

THE UNIVERSITY OF MANITOBA

PROPOSED DESIGN GUIDELINES
FOR CHILDREN'S PLAY IN PUBLIC TOWNHOUSING:

A STUDY OF 4-TO-7-YEAR-OLDS AT PLAY
IN FIVE PUBLIC TOWNHOUSING DEVELOPMENTS
IN THE CITY OF WINNIPEG, 1976 - 1977

BY

RANDY MAUREEN SILVER

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ABSTRACT

Thirty-four design guidelines for the play provision of children aged 4-to-7-years, resident in public townhousing, city of Winnipeg, are presented.

The age group of 4-to-7 was chosen primarily because children in that age bracket rely upon and make a thorough use of their home environment for learning and development through play. Low-income, high-density housing was chosen because of a recognized need for design response to the large concentrations of often deprived child residents.

The design criteria were developed by: a literature review of child development and play; an examination of five play environments (the natural environment, the home environment, playgrounds with equipment, community play centres, and adventure playgrounds); a social, physical, and climatic review of public townhousing in Winnipeg; and a detailed examination of play and provision for it in five public townhousing sites in Winnipeg.

The five case study sites, as identified by the neighbouring streets, and their respective number of townhouse units, are: Tuxedo (125 units), Carriage Road (75 units), Pembina Perimeter (39 units), Pembina Victoria (35 units), and David (14 units). The density of each site is 13 units to the acre. Each has been financed through the Central Mortgage and Housing Corporation and the Manitoba Housing and Renewal Corporation, and all are managed by the Winnipeg Regional Housing Authority.

Observations in each site were made of the following: the nature of play activities, the number of 4-to-7-year-old children involved, the location of these activities in the project, the physical characteristics of each play location, weather conditions (in particular, wind or shade), and past evidence of children's play (such as trampled areas in snow or grass, vandalism, or play elements strewn in private and public spaces).

The design guidelines are a translation of behavioural data into workable spatial form criteria, which should be taken into consideration in the design of public townhousing developments.

Longitudinal or post-evaluative research, beyond the scope of this thesis, will be needed to test the validity of these proposed guidelines.

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Randi Silver

INTRODUCTION

Play is fundamental to the development and learning of skills and concepts which are the basis of adult activity and thought. Play is essential to socialization, the acquisition of physical skills, the formulation of personality and self identity, and the experience of and ability to cope with real-life situations. The potential benefits of play are especially important between the ages of 4-to-7, since thirty percent of the child's learning is achieved during these years, and much of it is accomplished through play.¹

At this stage of early childhood, youngsters have a limited territorial range; their activities are controlled and restricted to a greater degree than for older children. The 4-to-7-year-old is often not allowed free mobility to cross busy streets or travel throughout the neighbourhood to parks or playgrounds, without an older chaperone. His particular play needs and interests must be met within the home environs.

The challenge of sensitively designing for play at home is of particular importance in the context of multi-family housing. The concentrations of children burden the home environment. Public townhousing projects, with their small dwellings and high densities,

¹M. Paul Friedberg and E. P. Berkeley, Play and Interplay (New York: The Macmillan Company, 1970), p. 35.

are designed and realized under a tighter budget than are private or condominium housing. Understandably, there is less concern, space, and money allocated for children's play.

All too often, the spaces intended for child users in public townhousing projects in Winnipeg are designed to suit adult values of how children should play, rather than in response to the way youngsters actually play. Current planning frequently ignores the inherent nature of children and play: growing, changing, impulsive, dynamic, and free. Token play spaces are often badly located, and provide a narrow range of activity or single-function play equipment, that are neither scaled nor positioned to enhance play. Also, they do not respond to both summer and winter use, which are of vital significance in this climate, where fair weather play may last only up to six or seven months of the year. As a result, play facilities are not fully used; children play elsewhere, often disturbing other residents, damaging landscaping, or turning to vandalism or graffiti. Such behaviour leads to further restrictions on children, and such restrictions may hamper the child by causing frustration, delaying the development of his potentialities, or worse:

The frustration engendered by a barren and unyielding environment during childhood...may lead in the end to juvenile delinquency, aggression, alienation, drugtaking, etc.¹

In addition, such low- or mis-use of the allotted play spaces

¹Arvid Bengtsson, Ed., Adventure Playgrounds (New York: Praeger Publishers, 1972), p. 11.

generates an attitude whereby even fewer resources are allocated for play provision in future public townhousing, with the excuse given that facilities are 'not used anyway' or 'not appreciated'. In fact, play spaces and facilities are commonly considered a luxury, and are one of the first things to be cut back due to budgeting. Clearly, present provision for children's play seems irrelevant.

This thesis confronts the challenge of creating sensitive play opportunities for 4-to-7-year-old residents of public townhousing in Winnipeg. This enables a focus on the play needs of those most dependent upon a home environment in which: provision for play may be less than satisfactory, and where the physical environment may be less supportive of the developmental benefits available through play. The premise of the author is that sensitive provision for play should become a fundamental design determinant that is inherent in the housing process and not easily dismissed.

The first three chapters of the thesis identify and derive criteria that are essential to guide decisions at an early stage in the design process. This requires a basic recognition of the nature of the child's thought, ability, and interests as they relate to play. An exploration of the 4-to-7-year-old, in Chapter I, provides an understanding of the child's needs, his conceptions of space and its contents, the nature of his play,

and how his capabilities can be developed and enhanced within his limitations. The designer must be responsive to these factors in planning for play, rather than relying upon his own values and adult basis of thought.

The environment provides the opportunities for children to realize their potential to play. In Chapter II, various places where children commonly play are examined. These include spaces which reflect the concept that play does not require a man-made or a structured environment, as well as the opposite notion, that provision for play must be highly contrived, contain specific equipment, and/or be supervised in order to be beneficial to the child. Emphasis is given to the qualities in any or all of these physical environments that promote play, respond to child interests, and are beneficial to development.

Following this, in Chapter III, the generalized understandings of 4-to-7-year-olds at play are applied within the context of public townhousing in Winnipeg. This helps determine the applicability of the aforementioned environmental qualities to this form of housing. An overview of the nature of public townhousing, including its physical and social characteristics together with the constraints of the climate in Winnipeg, reveals implications for the play of 4-to-7-year-olds.

Also in this Chapter, an investigation of children's use of five public townhousing projects in Winnipeg is conducted, to evaluate and learn from the successes and failures of existing projects, and to elaborate on the criteria constituting adequacy

or inadequacy of the play environment. The case study of children's actual use of the sites furthers the understanding, from the child's point of view, of: what youngsters want to be able to do, what qualities of the physical setting of public townhousing promote or hinder these behaviours, and what constitutes child satisfaction. Since communication skills are not well-developed at age 4-to-7, most of this information is gained through observational techniques. The analysis of the case study provides criteria, based upon and evaluated by, the findings in Chapters I and II.

Chapters four to six are meant to provide a functional relationship between the needs and concerns of the various user groups (with emphasis on the 4-to-7-year-olds) and the design of public townhousing developments in Winnipeg. The criteria gained from the literature and observational analyses are interpreted and applied as an evaluative base and rationale for translation into the proposed design guidelines.

The guidelines are hoped to be a valid and tangible reference, not a formula that would constrain imaginative and creative design. They enable the designer to become aware of the unique play needs of children, in such a way that he can project himself into the role of the child, understand reasons for each guideline, and creatively interpret design solutions that are based upon facts rather than mere intuition. The guidelines also indicate how to facilitate play in spaces where it is desirable, and how to minimize conflicts between incompatible activities or the concerns of user groups.

The proposed design guidelines are open to interpretation. They will require evaluation after implementation, and should be changed over time as needs change and as evaluations indicate inconsistencies, limitations, or a need for further amendment.

Children's play is not only movement, action and noisy behaviour. It can just as well consist of daydreams, lying in the grass pondering the shapes of clouds. Trees, animals, birds, people, things and machines can all be subjects for the child's imagination. A buzzing bee, a butterfly, the waving of the tall grass, a leaf falling--all can satisfy a playful wonderment. Through observation the child gathers material for play--watching, he gathers impressions to convert into play. When things are happening the child can be a surprisingly patient and absorbed onlooker.

Idleness--doing nothing--just letting life pass through the senses, is also a game. Idling play opens up perspectives into a world of daydreams--the places where the child can lie and listen to the grass are among the milestones in his life.

Training and psychology help us to understand the child's need for play. The interplay between child and adult in play experiments--the warm atmosphere, where the adult uses all available aids to meet the child's need for development in play--are the fertile soil of play itself.¹

For children and young people it (play) is an expression of their desire to make their own discoveries in their own time and at their own pace.²

Play is the highest level of child development. It is the spontaneous expression of thought and feeling--an expression which his inner life requires....play is never trivial; it is serious and deeply significant. It needs to be cherished and encouraged by the parents, for in his free choice of play a child reveals the future life of his mind to anyone who has insight into human nature. The forms of play at this stage are the core of the whole future, since in them the entire person is developed and revealed in the most sensitive qualities of his mind.³

¹Arvid Bengtsson, ed., Adventure Playgrounds (New York: Praeger Publishers, 1972), p. 23.

²Lady Allen of Hurtwood, Planning For Play (London: Thames and Hudson, 1968), p. 11.

³Friedrich Froebel, The Education of Man (New York, 1826), cited by Willem van der Eyken, The Pre-School Years 2nd ed. (Middlesex, England: Penguin Books Ltd., 1969), p. 44.

CHAPTER I

THE NATURE OF CHILDREN AND PLAY

A. The Nature of Play

Play is not easily defined or classified. It refers to a multitude of activities with both overt and covert characteristics, which cannot be categorized as to occurrence, duration, location, or uniformity of nature. Play occurs throughout the life cycle, in various forms, expressions, and quantities; there is the play of adults, as distinguished from that of children or adolescents. Play and work are often inseparable; play may be a learning experience, or mere repetition; it may be useful or serve no apparent purpose; and it may be solitary or involve social interaction.

The associated bodily activities are numerous: running, climbing, sliding, swinging, cycling, digging, building, exploring, hiding, and general moving about. Play also consists of more passive behaviour which may look like idleness but involves intensive thought and imagination, such as watching people and nature, engaging in conversation, fantasizing, and sharing experiences.

Accepting that play is merely one aspect of the whole of human dynamics, and that all natural human functions and activities are directed by the complex interaction between heredity and the environment, it follows that play is a function of this interaction. Heredity is directly related to the individual's potential to play; the social environment transmits its attitudes to play; and the physical environment provides clues, stimuli,

space, and outlets for the activities of play. Each affects and is affected by the others, in influencing the child's play behaviour.

Play may be regarded as an attitude, or a relative orientation of a behaviour that differentiates it from a corresponding serious behaviour labelled 'work'. Play is less oriented to reality and it often occurs in an illogical or unexpected context.¹ It has been described as being voluntary, unstructured, adventurous, unreal, intrinsic, and impulsive. Play connotes pleasure-seeking, laughter and fun, creativity, spontaneity, lack of conflict and constraint by people and circumstances, freedom of choice, and freedom from convention.²

1. Play theory

The basic need to play initiates the lifelong process by which the child explores, investigates, manipulates, and experiments with himself, other people, and his environment. As a by-product of his experiences, the individual gains knowledge from his own direct sensory activities. He builds the basis for future learnings which are necessary for the achievement of full maturity. He develops friendships and appreciation for his surroundings. He develops and expresses his interests, imagination, and personality; and he applies and exerts his vital organs, muscles, and co-ordination.

Play is now generally accepted as an integral part of living and maturing. Its existence as a universal instinct or need is seemingly

¹Jean Piaget, Play, Dreams and Imitation in Childhood, trans. C. Gattegno and F. M. Hodgson (New York: W. W. Norton & Company, Inc., 1951), p. 150; and Susanna Millar, The Psychology of Play (London: Penguin Books Ltd., 1968), p. 20.

²Piaget, Play, Dreams and Imitation, pp. 148-149.

most satisfactorily explained by an integrated model of three behavioural theories on play. The first theory, called arousal-seeking motives, suggests the factors that initiate play. The second theory, labelled learning and behavioural modification processes, explains changes in those motives and in the behavioural responses that result from the continuous learning processes. The third theory, referred to as cognition and thought, provides a basis for analysis of the play motives and the related processes of learning and behaviour modification.¹ These are discussed briefly below.

a) Arousal-seeking motives. In order to develop fully and attain their potential, children need various types of stimulation, including motor, physical-tactile, social, and verbal. In play, they innately avoid boredom as well as over-stimulation by seeking out external stimuli according to a unique and genetically-based optimal arousal level. The individual responds to environmental stimuli; once his interests have been exhausted, his arousal-seeking instinct motivates a behavioural change to pursue additional interests and maintain the flow of stimulation.² To preserve this continuity of arousal, external stimuli should provide a complexity that elicits new responses as the individual plays.³

¹M. J. Ellis, Why People Play (New Jersey: Prentice-Hall, Inc., 1973), pp. 80-99; and M. J. Ellis, "Creativity in Play," Play and Creativity: Planning the Environment and Training Leaders, Report of the 5th Conference of the International Playground Association, 1972, pp. 10-13.

²Ellis, "Creativity in Play," pp. 10-13.

³M. J. Ellis, "Play: Theory and Research," Proceedings of the EDRA 3/ar 8 Conference 1 (Los Angeles: University of California, January 1972): 5-4-2.

The approach of the author to this theory is that play behaviour, rather than being the direct result of the imposition of external stimulus situations, is influenced by the perception and interpretation of environmental stimuli held by an individual at any given time. Physical variables (such as space, shape, colour, and material), inner forces (including genetic constitution, biological needs, and psychological values and goals), and social and cultural situational factors interact to suggest stimuli or clues. These influence the individual's momentary perception and motivate activities. Individuals respond differently to the stimuli, resulting in a variety of unpredictable arousal seeking behaviours; conversely, the same response may be elicited by a wide variety of forms.

The stimuli may be selected for the relative qualities and quantities of novelty, complexity, and the degree to which they arouse or relieve uncertainty and conflict. Colour, change, ambiguity, surprise, intensity, and other factors affect the individual's selective response, directing him toward one stimulus rather than another.¹ In general, it can be assumed that the child will not play unless external stimuli are relevant and interesting enough to motivate him at a particular moment; individuals do not play to burn up excessive energy or to let off steam.²

b) Learning and behaviour modification processes. As the child gains knowledge and awareness of his effects on the environment, he learns to evaluate the consequences of his activities in terms of learned social incentives such as reward and punishment. He discovers that he

¹D. E. Berlyne, Conflict, Arousal, and Curiosity (New York: McGraw-Hill Book Company, Inc., 1960), pp. 18, 96-103.

²Millar, Psychology of Play, p. 15.

is able to modify his behaviour in a way which not only stimulates him, but also increases his chances for success, survival, and social acceptance. Through a combination of arousal-seeking motives and behavioural modifications, the individual learns to base his behaviours and responses upon the effectiveness of past experience with environmental clues. This leads to an increasingly flexible and complex repertoire of responses in his play activities and interactions with the environment. In his quest for behavioural control, the child is changed by his experiences: he develops into a more complex and knowledgeable being, whose play behaviours are increasingly intricate and involved. Environmental stimuli should correspondingly increase in complexity as the individual progresses.¹

c) Cognition and thought. Jean Piaget² has theorized that this increasing complexity of play behaviour is universal and occurs sequentially, paralleling and reflecting the individual's cognitive development. As the child develops and grows, his play behaviours and needs change and call for different qualities and quantities of provision for play, to correspond with his increasingly complex perception of the world and his more effective capacity to deal with space, objects, and people.

Piaget considers play to be an essential part of the learning and developmental processes by which an individual constructs his knowledge to understand and cope with the real world. Depending on his level of development, the child will either tend to distort and subordinate

¹Ellis, "Play: Theory and Research," p. 5-4-2.

²See for example: Piaget, Play, Dreams and Imitation; and Jean Piaget, Six Psychological Studies, ed. David Elkind, trans. Anita Tenzer (New York: Random House, Inc., 1967).

reality to suit his existing level of understanding based upon past experience; or, he will submit to reality by modifying his own mental and behavioural patterns to relate to a new experience.

As the child's system of mental actions adapts progressively to reality, he develops an increased capacity to detect inconsistencies and distortions in his previous ways of thinking. Through experience, these incongruities force him to face certain conflicts, frustrations, and surprises. The child resolves those conflicts and reconstructs his version of reality to reduce the conspicuous errors. Richer and increasingly complex experiences follow, and either verify the child's understandings or renew this cycle.¹ Play is the major means by which the child experiences, resolves, and reconstructs--all of which are prerequisites for cognitive development to proceed.

Over time, the individual's thought and perception are increasingly reconciled to reality and the norms of the adult world, thus reducing the tendency towards distortion.² For this reason, play activities predominate in childhood, when the characteristics of thought and behaviour are less adjusted to reality; and they diminish in adulthood, when play behaviour emerges as a more serious form of intelligent behaviour.

2. The role of play

This predominance in the early years renders the play instinct a major developmental process for the child. According to Piaget, play

¹John L. Phillips, Jr., The Origins of Intellect: Piaget's Theory (San Francisco: W. H. Freeman & Company, 1969), p. 10; and Piaget, Six Studies, pp. xvi, 64, 119, 120, 127, 128.

²Piaget, Play, Dreams and Imitation, pp. 135, 146, 285.

expresses what the child has already succeeded in mastering, and is a basis for practicing already-learned skills. As well, it enhances the individual's progressive learning and growth.

Play has many beneficial functions. It gives children opportunities for learning the skills of problem solving, effective communication, and classification of objects, people, and phenomena in the environment; these insights are essential for developing rational thought and the ability to make appropriate choices. Play also contributes to the child's learned conceptual understanding of 'here' and 'not here' and the differentiation between events caused by his own actions and those caused by outside sources;¹ these are fundamental to orienting oneself in the environment.

Play provides many opportunities to learn and assume the various socially acceptable roles, activities, and relationships inherent in the adult world. Play is essential to the development of a healthy self identity. It also contributes to physical health and the acquisition of motor skills.

3. Relationship between play and the developmental stages

The preceding roles of play not only benefit the child, but are reciprocally affected by his specific stage in development. The natural integration of the cognitive, perceptual, social, emotional, and physical states of the child at each developmental stage combine with opportunities and stimuli in the physical environment to reflect the abilities, preferences, limitations, and perseverance of the child at

¹G. N. Getman, Perceptual-Motor Aspects of the Developmental Process (Van Nuys, Calif.: Remediation Associates, Inc., 1967), p. 12.

play.¹

It is fundamental to explore the play-related developmental achievements of the child, to gain an understanding of the child's nature: his thought, interests, capabilities, and needs in play. This will provide some insight by which an adult can project himself into the role or developmental level of the child. In this way, an adult designer can better predict:

- (i) What, where, when, and how the child is characteristically thinking and behaving;
- (ii) What effects the play environment may have upon his perceptions; and
- (iii) How sensitive interpretations of children's actual play needs may affect the design of the play environment.

B. The Nature of the Child

The nature of the child's thought, behaviour, and play activities continually change as he progresses in development. Piaget proposes that this development occurs in an invariant sequence of distinct stages, each with predictable characteristics of intellectual content and external behaviour. The various stages contribute to and alter one another; in this way, achievements from previous stages of the developmental process are necessary prerequisites for further progression.

As the child develops, his cognitive system advances, his abilities and freedom in the environment expand, and his opportunities for

¹Anna S. Espenschade, "Motor Performance in Adolescence Including the Study of Relationships with Measures of Physical Growth and Maturity," Monographs of the Society for Research in Child Development 5 (1966): 1.

communication with people and things increase. His senses develop more fully, and the individual is better able to co-ordinate them to interpret environmental clues and conditions, and to adapt his behavioural responses accordingly.

The child has obviously not yet acquired all the abilities, or the framework for mental and physical actions, which are the basis of adult thought and behaviour. He is less prepared for interpersonal co-operation, conceptual understanding, and logical thought. As a result, many adult values and environmental stimuli will evoke in the child a naive or distorted understanding, and others will have no influence upon his limited view of reality or upon his play activities.

The successive developmental stages follow a rate dependent upon:

- (i) The individual's inherited genetic constitution and speed of maturation;
- (ii) His actual experiences, opportunities, and the stimuli in the physical environment; and
- (iii) The attitudes and encouragement gained through functioning in the social environment.

An innate self-regulating process directs and co-ordinates the interaction between the inherited and the environmental factors, and serves to integrate their influence and effects upon the individual.¹

Piaget suggests that these stages are achieved within commonly delineated ranges of age. The age group comprising the years 4-to-7 is Piaget's second division. This range is of particular importance to this thesis; however, to understand its place along the sequence, a brief

¹Piaget, Six Studies, p. 127.

discussion of the others is necessary.

1. The development of the child: 0-to-3-year-olds

The developmental period beginning with birth establishes the relationship between the individual and his environment, and the initial expressions of playful behaviour. Play begins as mere physical pleasure and reflex motor action; there is little meaning or thought involved. The child responds simply to things that stimulate his body and fulfill his organic needs and physical satisfactions. He explores his hands, feet, and objects with which he comes in contact.¹ He is unaware of the permanence of objects or of himself as a distinct entity; nor does he make a distinction between himself and other objects.

The infant's first movements are involuntary actions and general postural movements, leading from prone to upright posture, followed by transport movements which enable a progression to independent walking, running, and jumping. The development of his motor skills proceeds in a sequential pattern of movements: simple and awkward movements appear before more complex and refined bodily co-ordinations.² As this sequence progresses, his established patterns of active reaching, touching, and exploring lead to the ability for intentional manipulations, which are eventually augmented by his increased visual and perceptual co-ordinations.³

¹ John Sours, "Play and Human Development," International Journal of Early Childhood 5 (1973): 139.

² Aileene S. Lockhart, "The Motor Learning of Children," in A Textbook of Motor Development, ed. Charles B. Corbin (Dubuque, Iowa: Wm. C. Brown Company Publishers, 1973), p. 152.

³ Getman, Perceptual-Motor Aspects, p. 6; and Espenschade, "Motor Performance," p. 2.

By the age of 3, the child usually attains the following limited skills:

- (i) The manipulation of objects, characteristically using the palms of the hands;¹
- (ii) Walking both forwards and backwards, following a straight line, but losing his balance in walking a small circle;
- (iii) Running, without the ability to turn or stop suddenly;
- (iv) Jumping a distance of up to 24 inches, an upward height of 8 inches, and downward from a height of up to 18 inches; and
- (v) Ascending stairs, and initial attempts at climbing ladders and descending stairs.

Children of this age are not always willing or able to climb simple play apparatus. They are not proficient in the eye-hand co-ordination required for complex climbing or for catching and throwing balls, although progressive attempts are made to improve these skills.²

The child practices and masters each of his simple motor achievements through play. His repetitions are not intentional efforts to learn, but are sources of pleasure associated with muscular sensations, visual signs of change, and encouraging reactions as he shows off his new-found powers to himself and others.³ These are limited by the child's skills, his ability for voluntary control, and the nature of the materials and

¹Jean Piaget and Barbel Inhelder, The Child's Conception of Space, trans. F. J. Langdon and J. L. Lunzer (London: Routledge and Kegan Paul, 1956), p. 40.

²Harriet G. Williams, "Perceptual-Motor Development in Children," in A Textbook of Motor Development, ed. Charles B. Corbin (Dubuque, Iowa: Wm. C. Brown Company Publishers, 1973), pp. 118-119.

³Piaget, Play, Dreams and Imitation, p. 162.

objects at hand.¹

When an object or experience is unfamiliar to him, or evokes stimulation, the child explores it through imitation and manipulation. He practices his skills, repeating and refining each new acquisition.² In his play, the child often produces novel effects by chance. He attempts to reproduce those new or impressive effects, automatically practicing and coding each activity to become part of his repertoire.

The toddler's mobility, once he has acquired the ability for free locomotion, is limited to the immediate range of his home. Thought is limited at this age: things out of sight do not or cease to exist.³ This deters him from venturing far beyond familiar surroundings or away from his mother. Parental dependence and the need for protection diminish as the child develops the ability to distinguish himself as a separate entity. The mother-child play space assumes lesser importance and he plays independently a short distance away, frequently returning to home-base for affection and the security of bodily contact.⁴ However, this does not prevent the child from numerous escapes. He can scale low fences and barriers, and may unintentionally wander out of the range of familiar landmarks, unable to find his way back.

Around the age of 3, the child usually shows behaviours indicating a growing identification with others. This is largely the result of his increased mobility and communication skills, which enable contact with

¹ Millar, Psychology of Play, p. 112.

² Ibid., p. 134.

³ Piaget, Play, Dreams and Imitation, p. 207.

⁴ P. Mussen, J. Conger, and J. Kagan, Child Development and Personality (New York: Harper and Row Publishers, Inc., 1969), p. 265.

other people and situations. He plays alongside rather than with other children, and is unable to engage in social interaction. His thought remains bound by an egocentric preoccupation with self-satisfaction, and he is unable to consider the viewpoints or feelings of others. Through motor activities, he increases the awareness of the detachment between himself and other objects and people, and of the results of applying his skills. This improved sense of 'mine' and 'yours' is reflected in conflicts over toys and possessions.¹

Many social learning situations arise as the child engages in play, and these are necessary to supplement the skills achieved from biological maturation. To form a personal interpretation of his social world, the child needs opportunities for visual contact with adults and other children, who act as models for imitating, watching, and learning. Socialization training directed by the parents introduces the toddler to such values as the control of emotions, cleanliness, the inhibition of certain activities, and restrictions of wandering.² However, the child's understanding of these values are not yet conceptual, and he cannot apply them in general to other situations. His behaviour is often erratic, and appears to be controlled, not by rules, but by the immediate impulse and a fear of punishment.³

The advent of language and the ability to communicate via images and words adds a new dimension to his activities. Play, instead of being mere concern for physical events and direct actions, progresses to the

¹Sours, "Play and Development," p. 140.

²Mussen, Conger, and Kagan, Child Development, p. 259.

³Ibid., p. 508.

ability to think and act upon objects with a degree of verbal and symbolic activity. At this time, the child incorporates a distortion of reality in symbolic make-believe play or fantasy.¹

Fantasy play is at its height during the first three years, interchanging with the continuation of repetitive practice play. It is often characterized by the imitation of adults and real-life situations. In this re-creation of human relationships, the child becomes more aware of his own identity as a distinct ego with a need to control his behaviour. Fantasy or symbolic make-believe also helps to overcome memories of unhappy situations and relive pleasant ones; to alleviate frustrations, angers, tensions, and energies; and to provide an outlet for creative thought and activity. It enables the child to cope with emotional stress, by giving him a sense of mastery of his own affairs.²

The content of the child's fantasy play reflects what is of current interest, new, or impressive, as well as things that are visible and recurring patterns of his primary focus--his family.³ Because of his limited experience, the child's memory provides few clues for fantasy. It is therefore important that the child can play where people and ongoing events will provide incentives, set examples, and spark his imagination.

The child will distort elements of his surroundings to suit his fantasy. Simple and undefined props (for example, toys, cardboard boxes, or rocks) together with an internal representation and a few

¹Piaget, Play, Dreams and Imitation, p. 162.

²Ibid., pp. 132-134; and Piaget, Six Studies, p. 23.

³Millar, Psychology of Play, p. 153.

spoken words to set the context, are ample to free the child's imagination and help him pass from reality to fiction. Because of his primitive thought and mental imagery, however, the child relies strongly on his own bodily actions, and on real, physical elements. Thus, a wide range of experiences, and contact with materials and people, are necessary for imaginative play.¹

The child's repetitions and imitations are not accurate and are largely dependent upon past experience.² Further encounters in the environment, practice in sensory-motor and intellectual activities, and repetition with subtle variations and progressions, direct the child to a more accurate and refined understanding of reality.

2. The development of the child: 4-to-7-year-olds

The child during this stage has the ability for mental representations, however he retains the sensory-motor basis of understanding. He is unable to carry out his actions at an abstract level, and the need continues for direct contact with physical manipulations and explorations for his actions to be meaningful. The child's own actions upon things (including ordering, actively exploring, representing, manipulating, and transforming a variety of stimuli) are primary sources of learning and are prerequisites for understanding objects, space, orientation, and environmental realities.³

During this period, the child's ideas are not generalizable or

¹ Ibid., pp. 172-173; Piaget, Play, Dreams and Imitation, p. 228; and Piaget, Six Studies, p. 23.

² Ibid., pp. 166-169.

³ Piaget and Inhelder, Conception of Space, p. 77.

systematic. Common things appear novel to him and are perceived as stimuli to motivate play.¹ The child reaches for, touches, and plays with most everything within his sight. He focuses on single, eye-catching details that are impressive or subjectively important, attending to only one event, dimension, or sense at a time. He shifts unsystematically from one activity to another, with a short attention span; he spends a minimal amount of time to superficially explore any one aspect until his sensory arousal and pleasure motives are satisfied.² This indicates a need for a range of diverse elements in the environment to accommodate his continually changing interests.

The child lacks the systematic ability to co-ordinate a number of isolated perceptions into a totality. This limits his understandings to individual aspects of an event or spatial state. Complex shapes therefore have no meaning for him except as a number of isolated shapes and patterns which provide much interest for exploration, and whose textures and colours are more meaningful to him than the shape itself.³ The child's reliance on tangible and isolated impressions, together with his limited ability to reason, result in a need for identifiable and enduring elements in the environment. Familiar, permanent objects will enable the child to feel comfortable and secure in certain places.

¹Piaget, Six Studies, p. 7.

²Joachim F. Wohlwill, "Children's Voluntary Exploration and Preference for Tactually Presented Nonsense Shapes Differing in Complexity," Journal of Experimental Child Psychology 20 (1975): 162.

³David Canter, Psychology For Architects (New York: Halsted Press, 1974), pp. 72-73; and Piaget and Inhelder, Conception of Space, pp. 35-37, 118.

The child gradually perceives more detail and acknowledges aspects which he has previously ignored. The environment must be complex and varied enough to sustain his interest and encourage the child to explore, investigate, and thereby learn.

During this period, the child is increasingly able to adapt aspects of reality to his play activities, resorting to his own special blend of reasoning and intuition to account for what he sees, explores, and manipulates. Nothing is due to chance in his egocentric world: objects that move do so because they are 'alive'; spaces, furniture, and child-scaled objects are 'custom-made' for him by some wise plan of the universe.¹

The child associates physical stimuli and clues with his past experiences and he understands events only through his relation to them, from his own point of view, and by associating with objects which were coincidental participants in the same set of activities.² Things have meaning to him only by their use, or by the ways he can incorporate them into his play activities, "...just as a fence, rather than being a barrier to further penetration is something to climb on and over, (and) balance on top of."³

Socialization and interpersonal contacts influence the child's perception of specific environmental conditions. Objects in space begin to impart more meaning and clues for behaviour. By this time, children show a deliberate preference for locating themselves near an object rather

¹Piaget, Six Studies, p. 25.

²Ibid., p. 29.

³George Rand, "Children's Images of Houses: A Prolegomena to the Study of Why People Still Want Pitched Roofs," Proceedings of the EDRA 3/ ar 8 Conference 1 (Los Angeles: University of California, January 1972): 6-9-2.

than in the middle of an open space, and for using a play item placed in the centre of a play area.¹

The child's response to objects and space are not confined to the adult socio-spatial connotations or to the generalizations of responses that 'should' follow. For example, the child will react cautiously to the danger sign provided by the street edge, but this perception of an edge or boundary will not be generalized to other social indicators that are not part of his past experience.² The child's play activities may be expected to conflict with the social rules of behaviour intended by low fences, porch steps, visual green spaces, or private 'keep-off' zones, since his perceptions do not yet evoke the adult's conditioned set of responses. The child at this age therefore needs concrete, tangible clues in the form of obvious physical elements (such as solid barriers), to help generate socially desirable behaviours. This is necessary to minimize adult restrictions and interferences that would disrupt his play and force the child to acknowledge reality.

This need for identifiable clues is greater at this age than for older children. Thought is subjective and relies heavily on the presence of an image or symbol,³ and the child's increasing drive toward realism and accuracy suggest that the play environment should impart an identifiable sense of place. A variety of clues and stimuli, together with attention to spatial definition--shapes, sizes, boundaries,

¹Ellis, "Play: Theory and Research," p. 5-4-4.

²Rand, "Images of Houses," p. 6-9-2.

³Piaget, Play, Dreams and Imitation, p. 228.

objects, and materials--will enable the child to identify and interpret spaces and functions. This will ensure that each child finds his own place for chosen activities, and is stimulated to exercise all forms of play.

Studies have shown that children prefer numerous smaller spaces rather than a single large one.¹ This is largely due to the scale and perceptions of the child: to a small person, even little spaces seem big. A compact space enables the child to perceive it at once, as a whole rather than as isolated elements of images and stimuli. Large spaces, on the other hand, will presumably have little meaning except for the child-scaled elements and variations contained within. Children have been commonly observed to prefer small spaces with the added dimension of enclosure,² especially complete enclosure. Reasons for this propensity include the attraction of: a touchable boundary of finite space, visual separation, and darkness. These characteristics and the small scale of the space provide a sense of emotional security and protection from intrusion.³

There is a lack of evidence indicating preferences for the shape of spaces or enclosures, in relation to the different age groups. The child's spatial perceptions do not detect angles or straight lines, nor do they differentiate between circles, spheres, and cubes; it seems that

¹Clare Cooper Marcus, "Children in Residential Areas: Guidelines for Designers," Landscape Architecture 65 (October 1974): 375.

²Lady Allen of Hurtwood, Planning For Play, p. 26.

³Barrie B. Greenbie, "An Ethological Approach to Community Design," Environmental Design Research (Stroudsburg, Penn.: Dowden, Hutchinson & Ross, Inc., 1973), p. 17; and Ellis, "Play: Theory and Research," p. 5-4-4.

it may not matter if play spaces are round, square, or triangular. What the child does detect are: order, connectedness, separation, and enclosure, including the play activity possibilities of horizontal and vertical shapes.¹

The child's ability to internalize mental images of his physical surroundings suggests that even the 4-year-old can make sense of his space--explore new territories, find his way around, and follow both new and familiar routes. Space and its contents are perceived according to the child's personal activity patterns and momentary point of view, and he relies on particular objects and their relationships for his first spatial references. Therefore, the permanent, identifiable objects or landmarks necessary for security and orientation will include elements in familiar places along frequented play routes, and extend to other places in the child's habitual movement patterns.²

Spatial manageability, together with a developing independence, enables the child to play at further distances from his mother. However, children of this age maintain a short spatial range, within view and calling distance from home. The extent of this play radius is the result of: parental restrictions and concerns for the safety of the child; the spontaneous and impulsive nature of play; and the emotional security of being close to home and near his mother to occasionally share new experiences.

¹Piaget and Inhelder, Conception of Space, pp. xi, 28, 153, 154, 245; and Williams, "Perceptual-Motor Development," p. 132.

²Gary T. Moore, "Elements of a Genetic-Structural Theory of the Development of Environmental Cognition," Proceedings of the EDRA 3/ar 8 Conference 2 (Los Angeles: University of California, January 1972): 30-9-4, 30-9-5.

The child's emotional attachment and dependency reveal an evolution from the previous clinging, to attention-seeking for help, approval, and encouragement.¹ This is reflected by a decrease in the need for adults' continual presence during play, and by an extension of the child's unescorted range of mobility beyond his family territory. A combination of this increased mobility and independence, and the decreased need or desire for constant supervision, renders the child vulnerable to many dangerous external influences. At this age, the child's thought does not enable him to consider potential hazards or slightly different situations that have not been directly experienced. Therefore, children cannot be sufficiently informed about danger; this creates a very real need for a safe environment, that does not inhibit opportunities for self-discovery or trial-and-error learning.

Mobility increases the child's opportunities for contact with the physical and social environments, and leads to increasingly complex interpersonal activities which are the roots of conflict, stress, and anxiety. The child must learn to cope with those feelings in a socially acceptable manner. He learns defence mechanisms which are frequented in play: avoiding and reducing unpleasant situations by distortions of reality; physically withdrawing to a 'safer' place; regressing to immature behaviours; and projecting blame to real or imaginary companions.²

The child's thought prevents him from differentiating between real and imagined dangers, and he confuses reality with his own subjective experiences. At this age, many of the child's fears and anxieties are

¹Mussen, Conger, and Kagan, Child Development, p. 342.

²Ibid., pp. 349-355.

irrational; they often concern imaginary creatures, pain and threat to personal safety, sudden changes or surprises in the level or quality of stimulation, and new situations which he must face alone. An inability to attempt new experiences, free from critical evaluation of his performance, will also cause anxiety for the 4-to-7-year-old.¹ In play, he will avoid such situations by not taking unnecessary risks, seeking familiarity and privacy, and avoiding places which instil imaginary fears.

Anxiety and threat are disruptive to play, and result in less creative and meaningful activities. Certain opportunities in the environment that are known to reduce such feelings should be available. These include gradual and mild stimulation, hiding places and/or self-built retreats, and ample space or opportunity to challenge and neutralize fears or discharge emotions by mental and physical activities.²

In the North American context, children are encouraged to seek interpersonal contact at a very young age, despite egocentric limitations in the ability to share, to relate to, and to get along with others. To the child, who formerly always played alone, the mere presence of a playmate brings with it increased complexity, stimulation, curiosity, and variety.³ Activities which enable contact with adults as well as peers of all ages greatly enhance play and the child's

¹E. Mavis Hetherington and Ross D. Parke, Child Psychology: A Contemporary Viewpoint (New York: McGraw-Hill Book Company, 1975), p. 186.

²Millar, Psychology of Play, pp. 219, 230.

³Ibid., p. 218.

ability to learn, through watching, imitating, and communicating. Opportunities for sharing and developing personal relationships with other children and adults may also help minimize problems of loneliness in later life.¹

Communication enables the child to exchange ideas and learn to consider the needs, opinions, and viewpoints of others. Piaget has stressed the importance of social interaction, information exchange, and mutual control. These compel the child to question his ideas of reality, they cause him to reshape his own thoughts, and they liberate him from the binds of egocentric thought. In this way, communication and interaction are fundamental to the eventual acquisition of logical thought processes.²

Children of this age group remain unable to play co-operatively in an organized group with common goals, rules, or a sense of participation. Their spaces should therefore not be intended for rigid, organized games; they need more general spaces which, by shape, size, elements, and other clues, allow for group or individual play of a social or more private nature.

Group play at this age frequently consists of a small number of children, each playing alongside or parallel to the others; each is actively involved in his own pursuit, and there is no sharing or communication. A slightly more social form which appears is associative play, where a number of children play at the same activity, sometimes sharing toys and materials, and each unintentionally triggering the others'

¹Arvid Bengtsson, The Child's Right to Play (Sheffield: International Playground Association, 1974), p. 111.

²Piaget, Six Studies, pp. 119-120.

imaginations.¹ Whether his activities occur in a group or in solitude, the 4-to-7-year-old plays for himself. He is unconcerned with the fantasies, conversations, or intentions of those around him. He is unable to perceive situations as others may; as a result, he is unaware of the effects of his communications and shows little effort to help or consider another's needs and feelings.² Conflict, disagreement, and hurt feelings arise frequently because the child has difficulty waiting for his turn and sharing in play. It is necessary to provide a variety of distinct areas to separate children, to break up fights, and to allow retreat from 'bullying', without causing any child to be deprived of play opportunities.

People and social events are the most impressive parts of the young child's experiences, and as stimuli, they increase the amount of exploring, playing, and imitating.³ Since watching is an important form of play and learning, these spaces should offer visual and physical interconnections, as well as opportunities for watching adult and child activities. This implies a need for some separation of play spaces, yet without segregation or isolation from the general life of the environment.

During this developmental period, the child has been initiated to the socialization of sex-appropriate behaviours and interests; in North America, these are reflected by differences in the sexes' interpretation of needs and choices in play. However, these differences

¹ Millar, Psychology of Play, p. 178.

² John H. Flavell, The Developmental Psychology of Jean Piaget (Princeton, N.J.: D. van Nostrand Company, Inc., 1963), pp. 156, 162.

³ Millar, Psychology of Play, pp. 176, 200.

are not extreme in the 4-to-7 age group; they assume a greater role beyond age 7, when children naturally segregate into same-sex play groups.¹ In any case, the environment cannot be expected to reinforce the sex-role stereotyping of activities, nor would this imposition be passively accepted by children at play.

The child's social world expands greatly when he enters nursery or elementary school, and is exposed to directed activities and the different values and expectations of his teachers and peers. The child must adjust to the pressures of the society and the fact that his home is no longer the major focus of all his activities; he must be 'good' in the eyes of his teacher, he must compete with other children and gain acceptance with peers, and he must adhere to the values of his parents.

Conflicts arise frequently between his own and others' needs and values, and the child is slowly forced to diminish his egocentrism and recognize the reality of the various roles he has previously enacted in play. This helps reinforce his emerging self image: during this period of acknowledging others and the environment, there is a parallel increase in the child's awareness of self. At this age the expression of possession and identity assumes a higher degree of importance.

The child needs ways of expressing his individuality through the territorial instinct. Because of his limited representational conceptions of space, the 4-to-7-year-old will rely on the tangible possession of physical space,² and he will defend that space to renew his sense of

¹Corinne Hutt, "Sex Differences in Human Development," Human Development 15 (1972) : 159-161; Mussen, Conger, and Kagan, Child Development, p. 340; and Millar, Psychology of Play, pp. 185, 196.

²Greenbie, "Ethological Approach," p. 17.

confidence and security. His territorial expressions, in conjunction with his mental imagery, will consist of actual alterations, constructions, and demarcations of physical boundaries. An older child or adult, however, can relate to and rely on symbolic expressions of identity.

An essential part of the child's perceived competence and sense of satisfaction is the response of others--their approval of his behaviours and achievements. The child shows off to an audience to gain feedback and encouragement; yet he often needs privacy to perform less-perfected skills. Peers begin to provide a major input for self-evaluation, mutual sources of attention, reinforcement, and approval. In his concern for being accepted by friends, the child ceases to unquestioningly follow parental rules; instead, he may choose to conform with peers despite an awareness of restrictions and socially-approved responses. For example, physical activity, aggression, and noisy behaviour are often means of gaining popularity,¹ and these activities must be expected. Opportunities for them must be provided in a controlled, socially acceptable way, to minimize reasons for parents to punish and frustrate their children. Encouraging an alternative to prohibited behaviours by channelling them into socially accepted ones is a form of self-control which is less likely to cause anxiety or internal conflicts over desired and restricted activities. This may reduce the 'need' for vandalism, destruction, graffiti,

¹Jack Keogh, "Development in Fundamental Motor Tasks," in A Textbook of Motor Development, ed. Charles B. Corbin (Dubuque, Iowa: Wm. C. Brown Company Publishers, 1973), pp. 71-72.

aggression, or other anti-social behaviours.¹

The importance of peer approval and making friends has other effects on the child's play activities: it increases his motivation to meet challenges, to take and overcome risks in their presence,² and to gain competence in special motor skills which are valued by his group. With more experience in diverse situations, there is a preference for increasing difficulty, complexity, risk-taking, and mild dangers and fears.³ It may be that the child's interest in identifying and coping with perceived dangerous elements, and the need to take calculated risks within his limitations are major stimuli to the child's choice of play activities.⁴ Natural and calculated hazards in the environment provide essential opportunities for the exploration of personal capabilities and limitations, and for gaining self-confidence and competence in both familiar and new skills.

At this age, the child learns to capitalize on his achievements and shun defeat; he evaluates his successes and failures, and these have long-term effects on his actions, his sense of esteem, and his future development.⁵ Activities and places which consistently lead to failure, such as

¹Anthea Holme and Peter Massie, Children's Play: A Study of Needs and Opportunities (London: Michael Joseph Ltd., 1970), p. 85; Richard Dattner, Design For Play (Cambridge, Mass.: Reinhold Book Corporation, 1969), pp. 13, 43; and Hetherington and Parke, Child Psychology, p. 392.

²Lady Allen of Hurtwood, Planning For Play, p. 14.

³Berlyne, Conflict, Arousal, pp. 213-214.

⁴Dvorah Susman, "It's Child's Play," Scopus 24 (Spring 1970): 21-22.

⁵Piaget, Six Studies, p. 35.

those that are too complex or challenging in response to his capabilities and confidence gained through past experience, will lose their interest and be avoided.¹ At the same time, activities which do enable success but do not inspire new challenges, may thwart learning and the progression to further degrees of difficulty in the increasingly complex play activities. These will be similarly avoided, or will result in the invention of possibly more dangerous challenges. The need to face challenge and overcome risk must be accommodated by both familiar and new opportunities, with graduated degrees of difficulty.

The child's ability and willingness to attempt what he perceives as a challenge or risk are ultimately determined by psychological and bodily characteristics;² thus there will be a great variety of levels and qualities that serve as risks, even within the 4-to-7 age group. The different levels of challenge should be grouped together within a space or structure so that older, timid children are not segregated or embarrassed by their inability to play at similar activities as their peers. This will enable interaction and learning among children with varying skills; it will avoid the stigma of being 'inferior'; and it will help to separate the different levels to minimize conflict and accidents.³

The child has an instinctive concern for personal safety, and he will not carry out a challenge unless he is confident of his

¹Dattner, Design For Play, p. 47.

²Robin C. Moore, "Open Space Learning Place," New School of Education Journal 2 (University of California, 1973) : 43.

³Dattner, Design For Play, p. 48.

abilities.¹ However, it is conceivable that at this age, when peer pressures gain influence and when limited experience may lead to misperceptions, the child will occasionally initiate an activity beyond his capability. For this reason, it is especially important that, if unable to cope, he can safely back down without humiliation. This indicates a need for 'escape routes' that are legitimate activities in play: for example, climbing elements which alternatively can be slowly walked or slid down.

The child needs some opportunities to play away from adults. Parents underestimate the child's ability or need to take risks, and often attempt to overprotect and save the child from unnecessary pain and trouble. Parental interference may inhibit trial-and-error learning as well as minimize the conflicts and frustrations that are necessary to progress. Overprotection may also hamper motor development by preventing practice, and thereby affect the child's ability to play on equal terms with his peers.² Graduated challenges must respond to parental concerns for safety. In this way, parents will appreciate that the child can be safe and able to cope without constant supervision by an adult.

The child's muscular endurance is not fully developed. He tires quickly and cannot maintain a pace for long; he alternates vigorous activity with passive play.³ This indicates a need for physically-linked

¹ Joe Benjamin, In Search of Adventure (London: The National Council of Social Service, 1961), p. 6.

² Anna S. Espenschade and Helen M. Eckert, Motor Development (Columbus, Ohio: Charles E. Merrill Books, Inc., 1967), p. 106; and Dattner, Design For Play, p. 51.

³ Lockhart, "Motor Learning," p. 158.

zones incorporating both passive and active opportunities. The retention of visual contact between them will generate play and enhance learning possibilities. However, the obvious incompatibilities between active and passive play require some physical separation and control to minimize conflicts.

The 4-year-old is amused by simple movements and perceptions, and has sufficient ability to exert his will and impose changes on the environment. He takes pleasure in physical action and in being the cause of effects on people and things.¹ These aspects of control help to reinforce his growing individuality and self-identity, and provide important learning situations for self-actualization.²

The child is in the process of developing the voluntary motor control necessary to co-ordinate the sequence and timing of his movements, including ease and fluidity of motion and the appropriate quality and quantity of movement without tense or superfluous acts.³ Through practice and experimentation, the child learns which body postures and activities are best for attaining the power for specific movements; pushing and pulling objects help enable this sort of discovery.

At this age, the child's tactile and kinesthetic senses are relied on for regulating his motor behaviour. As inter-sensory functioning progresses, this control is augmented by a use of specific visual cues, and eventually the child can sit still for longer periods,

¹Piaget, Play, Dreams and Imitation, p. 162.

²Clare Cooper, The Adventure Playground: Creative Play in an Urban Setting and a Potential Focus for Community Involvement (Berkeley: University of California, 1970), pp. 15-16.

³Lockhart, "Motor Learning," pp. 152, 161.

modulate his spurts of activity, and execute finer movements.¹

By the age of 5 or 6, the child has generally learned every motor and manipulative activity, so that very few new skills appear.² His practice play consists of refining the quality, and experimenting with modifications of his skills, with an increasing accuracy of both mental and physical actions. Some activities are no longer practiced once fully mastered, whereas others, such as competitive skills, continue to provide pleasure and increase in complexity³ as the basis of future recreational pursuits.

The motor activity repertoire of most 4-to-7-year-olds, which can effectively be used and challenged in play, includes the following:

(i) Walking, in co-ordinated strides approximating the adult style. The child practices variations: he can tiptoe and walk backwards, follow a straight line or circle, and balance at least part way on a narrow ramp or board (2½ inches width, minimum).

(ii) Running smoothly, with power. The child has effective control over stopping, starting, and turning sharp curves with little or no deceleration.

(iii) Jumping down from a height of 28 inches, a distance of up to 10 inches from a standing position, or up to 33 inches from a running start. These measurements increase, and the ability to

¹Williams, "Perceptual-Motor Development," p. 11; and Millar, Psychology of Play, p. 248.

²Robert M. Malina, "Factors Influencing Motor Development During Infancy and Childhood," in A Textbook of Motor Development (Dubuque, Iowa: Wm. C. Brown Company Publishers, 1973), p. 34.

³Piaget, Play, Dreams and Imitation, p. 144.

jump over barriers improves, by age 5 or 6. Boys are better at jumping than girls, probably because of the greater strength required to propel the body upward. The balancing adjustments involved in landing increase the sensed element of challenge as well as the frequency of falling and bodily hurt.

(iv) Hopping and skipping 4 to 10 steps on one foot, by age 4. By age 6, children can easily hop 16 feet, and awkwardly skip by alternating feet. This includes some variations such as going backwards, sideways, or about-face, and skipping on wide ramps.

(v) Climbing up and down ladders and stairs, especially if the risers are low and child-scaled. Trees, fences, and other vertical objects are popular for climbing. Proficiency in climbing is not achieved until age 6; however, at all ages, a child who senses danger to his personal safety will revert to earlier, more cautious movements such as 'on all fours'. The child attempts shorter climbs before longer ones; longer and higher are perceived as more risky and difficult. Ascending skills are achieved before descending; the child may attempt a climb then become stranded, afraid to descend.

(vi) Throwing and catching, unskilfully. Children aged 4 are not proficient at throwing, but they improve rapidly at 5 and beyond, when they can throw as far as 17 feet. Catching, striking, and bouncing do not improve markedly until age 7 or later, when the complicated co-ordinations between eyes and hands increase. Large items are easier for this activity--whether balls, rocks, snow, or mud.

(vii) Riding wheeled toys, including wagons, tricycles, and

scooters. The child can propel and direct the vehicle with some accuracy in steering, reversing, and negotiating sharp turns.

Bicycling is often mastered as early as the age of 5. The use of these free-roaming vehicles increases in importance and extends the child's wandering range. Activities such as roller-skating, ice-skating, and skate-boarding require greater ability for balance and propulsion; their appearance in the child's motor actions depends largely on learning and encouragement in the environment.¹

(viii) Swinging. The 4-year-old requires assistance in 'pumping'; by age 5, the child can gain speed and height by his own co-ordinated actions; by around 7, he adds daring variations such as jumping off in mid-air.

(ix) Sliding and sledding. At age 4, children slide frontwards, backwards, sitting, or lying down; they sometimes brake along the sides with their feet to vary speed or reduce fears. As the child masters the co-ordinations involved in climbing, shifting position, and regaining balance, he attempts variations including climbing or running down the slippery slope.

(x) Manipulation and exploration of objects. This involves clutching and use of the palms at age 4; older children more effectively make use of their fingers to explore.² The centration on one sense at a time, the interest in textures, and the reliance on

¹W. L. Hottinger, "Motor Development: Conception to Age Five," in A. Textbook of Motor Development, ed. Charles B. Corbin (Dubuque, Iowa: Wm. C. Brown Company Publishers, 1973), pp. 17, 19; Williams, "Perceptual-Motor Development," pp. 117-119; and Espenschade and Eckert, Motor Development, pp. 108, 113, 118, 119, 121, 125, 132, 134.

²Piaget and Inhelder, Conception of Space, p. 40.

real actions upon objects, alter by about age 7, when these tactile-kinesthetic impressions are augmented by an increased use of visual cues.

Since the age range of 4-to-7 is the period for learning all motor activities, the child needs various opportunities to practice and exercise large muscle and manipulative skills. This presupposes adequate space, appropriate surfaces and landscaping, elements for challenge and practice, equipment and materials that are manipulable and will show visible effects by the child's actions, and a built-in response to the progressive differences in individuals' capabilities. Objects in the environment will be perceived as stimuli, and this perception will cause a need to play with them and practice skills.

The motor actions initiated in practice play are eventually repeated in increasingly complex play schemes. Many practice play actions acquire imaginative content and spontaneously invented rules of competition, whereas others transform into goal-oriented games of construction and activities directed at serious aims, such as the hobbies of older children.

Symbolic make-believe or fantasy play assumes a different nature by the age of 4, when the child's representations and symbols become less distorted than in the earlier years. He attempts a more straightforward imitation of reality in the details of scenes and his performance. Fantasy occurs frequently and remains intensely felt; but the reduced need to distort diminishes the importance of this type of play.¹ With growing experience in the physical and social environment, and with maturation,

¹Piaget, Play, Dreams and Imitation, pp. 135, 146, 285.

the child is more able to satisfy his intellectual and emotional needs without resorting as much to distortions of reality.

The nature of fantasy in this age group involves more exact imitation, greater order and coherence, and a differentiation of roles in the theme.¹ The child's pretence does not necessarily involve bodily actions although it may incorporate the motor skills achieved in practice play. This is because the child is able to control objects and space both verbally and symbolically, as well as by his earlier method of overt action. The tendency toward increasing realism suggests that actual physical relationships and similarities may be sought in his fantasy setting, by imitative postures or movements, accompanying dialogue, and props. His mental imagery remains plastic and dynamic in comparison to the adult's static symbolism and understandings. This enables him to use creative thought to achieve the desired accuracy of imitation.

Thus, a cardboard box can be a boat, car, house, rocket ship, submarine, horse, swimming pool, or almost anything else. The fabricated submarine or horse, on the other hand, is too insistent in its meaning and leaves little latitude for the exercise of fantasy.²

The child becomes so intensely involved in his pretence, that it becomes his momentary reality. Thus he may be oblivious to surrounding activity, potential dangers, or possible conflicts between his own and others' activities. He may be self-conscious of his actions and verbalizations, especially in the presence of adults or peers who are evaluating his acts. Direct interference, control, and criticism of the child's play lead to inhibition or non-cooperation, as well as tension and anxiety.

²Ibid., pp. 135, 137.

³Dattner, Design For Play, p. 49.



The child resents adult intrusions that do not fit into the framework of his fantasy, as well as other disruptions that force him to return to reality.¹

At this age, the child is sufficiently able to manipulate his perceptions and ideas; but his thought and experience limit his ability to create his own play themes. Spontaneous make-believe depends largely upon the clues and stimuli in the physical/social environment. These include adequate space for both individual and social fantasies to occur without interference. The child needs a range of materials or props which are freely accessible and usable to suit his whim. He needs sufficient experience and contact with non-interfering adults, older and younger peers, and varied events to serve as models for imitation.

3. The development of the child: 8-year-olds and above

The child from 8 years of age takes for granted many things that he previously did not know existed.² He learns to ignore many stimuli upon which he focused in play when younger. He increasingly recognizes subtleties which were formerly perceived only in isolation. Improved inter-sensory functioning, combined with an increased attention span and the ability to simultaneously consider two or more aspects of an event or object, enhance subtle cognitive connections. As a result, the child is able to verify and correct many of his primitive and naive beliefs. The need remains for direct action and experience for this ability and learning; the environment must provide suitable degrees of

¹Piaget, Play, Dreams and Imitation, p. 128; and Flavell, Jean Piaget, p. 161.

²Piaget, Six Studies, p. xii.

complexity for this age group's manipulations and experiences.¹ This new quality of thought and perception enable the child to create some incentives for play and exploration, by searching for and examining subtleties and co-ordinating them in his mind.

The child begins to acquire logical and rational thought, the ability to classify information, and the comprehension of number, mass, weight, and dimensional relationships. He also develops the ability to conceptualize space rather than merely perceive it intuitively. He becomes capable of exploring territories and following routes in thought and imagination as well as in action. Isolated and unco-ordinated space perceptions are given up progressively as the child realizes that things are relative and depend on particular vantage points and perspectives.

The augmented ability to see things from other viewpoints allows the child to engage in social behaviour which is co-operative in nature, with a greater concern for others' needs, feelings, and circumstances in a situation. He learns to tolerate and channel the frustrations arising from his more sophisticated understanding of social norms. At this time, behaviour is guided by a more equalitarian sense of right and wrong, replacing the emotional and impulsive directions of the younger child.

The increased desire for independent action and the expressions of dominance and territoriality are evidenced by a chosen separation from adults and from younger children, and by a willingness to travel further to find a suitable setting for activities. The freedom to play away from the home territory usually occurs around age 9 or 10; however, it varies

¹Ibid., pp. 30, 156.

with family attitudes, the perceived safety of the neighbourhood,¹ and occasionally, the sex of the child. When the child is confined or chooses to remain close to home, his assertion of independence often disrupts the play and personal space of younger children.

The child's activities reflect and accept the constraints of reality to a degree quite impossible for the younger child. Many imaginary concerns and fantasies become subdued, infrequent, and left to private thoughts. The symbolic content of play diminishes and transforms into creative imagination, exact imitations of reality, and intelligent thought.² Hobbies are often utilized at this age, to assert the child's unique interests, independence,³ and creativity.

The increasing complexity of play manifests itself in the formation of rules in organized game play. Unlike other forms of play, games with rules actually increase in importance and frequency with age, and persist at the adult level.⁴ Games with rules imply restrictions, obligations, co-operation, competition, and other similarities to real-life constraints; these characteristics preclude their appearance in children under age 8. When rules do emerge occasionally in the play of youngsters, they are not fixed regulations; they consist of competitive practice play activities, symbolic play with a recurring theme, spontaneously invented rules that are changed at whim, or rules

¹Vere Hole, Children's Play on Housing Estates (London: Her Majesty's Stationery Office, 1973), p. 15; and Holme and Massie, Children's Play, p. 143.

²Piaget, Play, Dreams and Imitation, pp. 145, 168, 205; and Millar, Psychology of Play, p. 55.

³Sours, "Play and Development," p. 141.

⁴Piaget, Play, Dreams and Imitation, p. 140.

of traditional games such as hide-and-seek.¹

By the age of 12, the pre-adolescent's cognitive framework generally enables him to begin thinking like an adult: to follow logical propositions, to predict and interpret experiences, to reason in abstract terms without need for accompanying actions, to consider various solutions to a problem, and to make wise and rational choices. This frees thought, enables reflection and retrospection, and eventually leads to the decline of egocentrism. The process continues and progresses through the life cycle, although some adults never do reach the ability for mature thought.

Reflective thought and conceptual understanding enable the adolescent to confront reality and choose between conformity to an expected, appropriate response within the social norms, or an alternative response which is challenging and may be considered anti-social. The socio-spatial understandings at this age include those of privacy, restrictions, borders, and boundaries.²

Inter-sensory functioning nears full development, and explorations of stimuli are qualitatively and quantitatively different than in younger children. Stimulus determinants for play include a predominance of visual clues. Explorations are intensified: more time is spent on increasingly complex objects, and all sides, angles, and circumstances are examined. The individual now attends to shape more than to texture, and his attention span extends in proportion to the complexity of the shapes,³ in an effort to learn and understand rather than merely to

¹ Ibid., pp. 112, 143.

² Rand, "Images of Houses," p. 6-9-2.

³ Wohlwill, "Voluntary Exploration," pp. 160-162.

stimulate the senses.

Adolescents have more freedom of mobility, both territorially and socially. Their play is often pursued at the community or city level. Interaction between male and female groups increase, and eventually emerge as single-sex cliques as well as mixed-sex cliques and couples. Play activities extend to behaviours perceived by them to be appropriate to adulthood, including dating, drinking, and smoking.

Social acceptance remains very important, but these years characterize the beginnings of a major adjustment to the assertion of independence.¹ Peers form gangs and seek privacy from adults as part of this assertion. The adolescent's increasing pressure to create a social position for himself often leads to an involvement with sports and games as status-seeking.

Play activities approach the adult mode and become more systematic. They are often integrated into a social pattern of traditional or fixed procedures. Whereas play, for the 4-to-7-year-old, is pursued as the major purpose in life, play for the adult too often conflicts with work and becomes a luxury. However, it remains a crucial part of life rather than an option, extending throughout the life cycle as a universal need.

C. Summary and Conclusions

Play and development are interrelated processes for the child. The nature and activities of play continually change and increase in complexity as the individual develops and matures.

The ages of 4-to-7 comprise a major developmental stage, which

¹Mussen, Conger, and Kagan, Child Development, pp. 678-679.

reflects a characteristic nature of the child's play-related thought, interests, needs, and capabilities. Play for the 4-to-7-year-old is impulsive. It involves both physical and mental pursuits, as well as both solitary and group activities. Physical activity, fantasy, manipulation, and unoccupied behaviours are the main types of play at this age which must be accommodated in the environment.

A responsive environment can satisfy the child's play needs and desires as well as enhance his potential for progressive learning and development through play. To this end, the physical environment must offer certain opportunities that are accessible within the 4-to-7-year-old's limited mobility range. These opportunities are equally important and yet are difficult to isolate because they are interrelated and not mutually exclusive. In general, they are as follows:

- (i) Action upon and control over certain elements in the environment, to create visible and/or sensed effects that are clearly the result of the child's own doing;
- (ii) Practice of motor activities and movements in space to refine and co-ordinate physical capabilities as well as to benefit by exercise and exertion of the muscles and organs;
- (iii) Progression, through variations to activity, gradually increasing intricacy and challenge, and experiencing new or unexpected stimuli, to sustain interest and elicit new responses;
- (iv) Social interaction and opportunities for watching people and events, to stimulate and educate the child. At the same time, the child needs opportunities for chosen privacy, both in secluded locations and in the midst of activity;
- (v) Practice of imaginative and representational capacities

through fantasy, creative interpretation, and representing/
distorting objects from the real world; and

(vi) Freedom from anxieties, regulations, and dangers, so that the child can direct his own activities or distortions without external constraint or interruptions that force an acknowledgment of reality.

The preceding environmental opportunities must be responsive to the 4-to-7-year-old's psychological needs. An overall guiding principle is that the child needs a considerable contribution of diverse stimuli and clues to spark play, to offer motivation and incentive, and to hint at--but not dictate--activities and responses. The variety of clues must offer: identity as being acceptable for play, elements for retreat and security, variations of scale and texture, graduated challenges, and complexity.

These theoretical implications must be augmented by an examination of the characteristics of the environment that respond to or ignore the nature of the child and of play. In the following chapter, an investigation of the child at play in a variety of existing types of environment will help to identify specific physical characteristics that are responsive to his play needs.

CHAPTER II
CHILDREN AND PLAY: INTERACTION
WITH THE ENVIRONMENT

Children at play interact with their environment. Youngsters choose favourite places, discover activities, and invent play functions for all that they see, touch, and move. The play environment may occur anywhere, changing impulsively according to the mobility, unique perceptions, and skills of each child.

Play is where something turns up to move the imagination. This can be anything but preferably something that can be manipulated and influenced--a friend, a ball, or just a stone to kick about.¹

Play is not an isolated function that requires specific times or designated places to occur.² Yet, prevailing socially-responsible attitudes reflect the notion that children need specialized spaces and equipment for play. The misconception of this public outlook is demonstrated by the fact that children do not always choose to play in the spaces programmed for them. It is common to find that children prefer to play in the street which, although dangerous, is far more stimulating than many planned playgrounds. Youngsters will often ignore expensive play equipment, and instead, invent their own activities--in dirt, around water, or with trees, leaves, and rocks.³

¹Bengtsson, Child's Right, p. 49.

²M. Paul Friedberg and E. P. Berkeley, Play and Interplay (New York: The Macmillan Company, 1970), p. 36.

³Dattner, Design For Play, p. 61.

Several distinct types of environments where children play can be classified as belonging within a broad continuum that ranges from unstructured play spaces, which do not have as their primary reason for existence the function of play, to highly contrived or structured spaces, where play activities are suggested and pre-planned by the elements provided.

The following sections are devoted to an analysis of play environments along this continuum. These include:

- (i) The natural and unstructured environment,
- (ii) The unstructured home environment,
- (iii) Structured playgrounds with equipment,
- (iv) Structured community play centres, and
- (v) Structured adventure playgrounds.

In the analysis, the characteristics of each type of play environment are discussed to understand what physical form qualities are appropriate to the 4-to-7-year-old child's interests and development through play.

A. Play in the Natural and Unstructured Environment

The child's attraction to 'found' areas might best be seen in his activities in a natural, totally unstructured-for-play environment such as the wilderness.

For here he is exposed to a wealth of experiences--stepping stones across a stream, a slide down or a climb up a hill, balancing on a fence, digging in the earth, climbing a tree, throwing a rock. In nature, the child doesn't need devices, for he manufactures his own interests from the wealth of resources at his own fingertips. These resources have qualities--colour, sound, odors, textures, heat and cold. He doesn't consider any one spot as his playground; his playground is the world.¹

¹M. Paul Friedberg, Playgrounds for City Children (Washington, D.C.: Association for Childhood Education International, 1969), p. 7.

