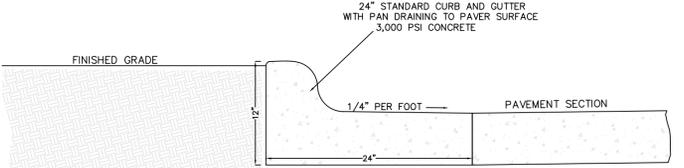
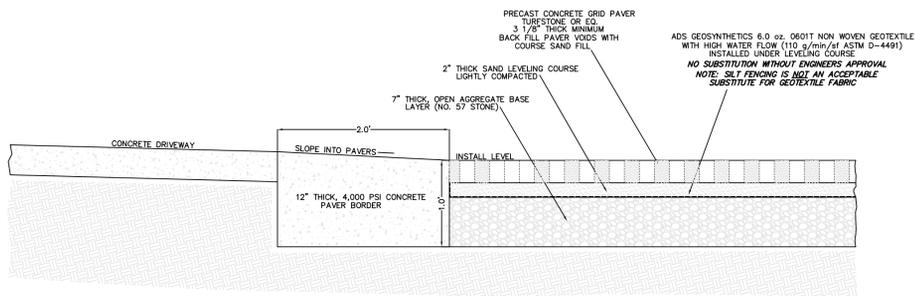


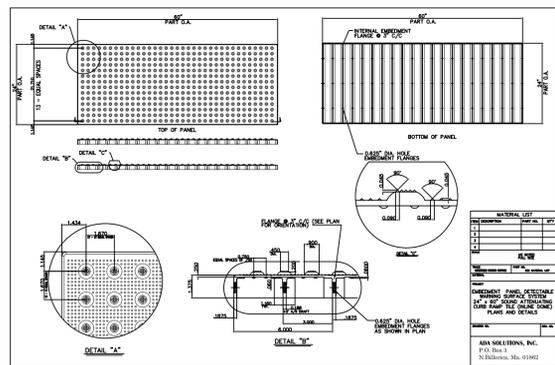
CONTRACTION JOINTS SHALL BE PLACED AT 10' INTERVALS.
ALL CONTRACTION JOINTS SHALL BE FILLED WITH JOINT FILLER AND SEALER.
CURB AND GUTTER PAVING SECTION AA
NOT TO SCALE



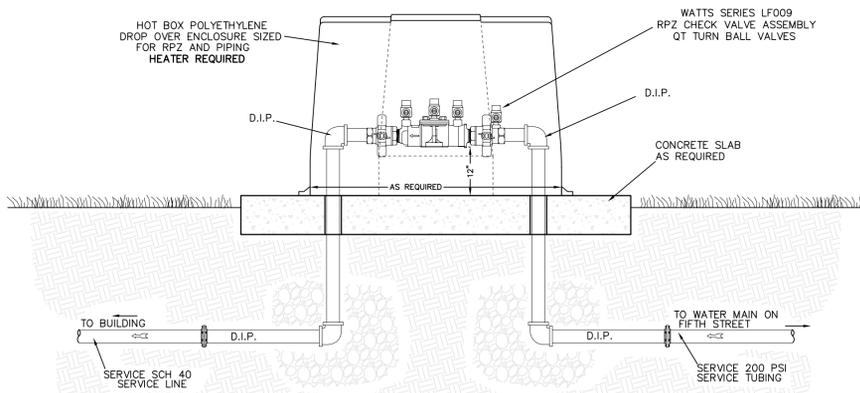
CONTRACTION JOINTS SHALL BE PLACED AT 10' INTERVALS.
ALL CONTRACTION JOINTS SHALL BE FILLED WITH JOINT FILLER AND SEALER.
CURB AND GUTTER PAVING SECTION BB
NOT TO SCALE



TURFSTONE/PICP PAVING DETAIL
NOT TO SCALE



DETECTABLE PAVER PANELS - ADA SOLUTIONS, INC. or EQUAL
NOT TO SCALE



FIRE LINE BACK FLOW PREVENTION FOR SWIMMING POOL SERVICE
NOT TO SCALE

2.1 WASTEWATER COLLECTION SYSTEM

2.1 Gravity Sewer Main Materials
Ductile iron pipe shall be designed as per ANSI A21.50 and ANSI A21.51 for a working pressure of 150 psi, laying condition B. Pipe shall be manufactured as per AWWA C141 in 18 ft. minimum lengths.
Pipe joints shall be of the push-on type as per AWWA C151. Pipe lining shall be cement mortar with a seal coat of bituminous material, oil in accordance with AWWA C104.

Polyvinyl Chloride (PVC) pipe shall be made of PVC plastic having a cell classification of 12454-B, 12454-C, or 13364-B (with minimum tensile modulus of 500,000 psi) as defined in Specifications D1784. PVC pipe shall have integral wall bell and spigot joints for the conveyance of domestic sewage. Fittings shall be made of PVC plastic having a cell classification of 12454-B, 12454-C, or 13364-B as defined in Specifications D1784. Fittings must be manufactured by pipe supplier or approved equal, and have bell and/or spigot configurations compatible with that of the pipe. Compounds with superior properties are also acceptable.

