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F 100 INTRODUCTION AND GENERAL INFORMATION

The City of Los Angeles (City) Department of Public Works (DPW) has over 6000 miles of sanitary sewers designed and constructed by or under the supervision of the Bureau of Engineering (BOE). The Bureau of Sanitation (BOS) determines the need for sewer repair or replacement and determines future needs for the sewer collection system. The BOE may assist in this planning effort. The BOE designs sewer projects and prepares construction plans, specifications and contract documents for projects. The projects are advertised for competitive bids, then awarded to and constructed by the successful contractor. Construction inspection is performed by the Bureau of Contract Administration (BCA). The Project Engineer provides consultation during construction of the sewer, including preparation of change orders and final inspection for acceptance by the City.

All accepted sewers are assigned to the BOS for operation and maintenance (O&M). Sewers proposed under private development are usually designed by private engineers (or the BOE, if necessary). The plans and specifications are reviewed and approved by the BOE. Compliance with BOE standard plans, specifications, policies and practices are required on all sewers including private sewers constructed under the jurisdiction of the City Engineer. Reciprocal practices and authority are applied at the boundaries with other governmental agencies. Those portions of other sewers located within the City that are connected to the City sewer system under contract for sewage treatment service are also designed and constructed to conform to BOE standards. The Los Angeles Municipal Code (LAMC) (1) Chapter VI, Article 4 - Sewers, Watercourses, and Drains; and Article 4.1 - Sewer Service Charge, codify the City's current policy.

F 110 DEFINITIONS AND TERMINOLOGY

The LAMC Section 64.00 defines numerous words and phrases applicable to City sewers. Additional definitions and terms relative to sewers are listed in Chapter 1 of “Gravity Sanitary Sewer Design and Construction” (American Society of Civil Engineers (ASCE) Manual No. 60 / Water Pollution Control Federation (WPCF) Manual of Practice No. FD-5, ISBN 0872623130). Additional definitions can be found in Part 1, Section 1 of the Standard Specifications for Public Works Construction (SSPWC), commonly referred to as the "Green Book".

For expedience, some of these definitions are summarized as follows:

Average Daily Flow (ADF) (Design)	Summation of Land Use Demographics coefficient times the area (acres) corrected for the equivalent rates per charts (City)
Average Daily Flow (ADF) (Measured)	The total measured quantity of flow tributary to a point divided by the number of days of flow measurement.
Building Sewer	That portion of the sewer lying within private property, between the building and public street sewer easement, or private disposal system. Also, called a House Sewer.
House Connection Sewer (HC)	Any sewer pipeline, or portion thereof, constructed in a public street, alley, walk, or other public right-of-way, or in a sewer easement, granted to the City and connecting or proposing to connect any lot or part of a lot with any local public sewer.
Infiltration	The total extraneous flow entering a sewer system, excluding sanitary sewage, because of poor construction, corrosion of the pipe, ground movement or structural failure through joints, porous walls or breaks.
Inflow	The extraneous flow which enters a sanitary sewer from sources other than infiltration, such as roof drains, basement

drains, land drains or manhole covers.

Interceptor Sewer

A collecting sewer that intercepts and collects the sewage from local public sewers and conducts such sewage to a point of treatment or disposal.

Local Sewer

A local public sewer to which the house connection sewers are joined.

Lot

Any piece or parcel of land as bounded, defined or shown on a map or deed recorded by the County Recorder, provided however, that in the event any building or improvements appurtenant to said building covers more than one "lot" as defined herein, the term "lot" shall be deemed to mean all such pieces or parcels of land upon which such buildings or improvements are wholly or partly located.

Main or Trunk Sewer

A larger sewer that has tributary branches and serves a large area.

Outfall Sewer

A major sewer that receives wastewater from a collecting sewer system or a treatment plant and flows to a point of disposal.

Peak Dry Weather Flow
(PDWF)

The maximum flow rate of sewage in a conduit during dry weather.

Peak Wet Weather Flow
(PWWF)

The maximum flow rate of sewage in a conduit during a storm event.

Public Sewer

Any sewer, other than a house connection sewer, which has been constructed in a public street, alley, walk, or other public right-of-way, or in a sewer easement, and is or is proposed to be a part of the sewer system of the City.

Relief Sewer	A sewer that provides additional capacity for other sewers which would flow in excess of their design capacities if not relieved.
Sewer Shed	The drainage area in which sources of sewerage flow to reach a common collection point.
Spur Sewer	A public sewer without a terminal structure, usually to be extended at some future date. Spur sewers are usually constructed from a sewer to the edge of a proposed pavement in a street about to be surfaced or resurfaced. This is accomplished in order to avoid cutting the pavement when the spur sewer is connected to the extended development.

Definitions of terms and words pertinent to work by other disciplines affecting sewers are covered in Parts C, E, G, H and J of the Manual (See [General Provisions](#)).

F 111 ABBREVIATIONS

The following abbreviations are used in this Manual:

ABAND	Abandon or Abandoned
ABS	Acrylonitrile - Butadiene - Styrene
ACP	Asbestos Cement Pipe
AD	Administration Division
ADF	Average Daily Flow (cfs)
APWA	American Public Works Association
ASCE	American Society of Civil Engineers
BC	Beginning of Curve
BOE	Bureau of Engineering
B&S	Bell and Spigot
BOS	Bureau of Sanitation
BSF	Bonded Sewer Fee
BSL	Bureau of Street Lighting
BVC	Begin Vertical Curve
CALTRANS	California Department of Transportation
CAL/OSHA	California Occupational Safety and Health Administration
CAO	City Administrative Officer
CCA	Capital Construction Account
CCTV	Closed Circuit Television
CE	City Engineer
CEQA	California Environmental Quality Act
cfs	Cubic feet per second
CIP	Capital Improvement Project or Program
CLA	City Legislative Analyst
Con AD	Bureau of Contract Administration
CP	Concrete Pipe
CSP	Corrugated Steel Pipe
d	Depth of Flow
D	Diameter
DIP	Ductile Iron Pipe
DOSH	Department of Occupational Safety and Health
EC	End of Curve
EED	Environmental Engineering Division
EIR/EIS	Environmental Impact Report/Statement
EMG	Environmental Management Group
EVC	End of vertical Curve
FMD	Financial Management Division (BOS)
fps	Feet per second
ft	feet
gal	gallons
gpad	gallons per acre per day
gpcd	gallons per capita per day
gpd	gallons per day