Unstructured environments in the urban situation, including junk yards, construction sites, abandoned houses, and unkempt leftover spaces reveal a similar magnetic attraction for children's play.

In both these unstructured-for-play habitats, the child can find what he primarily seeks: rich experiences over which he has some individual control.¹ These habitats are full of stimuli and simple forms that suggest a multitude of play possibilities. There are places and things to explore, and a variety of shapes, heights, depths, and small-scaled elements which can be piled, climbed on, jumped over, built with, burrowed in, thrown, carried, destroyed, and moved. The child can find privacy, even with a crowd of children around him: for example, under a bush, behind a rock pile, or in an abandoned car. Secret hideaways, with varying degrees of enclosure and away from real-life conflicts, can become magic places for fantasy. The child can find a tire, rope, and a tree to make a swing, often benefiting from an adult's participation in play. He can find an old wheel to move realistically in the adult mode of a truck driver, steer recklessly around corners in both his mind and bodily action, and move the prop and himself in an increasing accuracy of imitation.

The varied topography, consisting of living and/or manipulable elements, generates a desire to interact with them, and permits the child to experience physical control with visual effects. From the child's point of view, the whole environment is responsive; materials and elements are tangible, manipulable, and perceived as useful toys. This contributes to the identifiable sense of place to play that entices children. The

¹Dattner, Design For Play, p. 61.

elements are general and flexible enough to allow the child to impose his own meaning and mode of play,¹ which can be changed at will and can mimic the adult world.

This ambiguity, or generalized form, is a quality of the natural and unstructured environment that stimulates creative and diverse behaviour. With no overriding outside direction influencing how play should proceed, the child learns to make his own decisions, and to invent and discover experiences for himself. The child directs and controls the unstructured habitat to serve his egocentric play. He challenges and exercises the mental imagery he is in the process of mastering, by imposing his own meanings and interpretations on the common environmental elements.

The complexity of the natural, unstructured play environment enables the child to shift continually to different activities, focus on new stimuli, and always find something unfamiliar and in need of exploration. He can visit the same place many times and always find a surprise that elicits new responses. There is a wide variety of elements, and each can be used and moved in endless ways. Thus, even with his short interest span, the child becomes intensely absorbed, and finds privacy through involvement and the freeing of his imagination.

Complexity extends to the different textures, shapes, colours, and materials which make up the environment. It increases with the number of dissimilar elements, including their orientation and arrangement in space, the absence of repetition and symmetry, the amount of contour in a pattern, and the number of moving parts.² The ground

¹Ibid., p. 49

²Berlyne, Conflict, Arousal, pp. 38, 39, 102.

surface in these environments is rarely flat or monotonous, and is full of distinguishable and manipulable elements which are very noticeable to the child. Things are not tidily arranged according to a plan, and it seems that with increased 'clutter' or complexity within the environment, the seductive value to children is greater.

The visually complex environment provides a means for children to perceive some spaces as 'wholes'. The 4-to-7-year-old's isolated perceptions and static-image thought prevent him from sensing space as a totality to the extent that the adult does. It is impossible to give dimensions to the size of space that the child can perceive at once, because each individual's perceptions are unique; a complex environment most likely provides a range for everyone.

The external stimuli in unstructured environments do not dictate or limit play; each element has a unique purpose and meaning, imposed by the child at a given time. The meaning of a stimulus can change on whim, or concurrently evoke other meanings to different children. The multiple function of the elements in the wilderness or in vacant lots is an aspect of their ambiguity and complexity. Without dictating play purposes, multi-functional stimuli reflect a potential to create play opportunities and to increase the diversity and pleasure of activities.

The child's ability to control and experience a response to his actions indicates an environmental flexibility that is the essence of the appeal of both the natural and urban unstructured play spaces. The child can reorganize, handle, play with, and move anything and everything, without fear of or concern for creating disorder. There are no restrictions or blame for his noise or activity, no traffic dangers, nothing to interrupt his adventures or fantasies, and nothing to 'protect' him from

involvement and experience. He can become immensely absorbed in creation, and attempt his own calculated risks without overprotective restraint. This freedom to act without external constraint reduces frustration,¹ and the child's ability to control some flexible aspects of the environment increases his enjoyment.

However, in the city and to an adult, natural and unstructured areas often mean wasted space, hazards to health and safety, and an offensive blight. Thus, urban renewal and the planning of new areas remove eyesores and clean up the cluttered spaces, much to the detriment of children. For play value, "so much tidiness often means dullness and at once children feel that the enchantment of an area has vanished."² The scarcity of unclaimed open space within the city, together with the 4-to-7-year-old's limited territorial range, deny many children the opportunity to take advantage of the natural and unstructured play environments.

B. Play in the Unstructured Home Environment

The home environment is also unstructured in the sense that its primary function is not play-related; the interior and exterior spaces are interpreted and adapted by children for play activities. Play in and around the home environment has traditionally provided children with rich experiences, including contact with adults and their activities, and an integration with the essence of real life situations.

Play at home is appropriate for 4-to-7-year-olds because their

¹Millar, Psychology of Play, p. 150.

²Bengtsson, Child's Right, p. 13.

play is spontaneous and comes in spurts, and they value the familiar surroundings of their own secure territory. The youngster has more time and opportunity to play at home than at any other designated or found play space, particularly because of the close visual and physical links with the activities and reinforcements of his family.¹ As the child of this age gains self-confidence and independence, his play activity extends from the yard, to the street, or to other nearby spaces within his territorial domain.

The private nature of the single family dwelling (typical to the North American suburbs) often makes play at home solitary or exclusive; neighbouring children are generally not free to enter a friend's yard or house without consent. Group play is necessarily of a limited size, according to: the space available; the extent of the child's friendship networks; and the noise and mess factors tolerated by the parents, who have a strong influence on play activities.²

Play inside the house supplements, and in bad weather, replaces much outdoor play. Indoor play is physically more restricted than is outdoor play. The child's bedroom provides a personal, private, and secure territory which is the core of his activity. A home with a basement enables untidy play with toys, constructions, and some restricted use of wheeled toys. However, indoor play is not sufficient for the child's need to exercise his larger muscles and practice active physical skills.

Front and/or rear yards provide an easily accessible adjunct to

¹Dattner, Design For Play, p. 119; and Holme and Massie, Children's Play, p. 77.

²Holme and Massie, Children's Play, p. 58.

indoor play space. The outdoor family area that is closely related to the dwelling's main entry is frequently the focal point of young children's activities.¹

The family often tolerates the clutter of playthings including toys, make-believe props, wheeled or gymnastic equipment, and dirt or snow creations, in the front and/or rear yards. Since parents have autonomy over the yards, such untidiness is less likely to cause friction with neighbours. Family gardens enable growing plants, digging, or 'building'; trees and shrubs can be used as niches or for climbing. The child adapts the micro-environment for use in his fantasy, exercise, explorations, and manipulations. Although some families provide additional play elements such as swing sets, there are typically no dominant clues to rigidly guide play. Landscaping, textures, surfaces, corners, open space, lawn furniture, and fences are among the ordinary stimuli that generate creative use.

The family yards are generally large enough to ensure that older and younger children as well as parents can find a niche to co-exist peacefully. Fantasy is easily pursued and generated in the familiar places which are flexible and ambiguous enough to represent distortions. The yard is safe from intrusions and dangers, and there are a variety of small-scaled private spaces to escape the continual presence of parents, whose listening or watching often inhibits fantasy.

The yards may be personalized and defined with planting and fencing. But the perceived sense of ownership extends to the public sidewalk and street, and it is common to find children referring to

¹Bengtsson, Child's Right, p. 51.

'my sidewalk' with a strong sense of identification. The regular shapes and perceived or defined boundaries of the yard, sidewalk, and street facilitate visual control from inside the home.

Sidewalks and streets continually serve as a magnet for play, by offering a unifying place where children on the same street have a sense of belonging and control over their own little community.¹ As circulation paths and meeting areas, they offer varied and on-going activity in the midst of neighbourhood life; this has the physical and social advantages of mixing with real-life situations. Contact with people, especially adults, is educational as well as a rich generator of the desire to play.² Incidental social learning through interaction is more available on streets, sidewalks, and in access areas than in most isolated or designated playgrounds. The child can watch and learn from adults and older peers, in the midst of community life and on-going situations that are realistic in nature. He can gather ideas for play, show off to an audience, and be sure of meeting with or seeing playmates.

Sidewalks have a great play potential (although not yet exploited by designers) and children discover creative uses for the raw materials found there. The continuous, unobstructed, and lengthy hard surfaces of the streets, sidewalks, alleys, and driveways allow a wide variety of spontaneous play responses.

Children play more frequently on hard surfaces, which are readily provided by the linear sidewalk system, than they do on grass.³ The

¹Arvid Bengtsson, Environmental Planning for Children's Play (London: Crosby, Lockwood & Son Ltd., 1970), p. 21.

²Bengtsson, Child's Right, pp. 17, 20.

³Cooper Marcus, "Guidelines," p. 375.

street spaces form a continuous loop around the block, providing a level and relatively safe circuit for roaming and riding wheeled toys, without a need to cross the street. The circulation system accommodates both adults walking and children, running, cycling, and generally playing. This often leads to conflicts because youngsters are careless about traffic or the need to direct their movements to adjust to other users of the sidewalks.¹

It is essential to remember that the 4-to-7-year-old has limited perception and judgment, as well as the ability to consider only one thing at a time. These combine to make children vulnerable in traffic situations. Even up to age 11 or 12, children remain poorly equipped in terms of "sight, hearing, (and the) ability to differentiate right from left, fast from slow, near and far."² The direct experience of traffic, at this age, is more of a hazard than a potential learning situation.

However, when pedestrian paths are narrow, children often spill onto vehicular spaces, seemingly indifferent to the dangers of traffic. Their need to take risks and the thrills of mild danger contribute to the popularity of roads, even with the close proximity of similar hard surfaces in a safer location. If the street is easily supervised and relatively free from heavy traffic, parents are less apprehensive about road play, although they continually discourage it.

In certain social group situations, the characteristics of both exterior and interior home spaces are inadequate for children's play.

¹Ibid., p. 375.

²Ibid., p. 373.

This includes areas where increasing street traffic consumes potential play space as well as creates more dangers to young children's play near roads, where the move to higher density living reduces yard space available for doorstep play, and where multi-storey housing further ignores and restricts the child and his need for outdoor play. For 4-to-7-year-old children living in over-crowded or deprived housing conditions, play in the unstructured home environment often lacks many of the positive characteristics that are responsive to children's play needs.

C. Structured Playgrounds with Equipment

Play in a neighbourhood playground provides a complement to the child's at-home activities. Whereas the home and natural environments are unstructured enough to allow the child to impose his own play meanings on all he contacts, playgrounds are usually over-structured by adults and lack a variety of stimuli.¹ Structured playgrounds with equipment, although located in neighbourhoods, may be too far from the home to promote parental consent or allow a spontaneous use of the facilities. The 4-to-7-year-old may have relatively infrequent opportunities to play in these planned-for-play spaces.

Neighbourhood playgrounds are generally of two types:

- (i) Traditional, which reflect the rigid view of play as body-builder; and
 - (ii) Creative, which attempt to nurture the child's social, emotional, and cognitive growth as well as his physical development.
- The traditional forms of equipment include tubular swing sets,

¹Holme and Massie, Children's Play, pp. 58, 66.

monkey bars, slides, and teeter-totters. The more contemporary creative designs emphasize abstract and novel forms of these, incorporated with landscaping,¹ and including the use of timber structures, play sculptures, recycled materials, sand and water, and other innovations to traditional apparatus. In both types of playground, the equipment includes static devices for climbing and sliding, as well as things that move to foster swinging, bouncing, or spinning.

The apparatus provide identifiable landmarks and perceptible physical clues that suggest certain common behaviours. An equipped playground is clearly recognizable as a place for play; this identity reinforces the child's selection of the play setting.² It entices him and encourages physical exercise.

However, the equipment does not retain the child's interest, nor does it dominate or control activities. Children make use of apparatus for relatively short periods at a time, and frequently shift to other forms of active or passive play. The need to seek new adventures and to become involved, through thought or creative interaction with the environment, is not readily satisfied by play equipment alone. Thus, relatively flat and unobstructed open spaces, for running, jumping, or other non-directive activities, are nearly as important as the equipment.

Gymnastic equipment has been criticized for its limited function

¹Children's Environments Advisory Service, "What is a Creative Playground?," Creative Playground Information Kit 1 (Ottawa: Central Mortgage and Housing Corporation, n.d.), p. 1.

²Robert L. Bishop, "Measurement of Children's Preferences for the Play Environment," Proceedings of the EDRA 3/ar 8 Conference 1 (Los Angeles: University of California, January 1972) : 6-2-6; and H. Sanoff and G. Coates, "Behavioural Mapping: An Ecological Analysis of Activities in a Residential Setting," International Journal of Environmental Studies 2 (1971) : 234.

for body exercise, which ignores the child's need to create. The apparatus are designed to stimulate a single, skill-oriented activity rather than to inspire interest, curiosity, or suggest alternate forms of behaviour.¹ The materials inhibit creative adaptation in physical activity. The play clues are strongly tied to the expected physical response, thus limiting fantasy. However, physical exercise equipment is valuable when it requires input and exertion by the child, and when it encourages activities that are fundamental to the development of skills that are within the child's capabilities.

Creative equipment, too, limits the child's mental and physical control in play. By watching others, and through his own initial experiments, the child eventually learns to associate each apparatus with a play function and the expected sensory effects evoked by that identifiable play structure.

Adult values of durability, ease of maintenance, and safety have a bearing upon the design of both types of playgrounds. Thus the apparatus have pre-determined functions, are indestructible, and are fixed in place. Supervision generally exists only if parents accompany their children; this, together with the fact that playgrounds are open to the public at all hours, precludes the provision of loose or portable materials to alleviate the rigidity and delimitation of activities. For safety reasons, apparatus are widely spaced, and are separated or isolated according to activity type: active and physical, passive, or construction play. This separation is intended to minimize conflicts between incompatible movements, over-crowding, or accidents as children

¹Dattner, Design For Play, p. 37.

change from one activity to another. However, this discourages both social interaction and the spontaneous or sequential flow among play elements. Moreover, the fixed apparatus and isolated positions do not contribute to safety as much as do the following: resilient and unabrasive surfaces, sturdy construction, elimination of sharp protrusions or splinters, and use of energy-absorbing surfaces under gymnastic structures.¹

Equipment has been criticized for promoting solitary, uninvolved play activities. Children play alongside each other, sometimes talking, but each practices and develops his individual skills without any devotion to the group. No interaction is required except when children must wait in line to use an apparatus. Play is not something that should be constrained by line-ups, regardless of any developmental value for the egocentric child under age 7 (such as in acknowledging each other's turn).

Very few parents spend their leisure in playgrounds, with or without their children. This minimizes the benefits of adult contact that are readily available in play at home, and thus reduces the ingredients for generating fantasy as well as some of the incentive for play. However, separation from adults does offer the advantage of preparing the child for mature social attitudes at an earlier age. The child, in the absence of parental interference, is less likely to suffer from overprotection as he learns to make decisions, to get along in groups and assert his identity, and to overcome the frequent conflict situations

¹Paul F. Wilkinson and Robert Lockhart, Safety in Children's Formal Play Environments (Toronto: Ontario Ministry of Culture and Recreation, 1976), pp. 66-73.

that arise.¹

Equipment has been criticized for not responding to the different abilities of the age groups. Once the child is able to use an apparatus, by age 4 or 5, his play activities remain essentially the same; he masters the intended purpose, and repeats motor movements with or without variations. Although repetition is not all mechanical--for it is a means of developing self-confidence through mastery--it must enable progress to retain the child's interest and foster advancement in skills and confidence.

Children of all ages and skills use the same or similar apparatus. The older ones are often involved in riskier, more difficult movements adjacent to the 4-to-7-year-olds. The younger children are unaware of the potential dangers or the need to anticipate the actions of their peers, who are not always careful of each other. With no differentiation of skills or age levels, the safety intended by the aforementioned wide spacing of equipment is negated. The mixing of skills does, however, provide opportunities for youngsters to learn by watching and imitating older children, to play alongside friends whose abilities differ, and to gain ideas for future practice or make-believe.

Many playgrounds do not allow the child any measure of control over play. In seeking to satisfy this need, the child often produces his own activity: twisting the swing chains and slowly unravelling them to get dizzy, climbing up the slippery slope of the slide, and jumping off an apparatus in mid-air. When there are no adults to deter this invention

¹Terence Moore, "Language and Intelligence: A Longitudinal Study of the First Eight Years," Human Development 11 (1968) : 19; and Holme and Massie, Children's Play, p. 58.

of challenge, variety, and control, the child will often resort to far more dangerous and destructive expressions of play:

Swings become hanging battering rams for an exciting and noisy battle; children with nerves of steel play swing-the-swing-around-the-top-in-a-full-circle. Seesaws make excellent catapults and are great for the jump-off-while-your-partner-is-up-in-the-air game. And after these limited and perilous options are used up, there are the games of destruction...The final expression of the frustration of the otherwise powerless children is the scrawling of obscene remarks on the unyielding and inhospitable asphalt.¹

The implication is that children, for lack of interest, will make adaptations whether or not they are socially desirable. Much of the activity that adults label as mis-use or vandalism is a consequence of play, motivated by boredom rather than by malice.²

In spite of these and other shortcomings of playground equipment, children are attracted to certain types of apparatus that do meet play needs and interests. The advantages and disadvantages of typical examples of both traditional and creative apparatus, as well as improvisations to each, are worthy of emphasis and are discussed below.

a) Swings are one of the most popular apparatus³ because of the exciting ride and sensory variation in movement that the child controls himself. Swings provide a learning experience for the 4-to-7-year-old, because the child must learn to 'pump' himself to gain height and speed, and to perceive the sensations of high and low, fast and slow.

Traditional swings limit social interaction; only one child can use the swing at a time, and he often monopolizes it without concern for

¹Dattner, Design For Play, p. 37.

²Bernard Rudolfsky, Streets for People: A Primer for Americans (Garden City, N.Y.: Doubleday and Company, Inc., 1969), p. 330.

³Bishop, "Children's Preferences," p. 6-2-6.

line-ups of children waiting their turn. Younger children are often 'boosted' by adults or older children. However, this form of interaction is not beneficial and denies the child practice of his skills by not requiring any input by him. The traditional metal or wood seats, which are known to be quite dangerous to small heads, and box swings which 'trap' the child, are particularly unsuitable to playgrounds that are unsupervised.

Improvisation in the form of rubber or cloth belt-type seats, discarded tires, and rope or plastic-coated chains are notable improvements to safety. The use of tires enables a few children to use the swing at once, thus reducing line-ups and encouraging social interaction. This group activity also contributes to a flexibility, where the movement is not rigid or predictable. A 'mountain' of tires strung to a vertical support enables many children to swing at once, offers the challenge of climbing up a moving element, and causes each child to feel the effects of his actions as well as the combined efforts of others' actions. This device contributes to the child's sense of control, and teaches him that others too can affect him as he affects them.

b) Slides are responsive to child interests¹ because the variations of relative height and speed stimulate the child's senses. Slides challenge physical co-ordination in climbing, and offer stimulation in zooming down in various positions and speeds. Occasionally, when not inhibited by line-ups or pushy children, the child may use the high platform as a vantage point for watching or fantasy play.

¹Ibid., p. 6-2-6.

However, traditional slides accommodate only one user at a time, and generate long queues of children. The safety of slides is often questionable: narrow ladders leave no option to back down if the slide is sensed as too difficult; the platform height is often 7 feet, and with grass or pavement below, a fall from that height is dangerous. The height and slope of the slide is the same for all ages and skills of child users; there is no allowance for progression.

Designers have created improvised forms of slides which utilize earth mounds or pyramids of logs or bricks as the climbing means. This minimizes the dangers of falling from the slide, and enables multiple access points as well as a legitimate means of retreat. Slides imbedded in mounds also provide an alternate variety of descent, on the sloped access.¹ An additional improvement to the slide has been to offer a choice of heights and slopes. This varying degree of complexity or challenge accommodates the variety of interpretations of 'difficult' or 'dangerous', and enables enough choice to help children cope without assistance. Some newer slides are wide enough to allow more than one child to go down at once, thus reducing line-ups. However, these wide slides prevent small children from using the edges for balance and braking. In addition, wide slides are more prone to accidents when a number of sliding bodies congest at the bottom.

c) Climbing devices are popular and offer the child some control as he moves over, under, through, and around an object or space.² Climbing and hanging by the arms are good exercise, and are challenging to the

¹Dattner, Design For Play, p. 36.

²Ibid., p. 45.

child under age 7. A number of children can use climbing structures at once, which helps foster social interaction. This also satisfies the child's preference for socially-active spaces; children appear to dislike both overcrowded and empty playgrounds.¹

Traditional, all-steel climbing apparatus have been related to increased accident rates.² Also, lattice frames such as monkey bars are not highly attractive to children. More popular are climbing structures which allow the child to relate to them in a variety of ways by climbing on, through, and into cavities which respond to his affinity for enclosed and private spaces.³

Climbing apparatus may assume novel forms including: tree houses, platforms and enclosures at varying heights, rope nets, tire ladders, or simple earth mounds, rock piles, and tree stumps. These effectively excite the child's imagination, enable interpretative gymnastic and social activity, and are simultaneously responsive to adults' aesthetic senses. Climbing apparatus with different levels and modes of use can easily incorporate degrees of challenge, to complement the child's tendency to establish his physical limits, and act as a gauge to measure progress. Climbing structures that respond to the different degrees of skill help children safely separate into play groups of similar ages or skills. Apparatus can be combined with other play items to enhance social interaction and complexity, provided these combinations are compatible and carefully planned to minimize conflict.

¹ Bishop, "Children's Preferences," p. 6-2-7.

² Wilkinson and Lockhart, Safety, p. 59.

³ Bishop, "Children's Preferences," pp. 6-2-6, 6-2-7.

d) Sandboxes are one of the most popular elements in structured playgrounds. Sand is manipulable, it satisfies the child's urge to create and to control certain aspects of the playground, and it enables him to become deeply involved both physically and mentally. When sand is damp, or has a nearby water supply, it is one of the best 'building' materials.¹

There are many difficulties with sand. A small sandbox becomes congested. Sand pits are often unhygienic because animals and children litter in them and broken glass and garbage find their way in the pits. Proper drainage and exposure to the sun are necessary. Replenishment must be augmented by regular raking, sterilization, or changing of the sand. However, in spite of these disadvantages, play with sand is preferable to the objectionable (as perceived by adults) play with dirt in street gutters.²

An innovative, multi-functional sandbox that offers things to climb over or through, or to balance on, increases interest as well as interaction and diversity of play. However, these additions must be compatible with passive sand play; the groupings must not consist of potentially conflicting pursuits such as a combination of cycling or jumping with digging. This emphasizes the need for unobtrusive control over the location of active and passive zones to minimize conflict.

e) Water play has an obvious potential, however it is difficult to accommodate in an unsupervised playground for reasons of safety. When structured provision is made for water play, fountains and wading

¹Holme and Massie, Children's Play, p. 126.

²Ibid., p. 101; and Dattner, Design For Play, p. 36.

pools are most often used (the latter require supervision and daily drainage of the water). These limit the child's involvement and interest, generate solitary play, and increase undesirable behaviours such as splashing or spraying. They also create problems that are similar to those with sand, as well as the nuisance of children plugging the drainage system with sand, mud, or twigs.

Natural water sources such as puddles and streams that result from rainshowers or melting snow are, unfortunately, rarely exploited in playgrounds. These have the potential to offer a novelty and a manipulability that enhance the child's involvement and co-operation in play.¹

f) Landforms and undulations impart a spatial quality that evokes interpretative play, responds to the child's need for enclosure, and generates a diversity of activities within a limited area. They contribute to the child's creative expression in imagination as well as in free experimentation with his muscles and co-ordination. However, level changes are often excluded in traditional playgrounds for reasons of cost or maintenance.

Designers of creative playgrounds have recognized that the lack of topographic changes limits play potential, and that landforms can effectively and unobtrusively guide movements and suggest circulation patterns. This is a notable contribution to safety that is superior to the wide spacing of apparatus. Landforms subdivide space and help to relieve the large scale, starkness, and emptiness that pervades most structured playgrounds. They also contribute to the overall appeal of

¹Children's Environments Advisory Service, "What is a Creative Playground?," p. 2.

the area through visual complexity and mystery; they help to buffer noise, and they may reduce the aggressive activity that so often occurs in crowded playgrounds.

g) Teeter-totters or see-saws are not high on the child's list of preferences, and are little used.¹ Although they encourage social co-operation, offer sensory arousal, and require muscular exertion, they are limited and predictably rigid in potential. Also, they prove to be a dangerous means of gaining these benefits: younger children often dart under the apparatus while it is in the air, the child's short interest span may cause him to suddenly and unexpectedly jump off, or his mind may waver momentarily and disrupt the rhythm.² All of these may cause serious injury.

In general, this type of play equipment is not desirable in unsupervised playgrounds for 4-to-7-year-olds. The benefits of teeter-totters or see-saws can be more safely gained by other, more enjoyable apparatus.

h) Realistic or abstract 'fantasy' equipment is intended as a complement to the familiar, predetermined, and restricted patterns of swinging, sliding, and climbing. It is meant to inspire the child to become involved and to interpret his own play from the very real or ambiguous clues offered by the equipment. However, these innovative and stylized play apparatus--so carefully and tastefully designed--appear to respond more to adult tastes than to child preferences. Once the novelty of the forms has subsided, the child's familiarity with the

¹Bishop, "Children's Preferences," p. 6-2-6.

²Dattner, Design For Play, p. 36; and Wilkinson and Lockhart, Safety, p. 59.

apparatus and its limited potential for play result in disinterest.¹

The forms are often overly real and may incorporate actual discarded elements. The image presented dominates and thwarts the child's inventive capacities, constrains him to reality, and directs him to play at the theme presented by that image. As a result, an old fire truck or a sculpted animal will always appear just that to the child. This inflexibility restricts and predetermines his play as much as conventional equipment, without offering the same physical development benefits. Play clues seem to be at their best when they are colourful and recognizable, but ambiguous and open to interpretation of use rather than aggressively real.²

When innovative play elements are designed to meet a single function, such as the fire engine or animal, they are less popular than traditional apparatus. However, when a variety of gymnastic activity possibilities are incorporated with the fantasy theme, the popularity increases considerably.³ Thus a novel or abstract form, that evokes multiple images in the child's mind, can simultaneously be adapted in fantasy, be used to exercise the muscles and co-ordination, or become the beginnings of a fort. A single apparatus that serves a number of play purposes, without dictating activity, increases the enjoyment, choice, diversity, and use, as well as the benefits to the overall development of the child.

It is apparent that in both traditional and creative structured

¹Dattner, Design For Play, p. 49; Bishop, "Children's Preferences," p. 6-2-6; and Lady Allen of Hurtwood, Planning For Play, p. 18.

²Bishop, "Children's Preferences," p. 6-2-6.

³Ibid., p. 6-2-6; and Holme and Massie, Children's Play, p. 100.

playgrounds, children's play is largely dependent upon the quality as well as the quantity of play equipment provided. Improvements to the standard playground apparatus have been discussed in the aforementioned improvised forms of play elements (an elaboration of responsive solutions is available from numerous publications¹). With adequate concern for the child's needs, the characteristics of structured playgrounds with equipment can have more potential to provide opportunities that are just as essential to the child as are natural elements in the unstructured environment.

D. Structured Community Play Centres

Community play centres, including community centres and play parks, are structured to attract the whole family; their intention is to integrate those at different stages of the life cycle through leisure pursuits.² Provision for play at these centres frequently incorporates equipment similar to that in neighbourhood playgrounds, with the addition of facilities for toddlers, teens, and adults. The community play centres tend to be more elaborate and formal, and offer the advantages of increased on-going activity and greater choice and variety of play opportunities.

Community play centres are intended for outings of longer duration than those in playgrounds. They serve a larger population and can

¹See for example: Children's Environments Advisory Service, Creative Playground Information Kit 1 (C.M.H.C., Director Polly Hill); Jay Beckwith and Jeremy Joan Hewes, Build Your Own Playground (San Francisco: Houghton-Mifflin, 1975); and Paul Hogan, Playgrounds For Free (Cambridge, Mass.: The M.I.T. Press, 1974).

²Holme and Massie, Children's Play, p. 254.

support separately-zoned areas for specific activities such as field games, gymnastic and creative equipment, tennis courts, picnic facilities, and attractive resting places. There is often an abundance of trees and landscaping, comfortable benches, sheltered spaces, and people and bicycle paths, especially when the centre is located in a natural site within a park. Municipal swimming pools or skating rinks may be incorporated with the play centre; this enables some sharing of wash-rooms and indoor facilities.¹

The community play centre has become an institution, separated from real-life constraints. Unlike playgrounds, a centre is more appropriate to adult participation. The wide range of users, age groups, and facilities benefit the growing child. However, depending on the accessibility and ease of transportation, community play centres require deliberate attendance and planning ahead. They are not conducive to the spontaneous play of unchaperoned youngsters.

Once in the structured community play centre, the child's choices of play are restricted to what has been provided and what is permissible under the watchful eye of his parents or other adults. When conflicts occur, adults are on hand to separate children and help to solve their problems. This reduces the frequency of accidents in play centres.² However, the continual presence of parents puts a damper on play and fantasy, and restricts or directs children to the behaviour perceived by adults to be good.

When the centre is located in a park, the well-kept grounds and

¹Ibid., p. 253.

²Ibid., p. 89.

landscaping materials offer attractive clues for real involvement in play. However, their potential for digging, lighting fires, and manipulating are denied to the child. The presence of these identifiable play clues, together with restrictions in the use of 'keep-off' areas, may increase frustration for the child and lead to aggressive or destructive play behaviours.¹ This is detrimental to enjoyment and inhibits many of the child's natural play desires.

Community play centres for the entire family do not offer the degree of independence beneficial to or sought by children. On the other hand, community facilities that do separate the child from his parents but also promote independent action under other forms of guidance, have the potential to strengthen family ties, offer feedback and security, and contribute to earlier social maturation and self-confidence.²

Some of these centres offer play leadership programmes, including day-care facilities, with professional supervision to replace accompaniment by parents. This has the advantage of contact with non-interfering adults together with the possibility of including loose and portable play elements to augment the wide range of activities. Some elements for truly creative play--such as water, building blocks, or arts and crafts--can be provided only in a controlled and guarded urban setting with indoor and storage facilities.

A danger of structured, supervised schemes is that the discipline imposed may destroy the fundamental aim of encouraging child creativity

¹Millar, Psychology of Play, pp. 150, 219.

²Holme and Massie, Children's Play, pp. 84, 89; and Lady Allen of Hurtwood, Planning For Play, p. 17.

and control in play. Whether supervised by parents or paid leaders, the rules and limitations too often delimit the child's freedom. The areas are not open at all hours, and play there is largely controlled by schedules; there may be different hours of operation or useability for different age groups. This reduces the benefits of older and younger children mixing with and watching each other. The need to wait for specific times to play is contrary to the nature of younger children's play.

Community play centres do not cater to free, spontaneous, private, or adventurous play activities, and the essence of organized play with rules does not meet the common interests of children under age 8. The organization and programming, together with the amount and type of apparatus, determine play; this means a loss of the child's control and freedom.

These centres can be criticized for the way in which they limit fantasy and adventure through the child's own involvement with the environment. Programmed play provision is adult-prescribed rather than child-initiated. This not only diminishes behavioural diversity, but deprives the child of enjoyment and developmental value.

E. Structured Adventure Playgrounds

The adventure playground is an urban complement to play in the natural and unstructured environment; another name for the same concept is junk playground. The intent is to provide a setting full of opportunities, from the child's point of view, which enable him to spontaneously find or make his own activities, challenges, adventures, and creations. Within a framework of supervision and safety, the child is

encouraged to learn through experimentation with physical resources and experiences otherwise unavailable or forbidden to him.¹ This includes contact with ambiguous and malleable resources such as earth, wood, fire, and water, which the child can freely use constructively or destructively.

Because of their urban context, adventure playgrounds need to be highly contrived and organized to achieve the unstructured-for-play function and the qualities of a man-made 'wild' setting. Although adventure playgrounds have existed in Europe for over thirty years, their elaborate requirements together with resistance to novelty and change have delayed their implementation in North America. The basic principle requires structured provision including:

- (i) A site of about 1/3 of an acre, with storage, washrooms, and heated indoor facilities;
- (ii) An 8 to 10 foot high, lockable fence surrounding it to screen the noisy and messy appearance generated from active construction and free play. The lockable fence provides security for children's creations, supplies, and tools when the grounds are unsupervised;
- (iii) Tools and a constant supply of raw materials, such as lumber, cardboard, rope, nails, logs, tires, and cloth. This indicates the need for well-advanced planning of all kinds, including community initiative, funding, and delivery;² and

¹ Benjamin, Search of Adventure, pp. 6-7.

² Children's Environments Advisory Service, "Setting up an Adventure Playground," Adventure Playground Information Kit 2, pp. 1, 7; and Children's Environments Advisory Service, "What is a Creative Playground?," p. 1.

(iv) A skilled, unobtrusive play leader(s), whose personality, competence, and understanding of children contribute considerably to the success of the playground.

The actual design of the spaces within the fenced site remains open-ended and unfinished by adults. The inside of the playground is essentially shaped by the children through a continuous cycle of building and re-building. Children organize their own activities by an imaginative interaction with an environment that is both natural and man-made. They are limited only by their unique ability, their imagination, and the nature of the various physical resources. Play is undirected, the product is never complete, and the valuable situation of learning-by-doing is at its height.¹

Play in adventure playgrounds suits the progressive interests of children between 2-to-18 years of age, with particular appeal to those over age 7. The adult leadership enables children to dig earth, build with real tools, climb trees, and light fires without criticism. Adventure playgrounds are often augmented with provisions for arts and crafts, cooking, or keeping pets. In the open and changeable setting, children can develop their own society and give it order and physical form.² All the activities are, by nature, realistic and part of their world as experienced by watching adults. Adventure play may provide more opportunities for learning and gaining a grasp of reality, than do activities in the street or fixed playgrounds.

¹R. Moore, "Open Space Learning Place," p. 40.

²Ibid., p. 40; Lady Allen of Hurtwood, Planning For Play, p. 5; and Holme and Massie, Children's Play, p. 253.

Provision for big-muscle activity and the development of motor skills is largely unstructured, and conventional fixed equipment is taboo. However, children often build their own tire swings or obstacle courses, or improvise with earth-mound slides and rope-pulleys. These apparatus, and the play process of creating them, encourage social interaction and co-operative efforts as well as participation by the adult leader. Because children play on or with things they have created, the activities are more enjoyed.¹ Stimuli in the environment, and the plasticity of response they enable, are directly related to fun and creation. This highlights a difference between adventure playgrounds and structured playgrounds or community play centres. In the two latter forms of provision:

...adults in the form of professional artists, architects, landscape architects, and planners have had all the fun playing with their own materials, concepts and planning-alternatives, and then builders have had all the fun building the environments out of real materials; and thus has all the fun and creativity been stolen...²

Rigid and inflexible elements, built and arranged without input from the child, increase frustration and aggressive behaviour. Adventure playgrounds can reduce frustration and boredom, which may be the basis of destruction and vandalism.³ Constructive and destructive energies are more likely to be expressed in socially-acceptable behaviour rather than in graffiti or vandalism. The child is allowed to

¹Children's Environments Advisory Service, "What is an Adventure Playground?," Adventure Playground Information Kit 2 (Ottawa: Central Mortgage and Housing Corporation, n.d.), p. 1.

²Simon Nicholson, "How Not to Cheat Children: The Theory of Loose Parts," Landscape Architecture (October 1971) : 30.

³Rudolfsky, Streets for People, p. 330; and Millar, Psychology of Play, pp. 150, 219.

uninhibitedly arrange and personally alter elements in his own way, and thereby become intensely involved. This promotes learning as well as a sense of pride and respect toward the playground which the child has helped design. This sense of responsibility indicates a decrease in egocentrism, and may extend to concern for younger children in the playground as well as for others in the neighbourhood.¹

Besides the potential for the development of manual skills, for learning through trial-and-error, and for creative expression, adventure playgrounds enable children to develop their individual interests and identities. The child can always find some activity at which to excel; this contributes positively to his sense of self-esteem.² The independence and adventure inherent in risk-taking are available in various degrees, according to the child's self-imposed or self-built challenge, or his drive to increasingly realistic constructions. Flirting with danger is made safer because of the presence of a full-time supervisor.

The mixing of age groups provides many learning situations, and social exchange co-exists with private and solitary play. Some interaction is encouraged by building activities and the provision of materials such as long boards or heavy items that require two or more children to lift and carry. For the 4-to-7-year-olds, who are less interested in co-operative efforts, and whose manipulative skills are less developed, there is usually provision of simple loose materials and smaller tools to accommodate their building abilities and short

¹Lady Allen of Hurtwood, Planning For Play, p. 58.

²Ibid., p. 58.

attention spans.¹

The adventure playground concept does serve a very real need for children of all ages. It offers most or all of the 'good' qualities of the child-environment interaction, and appears to be the form of play provision that best responds to children's needs and interests.

However, like other forms of planned provision away from home, adventure playgrounds isolate children from everyday on-going activities. The play leader cannot be there at all hours, so the child cannot spontaneously play there in short spurts or during off-hours, even when the playground is easily accessible from his home. The high fence precludes parental surveillance when the area is not supervised.

Adventure playgrounds also have certain connotations. Adults are hesitant about the effects on children when given a 'hideout' with permission to be free or destructive.² These playgrounds are regarded by adults as detrimental to the community image; they might be particularly objectionable to families in low-income areas. This creates a dilemma, because this form of play provision may be especially beneficial to children living in overly crowded, regulated, or poor housing conditions, or youngsters with working mothers.³

When adventure playgrounds are available to children, they remain insufficient as the sole provision for play. They are a realistic complement to spontaneous play at home, and add variety and alternatives to the 4-to-7-year-old's occasional excursions to neighbourhood

¹Dattner, Design For Play, pp. 61-62.

²Lady Allen of Hurtwood, Planning For Play, p. 19.

³Lady Allen of Hurtwood, Forward to Adventure Playgrounds, by Bengtsson, ed., p. 8; and Holme and Massie, Children's Play, p. 65.

playgrounds or community play centres.

F. Summary and Conclusions

The preceding examination of the child's use of different play environments has contributed to an understanding that:

- (i) Although each type of play space has unique characteristics, each can, with adequate planning, have the potential to satisfy the major play needs of the 4-to-7-year-old as isolated in chapter one;
- (ii) In actuality, however, these play environments often do not reach this potential; and
- (iii) Children of this age do not always have access to the variety of areas to fulfill the totality of their play needs; they rely largely upon their home environment, and what the parents have provided or what can be adapted for play therein.

It is, therefore, clear that certain fundamental physical qualities of each type of play environment must be provided within the youngster's territorial range. These qualities may be natural or man-made; some may be augmented by unobtrusive leadership; but all should be available to the child for spontaneous play at any time of the day without need of a chaperone. The physical qualities include the following:

- (i) Things that can be manipulated, modified, and moved by the child in various ways (e.g., rocks, loose parts, sand, dirt, water, shrubbery).
- (ii) Things that move the child by his own exertion, through changes in bodily position, speed, or height, without limiting him to rigid or always predictable effects (e.g., tire swings, rope nets, hills,

disconnected jumping levels).

(iii) Things that offer concrete and tangible clues, of both ambiguous and articulated natures, to evoke multiple images and a diversity of uses without dictating or totally pre-empting activities (e.g., street furniture, platforms, landforms, water, both natural and recycled elements that are flexible and of general or ambiguous form).

(iv) Things that increase in visual and functional complexity, and that can be combined with each other to overlap; this should enable a choice of elements, mode of use, and degree of challenge, including alternative uses that serve as 'escape routes' (e.g., fences, stepping stones, play apparatus, variations in shape, height, and slope).

(v) Things that enclose space, create small-scale defined areas, and offer vantage points (e.g., platforms, hills, rock piles, fences).

(vi) Things that unobtrusively control circulation and separate levels of skill as well as active and passive pursuits (e.g., landforms, complex apparatus, vehicular segregation).

(vii) Things that encourage social play and acknowledgment of the presence of others (e.g., group tire swings, complex apparatus that many children can use at once, heavy or long loose parts, streams, small spaces, sand).

(viii) Spaces which are open and unobstructed, for cycling and running (e.g., sidewalks, yards, 'natural' areas not carefully landscaped).

(ix) Spaces that enable resting, withdrawing, or watching, with

a view to adults and on-going activities; these should enable the choice of being on view or hidden (I-see-you-but-you-can't-see-me) (e.g., circulation paths, access and meeting areas, benches, caves, stages).

The 4-to-7-year-old's reliance on the home environment, for these environmental qualities and for satisfying his play needs, is significant. His choice and opportunities are affected and are possibly less than adequate in situations of limited space and economic resources: for example, in low-income, high-density housing. An examination of a particular form of low-income housing in Winnipeg is the subject of the next chapter.

CHAPTER III

4-TO-7-YEAR-OLDS AT PLAY IN

PUBLIC TOWNHOUSING DEVELOPMENTS IN WINNIPEG

Public townhousing in the city of Winnipeg functions as rental accommodation for "...families of low income in need of decent, safe, and sanitary housing..."¹ It is characterized by attached dwelling units at high densities and a large number of child residents. A partial intent of this chapter is to understand how play is affected by the particular nature of the public townhousing families, the developments, and the unique climatic conditions of Winnipeg. This will provide insight into the nature of play and its implications on the design of the child's at-home play environment.

To augment general knowledge of public townhousing and its predictable effects on play, this chapter includes a case study of 4-to-7-year-old children at play in five existing public townhousing projects. These sites reflect typical variations of: project size, approach to planning and design (including spatial relationships, unit orientations, and site constraints), and the degree of planned play provision. The projects chosen are representative of public townhousing at a density of 13 units to the acre. The intent of the case study is to determine:

- (i) How spaces in existing projects are actually used by 4-to-7-year-olds for play, and whether common activity patterns exist;

¹The Government of Manitoba, "The Housing and Renewal Corporation Act," The Manitoba Statutes, Chap. H160, sec. 1(s).

(ii) The physical relationships that complement and maximize play opportunities and minimize conflict between children at play and other public townhousing user groups; and

(iii) How the understandings gained in Chapters I and II may be applicable to and incorporated within the design constraints of this form of housing in Winnipeg.

A. General Characteristics of Public Townhousing in Winnipeg and Some Implications for Play

The Federal Government agency, Central Mortgage and Housing Corporation (CMHC), together with the province of Manitoba, through The Manitoba Housing and Renewal Corporation (MHRC), fund the purchase of land and the construction of public housing. The municipal agency, The Winnipeg Regional Housing Authority (WRHA) is responsible for tenant placement, and the management and large-scale maintenance of the units as well as of the overall projects.

Unlike single detached housing, there are a number of users and management groups who concurrently share concern over the public housing spaces: children of all ages, adult tenants, resident caretakers who are responsible for project upkeep, the MHRC, and the WRHA. Thus the child and his parents do not have autonomy over their home environment.

Other constraints associated with publicly financed, high-density housing include the characteristic social nature of the tenants, the physical qualities of the housing environment, and the particular climatic conditions of Winnipeg. These factors have the potential to either enhance or restrict play.

1. The social nature

The majority of families accommodated in Winnipeg's public town-housing have the following characteristics: a lower income relative to the rest of society; a high degree of single-parent families; unstable family and social relationships; and until recently, a relatively large family size.¹ These attributes of tenant families have implications for children's play, including:

a) The play provisions within the housing project may be the child's sole play opportunity. Limited economic resources restrict the options to invest in constructive recreational pursuits, to spend money on toys or other amenities, or to take children to municipal play facilities.

b) The large numbers of children within a project places an additional burden on neighbourhood planned or unplanned play areas. This reduces or precludes the possibility of relying on the street spaces to disperse and accommodate children. While increasing the potential to make and play with friends, the concentrations of children and the annoyance resulting from their play (in particular, noise, fighting, and property wear),² cause added strain on the public town-housing family.

c) Many children's play activities are unsupervised, because

¹ Terence D. Maunu, "Public Town Housing in Winnipeg: An Analysis and the Development of a Pattern Language" (Masters thesis, University of Manitoba, 1975), pp. 34-37; and Interview with Gary Charles, of the Winnipeg Regional Housing Authority, Winnipeg, Manitoba, December 1976. Mr. Charles explained that families now seeking accommodation in public townhousing in Winnipeg are largely in need of 2 and 3 bedroom units. This indicates a current trend toward smaller families.

² Polly Hill, "Children's Play in Public Housing Projects," Living Places 10 (Ottawa: Central Mortgage and Housing Corporation, 1974) : 4.

of the high number of single-parent families, families with problems, and working parents who are unavailable for a large portion of the day. As a result, many young children will be more independent and peer-oriented,¹ and social conflict and annoyance with 'other people's children' may be heightened.

d) Sensitive provision for play may be of increased importance in the context of public housing projects, to exploit the potential for learning and development through play. It has been determined that children in large, low-income families are often inadequately prepared for learning and understanding the various societal roles; and the quality of their home life is often different than for the rest of society. Large, low-income families typically reflect a minimal amount of interaction between child and parent. Time, motivation, and the awareness of the subtleties of child development are usually deficient, and result in less intellectual and/or sensorial stimulation, individual attention, supervision, or encouragement in play.²

A further difficulty is that, through socialization, the child adopts some of his parents' attitudes, including feelings of helplessness, discrimination, dependence upon and exploitation by external control, low self-esteem, and lack of motivation.³ These feelings are detrimental to creativity and learning through play, and may be alleviated by opportuni-

¹Thomas J. Ryan, Poverty and the Child: A Canadian Study (Toronto: McGraw-Hill Ryerson Ltd., 1972), p. 80.

²Ibid., pp. 54, 61, 80; and Millar, Psychology of Play, p. 209.

³Ryan, Poverty, p. 74; and Hetherington and Parke, Child Psychology, p. 295.

ties to experience control in play and to engage in free fantasy as an outlet. Play elements that are known to contribute to cognitive and perceptual development are essential to sensitive play provision for disadvantaged children.

e) . Although supervised play schemes of the adventure playground type are the most suitable for children from low-income families, they may not be appreciated by the parents. The unsightliness of adventure playgrounds may increase the run-down appearance of a housing project, and thereby lower the self-esteem of adult tenants. This could increase the perceived stigma of public housing and contribute to a lack of tenant concern over the care and maintenance of the project.

2. The physical nature

Public townhousing is characterized by three or more attached dwelling units that share common party walls, and that are planned at a higher density than is single-family detached housing. The MHRC establishes the maximum number of units to be placed on the site, as constrained by zoning densities and by land and construction costs. The appropriate number of units, together with the required parking and economy of servicing, are organized to form the most efficient site plan. In Winnipeg, most public townhousing developments have been built at a density of 13 units per acre. The current demand for public housing, the scarcity of land, and increased land values together have resulted in the need to raise the density of newer projects to 50 or 60 units per acre, by the use of stacked townhousing.

The dwelling unit and small exterior yards at either exit of each unit are provided for individual family possession. However, play spaces, undefined visual green areas, parking spaces, and driveways

serve the communal needs of all the residents.¹

The physical nature of public townhousing is affected by the inherent economic restrictions as well as by the varying concerns of user groups and governmental agencies. Some implications for children's play include:

a) Provision for play is seldom carefully planned or given adequate funding, in spite of the high ratio of children per project; priority is given to adult needs, including small private gardens, car parking, and maintenance and garbage facilities.² Servicing and parking efficiencies contribute to play spaces being relegated to leftover areas. Although play facilities are specifically required by CMHC, no fundamental requirements are catalogued by either the CMHC, the MHRC, or the building codes. All too often, the upkeep and maintenance concerns of the WRHA and the resident caretakers dictate the elimination of certain forms of provision. Also, when economic budgets are tight, comprehensive play facilities are considered extravagant and are the first amenity to be cut back.

b) The budget considerations dictate that the spaces allotted for play serve the play needs of all ages of children, in spite of the knowledge of the different needs and abilities of pre-schoolers and pre-teens.³ It is naive to presume that the high-density public townhousing project can accommodate the recreational interests of all residents. Since adults and teens will often go off the site, whereas

¹Maunu, "Public Town Housing in Winnipeg," p. 93.

²Hill, "Public Housing Projects," pp. 2, 4.

³Ibid., p. 4.

children under about 9 or 10 years are confined to the project for their play, the needs of those who make most use of the site should take priority.

c) Public open spaces will be especially prone to wear and maintenance difficulties from play. Children tend to make more use of the whole site--not just the designated play areas.¹ Communal open spaces do not have an obvious or defined purpose: children often regard them as play territories, whereas adults see them as 'wasted space' or as 'parks' primarily for visual functions. This lack of definition contributes to an absence of tenant concern or responsibility for the open spaces.

d) High noise levels, aggressive activities, and annoyance from children impinging on privacy can be expected both outside and inside the dwelling unit. The small yards, crowded conditions, and concentrations of children limit both the opportunity for privacy or solitary play, as well as the opportunity to develop self-entertainment skills to relieve boredom.² The resulting annoyance is increased because party wall or exterior end wall soundproofing is inadequate, and because of the close living conditions. As a result, many of the spontaneous, noisy, and creative pursuits of children will be restricted by parents. However, many parents will shirk responsibility for their children's actions, thus contributing to increased difficulty for the caretakers and to further deterioration of property worn from active play.

e) There are limitations to what parents and children can do

¹Cooper Marcus, "Guidelines," p. 373.

²Ryan, Poverty, p. 80.

to the rented house and yards to improve play opportunities. Socially responsible tenants, and adults who take pride in their gardens, will restrict children from digging activities, building or playing with untidy materials in the yards, or otherwise affecting an environment that is not their own. The addition of small play apparatus in the yard attracts concentrations of children, thus increasing annoyance to the family. Basements are unfinished, and although the MHRC will provide materials to improve them for play, tenants are limited by their ability and willingness to invest time or money for this purpose.

f) Because of site planning, some units are often isolated from the project's play area(s). Visual control from every unit is not usually a site design determinant. However, adults value supervisibility from the dwelling unit, and prefer their children to play within sight and calling distance;¹ this enhances the parents' perception of safety. Ease of supervision enables neighbours to keep an eye on the sizeable proportion of youngsters who, for various reasons, are left unattended for a large part of the day.

g) Provision for play can be elaborated and improved with increased funding, such as is available in large developments. It can be expected that, a public townhousing project that shares its play facilities with the surrounding community can: benefit through improved play elements, possibly include part-time leadership schemes, and as a by-product, integrate more easily into the community. The National Housing Act, through CMHC, provides a cost-sharing arrangement for recreational facilities that are to be jointly used by the project tenants and

¹Hill, "Public Housing Projects," p. 2.

the surrounding community. However, it seems that most tenant organizations are unaware or ill-equipped to take advantage of this arrangement.¹ Another possible reason for its non-implementation is that tenants are often reluctant to encourage access to the site by non-residents. When outsiders frequent the site, the tenants suffer from a loss of security over territory and personal safety.² It is probably more desirable if the play facilities serve only the project, to strengthen the sense of community therein.

3. The climatic nature

The constraints imposed on children's play by the nature of public townhousing are further affected by Winnipeg's northern climate. Seasonal change is a powerful element affecting children's outdoor play behaviour; play activities and the child's use of space vary significantly at different times of the year.

Winnipeg's climate is one of widely varying temperatures. The cold weather season normally lasts up to seven months of the year; temperatures between October and April show a typical mean range of $+6.6^{\circ}$ to -18.3° Celsius, with an overall low of -23.2° C. in January. Snow is present for most of this period, beginning in mid-October and disappearing after the end of April. The amount of fallen snow averages over 18 centimeters, although the actual groundcover of snow varies. Sunshine is plentiful throughout the year, with rarely more than seven consecutive overcast days. Thus, the coldest period benefits from the warming effects of the sun. This warming influence is at its low point in November, which

¹Ibid., p. 6.

²Cooper Marcus, "Guidelines," p. 373.

averages 2.7 hours per day of bright sun. Winnipeg is notable for its cold, strong winds; in April, the windiest month, velocities exceed 13 m.p.h. The average wind speed during the cold months is 12.4 m.p.h.; this has a strong effect on the 'felt' temperature, which is often lowered to conditions which are unpleasant for extended outdoor activities. Winnipeg's winds are predominantly from a southerly direction as the air flow is funneled down the Red River; the prevailing direction shifts to the northwest in December, and to the north-northeast in May. However, the strongest and coldest winds are those from the north and northwest.¹

The warm season, occurring from May to September, typically shows a mean temperature of up to +19.7° C. or higher. Sunshine is at its peak during the summer, particularly in July, the warmest month. Winds are generally milder and prevail from a south or south-easterly direction. Rainfall and thunderstorms are most prevalent in the warm months, between June to August.²

Transitional periods between the two extreme seasons occur in April/May and in September/October. Spring is brief in Winnipeg, and is characterized by melting snow, warming temperatures, and light rainfall. Autumn marks the return of cooler temperatures, the first traces of snow, and a short-term groundcover of fallen leaves.

The distinct seasons affect children's play, yet provision for play in Winnipeg is too often designed only for summer use. The weather is

¹Canada, Department of the Environment: Atmospheric Environment Service, Weather Notes, 1975, For Winnipeg, Manitoba, pp. 1, 5-9, 13; and James P. Lewis, "A Study of the Forces Influencing the Design of a House for the Southern Manitoba Area" (Bachelor of Architecture thesis, University of Manitoba, 1950), p. 17.

²Department of the Environment, Weather Notes, pp. 1, 7-8.

rarely too hot or too cold to preclude outdoor play all year long--if only in brief spurts or on the way home from day-care or school. This indicates that consideration should be given to the following play implications:

a) Snow is a totally manipulable resource which can be shaped and controlled by the child, and offers natural, adventure-type play opportunities. Throughout winter, snow changes in character and play potential: it drifts and relocates, and little 'hills' appear where none exist. The texture changes from powder to a wet and packable consistency, and it finally turns to water and streams. Play activities are created and modified in response to these snow conditions. Children's play particularly gains from changes such as snowfalls or blizzards; after a storm,

The child takes over--he is temporarily Lord of the City. You see him darting in every direction collecting snow....A great trick of the skies, this, a temporary correction for the benefit of the neglected child.¹

b) When children expect tolerable weather conditions from their winter outdoor play environment, they may be more willing to dress up in the layers of warm clothing and boots. There is evidence that exposure to the warming effects of the sun, and shelter from the cold winds, have a strong influence on whether children will play outdoors in winter.² It is conceivable that in summer, the child's preferences are reversed: he may seek shelter from the hot sun or rain showers and welcome the cooling of a mild wind or shade. Winnipeg's sun and shade patterns are

¹Aldo van Eyck, cited by Alison Smithson, ed., Team 10 Primer (n.p., 1962), p. 15.

²Bengtsson, Child's Right, p. 37.

easily predicted: shadows are long in winter and shorter in summer; and areas which are oriented to the south or southwest are affected most by the warming effects of the sun. Winds, however, are erratic and more difficult to anticipate because of changes in direction, and the effects of building masses which funnel or break the winds. The east side of built forms in Winnipeg is generally the most sheltered.¹

c) Certain forms of play, some types of equipment, and specific materials or surfaces, lose their appeal or suitability as the seasons change. For example, the cumbersome winter clothing makes it difficult to climb narrow or steep ladders; surfaces that are painted or otherwise lack a heavy texture are slippery in wet and cold weather; metal equipment poses the dangers of freezing skin in winter or burning it in summer; and large asphalt areas are very uncomfortable on hot summer days, particularly when they are not shaded. The child hauls out different toys at the beginning of each season. If neglected toys are left outdoors throughout the year, they are liable to rust or break; considering the public housing families' limited money available for toys, it is not always possible to replace the child's weather-damaged playthings.

d) The winter play environment undergoes micro-transformations that suggest new or different clues for children's interaction with their surroundings. Subtle spatial indicators such as surface materials, low curbs, barriers, and circulation routes delineated by the designer, disappear as the ground cover becomes homogeneous. Many new or stronger definitions appear from drifts and the snow-clearing process, including contrasts between shovelled paths and roads, piles of deep snow along

¹Lewis, "House for Southern Manitoba," p. 17.

their edges, and well-packed snow or icy patches. Vertical elements and strong landforms gain accent and importance as landmarks. The layers of snow underfoot make it easier for the small child to reach higher elements, which may have been intentionally placed beyond the scale of youngsters.

e) In winter, the play environment depends on artificial lighting to extend its period of usefulness beyond the limited hours of daylight.

f) Winnipeg's clay soils impede natural drainage, particularly during spring thaw and rainy periods. Standing water, although it may expand play opportunities, conflicts with the useability of play areas, contributes to the deterioration of apparatus, and creates annoyance from mud and untidiness.

4. Conclusion and design priorities

The preceding overview of public townhousing families and developments in Winnipeg clearly suggests implications for play at home. Potentially conflicting situations may result from the combination of: the large number of children, the limited family territories (yards and units), the presence of communal open space, the determining effects of seasonal factors, and the partial control of government agencies. It seems evident that the public townhousing environment cannot be totally unstructured-for-play, as it is in single-family detached housing. The designer must establish priorities in planning both the exterior and interior environments, to:

- (i) Absorb aggressive play, intense property wear, and noise;
- (ii) Minimize impinging on the privacy of tenants, while facilitating spontaneous and unrestricted play;

(iii) Encourage pride and concern over well-defined private spaces and visually-attractive public areas;

(iv) Facilitate supervision and accessibility of play spaces in the project;

(v) Integrate and define the play spaces as the property of the project community, to discourage 'invasion' by outsiders; and

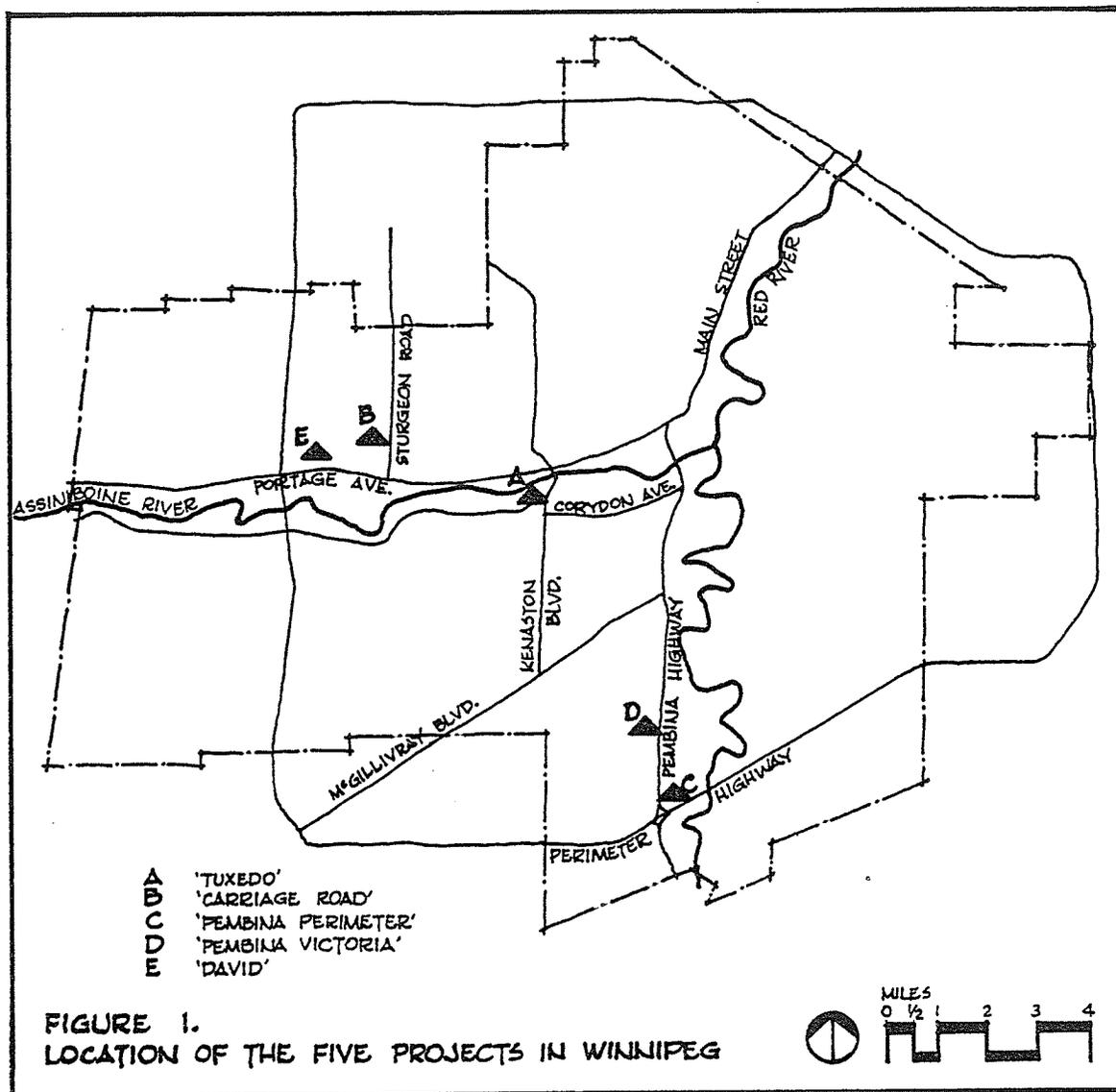
(vi) Enhance opportunities for all types of play throughout the year.

These priorities will be essential to the evaluation of the five case study projects, which are introduced in the following section.

B. The Five Public Townhousing Projects Investigated

The five projects typify different forms and spatial relationships that reflect varying degrees of priority given to design determinants. The spaces and the transitions between them include areas specifically planned and equipped for children's play, as well as some intended for other purposes but potentially adaptable by children for play. Two of the developments incorporate apartment blocks, however only the townhouses themselves and their surrounding land areas are included in this study.

The location of each of the five projects is shown on a schematic map of Winnipeg (Figure 1, p. 99). A description of each, progressing from the largest to smallest project (in number of townhouse units) follows.



1. Description of the projects and their respective provisions for play

a) Tuxedo (See site plan, Figure 2, p. 100)

The development referred to as 'Tuxedo' contains 125 townhouse units. The site is bounded on three sides by streets: Tuxedo Boulevard, Edgeland Boulevard, and Doncaster Street. On the fourth side of the project are: a senior citizens' highrise, an apartment block, and additional public housing under construction.

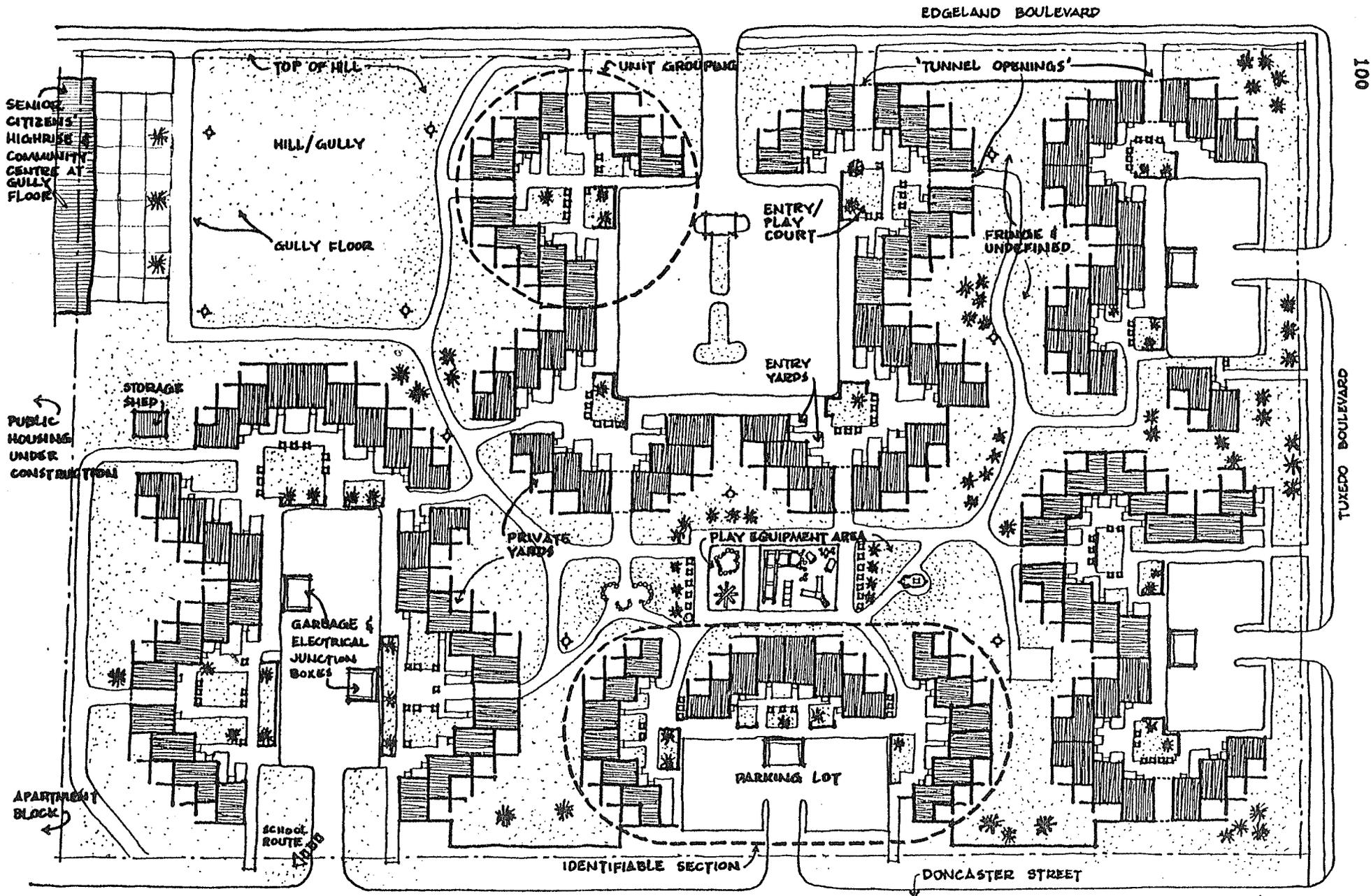


FIGURE 2

TUXEDO SITE PLAN



The project is divided into five identifiable sections, which surround an internal green space. Each of the five sections is arranged around its respective parking lot, and consists of 2 to 4 small unit groupings or clusters that contain between 5 to 14 dwellings oriented to an entry/play court.