Pipe shall have a maximum Standard Dimension Ratio (SDR) of 35. Where laying conditions so warrant and in accordance with manufacturer's recommendations, lower SDR values (stronger pipe) may be required.
Installation shall consist of either Class I or Class II bedding material (as defined hereinafter), placed 6" below the pipe barrel and continuing to a minimum of 6" above the pipe, as per ASTM D2321. In addition, the installation of PVC pipe shall satisfy the flexible pipe requirements as outlined hereinafter. No Clay or VCP Pipe will be accepted.

Additional Requirements for PVC Pipe
A. Installation of PVC pipe shall follow the recommendations of ASTM-D-2321 "Underground Installation of Flexible Thermoplastic Sewer Pipe". For flexible pipe bedding and embedment material shall be either Class I or Class II. In any area where the pipe will be installed below existing or future ground water levels or where the trench could be subject to inundations, only Class I material shall be used for bedding and embedment.
B. The manufacturer's specifications or otherwise approved method shall be used in determining the stiffness class of the pipe to be installed so as to attain the required deflection control. The class of the pipe must be approved by the Engineer prior to installation.
C. The maximum allowable deflection after installation shall BE LESS THAN 5% of the pipe diameter. The mandrel (go/no-go) deflection test must be performed on each line prior to acceptance, and no less than 30 days after installation. The Contractor shall supply the mandrel used for this performance test. The mandrel device shall be cylindrical in shape and have 9 possible contact points with the pipe. The mandrel's length and diameter (D of proving ring) shall equal the dimensions in the following table, and shall be subject to the Engineer's approval.

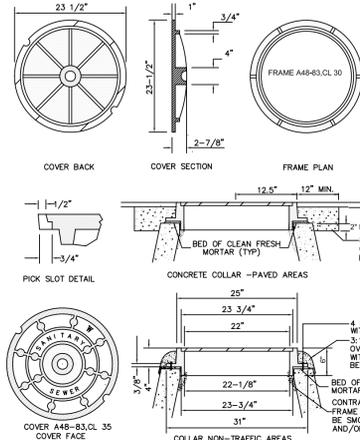
For flexible PVC pipes, the following shall apply:

Nominal Diameter	Length	Proving Ring Dia/Mandrel
8"	8'	7.40"

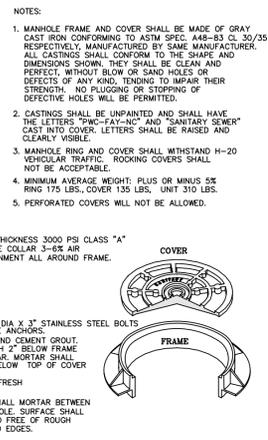
D. For flexible PVC pipe, the pipe shall be produced with bell and construction. Joining will be accomplished by rubber gasket in accordance with manufacturer's recommendation, unless otherwise directed or approved Engineer. Flexible watertight elastomeric seals in accordance D3212-81, may also be used. Each pipe length shall be clearly marked information including pipe size, profile number, and class number.
E. A minimum trench width shall be one pipe diameter plus 9" on each side of the pipe.
F. The bedding (6" minimum) and embedment materials shall be per ASTM D2321. The embedment materials shall be installed from trench wall to trench wall and from the invert to a minimum of 6" above the crown of the pipe.
G. The bedding and embedment materials shall be compacted to a minimum of 90% Standard Proctor density for Class I and II materials. Bedding and embedment materials classifications shall be defined as follows:

- Class I**
Angular (1/4" to 1-1/2") graded stone, including a number of fill materials that have regional significance such as coral, slag, cinders, crushed stone, crushed gravel and crushed shells.
- Class II**
Coarse sands and gravels with maximum particle size of 1-1/2", including variously graded sands and gravels containing small percentages of fines, generally granular and non-cohesive, either wet or dry. Soil types GW, GP, SW & SP are included in this class.

H. The minimum design slope for gravity sewer mains shall be 0.6%, and no gravity lines will be accepted with less than 0.5% slope installed.



