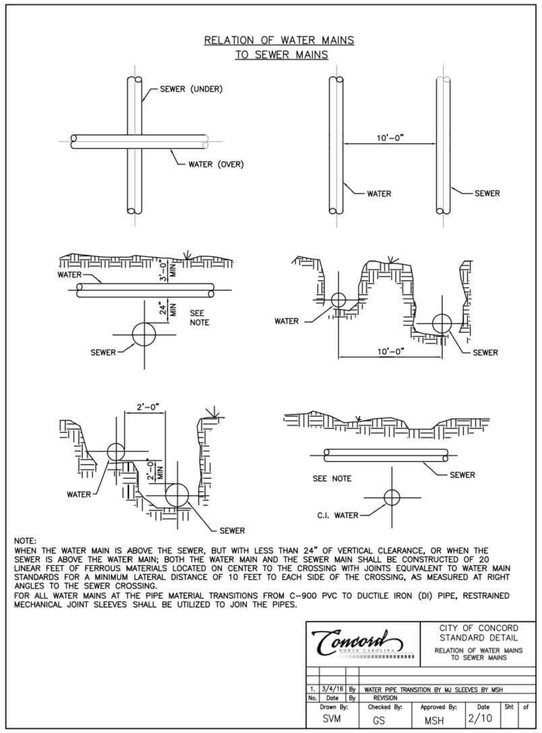


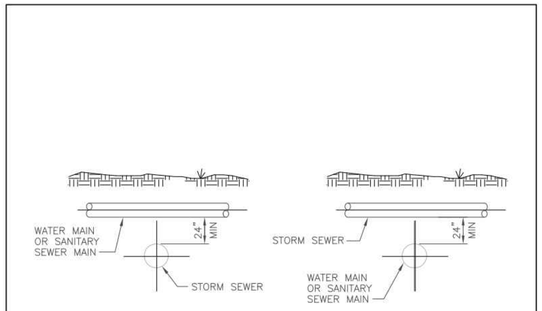
NOTE:
WHEN THE WATER MAIN IS ABOVE THE SEWER, BUT WITH LESS THAN 24" OF VERTICAL CLEARANCE, OR WHEN THE SEWER IS ABOVE THE WATER MAIN; BOTH THE WATER MAIN AND THE SEWER MAIN SHALL BE CONSTRUCTED OF 20 LINEAR FEET OF FERROUS MATERIALS LOCATED ON CENTER TO THE CROSSING WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A MINIMUM LATERAL DISTANCE OF 10 FEET TO EACH SIDE OF THE CROSSING, AS MEASURED AT RIGHT ANGLES TO THE SEWER CROSSING.
FOR ALL WATER MAINS AT THE PIPE MATERIAL TRANSITIONS FROM C-900 PVC TO DUCTILE IRON (DI) PIPE, RESTRAINED MECHANICAL JOINT SLEEVES SHALL BE UTILIZED TO JOIN THE PIPES.

Concord NORTH CAROLINA	CITY OF CONCORD STANDARD DETAIL
	RELATION OF WATER MAINS TO SEWER MAINS

No.	Date	By	REVISION					
1.	3/4/16	By	WATER PIPE TRANSITION BY MJ SLEEVES BY MSH					
Drawn By:		Checked By:		Approved By:	Date	Sht	of	
SVM		GS		MSH	2/10			

1 RELATION TO WATER & SANITARY MAINS NTS

CITY OF CONCORD TECHNICAL STANDARDS MANUAL



NOTE:

WHEN A WATER MAIN OR SANITARY SEWER MAIN CROSSES OVER OR UNDER A STORM SEWER AND CONDITIONS PREVENT THE REQUIRED 24" MIN VERTICAL SEPARATION, THE WATER MAIN OR SANITARY SEWER MAIN SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A MINIMUM DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING.

