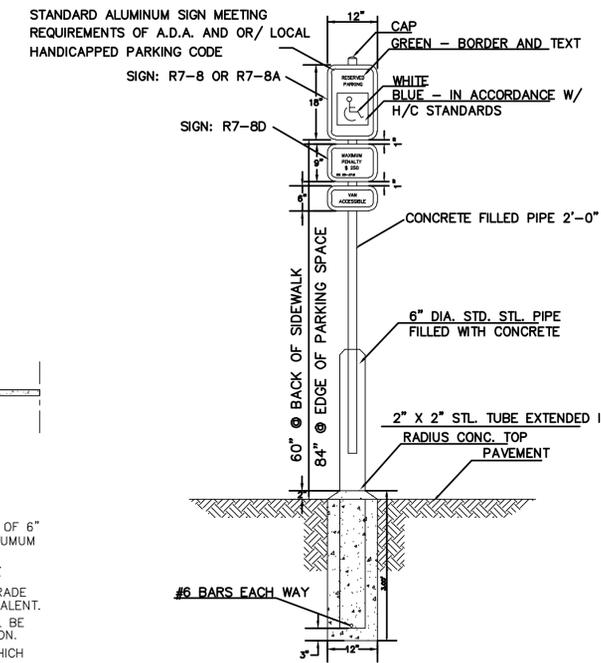
NOT TO SCALE



STANDARD SIGN INSTALLATION LOCATION

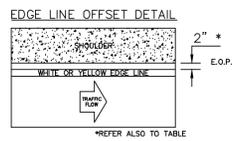
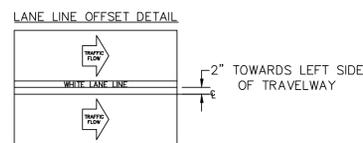
SD 15-04
NOT TO SCALE

- NOTES:
1. STREET NAME SIGNS SHALL BE A MINIMUM OF 6" EXTRUDED ALUMINUM BLADES USING A MINIMUM OF 4" C SERIES LETTERING IN REFLECTIVE SILVER & REFLECTIVE GREEN BACKGROUND.
 2. ALL REFLECTIVE SIGNS SHALL BE MADE OF ENGINEERING GRADE OR HIGH INTENSITY GRADE REFLECTIVE SHEETING OR APPROVED EQUIVALENT.
 3. ALL SIGNS PLACED IN RIGHT-OF-WAY WILL BE APPROVED BY TRAFFIC ENGINEERING DIVISION.
 4. ALL FOOTINGS TYPICAL FOR ALL SIGNS, WHICH NEED TO BE ANCHORED IN CONCRETE.



HANDICAP PARKING SIGN

NOT TO SCALE



PAVEMENT MARKINGS OFFSETS

SD 11-02

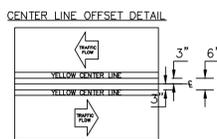
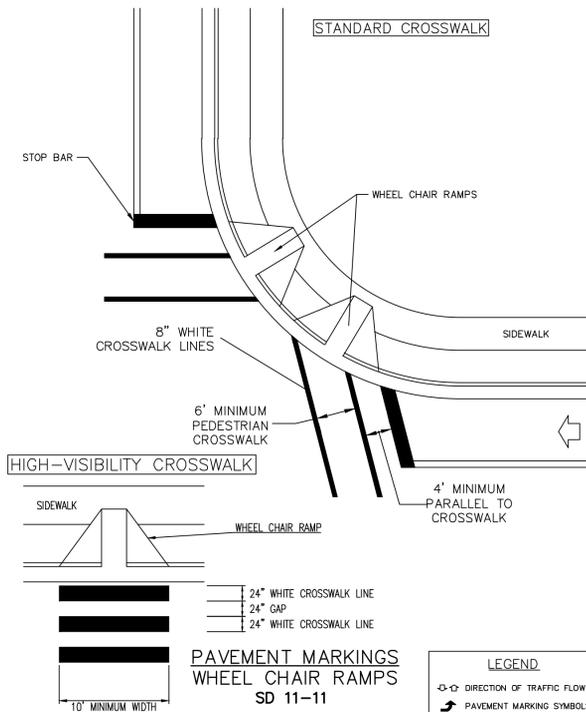


TABLE 1
EDGE LINE OFFSETS FOR 2-LANE, 2-WAY ROADWAYS WITH UN-PAVED SHOULDERS

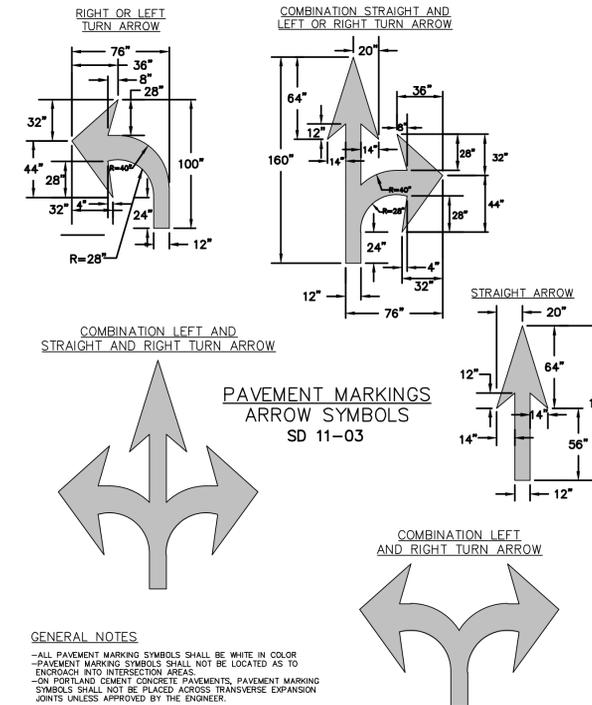
WIDTH OF TRAVEL PAVEMENT	MAX. EDGE LINE OFFSET FROM E. O. P.	MINIMUM LANE WIDTH
16' - 20'	2"	8' - 10'
22'	2"	11'
24'	1"	11'
26'	2"	11'
28'	2"	12'
30'	3"	12'
32'	4"	12'



PAVEMENT MARKINGS WHEEL CHAIR RAMPS

SD 11-11

- LEGEND
- DIRECTION OF TRAFFIC FLOW
 - PAVEMENT MARKING SYMBOLS

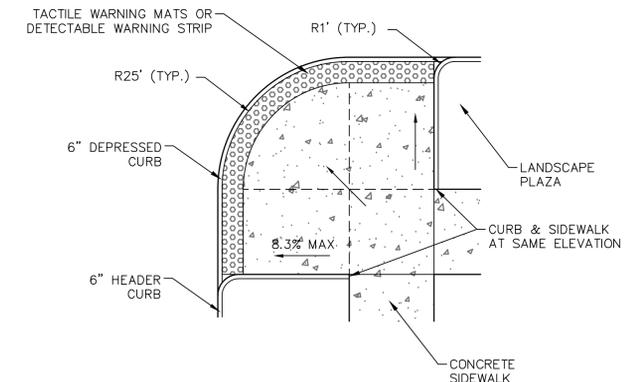


PAVEMENT MARKINGS ARROW SYMBOLS

SD 11-03

GENERAL NOTES

- ALL PAVEMENT MARKING SYMBOLS SHALL BE WHITE IN COLOR
- PAVEMENT MARKING SYMBOLS SHALL NOT BE LOCATED AS TO ENROACH INTO INTERSECTION AREAS
- ON PORTLAND CEMENT CONCRETE PAVEMENTS, PAVEMENT MARKING SYMBOLS SHALL NOT BE PLACED ACROSS TRANSVERSE EXPANSION JOINTS UNLESS APPROVED BY THE ENGINEER.



INTERSECTION WITH DEPRESSED CURB

NOT TO SCALE

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RIVERLIGHTS
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RIVERLIGHTS MARINA VILLAGE
SITE DETAILS

DATE: 08APR15
MCE PROJ. # 2735-0124
DRAWN: EEM
DESIGNED: EEM
CHECKED: RMC
PROJ. MGR.: NJL

SCALE: HORIZONTAL: ---
VERTICAL: ---

MAC FILE NUMBER: CS-502
DRAWING NUMBER: 29
REVISION: 29 OF 47

STATUS: FINAL DESIGN
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REVISION: H

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 840-86.
 OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOMELS 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. 840-05.
 USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
 FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 12'-0" IN HEIGHT USE 6" WALLS AND BOTTOM SLAB. OVER 12'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.
 CONTRACT WITH PIPE CHAINS MATCHING. CHAINERS ALL EXPOSED CORNERS 1".
 DRAWING NOT TO SCALE.

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 CONCRETE CATCH BASIN 12" THRU 54" PIPE

PIPE	DIMENSIONS OF BOX AND PIPE		COVER		CONCRETE IN BOX		DEDUCTIONS	
	SPAN	WIDTH	MIN.	HEIGHT	NO.	LENGTH	NO.	ONE PIPE
12"	3'-0"	2'-2"	0	2'-9"	0	0.238	0.772	0.015
18"	3'-0"	2'-2"	0	3'-0"	0	0.238	0.809	0.033
18"	3'-0"	2'-2"	0	3'-0"	0	0.238	0.807	0.033
24"	3'-0"	2'-2"	0	3'-0"	0	0.238	1.001	0.059
30"	3'-0"	2'-2"	0	3'-0"	0	0.238	1.001	0.059
36"	3'-0"	2'-2"	0	3'-0"	0	0.238	1.001	0.059
42"	3'-0"	2'-2"	0	3'-0"	0	0.238	1.001	0.059
48"	3'-0"	2'-2"	0	3'-0"	0	0.238	1.001	0.059
54"	3'-0"	2'-2"	0	3'-0"	0	0.238	1.001	0.059

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 TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE

GENERAL NOTES:
 THIS PRECAST BOX MAY BE USED FOR THE FOLLOWING STANDARDS:
 840-04, 840-05, 840-14, 840-15, 840-51, 840-52, 840-54, 840-35, 840-36 AND 840-41.
 INSTALL AND PAY FOR PRECAST DRAINAGE STRUCTURES IN ACCORDANCE WITH NCOTD STANDARD SPECIFICATION SECTION 840.
 USE 4000 PSI MINIMUM COMPRESSIVE STRENGTH CONCRETE.
 USE ASTM #615 GRADE 60 REINFORCING STEEL. USE ASTM A185 WELDED WIRE FABRIC (WWF).
 LIMIT MAXIMUM DEPTH TO TOP OF BOTTOM SLAB TO 15'-0".
 PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.
 ORIENT STRUCTURES SO THAT CORNERS WILL NOT BE CUT OR MODIFIED UNLESS ALLOWED BY DETAIL IN PLANS.
 PRECAST ALL ELEMENTS TO MEET ASTM 913.
 FRAME AND GRATE HEIGHT MAY BE ADJUSTED WITH CONCRETE OR BRICK IN ACCORDANCE WITH STANDARD 840-25.
 PROVIDE PRECAST STRUCTURES OVER 4'-0" IN DEPTH WITH STEPS 12" ON CENTERS IN ACCORDANCE WITH STD. NO. 840-86.
 WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR IF THE SAME MIN. AREA OF STEEL IS PROVIDED.
 SEAL JOINTS WITH AN APPROVED SEALANT (SEE SECTION 840 OF NCOTD STANDARD SPECIFICATIONS).
 LIMIT MAXIMUM STRUCTURE SIZE INSIDE CLEAR DIMENSIONS TO 6'-0" X 6'-0".
 THE OUTSIDE PIPE DIAMETER PLUS 2" IS THE MINIMUM STRUCTURE SIZE OR THE OPENING REQUIRED FOR GRATE AND FRAME WHICHEVER IS GREATER.
 ROUND MANHOLE MAY BE USED IN LIEU OF SQUARE PROVIDED 2 EXTRA #5'S ARE PLACED ON EVERY SIDE NOT ADJACENT TO A WALL. SEE STD. DWG. 840-34 FOR MANHOLE INSTALLATION.

ENGLISH STANDARD DRAWING FOR TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE

SHEET 1 OF 1
840.46

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

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

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

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

DETAIL SHOWING TYPES OF GRATES USE ACCORDING TO WATER FLOW.