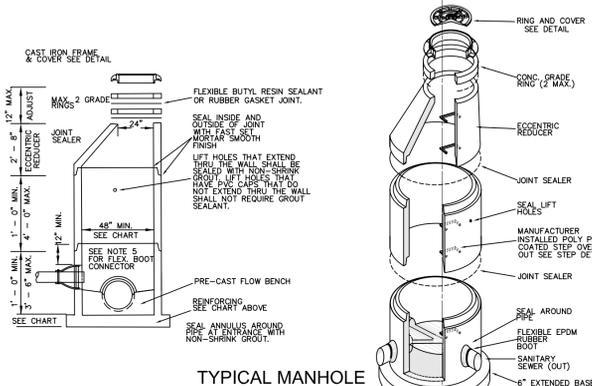
TYPICAL MANHOLE FRAME & COVER
SCALE: NONE



TYPICAL MANHOLE INSERT
SCALE: NONE

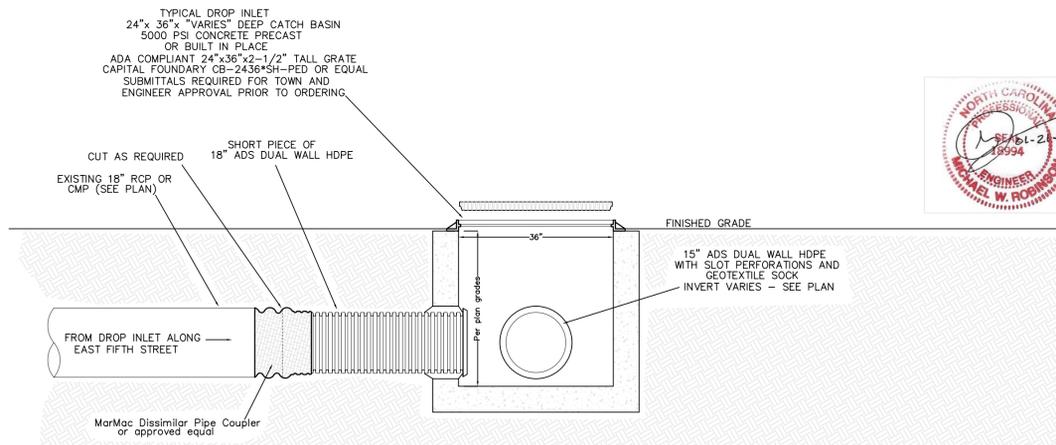
PIPE SIZE	MANHOLE SIZE	MIN. WALL THICKNESS	MIN. REINF. STEEL	MIN. BASE THICKNESS
24" & LESS	48" DIAMETER	3"	ASTM A-185 0.12 SQ./IN.	6"
24" - 36"	60" DIAMETER	6"	ASTM A-185 0.15 SQ./IN.	8"
42"	72" DIAMETER	7"	ASTM A-185 0.15 SQ./IN.	8"

MANHOLE DIAMETER SIZES MAY BE ADJUSTED ON THE PLANS TO REFLECT SPECIAL CIRCUMSTANCES. REDUCING SLABS ARE NOT ACCEPTABLE ON MANHOLES LESS THAN OR EQUAL TO 6" DIAMETER.



TYPICAL MANHOLE
SCALE: NONE

- 1. PRECAST REINFORCED CONCRETE MANHOLES SHALL BE IN ACCORDANCE WITH ASTM C-478.
- 2. MIN. CONCRETE COMPRESSIVE STRENGTH SHALL BE 4000 PSI.
- 3. MANHOLES GREATER THAN 4' DEPTH SHALL HAVE MIN. 6" EXTENDED BASE.
- 4. FLEXIBLE BUTYL RESIN JOINT SEALANT SHALL BE IN ACCORDANCE W/ ASTM C990. RUBBER GASKET JOINTS SHALL BE IN ACCORDANCE W/ ASTM C-443.
- 5. FLEXIBLE EPDM RUBBER BOOT CONNECTORS SHALL BE MANUFACTURER W/STAIN-LESS STEEL COMPRESSION RING AND TAKE-CLAMP. CONNECTION TO MAIN SHALL BE BY CONTRACTOR WITH STAINLESS STEEL PIPE CLAMP.
- 6. CONNECTIONS TO EXISTING MANHOLES SHALL BE BY CORING MAN- HOLE AND FIELD INSTALLING A FLEX. BOOT CONNECTOR. DO NOT ALLOW DEBRIS TO ENTER SYSTEM.
- 7. MORTAR SHALL BE QUICK SETTING, NON-SHRINK, GROUT MIXED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- 8. MANHOLE STEPS SHALL BE IN ACCORD- ANCE WITH ASTM C478 AND OSHA REGULATIONS ALIGN W/INVERT OUT.



DETAIL - PROPOSED DROP INLET
NOT TO SCALE

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ENGINEERING AND SURVEYING
KILL DEVIL HILLS, NC 27948
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EMAIL: mrobinson@bxbengineering.com

DETAIL SHEET
PRELIMINARY



NO.	DATE	DESCRIPTION	BY	REVIEW
1	02-27-22	REV. FOR RCP REVIEW	MWR	

PROJECT: **FIFTH STREET COTTAGES**
NORTH CAROLINA
DARE COUNTY
KILL DEVIL HILLS

A PORTION OF TRACT 4, WRIGHT'S SHORES

DATE: 01-31-22 SCALE: 1"=20'
DESIGNED: MWR DRAWN: MWR
SHEET: 7 OF 9
CAD FILE: fifth street cottage court-ksh-base.dwg
PROJECT NO: 051121