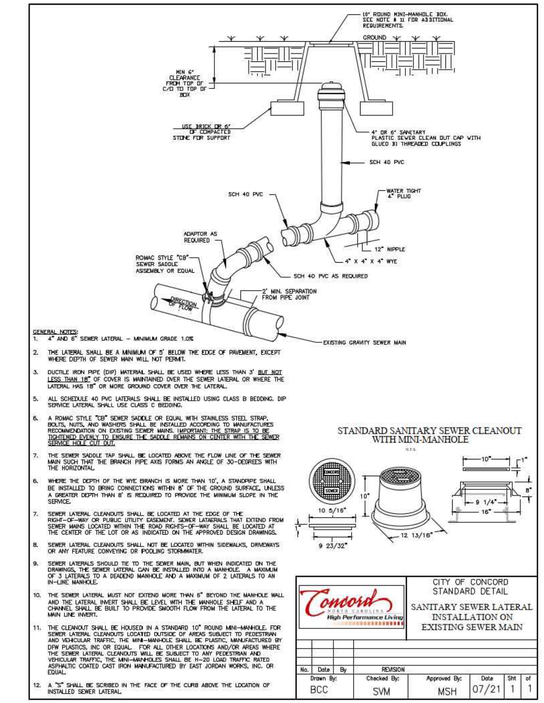
FOR ALL WATER MAINS AT THE PIPE MATERIAL TRANSITIONS FROM C-900 PVC TO DUCTILE IRON (DI) PIPE, RESTRAINED MECHANICAL JOINT SLEEVES SHALL BE UTILIZED TO JOIN THE PIPES.

Concord NORTH CAROLINA	CITY OF CONCORD STANDARD DETAIL
	RELATION OF WATER MAINS AND SEWER MAINS TO STORM SEWER

No.	Date	By	REVISION					
1.	3/4/16	By	WATER PIPE TRANSITION BY MJ SLEEVES BY MSH					
Drawn By:		Checked By:		Approved By:	Date	Sht	of	
SVM		MSH			11/09			

