

P R E F A C E

Part G of the manual covers the design of storm drains only. It presents the design criteria, standards, policies, and procedures to the new engineer and provides a reference source for the experienced designer. Other office or processing operations related to storm drain design are covered in other parts of the manual.

The design of storm drains by City forces for the Los Angeles County Flood Control District or the State Division of Highways is not included in this manual.

GENERAL OUTLINE

G 000 INTRODUCTION

Liability and Responsibility, Project Types and Agency Jurisdictions, Capital Improvement Projects, Assessment Projects, Private Development Projects, Easements Watercourses, Drainage Complaints.

G 100 GENERAL DESIGN

Policy, Design Practices, Types of Drainage Systems, Excavation and Backfill, Grading and Erosion Control, Soil Mechanics Nomenclature, Geological Nomenclature, Preliminary Study, Hydraulic Laboratory.

G 200 HYDROLOGIC DESIGN

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DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES

PROPOSED ORGANIZATION CHART 1989-90

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DEPUTY CITY ENGINEER II

BUREAU OF ENGINEERING
WASTEWATER PROGRAM
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DIRECTOR

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APPROVED *Robert S. Stein*
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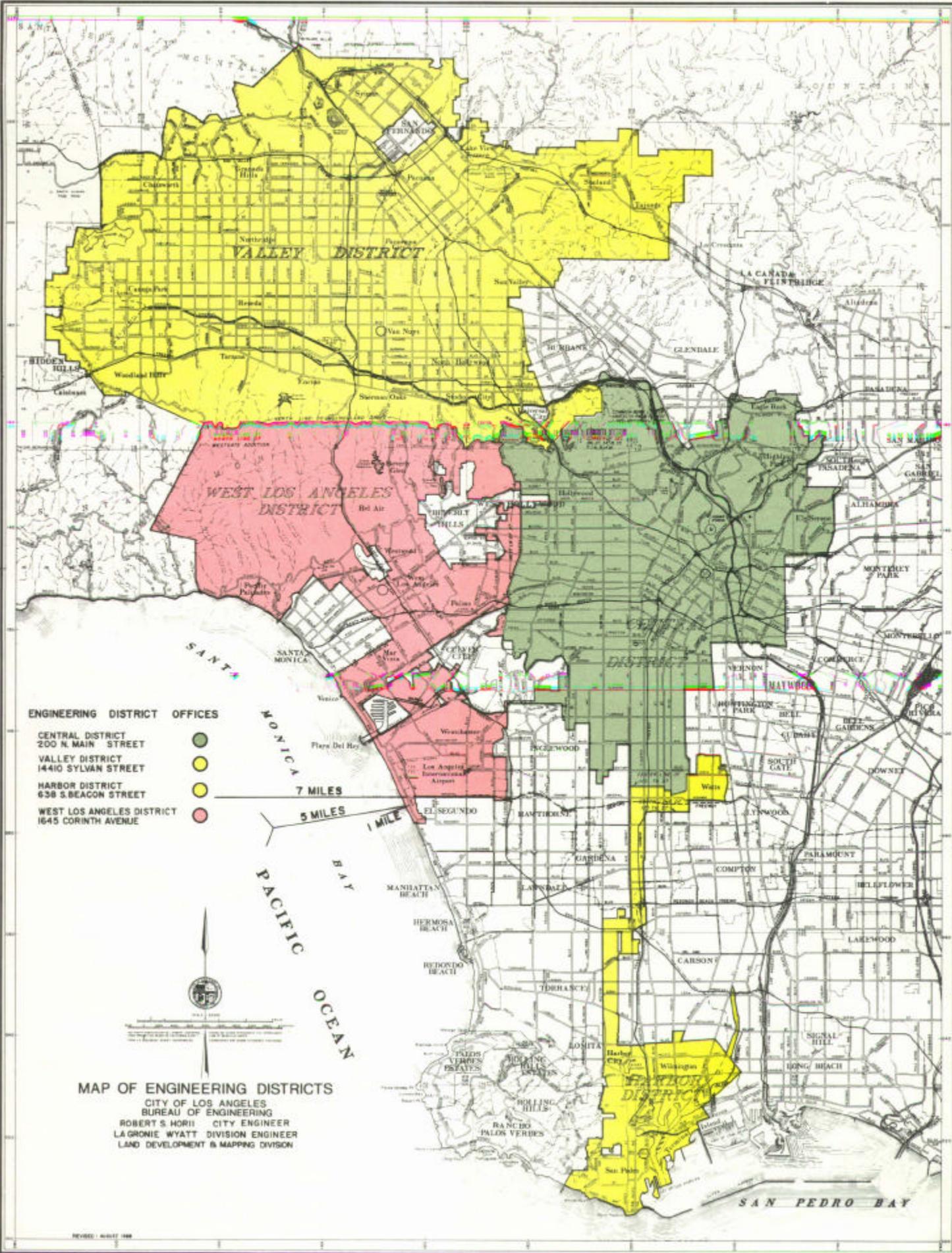
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- VALLEY DISTRICT
1440 SYLVAN STREET
- HARBOR DISTRICT
638 S. BEACON STREET
- WEST LOS ANGELES DISTRICT
1645 CORINTH AVENUE



MAP OF ENGINEERING DISTRICTS
 CITY OF LOS ANGELES
 BUREAU OF ENGINEERING
 ROBERT S. HORII CITY ENGINEER
 LA GRONIE WYATT DIVISION ENGINEER
 LAND DEVELOPMENT & MAPPING DIVISION

REVISED: AUGUST 1988

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G 000 INTRODUCTION

To provide the City of Los Angeles with storm water runoff facilities has been a constant, costly, and complex endeavor. The City is surrounded by sharply rising mountains which create heavy runoff into the flat plains below extending some 30 miles to the ocean. This factor, coupled with the high intensities of rainfall which occur between November and April, makes the Los Angeles area one of the most vulnerable to flooding in the country for density of population.

The City of Los Angeles is relatively young in comparison with many large cities of comparable size. Most of its growth has taken place during the past 50 years, during which many changes in economic factors and engineering have occurred. Consequently, storm drains and other drainage facilities deemed hydraulically adequate or economically sufficient in the early 1900's have

proved inadequate in recent years due to changes in accepted methods of evaluating storm runoff.

At present, the greatest portion of the City's 460 square miles has been subdivided and developed, and every effort has been made to provide adequate drainage facilities. Approximately 1000 miles of City-owned storm drains have been constructed, exclusive of those constructed and maintained by the U.S. Army Corps of Engineers, the Los Angeles County Flood Control District, the State Department of Transportation, and the Soil Conservation Service of the U.S. Department of Agriculture. Nevertheless, the phenomenal and unanticipated growth of the City has resulted in many drainage deficiencies.

These existing problems, along with those which will result from the future development of the City, form the challenge which the storm drain design engineer must meet.

G 010 LIABILITY AND RESPONSIBILITY

G 011 DEFINITIONS

Refer also to all definitions in Section 1-2 of the *Standard Specifications* for Public Works Construction (Latest Edition) with supplements.

1. *Watershed*: A drainage area bounded on three sides by ridges where flow by gravity of all runoff within the area drains ultimately to a particular watercourse or valley street which outlets on the fourth side. The fourth side is established when its flow joins the flow of an adjacent watershed.

2. *River*: A large stream of water which serves as the natural drainage channel for a watershed of considerable area.

3. *Watercourse*: A natural stream of water flowing in a particular direction in a definite channel having a bed and banks. It need not flow continually, nor is it restricted as to property ownership.

4. *Runoff*: The amount of rainfall (less losses from infiltration, evaporation, transpiration, interception, and storage) which flows naturally on the earth's surface.

5. *Storm Drain System*: A combination of all drainage facilities within a watershed, including

natural watercourses and conduits, to convey surface runoff from its most remote location to the watershed outlet.

6. *Trunk Line*: The major collector conduit of a storm drain system. Trunk lines accept flows from smaller contributing storm drains and generally outlet into major or secondary watercourses (see [Section G 020](#)).

7. *Lateral*: A storm drain conduit which outlets into a trunk line when considered as a part of a storm drain system. In terms of a storm drain project, a lateral is a conduit which outlets into the main line.

8. *Main Line*: The principal conduit of a storm drain project. A main line collects flow from laterals and catch basin connections.

9. *Storm Drain Project*: Storm drain conduit constructed under a single contract. This does not include catch basin connections or culverts when constructed alone.

10. *Catch Basin Connection*: A storm drain conduit which conveys surface runoff from a catch basin or catch basins to a trunk line, a main line, or a lateral.

G 012 PUBLIC LIABILITY

Almost every aspect of municipal action on drainage and flood control work may have serious legal complications. Therefore, the design engineer must be able to recognize liability and avoid situations in which liability would be incurred.

This section summarizes some general rules applicable to storm drain design. These rules are only a guide, and the designer should remember that they do not necessarily represent the controlling laws of California. The interpretation of state laws is always the responsibility of the City Attorney's office, which will furnish appropriate advice upon request.

G 012.1 Laws and Definitions

Public Liability Act: This act provides that a local agency is liable for injuries to persons or property resulting from the dangerous or defective condition of public property, provided the person authorized to remedy the condition had knowledge of the condition and failed to remedy it or take necessary action to protect the public within a reasonable length of time.

State Constitution: This constitution provides that a local agency shall not take or damage property for a public purpose without paying full compensation therefor.

Diversion: An act of man which alters the direction of surface water flow from one drainage watershed to another.

Negligence: The failure to perform an act which a prudent and reasonable person would be expected to perform, or the performance of an act that such a person would not be expected to perform. Such expectations are guided by those considerations that ordinarily regulate the conduct of human affairs.

G 012.2 Rights and Obligations: Inherent with rights are obligations. Both the private property owner and the City have rights with respect to the use of property, and obligations to each other. This section is concerned only with those rights and obligations pertaining to surface waters and drainage.

G 012.21 Private Property: A property owner has the right to develop his land normally, provided he does not injure or damage any person or property, and provided he complies with all applicable legal regulations.

Riparian Water Rights: The owner of the land bordering upon a river has no absolute ownership of the waters, but has a right, in common with others, to the reasonable use of waters flowing past his land.

Doctrines of Surface Water Law:

First, the common enemy doctrine. Under this doctrine, each owner has the unqualified right to fend off surface waters without regard to the upper owners or other owners.

Second, the civil law rule. Under this rule, the lower owner must accept upper water in its natural condition, but the upper owner has no right to alter the natural system of drainage.

Third, the rule of reasonable use. The rights of the parties are determined by assessment of all the factors.

The Supreme Court adopted for California the civil rule subject to the rule of reasonable use. The court said: "The issue of reasonableness becomes a question of fact to be determined in each case upon a consideration of all relevant circumstances, including such factors as the amount of harm caused, the foreseeability of the harm which results, the purpose or motive with which the possessor acted, and all other relevant factors."

The court concluded that if both the upper and lower owner act in a reasonable manner, then the civil law applies; namely, that the upper owner has to bear the costs of diversion to the lower owner. Otherwise, if one side acted more reasonably than the other, then the burden would be borne by the one who acted less reasonably.

(For more detailed information, refer to [Subsection G 012.4](#))

G 012.22 Municipality:

Police Power is the power of a local agency to enact and enforce laws within constitutional limits to promote order, safety, health, morality, and the general welfare of society. This power is properly exercised by the City in making public improvements, provided ---

- a. The taking or damaging of property is essential to the public welfare;
- b. Reasonable care and diligence are used in proceeding with the improvement;
- c. No needless injury is inflicted upon private property; and,

d. The City's action does not constitute a trespass upon private property.

Eminent Domain is the right of a governmental agency to acquire property for the development of projects of benefit to the public as a whole. Just compensation must be paid for the property.

The City of Los Angeles has the duty to invoke its rights for the protection of the public and the betterment of the community.

G 012.3 Practical Design Applications:
Below is a list of principles which the engineer must consider in designing storm drains.

a. Do not divert surface waters from one property to another over which they would not naturally flow.

b. Do not gather waters by artificial means and discharge them onto lower property in greater volume or concentration than they would naturally be discharged (except that the volume may be increased by urbanization or by development of the upper property-see [Subsection G 012.43, c](#)).

c. Do not construct ditches or other artificial structures to drain waters which have accumulated naturally in ponds and depressions onto lower property owned by another person.

d. Do not direct surface waters which have been improperly diverted from still higher property onto lower property.

e. Do not concentrate surface waters into a single channel, instead of two or more, and then discharge the channel onto lower property.

f. Do not obstruct the flow of surface waters from higher property that naturally drain across or onto lower property.

g. Do not construct public drainage systems on private property; easements for drainage and construction purposes are to be acquired by the City prior to construction.

G 012.4 Excerpts from Court Decisions and Other Authorities: Relating to Watercourses, Surface Waters, and Flood Waters as they may affect, or be affected by, the Design, Construction, and Operation of Storm Drains and other Drainage and Flood Control Works, Streets, Subdivisions, and other Municipal Improvements-Prepared by Ferdinand P. Palla, City Attorney of the City of San Jose, California, and Presented in a Paper Titled "Responsibility of Public Works Officials

for Control of Flood Hazards in Cities," to the Public-Works Officers' Department Annual Conference at Los Angeles, California, October 25, 1960.

A summary of the text of the subject paper includes:

1. Distinction Between Surface Waters and Flood Waters
2. Rights and Obligations Respecting Surface Waters
3. Floods Attributable to Flood Waters

As cities expand and develop, and former rural or agricultural areas become urbanized, cities, and particularly their public works officials, are constantly confronted with serious drainage problems which, if left unsolved, might result in extensive flood damage. Waters which formerly percolated into the ground cannot penetrate the rooftops, pavements, and other improvements in new subdivisions. The natural flow of surface waters is altered, and watercourses often become inadequate to handle increased runoff of surface waters. To what extent do cities and their public works officials have a responsibility to prevent such damage? An attempt is made in this paper to give some of the answers. However, the legal answers depend so much on the circumstances of a particular situation that, at best, only the general rules can be given. Designers seeking answers covering specific situations should always consult with their city attorney, since what might appear to be a slight change in circumstances might well render a general rule of law in applicable.

G 012.41 Distinction Between Surface Waters and Flood Waters: The rules of law governing liability for flood damage caused by "surface waters" differ from the rules applicable to flood damage caused by "flood waters." In this paper, "surface water" damages and "flood water" damages are therefore discussed separately How do the courts distinguish the two types of waters?

a. "*Surface Waters*" Defined. "Surface Waters," often better referred to as "diffused surface waters," have been defined by the California Supreme Court as follows:

"Surface waters are those falling upon, arising from, and naturally spreading over lands produced by rainfall, melting snow, or springs They continue to be surface waters until, in

obedience to the laws of gravity, they percolate through the ground or flow vagrantly over the surface of the land into well defined watercourses or streams . . . After they have been gathered into a natural channel, however, they become stream waters . . . Everett v. Davis, 18 Cal. 2d 389, 115 Pac. 2d 821 (1941).

