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THE EFFECTIVENESS OF THE SITE PLAN CONTROL PROCESS IN WINDSOR, ONTARIO
1988-1992

by

Nancy Morand

A Thesis
Submitted to the Faculty of Graduate Studies and Research through the Department of Geography
in Partial Fulfilment of the Requirements for the Degree of Master of Arts at the University of Windsor

Windsor, Ontario, Canada
1994

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ABSTRACT

All of Ontario’s twenty most populous municipalities utilize Site Plan Control (SPC) as a method to closely control development. All but Windsor and Thunder Bay apply SPC on a municipality-wide basis. The City of Windsor has not placed the entire city under SPC, but rather only specific geographic areas, thus offering a rare opportunity to evaluate the effectiveness of the Site Plan Control process.

Thirty commercial developments which proceeded under SPC during the five year period from 1988 to 1992 were compared to thirty which proceeded in NON-SPC areas. Variables for comparison were chosen that related directly to the three major goals for SPC as stated in the Windsor Official Plan: 1) the development shall function in a safe and orderly manner, 2) be aesthetically pleasing and 3) relate well to adjacent development. Developments were awarded points for achieving various design objectives utilizing a point system that took into account the limitations of the site and the importance of the objectives to the City of Windsor, as stated in the Official Plan.

The analysis revealed that SPC sites scored 80 percent higher than NON-SPC sites, suggesting that the SPC process in Windsor had a positive influence on commercial development. In other words, developments that went through the SPC process achieved more of the design objectives deemed desirable by the City of Windsor as stated in City documents than did NON-SPC developments. An analysis of the scores relative to the functionality and safety of sites showed SPC developments scoring 92 percent higher than NON-SPC developments. When looking at the scores for variables pertaining to the aesthetics of the site, SPC developments scored 137
percent higher. However, in this analysis SPC had no positive effect in terms of the relationship of the development to adjacent development - with SPC developments scoring 17 percent lower than NON-SPC sites.

The major recommendation of the study is that the area of SPC be expanded to include the entire City of Windsor. It is also recommended that the City of Windsor support any change in Provincial legislation that would give municipalities more power to influence the appearance of proposed developments.
ACKNOWLEDGEMENTS

Firstly I would like to thank the members of my thesis committee; Dr. Malcolm Matthew for all his good advice, Dr. Veronika Mogyorody for her endless hours of consultation, Prof. Doug Caruso for his insights and expertise and Dr. Larry Kulisek for his support - and to all of them for their friendship and good wishes.

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1.0 INTRODUCTION

The Province of Ontario has given local governments a potentially powerful tool, called Site Plan Control (SPC), for regulating the form and appearance of development (Ontario, 1973). Under SPC the site details of a proposed development must receive municipal approval before the project can proceed even if it conforms to the zoning regulations. Site details include such matters as building location and configuration, landscaping, parking layout and driveway location. The Planning Act permits a municipal government to designate all or part of the land under its jurisdiction as an area of site plan control. Windsor City Council has chosen to designate about 15 percent of the land in the city. This area includes the downtown commercial core, neighbourhood commercial areas, commercial frontage on major arterial roads and properties subject to zoning amendments (Windsor, 1979).

There has been ongoing debate as to the merits of placing the entire city under site plan control. Advocates in the city administration point to the extra level of control afforded the city in insuring developments that are attractive and functional. Those opposed, from the Development Commission and the development industry itself, cite the higher costs involved for developers in terms of both time and money. Some have also questioned the effectiveness of the SPC process in achieving it's objective of improving development standards, as set out in Official Plan Amendment #77 (Windsor, 1985).
This research seeks to determine whether the SPC process has been effective in Windsor and has resulted in closer achievement of the objectives for development (Windsor, 1985) than that which has occurred over the same time period without this additional level of control. Prior to this study there had been no comprehensive evaluation of the effectiveness of the site plan control process in Windsor.

