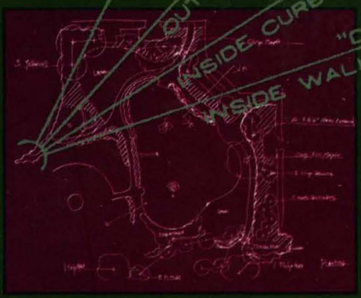
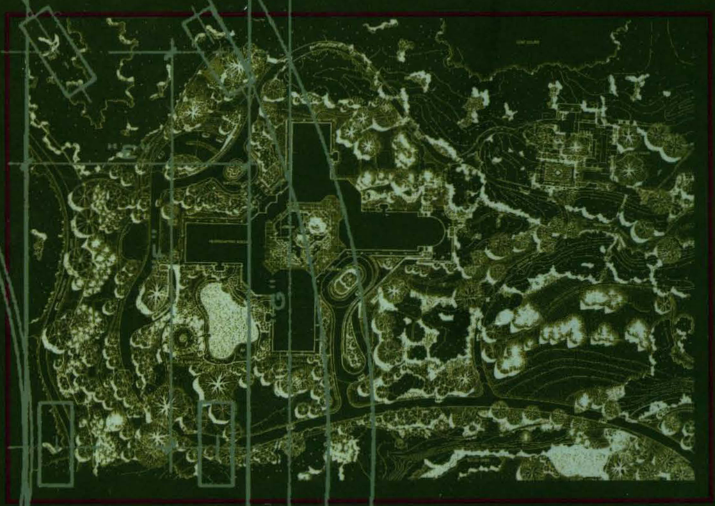
TIME-SAVER STANDARDS

SECTION-1

FOR LANDSCAPE ARCHITECTURE

second edition





CHARLES W. HARRIS

NICHOLAS T. DINES

EXTENDED LENGTH VEHICLES
DIMENSIONS AND TURNING RADII

MAKE OF CAR	"A"	"B"	"C"	"D"	"E"	"F"	"G"
Cadillac	30'–0"	28'–6"	18'–11 1/2"	18'–9"	6'–11"	13'–0"	20'–10 1/4"
Dodge	23'–4"	21'–9"	13'–4 1/2"	12'–10 3/4"	6'–8"		18'–4"

TIME-SAVER STANDARDS
FOR LANDSCAPE ARCHITECTURE:
DESIGN AND CONSTRUCTION DATA

Second Edition

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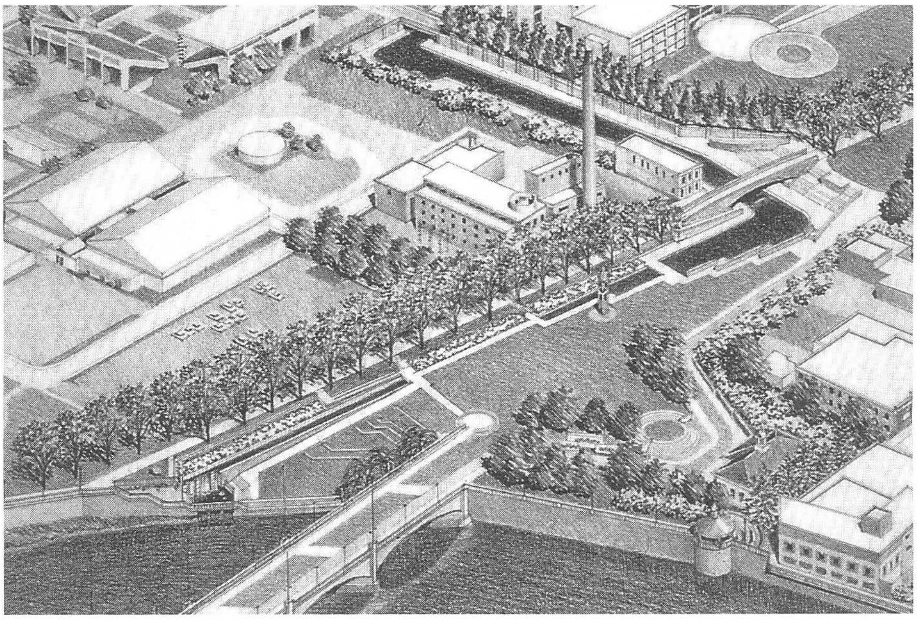

Sasaki Associates

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are designated on the drawings for removal by the contractor.

Topsoil Stripping and Stockpiling:

The contractor removes all topsoil within the grading limits and stockpiles the soil in whatever areas will be convenient for future respreading at the completion of the project.

Rough Grading:

By blasting, trenching, backfilling, and cutting and filling to the proposed new subgrade, the contractor prepares all subgrade surfaces to receive foundation footings and subbase material for below- and on-grade structures. Trenching for utility lines also occurs at this stage. The top elevations of manholes and drains are set at their approximate grades without final brick course shims or rims.

At the completion of the rough grading, all exterior surfaces are cut or filled to specified rough-grade tolerances [± 150 to 300 mm (6 to 12 in)]. They are then ready for final grading prior to placing the topsoil and the wearing surfaces (concrete, asphalt, brick, etc.).

Finish Grading:

The project is staked out and resurveyed to establish the finished geometry and the elevations of walks, roads, and other edges. The paved areas are then graded to finer tolerances, and base material is installed. Topsoil is spread over the rough grades in the planted areas to within a tolerance of ± 25 to 75 mm (1 to 3 in).