2 RELATION TO WATER, SANITARY & STORM NTS

CITY OF CONCORD TECHNICAL STANDARDS MANUAL



GENERAL NOTES:
1. 4" AND 6" SEWER LATERAL – MINIMUM GRADE 1.0%
2. THE LATERAL SHALL BE A MINIMUM OF 5' BELOW THE EDGE OF PAVEMENT, EXCEPT WHERE DEPTH OF SEWER MAIN WILL NOT PERMIT.
3. DUCTILE IRON PIPE (DIP) MATERIAL SHALL BE USED WHERE LESS THAN 3' BUT NOT LESS THAN 18" OF COVER IS MAINTAINED OVER THE SEWER LATERAL OR WHERE THE LATERAL HAS 18" OR MORE GROUND COVER OVER THE LATERAL.
4. ALL SCHEDULE 40 PVC LATERALS SHALL BE INSTALLED USING CLASS B BEDDING. DIP SERVICE LATERAL SHALL USE CLASS C BEDDING.
5. A ROMAC STYLE "CB" SEWER SADDLE OR EQUAL WITH STAINLESS STEEL STRAP, BOLTS, NUTS, AND WASHERS SHALL BE INSTALLED ACCORDING TO MANUFACTURES RECOMMENDATION ON EXISTING SEWER MAINS. IMPORTANT: THE STRAP IS TO BE TIGHTENED EVENLY TO ENSURE THE SADDLE REMAINS ON CENTER WITH THE SEWER BEFORE TRUE OUT DUE.
6. THE SEWER SADDLE TAP SHALL BE LOCATED ABOVE THE FLOW LINE OF THE SEWER MAIN SUCH THAT THE BRANCH PIPE AXIS FORMS AN ANGLE OF 30-DEGREES WITH THE HORIZONTAL
7. WHERE THE DEPTH OF THE WYE BRANCH IS MORE THAN 10', A STANDPIPE SHALL BE INSTALLED TO BRING CONNECTIONS WITHIN 8' OF THE GROUND SURFACE, UNLESS A GREATER DEPTH THAN 8' IS REQUIRED TO PROVIDE THE MINIMUM SLOPE IN THE SERVICE.
8. SEWER LATERAL CLEANOUTS SHALL BE LOCATED AT THE EDGE OF THE RIGHT-OF-WAY OR PUBLIC UTILITY EASEMENT. SEWER LATERALS THAT EXTEND FROM SEWER MAINS LOCATED WITHIN THE ROAD RIGHTS-OF-WAY SHALL BE LOCATED AT THE CENTER OF THE LOT OR AS INDICATED ON THE APPROVED DESIGN DRAWINGS.
9. SEWER LATERAL CLEANOUTS SHALL NOT BE LOCATED WITHIN SIDEWALKS, DRIVEWAYS OR ANY FEATURE CONVEYING OR POOLING STORMWATER.
10. SEWER LATERALS SHOULD TIE TO THE SEWER MAIN, BUT WHEN INDICATED ON THE DRAWINGS, THE SEWER LATERAL CAN BE INSTALLED INTO A MANHOLE. A MAXIMUM OF 3 LATERALS TO A DEADEND MANHOLE AND A MAXIMUM OF 2 LATERALS TO AN IN-LINE MANHOLE.
11. THE SEWER LATERAL MUST NOT EXTEND MORE THAN 6" BEYOND THE MANHOLE WALL AND THE LATERAL INVERT SHALL BE LEVEL WITH THE MANHOLE SHELF AND A CHANNEL SHALL BE BUILT TO PROVIDE SMOOTH FLOW FROM THE LATERAL TO THE MAIN LINE INVERT.
12. THE CLEANOUT SHALL BE HOUSED IN A STANDARD 10" ROUND MINI-MANHOLE, FOR SEWER LATERAL CLEANOUTS LOCATED OUTSIDE OF AREAS SUBJECT TO PEDESTRIAN AND VEHICULAR TRAFFIC. THE MINI-MANHOLE SHALL BE PLASTIC, MANUFACTURED BY DFW PLASTICS, INC OR EQUAL. FOR ALL OTHER LOCATIONS AND/OR AREAS WHERE THE SEWER LATERAL CLEANOUTS WILL BE SUBJECT TO ANY PEDESTRIAN AND VEHICULAR TRAFFIC, THE MINI-MANHOLES SHALL BE H-20 LOAD TRAFFIC RATED ASPHALTIC COATED CAST IRON MANUFACTURED BY EAST JORDAN WORKS, INC. OR EQUAL.
13. A "S" SHALL BE SCRIBED IN THE FACE OF THE CURB ABOVE THE LOCATION OF INSTALLED SEWER LATERAL.

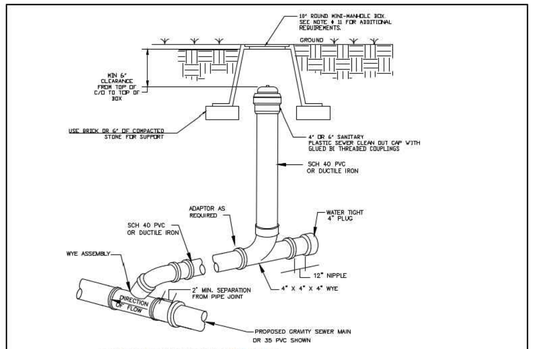
STANDARD SANITARY SEWER CLEANOUT WITH MINI-MANHOLE
N.T.S.

Concord NORTH CAROLINA High Performance Living	CITY OF CONCORD STANDARD DETAIL
	SANITARY SEWER LATERAL INSTALLATION ON EXISTING SEWER MAIN

No.	Date	By	REVISION					
Drawn By:		Checked By:		Approved By:	Date	Sht	of	
BCC		SVM		MSH	07/21	1	1	

3 LATERAL SERVICE TO EXISTING SANITARY NTS

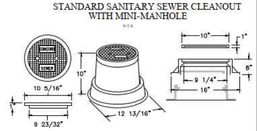
CITY OF CONCORD TECHNICAL STANDARDS MANUAL



STANDARD SANITARY SEWER LATERAL WITH MINI-MANHOLE
N.T.S.

