SANITARY SEWER DESIGN NOTES

1. ALL GRAVITY SANITARY SEWER MAINS SHALL BE 8" DIAMETER MINIMUM. COMMERCIAL SERVICE LATERALS WITH MULTIPLE CONNECTIONS SHALL BE GREEN 6" DIA. OR LARGER. ALL SINGLE FAMILY RESIDENTIAL SERVICE LATERALS SHALL BE 4" - SINGLE SERVICES.

2. ALL GRAVITY SANITARY SEWER LINES SHALL BE GREEN PVC SDR 26, ASTM D-3034. IN PLACES WHERE A MINIMUM COVER OF 4.0' CANNOT BE MAINTAINED, AWWA C-900 OR C-905 GREEN PVC DR-25, CLASS 100 OR CONCRETE ENCASEMENT SHALL BE USED. WATER LINES, RECLAIMED LINES, AND STORM DRAINAGE CROSSINGS SHALL ALSO FOLLOW THE CONCRETE ENCASEMENT REQUIREMENT PER THESE STANDARDS AND AS PER REGULATORY REQUIREMENTS.

3. MINIMUM GRAVITY SANITARY SEWER SLOPES ARE AS FOLLOWS:

   8" PIPE 0.40 %
   10" PIPE 0.30 %
   12" PIPE 0.22 %

4. MAXIMUM DEPTH OF SANITARY MANHOLES SHALL BE 15.0'. MAXIMUM DEPTH OF LIFT STATION WET WELLS SHALL BE 20.0'.

5. GRAVITY SANITARY SEWER LINES SHALL BE INSTALLED WHenever POSSIBLE UNDER PAVED AREAS WITHIN PUBLIC RIGHTS-OF-WAY. UTILITY EASEMENTS SHALL BE PROVIDED WHenever PUBLICLY-OWNED SEWER LINES ARE CONSTRUCTED OUTSIDE OF A PUBLIC RIGHT-OF-WAY.

6. ALL TESTING REQUIRED BY THE CITY SHALL BE PAID FOR BY THE CONTRACTOR / DEVELOPER.

7. ALL LOCAL COLLECTION SANITARY SEWER MANHOLES SHALL BE PRECAST WITH A MINIMUM INSIDE DIAMETER OF 4 FEET.

8. STANDARD MANHOLES SHALL BE LOCATED AT INTERVALS NOT EXCEEDING 350 FEET.

9. INDIVIDUAL SANITARY SERVICE ON NEW CONSTRUCTION SHALL NOT BE CONNECTED DIRECTLY INTO MANHOLES, AND MUST CONNECTED TO SEWER MAIN LINES BY USE OF WYE CONNECTIONS, UNLESS OTHERWISE APPROVED BY THE CITY.

10. FOR SINGLE FAMILY HOMES, SINGLE FOUR INCH SEWER SERVICES LATERALS SHALL BE CONSTRUCTED AT EACH LOT OR UNIT AND LOCATED ON THE DOWNSTREAM SIDE OF THE LOT CENTER LINE. THESE SERVICES SHALL BE EXTENDED 4 FEET ABOVE GROUND AT THE PROPERTY LINE WITH A PVC RISER AND PLUG BEING EASILY VISIBLE FROM THE ROAD. RUBBER SEAL FITTINGS SHALL BE USED ON ALL LINES. NO GLUED JOINTS ARE PERMITTED ON LATERALS.

11. FOR MULTI-FAMILY AND COMMERCIAL SITES, SIX INCH MINIMUM SEWER SERVICES AND CLEANOUTS SHALL BE PROVIDED AS APPROVED BY THE CITY.

12. SANITARY SEWER LIFT STATIONS AND FORCE MAINS, SIZE, MATERIAL, AND DESIGNS SHALL BE APPROVED BY THE CITY. LIFT STATIONS SHALL BE CONSTRUCTED WITH A MINIMUM WET WELL INTERIOR DIAMETER OF 6.0 FEET. FORCE MAINS SHALL BE A MINIMUM 6 INCH DIAMETER.