TYPE "G" TYPE "E" TYPE "F"

WATER FLOW SAG WATER FLOW

SECTION A-A SECTION B-B

TYPE "E" SECTION A-A

SECTION A-A SECTION A-A

TYPE "F" SECTION A-A

TYPE "G" 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 MEDIAN CURB FOR CATCH BASIN (FOR USE WITH 1'-6" CURB AND GUTTER)

ENGLISH STANDARD DRAWING FOR MEDIAN CURB FOR CATCH BASIN (FOR USE WITH 1'-6" CURB AND GUTTER)

SHEET 1 OF 1
852.05

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

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

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 CONCRETE CATCH BASIN 12" THRU 54" PIPE

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.

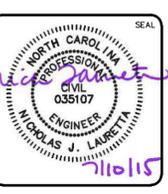
ENGLISH STANDARD DRAWING FOR DRAINAGE STRUCTURE STEPS

ENGLISH STANDARD DRAWING FOR DRAINAGE STRUCTURE STEPS

SHEET 1 OF 1
840.66

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RIVERLIGHTS MARINA VILLAGE

STORM DRAINAGE DETAILS

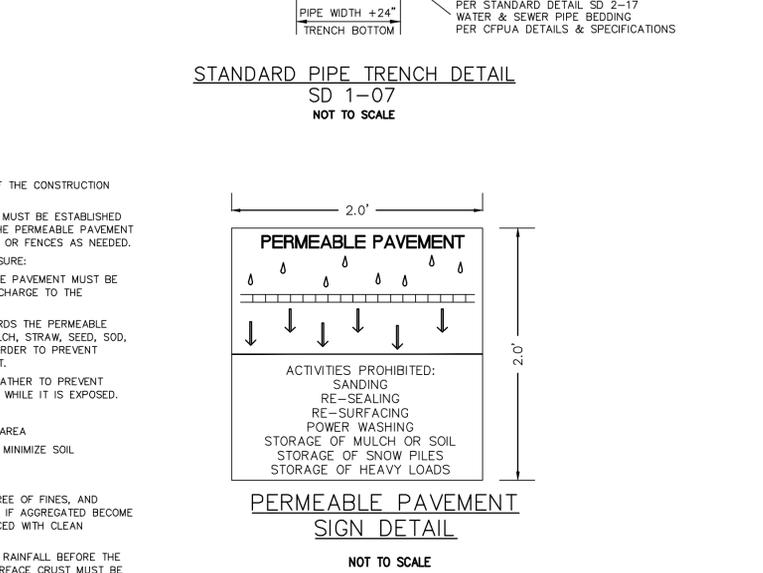
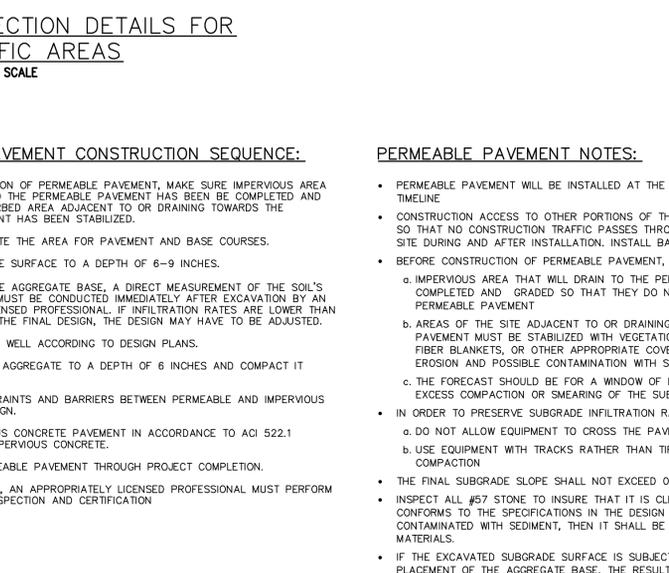
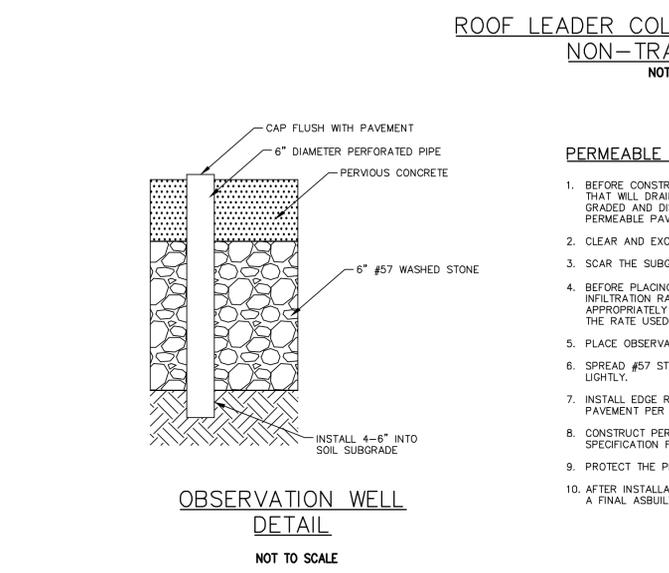
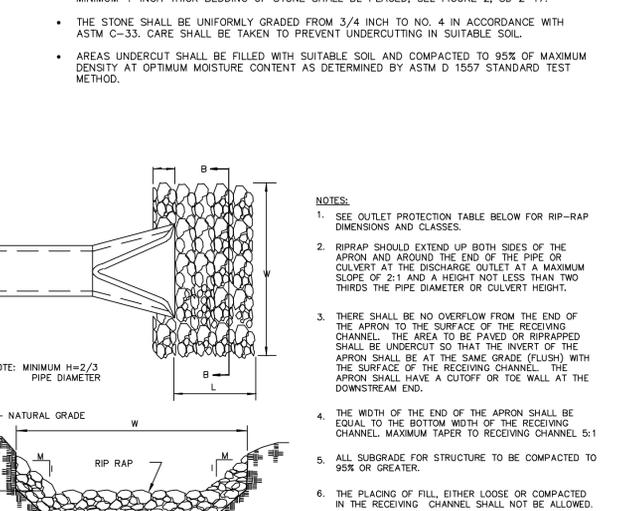
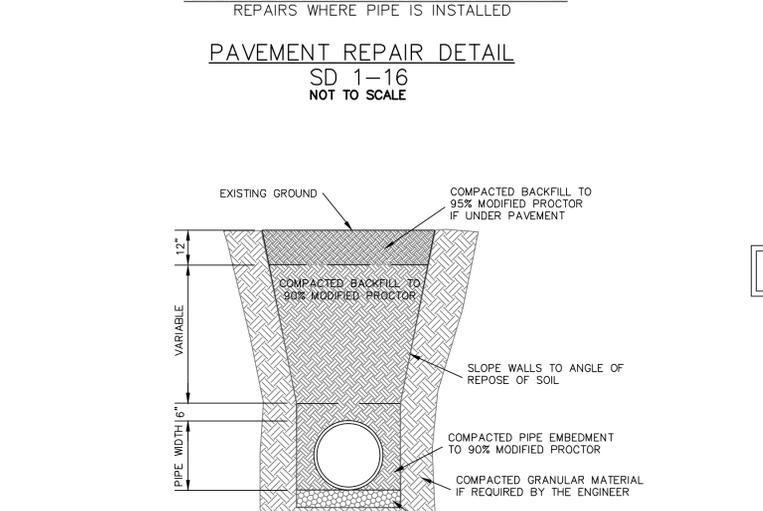
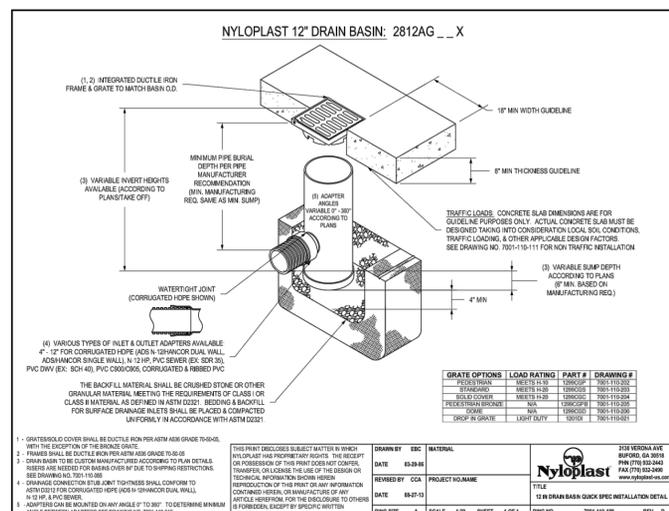
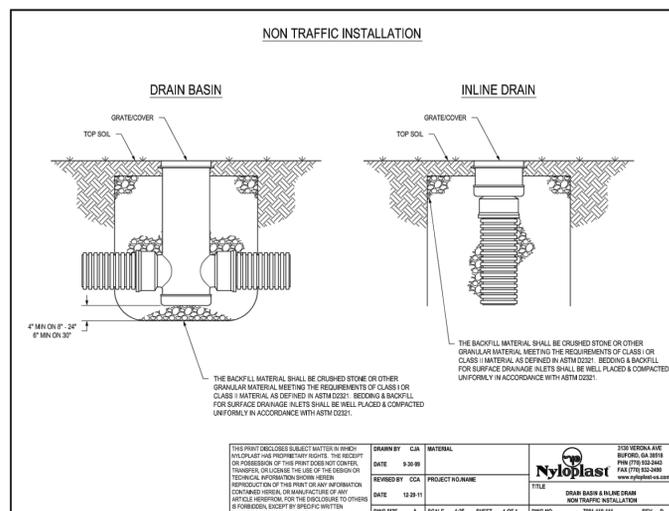
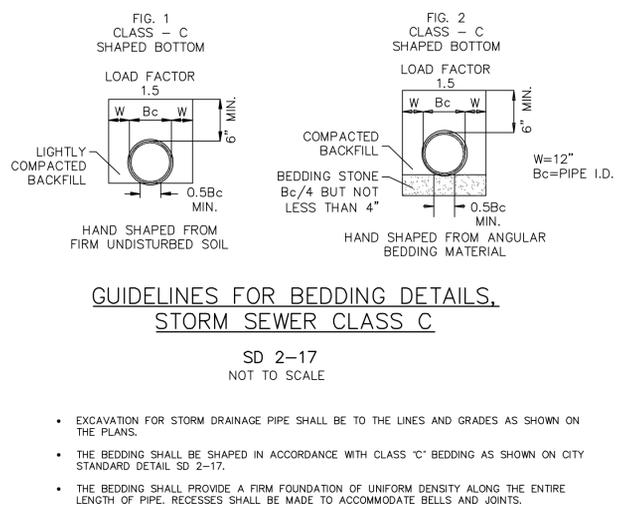
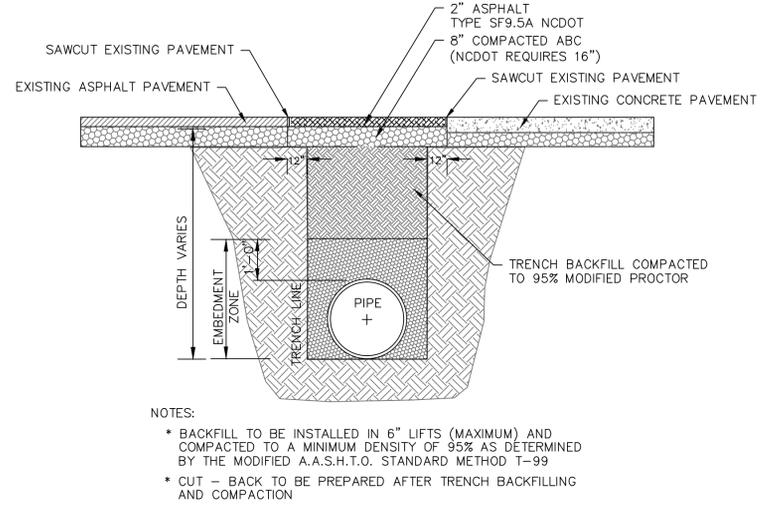
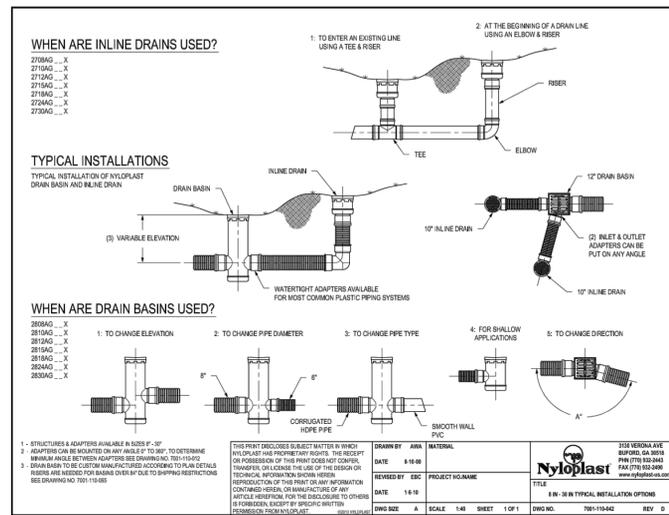
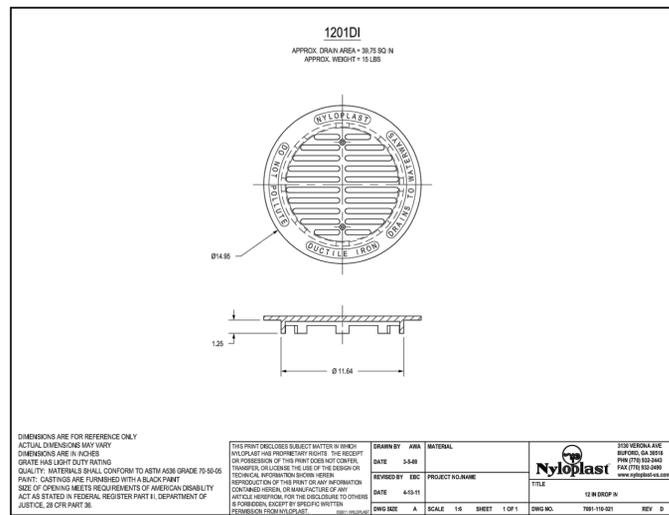
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 DESIGNED: EEM
 CHECKED: RMC
 PROJ. MGR.: NJL