Surface waters never originate in overflow of streams, such overflows being commonly referred to as "flood waters" rather than as surface waters. The essential distinction between these two classes of waters is that surface waters have not yet become part of a watercourse, whereas flood waters were once a part of a watercourse, but have broken away therefrom. *Horton v. Goodenough*, 184 Cal. 451, 194 Pac. 34 (1920).

b. "Flood Waters" Defined. "Flood Waters" are waters which were once part of a stream but have escaped therefrom and overflowed onto adjacent territory. The California Supreme Court, in considering the matter, has stated:

"Implicit in the definition of flood waters is the element of abnormality, they are flood waters because of their escape from the usual channels under conditions which do not ordinarily occur.

"As flood waters are those which break away from a stream under conditions which do not usually occur, they can never be the flow of a stream at the end of its channel."

Flood waters retain their identity as such while flowing wild over the country. *Mogle v. Moore*, 16 Cal. 2d 1, 9, 104 Pac. 2d 785. They do not include high waters flowing in the natural channel of a stream, since in such case they haven't escaped from the stream. *Costello v. Bowen*, 80 Cal. App. 2d 621, 182 Pac. 2d 380.

Since waters cannot be "flood waters" unless they were once a part of a stream or watercourse, courts occasionally must determine what is a stream or watercourse. In 1902, in the case of *Sanguinetti v. Pock*, 136 Cal. 466, 69 Pac. 98, the California Supreme Court defined a watercourse as follows:

"There must be a stream, usually flowing in a particular direction, though it need not flow continually. It may sometimes be dry. It must flow in a definite channel, having a bed or banks, and usually discharge itself into some

other stream or body of water. It must be something more than a mere surface drainage over the entire face of the tract of land, occasioned by unusual freshets or other extraordinary causes. It does not include the water flowing in the hollows or ravines in land, which is mere surface water from rain or melting snow (i.e., snow lying and melting on the land), and is discharged through them from a higher to a lower level, but which at other times are destitute of water. . ."

In 1947, in the case of *Costello v. Bowen*, 80 Cal. App. 2d 621, 182 Pac. 2d 615, the California Appellate Court further defined a watercourse as follows:

"In general terms it has been said to consist of a running stream of water following a regular course or channel and possessing a bed and banks. . .

"It is the channel through which the water of a particular district or watershed usually or periodically flows. While it is ordinarily defined as a stream, containing a definite bed, banks and channel, which flows into some other river, stream, lake or the sea, none of those characteristics is an absolute fixed factor. A watercourse may exist even though it serves as a mere channel by means of which a particular watershed is drained, and although it may be dry in certain seasons, or despite the fact that it may not empty into any other river, stream, lake or body of water, but, on the contrary, even though it terminates in some sandy basin where it disappears from sight . . . The question of the existence of a watercourse is often one of fact to be determined by a jury or the court. If the evidence in that regard is conflicting, the determination of the trial court will not be disturbed on appeal . . ."

A slough that carries no water except in time of flood and that is simply a conduit by which occasional flood waters of a nearby river escape into adjoining lowlands has been held to be not a watercourse. *Lamb v. Reclamation District*, 73 Cal. 125, 14 Pac. 625 (1887). Nor does a stream include water deposited "during time of storm which immediately runs away and leaves in its course a mere stretch of sand and rock." *San Pedro L.A. and S.L. RR v. Simons Brick Co.*, 45 Cal. App. 57, 186 Pac. 62 (1919).

It has been said that a stream

meets the requirements of a watercourse if it flows when streams in the general region are accustomed to flow. *McManus v. Otis*, 61 Cal. App. 2d 432, 143 Pac. 2d 380.

G 012.42 Rights and Obligations Respecting Surface Waters: Article 1, Section 14, of the Constitution of the State of California provides that a city shall not take or damage property for a public purpose without paying compensation therefor. In most suits against cities for flood damages, it is this constitutional provision which is cited as the legal basis for the action. It is significant that, unlike a similar provision in the United States Constitution which refers only to taking of property, the California Constitution also prohibits the damaging of property for a public purpose, unless full compensation is paid therefor. There are two defenses which a city often seeks to make in such suits. One is that the injury is such that a private person would not have been liable if he had caused it, and that therefore the city should not be liable. In this respect, the California courts have held that a plaintiff, to recover under the above constitutional provision, must prove that the injury is one which would give rise to a cause of action on the part of the plaintiff if it were inflicted by a private person. *O'Hara v. Los Angeles County Flood Control District*, 19 Cal. 2d 61, 119 P. 2d 23 (1941). The other possible defense is that the injury was a result of the reasonable exercise by the city of its "police powers." In this respect, the California courts have held that the taking or damaging of property resulting from the reasonable exercise by a city of its police powers is an exception from the applicability of the above constitutional provision, and not compensable. *Lampe v. City and County of San Francisco*, 124 Cal. 546, 57 Pac. 461. It is essential, therefore, in determining the legal duties, responsibilities and liabilities of cities and public works officials with respect to surface waters to consider (1) the rights, duties, and liabilities of private persons with respect to surface waters, and (2) the nature and scope of a city's "police power."

G 012.421 Rights and Obligations of Private Persons with Respect to Surface Waters:

1. General Rule. It is well established that a private landowner must bear the burden of receiving upon his and the surface water naturally

falling upon land above it and naturally flowing to it therefrom, and he has a corresponding right to have the surface water naturally falling upon his land or naturally coming upon it, flow freely therefrom upon adjoining lower land, as it would flow under natural conditions. *Heier v. Krull*, 160 Cal. 441, 444, 117 Pac. 530 (1911); *Andrew Jergens Co. v. Los Angeles*, 103 Cal. App. 2d 232, 235, 229 Pac. 2d 475 (1951).

2. Restrictions on Upper Landowners. An upper private landowner has been held to have no right to divert surface waters from his land or to lands of another over which they would not naturally flow, *Wood v. Moulton*, 146 Cal. 317, 80 Pac. 92 (1905); nor to gather such waters on his land by artificial means and discharge them onto lower land in greater volume or in different manner than they would naturally be it onto discharged, *San Gabriel Valley Country Club v. County of Los Angeles*, 182 Cal. 392, 398, 188 Pac. 554 (1920); nor to change the flow of water to the injury of a lower owner, *Shaw v. Sebastapol*, 159 Cal. 623, 624, 115 Pac. 213 (1911); nor to construct ditches or other artificial structures and thereby turn waters which have naturally accumulated in ponds and depressions on his land onto lands of a lower owner, *Galbreath v. Hopkins*, 159 Cal. 297, 301, 113 Pac. 174 (1911); nor to collect surface waters into a single channel, instead of three, and discharge it on a lower owner's land, *Humphreys v. Moulton*, 1 Cal. App. 257, 81 Pac. 1085 (1905). Not even when surface waters have been improperly diverted to his lands from still higher lands may an upper proprietor direct such waters to the lands of a lower owner. *Allen v. Stowell*, 145 Cal. 666. *Thompson v. La Fetra*, 180 Cal. 771. Such acts have been called an invasion and injury to property and a nuisance per se. (*Galbreath v. Hopkins, supra.*) But he is not responsible for a concentration of flow caused by unlawful diversion above him, before the water reaches his land, and he need not intercept such flow. *Mathews v. Kinsell*, 41 Cal. 512. Also the above does not mean he cannot build ditches or drains on his land: he may, provided his neighbor is not thereby injured. *Galbreath v. Hopkins*, 159 Cal. 297.

3. Restrictions on Lower Landowners. As for lower landowners, it has been held and it is settled law that they may not obstruct the flow of surface waters that naturally drain across or onto their property from adjoining lands, *O'Hara v. Los*

Angeles County Flood Control District, 19 Cal. 2d 61, 63, 119 Pac. 2d 23 (1941); that they are liable for damages for injury to upper land caused by obstructions which they place in the way of natural flow, thus causing surface waters to back up or remain on land of the upper owner, *LeBrun v. Richards, 210 Cal. 308, 313, 291 Pac. 825 (1930)*; and that they have no right to deflect the flow of surface waters from their land onto adjacent land to which such waters would not naturally flow, *Cushing v. Pires, 124 Cal. 663, 665, 57 Pac. 572 (1899)*.

4. Exceptions to Above Rules. As in the case of all general rules, there are some exceptions to the applicability of the above. Following are some of the exceptions:

a. Prescriptive Rights. The right to turn waters from one's land onto lands of another by means of artificial ditches or otherwise may be acquired by prescription; if such is continued for a number of years required to establish adverse possession. *Hails v. Martz, 28 Cal. 2d 775*.

b. Tillage of Land. An exception is made where the interference with natural flow results from the tillage of land in the natural way. An upper landowner is not liable for a gradual increase in the drainage of surface waters from his land caused by the cultivation of soil in the usual method. *Coombs v. Reynolds, 43 Cal. App. 656; Bd. of Trustees of Stanford University v. Rodley, 38 Cal. App. 563*.

c. City Lots. The above general rules have been declared inapplicable in the case of city lots, where changes and alterations in the surface are essential to the enjoyment of such lots. *Los Angeles Cemetery Assn. v. Los Angeles, 103 Cal. 461*. Thus, an owner of a lower-lot may so improve his property as to dam up the outlet and cause surface water, which does not assume the form of a running stream, and which falls in the immediate vicinity to stand upon adjoining property, without incurring any liability; but he cannot, without being liable therefor, divert such water, by means of a ditch or otherwise, onto neighboring land or an adjoining street, thereby causing injury. *Cloverdale v. Smith, 128 Cal. 230*. With respect to an owner of an upper city lot, he must dispose of surface water in such manner that it not his neighbor, and if he wishes to remove it

from his premises he must conduct it directly to a sewer or a drain. He may not turn an adjoining lot. *Armstrong v. Luco, 102 Cal. 272*. The owner of a building is not responsible under all circumstances for keeping rain water that has fallen onto his building from flowing to adjacent lots, but he must use reasonable care to prevent damage. *Dauberman v. Grant, 198 Cal. 586*.

In April, 1966, the California Supreme Court modified the existing law with respect to surface waters in California. The rights and liabilities of adjoining land owners with respect to the flow of surface waters have generally been determined by the rule of civil law, which the court stated to be as follows: . . . "the owner of an upper, or dominant, estate is entitled to discharge surface water from his land as the water naturally flows. As a corollary to this, the upper owner is liable for any damages he causes to adjacent property by the discharge of water in an unnatural manner. In essence, each property owner's duty is to leave the natural flow of surface water undisturbed." The court further stated: "But no rule can be applied by a court of justice with utter disregard for the peculiar facts and circumstances of the parties and properties involved. No party, whether an upper or a lower land owner, may act arbitrarily and unreasonably in his relations with other landowners and still be immunized from all liability. It is therefore incumbent upon every person to take reasonable care in using his property to avoid injury to adjacent property through the flow of surface waters. Failure to exercise reasonable care may result in liability by an upper owner to a lower landowner. It is equally the duty of any person threatened with injury to his property by the flow of surface waters to take reasonable precautions to avoid or reduce any actual or potential injury." Thus, liability for injuries caused by surface waters is to be determined by reference to tort concepts rather than property law. On the issue of reasonableness the court said: "The issue of reasonableness becomes a question of fact to be determined in each case upon a consideration of all the relevant circumstances, including such factors as the amount of the harm caused, the foreseeability of the harm which results, the purpose or motive with which the possessor acted, and all other relevant matter." Other factors to be considered include: (1) The necessity for the drainage, (2) the care taken

to avoid unnecessary injury to the land receiving the burden, (3) the utility of the benefit accruing to the land drained weighed against the gravity of the harm resulting to the land receiving the burden, (4) if, where practicable, the drainage is accomplished by reasonable improving and aiding the normal and natural system of drainage according to its reasonable carrying capacity, or if, in the absence of a practicable natural drain, a reasonable and feasible artificial drainage system is adopted.

However, if the actions of both parties are reasonable under the new guidelines framed by the court the civil law rule prevails. In the words of the court: "If the actions of both the upper and lower landowners are reasonable, necessary, and generally in accord with the foregoing, then the injury must necessarily be borne by the upper landowner who changes a natural system of drainage, in accordance with our traditional civil law rule."

Keys v. Romley (1966), 64 Cal. 2d 39

Action by upper landowners against an adjoining lower landowner to enjoin her from maintaining a dam along her property line which caused surface waters to accumulate on the upper owner's property, and cross-action by the lower owner to enjoin upper owners from discharging surface waters onto her land in a concentrated manner in increased volume and acceleration. Judgment enjoining lower owner from maintaining her dam and from interfering with surface water flow through a ditch on her property reversed with directions.

This controversy involves adjoining property owners in the City of Santa Barbara. The plaintiffs and their predecessors in interest, owners of upper ground, improved their property by the construction of 48 apartment units and adjacent paved parking area. Their parking area was bounded by a 6-inch asphalt berm which channeled surface waters to the corner of their property, and from there the surface waters traveled across defendant's property through a defined swale. The amount of surface runoff was necessarily increased when the improvements rendered impervious the previously existing bare ground. The defendant, the lower owner, found that surface waters which formerly spread fanwise across her property now flowed in a concentrated man-

ner and in increased volume and acceleration. Therefore she constructed a dam along her property line, the effect of which was to back surface waters up onto plaintiffs' property. This mutual vexation resulted in each landowner seeking injunctive relief against the acts of the other.

The trial court found that plaintiffs' improvements had indeed concentrated waters and increased the volume of flow onto defendant's land. But it also found that plaintiffs had no alternative method of disposing of surface waters except across defendant's property and that defendant would not be appreciably damaged by the increased flow in a confined manner across her property. Therefore plaintiffs were permitted by the court to construct an open ditch 6 feet wide and one foot deep across the width of defendant's property, the ditch to be maintained at plaintiff's expense. Defendant was enjoined from maintaining her dam and from interfering with the flow of surface waters through the ditch. The defendant appeals from this judgment.

The rule of law applicable to the foregoing facts is discussed at length in *Keys v. Romley*, and we consider it controlling here. As indicated above, the court found plaintiffs had no alternative available other than the means they selected to dispose of surface waters. It may be that implicit therein is a determination of reasonableness. Nevertheless, we must return the cause for a finding on the reasonableness of defendant's conduct and for weighing the respective conduct of the parties in accordance with the rule described in *Keys v. Romley*.

