

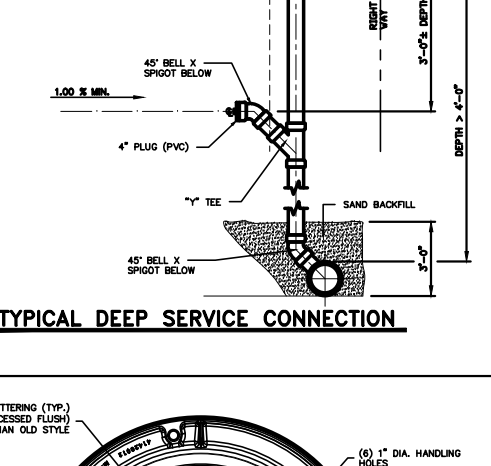
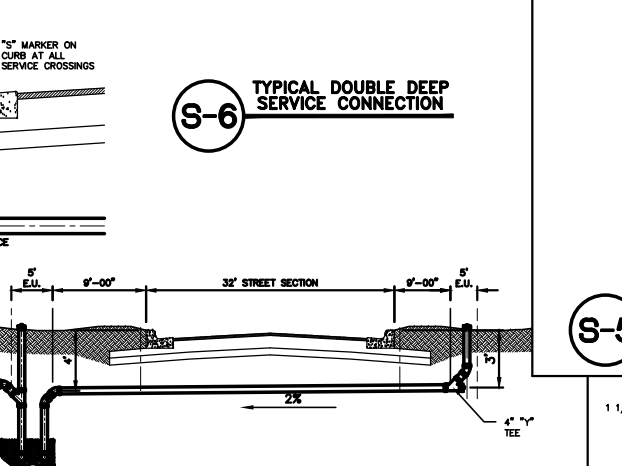
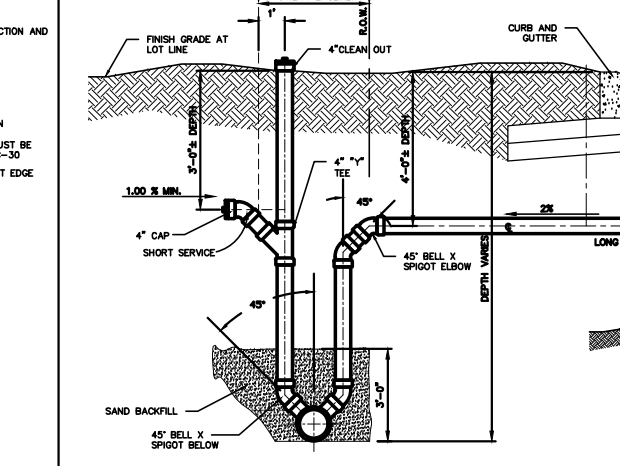
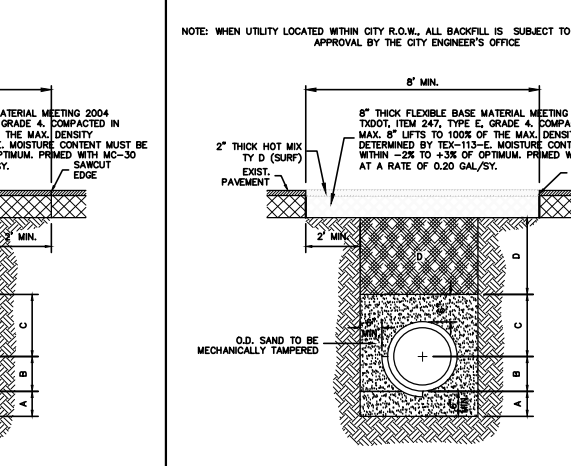
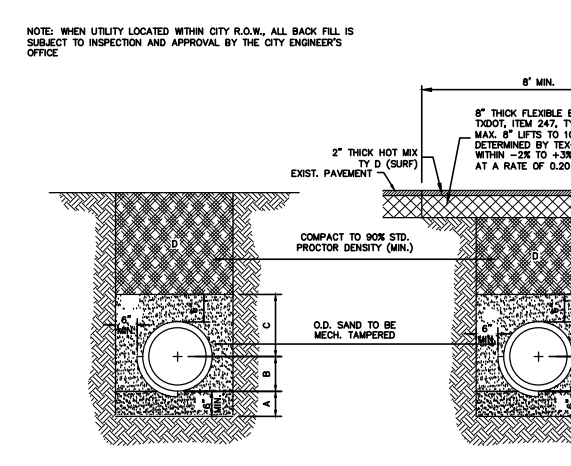
S-1 TYPICAL RESIDENTIAL SEWER SERVICE DETAIL (RESIDENTIAL AND DUPLEX ONLY)
 NOTE: SEE DETAIL S-5 FOR BACKFILL REQUIREMENTS.