SCALE: HORIZONTAL: ---
 VERTICAL: ---

MAC FILE NUMBER: CG-501
 DRAWING NUMBER: 30
 30 OF 47

STATUS: FINAL DESIGN
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REVISION: H



PERMEABLE PAVEMENT SIGN DETAIL
NOT TO SCALE

NOTE: SIGN IS TO BE PLACED ON 4"x4" POST. TOP OF SIGN TO BE 48" ABOVE GROUND

PC NUMBER	OUTLET DIA (in)	Q (cfs)	V (fps)	ZONE	D50 (in)	RIPRAP CLASS	Dmax (in)	THICKNESS (in)	LENGTH (ft)	WIDTH (ft)
1	30	4.33	4.22	2	8	B	12	18	15	7.5
2	30	3.39	3.88	1	4	A	6	9	10	8
3	36	4.92	5.98	2	8	B	12	18	18	9

NOTES:
1.) Minimum apron length of 10 ft shall be installed.
2.) Dmax = D50 x 1.5
3.) Thickness = Dmax x 1.5
4.) Width = 3 x Pipe Dia

STORM DRAINAGE NOTES:

- ALL PIPE BEDDING SHALL BE CLASS "C" UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- ALL STORM DRAINAGE PIPES SHALL BE RCP CLASS III UNLESS OTHERWISE NOTED ON THE PLANS.
- DO NOT PLANT TREES WITHIN UTILITY AND DRAINAGE EASEMENTS.
- THE ENGINEER AND THE CONTRACTOR SHALL INSPECT ALL EXISTING PIPES USED IN THE FINAL DRAINAGE SYSTEM AND AGREE ON THE CONDITION OF THE PIPES PRIOR TO CONSTRUCTION. IF DAMAGE OCCURS TO THESE PIPES DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF THE PIPE(S).
- THE CONTRACTOR SHALL CONTACT ONECALL BEFORE COMMENCING ANY WORK. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES WHETHER INDICATED ON THE DRAWINGS OR NOT. THE CONTRACTOR WILL ASSURE THE PRESENCE ON SITE OF A REPRESENTATIVE OF THE GAS COMPANY WHEN WORKING IN THE VICINITY OF ANY GAS MAINS.

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RIVERLIGHTS MARINA VILLAGE
STORM DRAINAGE DETAILS

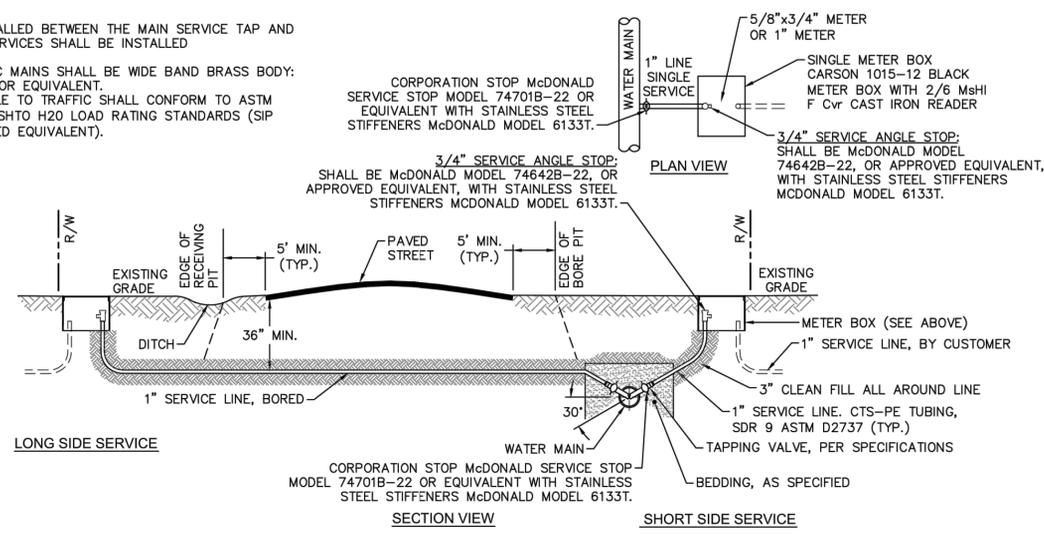
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VERTICAL: ---

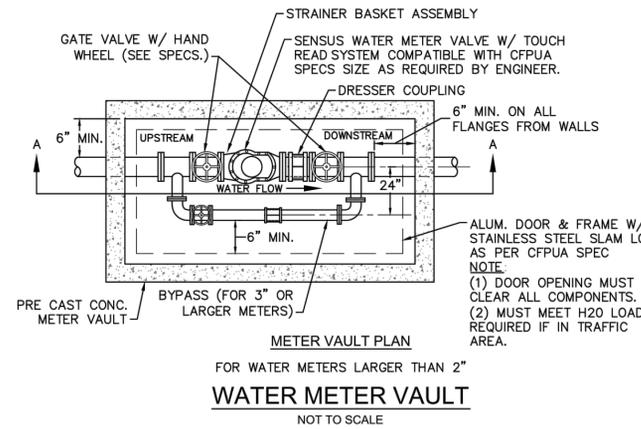
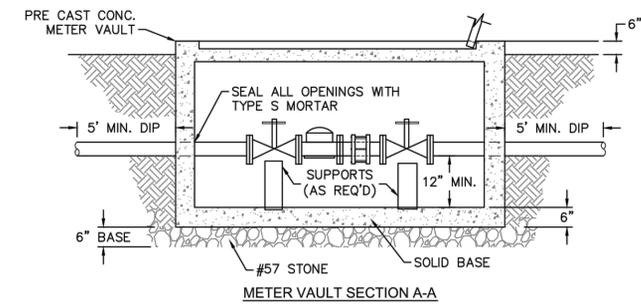
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MAC FILE NUMBER: CG-503
DRAWING NUMBER: 32
REVISION: 32 OF 47
H

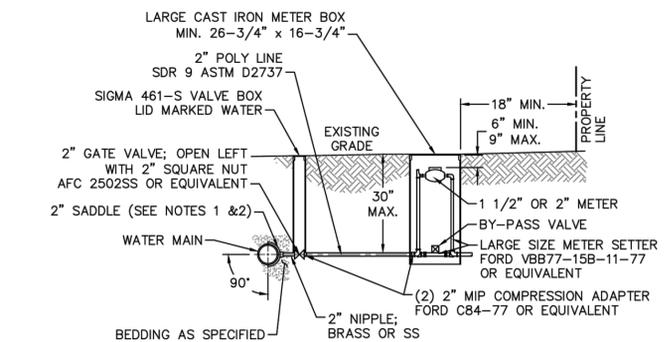
- NOTES:**
- NO JOINT SHALL BE INSTALLED BETWEEN THE MAIN SERVICE TAP AND THE METER STOP. ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
 - SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: SADDLE McDONALD 3801 OR EQUIVALENT.
 - METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM A48, CLASS 30B AND AASHTO H20 LOAD RATING STANDARDS (SIP MODEL 4240 OR APPROVED EQUIVALENT).



SINGLE SERVICE CONNECTION
NOT TO SCALE

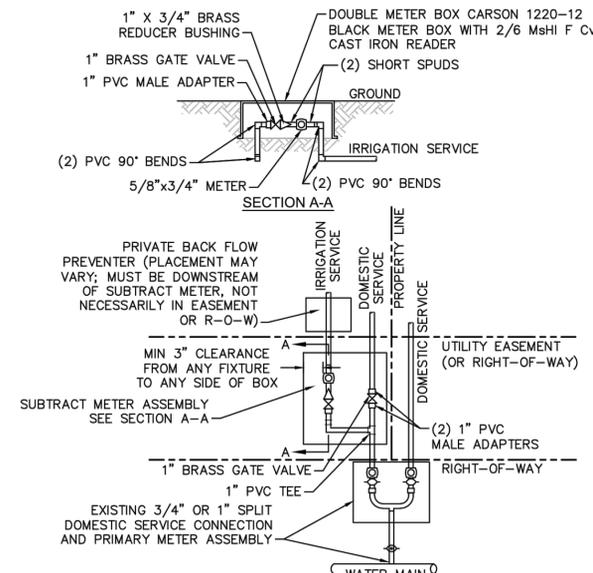


WATER METER VAULT
NOT TO SCALE



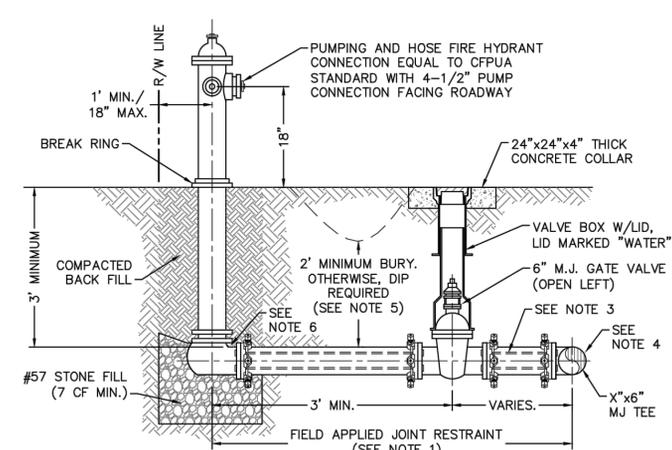
- NOTES:**
- ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
 - SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: McDONALD 3800, FORD S90 (DOUBLE STRAP) OR EQUIVALENT.
 - METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM A48, CLASS 30B AND AASHTO H20 LOAD RATING STANDARDS (OLDCASTLE PRECAST MODEL B1730 OR APPROVED EQUIVALENT).
 - METER BOXES SUSCEPTIBLE TO INCIDENTAL, NON-DELIBERATE TRAFFIC SHALL CONFORM TO ANSI/SCFE 77 TIER 15 LOAD RATING STANDARDS (SYNERTECH MODEL DUO 17x30 OR APPROVED EQUIVALENT).
 - NON-TRAFFIC METER BOXES SHALL BE SIGMA MB2203 OR APPROVED EQUIVALENT.
 - 3" CLEAN FILL REQUIRED ALL AROUND 2" POLY SERVICE LINE.