The judgment is reversed and the cause remanded with directions to the trial court to redetermine the issues in conformity with the views expressed in *Keys*. The parties are to bear their own costs on appeal.

Pavliotti v. Acquistanace (1966)

G 012.422 Rights and Obligations of Cities Respecting Surface Waters:

1. Police Power. As heretofore stated, the first question a city must ask itself in determining whether it has any constitutional liability for surface water damage is whether the injury is one which would give rise to a cause of action if inflicted by a private person. If a private person

would not be liable, then neither is the city liable. If, however, a private person would be liable, we must then ascertain whether the city is excused from liability because of its "police power."

The term "police power" is broad and flexible, and has never been properly defined by the courts. In general, it consists of the power of a government to enact laws and do things, within constitutional limits, to promote order, safety, health, morals, and general welfare of society. Because of such power, a city is not subject to the same restrictions as a private person with respect to the control of surface waters. To the extent that, in making a public improvement, a city is lawfully and properly exercising its police power, it is not liable for property damage caused by changes in the natural flow of surface waters, if such changes in natural flow are incidental to the making of the public improvement. *Lampe v. City and County of San Francisco, 124 Cal. 546*. This assumes, however, that:

- a. The taking or damaging of private property is so essential to the public health, safety, and morals as to be justified under the police power;
- b. The city is using reasonable care and diligence in proceeding with the public improvement. *House v. L.A. Flood Control Dist., 25 Cal. 2d 384*.
- c. The city is not needlessly inflicting injury upon private property. *House v. L.A. Flood Control Dist. 25 Cal. 2d 384*.
- d. The city's actions do not constitute a trespass upon private property. *Womar v. City of Long Beach, 45 Cal. App. 2d 478*.

2. Specific Situations. Let us now consider how the courts have applied the above-mentioned rules in the following specific situations:

- a. Public Streets Constructed at Grade Higher than Adjoining Lands, Causing Surface Water to Accumulate and Stand on Adjoining Lands. Let us assume that a public street is constructed at a grade higher than that of abutting upper lands, thus causing surface waters, which formerly flowed from the upper lands onto and over the street area, to accumulate and stand on the upper lands. Is city liable for damage caused thereby? Generally, no.

As early as 1899, in the case of *Lampe v. City and County of San Francisco, 124 Cal. 546, 57 Pac. 461*, the California Supreme Court held that a city is not liable for such damage, where such waters had not been flowing in a natural channel, even though the grade of the street had been raised about five feet above the level of the plaintiff's adjoining lot, and had caused an accumulation of surface waters within such lot, together with flooding of a dwelling house basement. The decision was based on the theory that a city is not liable for incidental damage resulting from the proper and lawful exercise of its police power. The court expressly agreed with "the doctrine that a municipality is not bound to protect from surface waters those who may be so unfortunate as to own property below the level of the street."

This assumes, however, that such waters were not caused to be diverted onto other lands, where they formerly did not go, that the damage was not caused because of an unnecessarily high street grade, and that the damage was not caused by negligence in planning and constructing the street. If the damage was needlessly inflicted by an unnecessarily high grade, or by negligence, the city is liable. *House v. Los Angeles Flood Control District, 153 Pac. 2d 950*.

- b. Public Streets Constructed at Grade Higher than Adjoining Lands, Causing Obstruction to Flow of Surface Water which has Formed Itself a Definite Channel, said Channel Not Being a Watercourse. Let us assume that the surface water which has been obstructed by the street, which is constructed at grade higher than the adjoining lands, did not formerly flow in an ordinary diffused state but, owing to the conformation of the adjacent country, had formed itself a definite channel in which it was accustomed to flow. Let us assume that this channel did not constitute a natural watercourse or stream as such is defined by law. Let us further assume that this channel was either entirely blocked by the street, or partially blocked in that a culvert constructed to handle this water was too small or otherwise inadequate. Let us assume that as a result, water was caused to turn back, accumulate, and stand on the lands through which such water formerly flowed. Is the city liable for damages? Yes.

This is an exception to the rule hereinabove stated in the immediately preceding paragraph

(a). The courts here found that a channel such as the one above described, even though it is not a watercourse, possesses so many of the attributes of a watercourse that the rule applicable to watercourses (hereinafter set forth in Part II of this paper) should prevail. *Los Angeles Cemetery Assn. v. Los Angeles*, 103 Cal. 461.

c. Same Situation as Above, Except that Culvert Constructed to Handle Water Is Too Small to handle Unexpected Flood which Could Not Have Reasonably Been Foreseen. Where a city, in the construction or maintenance of a culvert or storm sewer, has sufficiently provided for the ordinary flow of surface water, and has not been guilty of negligence in the construction or maintenance of the culvert or storm sewer, it is not liable for damages resulting from the failure of the culvert or sewer to handle an extraordinary flow of water, by reason of an unexpected flood, which could not have reasonably been foreseen. *Los Angeles Cemetery Assn. v. Los Angeles*, 103 Cal. 461. It is a question of fact to be decided by a jury whether the flood was extraordinary or could have been reasonably foreseen. If it could have been reasonably foreseen, the city is responsible.

d. Public Street Constructed at Grade Higher than Adjoining Lands, Causing Diversion of Water onto Lands Where Such Waters Did Not Formerly Flow. Let us assume that the construction of a public street, at a grade higher than that of adjoining lands, not only causes water to accumulate and stand on the upper lands through which they formerly flowed, but also causes such waters to flow onto lands where they never formerly flowed. Is the city liable for damage to the last mentioned lands? Yes.

Here we have a situation where the street didn't merely prevent water from flowing off the upper lands, but actually turned such waters from said upper lands onto new lands which formerly didn't receive them. The flow of water was not merely obstructed. It was also diverted. The city has thus committed a trespass upon the lands which formerly didn't receive the waters. The city is liable for damages even if the high grade were necessary, and even if there were no negligence. "Trespass" creates the liability. "Police power" is no defense. *Womar v. City of Long Beach*, 45 Cal. App. 2d 478.

e. Public Street So Constructed that Water Accumulates Therein, and Then Is Discharged on Certain Adjoining Lands in Manner or Quantity Different than Before. Let us assume that a public street is so constructed that water accumulates therein, either because water falling on the street can't percolate through the pavement, or because the street is constructed at a grade lower than adjoining lands, causing water to flow from said lands onto the street. Let us also assume that the water so accumulated in the street is then caused to flow onto certain adjoining private lands in quantity greater than or in manner different from that which would result under conditions of natural flow. Is city liable for flood damage caused thereby? Yes.

Where surface waters are collected on a City street and sent or caused to flow onto abutting private lands in quantity greater than or in a manner different than under natural flow conditions, the courts have generally held the public agency liable for resulting flood damage. Such decisions appear to be based on the theory that a public agency, having collected water at a particular point, has a duty to provide an adequate method for carrying it away, and that if it fails to perform this duty it is guilty of negligence or trespass in making the public improvements, and has thus transcended the scope of its police power. Having thus damaged private property for a public purpose, in a manner not justified under the police power, the city must make compensation under Article I, Section 14 of the California Constitution, just as it would be required to do in exercising the power of eminent domain. *House v. Los Angeles County Flood Control District*, 25 Cal. 2d 384, 153 Pac. 2d 950 (1944). *Womar v. Long Beach*, 45 Cal. App. 2d 643, 114 Pac. 2d 704 (1941). In *Los Angeles Brick and Clay Products Co. v. Los Angeles*, 60 Cal. App. 2d 478, 141 Pac. 2d 46 (1943), the court held that a municipality is not exempt from liability for trespass caused by its corporate act, but is liable for damages caused by the dumping of storm water onto privately owned land, even though each act in constructing a street improvement is done according to statute. The court further held that it was not necessary for plaintiff to allege or prove that defendant was negligent in creating a nuisance, since a trespass voluntarily committed causes no less detriment than one resulting from neglect. The court ob-

served that “defendants achieved exactly what they set out to do, namely, to send ponded flood waters from public streets onto plaintiff’s private acres.” In *Stanford v. San Francisco*, 111 Cal. 198, 43 Pac. 605, the city was held liable for damage to private property resulting from the paving of a street where, because of such paving, water which previously sank into the soil was made to accumulate above the grade of the street and be discharged onto plaintiff’s land.

f. Public Drainage System with Inadequate Outlet. Let us assume that a city has a public drainage system, consisting of gutters, ditches, and/or storm sewer lines, designed to collect and dispose of surface waters which are collected in city streets or other public properties. Let us further assume that said drainage system conducts and discharges such waters, not into a natural stream, but onto a natural swale or draw in private property, in quantities greater or in manner different than under conditions of natural flow. Is the city liable for resulting flood damage to the private property? Yes.

A very recent case on this matter is *Steiger v. City of San Diego*, 163 A.C.A. 131 (August, 1958). Defendant subdividers presented subdivision plans to defendant City of San Diego, providing for a system of drainage, storm drains, and Highways. The plans were approved by the City, and the improvements were constructed, approved, and accepted by the City, and became a part of the city’s system of public works. The system of drains was so constructed that rain water collected therein was conducted through a culvert under a public street and into a draw or swale on plaintiff’s property. The installed drainage system included lands which were not a part of the natural basin. The drainage system caused considerable increase in the flow of waters into the draw within plaintiff’s land, causing considerable erosion and damage. The Court held that the swale or draw in plaintiff’s land did not constitute a natural watercourse, that the city was liable for damages, under the provisions of Article IS Section 14, of the Constitution, even though there was only damage to property and no taking of property; and that the city was not entitled to an easement in return for payment of such damages.

In *Callens v. County of Orange*, 129 Cal. App. 2d 255, 276 Pac. 2d 886 (1954), the County was

required to pay compensation where, through the construction and deepening of ditches, it had diverted and accumulated surface waters from areas that would not normally drain across plaintiff’s land, and had failed to provide an outlet therefor. It was found that the work was done negligently, and that said interference with natural conditions resulted in plaintiff’s land being inundated by a violent discharge of water with resultant damage which under natural conditions would not have occurred. The county was found to have exceeded its police power.

In *Bacigalupi v. Bagshaw*, 87 Cal. App. 2d 51, 196 Pac. 2d 66, it was held that a county could not lawfully, to protect two county highways, divert storm waters to a certain location and there leave such waters to spread out over the adjoining private property; that it was its duty, having collected such waters at that point, to provide an adequate method of carrying them away.

g. Construction of Levees Along a Stream, in Such Manner as to Obstruct Flow of Surface Waters into Stream. Let us assume that a city, in order to protect itself from flood damage resulting from occasional overflows of a river or other natural stream, constructs a system of levees along the banks of the stream. let us also assume that although the levees protect private property from damage which might otherwise be caused by “flood waters” overflowing the banks of the river, they also have the effect of obstructing the natural flow of surface waters from private property into the river or stream, thereby causing surface water to accumulate and stand on the private property. Is the city liable for resulting damage to the private property? Generally, no.

In *O’Hara v. Los Angeles County Flood Control District*, 18 Cal. 2d 61, 119 Pac. 2d 23 (1941), the court held that the same rule should apply in this situation as is applied where a city raises the grade of a public street, thereby obstructing the natural flow of surface waters from adjoining lands onto and across the street; that is. that such damage is an incidental consequence of the lawful exercise of the police power (flood control) and therefore non-compensable.

This assumes, of course, that the damage was not unnecessarily inflicted, and that the damage

did not result from negligent construction of the levees. For example, if the obstruction of waters could have reasonably been minimized by the construction of flood gates or openings in the levees, the City might be held liable on the ground that it negligently constructed the levees, and caused unnecessary damage. This would be a question of fact to be determined by the court.

h. Public Improvements Constructed by Subdividers, in Accordance with Plans and Specifications Approved by City, and Accepted by City and Made a Part of its Public Works System. The Subdivision Map Act provides that control of the design and improvement of subdivisions is vested in the governing bodies of cities and counties, and that every city and county shall adopt ordinances regulating and controlling the design and improvement of subdivisions. Government Code Section 11525. "Design" is defined as referring to "Street alignment, grades, and widths, alignment and widths of easements and rights of way for drainage and sanitary sewers and minimum lot area and width." Government Code Section 11510. "Improvement" is defined as referring to "only such street work and utilities to be installed, or agreed to be installed, by the subdivider on the land to be used for public or private streets, highways, ways, and easements, as are necessary for the general use of the lot owners in the subdivision and local neighborhood traffic and drainage needs as a condition precedent to the approval and acceptance of the final map thereof." Government Code Section 11511. The Act further provides that the governing body of any city or county may disapprove a tentative map or maps of a subdivision because of flood hazard and inundation, and require protective improvements to be constructed as a condition precedent to approval of the map or maps.

In accordance with said Act, cities usually require subdividers to construct streets, sanitary sewers, storm drains, and other improvements in accordance with plans and specifications prepared or approved by the city. Upon completion of such improvements, a city usually accepts them, and they become a part of the city's public works system. Is a city excused from responsibility or liability for surface water damage caused by said improvements, merely because they were con-

structed subdivider rather than by the city? No!

The law is well settled that in the above situation the city, and not the subdivider or contractor, is responsible for said damages. *Steeger v. City of San Diego*, 163 CA 2d 110. A different result might be obtained, however, if the damage resulted from the failure of the subdivider or contractor to comply with the plans and specifications approved by the city and the city did not, because of such non-compliance, accept the improvements.

In a recent case a subdivision and an improvement to some church property were built above the plaintiff's property. The development of the subdivision increased the amount of water runoff onto the church property but there was no evidence of diversion. The water broke into three channels on the church property, one of which flowed across plaintiff's property. The construction of the improvement on the church property diverted water into the channel flowing across plaintiff's land. The City had an existing easement over plaintiff's property for drainage of that amount of water which could be handled by a 20" culvert adjacent to the property which drained into a natural channel on the property. Due to the increased flow caused by the diversion the City widened the channel on plaintiff's property and replaced the 20" culvert with a 24" culvert. This was done to alleviate the spilling over onto plaintiff's property of water which could not be handled by the 20" culvert. The following were held to be acts of inverse condemnation. 1: The diversion of drainage waters. The approval of subdivision maps and plans which include drainage systems constitutes a substantial participation incident to the serving of a public service. 2: The construction of the 24" culvert. The discharge of the additional waters caused by the diversion increased the burden on plaintiff's property. Liability for both of the above was predicated on the theory that the City failed to appreciate and provide for the probability that the drainage system and the larger culvert, functioning as deliberately conceived, would result in some damage to private property. 3: The enlargement of the channel on plaintiff's property. The City enlarged the ditch to accommodate the

increased flow without the owner's consent and committed a trespass in so doing.