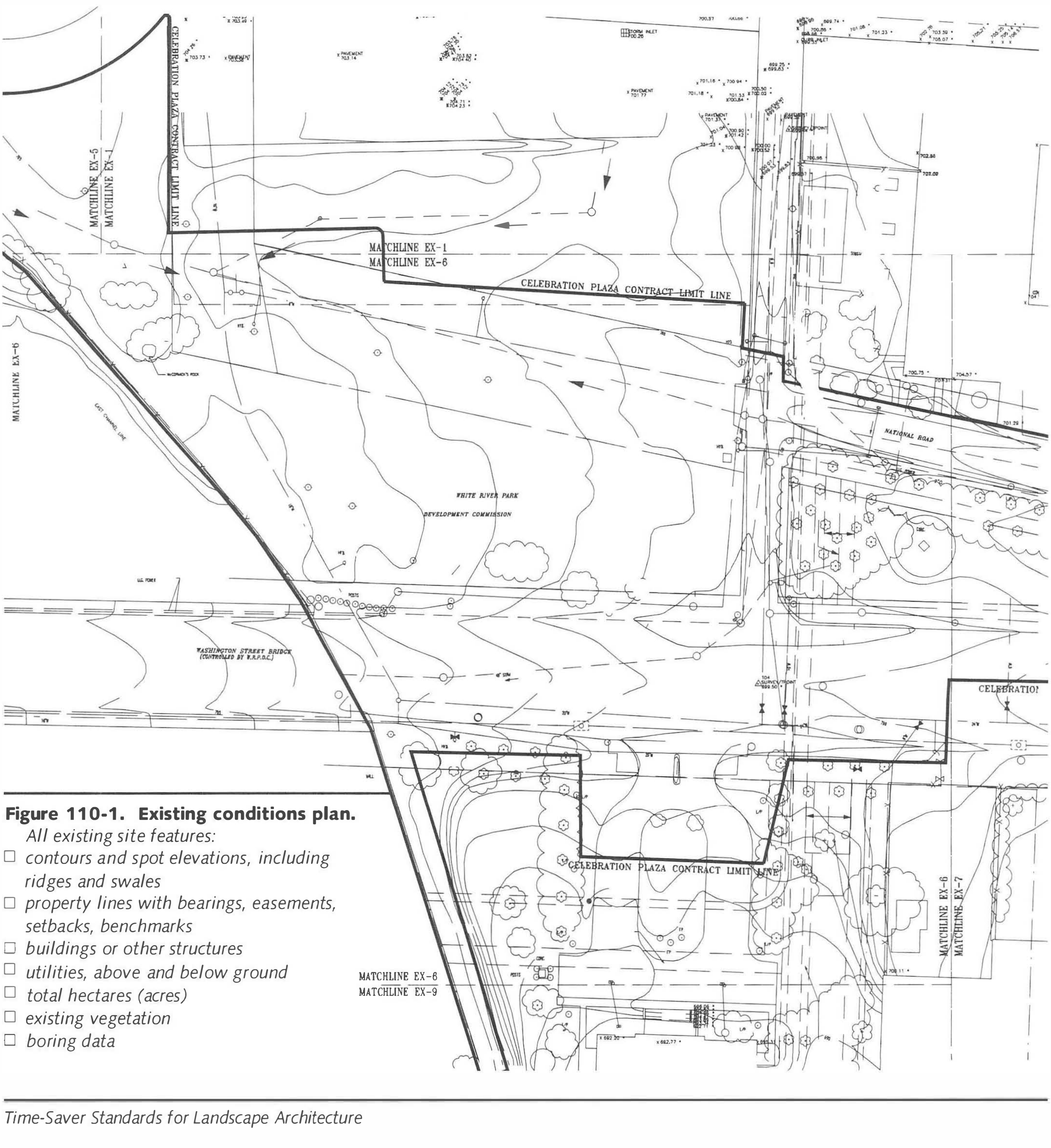

Figure 110-1. Existing conditions plan.
All existing site features:
- ☐ *contours and spot elevations, including ridges and swales*
- ☐ *property lines with bearings, easements, setbacks, benchmarks*
- ☐ *buildings or other structures*
- ☐ *utilities, above and below ground*
- ☐ *total hectares (acres)*
- ☐ *existing vegetation*
- ☐ *boring data*

SECTION 130

Site Construction Operations

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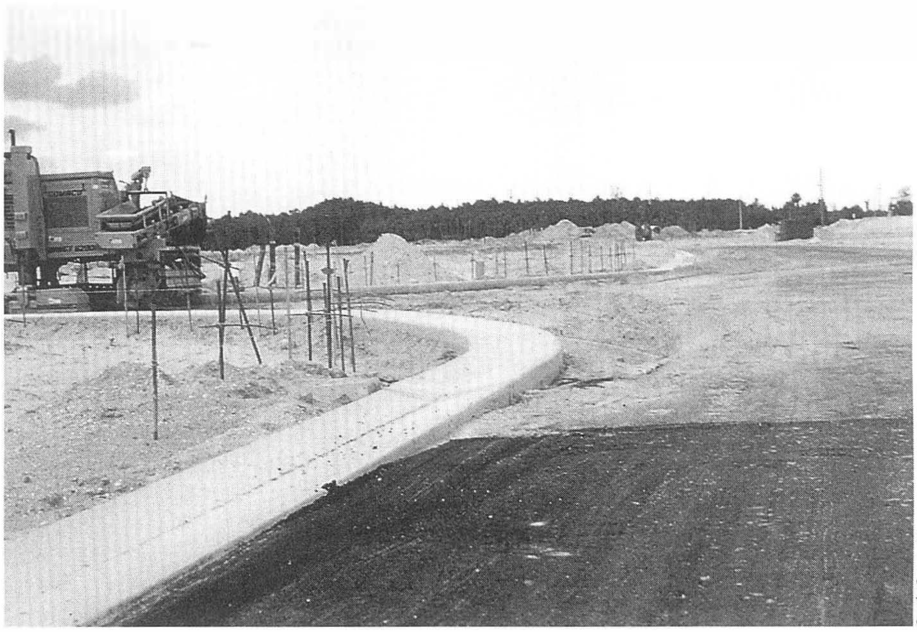

Sarah Gronquist

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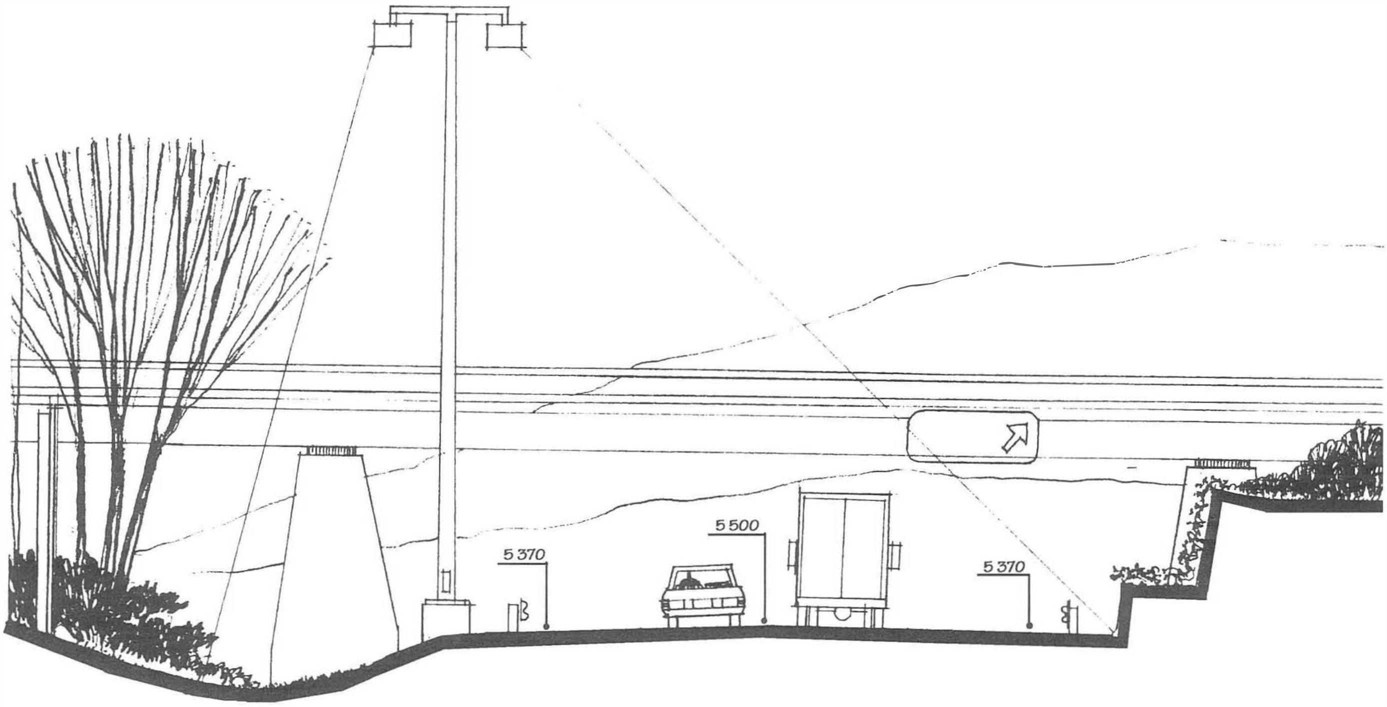

Figure 130-1 a. A typical design cross section emphasizing finished surface elevations.