GENERAL NOTES:
1. 4" AND 6" SEWER LATERAL – MINIMUM GRADE 1.0%
2. THE LATERAL SHALL BE A MINIMUM OF 5' BELOW THE EDGE OF PAVEMENT, EXCEPT WHERE DEPTH OF SEWER MAIN WILL NOT PERMIT.
3. DUCTILE IRON PIPE (DIP) MATERIAL SHALL BE USED WHERE LESS THAN 3' BUT NOT LESS THAN 18" OF COVER IS MAINTAINED OVER THE SEWER LATERAL OR WHERE THE LATERAL HAS 18" OR MORE GROUND COVER OVER THE LATERAL.
4. ALL SCHEDULE 40 PVC LATERALS SHALL BE INSTALLED USING CLASS B BEDDING. DIP SEWER LATERAL SHALL USE CLASS C BEDDING.
5. THE SEWER LATERAL WYE SHALL BE LOCATED SUCH THAT THE BRANCH PIPE AXIS FORMS AN ANGLE OF 30-DEGREES WITH THE HORIZONTAL.
6. WHERE THE DEPTH OF THE WYE BRANCH IS MORE THAN 10', A STANDPIPE SHALL BE INSTALLED TO BRING CONNECTIONS WITHIN 8' OF THE GROUND SURFACE, UNLESS A GREATER DEPTH THAN 8' IS REQUIRED TO PROVIDE THE MINIMUM SLOPE IN THE SERVICE.
7. SEWER LATERAL CLEANOUTS SHALL BE LOCATED AT THE EDGE OF THE RIGHT-OF-WAY OR PUBLIC UTILITY EASEMENT. SEWER LATERALS THAT EXTEND FROM SEWER MAINS LOCATED WITHIN THE ROAD RIGHTS-OF-WAY SHALL BE LOCATED AT THE CENTER OF THE LOT OR AS INDICATED ON THE APPROVED DESIGN DRAWINGS.
8. SEWER LATERAL CLEANOUTS SHALL NOT BE LOCATED WITHIN SIDEWALKS, DRIVEWAYS OR ANY FEATURE CONVEYING OR POOLING STORMWATER.
9. SEWER LATERALS SHOULD TIE TO THE SEWER MAIN, BUT WHEN INDICATED ON THE DRAWINGS, THE SEWER LATERAL CAN BE INSTALLED INTO A MANHOLE. A MAXIMUM OF 3 LATERALS TO A DEADEND MANHOLE AND A MAXIMUM OF 2 LATERALS TO AN IN-LINE MANHOLE.
10. THE SEWER LATERAL MUST NOT EXTEND MORE THAN 6" BEYOND THE MANHOLE WALL AND THE LATERAL INVERT SHALL BE LEVEL WITH THE MANHOLE SHELF AND A CHANNEL SHALL BE BUILT TO PROVIDE SMOOTH FLOW FROM THE LATERAL TO THE MAIN LINE INVERT.
11. THE CLEANOUT SHALL BE HOUSED IN A STANDARD 10" ROUND MINI-MANHOLE, FOR SEWER LATERAL CLEANOUTS LOCATED OUTSIDE OF AREAS SUBJECT TO PEDESTRIAN AND VEHICULAR TRAFFIC. THE MINI-MANHOLE SHALL BE PLASTIC, MANUFACTURED BY DFW PLASTICS, INC OR EQUAL. FOR ALL OTHER LOCATIONS AND/OR AREAS WHERE THE SEWER LATERAL CLEANOUTS WILL BE SUBJECT TO ANY PEDESTRIAN AND VEHICULAR TRAFFIC, THE MINI-MANHOLES SHALL BE H-20 LOAD TRAFFIC RATED ASPHALTIC COATED CAST IRON MANUFACTURED BY EAST JORDAN WORKS, INC. OR EQUAL.
12. A "S" SHALL BE SCRIBED IN THE FACE OF THE CURB ABOVE THE LOCATION OF INSTALLED SEWER LATERAL.

STANDARD SANITARY SEWER CLEANOUT WITH MINI-MANHOLE
N.T.S.

