PROJECT REFERENCE NO.	SHEET NO.
U-5105	UC-3C
DESIGNED BY: RBW	
DRAWN BY: JNA	
CHECKED BY: CLS	
APPROVED BY: RBW	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

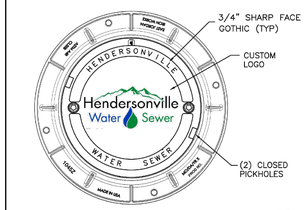
NORTH CAROLINA PROFESSIONAL SEAL 10757 ENGINEER RONALD B. WILKINS
DocuSigned by: Ronald B. Wilkins 30B8F7AF145423
6/7/2018 9:13:33 AM EDT

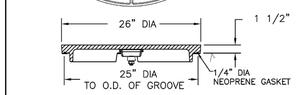
UTILITY CONSTRUCTION

HINDE ENGINEERING
License No. C-2639
401 Harrison Oaks Blvd., Suite 145 Cary, NC 27513

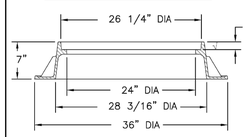
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DWG. NO. 14B

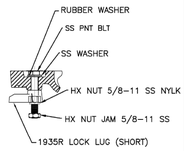




MANHOLE COVER



MANHOLE CASTING



LOCK LUG ASSEMBLY

NOTE:
COVER SHALL BEAR THE WORDS:
"SANITARY SEWER"

REVISION	DATE	BY

NO SCALE

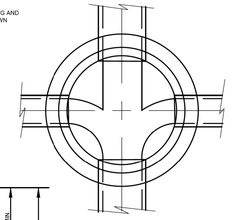
CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
DETAIL DWG. NO. 14B
ITEM NO.
WATERTIGHT, LOCKING MANHOLE CASTING & COVER

DWG. NO. 10

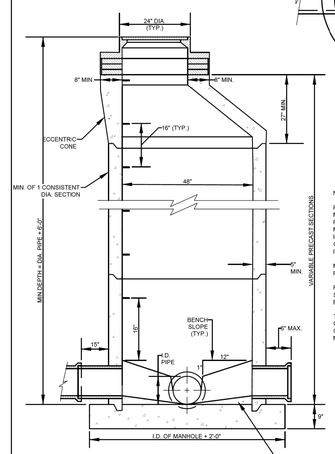
NOTE:
IF TOP STEP IS IN 24" DIA. OPENING, IT MAY PROJECT NO MORE THAN 3-1/2".

SEE DRAWINGS:
NO. 13 FOR GRADE ADJUSTMENT.
NOS. 14 AND 15 FOR CASTING DETAILS.
NOS. 33 AND 34 FOR PAVEMENT DETAIL AROUND CASTING.

MANHOLE CASTING AND COVER NOT SHOWN



PLAN



SECTION

CONCRETE WITH STEEL TROWL FINISH OR PRECAST INVERT CHANNELS AND BENCH.

NOTES:

PRECAST MANHOLE SECTIONS SHALL MEET ASTM C478. MANHOLE JOINTS SHALL UTILIZE BUTYL RUBBER SEALANT, 2 PIECES ALL AROUND OR O-RING GASKETS (ASTM C443). A MINIMUM 6-INCH WIDE BUTYL RUBBER SEAL SHALL BE INSTALLED ON ALL BELOW GRADE EXTERIOR JOINTS. CONCRETE IN MANHOLES SHALL MEET THE SPECIFICATION ITEM NOS. 5 & 14.

MANHOLE STEPS SHALL BE M.A. IND. PS-1-PF REINFORCED PLASTIC STEPS OR APPROVED EQUAL.

FOR PIPE CONNECTIONS USE ASTM C-923 FLEXIBLE GASKET SUCH AS A-LOK, DURA SEAL III, KOR-N-SEAL OR APPROVED EQUAL.

TAR STRIPS SHALL BE USED AT ALL JOINTS. THE CONTRACTOR SHALL APPLY TAR OVER THE CEMENT PARGING ON THE OUTSIDE OF THE ADJUSTMENT RINGS AND OVER THE MANHOLE CASTING EXTERIOR.