GC	Grade Change
GED	Geotechnical Engineering Division
GL	Ground Line
GSD	Department of General Services
GWI	Groundwater Infiltration
HC	House Connection Sewer
HGL	Hydraulic Grade Line
hp	horsepower
HRL	Hydraulic Research Laboratory
hrs	hours
I/I	Infiltration/Inflow
in.	inches or inch in the case of pipe size
JS	Junction Structure
Kwh	Kilowatt hours
LADBS	Department of Building and Safety
LACDPW	Los Angeles County Department of Public Works
LADOT	Los Angeles Department of Transportation
LAMC	Los Angeles Municipal Code
lf	linear feet
LSRB	Local Streets & Roads Branch
mgd	million gallons per day
mg/l	milligrams per liter
MH	Maintenance Hole
min	minutes or minimum
n	Manning's Roughness Coefficient
NAD 27 or 83	North American Datum 1927 or 1983
NGVD	National Geodetic Vertical Datum
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
PAC	Project Award & Control Division
PCC	Portland Cement Concrete
PDM	Project Delivery Manual
PDWF	Peak Dry Weather Flow
PE	Project Engineer
PF	Peak flow
PI	Point of Intersection
PM	Project Manager
PP	Pumping Plant
PRC	Project Review Committee/Point of Reverse Curve
PVC	Polyvinyl Chloride
PWWF	Peak Wet Weather Flow
Q	Hydraulic rate of flow (cfs or MGD)
RCB	Reinforced Concrete Box
RCP	Reinforced Concrete Pipe
RDI	Rainfall-Dependent Infiltration
RDI/I	Rainfall-Dependent Infiltration/Inflow
rpm	revolutions per minute
s	Slope ft/ft or m/m
SCM	Sewer Construction and Maintenance Fund (LAMC)

SD	Storm Drain
SDR	Standard Dimension Ratio
SED	Structural Engineering Division
SFC	Sewerage Facilities Charge
SIMMS	Sewer Inventory Maintenance Management System
SSC	Sewer Service Charge
SSPWC	Standard Specification for Public Works Construction (Green Book)
SURVEY	Survey Division
SWI	Stormwater Inflow
TCP	Traffic Control Plan
TCS-Y	Terminal Cleanout Structure-Y
USCS	Unified Soil Classification System
USGS	United States Geodetic Survey
VC	Vertical Curve
VCP	Vitrified Clay Pipe
WCCD	Wastewater Collections Construction Division
WCED	Wastewater Collections Engineering Division
WCIP	Wastewater Capital Improvement Program
WEF	Water Environment Federation
WESD	Wastewater Engineering Services Division (BOS)

F 120 CLASSES OF PROJECTS

There are essentially three classes of sewer projects. Two classes are City Projects and include: (1) Cash Contracts and (2) Assessment Act Contracts. Cash Contracts are funded by means other than assessments against benefited property. Assessment Act Contracts are funded by assessments on the benefited properties. The third class of projects is Class "B" Permits which are constructed by individuals or other entities. (See [F 123](#).)

F 121 CASH CONTRACTS

F 121.1 CAPITAL IMPROVEMENT PROJECTS

Capital Improvement Projects (CIP) evolves from studies of sewer deficiencies and priorities of the CIP Program projects which were not previously funded for design or construction. The CIP is limited by the amount of funds available and the urgency of the problem sought to be alleviated. The CIP is funded by the Sewer Construction and Maintenance Fund (SCM) which is accumulated from HC fees, Sewerage Facilities Charges (SFC), Sewer Service Charges (SSC), and Bonded Sewer Fees (BSF). A CIP Flow Chart is shown in Part E of the Bureau Manual. The BOS Wastewater Capital Improvement Program (WCIP) shows a current list of approved projects. List can be obtained from the FMD web site at <http://san.ci.la.ca.us/fmd/index.htm>.

F 121.11 GRANT FUNDS

Grant funds may be used for major sewers in conjunction with wastewater treatment plants. The BOS Financial Management Division (FMD) coordinates all wastewater grants. Applications for and acceptance of Grants requires City Council approval.

F 121.12 BOND FUNDS

Many of the City's larger sewer projects have been financed by bond funds. Wastewater Bonds are revenue bonds repaid from the revenue generated by providing services with facilities funded by said bonds.

F 121.2 OTHER CASH PROJECTS

The projects in the following subsections have distinct sources of funds and project origination that merit separate discussion.

F 121.21 TRANSPORTATION IMPROVEMENTS

Transportation improvements by the California Department of Transportation (CALTRANS), Los

Angeles County Metropolitan Transportation Authority (METRO) and other agencies may involve sewer realignment and reconstruction work. The engineering for this type of project shall be performed by the respective agency proposing the improvements. The BOE Bridge, Street and Stormwater Program coordinates the design and plan preparation and acts as liaison for any sewers that may be affected by Metro projects.

Individual Engineering District offices coordinate any improvements proposed by other agencies or private developers that may affect any City sewers in the respective Districts. See Part E of the Bureau Manual.

F 121.22 STORM DRAINAGE IMPROVEMENTS

Los Angeles County Department of Public Works (LACDPW) storm drain projects may involve the relocation or reconstruction of City sewers. The LACDPW prepares the necessary plan submittal to the BOE for review and approval. However, the LACDPW may contract the BOE to do the engineering. In either case, the Engineering District offices, where improvements are being proposed, in conjunction with the WCED act as liaison between the BOE and the LACDPW. Refer to Part G of the Bureau Manual for procedures.

F 121.23 STREET IMPROVEMENTS

Street widening and realignment CIP Projects are financed by gas tax funds from the State. These projects could also be funded by Bond Programs such as Proposition C, or Federal funds as well. This type of project could be categorized as a CIP (see [F 121.1](#)); it is unique as to its source of funds. Projects are planned by the BOE Bridge, Street and Stormwater Program, and the Bureau of Street Services (BSS). These projects may necessitate sewers being relocated and/or remodeled to fulfill minimum requirements. House Connection sewer relocations and extensions necessitated by street widening are, generally, gas tax eligible. Other sewer work is not generally gas tax eligible.

Federal Aid Urban funds are administered by CALTRANS Office of Local Assistance through the Local Streets & Roads Branch (LSRB). The Federal grant projects will be coordinated by the Project Management Division (PMD), Grants Processing Section. For local certification see Part E of the Bureau Manual.

F 122 ASSESSMENT ACT PROJECTS

Sewers may be planned, financed and constructed under Assessment Act proceedings. These projects are initiated by Council action or by private property owners through petition. The policies and procedures for Assessment Act projects are stated in Part C of the Bureau Manual. An Assessment Act project flow chart is shown in Part E of the Bureau Manual.

F 123 CLASS "B" PERMIT PROJECTS

Class "B" Permit projects may be originated and funded by individuals or other entities. The engineering work is normally done by private engineers hired by the permittee. However, it may be done by the BOE if funded by the permittee. Part C of the Bureau Manual covers the policies and procedures for Class "B" Permit projects.

F 124 CONSTRUCTION COST ESTIMATES

All construction cost estimates are to be adjusted with an escalation factor compounded annually to the midpoint of construction based on the project's construction schedule at the time of the estimate.