LARGE METER
NOT TO SCALE



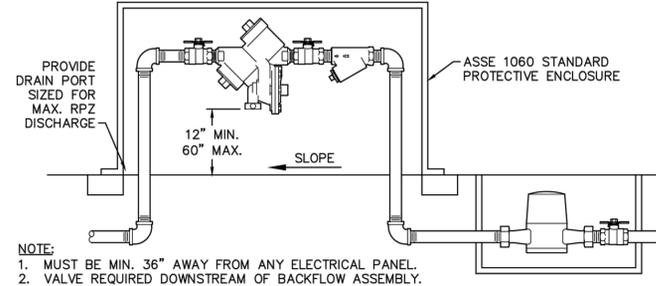
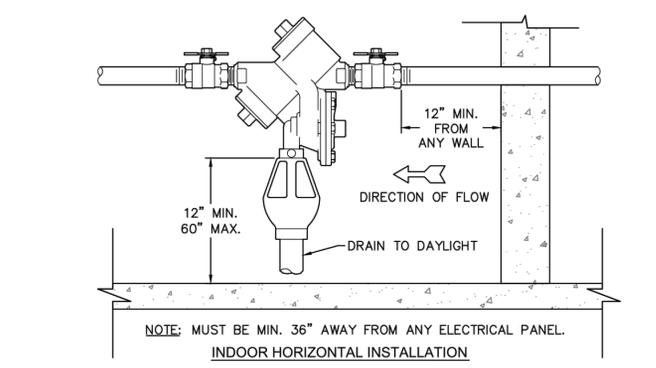
- NOTES:**
- BEYOND THE PRIMARY DOMESTIC METER ASSEMBLY, CFPUA IS ONLY RESPONSIBLE FOR METER AND WASHERS OF SUBTRACT METER ASSEMBLY.
 - ALL PIPE AND FITTINGS UP TO FINAL SERVICE LINE TO BE 1" EXCLUDING METERS.

DOUBLE SERVICE CONNECTION USING SUBTRACT METER
NOT TO SCALE

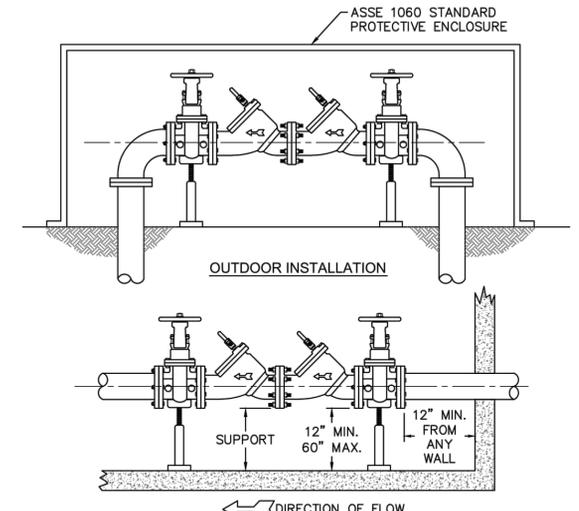


- NOTES:**
- JOINT RESTRAINT SYSTEMS SHALL BE WEDGE ACTION STYLE FOR DI OR C-900 PVC PIPE AS MANUFACTURED BY EBAA IRON, SIGMA, STAR PIPE PRODUCTS OR APPROVED EQUAL.
 - WHEN HYDRANT LEGS REQUIRE FULL LENGTH PIPE SECTIONS, OVER BELL RESTRAINT SYSTEM SHALL HAVE 316 STAINLESS STEEL HARNESS AND FASTENERS.
 - CONTINUOUS 316 STAINLESS STEEL RODS (TEE TO VALVE AND VALVE TO HYDRANT) MAY BE USED WITH COR-BLUE MJ T-BOLT AND GASKET KITS, AS AN ALTERNATIVE.
 - HYDRANT TEE SHALL BE RESTRAINED ON EACH SIDE OF MAIN PLUS ANY VALVE, FITTING, OR JOINT IN MAIN WITHIN 10- FEET OF HYDRANT TEE.
 - HYDRANT AND VALVE SHALL BE PLACED OUTSIDE DITCH LIMITS.
 - WEEP HOLES OPEN AND UNBLOCKED TO DRAIN.

FIRE HYDRANT ASSEMBLY
NOT TO SCALE



REDUCED PRESSURE PRINCIPLE ASSEMBLY
NOT TO SCALE



- NOTE:**
- MUST BE MIN. 36" AWAY FROM ANY ELECTRICAL PANEL.
 - VALVE REQUIRED DOWNSTREAM OF BACKFLOW ASSEMBLY.
 - VERTICAL INSTALLATION SHALL BE DESIGNED AND SUBMITTED TO CFPUA ESDM FOR APPROVAL.

DOUBLE CHECK VALVE ASSEMBLY
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.
 - THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
 - THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
 - 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

REV:	DESCRIPTION:	DATE:
1	Single Service Connection, Double Service Connection, and Large Meter Revised	10/26/12
2	Single Service Connection and Fire Hydrant Details Revised	7/23/13
3	Fire Hydrant Detail Revised	01/03/14

CFPUA WATER DISTRIBUTION SYSTEM

STANDARD DETAILS



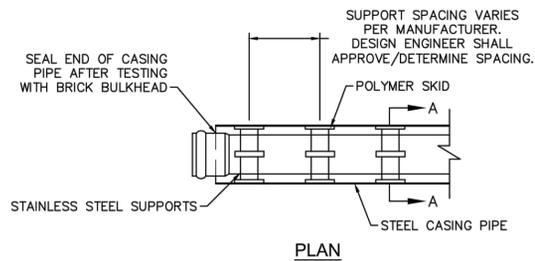
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

Stewardship. Sustainability. Service.

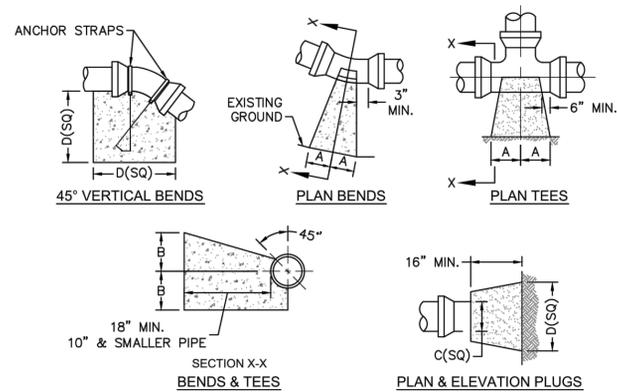
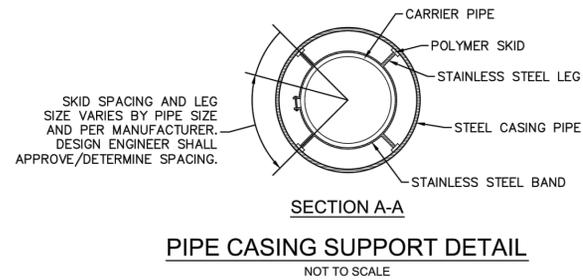
DATE: 1/9/12
SCALE: N/A
DRAWN BY: CFPUA
CHECKED BY: CFPUA
PROJECT NO.:

SHEET NO:
WSD-1

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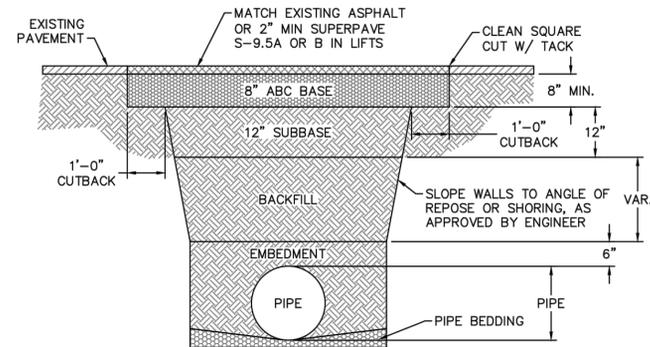


NOTE: PIPE SUPPORT TO BE PLACED TO PROVIDE PROPER SUPPORT, ALIGNMENT, AND GRADE AS SPECIFIED. CONTINUOUS SUPPORTS MAY BE USED AS ALTERNATIVE. OIL, GREASE, OR PETROLEUM PRODUCT MAY NOT BE USED AS LUBRICANT.



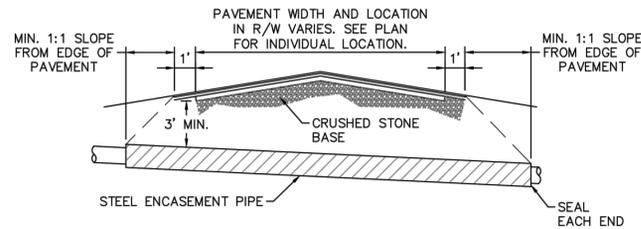
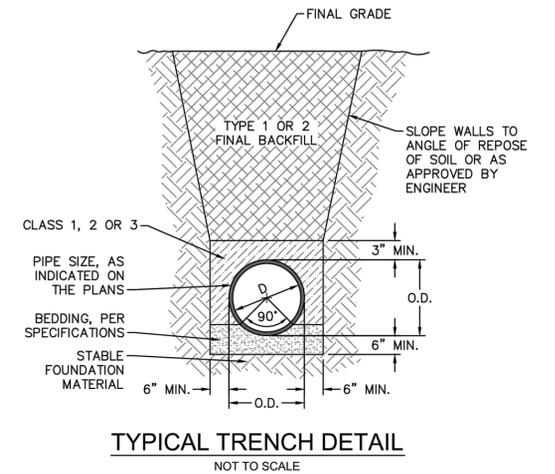
SIZE	90 BENDS		45 BENDS		22 1/2 BENDS		TEES/PLUGS		45 VERT. BENDS
	A	B	A	B	A	B	A	B	
3"	8"	6"	5"	6"	3"	7"	6"	8"	27"
4"	8"	9"	5"	8"	3"	11"	6"	9"	28"
6"	14"	11"	9"	9"	8"	8"	12"	9"	36"
8"	16"	16"	12"	12"	10"	13"	14"	13"	42"
10"	18"	22"	15"	14"	14"	16"	18"	15"	50"
12"	20"	28"	18"	17"	16"	16"	22"	18"	62"
14"	26"	29"	21"	19"	18"	18"	26"	20"	72"
16"	33"	29"	25"	21"	20"	21"	32"	21"	83"
18"	40"	30"	28"	24"	22"	23"	36"	24"	88"

NOTES:
1. BASED ON 160 PSI TEST PRESSURE AND 2000 PSF SOIL BEARING CAPACITY.
2. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND.
3. USE MEG-A-LUG (PREFERRED) IN LIEU OF BLOCKING AND RODDING.



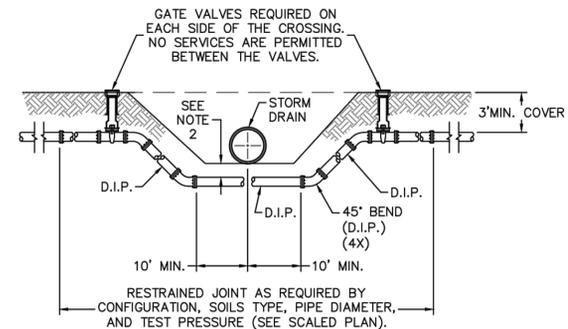
NOTES:
1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
3. 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY STREETS.
4. BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MINIMUM LIFTS
5. SOIL SHALL BE COMPACTED BY A MECHANIZED TAMPER (I.E. JUMPING JACK). HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.
6. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.
7. ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99.
8. 1-FOOT CUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.

