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PROJECT REFERENCE NO.	SHEET NO.
B-4490	UC-3H

DESIGNED BY: ·
DRAWN BY: NONE ·
CHECKED BY: ·
APPROVED BY: ·
REVISED:

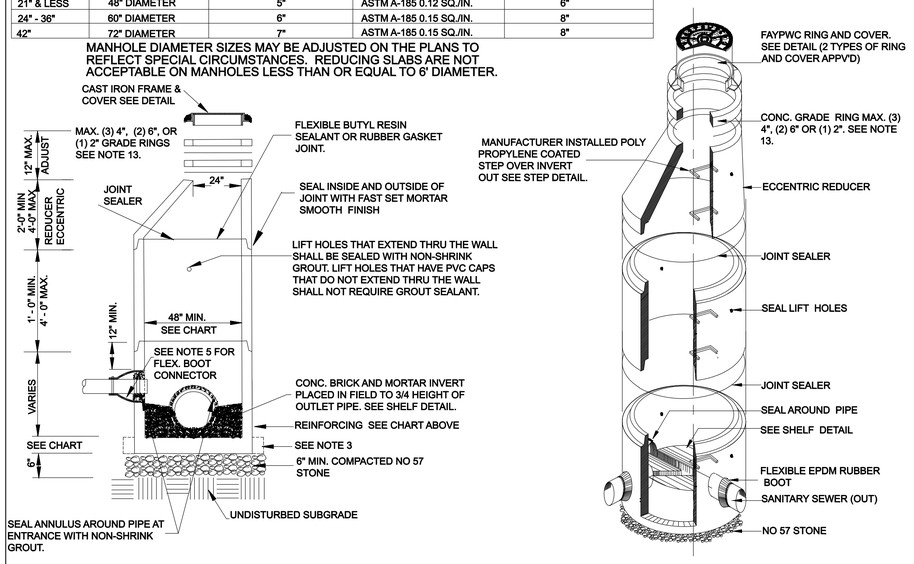
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE: (919)707-6690
FAX: (919)250-4151

NORTH CAROLINA PROFESSIONAL SEAL 7952 ENGINEER JOHN DAVID POETZSCH
Docusigned by: John Poetzsch
EA0978F80EE428...
2/2/2016

UTILITY CONSTRUCTION

PIPE SIZES	MANHOLE SIZE	MIN. WALL THICKNESS	MIN. REINF. STEEL	MIN. BASE THICKNESS
21" & LESS	48" DIAMETER	5"	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.



STANDARD MANHOLE N.T.S.			PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.
SHEET NO. 1 OF 2	DWG. NO. S.2	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT
	DATE: JULY 01, 2015	APPROVED BY: J.E.G.	

NO.	DATE	REVISION
1	FEB 07	CREATED S.2A ADDED NOTES 13-17
2	JULY 13	ADDED SHEET 2 OF 2

2015-S2 STANDARD MANHOLE.dwg

NOTES:
1. PRECAST REINFORCED CONCRETE MANHOLES SHALL BE IN ACCORDANCE WITH ASTM C-478.

2. MINIMUM CONCRETE COMPRESSIVE STRENGTH SHALL BE 4000 PSI.

3. MANHOLES GREATER THAN 12' DEPTH SHALL HAVE MINIMUM 6" EXTENDED BASE.

4. FLEXIBLE BUTYL RESIN JOINT SEALANT SHALL BE IN ACCORDANCE WITH ASTM C990. RUBBER GASKET JOINTS SHALL BE IN ACCORDANCE WITH ASTM C-443.

5. FLEXIBLE EPDM RUBBER BOOT CONNECTORS SHALL BE IN ACCORDANCE WITH ASTM C923, INSTALLED BY MANUFACTURER WITH STAINLESS STEEL COMPRESSION RING AND TAKE-UP CLAMP. CONNECTION TO MAIN SHALL BE BY CONTRACTOR WITH STAINLESS STEEL PIPE CLAMP.

6. CONNECTIONS TO EXISTING MANHOLES SHALL BE BY CORING MANHOLE 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 ACCORDANCE WITH ASTM C478 AND OSHA REGULATIONS. ALIGN STEPS WITH INVERT OUT.