In Windsor the opportunity exists to monitor the effectiveness of the SPC process in a way which is truly unique in the Province. All of the twenty most populous municipalities in Ontario utilize SPC as a method to closely control development. Under Provincial legislation (Ontario, 1983), the municipality may designate all or part of the city as an area of SPC. This research has revealed that the majority of the twenty cities surveyed (16) have placed the entire municipality under SPC. Two others have designated certain zoning categories as SPC areas, for example, all commercially zoned lands. The only cities, surveyed as part of this study, which apply SPC to specific geographic areas are Thunder Bay, which utilizes SPC in conjunction with rezoning applications, and Windsor.

This research takes a random sample of commercial developments that proceeded in Windsor under SPC during the five year period from 1988 to 1992 and compares them to a random sample of commercial developments that proceeded during the same period in areas without SPC. The basis for comparison was variables which reflect the objectives of SPC as stated in the Official Plan (Windsor, 1985) such as the provision of landscaping, planting of trees, location of buildings, driveways and parking areas.
The objective of the study was to attempt a quantitative comparison between two groups of developments, SPC versus NON-SPC. Although the criteria for comparison and the site-survey procedure were designed to be as objective as possible, the subject matter is to some extent qualitative. The site specific data was subject to the author's weighting, based on expert opinion.
2.0 REVIEW OF THE LITERATURE - ORIGIN AND BASIS OF SITE PLAN CONTROL IN WINDSOR

This review of the origin and basis of SPC in Windsor is divided into two main sections. Section 2.1 describes the evolution of the laws relative to SPC, from the Ontario Planning Act to Windsor’s site plan control by-laws and procedures. Section 2.2 reviews design guidelines used in the application of SPC, from general design literature to the design guidelines developed by the city administration for use in Windsor. An understanding of the basis of both the SPC design guidelines and the procedures governing the SPC process is essential if one is to monitor the effectiveness of site plan control in Windsor.

2.1 Laws and Procedures Governing the Application of SPC

Provincial site plan control legislation has evolved over the past two decades in response to the desire expressed by municipalities to control local development more closely. Prior to 1973, Ontario municipalities had been enacting spot rezoning by-laws with "site plans" attached as an integral part of such by-laws. This method, known in Windsor as "Development Control" zoning, enabled municipalities to obtain greater control over specific developments (Reed, 1978). By the early 1970s, developers were challenging the legal authority for this type of by-law (Ontario Law Reform Commission, 1971). In response, the Government of Ontario legalized the existing municipal practice of indirect development control within the framework of zoning by-
laws with the enactment of Section 35a to the Planning Act (Ontario, 1973). This section was amended in 1979 (Ontario, 1979) to separate site plan control from the rezoning process by giving the municipality the authority to deal with development on a site by site basis, and to negotiate individual requirements with the applicant. The amended Section 35a specified that the applicant could be required to submit plans to council, or a committee or individual appointed by council, for approval. Council could also require a SPC agreement as a condition of approval. Later revisions to the SPC provisions of the Planning Act only served to refine the law. Section 40 of the revised Planning Act (Ontario, 1983) for example added a definition of "development" and required that the municipal official plan "show or describe" the areas proposed for SPC. Site Plan Control provisions are found in Section 41 of the latest version of the Planning Act (Ontario, 1990).

Amendment No.77 to the City of Windsor's Official Plan (Windsor, 1985), established SPC policies for Windsor. These policies provide that all lands within the City may be designated areas of SPC and that implementation will occur in stages, with priority given to sites which are the subject of rezoning and where the pace of development activity warrants site specific review. Immediate attention was given to lands abutting major roads and areas of commercial, industrial and multiple residential development activity. The designation of areas of SPC has been on-going since the adoption of the City's "Site Plan Control By-law 6326" in 1979.