(FOR PRIVATE ROADS AND PAVED AREAS; CONTRACTOR TO MEET MIN. REQUIREMENTS AS DEFINED BY RIGHT-OF-WAY OWNER FOR PUBLIC ROAD REPAIRS)



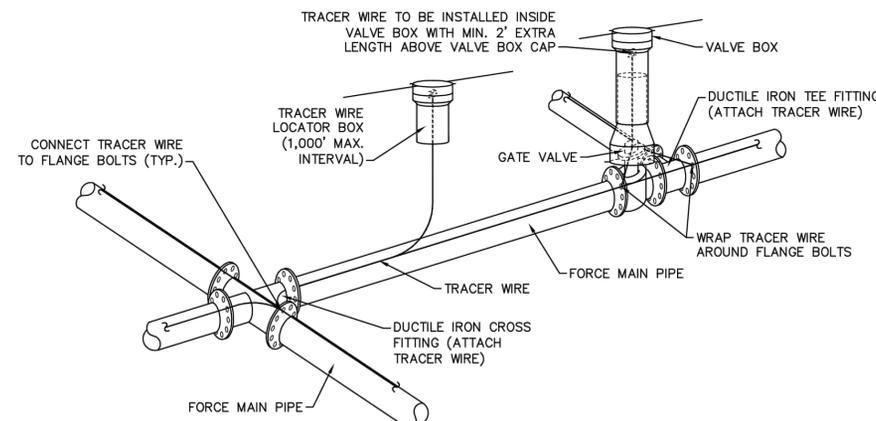
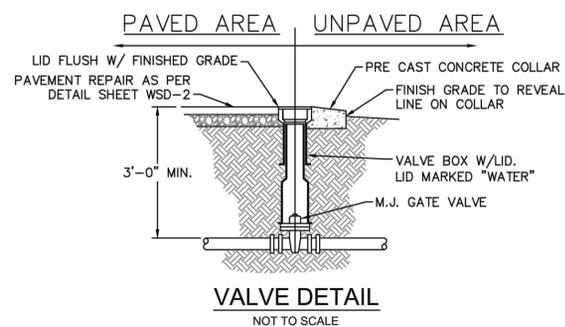
NOTES:
1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.
2. TRACER WIRE SHALL BE CONTINUED THROUGH CASING.

TYPICAL BORING/JACKING DETAIL



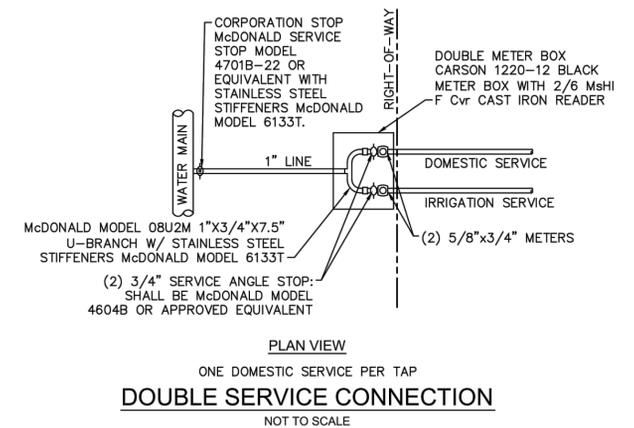
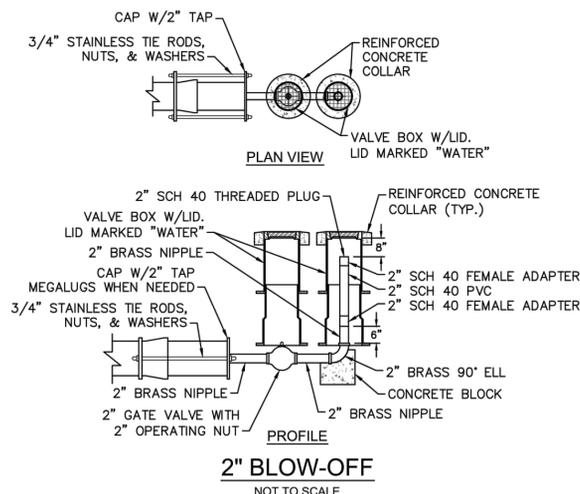
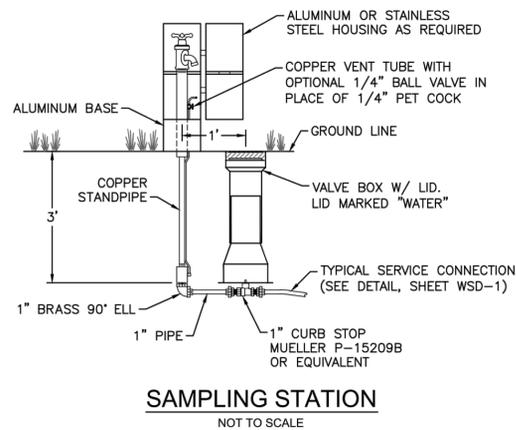
NOTES:
1. USE PRESSURE CLASS 350 DIP, UNLESS SPECIFIED OTHERWISE.
2. MINIMUM DEPTH REQUIRED, UNLESS SPECIFIED OTHERWISE BY CFPUA:
a. IN DOT R/W, 36" MIN. TYPICAL, OR 24" MIN. WHEN CROSSING A DITCH LINE.
b. ALL OTHER LOCATIONS, 30" MIN.
c. WHEN STORM DRAIN INVERT IS BURIED AT OR BELOW ABOVE DEPTHS, 18" MIN. CLEARANCE IS REQUIRED.

WATER MAIN DITCH AND STORM DRAIN CROSSING



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

TRACER WIRE DETAIL



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 WATER DISTRIBUTION SYSTEM

STANDARD DETAILS

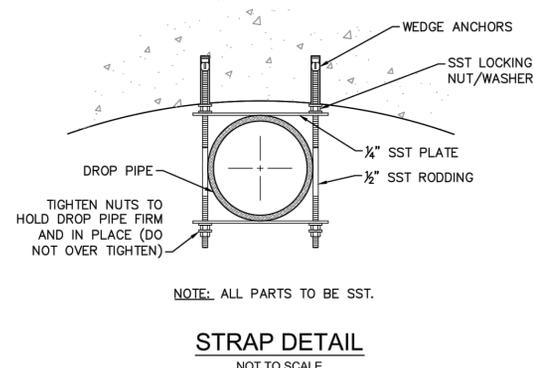
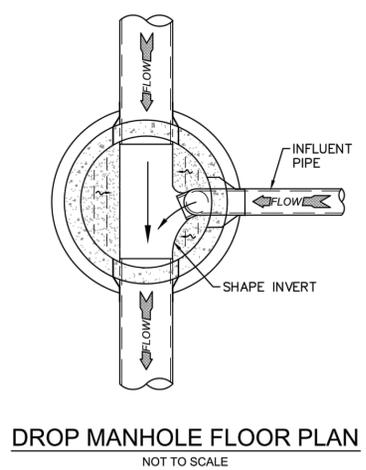
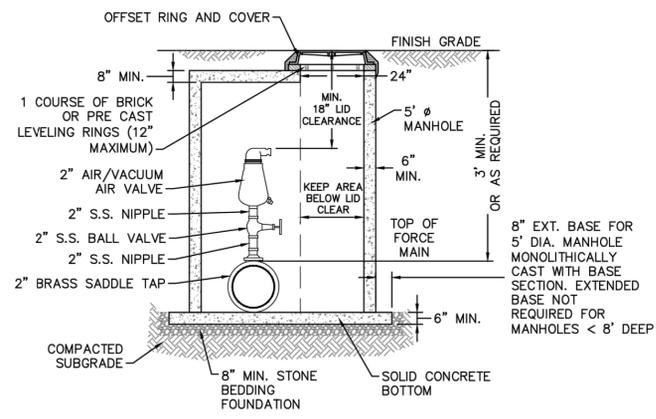
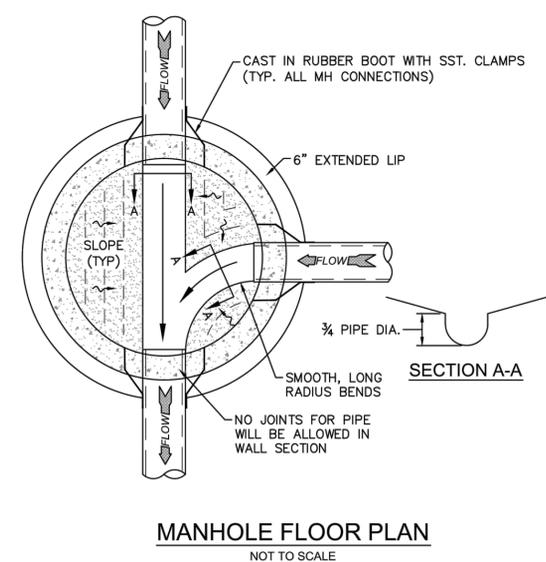
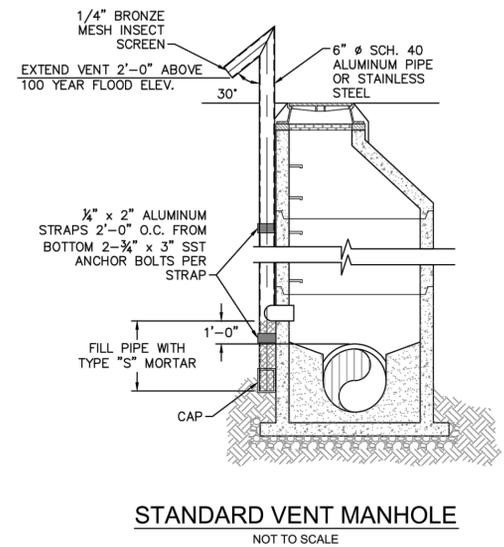
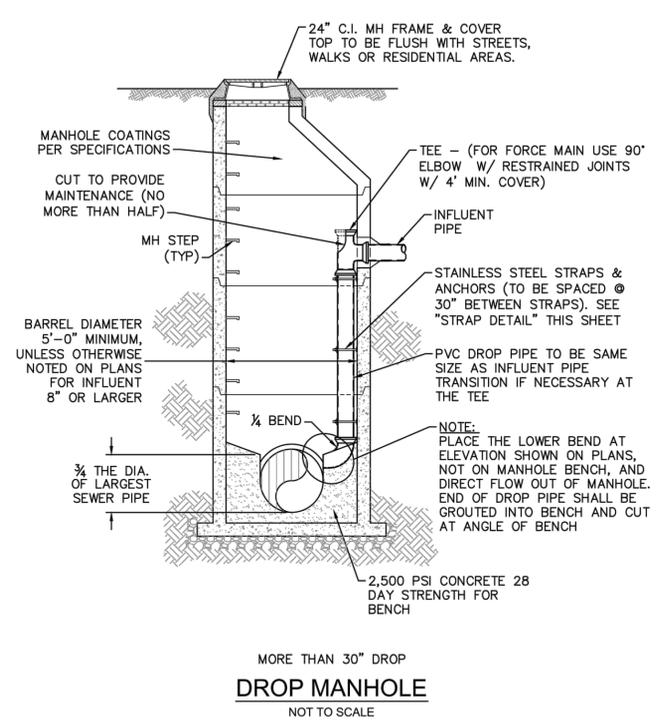
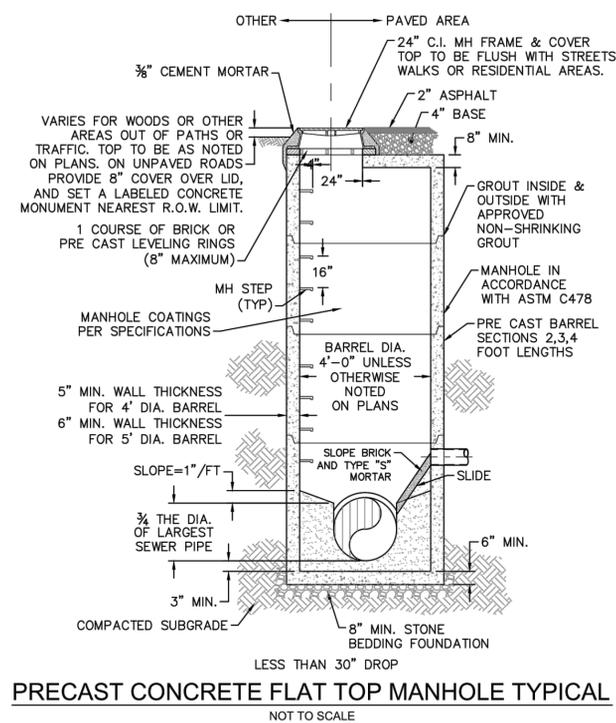
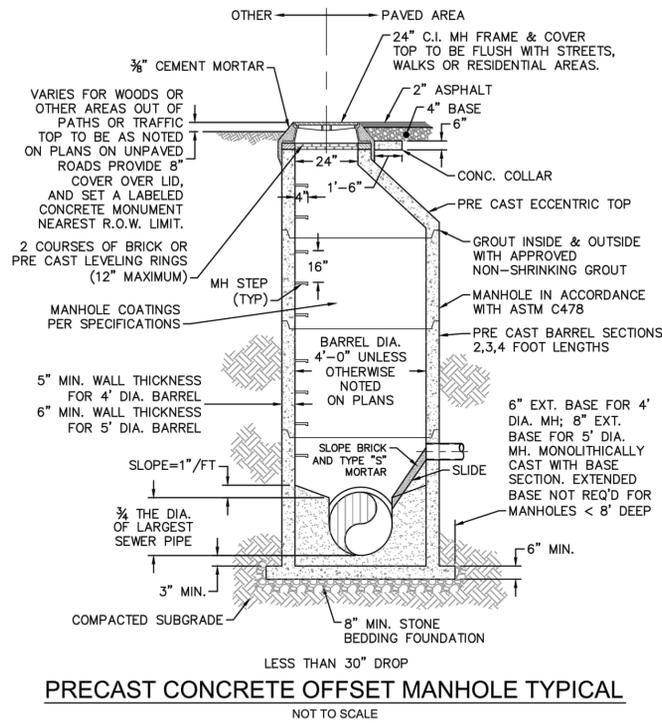
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: 1/9/12
SCALE: N/A
DRAWN BY: CFPUA
CHECKED BY: CFPUA
PROJECT NO.:

SHEET NO:
WSD-2

REV:	DESCRIPTION:	DATE:
1	Revised Water Main Ditch and Storm Crossing Detail	11/12/13
2	Revised Water Main Ditch and Storm Crossing Detail	05/05/14

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- CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD SEWER NOTES:**
- SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
 - 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.
 - ALL SERVICES TYING INTO DUCTILE IRON MAINS SHALL BE CONSTRUCTED OF CLASS 50, DIP, WITH PROTECTO 401 CERAMIC EPOXY LINING.
 - MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE FRONTAGE OF ALL LOTS AND AS SHOWN FOR NEW DEVELOPMENTS.
 - NO FLEXIBLE COUPLINGS SHALL BE USED.
 - ALL STAINLESS STEEL FASTENERS SHALL BE 316.
- STANDARD SEWER NOTES**
(REQUIRED ON ALL SEWER PLAN AND PROFILE SHEETS)

- 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.
 - THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
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 - 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

REV:	DESCRIPTION:	DATE:
1	AIR / VACUUM AND AIR RELEASE COMBINATION VALVE REVISED	10/26/12
2	STANDARD SEWER NOTE #6 REVISED	12/10/12
3	REVISED STANDARD VENT MANHOLE TO EXTEND VENT 2'-0" ABOVE 100 YR FLOOD	11/20/14

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

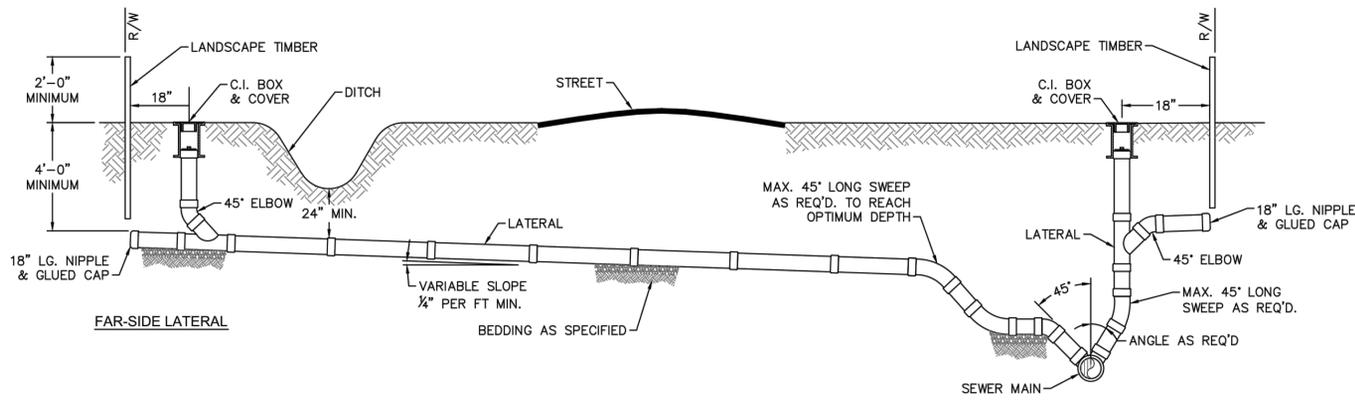
DRAWN BY:
CFPUA

CHECKED BY:
CFPUA

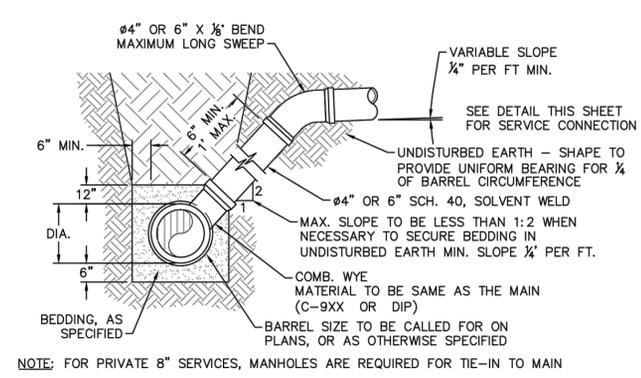
PROJECT NO.:

SHEET NO:
SSD-1

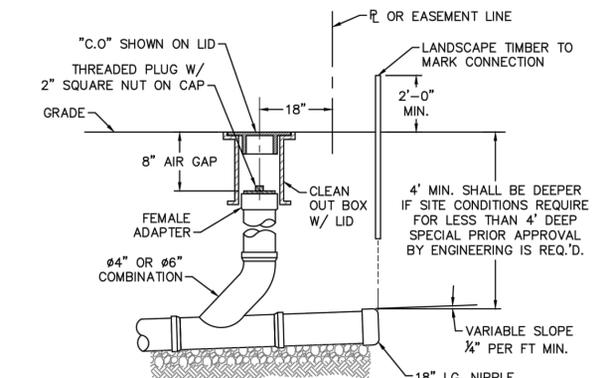
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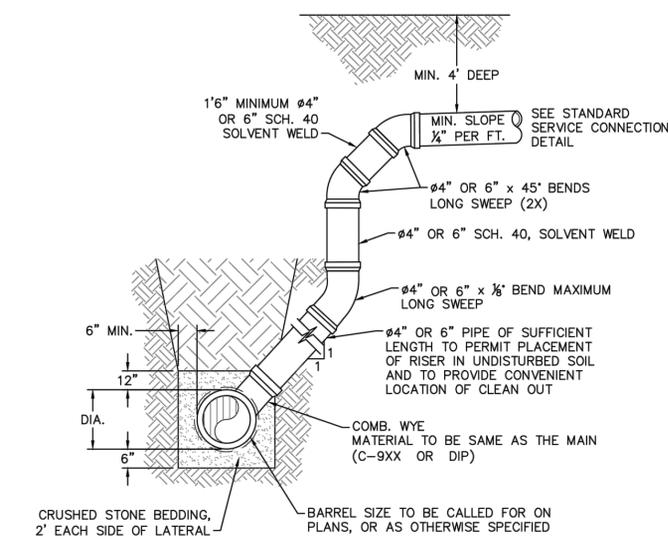
NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR TIE-IN TO MAIN
STANDARD SERVICE CONNECTION TO SANITARY SEWER
 NOT TO SCALE



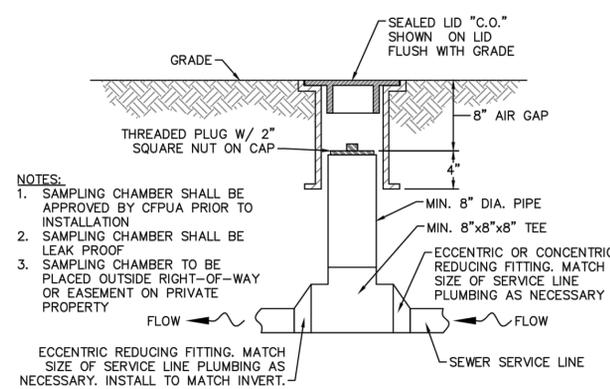
NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR TIE-IN TO MAIN
STANDARD SERVICE LATERAL
 NOT TO SCALE



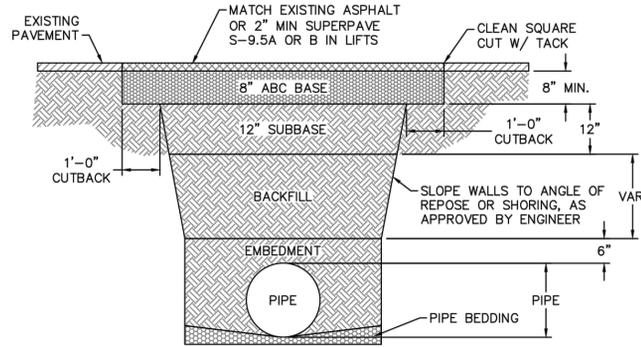
NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR TIE-IN TO MAIN
SERVICE CONNECTION & CLEAN-OUT
 NOT TO SCALE



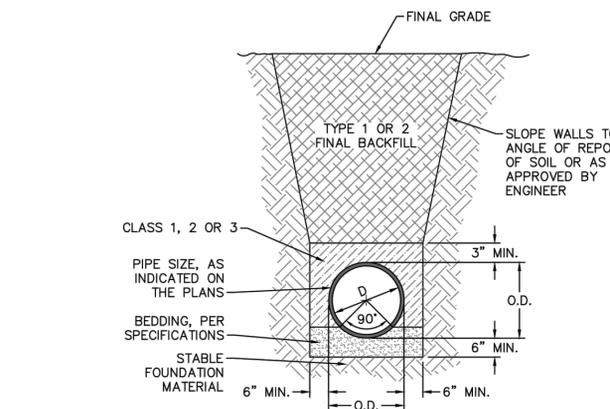
NOTE: 1. SPECIAL CARE SHALL BE TAKEN DURING BACKFILL OPERATIONS. THE RISER SHALL BE PLUMB AND TRUE AT ALL TIMES, AND REST ON FIRM, STABLE FOUNDATION.
 2. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR TIE-IN TO MAIN.
DEEP SERVICE LATERAL
 NOT TO SCALE



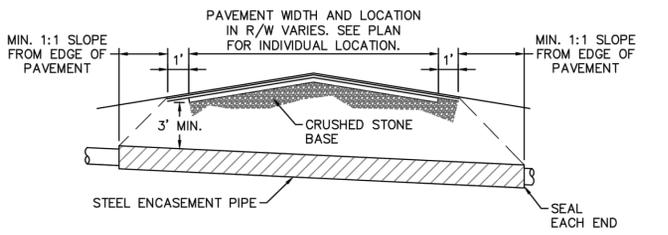
NOTE: 1. SAMPLING CHAMBER SHALL BE APPROVED BY CFPUA PRIOR TO INSTALLATION.
 2. SAMPLING CHAMBER SHALL BE LEAK PROOF.
 3. SAMPLING CHAMBER TO BE PLACED OUTSIDE RIGHT-OF-WAY OR EASEMENT ON PRIVATE PROPERTY.
SAMPLING CHAMBER
 NOT TO SCALE



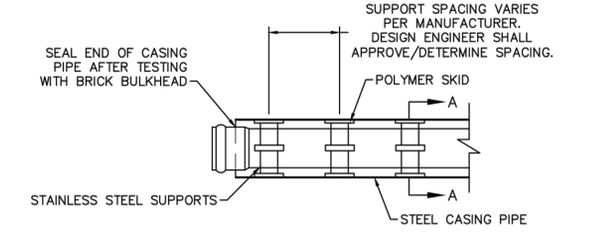
NOTE: 1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
 2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
 3. 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY STREETS.
 4. BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MINIMUM LIFTS.
 5. SOIL SHALL BE COMPACTED BY A MECHANIZED TAMPER (I.E. JUMPING JACK), HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.
 6. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.
 7. ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99.
 8. 1-FOOT CUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.
 (FOR PRIVATE ROADS AND PAVED AREAS; CONTRACTOR TO MEET MIN. REQUIREMENTS AS DEFINED BY RIGHT-OF-WAY OWNER FOR PUBLIC ROAD REPAIRS)
PAVEMENT REPAIR WHERE PIPE INSTALLED
 NOT TO SCALE