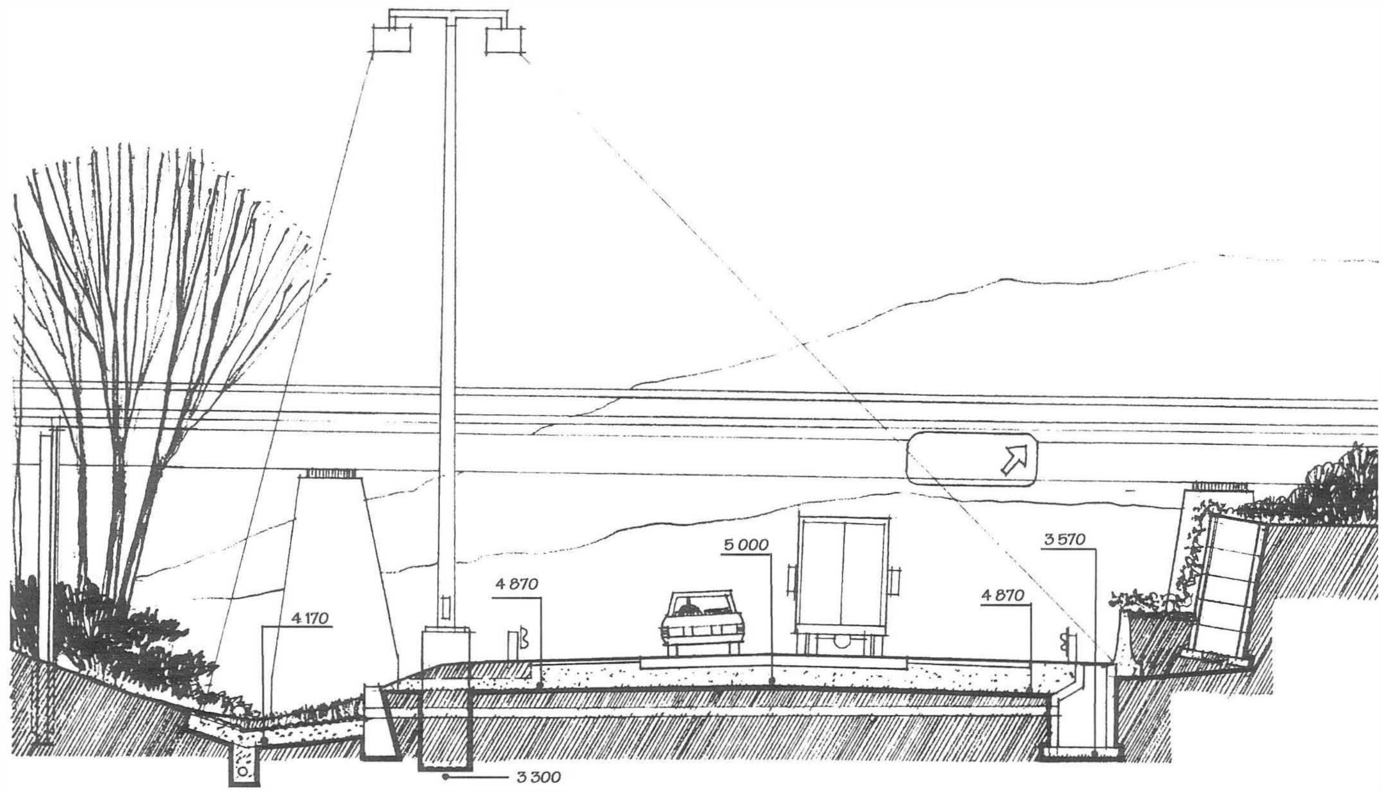

Figure 130-1 b. A contractor's analysis of the same design with emphasis on the subgrade elevations.

SECTION 210

Spatial Standards

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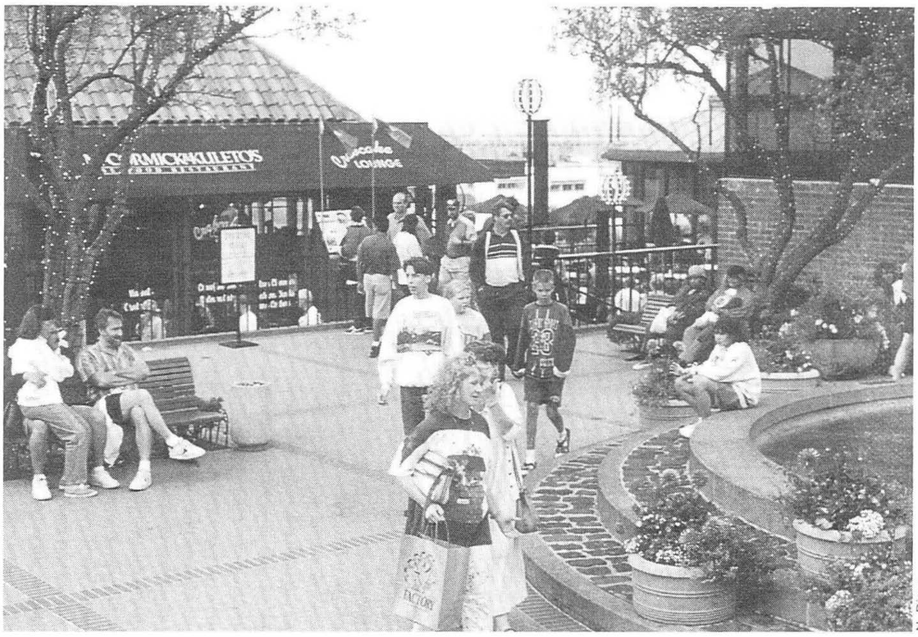

N. Dines

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1.0 INTRODUCTION

Human spatial standards are derived from ergonomic and cultural data and vary widely across cultures and land-use settings. Standards are often established to provide:

1. Minimal safety clearances (ergonomic/legal)

2. Perceived user comfort (psychological/perceptual)

3. Ceremonial protocol (cultural/ritual)

4. Aesthetic choice (personal/cultural)

Most "normative" standards require cultural adjustment before being applied to a particular design setting. Cultural standards are often referred to as the "hidden dimension," and at times may contradict strictly