A Cost Estimator program is available for use at the BOE website. The link is as follows: <http://eng.lacity.org/estimator/index1.cfm>. Access to the program requires a "User Name" and a "Password." Website provides instructions for obtaining account.

F 124.1 WORK ORDER ESTIMATE (CLASS "O")

The Class "O" Estimate ("Opinion of Cost Estimate") is based on preliminary investigations, anticipated project needs, and the engineer's best judgement based on limited information. This class of estimate will be useful for planning purposes and in the preparation of the project pre-design report. The Class "O" Estimate uses the highest estimating contingency. The Class "O" Estimate is the minimum required Cost Estimate for all new wastewater projects when requesting Work Order approval. The Class "O" Estimate shall be included in the Capital Projects List and in response to communications requesting preliminary estimates until the pre-design report is completed

F 124.2 TENTATIVE ESTIMATE (CLASS "C")

The Class "C" Estimate shall be used for design when the project's scope has been better defined and sufficient information has been obtained and revision of a Class "O" Estimate is warranted. This Class "C" estimate shall be included in the pre-design report. Class "C" Estimates shall be included in the Capital Projects List and in response to communications requesting preliminary estimates during early design. The Class "C" Estimate is based on general knowledge of the project with regard to location, limits, width of improvements, width of right-of-way and other known physical characteristics. It is also based on previous experience with similar projects in the same area. This estimate can also be used for initial fund appropriation (budget approval).

F 124.3 APPROPRIATION ESTIMATE (CLASS "B")

The Class "B" Estimate can be used as the basis for fund appropriation (budget approval); for example, in the Annual Capital Improvement Expenditure Program, for other specific projects as directed by the Board of Public Works and for urgent projects recommended for immediate financing. The Class "B" Estimate is based on detailed knowledge of the project obtained by field

investigations and preliminary design. The Class “B” Estimate uses the lowest estimating contingency. During design, this estimate may be used to increase or decrease fund appropriation (budget change).

F 124.4 FINAL ESTIMATE (CLASS "A")

The Class "A" Estimate shall be the Engineer's final estimate based on completed plans prior to the advertisement for bids. The Class “A” Estimate should reflect the prevailing market conditions in the constructing community. The goal for preparing this estimate is to match the median bid for all bids received.

F 130 WASTEWATER CAPITAL IMPROVEMENT PROGRAM AND BUREAU OF SANITATION / BUREAU OF ENGINEERING FUNCTIONS

The BOS is responsible for wastewater systems advanced planning. This includes sewage treatment plants, pumping plants, sanitary sewers and appurtenant structures. The BOS manages the Wastewater Capital Improvement Program (WCIP). The Bureau of Engineering is the BOS' design office of choice.

All wastewater projects must be submitted to the Project Review Committee (PRC) for approval. Each particular Engineering Division (EED, WCED, etc.) tasks a wastewater project and submits a PRC package for consideration.

F 131 SEWER DEFICIENCY / CAPACITY

The BOS maintains a sewer gauging database obtained from permanent flow monitoring stations. The BOS requests the creation of sewer projects should gauging indicate a capacity deficiency. The BOS has an ongoing program to inspect sewers via closed circuit television (CCTV). As a result, the BOS has a database of sewer inspections that enable the city to determine the condition of existing sewers.

All new developments in the city are required to obtain a sewer capacity clearance from the Engineering District office at the time that a sewer connection permit application is submitted. Sewer capacity clearance is obtained from the BOS.

F 132 PROJECT / CHANGE AUTHORIZATION PROCESS FOR THE WASTEWATER CAPITAL IMPROVEMENT PROGRAM

The Project/Change Authorization Process plans, defines and documents new projects and/or changes to projects in the Wastewater Capital Improvement Program (WCIP). It establishes the policy for initiating the request for authorization of new projects and changes to existing projects.

A project shall be authorized by the BOE and the BOS PRC committee, before it can appear in the WCIP. Work orders shall not be opened nor design activities undertaken prior to obtaining approval from PRC. Funds for the project will not be allocated until the project is approved by the PRC committee.

The Engineer for a new project or proposed change to an existing project prepares a PRC package with supplementary information, if needed. The PRC package requires project scope, cost estimate

and justification information. Supplementary Information shall be used to provide more information on the scope and justification of the proposed project and/or changes to a project.

Further assistance in obtaining and preparing the PRC package is available from the BOS staff / FMD web site. The cost estimate shall include the initial capital costs, cash flow information, and backup data.

The Project Manager / Engineer shall submit a Bureau of Engineering Wastewater Program Work Order Form to request a new Work Order for the new project. The Work Order Form shall be sent to the BOS FMD for processing and approval. The assigned Work Order Number will be used to identify and track the project within the City's system. The MIMIS Number and the Work Order Number will be provided by the BOS FMD.

Completed forms and the backup cost data shall be transmitted to the BOE Administrative Work Order Unit.

F 140 ENVIRONMENTAL DOCUMENTATION

Generally, sanitary sewers are categorically exempt from environmental impact requirements as defined in the City Guidelines for the Implementation of the California Environmental Quality Act (CEQA) of 1970 (CEQA Guidelines) (4). The policy and procedures are given in the CEQA Guidelines. However, all BOE environmental matters relative to sewer work shall be coordinated through the Environmental Management Group (EMG). Requests for Environmental Review Services shall be prepared and forwarded to EMG so that a preliminary investigation is conducted to determine the type of environmental documentation needed for particular projects. The EMG shall make a determination on the level of Environmental Review necessary for the project. They may need assistance from the Project Manager (PM) to arrive at a determination.

F 141 INITIAL STUDY

The BOS is responsible for citywide wastewater systems advance planning. However, BOS may seek assistance from BOE with the Initial Study efforts.

F 142 LEAD CITY AGENCY

The lead City agency for projects approved by PRC shall be Wastewater Conveyance Engineering Division (WCED) for collection systems projects and Environmental Engineering Division (EED) for treatment plant projects. The lead office assigns a PM who is responsible to execute the project from beginning to end.

This includes opening a work order, initial study, design, construction, project closeout and closing the work order.

Other pertaining support services shall be requested from Divisions/Groups as required. Some examples are listed below:

- a. Environmental Documentation, EMG
- b. Survey support, Survey Division
- c. Structural support, SED
- d. Geotechnical support, GED
- e. Public Relations, Public Affairs Office (PAO)

F 150 COMPUTER UTILIZATION

The Systems Group has responsibility for all BOE computer programs employed in engineering design. BOE developed computer programs are not for sale but may be shared with other governmental agencies doing similar work if there is reciprocity. Engineers and support staff have the responsibility to ensure that project data is backed up to prevent data from being altered or destroyed.

