APPENDIX D
GENERAL CONSTRUCTION METHODS

This appendix provides a description of general construction methods for facilities included in the three alternatives analyzed in this final joint document.

Outfalls and Conveyance Facilities

Outfall and pipeline excavations are usually constructed using the "cut-and-cover" method, where a length of trench is excavated, the pipe is placed and connected to the previous section. The trench is backfilled with material excavated from the trench, if suitable, or imported materials. The excavation quantities depend upon pipe size, depth and type of flow (i.e., force main vs. gravity main).

Trenchless technologies are alternatives to cut-and-cover pipe installation. These include several methods, including bore and jacking, microtunneling, and directional drilling to install a portion or all sections of underground pipe while minimizing surface disruption. All trenchless construction methods reduce disruption by confining surface work to a few shafts or portals.

CSO Control Facilities and Regulating Structures

These facilities are usually partially or fully underground, therefore, large-scale excavation is required. Because these facilities are located at relatively low elevations, it is likely that excavation could extend below the groundwater table, requiring dewatering to achieve and maintain dry foundation excavations. The excavation depth requires shoring to support the sides.

Tunnels

The tunnel boring machine (TBM) is practical only with larger diameter pipes. To use this method, a large working portal area is prepared at one end of the tunnel for staging of equipment and removal of spoils. A digging apparatus at the front of the tunnel shield deposits the spoils onto a conveyor belt which moves them to the rear of the machine where a rail car collects and transports them back to the portal. From the working pit, trucks haul the spoils away to an approved disposal site. As the machine moves forward, the liner is placed behind the TBM. When the boring machine has completed digging the tunnel length, a hole is dug at the end, called the receiving portal, and the machine is removed. Long tunnels may require access/air shafts to the surface located at specific distances along the route.