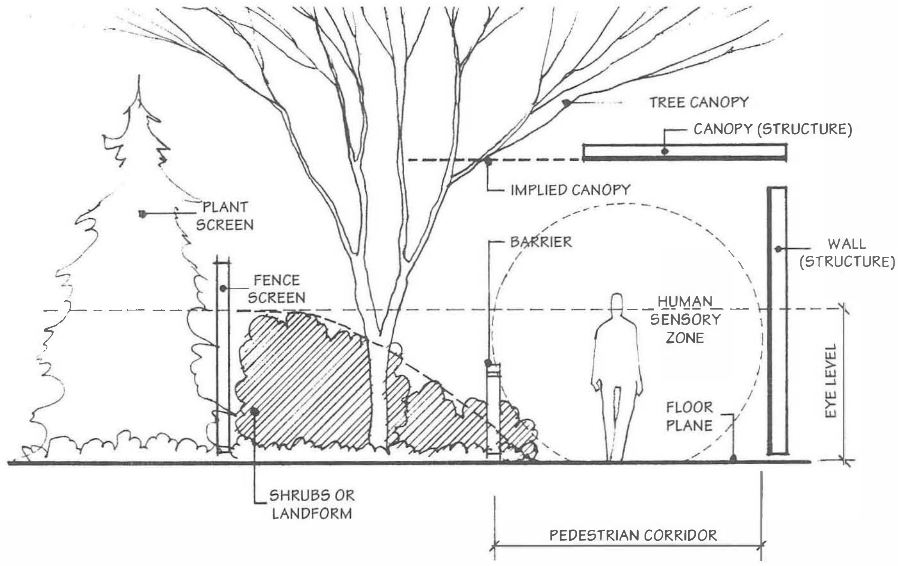

Figure 210-1. Elements of spatial enclosure: floor, wall, canopy, modified by time, light, climate, and intensity of activity.

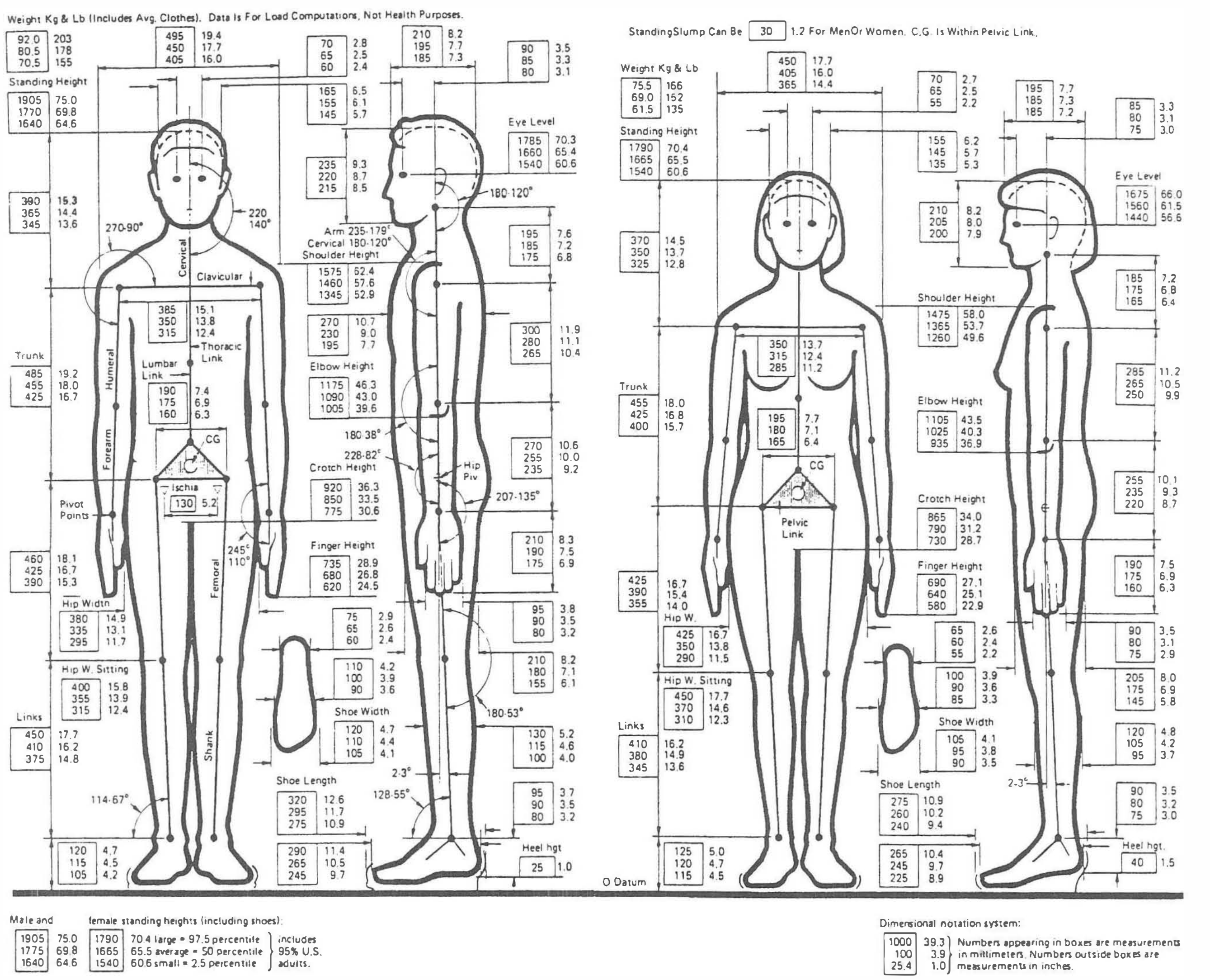

Figure 210-2. Standing adult male and female dimensions. *(Anthropometric data provided by Henry Dreyfuss Associates).*

Energy and Resource Conservation

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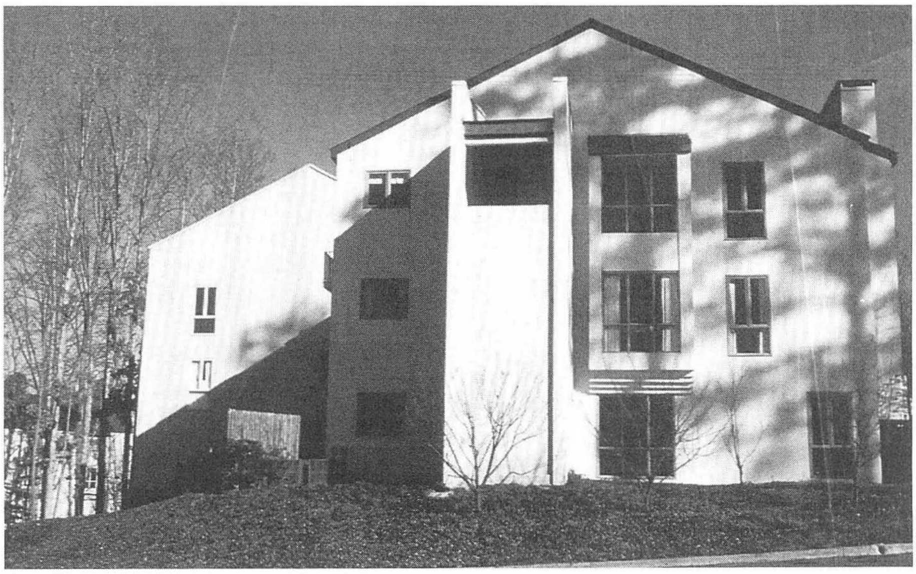
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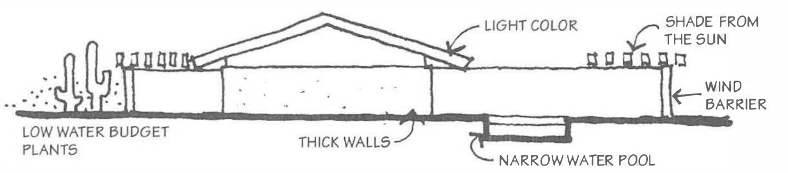

Figure 220-5. General site design strategies for hot arid regions.