13. IT SHALL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO PREPARE AND SUBMIT FLOTATION CALCULATIONS TO SIZE THE BASE OF THE WET WELL, AND ANY MANHOLES AS DEEMED NECESSARY BY THE CITY.

14. SANITARY SEWER DROP MANHOLES SHALL ONLY BE USED UNDER SPECIAL CONDITIONS AS APPROVED BY THE CITY. DROPS LESS THAN 2.0' SHALL NOT BE ALLOWED.

15. ALL SANITARY SEWER FORCE MAINS, INCLUDING FITTINGS, SHALL BE DIP WITH PROTECTO 401, PVC AWWA C-900, OR C-905 (COLOR "GREEN") (PRESSURE FITTINGS, PRESSURE CLASS 150 OR C-907).
16. SANITARY SEWER MANHOLES WHICH HAVE SEWER FORCE MAINS DISCHARGING DIRECTLY INTO THEM SHALL BE FIBERGLASS OR POLY-ETHYLENE LINED OR EPOXY LINED. RETRO-FITTING OF MANHOLES WITH LINERS SHALL BE REQUIRED WHEN NEW CONNECTIONS SUCH AS THIS ARE MADE. FIBERGLASS SHALL BE A MINIMUM 1/2" THICKNESS UNLESS APPROVED OTHERWISE BY THE CITY. OTHER TYPES OF LINING METHODS AND MATERIALS MAY BE CONSIDERED ON A CASE BY CASE BASIS. UNDER SPECIAL CIRCUMSTANCES WHERE HYDROGEN SULFIDE IS A MAJOR CONCERN MANHOLES UPSTREAM AND/OR DOWNSTREAM OF THE FORCE MAIN TIE-IN OR WET WELL MAY ALSO BE REQUIRED TO HAVE LININGS INSTALLED.

17. ALL SANITARY SEWER MANHOLES SHALL HAVE ALL INTERIOR SURFACES COATED WITH THREE (3) COATS OF WHITE/GRAY OVER RED OVER BLACK EW-1 EPOXY PAINT WITH A TOTAL OF 12 MILS DRY FILM THICKNESS OR BLACK COAL-TAR EPOXY WITH A TOTAL OF 16 MILS THICKNESS. OUTSIDE SURFACE TO BE COATED WITH TWO (2) COATS OF BLACK OVER BLACK EW-1 EPOXY PAINT WITH A TOTAL OF 8 MILS OR ONE (1) COAT OF BLACK COAL-TAR EPOXY WITH A TOTAL OF 8 MILS. ALL COATS SHALL BE APPLIED AT THE FACTORY EXCEPT MINOR FIELD TOUCH UP AT JOINTS AND AT MANHOLE NECK.

18. ALL MANHOLES CONSTRUCTED IN SIDE YARDS, BACKYARDS, AND EASEMENTS OUTSIDE OF THE RIGHT-OF-WAY SHALL BE OUTFITTED WITH FIBERGLASS OR EPOXY LINERS IN COMPLIANCE WITH ASTM-3753 OR OTHER TYPES OF LINERS APPROVED BY THE CITY. IN ADDITION THE CITY MAY REQUIRE LINERS TO BE INSTALLED IN OTHER AREAS WHERE THE PUBLIC UTILITIES DEPARTMENT BELIEVES THE NEED IS JUSTIFIED SUCH AS IMMEDIATELY UPSTREAM OF FORCE MAINS CONNECTING TO GRAVITY MAINS.

19. ALL SEWER LINES WHICH ARE CONSTRUCTED OUTSIDE OF PUBLIC RIGHTS-OF-WAY WITHIN SIDE YARDS, BACKYARDS, AND OTHER POORLY ACCESSIBLE AREAS SHALL BE CONSTRUCTED OF GREEN C-900 PVC. ABSOLUTELY NO USE OF PLASTIC STYRENE FITTINGS SHALL BE ALLOWED.

20. CONTEC A-2000 PVC PIPE SHALL NOT BE ALLOWED FOR USE.


22. ALL HDPE PIPE INSTALLED FOR SEWAGE FORCE MAINS SHALL BE SDR 11 WITH #10 COPPER HEAD TRACER WIRE UNLESS SPECIFICALLY NOTED OTHERWISE. THE HDPE PIPE SHALL BE SIZED TO MATCH THE EXTERNAL DIAMETER OF THE PVC TO WHICH IT IS ATTACHED.