F 151 COMPUTER WORKSTATION

Any problem arising through use of a computer workstation should be resolved with the Systems Group via the Help Desk. Several programs are available for use in sewer design. The Engineer shall select the appropriate computer applications for sewer analysis and sewer design calculations. These include:

- a. Flow parameter (“Q”, “V”, “d”, etc.) computation for conduits flowing full or partially full. (FlowMaster)
- b. Sewer network modeling. (MIKE URBAN or InfoWorks)
- c. Sewer repair tracking. (SMARTS - Sewer Management Automated Repair Tracking System)

NavigateLA (<http://navigatela.lacity.org>) is a web-based mapping application that delivers maps and reports useful for sewer design. NavigateLA can be used to locate and provide basic information on sewers throughout the City of Los Angeles. Additional resources are referenced in Section [F 185.1](#).

F 152 DATA RETENTION

Project files should be saved in the project directory on the file server. See Section 191 “Project Notebook” for the recommended electronic filing system. Systems personnel should ensure that files on the file server are backed-up on a regular basis.

F 160 SAFETY

F 161 FIELD OPERATIONS SAFETY

The BOE safety program is directed by a Safety Engineer designated by the City Engineer. All complaints or needs for safety improvement shall be reported to the BOE Safety Engineer.

It may be necessary for design personnel to inspect maintenance holes and/or structures during the design and construction of a project for various reasons. Entering maintenance holes of any type may be extremely dangerous for several reasons. See J 176, et seq. of the Bureau Manual. Unconsciousness may be caused by lack of sufficient oxygen in the maintenance hole or sewer atmosphere. This unconsciousness may occur suddenly and with no warning. Lack of oxygen sufficient to cause unconsciousness can cause death in three to five minutes. All maintenance holes, unventilated for a considerable time, are deficient in oxygen. Terminal maintenance holes are particularly dangerous.

Maintenance holes on large sewers are often dangerous because of toxic and explosive gases in addition to deficient oxygen. The sewer atmosphere may be explosive due to leakage into the sewer from nearby conduits transporting gas, gasoline, or other explosive materials. Consequently, the use of an open flame in or near the top of an open maintenance hole is dangerous. Smoking in or throwing lit cigarettes into an open maintenance hole is also extremely hazardous.

Personnel shall not enter maintenance holes for any reason. Should BOE staff need to inspect sewer maintenance holes or structures, the assistance of the Wastewater Collection System Division of the Bureau of Sanitation shall be requested. The safety measures taken shall comply with the State Safety Code. Safety measures shall be directed by the Wastewater Collection System Foreman or other qualified person present.

F 162 CONSTRUCTION SAFETY

Construction safety is covered in the Wastewater Master Specifications and SSPWC. The Engineer should review all sewer designs for compliance with official and recognized safety requirements. Special emphasis shall be given to traffic control and excavation safety.

The LADOT approves traffic control requirements for each project. The Engineer shall keep informed of all rules and regulations of the California Division of Occupational Safety and Health (DOSH) and the California Occupational Safety and Health Act (CAL/OSHA) as they pertain to sewer design.

F 163 OPERATIONAL MAINTENANCE SAFETY

The Engineer should be fully aware of all operation and maintenance (O&M) safety requirements of field personnel. References (2), (5) and (6) cover general requirements. Each sewer project shall be reviewed for additional requirements peculiar to the site and the design of the project.

The Engineer shall provide for and augment safety by properly sizing physical plant items and specifying suitable materials and methods in the Plans and Specifications. Examples of this endeavor are the use of larger MH frames and covers for easier access and nonferrous materials to inhibit "sparking".

F 170 MANUALS, STANDARDS AND RESEARCH

Manuals, standards and research in sewer design shall be pursued by each division/district office. As new or better methods or designs evolve, they should be suggested for review by management. State-of-Art found to merit consideration for inclusion as part of the policy and procedures for sewer design and plan preparation shall be transmitted to management for review.

F 171 REVISIONS AND ADDITIONS TO MANUAL - PART F

Part F of the Bureau Manual, Sewer Design, shall be revised periodically by issuing new pages or by Special Orders/Notices as the need arises. Engineers are encouraged to make suggestions for revisions or additions through the District/Division Engineer. The policy and procedures for the BOE Manual preparation and revision are stated in the "General Provisions" of each Manual part. Processing shall be the responsibility of WCED.

F 172 SPECIAL ORDERS

The City Engineer (CE) issues Special Orders to supplant, supplement or update certain policies, practices or procedures. A Special Order usually supersedes a section of the Bureau Manual and may include illustrations. Special orders can be viewed at or printed from the BOE web site.

F 173 STANDARD PLANS

Standard plans are prepared in the "S" series. Each Standard Plan is identified separately by means of an "S", followed by a hyphen (-), a three digit number, another hyphen, and finally by another number either one or two digits long. Sanitary sewer standard plans are in the "S-100" series, while standard plans applicable to both sanitary sewers and storm drains are in the "S-200" series. BOE is currently using American Public Works Association (APWA) standards for storm drains. The final one or two digit numbers refer to the revision number of that particular standard plan, starting with zero (0). All "S" series standard plans also have a Vault Index Number that is in the "B" Series. Some older plans that are in the "B", "D", "DL" or older standard plans are being revised, and their revisions will be in the newer "S" series.

Further discussions relating to Standard Plans, may be found in the Management Volume, and Part "A" Administration, of the Bureau of Engineering Manual.

Standard Plans can be viewed at or printed from the BOE web site.

F 173.1 REVISIONS AND ADDITIONS TO STANDARD PLANS

The preparation, revision and retirement of standard plans are the responsibility of the Engineer of Design. Engineers are encouraged to submit suggestions for improving or correcting existing standard plans and for the development of new standard plans. Such suggestions should be submitted to management for consideration. New or revised standard plans shall be circulated throughout the Bureau for review and comments before finalization. Those found to have merit will be incorporated into the final standard plans.

F 174 METRICATION

Units of measurement in the BOE are the English Gravitational System. Metric equivalents of the English Gravitational System shall not be used on any plan or specification unless it is necessary to accommodate a standard industry practice, such as crossing under State freeways (Special Order No.022-0295).

F 175 ENGINEERING RESEARCH

Each Division/District Engineer and WCED shall be responsible for continuing research on new, improved and more efficient engineering methods, material standards and construction practices. Periodic Staff/Committee meetings, usually monthly, should be held to provide comment and recommendations regarding technology in engineering methods, material standards and construction practices along with the routine Division/District staff agenda.