9. PRECAST INVERTS ARE NOT ALLOWED. STANDING WATER IN INVERT OF MANHOLE IS NOT ACCEPTABLE.

10. VERTICAL DROPS BETWEEN THE INFLOW PIPES AND OUTFLOW PIPES SHALL REQUIRE THE FOLLOWING:
A. GREATER THAN 2.5' SEE DROP STRUCTURE DETAIL (MIN. 5' DIAMETER MH REQUIRED).
B. 1' TO 2.5' SEE PIPE SLIDE DETAIL.
C. LESS THAN 1' SEE MORTAR SLIDE DETAIL.

11. AN ECCENTRIC CONE SHALL BE UTILIZED ON ALL MANHOLES, UNLESS OTHERWISE APPROVED BY FAYPWC.

12. INVERT ON PLANS IS TO MANHOLE CENTERLINE.

13. CONCRETE GRADE RINGS SHALL NOT BE USED FOR ABOVE GRADE ADJUSTMENTS (i.e., OUTFALL AREAS). USE OF GRADE RINGS ARE ALLOWABLE IN YARD AREAS AND PAVEMENT, WHERE THE RING AND COVER ARE AT GROUND LEVEL.

14. THE MINIMUM SLOPE ACROSS THE INVERT OF THE MANHOLE SHALL BE 1%, UNLESS OTHERWISE APPROVED BY FAYPWC.

15. THE EXTERIOR MANHOLE RISER JOINTS, INCLUDING THE JOINT AT THE CONE, SHALL BE SEALED ON THE OUTSIDE BY AN APPROVED JOINT WRAP. THE WRAP SHALL BE IN ACCORDANCE WITH FAYPWC SPECIFICATIONS.

16. MANHOLE BOOT FOR 4-INCH LATERALS. SHOULD IT BE NECESSARY TO INSTALL A 4-INCH LATERAL INTO A MANHOLE, THE RUBBER BOOT THAT THE LATERAL IS INSERTED INTO SHALL BE SECURELY FASTENED TO THE CORE HOLE BY UTILIZING A STAINLESS STEEL BAND THAT IS TIGHTENED USING A JACK OR A TORQUE WRENCH (DIRECT DRIVE). BOTH STANDARD SIZE AND STEP DOWN BOOTS ARE ALLOWED. THE TORQUE WRENCH SHALL BE SUPPLIED BY THE MANUFACTURER. NO OTHER TYPE BANDS OR METHOD OF SECURING THE BOOT TO THE MANHOLE SHALL BE ACCEPTED.
FOR FOUR (4) INCH SDR 26 LATERALS, THE PIPE OUTSIDE DIAMETER RANGE OF THE BOOT SHALL BE 3.5 INCHES TO 4.25 INCHES.
FOR FOUR (4) INCH DUCTILE IRON LATERALS, THE PIPE OUTSIDE DIAMETER RANGE OF THE BOOT SHALL EITHER BE AS FOR VC OR 4.25 INCHES TO 4.81 INCHES.
IN ALL CASES, THE BOOT SHALL BE TIGHTENED ON THE LATERAL BY MEANS OF A SINGLE STAINLESS STEEL STRAP.
THE LATERAL INVERT SHALL BE AT THE TOP OF THE SHELF.

17. NO MORE THAN 4, FOUR INCH LATERALS OR 3, SIX INCH LATERALS SHALL ENTER A 4' DIAMETER TERMINAL MANHOLE. NO MORE THAN 2 LATERALS (REGARDLESS OF SIZE) SHALL ENTER ALL OTHER 4' DIAMETER MANHOLES. ALL LATERALS SHALL HAVE AN INDIVIDUAL TROUGH. 5' DIAMETER MANHOLES SHALL BE USED IF THE ABOVE CONDITIONS ARE NOT MET.