Units range from 2 to 5 bedrooms, with the larger ones dispersed throughout the site at the ends and/or centres of unit groupings. All dwellings have enclosed private yards: a 6'-0" high solid party wall fence, and a 2'-6" high end fence and gate, with the two remaining sides enclosed by the living room side of the unit and either the end wall of the neighbouring unit or the kitchen wall at 90° to the living room wall. In this way, all private yards are directly off the living rooms and also the kitchens of some units. Over half of the private yards are oriented to the sun.

The entry/play court spaces on the main entrance side of the units extend to the parking lot, where a separation is created by a 6" curb and a 6'-0" high fence. This solid fence helps to reduce the number of units visible at any one time and prevents children from running directly onto the parking lot from the court. However, it also reduces visual control from the units and limits views to vehicular activity from inside the courts. Each entry/play court varies in size and character despite the repetition of similar elements and surface materials: flat grassy areas adjacent to the fence, a few young trees, pavement extending over the remaining area and up to the unit entry yards, and 21" high by 24" deep concrete cubes separating the court grass from the pavement. These cubes are space dividers as well as potential climbing devices and play tables. The paving serves as the collector sidewalk for the unit grouping as well

as a hard-surfaced play zone connected with the path circuit. Over half the courts are not oriented to the sun, however all are large enough to receive sun during part of the day.

Semi-private entry yards are differentiated from the entry/play courts by unit staggering, the sidewalks to the unit doorsteps, and their grassed surfaces. Some families have added low fences to further define their territory. Kitchen windows for most units overlook the entry yard and court, allowing for easy supervision over children playing in the court. Access from the entry side to the central green space, to the private side of units, and to other groupings, is facilitated by separations between unit groupings and by 'tunnel openings' (that is, covered passages between the buildings, formed at grade by overhanging second floor bedrooms).

The parking lots in 'Tuxedo' vary in size, serving from 16 to 40 units. The largest is a loop-type with four rows of parking stalls; the other four lots are double-loaded, dead-ended lanes which promote lower speeds and less traffic. Central garbage bins and electrical junction boxes are hidden within 6'-0" high wood fence enclosures, which reduce their potential as play clues. To a limited degree, the projecting enclosures reduce the visual impact of the large number of parked cars, which conceivably affects parental concern for children's safety when playing in the driveway. Unfortunately, it is less effective in the largest parking lot.

In addition to the 14 entry/play courts, 'Tuxedo' has two play areas planned for the child residents, both of which are oriented to the private side of units. The first, the central play equipment area, is easily accessible through openings in each unit grouping, and is connected

with the entry/play courts by a pedestrian path circuit. This central green space includes the most elaborate play facilities of the five projects studied. It contains earth mounds, plantings, architecturally designed play equipment, and paths serving both cyclists and pedestrians. These paths flank and cross the play space and its landforms, and provide the major link among the five site sections. They also serve as a shortcut route to school and shopping. The location of this play space, and the ease of access to it along everyday movement patterns, reflects a conscious attempt to encourage its use by child residents. The inadequate visual overview, limited to one-quarter of the units, may be compensated by its complete segregation from vehicular traffic. This play area receives sun all day, and is reasonably well lit in the evening. The townhouse massing provides shelter from winds, although the higher landforms, the north end of the space, and the 'tunnel' openings become very windy. The landscaping and the organization of facilities prompt the tenants to perceive and identify the space as 'their park'.

The second planned play area is a large grassed hill/gully at the southwest corner, adjacent to the two largest subdivisions of the site. It is flanked at the top by the pathway system, and is widely used as a shortcut to the neighbourhood facilities west of the project. The basement of the adjacent senior citizens' highrise, which opens onto the gully base of the hill, functions as a community centre for the project. This area receives sun all day, and the east-oriented hill slope is used for winter tobogganing. There are no windbreaks at the top of the hill, and it becomes very windy in the winter. Visual control is available to the living rooms of only a few units, and the isolated location of the hill/gully appears to render it suitable for older children or youngsters

only from the few adjacent units. The space is lit for evening use and is augmented by street lights along the bordering residential street.

b) Carriage Road (See site plan, Figure 3, p. 105)

'Carriage Road', consisting of 75 units, is the second largest project studied. The site is bounded on two sides by a quiet residential street called Carriage Road. On the third side is a two-storey senior citizens' block, and on the fourth, a public pedestrian lane, single-family detached housing, and a community centre and school.

The site planning concept is similar to that of 'Tuxedo', in response to the relationships between vehicular and pedestrian activity, access to the unit, and children's play. The site is divided into two identifiable sections of 35 and 40 units, separated by a large grassed field. Each section is comprised of 4 unit groupings that contain between 4 to 12 dwellings, and that are oriented towards a parking lot. Each unit grouping is clustered around an entry/play court.

All dwellings have either 3 or 4 bedrooms. Living rooms are oriented to the private yards, which are defined by a 5'-0" high fence at the two party walls and a 5'-0" high fence with a 3'-8" high semi-transparent fence and gate enclosing the end. One-third of the units' private yards are further defined by 10'-0" jogs in the unit massing. The private yards are oriented to a narrow green space, and have a visual link with parking and other unit groupings.

The 7 hard-surfaced entry/play courts are more uniform in size and shape than those at 'Tuxedo'. They are separated from the parking area by a 3'-0" high fence that contains activities and prevents overflow onto the vehicular spaces, while preserving a direct visual connection with parking and other unit groupings. The courts extend from this fence to

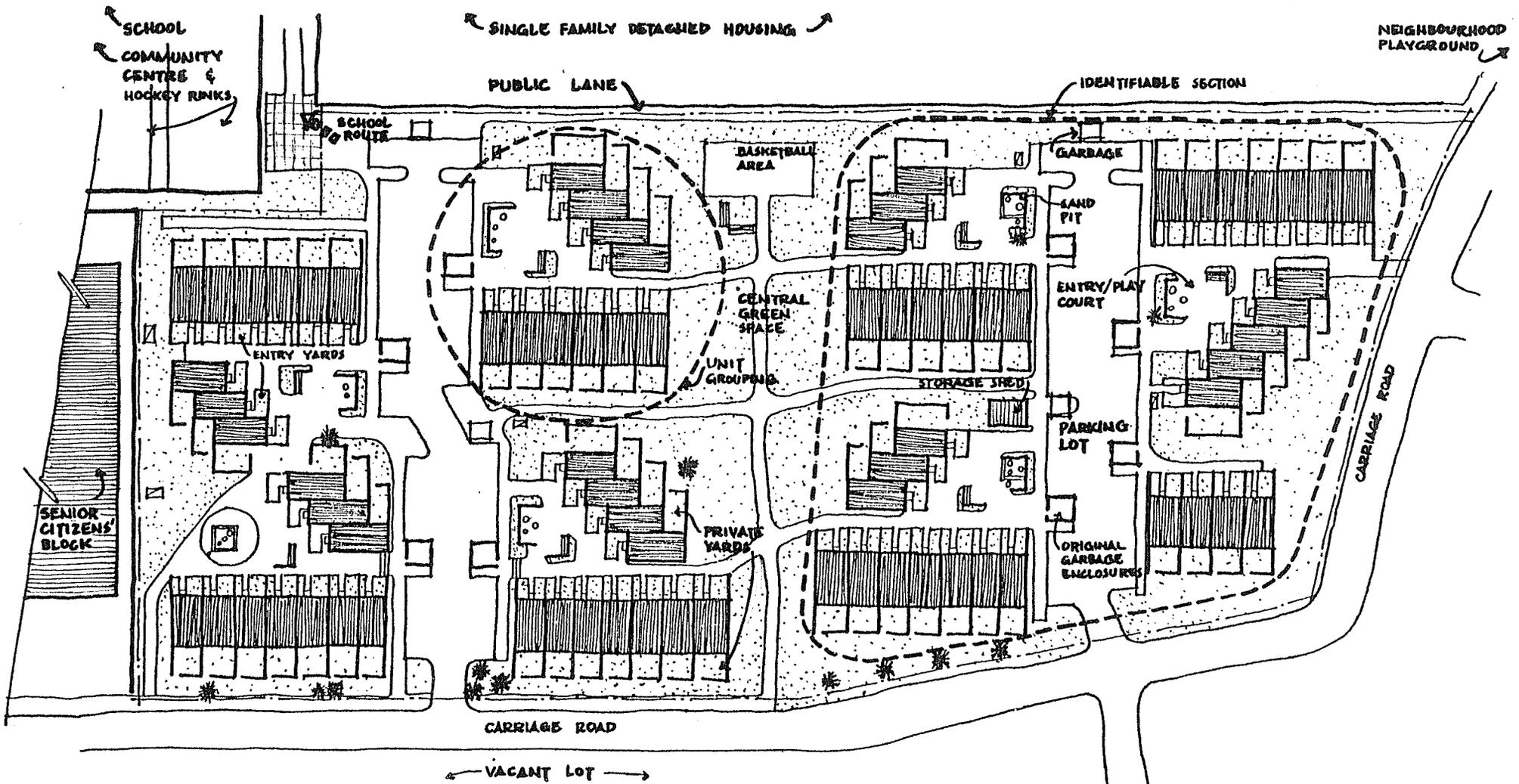


FIGURE 3.

CARRIAGE ROAD SITE PLAN



the entry yards, and the continuous concrete surface serves for play as well as collector sidewalks. Low fences and cylindrical concrete forms of varying heights subdivide the space, and together with small benches, act as climbing elements, play tables, and rest stops. Each entry/play court originally contained two sand pits; however, parental complaints about the problems of children and cats littering in the sand, and dispersing it throughout the court and into the house, resulted in the removal of all but three. Most of the courts receive sun all day, although some are shaded by mid-afternoon. Lights for evening use are supplied by parking lot standards and wall fixtures mounted on the units.

Entry yards are well-defined; the material change from concrete to grassed yard, and the occasional staggering of units, are augmented by the recent installation of 1'-6" high wooden rail fences. This reinforces the identity of territory to a greater degree than the unfenced and staggered yards at 'Tuxedo'. All kitchens overlook the entry yard and court beyond.

The two parking lots in this project appear smaller than reality because each is divided into four sections through the use of jogs and protruding fenced garbage enclosures. Difficulties with sanitary engineer unions resulted in the addition of new garbage bins at more easily maintained locations; the original enclosures are open for children's play. The parking lots are major visual and circulation links. One serves as a shortcut to the elementary school and community centre. Both are dead-ended and double-loaded, and their apparent small size seems to reduce both actual and perceived dangers to children's play in them.

In addition to the 7 semi-public entry/play courts, the central green space between the two major sections offers a play space for all

child residents. At the west end is a paved basketball area which is converted to an ice rink in the winter. Two benches, one tree, and the linear paved paths are the only other elements in the large space. The proximity of the site to a neighbourhood playground may have influenced the decision to not provide play equipment in the grassy field. However, it lacks landforms and a sense of enclosure, and although it is safe from traffic, it remains isolated and has no identifiable play elements. The school route for half the units passes through this area, and a paved path system connects it with the entry and private sides of units. The area receives both sun and wind most of the day. It is not supervisable from many units and is not lit for evening use.

Apart from the single communal play area, the project is surrounded by three facilities open to the entire neighbourhood. Across the east side street is a vast vacant lot. It is flat and equipped with elements for organized sports; in winter, it is used to store snow removed from the project's parking lots. The playground, northwest of the site, contains a variety of play apparatus. A community clubhouse and hockey rinks fringe the southwest of the site, and their proximity is ideal to entice older children and potentially reduce the congestion of children in the townhousing project.

c) Pembina Perimeter (See site plan, Figure 4, p. 108)

This project is situated near the junction of Pembina Highway and the Perimeter Highway. It is bordered to the east by a vacant field leading down to a gully, which serves as a storm-runoff storage pond. The development incorporates a 52 unit apartment block, whose massing buffers the townhouses from the highways.

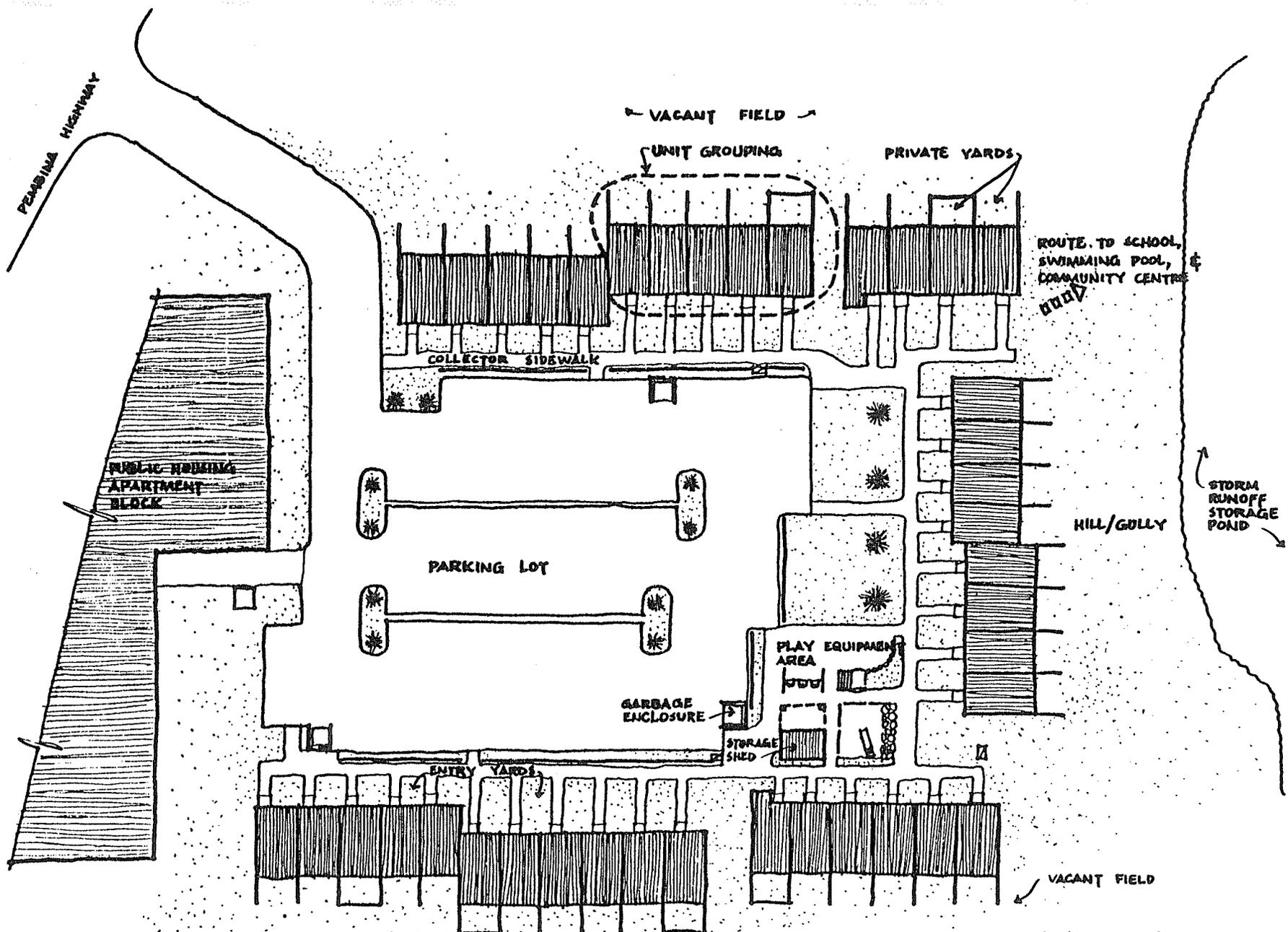
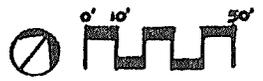


FIGURE 4. PEMBINA PERIMETER SITE PLAN



The site planning concept differs totally from the previous projects: the 39 townhouses are arranged in linear rows flanking three sides of a single parking lot, and do not enclose a small space for each grouping. The rows are subdivided into 7 unit groupings which are linear banks; each bank has 4 to 8 units, and is slightly jogged, with little variation in setback from the parking lot. The whole project is visible at once from each unit, and the large scale of the interiorized space is compounded by the massive area devoted to parking. The total number of townhouse units is equal to the largest identifiable sections at 'Tuxedo' and 'Carriage Road', but the lack of clusters clearly adds to the perceived size--especially to the small child.

Units range from 3 to 5 bedrooms, and the larger ones occur at the ends of banks, close to the planned play area. Living rooms and private yards are oriented outward, toward the fringe vacant field and runoff pond. These yards are defined by 5'-4" high solid party wall fences, with no enclosure at the end; however, some families have added a fence to totally contain their yards. The usefulness of these yards, to control children's wanderings, is less developed than in the previous projects. Over half of the units' private sides are oriented to the northeast and northwest, and receive little sun during the day.

The single parking lot, serving all the townhouse and apartment units, consists of three double-loaded parking lanes, connected by looped aisles. No attempt was made to subdivide the lot into smaller sections to localize or reduce the flow of traffic. The result is that the vehicular movement is faster and heavier than at the previous projects. This contributes to the dangers to children playing in the parking lot.

The transition from public parking lot to semi-private entry yards

includes a 6" curb, a 1'-6" high rail fence, a pedestrian collector sidewalk, and a material change from concrete sidewalk to grassed entry yard. Most entry yards blend with the public spaces because of their subtle demarcation. This is particularly noticeable for the northeast bank of units, which borders the school route and the play area: these spaces are barely distinguished from the yards. A few tenants have added low fencing to strengthen the boundary of their territory.

The central play equipment area is located adjacent to the southeast end of the parking lot, and serves as an entry-related play facility for about one-third of the units. In this way, it resembles an entry/play court, except that it serves the entire project. The majority of the play area is grassed and has a few young trees; the space is given some sense of enclosure by the unit massing and by the adjacent parked cars. The curb and rail fence separate play from parking without restricting the child's visual overview of ongoing activity. The remainder of the space is paved, and contains equipment: swings, a slide within a sand area, and a culvert submerged under an earth mound and timber steps. A north-northwest oriented sheltered area, over part of the paved play area, is created by an extended overhang of the storage shed roof. The space receives sun throughout the day and is well sheltered from winds; parking lot lights extend its period of use.

The second play area is a hill/gully immediately east of the project. It is a natural, leftover space, that is part of the storm drainage and storage system for the community. The townhousing side of the hill faces northeast, has little sun, and is windswept; the opposite side, with a higher and larger slope, is sunnier and open for use by the surrounding community. This play area is along the routes to school, to a community

centre, and to a swimming pool. During the winter, the storage pond is converted to a skating rink. The hill closest to the housing project is supervisable from the private side of only eight units. This lack of overview poses a problem during summer, when the pond is a hazard to young children. This play area is not lit for evening use. It is also isolated from the equipment area and the majority of activity-generating spaces.

d) Pembina Victoria (See site plan, Figure 5, p. 112)

'Pembina Victoria' is a smaller project, on a narrow site bounded on the north and south by low-rise apartments, on the west by a railroad track, and on the east by Pembina Highway and the Victoria Hospital. It resembles 'Pembina Perimeter' in: the number of townhouses, the exclusion of clustering and entry/play courts, and the incorporation of an apartment block. However, the 35 townhouses and 15 apartment units are oriented toward a peripheral loop road and parking stalls. This illustrates a reversal of the car parking parameters of the previous three projects.

The 3 to 5 bedroom townhouse units are arranged in three linear rows. These are broken into 6 unit groupings, which are linear banks, by separations between dwellings and by 90° changes in orientation. Each grouping consists of 4 to 8 units, staggered to varying depths. Access between the groupings, to the internal green space, is limited to three passages; fencing blocks the other openings.

The two largest units are adjacent to one another, at the centre of one row. The cantilevered bedrooms on the second floor allow passage between them in the form of a 'tunnel'. All but these two units have

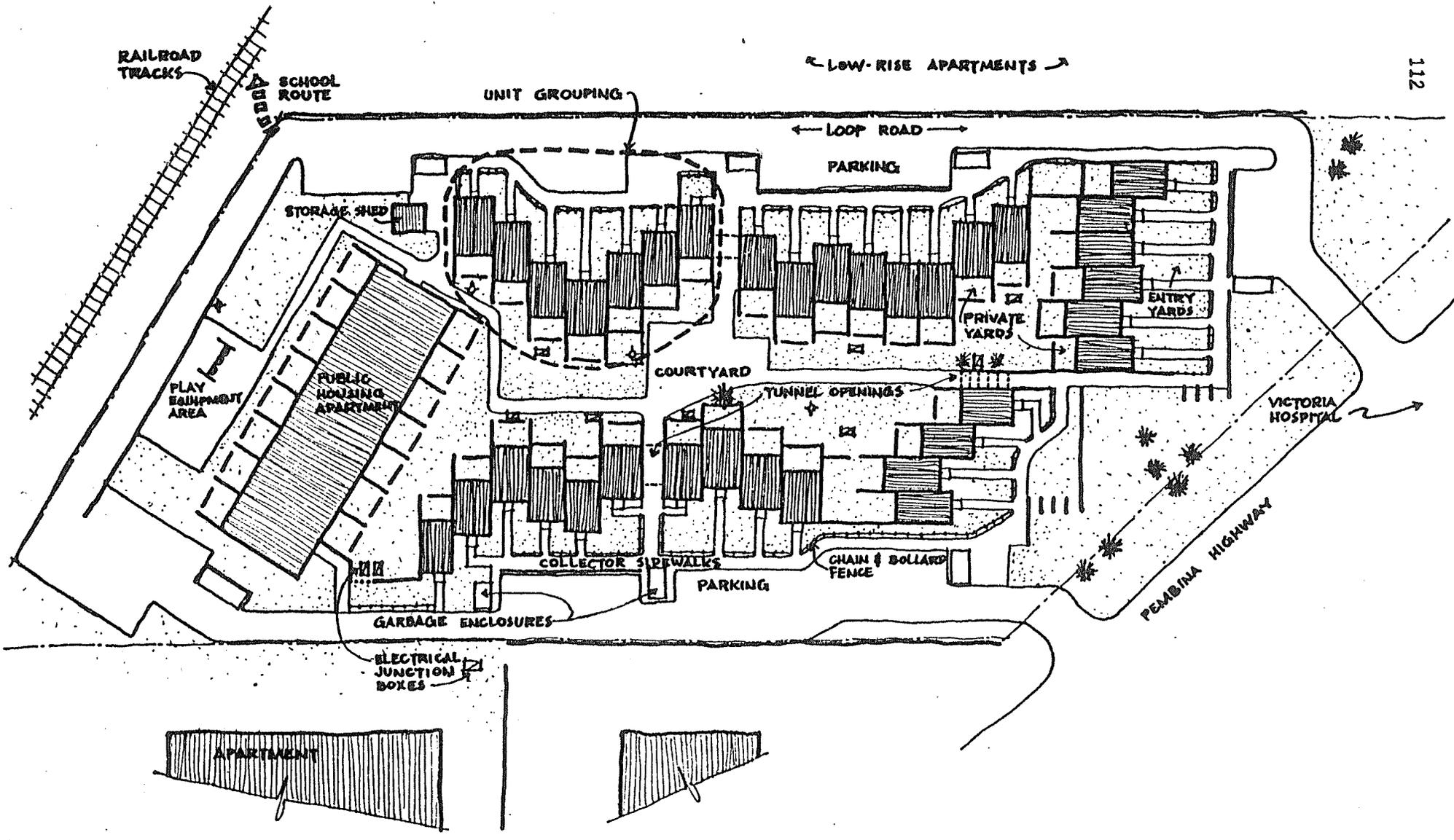


FIGURE 5.

PEMBINA VICTORIA SITE PLAN



living rooms oriented to the private yards and the green space. The private yards are defined by unit jogs as well as 6'-4" high semi-transparent party wall fences, with 4'-0" high end sections that have two openings on either side without gates. The majority of families have increased their privacy and control over the yard by closing in one or both of these openings. Over half of the private yards are oriented to the sun.

Parking is single-loaded along the loop road, in a number of medium-sized lots. Vision across some corners of the road is restricted, and neither motorists nor children at play can foresee each other at those locations. Asphalt speed bumps have been installed along the long peripheral loop, however they do not effectively reduce speeds and cause snow removal difficulties.

Collector sidewalks are adjacent to but separated from parking by a 6" curb, and in some locations, by a fence varying in height from 1'-6" to 4'-0". Entry yards are differentiated from the sidewalks by a material change to grass and by a 2'-0" high chain-and-bollard fence. Unit staggerings and changes in exterior materials demarcate the width of each family's territory, and the varying setbacks create sometimes disproportionate yard sizes. All but two townhouse kitchens have a view over the sidewalk and parking spaces in front of the unit. However, supervision is laterally restricted by the unit staggering.

The lack of an entry/play court or other entry-related play space leaves little common territory for gatherings of children. When the project was initially built, there was an extended sidewalk area on the south side of the site, adjacent to parking, which accommodated a planting arbour. This proved to be attractive for children's play,

because of its location in the midst of activity, and because of the arbour's climbing clues. However, the hard surface underneath was dangerous for play activities, and parental complaints resulted in the removal of the structure. Instead of being modified to support children's play, the paved area was subsequently converted for additional parking.

'Pembina Victoria' has two areas planned for play. The first is a paved courtyard within the internal green space, which is supervisable from the private yard side of units. This area is pleasantly enclosed, but its visual charm does not appear to be relevant to the play interests of children: it is totally segregated from the daily activity of the project, and is unequipped except for paved linear paths, numerous light standards, and electrical junction boxes. The original plan provided a sandbox in the open space at the junction of shortcut paths. However, due to parental complaints of the problems with cats, children, and sand, it was soon paved over.

The second planned space, the play equipment area, is located on a seemingly leftover space along the west boundary, separated from the loop road and the railroad tracks beyond by a 4'-8" high fence. The space is isolated from the townhouses and is supervisable only by 8 apartment units. Half the play area is asphalted and equipped with a swing set and a 2'-0" high rail fence for definition. An angular paved path leads from the courtyard, around the apartment building, and into this paved area. The overall impression is one of barrenness and isolation from the rest of the project.

There are no community play areas close enough for spontaneous, unchaperoned play, but there is a fringe space adjacent to the highway available to children. This area is of a large scale, is flat and grassed,

and has some mature climbing trees; it is sunny but windy, and is not intended specifically for play.

e) David (See site plan, Figure 6, p. 116)

The project referred to as 'David' is bounded on two sides by streets; David Street and Fairlane Avenue. The other two sides are flanked by private residences and a vacant lot.

This is the smallest project investigated, containing 14 identical, 3 bedroom units. The total size of the development is comparable to one large unit grouping or cluster at either 'Tuxedo' or 'Carriage Road'. This project is unique in that its siting concepts enable it to be similar to single-family detached residences rather than a typical, larger housing development. This is accomplished by three linear unit groupings, two of which are oriented to the residential streets. They enclose an internal area containing entry yards, parking facilities, and a play area. The interior of the project resembles a back lane with the addition of a communal play space.

The units are set back from the street at a distance equal to that of the neighbouring houses, to further blend into the community. The private yards on the outward-oriented living room side of units are unfenced and resemble 'front yards' typical of single-family dwellings. There are no public collector sidewalks, and low hedges are the only indicators of privacy. Although these yards are large, their design does not offer the degree of privacy or the means to contain or restrict children's wanderings, as available in other projects.

The entry yards are well defined by a combination of 3'-0" and 6'-0' high fencing on 2½ sides, as well as by the material change from

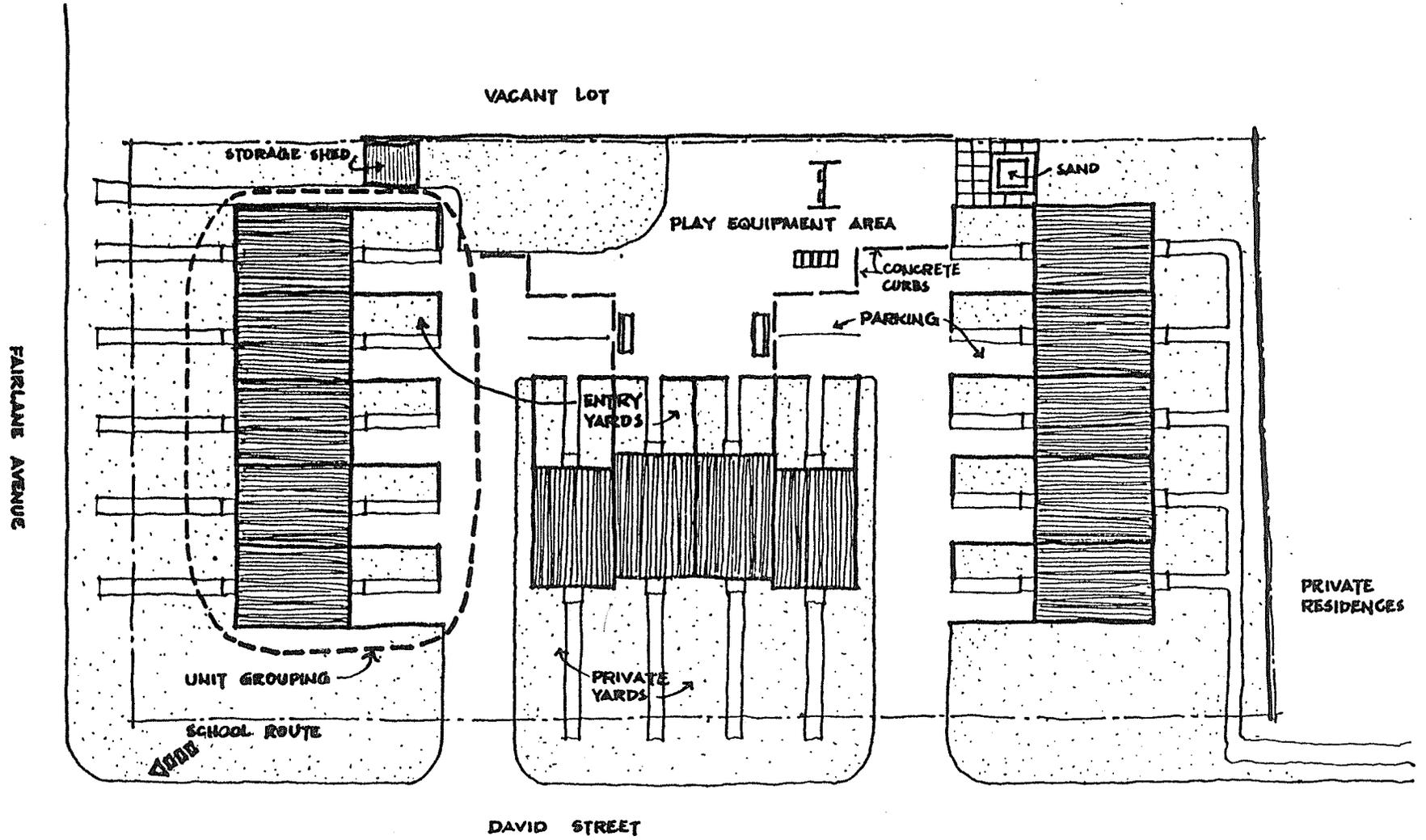
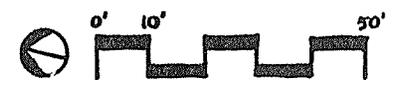


FIGURE 6.

DAVID SITE PLAN



the totally paved interior to the grassed yards. Kitchen windows overlook the yards and the play area beyond. Individual parking spots for all but four units are located within the yard, and considerably reduce the useable outdoor family area. The remaining cars are parked adjacent to the driveways. Two separate driveways, serving only seven units each, provide dead-ended vehicular access to the site, and result in minimal traffic dangers.

The internal space between the driveways is the single planned play equipment area. It consists of a small grassed portion--where play is forbidden--and a hard-surfaced area which is visually a continuation of the driveway. The play area is enclosed on the east boundary of the project by a 6'-0" high fence, and is separated from parking only by pre-cast concrete parking curbs. Within the paved area are swings, monkey bars, benches, and a conventional sandbox. The sand had originally been centrally located, however noise and blowing sand motivated its relocation to the southeast end of the area. The play space is sunny but wind-swept, and there is no lighting for evening use.

Several parks and a community centre are nearby, but are beyond the spontaneous and unchaperoned play radius of young children. A large vacant lot adjacent to the play area, and fringe boulevards along the streets, are available for unplanned play.

2. Comparison of the projects: common zones

The preceding description of the five projects has revealed that certain zones of the sites are common to each, although they have been given various planning and design detail emphases. These zones, and their component spaces are:

(i) Entry zones: spaces related to the main entrance side of dwellings in a grouping of units. The components include a semi-private entry yard with a path and steps to the unit, and in most cases, either an entry/play court or a collector sidewalk.

(ii) Parking zones: spaces related to the parking lot, including the road and any sidewalks or boulevards flanking it. Snow mounds are an additional, winter-only component in most projects, as revealed by observation.

(iii) Planned play areas: one or two spaces in the project intended for play, that vary in the degree to which they are structured for that purpose. The components of these play zones depend on the type of space provided. They include: equipment in specialized areas, hill/gully landforms, and/or both paved and grassed areas such as courtyards or central green spaces.

(iv) Private yards: family territories, generally on the living-room side of units.

(v) Fringe and undefined areas: communal paved areas or green spaces intended for pedestrian circulation, esthetics, or to provide a buffer between unit groupings. The components are essentially either paved paths or grass.

(vi) Community and 'found' areas: some projects have adjacent public spaces, not part of the site, and unstructured-for-play; for example, construction sites, vacant lots, or residential streets and boulevards. These are available for use by children from the project as well as from the surrounding community.

It is assumed that these zones are common to all or most public townhousing

developments in Winnipeg.

It is important to understand how the five projects and their zones function for the play of 4-to-7-year-old children. The following section deals with data gathering on children's use of the sites and a critical analysis, comparing and contrasting provisions for play and the use of the zones in each of the five projects.

C. Site Use by 4-to-7-Year-Old Children for Play

1. Data gathering

The children's use of each of the five sites was systematically observed and recorded in both summer and winter. This included site visits of 6 hours per day, on one weekday and one weekend during each season, for a total of 24 hours at each site. The observation days were chosen to allow each site to be observed under similar weather conditions (that is, temperature, amount of sun, and presence or absence of snow or rain). In addition, casual site visits on less favourable days were conducted to gain overall impressions.

The data were gathered, by the author, in walking tours throughout each site between 10 A.M. and 5 P.M. These routes were pre-planned to enable a view to all areas in the project; continuous movement was intended to preserve the desired unobtrusiveness. The recording of data included: the play activity observed and its location, the physical characteristics of that setting, the number of children involved, the time of observation, and the weather conditions. These were plotted on a number of prepared site plans of each project, to differentiate activities observed during each walking route. Only those children judged to be between 4-to-7 years

of age were methodically recorded; other children's play activities were noted as supplementary information.

Behaviour traces were mapped on the site plans to augment the systematic observations. These included such things as heavily trampled areas in grass or snow, play elements strewn in yards, vandalism or graffiti, and parents' erection of 'keep-out' fences.

A modest survey of adult tenants was conducted to augment the behavioural data. An average of 13% of tenant families in each project was interviewed. These were chosen by stratified sampling:¹ that is, a random selection was made of families having at least one child between 4-to-7 years of age, with a representation from all areas of the project. The survey included questions of both a structured and open-ended nature. They were developed primarily to gain insight into the parents' perceived satisfaction or dissatisfaction with provisions for play in the projects, and their perception of concerns or conflicts with children's play in both exterior and interior spaces. Mothers filled out the questionnaire in the presence of the author, and verbally elaborated on their various concerns. This produced much incidental but relevant information in addition to the prepared questions.

It was initially expected that children themselves could also participate in a survey, however casual questioning of 4-to-7-year-olds proved to be an inadequate measure of their preferences or perceived satisfaction. At best, their responses were misleading and amusing. This seemed logical, in retrospect, considering the knowledge of child thought,

¹William Michelson, ed., Behavioural Research Methods in Environmental Design (Stroudsburg, Penn.: Dowden, Hutchinson & Ross, Inc., 1975), p. 134.

orientation to reality, and capability of effective verbal or graphic communication at their developmental level.

The adult survey indicated that most parents had given extensive thought to the adequacies or dysfunctional aspects of the public town-housing environment, prior to the survey. However, it also revealed that many parents were unaware of their children's actual activities and whereabouts in play outdoors. Thus it was confirmed that unobtrusive observation, together with in-person adult questioning, were the most meaningful tools for feedback about children under 8 years. Observation yielded more accurate information than did questioning, for the purposes of this thesis.

It is important to recognize that the survey and observational data were limited. They were dependent on such things as the particular tenants interviewed, their honesty in answering, and the fact that play behaviour patterns were based upon only 24 hours of actual observation at each site. Also, the weather conditions were unusual in both seasons: the winter of 1976-77 was exceptionally mild, with less snow than normal; the 1977 summer was wetter and cooler than in other years, and often resembled spring weather. The observations, therefore, may not represent typical intensities of play activity in either season.

2. Critical analysis

The projects are analysed in terms of the aforementioned common zones (see p. 118) so that the various site planning concepts and design factors that influence play can best be compared. To control for the differences in project size and the correspondingly disproportionate numbers of child residents, all findings are compared by a percentage

of the total use within each project. These are discussed in the past tense because of their basis on specific observational periods in the past; the findings may be unique, and it is possible that a repetition of the case study would not reveal identical results. However, it is understood that the physical environment is a constant.

The presentation of the critical analysis includes the following:

- (i) A brief description of overall site use of the project;
- (ii) Site plans showing the overall use in winter and in summer;
- (iii) A bar-graph indicating the distribution of activity, within the zones of each project as well as in comparison to other projects;
- (iv) A description of play activities and design characteristics of each zone or its component spaces; and
- (v) Hypotheses of factors contributing to the observed distribution of activities within the zones or in other areas peculiar to a project.

The framework for analysis is based upon the design priorities established in section 'A' of this Chapter, as well as the understandings gained in Chapters I and II, concerning 4-to-7-year-old children: their play, their play needs, and the environmental qualities that reinforce both play and child development, within the context of public townhousing in Winnipeg.

a) Tuxedo

The largest project investigated, which supports the most varied and elaborate provisions for children's play, was expected to reflect the greatest numbers of children playing outdoors. This was the case

during the warm season. However, in winter there were fewer children, both in absolute numbers and in proportion to the project size, than in some of the smaller projects.

Overall activities throughout the year predominated in the entry zone, which incorporated an entry/play court; comparable use was made of the planned play areas, in particular, the central play equipment area. The remaining zones--parking lots, private yards, fringe areas, and spaces beyond the housing grounds--showed decreasing degrees of activity in that order. The proportion of play observed in the zones varied between the winter and summer seasons. (See Figures 7, 8, & 9, pp. 124 - 126)

Winter activities were virtually distributed in four areas. The majority of activity occurred in the closely related entry and parking zones; the remainder took place on the private side of the unit groupings--in the private yards and in the planned play areas.

Summer activities predominated in the planned play areas, with an equally high use of the entry zones. Both these areas were used to a greater degree than in winter, with a significant reduction in the use of parking areas and private yards. Summer also showed increased use of internal fringe green spaces.

1) Entry zones (See Figure 10, p. 127)

The high degree of observed use of the entry zones for children's play was probably due to the following reasons: the accessibility and ease of supervision from the units, the fact that children like to play in access areas where interesting neighbourhood activities are likely to occur, the sense of place and belongingness offered by unit entry

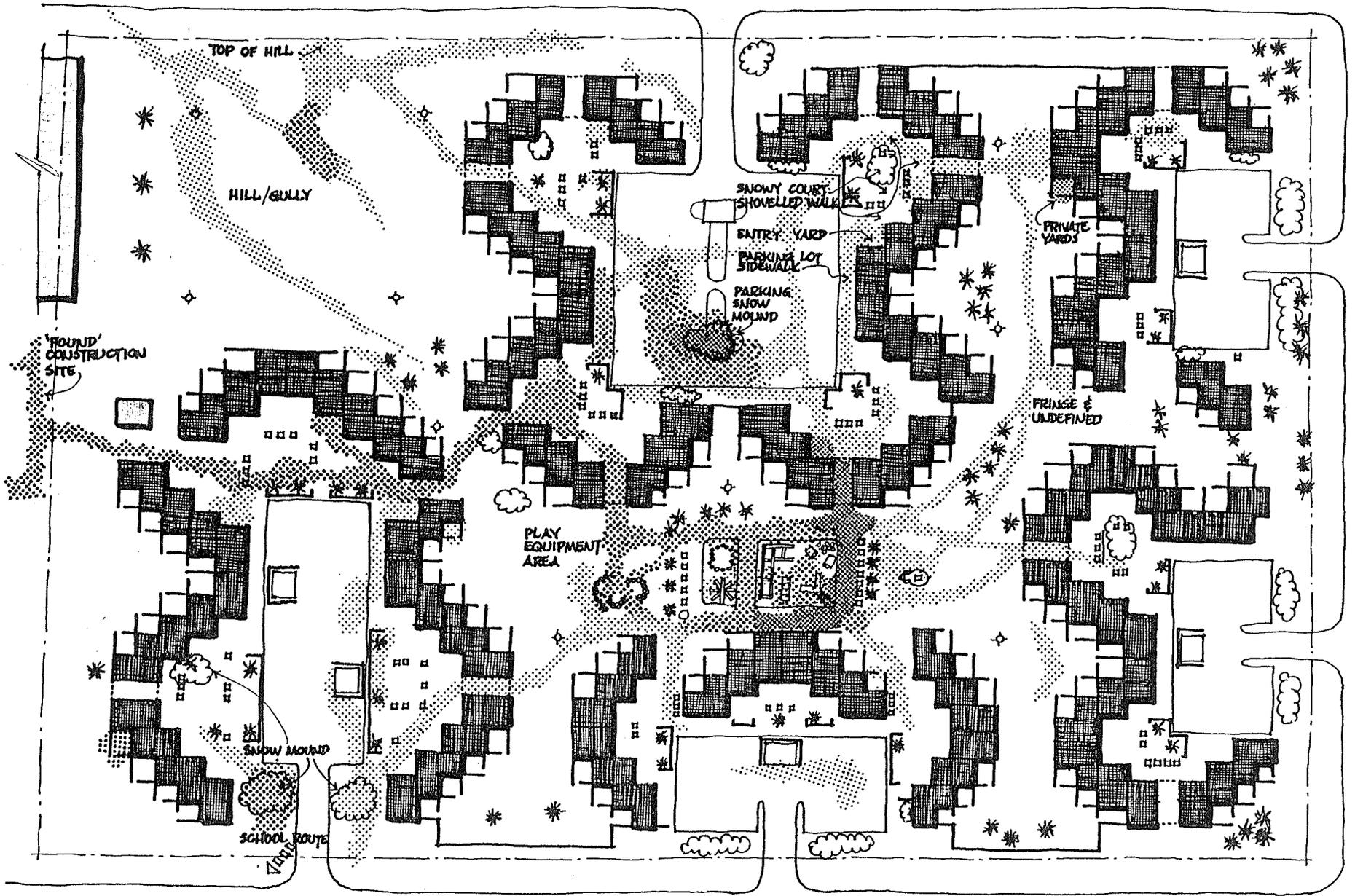


FIGURE 7.

TUXEDO: MAPPED DISTRIBUTION OF ACTIVITY IN WINTER



 LEAST → MOST ACTIVITY



 0' 10' 50'

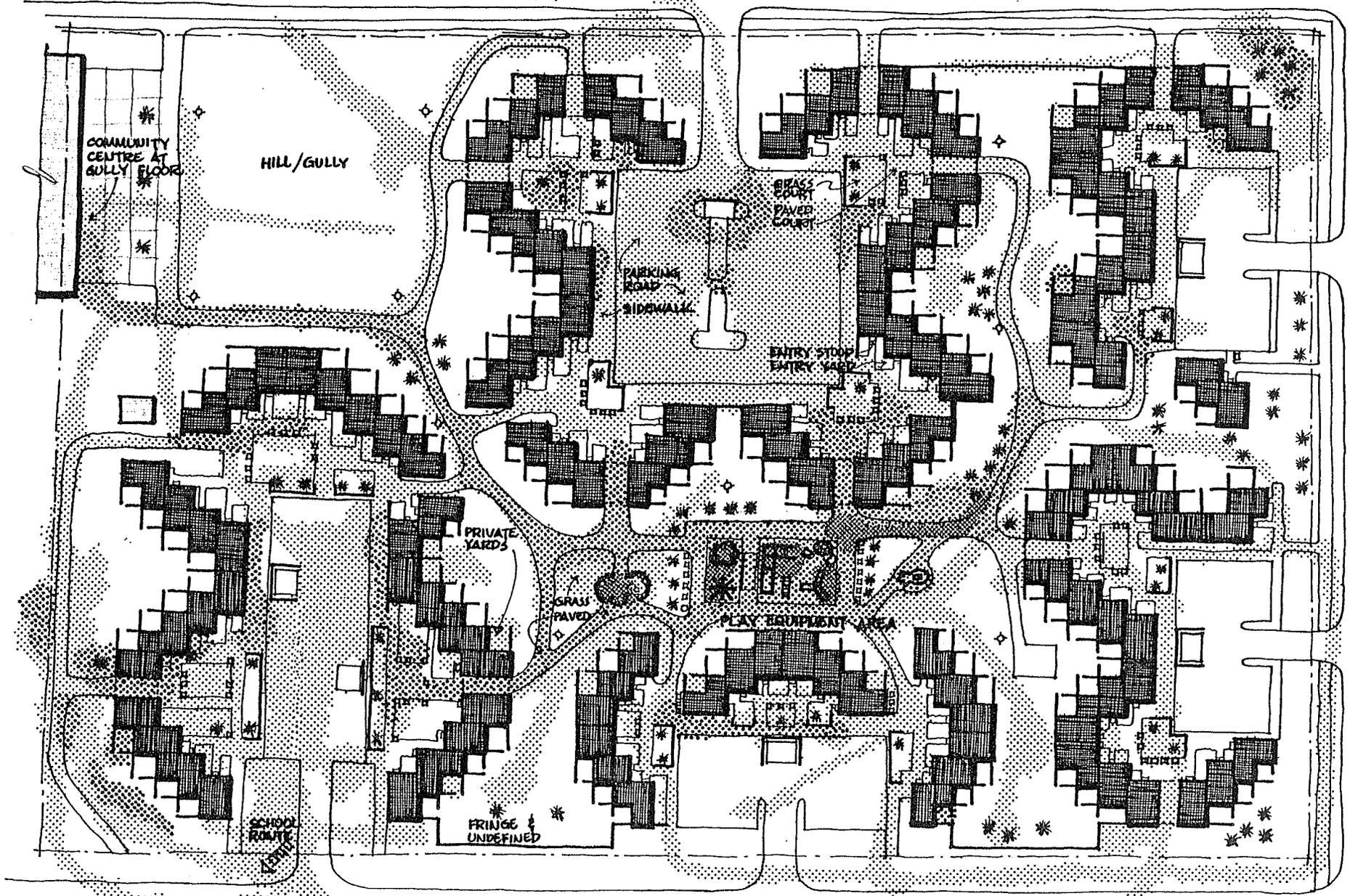
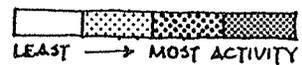


FIGURE 8.

TUXEDO: MAPPED DISTRIBUTION OF ACTIVITY IN SUMMER



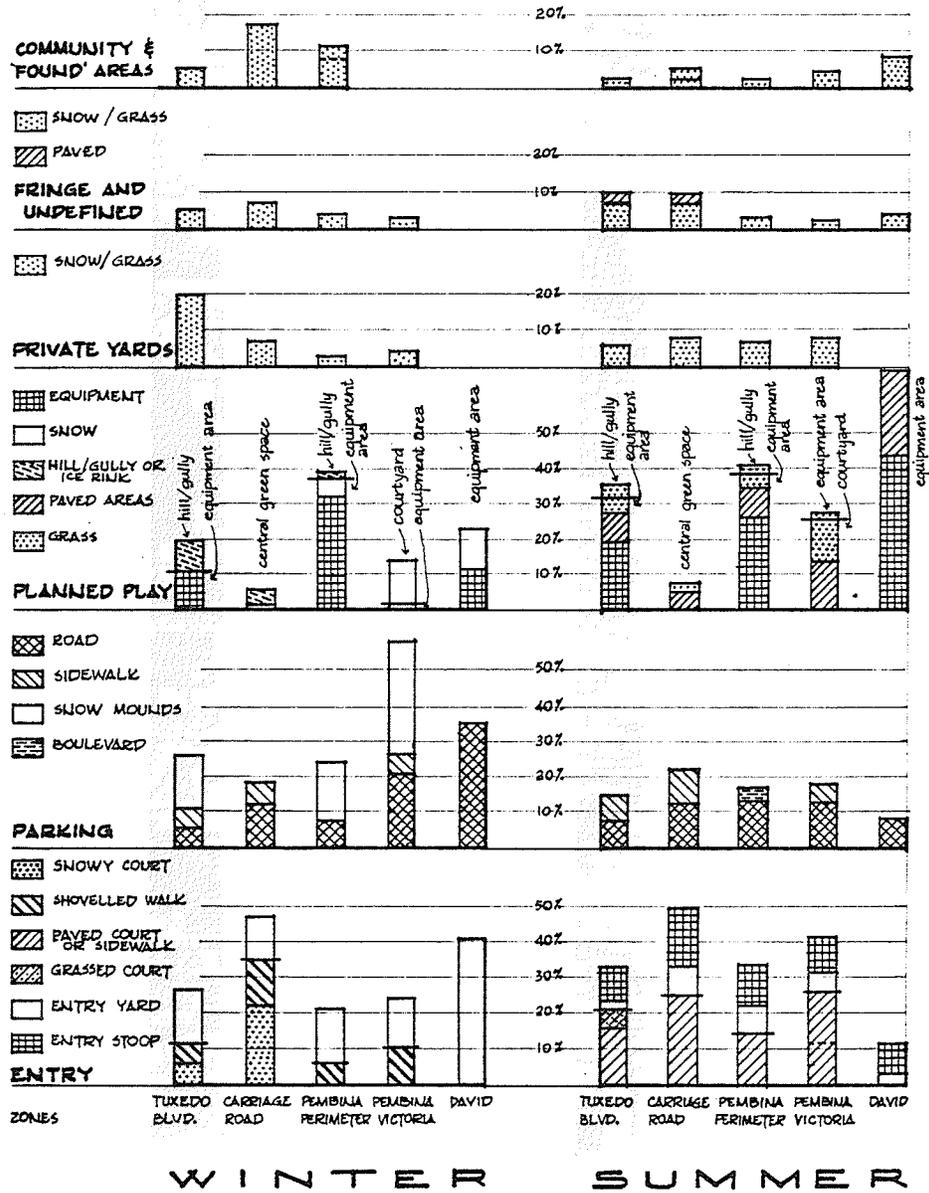


FIGURE 9. TUXEDO: PERCENTILE DISTRIBUTION OF ACTIVITY IN ZONES

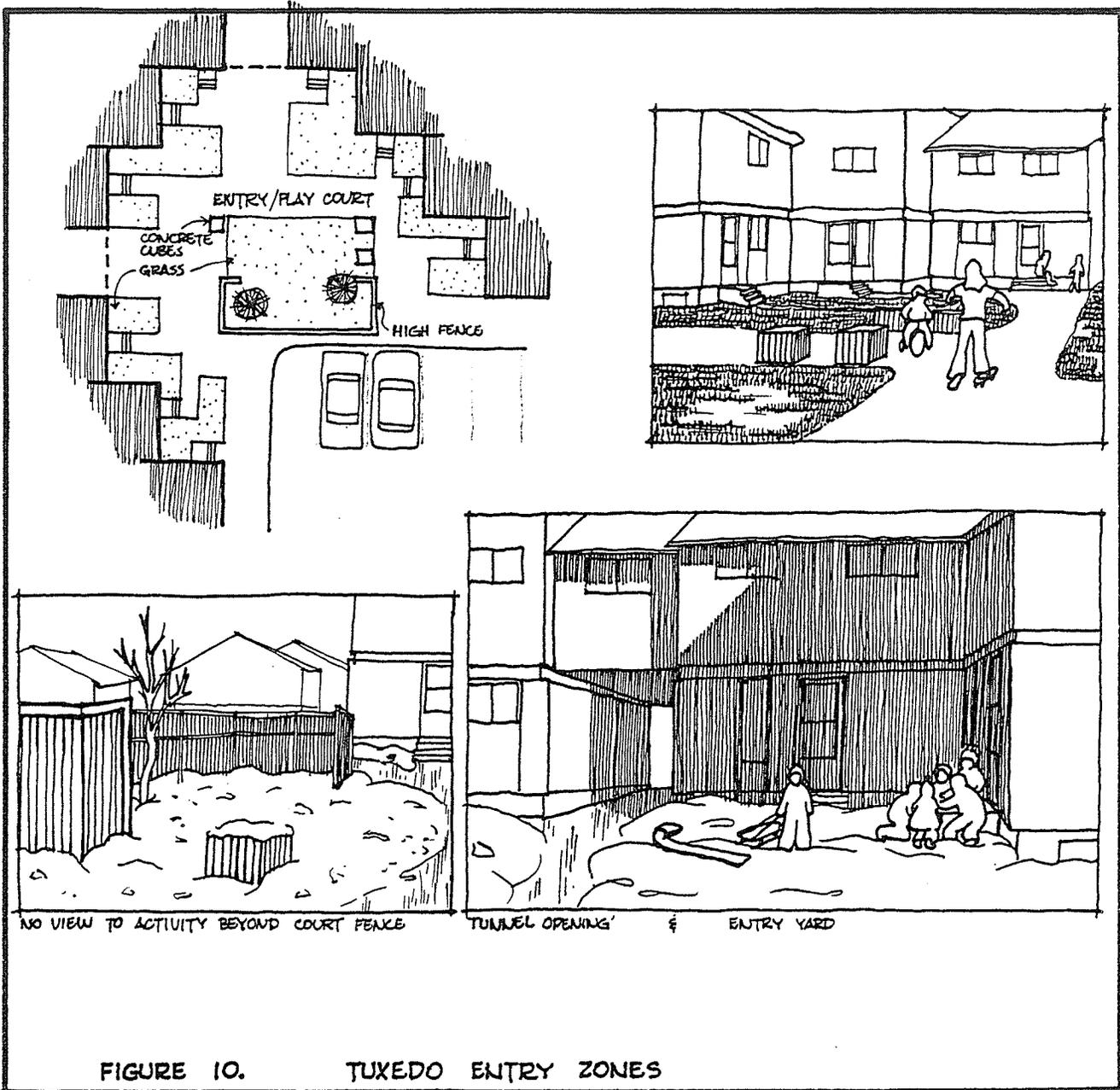
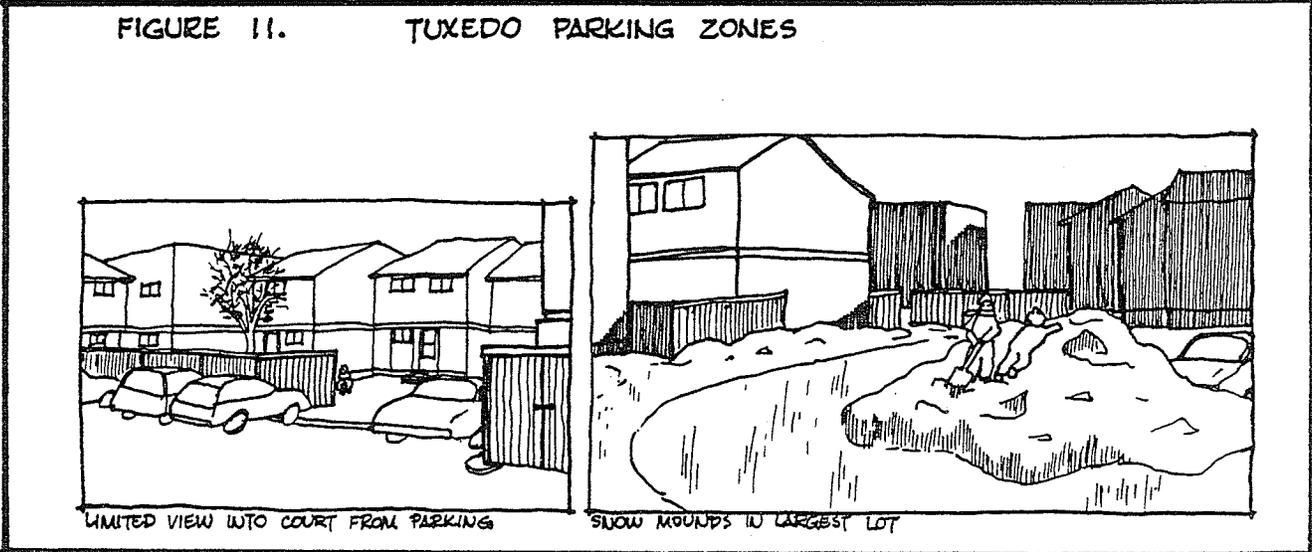


FIGURE 10. TUXEDO ENTRY ZONES

FIGURE 11. TUXEDO PARKING ZONES



LIMITED VIEW INTO COURT FROM PARKING

SNOW MOUNDS IN LARGEST LOT

yards and the enclosure of the courts, and the function of the courts as an alternative to other planned play spaces. Parental restrictions were also a factor influencing play in the entry zone: nearly half the parents interviewed preferred that their 4-to-7-year-olds play within the defined space in front of the unit. The large project size made it impossible for the majority of units to have visual control over the central play areas, whereas the entry zone afforded supervision over a safe and defined area, free from traffic, dangerous equipment, and conflicts between older and younger children.

(a) Entry/play court spaces were the most popular part of the entry zone in summer, although not in winter. In the warm season, the courts showed a greater physical variation: both grassed and paved portions, 21" high concrete cubes which accent the change in surface material and define circulation, and 1 or more deciduous trees. In winter, the court surfaces were homogeneous. The pedestrian paths, an inseparable part of the overall paved area in summer, became strongly defined as shovelled sidewalks, distinct from the greater snowy portion of the court. The low concrete cubes, partially or totally buried under snow, and the high enclosing fence remained as the only tangible elements functioning with snow as clues for play.

(i) In summer, the paved portions were used over three times as much as the grass, for such activities as riding wheeled toys, watching or unoccupied behaviour, general movement, and some manipulative play along the grass edge, in puddles, or with toys. The grassed portions were used for similar activities as well as for

extensive play with dirt, either dug by the child or on patches worn from heavy pedestrian use. These activities were a form of vandalism, attributable to the lack of provisions in the entry zone for manipulative play. The courts were well used by the younger children, and as well, by many older children, whose fast bicycling and skateboarding occurred predominantly in the elongated courts. This seemed a hazard to the more passive and uncoordinated play of the youngsters. Proportionately low use was made of climbing elements; in general, the trees and 6'-0" high fences generated more play than did the 21" high concrete cubes. The latter were well below the height easily climbed and jumped from by children as young as 4 years.

(ii) In winter, comparatively lower use was made of the court space. The shovelled path and snowy court were used equally: the former generated a greater variety of activities including snow play, sledding and skidding, general movement and unoccupied behaviour, and some play with toys. The remainder of the courts' activities centred on manipulative snow play, with a minimal amount of climbing of the fences. Although no use of the concrete cubes was observed, tracks in the snow indicated that they were the most-used portion of the snow-covered court. These space-dividing cubes served as an edge for shovelling the collector sidewalk and most of the snow was piled on or against them. This created the principle variation in the otherwise level space. Although the effective height of the cubes was reduced by the groundcover, additional snow on top of them may have contributed to the challenge of jumping and climbing as well as to the fun of 'messing up'

fresh, deep snow. However, winter play clues generally were minimal.

(iii) The low observed use of the 6'-0" high fences as play elements indicated that fence-climbing was infrequent. In spite of this, 25% of parents interviewed expressed frequent anxiety over such activity. Their concern was not surprising, because of the dangerous drop to the pavement on one side or grass on the other--neither of which had sufficient energy-absorbing qualities for such a fall. The fences, built of vertical siding, were difficult to climb because the lowest horizontal brace or 'step' was over 3'-0" above grade. This, together with the youngster's sense of 'safety first', made it curious that children, as young as 4 years, attempted the climb at all. Observed fence play did not include balancing on the narrow top, but remained as sitting atop or moving cautiously across the horizontal brace.

(iv) Tree climbing, traditionally as attractive to children as fence climbing, was neither a voiced concern nor an observed problem in the courts. Some trees did show breakage obviously the result of children's play, however this was minimal because the trees were too young to climb, yet strong enough to resist some mild play. Children complained of their being too difficult to grasp or climb; this was a positive factor for visual and maintenance concerns.

(v) The high use of entry zones was distributed over the 14 unit groupings' courts, thus reducing the problems from over-concentrations of children and from conflict with the primary entry zone function of pedestrian movement.

(b) Entry yards were used more than the court spaces in winter, and were more popular than in summer. In winter, the entrance steps were used as much as the snowy yard, which gained definition by the adjacent shovelled collector path; the dominant activity was manipulative snow play. It was unclear why the yards were preferred over the court area, since the play possibilities and character of the snow were similar in both; it may simply have been the security and feelings of ownership elicited within family territory. In summer, the small grassed yards were negligibly used, whereas the entry steps showed higher use. The territorial sense might again have been a factor: the stoop offered a greater perception of belonging than did the poorly defined yard boundaries. This lack of definition made the yards blend with the courts, where equal or better opportunities existed for play in grass.

(i) Lack of sufficient entry yard definition resulted in unsightly patches of worn grass. Areas near trees, corners, and edges, were particularly trampled; this offered the child clues for digging and further forms of mis-use.

(ii) Nearly half the parents interviewed complained of maintenance problems in the yards, largely from children digging, bicycling over lawns, or accidentally destroying flowers and shrubs.

(iii) The entry steps were significantly used by children and parents, for sitting, watching, passively playing, and neighbouring. As many as 8 persons were often observed sitting on the tiny stoop at one time.

2) Parking zones (See Figure 11, p. 127)

The five parking lots varied in size, and all but the largest were single-loaded and dead-ended. The close relation between parking and entry areas, commonly considered to be an activity generator attractive to children, resulted in their play frequently spilling onto the driveways.

In winter, the amount of play in the parking lots approximated that in the court portion of the entry zone. In summer, parking lots were used much less than expected: only one-third of the degree of winter use.

(a) Roads and sidewalks

(i) In summer, the parking lots did not offer as much play opportunity as did the paved path circuit that linked active areas of the project (namely, play areas and entry/play courts). This, together with the relative isolation of the lots, were probably stronger deterrents than were parental warnings about play near cars. Rather than overcome the 6" curb onto the parking lot, children preferred to ride their wheeled toys on the sidewalks and courts which were at the same level as, and connected with, the play area and its paths. Activity on the driveways was limited to unoccupied behaviour and general movement; the sidewalks also accommodated these and wheeled toy activities. Some older children made greater use of the driveways as part of their bicycle circuit to public streets: this was less of a concern since they are less vulnerable and more aware of traffic dangers.

(ii) In winter, the sidewalks and driveways accommodated

similar activities, including snow play, movement, unoccupied wandering, and some sledding. The amount of play was similar to summer.

(iii) The 6'-0" high court fences blocked any views to cluster activity from the parking lot. An unoccupied child searching for playmates or for interesting activities was, therefore, at an advantage in staying on the sidewalks for a better view of, and easier access to, entry courts.

(iv) Despite the relatively low use of the parking lot roads for play, and the infrequency of high speeds in the lots, 75% of parents interviewed expressed concern for their children's use of them, and 80% specified parking lots as the least preferable play area. Only 20% felt there were extreme conflicts between cars and children riding wheeled toys on the roads.

(b) Snow mounds created by clearing the driveway increased the attraction and use of the parking lots.