Under the SPC approval process in place from 1988 to 1992, the Windsor Planning Department processed each SPC application by circulating the application to
other affected municipal departments or outside agencies (the Essex Region Conservation Authority, Development Commission, Business Improvement Areas, school boards, etcetera), negotiating a satisfactory plan with the developer and reporting to Council. After Council approval, the Legal Department prepared a legal agreement which, once executed by the owner, was registered on title. The SPC approval process generally took 6 to 8 weeks. The time, however, varied depending on the scale and complexity of the development proposal, the completeness of the application at the time of filing and the need for plan revisions as a result of administrative comments concerning the site design. Official Plan Amendment #77 (OPA 77) (Windsor, 1985) states that the city will endeavour to ensure that the cost of providing the facilities required in the SPC agreement is "equitable" in relation to the total cost of the proposed development.

2.2 Design Guidelines in the Application of SPC

Kevin Lynch (1971) defined site planning as the art of arranging buildings and other structures on the land "in harmony with each other." His book is used as a condensed technical reference for the planner. Lynch (1960) also introduced the concept of the "...image of the city" and encouraged planners to use such "building blocks" as paths, edges, districts, nodes and landmarks to create a visual plan at the city scale. In his later work Lynch (1981) explores the "gradualist" approach to modifying the environment. He suggests a strategy of making repeated or piecemeal changes in selected factors in order to improve the whole. Lynch's influence is
reflected in Windsor’s goals for SPC. "...to improve the quality and appearance of developments and thereby improve the image of the city as a whole" (Windsor, 1992). Lynch laments the lack of a comprehensive vision for city building and notes that "No one takes anything like a comprehensive view of the evolving spatial structure, except perhaps the local planning agency, which is one of the weaker actors" (Lynch, 1981, p.41).

Gordon Cullen’s *Townscape* (1961) complemented Lynch’s work with a British approach. To Cullen there is "an art of relationship just as there is an art of architecture," the purpose of which is to take all the elements that go to create the urban environment: buildings, trees, nature, traffic, etcetera, and weave them together in such a way that "drama " is released (Cullen, 1971, p.8). Cullen’s analysis of urban environments is microscale and based on aesthetic principles. He introduces urban design terminology, for example concepts of enclosure, rhythm, vistas and sense of place, that are reflected in Windsor’s design principles.

Theoretician Christopher Alexander in his *Notes on the Synthesis of Form* (1966) addresses the concept of good design. He states that every design problem begins with an effort "to achieve fitness between two entities: the form in question and its context." He recommends that we should "see the process of achieving good fit between two entities as a negative process of neutralizing the incongruities, or irritants, or forces, which cause misfit" (Alexander, 1966, p.24). By 1987 Alexander had written (along with H. Neis, A. Anninou and I. King) *A New Theory of Urban Design* based on an experiment done at Oxford University in 1978. In this book Alexander
contents that the goal of urban design should be the creation of "wholeness" in the environment and that the wholeness will have to come from a "process" that guarantees that "each new act of construction becomes related in a deep way, to what has gone before" (Alexander, 1987, p. 16). This new theory tries to generate urban structure without an overall plan, contending that large-scale order will emerge "organically" from the "co-operation of the individual acts of construction." While the planning professionals in the Windsor Planning Department have yet to embrace this theory, valuable lessons can be learned about relating new development to its surroundings or context.

Danish architect Jan Gehl in his 1987 publication Life Between Buildings emphasizes the need to design for the everyday needs of people, to design safe and pleasant environments which are conducive to social interaction (Gehl, 1987). These needs are reflected in Windsor’s stated goals for site plan control, e.g. to ensure that new development function in a safe and orderly manner, be aesthetically pleasing and not detract from adjacent development (Windsor, 1985).

In his Introduction to Urban Design (Barnett, 1982) designer Jonathan Barnett explores various means by which municipalities may control the form of development. He points out that zoning, more particularly incentive zoning, is one powerful tool. He suggests however, that for site details such as placement of loading spaces, parking lots, entrances and exits, etcetera, design review is more appropriate. He suggests that a set of standards for site plan review be adopted and given to the developer before the building is designed. He suggests that the guidelines should be written in performance
language, so as not to prejudge the solution to the design problems. The standards
to provide a checklist for evaluating the design, and should ensure that major design
issues are not brought up for the first time at a late stage of the design process. Mr.
Barnett contends, "It is left to local government to look after the public's need for
urban design" (Barnett, 1982, p. 216).