TYPICAL TRENCH DETAIL
 NOT TO SCALE



NOTE: 1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.
 2. TRACER WIRE SHALL BE CONTINUED THROUGH CASING.
TYPICAL BORING/ JACKING DETAIL
 NOT TO SCALE



NOTE: PIPE SUPPORT TO BE PLACED TO PROVIDE PROPER SUPPORT, ALIGNMENT, AND GRADE AS SPECIFIED. CONTINUOUS SUPPORTS MAY BE USED AS ALTERNATIVE. OIL, GREASE, OR PETROLEUM PRODUCT MAY NOT BE USED AS LUBRICANT.
PIPE CASING SUPPORT DETAIL
 NOT TO SCALE

- GENERAL NOTES:**
- NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
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THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

REV:	DESCRIPTION:	DATE:
1	SAMPLING CHAMBER REVISED	10/26/12

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

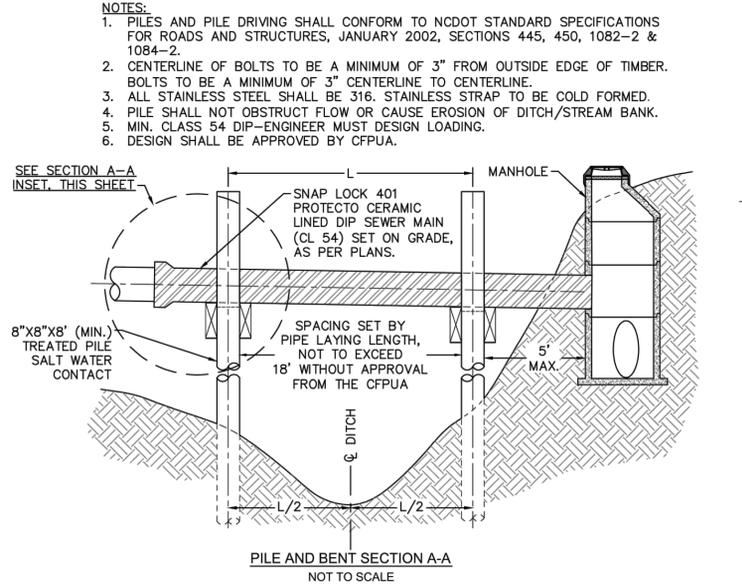
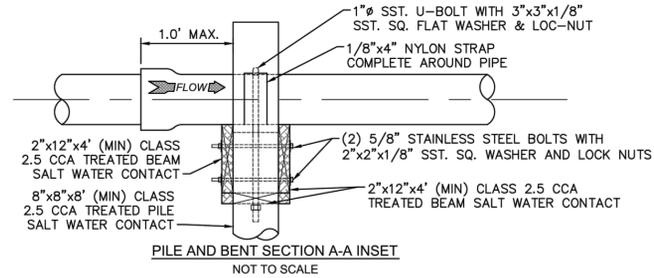
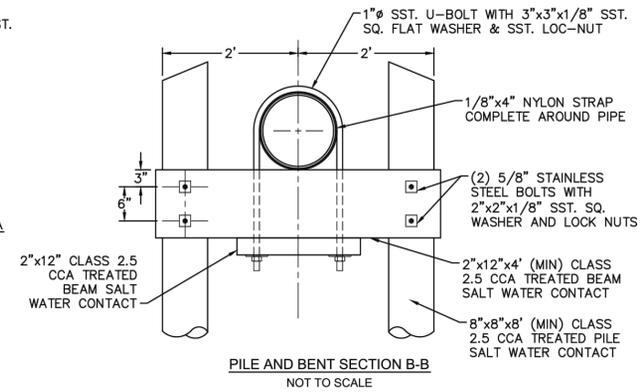
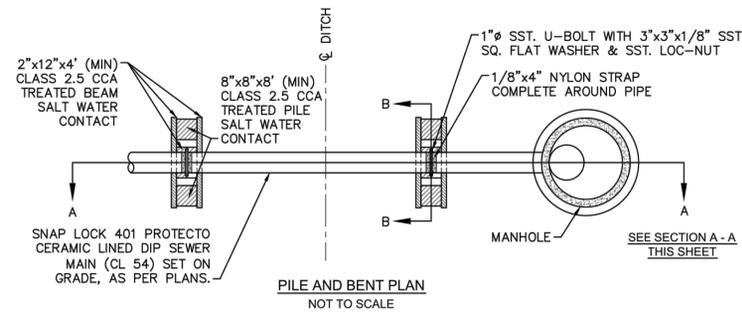
DRAWN BY:
CFPUA

CHECKED BY:
CFPUA

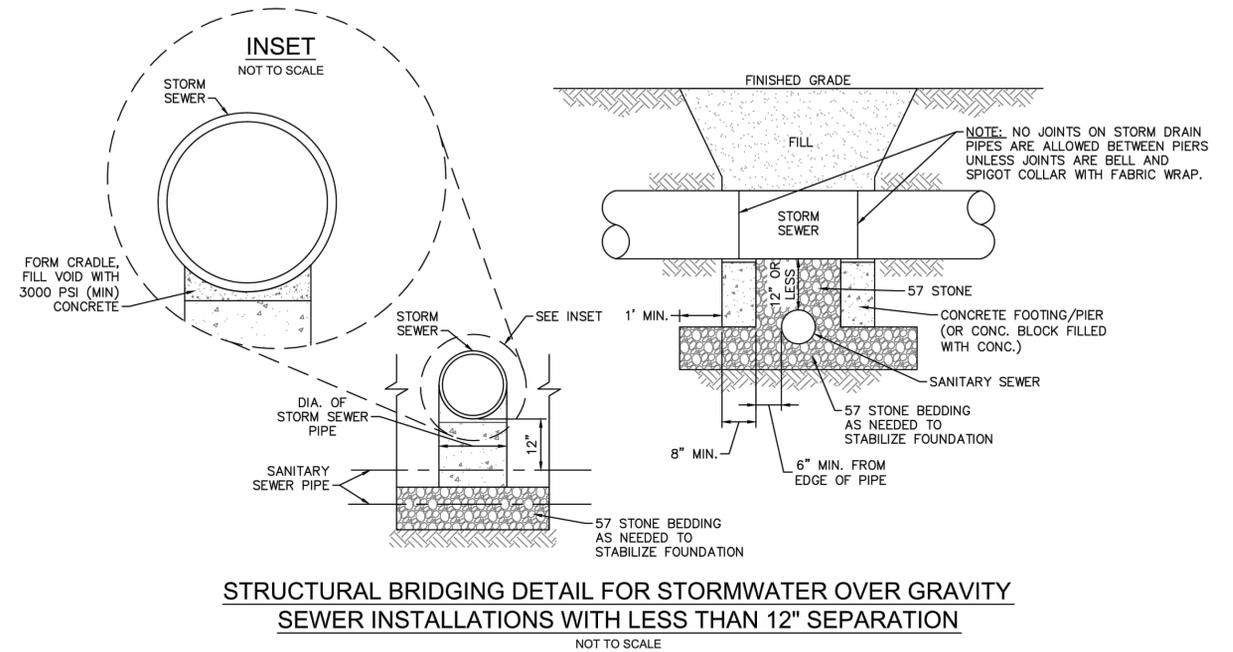
PROJECT NO.:

SHEET NO:
SSD-2

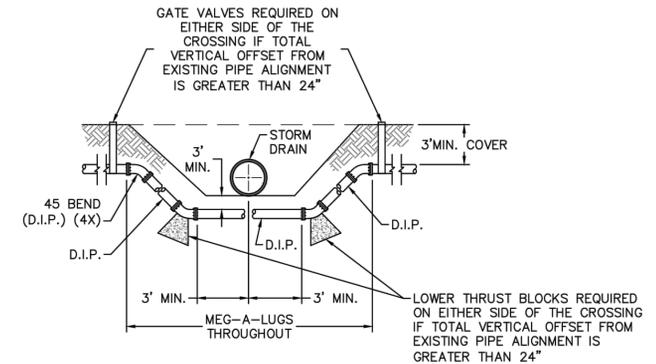
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PILE AND BENT DETAIL
NOT TO SCALE

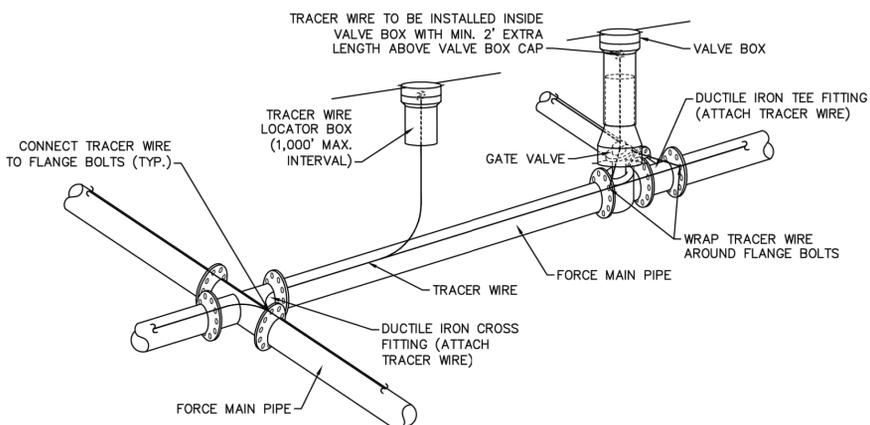


STRUCTURAL BRIDGING DETAIL FOR STORMWATER OVER GRAVITY SEWER INSTALLATIONS WITH LESS THAN 12" SEPARATION
NOT TO SCALE



NOTE: USE D.I.P. (CL50 OR BETTER)

FORCE MAIN DITCH AND STORM DRAIN CROSSING
NOT TO SCALE



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

TRACER WIRE DETAIL
NOT TO SCALE

- 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

REV:	DESCRIPTION:	DATE:

CFPUA SANITARY SEWER

STANDARD DETAILS

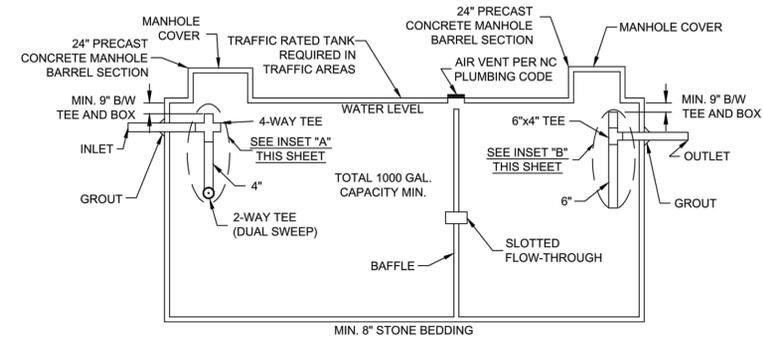
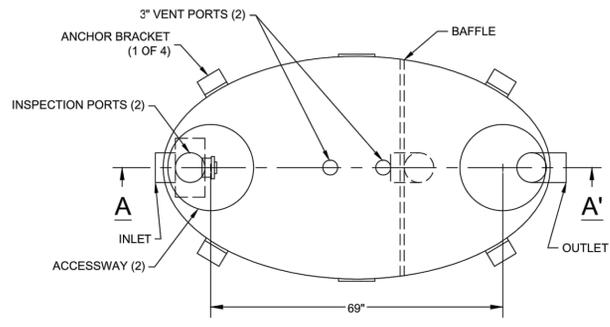


CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

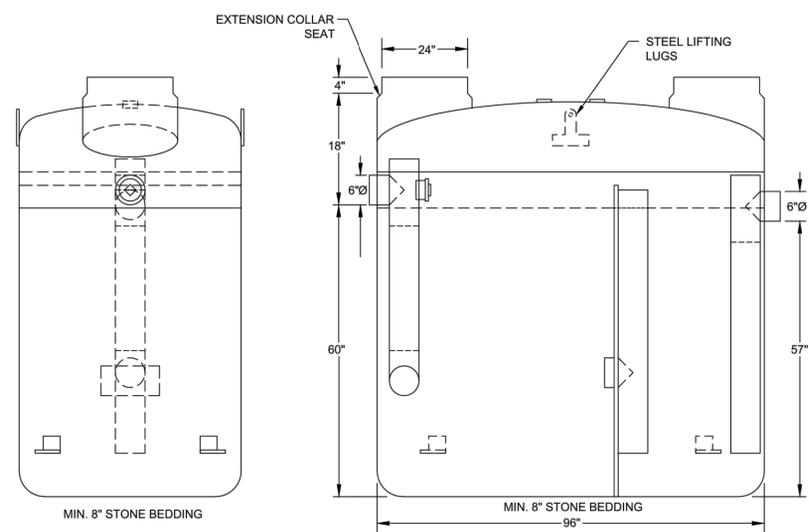
DATE:
1/9/12
SCALE:
N/A
DRAWN BY:
CFPUA
CHECKED BY:
CFPUA
PROJECT NO.:

SHEET NO:
SSD-3

Stewardship. Sustainability. Service.