18. NO MORE THAN 5 LATERALS SHALL ENTER A 5' DIAMETER

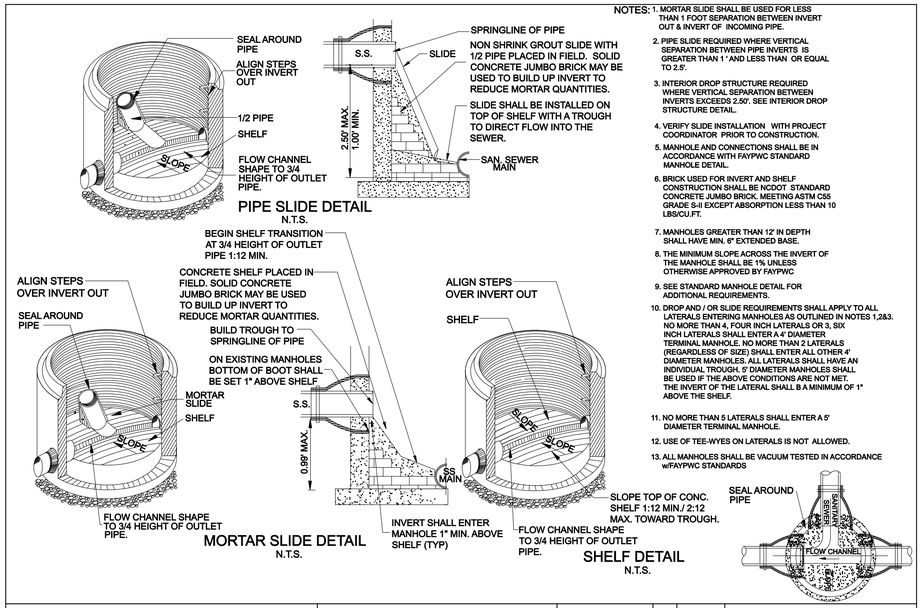
19. USE OF TEE-WYES ON LATERALS IS NOT ALLOWED.

20. ALL MANHOLES SHALL BE VACUUM TESTED IN ACCORDANCE WITH FAYPWC STANDARDS.

STANDARD MANHOLE			PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.
SHEET NO. 2 OF 2	DWG. NO. S.2	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT
	DATE: JULY 01, 2015	APPROVED BY: J.E.G.	

NO.	DATE	REVISION
1	1/08	CREATED DETAIL, ADDED NOTES 14-20
2	7/13	REVISED NOTES 9, 10, 11, 15. CONVERTED TO S.2 SHEET 2 OF 2

2015-S2 STANDARD MANHOLE.dwg

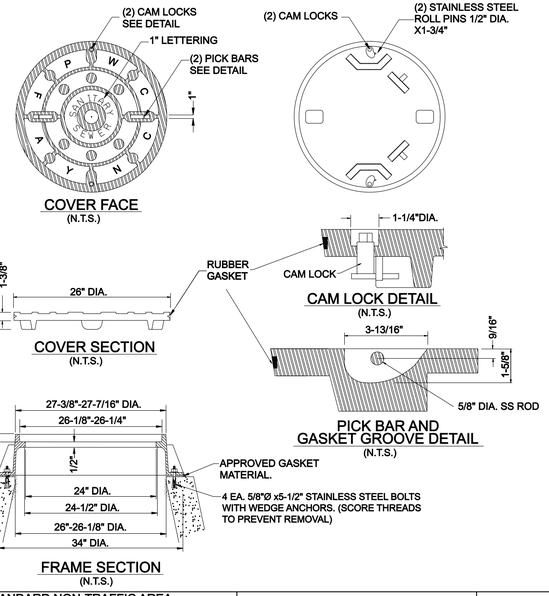


NOTES:
1. MORTAR SLIDE SHALL BE USED FOR LESS THAN 1 FOOT SEPARATION BETWEEN INVERT OUT & INVERT OF INCOMING PIPE.
2. PIPE SLIDE REQUIRED WHERE VERTICAL SEPARATION BETWEEN PIPE INVERTS IS GREATER THAN 1 ' AND LESS THAN OR EQUAL TO 2.5'.
3. INTERIOR DROP STRUCTURE REQUIRED WHERE VERTICAL SEPARATION BETWEEN INVERTS EXCEEDS 2.50'. SEE INTERIOR DROP STRUCTURE DETAIL.
4. VERIFY SLIDE INSTALLATION WITH PROJECT COORDINATOR PRIOR TO CONSTRUCTION.
5. MANHOLE AND CONNECTIONS SHALL BE IN ACCORDANCE WITH FAYPWC STANDARD MANHOLE DETAIL.
6. BRICK USED FOR INVERT AND SHELF CONSTRUCTION SHALL BE NCDOT STANDARD CONCRETE JUMBO BRICK, MEETING ASTM C55 GRADE S-II EXCEPT ABSORPTION LESS THAN 10 LBS/CU.FT.
7. MANHOLES GREATER THAN 12' IN DEPTH SHALL HAVE MIN. 6" EXTENDED BASE.
8. THE MINIMUM SLOPE ACROSS THE INVERT OF THE MANHOLE SHALL BE 1% UNLESS OTHERWISE APPROVED BY FAYPWC
9. SEE STANDARD MANHOLE DETAIL FOR ADDITIONAL REQUIREMENTS.
10. DROP AND / OR SLIDE REQUIREMENTS SHALL APPLY TO ALL LATERALS ENTERING MANHOLES AS OUTLINED IN NOTES 1,2&3. NO MORE THAN 4, FOUR INCH LATERALS OR 3, SIX INCH LATERALS SHALL ENTER A 4' DIAMETER TERMINAL MANHOLE. NO MORE THAN 2 LATERALS (REGARDLESS OF SIZE) SHALL ENTER ALL OTHER 4' DIAMETER MANHOLES. ALL LATERALS SHALL HAVE AN INDIVIDUAL TROUGH. 5' DIAMETER MANHOLES SHALL BE USED IF THE ABOVE CONDITIONS ARE NOT MET. THE INVERT OF THE LATERAL SHALL B A MINIMUM OF 1" ABOVE THE SHELF.
11. NO MORE THAN 5 LATERALS SHALL ENTER A 5' DIAMETER TERMINAL MANHOLE.
12. USE OF TEE-WYES ON LATERALS IS NOT ALLOWED.
13. ALL MANHOLES SHALL BE VACUUM TESTED IN ACCORDANCE w/FAYPWC STANDARDS