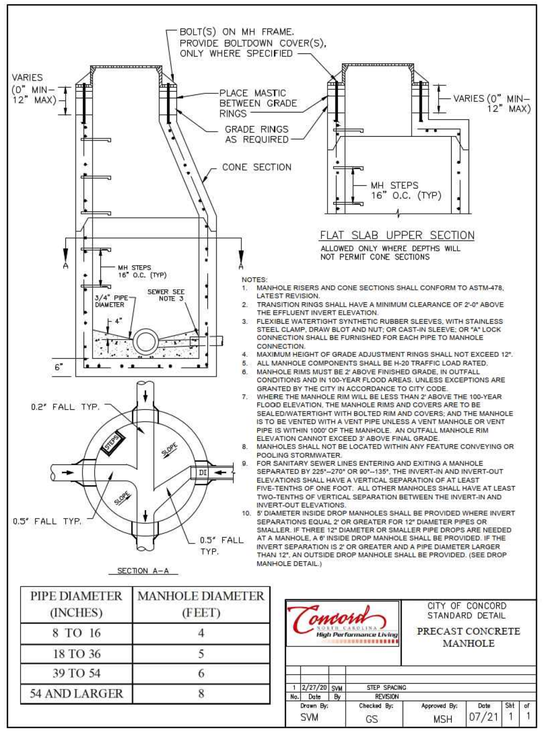


Concord NORTH CAROLINA	CITY OF CONCORD STANDARD DETAIL
	SANITARY SEWER LATERAL INSTALLATION ON PROPOSED SEWER MAIN

No.	Date	By	REVISION					
Drawn By:		Checked By:		Approved By:	Date	Sht	of	
BCC		SVM		MSH	07/21	1	1	

4 LATERAL INSTALLATION TO PROPSOED SANITARY NTS

CITY OF CONCORD TECHNICAL STANDARDS MANUAL



NOTES:
1. MANHOLE RISERS AND CONE SECTIONS SHALL CONFORM TO ASTM-478, LATEST REVISION.
2. TRANSITION RINGS SHALL HAVE A MINIMUM CLEARANCE OF 2'-0" ABOVE THE EFFLUENT INVERT ELEVATION.
3. FLEXIBLE WATERTIGHT SYNTHETIC RUBBER SLEEVES, WITH STAINLESS STEEL CLAMP, DRAW BLOT AND NUT; OR CAST-IN SLEEVE; OR "A" LOCK CONNECTION SHALL BE FURNISHED FOR EACH PIPE TO MANHOLE CONNECTION.
4. MAXIMUM HEIGHT OF GRADE ADJUSTMENT RINGS SHALL NOT EXCEED 12".
5. ALL MANHOLE COMPONENTS SHALL BE H-20 TRAFFIC LOAD RATED.
6. MANHOLE RIMS MUST BE 2' ABOVE FINISHED GRADE, IN OUTFALL CONDITIONS AND IN 100-YEAR FLOOD AREAS. UNLESS EXCEPTIONS ARE GRANTED BY THE CITY IN ACCORDANCE TO CITY CODE.
7. WHERE THE MANHOLE RIM WILL BE LESS THAN 2' ABOVE THE 100-YEAR FLOOD ELEVATION, THE MANHOLE RIMS AND COVERS ARE TO BE SEALED/WATERTIGHT WITH BOLTED RIM AND COVERS, AND THE MANHOLE IS TO BE VENTED WITH A VENT PIPE UNLESS A VENT MANHOLE OR VENT PIPE IS WITHIN 1000' OF THE MANHOLE. AN OUTFALL MANHOLE RIM ELEVATION CANNOT EXCEED 2' ABOVE FINAL GRADE.
8. MANHOLES SHALL NOT BE LOCATED WITHIN ANY FEATURE CONVEYING OR POOLING STORMWATER.
9. FOR SANITARY SEWER LINES ENTERING AND EXITING A MANHOLE SEPARATED BY 225°–270° OR 90°–135°, THE INVERT-IN AND INVERT-OUT ELEVATIONS SHALL HAVE A VERTICAL SEPARATION OF AT LEAST FIVE-TENTHS OF ONE FOOT. ALL OTHER MANHOLES SHALL HAVE AT LEAST TWO-TENTHS OF VERTICAL SEPARATION BETWEEN THE INVERT-IN AND INVERT-OUT ELEVATIONS.
10. 5' DIAMETER INSIDE DROP MANHOLES SHALL BE PROVIDED WHERE INVERT SEPARATIONS EQUAL 2' OR GREATER FOR 12" DIAMETER PIPES OR SMALLER. IF THREE 12" DIAMETER OR SMALLER PIPE DROPS ARE NEEDED AT A MANHOLE, A 6' INSIDE DROP MANHOLE SHALL BE PROVIDED. IF THE INVERT SEPARATION IS 2' OR GREATER AND A PIPE DIAMETER LARGER THAN 12", AN OUTSIDE DROP MANHOLE SHALL BE PROVIDED. (SEE DROP MANHOLE DETAIL)