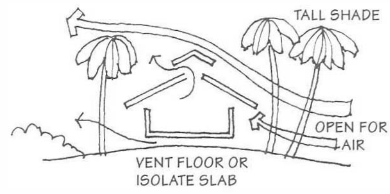

Figure 220-6. General site design strategies for hot humid regions.

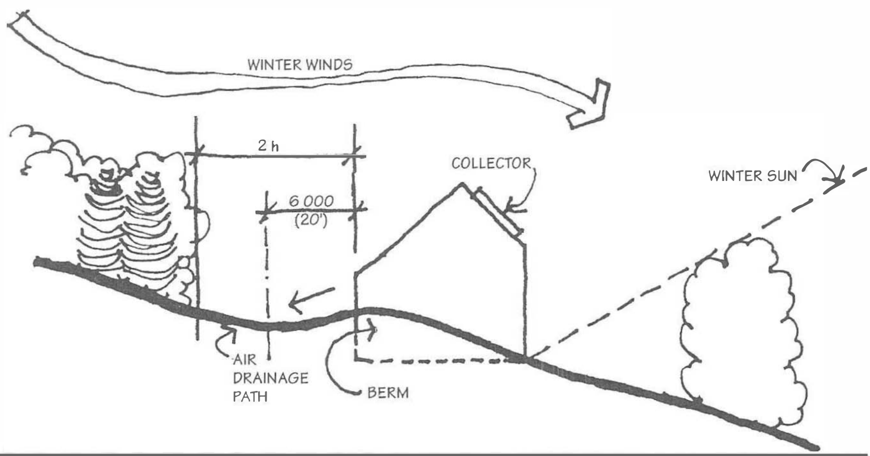

Figure 220-7. General site design strategies for temperate and cold regions.

Table 220-01. SUMMARY OF REGIONAL BIOCLIMATIC STRATEGIES

	Climate Zones			
Factors Modified by Landform, Vegetation, and Structures	**Hot Arid**	**Hot Humid**	**Temperate**	**Cold**
Sun	• Avoid heat absorbing materials use, thick walls or earthshelters • Use pergola and trellis structures for shade • Provide large overhangs on buildings • Avoid large area of exposed glass	• Maximize shade through the use of plantings • Use pergola and trellis structures for shade • Screened terraces provide relief from direct heating of main structure • Provide large overhangs on buildings • Use high ceilings and vent all roof systems	• Site structures on southerly slopes for solar gain in winter • Avoid northern entrances to buildings • Plant deciduous trees for afternoon shade • Use earthshelters to protect from summer sun	• Site structures on southerly slopes for solar gain in winter • Cold climate siting benefits from steeper slopes for better solar access • Avoid northern entrances to buildings • Plant deciduous trees for afternoon shade • Use earthshelter to protect from summer sun
Wind	• Site structures at toe of slopes for exposure to cold air flows at night • Use plant material to block desiccating winds • Deflect hot winds with walls and screens	• Site structure at top of slope for exposure to breezes • Avoid excessive earthmounding that may trap moist air • Maximize breezes through use of high canopy trees and with a loose open planting pattern • Avoid tall solid walls that block wind	• Site structure on middle to upper slope for access to light winds, but protection from high winds • Landforms, plants, and structures can be used to divert northerly winter winds while allowing cooling summer breezes • Use earthshelters to protect from winter winds	• Site structure on middle to lower slope for wind protection • Plant coniferous shelter belts to block cold winds • Avoid topographic depressions that collect cold air • Use earthshelters to protect from winter winds
Water	• Use moisture conserving plants-xeriscape • Limit impervious surface to minimize runoff-porous paving can be used	• Avoid siting next to stagnant bodies of water • Maximize infiltration of stormwater runoff	• Use of retention/ detention ponds for stormwater provides for evaporative/cooling of the site • Foundations for structures and pavement must drain well to prevent damage from frost/thaw action	• Use of retention/ detention ponds for stormwater provides for evaporative cooling of the site • Foundations for structures and pavement must drain well to prevent damage from frost/ thaw action

storing energy, increasing humidity, and diverting desiccating winds.

Hot Humid Regions: Characterized by hot summer temperatures [>20°C (68°F)] and mild to cool winters [>0°C (32°F)]. Annual precipitation and humidity are high, with frequent rain showers. Freezing temperatures are uncommon, and relatively minor diurnal temperature fluctuations are typical. Site planning and design should seek to increase shade, cooling from evaporation, and breezes.

Temperate Regions: Characterized by hot, often humid, summers [>20°C (68°F)] and cold winters [<0°C (32°F)]. Annual precipitation is fairly high. The region is subject to repetitive freezing/thawing action, and significant seasonal temperature fluctuations are common. Site planning and design should seek to promote shade and evaporative cooling in warm periods, and block winds and promote heat gain in cool periods, without disrupting favorable summer wind pattern.

Cold Regions: Characterized by mild summer temperatures [>10°-20° C (50°-68° F)] and very cold winters [<0° C (32° F)]. Annual precipitation is typically low. Region is subject to extreme freezing/thawing action. Site planning and design should seek to control winter winds, and promote solar gain and storage.

Figure 220-2 illustrates a topographic section showing the theoretical "most favorable" microclimate location for each climate region. Hot Arid climates favor the eastern slope base to avoid harsh sun and to receive cool diurnal air drainage for the upper slope. Hot Humid climates favor the top of the eastern slope to avoid harsh west sun and to receive the evaporative cooling effect of winds due to turbulence at the hilltop. Temperate climates are most favorable at the south-east "military crest" to receive both sun and breezes, but to avoid cold winds at the true crest. Cold climates are ideal on the south to south-western lower slope to receive solar radiation and be protected from winter winds, but high

SECTION 240

Outdoor Accessibility

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1.0 INTRODUCTION AND PURPOSE

Passage of the Americans with Disabilities Act in 1990 has produced both published legal guidelines and recommendations for access to the U. S. outdoor environment. This section focuses on accessibility within outdoor environments such as parks, playgrounds, gardens, wilderness areas, beaches, and common urban environments. Specific design recommendations for fully accessible environments and additional guidelines based on a number of important design concepts and principles are provided.