(i) Winter activity was pronounced in only the two largest lots, where greater surface areas contributed to larger snow mounds. However, much of the snow appeared to have been hauled away rather than stockpiled on the boulevards fringing the lots, resulting in relatively low piles. The mounds generated manipulative snow play, climbing, and sliding activities, as well as some watching from atop. The higher mounds, and in some cases, those that spilled onto the icy road, were most used, possibly because of the danger thrills offered. The mound located towards the end of the largest lot, where cars slowed down to turn, was highly used. The next

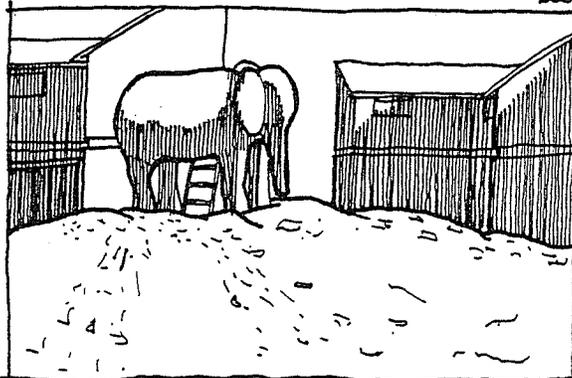
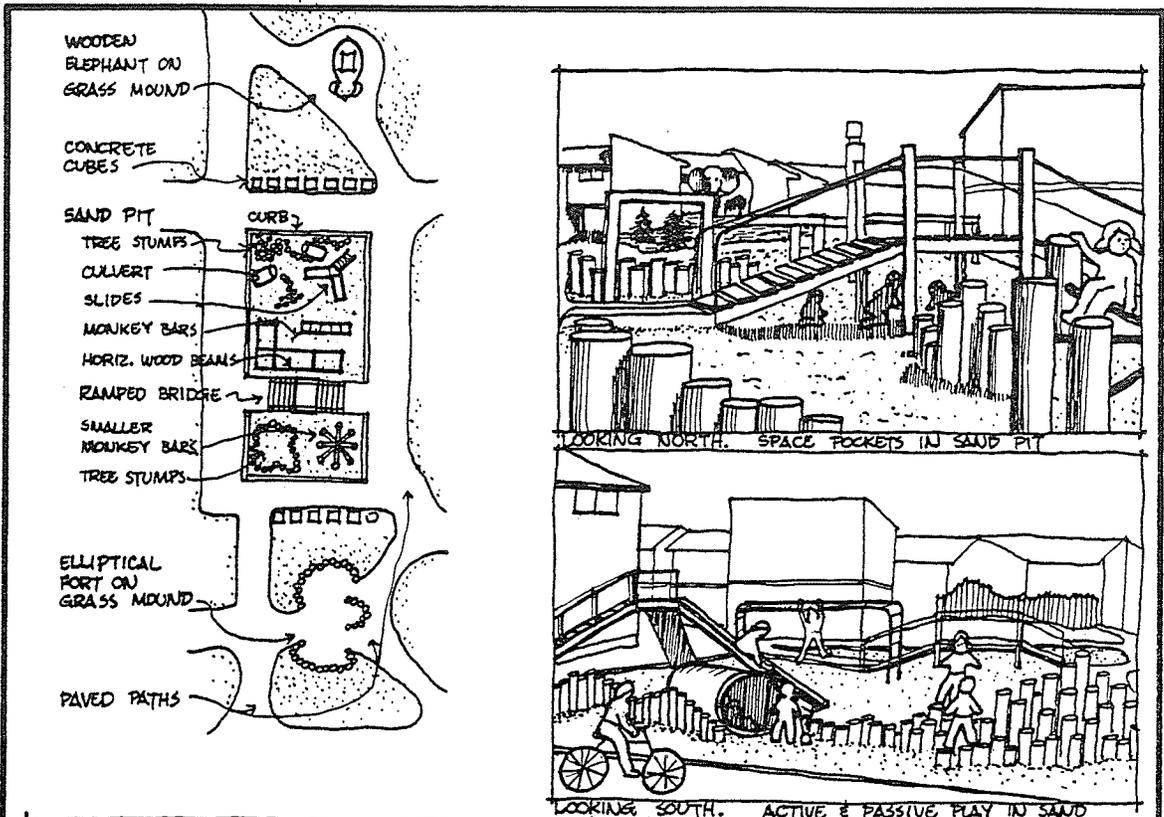
popular mounds were adjacent to the vehicular entrance to the second largest, dead-ended lot. There, the boulevards were part of the sidewalk system, and children tended to use the icy walk as their landing zone rather than the more hazardous road. Thus it appears that the children did not specifically seek the roads for their play, unless no similar opportunities and icy surfaces were available.

3) Planned play areas (See Figures 12 & 13, p. 135)

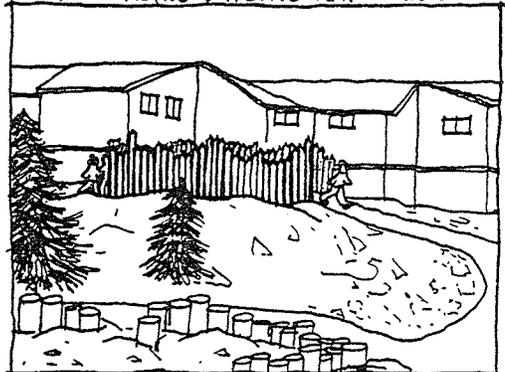
The combined activities in the two planned play areas amounted to a degree of use approximating play in the entry zones. The play areas offered a greater number of identifiable clues than did the entry spaces, however the popularity of these clues appeared to be seasonal. The central play equipment area showed three times as much use in summer as winter, whereas the hill/gully, which was equally popular in winter, accommodated over twice as much activity as it did in the summer.

(a) The play equipment area was conveniently located and accessible from all five sections of the project. The pedestrian and bicycle path systems connected and converged in this area, and the easy access through openings in each unit grouping increased its potential as a meeting place or activity node along frequented routes: to school, to friends' homes, or to other activity locations along the play circuit.

The equipment was obviously the result of careful consideration of children's preferences, safety, and need for manipulative and interpretive play. The area included three well defined sections in a linear arrangement, separated and surrounded by wide paths that varied from 5'-0" to 12'-0" in width, and by landscaping



ELEPHANT ON MOUND; LADDER TO BELLY CAVITY. LOOKING EAST



FORT ON MOUND; PAVED/ICY PATHS OVERTOP MOUND & FLANKING IT. LOOKING SOUTH

FIGURE 12. TUXEDO PLAY EQUIPMENT AREA

FIGURE 13. TUXEDO HILL/GULLY PLAY AREA

LOOKING SOUTH. COMMUNITY CENTRE AT GULLY FLOOR

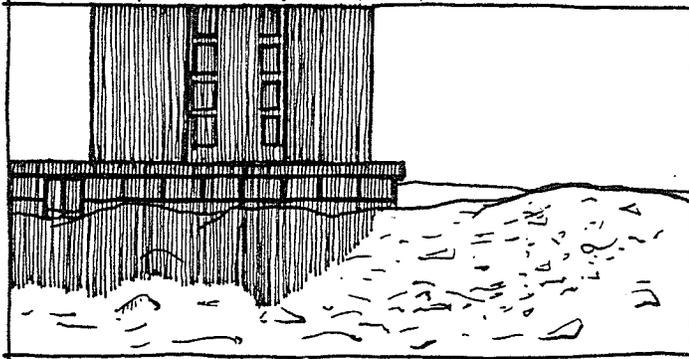
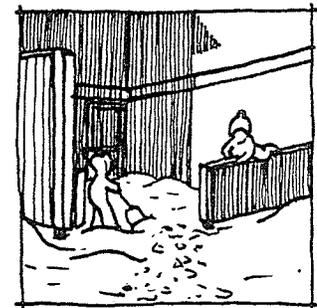


FIGURE 14. TUXEDO PRIVATE YARDS



elements. The two end sections each consisted of a 4'-0" to 5'-0" high grassed mound, bordered by and topped with paved paths. At the top of one was an elliptical fort: tree stumps of varying heights, with three defined play nodes. At the top of the other was the principle landmark of the space: a life-sized wooden elephant with a small ladder leading to its hollow belly. This cavity was large enough for two children to stand in and peek over the top. A more adventurous climb extended beyond the cavity walls and onto the 7'-0" high elephant's neck and back.

Between the two mounds was a sand pit roughly 80'-0" x 40'-0" in size. This pit was surrounded by a 1" high x 12" wide curb--the only separation from the wide bicycle paths bordering it. The sand area was subdivided into two portions by a sloped bridge extending between the paths on opposite sides of the pit. Equipment was densely placed in the sand, leaving voids, for passive sand play, to help guide movements, and limit potential conflicts between active and passive play. The larger area contained: a 7'-0" high slide with two identical slopes and a child-scaled staircase rather than a traditional steep ladder; two climbing devices--one, traditional metal monkey bars, and the other, a horizontal wood beam structure; two 3'-6" diameter culverts at ground level; and a mass of tree stumps of varying heights intended for climbing or perching. The other section contained: a smaller form of monkey bars with a number of horizontal bars of varying heights radiating from a centre post, and enabling a climbing circuit; and an irregularly shaped circuit of tree stumps, varying in height.

(i) In summer, the strong clues offered by the equipment

generated over twice as much activity as did the paved paths and grassed areas. Manipulative sand play was the major attraction, followed by climbing activities that included a challenging obstacle course circuit invented by the children. The apparatus were compact enough to enable continuous climbing, balancing, and jumping movements along an overhead route from one element to another; shopping carts were frequently wheeled into the sand area, between apparatus, to facilitate the continuous circuit. Active and challenging play was made safer by the soft sand underneath to cushion falls. The variety and complexity of the activities, together with safety, accounted for children's preference to make use of the equipment rather than the court fences.

(ii) Unoccupied behaviour and watching were more prevalent than use of the slide; the splintered wooden edges and the hot metal slope, together with rigidity and lack of challenge, probably contributed to this paucity of use.

(iii) The level change and the sand surface itself successfully deterred all but a few children from shortcutting through the sand pit on wheeled toys. Boisterous play combined with passive manipulations in the sand seemed a potentially conflicting situation. However, it was eased by the physical division of the area by the bridge. Sand play occurred simultaneously and compatibly in activity voids created by the location and orientation of apparatus. Children also played undisturbed in the small-scaled, enclosed, shaded, and private spaces under the bridge and slide, and near the culverts.

(iv) The insignificant curb around the sand pit did not

help retain sand in the area, and much spilled over the sides or was transported by children. The amount of sand remained adequate for play throughout the summer, although garbage and broken glass were abundant.

(v) The bridge division, and the varying degrees of challenge offered by each apparatus enabled the activities of older and younger children to co-exist. After school hours, older children gathered in the larger section of the sand area. At these times, most of the youngsters moved to the smaller section to continue their play.

(vi) The project's large size made supervision over the play area from every unit impossible. Of parents interviewed, 50% expressed concern over their youngsters' safety, and 25% preferred that their children do not use the play equipment area. However, half the parents did feel it was the best place on site for their children, complimenting the location, amount of space, and amount of equipment available. Despite the elaborate provision, 30% of parents complained that there was hardly any equipment, 50% felt there was only an average or insufficient amount of space, and 25% thought the play area was poorly located.

(vii) The concentration of children playing in the equipment area was not perceived as a major problem despite its orientation to the private side of units. The potential noise and annoyance were eased by the clustering geometry, which created a green space buffer separating the private yards from the play area, and by the size of the space, which helped disperse the children. The majority of parents were satisfied with the equipment area, citing safety

from traffic, suitability for play, and to a lesser degree, ease of supervision and access, as reasons for the high use. Casual questioning of children revealed that they preferred it to other areas in the project. This was probably influenced by: the variety of play opportunities offered by the sand, mounds, and equipment; the ease of access afforded by the spatial arrangement and unit grouping openings; the play area being a focus on the circulation system; and the lack of clues for play in the parking areas.

(viii) In winter, only the vertical parts of the equipment were visible and used (slide, bridge, and wooden structures). The slide was used more than in summer, in proportion to the total degree of activity. The shovelled paths, slopes, and deep sections of snow were more popular than any of the apparatus.

(ix) The elephant was used minimally and did not hold children's interest, except as an occasional vantage point. Climbing it appeared to be deterred both by the limited play potential and by the 7'-0" drop to pavement. The hollow belly cavity was marred with graffiti, and parents complained of its use as a toilet more than as a play element. Damage to the elephant's trunk, either intentional or accidental, also indicated children's dissatisfaction with its play potential. In winter, it was even less attractive because of the difficulty in climbing the ladder with boots and mittens, and because of its location on a windy hill.

(x) The tree stump fort on top of the other mound was unused in both seasons. The fort was permanently structured, the posts were pointed on top to preclude balancing, and its rigidity did

not encourage improvisations. The paved paths leading up to the mound to the fort were the major attraction; they allowed children to gain greater speed while riding wheeled toys, to challenge their strength in ascending the slope, or to get dizzy by rolling down the grass. In winter, these paths were shovelled and were popular for skidding and sliding, particularly en route to school.

(xi) In summer, the paved path system throughout the play area was used mostly for riding wheeled toys in a circuit through the project or for general movement and unoccupied behaviour. The grassed sections of the play area were used the least, although they generated more activity variation than did the pavement-- watching, rolling, digging, movement, and occasional cycling. In winter, these paths were shovelled, and sliding, snow play, and movement on them were as popular as was use of the equipment.

(xii) The interest of the bicycle circuit kept children on the planned route rather than on the dangerous parking lot. As a result, the majority of parents felt there were adequate paved areas, safe for children under 7 years. However, despite the fact that the paths were wide, many parents were concerned about conflicts when older and younger children shared the same paths, or when faster wheeled toys caused problems for pedestrians and tots in the play area.

(b) The hill/gully play area, located at the south end of the site, was nearly as popular as the central equipment area in winter; however it was minimally used in summer.

The 15° slope was sun-oriented, although windy, and seemed

ideal for sledding because of the slope and long run. However, its use diminished by mid-winter, when most of the snow was packed and worn to the grass underneath. The man-made snow mounds in the parking lot, on the other hand, were used twice as much as this hill, despite their being lower, less suitable for sledding, and more dangerous. This was explained by the observations that: the parking lot mounds lasted longer in the season, they were continually replenished after each snowfall, they were of a smaller scale, and they offered multiple play functions including sliding, digging, building, and watching on-going activities. The toboggan hill was comparatively isolated; it suggested only sledding, the snow was too shallow for digging, and it was not augmented by either the snow clearing process or by drifting.

In summer, essentially only the paved paths bordering the top were used in play. These were part of the paved circuit throughout the site and generated riding wheeled toys and general movement. This under-use of the hill/gully may have resulted from its large scale and barrenness that children dislike. The public housing community centre opening on the gully floor offered a summer programme of arts and crafts directed at school-aged children. This was minimally used by any children, as they preferred to play closer to home or in the equipment area.

4) Private yards (See Figure 14, p. 135)

The well-defined private yards offered a limited space for supervisable and controllable play, and some enabled a view to the play area beyond the negative cluster green space. Access from the private side

of the unit was via an all-weather door. Some children preferred the convenient but longer route from the entrance side and through the unit grouping openings. The majority of play in the private yards occurred in winter. Tracks in the snow from children's play indicated that over twice as many of the sun-oriented private yards were used, as compared to shaded yards. In summer, there were fewer observations of play there, as well as fewer private yards showing evidence of previous use for play.

(i) In summer, sun-oriented yards were twice as well used as shaded yards. These were used to the same extent as private yards in other projects during the warm season, for such activities as passive play, climbing the low and high portions of the fence, and play with toys or in wading pools. The low summer use as compared to winter seemed partly a result of their location, close to the play areas: children could see playmates gathered in the equipment area, and would join them rather than remain isolated in the yard. The expectation of activity in the entry zones may also have motivated them to play on the public rather than the private side of units.

(ii) In winter, the lower activity distribution over the site may have caused little incentive for children to seek activities other than those in the private yard, which offered climbing and jumping from fences, and snow play in deep drifts, as well as a fast retreat indoors from the cold. The small, enclosed yard space may have been more conducive in winter than the larger areas which were virtually empty most of the day.

(iii) Half of the parents interviewed felt the private yards

were a good play space in both seasons. This satisfaction was due to the defined limits in comparison to the unfenced entry yards. The large size of the project caused 25% of parents to restrict their children from making use of the entire site; this rendered the private yards a good alternative for safety and supervision.

5) Fringe and undefined areas, and community and 'found' areas

These did not show significant use by 4-to-7-year-olds. The main attractions were: the visual green spaces between unit groupings, a construction site at the south end of the project, and the public sidewalks bordering the site.

6) Other general observations

(a) 'Tunnel' openings, created by the cantilevered second floor of a five bedroom unit, facilitated access from the entry/parking side to the interior of the site. They were used by children as a shelter from rain showers and as a shaded play space in the summer. These openings offered small scale enclosure, privacy, and a visual and physical connection between the entry and play zones. However, they did show evidence of graffiti and vandalism. Children had thrown dirt or snow at the walls and roof, and these markings were difficult to clean because of the exterior facing of stucco and tyndall stone.

(b) The path circuit design and use reflected children's pattern of taking the shortest possible route. The addition of mounds and paved slopes as part of the path system increased the children's preference to follow the planned routes rather than

trample the grass. The designer's prediction of movement patterns and the general adherence to them was particularly successful where the school route passed through the play area, where paths were curvi-linear, and when they contained unique or vertical elements as clues for play en route.

(c) Children's satisfaction, as interpreted by the parents, was generally high: 75% of parents felt their 4-to-7-year-olds enjoyed playing in the project. However, 69% thought there was not enough for the children to do. Nearly one-third preferred that their children play indoors throughout the year.

(d) Parental restrictions were imposed because of the large size of the project. The youngest children, including 4 and 5 year olds, were less free to roam throughout the site. The location of the entry/play courts and the planned play areas was responsive to this, and offered safe and easily accessible areas for spontaneous play.

b) Carriage Road

Carriage Road revealed totally different activity patterns in both seasons than did 'Tuxedo', despite their similar site planning concepts. The distribution and proportion of activities over all the zones in the project was closely correlated between the seasons. 'Carriage Road' showed the poorest use of communal, planned play spaces of all projects.

The overall activity during the year predominated in the entry zone, which incorporated an entry/play court within each unit grouping. The remainder of activities centred in the parking zone, followed by fringe

and undefined green spaces, private yards, and the central play area. This pattern was similar for both seasons, with one exception: in winter, the vacant lot across the street was used to a relatively high degree because of the snow mounds deposited there. In summer, this lot was unused. (See Figures 15, 16, & 17, pp. 146 - 148)

1) Entry zones (See Figure 18, p. 149)

The propensity to play in the entry zone may have been fostered, as at 'Tuxedo', by: ease of supervision, parental restrictions, the sense of belonging and enclosure, and the spatial extension of the unit access area to include the court. However, it seemed that the lack of alternate locations of interest to children was an overriding factor at 'Carriage Road'.

(a) Entry/play courts were as popular as the entry yards in summer, and accounted for a similar degree of use as did the 'Tuxedo' courts. In winter, however, they were used more than the entry yards, and tripled the proportionate winter activity in the courts at 'Tuxedo'.

The surface of the courts was flat and paved, and in summer, functioned for both play activities and pedestrian movement. The space was subdivided and defined by 3'-0" high fencing. The triangular shaped play portion of the court was further subdivided by 1'-4" diameter concrete forms that varied in height from 10" to 3'-0". Three of the courts had small sand boxes, and all had benches to invite use by adults, while supervising or neighbouring. In winter, the snowy triangular portion appeared distinct from the linear shovelled paths around it.

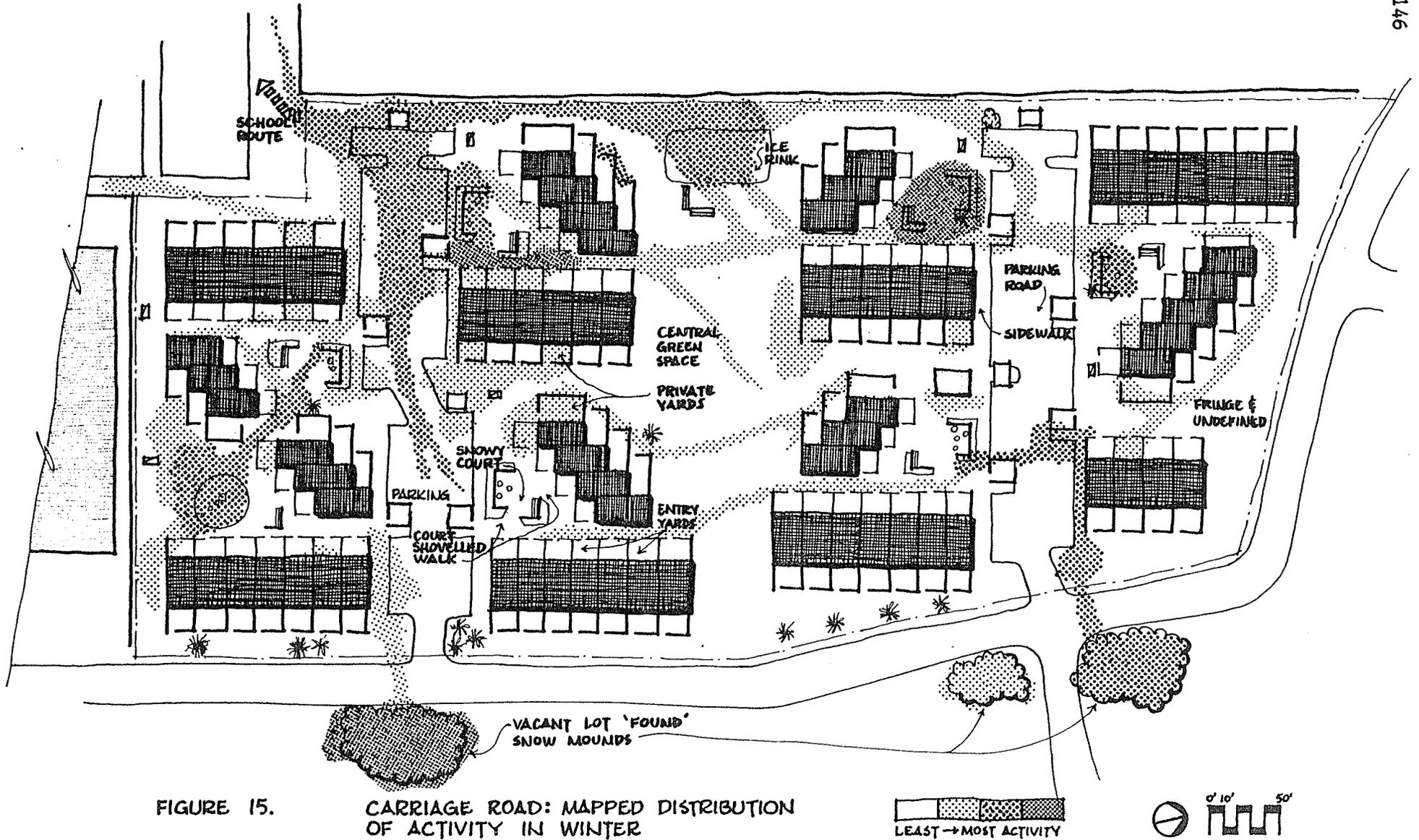


FIGURE 15.

CARRIAGE ROAD: MAPPED DISTRIBUTION OF ACTIVITY IN WINTER

LEAST → MOST ACTIVITY

0' 10' 50'

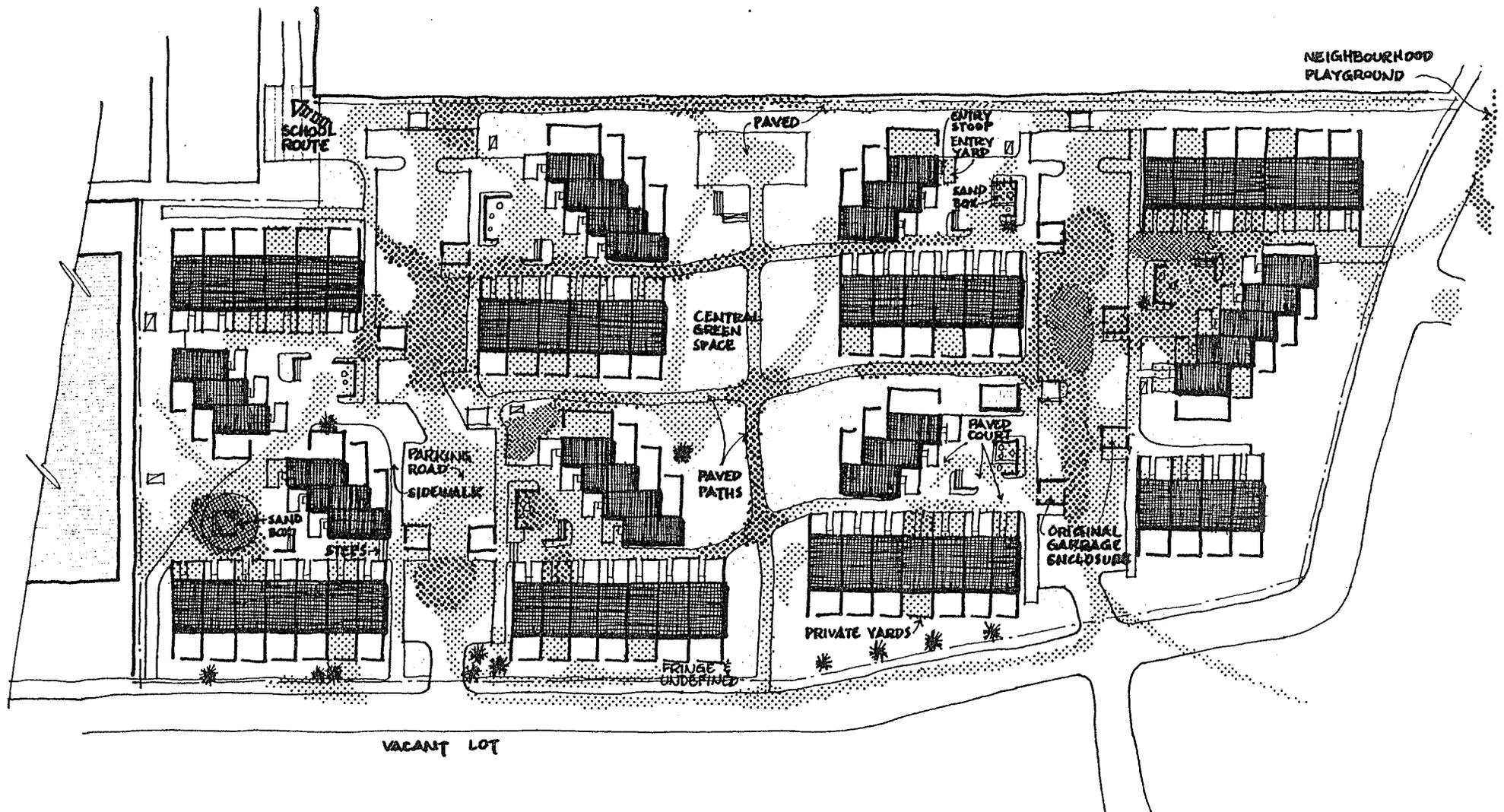


FIGURE 16. CARRIAGE ROAD: MAPPED DISTRIBUTION OF ACTIVITY IN SUMMER

[Legend showing four hatching patterns from least to most activity]

[North arrow and scale bar: 0' 10' 50']

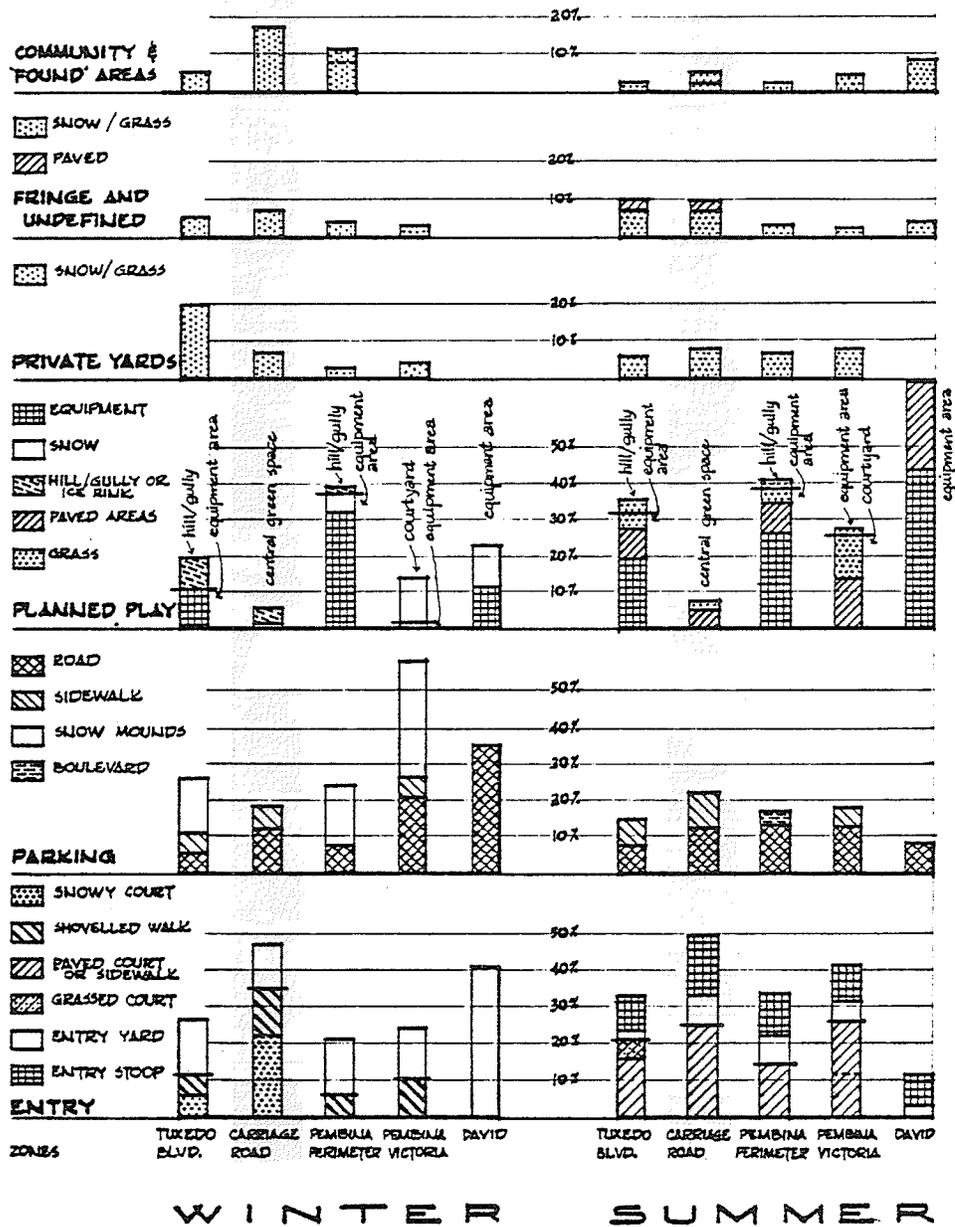


FIGURE 17. CARRIAGE ROAD: PERCENTILE DISTRIBUTION OF ACTIVITY IN ZONES

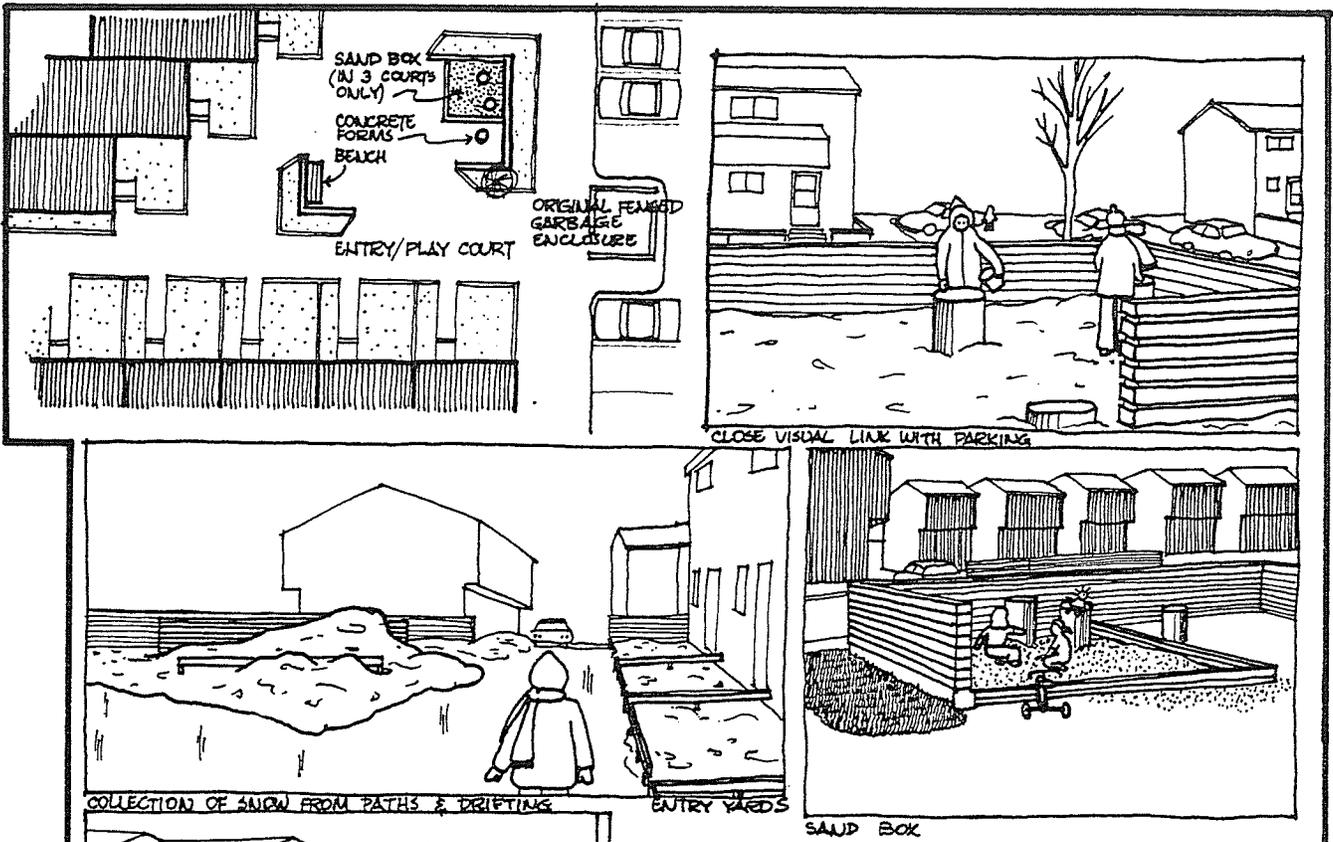


FIGURE 18. CARRIAGE ROAD ENTRY ZONES

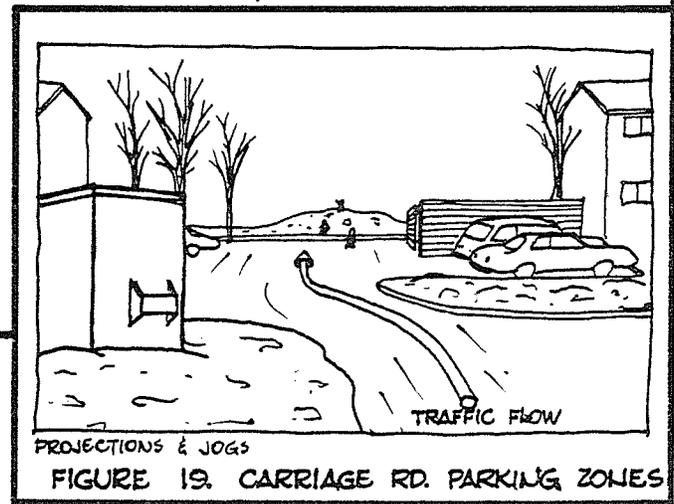
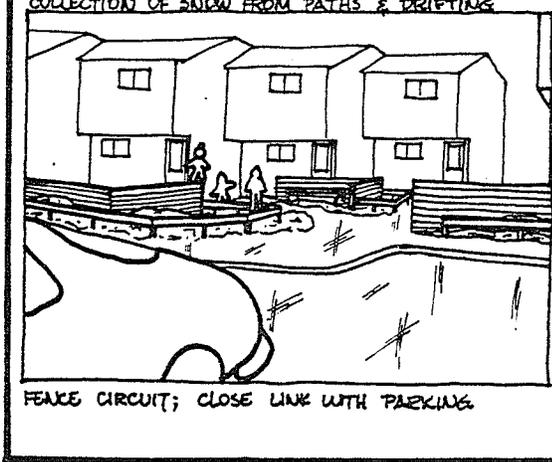


FIGURE 19. CARRIAGE RD. PARKING ZONES

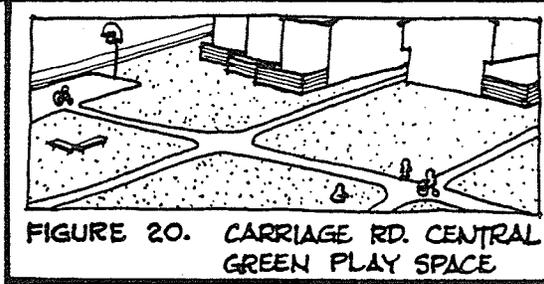


FIGURE 20. CARRIAGE RD. CENTRAL GREEN PLAY SPACE

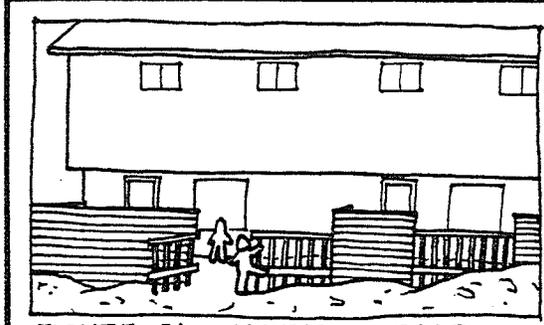


FIGURE 21. CARRIAGE ROAD PRIVATE YARDS

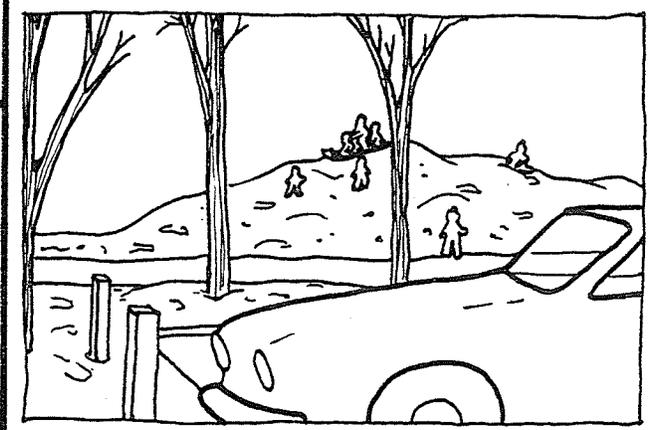


FIGURE 22. CARRIAGE RD. VACANT LOT

(i) In summer, the courts were used for riding wheeled toys and watching activities in the parking lot or other unit groupings. Climbing and balancing, on the fences or occasionally on the concrete forms, were as popular as manipulative play in the sandboxes or dirt.

(ii) In winter, the snowy portion of the courts generated twice as much activity as did the surrounding shovelled sidewalks, particularly for fence play and manipulative snow play. The fact that winter activities on the courts and paths were of a greater proportion than at 'Tuxedo' seemed to be related to the following factors: the 3'-0" high fences were low and wide enough to be climbed and balanced on, with a sense of challenge as well as safety; the horizontal fence boarding facilitated climbing; and the visual connection between the courts, the parking lot, and the other unit groupings increased the potential for showing off and for watching on-going activities. In addition, these courts better responded to winter conditions: the fences encouraged snow drifting, the snow shovelled from the court paths added height to the drifts adjacent to the fences, and 1'-6" high rail fences defining the edge of the court path added clues for play. These rail fences had actually been installed to protect shrubbery; however, in winter they added length and a challenging level change to the fence-balancing circuit. They also defined a space to pile snow cleared from the path, and this created a deep cushion for the popular jumping and rolling activities.

(iii) The openness of the courts was qualitatively different than at 'Tuxedo', because of the lower fence height and because of

the method of subdividing the space. This, together with children's propensity to play in, or with elements in, the centre of a space, may have enhanced play in the courts. The triangular centre encouraged a natural shortcut between opposite sides of the court; and the fenced separation of the play 'pockets' within facilitated this route. This allowed children in the 'pockets' to play undisturbed with activity milling around them.

(b) Entry yards were more popular in summer than in winter, and the majority of activity occurred on the entrance stoop. This summer use of yards was the highest of all five projects, possibly because of the lack of alternative locations for small group gatherings, and their location in a prime activity-generating zone offering wide visual overview. In summer, the stoops accommodated unoccupied behaviour, watching, and play with toys. The grassed yards were used for similar activities, but also offered fence play, on the 1'-6" high rail fences defining yards or on the 3'-0" high end-unit fences, as well as digging activities.

(i) The grass in the yard provided the only surface material change in the entry zone. It also offered a cooler place for play, augmented by the shade of the units, and an alternative to the courts which lacked protection from the sun.

(ii) The rail fence was observed to invite, rather than deter, play and trespassing. Although 60% of parents interviewed expressed concern over such 'invasion' activity, the majority did not complain about play on these low fences.

2) Parking zones (See Figure 19, p. 149)

Parking was the most popular alternate play area to the entry zones. Its high use in play was enhanced by the close visual link over the court fence, and by the geometry of unit clusters, which opened to the parking lots. Jogs in the roadway, and divisions of the lots by protruding garbage enclosures, were utilized to minimize the visual impact of parking 35 to 40 cars. Thus, the two lots appeared smaller than in reality, and these divisions and the dead-ends reduced traffic speed and dangers. Regardless of this increased safety, 75% of parents disapproved of, and expressed concern for, their children playing there.

In summer, these parking zones showed more use than in other projects; this was particularly because the bordering sidewalks, which had as much activity as did the roads, generated more play than those in the other four sites. In winter, the roads were used more than sidewalks, yet overall use of the parking zones was lower than in other projects; this was because snow cleared from them was hauled to the vacant lot rather than being piled therein.

(a) Roads and sidewalks

(i) Riding wheeled toys was the major summer attraction of the roads. Although the paved courts offered space for this activity (which could extend to pedestrian paths in the centre of the project) there was little attraction to draw children beyond the court or the unobstructed parking lot. The sidewalks flanking the road and connecting the courts were less attractive for cycling because they were narrow, jogged, and in two cases, included a stepped level change. The curb of the road was less of an

obstacle than these design factors, and children therefore tended to remain in their own half of the project, making use of all four paved courts and the parking lot separating them.

(ii) Watching and climbing activities extended from the courts to the road and sidewalk. Children made use of cars, both vacant and new garbage enclosures, and adjacent fences for active play, as well as any puddles or dirt areas for manipulative activities.

(iii) In winter, the popularity of roads, despite the absence of snow mounds or other clues for play, was again enhanced by the visual connection between all four unit groupings in each half of the project and their respective parking lot. The lot also provided the shortest route both to school and to the vacant lot snow mounds.

(iv) Manipulative snow play was the major attraction of roads, followed by watching, walking with sleds, and general movement. These activities also generated skating and hockey, mostly by older children.

(v) The majority of parents felt there were no conflicts between bicycles, and cars or pedestrians.

3) Planned play areas (See Figure 20, p. 149)

The paucity of use observed in the single planned play area was a result of the lack of activity clues. Pedestrian and bicycle paths passed through this space to link the two sections or halves of the project; otherwise, the area was empty and devoid of a focus for play.

(a) The central green space was used for short-term play in both seasons, and most activity was the result of the space being a circulation link along the school route. In summer, the majority of use involved riding wheeled toys and general movement along the paved paths. The larger, grassed portion was insignificant for play except as a 'spill-over' area adjacent to paths. Older children, however, found it ideal for digging holes to play marbles. Some unsightly sections of grass indicated that children exploited worn areas where exposed dirt or holes encouraged further mis-use of this manipulable resource.

The play area offered more play clues in winter than in summer. The shovelled paths followed the planned circulation, and included a diagonal shortcut along the school route. Deeper areas of snow were well-trampled, confirming the popularity of this large space for the short-term fun of 'messing up' fresh snow. The major play clue was a skating rink near the school route. It accounted for nearly all play in that area, including some general movement to and from school, with quick detours to skid across the ice. The major activities were, as expected, skidding and skating, as well as manipulative snow play when the rink had not been cleared. It served the younger children and was not invaded by hockey players. This positive circumstance was attributed to the lack of sideboards for hockey and the proximity of several community rinks bordering the project. In spite of this, however, both hockey and ice skating occasionally occurred on site--in the parking lots rather than on the rink. In summer, the area exposed a paved basketball court, which was minimally used as part of the bicycle

circuit or for older children's ball games.

(i) Understandably, 75% of parents complained of the lack of play equipment provided for 4-to-7-year-old children. Dissatisfaction was expected to be even stronger, considering that 30% at 'Tuxedo' were discontent with their elaborate provisions.

(ii) Over 60% felt that space for play was generally adequate, that there was no cause for worry over children's safety in the play area, and that the location of the interiorized, traffic-free space was average or good.

(iii) An equal number of parents were satisfied as were dissatisfied, with the ease of supervising the play area from the unit, and with the play space's accommodation of both older and younger children's play simultaneously.

4) Private yards (See Figure 21, p. 149)

The use of private yards for play was lower than at 'Tuxedo', but not significantly different from other projects whose yards were less defined. These yards offered a lateral view to the parking lots. The fences were easily climbed and the semi-transparent end section enabled small children to easily peek at passers-by. The major activities included watching, unoccupied play, balancing on both high and low fences, and manipulative play with snow, water, dirt, or toys.

Access to the private yards from the living room side was via an all-weather door or by the easy route from the entry side. The total enclosure enabled control over the wanderings of younger children, as an alternative to the defined and supervisable entry yards and courts.

(i) The ease of parental control offered by the entry zone

may have lowered the need to restrict children to the private yards, thus accounting for the parents' low preference given to them for play. Twenty-five percent of parents restrained their children from playing in the private yards, for fear of ruining the grass, or possibly because they were regarded as the adults' spaces.

(ii) A greater amount of play in these yards was observed in summer. However, behaviour trace evidence revealed that in winter, a larger number of yards generated play. The majority showing use were sun-oriented.

(iii) In winter, a lower proportion of the private yards used for play were outward oriented, facing the street or neighbouring residences, rather than facing the adjacent unit grouping or internal fringe areas. In summer, the difference between outward or inward oriented yard use was negligible.

5) Fringe and undefined areas

The spaces between unit grouping private sides were largely used for unoccupied activities, fence and toy play, manipulative snow play in winter, and digging in dirt or grass in summer. Their proportion of activity in both seasons approximated that in 'Tuxedo', and the fringe and undefined areas in both these projects were more popular than in others. This may have been because the cluster geometry provided a suitable scale, sufficient enclosure, and the opportunity for views to on-going activity, to help impart a sense of place for play. These areas were easily accessible from the parking areas and the entry zones, through separations in each unit grouping and interconnecting paths--all of which

encouraged use. Because these areas were not highly used in play, conflicts with the adjacent private yards were minimal, in spite of the lack of a buffer or distance separation.

6) Community and 'found' areas

The public sidewalk and neighbourhood playground were not highly used by 4-to-7-year-olds during summer, and no use of them was observed in winter. However, the vacant lot across the east side street was a significant play area in winter. (See Figure 22, p. 149)

(a) Snow mounds in the vacant lot generated as much activity as did mounds within other projects. This indicated that children as young as 4 years, given parental consent, would intentionally travel to a play element of interest.

(i) The three 8'-0" high snow mounds offered strong play clues. Their size, irregularity of shape, and varied steepness of slope were conducive to tobogganing, and they were of a scale more suitable for play than were typical parking lot mounds. The large crush space around them enabled an icy but safe landing zone. As a result, numerous play activities beyond the expected climbing and sliding evolved. Three challenging and exciting toboggan runs were 'built' by the children, as were a number of forts. Children exploited the various niches of the mounds for manipulative play, for daring climbs to vantage points, or for adventure and hiding. These large, three-dimensional, and flexible play elements encouraged children to organize and segregate their activities so the various pursuits could peacefully co-exist.

(ii) In general, parents felt the snow mounds were a suitable

play space, because the separating street was rarely busy, and although beyond visual control of most units, the vacant lot was within a convenient distance for fetching children.

7) Other general observations

(a) Fence play was perceived as a greater problem than in other projects: 75% of parents voiced concern. However, it was rated as only sometimes a problem. In some projects, higher fencing, which was intended to deter climbing activities, caused very frequent concern for as many as 40% of parents.

(b) Children's satisfaction, as rated by parents, was high: all parents felt their children enjoyed playing (at least somewhat) on the site. However, the majority complained that there was not enough for them to do, and the adequacy of the grounds for play was only average.

(c) Parental restrictions on 4-to-7-year-olds were not prevalent, for reasons such as the relatively small project size, its safety, and compatibility of older and younger children. Half as many parents as at 'Tuxedo' restricted their children from playing all over the site, and 25% more than at the large project felt it was safe for children to roam. This was attributed to the freedom from hazards (including play apparatus and heavy traffic), the accessibility of the entry/play courts, and the presence of the central green space, which served to naturally limit children's wanderings to their half of the project. Thus, no parents preferred their children to play indoors in summer, although over one-third

felt the most suitable place for winter play was inside the unit.

c) Pembina Perimeter

'Perimeter' had been occupied only one year at the time of this study, and the behaviour patterns observed may not have reflected established preferences to the same degree as older projects. Also, the public housing apartment complex contributed to the comparatively high numbers of children observed outdoors. 'Perimeter' showed the greatest number of activities and children in winter, of all five projects. There was also a closer correlation between use in the two seasons, with slightly over twice as many children observed in summer. In winter, children were motivated to play outdoors for longer periods, beginning earlier in the morning, and on colder or overcast days, when other projects appeared empty.

Throughout the year, the entry-related, planned play area accommodated the majority of children's activities, and was used in conjunction with the interiorized entry and parking zones. The areas related to the private sides of units were little used, except for some winter activities on the community-oriented hill/gully. (See Figures 23, 24 & 25, pp. 160-162)

1) Entry zones (See Figure 26, p. 163)

Play in the entry yards and collector sidewalks was proportionately lower in winter than in summer; in winter, 'Perimeter' showed the least amount of entry zone play of all the projects. The yards showed more use than did the sidewalks in both seasons; this may have been affected by the lack of fencing to deter the overspilling of play and movement from

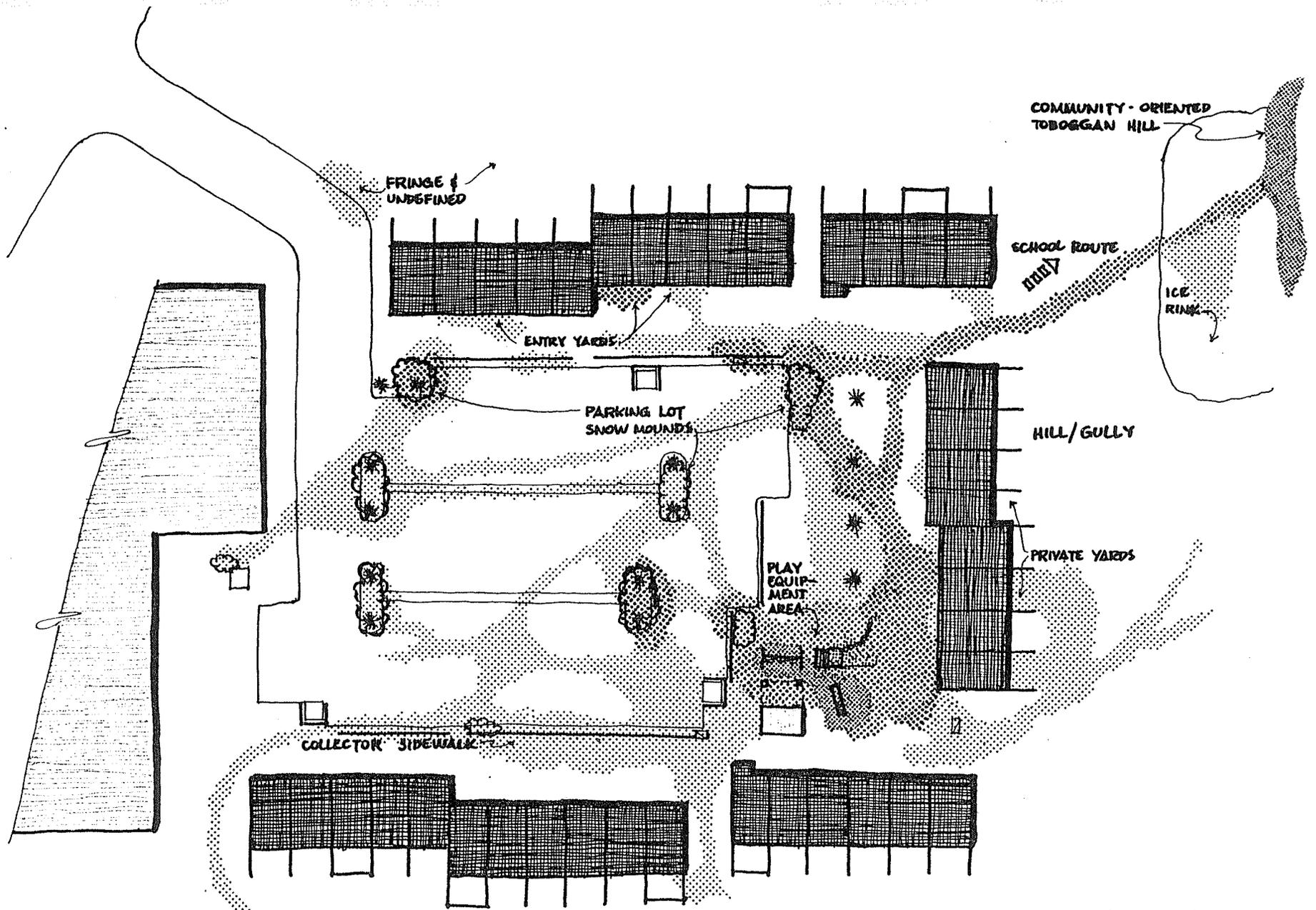


FIGURE 23. PEMBINA PERIMETER: MAPPED DISTRIBUTION OF ACTIVITY IN WINTER



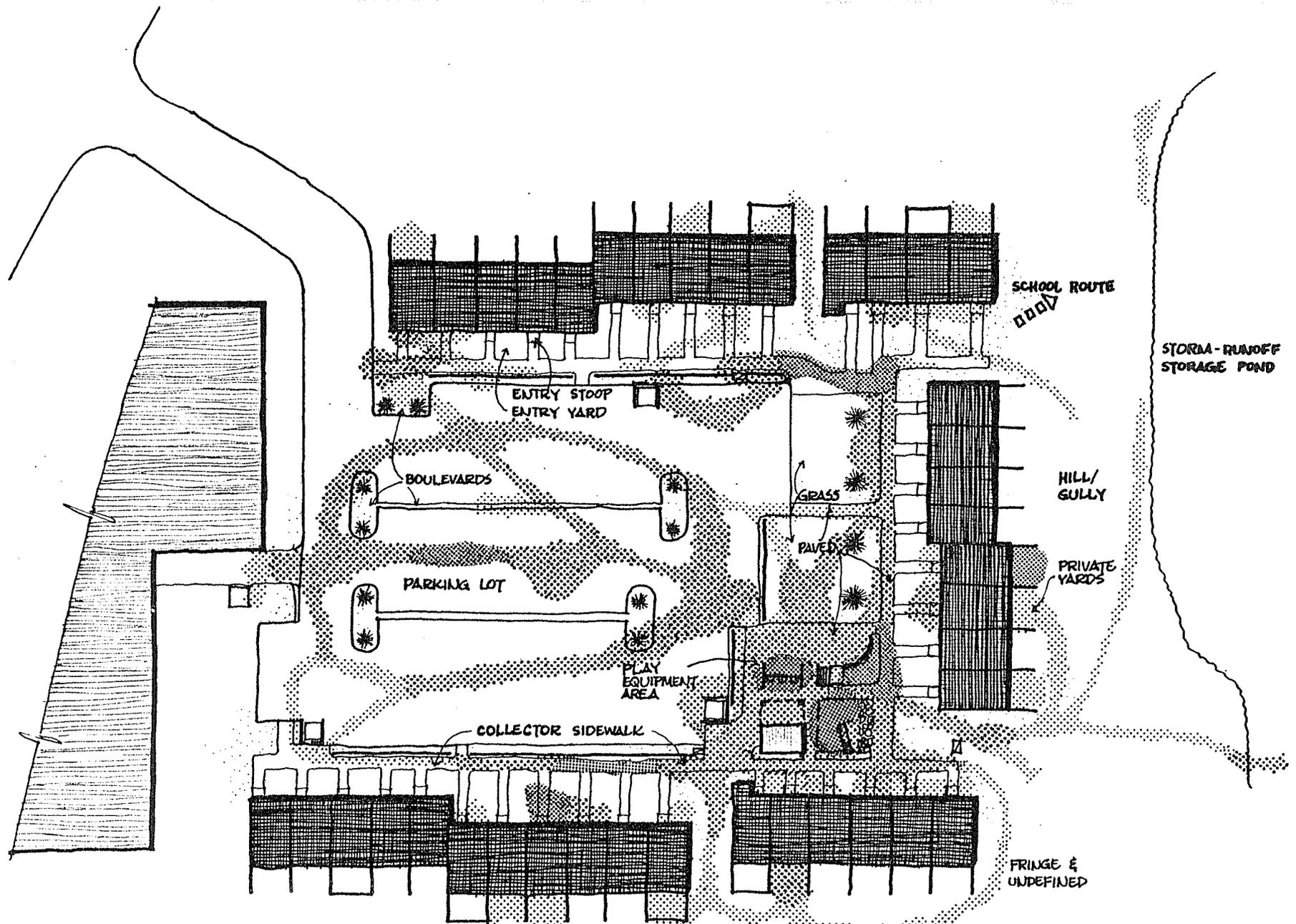


FIGURE 24. PEMBINA PERIMETER: MAPPED DISTRIBUTION OF ACTIVITY IN SUMMER



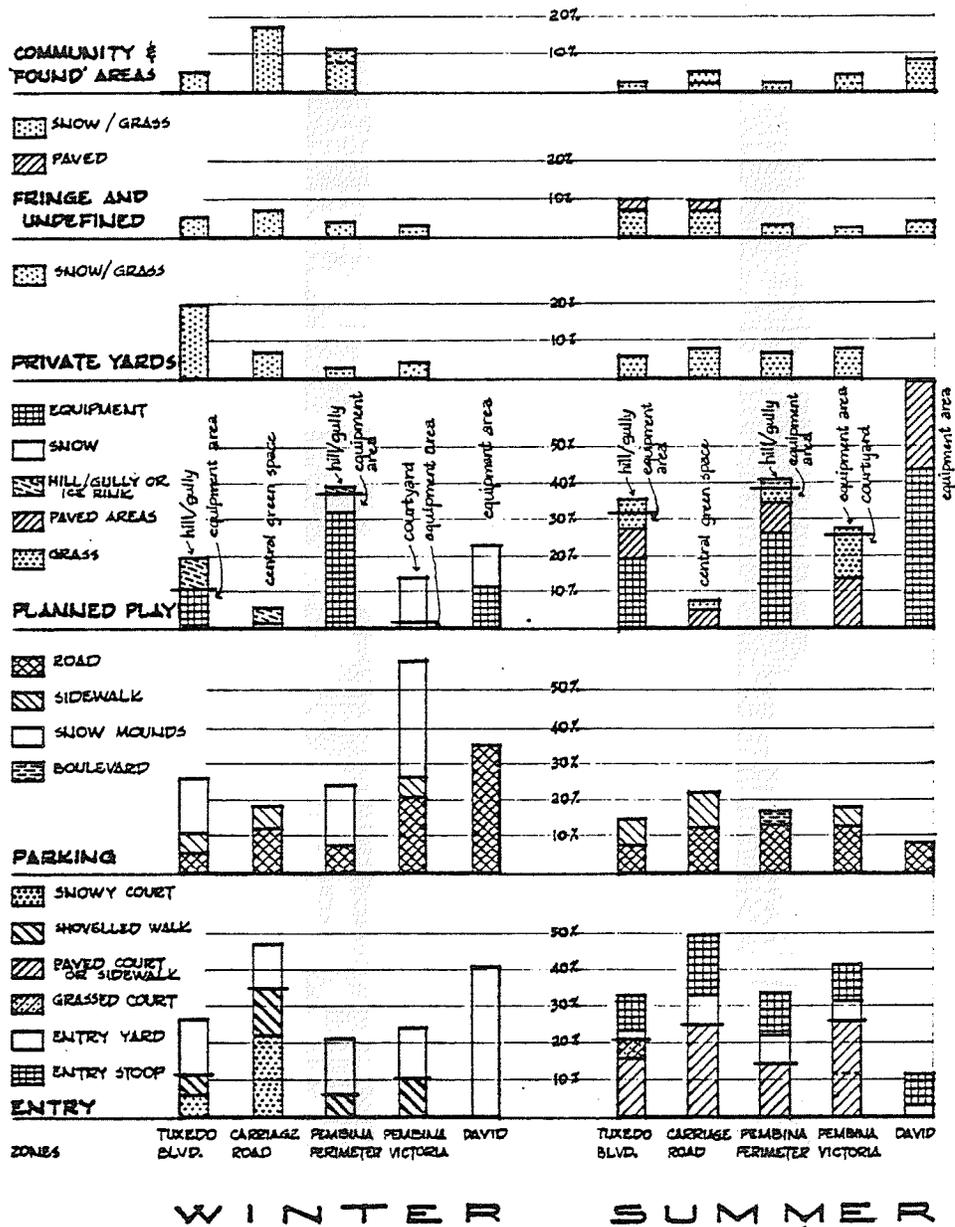


FIGURE 25. PEMBINA PERIMETER: PERCENTILE DISTRIBUTION OF ACTIVITY IN ZONES

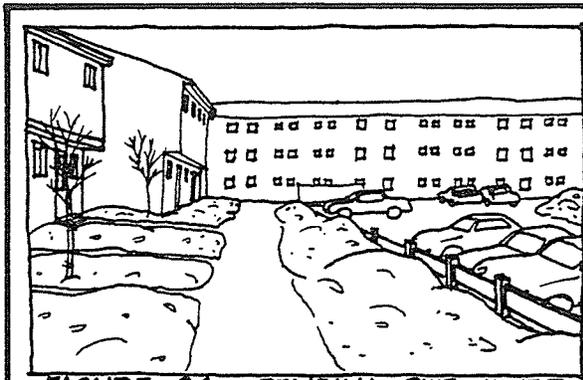


FIGURE 26. PEMBINA PERIMETER ENTRY ZONES

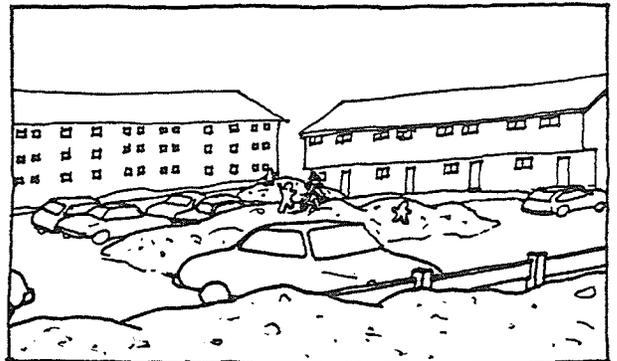
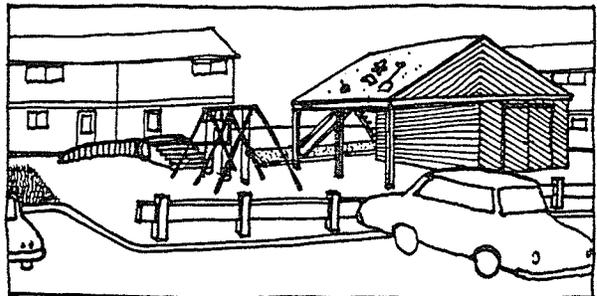
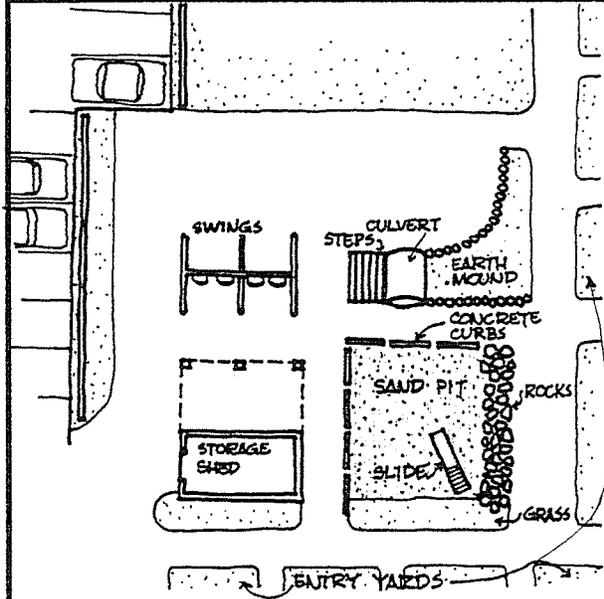


FIGURE 27. PEMBINA PERIMETER PARKING ZONES

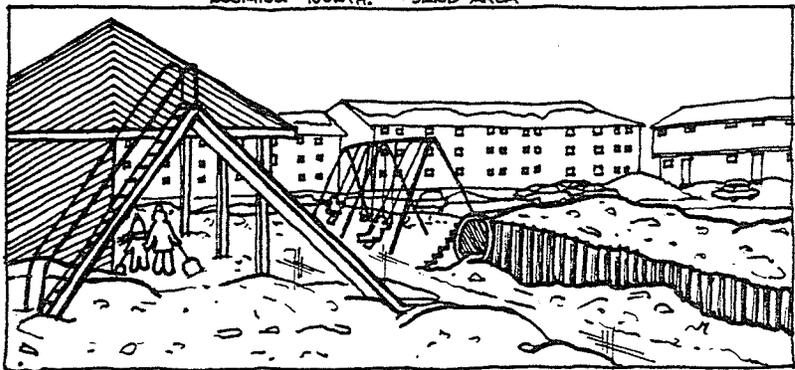


LOOKING EAST. EQUIPMENT & STORAGE SHED OVERHANG



LOOKING NORTH. SAND AREA

FIGURE 28. PEMBINA PERIMETER PLAY EQUIPMENT AREA



LOOKING WEST



FIGURE 29. PEMBINA PERIMETER HILL/GULLY PLAY AREA

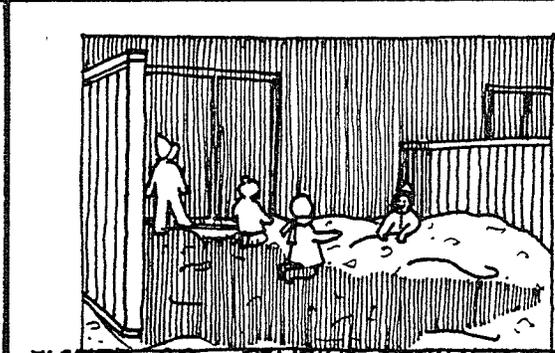


FIGURE 30. PEMBINA PERIMETER PRIVATE YARDS

paved/shovelled path to grassed/snowy yard.