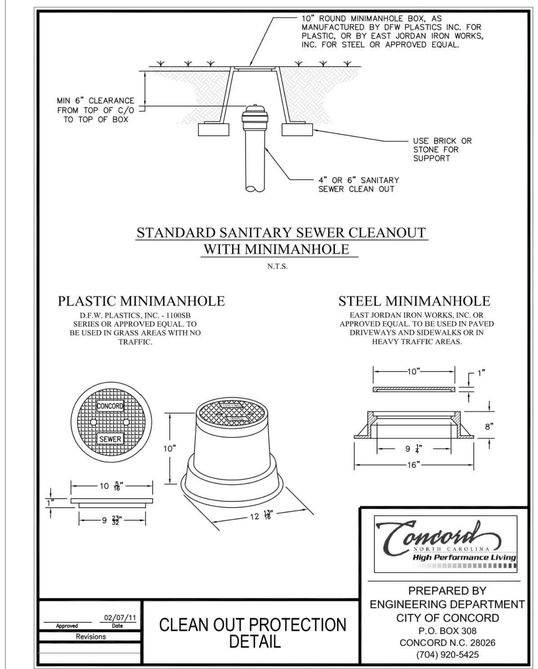
PIPE DIAMETER (INCHES)	MANHOLE DIAMETER (FEET)
8 TO 16	4
18 TO 36	5
39 TO 54	6
54 AND LARGER	8

Concord NORTH CAROLINA High Performance Living	CITY OF CONCORD STANDARD DETAIL
	PRECAST CONCRETE MANHOLE

No.	Date	By	REVISION					
1.	2/27/20	SVM	STEP SPACING					
Drawn By:		Checked By:		Approved By:	Date	Sht	of	
SVM		GS		MSH	07/21	1	1	

5 PRECAST CONCRETE MAHOLE NTS

CITY OF CONCORD TECHNICAL STANDARDS MANUAL



Approved	02/07/11 Date
Revisions	

CLEAN OUT PROTECTION DETAIL

Concord NORTH CAROLINA High Performance Living

PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425

6 CLEANOUT PROTECTION DETAIL NTS

CITY OF CONCORD TECHNICAL STANDARDS MANUAL

[redacted]

PANDA EXPRESS, INC.
1683 WALNUT GROVE AVE.
ROSEMEAD, CALIFORNIA 91770
TELEPHONE: 626.799.9898
FACSIMILE: 626.372.8288

[redacted]

REVISIONS:

[redacted]

ISSUE DATE:

ISSUE FOR PERMIT	04-07-22
ISSUE FOR BID	04-25-22

[redacted]

DRAWN BY: KBS

[redacted]

PANDA PROJECT #:D8689
PANDA STORE #:
ARCH PROJECT #:

[redacted]

INGENIUM ENTERPRISES
Civil Engineering & Planning

[redacted]

NORTH CAROLINA PROFESSIONAL SEAL 028140 ENGINEER JAMES D. NEFF
4/28/22

[redacted]

UTILITY DETAILS III

C04.3

[redacted]

TRUE WARM & WELCOME 2200