Many individuals are unable to independently obtain access to the landscape because of barriers. Barriers in the landscape include designed surfaces which are not wheelchair-negotiable and misplaced bollards which create obstacles undetectable by cane. Yet barriers can often be avoided by creative or simple design solutions which take into account different users' needs. The concept of "Universal Design" has emerged to help designers address issues of concern to the widest possible range of individuals without segregating different users.

Information in this section has been prepared to complement the Uniform Federal Accessibility Standards (UFAS) and the Americans with Disabilities Act Accessibility Guidelines (ADAAG). Currently, the UFAS applies to many federal agencies while the ADAAG applies to the private sector. State or local government entities may follow either set of standards, but a site design must be uniform in application (i.e. the UFAS and ADAAG guidelines cannot be "mixed and matched" within one site).

For further information including specific recommendations, the Office of the Americans with Disabilities Act may be contacted directly. Expert guidance is available regarding the application of the Americans with Disabilities Act, the Americans with Disabilities Act Accessibility Guidelines (ADAAG), and the Uniform Federal Accessibility Standards (UFAS). Contact:

The Office of the Americans with Disabilities Act
Civil Rights Division
US Department of Justice
P.O. Box 66118
Washington, DC 20035-6118
1 (800) 514-0301
1 (800) 514-0383 TTD
1 (202) 514-6194 (Electronic Bulletin Board)
website: www.usdoj.gov

The Uniform Federal Accessibility Standards (1984) were developed to minimize the differences between the standards previously used by four federal agencies (the General Services Administration, the Department of Housing and Urban Development, the Department of Defense, and the U.S. Postal Service), and the standards recommended for facilities that are not federally funded or constructed. The UFAS include architectural and transportation guidelines as well as a large amount of basic information useful for formulating minimum dimensional criteria for many situations.

The Americans with Disabilities Act Accessibility Guidelines (1991) was subsequently developed by the US Architectural and Transportation Barrier Compliance Board. The ADAAG incorporates ANSI A117.1-1980, which were developed by the American National Standards Institute. The ADAAG sets guidelines for accessibility for the private sector, under the Americans with Disabilities Act of 1990. At this writing, it seems likely that the ADAAG will soon replace the UFAS as the single accessibility guideline standard in the U.S.

Copies of the UFAS standards may be acquired by contacting the US Architectural and Transportation Barriers Compliance Board.

2.0 IMPORTANT DESIGN CONCEPTS

Several concepts related to accessibility are important to understand prior to reviewing the guidelines outlined in this section.

2.1 Universal Design

Universal Design is a philosophicall approach to design which seeks to eliminate barriers while providing access and usability to the broadest possible range of people. A key to Universal Design is becoming aware of the wide variety of disability concerns. Designers following the UFAS or ADAAG standards may find that while the dimensional guidelines are highly useful, following UFAS or ADAAG does not automatically create an accessible or usable space. Understanding different types of impairments and how they might affect access is necessary in order to create usable landscapes. In addition, the guidelines permit flexibility, if equal or greater accessibility can be provided by a different or more creative design solution.

2.2 Accessible Route

Providing an accessible route is the most important way to ensure universal access.It connects the primary elements and spaces of a site, parking, entrances, facilities, and buildings. An accessible route must be provided which is continuous and free from obstructions, as specified in the ADAAG section 4.3 Accessible Route. This route must coincide with the route planned for the general public to the maximum extent feasible (Figure 240-1).

The particular site context usually dictates design strategies. Therefore, design considerations for continuous accessibility should emphasize specific elements and details. These elements relate to spaces such as interiors, waiting and rest areas, and parking; specific transition points at building entries and curb ramps; clearances between buildings and on paved surfaces, and details including lighting and signage. Pedestrian circulation systems should include loops rather than dead ends.

2.3 Graduated Difficulty of Access

A system of graduated difficulty of access is most applicable to the design and management of outdoor recreational facilities, particularly to hiking and camping areas (See 5.0 Accessible Recreation in this section for further information). The objective is to provide a wide variety of trail types with a range of opportunities and experiences to accommodate or challenge all abilities. The diversity of trail types is characterized by variations in degree of difficulty (with varying surfaces, widths, slopes, cross-slopes, lengths, edges, number of rest stops, etc.). A good system of signage is necessary for user selection of trail type. Such a system does not compromise the recreational experience for anyone, nor segregate users.

3.0 DESIGN CONSIDERATIONS FOR ACCOMMODATING DISABILITIES

The range of abilities among people is highly varied. The guidelines in this section address specific categories of impairment and design strategies required to accommodate them. They include visual, mobility, hearing, manual, and learning impairments. Other areas of concern include lack of stamina and extremes in size and weight. Hearing and manual impairments are sometimes accommodated by specific devices. Learning and mental impairments in the outdoor environment are often addressed by clarity of signage or the use

Natural Hazards: Earthquakes

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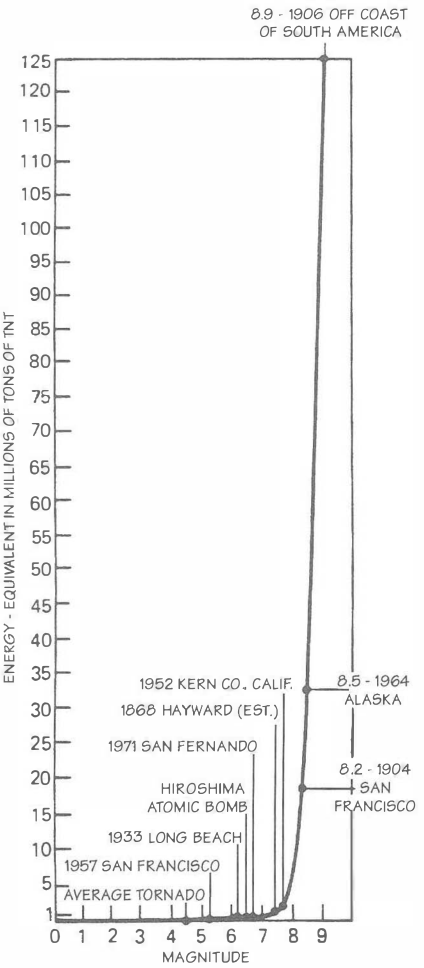

Figure 252-3. Richter magnitude scale. *This graph shows the amount of energy released by earthquakes of different magnitudes.*