For a minority of units, the play equipment area functioned as a substitute for entry/play courts, however the project lacked courts as a component of the entry zone. The degree of active play did not appear to conflict with pedestrian circulation between the unit and the parking lot. This may have been eased for the units bordering the equipment area because it was possible to by-pass the active part of the play area without having to contend with too many children on the sidewalks.

(a) Collector sidewalks were uniform in width and linear, and lacked any 'pockets' of play space inherent in a clustering arrangement of units. The absence of entry/play courts did not significantly alter the amount of play on the semi-public paths, but seemed to burden the paths bordering the equipment area.

(i) The sidewalks accommodated the majority of wheeled toy play, as well as general movement, watching, climbing (on fences adjacent to the parking lot, and on electrical junction boxes), and overspilling of play from the equipment area. They were often used as an extension of family territory, particularly where the unit was further from the play area; children frequently played on the path in front of their unit, and seemed to hesitate before venturing beyond the bounds of their bank of attached units. This contentment to play close to home was probably enhanced by the ability to see any on-going activity in the project's interior, from the unit; it also indicated that parental restrictions on the child's wandering range were factors.

(ii) In winter, the low use of the shovelled sidewalks

included general movement, watching, snow play, and climbing or balancing on the fence or electrical boxes. The fence and grass separation from the parking lot defined a space for piling snow from the sidewalks. However, this long and narrow space, and the continuous and unvaried snow within, did not entice play or contribute clues as did the distinctive and more contained piles in the entry zones at 'Carriage Road'. Although the method of snow storage at 'Perimeter' deprived children of additional play clues, it did appear to be a positive factor, since it would be undesirable to encourage activity that could spill onto the adjacent busy parking lot.

(b) Entry yards were more popular than the sidewalks, and were particularly well-used during the summer. The majority of warm weather play occurred on the entrance steps, where children and parents engaged in passive watching, talking, and some manipulative play with toys. The grassed yards accommodated unoccupied behaviour, with a minimal amount of play with toys, dirt, or water. The lack of fencing denied children of (albeit disapproved of) climbing opportunities, but did not appear to affect the amount of play in the yards. There were fewer complaints about children trespassing here, than at 'Carriage Road' where there were property fences.

In winter, the snow-covered yards generated more activity (snow play and running in deep drifts) than did the stoops, which were used for watching and unoccupied play. On sunny and mild winter days, some parents joined their children on the doorstep;

this was the only project where adults were thus motivated in the cold season. This may have been encouraged by the approximately 220'-0" distance between opposite units, which afforded more privacy than in cluster arrangements; also, the central play area offered adults entertainment and interest from the unit stoop.

(i) Yard use, as noted, was often the result of the overflow of activity from the play area. The lack of definition between semi-public and semi-private areas, the relative ease of supervision of the play area from all units, and the strong clues offered by the equipment and other children at play, together made it difficult or unnecessary to confine children to the entry yards. In spite of this, their degree of use was comparable to other projects.

(ii) For summer, 67% of parents felt the entry yards were a good place for their children to play; only 33% felt the same for winter.

(iii) A majority of parents complained of maintenance or vandalism problems in the yard, from children's play: a higher dissatisfaction than at the two previous projects. The lack of property fences and the absence of differentiation between the yards of adjacent units probably contributed to this. It was found that complaints were generally fewer in projects with well-defined entry yards or, where territorial definition was achieved by unit staggering rather than fencing, as at 'Tuxedo', wherein even small and virtually undemarcated yards created fewer perceived problems.

(iv) There were more complaints of conflict between

pedestrians and wheeled toys in this project than in the others. The sidewalks and the paved portion of the play area offered the only 'safe' areas for riding bicycles; they also generated active and passive play as part of the controlled close-to-home spaces. The combination of these activities sharing spaces with pedestrian movement, without space 'pockets' or a means of directing motion, proved to be incompatible.

2) Parking zones (See Figure 27, p. 163)

The single parking lot was virtually the focus of the project, and contributed both to actual and perceived dangers to children playing there. Its close relation to the play equipment area and entry zones seemed to encourage spilling over in play. However, it was not used as extensively as the lots at 'Carriage Road' in summer, or at most of the other projects in winter.

In summer, the road itself was used twice as much as in winter--an increase that was unique to this project. However, the popularity of snow mounds on the boulevards increased the overall use of this zone to a higher degree than in the warm season. It was slightly more enticing than the entry zone in winter, because of these mounds; in summer, however, parking accounted for half as much play as did entry.

(a) Roads

(i) Summer use of the driveways involved riding wheeled toys in place of, or in addition to, cycling on the sidewalks. The U-shaped arrangement of unit groupings did not enable a continuous circuit on the safer sidewalks; turning around at fast speeds was difficult and children often preferred to ride on the road to

complete their circuit. Many older children also made use of the lots, and this may have lured the youngsters to follow suit. Or, the attraction may simply have been the road's comparative freedom from obstructions or congestions of children and pedestrians, for whom a rider must slow down and consciously exercise greater caution. General movement and watching were prevalent, and children often shortcutted across the parking lot rather than follow the sidewalk to reach the play area.

(ii) The small grass boulevards centred in the parking lot or adjacent to 2'-0" high fences, generated a small amount of activity: chasing games, watching, climbing onto the fences and/or cars, and digging in grass or dirt.

(iii) In winter, the road itself was not highly used, especially in comparison to the snow mounds. Its main activities included general snow play and skidding, as well as shortcutting between units, the play area, and the school route. Older children made use of the northeast end, furthest from the vehicular entrance to the lot, for hockey amongst parked cars.

(iv) Parents confirmed that the size and nature of this parking lot was perceived as undesirable for families with children: 100% disapproved of, and expressed concern over, youngsters' use of it, although 16% conceded that it seemed to offer more play opportunities than other areas in the project.

(v) Over 80% of parents interviewed complained of conflicts between cars and bicycles; this was the highest dissatisfaction in this regard of all projects.

(b) Snow mounds

(i) The snow mounds, piled on the grassed boulevards in the centre and along the edges of the parking lot, partially buried young trees planted there for visual relief. By summer, these trees were badly damaged, both by freezing of the growing roots, and by children grabbing the branches for support in the challenging climb up the mounds. Climbing, sliding, and manipulative snow play were the major attraction of the mounds; sledding was minimal because of the limited crush space afforded by the icy parking lots as well as the distribution of snow into piles of 4'-0" high or lower. As at 'Tuxedo', the choice to play on parking lot mounds rather than on the larger toboggan hill (either the sun-oriented or shaded slope) was probably affected by their being a better scale for children, and offering a greater variety of play possibilities and interpretations. Also, these snow mounds lasted longer and were closer to home, in with the heart of site activity rather than isolated.

3) Planned play areas (See Figures 28 & 29, p. 163)

The central play equipment area was proportionately more alluring to children than was the elaborate set-up at 'Tuxedo', in summer and particularly in winter. This attraction may have been enhanced by its location, the inclusion of swings, and the lack of alternate spaces with strong play clues. The second planned provision, the toboggan hill/gully, was used negligibly. The opposite slope, which was open to and used by the surrounding community, was more active.

(a) The play equipment area was an identifiable place for

play in the heart of all activity within the project. It was visible from all units, although for most, it was beyond the range of easy recognition or calling. The close relationship between play, the unit, entry, and parking, ensured that children in this space could meet their playmates, and attend to the site's major on-going activity. Children often watched over the area from bedroom and kitchen windows, calling to or joining friends in the play area.

The equipment was concentrated at one end, over a flat paved surface; the remaining rectangular space was flat and grassed, with a few trees and linear paths to the parking lot. The maintenance storage shed helped define and buffer the equipment area from a few adjacent units; however the majority of dwellings fronting onto the play space had no design treatment to facilitate compatibility between semi-private yards and the semi-public play zone. The sheltered area beneath the storage shed roof contained picnic tables and benches for children or supervising adults.

(i) In summer, the equipment generated three times as much activity as did the paths, and paved sections were more popular than the larger, grassed squares. Manipulative sand play was the predominant summer activity, followed by swinging; in comparison, watching, climbing, sliding, running, and playing with or riding toys were each of minor importance. The sandbox was larger than those at 'Carriage Road', but smaller than either section of the sand pit at 'Tuxedo'. The 7'-0" high slide was located within; this created conflict because the sand area was too small for active and passive play to co-exist, and there were no subdivisions for protected play. This was compounded by the expected preference

shown for playing near or under the vertical element, for the minimal shade and sense of place offered. These conflicts may have contributed to the low use of the slide in summer, as compared to winter, when sliding was the only behaviour suggested.

(ii) The sand area was not well-contained: it was defined only by small rocks on one side, pre-cast concrete curbs on two sides, and grass on the fourth. This did deter children from riding wheeled toys through the passive zone, however much of the resource spilled onto the paving or was transported to a nearby location for private play. Manipulative play increased when rain-fall made the sand damp and packable; many children increased its 'building' possibilities by carrying water from the hose bibb attached to the units--frequently forgetting to turn off the taps.

(iii) The slide was as popular for the challenge of climbing the slippery slope or hanging from the structure, as for conventional sliding. The steps and earth mound over the culvert were equally open to interpretive but often dangerous play possibilities. For example, speedy tricycle races down the short slope and onto the inadequate unobstructed width of the sidewalk; also, the top of the mound and inside the culvert offered high and low places for social or private play with toys and transported sand.

(iv) The paved portion of the play area was widely used in conjunction with collector sidewalks, for riding wheeled toys and manipulative play with toys, water puddles, and deposited sand. The grass areas were little used; they offered no clues for play, except a smaller swing set which had been added by the tenants. Damage to the grass and trees was minimal, and was possibly

deterred because of the manipulative opportunities offered within the space, or because of the dominating visual control from the units.

(v) In winter, the equipment was again the major attraction of the play area. The most frequent activities were: swinging, sliding, climbing the slide slope and culvert mound, and 'bumping' down the 45° angle culvert steps; in addition, unoccupied behaviour, snow play, and use of the slide and culvert as vantage points or resting places were observed.

(vi) The snow-covered remainder of this play area offered relatively deep snow, augmented by parking lot clearing. This additional snow was spread over the flat area rather than in high, concentrated mounds. This minimized the attraction for play, and children's use of the space was limited to running in the deep snow, particularly in conjunction with the adjacent school route. The deepest portion of snow, close to the parking lot edge, afforded some challenging and manipulative activities; it remained too low for sledding although the flat play space would have offered a safe and wide landing zone.

(vii) The slide emptied close to grade, and through high winter use, the snow groundcover was worn to a 'pit' that actually trapped small children. This icy trap made it difficult to get out of the way of the next slider. A further difficulty was that in winter, the slide was located close to the culvert: its exit end was only 3'-0" from the adjacent 4'-0" path. When children gathered on this path, they impeded a slider from scrambling out of the way. This was perceived as a real problem, and by spring

the slide was relocated to the opposite end of the sandbox. This, however, may have increased the aforementioned incompatibility between active and passive play.

(viii) The equipment area attracted the majority of children at any given time, thus concentrating most activity and noise at one end of the project--as close as 20'-0" from bordering units. In winter, the undefined entry yards bordering on the play area were separated from it only by the shovelled path; in summer too, the grassed yards seemed to be an extension of the play area. Many tenants were prompted to erect their own small fences to define and help stop movement through their yards; however, activity continued to spill onto them.

(ix) The play area was sunny and sheltered from winds in both seasons. The storage shed overhang provided shade for passive play, however did not serve the sand pit, where the hot sun in the afternoon made it uncomfortable.

(x) Parents occasionally accompanied their children to the play area, even in winter, to help and supervise them. Other projects, where the play area was located on the private side of units, did not generate adult participation.

(xi) Of parents interviewed, 67% thought the play area was the best place for their youngsters in summer, whereas only 16% felt the same about winter; 16% expressed disapproval of play in the sandbox for safety and sanitary reasons.

(xii) Over 80% complained that there was hardly any play equipment, and 50% felt there was hardly any play space.

(xiii) This project showed the most complaint--over 80%--

about maintenance or vandalism problems in a play area. This was surprising since the visual control was thought to be a deterrent. It was possible that this visual connection merely heightened awareness of the wear and tear of normal play.

(xiv) Ease of supervision over the play area from the unit was judged satisfactory by 67%, who agreed that the play space was in an average or good location. The most dissatisfaction with location was from the unit furthest away from the equipment area. Only one of the families interviewed living on the edge of the play area, where noise and overspilling onto the yard were a frequent occurrence, felt the location was unsatisfactory. Thus, the accessibility, close visual link with the entry and kitchen side of units, and the fact that children tended to remain in view for long periods, seemed to counteract the problems inherent in its location.

(xv) Concern for children's safety was largely the result of conflict between older and younger children. Also, 16% thought the location of the play area, adjacent to a parking lot with only a 2'-0" high separation, was illogical. This indicated an unawareness of the fact that the parking-generated activities were, in part, the reason why children preferred to remain in this area, and therefore, in view of the unit.

(b) The hill/gully was minimally used in both seasons. In winter, the seemingly ideal toboggan hill was too windy and cold for play; children preferred to play on the opposite, sunny slope. Sledding and snow play were as popular for the townhouse children as for residents of the surrounding community, as was skating on

the pond's rink. Only 16% of parents cited this space as a desirable winter play area; none approved of it for summer use.

In summer, play consisted mostly of fetching water or minnows, or adventure/fantasy near a rock dam. Few children under 8 years were observed there, because of parental restrictions; 16% of parents expressed real anxiety when children were out of sight, because of the dangers of drowning.

4) Private yards (See Figure 30, p. 163)

The outward-oriented private yards accommodated the same proportion of play in summer, and slightly less in winter, as in other projects. This indicated that the degree of enclosure was not a prime determinant of yard use by children. Fewer than one-sixth of the units added an end section fence to contain their yards; the majority of these were south-oriented, and showed evidence of use by children for play.

The private yards were the only alternative small-scaled space for private or social play; there were no equivalent niches within the interior of the project. Access to these yards from the unit was via a sliding glass door, which hindered admittance in winter. The route from the main entry side was somewhat inconvenient, and intensified the isolation of the yards.

In summer, private yard activities included toy play, unoccupied behaviour, manipulative play (with transported sand, water, or toys), and some chasing games. The proportion of use equalled that in other projects, indicating that children chose both the privacy as well as the variety of location, of any separate and defined area. This choice did not seem to depend on the potential for views to activity, since these

yards faced vacant areas yet were as popular as other projects' yards that faced a play area or other activity zone.

In winter, minimal play was observed, and snow play was the only activity. Tramples and diggings indicated that over half the private yards accommodated play sometime during the winter. As in other projects, these behaviour traces suggested that more yards were used in winter than summer, although such activity was not always verified.

(i) One-third of parents interviewed preferred that their youngsters play in these yards in both seasons. This was a higher number than at 'Carriage Road', where the fully-enclosed yards and the all-weather door access seemed more conducive to play there. However, this preference indication was smaller than at 'Tuxedo', where yards also were convenient and delimited.

(ii) The private yard fences offered the highest climbing elements in the project, other than the slide. Although play on these fences was not observed, 67% of parents expressed occasional worry about such activity.

5) Fringe and undefined areas, and community and 'found' areas
These were not used significantly, other than the community-oriented side of the toboggan hill/gully. Because the activities were closely related to the project's second planned play area, they have been discussed above (see "(b) The hill/gully").

6) Other general observations

(a) The linear site planning, and the meagre provision of fencing, enclosures, level changes, or other environmental elements,

resulted in a minimum of distinct shapes, sizes, and qualities of space for adaptation by children at play. Visual and textural complexity were deficient as components for children's interest, learning, and creative involvement in play. This project did not reveal distinct visual changes between the seasons as did the court-type projects; the totally flat interior, exposed and comprehensible at once, varied only in surface material during the year. In the previous projects, however, the site seemed 'new' in each season: there were more qualities and complexities of space to respond to the seasons, and the fences and clustering seemed to add to that visual variation. These qualities that enabled discovery of changed space were perceived by the author to offer more clues for play and interpretation.

(b) The storage shed's sloped roof was the target of much undesirable behaviour, probably by older, bored children. Toys and some heavy items such as shovels were found atop the roof, and this posed a danger to children below. It seemed that the slope and height of the roof actually generated this mis-use: the items thrown remained visible and offered a sign of the child's throwing skills, or taunted the owner of the object as well as adults. Traces of this behaviour were also found in the project discussed next, which also had a sloped roof on the tool shed. However, the shed at 'Tuxedo', which was half buried by earth berms and had a low sloped roof, did not reveal this form of abuse because of the reduced sense of challenge in reaching the roof, and possibly because of the shed's relative isolation on site.

(c) The path system did not enable a cycling circuit and was not sufficiently responsive to play or movement. There did not seem to be enough planned paths, particularly along the school route and on the private side of units, where the grass was trampled. This shortage of pavement, other than the collector sidewalks or parking lots, contributed to the 67% dissatisfaction with the amount of safe hard-surfaced areas. Over 80% of parents mentioned problems with bicycles, including: safety, conflict with cars, the dangers to others posed by children riding through the play area, and the lack of concern for pedestrians of all ages using the sidewalks.

(d) Destruction of plantings by children at play generated more annoyance than in other projects. The relatively small amount of greenery in the public areas suggested that this complaint related more to plantings in the semi-private, unfenced yards.

(e) Children's satisfaction was high, as perceived by parents. Over 80% felt their children enjoyed playing on site, although the same number thought there was not enough for them to do.

(f) Parental restrictions on children's use of the site were imposed by one-third of those interviewed. The dangers of the runoff pond, which was not easily supervised except from the private side of 8 units, together with the hazardous high-speed traffic on the two surrounding highways caused parents to restrict their children's wanderings to a greater degree than in other projects. The majority preferred their 4-to-7-year-olds to remain on the interior, entry/parking/play side; two-thirds of parents complimented the ability for relatively safe play in these interiorized zones.

d) Pembina Victoria

This medium-sized project was unique in that it was outward-oriented, and formed neither small, semi-public clusters nor a central public enclosure. This project offered the fewest play clues and elements of all five sites, and was the only one without some form of play provision related to the entry zone of units.

Observed activities in both seasons depended more on the weather than in the other projects: casual observations on overcast days revealed few or no children outdoors, whereas in other sites, at least some children were motivated to play even in unfavourable weather. In winter, the co-operation of the snow clearing process seemed to contribute more clues for play than were available in summer.

The combined seasonal distribution of activities centred in the parking zone, followed by the entry zone spaces. The play areas, of which only one was used significantly, were less popular than these outward-oriented spaces; private yards, followed by fringe and community areas, accounted for the remaining play locations. (See Figures 31, 32 & 33, pp. 180-182)

In winter, the parking zone generated nearly 60% of all observed activity: an undesirable situation that was more prevalent than in the other projects. Play in the entry zone and the internal courtyard play area largely accounted for remaining activities.

In summer, entry zones and the courtyard play area gained popularity, with a corresponding decrease in parking zone activities, so the amount of play on the roads was similar to other projects. Private yard use also increased, showing a slight margin over the proportionate use in the other four sites.

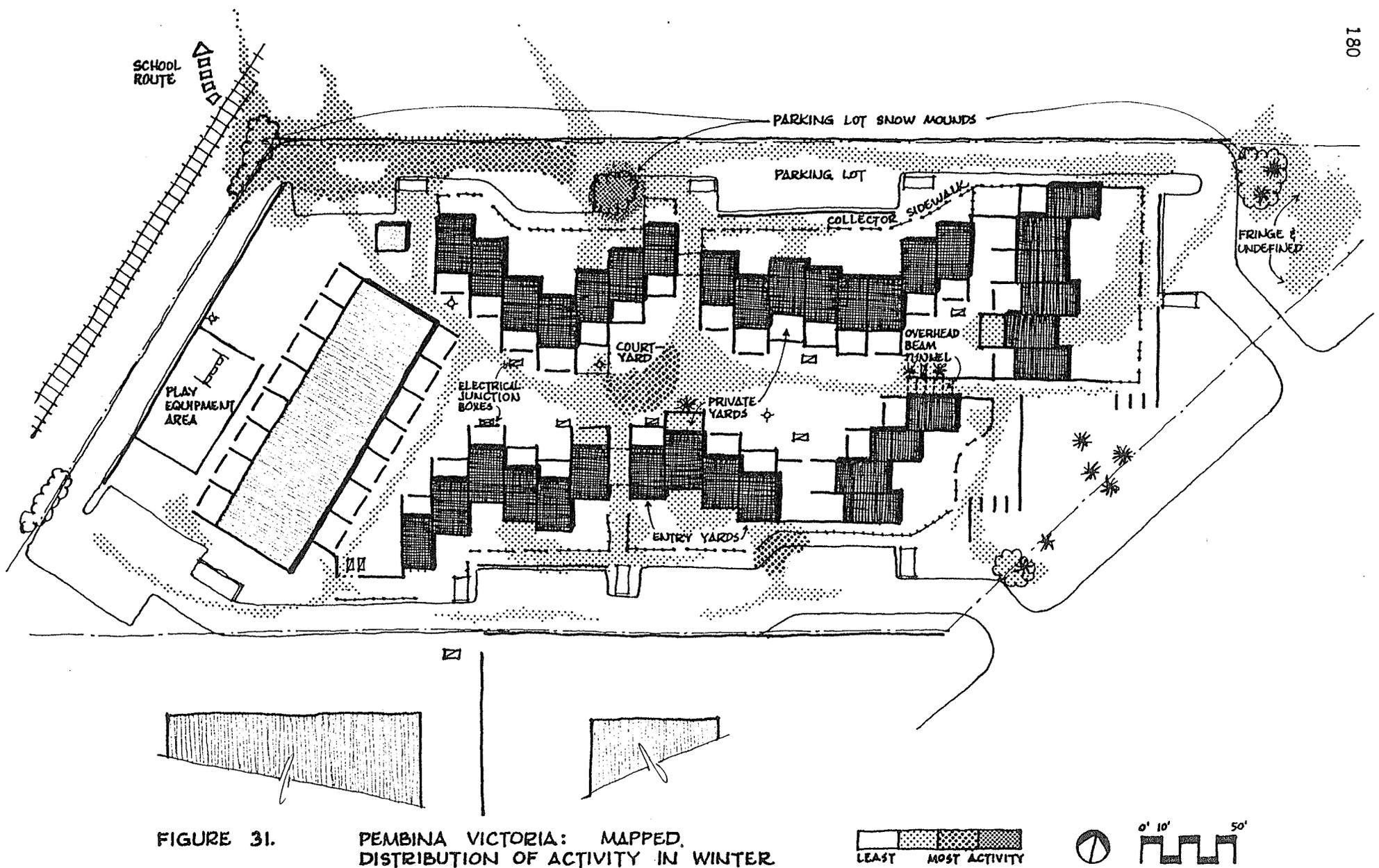


FIGURE 31. PEMBINA VICTORIA: MAPPED. DISTRIBUTION OF ACTIVITY IN WINTER

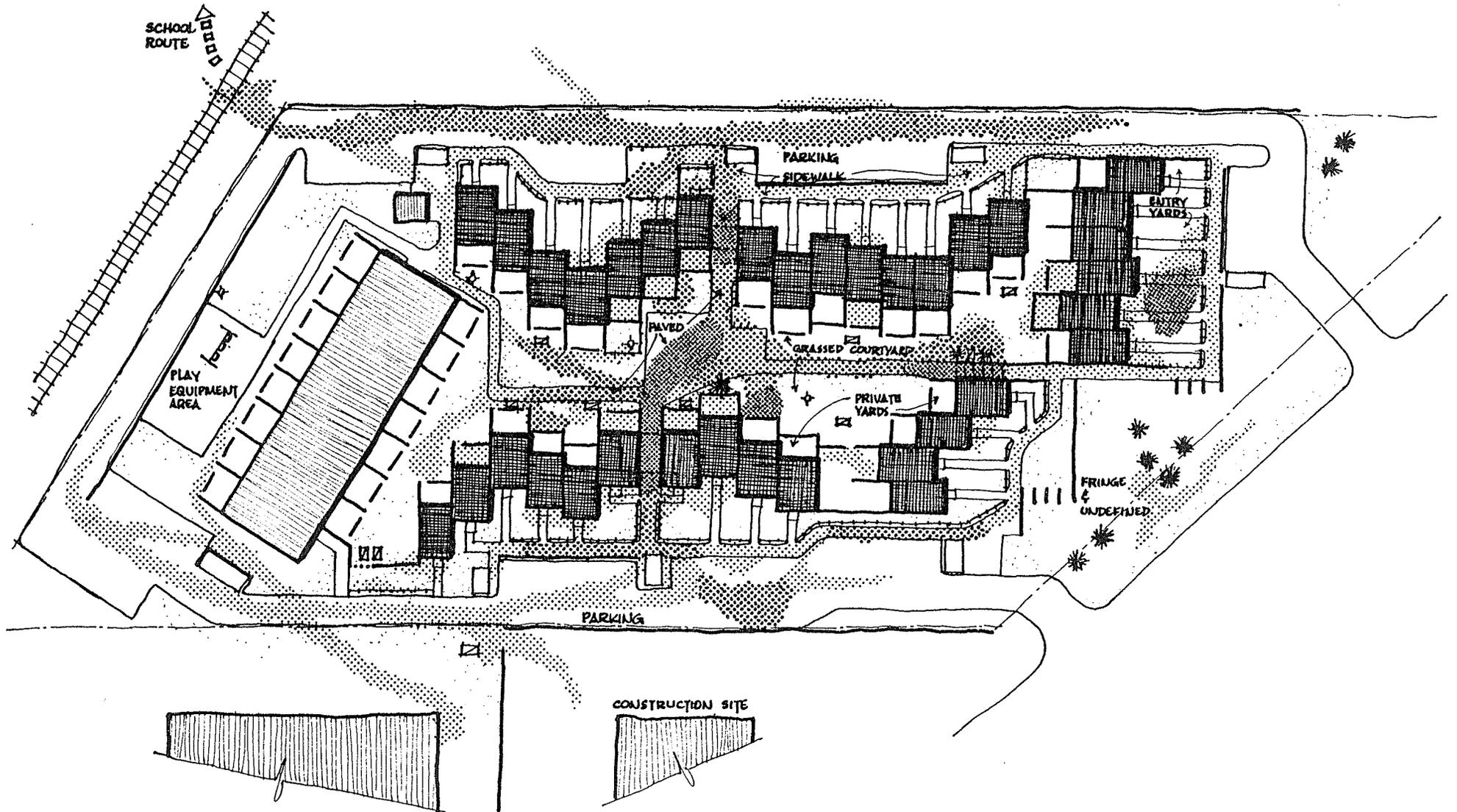


FIGURE 32. PEMBINA VICTORIA: MAPPED DISTRIBUTION OF ACTIVITY IN SUMMER

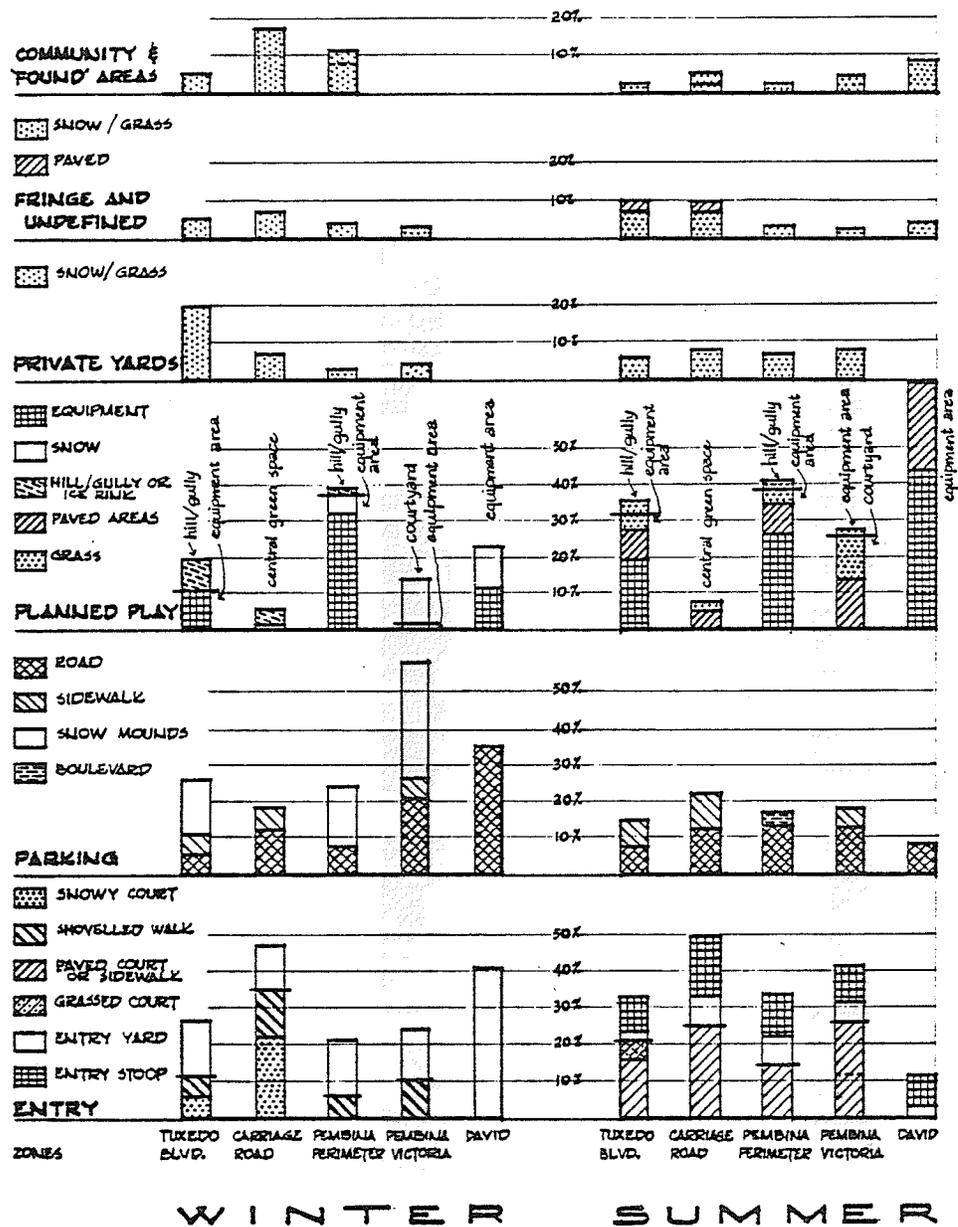


FIGURE 33. PEMBINA VICTORIA: PERCENTILE DISTRIBUTION OF ACTIVITY IN ZONES

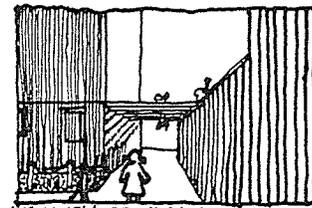
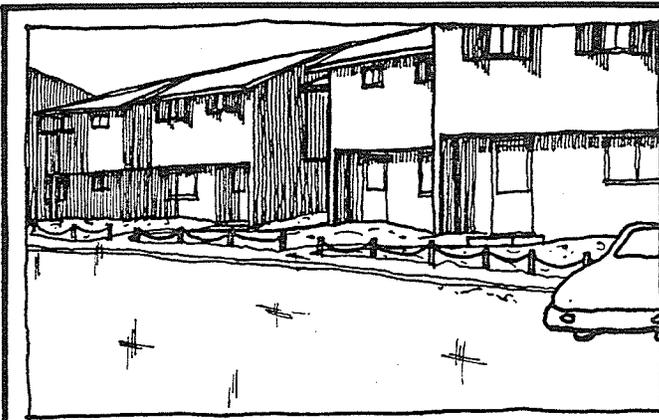
1) Entry zones (See Figure 34, p. 184)

The proportion of play in the entry zone was not incomparable to that in other projects, despite the absence of extended space for play such as courts. The collector sidewalks and entry yards were used similarly in both seasons, except that in summer, the increased amount of activity was attributable to children's adaptation of the 'tunnel' openings between unit groupings as play spaces. These hard-surfaced and sheltered extensions of the sidewalk offered a transitional area with a visual connection both to the outward-oriented entry/parking zones, and to the interior courtyard play zone.

Thirty percent of parents interviewed preferred that 4-to-7-year-olds play on the entry zone side of units in both seasons, for ease of supervision and fetching. The children's choice to play there seemed to result from a lack of alternative, activity-generating locations, rather than from a desire to remain close to home; for example, many children roamed to the opposite side of the project, where they could be with friends, but where parental control was minimized.

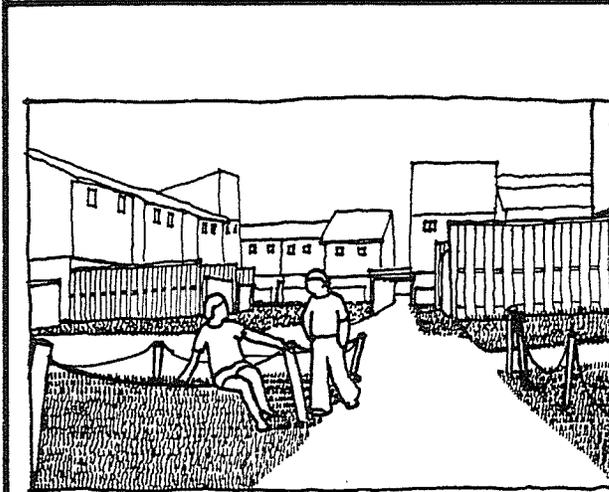
(a) Collector sidewalks were in general used similarly to other projects' sidewalks or paved courts. However, play on the sidewalk extensions between unit groupings contributed to the second highest summer use of paved pedestrian areas for all projects, preceded only by the paved courts at 'Carriage Road'.

(i) The three unit grouping openings were centrally located along each side of the linear townhousing arrangement. They were each given a different means of enclosure, by the use of: a roof, a series of overhead beams forming a trellis, and a passage

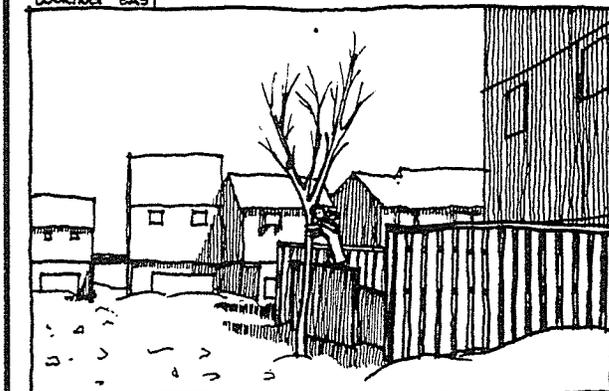


'TUNNEL' OPENING: BEAMS

FIGURE 34. PEMBINA VICTORIA ENTRY ZONES



LOOKING EAST

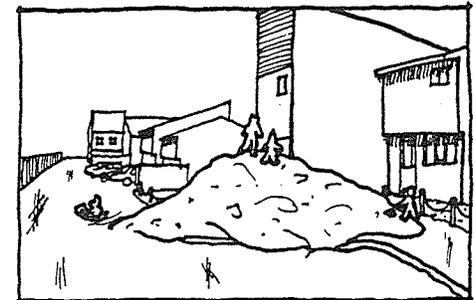


LOOKING EAST

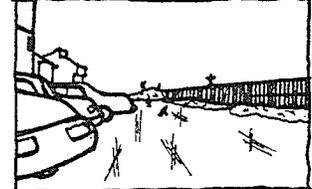
LOOKING WEST



FIGURE 36. PEMBINA VICTORIA COURTYARD PLAY AREA



SNOW MOUND ON LOOP ROAD



LOOP ROAD

FIGURE 35. PEMBINA VICTORIA PARKING ZONES

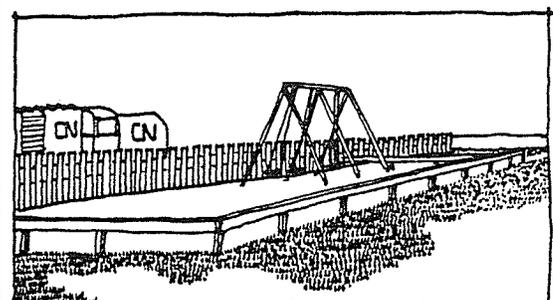


FIGURE 37. PEMBINA VICTORIA PLAY EQUIPMENT AREA

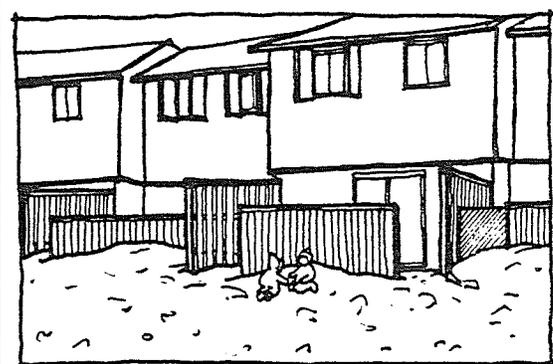


FIGURE 38. PEMBINA VICTORIA PRIVATE YARDS

beneath the cantilevered upper levels of two adjacent 5 bedroom units. These 'tunnels' offered the only small-scaled and semi-enclosed private space other than private yards. In comparison, the 'tunnels' at 'Tuxedo' provided an alternate to the courts, to the subdivisions within the play equipment area, and to private yards, thus offering a greater degree of choice for small group gatherings.

(ii) The 'tunnel' openings were mainly used in summer, for unoccupied behaviour and watching, mid-way between the two highly active areas. In summer, observed dysfunctional activities included: writing on the walls, throwing mud and toys against the ceiling, and many instances of both older and younger children climbing the overhead beams, with an 8'-0" drop to pavement. These 'tunnels' were frequently congested, and this generated conflict between bicycles speeding through the concentrations of children in the 10'-0" wide space.

(iii) The sidewalks and 'tunnels' were used for riding wheeled toys as part of the circuit through and around the site. However, children more often spilled onto the roads. This seemed to result from the sidewalks' numerous jogs and sharp turns that required negotiation. The paved circuit enabled continuous movement, however its planning did not correspond with children's tendency to follow the shortest route offering desirable play opportunities. The roads enabled similar views and circulation through the site, yet did not force children to concentrate, slow down, or follow inconvenient paths.

(b) Entry yards varied in size and were mostly larger than in the other projects. In winter, their size together with deep snow deposited from the shovelling of collector sidewalks, did not generate as much play as expected. More use was made of the snowy portion of the yard than of the entrance steps: a characteristic found in other projects lacking a snow-filled entry court, indicating the desire for a deep snow area that is entry-related. The lower-than-expected use for play seemed to be a result of minimal incentives and clues: the area was evenly distributed with snow and lacked unusual or high drifts. Yards on the south and east sides of unit banks had deeper drifts; these were more attractive, particularly on sunny days, for snow play and jumping.

In summer, the entry steps were more popular than the grassed yards, as in other projects; both areas accommodated similar activities, including watching, unoccupied behaviour, and play with toys. Fewer parents than at the other sites joined the children on the doorstep; this deprived children of audiences and interaction. A partial reason for this may have been that only one-third of the yards were sun-oriented.

(i) Twenty percent of parents felt that the chain-and-bollard fence was inadequate, and together with the lack of party wall fencing, made supervision and control over children difficult.

(ii) Two yards protruded significantly into the jogged portion of the sidewalk system; these were often used as a shortcut. The chain fence was an insufficient visual barrier to detour pedestrians around these yards, particularly young children who have no concept of respect for others' yards. During winter, these yards were

as trampled as the shovelled paths, and the discreet fence was ignored in the tendency to follow the shortest route.

2) Parking zones (See Figure 35, p. 184)

The amount of play on the parking loop road reflected a seasonal preference. However, the presence of the snow mounds did not appear to be the root of this popularity. It seemed that in winter, the roads themselves served as a substitute for a more suitable, close-to-home, and entry-related play zone. In summer, children adapted the 'tunnels' as an alternative, thus reducing the amount of activity on the roads.

(a) Roads and sidewalks

(i) In summer, riding wheeled toys was the predominant driveway activity, and the roads were used in conjunction with, but more often than, the safer paved paths flanking them. General movement, climbing and balancing on the 5'-0" high site property fence, watching, and play with balls or any standing puddles were also observed; these typified road play in other projects.

(ii) In winter, activity consisted mainly of manipulative snow play and watching. Movement and fence play occurred as often as in summer. The similarity of these behaviours to other projects' parking zone activities indicated that the loop road did not in itself generate more play, but that the alternate spaces in this project were less enticing.

(iii) Winter activity in the lots was largely concentrated on the north side, where the best snow mounds were, and where the school route generated play and interest. However, after school hours and on weekends, children generally chose sunnier locations,

or played on their own side of the project.

(iv) The linear layout made it impossible to watch all units' on-going activities from the entry zones. This probably contributed to the use of the roads, because standing in the middle of the parking lot enabled a wider overview. In contrast, the courts at 'Tuxedo' offered a view to as many units, within a safe and traffic-free space; standing in the driveway hindered overview and reduced the lots' attractiveness for this purpose.

(v) Although 20% of parents expressed no concern or worry about children's safety there, all disapproved of their youngsters' use of the road. This was not surprising, since the loop road generated faster traffic and increased hazards.

(vi) Although 60% admitted that enough safe hard-surfaced areas had been provided, they complained that children too often preferred to play on the road, and generated conflicts between cars and bicycles.

(b) Snow mounds

(i) Snow mounds were the major winter attraction. These were located along the edge of the road concurrently fronting on the sidewalk or fringe area. They accommodated climbing and sliding (without sleds) as well as manipulative snow play. The limited number and size of areas available for stockpiling snow necessitated higher mounds. This height was suitable for sledding, however: the road was a dangerous landing zone, about which children were frequently interrupted and warned by parents; the sidewalks did not offer a sufficient amount of crush space; and sledding onto the fringe areas

detracted from the thrills of gaining speed because their powdery base caused abrupt deceleration.

(ii) A 6'-0" high mound located at a widening of the collector sidewalk generated a large amount of digging and climbing. The pavement was wide enough to enable play to co-exist with pedestrian movement, even with the snow pile covering half the area. A larger space for storing snow was along the fringe facing the highway. Tramples indicated that the low, spread-out piles were well used, however observation did not reveal significant use. Two young trees in the space were badly damaged, by children sliding into them, clinging to them for support, or trampling the layers of snow and ice over the tree roots.

3) Planned play areas (See Figures 36 & 37, p. 184)

Play area activities in both seasons predominated in the courtyard space, despite the lack of play elements or clues. The equipment area's poor use was partly the result of its isolation; in addition, the swings, which were the only apparatus, were removed during the winter months, leaving the space barren.

(a) The courtyard offered a shortcut route through the site, between the outward-oriented unit groupings, and along the way to school. In spite of its isolation from the active entry and parking zones, together with the absence of play clues, this area generated more play than expected. Also, it accommodated a greater degree of use as well as more varied activity than did the empty, central green space at 'Carriage Road'. Play seemed to be enhanced by the spatial enclosure and variations created by the unit massing; this

provided a sense of place and more appropriate child scale than did the space at 'Carriage Road'. In addition, there were numerous vertical elements within the space, unintended for but adapted by children as play clues (including electrical junction boxes, light standards, and a fire hydrant). The lack of an alternate space of interest probably contributed to children's choice of the large, enclosed, but barren interior that served as a link with other areas in the project.

(i) In summer, the amount of play was second only to the entry zones. The paved portions were used slightly more than the larger grassed surfaces, particularly for unoccupied behaviour and watching, riding wheeled toys, and general movement between the 'tunnels'. Some children lingered on the central paved square, playing with toys, balls, or puddles, and many were observed to climb on the numerous junction boxes adjacent to the paths. Older children played football on this square: an undesirable situation, considering the numbers of small children and the large unit windows on the living room side. The grassed spaces were equally used for watching and passive play, as well as for chasing games and manipulative dirt play in trampled areas and in puddles. Some children also rode wheeled toys on the grass and played with the vertical street furniture, including the aforementioned climbing of 'tunnel' overhead beams. No legitimate climbing or manipulative opportunities were available.

(ii) In winter, the space was mainly used as a shortcut along the school route. Some snow play, climbing on junction boxes, chasing, and swinging on the chain fence, accounted for the few

activities generated in the often wind-funneled courtyard.

(iii) No buffer zone was created to protect the fenced private yards from the adjacent play area, thus increasing the noise and potential annoyance to adults. This was especially pronounced where units flanked the central paved square, at the junction of two popular 'tunnel' openings.

(iv) Visual control over planned play areas was perceived as a greater problem than in the other projects: 60% of parents felt it was difficult to supervise their children in the courtyard.

(v) Only 20% of parents felt the courtyard was suitable for play in summer, whereas none thought it was a good place for winter play. The amount of play equipment and space, the play area's location, and the safety of children within, generated complaint by 80% of parents--again, the highest dissatisfaction of all five projects. Supervision difficulties, the lack of clues, noise problems, large amounts of hard-surfaced areas, and the possibility of children wandering to the nearby railroad tracks, were all factors mentioned by the 80% of parents who expressed concern and grievance over play in the courtyard green space.

(vi) Vandalism as an offshoot of play was observed in more instances in this project, although it was not perceived as a major problem by all tenants. Grass in the central play space was trampled and worn, especially where the paths jogged at 90° angles; children ignored the planned movement to follow a shorter, diagonal grass route, and created paths around the apartment building on site. The children had broken portions of a 4'-0" high vertical-board fence, to accommodate their desired shortcutting through the

private yard zone of these apartments. By spring, this hole in the fence was altered to create an actual passageway. There was also evidence that children had attempted shortcuts across the private yards adjacent to collector sidewalks; those families added bridging to deter fence climbing.

(vii) The difficult corners of the paved paths, together with the lack of landforms to add variety or interest along the circuit encouraged children to revert to the loop road for riding wheeled toys.

(viii) Two trees at an edge of the courtyard, adjacent to the overhead beam 'tunnel', were used to facilitate climbing onto the beams; these trees were badly damaged.

(b) The equipment area was negligibly used. In winter, the 1'-6" high fence separating it from the private zone of the apartment units offered a place to sit briefly, while roaming through the site. In summer, after the swings had been reinstalled, activity remained minimal; the swings and the pavement were observed to attract only apartment children. Children from the townhouses used the space as little as in winter, and for similar, unoccupied activities.

(i) This paved play area was visible and accessible from the school route, however its isolation and barrenness dissuaded children from making this detour.

(ii) The majority of parents either did not know of the availability of swings on site, or thought the play area was meant only for the apartment residents. This was attributed to the fact that it was not visible from any townhouse units.

(iii) The swings had been mis-used, probably by older, bored children: winding them over the top, twisting the chains or tying them together, and raising the height of the swing seat over 2'-0" above grade, thus depriving the small children. The space may have invited use as a hideout, since it was free from parents' visual overview.

4) Private yards (See Figure 38, p. 184)

Private yards generated a similar proportion of play as in other projects, although in summer, they showed a slight margin in use. In winter, the minimal use included climbing on the 4'-0" high end-section fences, as well as some snow play. In summer, watching and unoccupied behaviour predominated; climbing and jumping on the fences and manipulative play with toys, dirt, and plantings were also observed.

(i) In winter, access to the private yards required a circuitous route, from the entry side and through 'tunnel' openings. In summer, the sliding glass doors off the living rooms enabled an easier admittance. In spite of the difficult winter access, tracks in the snow revealed that play was not confined to the yards nearest to the 'tunnels', nor did activities predominate in sun-oriented yards. This suggested that, as in other projects, children chose the privacy and enclosure of the spaces, and used them as part of their play in adjacent areas. They were willing to detour to gain access, unlike at projects which enabled a faster retreat indoors via all-weather doors.

(ii) The fences, and the gates added by the tenants, were the project's only climbing apparatus other than the aforementioned

spatial elements primarily intended for other purposes. In addition to the impinging on privacy, fence climbing generated frequent concern for 40% of parents; however, it was not specified if this was in reference to the private yard fences or the numerous parking lot fences. This percentage of concern was lower than in the three previous projects.

5) Fringe and undefined areas, and community and 'found' areas

The 4-to-7-year-olds did not play frequently on the fringe areas bordering the highway, other than the winter-time use of snow mounds. Public sidewalks, too, were unused. The construction site adjacent to the project offered dirt piles and the only real manipulative play opportunity nearby. However, these were less popular than expected (as at 'Tuxedo'), possibly because of warnings from the construction foremen.

6) Other general observations

(a) Maintenance and vandalism problems created by the children, in the yards and in the public open spaces, were of major concern in this project. Many toys and litter had been thrown onto the storage shed's sloped roof, probably for similar reasons as at 'Perimeter'. Other signs of abuse indicating dissatisfaction with the environment included: graffiti on the 'tunnel' walls, bending and uprooting chain-and-bollard fences, revolving those chains dangerously fast, nailing onto private yard fences, and climbing on and denting the 4'-0" high, plywood roof of the garbage enclosures.

(b) Children's satisfaction was poorly rated by parents: 80%

felt that play on site was not enjoyed. This was the highest dissatisfaction of all projects, and was due to the paucity of provision. The majority complained that there was not enough for children to do, and 40% derated the grounds as inadequate or the worst possible.

(c) Parental restrictions were enforced because of the hazardous loop road, and the proximity of the railroad tracks and the highway. However, only 20% admitted restricting their youngsters; 60% felt it was sufficiently safe for children to play all over the site. It is probable that the small size of the project generated a sense of security.

e) David

The smallest project studied was the least development-like, and blended successfully into the surrounding community. This seemingly added a different dimension to play: young child residents roamed down the street for play, and children from nearby private dwellings occasionally played on the facilities in addition to use of the site as a shortcut. However, these activities may simply have been undetected in the other projects, because of the large size and numbers of children.

In proportion to the size of the project, 'David' motivated the fewest children to play outdoors in both seasons. It also showed the closest correlation between the amount of play observed in winter and in summer. However, this did not seem to result from a design response to seasonal change; throughout the year, the paucity of activity indicated that provision for play did not interest the child residents. This was further affected by the small number of young children to

stimulate play; many of the tenant families had older children, but relatively few 4-to-7-year-olds.

The combined seasonal distribution of activities centred in the interior planned play area; entry and parking zones were half as popular as this area. Community and fringe spaces were minimally used. There were no play activities observed in the street-oriented private yards, although in summer these were used by older children and teenagers for unoccupied behaviour. (See Figures 39, 40, & 41, pp. 197-199)

In winter, activities were confined to the interior of the project, in the entry, parking, and play zones. In summer, children made slightly more use of the site as a whole; but the majority of activity, which remained internally located, predominated in the play area. The entry and parking zones were the only other significant play area. The pattern of children's play typically reflected brief periods of outdoor play, with frequent visits off site to visit friends, or a retreat inside the unit to play or watch from windows.

1) Entry zones (See Figure 42, p. 200)

The entry zones at 'David' were unique because of their function for car parking in all but four cases, and because the zone consisted only of entry yards: there were no collector sidewalks as a transition to the semi-private yards.

In winter, the entry zones accounted for the majority of play on the site, and surpassed the proportionate use shown in three other projects. In summer, the popularity of the entry zones decreased considerably and showed the lowest degree of activity of all projects.

(a) Entry yards, in winter, generated manipulative snow

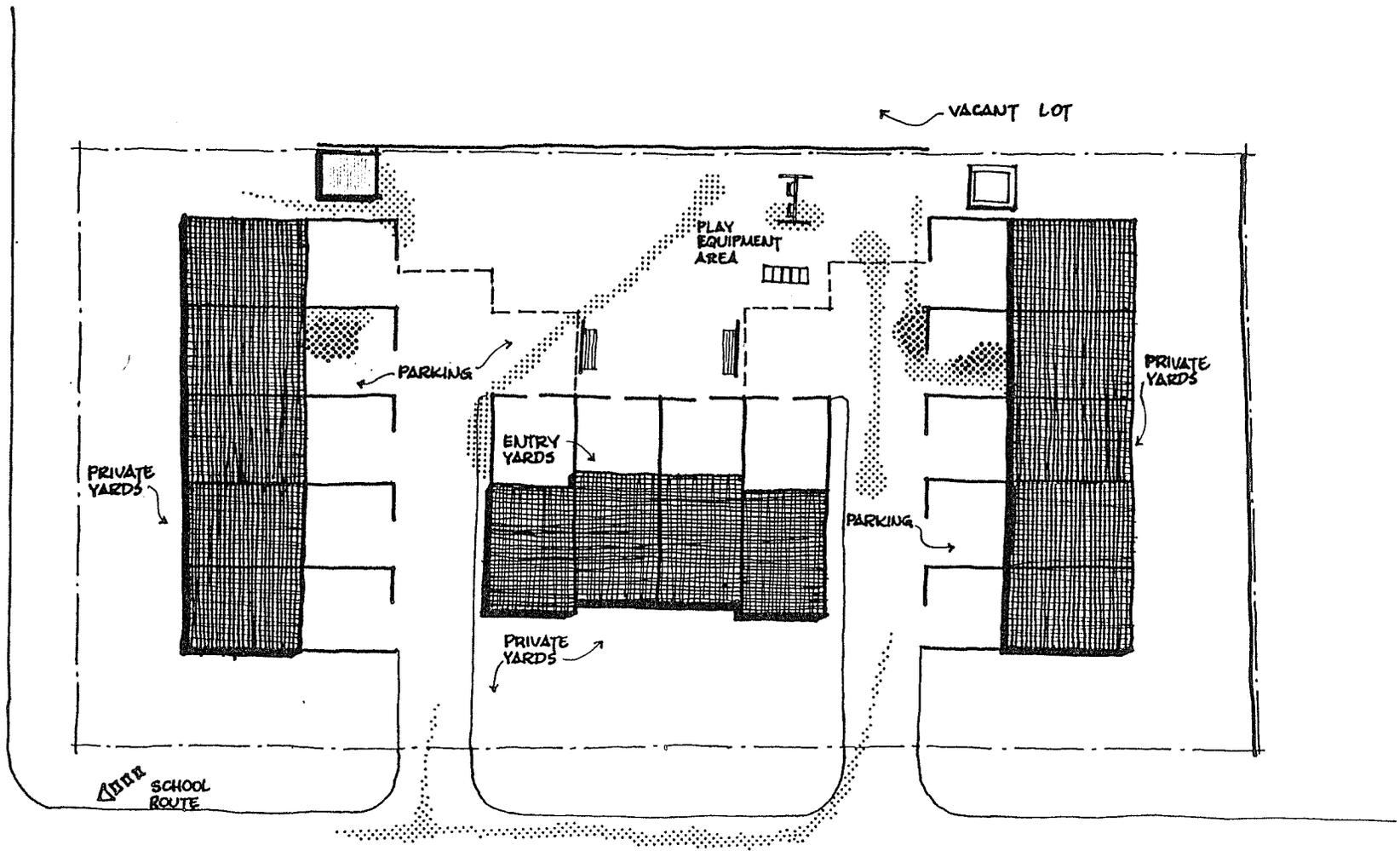
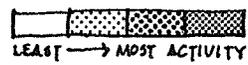


FIGURE 39.

DAVID: MAPPED DISTRIBUTION OF ACTIVITY IN WINTER



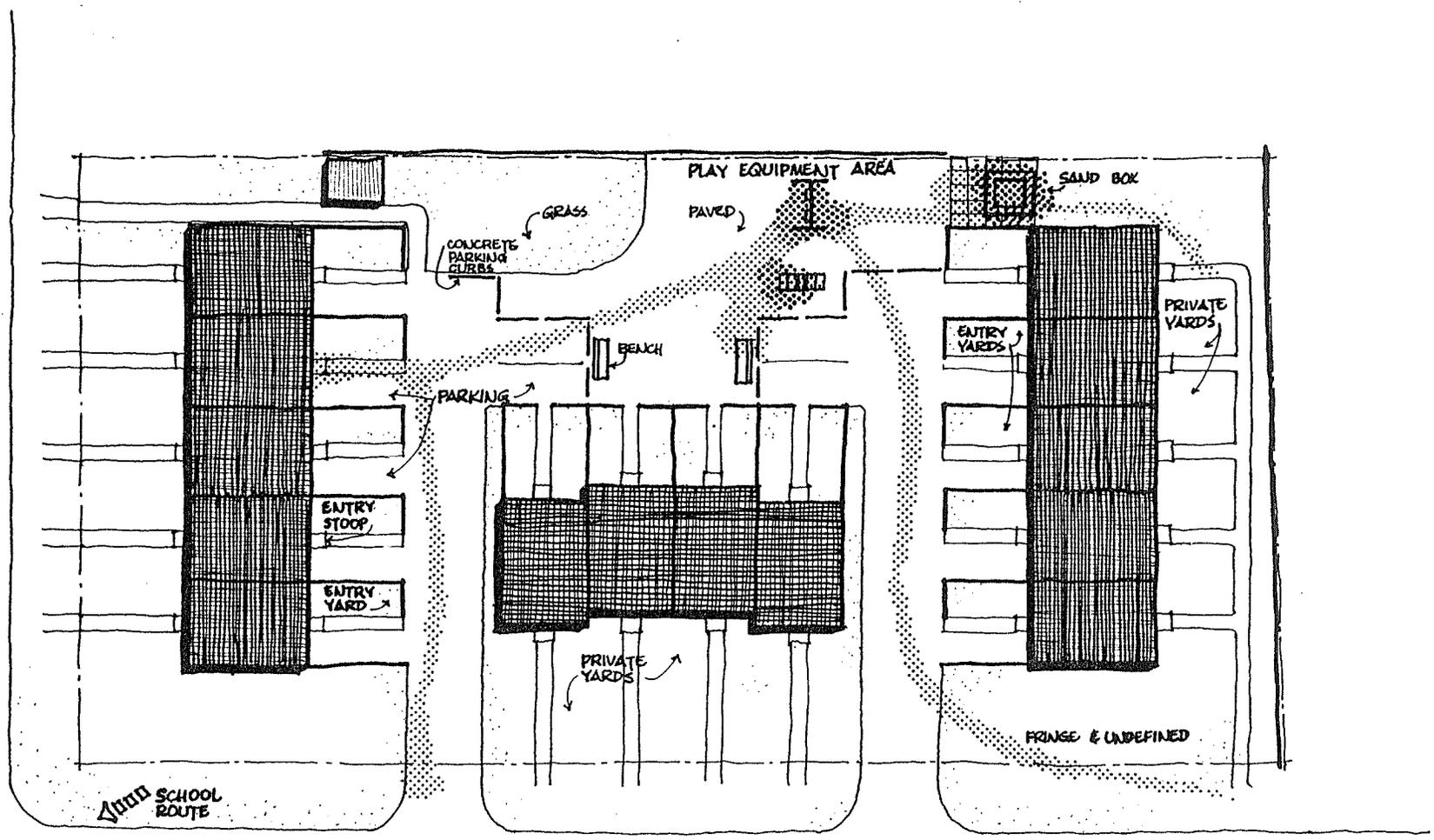


FIGURE 40.