S-2 TYPICAL MULTIFAMILY AND COMMERCIAL TYPICAL MULSEWER SERVICE DETAIL (MULTIFAMILY UP TO TRIPLEX)
 NOTE: SEE DETAIL S-5 FOR BACKFILL REQUIREMENTS.

S-3(A) S-3(B) MONOLITHIC FIBERGLASS MANHOLE DETAILS
 NOTE: ALL DROP CONNECTIONS TO M.H. SHALL USE INSERT-A-TEE

GENERAL WASTEWATER CONSTRUCTION NOTES:
 1. HMAC: 2" MINOR RESIDENTIAL, RESIDENTIAL AND MULTI-FAMILY COLLECTOR, COLLECTOR, MINOR AND PRINCIPAL ARTERIAL STREETS, HMAC: 3" RURAL ARTERIAL STREETS. IN NO CASE SHALL THE THICKNESS OF THE HMAC BE LESS THAN THE THICKNESS OF THE EXISTING ADJACENT HMAC.
 2. THE CONTRACTOR SHALL VISIT THE SITE OF THE WORK AND EXAMINE LOCAL CONDITIONS TO BE ENCOUNTERED, IMPROVEMENTS TO BE PROTECTED, AND PERMITS AND FEES TO BE REQUIRED, ALONG WITH OTHER RESEARCH THAT IS NECESSARY TO ENSURE THAT THE CONTRACTOR THOROUGHLY UNDERSTANDS THE PROJECT AND IS FULLY AWARE OF ALL THE CONDITIONS AND CONSTRAINTS THAT MAY BE ENCOUNTERED DURING THE COURSE OF CONSTRUCTION.
 3. THE CONTRACTOR SHALL ADHERE TO ALL TRENCH REGULATIONS PER 30 TAC CHAPTER 217 AND TRENCH SAFETY FOR EXCAVATIONS. THE CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC CONTROL AND MUST ADHERE TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
 4. ALL FIBERGLASS MANHOLES SHALL BE MONOLITHIC WITH 0.5" MINIMUM WALL THICKNESS. FIBERGLASS BOTTOM SHALL BE DESIGNED TO WITHSTAND HYDROSTATIC HEAD PRESSURE UNDER ALL CONDITIONS.
 5. ALL FIBERGLASS WALL PENETRATIONS SHALL BE CORED AND SEALED WITH APPROVED TSPHMA WATER STOP GASKET ASSEMBLY. THE CONTRACTOR SHALL PROVIDE PROTECTIVE COATING ON ALL EXPOSED CONCRETE SURFACES, INCLUDING CORBEL AREA, MANHOLE WALLS AND MANHOLE BENCH.
 6. FOR FIBERGLASS MANHOLES WITH WATER-TIGHT BOTTOM, ADHERE TO ALL MANUFACTURER REQUIREMENTS. FIBERGLASS BOTTOM AND BENCH MUST ALSO BE FACTORY INSTALLED.

S-4 TYPICAL SHALLOW SERVICE CONNECTION



STANDARD PIPE BEDDING (MAIN & SERVICE LATERALS)
 APPLICABLE BENEATH FUTURE UNPAVED STREETS
 A. SAND BEDDING PLACED BEFORE PIPE IS LAID UP TO FLOW LINE OF PIPE. (MIN. THICKNESS = 8")
 B. SAND BACK FILL PLACED AFTER PIPE IS LAID FROM BOTTOM OF PIPE TO SPRING LINE OF PIPE. (4" LIFTS, MECH. TAMPED).
 C. SAND BACK FILL PLACED FROM SPRING LINE OF PIPE TO 6" ABOVE TOP OF PIPE. (6" LIFTS, MECH. TAMPED).
 D. FILL TRENCH W/SELECT BACKFILL, W/12" LIFTS COMPACT TO 90% STD. PROCTOR.
 FOUNDATION PREPARATION (WELL POINTS, GRAVEL OR CEMENT STABILIZATION, OR APPROVED SUBSTITUTE) SHALL BE REQUIRED WHEN TRENCH BOTTOM IS UNSTABLE.
 BACK FILLING AT STRUCTURES SHALL BE PLACED IN UNIFORM LAYERS, MOISTENED AS REQUIRED TO APPROXIMATE OPTIMUM MOISTURE CONTENTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY. THE THICKNESS OF EACH LOOSE LAYER SHALL BE SAND, APPROVED SITE SOIL OR OTHER APPROVED SUBSTITUTE.