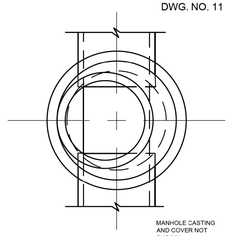
REVISION	DATE	BY

NO SCALE

CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
DETAIL DWG. NO. 10
ITEM NO.
PRECAST MANHOLE SEWER 8"-21"

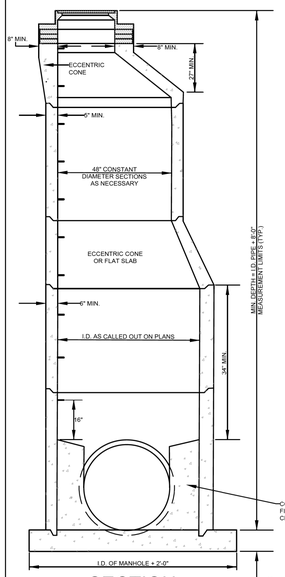
DWG. NO. 11

SEE DRAWINGS:
NO. 13 FOR GRADE ADJUSTMENT
NOS. 14 AND 15 FOR CASTING DETAILS
NOS. 33 AND 34 FOR PAVEMENT DETAIL AROUND CASTING



PLAN

MANHOLE CASTING AND COVER NOT SHOWN



SECTION

NOTES:

PRECAST MANHOLE SECTIONS SHALL MEET ASTM C478. MANHOLE JOINTS SHALL UTILIZE BUTYL RUBBER SEALANT, 2 PIECES ALL AROUND OR O-RING GASKETS (ASTM C443). A MINIMUM 6-INCH WIDE BUTYL RUBBER SEAL SHALL BE INSTALLED ON ALL BELOW GRADE EXTERIOR JOINTS. CONCRETE IN MANHOLES SHALL MEET THE SPECIFICATION ITEM NOS. 5 & 14.

MANHOLE STEPS SHALL BE M.A. IND. PS-1-PF REINFORCED PLASTIC STEPS OR APPROVED EQUAL. IF TOP STEP IS IN 24" DIA. OPENING IT MAY PROJECT NO MORE THAN 3-1/2".

FOR PIPE CONNECTIONS USE ASTM C-923 FLEXIBLE GASKET SUCH AS A-LOK, DURA SEAL III, KOR-N-SEAL OR APPROVED EQUAL.

TAR STRIPS SHALL BE USED AT ALL JOINTS. THE CONTRACTOR SHALL APPLY TAR OVER THE CEMENT PARGING ON THE OUTSIDE OF THE ADJUSTMENT RINGS AND OVER THE MANHOLE CASTING EXTERIOR.

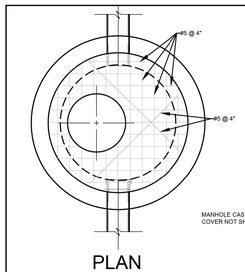
CONCRETE WITH STEEL TROWL FINISH OR PRECAST INVERT CHANNELS AND BENCH.

REVISION	DATE	BY

NO SCALE

CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
DETAIL DWG. NO. 11
ITEM NO.
PRECAST MANHOLE SEWERS 24" THRU 48"

DWG. NO. 12

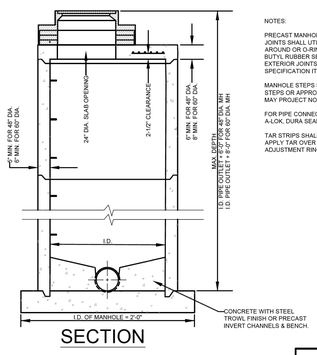


MANHOLE I.D.
48" FOR SEWERS 8" THRU 21"
60" FOR SEWERS 24" THRU 36"

SEE DRAWINGS:
NO. 13 FOR GRADE ADJUSTMENT.
NOS. 14 AND 15 FOR CASTING DETAILS.
NOS. 33 AND 34 FOR PAVEMENT DETAIL AROUND CASTING

MANHOLE CASTING & COVER NOT SHOWN

PLAN



SECTION

CONCRETE WITH STEEL TROWL FINISH OR PRECAST INVERT CHANNELS & BENCH.