F 176 HYDRAULIC RESEARCH LABORATORY

The Design Standards and Investigations Group is responsible for the operation of the Hydraulic Research Laboratory (HRL). The HRL is staffed by engineering personnel experienced in studying hydraulic systems such as sewers and storm drains. The principal activities are designing, constructing and testing scale models of proposed or existing hydraulic structures. Models are tested to determine the efficacies of these hydraulic structures. If any deficiencies are found, the HRL will modify the model until it performs satisfactorily. The HRL also conducts field investigations to study the hydraulic performance of sewers and wastewater structures. Technical reports and final recommendations are then prepared by HRL to summarize the results of the testing.

The HRL is also responsible for computer hydraulic modeling of wastewater facilities. The decision to employ physical modeling, computer modeling, or a combination is made on a case by case basis.

The HRL should be consulted early in the pre-design phase of a project whenever a proposed sewer or wastewater structure is to convey large flows or has a unique geometry.

F 177 SEWER STUDIES

The Wastewater Engineering Services Division (WESD) of the Bureau of Sanitation (BOS) conducts sewer studies of various categories. The District Engineers shall contribute information relative to sewers and appurtenant works as the need arises. The studies may pertain to sewage flow involving land use plans and wastewater treatment plants. See [F 130](#) relative to Advance Planning. See [F 200](#), et seq. for sewage flow determination.

F 180 PUBLIC COUNTERS

Public counter activities are performed in all district offices. Generally, they involve checking permit applications relative to the construction of sewers by private developers, possible interference with existing or proposed sewers and other surface and subsurface structures and House Connection Sewer (HC) information, such as location and fees. Specific information, policies and procedures are contained in Part C of the Bureau of Engineering Manual and Section 64.00, et seq., of the LAMC (1). The sewer information sources are the Sewer Maps (1-inch = 400 feet scale), Sewer Wye (Y) Maps (1-inch = 50 feet scale), and the Engineer's files.

F 181 TYPES OF PERMITS INVOLVING SEWERS

Part C of the Bureau Manual discusses the types of permits issued or processed by the BOE. Those requiring sewer checking or involvement are:

- a. Class "B" Permits for which plans are submitted for sewer work to be performed by private developers or other agencies.
- b. Building permits issued by the Department of Building and Safety (DBS) for which the availability of a sewer must be determined.
- c. Special and General Excavation Permits issued by the district offices for possible conflict with existing or proposed sewers.
- d. HC permits issued by the district offices.
- e. Watercourse Permits to excavate, fill, alter, perform work in, or repair a natural watercourse involving sewers. A Class "B" Permit is required along with this permit if the sewer is directly affected by construction.
- f. Industrial Waste Permits issued by the Bureau of Sanitation where monetary surcharges for sewage quality are involved.
- g. Rights of Entry.
- h. Slope Rights.
- i. State Highway Encroachments.

- j. National Pollutant Discharge Elimination System (NPDES) permit for groundwater discharge.
- k. Application to do work in a City easement.
- l. California Division of Occupational Safety and Health Administration (DOSH) for excavation and tunnel classification relative to hazardous gases or vapors.

Class "A" Permits do not normally involve sewers. However, within the district offices, these permits should be checked by the Engineer if the permit pertains to street tree installations and an excavation permit has not been approved. HC locations are of paramount concern. A minimum horizontal clearance of 5 feet between the HC and street tree should be maintained.

F 182 PERMITS TO CONSTRUCT OVER SEWER EASEMENTS

A property owner may request permission to construct over a sewer easement. Each case shall be given careful consideration. The easement should be checked to determine the rights it grants to the City. Criteria and requirements for safe construction over or near the sewer shall be determined before the permit is issued. Los Angeles Municipal Code Section 62.106 requires that work in a public easement be done under permit and fees charged (See C 300). If work within a public easement requires the relocation, remodeling or protection of public work facilities, or if otherwise deemed necessary by the City Engineer, a Class "B" Permit shall be required along with plans.

Before allowing anyone to construct over a sewer, a thorough investigation should be made as to protection of the sewer during construction, structural adequacy of the sewer to support building loads, and the feasibility of repairs to the sewer, should that become necessary. Although the need for repair of a sewer may not have been required in the past, the need could arise in the future and should be considered in the investigation.

Driveways, carports, patios, swimming pool decks and residential type garages may be permitted over a sewer since they generally would not impose a significant load on the sewer and would not substantially restrict access for repairs to the sewer. The construction of a major structure which would appear to cause the City maintenance or reconstruction problems in the future should be reason for requiring the property owner to relocate the sewer to an accessible location.

If the sewer is judged endangered by the construction, structurally inadequate, or is likely to need repairs or replacement in the future, consideration should be given to bridging, blanketing, encasing or reconstructing the sewer. Any costs involved in protecting or reconstructing the sewer must be borne by the property owner. Any plans required must be processed as a Class "B" Permit.

Along with the Application to do Work on City Easement, Standard Form Eng. 4.163, a property owner is required to sign and record a Waiver of Damages, Indemnification Agreement and Right of Ingress and Egress - Covenant to Run with the Land, Standard Form Eng. 3.685, which reasserts the City's basic easement rights. Unless the sewer is relocated and the City has no further need for the easement, the easement rights to maintain the sewer shall be retained.

F 183 FEES AND CHARGES

Fees and charges are listed in Part C of the Bureau Manual. The district offices are responsible for determining the Sewerage Facility Charge (SFC) by calculation of any additions or exemptions to the Sewer Service Charge (SSC). Policies and procedures relative to HCs and tapping into existing sewers where a "Tee" or "Wye" is unavailable are given in Section 64.17 of the LAMC (1).

F 184 BONDS AND INSURANCE

Part C 224 of the Bureau Manual covers policies and procedures relative to bonds and insurance required in connection with permits issued at public counters in district offices. All bonds posted and insurance furnished in favor of the City are subject to the approval of the City Attorney as to legality and sufficiency of the forms and the amounts.

F 185 MAPS AND INFORMATION

The Mapping Group is responsible for maintaining all sewer and Wye Maps and each district office records all new sewer connections in the area within the district. Maps are in electronic form and can be viewed and printed from the BOE web site. Any information furnished from these references shall be accompanied with a statement that the user is responsible for checking the validity and the accuracy of the data.

F 185.1 MAPS AND SEWER PLANS LINKS

The BOE has converted almost all pertaining Maps to an electronic format. These maps have provided engineers and designers preliminary information to aid in the preparation of plans, reports studies, etc. Staff is advised that the information shown on these maps should always be considered preliminary. A field check and survey shall be performed to validate critical information such as MH stationing, center line ties and conduits invert elevations, etc. Maps/Plans can be found at internet links as follows:

- 1 NavigateLA: <http://navigatela.lacity.org>

This website has a graphic compilation of almost all information pertaining to the City of Los Angeles. The information is presented in layers that can be accessed by toggling on/off the

proper boxes (usually on the left hand side of the site page). This website is a gate to many other important links such as property information, aerial maps, etc. Plan and Map numbers for existing sewers can be obtained from this site.