Frustuck v. City of Fairfax (1963),
212 Cal. App. 2d 345

i. Streets, Drains, and Other Such Improvements Constructed by Subdivider in Accordance with Plans and Specifications Approved by a City, but Not Accepted by City. Who has the responsibility for water damage caused by streets, sewers, drains, and other improvements which a city requires a subdivider to construct, which are constructed in accordance with plans and specifications approved by a city, but which a city refuses to accept as part of its public works system? In the recent case of *Youngblood v. City of Los Angeles, 158 A.C.A. 151 (1958)*, an action for damages to property resulting from increased flow of water- in a natural stream allegedly caused by paving and other subdivision improvements, a nonsuit in favor of the city was sustained on the ground that, although the city had approved the subdivision map and the construction of subdivision improvements, it had not accepted such improvements until after the damage had occurred and, therefore; no liability on the part of the city arose by reason of the manner in which the subdivider was doing the work, under the rule announced in *Hoover v. County of Kern, 118 Cal. App. 2d 139, 257 Pac. 2d 492 and Wallner v. Barry, 207 Cal. 465, 279 Pac. 148*. The Hoover case merely involved a defect in a street resulting from non maintenance. The Wallner case, however, involved flooding caused by construction of a "fill" and culvert, as part of a subdivision, which were so negligently designed and constructed as to cause the impounding of water. The subdivision map and the plans for said improvements had been approved by the city, and dedication of the streets had been accepted by the city prior to their completion. The court held that the city's acceptance of dedication was conditional upon the completion and subsequent acceptance of the improvements, and that since the city had not yet accepted the work, the city was not liable for damage resulting from their negligent construction or maintenance.

Notwithstanding the above cases, we feel that this question has not yet been completely resolved. If, by virtue of its powers of control over design and improvements and over drainage, a city should require a subdivider to construct

streets, drainage, and other improvements strictly in accordance to designs and plans specified by the city, and if unlawful flooding should result because of the design and plans required by city and not because of any negligence in construction or maintenance, can city evade liability merely because it failed to accept dedication of such improvements? This would not be a situation involving negligence in construction or maintenance, but negligent or deliberately bad design. Can it not be said that since the city has required construction of such improvements, pursuant to the Subdivision Map Act, for the benefit and protection of public health, safety, and welfare, any resultant damage to private property is damage caused for a public purpose for which the city must pay compensation under Article I, Section 14 of the Constitution, even though the city does not accept title to such improvements? We believe the city, in such a case, would be held liable, although we know of no case where the issue has been squarely presented and decided.

j. Subdivision Improvements, Other Than Those Required by City, and Other Than Those Required by City to Be Constructed in Accordance with Plans and Specifications Approved by City. Let us assume a city approved a subdivision map for land which under natural conditions is subject to frequent or occasional floods, without requiring the construction of any drainage facilities to prevent such flooding in the future, and future flood damage results. Let us also assume the city approves a subdivision map for another subdivision in which the subdivider proposes to raise, lower, or otherwise change the grade of all or some of the private lots, so that the natural flow of surface waters is altered, causing future flood damage. Let us assume the damage is not caused by any streets, drains, or other such improvements required by the city. Is the city responsible and liable for such damage?

Section 11551.5 of the Subdivision Map Act says that the governing body of a city may disapprove a tentative map of a subdivision because of flood hazard and inundation, and require protective improvements. It does not require the city to disapprove a tentative map of a subdivision because of flood hazard, and does not require the city to insist upon protective improvements. A person cannot compel the Performance of, or recover in-

demnity for damage resulting merely from the non-exercise of, powers conferred on a city by charter or statute. There must be a plain, certain, and non-discriminatory duty to be performed for an individual's own benefit before a right of action arises in his favor. The duty of the city to exercise its powers is a political duty owing to the state alone, or to all citizens of the community. The exercise of such powers is discretionary with the legislative and administrative authorities of the city. *35 Cal. Jur. 2d 318.*

In our opinion, a city is not liable for flood damages where the land originally was subject to such flooding and the city merely failed to require drainage improvements as a condition to approving a subdivision map. Thus, in an action against a city to recover damages caused by surface waters which flowed on plaintiff's property at an intersection of streets, and to abate a nuisance, the city was held not liable where it was shown that there existed a natural depression at or near said intersection, which caused surface waters to accumulate there, and that such waters always collected there under natural conditions. The fact that the city had graded and paved the streets was held immaterial, since such grading or paving was not the real cause of the inundation. The court further held that where a city is confronted with a difficult drainage problem in a low-lying area, in its effort to combat flood waters and to solve the problem, the city could not be held strictly accountable to the owner of property which was still flooded after grading and paving of streets merely because the city failed to completely remedy the existing situation. *Womar v. City of Long Beach, 114 Pac. 2d 704, 45 Cal. App. 2d 643 (1941).*

However, the following case must be considered.

In this case, an appeal is made by defendant County of Los Angeles (County) and defendant Gibco Construction, Inc. (Gibco) from a judgment of the Superior Court of Los Angeles County in favor of plaintiff David Sheffet and against defendants. The action was brought by plaintiff, as an owner of real property, against defendants for damages caused by surface waters and mud draining across and onto plaintiff's property and into the drainage ditch on plaintiff's property from the land and streets owned by the defendants; for an injunction ordering defendants to refrain from

draining surface waters across plaintiff's land; and for an injunction ordering defendants to take corrective steps to prevent the draining of surface waters onto plaintiff's land and in plaintiff's drainage ditch in excess of the existing prescriptive rights of defendants. After a court trial, plaintiff was awarded \$50 in damages against both defendants, and the court issued the following injunction:

"Defendants Gibco Construction, Inc., a corporation, and County of Los Angeles, and each of them, are enjoined from in any manner discharging onto the real property of plaintiff or within the ditch located upon plaintiff's property, in excess of defendants' existing prescriptive rights, the surface waters which collect from time to time on said defendants' lands, walks, curbs, drives, gutters and streets, and further, said defendants, and each of them, are hereby ordered, directed and required, to take corrective steps within 240 days hereto to prevent the said draining of surface waters onto plaintiff's land and upon and in plaintiff's ditch in excess of defendants' existing prescriptive rights."

Plaintiff has owned and resided on the real property known as 396 East Mendocino Street in Altadena, California since 1952. Prior to March 1965, the property located across the street from plaintiff was higher and unimproved land. In March of 1965, defendant Gibco commenced construction of a subdivision on the property, then known as Tract No. 29892. The property was cleared of trees and brush in March 1965, and grading was commenced during the months of April and May 1965. Plans for the subdivision were prepared by engineers employed by defendant Gibco, and were approved by defendant County. Contained in the plans were two one-block-long streets: Deodara (running east and west) and Oliveras (running north and south). After they had been completed and had passed final inspection, they were dedicated as public highways and accepted by defendant County "for all public purposes and liability attaching thereto." Due to this construction, the natural area available for absorption of surface waters on the tract was reduced by 51.4 percent. This reduction, combined with the design of Oliveras and Deodara Streets, created an increased and different pattern of surface-flow from

the tract, concentrating the runoff to and down Oliveras which dead-ended at its intersection with Mendocino immediately north of plaintiff's easterly driveway apron. Prior to November 1965, plaintiff had experienced no flow of surface water onto his property from across the street. In various rainstorms between 1965 and December 1966, water and mud from the tract flowed onto and flooded plaintiff's property, via the overflow from Oliveras, across Mendocino and down the driveway on the east side of plaintiff's property, as well as mud and water from the tract being deposited in the drainage ditch on the west side of his land. Plaintiff made several complaints to the County and Gibco, but neither defendant took any steps to alleviate the problem of water and mud flowing from the tract.

On this appeal from the judgment, defendants raise five contentions: (1) the plaintiff did not act reasonably in protecting his property; (2) the injunction is vague, confusing, and incapable of being carried out; (3) in injunction does not lie where plaintiff has only suffered nominal damages; (4) plaintiff's drainage ditch is a natural watercourse and defendants may properly discharge surface waters into it; (5) by statute, defendant County is immune from liability in this case.

California courts follow a modified rule of civil law in determining the rights and liabilities of adjoining landowners with respect to the flow of surface waters.

Keys laid down three express rules: (1) if the upper owner is reasonable and the lower owner is unreasonable, the upper owner wins; (2) if the upper owner is unreasonable, the lower owner is reasonable, the lower owner wins; (3) if both the upper and lower owners are reasonable, the lower owner wins.

Here, defendants argue that plaintiff failed to take any reasonable precautions to protect his property from the flow of water and mud. The trial court expressly rejected this contention. Assuming that the rule of Keys is applicable here, unless there is no substantial evidence to support this finding, we are bound by the decision of the trial court.

The person who may minimize damage and fails to do so cannot recover for the excess damage occurring. On the other hand, a person who reasonably acts to minimize the damage should recover the costs of such "minimization" as damages. Where, however, the injured person acts reasonably, by action to minimize the damage, or by inaction which does not unreasonably increase his damages, if there is a diminution in the value of his land also involved, we see no reason why he may not recover for the damage.

Upon an examination of the record, we have determined that there is substantial evidence to support a finding that plaintiff acted reasonably in relation to his property. So far as the County is concerned, however, we conclude that the increased use of plaintiff's ditch, as a result of the improvement, is in the nature of inverse condemnation (the remedy which a property owner is permitted to prosecute to obtain the just compensation which the Constitution assures him when his property, without prior payment therefore, has been taken or damaged for public use.); that the County is not as a matter of law, prohibited from increasing a servitude if such increase is without unreasonable damage to the owner of the servient estate and compensation for any diminution in the property's value is paid by the County.

Since it was the trial court's finding that the County acted unreasonably in accepting the dedication of Deodara and Oliveras Streets, the layout of which caused the defective drainage of Mendocino Street, we are not required to resolve the question. Property is only deemed taken or damaged for a public use if the injury is a necessary consequence of the public project. (*Albers v. County of Los Angeles*, supra, pp. 263-64.) *Van Alstyne* (Inverse Condemnation, supra, at page 781) states:

"It now appears settled that if the construction or maintenance of a public project is designed to serve the interests of the community as a whole, any property damage caused by the project or by its operations as deliberately conceived is for a public use and is constitutionally compensable. On the other hand, damage resulting from negligence in the routine operation having no relation to the func-

tion of the project as conceived, is not within the purview of section 14, Article I, California Constitution.”

Here, the increased burden upon plaintiff's ditch was a necessary consequence of the design of the tract and the creation and improvement of the streets. However, the overflow of the streets' crown, while resultant, was not a necessary consequence of the improvement to the higher ground. It is true that defendant County merely approved the plans and accepted the streets, leaving the actual planning and construction to a private contractor, but the County is not thereby shielded from liability. In the instant case, the defendant County is liable to the plaintiff for the same reasons as expressed in *Frustuck*, upon its approval of the plans.

Gibco's liability, however, is a different question. In the absence of something in the nature of a protective covenant, where a public entity approves the plans for a subdivision, including a drainage system, and there is damage to adjacent property as a result of those improvements, the public entity, not the subdivider, is liable in an inverse condemnation suit.

The whole of the injunction goes to the manner of discharging waters, none of which are within the control of defendant Gibco. There has been a waiver of appeal by Gibco from that portion of the judgment relative to the damage award of \$50. There is no evidence of negligent conduct by Gibco contributing to or causing the water or mud flow other than would naturally result from the terrain alteration and the concentration of the surface waters into the streets. What the facts here established is that the surface waters' runoff was increased in volume, and was directed and concentrated into the public street in the expected fashion occasioned by the approved subdivision plan. Thus, the diversion in question, so far as Gibco was concerned, was only the drainage of surface waters by an abutting property owners into a public street. However, the drainage of surface water over a public street is a use thereof by abutting property owners which could not be unlawfully obstructed. For that reason, inverse condemnation is an accomplished fact as to any diminution in value of plaintiff's property caused by the additional burden placed on the ditch, and an

injunction will not lie where the damage to plaintiff is not unreasonable under the propriety of the improvement. Except for the minor clean-up recovery for the mud occasioned during tract development and the over-crown runoff via the plaintiff's driveway, plaintiff's action must be limited to damages for the loss in value of his property. But he cannot now require the County to undo that which has been accomplished and which does not create an unreasonable increase in the burden which the land already bore. While it is true that the surface water diversion may not be a part of the public improvement, nevertheless the resultant runoff and diversion, were intended, is caused by the improvement. While the public use of the improvement obtains, the damages which also result and which are attached thereto are within the authority of the agency causing the improvement, to the same extent as is the improvement itself.

In cases such as the one before us, neither the consequentially injured party nor the courts may superimpose corrective authority upon public works already created unless they are negligently constructed, or constructed in a manner unnecessary to the public improvement. As we have pointed out, the use of the ditch, by the increase of its burden, did not cause a different injury, though it may well have constituted a diminution in property value for which plaintiff may recover. This portion of the improvement was designed to accomplish the very result of which plaintiff complains. The over-dash crown runoff, however, is but the result of negligent design of the crown height or road pitch, and has no relationship to the reasonableness of the public improvement sought to be created. As to such unnecessary, unintentional, and negligently created consequences of the public improvement, we see neither logic nor reason which prohibits the issuance of an injunction to prohibit the maintenance thereof.

In the instant case, the injunction is proper as it relates to the over-crown runoff, and a mandatory injunction could issue ordering the County to cease engaging in such acts of negligence in the maintenance of the inadequate drainage system.

Inverse condemnation does not involve ordinary

negligence, but rather damages which are a natural consequence of the public improvement. The injunction as issued, however, exceeds the bounds of judicial authority in the instant case as it relates to the increased use of the ditch. Were it to be approved in that respect, it would authorize an injunction which would effectively negate the power of the government to take property through inverse condemnation.

While plaintiff did not specifically allege that his property had been taken or damaged for a public purpose and therefore inversely condemned, his first amended complaint did allege facts which would support a cause of action for inverse condemnation. The pleading alleges that defendant County allowed the construction of a subdivision on the land above his property; that defendant County allowed the construction of and accepted the streets on said land; that said construction reduced the natural drainage area on said land, causing substantial amounts of surface water to be discharged onto his property and overload his drainage ditch; and that these surface waters continue to be discharged onto his land. These facts, if true, constitute a taking by way of damage to plaintiff's land and for a public purpose. Adequate and timely notice and demand are alleged. Thus, a cause of action in inverse condemnation is substantially set forth, though subject to improvement by amended pleading.