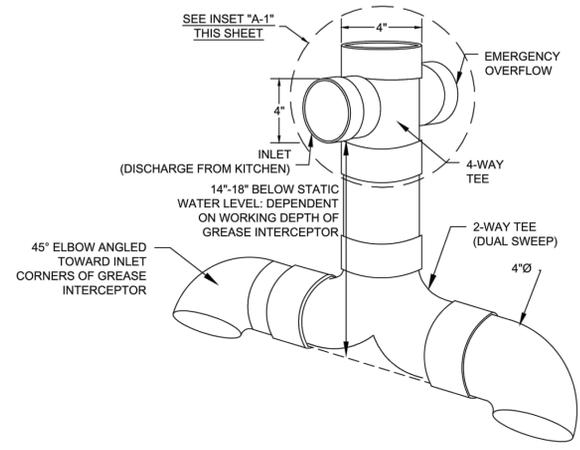


CONCRETE GREASE INTERCEPTOR
NOT TO SCALE

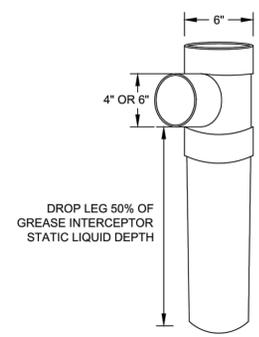


- NOTES:
1. FOR GRAVITY APPLICATIONS ONLY
2. MIN. THICKNESS: 1/4" WALL AND 3/8" TOP AND BOTTOM BOWLS
3. STANDARD PIPE STUBS ARE SOCKET SDR 35 PVC
4. EXTENSION COLLARS SHALL BE CAULKED WITH SIKAFLEX OR EQUIVALENT FOR WATERTIGHT SEAL
5. FOLLOW MANUFACTURE'S SPECS FOR TRAFFIC OR PEDESTRIAN LOADING

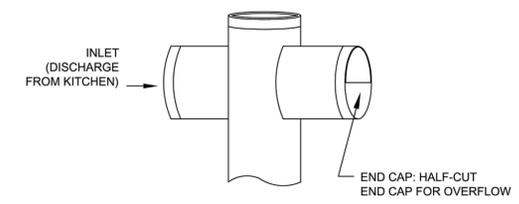
FIBERGLASS GREASE INTERCEPTOR
NOT TO SCALE



GREASE INTERCEPTOR INSET "A" 4" SANITARY TEE
NOT TO SCALE



GREASE INTERCEPTOR INSET "B" 6" X 6" X 4" OUTLET SANITARY TEE
NOT TO SCALE



GREASE INTERCEPTOR INSET "A-1" EMERGENCY OVERFLOW CLOSE-UP
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.
- THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
- THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
- THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN & STOCKPILE AREAS (TO ARRANGE AND INSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

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

CFPUA SANITARY SEWER

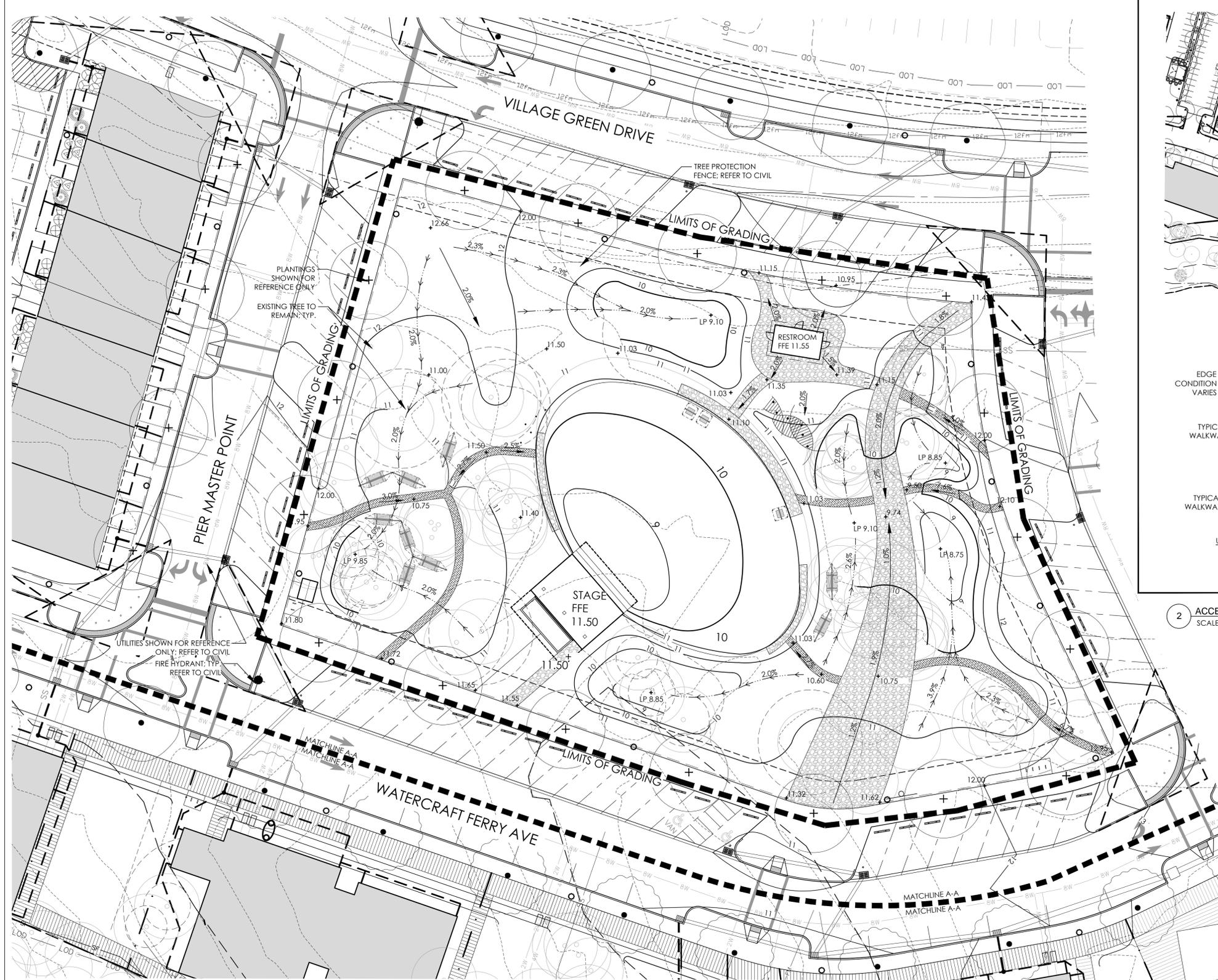
STANDARD DETAILS

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560
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DATE:	1/9/12
SCALE:	N/A
DRAWN BY:	CFPUA
CHECKED BY:	CFPUA
PROJECT NO.:	

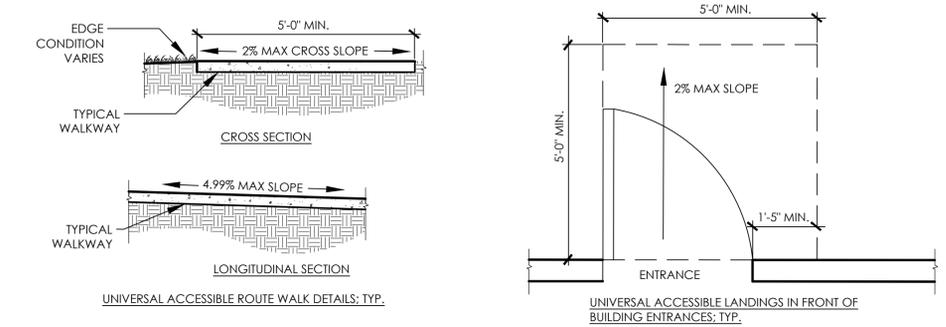
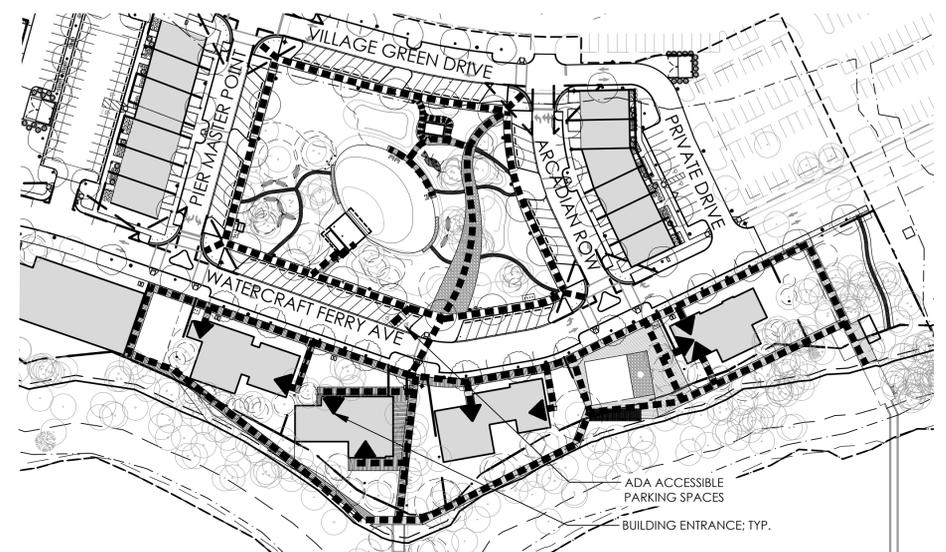
SHEET NO:
SSD-4

REV:	DESCRIPTION:	DATE:



ADA ACCESSIBLE ROUTE DIAGRAM

■■■■■■■■■■ ADA ACCESSIBLE ROUTE



2 ACCESSIBLE DIAGRAM
SCALE: NTS

1 GRADING VILLAGE GREEN
SCALE: 1" = 20'-0"

Approved Construction Plan
Name: _____ Date: _____
Planning: _____
Traffic: _____
Fire: _____

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



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

REV. NO.	DESCRIPTIONS	DATE
CITY OF WILMINGTON TRC SUBMITTAL 3		07/10/15
CITY OF WILMINGTON TRC SUBMITTAL 2		05/29/15
CITY OF WILMINGTON STORMWATER SUBMITTAL		05/29/15
NEW HANOVER COUNTY EROSION CONTROL SUBMITTAL		05/15/15
CITY OF WILMINGTON TRC SUBMITTAL		04/28/15



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www.mckimcreed.com

Surface
RIVERLIGHTS
Newland COMMUNITIES

RIVERLIGHTS - MARINA VILLAGE
VILLAGE GREEN GRADING PLAN

DATE: 05/29/2015	SCALE: 1" = 30'-0"	MAC FILE NUMBER
MCE PROJ. # 2735-0124		DRAWING NUMBER
DRAWN: JI		L151
DESIGNED: JC, ED		
CHECKED: JC, ED		
PROJ. MGR.: JC		
STATUS: NOT FOR CONSTRUCTION		REVISION