2. BOE Electronic Vault: <http://engvault.lacity.org>

This website provides access to different plans such as Standard Plans, Street Plans, Sewer Plans, and Storm Drain Plans. Also, maps such as Cadastral Maps, Drainage Maps, Parcel Maps, Right of Way Maps, Sewer Maps, Topographic Maps and Wye Maps can be found. A visit to the website can reveal other useful maps.

This site requires knowledge of plan and maps numbers, which can be obtained/linked from the NavigateLA site. The user will find that, often times, some research work may be necessary to find maps and plan numbers.

3. Map Gallery: <http://navigatela.lacity.org/common/mapgallery>

This website offers a comprehensive link to several maps that includes a few listed in 2. above. This site provides maps that engineers and designers may find useful to inform the City Legislative and Executive branch regarding sewer projects. A sample list of maps is shown below:

- Accelerated Sewer Repair Projects
- City Boundary Maps
- Council District Maps
- Engineering Districts
- Geotechnical Group Maps
- GIS Street Maps
- LA River Revitalization Plans
- Neighborhood Councils Maps

All Maps/Plans can be printed on appropriate paper sizes for the user's further perusal.

F 190 MASTER PROJECT FILE

Each Project Engineer shall maintain a complete, current and well organized project file. In the event the project must be assigned to another Engineer or, if in the future, questions arise about the project, an orderly project file will allow a smooth transition of assignment or help answer questions pertinent to the project. Table F 190 enumerates a "Master List of Files" that should provide a minimum standard of files to be maintained by each Project Engineer. The master list shows categories with index numbers for organizing typical records and documentation to be kept throughout the course of a project.

Table F 190
MASTER LIST OF FILES

Index Number	File Description
1.....	GENERAL PROJECT INFORMATION
1-1	GENERAL CORRESPONDENCE, W.O.
1-1-1 .....	..... Correspondence
1-1-1-1 .....	..... Correspondence with Government Agencies
1-1-1-2.....	..... Interoffice Correspondence
1-1-1-3.....	..... Correspondence to Public/Others
1-1-1-4.....	..... Correspondence from Public/Others
1-1-2 .....	..... Telephone Memos
1-1-3 .....	..... Public Interface
1-1-4 .....	..... Newsletters
1-1-5 .....	..... Workshops/Conferences
1-1-6.....	..... Weather Summaries & Observations
1-2	GENERAL GUIDELINES
1-2-1 .....	..... Intellectual Property Rights Agreement
1-3	REPORTS
1-3-1 .....	..... General Reports
1-3-2 .....	..... Board Reports
1-3-3 .....	..... Progress/Status Reports
1-3-3-1 .....	..... General Status Report
1-3-3-2.....	..... Weekly Project Report
1-3-3-3.....	..... Monthly Project Report
1-3-3-4.....	..... Scheduling Status/Variance Report
1-3-3-5.....	..... Non-Compliance Summary Report
1-3-3-6.....	..... Major Milestones Report
1-3-4 .....	..... Weekly Document Status Reports
1-3-4-1 .....	..... Shop Drawing Status Report
1-3-4-2.....	..... Change Order Status Report
1-3-4-3.....	..... RFI Status Report
1-4	PROJECT RANKING
1-5	MEETING NOTES/MINUTES
1-5-1 .....	..... General Meeting Notes
1-5-1-1 .....	..... SWRCB Meetings
1-5-1-2.....	..... Weekly Overall Project Meetings
1-5-1-3.....	..... Coordination Meetings (Between Projects)
1-5-1-4.....	..... Coordination Meetings - Bureau of Sanitation
1-5-1-5.....	..... Project Claims Meetings
1-5-1-6.....	..... Pre-Bid Meetings
1-5-1-7.....	..... Pre-Construction Meetings
1-5-2 .....	..... Contractor Meetings
1-5-2-1.....	..... Weekly Meeting with Contractors
1-5-2-2.....	..... Special Meetings with Contractors
1-5-3 .....	..... Job Site Meetings

- 1-5-4 Safety Meetings
- 1-5-5 Division/Staff Meetings
- 1-6 GRANT CORRESPONDENCE
- 1-6-1 SWRCB Correspondence
- 1-6-1-1 To SWRCB
- 1-6-1-2 From SWRCB
- 1-6-2 EPA Correspondence
- 1-6-2-1 To EPA
- 1-6-2-2 From EPA
- 1-6-3 Corps of Engineers
- 1-6-3-1 To Corps of Engineers
- 1-6-3-2 From Corps of Engineers
- 1-6-4 FEMA Correspondence
- 1-7 PERMITS
- 1-7-1 General
- 1-7-2 Air Quality Management District
- 1-7-3 Building & Safety Department
- 1-7-4 California Coastal Commission
- 1-7-5 Other Cities
- 1-7-6 Cultural Affairs
- 1-7-7 Fire Department
- 1-8 CONSULTANT/ON-CALL/PERSONAL SERVICES CONTRACTS
- 1-8-1 Correspondence
- 1-8-2 RFP/RFQ
- 1-8-3 Proposals
- 1-8-4 Evaluations
- 1-8-5 Insurance/Bonds
- 1-8-6 Contracts/Amendments
- 1-9 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

2.....REAL PROPERTY

- 2-1 GENERAL
- 2-2 MEETINGS
- 2-3 ORDINANCES/LAWS
- 2-4 RIGHTS OF WAY/PROPERTY ACQUISITION
- 2-5 PROJECT SITES SELECTION/OPTIONS

3.....PLANNING / PREDESIGN

- 3-1 PLANNING
- 3-1-1 Correspondence
- 3-1-2 Support Information
- 3-2 TECH. MEMORANDUM/CONCEPT RPT/PREDESIGN RPT
- 3-3 ENVIRONMENTAL DOCUMENTATION
- 3-4 NOT USED
- 3-5 NOT USED
- 3-6 NOT USED
- 3-7 NOT USED
- 3-8 PREDESIGN

- 3-8-1 Correspondence
- 3-8-2 Calculations/Pre-design Book
- 3-8-3 Vendor Data
- 3-8-4 Operational/Test Data
- 3-8-5 Factory Testing
- 3-8-6 Site Inspection

4..... COSTS

- 4-1 GENERAL CORRESPONDENCE
- 4-2 COST ESTIMATES
- 4-3 CIP
- 4-4 WPRR
- 4-5 DEVIATIONS SUPPORT
- 4-6 CASHFLOW SUMMARIES - USE 8-6-7
- 4-7 LABOR RATES - USE 8-8-6
- 4-8 INVOICES/BILLINGS
 - 4-8-1 General
 - 4-8-2 Consultant/Personal Services Invoices
 - 4-8-3 Billings
 - 4-8-3-1 DWP
 - 4-8-3-2 Southern California Gas Co.
 - 4-8-3-3 Telephone