Defendants contend on appeal that plaintiff's drainage ditch is a natural watercourse. However, neither defendant raised this theory until defendant County argued it in its Points and Authorities dated November 1, 1967. Neither defendant set forth in any pleading any allegation that the ditch was a natural watercourse. Neither defendant requested or moved to conform any pleading to any evidence concerning the issue of a natural watercourse. On March 3, 1967, plaintiff, in his proposed findings of fact, included a finding that the drainage ditch was not and had never been a natural watercourse. The defendants objected to this proposed finding on the ground it was unnecessary, and the courts deleted it, indicating that the proposed finding concerning defendant's prescriptive rights covered the point. Defendants did not request a special finding on the issue of a natural watercourse. The defendants may not now complain on appeal of defects in the

court's findings for which they are responsible.

However, on the evidence in the case before us, we would conclude that defendant's arguments would fail on the merits. Pursuant to exception (2) set forth in *Albers*, the County correctly argues that an upper landowner may discharge surface waters into a natural watercourse and increase its volume without subjecting itself to liability for any damage suffered by a lower landowner, even if the stream channel is inadequate to accommodate the increased flow. (*Archer v. City of Los Angeles*, supra, 19 Cal. 2d 19). It is the County's contention that because of its long and continued use, plaintiff's drainage ditch constitutes a natural watercourse.

We have heretofore discussed the right of the County to increase the burden upon the ditch, provided recompense for diminution of value, if any, is paid under the theory of inverse condemnation. Plaintiff's complaint, however, goes beyond the problem of excess water in his ditch. His complaint is that the water races down the new street, across Mendocino, and down his driveway, flooding across his yard, depositing debris, as well as causing erosion. We are therefore not confronted with the narrow problem of increased waters through the ditch, as the County would suggest. In the instant case, the County suggests that a grate and drain could have been constructed by plaintiff at his driveway apron to funnel the waters across his land to the drainage ditch. While this may be a possible solution, it goes more to the damage occasioned by the introduction of the waters onto plaintiff's property than to the issue of reasonable or unreasonable action by plaintiff. (*Frustuck v. City of Fairfax*, supra, pp. 368-69.) Certainly, whatever plaintiff must erect on his property he is entitled to both the cost of such erection and the damage caused by the burden requiring such protective structures.

The suggestion of the County above discussed might have been a solution to the problem; nevertheless, the obligation to prevent future damage from the County's maintenance of its negligently constructed street was that of the County. The burden is on the County to construct its streets in such a manner as to accomplish the purpose for which they were intended. This includes provid-

ing the road with such crown or pitch as to divert the oncoming surface waters in the direction intended. If the approved design fails to meet the purpose for which it was created and the condition of the street results in causing damage, its maintenance in such condition may be enjoined, for the resultant damage is not "for the public use."

The issuance of the injunction, so far as it relates to the use of the ditch, while erroneous and requiring reversal, was a clear attempt by the trial court to provide relief to plaintiff for the damage he has been occasioned. Though that remedy cannot be affirmed, the determination of liability need not be disturbed so far as defendant County is concerned. So far as the injunction related to over-crown runoff, the injunctive relief is affirmed.

As to defendant County, the judgment is reversed as to the relief sought to be granted as to any increased use of the ditch for water diversion purposes only, and the case is remanded to the trial court on the issue of damages only, in conformity with this opinion.

As to defendant Gibco, the judgment is reversed as to both liability and damages.

Sheffet v. County of Los Angeles 3 Ca 3d 720 (1970).

With respect to flood damage caused by changing the grade of all or part of some of the private lots, it is our opinion that the city is not responsible if it didn't require such change of grade as a condition of approval of the subdivision map, and if the city itself didn't change such grades. However, we expect litigation on this point; it will probably be contended that a city has a duty to refuse approval of a subdivision map unless adequate drainage is provided. In our opinion, a city has no such duty, but we know of no Appellate case squarely deciding the issue.

G 012.43 Floods Attributable to Flood Waters: We have hereinabove discussed liability for flood damage caused by "surface waters." Now, let us consider the responsibility of a city for flood damage caused by "flood waters." As heretofore

pointed out, "flood waters" are waters which were once part of a natural watercourse or stream but have escaped therefrom and overflowed on adjacent territory.

a. Obstructing Natural Flow of Waters in a Natural Watercourse, or Diverting Waters from a Stream. It is well established that no person has any right to obstruct the flow of a natural watercourse, nor to divert water from its natural channel into another channel, if the result is to cause an overflow of water upon land of another that would not have reached such land had the artificial change not been made. *Clement v. State Reclamation Board, 35 Cal. 2d 628, 220 Pac. 897 (1950)*. Nor may a person divert the flow of water from its natural and accustomed channel to another channel of even the same stream if the result is to precipitate water on lands which would not otherwise have received it. *Hellman Com. Tr. & Sav. Bank v. Southern Pacific Co., 190 Cal. 626, 214 Pac. 46 (1923)*.

The above rules apply alike to natural persons, private corporations, municipal corporations, and political subdivisions of the State, whether the obstruction or diversion is made on one's own land or on land of another with latter's consent. *Smith v. Los Angeles, 66 Cal. App. 2d 562, 153 Pac. 2d 69 (1944)*. In view of the above rules, therefore, it is obvious that if a city should construct any public improvements which obstruct the flow of a natural watercourse, or divert waters therefrom, with consequent overflow of waters on lands which would not otherwise receive them, the city is liable for resultant damage, under Article I, Section 14 of the Constitution.

b. Floods Attributable to Dikes, Levees, Embankments, and Other Improvements Constructed to Protect Lands from High Waters in a Stream. It is well settled in California that flood waters are a common enemy against which owners of land may construct defensive barricades, provided they do not obstruct the flow of water in a stream nor divert water therefrom. The principles relating to this right of protection were stated by the California Supreme Court in *Weinberg Co. v. Bixby, 185 Cal. 87, 196 Pac. 24 (1921)*, as follows:

“The doctrine of the common law relating to protection against flood overflow of rivers, and which has been adopted by the California courts, recognizes such flood waters as a common enemy which may be guarded against or warded off by one whose property is invaded or threatened, by obstructions which are merely defensive in their nature and not calculated to interfere with the current of the water in its natural channel.

“This rule has been so often cited, approved, and commented upon by the supreme court of this state as applied to dikes and embankments by property owners to prevent overflow of their lands by the flood waters of the Sacramento River and similar streams of this state, even though the result of such obstruction has been to throw an increased volume of the flood upon opposite or lower proprietors, that it is not necessary to review the decisions at length . . . (Emphasis ours).

“We recognize the limitation in all of these cases that such right of self-protection does not permit of any obstruction of or interference with the natural channel of the stream or diversion of the flow of the water in such channel.

“The fact that a land owner avails himself of the right to repel vagrant waters of a river by embankments does not, in the absence of some further circumstances or set of circumstances, impose upon him any obligation to maintain such obstruction, or to refrain from restoring natural conditions. There is nothing in the doctrine of self-protection against flood waters to prevent a land owner from applying it to a single acre of his lands or the conservation of a single annual crop by temporary structures.”

In Green v. Swift, 47 Cal. 536 (1874), the Supreme Court held that owners of land adjacent to the Sacramento River that had been damaged as a result of work done pursuant to authorization of the legislature for the purpose of protecting the City of Sacramento could not recover damages, such damage being incidental to the lawful exercise of the police power.

In Clement v. State Reclamation Board, 35 Cal. 2d 628, 220 Pac. 2d 897, it was held that the state could take any action to protect all landowners in an area from flood waters, which could be

taken for his own protection by an individual landowner in preventing waters of a stream from overflowing his land, without payment of compensation.

However, although a person may install, maintain, and operate structures to protect his property against flood waters, in order to avoid liability the acts of the owner of such structures must be reasonable under the circumstances. *Wade v. Thorson, 5 Cal. App. 2d 706, 43 Pac. 2d 592 (1935)*. Whether his conduct is reasonable will be determined by existing conditions and not by the subsequent consequences of his acts. *Jones v. California Development Co., 173 Cal. 565, 160 Pac. 823 (1916)*.

c. Increased and Accelerated Flow of surface Waters into and In a Creek, Resulting from Urbanization, Construction of Storm Drains, and from Straightening, Widening, and Deepening of a Portion of the Creek, Without Improving Outlet of Creek. Let us assume an area drained by a creek is transformed into residential and business districts, and as a result surface waters which formerly followed no defined course are confined to ditches and channels emptying into the creek. Let us further assume that public concrete storm drains are later constructed to improve the drainage. As a result of the urbanization, less water is absorbed into the earth, and more is caused to flow into the creek; and as a result of the drainage improvements, the flow of such water into the creek is accelerated. Let us further assume that the city straightens, widens, and deepens a portion of the creek so that it can receive such increased runoff, but doesn't improve the lower portion or outlet of the creek, with the result that the lower portion of the creek can't handle the increased and accelerated flood, so that lower riparian lands are flooded. Is the public agency which made such improvements responsible for such damage? No, not if the drainage improvements followed the natural drainage of the area.

The above situation was presented in the case of *Archer v. City of Los Angeles, 19 Cal. 2d 19*. The court held that there is no diversion of surface waters if such waters, flowing in no defined channel, are for a reasonable purpose gathered together and discharged into a stream that is their natural means of drainage, even though the stream channel is inadequate to accommodate

the increased flow. It further stated that while a landowner may not collect surface waters and discharge them upon adjacent land, he may discharge them for a reasonable purpose into a stream into which they naturally drain, without incurring liability for damage to the lower land caused by the increased flow of the stream.

The court further held that the straightening, widening, and deepening of the channel of the stream to improve drainage entails no diversion of waters therein, and therefore creates no liability for flood damage suffered by lower riparian lands.

The above assumes, however, that the drainage improvements follow the natural drainage of the country. If water is diverted out of its natural channel and diverted into a different channel, there is then liability for resultant flood damage.

d. Floods Attributable to Obstructions to Flow of Escaped Flood Waters. It is well settled not only that a person may protect his property from high stream waters by levees, etc., but also that he may protect his land from escaped stream waters, referred to as flood waters, by obstructing the flow thereof onto his land, even though such obstruction causes the water to flow onto land of another. *Horton v. Goodenough*, 184 Cal. 451, 194 Pac. 34 (1920); *Williams v. California Pacific Coast Aggregates*, 128 Cal. App. 2d 77, 276 Pac. 2d 28 (1954).

e. Improvements Constructed by Subdividers. What is a city's liability for "flood water" damage caused by improvements constructed by a subdivider? The rules applicable in this situation are similar to those applicable where the damage is caused by "surface waters" rather than by "flood waters." See [Section G 012.422](#), Subsection 2, i and j.

G 012.5 Personal Conduct: A City employee within the capacity of his office can incur liability for the City. Therefore, the design engineer must, by ability, training, good judgment, and constant attention to his work, protect the City from charges (which would have foundation) of negligence in design. In the absence of negligence, a damage or taking of property which occurs, and which was the natural or probable result of the design (and hence foreseeable) subjects the City

to liability, since this damage is interpreted as having been intended.

No personnel of the Bureau of Engineering shall express either written or oral opinions to the public about City liability in any actual or potential claim against the City. The design engineer shall not express or imply legal responsibility on the part of the City in reports or other official instruments; nor shall he do unauthorized remedial work, since this may imply an admission of legal responsibility on the part of the City. All calls requesting information on such matters shall be referred to the District or Division Engineer.

G 013 BUREAU RESPONSIBILITY

The Bureau of Engineering plans, designs, and prepares the construction drawings, estimates, and specifications for all streets, bridges, and other structures, sanitary facilities, storm drains, and related public improvements, and subsequently handles contract documents and certain contractual relationships during construction. It is responsible for the engineering features of all subdivisions, land acquisitions, and related activities, together with the basic assessment act procedures involved in public improvements financed by that method. The Bureau is charged with the responsibility for all basic and project surveying and for preparation of all basic maps, and is the custodian of all records pertaining thereto. It is also custodian of all original maps, plans, records, and other data related to the public works with which the Bureau is concerned. It acts as coordinator with Federal, State, and County agencies in the financing, design, and construction of public works facilities.

The Organization Chart of the Bureau of Engineering is found in the front of this Manual. The design of storm drains is the responsibility of the Drainage Systems Engineering Division and the Engineering Districts. Other duties and responsibilities of the Bureau are covered in other parts of the Manual.

G 013.1 District Responsibility: Each District Office is responsible for the design and processing of streets, sewers, and storm drains of all City projects within the district, unless a project is specifically assigned to another design office by the City Engineer. It is also responsible for the design or checking of Los Angeles County Flood

Control District projects and the design of storm drains for State highways within the district. Each district maintains its own reference maps and records. A map of Engineering Districts is found in the front of this Manual.

Although the design office loses direct control over the project after the Division/District Engineer has signed the tracings, that office should maintain accurate and current knowledge of the progress of projects which have been designed by that office. If, at any time, the design office feels that any of the projects are not making satisfactory progress, contact should be made with the responsible division ([Figure G 750](#)) to determine the cause of the delay and what steps, if any, can be taken to expedite the project.

G 013.2 Drainage Systems Engineering Division Responsibility: The Drainage Systems Engineering Division is responsible for the design and processing of all storm drain projects within the Central District, and also serves as consultant to the District Offices' storm drain projects which have special requirements or cover extensive areas. It establishes procedures and initiates Standard Plans for storm drains and appurtenances; compiles data for drainage maps; designs storm drains for State Freeways throughout the

City; coordinates, reviews, and processes, matters pertaining to the Los Angeles County Flood Control District Programs within the City; operates an Experimental Hydraulic Research Laboratory for the investigation and solution of special hydraulic problems beyond the scope of general engineering knowledge; and gathers rainfall data throughout the City.

G 013.3 Personal Responsibility: The District or Division Engineer delegates to the Project Engineer or squad leader individual responsibility for "follow through" on his assigned project, from the issuance of the work order to the approval of the plans by the District or Division Engineer. This means that the Project Engineer or squad leader shall expedite the path of plans through other persons, bureaus, and departments in order that scheduled dates for design completion can be met. In those instances when the Project Engineer or squad leader finds that a delay will occur which is beyond his scope of authority to overcome, it shall be his duty to notify the District or Division Engineer.

The designer is responsible to his Project Engineer or squad leader and shall discuss all design problems with him.

G 020 PROJECT TYPES AND AGENCY JURISDICTIONS

The types of drainage projects within the City are dependent upon the agency of jurisdiction over the project. Determination of the agency of jurisdiction is based upon the type of drainage facilities involved. These facilities are divided into three classes:

1. Major Watercourses, such as the Los Angeles River and Compton Creek, which are under the jurisdiction of the Corps of Engineers, U. S. Army.
2. Secondary Watercourses, such as Laguna Dominguez Channel and Aliso Creek, which are under the jurisdiction of the Los Angeles County Flood Control District.
3. Local Drainage Facilities, which are under the jurisdiction of the City of Los Angeles.