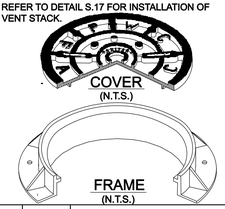
PIPE SLIDE, MORTAR SLIDE AND SHELF DETAILS N.T.S.			PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.
SHEET NO. 1 OF 1	DWG. NO. S.4	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT
	DATE: JAN. 01, 2015	APPROVED BY: J.E.G.	

NO.	DATE	REVISION
1	JAN. 05	ADDED NOTE 8.
2	FEB 07	REVISED NOTE 8, SLIDE DETAIL. ADDED NOTES 10,11,12

2015-S4 PSLIDE.dwg



NOTES:
1. MANHOLE FRAME AND COVER TO BE MADE OF GRAY CAST IRON CONFORMING TO ASTM SPEC. A48-83, CLASS 35, MANUFACTURED BY SAME MANUFACTURER. ALL CASTINGS SHALL CONFORM TO THE SHAPE AND DIMENSIONS SHOWN. THEY SHALL BE CLEAN AND PERFECT, WITHOUT BLOW OR SAND HOLES OR DEFECTS OF ANY KIND, TENDING TO IMPAIR THEIR STRENGTH. NO PLUGGING OR STOPPING OF DEFECTIVE HOLES WILL BE PERMITTED.
2. CASTINGS SHALL BE UNPAINTED AND SHALL HAVE THE LETTERS "PWC-FAY-NC" AND "SANITARY SEWER" CAST INTO COVER. LETTERS SHALL BE RAISED AND CLEARLY VISIBLE.
3. MANHOLE RING AND COVER SHALL WITHSTAND H-20 VEHICULAR TRAFFIC.
4. MINIMUM AVERAGE WEIGHT: PLUS OR MINUS 5% RING 155 LBS., COVER 160 LBS., UNIT 315 LBS.
5. PERFORATED COVERS WILL NOT BE ALLOWED.
6. SUPPLY SOCKET FOR TURNING CAM LOCK MECHANISM. ONE SOCKET PER PROJECT.
7. USE OF CONCRETE GRADE RINGS ARE NOT ALLOWED, UNLESS APPROVED BY THE FAYPWC PROJECT COORDINATOR.
8. THIS DETAIL IS TO BE USED ON ALL MANHOLES LOCATED OUTSIDE OF PAVED AREAS, UNLESS OTHERWISE APPROVED.
9. REFER TO DETAIL S.17 FOR INSTALLATION OF VENT STACK.



STANDARD NON-TRAFFIC AREA MANHOLE RING AND COVER WITH WIPER GASKET & CAM LOCK N.T.S.			PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.
SHEET NO. 1 OF 1	DWG. NO. S.6	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT
	DATE: JULY 01, 2015	APPROVED BY: J.E.G.	

NO.	DATE	REVISION
1	JUL 08	REVISED NOTE ON FRAME SECTION ADDED NOTE 7, 8
2	DEC 08	REVISED DIMENSIONS ON FRAME SECTION
3	JUL 09	REVISED NOTES ON FRAME SECTION/REVISED NOTE 3

2015-S6 RING COVER.dwg

Prepared by:
AECOM
AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
919-854-6200 919-854-6259 (fax)
F - 0342

DATE: 2/12/2016
TIME: 7:38:22 AM
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