5..... SCHEDULING

- 5-1 GENERAL CORRESPONDENCE
- 5-2 MASTER SCHEDULE
- 5-3 CONSENT DECREE SCHEDULING
- 5-4 DEVIATIONS SUPPORT
- 5-5 PRELIMINARY SCHEDULES

6..... DESIGN

- 6-1 GENERAL CORRESPONDENCE
- 6-2 DESIGN REPORTS
 - 6-2-1 Architectural
 - 6-2-2 Civil / Soil
 - 6-2-3 Electrical
 - 6-2-4 Instrumentation
 - 6-2-5 Mechanical
 - 6-2-6 Structural
 - 6-2-7 Survey
 - 6-2-8 Hazardous Waste
 - 6-2-9 Traffic
 - 6-2-10 Plastic
- 6-3 DESIGN GUIDELINES
- 6-4 VALUE ENGINEERING
 - 6-4-1 Correspondence
 - 6-4-2 Preliminary Studies
 - 6-4-3 Final Studies

- 6-5PLAN CHECKS - Use 1-7 PERMITS
- 6-6DESIGN DISCIPLINE CALCULATIONS
 - 6-6-1 Architectural
 - 6-6-2 Civil / Soil
 - 6-6-3 Electrical
 - 6-6-4 Instrumentation
 - 6-6-5 Mechanical
 - 6-6-6 Structural
 - 6-6-7 Survey
 - 6-6-8 Hazardous Waste
 - 6-6-9 Traffic
 - 6-6-10 Plastic
- 6-7DESIGN SURVEYS
- 6-8DESIGN REVIEW (SPECS/PLANS)
- 6-9DESIGN SCHEDULES
- 6-10SPECIFICATIONS
 - 6-10-1 General Information
 - 6-10-2 Bid Proposal
 - 6-10-3 General Conditions
 - 6-10-4 Technical Provisions

- 7.....BID / AWARD / PRECONSTRUCTION**
 - 7-1GENERAL CORRESPONDENCE
 - 7-2CORRESPONDENCE FOR CONSTRUCTION/BID PERIOD
 - 7-2-1 Advertisement for Bids
 - 7-2-2 Bid Documents
 - 7-2-3 Addenda
 - 7-2-4 Bid Phase Correspondence with Bidders
 - 7-3RFP/RFQ
 - 7-4BID EVALUATIONS
 - 7-5PROPOSALS
 - 7-6CONTRACT AWARD/NTP/CONTRACT/AMENDMENT
 - 7-7PRE-CONSTRUCTION CONFERENCE & MEETINGS
 - 7-8BID BREAKDOWN
 - 7-9PRELIMINARY PROJECT SCHEDULE (CPM, etc.)
 - 7-10LIST OF SUBCONTRACTORS / RELATED CORRESPONDENCE
 - 7-11MOBILIZATION
 - 7-12BONDS & INSURANCE

- 8.....CONSTRUCTION**
 - 8-1GENERAL CORRESPONDENCE
 - 8-1-0 Engineers Jobsite Memo
 - 8-1-1 Contractor Correspondence
 - 8-1-1-1 Correspondence to Contractor
 - 8-1-1-2 Correspondence from Contractor
 - 8-1-2 Permits - Use 1-7 PERMITS
 - 8-1-3 Photos/Videos
 - 8-1-3-1 Progress Photos

8-1-3-2	.....	Claims Photos
8-1-3-3	.....	Safety Hazard Photos
8-1-3-4	.....	Accident Photos
8-1-3-5	.....	Public Relations Photos
8-1-3-6	.....	Post-Construction Photos
8-1-3-7	.....	Videotape Construction Rec. (See tape file for tapes)
8-1-4	.....	Interdepartmental Correspondence
8-1-4-1	.....	To Division (from other divisions)
8-1-4-2	.....	From Division (to other divisions)
8-1-5	.....	Health & Safety
8-1-6	.....	20-Day Preliminary Notice
8-1-7	.....	Public Interface
8-1-8	.....	Monthly Progress Reports
8-1-9	.....	Project Engineer's Daily Diary
8-1-10	.....	Daily Construction Report
8-2	.....	CONSTRUCTION STANDARDS (MANUAL)
8-3	.....	PROJECT (CONSTRUCTION) MANAGEMENT
8-3-1	.....	Wkly Contractor Manpower & Equipment
8-4	.....	PLAN CLARIFICATIONS
8-5	.....	RFIS
8-6	.....	CONSTRUCTION SCHEDULING
8-6-1	.....	Master Schedule
8-6-2	.....	Three Week Schedule
8-6-3	.....	Overall Project Schedule
8-6-4	.....	Contractor Work Schedules (Diagrams)
8-6-5	.....	Schedule Updates (Computer Printout)
8-6-6	.....	Contractor Progress Reports
8-6-6-1	.....	Weekly Status Report
8-6-6-2	.....	Monthly Progress Report
8-6-7	.....	Cost Loading & Cash Flow Summary
8-6-8	.....	Corps of Engineers-Interim Construction Report
8-6-9	.....	Delays in Work
8-6-10	.....	Time Extensions
8-6-11	.....	Suspension of Work
8-7	.....	SHOP DRAWINGS / SUBMITTALS
8-7-1	.....	Transmittal for Info Only Submittal
8-7-2	.....	Record Drawings (As-Builts) / As-Bid Drawings
8-8	.....	CHANGE ORDERS
8-8-1	.....	Change Orders
8-8-2	.....	Deviation Requests/Engineer's Action
8-8-3	.....	Pending Change Order Items
8-8-4	.....	CO's from other Projects/Elements
8-8-5	.....	CO Request from Contractor/Engineer's Action
8-8-6	.....	Contractor Labor Rates / Overhead Change Requests
8-8-7	.....	Bid Item Allowances
8-9	.....	PROGRESS PAYMENTS
8-9-1	.....	Procurement Contracts
8-9-2	.....	Stop Notices