G 021 CORPS OF ENGINEERS

The Corps of Engineers, U. S. Army, designs and constructs the major flood control facilities as shown on [Figure G 023](#). These projects are fi-

nanced by federal funds and need no authorization or approval from any state or local agency. Since these major facilities must accept contributory flows, however, the City usually reviews each design to ensure that all existing tributary drains within the City have a proper outlet, and to request that planned or proposed projects be accommodated. The review is usually assigned to the City engineering district office of jurisdiction.

G 022 STATE DEPARTMENT OF TRANSPORTATION

State Projects within the City are financed and constructed by the State. Generally, the State designs its own highways and freeways and the City designs all drainage facilities required under agreement with the State. However, the Transportation Engineering Division designs all city streets constructed as part of State Freeway projects and is responsible for processing all State Projects within the City. Drainage facilities for

State highways, other than freeways, are designed to City standards and may be designed by the City District Office of jurisdiction. Drainage facilities for State Freeways are designed by the Storm Drain Design Division.

Freeway storm drains are classified as “onsite” and “off-site”. On-site drains are those constructed entirely within the State right of way. They are designed to the following State standards:

- a. For normal design, use a 25-year storm frequency.
- b. For sumps, use a 50-year storm frequency. (This design is not covered in this manual.)

Off-site drains are those constructed outside of the State right of way to pick up or discharge runoff. They are designed to City standards and criteria.

Freeway culverts are designed for a 50-year storm. The State’s prime considerations are to protect the freeway embankment or roadway from flooding on a 50-year frequency storm and to provide facilities which maintain existing drainage conditions. Particular care is taken to ensure that no damming or diversion occurs. Accommodations for proposed (or future) drainage facilities beyond the scope of the freeway project must be financed through a betterment agreement with the City.

Storm drains in State highways other than freeways are maintained by the City Bureau of Sanitation, except those drains constructed by the Los Angeles County Flood Control District. On-site freeway drains are maintained by the State Division of Highways. Off-site freeway drains, inverted siphons, and pumping plants are generally maintained by the City Bureau of Sanitation under agreement with the State.

G 023 LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

The Los Angeles County Flood Control District (LACFCD) is a legal entity established by the State to allow the collection of taxes for the construction of drainage facilities. The primary function of LACFCD is the improvement and maintenance of major watercourses, the cost of which is beyond the financial capability of municipal agencies. The Comprehensive Plan-Control and

Conservation of Flood Waters (Figure G 023) delineates the major watercourses for which the LACFCD is responsible.

The LACFCD also provides additional drainage relief by constructing trunk storm drains which serve as outlets for local drains. The local agencies coordinate their drainage needs through the LACFCD for a District-wide Bond Issue Program.

The City of Los Angeles, as a local agency, proposes and controls the design of its own projects through the use of city employees or private engineers. The LACFCD lets construction contracts for these projects and maintains the facilities. The City Council has agreed to quitclaim all City drainage easements under the jurisdiction of the Department of Public Works to the LACFCD as required for these projects.

LACFCD projects are designed to their standards, which are not covered in this manual. However, City runoff criteria and methods are used in the design.

G 024 CITY OF LOS ANGELES

Storm drains in the City of Los Angeles, other than those by LACFCD, are financed by Gas Tax Funds, Capital Improvement Funds ([Section G 030](#)), by Assessment ([Section G 040](#)), or by Private Development ([Section G 050](#)).

The drains financed under Capital Improvement provisions and Assessment proceedings are usually constructed in conjunction with street improvements. Storm drains provided by private development are generally those required from tracts. The City has developed a Master Plan of Drainage, coordinated with the LACFCD Comprehensive Plan, which delineates the watercourses requiring improvement.

If private development is in an established drainage district, such as exists in the San Fernando Valley area, the developer is required to deposit an acreage fee in a special fund. As these fees become available, the City designs and constructs the storm drains. In other areas of the City, the construction of storm drains is required as part of the development, as outlined in [Section G 050](#).

G 025 OTHER AGENCIES The City of Los Angeles is bordered by many local agencies with similar drainage problems.

Financial savings are very often realized by cooperative participation in common construction. Therefore, many storm drain designs are submitted to the City for review and comment prior to construction. Such review is made by the City engineering district of jurisdiction.

For projects built in the City but financed by another agency, such as the construction of drains with street improvements by the County Road

Department, the designer generally reviews the plans for accuracy of substructures, compliance to City standards, adequacy of facilities, and coordination with adjacent construction, either existing or proposed. For projects in a bordering agency using City drainage facilities as an outlet, the designer checks that the outlet drain capacity is not exceeded and that diversion does not take place

G 030 CAPITAL IMPROVEMENT PROJECTS

Capital Improvement Projects are those projects initiated by the City to eliminate public hazards or to provide public service. Storm drains are independently financed by Capital Improvement Funds, although a majority of the drains are constructed in conjunction with street improvements. A storm drain Capital Improvement Project is generally considered necessary when damage, periodic flooding, etc., call attention to a drainage problem. These projects are requested by the District Office in the order of preference for financing. For Capital Improvement procedures, refer to the Operations and Control Manual. Most Capital Improvement Projects are limited to improvements providing more than local benefit. However, if hazardous conditions exist which could result in liability for the City, drainage facilities of local benefit may be included with the Capital Improvement Project. The designer must use good judgment in his evaluation of the existing hazard.

G 031 FINANCING

The various sources of funds available to the City Council to finance Capital Improvement Projects, together with a short summary of their limitations for storm drain use, are as follows:

G 031.1 State Gas Tax Fund: The City of Los Angeles and other Cities in the State share an amount-per-gallon gas tax fund proportioned according to population, or vehicle registration and assessed valuation. This money is available for construction, R/W acquisition, and maintenance on city streets qualifying under the Select System of streets. State policy restricts the use of these funds to these drainage facilities which directly benefit vehicular traffic in amounts as specified below.

Sections 2106 (1.04 ¢) and 2107 (.725 ¢) of the *Streets and Highways Code* and the Office of the

State Controller Guidelines Relating to Gas Tax Expenditures on Streets and Roads (March, 1971) state that this gas tax money is available for such street and road drainage work as:

- a) complete reconstructions or additions to culverts
- b) installations or extensions of underdrains
- c) extensions of existing culverts and drains and replacements of headwalls.

A city may not use moneys to construct facilities which are required to drain roads and streets not in the select system. It follows that a drain located on the select system which is constructed larger than would be necessary to drain the select system, for the purpose of carrying other than select system drainage, must be financed in part with moneys not restricted to the select system. Also, any drain located on the select system that carries only drainage water from roads or streets not in the select system must be financed with moneys which are not restricted to select system construction and rights of way. However, when existing drainage facilities require lowering or relocating solely by reason of construction or improvement of a select system street or road, the cost of such lowering or relocating will be 100% eligible for financing with select system moneys irrespective of the source of the drainage water carried. The costs of any betterments involved in such reconstructed or relocated drainage facility will be participating to the extent of benefit to the select system.

Each city shall determine for each construction project on its select system which includes drainage facilities, the costs which are properly chargeable against Section 2106 moneys. For this purpose those portions of the drainage system listed below may be financed entirely with such moneys:

1. Cross culverts regardless of angle of crossing.
2. Storm drains, culverts, or drainage channels

which are required to be constructed or reconstructed by improvement of the roadway of the select system street or roadway.

3. Longitudinal storm drains or other longitudinal culverts, including manholes, located within the select system rights of way and which drain the select system only.

4. Cross or longitudinal gutters at intersections.

5. Catch basins and related pipes.

The term catch basin shall include outlet structures or curb openings. Eligible catch basins must be located within the select system rights of way, or as close to the curb return joining the select system as practicable considering the location of obstructions and/or hydraulic considerations.

Longitudinal select system drains which are interconnected with longitudinal drains from roads and streets not on the select system and which are designed to convey both select system drainage and other than select system drainage may be jointly financed with select system construction moneys and other moneys in the same ratio as the quantity of water from each of the two systems it is designed to convey. Longitudinal drains do not have to be within the select system rights of way but may be located a reasonable distance therefrom. If it can be shown that such a drain will convey select system drainage water in a manner as economically as if it were located within the select system rights of way it is eligible for financing with select system construction moneys in the same ratio as set forth above.

Outfalls and connections to other drainage systems for the purpose of disposing of select system drainage concentrations are eligible for financing in the same manner as set forth above.

Each city which expends Section 2106 moneys to finance the construction of drainage facilities shall keep records for a period of at least three years after the end of the fiscal year of the expenditure, showing how it calculated or otherwise determined the amount of such moneys that were eligible to finance such facilities. Such records shall be made available to the auditors of the State Controller or other representatives of the State who are authorized to examine them for the purpose of verifying that the restricted moneys were used only to finance facilities or portions thereof which drain the select system.

Gas Tax replacement moneys are available also

for such maintenance work as reshaping drainage channels and side slopes, restoring erosion control, cleaning culverts and drains, and repairing underdrains, culverts, and drains.

G 031.2 County Gas Tax Fund: Money from the Los Angeles County Subventions and Grants Funds are available for use by the City for drainage facilities, provided essentially the same requirements in Subsection G 031.1 above are met.

G 031.3 Permanent Improvement Fund: This is an amount of money per \$100 of assessed value of taxable property which is set aside by the City for acquisition of land or right of way and for construction of public works improvements with an estimated life of ten or more years. Permanent Improvement funds are usually used to finance projects or construction not eligible for gas tax funds or financed by assessment or private development. Storm drain projects, either alone or in conjunction with street improvements, may qualify for financing under this fund.

G 031.4 Other Funds: Other sources of revenue are the General Fund, the Subventions and Grants Fund, and the State Grade Separation Fund. The General Fund, which contains revenues not appropriated for other purposes, is often appropriated up to \$5000 (by the CAO without City Council approval on previously approved projects) for storm drain purposes. The Subventions and Grants Fund consists of money allocated to the City from the State or County for specified purposes, either in the form of subventions, to which are attached restrictions on their use, or grants which generally have no restrictions. This fund is often used to acquire easements for storm drain projects. The Streets and Highways Code states the limitations on the use of the State Grade Separation Fund for storm drain purposes.

G 032 PREPARATION OF CIP REQUEST

The District or Division Engineer is responsible for initiating a Capital Improvement Project (CIP) in his district. Ordinarily, the storm drain designer makes a Preliminary Study (Section G 180) to acquire the data necessary for a CIP request. This data is presented on a CAO-39 form a plan location sketch, and a class "B" cost estimate and submitted to the Coordinating Division. Refer to the Operations and Control Manual for the requirements and procedures necessary for requesting a Capital Improvement Project.

The District Office should review all CIP's annually to update their cost and order of preference. Changes in field conditions which appreciably change the scope or the cost of a project require the submittal of a revised CAO-39. Projects whose change in cost is less than 10% (or as directed by the Advance Planning Section of Coordinating Division) need not be revised. However, the order of preference for all projects should be submitted by the Districts every year.

G 033 COST ESTIMATE CLASSIFICATION

Cost Estimates for Capital Improvement Projects have been defined and classified as follows:

Tentative Estimate ' Class "C": This class of estimate is intended to show order of magnitude only and is subject to major revision. It is not to be used as a basis for fund appropriation. This estimate is based on general knowledge of the project with regard to location, limits, width of right of way, and other known physical character-

istics, with due consideration given to similar projects in the same area.

Appropriation Estimate-Class "B": An estimate of this class is used as the basis for fund appropriation. It is based on specific, detailed knowledge obtained by field investigations and studies. Sufficient consideration should be given to this estimate to reasonably assure the construction of the project.

Final Estimate-Class "A": This class of estimate is the final summation of costs by the Utility and Estimating Division based on completed construction plans. It forms the basis for determining the construction cost of the project. If this estimate indicates that additional funds will be required, a prompt report should be made to the Board of Public Works.

The design engineer is urged to consult the Utility and Estimating Division for verification of unit costs. For comparative costs used in studies or investigations, the LACFCD Cost and Quantity Manual (latest revision) may be used.

G 040 ASSESSMENT PROJECTS

Assessment projects are generally financed under the 1911 Act of the State Street and Highways Code or the 1941 City Ordinance. They are usually initiated by petition from property owners, and paid for by the assessment of the property benefiting. The design engineer is referred to the Operations and Control Manual for assessment procedures (Chapter C 400).

Assessment projects are designed in the same order as the petitions are filed, unless otherwise directed by the City Council. Approval of the petition by the City Council is required before design is begun.

G 041 PRELIMINARY PROCEDURES

Prior to design, many procedures are required for Assessment Projects which are initiated by the design office. These are outlined in detail in Assessment Project Procedures (Section E 810) of the Street Design Manual. Ordinarily, the designer makes a feasibility study and prepares a class "C" tentative cost estimate. Based on this study, a Recommendation Report is prepared which includes the feasibility and scope of the

project, the Planning Commission recommendation, the tentative cost estimate, a request for authorization for Right of Way acquisition (if required), and a request for allocation of public funds (if required), for which a CAO-39 form is used. This report is sent to the Assessment Section of the Coordinating Division together with the petition signatures and sketch. If another Department is involved in the project, a joint report is prepared.

G 042 DESIGN CONSIDERATIONS

In the design of storm drain assessment projects, the designer must check that the construction is eligible for financing under assessment proceedings. For example, the relocation of utilities which have prior rights cannot be financed by assessment. Due care must be taken to restrict the drainage design to that which benefits only the local area under consideration.

Most drains financed by assessment are those incidental to street improvements. Where storm drains are included in a street improvement assessment district and the extent of drainage facilities

required are more than normal minimum catch basin and connection laterals necessary to make the street improvement functional, the cost may be defrayed by City public funds. If financing by public funds is not provided and a main line or lateral is required for the project, a drainage assessment district should be established.

Since the cost of the improvement is paid by property owners who could protest the project out, the expense of the project is of prime importance. The designer should limit the drains to the very minimum required but should not sacrifice design standards.

G 043 DRAINAGE ASSESSMENT DISTRICT

Whenever a storm drain main line or lateral is financed by assessment, either as a separate project or in conjunction with a street improvement, the design office must provide the information by which the Bureau of Assessment distributes the

cost among the property owners benefiting from the project. Any change of conditions resulting from the project which improves or alleviates the drainage either upstream or downstream from the project may be deemed a benefit, and the property can be included within the drainage district boundary.