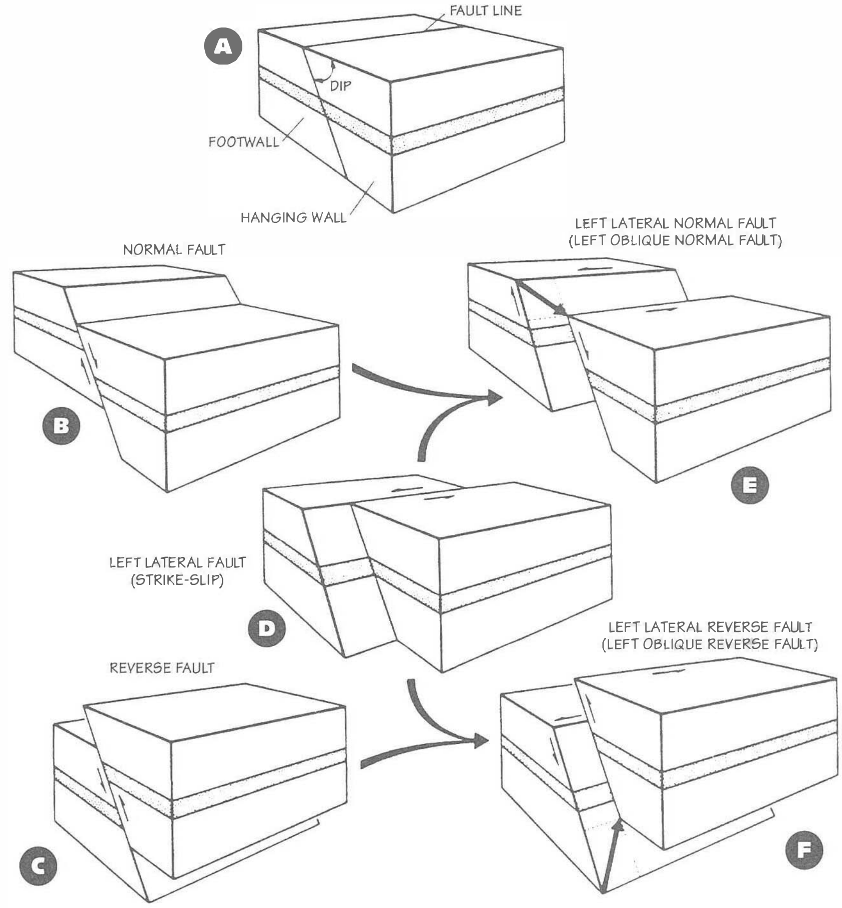

Figure 252-4 Types of faults.: *(a) names of components, (b) normal fault, (c) reverse fault, (d) left-lateral strike-slip fault, (e) left-lateral normal fault, and (f) left-lateral reverse fault.*

seismic energy increases as it nears the tip of the layer. Again, structures located above this zone can be subjected to much higher seismic energies and become more susceptible to structural and other types of damage.

4.3 Earthquake-Induced Ground Failures

There are three major types of ground failures. All have some connection with the liquefaction of underlying geological materials.

Liquefaction:

Liquefaction is a temporary condition when seismic waves pass through saturated layers of granular materials (such as sand or silt). These waves cause the voids in this material to collapse, or for a short time, causes the material to behave as a fluid and as a result lose its bearing capabilities. This material must be within about 30 m (100

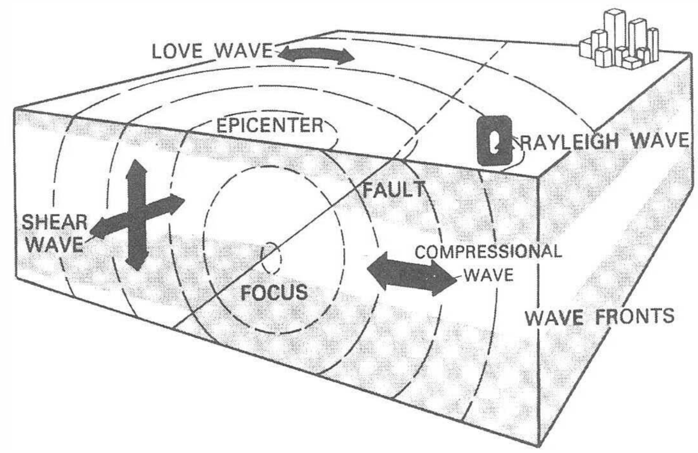

Figure 252-5. Directions of vibration *caused by body and surface seismic waves generated during an earthquake. When a fault ruptures, seismic waves are propagated in all directions, causing the ground to vibrate at frequencies ranging from about 0.1 to 30 Hz.*

SECTION 253

Natural Hazards: Landslides and Snow Avalanches

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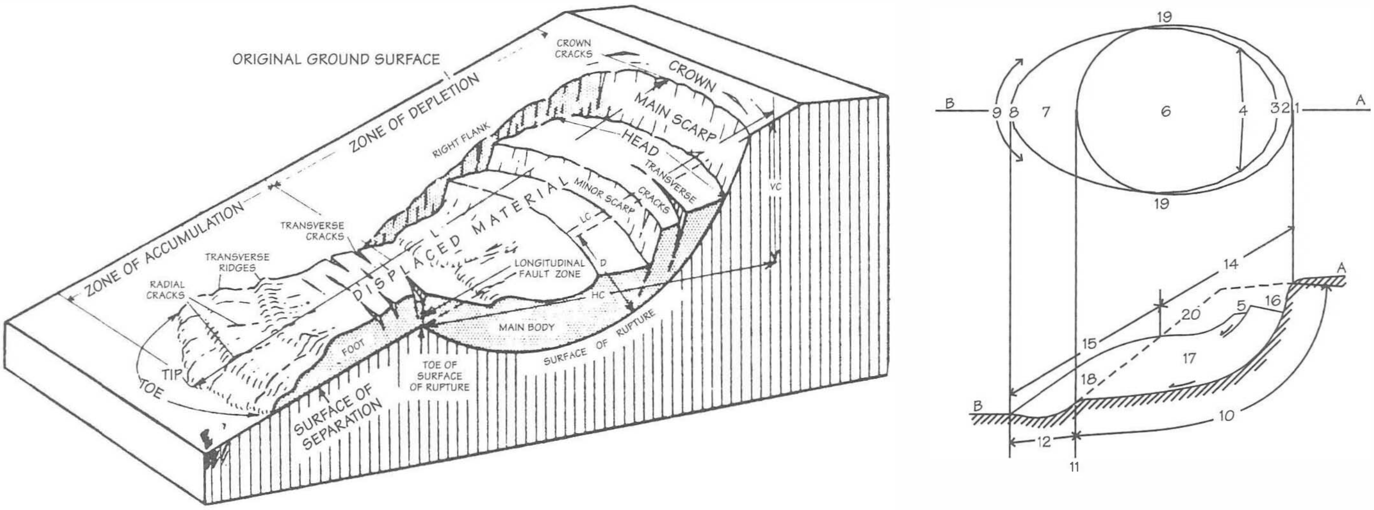