DAVID: MAPPED DISTRIBUTION OF ACTIVITY IN SUMMER

LEAST → MOST ACTIVITY



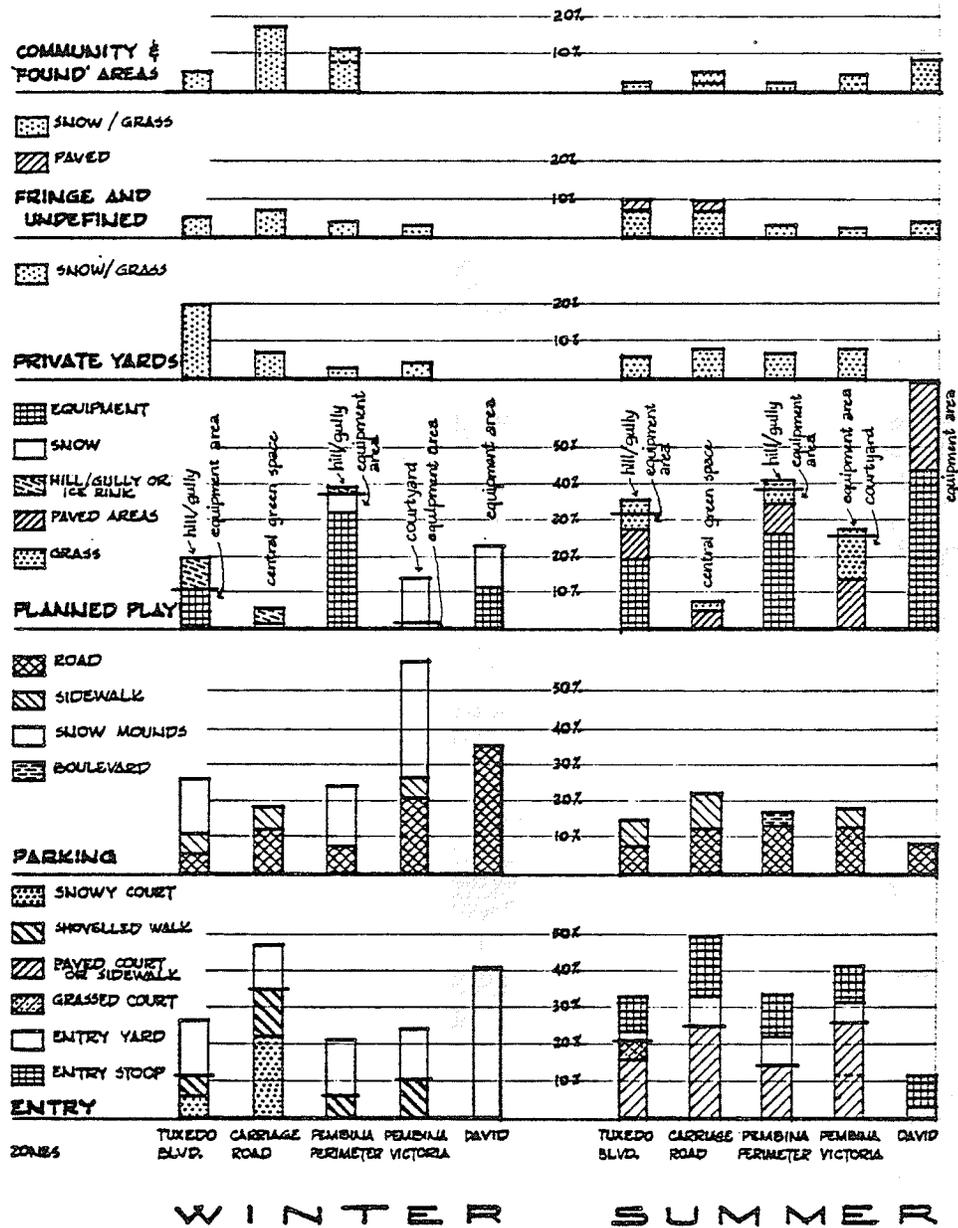


FIGURE 41. DAVID : PERCENTILE DISTRIBUTION OF ACTIVITY IN ZONES

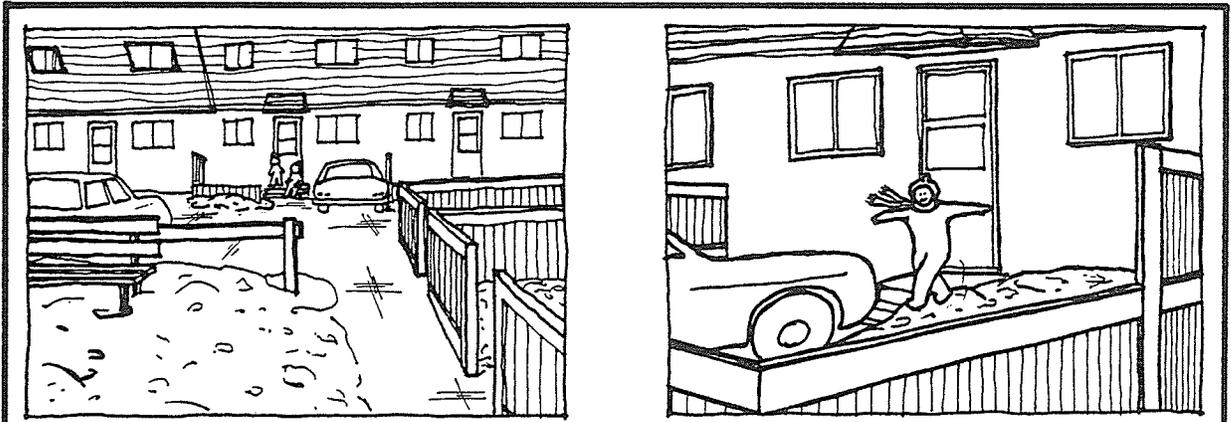


FIGURE 42. DAVID ENTRY ZONES

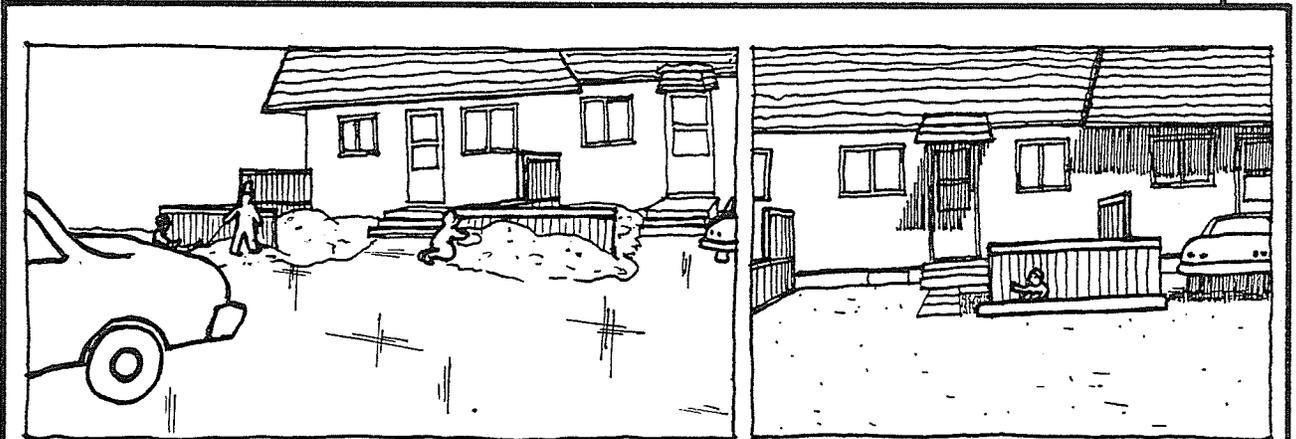


FIGURE 43. DAVID PARKING ZONES

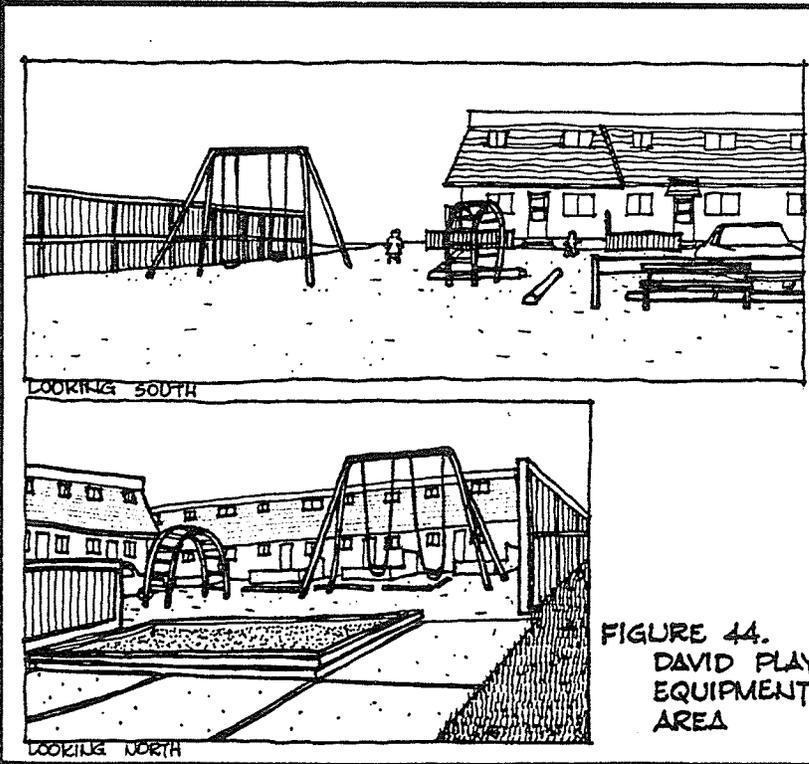


FIGURE 44. DAVID PLAY EQUIPMENT AREA

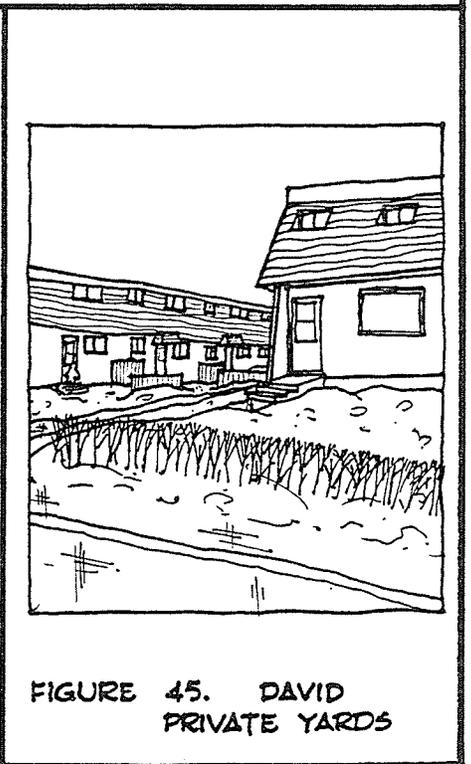


FIGURE 45. DAVID PRIVATE YARDS

play as well as some sliding, on piles of snow adjacent to the fence. The entrance steps, snowy yard, and shovelled parking stall were equally used. In summer, unoccupied and watching activities prevailed, and as in other projects, the entry steps accommodated more play than did the grassed yards. The parking stalls were unused for play in summer.

(i) The majority of winter activity occurred where snow was the deepest, either from drifting around the fences, or from the shovelling of the individual parking stalls. The yards offered the only deep snow play clues on site. There were no higher sledding or climbing areas, and this probably contributed to the choice to play in the yards.

(ii) In summer, activities were mostly short-term, and appeared to consist of a search for friends or clues to spark play. This low use was interpreted to be the result of boredom, rather than a preference to play beyond the yards in the highly visible equipment area. Many children watched over the internal space, from the bedroom or kitchen windows, content to play indoors where there was an equal potential to view the limited variety of activities in the small project.

(iii) In addition to car parking, the yards accommodated garbage cans; and since the yards on the living room side had no fencing or sense of privacy, the entry yards also served for overnight storage of play equipment, and family activities of a private nature. This left a limited amount of space for play, and restricted the nature of activities that could occur; this probably contributed to the paucity of use.

(iv) Half the parents interviewed felt the well-defined and enclosed yards were the most suitable place for play in both seasons. This was not significantly different from responses in other projects, despite the convenience of and visual control over the adjacent play space, or the seeming inadequacy of the yard size.

(v) The adult survey revealed that children occasionally played on fences, with few causes for worry. However, little fence play was observed, confirming that it was not a frequent occurrence. Considering the popularity of climbing fences of similar heights in other projects, this low use did not seem to result from concerns for personal safety or a lack of challenge. This indicated that the attraction of fences for play had some roots in the presence of other people: an audience to impress, on-going activity to watch from high, or the ability to escape surveillance when fence play was forbidden--all of which were noticeably absent in the interior of this project.

2) Parking zones (See Figure 43, p. 200)

The two dead-ended parking zones each served for access of 7 cars, and for parking of 2 cars. In winter, these accounted for the second highest proportion of play in parking zones of all projects. The use of roads for play was actually higher than for other sites, however the others had snow mounds or collector sidewalks as components of this zone, which contributed to the overall amount of play; 'David' had no mounds or sidewalks. In summer, the proportion of activity on the drive-ways decreased significantly and they were of lower than average

popularity for play.

The minimal transition between parking and play zones, together with the extension of the paved surface into the majority of entry yards, contributed to a spillover of activities onto the road. The adjacency of parking and entry or play, without the intervention of sidewalks, required that children cross the road to reach any areas of the project. Together, these contributed to playing on roads, particularly in winter, when the snow cover further blended the zones into a single perceived space. The discrepancy in amount of use between winter and summer may have resulted from the greater motivation to use the metal equipment in warm weather, the lower activity potential of the driveway in the absence of manipulable snow, and the availability of the same hard surface material to enable the desired activities within the larger, play space.

(a) Roads

(i) Manipulative snow play was the major winter activity on the driveways. Clearing of the small parking lots generated little snow, which was distributed in small piles (too low for climbing or sliding) against the entry yard fences. Thus the high winter use was not attributable, as in the other projects, to the incentive offered by high mounds. Possible reasons for the popularity included: the fact that edges of the driveway offered the only variations in snow level other than in the entry yards; the lack of other interesting winter activity clues in the project; and the absence of fencing or other elements within the play space to encourage drifting and enable similar activities. Children were observed to use the icy driveways for a minimal amount of make-

shift sledding or skidding en route from school. Because of the lack of collector sidewalks, the roads were the only suitable surface for these activities. Older boys used the driveways for hockey, much to the annoyance of the tenants.

(ii) In summer, unoccupied walking and watching activities accounted for the minimal use; children rarely lingered on the roads, and used them as paths. Although no youngsters were observed riding wheeled toys, the survey indicated that children did ride on the drives and caused annoyance or worry to half the parents interviewed.

(iii) Although children had to cross the driveways to reach the play area or visit friends, this did not seem hazardous because of the slower and less frequent traffic than at the parking lots in other projects. Despite this relative safety, all parents interviewed expressed concern for children's play on them: an equal or greater percentage than at the other projects with larger parking lots or continuous loop roads.

3) Planned play areas (See Figure 44, p. 200)

The interior play area was visually and physically related to the entry and parking zones, somewhat like 'Perimeter'. The transitions between entry, parking, and play zones were less articulated than at any other project: there were no fences or level changes to differentiate the continuous paved surfaces of the play area from the parking lot. In summer, the area was defined by an outline of pre-cast concrete parking curbs. In winter, these curbs were buried and the area relied on definition by the texture change, from shovelled and well-packed driveway to

deep, powdery snow beyond.

(a) The play equipment area consisted of a conventional swing set and monkey bars, a small sandbox about 25'-0" away, and two wooden benches. A small grassed area at one end provided the only surface variation, but it was controlled to function for visual purposes only. This area revealed the second highest proportion of winter play in a planned play space, and accounted for the largest proportion in summer, of all five projects. This was probably the result of the presence of visible clues for play within the entry/parking relationship, together with the lack of alternative areas of interest.

(i) In summer, swinging and sand play were the predominant activities. The monkey bars generated as much climbing as did the benches and nearby cars--all of which had dangerous hard surfaces underneath. The extensive paved areas were not used for riding wheeled toys, except by older children en route to the public streets.

(ii) The sandbox had a 6" wooden curb; however, its need for replenishment indicated that much was lost, to the wind, by children transporting it, or by spilling over the low edge. Manipulative activities were short-lived, possibly because the uncared-for sand, which was full of dirt and litter, did not respond to shaping; or because of the absence of other children or adults to stimulate and maintain interest.

(iii) In winter, the equipment area generated both swinging and snow play. The most-used portion, as indicated by tramples in

the snow, was the area around the swings. Much of the snow was untouched throughout the season, indicating that children were not motivated to run or jump on the smooth cushion. In other projects, on the other hand, almost all areas were trampled at least to some degree; thus, it seemed that the low number of children in this small project, together with the windy location of this space, reduced the attraction of outdoor play.

(iv) All parents interviewed were satisfied with the ease of supervision of the central space, rating the location as 'good' to 'the best possible'. They also appreciated the amount of safe paved areas for riding wheeled toys. However, only 50% felt the play area was suitable for their youngsters; others expressed concern over safety in the space, particularly because of older children riding bicycles and motor bikes within the equipment area.

(v) Half the parents were satisfied with the amount of play space, but complained of the lack of equipment. The remainder rated the facilities as average.

4) Private yards (See Figure 45, p. 200)

These were unused for play by 4-to-7-year-olds.

5) Fringe and undefined areas, and community and 'found' areas

These zones, in summer, functioned minimally for wandering and visiting friends down the street; however, behaviour traces indicated greater use than was observed. The boulevards bordering the site had worn areas in the grass as well as heavily trampled snow. There were no peripheral public sidewalks for this project, and children apparently used the boulevards as their own defined pedestrian route to school. The survey

indicated that, although it was discouraged, these areas were also used by older children for active ball games.

The 'found' vacant lot adjacent to the site was unused, however behaviour traces indicated that some play had occurred there: a worn path led to it from the equipment area, pits had been dug, and discarded materials had been arranged in neat piles. It is possible that this area attracted older children or non-residents.

6) Other general observations

(a) Impingement on family territory by children at play caused complaint by the highest percentage of parents, of all projects. This may have been provoked by the increased perception of ownership offered through the design similarities to detached housing.

(b) Children's satisfaction, as interpreted by parents, did not reflect the sense of boredom or inadequacy gained by the author. All parents interviewed agreed that the project was adequate for play, that there were an average number of things for children to do, and that the 4-to-7-year-olds enjoyed playing on the site.

(c) Parental restrictions were minimal in this project, and no one expressed concern over their youngsters' safety in wandering throughout the site.

(d) The size of project and the site planning enabled 'David' to superficially resemble single or semi-detached family housing, at the same density as the other projects. However, the advantages

for children at play in either single- or multi-family housing were not exploited: that is, there was less opportunity for always finding someone to play with; the project was too small to warrant elaborate play facilities, and thus offered a minimal amount of clues for play; and the individual family territories were too small to facilitate social groupings of children for play at home.

3. Summary of findings

The analyses made in this chapter provide important insight into 4-to-7-year-old children's play in the public townhousing environment in Winnipeg. The children's activity patterns have revealed some common characteristics, as well as some indicators of the adequacy or inadequacy of the built play environment in this form of housing.

a) Play circuit

Children make use of the whole site, in a circuit connecting entry zones, parking areas, planned play spaces, yards, and a variety of unplanned and 'found' spaces on or adjacent to the site. They do not remain in one area, regardless of the degree of planned provision therein.

This activity pattern is facilitated when openings between unit groupings enable convenient routes (both for children and for adults' convenience in fetching youngsters), and particularly, when the path system is a circuit that interconnects all spaces in the project. Extensive path circuits are essential and unifying components of a site. Their use as a 'highway' for young cyclists and pedestrians is enhanced when there are play nodes along the circuit, that are child-scaled and have definition as a place to play. When these nodes are at intersections of,

or are surrounded by paths, snow shovelling contributes clues for play along the edges.

b) High-use zones

Children play in activity-generating areas, where it is likely that they will see and meet their friends. In general, they play more, show greater diversity of activity, and make more noise, where the physical clues suggest alternate forms of behaviour and where these clues are along shortcuts or frequented paths. People, vertical elements, lengthy hard-surfaced areas, snow mounds or drifts, level changes, and malleable materials consistently stimulate play. The distribution of and accessibility to these clues, together with views to on-going activity, appear to affect use more than does the size or orientation of the area.

1) The majority of children's play activities occur in the transition area between parking and the units. This spatial relationship generates common daily activities that reinforce play, including adult movement between the car and the common unit entrance, and the resulting spontaneous meeting and visiting among neighbours. Entry zone areas adjacent to the dwelling offer children a location for impulsive play, a sense of belonging, a potential for meeting friends, and the chance to see novelties such as garbage collection, deliveries, or other adult activities. Parents often restrict their youngsters' play to the space fronting the commonly-used entry door because of its convenience to the unit for supervising and calling or fetching children.

When the entry zone incorporates a court, rather than merely a narrow, linear collector sidewalk, certain forms of play are enhanced;

also, children's activity and spatial preferences are satisfied, spilling over of play onto the closely-related parking spaces is deterred, and conflicts with adult movement are reduced. Small scaled, covered passages such as between units also respond to entry zone play.

2) Children inevitably play in parking lots, for riding wheeled toys, for engaging in active play, or for using them as wandering and viewing routes. When traffic dangers are perceived to be high, parents feel the need to restrict their children's wanderings and use of the site.

In winter, a major play attraction of parking zones is the existence of high snow mounds created from clearing of the lots. Snow play activities in vehicular spaces are undesirable for obvious reasons of danger and conflict, and because they encourage lingering on the road. However, children are consistently attracted to high, massive, and non-uniformly shaped snow piles, that can be approached from many sides, that can be gouged and shaped, and that offer a number of niches by their haphazard form. When a mound is about 4'-0" or higher, sliding activities are often initiated, and the icy driveway is used as the landing zone because of the increased speed, challenge, and danger thrills of descent onto a 'friction-free' surface. The presence of man-made toboggan hills does not help reduce the attraction to near-by snow mounds. The play activities extend into the spring season, when the melting snow forms streams and puddles.

Parking lots seem to be less attractive to children when both visual and physical connections via the road between unit groupings and play areas are indirect, whereas the links by the pedestrian path circuit are stronger. Also, parking lot play is reduced when a lengthy and varied paved circuit exists, with variations in level, view, and changes in

direction that interconnect all places of interest on site; and when snow mounds are located in a safe area that does not require access by the road, and that offers an adjacent, traffic-free spill-over space.

3) Planned play areas and public open spaces are used in conjunction with the highly popular entry and parking zones. However, their relevance to play and efficient utilization by 4-to-7-year-olds appears to depend on: the location and accessibility, views to on-going activity, the nature of play clues and/or apparatus therein, and the presence of other children to stimulate play. The two latter factors seem to be related to the project size.

Although easily and economically incorporated, flat open spaces that lack equipment or other facilities, and that are visually and/or physically separated from the majority of units, do not serve the play interests or needs of youngsters.

4) Private yards are occasionally used for an alternative private or enclosed space, or for ease of parental control over children's wanderings. Children's use of these yards does not appear to be related to design factors, however there are indications that, for various reasons, total enclosure of the yards, and all-weather doors from the living room side, are desirable.

5) All other spaces in a project are of minor significance for play. The use of fringe and undefined areas, and of community spaces, largely depends on: the clues in and ease of access to them, the views from them to other activities, and the alternatives offered in other site zones.

c) Daily and seasonal patterns

In general, more children play outdoors in the afternoon. Similar amounts of activity occur in sun as in shade during the summer. In winter, sunny areas are more attractive, and shelter from wind is of particular importance in the choice of locations. In both seasons, children tend to remain relatively close to their homes, with occasional extensions to the public spaces that are not related to their perceived section of the project.

d) Different age groups

Older and younger children generally play in the same spaces, and use the same play elements. Periods of age-segregated activity occur during school hours and in the evening. Parental complaints and worries over the compatibility of younger and older children at play roughly decrease with the size of the project.

e) Provisions for the four types of play

Children will not always travel to a specialized place to engage in manipulative play, which seems to be the most difficult to plan for. When children are confined or prefer to remain in an area that does not contain elements for manipulative play, they force the environment by digging grass or plantings. When sand is provided, parents often prohibit their children from playing in it, for reasons of cleanliness and problems of tracking it into the house. Parents frequently request that the sand be removed and the area paved or grassed instead; this is a waste of resources and leads to frustration and make-shift play that may take the form of vandalism.

Other play activities are more easily accommodated. The path

circuit and public open spaces are adapted for running and cycling. Fantasy is seemingly pursued everywhere. Climbing and balancing occur on fences, play apparatus, electrical junction boxes, garbage bins, trees, snow piles, and any other vertical elements. In particular, children play on elements that are between 2'-6" to 5'-6" high, or higher when there is a stepped level change to boost them. However, traffic dangers, maintenance difficulties, potential falls, and conflicts with adult activities are among the factors which affect children's opportunities for the various types of play.

f) Parental restrictions

Children are restricted by their parents to a greater degree when: supervision is difficult; the greater number of children in larger projects generates disruption and conflict; and anxiety is created by older or rough children, vehicular traffic, or other potential dangers.

g) Supervision

The ease of supervision is perceived by parents as more satisfactory when the kitchen window faces the most popular play zone: that is, the area with the most activity clues, and/or the play space related to the entry and parking zones.

h) Indoor play

In both seasons, a large number of 4-to-7-year-olds play indoors. Children watch active play or unit access spaces, both from ground and upper level windows. Parents confirmed children's use of the basement, the living level, and bedrooms, for play.

Annoyance from indoor play (noise, conflicts between family members, or maintenance difficulties) is not perceived by parents as a major

difficulty. There is no apparent relationship between the degree of annoyance and the frequency of indoor play; however, there is a small correlation with the design of the dwelling. In some projects, the 4 and 5 bedroom units have a living/dining room combination; these reflect the most annoyance, possibly because of the limited number of separate rooms that can function concurrently for play. Those units with a separate kitchen/dining area, or small units with a combined arrangement, are perceived as less problematic.

As they shift from outdoor to indoor play, children often bring their toys in, and presumably remove their boots, muddy shoes, or wet clothing. The majority of parents are generally satisfied with the location of the coat closet and basement stairs for this convenience. However, when both closet and stairs are centrally located, and thus encourage tracking through the house, parents are least satisfied.

i) Toy storage

A major tenant complaint is the overnight and seasonal storage of toys. The least dissatisfaction is found in projects where toys are stored in the fenced yards throughout the year. The most is found where the entry yards are unfenced and small, and in larger projects, where the fears of theft are increased and motivate many parents to store larger, expensive items such as bicycles in the narrow entry hall. This indicates that the concern or complaint is related more to the definition of the yards and the overall size of the project, than to the ease of access to the basement as a storage area.

CHAPTER IV

PROVISION FOR PLAY

The public townhousing environment must be regarded as a child setting, since children make the most use of all spaces within. Children between 4-to-7 years of age are among the most consistent users, particularly because their limited mobility restricts them to the bounds of their immediate home environment.

There are a number of forces which act upon the play of 4-to-7-year-olds in this context, including: the unique nature of the child's thought, ability, and interest; the social environment inherent in high-density housing for the low-income; the physical nature of townhousing projects; and the climatic conditions of Winnipeg. Recognizing that play is both necessary and beneficial, and that it can be encouraged or discouraged by the physical environment, the child's setting can be modified to enhance play.

The challenge to sensitively plan for play requires, first of all, a review of 4-to-7-year-olds' play desires and responses. This can be summarized into four categories of play:

- (i) Physical activity. Children need to practice most every physical and gymnastic activity, to develop and exercise their muscles and co-ordination, and establish their personal strengths, weaknesses, and capabilities. The environment must offer a number of opportunities for climbing, jumping, balancing, hanging by the

arms, riding wheeled toys, swinging, sliding, and running. These should be accommodated in a variety of ways which require some interpretation and decision-making by the child. Opportunities should enable: a perceptible change in position, speed, or movement in space, that is the result of the child's muscular exertion; the choice to progress and take calculated risks within graduated challenges, and thereby develop self-confidence; freedom from pre-determined or rigid activities; and some social interaction among participants.

(ii) Fantasy. Children need to practice their role-playing and representational capabilities, through fantasy and imitation. At this age, children rely on actual physical elements to aid their mental imagery: playing with toys, digging or building a space, and often extending to wild movements. Some elements and settings in the environment should be manipulable and flexible to enable both physical shaping and distortion in thought. Children become totally involved in fantasy, and should not be 'rudely awakened' by dangers, disruptions from other people or activities, or the imposition of expected behaviours and restrictions. The environment must offer some small-scaled places, that impart an identity as a place for play, and that are safe from traffic dangers. Some of these should take the form of an enclosed or separated space, whereas others should be physically and visually related to everyday activities.

(iii) Manipulation. Children need opportunities to alter elements in the environment; to express their territorial instinct and possessiveness, their growing individuality, and their creative

abilities; and to practice and develop their manipulative coordinations of the mind, eyes, hands, and fingers. The environment must offer flexible situations and materials that enable digging, rearranging, and building, whereby the child works with and represents relationships that exist in the real, physical world. Without this opportunity to control, or to have a perceivable effect upon the environment, children are more likely to react with some form of vandalism or abuse.

(iv) Unoccupied behaviour. Children need to engage in unorganized activities such as watching and resting, both of which are important for learning and mental exercise. Children tire easily from physical exertion, and as their interests shift, they tend to alternate between active and passive play. The retreat to more passive behaviour should be accommodated within each play facility, as well as in other, more secluded locations. Watching and social interaction are often inseparable at this age; together, they are major stimuli to spark the imagination and generate diverse play behaviour. Many unoccupied pursuits will therefore benefit from visual or direct contact with activities that are varied, impressive, or novel.

Further to this recognition of play responses, the creation of responsive environments for the play of 4-to-7-year-olds in public townhousing in Winnipeg requires a consideration of the following:

(i) Child satisfaction. The child's satisfaction is an ultimate goal in play provision, and the success of the play environment will be reflected by his free choice and initiative in using what has been provided. Places intended for play should offer a variety of

clues and elements that stimulate and are responsive to his input and preferences; otherwise they will be neglected or mis-used, and be regarded as a waste of valuable land and resources.

(ii) Contribution to development. Play activities that are initiated and enjoyed by the child can lead to important by-products: learning, acquiring skills, coping with emotional or psychological conflicts, and developing personality and creativity. Rather than applaud the child for his ability to contentedly adapt to most anything, designers should provide meaningful play opportunities that are known to benefit the child: by enabling direct actions and manipulations, as well as practice in exercise and thought; by encouraging social interaction and decision-making; by offering a progression in the complexity or difficulty of activities; and by minimizing pre-determined or unnecessary limitations on play.

(iii) Useable play areas at time of occupancy. Tenant participation in providing for children's play has many benefits related to increased user satisfaction, decreased vandalism, and added play value and meaning to children who are involved in the design and construction. However, in the situation of provision within multi-family housing, there are large numbers of children who need play spaces and clues as soon as they move in.¹ The child's need for security must be compensated at the critical period of adjusting to a new neighbourhood. The familiar and stable elements of a pre-planned and completed area will offer the assurance and incentive to make this adjustment easier. Therefore, all play areas

¹Bengtsson, Child's Right, p. 110.

must be useable when the project is initially occupied; that is, they must offer some form of all four categories of play.

(iv) Compatibility between user groups. There is a need to unobtrusively guide the child: to encourage certain acceptable behaviours and discourage unacceptable ones. Conflicts, between incompatible play activities or with the various functions and user groups of a multi-family housing development, must be minimized; concerns for safety, privacy, and ease of maintenance must be resolved; and the child's need for control and freedom from external constraint must be respected.

(v) Climatic response. The distinct climate and seasonal differences in Winnipeg have the potential to increase the variety and the value of children's play. Provision should exploit the immense opportunities of snow by a consideration of, and planning for: drifting, the artificial snow clearing process, and the effects of sun and wind upon the play environment. Concurrently, the designer must anticipate the spatial transformations between seasons, to enhance both warm and cold weather play. The prevailing winds in Winnipeg are affected by unit massing and the site surroundings; changes in wind direction and wind funnels are often impossible to anticipate. Therefore, the location of some elements to encourage snow drifting or to reduce exposure to winds and the snow build-up on apparatus might be more logically considered after the first winter of occupancy.

(vi) Multi-functional design. The overall guiding principle is that provision for play should be a site planning parameter: an inherent part of the design process at the initial stages of

consideration. Due to cost constraints, play spaces and elements must be an integral part of planning that cannot be cut back. An emphasis on spatial elements that double for play, and that are multi-functional whenever possible, will both increase play opportunities and be less susceptible to elimination. Because space is at a premium, designers should emphasize well-defined circulation and site planning that creates the greatest variety of identifiable spaces.

Equipment and facilities should be chosen for their popularity as well as for the diversity of play opportunities they offer within a limited size of space. Complex combinations of compatible play functions and apparatus that enable a variety of uses are conducive to decision-making interpretations, sustaining interest, encouraging social groupings and interactions, and responding to large numbers of children who do not want to wait in line to play. All street furniture must be durable to withstand their expected use in play; certain elements such as fences, sidewalks, and steps or ramps should also enhance play.

The added expense of increasing the durability and useability of all play and multi-functional elements will help extend the life of facilities and reduce losses through vandalism or destruction. In this way, the increased capital and expected maintenance costs will be distributed over a longer period of time.¹

Finally, sensitive provision for the play of 4-to-7-year-olds

¹Dattner, Design For Play, p. 40.

in public townhousing in Winnipeg requires a response to the play activity patterns of youngsters in this age group as well as the various physical qualities that maximize play opportunities and minimize conflict.

It is clear that, although children will interact with virtually all spaces in the housing site, certain component zones of projects will inevitably attract high use: in particular, the spaces related to unit entries and parking areas, and in larger projects, the public open spaces and any interesting planned play facilities. The findings have provided insight into appropriate ways of planning the site zones, to maximize play and development through the seasons, while responding to the various concerns and needs of other user groups in the project.

The intent of the following two chapters is to promote these understandings of physical characteristics, in the form of design statements for play provision in public townhousing. The first of these design chapters presents performance rationales, derived from the research in chapters I, II, and III, which are translated into design guidelines in the subsequent chapter.

CHAPTER V

DEMONSTRATED RATIONALE FOR DESIGN GUIDELINES

The design concerns isolated in this chapter represent the synthesis of both literature and case study research data, collected in this thesis. As such, they are the basis of translating behavioural data into architectural form. The rationales explain the intent of, and reasons for the derivation of, the ensuing design guidelines. They are intended to serve as a framework for interpretation as well as post-construction evaluation by the designer.

The demonstrated rationales are organized in the same sequence as their respective design guidelines, and are correspondingly numbered and titled to facilitate cross-reference between them. The series of statements in both these chapters begin with components that are applicable to general site planning in all public townhousing developments, and proceed to those aspects that are relevant to specific zones of projects. In this way, planned-for-play spaces are interspersed and discussed with the site zone to which they are related.

1. Site Planning for Play in Relation to Project Size

Noise and space problems associated with children's play are of minor concern in small projects, both because of the few child residents and because the youngsters may be accepted more readily into the play activities of the neighbouring families than in larger projects. The few children living on site can obviously make inefficient use of play

facilities provided, thus leading to discontent over wasted resources. At the same time, the mixing of child tenants and neighbourhood playmates will promote use of the project's play provisions by outsiders; this results in difficulties of control, security, and privacy. Therefore, very small projects (i.e. up to 15 units) do not warrant the development of a functional area for the specialized purpose of play.

As the project size increases, the larger number of children using the site tends to generate dissatisfactions resulting from the overcrowded, noisy, and often untidy conditions. Residents of larger projects perceive the developments as less safe for youngsters, and parents will commonly restrict their children to play near home. An arrangement providing a number of identifiable and localized spaces will increase the child's choice and diversity of safe play locations.

The subdivision of larger projects into sections will facilitate the creation of central and interiorized spaces for groupings of child residents. This will help minimize concentrations of children in areas adjacent to the units and facilitate the restriction of youngsters' wanderings. Subdividing a site will also reduce the perceived size of the project, thereby minimizing parental concern over children's roaming beyond the unit.

2. Access Openings to Private Zones

Access to the private sides and interiorized areas in both winter and summer will be largely from the entry side of units. This route should be facilitated by creating passages through attached units and between small groupings of units and identifiable sections of the project. In this way, children will more likely disperse and make

integrated use of the site, and adults will not require an inconvenient route to fetch youngsters.

Some openings between or through units should be roofed, so they double as sheltered play spaces. An 8'-0" high opening with a sloped roof will tend to challenge children to throw toys, tools, and other objects onto the roof; this is a potential danger to passers-by below. Therefore, a flat roof or a passage underneath the overlapping upper levels of adjacent units are preferable solutions.

Children can be expected to group in these access openings, particularly when they are transitions to play areas. Walls and ceilings of the passages must be washable and/or paintable, in anticipation of graffiti, mud, and snow balls. The bordering units should have additional sound-proofing and no windows opening onto the space, so that children do not impinge on privacy or break windows and tear screens. However, it is desirable to facilitate visual control over these access openings from some units, such as those opposite to the passages.

3. Paved Path Circuit

The paved pathways in a project must be dually considered as a pedestrian movement system and as a play zone that integrates each play area. Paths must be wide enough to simultaneously facilitate the direct movement of adult pedestrians, the meandering of children, and the reckless speed of cyclists.

Paved paths must accommodate children's desired movements throughout all open and public areas to minimize abuse of grassed spaces. The pavement should flow and curve, reflecting the way people tend to travel the shortest route between destinations; therefore, corners should be

rounded and never sharp.

Children will be encouraged to remain on a planned path system, provided that it is a continuous circuit incorporating: direction changes, ramped level changes, and a choice of routes to enable alternate views to all play areas and major activity-generating zones on site. A circuit alone, without these qualities, will not effectively interest children and they will prefer the parking lot for their wheeled toy activities, invade play areas for cycling, or remain in entry zones where they tend to generate greater conflict with adult movement.

Consideration should be given to widening and defining areas along the circuit, where snow from the paths may be piled to contribute to play opportunities. A low fence, bench, or large boulders in some locations such as the junction of paths will also encourage natural snow drifting. However, this must not be promoted immediately adjacent to the parking lot. A fence separating the lot from the sidewalk is undesirable because it would offer an edge for piling snow, encourage balancing and spillage of play activities onto the road, and promote climbing onto adjacent cars.

Paths in the entry space should be wide enough to allow adult and child movements to co-exist. Long, straight sections of pavement are conducive to older children's active ball games and fast cycling or skateboarding. These activities may conflict with pedestrian movement, cause window breakage, or disrupt the youngsters, and should be discouraged by constrictions and jogs in the pavement.

The parking lot sidewalk should direct movement towards the grouping of units so that the pedestrian connection between adjacent groupings is more conveniently accommodated on the sidewalk rather than across the parking space. This will help minimize shortcutting across the lot. A

wide opening linking the unit grouping with the sidewalk and a continuation of the circuit through and beyond that grouping will increase the strength of this connection.

The paved path system should include routes to the private sides of units; this is particularly important when a central play area is located therein. The circuit should be planned to prevent disruptive shortcutting, while enabling an overview to play activities and spaces.

4. Entry-Related Play Area for Each Grouping of Units

An entry-related play space for each small grouping of units is the single most important planned play area in all public townhousing projects having over 15 dwellings. Units should be arranged to inherently create an area suitable for play immediate to each house; in this way, a number of small entry-related play spaces or 'courts' will be dispersed throughout the site. This will help minimize concentrations of children in areas adjacent to particular units, and will accommodate both adult and child preferences for close-to-home play activities.

A linear arrangement of units, or an area that does not offer a sense of small-scale and of enclosure, does not respond to the spatial preferences exhibited by children at play, nor does it provide a physically or perceptually delimited place to contain or restrict children. This makes supervision difficult from inside the unit. Visual control is also hindered beyond a distance from which one can recognize a person and/or his actions; this maximum range is around 70'-0".¹

Whenever possible, a clustering arrangement shall be used because it

¹Cooper Marcus, "Guidelines," p. 375.

best creates a small enclosure and is readily identifiable as a group. It also helps reduce winter winds, and thereby prolongs the use of the space throughout the year.

A 14-unit grouping has been found to provide a comfortable 'neighbourhood' that is clearly designated for a group of families, and that results in increased concern for and control over the shared space and activities therein.¹ This size of cluster grouping is appropriate for the entry-related play interface and it enables each dwelling to have visual control over the localized play space.

The semi-public functions and play activities that are inherent in dwelling unit access areas are incompatible with privacy requirements; therefore, the unit windows overlooking the entry-related play area of each unit grouping should be in the kitchen and/or a vestibule, but not in the living room.

5. Separation From the Parking Lot

Children must be protected in their play area by a separation from the vehicular spaces; at the same time, a visual and physical connection is required between the entry and parking zones. A fence separation will best minimize the strength of the parking/play link, and discourage the children from spilling over from one to the other or using them as parts of the same space.

It is not advisable to encourage fence play adjacent to the parking lot. Since children will climb and balance most often on a vertical element between 2'-6" to about 5'-6" in height, and since a low separation

¹Maunu, "Public Town Housing in Winnipeg," pp. 172-174.

is not an effective barrier, the preferable solution is a high fence. A significant height difference between the top of the fence and its horizontal bands or lowered sections will help deter climbing onto the top and use of the fence as a balancing circuit.

It is important to offer some view, at the child's standing or sitting height, from the entry-related play area to the activity-generating parking lot; this facilitates watching on-going activities that interest, stimulate play, and provide learning experiences. It is equally desirable to limit children's views from the parking lot into the play spaces of adjacent unit groupings; in this way, the better or more interesting visual overview from sidewalks will reduce children's use of the road for wandering and unoccupied activities.

A 6'-0" high, semi-transparent fence will help control views into the entry space from the parking lot by reducing visibility to 50% (in the spaces between fence boards) yet will permit children a full view beyond from a close range in the play area. The semi-transparency will also reduce the shadows cast by the fence onto the play space; this could otherwise be detrimental to winter play initiative.

6. Separation From Collector Sidewalks

Circulation must be unobtrusively controlled to minimize user conflicts in the entry zone, since it is the most highly used of all public townhousing areas. Vertical elements and level changes define and delimit the extent of a space, help contain children, control movement, and double as play clues. Small-scaled separations will offer an additional sense of security to children and increase the identity of the space for play.

To retain the visual link between the units and children at play,

elements should not exceed 3'-0" in height unless they are very narrow (e.g., trees).

Winter play possibilities in the entry space will be increased when the play portion is at a lower level than the adjacent collector sidewalk; when the path is cleared and snow is piled along the edge of the level change, the height of the landform will be augmented to add play clues. The collection of deep snow may be further enhanced when the separation of play area and path is created by long, low space-dividers. These help define where snow is to be piled, and can be oriented to encourage snow drifting by locating some at right-angles to the prevailing winds.

7. Subdivision of the Entry-Related Play Area

Children prefer small outdoor enclosures for many of their passive, group or solitary activities. A number of niches minimizes disruption or interference between children, and small divisions inherently create obstructions to help reduce active group play and noise, particularly by the older children who share the space.

A variety of materials, textures, and shapes should be exploited to subdivide the play area. The small-scaled space dividers should be multi-functional to serve as climbing elements, play tables, seats, wind and sun screens, and snow drift collectors. These elements must be durable so the intensive use by children will not be interpreted as vandalism or create maintenance problems. Wood should be stained, and sturdy, well-anchored construction must be used.

Varying heights of connected elements will add challenge and increase caution in stepping or jumping; this will help reduce conflict

between passive play in the niches and active use of the low walls. Solid partitions that are uniformly level should be restricted in height to prevent their blocking a view from the unit.

8. Duplication of Facilities in the Entry-Related Play Area

When a popular play element is located in one play space adjacent to a small group of units, and not duplicated in other entry-play spaces, that grouping will be overcrowded with children from other parts of the project. This will lead to annoyance to families bordering that space, as well as to parents in other groupings who are unable to keep their children within view of their own units.

Playground equipment is a noise generator and must not be located close to units; also, its expense is a deterrent to duplication in every entry zone. Multi-functional elements are more economical and can be provided in each entry space; through varying details and forms, they will offer an identity to the unit grouping while maintaining similar play possibilities to those in other entry zones.

Where no socially-acceptable digging or 'building' area is provided in the entry zone, children force the environment for this purpose--digging lawns and gardens, gouging wood, and other forms of vandalism. The alternative to provision for manipulative play activities is to pave the entire area and eliminate all yielding materials; this is undesirable for both adult and child values. Although sand is a cleaner medium than dirt, and may be preferred from the mother's standpoint of cleanliness, it is unlikely that budgeting would permit provision of a sand pit for each unit grouping, especially in projects with more than 5 or 6 groupings. A dirt area that is integrated with tree planting in the entry space is more

likely to survive financing cutbacks because of its value for aesthetic appeal. However, dirt should never be the only manipulative provision within a project, because of its all-too-easy conversion to planting.

Locating loose materials that cling to children in close proximity to the unit necessitates planning to maximize the amount of dirt or sand that will be shaken off the child's clothes and shoes before he enters the house. A circuitous route, creating a greater travel distance to the unit, and a total or partial enclosure, that requires children to climb over an obstacle before leaving the 'messy' area, together will help retain the sand or dirt in its place and minimize tracking into the house. A low enclosure has the added benefits of: offering shelter from wind to minimize the blowing of sand or dust; providing shade from the summer sun; and protecting both the children at play and any landscaping materials within from fast cycling and shortcutting.

9. Dirt Provision in the Entry-Related Play Area

The aforementioned dirt-play area must be relatively large to enable children to dig and build without damaging any trees planted therein. However, if it is too large, or poorly defined and contained, parents will initiate planting shrubs and flowers to enhance the entry zone--thus depriving children.

It is to be expected that some children will play within the dirt itself. Gently sloping the sides of dirt-play planters will help retain some of the dirt that will inevitably spill over. The planter may be located over a grassed surface, so that any spillage will not become untidy or combine with water to form mud puddles. Raising the dirt to the level of a child's standing/working height, and creating a hard-

surfaced area around the dirt when it is at grade, both minimize the need for children to climb into the dirt itself and thereby damage the tree and/or their clothes. A heavily-textured surface surrounding the base will reduce cycling or active play that would disrupt manipulative activities.

10. Sand Provision in the Entry-Related Play Area

Sand must be well-contained to minimize spillage and blowing. A low curb or level change of less than 12" is insufficient. An enclosing wall helps knock sand off children's clothes as they climb over it; however, it impedes sweeping spilled sand back into the area. Sinking the pit is more responsive to the need to sweep the sand and to facilitate wind blowing it back to the lowest part of that area.

For sanitary reasons, sand needs good drainage, exposure to the sun at least 4 hours per day, and an occasional raking. Connection with the city storm sewer is necessary, since the clay soils in Winnipeg are not conducive to natural fast drainage of standing water.

Many public housing families own cats, who use the sand as a bathroom; broken glass and litter find their way into sand pits; and sand 'disappears' throughout the season and must be replenished. Although the location of sand in a small grouping of units may foster some tenant concern for its upkeep, the MHRC must be willing and responsible for maintaining any sand provided. This should be attended to at least twice a month during May through September.

Children often transport sand in small piles to the adjacent area or to the sides of the pit. A series of steps will facilitate the need to create piles while retaining the sand within the contained area; a

central table in the pit will also serve this purpose. Low walls, corners, and edges in the pit will facilitate building activities. Spilled sand will kill grass, and when the two materials are close together, the probability of spillage and of children transporting it to the grass increases.

When sand is too fine, it is not shapeable and will blow away. An alternative is to use a mixture of sandy gravel and clay; this is a more stable material and has more play 'building' value.¹

11. Grass in the Entry-Related Play Area

Although children use hard surfaces for most of their play, grass is appreciated both for aesthetic reasons and for its cooling effects in summer. However, grass is easily abused in active and manipulative play.

To minimize wear and tear, grass should be in a defined and semi-enclosed space, preferably along an edge and where shortcutting will not contribute to deterioration and further abuse. When no opportunities for digging activities are provided in the entry zone, then grass should not be provided except within the controlled entry yards.

A roughly-textured material may be used to define the grass edge to deter cycling. Gravel should not be used for this purpose unless it is fixed in a bed of asphalt, because loose rocks are too easily thrown about.

12. Definition of Unit Entry Yards

Entry yards serve an important function as a transition from the semi-public entry/parking interface to the private dwellings. They are often used for casual storage of playthings and should help to contain

¹Dattner, Design For Play, p. 77.

children or to separate them from quarreling. Adults symbolically understand the yards as private family territories, however children must confront strong physical barriers to respond to the 'keep-off' signal of other families' yards.

Fences offer the most obvious barrier to deter children from wandering, trespassing and causing annoyance, or trampling the grass; they also offer a territorial designation of the child's ownership, and increase the security of his possessions in the yard. However, fences often act as a stimulus to play rather than as a deterrent. An angled fence top presents challenge, and chain-and-bollard fences encourage dangerous play activities because of their movability. To minimize the potential popularity of property fences as play objects, they should be too high to be an easy jumping barrier, too low to be a challenge in climbing, and too narrow to allow successful balancing. There should not be a gate from the collector sidewalk to the unit path; this will interrupt use of the fence as a play circuit.

It may be preferable if tenants must install their own party wall fence separations, to motivate them to show more care, upkeep, and control over children's use of them. Inexpensive metal or plastic decorative fences can be used since these are unsuitable for play activities. When this is implemented, there must be well-defined staggerings, wing walls, or other means to indicate the extent of each yard and hint at enclosure.

When entry yards are raised above the semi-public space level, it gives a stronger definition to the yards and the sense of territorial possession. However, a stepped level change encourages children to leave bikes and other large toys sprawled on the collector sidewalk rather than

bringing them into the yards; this creates conflict with pedestrian movement. A very small level change, about 6", is less likely to cause this reaction, however it is a potential tripping obstacle. A surface colour and/or material change at the transition between collector sidewalk and unit path can be used to heighten the separation and definition between semi-public and semi-private spaces.

13. Outdoor Storage in the Entry Yard

Children in public townhousing have large and often expensive playthings, including bicycles, sleds, and wagons. These are usually left outside the main entry door for casual, overnight, as well as seasonal storage. This often leads to problems of theft, vandalism, or rusting, and to the overcrowded appearance of yards covered with toys.

These problems, however, do not always provoke carrying large items into the house, wherein there is no place for storage other than in the basement or the hallway. It is especially inconvenient to haul things in just for overnight storage.

An outdoor storage facility should be provided at ground level on the commonly-used entrance side of the unit. This will respond to that yard's predominant use in both seasons, and will enable children to remove and replace their toys without assistance. As a rough guide, it should be large enough to contain at least one bicycle per bedroom.

The storage facility can add to the definition of the yard, by becoming a component of the fence, or it can extend part-way across the unit facade, possibly as a built-in feature. It must not be high enough to obstruct any unit's surveillance over the entry-related play area or the parking lot.

14. Entry Porch for Each Unit

The entry steps leading to the unit door frequently function for adult leisure and child surveillance, as well as for children's passive play alone and in groups. The sense of belonging, the proximity, the raised definition, and the steps for sitting, are factors in its markedly higher use than the rest of the yard.

A porch rather than mere steps and a landing will offer children a raised niche for passive play, with security and overview. The railing's hint of enclosure and the stage-like level change are clues and props for play. The porch should aid in territorial definition of the yards at the party walls; it will help minimize conflict between children perching and adults maneuvering to get by; and it will respond to adult tendencies to remain close to such things as the telephone, cooking, or laundry for their at-home leisure activities.

The fact that adults can make a beneficial and stimulating contribution to children's play has led to many suggestions that play spaces should contain comfortable seating and park-like surroundings to entice adults. In the public housing context, very few adults frequent the public spaces regardless of their attractiveness. Since it is easier to accept, and work with, adult activity patterns rather than attempt to change their living habits, and since many of both child and adult pursuits occur within the entry spaces, this comfortable seating should take the form of a space that can accommodate lawn chairs near the unit, and/or wide steps to the entrance porch.

15. Small, Dead-Ended Parking Lots

Children will inevitably play in parking lots. Both actual and perceived dangers to youngsters playing in vehicular spaces may be reduced by the use of small parking lots serving a limited number of cars, together with dead-ended traffic lanes which tend to foster slower speeds. Individual lots serving up to 7 cars¹ adequately resolve these concerns, however such an arrangement is not efficient in parking cars.

By dividing parking lots into small sections, and/or using single-loaded lots, the length and width of unobstructed road space will be restricted. In this way, the potential for play will be hindered and children will likely choose more suitable areas for their play.

16. Parking Lot Subdivisions

The subdivisions in a parking lot must be distinct enough to caution drivers to slow down before entering. Jogs, sharp turns in the driveway, and sidewalk projections may be used to separate the subdivisions. However, these must not create a blind spot; children playing and drivers must both be given adequate view and warning of each other's presence. A separation between subdivisions should therefore be wide enough so that children playing there are readily visible between the parked cars. There must be no physical obstructions over 2'-6" in height at entries or subdivisions of the lot that would hide children or otherwise interfere with the visual link between children and drivers.

It is important that elements on these divisions accommodate only passive and 'interested' activities that will not likely spill onto the

¹Christopher Alexander et al., Houses Generated By Patterns (Berkeley: Centre for Environmental Structure, 1969), p. 70.

road. This precludes high and narrow fences, moveable elements, or other devices which would be used for and enhance play activities and challenges. Trees should not be planted in the jogs or boulevards of the parking lot, because some snow cleared from the lot or paths flanking it will be piled there. Children will often damage trees while playing in the snow because they offer a vertical element for swinging or leaning.

17. Means to Reduce Traffic Speed

Children are relatively unco-ordinated and their movements are unpredictable and often unconcerned; the approach of a car must offer adequate warning for them to recognize and respond, as their reactions will be exaggerated or delayed after being deeply involved in play or thought. Adequate warning time is especially crucial in winter, when greater caution is required for a safe retreat off icy driveways.

To help slow traffic, speed bumps should be used in strategic locations such as at each street entrance to the lot and at the transition between parking lot subdivisions. It must be expected that some maintenance costs will incur, because front-end loaders and scrapers often damage the bumps during winter clearing of the lot.

Constrictions at the entrances cannot be used to reduce speeds, because of the 18'-0" minimum width required for two-way traffic. Signs limiting speeds to 5 m.p.h. may be posted, however these have not been effective in the past.

18. Loop Roads

Loop roads should be avoided whenever possible, because they generate faster and heavier flows of through-traffic. When site constraints dictate the use of loop roads, planning should emphasize means to reduce

speeds, to minimize conflict with child-pedestrian circulation throughout the site, and to avoid the creation of a green-space in the centre of the loop that would require access by crossing the road.

By alternating the position of the parking stalls and of the driving lane at each subdivision of the lot, it is possible to create sharp jogs and a weaving traffic route to slow speed. The majority of car stalls should be located on the side furthest from the units; in this way, the driveway and curb where children tend to play will be clearly visible to drivers, and the approach by the driver to the car will be across the road, thereby providing a preview of children in the area.

19. Parking-Related Play Area for Lots Serving up to 25 Cars

In winter, a parking lot collects a large amount of snow which must be stockpiled or hauled away. As a free resource, snow should be exploited to create play opportunities; therefore, an area should be planned for depositing this snow, to maximize the suitability and safety of children's play on snow mounds. Only one space should be provided within each lot for this purpose, because a linear spread or a distribution of snow in low, uniform piles, does not offer as diverse play possibilities as does a high mound.

It will be a managerial responsibility to ensure that the privately-contracted snow clearers co-operate with this intent, rather than pile snow at midpoints along the driveway, against fences, or on boulevards near driveway entrances.

The play area should be located at an end or side of the parking lot, to allow for the highest possible mound without creating visual annoyance to nearby units, or a visual obstruction for on-coming cars.

A location near the least amount of traffic is important, in anticipation of some play spilling onto the driveway. The space must not interfere with pedestrian activity to and from cars and units. Manipulative snow play activities will extend onto the pavement surrounding the mound; this may necessitate a widening of the sidewalk area.

20. Parking-Related Play Area for Lots Serving 25 or More Cars

Parking lots serving 25 or more cars will collect enough snow for relatively high mounds that enable sledding. The snow mound area in these lots must be adjacent to an unobstructed landing zone--free from parked or moving cars, trees, fences, and major pedestrian routes. This requires extensive space which must be useable for summer play as well.

When the landing zone is well-packed and icy, it is more responsive to play and sliding activities. It is relatively easy to direct the snow clearers to shovel an area that is at the same level as, and in line with, the parking lot, and to pile snow from the lot onto an adjacent defined area.

A fence separation from the parking lot will help contain children in the play area, but there must be a clear opening, wide enough for access by the front-end loaders or scrapers. This fence must be able to withstand possible collisions by the machinery and to support the pressure of the adjacent snow mound; concrete block is the most suitable material. It must be kept low, to facilitate dumping snow over the fence, as well as to minimize the dangers of falling when children inevitably climb and balance on top.

Some fast sledding and out-of-control children must be expected within the play area as well as in areas extending beyond the designated.

landing zone. This necessitates a clear space beyond the bounds of the play space; it must not have any physical obstructions that would restrict sledding or cause injuries from collision. A widening of the landing zone itself is undesirable, since that might encourage older children to use it for hockey. When space permits, it is advantageous to centre the snow piling area, with a cleared landing zone on either side; in this way, one side could be used for skidding and skating activities without interference with sliding on the other side. This requires clear access for the machinery on both ends of the fence separation, as well as an obstruction-free space on either side, for 10'-0" beyond the play area bounds.

The landing zone should incorporate a drain to help reduce standing water in the melting season. Part of the parking lot and all of this play area should slope to the drain; in spring, this will encourage children to gather at streams and puddles that are safely within the play area rather than in the middle of the vehicular space.

In summer, the play area should accommodate riding wheeled toys as part of the paved path system. The ramps bridging the surrounding sidewalks with the lower pavement of the play space should direct movement straight across the play area rather than toward the parking lot.

21. Hidden Garbage Bins and Electrical Junction Boxes

Garbage bins and electrical junction boxes, like other vertical elements and street furniture, invite play and climbing; these activities are undesirable because the children frequently damage the boxes and their play spills onto the driveway. Children are less likely to use or mis-use these items when they are located out of the way, both visually and

physically, from child routes to school, to play areas, and along play circuits. However, it is important that these facilities remain convenient for adult access from the unit, while reducing their visual presence.

It is desirable for both garbage bins and electrical junction boxes to be contained within a solid fence enclosure that is centrally located, but not adjacent to or situated to act as a focus of major shortcut routes or play spaces. Gates to the enclosure would invite swinging and damaging of hinges; a partial roof would impede garbage collection as well as encourage climbing and its use as a play platform. Vertical boarding will deter climbing activities, especially when no horizontal braces or 'steps' are exposed. It is preferable to locate the enclosure away from snow-piling areas since mounds would facilitate scaling of the fence.

22. Central Play Area

Central planned play areas, as noted, are warranted only in projects containing relatively large numbers of youngsters, such as those with over 50 units. These play areas will be used by children of all ages, and will generate more noise and active play than will other spaces because of their large scale, sense of being public and less controlled, and their primary devotion to play. It is essential that these areas do not interfere with adult circulation through the site or between cars and units, and particularly important that they do not impinge on the privacy of units. Central play areas must not be located overly close to a single grouping of units, nor immediately adjacent to the private yards. A clustering geometry best creates a void or green space buffer

to protect nearby yards; clustering can also be used to create a deep, squarish play space that will help bury the noise generated therein.

Central play areas must be accessible from all unit groupings. It is desirable to segregate them from vehicular spaces, by locating them internally. However, when a project is unable to support an interesting and elaborate play area, it should not be located internally; an empty or sparse layout will appear isolated and will be used minimally, and therefore not justify its cost. In such cases, it is better to integrate the group area with the location of the parking-related play space--as an extension of it.

The central play area should be separate from, but visually connected and linked by paths, with the entry-related play space. This will facilitate containing children within the entry zone while permitting them a view beyond.

In addition, it is important that the central play area is supervisable from inside the unit, and within an easy route for fetching and calling children. Parents need to feel their children are safe and secure when they are playing further from the unit; some of their concern is alleviated when they know other parents are nearby or watching for possible dangers. Depending on the project size and layout, surveillance may not be possible from every unit; however, it is essential that the majority of dwellings do have overview of the space. It may be necessary to provide more than one central play area (similarly equipped), particularly in very large projects with over 100 units.

Lighting is required to extend the useability of the play area in winter and in evenings. When the space is adjacent to another well-lit zone, there is less need for additional lighting.

Trees should be located with some thought to their benefits of shade, wind shelter, and encouraging snow drifting. These should include some that shed leaves, to provide additional play opportunities in autumn. When only very young trees can be provided, it is best not to include them in central play areas, but to locate them in more controlled areas such as the entry zones or unit yards.

23. Transition to a Central Play Area

An access transition into a defined central play space should offer identifiable clues to young children, to reinforce their sense of security and belonging, and to indicate that they are entering into their own domain where they can play unhindered and free of adult intervention. These should be planned at numerous locations, with thought to children's movements along the path circuit.

Access transitions to the central play space should be planned to help contain children and minimize impingement on the privacy of units. A logical place for some of these transitional entries is at the access openings between clusters or unit groupings.

Child-scaled arches and obstacles that offer a number of modes of entering, such as climbing or crawling, will impart a sense of transition as well as double as play elements. These can add to the variety and complexity of clues for play, to augment the provision of apparatus within. It is important that these structures, as well as any enclosing boundaries, are low or semi-transparent, to facilitate supervision from all units flanking the area.

24. Subdivision of the Central Play Area

Play spaces and apparatus appeal to a wide range of ages and

interpretations of use, and cannot be designated as belonging to one age group or having one purpose unless formally supervised. A continuous series of space pockets together with 2 or more strongly defined subdivisions will help accommodate the various age groups and the inevitable invasion by older children. This will minimize conflict and disruption between active and passive pursuits; it will enable a chosen separation of children or age groups; and it will respond to children's aforementioned affinity to small enclosures.

Rigid barriers are undesirable and unnecessary; the retention of visual links between the closely-related pockets is better for developmental value than is segregation, and responds to the tendency to frequently shift activities and locations. However, some low walls should be used and oriented to offer both wind and sun screening, to encourage snow drifting, and to respond to the winter need for vertical elements. Solid barriers over 3'-0" high will hamper overview of the play area both from the play pockets and from the units.

Some enclosures should be high and wide enough to challenge and encourage climbing, balancing, and using them as 'stages'. To increase their play potential, some space dividers should be linked to enable a circuit; the enclosure of the peripheral space pockets may be integrated with the defining boundaries of the central play area to form a continuous balancing circuit. When play equipment is provided, it may be carefully oriented to divide parts of the play area and to enclose pockets of space.

It is important that elements defining areas intended for passive play do not create challenges or encourage the dangerous overlap of fast or active play adjacent to inactive pursuits. The heights of these walls or elements should vary in undulating steps to prevent careless balancing

or jumping.

Perceived complexity is desirable, to stimulate play and hold the interests of children. Youngsters notice the complexity of details and of individual elements in small enclosures; they are unlikely to appreciate the intricacies of the play area as a whole once they are within its bounds. An integrated but relatively simple layout, incorporating a variety of orientations and arrangements of dissimilar elements as well as small-scaled distinctions of texture and parts, will better satisfy both adult and child values.

25. Landforms in All Central Play Areas

Flat, open spaces are the norm in Winnipeg, however they do not provide identifiable clues for, or attract use by, young children; they are occasionally used by over-eight's, and are more conducive to the organized games of older children. A large, flat space will not function as a central, planned play area and cannot be considered as an alternative to play provision.

Small hills and valleys should be formed in all central play areas to gain maximum play opportunities within a limited space. Earth mounds can be easily created by using fill from excavation on site. They are an economical means to enclose and subdivide space, to reduce scale, to add variety, to control circulation, to offer vantage points, and to contribute interpretable and challenging clues for play.

A slope exceeding a rise to run ratio of 1:3 should not be grassed because of difficulties in retaining grass on it; however, for ease of maintenance, it is recommended that slopes greater than 1:4 are not grassed.¹

¹Telephone conversation with Mr. R. Crosby, of Hilderman, Feir, Witty, and Associates Landscape Architects & Planners, Winnipeg, Manitoba, 28 October, 1977.

Attractive hard-surfaced materials should be used, with an asphalt path overtop; it is undesirable to pave the entire mound with asphalt because of the large amounts of it used elsewhere, throughout the site.

Children use any level changes as part of their wheeled toy circuit. Totally grassed mounds are soon worn to packed earth when the planned pathways do not acknowledge this attraction and do not offer a paved route overtop. Therefore, mounds that are not integrated with specific passive or active play facilities should be flanked and crossed by paths wide enough for cyclists to pass each other. There must be no sharp turn required to negotiate on descent of the mound, to enable fast cyclists to maintain control of their movements and minimize interference with pedestrians.

To prevent the use of grass slopes as an additional challenge for wheeled toys, the pavement at the top of these mounds should be defined by an edge that directs movement to the path. Some earth mounds should be combined with equipment to increase the variety and complexity of play provision.

The designer must consider drainage when locating earth mounds. There should be no dips or valleys that will cause standing water or mud, or interrupt the flow of water to the storm sewer. Care must also be given in situating large, high, and wide mounds to minimize disruption of the visual link from the units to the play area. Therefore, the uppermost levels in the central play area must not form a crater around the lower levels, and the highest mounds should be located in a central position.

26. Sand Pit in All Central Play Areas

Sand is preferable to dirt for offering acceptable manipulative play activities of a large scale. The problem of children tracking sand into the house will be less acute in central play areas, since they will be

located at some distance from dwelling units. However, there is still a need to prevent the sand from blowing around, spilling over the edges or onto grass, and becoming littered.

Sand must be damp to allow 'building' activities to occur. The distance from units makes it difficult for children to carry water from the house or hose bibbs in the yard; there should be a source of water provided near the central play area sand pit. A water fountain or hand pump (fitted with a limited flow valve in the pump head to act as a tap)¹ may be used, because they permit water flow only with exertion by the child and the water will not be left running; however these are costly and serve a limited function. Wading pools and streams offer a water supply as well as a popular form of play; however younger children require supervision, and the pools need continual maintenance and cleaning. A possible solution is to intentionally create 'puddles' by dips in the asphalt. These will collect water in wet weather or can be filled by children, and will function for water play as well as for the means to make sand workable. It is important to locate these puddles close to the sand surface and at a lower level than the pit enclosure; this will enable blowing or sweeping any sand in the 'puddles' back into the pit. The asphalt dips must also be separated from the paved cycling circuit for safety reasons.

In addition to the general requirements for sand drainage, it is important that the remaining spaces in the central play area do not drain into the sand pit. Earth mounds and level changes higher than the pit

¹Children's Environments Advisory Service, "Old Fashioned Hand Pump," Creative Playground Information Kit 1, (Ottawa: Central Mortgage and Housing Corporation, n.d.), p. 1.

enclosure should slope gently away, or have their own channels to direct water runoff to the storm sewer.

Some low walls should be provided in the pit as edges for building on or against; these must not create challenges for potentially disruptive activities. The orientations of the low walls, as well as any nearby trees or flat-roof overhangs, should vary to provide shade, shelter from excessive wind, and barriers to encourage snow drifting. When equipment is provided, shade may also be attained beneath platforms and bridges over 3'-0" high.

Sand is the best surface material for a physical activity area because of its energy-absorbing qualities, the difficulty of riding bicycles in it, and its durability. Gravel and wood chips are unsatisfactory because they are too easily thrown about. Therefore, when gymnastic play equipment is provided, sand should be used as the ground cover. This will require a large sand area, with carefully planned circulation and elements to define passive and active zones and to guide movements. Children riding wheeled toys, jumping, climbing, swinging, and sliding must be effectively prevented from disrupting those engaging in manipulative sand play; however, it is important to retain a visual connection between these incompatible activities.

27. Climbing Apparatus in the Central Play Area

Many horizontal, vertical, and diagonal elements suggest climbing, and combinations of relatively simple and economical materials can be used to create complex climbing apparatus. By varying the heights, slopes, enclosures, and combinations of elements, it is possible to increase the degree of challenge, opportunity, and interest to children.

The verticality of climbing structures renders them prominent, even under a snow cover. In this way they act as identifiable focii for play-- as objects to play near or under, as transitions to the play area, and as places that hint at enclosure and encourage children to 'complete' forts, boats, etc. in mind or with loose materials.

Children prefer climbing apparatus that enable them to choose from a variety of routes rather than just climbing on a limited frame. Therefore, elements should incorporate: a variety of level and/or direction changes along a circuit; different modes for ascent, descent, or retreat; as well as enclosures both at and above grade, along the circuit yet separate enough to double for passive play. In this way, the child's particular level of skill and willingness to attempt challenges can be accommodated.

Although children prefer greater seclusion, the enclosure of platforms or higher climbing elements should be open to varying degrees to facilitate supervision and to offer the child vantage points. These openings must not be of a size that could trap a child's head, and should be large enough to climb through only when the drop to the ground or to an intermediate level will not cause serious injury.

It is important to anticipate and reduce potential injuries from falling. As the height of the structure increases, the surrounding safety zone or an intermediate level intended to break falls must also widen; this will prevent children from falling or jumping against a stationary object or other youngsters nearby.

Climbing elements should have a sand base extending the full width of the safety zone. When a sand area is not large enough to contain both manipulative play pockets and the climbing apparatus, pine bark or pea

gravel should be used despite the ease in throwing them about. Grass is less suitable because it will quickly be worn; pavement must never be used under climbing equipment.