A separate map of the watershed boundary and the area of each individual assessment parcel tributary to or benefiting from the storm drain and a discussion of any engineering factors that influence benefit or responsibility for cost in the assessment district must be furnished with the memo of transmittal to the Coordinating Division. If a substantial portion of the tributary area is outside of the assessment boundary, consideration must be given to either expanding the boundary or appropriating public funds to help pay for the improvement.

G 050 PRIVATE DEVELOPMENT PROJECTS

The public drains acquired as a result of private development are those financed and constructed by a landowner in improving his property. The city requires storm drains in two basic types of private development, the subdivision and the lot-split ordinance.

The city design engineer must familiarize himself with the drainage problems of each area, since he represents the city in the solution of such problems. It is recommended that the city designer confer with and advise the private engineer in solving the more difficult drainage problems.

The procedures for processing subdivisions will be covered in the Subdivisions and Dedications portion of the manual.

G 051 SUBDIVISIONS

A subdivision generally refers to any real property, improved or not, which is divided for the purpose of sale or lease into five or more parcels within any one-year period. (The exceptions are noted in Section 11535 of the Business and Professions Code.)

The State Subdivision Map Act of the Business and Professions Code provides the City of Los Angeles the authority to regulate and control the design and improvement of subdivisions. City requirements for the proper control of drainage and erosion of subdivisions are outlined in Sections 17.02, 61.02, and 91.30 of the Municipal Code. The

City Engineer's drainage and erosion control requirements for the approval of subdivisions are specified in the following subsections.

G 051.1 Drainage Policy for Approval of Subdivisions: At the time application is made for subdivision of any area within the City of Los Angeles, the City Engineer may require the subdivider to submit a grading plan showing the existing topography of the area prior to development and the proposed topography after development. The plan shall include provisions for controlling all storm runoff within the proposed subdivision, and for discharging the storm runoff from the subdivision in such a manner as to protect the upper and lower properties from damage or nuisance resulting from such discharge. The computed storm runoff from the subdivision shall include the runoff from the entire area tributary to the subdivision, and shall be based on the ultimate development of the area as shown on the Master Plan of Land Use. Where such a grading plan is required, the acceptance of the tract for recordation will require the approval of said plan by the City Engineer and the Department of Building and Safety, and the filing of a sufficient surety or cash bond guaranteeing the construction of the drainage facilities indicated on said approved plan, and the payment of fees pursuant to the schedule described herein.

G 051.2 Definitions:

a. *Runoff* shall refer to the quantity or quantities of water as determined by application of Chapter G 200, Hydrologic Design, as adopted and as currently used by the Bureau of Engineering in the design of all drainage facilities. It shall include surface runoff and runoff in storm drains and natural channels.

b. *Surface runoff* is that portion of the runoff flowing across the surface of the land and not confined to natural channels or storm drains.

c. *Runoff from the tract* shall include all runoff from the area tributary to the tract as well as from the tract. It shall include all runoff naturally flowing to, through, and from the tract.

d. *Drainage facility or drainage facilities* shall include all means of intercepting, conveying, or storing storm water, including natural watercourses, improved drainage channels, retarding basins, closed conduits or pipes, and flood protective facilities.

e. *Storm drain or storm drains* shall mean permanent storm drains and shall, in general, be covered conduits or lined open ditches.

G 051.3 Causes for Withholding Approval:

Approval of a subdivision shall be withheld if, in the opinion of the City Engineer, one or more of the following conditions exist:

a. The area is subject to flooding during rainstorms, which will cause conditions dangerous to persons or structures.

b. There is no on-site drainage facility available which is adequate to convey the computed runoff from the tract without causing said drainage facility to overflow to the extent that damage to public or privately-owned property or injury to persons might result.

c. *Runoff from the tract* cannot practicably be conveyed to an adequate off-site drainage facility.

d. Excess runoff resulting from the subdivision cannot be retained within the subdivision.

G 051.4 Means for Providing Adequate

Facilities: The methods considered acceptable by the City Engineer to prevent damage to public and privately-owned property, or injury to persons,

include, but are not necessarily limited to, the following:

a. Collection in the public street system of all *runoff from the tract*, limited to such quantities as will be unobjectionable to the use of said streets. The depth of flow during a storm of 10 year frequency shall not exceed curb height (usually 8 inches) where the longitudinal slope is 2% or less. When the street slope exceeds 2%, the depth of flow and the maximum allowable street flow shall be reduced so that the momentum of the street flow (QV/g) does not exceed the value of the momentum for flow at curb depth on a slope of 2%, Q = flow in cfs, V = velocity in fps, and g = acceleration of gravity (32.2 fps^2). The computed values for the maximum allowable momentum for standard street widths and the method of computation are shown in Office Standard No. 118. In computing depth of flow in curved streets, the superelevation of the water surface shall be taken into account. (See Section G 111.)

b. Construction of storm drains to intercept all of the runoff and convey it to a suitable point of disposal into a natural watercourse or adequate drainage system whenever the limiting depth of flow is exceeded. These storm drain systems shall meet the following requirements:

1. In areas without sumps, storm drains shall be designed to remove all runoff from a storm of 10-year frequency.

2. In sump areas, storm drains shall be designed to remove all runoff from a storm of 50 year frequency.

3. Storm drains shall be of sufficient size in all cases to prevent flooding of building sites during a storm of 50-year frequency.

4. On side-hill streets, the maximum depth of water during a 50-year storm shall be curb height except as modified in Subsection G 051.4a above.

c. Reduction in peak rate of discharge of runoff from the tract, so as not to exceed the safe rate of discharge for which storm drain facilities are available, by:

1. Limiting the impervious areas of the proposed subdivision by increasing lot sizes or by other means.

2. Construction of retarding basins or other facilities to store excess *runoff from the tract* until said runoff can be discharged safely.

G 051.5 Additional Requirements:

In order to accomplish the above desired results in connection with the subdivision of any area, drainage easements shall be provided for all storm drain facilities which are not located in present or proposed public streets or alleys. Detailed engineering plans (see [Subsection G 051.7](#)) shall be prepared for the approval of the City Engineer and the improvements shown on these plans shall be constructed under proper permit from the City.

All cut and fill slopes on private property abutting public property shall conform to the requirements for Grading, Excavations, and Fills as set forth in Chapter IX, Article I, Division 30, of the Municipal Code as administered by the Department of Building and Safety. The general provisions of this ordinance are:

- a. Cut and fill slopes shall be a maximum of 2 horizontal to 1 vertical unless otherwise approved by the Department of Building and Safety and the City Engineer.
- b. Drainage benches shall be constructed on all cut and fill slopes at vertical intervals of 25 feet. Minimum width of drainage benches shall be 8 feet.
- c. Devices acceptable to the City Engineer shall be constructed to reduce erosive velocities when runoff is discharged into natural or temporarily improved channels.

The outlet portion of drains discharging into natural watercourses and the portion of drains in public streets and easements are under the jurisdiction of the Department of Public Works and must be approved by said Department.

G 051.6 Maintenance of Basins: Pursuant to a policy of the Board of Public Works adopted May 24, 1967, City forces shall perform the required maintenance of all retarding basins and debris basins within the City except those retarding basins approved prior to said date and pursuant to a surety bond guaranteeing maintenance by the owner or developer. The policy regarding maintenance by City forces includes the following regulations:

- a. All debris basins shall be exempt from payment of a fee for maintenance.
- b. The owner or developer of property subject to a division of land action requiring the construc-

tion of a retarding basin shall pay a fee to the City as set forth in the table below to defray the cost of maintenance of said retarding basin by City forces.

**SCHEDULE OF FEE
(Retarding Basin)**

	Period of Responsibility in Years	*Charges per Cubic Yard Basin Volume
New Basin	Five	\$1.00
Existing Basin or Prorated		
New Basin	More than four	\$1.00
	Three to four	\$1.00
Basin	Two to three	\$0.75
	One to Two	\$0.50
	Less than one	\$0.25

Subject to reduction.

c. Upon acceptance of a prorated fee from the owner or developer, the City shall assume the responsibility for maintenance of retarding basins previously approved pursuant to a surety bonds and the bond shall be exonerated.

d. The fee established for maintenance of new retarding basins shall be based upon a period of five years. In the event it is determined by the City Engineer that the basin is no longer required prior to expiration of the five-year period, a partial refund, in accordance with the Schedule of Fees, may be made to the payer upon his request.

G 051.7 Submittals for Approval: The plans submitted to the City for approval are the tract map, the grading plan, the construction plans, and if required, the erosion control plan. The storm drain plans should be coordinated with the street and sewer plans to prevent conflict in design.

The plans are submitted to the District or Division of jurisdiction for checking prior to approval by the City Engineer.

Prior to notifying the Street Opening and Widening Division that the final tract map is satisfactory for recording, it shall be the responsibility of the appropriate District or Division to verify with the Bureau of Right of Way and Land that:

- 1. The off-site easements have been acquired by separate instruments, or

2. That sufficient funds have been deposited by the subdivider to fully guarantee acquisition of the off-site easement and that its acquisition is assured.

The grading plan must be approved by both the City Engineer and the Department of Building and Safety.

In order that the Bureau of Sanitation can maintain a current schedule of maintenance, each District and Division shall notify the Street Opening and Widening Division, Bond Section, in writing whenever a new debris or retarding basin is approved for acceptance so this information may be transmitted to said Bureau.

G 051.71 Tract Map: The tract map is a plan of the proposed subdivision showing the sizes and relative locations of lots, streets, and easements with proper descriptions for legal documentation. The storm drain designer shall check for the adequate location, size, and description of the easements required for drainage facilities. Should drains be required outside of the tract boundary, the subdivider shall provide for the proper easements either by including the easements within the tract boundary or by separate instrument. The easement call-out, properly identifying the area referred to, is easement to the City of Los Angeles for drainage purposes. Call-outs dedicating property "to the City of Los Angeles in fee simple" must be accompanied by a note delineating the intended use of the property by the City.

G 051.72 Grading Plan: The grading plan indicates the changes to be made in the existing ground surface for the construction of the proposed improvements. It shows the topography and contours of the area as existing before development; the proposed contours after development; the plan layout with identification of lots, streets, and easements; and the general provisions for the control of surface runoff in the streets, in easements, and in watercourses. The designer shall review the proposed drainage provisions to satisfy himself as to their adequacy, alignment, and proper use in accordance with City standards. He should pay particular attention to the possibility of diversion caused by the proposed improvement.

Drainage facilities constructed on private property and maintained by the property owner are

private drains. Whenever such drains enter the street or drainage easement, however, they are public facilities maintained by City forces. Such drains may outlet into the street, provided that no hazard to the public is created and that the portion within the street is an approved conduit. Each lot shall drain directly to the street gutter or public drainage facility by means of a driveway or other approved facility. When no public drainage facilities are directly available and the street grade is too steep to contain the lot drainage within the driveway area, adequate protective measures shall be provided to protect the adjacent parkway from damage by erosion.

Cut and fill slopes adjoining streets, drainage channels, or other public facilities are subject to the requirements of the City Engineer. The requirements for slope stability, drainage facilities, and grading controls are given in Section G 150. The Grading Plan Notes given in Section G 151 must be shown on all such plans. This plan is not a permanent record but requires the approval of the Division or District Engineer.

G 051.73 Storm Drain Plans: Privately designed plans including profiles and details for the construction of drainage facilities in subdivisions shall be identical to city-designed storm drain plans except for the signature and registration number of the responsible engineer on the title sheet. Since these plans become permanent city records, they should be thoroughly checked by the City designer. All criteria, standards, and requirements delineated in the design sections of this manual are applicable to these plans.

G 051.74 Erosion Control Plans: The City Municipal Code establishes the period between December 1 and April 15 as the rainy season, during which heavy rainfall normally occurs in the City. Subdivision grading work during this period shall incorporate temporary erosion control devices where the City determines that such work may endanger public health or safety. Plans of erosion control devices shall be submitted to the Bureau of Engineering and design approval obtained not later than September 15 of the coming rainy season. All temporary erosion control devices shall be installed not later than December 1. Desilting basins shall be installed not later than October 15.

An erosion control plan is basically a grading plan over which erosion control measures are superimposed. This plan is not a permanent record but requires the approval of the Division or District Engineer. The city designer shall check that the plan meets City requirements on placing sandbags, constructing desilting basins, and other measures (as given in Section G 150) deemed necessary to control the deposit of silt and debris onto City streets or natural watercourses. The Erosion Control Plan Notes (given in Section G 153) must be shown on all such plans.

G 051.8 Flood Hazard Report: The City of Los Angeles is responsible for furnishing Flood Hazard Reports to the owner of a tract or to the public upon request. The Opening and Widening Division requests such a report, which designates the extent and frequency of flood hazard, from the design office.

To indicate the extent of flood hazard, the terms and their definitions used in this report are as follows:

Inundation indicates ponded water or water in motion, of sufficient depth to damage property due to the mere presence of water or to the deposition of silt.

Flood hazard indicates overflow water having sufficient velocity to transport and deposit debris, to scour the surface soil, or to dislodge or damage buildings. It also indicates erosion of watercourse banks.

Possible flood hazard indicates possible extension of areas denoted as subject to flood hazard, also the uncertainty of degree or extent of bank erosion.

Sheet overflow indicates water of minor depth, either quiescent or flowing, at velocities less than those necessary to produce serious scour. This type of overflow is considered a nuisance rather than a menace to the property affected.

Ponding of local storm water indicates standing water in local depressions. This is distinguished from sheet overflow by the fact that it originates on or in the vicinity of the property and is unable to reach a street or drainage course because of the condition of the ground surface.

To indicate the frequency with which these various hazards may occur, the following terms and their definitions are used:

Frequent: This term is used when a condition can occur at intervals of ten years or less when averaged over a long period of time. Several of these conditions may occur in a single decade or there may be no such occurrence for a period of time much greater than 10 years.

Infrequent: This term is used to denote an average interval between occurrences of more than 10 years.

Remote: This term is used when the occurrence is dependent upon conditions which do not lend themselves to frequency analysis, such as the diversion of a stream from its present bed due to breach of channel bank, deposition of debris, or the presence of other channel obstructions.

G 052 LOT SPLITS AND SINGLE LOTS

For development of lot splits (a division of land of less than five lots) or single lots, the City Engineer requires the construction of drainage facilities on land utilized for natural drainage. Whatever the existing conditions, the design engineer must consider the liabilities outlined in Section G 012.

G 052.1 Drainage Control: The control of drainage on lot splits or single lot developments is two-fold:

a. If a watercourse exists, the property owner must acquire a permit to do work in or adjacent to the watercourse (Sections 64.07 to 64.10 inclusive of Ordinance No. 77.000).

b. If the property is located in an inundated area, the property owner must acquire an inundation clearance prior to construction to determine whether his property is subject to damage from inundation or flood hazard (as defined in Subsection G 051.8).