NOTES:

PRECAST MANHOLE SECTIONS SHALL MEET ASTM C478. MANHOLE JOINTS SHALL UTILIZE BUTYL RUBBER SEALANT, 2 PIECES ALL AROUND OR O-RING GASKETS (ASTM C443). A MINIMUM 6-INCH WIDE BUTYL RUBBER SEAL SHALL BE INSTALLED ON ALL BELOW GRADE EXTERIOR JOINTS. CONCRETE IN MANHOLES SHALL MEET THE SPECIFICATION ITEM NOS. 5 & 14.

MANHOLE STEPS SHALL BE M.A. IND. PS-1-PF REINFORCED PLASTIC STEPS OR APPROVED EQUAL. IF TOP STEP IS IN 24" DIA. OPENING IT MAY PROJECT NO MORE THAN 3-1/2".

FOR PIPE CONNECTIONS USE ASTM C-923 FLEXIBLE GASKET SUCH AS A-LOK, DURA SEAL III, KOR-N-SEAL OR APPROVED EQUAL.

TAR STRIPS SHALL BE USED AT ALL JOINTS. THE CONTRACTOR SHALL APPLY TAR OVER THE CEMENT PARGING ON THE OUTSIDE OF THE ADJUSTMENT RINGS AND OVER THE MANHOLE CASTING EXTERIOR.

REVISION	DATE	BY

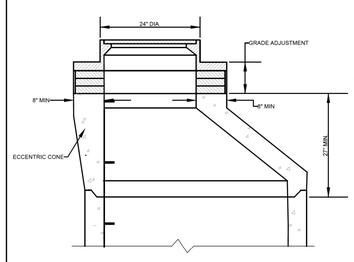
NO SCALE

CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
DETAIL DWG. NO. 12
ITEM NO.
SHALLOW PRECAST MANHOLE

DWG. NO. 13

NOTE:
IF TOP STEP IS IN 24" DIA. OPENING, IT MAY PROJECT NO MORE THAN 3-1/2".

PRECAST MANHOLE SECTIONS SHALL MEET ASTM C478. MANHOLE JOINTS SHALL MEET ASTM C443.



MIN. HEIGHT 6" - ANY COMBINATION OF PRECAST RINGS AND/OR SEWER MANHOLE BRICK.

MAX. HEIGHT 12" - ANY COMBINATION OF PRECAST RINGS AND/OR SEWER MANHOLE BRICK - BRICK COURSES NOT TO EXCEED TWO.

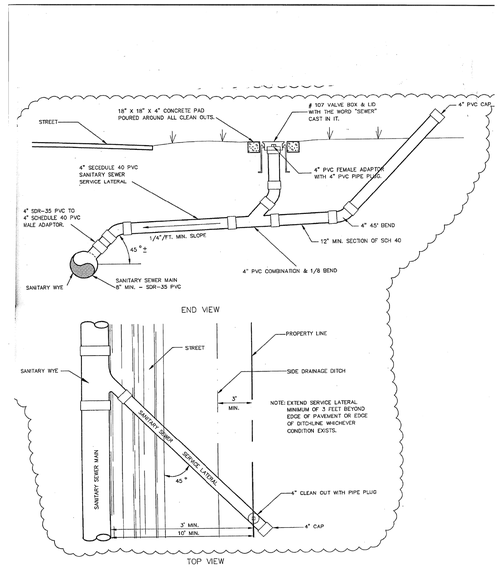
APPLY 3/4" CEMENT MORTAR TO INSIDE OF PRECAST RINGS AND/OR MANHOLE BRICK. APPLY 1/2" BITUMINOUS SEAL TO OUTSIDE OF PRECAST RINGS AND/OR MANHOLE BRICK. CONTRACTOR SHALL APPLY TAR OVER CEMENT PARGING ON THE OUTSIDE OF THE ADJUSTMENT RINGS AND OVER THE MANHOLE CASTING EXTERIOR.

NOTE:
THIS DETAIL APPLIES FOR ECCENTRIC CONE SECTIONS OR PRECAST FLAT SLAB TOP.

REVISION	DATE	BY

NO SCALE

CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
DETAIL DWG. NO. 13
ITEM NO.
MANHOLE GRADE ADJUSTMENT DETAIL



TYPICAL 4" SEWER SERVICE LATERAL AND CLEAN OUT DETAILS.
NOT TO SCALE

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