By making the lower ramps, steps, or platforms more accessible, the younger children will remain at their levels until they are ready to attempt the higher climbs. A steeper incline, higher structure, and adult-scaled steps are all perceived as more challenging and can be used to discourage youngsters from using the upper levels of the apparatus.

Wood or vinyl-covered metal are the preferred materials for climbing devices. Wood must be sanded to prevent splinters and treated to minimize deterioration; metal should have a vinyl coating to add comfort when children contact it with bare hands in both winter and summer. Nylon ropes should be used because of their durability; these should be secured at either end to facilitate climbing and discourage the uncontrolled movement of swinging when too close to the vertical supports. When ladders and steps are used, they must have a heavy texture to minimize the dangers of slipping in wet or icy weather.

28. Slides in the Central Play Area

Slides are large and dominant elements, and in isolation they dictate a single play activity which is not sufficient to interest children for long periods of time. To contribute to behavioural diversity and choice, and to enhance social interaction, slides should only be incorporated in conjunction with other play clues.

Imbedding slides into mounds minimizes the dangers of falling from the platforms and slopes of most slides, and adds variety and safety to the ascent and descent. The mounds should be hard-surfaced to allow a

steeper slope that is easily maintained. The surface should enable climbing as well as provide an alternate descent when there is a line-up or the child wishes to retreat; a smooth mound with indented steps can be used for sliding in summer as well as in winter.

When one slide is provided, it should be 2'-0" wide to allow younger children to brake along the sides with their feet. When two slides are installed, one should be wider to enable more than one child to go down at once; this will reduce line-ups and add to the excitement of varying sliding positions.

Since slides are most easily made of metal, they should be oriented to keep the metal surface away from direct sunlight, and to avoid exposure to the winter winds. Wooden sides or handrails must be carefully treated to prevent splinters.

Overcrowding and the possibility of falls must be anticipated. The top of the mound should be a platform, encircled with guardrails or a solid enclosure. The exit end of the slide must not be imbedded; it should be raised to the child's sitting height to enable him to quickly get out of the way of the next slider. The space under the lip of this end should be closed off to prevent small children from falling back, crawling under, or getting stuck.

29. Swings in the Central Play Area

Swings are always popular apparatus, and should be provided whenever space and budgeting permit; however they must not take priority over earth mounds and sand. Swings require a large space and perimeter safety zone of 10'-0" on both sides of the swing at rest. Provision of them will depend on the size of the central play area.

Children tend to monopolize swings for relatively long periods. Three or more swings, or the use of large tire swings which accommodate more than one child, will help to alleviate line-ups. Tire swings have positive social interaction values lacking in canvas or rubber-belt type swings useable by only one person at a time; and the tires have obvious safety advantages over metal or wood swing seats.

Nylon ropes are preferable to chains for suspension. The designer must predict wild swinging and twisting; nylon ropes are more durable than jute and will not snap or rot in the freeze-thaw cycles. As an alternative, chains coated with plastic may be used; these are durable, reduce the potential injury to children being hit by the chains, and eliminate the dangers of moist skin contacting freezing metal in winter. Suspension hooks must be closed and should not be adjustable without the use of tools; otherwise older children will raise the swings above the youngsters' level.

Swings impart momentum and generate uncontrolled movement. Circulation must be carefully planned so that children do not run or ride bicycles into the paths of swings. This includes a location away from: stationary objects, the paved path circuit, and both passive and active play zones.

30. Dual-Purpose Storage Sheds for Caretakers' Equipment

Storage sheds are generally provided on site for the caretaker's equipment. This limited primary function can be economically used to augment play opportunities, by intentionally designing the exterior to be accessible and useable by children and/or to benefit the play area. This must include planning to ensure that its use in play does not

interfere with the caretaker's activities.

The shed roof can overhang to serve as a source of shade for the play area. When this roof is flat, it will lessen the challenge of tossing toys onto the peak. If children have permissible access to the roof, it will also add play possibilities; walls can be scaled, slides can be imbedded in berms surrounding the shed, or the walls and roof may be incorporated with climbing platforms. When the roof is intended for play, a solid enclosure must protect children at the top from falling onto the pavement on the access-door-side of the shed.

31. Private Yards

The private yards provide children with seclusion for individual or small group play and a sense of territorial possession; they also offer a defined space for parents to separate the children or restrict them from wandering. However, the typically small size of the yards in public town-housing reduces their potential for children's play, particularly in summer when adults often dictate that the yards accommodate their own leisure activities rather than those of their children.

In very small and infill projects, more space should be devoted to the private and/or entry yards, and less to the public open space. In this way, the defined unit yards can, with minimal conflict, approximate the functioning of yards as a major play space in single-family detached housing.

Children do not understand the social connotation of private yards, and only total enclosure will effectively keep children out of others' yards or within their own, and offer the privacy needed by adult tenants. This indicates the need for fencing, extending to the ground, on all sides

except those enclosed by exterior walls, and as high as possible without being claustrophobic.

Solid fences with vertical boards are difficult to climb, especially when the highest portion, its horizontal brace, and the top of a lower adjacent section, have large differences in height. This reduces children's incentive to play on the fence, because the varying heights do not facilitate climbing or a balancing circuit. Some boarding, such as at the gate or along an end section, should be lowered and spaced apart to enable small children within the yard to watch activities beyond. Gates must have strong hinge and latch hardware, since children will swing on them.

The need for privacy makes it essential to buffer unit yards from each other and especially from noisy play areas. A separation of distance should be used between the yards and a nearby central play space. In addition, trees should be located to obstruct the open space immediately adjacent to the yards to deter active play. Evergreen trees are more suitable than deciduous, because the latter are more climbable and shed leaves that will promote play in autumn. Mounds and level changes should not be used; although they are not conducive to active play such as ball games, they do suggest rolling, sliding, hiding games, cycling, and other potentially noisy activities that are not desirable in this area.

32. Easy Route Between Both Unit Doors

Children often transfer toys and some large items from one yard to the other, through the house. There must be an effective link within the unit to facilitate this movement between both yards. Since children are not always careful about clean shoes or toys, it is unsatisfactory when

the door to the private yard requires a route through the centre of the living room.

Both doors require a small vestibule with a closet, or they may share a single vestibule. This will facilitate knocking off dirt or sand from shoes and clothing, and minimize maintenance difficulties in the unit.

Children often transfer their toys to the basement for indoor play. Since the kitchen-side door is the main unit access, the basement stairs should be located nearest it. They should open off a hallway, never off the living room, and there should be a door to shut out the noise and mess downstairs. The stairs to the bedroom/bathroom level should also be close to the main entry vestibule when possible, to minimize tracking through the house as children come in from outdoors. It is preferable for both stairs to be easily accessible from the vestibule(s) linking both unit doors.

33. Basements For Play

Basements are important for children's indoor pursuits. They are adaptable for multi-functions including messy activities, active play such as limited riding of wheeled toys, and small group play. Parents often prefer that the children use the basement, to minimize maintenance difficulties on the main living level or to reduce interruptions to adult activities.

The typically small basements in public townhousing units share the functions of laundry and storage as well. It is important that the area is efficiently utilized by grouping the laundry, heating, and stairs to enable these and play to co-exist.

Basements are more attractive for play when they have large windows

for natural light and for a view to activity. However, basement windows are very accessible to children playing outdoors, and are often abused by youngsters throwing stones or forcing sticks into the screens. The windows should therefore open onto the unit yards where parents can better control these destructive play activities, rather than onto semi-public open spaces at end walls.

When the unit design precludes basements or play space in basements, children must be given an alternate multi-purpose play room. This should not be located on the main living level because it would probably be interpreted as an adult space, it would not offer the child the needed privacy or ability to play untidily, and it would increase the interference with adult activities. The suitability of basements for play is partly the result of its vertical separation, which adds visual and sound insulation between children's noisy or messy activities and adults' daily pursuits. For this reason, the alternate play room should be located on the upper level of the unit.

34. Bedrooms For Play

Bedrooms offer a personal play area where the child is able to play in private, somewhat messily, and with less restriction than on the living level. The designer must consider that two or more children often share a bedroom; therefore at least one other than the master bedroom must be large enough for this function, and all bedrooms must be of a size to accommodate the necessary furnishings as well as free play space.

Children often watch outdoor spaces from their rooms, and they like to see or call out to their friends in conjunction with their indoor play. Their bedroom windows should preferably overlook a socially-active play

area. The windows must be low enough to enable a view at the child's standing height, yet not be so low or wide as to interfere with the placement of furniture. They should be located along the wall portion where furnishings are least likely to be placed--i.e., where the door or closet dictate a free access space.

Half of the closet space should be convertible for toy storage, with shelving supplied by the MHRC on tenant request. Shelving slots must extend to the floor so the child can reach his toys without assistance. As the bedroom size more closely corresponds to the minimum area standards set by CMHC, the closet space should be increased; in this way, storage can be largely accommodated therein rather than by furnishings, and the maximum amount of useable space will be left over for play.

CHAPTER VI

THE DESIGN GUIDELINES

This chapter represents the author's translation of behavioural data and research findings, into design guidelines for the provision for play of 4-to-7-year-old children in public townhousing in Winnipeg.

Each guideline is stated as a specific and definitive design condition that should be provided to respond to the particular relationship between the child-user and his play environment, as outlined in the preceding performance principles and demonstrated rationales. Each specific condition is meant to serve as a basis for creative interpretation by the designer. It is understood that the details and applicability of these guidelines will vary according to actual circumstances. Thus they are open to interpretation, and should be regarded as recommended options.

When site constraints prevent direct implementation of a guideline, it is proposed that the designer refer both to the design statement and its respective demonstrated rationale, to understand the performance or purpose intended by that guideline. In this way, a compromise or alternative solution may be realized as a component of, or a new, guideline.

A. General Site Planning Guidelines

1. SITE PLANNING FOR PLAY IN RELATION TO PROJECT SIZE

THE SIZE OF A PUBLIC TOWNHOUSING PROJECT HAS A DETERMINING EFFECT ON THE NEED AND ABILITY TO SUPPORT PLANNED PLAY FACILITIES. THIS RELATIONSHIP SHOULD INFLUENCE THE SITE PLANNING PARAMETERS.

- a) PROVISION FOR PLAY IN VERY SMALL PROJECTS HAVING UP TO 15 UNITS (APPROXIMATELY) SHOULD EMPHASIZE PLANNING TO APPROXIMATE SINGLE-FAMILY DETACHED HOUSING AND ITS NATURE OF PLAY. THIS INTENT SHALL EXTEND TO THE PROVISION OF LARGER UNIT YARDS, ON BOTH SIDES OF THE UNIT, INSTEAD OF DEVOTING SPACE TO COMMUNAL PLAY USE.
- b) PROJECTS CONTAINING OVER 15 UNITS WARRANT MORE EXTENSIVE PLAY FACILITIES. WHEN SITE PLANNING, AN EMPHASIS SHOULD BE PLACED ON THE CREATION OF A NUMBER OF SMALL GROUPINGS OF UNITS ORIENTED TO LOCALIZED AREAS, AND THE DUPLICATION OF CERTAIN PLAY ELEMENTS THEREIN. IN THIS WAY, PLAY AREAS WILL BE DISPERSED THROUGHOUT THE SITE.
- c) LARGER PROJECTS WITH 50 OR MORE UNITS CAN ADDITIONALLY SUPPORT ELABORATE PLAY AREAS SERVING THE ENTIRE PROJECT. THIS SHOULD BE FACILITATED BY SUBDIVIDING LARGE SITES INTO SEPARATE SECTIONS OF NO MORE THAN 40 UNITS EACH. THE SPACES SEPARATING EACH IDENTIFIABLE SECTION SHOULD BE DEEP AND ROUGHLY SQUARE, AND SHALL BE TREATED AS POTENTIAL PLAY LOCATIONS. THE DESIGNER SHOULD EMPHASIZE THE CREATION OF PLAY CIRCUITS TO LINK ALL ACTIVITY-GENERATING AREAS INCLUDING THE DUPLICATED, LOCALIZED PLAY FACILITIES.

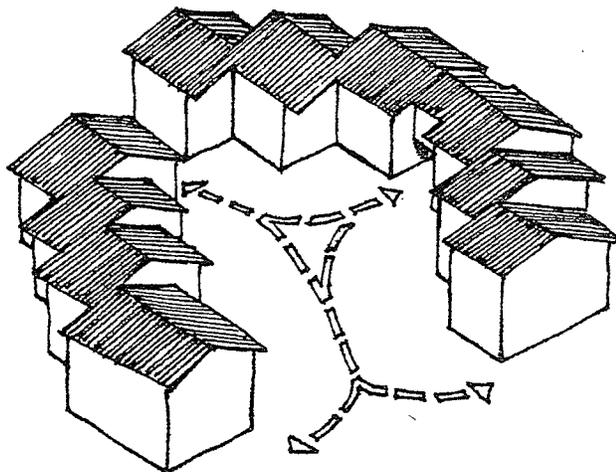
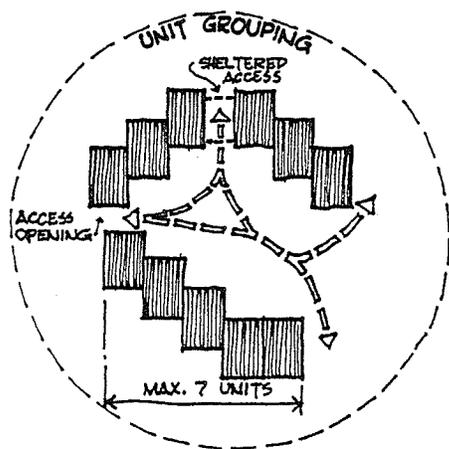
A GUIDE TO THE DESIGNER, INDICATING GENERAL PLANNED PLAY AREA NEEDS FOR PROJECTS OF VARIOUS SIZES, IS CHARTED BELOW. DETAILS OF REQUIREMENTS FOR EACH PLAY AREA TYPE ARE DISCUSSED IN SUBSEQUENT GUIDELINE SECTIONS.

PROJECT SIZE ±	ENTRY-RELATED PLAY AREA (SECTION 'B')	PARKING-RELATED PLAY AREA (SECTION 'C')	UNEQUIPPED CENTRAL PLAY (SECTION 'D')	EQUIPPED CENTRAL PLAY AREA (SECTION 'D')
	UP TO 15 UNITS		OPTIONAL	
UP TO 25 UNITS	✓	✓		
UP TO 50 UNITS	✓	✓	✓	
UP TO 100 UNITS	✓	✓	OPTIONAL	✓
OVER 100 UNITS	✓	✓	OPTIONAL	✓

2. ACCESS OPENINGS TO PRIVATE ZONES

PASSAGES THROUGH ATTACHED UNITS OR BETWEEN UNIT GROUPINGS SHALL BE CREATED FOR ACCESS TO THE PRIVATE SIDE OF DWELLINGS AND INTERIORIZED GREEN SPACE AREAS. THIS IS ESPECIALLY IMPORTANT IN LARGER PROJECTS AND WHEN A PLAY AREA IS LOCATED ON THE PRIVATE SIDES OF UNITS.

- a) THERE SHOULD BE AN ACCESS OPENING ON EITHER SIDE OF A MAXIMUM OF 7 ATTACHED UNITS.
- b) AT LEAST ONE PASSAGE WITHIN A GROUPING OF UNITS SHOULD BE ROOFED TO OFFER SHELTER FROM SUN AND RAIN. A LOW FLAT ROOF MAY BE INSTALLED, OR THE UPPER LEVELS OF ADJACENT UNITS MAY BE CANTILEVERED.
- c) THE END WALLS OF UNITS ADJACENT TO THESE OPENINGS SHOULD HAVE A PAINTABLE SURFACE AND GREATER SOUNDPROOFING. NO BASEMENT OR GROUND FLOOR WINDOWS, AND PREFERABLY, NO UPPER LEVEL WINDOWS, SHOULD OPEN DIRECTLY TO THE PASSAGE.



3. PAVED PATH CIRCUIT

PROJECTS CONTAINING OVER 15 UNITS SHALL INCORPORATE A VARIED AND UNOBSTRUCTED PAVED CIRCUIT CONNECTING EACH OF THE 'ENTRY-RELATED', 'PARKING-RELATED', AND 'CENTRAL' PLAY AREAS, AS WELL AS INTERNAL SPACES AND ANY OTHER ACTIVITY-GENERATING ZONES.

- a) THE CIRCUIT SHOULD BE CURVILINEAR WHERE ANY DIRECTION CHANGES OCCUR, OR WHEN EXPECTED SHORTCUTS FORM A DIAGONAL. THERE SHOULD BE NO 90° CORNERS, PARTICULARLY WHERE THE PATH BORDERS ON GRASS OR PLANTINGS.
- b) DEAD-ENDS SHALL BE AVOIDED; THE END OF ANY ROUTE SHOULD HAVE A 10'-0" MINIMUM DIAMETER AS A TURN-AROUND SECTION OF PAVEMENT TO EFFECTIVELY CONTINUE (REVERSE) THE CIRCUIT.
- c) VARIATIONS WITHIN THE PATH SYSTEM SHOULD BE PROVIDED THROUGH RAMPED LEVEL CHANGES. STEPS MAY BE INCORPORATED WITH THE PAVED RAMPS TO EASE WALKING.
- d) EACH PLAY AREA SHOULD FUNCTION AS A NODE OFF THE PATH CIRCUIT.

FOR PATHS IN THE GROUPING OF UNITS:

- e) PATHS WITHIN AND AT THE ENTRANCE TO A UNIT GROUPING, AND AT OPENINGS FOR ACCESS TO THE PRIVATE ZONES (GUIDELINE #2) SHOULD BE AT LEAST 10'-0" WIDE.
- f) STRAIGHT PATHS IN FRONT OF THE SEMI-PUBLIC ENTRY YARDS EXCEEDING 40'-0" IN LENGTH SHOULD BE AVOIDED; JOGS AND LOW OBSTRUCTIONS SHALL BE USED TO SUBDIVIDE LONG PORTIONS OF THE SIDEWALK.

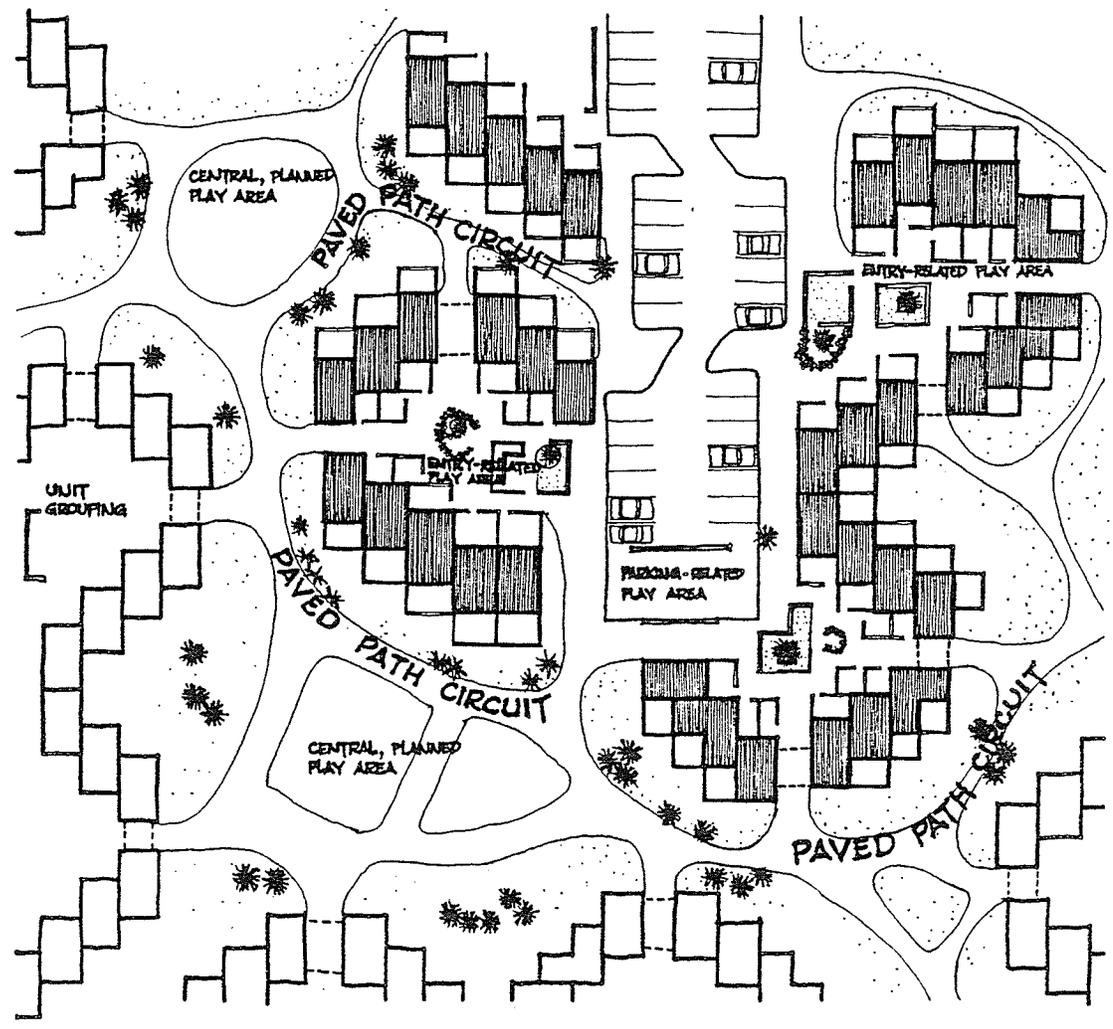
FOR PATHS FLANKING THE PARKING LOT:

- g) THESE SHOULD BE A MINIMUM OF 5'-0" WIDE, WITH AN ABRUPT 6" CURB SEPARATION FROM THE LOT.
- h) WHEN THIS SIDEWALK RUNS PARALLEL TO A UNIT WALL, A LOW FENCE OR HARDY PLANTINGS SHOULD DEFINE A BUFFER ZONE PROTECTING THE DWELLING. THIS SPACE WILL ALSO SERVE FOR THE PILING OF SNOW REMOVED FROM THE PATH.

- i) THERE SHOULD PREFERABLY BE NO FENCE SEPARATING THE PATHS FROM THE PARKING LOT; INDIVIDUAL POSTS SHOULD BE USED TO INSTALL PLUG-INS FOR CARS.

FOR PATHS IN A 'CENTRAL PLAY AREA':

- j) THE PAVED CIRCUIT SHOULD IDEALLY BE 10'-0" WIDE WHERE IT IS: A MAJOR ARTERY, AT A JUNCTION OF PATHS AND OTHER GATHERING SPACES, OR ADJACENT TO PASSIVE AREAS AND PLAY APPARATUS.
- k) LEVEL CHANGES, BY-PASS ROUTES, AND LOW WALLS SHOULD BE USED TO GUIDE MOVEMENT AND TO DISCOURAGE FREE FLOW ADJACENT TO OR WITHIN THE SAFETY ZONE OF SWINGS, SLIDES, OR CLIMBING APPARATUS (GUIDE-LINES #27-29) OR THROUGH PASSIVE PLAY POCKETS.

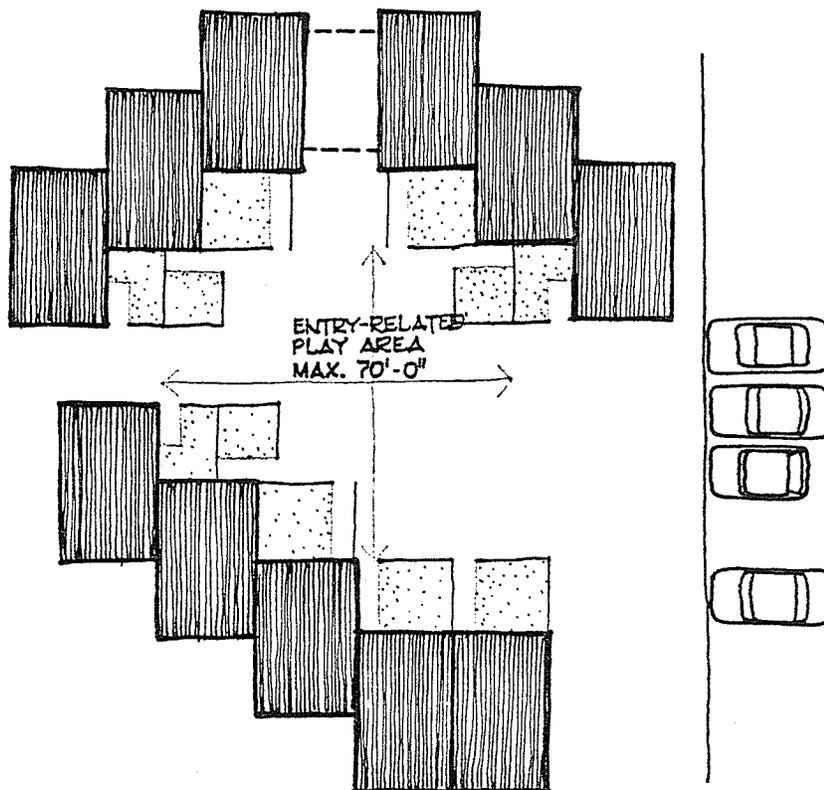


B. Entry Zone Guidelines

4. ENTRY-RELATED PLAY AREA FOR EACH GROUPING OF UNITS

IN ANY PROJECT CONTAINING OVER 15 UNITS, AN ENTRY-RELATED PLAY AREA SHALL BE CREATED FOR EACH IDENTIFIABLE GROUPING OF UP TO 14 TOWNHOUSE UNITS. THIS PLAY SPACE SHALL SERVE AS THE FOCUS OF THE TRANSITIONAL ZONE BETWEEN THE COMMONLY-USED, SEMI-PUBLIC ENTRANCES TO THE DWELLINGS OF THE GROUPING (i.e., KITCHEN SIDE) AND THEIR RESPECTIVE PARKING LOT.

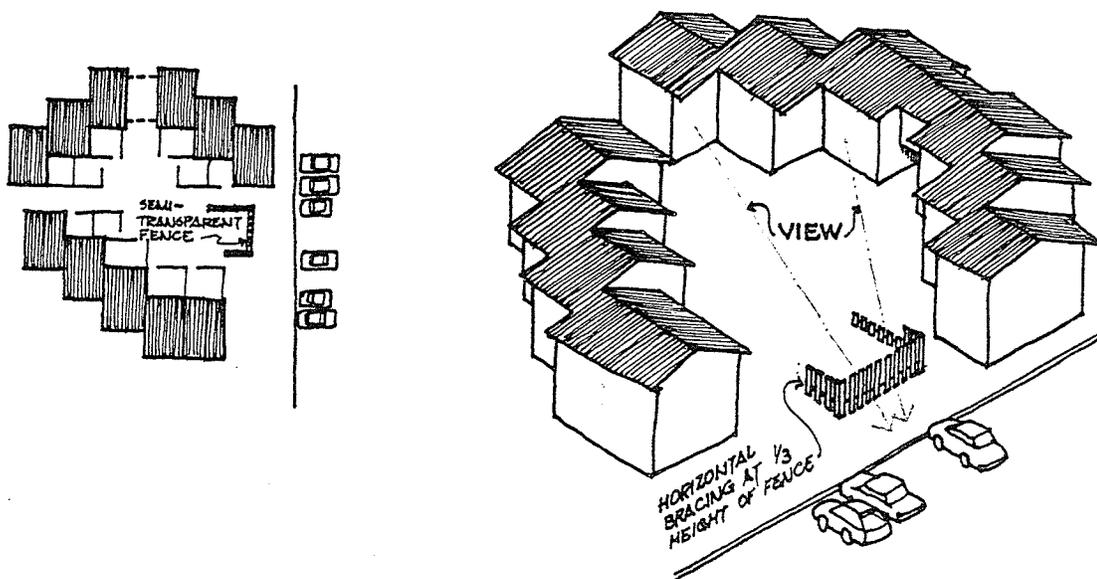
- a) EACH ENTRY-RELATED PLAY AREA SHOULD BE SEMI-ENCLOSED BY THE UNIT MASSING, TO CREATE A ROUGHLY SQUARE OR CIRCULAR SHAPE. THE MAXIMUM DIMENSION OF THIS ENCLOSURE, BETWEEN THE BOUNDS OF UNIT YARDS, SHOULD NOT EXCEED 70'-0". A CLUSTERING ARRANGEMENT SHALL BE USED WHENEVER POSSIBLE, AND THE PREFERRED ORIENTATION OF THE CLUSTER OPENING IS TOWARDS THE SOUTH.
- b) WHEN SITE CONSTRAINTS DICTATE A LINEAR ARRANGEMENT OF UNITS, A SENSE OF PLACE AND OF SPATIAL CONTAINMENT IN THE ENTRY ZONE SHALL BE PROVIDED. THIS MAY BE ACHIEVED BY WIDENING AND DEFINING THE AREA IN FRONT OF THE UNIT GROUPING, AND BY STAGGERING THE UNITS.



5. SEPARATION FROM THE PARKING LOT

THE ENTRY-RELATED PLAY AREA SHALL BE SEPARATED FROM THE ADJACENT PARKING LOT BY A FENCE, IN ADDITION TO ANY LEVEL CHANGES THAT MAY BE INCORPORATED.

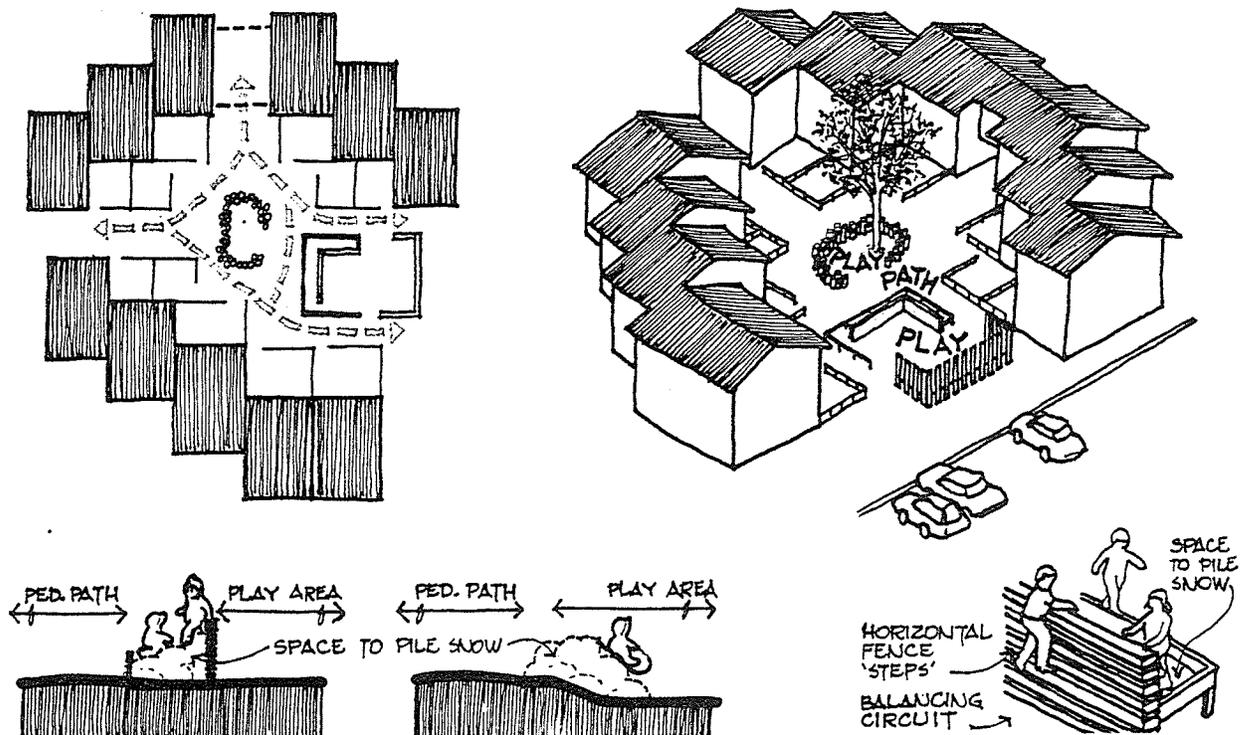
- a) A 6'-0" HIGH, SEMI-TRANSPARENT FENCE CAN BE USED TO PROVIDE THIS SEPARATION. THE FENCE SHOULD BE MADE OF 4" TO 6" VERTICAL BOARDING, WITH 4" SPACES IN-BETWEEN. A SOLID PORTION TO A HEIGHT OF 2'-0" TO 3'-0" ABOVE GRADE MAY BE USED TO INCREASE THE SENSE OF ENCLOSURE.
- b) CONSIDERATION SHOULD BE GIVEN TO LOWERING SMALL SECTION OF A 6'-0" FENCE TO 3'-0", OR VARYING THE HEIGHTS OF SECTIONS TO BREAK THE CONFINEMENT OF A HIGHER ENCLOSURE. THESE LOW PORTIONS SHOULD NOT BE LOCATED IN POSITIONS THAT WOULD OFFER FULL SURVEILLANCE OF THE ENTRY AREA FROM THE PARKING LOT.
- c) WHEN VARYING HEIGHTS ARE INCORPORATED, THERE SHOULD BE A 3'-0" MINIMUM DIFFERENCE IN HEIGHT BETWEEN EACH ADJACENT SECTION OF FENCE. THIS HEIGHT DIFFERENCE SHALL ALSO APPLY BETWEEN THE TOP OF A FENCE AND ITS HORIZONTAL BRACING; IT IS PREFERABLE TO LOCATE HORIZONTAL BANDS AT THE ONE-THIRD HEIGHT OF THE FENCE.



6. SEPARATION FROM COLLECTOR SIDEWALKS

THE ENTRY-RELATED PLAY SPACE SHALL BE PHYSICALLY DISTINCT FROM THE MAJOR PEDESTRIAN CIRCULATION ALONG THE COLLECTOR SIDEWALK. THE PLAY SECTION SHOULD BE CREATED AS A POCKET TO THE SIDE OF THE PEDESTRIAN PATH, AND THE PATH SHOULD NOT REQUIRE ACCESS THROUGH THE PLAY PORTION.

- a) LEVEL CHANGES TO A DEPTH UP TO 18" AND/OR SPACE-DIVIDING ELEMENTS VARYING UP TO 3'-0" IN HEIGHT CAN BE USED TO DIFFERENTIATE THE PLAY AREA AND THE PATH. SOME OF THESE LOW ELEMENTS SHOULD BE LONG, SOLID 'WALLS' ORIENTED TO THE PREVAILING WINDS--i.e., TO THE SOUTH AND NORTH-WEST. TEXTURAL, COLOUR, OR SURFACE MATERIAL CHANGES MAY BE USED TO AUGMENT THIS DIFFERENTIATION.
- b) CONSIDERATION SHOULD BE GIVEN TO COMBINING A LOW FENCE OR SUNKEN DEFINITION, ADJACENT TO THE PATH, WITH A HIGHER DIVISION 3'-0" TO 4'-0" BEYOND. IN THIS WAY, A SMALL PROTECTED PLAY SPACE IS CREATED, THAT DOUBLES AS A DEFINED AREA FOR PILING AND RETAINING SNOW SHOVELLED FROM THE SIDEWALKS.
- c) WHEN POSSIBLE, AT LEAST 2 SIDES OF THE PLAY SPACE SHOULD BE FLANKED BY PATHS.



7. SUBDIVISION OF THE ENTRY-RELATED PLAY AREA

ENTRY-RELATED PLAY SPACES SHALL BE SUBDIVIDED INTO A NUMBER OF DISTINCT, SMALL-SCALED NICHEs BY THE USE OF ELEMENTS THAT DOUBLE AS PLAY CLUES. THIS SHALL BE IN ADDITION TO, BUT MAY OCCUR IN CONJUNCTION WITH, THE REQUIREMENTS OF GUIDELINE #6.

- a) THESE DIVISIONS MAY INCLUDE: LEVEL CHANGES TO A MAXIMUM OF 18"; TREE STUMP SECTIONS ON END VARYING BETWEEN 14" - 40" IN HEIGHT; LARGE BOULDERS PERMANENTLY SET INTO THE GROUND; AND LOW FENCES, A MINIMUM OF 4" WIDE AND UP TO 36" IN HEIGHT, AND MADE OF STURDY HORIZONTAL BOARDING.
- b) THE DIVISIONS SHALL BE ARRANGED TO OFFER THE LARGEST NUMBER AND VARIETY OF PLAY POCKETS, WITHOUT CREATING VISUAL CHAOS OR A MAZE-LIKE FORM VISUALLY UNATTRACTIVE TO ADULTS. SOME OF THE ELEMENTS SHOULD BE CLOSELY LINKED TO PROVIDE ENCLOSURE AND TO ENABLE A BALANCING CIRCUIT WITH STEPPED VARIATIONS IN HEIGHT, AND SOME SHOULD BE CENTRED IN A SMALL SPACE TO SUIT CHILDREN'S LOCATING PREFERENCES.
- c) THERE SHOULD BE NO DIMENSION OF UNOBSTRUCTED SPACE IN THE PLAY ZONE LARGER THAN 20'-0" THAT IS NOT INTERRUPTED BY A JOG, A LOW 'WALL', AND/OR A LEVEL CHANGE.

8. DUPLICATION OF FACILITIES IN THE ENTRY-RELATED PLAY AREA

ALL ENTRY-RELATED PLAY AREAS WITHIN A PROJECT SHOULD PROVIDE SIMILAR CLUES AND OPPORTUNITIES FOR PLAY, IN ADDITION TO THE ELEMENTS REQUIRED BY GUIDELINES #6 AND #7. IT IS NOT ACCEPTABLE TO PROVIDE UNIQUE CLUES OR APPARATUS WHICH ARE KNOWN TO BE POPULAR, IN ONLY ONE GROUPING OR IN ALTERNATE UNIT GROUPINGS' PLAY AREAS. THE FORM, CHARACTER, AND DETAILS OF DUPLICATED ELEMENTS, HOWEVER, CAN AND SHOULD VARY AMONG THE SPACES.

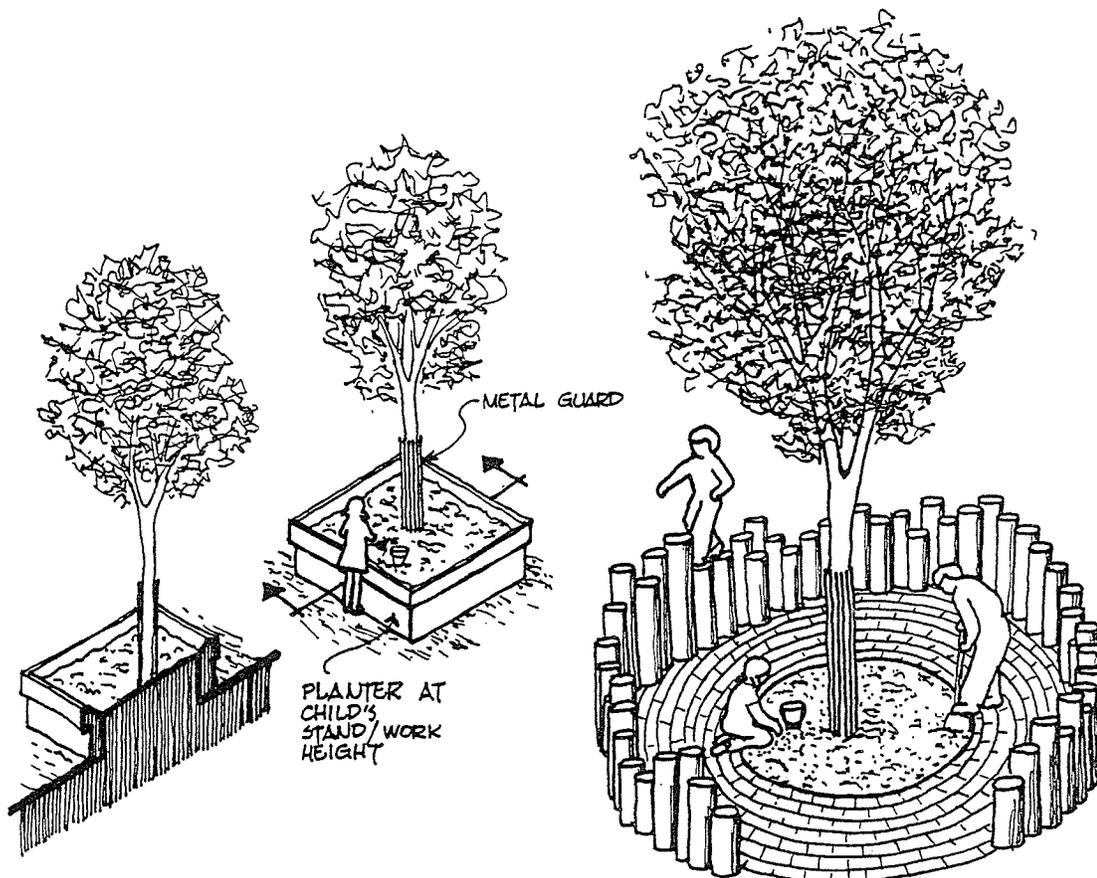
- a) ONE OR MORE SUBDIVISIONS OF EACH ENTRY-RELATED PLAY AREA SHALL CONTAIN A DIRT-PLAY COMPONENT. IN SMALL PROJECTS WHICH HAVE NO COMMUNAL CENTRAL PLAY AREA, THE ENTRY SPACE SHALL ALSO CONTAIN A SAND PIT.
- b) THESE MANIPULATIVE PLAY SECTIONS SHALL BE ENCIRCLED, PREFERABLY TOTALLY, BY ELEMENTS SUCH AS AN 18" HIGH FENCE, LARGE BOULDERS, OR A RING OF TREE STUMPS, TO CREATE AN OBSTACLE TO FREE-FLOWING MOVEMENT THROUGH AND FROM THE AREA. THE DEFINITION AND CONTAINMENT OF THE LOOSE MATERIAL WITHIN THE BOUNDS OF THE SUBDIVISION SHALL CONFORM TO GUIDELINES #9 AND #10.
- c) THERE SHOULD BE NO GYMNAS TIC EQUIPMENT INSTALLED IN THE ENTRY-RELATED PLAY AREA.

9. DIRT PROVISION IN THE ENTRY-RELATED PLAY AREA

THE COMPONENT FOR DIRT-PLAY IN EACH ENTRY ZONE SHOULD BE INCORPORATED WITH TREE PLANTING IN THE SPACE, AND MAY BE DEFINED BY ONE OR BOTH OF THE FOLLOWING:

- a) A WOOD OR CONCRETE PLANTER, APPROXIMATELY 22" HIGH AND AT LEAST 48" IN WIDTH. IT SHOULD BE FILLED WITH DIRT UP TO A LEVEL 6" BELOW THE TOP. THE RIM AROUND THE PLANTER SHOULD SLOPE BACK TOWARD THE DIRT CENTRE.
- b) A LARGE DIRT BASE, MINIMUM 48" WIDTH, SURROUNDING A TREE AT GROUND LEVEL. THE DIRT SHOULD BE ENCIRCLED BY A 24" MINIMUM WIDTH OF BRICK PAVERS OR OTHER HEAVILY-TEXTURED SURFACE, AND THAT SURFACE SHOULD GENTLY SLOPE TOWARD THE CENTRE.

ONLY FAIRLY MATURE TREES SHALL BE USED, AND PROTECTIVE MEASURES FOR THE TREES SHALL INCLUDE A METAL GUARD TO A HEIGHT OF 36" AROUND THE TRUNK.



10. SAND PROVISION IN THE ENTRY-RELATED PLAY AREA

A SAND AREA LOCATED IN AN ENTRY-PLAY SUBDIVISION SHALL CONFORM TO THE FOLLOWING:

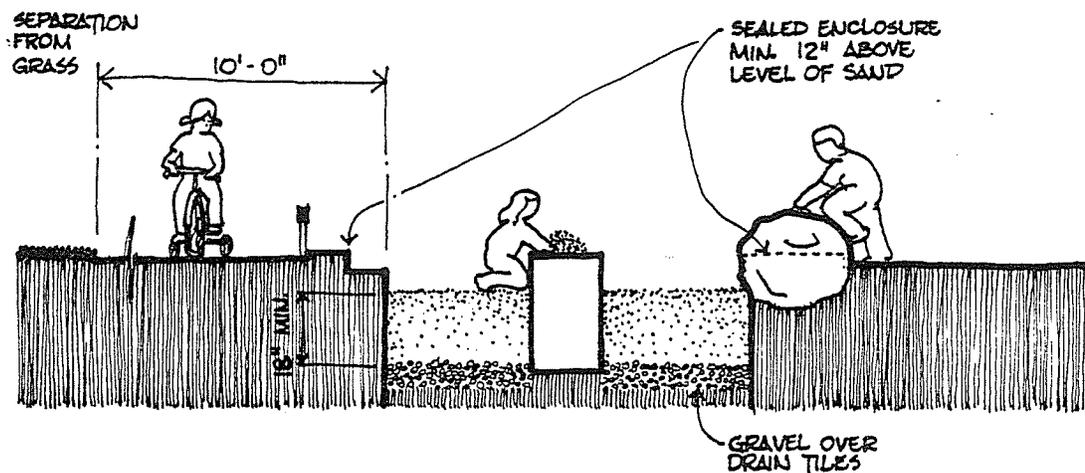
- a) IT SHOULD BE DEFINED AND ENCLOSED BY A SERIES OF 6" PAVED RISERS FROM GROUND LEVEL DOWN TO THE SAND AREA; BY A CHAIN OF LARGE BOULDERS (ABOUT 2' IN DIAMETER) THAT ARE PERMANENTLY FIXED AND SEALED AT THE BOTTOM TO FORM AN EFFECTIVE ENCLOSURE AT LEAST 12" ABOVE GRADE; BY A SOLID RING OF COMPACTLY ARRANGED TREE STUMPS

OF VARYING HEIGHTS; OR BY A COMBINATION OF THESE. IN THIS WAY, IT SHALL FUNCTION AS A PIT, A MINIMUM OF 12" TO 18" BELOW THE TOP OF THE CONTINUOUS ENCLOSURE.

- b) THE SURFACE AREA OF THE SAND SHALL BE A MINIMUM OF 36 SQUARE FEET; AND THE DEPTH OF THE SAND ITSELF SHOULD BE AT LEAST 18".
- c) COARSE GRAVEL OVER DRAIN TILES DIRECTED TO THE SEWER SHALL BE USED FOR DRAINAGE UNDER THE SAND.
- d) THE SAND MUST BE LOCATED WHERE IT WILL BE FREE FROM SHADOWS CAST BY THE UNIT MASSES FOR AT LEAST HALF THE DAY.
- e) THERE SHOULD BE PAVING FOR A MINIMUM OF 5'-0" AROUND THE SAND AREA; THERE MUST BE NO ADJACENT GRASSED AREA WITHOUT A SOLID BARRIER SEPARATION AND/OR WITHIN 10'-0" OF THE SAND.
- f) THE MHRC SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE SAND.

IN ADDITION, THE FOLLOWING ARE RECOMMENDED:

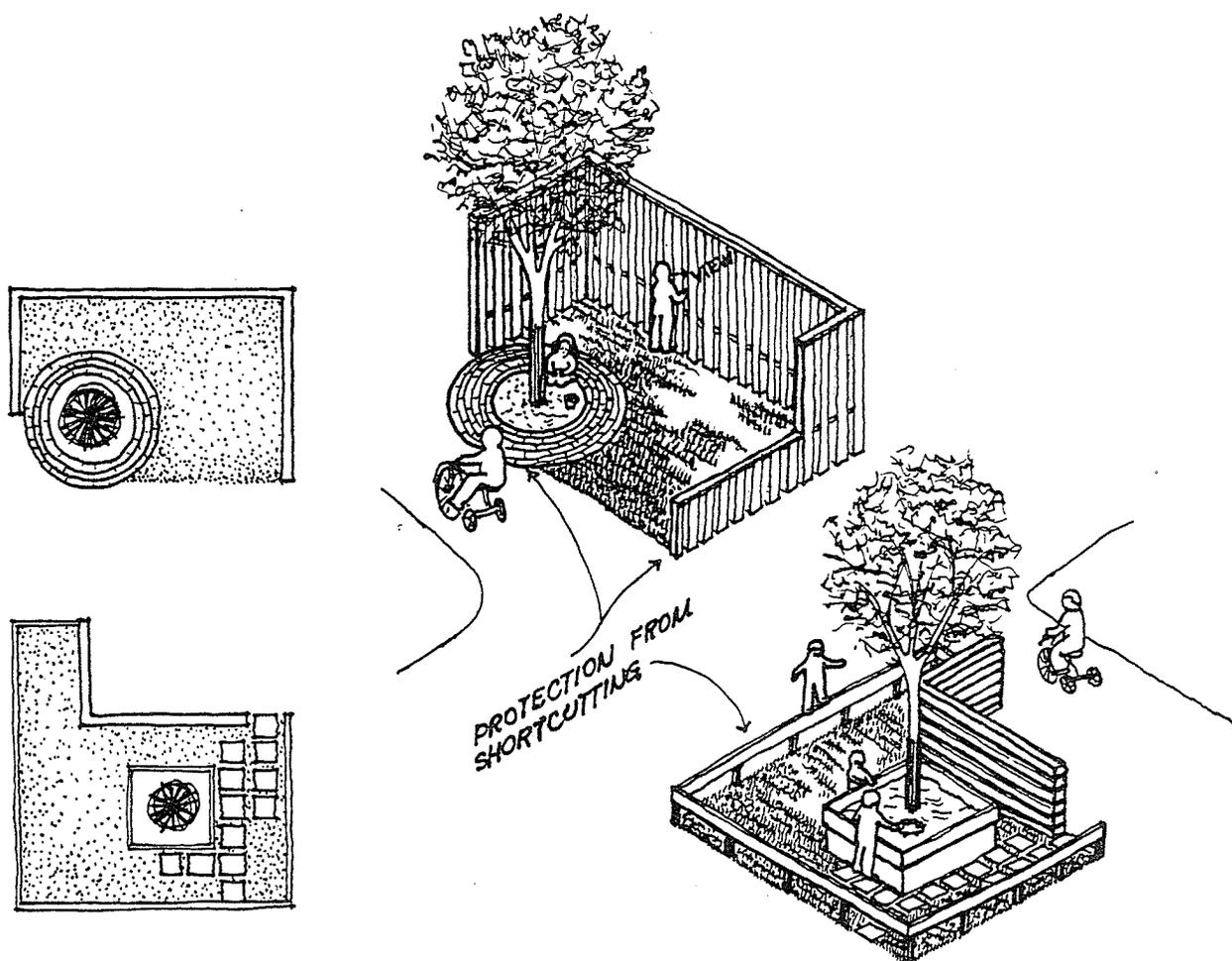
- g) A CENTRE TABLE, 12" HIGH, SHOULD BE LOCATED AS AN ISLAND IN THE SAND PIT.
- h) THERE SHOULD BE AN EDGE OR PORTION OF THE AREA WITH A SOLID WALL AT LEAST 18" IN HEIGHT.
- i) THE SAND MUST NOT BE OF AN OVERLY FINE CONSISTENCY, AND MAY BE REPLACED BY A MIXTURE OF SANDY GRAVEL AND CLAY SOIL.



11. GRASS IN THE ENTRY-RELATED PLAY AREA

GRASSED SECTIONS SHOULD BE INCLUDED IN THE ENTRY-RELATED PLAY SPACE ONLY WHEN MANIPULATIVE PLAY OPPORTUNITIES (GUIDELINES #9 AND #10) HAVE BEEN PROVIDED THEREIN.

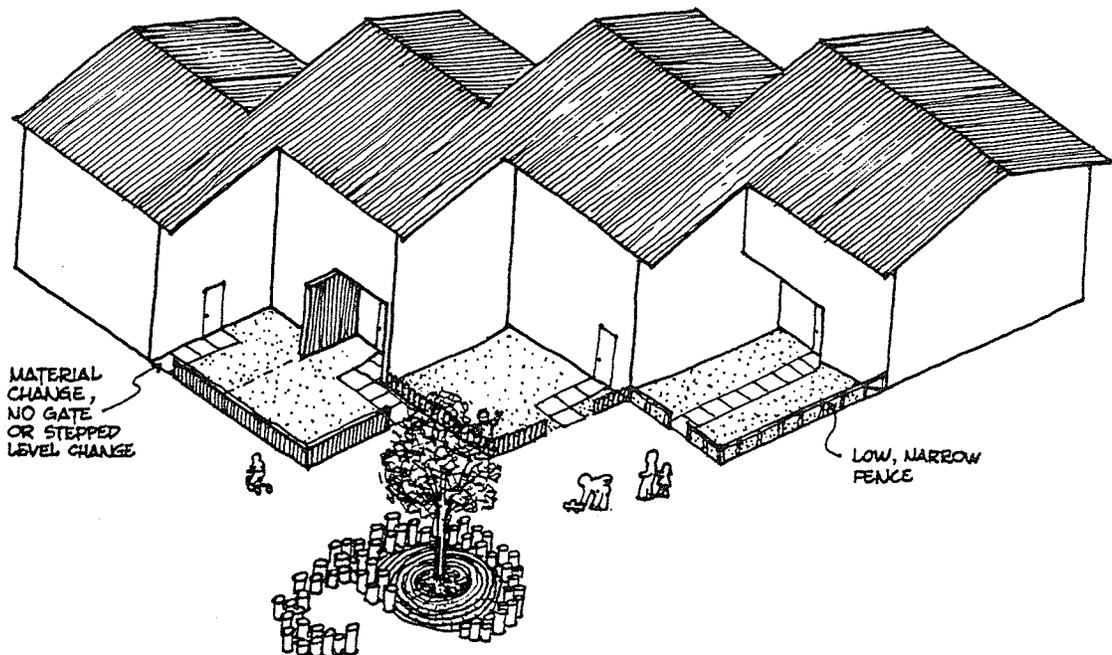
- a) GRASS SHOULD BE LOCATED IN NARROW SECTIONS THAT ARE SEPARATED FROM SHORTCUT ROUTES.
- b) IT SHOULD BE PARTIALLY OR TOTALLY ENCLOSED BY THE FENCE SEPARATION FROM THE PARKING LOT, LOW WALLS, AND/OR 1'-6" HIGH RAIL FENCES.



12. DEFINITION OF UNIT ENTRY YARDS

THE YARDS OFF THE COMMONLY-USED ENTRANCES TO THE UNITS (KITCHEN SIDE) SHALL BE WELL-DEFINED AND DISTINCT, FROM EACH OTHER AND PARTICULARLY FROM THE ENTRY-RELATED PLAY AND CIRCULATION SPACES.

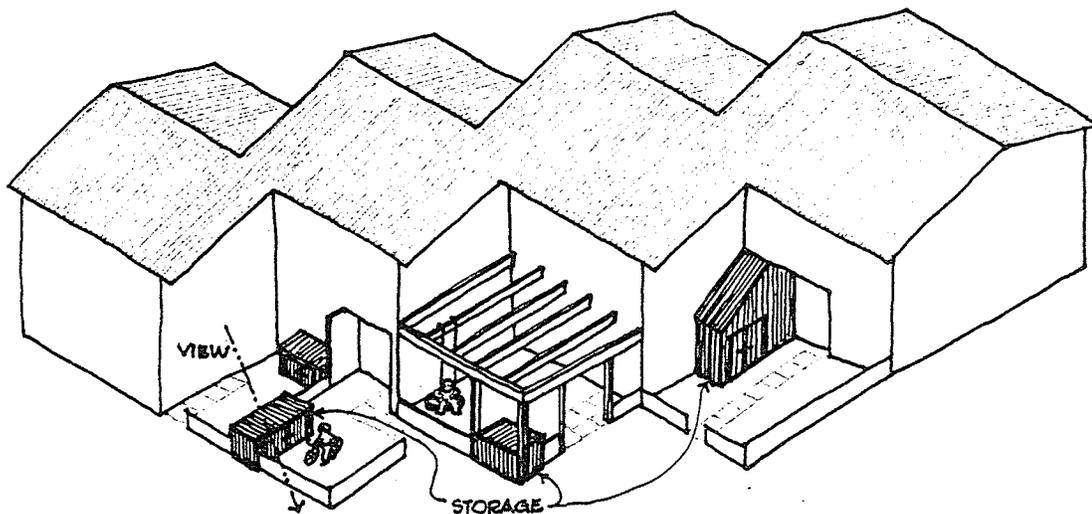
- a) A LOW, NARROW FENCE, SUCH AS 1½" WIDE BY APPROXIMATELY 20" HIGH, CAN BE USED TO DEFINE THE TERRITORY ALONG THE MATERIAL CHANGE FROM COLLECTOR SIDEWALK TO GRASSED YARD. THERE SHOULD BE NO GATE AT THE PATH TO THE UNIT.
- b) TERRITORIAL SEPARATION OF THE YARDS CAN BE IMPROVED BY A STAGGERING OF UNITS AND/OR WING WALL EXTENSIONS AT THE PARTY WALLS. IT IS OPTIONAL TO PROVIDE LOW, NARROW FENCES ALONG THE PARTY WALLS SEPARATING YARDS.
- c) THERE SHOULD BE NO STEPPED LEVEL CHANGE BETWEEN THE SEMI-PRIVATE YARDS AND THE SEMI-PUBLIC ENTRY SPACE. HOWEVER, A CHANGE IN MATERIAL FROM COLLECTOR SIDEWALK TO UNIT PATHWAY IS DESIRABLE.



13. OUTDOOR STORAGE IN THE ENTRY YARD

PROVIDE AN OUTDOOR STORAGE FACILITY AT GROUND LEVEL IN EACH ENTRY YARD FOR THE SECURITY OF CHILDREN'S TOYS.

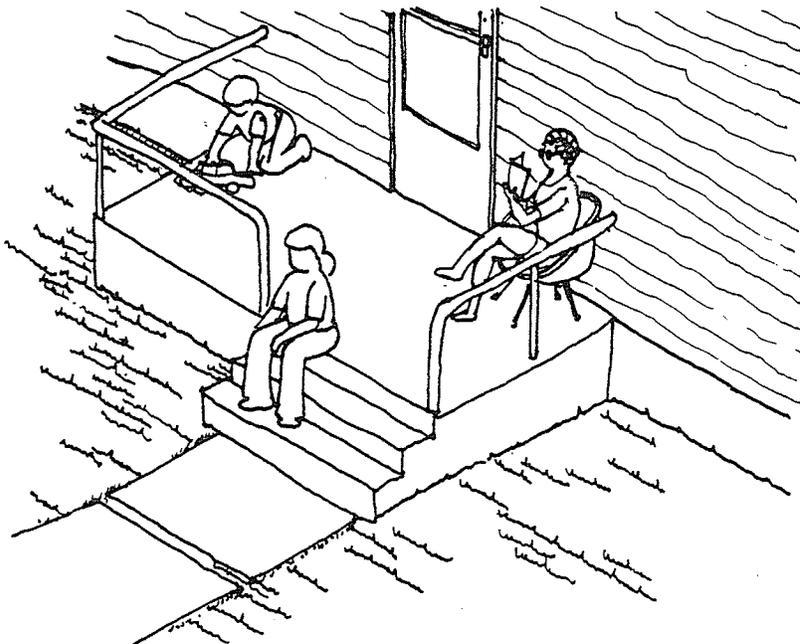
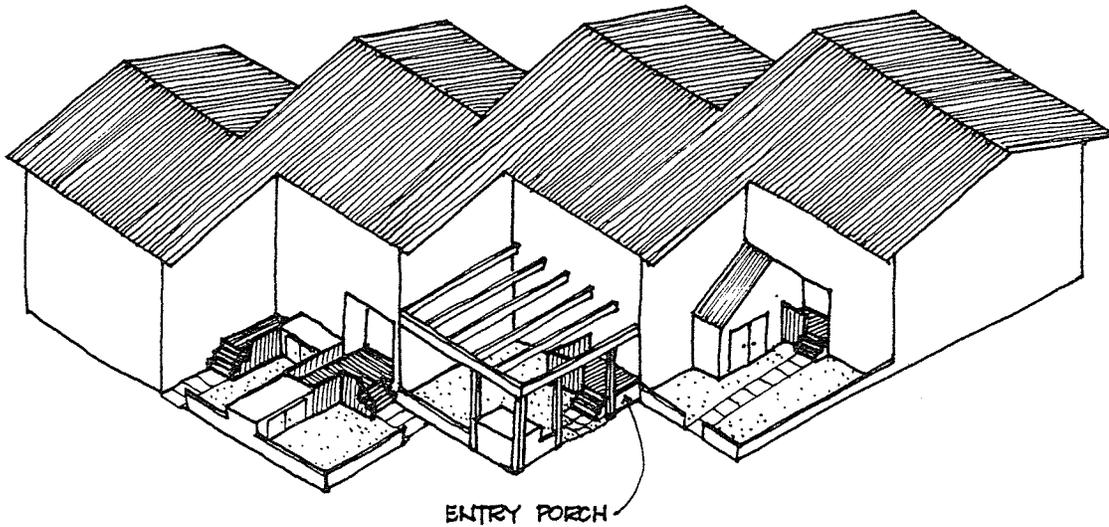
- a) THE STORAGE COMPONENT SHALL BE ROOFED, HAVE SWINGING DOORS AT LEAST 3'-0" WIDE, AND BE FITTED WITH LOCKABLE HARDWARE.
- b) THE MINIMUM DIMENSIONS SHALL BE 3'-0" WIDE, 8'-0" LONG, AND 4'-0" HIGH; THIS SIZE SHOULD INCREASE WITH THE SIZE OF THE UNIT.
- c) THE COMPONENT MUST BE DESIGNED AND LOCATED TO PREVENT OBSTRUCTING ANY UNIT'S SURVEILLANCE OVER THE ENTRY-RELATED PLAY AREA OR THE PARKING LOT.



14. ENTRY PORCH FOR EACH UNIT

THE LEVEL CHANGE FROM THE ENTRY YARD UP TO THE MAIN LIVING LEVEL SHOULD TAKE THE FORM OF A PORCH.

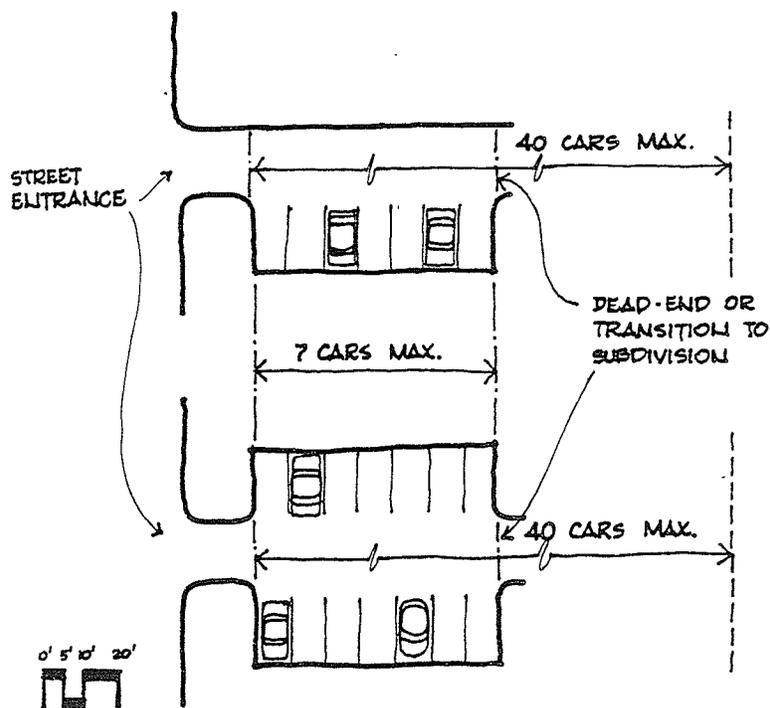
- a) IT MAY EXTEND ACROSS HALF OF THE UNIT FACADE OR BE INCORPORATED WITHIN AN INDENTATION AT THE ENTRY DOOR, AND MAY BE LINKED WITH THE STORAGE FACILITY (GUIDELINE #13).
- b) IDEALLY, THE STEPS SHOULD BE A MINIMUM OF 4'-0" WIDE, AND THE REMAINDER OF THE PORCH SHOULD BE ENCIRCLED BY A RAILING.



C. Parking Zone Guidelines15. SMALL, DEAD-ENDED PARKING LOTS

SMALL, DEAD-ENDED PARKING LOTS SHALL BE CREATED WHENEVER PRACTICABLE. THE MAXIMUM NUMBER OF CARS SERVED BY ANY LOT OR ITS DRIVEWAY SHOULD BE 40, HOWEVER THIS TOTAL SHALL BE REDUCED IF AT ALL POSSIBLE. IN ADDITION:

- a) EACH PARKING LOT SHOULD BE SUBDIVIDED INTO SMALL SECTIONS CONTAINING UP TO 7 CARS ON EITHER SIDE OF A SINGLE- OR DOUBLE-LOADED SECTION.
- b) EACH SUBDIVISION SHOULD BE FOLLOWED BY A PHYSICAL DIVISION THAT CREATES A TRANSITION TO THE ADJACENT SUBDIVISION OF THE LOT, OR BY A DEAD-END.