G 052.2 Watercourse Considerations: If the proposed improvement is only a partial encroachment on a watercourse with no intent to develop it, the design engineer will refer to the considerations outlined in Section G 070.

However, if the encroachment is such as to warrant the total or partial improvement of the watercourse, the design engineer must consider the improvement as a public facility requiring construction under permit in accordance with plans approved by the City. The dedication of a public easement for drainage purposes may be required only if the improvement is to be a part of a city storm drain system. The construction shall consist of a storm drain conduit and appurtenant facilities of 50-year storm frequency, based on ultimate development of the watershed in accordance with City standards. No private buildings should be allowed over the conduit or in the easement without the specific approval of the City. All surface drainage should enter the storm drain through approved inlets.

G 052.3 Inundation Report: Whenever property is subject to possible damage by inundation or flood waters, the Department of Building and safety requests an Inundation Report ([Figure G 052.3](#)) from the engineering district of jurisdiction prior to issuing a building permit. This report reflects the design engineer's evaluation of the property in relation to surface runoff or flood waters, to determine:

- a. The extent and frequency of flood hazard involved;
- b. The possible corrective measures to reduce the hazard; and
- c. Whether construction should be recommended.

Unless a watercourse is involved, this report is only a recommendation to the Department of Building and Safety, which is responsible for determining and enforcing the final conditions. The engineer circles the appropriate condition, makes any necessary remarks on the form, and completes the stamp on the back of the building permit application. One copy of the form is retained by the clearing office, Bureau of Public Works, and the other copy is returned to the Grading Division, Department of Building and Safety, with the plans and permit.

Flood hazards may be caused by ponding or by surface flow. Factors to be considered are the amount and concentration of water, its source, possible relief by use of existing drainage facilities, the amount of property affected, the depth of flow or ponding, the velocity and scouring effect, the depositing of debris or mud, the length of ponding time, and finally, the total estimated damage and frequency of occurrence. All damages resulting from storms of 50-year frequency or less will be considered. Records of existing storm drain projects, drainage maps, and previous inundation reports in the vicinity are invaluable aids in this determination. If possible, it is recommended that for less obvious situations, a joint field trip with the Department of Building and Safety grading inspector be arranged to discuss the effect that the contemplated grading will have on the proper drainage of the property.

The corrective measures considered to reduce the hazard are those deemed necessary for the protection of life and property. Measures such as filling the property to be completely clear of inundation from a 50-year storm may not require a waiver of damages from flood waters by the property owner. If, however, a minimum floor elevation is recommended (where surface flow cannot be blocked) to get above the high water level, leaving other portions of the property or the access to the property inundated, then a waiver of damages releasing the City from liability is required from the property owner.

Past practice has been to allow the property owner to build, if at all possible, provided measures can be taken to keep him reasonably free from flood damages and if he is made aware of the risk by the requiring of a waiver of damages. The engineer should not hesitate to recommend against construction, should a risk for which no corrective measures can be taken endanger life.

The engineer is referred to [Subsection G 051.8](#) for the terms used in the report. The extent and frequency of the hazard and the recommended corrective measures to be taken are shown under Remarks on the report. The Department of Building and Safety is responsible for acquiring necessary waivers.

G 060 EASEMENTS

G 061 DEFINITION

An easement to the City of Los Angeles is a documented legal right obtained by the City from a property owner, allowing the City to enter the property for a specified purpose. It does not affect ownership of property. To have an easement for drainage purposes usually means to have the rights of ingress and egress for the construction and maintenance of drainage facilities. The specified use of the easement may not be changed without further negotiation with the property owner. Generally speaking, the holder of an easement must use the easement in a reasonable manner. (See Easement Standards, Section G 122.)

For more information on the acquisition of property, refer to Fundamentals of Real Property for Street Design Purposes in the Street Design Manual (Section E 050).

G 062 POLICY

The City of Los Angeles requires that all public drainage facilities be constructed either on City property or in an easement for drainage purposes. Such an easement is usually permanent unless quitclaimed by the City.

G 063 TYPES OF EASEMENTS

G 063.1 Temporary Easements: Temporary easements are those acquired for a limited period of time, the length of which is usually determined by the amount of time required to accomplish work. Types of temporary easements are construction easements and some slope easements. A construction easement gives the City the right to occupy private property for working operations of the contractor. A temporary slope easement gives the City the right to occupy private property to grade slopes. These easements are usually acquired for the duration of construction. After the specified period of time has elapsed, all rights conferred by a temporary easement revert to the property owner.

G 063.2 Slope Easements: Slope easements are usually permanent easements obtained for the construction and maintenance of dirt slopes adjacent to public property or easements. If only a temporary easement were desired for the construction of a dirt slope, a temporary slope easement would be obtained. The maintenance of the

slope after completion of construction is the obligation of the party which has the easement or, if no easement exists, the owner of the property.

G 063.3 Combined Easements: A combined easement is usually obtained for more than one purpose; e.g., an easement for sewer and drainage purposes. It is not practical to combine easements for purposes under different City departmental jurisdictions.

Easements obtained by different departments of the City for different purposes may overlap. Also, two agencies may have the same rights in the same easement. These and similar types of easements are not usually considered combined.

G 063.4 Future Easements: A future easement is an irrevocable offer of rights for a specified purpose, made by a property owner to a governmental agency. It prevents any use of the property within the easement which would be contrary to this purpose, even though the agency has not yet accepted the offer. Although it may be accepted at any time, the offer is usually not accepted until just prior to construction. A future easement is usually not considered unless construction of public facilities is intended.

G 063.5 Rights of Entry: A right of entry, like an easement, is a documented legal right to enter private property for a specified purpose. It is generally used to acquire rights of ingress and egress only, or for construction of minor or temporary nature of short duration. Its use may be preferable over an easement because it is generally more easily acquired and is less costly. The Bureau of Right of Way and Land usually determines in their negotiations whether the use of a Right of Entry is advisable.

G 064 WORK IN A DRAINAGE EASEMENT

The City of Los Angeles has an obligation to protect the public from damages caused by misuse of drainage facilities under its jurisdiction. The City may accomplish this by invoking easement rights to protect its drainage facilities. Control of land use in easements is maintained by requiring the property owner to apply for a construction permit.

Figure G 064 shows the standard application form which the property owner must fill out

to obtain permission to do work in a City drainage easement. The engineer must review the application to determine the type, extent, and location of the work contemplated. If a structural check of the proposed work is needed, a plan must be submitted with the application. The engineer should review the area in the field and recommend what the City requires to protect its drainage facilities. The processing of this application and the permit required is covered in the Operations and Control Manual.

The prime concern of the engineer in reviewing the application is the protection of existing City drainage facilities. Work is usually allowed in a drainage easement provided the construction or use of the easement does not undermine, overload, obstruct, or otherwise damage or incapacitate the storm drain. If the work imposes loads or conditions for which the storm drain was not designed, the engineer should require the following:

- a. The alignment and depth of a covered storm drain shall be determined in the field,
- b. the storm drain structures shall be strengthened to withstand the loads or protected against conditions imposed by the work, and
- c. manholes or other accesses blocked by the work shall be remodeled or relocated.

The engineer shall transmit the proposed construction plans affecting the storm drain to the Structural Engineering Division for structural review and approval.

In addition to the above requirements, the engineer may require that the City be held harmless from any damages resulting from the work in the easement. After evaluating how the proposed work affects the existing drainage facilities, the engineer must use good judgment in determining when to require a waiver. Generally, a waiver of damages (Figure G 064A with Figures G 064H, Corporation, or G 064I, Private) is required from a property owner for any construction in a drainage easement in which drainage facilities exist. The protection granted to the City by the waiver is listed in items 1 to 5 of Figure G 064A. This waiver should be applied to protect City drains which may be damaged by the work and/or to protect the City from liability resulting from this damage.

The approved procedure for processing Waivers of Damages is outlined in the Engineering Form

3.685C (Figures G064J and K). This document is distributed with the waiver and includes instructions to both the applicant and City personnel. This procedure shall be followed to protect both the applicant and the City.

The six modifications shown below are to be used as a supplement to the original Waiver of Damages (Form 3.685). The information contained in each modification is standardized and has been approved for use by the City Attorney. When necessary, the appropriate modification should be selected for the waiver used and typed on the original waiver form as shown on the samples, Figures G 064B, C, D, E, F, and G.

The modifications are:

Modification 2

Watercourse (see Section G 070)

Modification 3

City Easement and Watercourse

Modification 4

LACFCD Easement

Modification 5

City and LACFCD Easement

Modification 6

LACFCD Easement and Watercourse

Modification 7

City and LACFCD Easement and Watercourse

If an application is made for temporary use of a drainage easement (such as grading or crossing of equipment over a drain capable of withstanding the load), the engineer should require a bond (in lieu of a waiver) to cover the cost of repair of any damages to the drain which may be incurred thereby. If no drainage facilities or watercourse exist in a drainage easement, no waiver or bond need be required. However, a revocable permit should be issued.

G 065 COMMON RIGHT OF WAY TERMS

Adverse Possession: An easement may be created by a use in a manner adverse to the exercise of the fee owner's rights for a continuous period of five or more years.

Condemnation: The exercise of the power of Eminent Domain (Subsection G 012.22).

Damages, Actual: Value of the property taken; e.g., square-foot value of a parking lot.

Damages, Severance: Value of the damages by virtue of a taking of the remaining property; e.g., loss in value of a business building by reduction of parking area.

Easement: A right or interest in the land of another which entitles the holder thereof to some specific use, privilege, or benefit out of or over said land.

Fee Title: The highest type of interest a person can have in land. It is potentially of indefinite duration, freely transferable, and inheritable.

Grant Deed: Conveys the fee title to the land.

Lease: The use of property given to another for a stated period of time for a consideration and obligation to perform by both parties for the stated time.

License: A personal, revocable, and non-assignable permission or authority to enter upon land of another for a particular purpose.

Permit: A temporary, revocable, and non-transferable license which gives one permission to do something without which one would be a trespasser.

Prescriptive Rights: A public easement may be created without formal documentation by permissive acts of the owner for a period of five or more years (e.g., repaving a sidewalk area and allowing the public to use the walk without obstruction).

Quitclaim Deed: An easement (or interest of uncertain validity) may be extinguished by a release in favor of the owner by the easement or interest holder.

Rent: The use of property by one other than the owner on a period-to-period basis (e.g., month-to-month) for a consideration terminable at the end of any period by either party

G 070 WATERCOURSES

Any person desiring to do work in a natural watercourse or channel where no City easement exists must file an Application/Permit (Form 3.651) with the City. When approved, this form becomes a natural watercourse permit (non-revocable). The engineer must review the description of the work proposed to be done, investigate the site, and determine whether the work meets City requirements.

Before the City requirements can be determined, the engineer must first determine whether the work constitutes a part of the City's permanently improved drainage system. If so, an "A" or "B" permit is required and the City storm drain and permit requirements (including the dedication of a drainage easement and/or Waiver of Damages to the City) must be met by the applicant. If not, the work is a private improvement (owned and maintained by the property owner) subject to the requirements of watercourse regulations (Sections 64.07 to 64.10 of the Municipal Code). The permit requirements are given in the Operations and Control Manual.

There are no set rules by which the future alignment of a permanent City storm drain can be predicted. Therefore, the engineer's good judgment in his evaluation of existing conditions must be relied upon to determine City requirements. Some factors which favor the construction of a

permanent City storm drain under a "B" permit are as follows:

1. The construction of a storm drain conduit which is aligned between two improved portions or extends from an existing City storm drain.
2. A major improvement of a watercourse which receive runoff from streets or other public property.
3. The choice of an applicant to construct a permanent storm drain under City inspection for possible future acceptance by the City.

Some factors which favor the construction of a private storm drain under a watercourse permit are as follows:

1. The construction of drainage facilities in an isolated or unimproved area.
2. The improvement of a watercourse which drains private property only.
3. Minor repairs, alterations, inlet structures, etc.

The type and extent of work allowed under a watercourse permit must meet the following criteria:

1. The work must not obstruct or interfere with the flow of water in the watercourse, and
2. The work must not injure adjoining property. (See Liabilities, [Section G 012.](#)) All conditions and restrictions of construction should be stipulated on the permit.

G 080 DRAINAGE COMPLAINTS

Throughout the year, and particularly during inclement weather drainage complaints are received by the City from property owners. In general, the City is not liable for damages caused by flood conditions. However, in the public interest, the City will investigate the complaints to determine whether any relief can be given. The Engineering Districts, or Divisions of jurisdiction shall be responsible for handling drainage complaints in their respective areas.

The procedure for handling drainage complaints is as follows:

1. The complaint shall be taken (by telephone or at the public counter) without comment or surmises as to the action to be taken by the City. A simple statement that the complaint will be investigated as soon as possible is sufficient. The form Drainage Complaint Report (Figure G 080) shall be filled in except for the Investigation portion, and the complaint shall be immediately referred to the responsible engineer.

2. The responsible engineer shall grant drainage complaints top work priority and endeavor to investigate the complaints while flood conditions exist, or as soon as possible thereafter. A thorough inspection of the site shall be made to determine the cause of flooding (or damage), and a recommendation to relieve the situation (if practical) is made. If no immediate action can be taken, the ultimate solution is recommended for future action. The investigation report should not be disclosed to the public prior to approval by the supervisor. Also, particular care shall be exercised to avoid any statements or implications from

which possible liability of the City for any flood damage might be inferred.

3. As soon as the investigation is complete, the investigating engineer must acquire approval on the recommendation by the District/Division Engineer (or his representative) before any action can be undertaken. A change in recommendation by the District/Division Engineer shall be made on the complaint form. The contemplated action can then be taken, and the complaint form is given to the mapping section for posting.

4. The draftsman shall post the complaint in carmine ink at its location on the drainage map. The letters "DC" and the year and month of the complaint (681) are the only information posted. The complaint form is then filed chronologically in the Drainage Complaint file.

The City Attorney recommends against giving advice as to rights of adjoining property owners in private drainage matters. The property owners should be informed that the matter is private and should be settled by the property owners involved in the dispute. If the property owners can agree on a mutual solution of their drainage difficulties, it would be proper to assist them with engineering advice as to sizes of pipes, grades, etc.

No inspection will be made, nor will any inspection undertaken proceed, in the presence of any legal representatives of the complainant or attorneys unless the City Attorney is also represented. Any arrangements for inspections with legal representatives must be made by the City Attorney's office.