- 8-10CLAIMS / DISPUTES
 - 8-10-1 Claims
 - 8-10-2 Disputes
 - 8-10-2-1 Contractor Initiated Actions
 - 8-10-2-2 City Engineer Documentation
 - 8-10-3 Potential Claims
- 8-11INSPECTION
 - 8-11-1 Inspection Reports
 - 8-11-1-1 Daily Construction Reports Generated by Field Inspector
 - 8-11-1-2 Field Diaries
 - 8-11-1-3 Certificates & Delivery Tickets
 - 8-11-1-4 Discrepancy (Non-Conformance) Reports
 - 8-11-1-5 Batch Plant Records
 - 8-11-1-6 Special Inspection Reports
 - 8-11-2 Accident Reports
 - 8-11-3 Inspector's Job Memorandum
 - 8-11-4 Notice of Non-Compliance
 - 8-11-5 Time & Material Sheets
 - 8-11-6 Material Safety Data Sheets
 - 8-11-7 Shop Inspection Requirements/Reports
 - 8-11-8 Storage of Equipment
 - 8-11-8-1 Equipment to Sanitation
 - 8-11-8-2 Equipment from Contractor
 - 8-11-8-3 Equipment to Contractor
 - 8-11-9 Final Inspection
 - 8-11-10 Final Inspection Correction List
 - 8-11-11 Building & Safety Correction Notice
 - 8-11-12 City of Los Angeles Test Lab (Building & Safety)
- 8-12PLANT INTERFACE
 - 8-12-1 Process Tie-in Plans / Coordination Correspondence
 - 8-12-2 Req. for Work Clearance/Special Plant Accommodations
 - 8-12-3 Gate Access Records
- 8-13SURVEY
 - 8-13-1 Sketches
 - 8-13-2 Survey Request from Contractor
 - 8-13-3 Survey Request Response to Contractor
- 8-14TESTS OR TESTING - QUALITY/MATERIAL/EQUIPMENT
 - 8-14-1 General - Includes noise testing.
 - 8-14-2 Pipe
 - 8-14-3 Concrete
 - 8-14-4 Steel
 - 8-14-5 Soils
 - 8-14-6 Asphalt Products
 - 8-14-7 Welding
 - 8-14-8 Mechanical
 - 8-14-9 Electrical
 - 8-14-10 Plastic Products
- 8-15NOT USED

8-16NOT USED
8-17NOT USED
8-18NOT USED
8-19NOT USED
8-20PROJECT CLOSE-OUT
8-20-1 General
8-20-2 Operational Testing & Validation
8-20-3 Partial Completion / Punch Lists
8-20-4 Final Submittals from Contractor
8-20-4-1 Record Drawings
8-20-4-2 Keying Schedule
8-20-4-3 Spare Parts
8-20-4-4 Tools
8-20-5 Notice of Completion
8-20-6 Final Progress Payment
8-20-7 Construction Management Project Close-out
8-20-8 Problem Identification Form
8-20-9 Beneficial Use/Partial Utilization
8-20-10 Plant Acceptance

9.....START UP / OPERATIONS

9-1GENERAL CORRESPONDENCE
9-2O & M GUIDELINES/MANUALS
9-2-1 General
9-2-2 Draft O&M Manual
9-2-3 Staff Review/Technical Review Manuals
9-3START-UP PROCEDURES/GUIDELINES
9-3-1 General
9-3-2 Start-up Procedures
9-3-3 Equipment Inspection/Review Report
9-3-4 Troubleshooting Process Problems
9-3-5 Scheduling
9-3-6 Start-up Meetings Summary
9-3-7 Equipment & Supply Purchases
9-3-8 Start-up Daily Log
9-3-9 Work & Equipment Status
9-3-10 Equipment Release Forms
9-4TRAINING
9-4-1 General
9-4-2 Manufacturer's Training
9-4-3 Training Manual Draft/Final
9-4-4 Audiovisual Aids, Materials
9-5FACILITY CERTIFICATION
9-6WARRANTY ITEMS
9-7FACILITY TESTING

F 191 PROJECT NOTEBOOK

Section F 190 sets forth the creation of an organized file or Project Notebook for each project. This Project Notebook shall consist of an electronic as well as a paper copy of project documents. The Project Manager (PM)/Project Engineer (PE) shall ensure that the Project Notebook is kept up to date with all correspondence (incoming/outgoing) and other proper documents pertaining to the project.

The Electronic Project Notebook is created on the assigned drive and directory (e.g. O:\Engineering\SZCxxxxx\). The PM/PE creates the project subdirectory under the work order number. The name of the subdirectory has the project name listed as well. A project electronic notebook has a directory link as listed below:

O:\Engineering\SZCxxxxx\SZC00000 - Sample Sewer Project

This subdirectory has tabs as necessary to capture all different communication, correspondence, etc with other divisions, bureaus, agencies, etc. as well as all engineering calculations, studies, presentations, meeting agendas and minutes, etc. related to each project.

The electronic Project Notebook has recommended subdirectories as shown below:

1. Bid and Award
2. Bid Package
3. Close Out
4. Constructability Review
5. Contract Administration
6. Construction
7. Cost Estimate
8. Department of Transportation
9. Department of Water and Power
10. Environmental Management
11. Geotechnical Engineering
12. Los Angeles County Public Works
13. Master Specifications
14. Project Award and Control
15. Photos
16. Plan Processing
17. Project Authorization
18. Project Engineer Checklist
19. Project Review Committee
20. Pre Bid Meeting

21. Pre-Design Report
22. Public Affairs Office
23. Quality Assurance/Quality Control
24. Real Estate
25. Bureau of Sanitation
26. Schedules
27. Sewer Gauging
28. Storm Drains
29. Street Lighting
30. Street Services
31. UPRS
32. Utilities
33. Work Order

Additional subdirectories are added by the PM\PE as necessary. Also, each subdirectory can have lower-level subdirectories as appropriate to allow for better file organization.

The hard copy Project Notebook follows the same primary organizational model as the electronic directory. The hard copy Project Notebook will have tabs that correspond to the electronic subdirectories.

Plans for each particular project are saved to the E: drive. The Principal Drafting Technician creates the proper organizational directory and subdirectories for each project plans.

After the project construction has been completed, all outstanding issues settled and finalized, and as-built plans prepared, all the project documentation (design and construction) is combined into one file for the proper Records Management archiving. The Project Manager and Construction Manager may want to keep copies of documents at their discretion. However, one set of documents shall always be archived.

F 195 REFERENCES

1. Municipal Code, City of Los Angeles, Chapter VI, Public Works and Property, Article 4 - Sewers, Watercourses and Drains and Article 4.1 - Sewer Service Charge.

2. WEF Manual of Practice No. FD-5, Gravity Sanitary Sewer Design and Construction 1982, Water Pollution Control Federation, Washington, D.C. This is also available as ASCE Manual No. 60, ASCE, New York, New York.

3. Southern California Chapter of the American Public Works Association and the Southern California District of the Associated General Contractors of California, Joint Cooperative Committee, Standard Specifications for Public Works Construction, latest approved edition and supplement, Building News, Inc., Los Angeles, California.

4. Guidelines for the Implementation of the California Environmental Quality Act of 1970, City of Los Angeles, Revised 1-27-81.

5. WEF Manual of Practice No. 1, Safety and Health in Wastewater Systems 1983, Water Pollution Control Federation, Washington, D.C.

6. WEF Manual of Practice No. 7, Operation and Maintenance of Wastewater Systems, 1980, Water Pollution Control Federation, Washington, D.C.