NUMBER	NAME	DEFINITION
1	Crown	Practically undisplaced material adjacent to highest parts of main scarp
2	Main scarp	Steep surface on undisturbed ground at upper edge of landslide caused by movement of displaced material (13) away from undisturbed ground; it is visible part of surface of rupture (10)
3	Top	Highest point of contact between displaced material (13) and main scarp (2)
4	Head	Upper parts of landslide along contact between displaced material and main scarp (2)
5	Minor scarp	Steep surface on displaced material of landslide produced by differential movements within displaced material
6	Main body	Part of displaced material of landslide that overlies surface of rupture between main scarp (2) and toe of surface of rupture (11)
7	Foot	Portion of landslide that has moved beyond toe of surface of rupture (11) and overlies original ground surface (20)
8	Tip	Point on toe (9) farthest from top (3) of landslide
9	Toe	Lower, usually curved margin of displaced material of a landslide, most distant from main scarp (2)
10	Surface of rupture	Surface that forms (or that has formed) lower boundary of displaced material (13) below original ground surface (20)
11	Toe of surface of rupture	Intersection (usually buried) between lower part of surface (10) of a landslide and original ground surface (20)
12	Surface of separation	Part of original ground surface (20) now overlain by foot (7) of landslide
13	Displaced material	Material displaced from its original position on slope by movement in landslide; forms both depleted mass (17) and accumulation (18)
14	Zone of depletion	Area of landslide within which displaced material (13) lies below original ground sur face (20)
15	Zone of accumulation	Area of landslide within which displaced material lies above original ground surface (20)
16	Depletion	Volume bounded by main scarp (2), depleted mass (17), and original ground surface (20)
17	Depleted mass	Volume of displaced material that overlies surface of rupture (10) but underlies original ground surface (20)
18	Accumulation	Volume of displaced material (13) that lies above original ground surface (20)
19	Flank	Undisplaced material adjacent to sides of surface of rupture; compass directions are preferable in describing flanks, but if left and right are used, they refer to flanks as viewed from crown
20	Original ground surface	Surface of slope that existed before landslide took place

Figure 253-1. Common features of a landslide.

Site Grading

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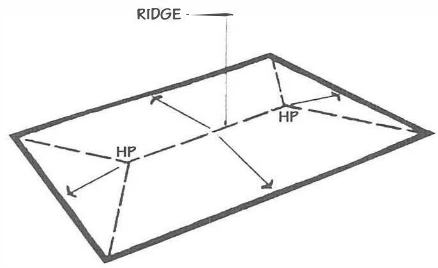

Figure 320-14. Perimeter edge level—drain from ridge line to all edges.

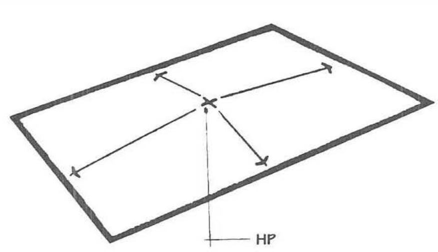

Figure 320-15. Perimeter edge level—drain from single high point.

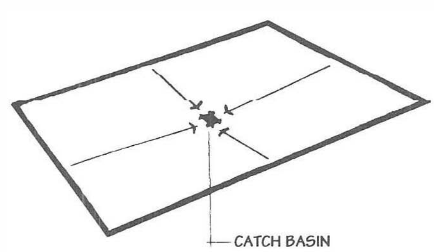

Figure 320-16. Perimeter edge level—slope to center drain inlet.

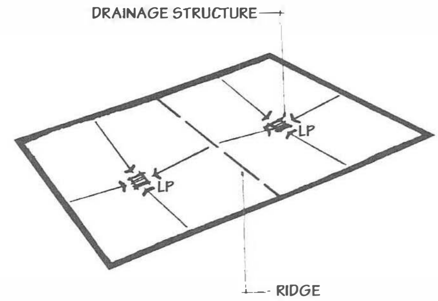

Figure 320-17. Perimeter edge level—all slopes to drain inlets at the same gradient.

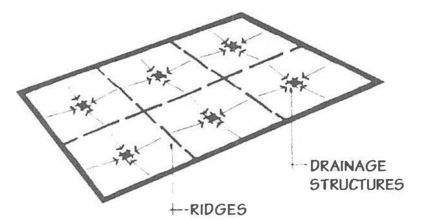

Figure 320-18. Perimeter edge level—all slopes to drain inlets at the same gradient.

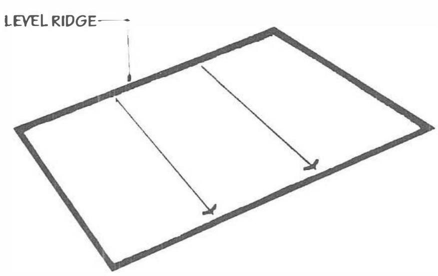

Figure 320-19. Perimeter edge level—slope away at uniform gradient.

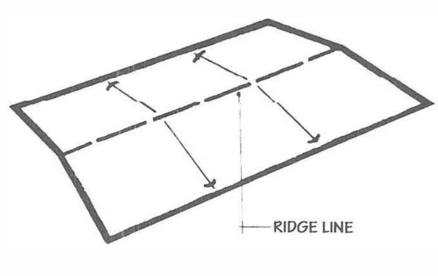

Figure 320-20. Two perimeter edges level—slope from ridge line.

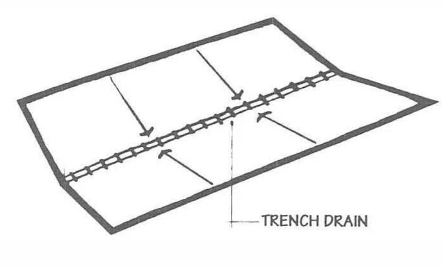

Figure 320-21. Two perimeter edges level—minimum slopes to trench drain.

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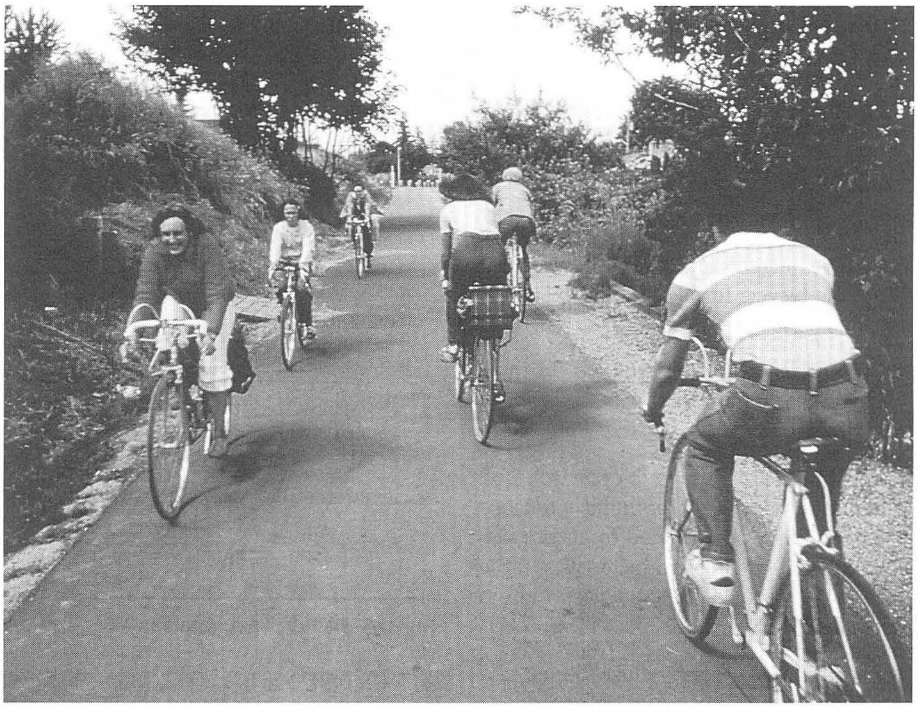

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