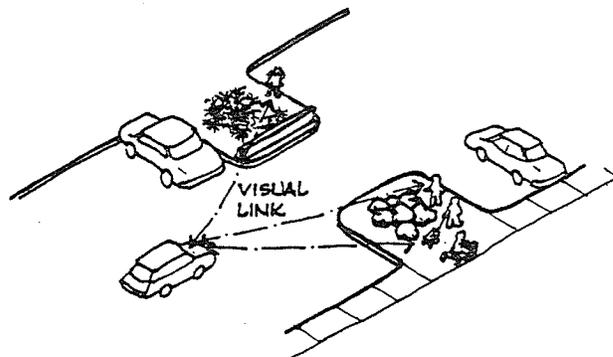
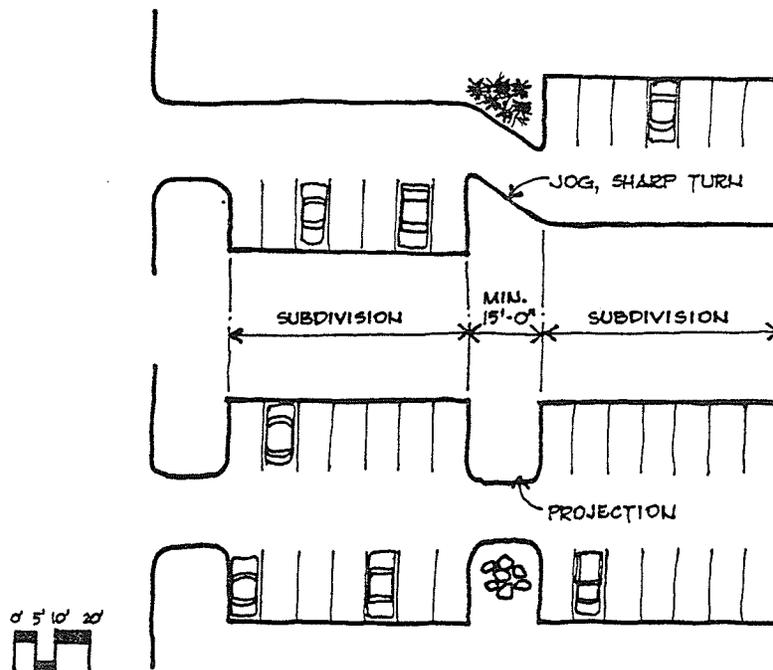


16. PARKING LOT SUBDIVISIONS

THE SUBDIVISIONS IN A PARKING LOT SHALL BE CREATED BY JOGS, PROJECTIONS, OR SHARP TURNS IN THE DRIVEWAY, AND MAY BE AUGMENTED BY PHYSICAL OBSTRUCTIONS NO HIGHER THAN 2'-6". THESE MAY INCLUDE:

- a) HARDY PLANTINGS BUT NOT TREES,
- b) AN IMMOBILIZED ROCK GARDEN,
- c) A 1'-6" HIGH, WIDE FENCE SUCH AS OF CONCRETE BLOCK, OR
- d) OTHER LOW ELEMENTS THAT DO NOT CREATE BLIND SPOTS OR PROMOTE ACTIVE PLAY.

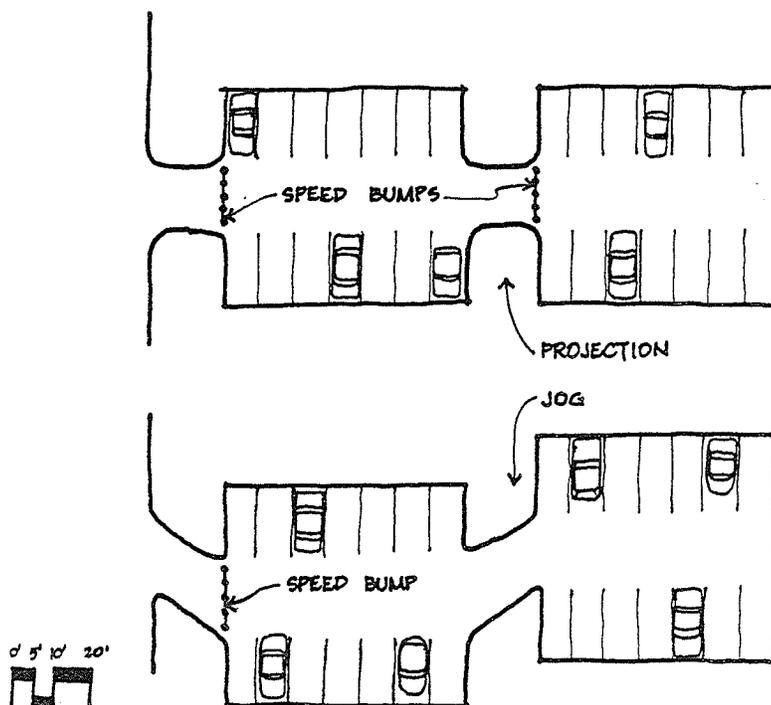
ANY PROTRUDING JOGS SHOULD SPAN THE WIDTH OF $1\frac{1}{2}$ TO 2 PARKING STALLS (i.e. 15'-0" TO 20'-0").



17. MEANS TO REDUCE TRAFFIC SPEED

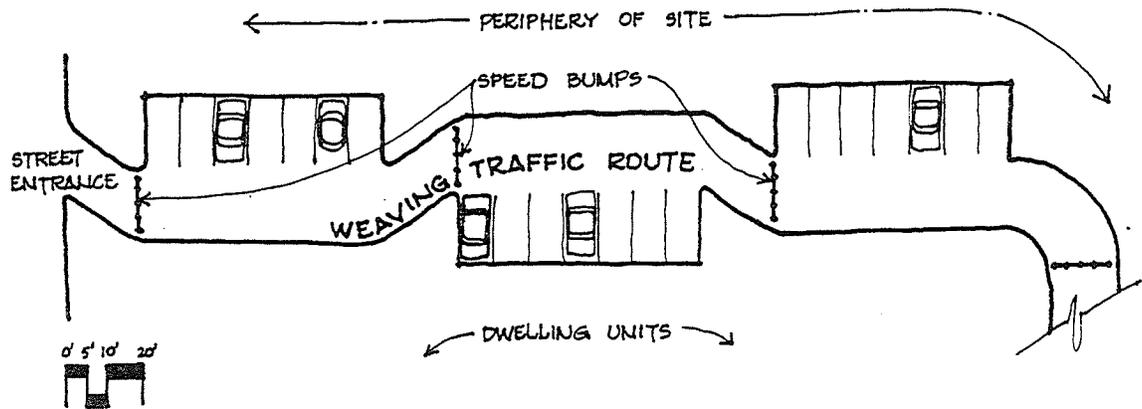
TRAFFIC SPEED AT THE STREET ENTRANCE TO A PARKING LOT AND AT EACH SECTION SHALL BE REDUCED BY THE USE OF SPEED BUMPS IN THE ROADBED, SHARP TURNS, OR JOGS. BLIND CORNERS MUST NOT BE USED TO SLOW TRAFFIC.

- a) A PARKING LOT WITH 2 OR MORE SUBDIVISIONS REQUIRES A SPEED BUMP AT THE STREET ENTRANCE, AND A JOG IN THE DRIVEWAY TRANSITION BETWEEN SECTIONS.
- b) WHEN A PROJECTION IS USED RATHER THAN A SHARP JOG, SPEED BUMPS BETWEEN EACH SUBDIVISION AS WELL AS AT THE STREET ENTRANCE ARE REQUIRED, DESPITE MAINTENANCE DIFFICULTIES FOR WINTER SNOW REMOVAL.



18. LOOP ROADS

WHEN LOOP ROADS ARE UNAVOIDABLE, THEY SHALL BE SINGLE-LOADED, AND CONFINED TO THE PERIPHERY OF THE SITE. PARKING SHOULD OCCUR IN SMALL SUBDIVISIONS ON THE SIDE OF THE ROAD FURTHEST FROM THE UNITS. WHEN THERE ARE MORE THAN 2 SUBDIVISIONS (i.e. OVER 14 CARS), THE PARKING STALLS SHOULD ALTERNATE BETWEEN THE SIDE CLOSEST AND THE SIDE OPPOSITE TO THE UNITS, THUS CREATING A WEAVING TRAFFIC ROUTE. TRAFFIC SPEED-REDUCING DEVICES (GUIDELINE #17) ARE ESPECIALLY CRUCIAL TO THIS FORM OF PARKING.

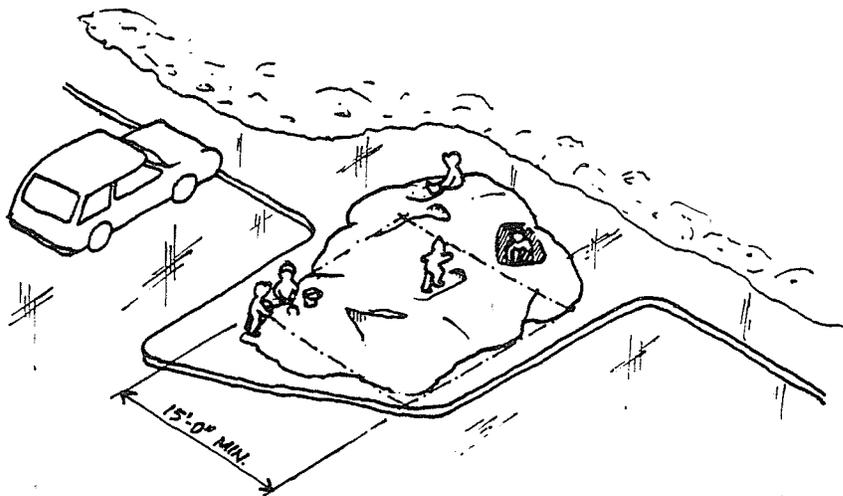


19. PARKING-RELATED PLAY AREA FOR LOTS SERVING UP TO 25 CARS

AN AREA ADJACENT TO, BUT DISTINCT FROM, EACH PARKING LOT SHALL BE CREATED TO DOUBLE AS A SPACE TO STOCKPILE SNOW CLEARED FROM THE LOT AND FOR CHILDREN'S PLAY. THE DESIGNER MUST MAKE IT AS OBVIOUS AND CONVENIENT AS POSSIBLE FOR THE SNOW CLEARER TO DEPOSIT ALL SNOW FROM THE LOT IN THE SINGLE SPACE RATHER THAN DISTRIBUTING IT IN LOW PILES. TO FACILITATE THIS INTENT, AND TO MAXIMIZE WINTER PLAY OPPORTUNITIES, THE SNOW MOUND AREA SHOULD BE LOCATED:

- a) DIRECTLY ADJACENT TO THE PARKING SPACE AND ALONG, OR PREFERABLY AT THE END OF, THE STRAIGHT PATH THAT THE FRONT-END LOADER WILL PREDICTABLY FOLLOW;
- b) NEAR THE DEAD-END OF A LOT OR WHERE TRAFFIC IS MINIMIZED, BUT NOT ADJACENT TO THE STREET ENTRANCE TO THE PARKING LOT;
- c) AS A NODE OFF THE PEDESTRIAN PATH SYSTEM AND IN A SPACE THAT IS EASILY ACCESSIBLE FROM ALL UNIT GROUPINGS SERVED BY THE LOT, WITHOUT INTERFERING WITH THE PRIVATE SIDE OF UNITS;
- d) AT SOME DISTANCE FROM LARGE, SHADOW-CASTING BUILDING MASSES, AND WHEN POSSIBLE, ON THE LEEWARD SIDE OF A GROUPING OF UNITS (i.e. EASTERLY OR SOUTHERLY SIDE).

THE EFFECTIVE DEFINED SNOW MOUND AREA WILL REQUIRE MINIMUM DIMENSIONS OF APPROXIMATELY 15'-0" BY 15'-0", IN ADDITION TO THE WIDTH OF ANY ADJACENT PEDESTRIAN PATHS. WHEN THE SNOW MOUND/PLAY AREA IS INCORPORATED WITH JOGS OR PROJECTIONS USED TO SUBDIVIDE THE PARKING LOT, THE WIDTH OF THE DEFINED AREA SHALL BE INCREASED.

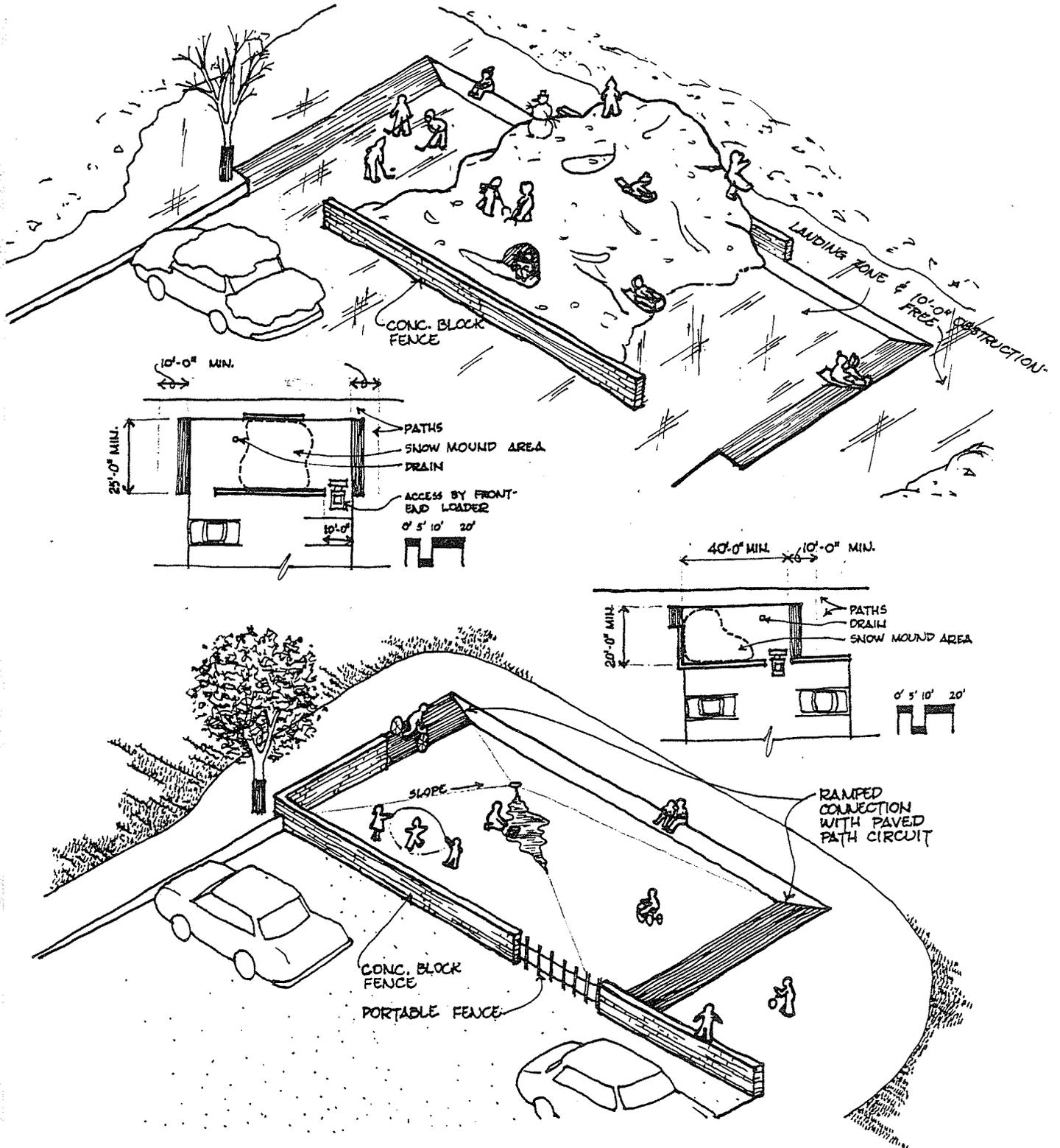


20. PARKING-RELATED PLAY AREA FOR LOTS SERVING 25 OR MORE CARS

THE PARKING-RELATED PLAY AREA FOR LARGER PARKING LOTS WILL REQUIRE MINIMUM DIMENSIONS OF 20'-0" BY 40'-0", AND A LOT SERVING UP TO 40 CARS SHOULD PROVIDE AT LEAST 25'-0" BY 50'-0". THIS PLAY AREA SHALL CONFORM TO THE LOCATION REQUIREMENTS OF GUIDELINE #19. IN ADDITION:

- a) IT SHALL BE A CONTINUATION OF THE PAVED SURFACE AND LEVEL OF THE PARKING LOT, WITH NO CURBS OR SPEED BUMPS TO DEFINE THE SPACE.
- b) A 3'-0" HIGH CONCRETE BLOCK FENCE SHOULD BE USED TO SEPARATE IT FROM THE ADJACENT VEHICULAR SPACE. AT ONE END OF THE FENCE, AND IN LINE WITH A STRAIGHT PATH FROM THE PARKING LOT, THERE MUST BE A 10'-0" WIDE OPENING TO ALLOW FREE PASSAGE BY THE SNOW REMOVAL EQUIPMENT. THIS HALF OF THE PLAY AREA IS TO BE CLEARED BY THE FRONT-END LOADERS, TO SERVE AS A SLEDDING 'LANDING ZONE'.
- c) TO ONE SIDE OF THE 10'-0" OPENING AND 'LANDING ZONE', A ROUGHLY SQUARE HALF OF THE PLAY SPACE SHOULD BE SEMI-ENCLOSED BY A LOW FENCE ON ONE OR TWO OUTER EDGES. THIS AREA WILL SERVE FOR PILING SNOW. THE FENCE SEPARATION FROM THE LOT MAY BE USED AS PART OF THIS DEFINED ENCLOSURE.
- d) THERE SHOULD BE NO PARKING/ENTRY INTERFACES OR PHYSICAL OBSTRUCTIONS FOR A MINIMUM DISTANCE OF 10'-0" BEYOND THE PLAY AREA BOUNDS. THE 'LANDING ZONE' PORTION MAY BE FLANKED BY PEDESTRIAN SIDEWALKS BUT SHOULD HAVE NO ADJACENT FENCES, TREES, OR OTHER ELEMENTS THAT COULD SERVE AS EDGES FOR PILING SNOW.
- e) THERE SHOULD BE A GRADUAL DOWNWARD SLOPE FROM A MIDPOINT IN THE PARKING LOT TO A LOW-POINT WELL WITHIN THE PLAY AREA; THIS LOW-POINT MUST HAVE A DRAIN CONNECTED TO THE CITY STORM SEWER. THE OVERALL SLOPE SHOULD NOT BE REFLECTED IN THE ADJACENT SIDEWALKS, THUS CREATING A LEVEL CHANGE FROM THEM DOWN TO THE PLAY AREA.
- f) A RAMPED CONNECTION SHOULD BE CREATED ON 2 SIDES OF THE PLAY AREA, OPPOSITE EACH OTHER, TO LINK THE PLAY LEVEL WITH THE PATHS FLANKING IT.
- g) IN SUMMER, A PORTABLE FENCE MAY BE USED TO CLOSE OFF THE FENCE OPENING, TO HELP REDUCE SPILLAGE OF PLAY ONTO THE PARKING LOT.

h) CONSIDERATION SHOULD BE GIVEN TO SPANNING THE PLAY AREA TO THE FULL WIDTH OF THE PARKING LOT TO CREATE 2 'LANDING ZONES' WITH THE SNOW MOUND AREA IN THE CENTRE. THIS REQUIRES A 10'-0" WIDE OPENING AT BOTH ENDS OF THE FENCE SEPARATION.



21. HIDDEN GARBAGE BINS AND ELECTRICAL JUNCTION BOXES

GARBAGE BINS SHOULD BE LOCATED WITHIN 3-SIDED, SOLID FENCE ENCLOSURES. THESE SHALL BE CENTRALLY LOCATED, BUT NOT ADJACENT TO MAJOR SHORTCUT ROUTES, PLAY SPACES, OR SNOW-PILING AREAS.

- a) THE ENCLOSURE SHOULD BE MADE OF 6'-0" HIGH VERTICAL SIDING, WITH NO HORIZONTAL BRACES EXPOSED TO THE OUTSIDE.
- b) IT MUST BE A MINIMUM OF 9'-0" WIDE TO ALLOW ACCESS BY TRUCKS.
- c) THERE SHALL BE A NARROW ENTRY, WITHOUT A GATE, FROM THE UNIT-SIDE OF THE ENCLOSURE.
- d) WHEN POSSIBLE, ELECTRICAL JUNCTION BOXES SHALL BE INCORPORATED WITHIN THIS STRUCTURE.

D. Central, Planned Play Area Guidelines

22. CENTRAL PLAY AREA

A CENTRAL PLAY AREA FUNCTIONING FOR THE COMMUNAL PLAY OF ALL CHILD RESIDENTS SHALL BE PROVIDED IN PROJECTS HAVING APPROXIMATELY 25 OR MORE UNITS. THIS AREA SHALL BE SEPARATE FROM, BUT VISUALLY CONNECTED TO, ACTIVITY-GENERATING ZONES INCLUDING OTHER PLAY SPACES. IT SHOULD BE LOCATED:

- a) AT THE EDGES OF UNIT GROUPINGS TO MINIMIZE INTERFERENCE WITH THE PRIVACY OF UNITS AND THE ENTRY/PARKING INTERFACE.
- b) APPROXIMATELY EQUIDISTANT FROM THE MAJORITY OF UNITS, AND ENABLE A VISUAL LINK FROM ALL OR MOST DWELLINGS IN THE PROJECT.
- c) IN CONJUNCTION WITH ROUTES THAT WILL BE FREQUENTED BY CHILDREN-- SHORTCUTS TO SCHOOL, PATHS BETWEEN GROUPINGS, OR IN CENTRAL LOCATIONS.
- d) WHERE ACCESS TO IT DOES NOT REQUIRE CROSSING THE PARKING LOT. IT SHALL NOT BE WITHIN THE CENTRE OF A LOOP ROAD OR AT THE STREET ENTRANCE TO THE LOT.

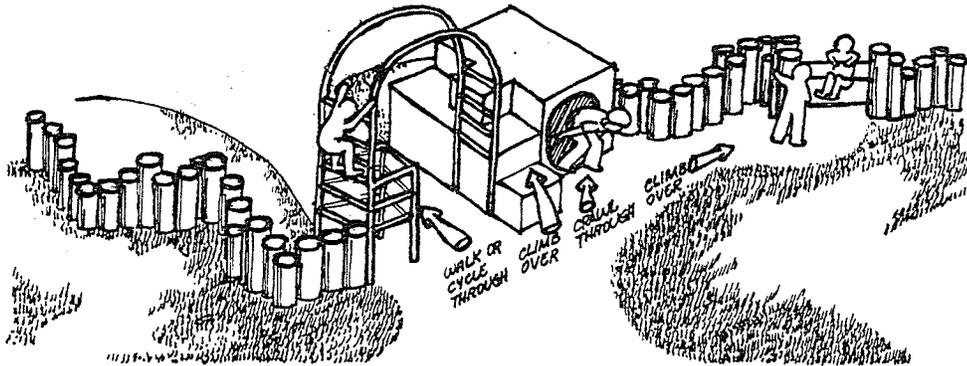
THE UNEQUIPPED CENTRAL PLAY AREA REQUIRED IN SMALLER PROJECTS SHOULD CONFORM TO GUIDELINES #23 TO #26. FOR LARGER PROJECTS WHICH CAN SUPPORT COMPLEX, INTEGRATED, AND MULTI-FUNCTIONAL APPARATUS, GUIDELINES #23 TO #29 ARE APPLICABLE. IN ADDITION:

- e) CENTRAL PLAY AREAS SHALL HAVE ARTIFICIAL LIGHTING WITH STURDY AND VANDAL-PROOF STANDARDS.
- f) SURFACE MATERIALS SHOULD INCLUDE BOTH PAVED AND GRASSED SECTIONS.
- g) WHEN POSSIBLE, BOTH CONIFEROUS AND DECIDUOUS TREES SHALL BE PLANTED; ONLY FAIRLY MATURE TREES SHOULD BE USED, AND THEY SHOULD HAVE METAL PROTECTORS AROUND THE TRUNKS TO A HEIGHT OF 36".

23. TRANSITION TO A CENTRAL PLAY AREA

ACCESS TO A CENTRAL PLAY AREA SHOULD OCCUR WHERE NATURAL PREDICTED SHORTCUTS OR DESIRE LINES FROM THE ENTRY ZONES, PRIVATE YARDS, AND PARKING-RELATED PLAY AREAS MEET WITH THE BOUNDS OF THE CENTRAL PLAY AREA. THESE TRANSITIONS SHOULD BE LOCATED TO MINIMIZE OVERLAP OR IMPINGEMENT ON THE PRIVACY OF UNITS. THE NUMBER OF ACCESSES WILL VARY WITH THE SIZE AND SITE PLANNING OF THE PROJECT. THEY CAN BE DEFINED BY ONE OR MORE OF THE FOLLOWING:

- a) A TRANSITIONAL SPACE, SUCH AS AT ACCESS OPENINGS THROUGH ATTACHED UNITS OR BETWEEN GROUPINGS (GUIDELINE #2).
- b) SCALED-DOWN OPENINGS OR CLIMBING-STRUCTURE ENTRANCES AT STRATEGIC POINTS IN THE OTHERWISE ENCLOSED AND BOUNDED SPACE.
- c) CHANGES IN LEVEL OR SURFACE MATERIAL.



24. SUBDIVISION OF THE CENTRAL PLAY AREA

CENTRAL PLAY AREAS SHOULD CONTAIN A NUMBER OF SEMI-ENCLOSED POCKETS OF SPACE. WHEN PLAY APPARATUS ARE PROVIDED, THE AREA SHALL ALSO HAVE AT LEAST TWO MAJOR SECTIONS OF A LARGER SCALE.

25. LANDFORMS IN ALL CENTRAL PLAY AREAS

LANDFORMS VARYING IN HEIGHT UP TO 6'-0" ABOVE GRADE SHALL BE CREATED IN ALL CENTRAL PLAY AREAS. EARTH MOUNDS SHALL BE COMPACTED FIRMLY AND VERY STEEP SLOPES SHOULD BE AVOIDED BECAUSE OF THEIR MAINTENANCE AND EROSION PROBLEMS.

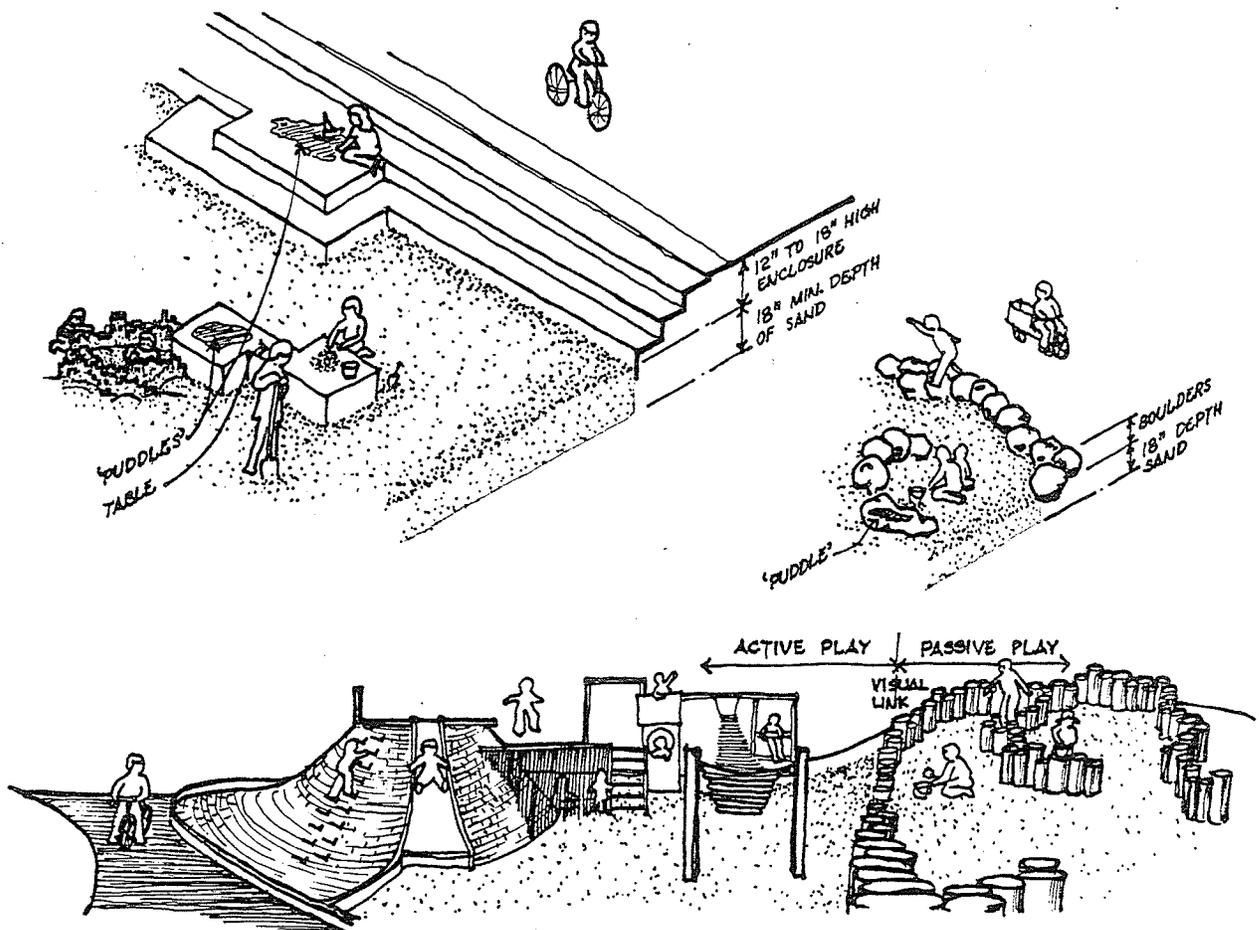
- a) THE HIGHEST MOUNDS SHOULD BE LOCATED AT THE CENTRE OF AN INTERIORIZED PLAY AREA, OR AT THE ENDS OF A PLAY SPACE THAT IS LOCATED ALONG AN EDGE OF THE SITE.
- b) SLOPES EXCEEDING A RISE-TO-RUN RATIO OF 1:4 SHALL BE TOTALLY HARD-SURFACED BY, FOR EXAMPLE, BRICKS, PAVERS, OR RAILWAY TIES. GENTLER SLOPES MAY BE GRASSED.
- c) WHEN A NUMBER OF MOUNDS CAN BE INCORPORATED, PRIORITY SHOULD FIRST BE GIVEN TO PLANNING THEM AS PART OF THE CYCLING CIRCUIT (GUIDE-LINE #3). THIS SHALL REQUIRE A 5'-0" WIDE MINIMUM ASPHALT PATH OVERTOP, THAT LINKS WITH THE PAVED PATH SYSTEM. THIS PATH SHOULD BE BORDERED AT THE TOP BY AN EDGE OR LOW WALL WHEN THE REMAINDER OF THE SLOPE IS GRASSED. A PAVED CRUSH SPACE, FREE OF OBSTRUCTIONS AND APPROXIMATELY 10'-0" DEEP, SHOULD INTERVENE BETWEEN THE MOUND AND ITS LINK WITH THE PAVED CIRCUIT.
- d) OTHER MOUNDS MAY BE INCORPORATED WITH TUNNELS, BRIDGES, AND PLAY EQUIPMENT (GUIDELINES #26-#28). LANDFORMS MAY ALSO BE USED AS THE BOUNDARY DEFINITION OF THE CENTRAL PLAY AREA OR ITS SUBDIVISIONS.

26. SAND PIT IN ALL CENTRAL PLAY AREAS

A SAND PIT SHOULD BE PROVIDED IN ALL CENTRAL PLAY SPACES. IT SHALL CONFORM TO THE RECOMMENDATIONS OF GUIDELINE #10 REGARDING: ENCLOSURE WITH A LEVEL CHANGE OF 12" TO 18"; AN 18" DEPTH OF SAND OVER GRAVEL AND A DRAIN; A SUNNY LOCATION; A WIDE PAVED AREA SURROUNDING IT; A CONSISTENCY OF SAND THAT ALLOWS SHAPING; THE INCLUSION OF A 12" HIGH CENTRE TABLE AND SOME 18" TO

30" HIGH EDGES; AND MAINTENANCE BY THE MHRC. IN ADDITION:

- a) THERE SHOULD BE SOME LOCALIZED SHADING DEVICES SUCH AS LOW WALLS, OVERHANGS, OR TREES.
- b) AN ADJACENT WATER SUPPLY SHALL BE PROVIDED. THIS CAN TAKE THE FORM OF PAVED DIPS--A MAXIMUM OF 2" DEEP AND IN VARIOUS SIZES--CREATED IN THE ASPHALT SPILL-OVER AREA, IN THE CENTRE TABLES, OR IN A SERIES OF WIDE STEPS LEADING DOWN TO THE SAND PIT. THESE DIPS SHOULD NOT BE CONNECTED TO THE RUNOFF DRAINS, AND SHOULD BE AT A LOWER LEVEL THAN THE TOP OF THE SAND ENCLOSURE. OLD FASHIONED HAND PUMPS OR WATER FOUNTAINS MAY ALSO BE USED.
- c) THE SAND AREA IN PROJECTS PROVIDING GYMNASTIC EQUIPMENT SHOULD BE LARGE ENOUGH TO INCORPORATE SUBDIVISIONS FOR PASSIVE MANIPULATIVE PLAY AS WELL AS SECTIONS THAT PRIMARILY SERVE AS THE GROUND COVER BENEATH THE PLAY APPARATUS. THIS SHALL REQUIRE WELL-DEFINED POCKETS OF SPACE FOR PASSIVE PLAY, CAREFULLY PLANNED CIRCULATION AND ORIENTATIONS OF EQUIPMENT, AND SAFETY ZONE MARGINS BETWEEN APPARATUS.



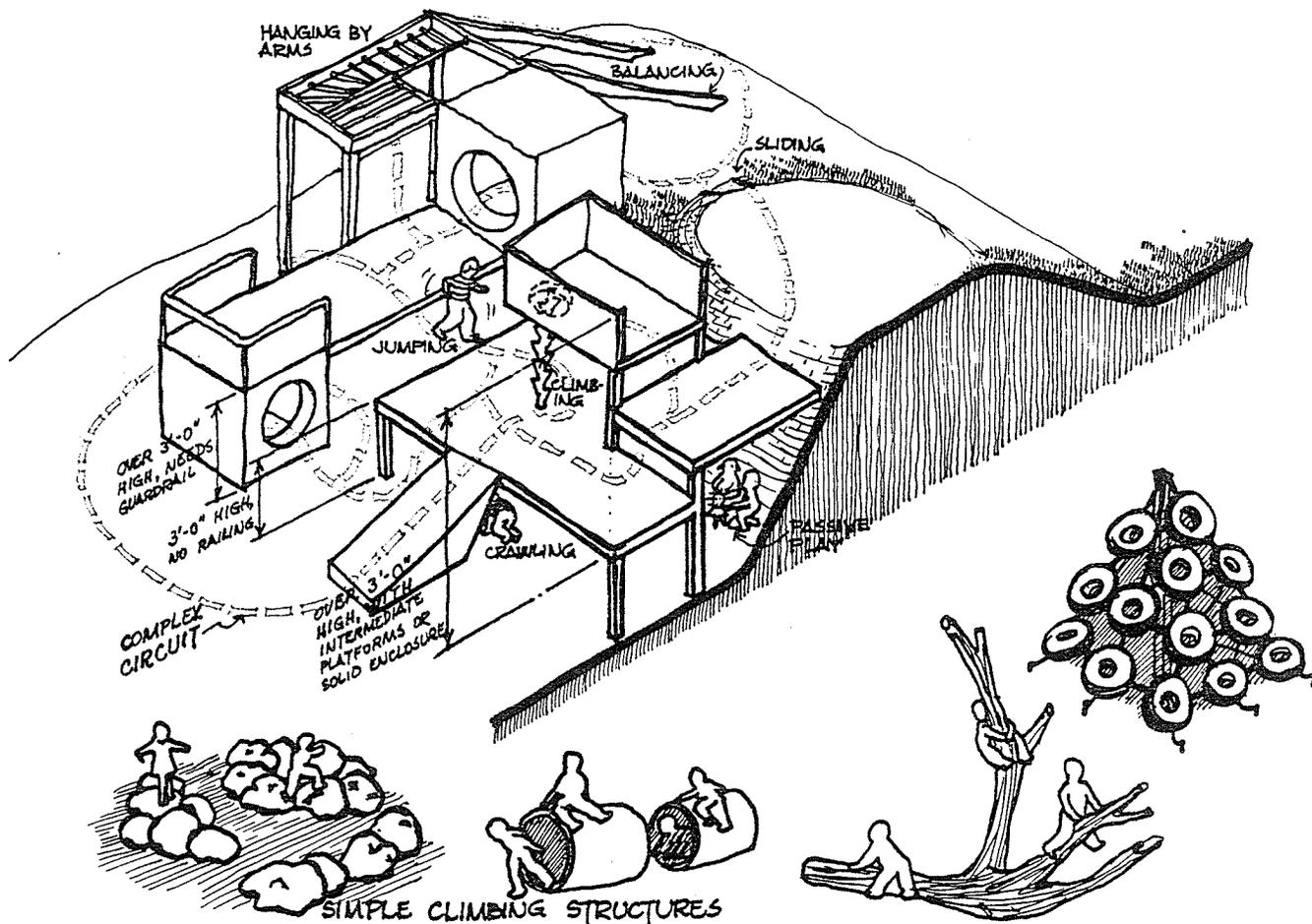
27. CLIMBING APPARATUS IN THE CENTRAL PLAY AREA

CLIMBING APPARATUS SHALL OFFER VARYING HEIGHTS AND MODES OF USE, INCLUDING THINGS TO CLIMB UP, ON, OVER, UNDER, THROUGH, INTO, AND AROUND, AS WELL AS TO HANG FROM BY THE ARMS. RATHER THAN LARGE, EXPENSIVE, AND LIMITED-FUNCTION EQUIPMENT, CLIMBING ELEMENTS SHOULD BE GROUPED TO ALLOW MOVEMENT FROM ONE TO ANOTHER IN INTERCONNECTED CIRCUITS. IN THIS WAY, A COMPLEX ARRANGEMENT WILL ACCOMMODATE A VARIETY OF CHOICES: FOR EXAMPLE, A CLIMBING OR BALANCING ROUTE; THE SEQUENTIAL MOVEMENTS OF CLIMBING-BALANCING-JUMPING-TUNNELING-SLIDING; AND PERCHING OR WATCHING IN QUIET GROUP PLAY.

- a) SOME SPACES, BOTH AT AND ABOVE GRADE, SHOULD BE ENCLOSED TO VARYING DEGREES TO DOUBLE AS NICHEs FOR PASSIVE PLAY. THESE MUST BE DEFINED AND SEPARATE FROM THE MORE ACTIVE JUMPING AND CLIMBING CIRCULATION ROUTES. THIS MAY INCLUDE COMBINING SOME STRUCTURES WITH LANDFORMS TO CREATE A NUMBER OF SMALL SEMI-ENCLOSED SPACES UNDERNEATH.
- b) THE CIRCUIT SHALL INCLUDE LEVEL CHANGES OF APPROXIMATELY UP TO 1'-6" AT A TIME, WITH CONNECTED AS WELL AS DISCONNECTED SECTIONS TO ENCOURAGE JUMPING. A HORIZONTAL SEPARATION MEANT TO OFFER A JUMPING LINK BETWEEN APPARATUS CAN BE UP TO 30" WIDE; IF IT ALSO INCORPORATES A LEVEL CHANGE, THIS DISTANCE SHOULD BE DECREASED TO AS LOW AS 10".
- c) FOR THE CLIMBING ELEMENTS IN GENERAL, THE LOWEST HORIZONTAL MEMBERS SHOULD BE A MINIMUM WIDTH OF 2½" TO 5½", AND HIGHER ONES SHOULD BE AT LEAST 5½" WIDE. HOWEVER, THESE SHALL BE INCREASED WHENEVER JUMPING TO OR FROM ADJACENT SURFACES IS EXPECTED. OVERHEAD CIRCULATION AND HANGING-BY-ARMS ACTIVITIES REQUIRE GRASPING HEIGHTS OF 4'-6" TO 5'-6" ABOVE GRADE OR PLATFORM LEVEL. GRASPING MEMBERS SHOULD INCLUDE ¾" DIAMETER VINYL-COVERED METAL BARS AND SOME LARGE TIMBERS. WHEN ROPE LADDERS ARE INCORPORATED FOR CLIMBING, THEY SHOULD BE OF ½" NYLON, KNOTTED, AND SECURED AT BOTH ENDS.
- d) LEVELS OR BALANCING BEAMS OF UP TO 3'-0" HIGH DO NOT REQUIRE HANDRAILS; PLATFORMS FROM 3'-0" TO 7'-0" IN HEIGHT REQUIRE A 2'-6" HIGH GUARDRAIL; WHEN THESE ARE OVER 7'-0" ABOVE GRADE, A FULL ENCLOSURE AROUND THE PLATFORM IS NECESSARY, TO A HEIGHT OF 2'-6" ABOVE THE FLOOR. HOWEVER, HANDRAILS MAY BE OMITTED BY OVERLAPPING AND TIERING

SOME PLATFORMS SO THAT THE DROP TO GRADE OR TO AN INTERMEDIATE LEVEL IS LESS THAN 3'-0".

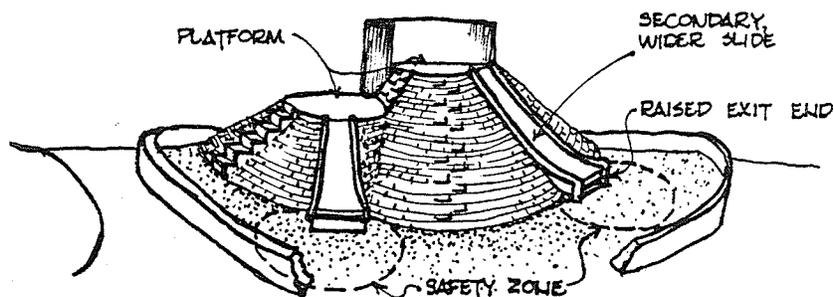
- e) THE SAFETY ZONE REQUIRED AROUND CLIMBING ELEMENTS OVER 3'-0" IN HEIGHT SHALL BE A WIDTH APPROXIMATELY EQUAL TO THE HEIGHT OF THE ELEMENT; AS PLATFORMS AND BARS GET HIGHER, THE SAFETY ZONE MUST WIDEN ACCORDINGLY. HORIZONTAL BARS INCLUDING GUARDRAILS AND BALANCING BEAMS WILL PROBABLY BE SWUNG ON, AND REQUIRE A MINIMUM SURROUNDING CLEARANCE OF 5'-0". THE SURFACE OF THE SAFETY ZONE SHOULD PREFERABLY BE SAND (GUIDELINE #26).
- f) ACCESS TO HIGHER APPARATUS SHOULD BE MADE MORE DIFFICULT BY SUCH THINGS AS: STEEPLY SLOPED BUT NARROW RAMPS, STEPS OR RUNGS SPACED UP TO 12" TO 16" APART, TIRE 'LADDERS', AND KNOTTED CLIMBING ROPES. STEPS OR RUNGS AT THE LOWER LEVELS SHOULD BE ABOUT 6" TO 9" APART.
- g) THERE MUST BE NO PROTRUSIONS, SHARP CORNERS, OR ABRASIVE SURFACES; AND ALL APPARATUS SHALL BE SECURELY ANCHORED.



28. SLIDES IN THE CENTRAL PLAY AREA

SLIDING EQUIPMENT CAN BE PROVIDED IN THE CENTRAL PLAY AREA TO AUGMENT THE ELEMENTS DISCUSSED IN PREVIOUS GUIDELINES; HOWEVER, SLIDES SHOULD NOT BE USED IN PLACE OF THEM. WHEN POSSIBLE, SLIDES SHALL BE IMBEDDED TO SLOPE WITH A MOUND, AND CONFORM TO THE FOLLOWING:

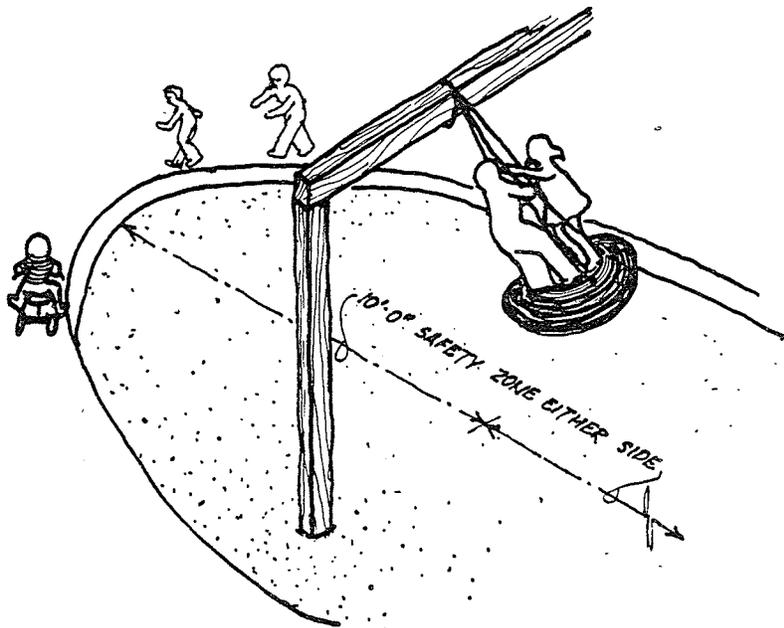
- a) ACCESS TO THE SLIDE PEAK SHOULD BE BY THE HARD-SURFACED MOUND ITSELF; INDENTATIONS, HEAVILY-TEXTURED SURFACES, RAMPS, AND/OR STEPPING PATHS SHOULD BE INCORPORATED WITHIN THE MOUND.
- b) THE SLIDE SHOULD BE ORIENTED IN A NORTH-EASTERLY DIRECTION.
- c) THE BOTTOM PORTION OF THE SLIDE SHOULD HAVE A REDUCED GRADIENT FOR A HORIZONTAL DISTANCE OF 18", AND THE EXIT SHOULD EMPTY AT 12" ABOVE GRADE. THE SPACE BELOW THIS 12" HIGH EXIT SHALL BE CLOSED OFF.
- d) THE SAFETY ZONE AT THE BOTTOM OF THE SLIDE SHALL HAVE A MINIMUM CLEAR WIDTH OF 5'-0" FROM ANY ADJACENT ACTIVITY AREA. THE PREFERRED GROUND COVER IS SAND (GUIDELINE #26).
- e) AT THE PEAK OF THE MOUND, OR WHERE THE SLIDE BEGINS, THERE SHALL BE A PLATFORM WITH A MINIMUM WIDTH OF 4'-0". ENCLOSURE AROUND THIS PLATFORM SHALL CONFORM TO GUIDELINE #27 TO PREVENT INJURY WHEN IT IS OVERCROWDED WITH CHILDREN.
- f) LADDERS MAY BE INCLUDED BUT SHOULD NOT BE THE SOLE MEANS OF ACCESS. WHEN THEY ARE ADDED, CHILD-SCALED WOODEN STEPS RATHER THAN METAL RUNGS SHALL BE USED.
- g) WHEN 2 OR MORE SLIDES ARE INCORPORATED, THEY MAY EXIT FROM THE SAME PLATFORM; EACH SHOULD BE DISTINCT AND OFFER DIFFERENCES IN SLIDING OR ACCESS ROUTES (i.e. HIGHER, STEEPER, LONGER, AND WIDER).
- h) WHEN THE SLIDE MOUND IS INTEGRATED WITH A CLIMBING STRUCTURE, A TRANSITION ZONE BETWEEN THE TWO FUNCTIONS SHALL BE CREATED BY MEANS SUCH AS A HANDRAIL SEPARATION OR ENLARGING THE PLATFORM AREA.



29. SWINGS IN THE CENTRAL PLAY AREA

WHEN SWINGS ARE PROVIDED IN A CENTRAL PLAY AREA, THERE SHOULD BE A MINIMUM OF 3, AND MORE WILL BE REQUIRED IN A VERY LARGE PROJECT.

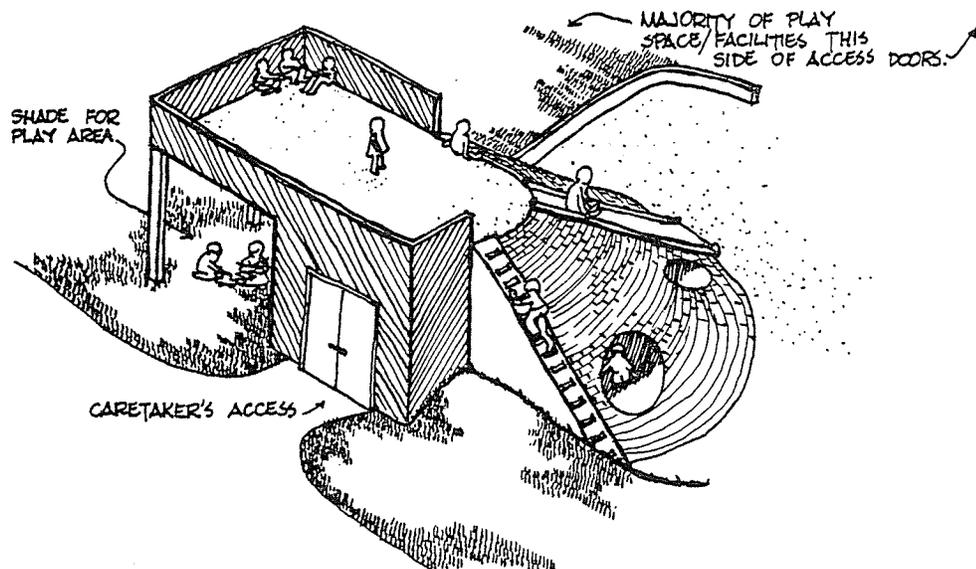
- a) TIRE SWINGS SHALL BE USED, AND EITHER $\frac{1}{2}$ " NYLON ROPE OR PLASTIC-COVERED CHAINS SHOULD BE USED FOR SUSPENSION.
- b) THE TIRES SHOULD BE 13" TO 22" ABOVE GRADE (INCLUSIVE). THIS HEIGHT SHOULD NOT BE ADJUSTABLE WITHOUT THE USE OF TOOLS.
- c) A 10'-0" WIDE, UNOBSTRUCTED SAFETY ZONE ON EITHER SIDE OF THE SWING SHALL BE DEFINED TO MINIMIZE INTERFERENCE WITH CIRCULATION OR WITH OTHER EQUIPMENT. PAVEMENT MUST NOT BE USED IN THIS SAFETY ZONE; IF SAND IS NOT PROVIDED UNDER SWINGS THEN THE AREA MUST BE GRASSED-- WITH THE EXPECTATION THAT IT WILL BECOME WORN AND UNSIGHTLY.



30. DUAL-PURPOSE STORAGE SHEDS FOR CARETAKERS' EQUIPMENT

WHEN A STORAGE SHED IS LOCATED IN A CENTRAL PLAY AREA, IT SHOULD BE DESIGNED TO BE USEABLE IN PLAY. THIS MAY INCLUDE AN OVERHANGING ROOF FOR SHADE IN THE PLAY AREA, OR THE ROOF AND EXTERIOR WALLS MAY BE PLANNED AS A PLAY PLATFORM AND CLIMBING STRUCTURE.

- a) THE SHED SHALL BE ORIENTED SO THAT THE ACCESS DOORS DO NOT OPEN ONTO THE MAJOR ACTIVITY AREAS OR JUNCTIONS OF MAIN ARTERIES IN THE CENTRAL PLAY AREA.
- b) A ROOF OVERHANG SHOULD BE ORIENTED IN A NORTHERLY DIRECTION BUT MUST NOT BE ALONG THE SAME SIDE AS THE STORAGE SHED DOORS. THE ROOF MAY HAVE A VERY LOW SLOPE, BUT SHOULD PREFERABLY BE FLAT.
- c) WHEN ACCESS TO A ROOF IS INTENDED, THE SHED WALLS SHOULD BE ANGLED, BERMED WITH A HARD-SURFACED MATERIAL, OR STEPPED IN PLATFORMS. A SOLID ENCLOSURE, APPROXIMATELY 3'-0" HIGH, SHALL BE PROVIDED ALONG THE WALL ABOVE THE SHED DOORS AND EXTEND PART WAY AROUND THE ADJACENT SIDES. THIS WILL HELP DIRECT PLAY ACTIVITIES TO THE SIDE OF THE SHED FURTHEST FROM THE CARETAKER'S ACCESS DOORS; ANY SPECIFIC PLAY CLUES INCORPORATED, SUCH AS SLIDES OR CLIMBING STRUCTURES, SHALL ALSO BE LOCATED ON THIS SIDE OF THE SHED.

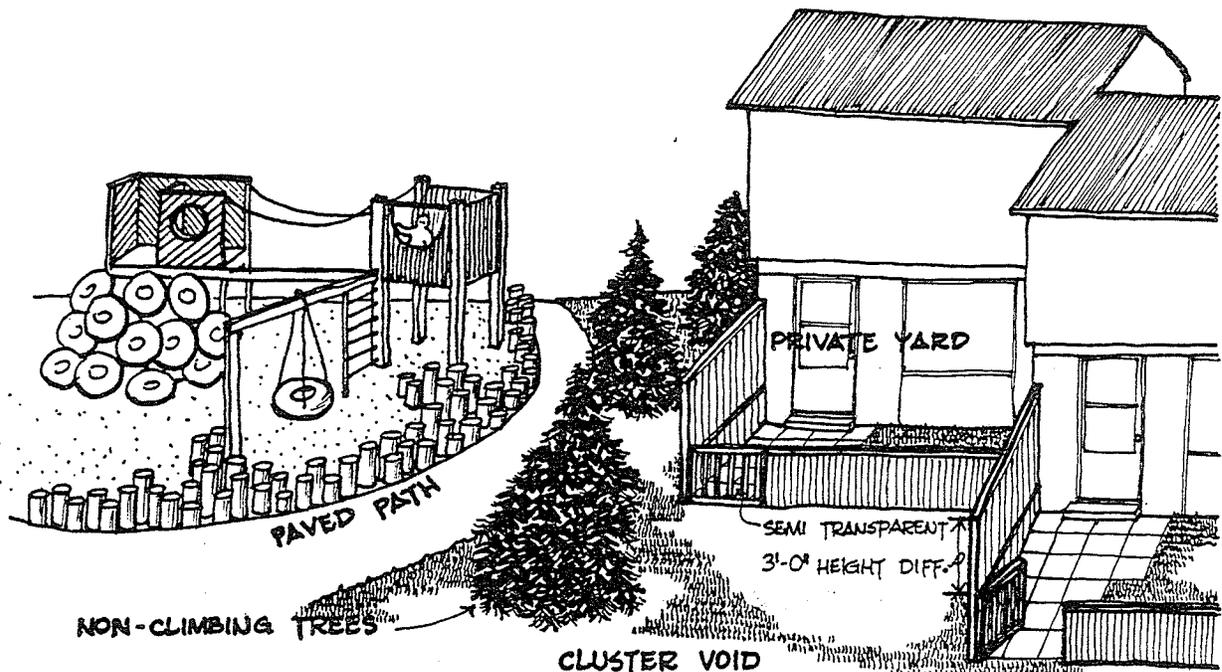


E. Private Yard and Dwelling Unit Guidelines

31. PRIVATE YARDS

THE PRIVATE YARD ADJACENT TO THE LIVING ROOM OF EACH UNIT SHALL BE A MINIMUM OF 20'-0" IN DEPTH. THIS SIZE SHOULD INCREASE IN VERY SMALL AND INFILL PROJECTS WITH A CORRESPONDING DECREASE IN THE PROPORTION OF PUBLIC OPEN SPACE.

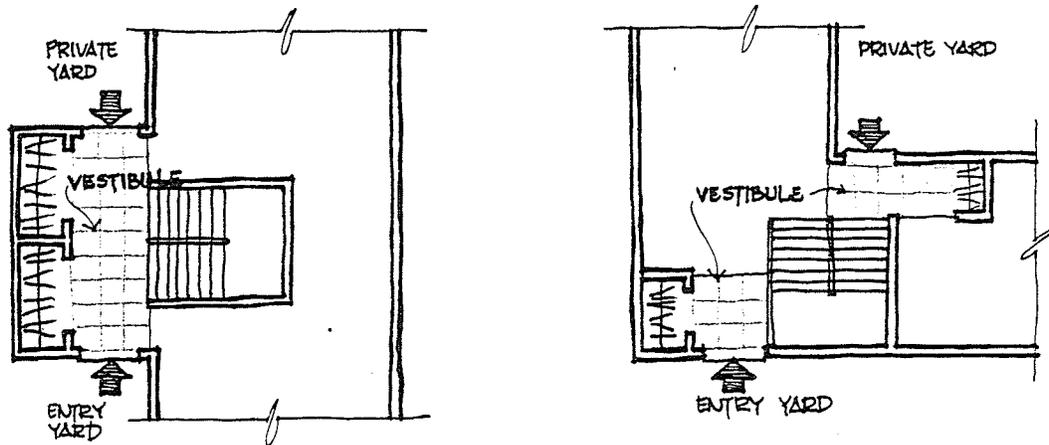
- a) THE PRIVATE YARD SHALL BE FULLY ENCLOSED AND DEFINED BY VERTICAL FENCING: IDEALLY, 6'-0" HIGH AT THE PARTY WALLS AND LOWERED TO 3'-0" HIGH AT THE END SECTION. FOR STREET-ORIENTED YARDS, THIS END SECTION HEIGHT MAY BE INCREASED TO 4'-0"; THIS SHOULD INCLUDE A SEMI-TRANSPARENT PORTION THAT IS NOT DIRECTLY IN FRONT OF LIVING ROOM WINDOWS.
- b) A SEMI-TRANSPARENT HINGED GATE SHALL PROVIDE OUTDOOR ACCESS TO THE YARD, AND AN ALL-WEATHER DOOR SHALL BE USED TO CONNECT THE INDOOR LIVING AREA WITH THE YARD.
- c) THE SPACE IMMEDIATELY BEYOND THE PRIVATE YARDS SHALL BE SEPARATED FROM ANY OTHER ADJACENT SPACES. A VOID BETWEEN CLUSTERS, PAVED PATHS, AND NON-CLIMBABLE TREES SUCH AS BUSHY EVERGREENS SHALL BE USED TO BUFFER NOISE AND PROTECT THE PRIVACY OF THE YARDS. MOUNDS SHOULD NOT BE USED TO SEPARATE THE PRIVATE ZONE IMMEDIATELY NEXT TO THE YARDS FROM PUBLIC AREAS BEYOND.



32. EASY ROUTE BETWEEN BOTH UNIT DOORS

THERE SHALL BE A DIRECT ROUTE BETWEEN BOTH ALL-WEATHER-TYPE DOORS TO THE UNIT TO MINIMIZE THE NEED TO TRACK THROUGH THE HOUSE.

- a) WHEN POSSIBLE, THESE DOORS SHOULD BE LOCATED TO ENABLE THE SHARING OF A VESTIBULE THAT GIVES DIRECT ACCESS TO BOTH BASEMENT AND UPPER LEVEL STAIRS.
- b) OTHERWISE, BOTH DOORS SHALL HAVE A VESTIBULE AND CLOSET, AND PRIORITY SHOULD BE GIVEN TO LOCATING THE BASEMENT STAIRS CLOSE TO THE ENTRY/PARKING SIDE OF THE UNIT.

33. BASEMENTS FOR PLAY

FULL BASEMENTS SHALL BE PROVIDED WHENEVER POSSIBLE TO CREATE THE MAXIMUM AMOUNT OF UNRESTRICTED CIRCULATION SPACE AVAILABLE FOR PLAY.

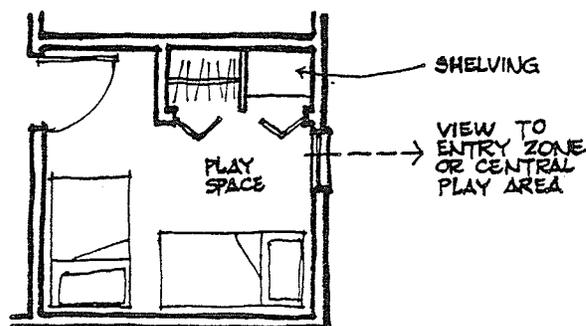
- a) LAUNDRY FACILITIES AND HEATING SYSTEMS SHOULD BE GROUPED ADJACENT TO THE PARTY AND END WALLS, AND CLOSE TO THE STAIRS.
- b) WINDOWS SHOULD BE LARGE AND OPEN ONTO THE DEFINED FAMILY YARD TERRITORY; IT IS PREFERABLE TO ENABLE A VIEW FROM THEM TO BOTH ENTRY AND PRIVATE YARDS.

- c) IN SITUATIONS OF STACKED OR SPLIT-LEVEL TOWNHOUSING, WHERE BASEMENTS ARE VERY SMALL OR NON-EXISTENT, IT WILL BE NECESSARY TO PROVIDE AN ALTERNATE PLAY-ROOM THAT IS NOT ON THE MAIN LIVING LEVEL.

34. BEDROOMS FOR PLAY

AT LEAST ONE BEDROOM PER UNIT, OTHER THAN THE MASTER BEDROOM, SHOULD BE LARGE ENOUGH FOR 2 SINGLE BEDS WITH SPACE LEFT OVER FOR PLAY. THIS CAN BE FACILITATED BY PLACING WINDOWS IN A CLEAR ACCESS SPACE WHICH WILL NOT INTERFERE WITH FURNITURE ARRANGEMENTS.

- a) TALL, NARROW WINDOWS SHOULD BE USED, AND PLACED BETWEEN 24" TO 30" ABOVE THE FLOOR; THE LOWEST PORTION OF THE WINDOWS SHOULD BE OPENABLE BY CHILDREN. IT IS PREFERABLE TO LOCATE THE CHILDREN'S BEDROOMS ON THE SIDE THAT OVERLOOKS THE ENTRY/PARKING SIDE OF UNITS. IN LARGER PROJECTS THAT HAVE A CENTRAL PLAY AREA, CHILDREN'S BEDROOMS MAY OVERLOOK IT.
- b) CLOSETS IN AT LEAST 2 BEDROOMS SHOULD HAVE A MINIMUM WIDTH OF 5'-0", AND OTHERS SHALL HAVE A CLEAR WIDTH OF AT LEAST 3'-0".¹ ONE-HALF OF THE LINEAR SPACE IN ALL BEDROOM CLOSETS SHOULD BE EQUIPPED WITH HARDWARE TO ENABLE ADDITION OF ADJUSTABLE SHELVING EXTENDING TO THE FLOOR.
- c) IF NEITHER A BASEMENT NOR A PLAY-ROOM ON THE UPPER LEVEL ARE PROVIDED, BEDROOMS SHOULD BE LARGER THAN THE MINIMUM AREA ALLOWABLE.



¹Maunu, "Public Town Housing in Winnipeg," p. 212.

CHAPTER VII

CONCLUSIONS

The research and observational analyses in this thesis have been fundamental to: understanding behavioural aspects of 4-to-7-year-old children's characteristic play patterns, desires, and abilities; demonstrating that sensitive response to play must be considered at the initial stages of design; and translating child-user needs into workable architectural form criteria. The literature review is held to be fundamental in establishing a basis of understanding of play environments for children. However, it is difficult if not impossible, to directly translate these implications into design criteria. The observational research, and in part, the survey, form the link between the behavioural data and design guidelines.

The thesis findings support the premise that public townhousing environments in Winnipeg cannot be totally unstructured-for-play. Everything must be carefully designed to unobtrusively direct and encourage children to fulfill their play needs in desirable locations, whether or not these locations are specifically devoted to play. Above all, planning must take into consideration the fact that children's play occurs everywhere in a housing project; the needs for safety, durability, and protection of the rights and values of the various users and management groups, cannot be over-emphasized.

The study has verified the important role of play provision in site planning and in the creation of responsive and satisfying environments

for child and adult users of public townhousing in Winnipeg. The findings have confirmed that consideration of children's play can, and should, influence the orientation and relationship of spaces, the clustering of units, and the details of built form, with the aim of enhancing play and minimizing conflicts.

However, designers cannot and should not attempt to rigidly dictate activities or presume that children will necessarily conform to the play behaviours expected to result from the planning considerations. A fundamental goal in planning the public townhousing environment is to provide the greatest variety of clues, which can be interpreted individually to allow the child to control his choices and activities in play.

The short-term nature of the thesis research and the inevitable subjectivity of translating observational data into design guidelines are acknowledged; other limitations of this study have been noted. It is, therefore, difficult to guarantee that a comprehensive and reliable set of information has been obtained.

It is imperative that, when the guidelines or interpretations of them are implemented and realized in built form, they be evaluated in terms of both the intended and actual behaviours or performances generated by each. Post-evaluative and longitudinal studies are necessary to augment and improve upon the proposed guidelines, and to initiate revisions when performances are found to be inadequate or discrepant, when knowledge of play and provision for it is furthered, and as this form of housing for low-income families evolves.

As noted, the guidelines proposed in this thesis are not absolute or finite; they are only a beginning to the design response to the needs and concerns of a major user group in public townhousing in Winnipeg. It is hoped that this thesis will spark further research, to add to the guidelines presented herein. It is expected that, in the future, a number of similar studies can lead to the implementation of valid criteria for sensitive play provision as an integral component of the site planning guidelines of the CMHC.

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