STANDARD PIPE BEDDING (MAIN ONLY)
 (PARALLEL WITHIN EXIST. STREET)
 A. SAND BEDDING PLACED BEFORE PIPE IS LAID UP TO FLOW LINE OF PIPE. (MIN. THICKNESS = 8")
 B. SAND BACK FILL PLACED AFTER PIPE IS LAID FROM BOTTOM OF PIPE TO SPRING LINE OF PIPE. (4" LIFTS, MECH. TAMPED).
 C. SAND BACK FILL PLACED FROM SPRING LINE OF PIPE TO 6" ABOVE TOP OF PIPE. (6" LIFTS, MECH. TAMPED).
 D. FILL TRENCH W/SELECT BACKFILL, W/12" LIFTS COMPACT TO 90% STD. PROCTOR.
 FOUNDATION PREPARATION (WELL POINTS, GRAVEL OR CEMENT STABILIZATION, OR APPROVED SUBSTITUTE) SHALL BE REQUIRED WHEN TRENCH BOTTOM IS UNSTABLE.
 BACK FILLING AT STRUCTURES SHALL BE PLACED IN UNIFORM LAYERS, MOISTENED AS REQUIRED TO APPROXIMATE OPTIMUM MOISTURE CONTENTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY. THE THICKNESS OF EACH LOOSE LAYER SHALL BE SAND, APPROVED SITE SOIL OR OTHER APPROVED SUBSTITUTE.

STANDARD PIPE BEDDING (MAIN & SERVICE LATERALS)
 UNDER EXISTING/ACTIVE STREET CROSSINGS.
 A. SAND BEDDING PLACED BEFORE PIPE IS LAID UP TO FLOW LINE OF PIPE. (MIN. THICKNESS = 8")
 B. SAND BACK FILL PLACED AFTER PIPE IS LAID FROM BOTTOM OF PIPE TO SPRING LINE OF PIPE. (4" LIFTS, MECH. TAMPED).
 C. SAND BACK FILL PLACED FROM SPRING LINE OF PIPE TO 6" ABOVE TOP OF PIPE. (6" LIFTS, MECH. TAMPED).
 D. FILL TRENCH W/SAND (12" LIFTS, MECH. TAMPED).
 FOUNDATION PREPARATION (WELLPOINTS, GRAVEL OR CEMENT STABILIZATION, OR APPROVED SUBSTITUTE) SHALL BE REQUIRED WHEN TRENCH BOTTOM IS UNSTABLE.
 BACK FILLING AT STRUCTURES SHALL BE PLACED IN UNIFORM LAYERS, MOISTENED AS REQUIRED TO APPROXIMATE OPTIMUM MOISTURE CONTENTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY. THE THICKNESS OF EACH LOOSE LAYER SHALL BE SAND, APPROVED SITE SOIL OR OTHER APPROVED SUBSTITUTE.

S-6 TYPICAL DOUBLE DEEP SERVICE CONNECTION

S-5 TYPICAL DEEP SERVICE CONNECTION

S-7 SEWER STANDARD PIPE BEDDING

CARRIER PIPE SIZE	PIPE CASING SIZE	MIN. WALL THICKNESS
6"	14"	0.187"
8"	16"	0.187"
10"	18"	0.250"
12"	20"	0.250"
14", 15"	24"	0.344"
16"	24"	0.344"
18"	30"	0.375"
24"	36"	0.375"
36"	48"	0.625"

S-8 UTILITY CROSSING AT EXIST./ACTIVE STREET DETAIL (WATER/SEWER)
 GENERAL NOTES:
 1. ALL STEEL CASING SHALL BE WELDED.
 2. STEEL CASING SHALL BE CLOSED AT EACH END USING BRICK OR BLOCK AND MORTAR GROUTED.
 3. CASING SPACERS SHALL BE USED TO INSTALL THE CARRIER PIPE INSIDE THE ENCASMENT PIPE. CASING SPACERS SHALL FASTEN TIGHTLY ONTO THE CARRIER PIPE SO THAT WHEN THE CARRIER PIPE IS BEING INSTALLED THE SPACERS WILL NOT MOVE ALONG THE PIPELINE. CASING SPACERS SHALL BE DOUBLED ON EACH END OF THE ENCASMENT.
 4. PROJECTION - TYPE CASING SPACERS SHALL BE CONSTRUCTED OF PREFORMED SECTIONS OF HIGH DENSITY POLYETHYLENE. THE FLEXIBLE SECTIONS SHALL BE JOINED TOGETHER AROUND THE PIPE TO PROVIDE A MINIMUM OF 16 PLASTIC PROTECTIONS PER SPACER SECTION.
 5. INSTALLATION AND SIZE OF SPACERS SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS.