23. LANDSCAPE PLANS SHALL CLEARLY DEPICT THE DESIGN LOCATION OF PLANTINGS RELATIVE TO THE LOCATION OF PUBLIC UTILITIES AND STORMWATER INFRASTRUCTURE IN ORDER TO EVALUATE POTENTIAL CONFLICTS.

24. GREASE INTERCEPTORS ARE REQUIRED FOR ALL COMMERCIAL BUILDINGS HAVING KITCHEN, FOOD PREPARATION OR SERVING FACILITIES AND / OR MISCELLANEOUS USES. GREASE INTERCEPTORS CONSTRUCTED EXTERNAL TO BUILDINGS SHALL BE SIZED IN ACCORDANCE WITH FAC 64-E-6. CALCULATIONS TO DETERMINE SIZING REQUIREMENTS SHALL BE SUBMITTED AS PART OF BUILDING PERMITTING. AN INSPECTION MANHOLE MAY BE REQUIRED IMMEDIATELY DOWNSTREAM OF THE GREASE INTERCEPTOR FOR INSPECTION PURPOSES, AS DEEMED APPROPRIATE BY THE CITY.

25. WHERE POTABLE WATER AND SANITARY SEWER MAINS CROSS WITH LESS THAN (18) INCHES OF VERTICAL CLEARANCE OR WHERE THE SEWER MAIN IS ABOVE THE WATER MAIN, THE SEWER MAIN SHALL BE ENCASED WITH CONCRETE OR ENCLOSED IN A WATER TIGHT CARRIER PIPE, OR PRESSURE RATED PVC PIPE (MEETING THE AWWA C-900 OR C-905 SPECIFICATION) FOR A MINIMUM LENGTH OF (20) FEET, CENTERED ON THE POINT OF CROSSING. A MINIMUM HORIZONTAL SEPARATION OF (10) FEET (EDGE TO EDGE) BETWEEN POTABLE WATER MAINS AND SEWER MAINS SHALL BE MAINTAINED WHEN AT ALL POSSIBLE. WHEN THE 10-FOOT HORIZONTAL SEPARATION CANNOT BE MAINTAINED THE WATER MAIN SHALL BE
SANITARY SEWER DESIGN NOTES CONT’D

INSTALLED IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF AT LEAST 18" ABOVE THE SEWAGE MAIN. ALTERNATIVELY, THE SEWER MAIN SHALL BE ENCASED WITH CONCRETE OR ENCLOSED IN A WATER TIGHT CARRIER PIPE, OR UPGRADED TO PRESSURE RATED PVC PIPE (MEETING AWWA C-900 OR C-905 SPECIFICATION) AND PRESSURE TESTED AT 150 PSI TO ASSURE WATER TIGHTNESS PRIOR TO BACKFILLING.

26. CEMENT USED IN CONCRETE MIX FOR PRECAST STRUCTURES SHALL BE TYPE II, ACID RESISTANT AND SULFIDE RESISTANT CONCRETE.

27. MORTAR TO CONTAIN “HYDRATITE” OR APPROVED EQUAL, TO PREVENT SHRINKAGE.

28. PROFILE VIEWS SHALL BE PROVIDED FOR ALL SEWER MAINS. PROFILE VIEWS SHALL BE ON THE SAME SHEET AS THE ASSOCIATED PLAN VIEW AND SHALL INCLUDE THE FOLLOWING INFORMATION:
   A. SIZE, SLOPE, LENGTH AND CLASS OF PIPE
   B. MANHOLE RIM AND INVERT ELEVATIONS
   C. UTILITY CROSSINGS WITH VERTICAL SEPARATION
   D. SHOW PROPOSED SEWER AND EXISTING UTILITY
   E. EXISTING GROUND PROFILE
   F. MATCH LINE
   G. VICINITY MAP
   H. PROFILE VIEW STATIONS TO COINCIDE WITH PLAN VIEW STATIONS