The Province of Ontario, in establishing guidelines for municipal use of SPC,
has suggested that municipalities publish general guidelines setting out minimum
municipal requirements for various types of development (Ontario, 1984). To this end,
the City of Windsor has prepared documents such as the "Manual of Landscaping
Requirements" (Windsor, 1989a), "Downtown Windsor - Site and Building Design
Guidelines" (Windsor, 1986), and the "Manual of Urban Design Principles" (Windsor,
1989b). While the landscaping manual has been adopted by City Council, the other
documents have no official status but are used as a guide by the administration in
reviewing development proposals. In preparing these documents, staff reviewed the
guidelines used in other Ontario municipalities. The Windsor guidelines closely
emulate those of Scarborough (Scarborough, 1985, 1987). Windsor's "Manual of
Urban Design Principles" (Windsor, 1989b) illustrates "preferred" and "not preferred"
treatments of development in both urban and suburban locations. A section on
"principles for building form and appearance" is included even though the Planning
Act gives no power to municipal councils to control architectural or aesthetic design
except in designated heritage districts. Indeed, some aspects of building design are
specifically excluded from SPC. These include height, interior areas, the colour,
texture, and type of materials, window detail, construction details, architectural and interior design (Ontario, 1984).

The City of Ottawa's new Official Plan, approved in 1991, contains an urban design chapter which provides a policy foundation for day-to-day planning decisions across the city (Lanktree, 1994). It has benefitted the development review process by setting out design guidelines to be used at the site level. The City of Windsor will soon (1995) be undertaking a major review/revision of its official plan. Consideration should be given to consolidating existing urban design policies into one chapter in the revised Official Plan.

2.3 Summary

Provincial legislation authorizing the use of SPC on the municipal level has evolved over time in response to the needs of the municipalities. Windsor has responded to the legislation by: adding SPC provisions to its Official Plan (Windsor, 1985); passing a SPC by-law (Windsor, 1979); setting up an administrative process for SPC applications; and developing its own urban design documents for use in reviewing development applications. The essential element not included in this package is a monitoring system, even though the Province encourages the monitoring of planning processes to determine whether or not any process is functioning properly by relating its outcome to the intended results (Ontario, 1982).
3.0 METHODOLOGY

3.1 A Priori Model

Amendment No. 77 to the Windsor Official Plan (1985) establishes a number of civic and environmental design objectives which can be achieved through the use of SPC. It is generally assumed by the City’s administration and elected officials that the SPC process in place during the study period (see Appendix A) has served to achieve these objectives. This concept is expressed in the figure below.

FIGURE 1
A PRIORI MODEL

The words appearing in the model are explained as follows:
- "Proposal" represents the initial development proposal.
- "SPC Area?" represents the test to determine whether the proposed development is located in an area of the city that is subject to SPC.
- "SPC Process" represents the SPC approval process.
- "Building Permit Process" represents the building permit process that every construction project must undergo.

- "Development" represents the actual development built after going through the building permit process.

- "Better Quality Development" represents the actual development built after going through both the SPC and building permit processes. "Better quality" is defined by performance criteria which are based on Windsor City Council's objectives for SPC as stated in Official Plan Amendment #77 (Windsor, 1985) and other guideline documents (Windsor, 1986, 1989a, 1989b).

The top line of Figure 1 represents the normal development approval process without SPC. The developer submits a construction proposal to the City's Building Department for its review. That department determines if the proposed development is located within an area that is subject to SPC. If not, the building permit application is processed. If the proposal meets the zoning, servicing, Ontario Building Code, Fire Code and other standards, the Building Department issues a building permit and the development may proceed.

The bottom line of Figure 1 assumes the addition of the SPC approval process to the normal development approval process. If the Building Department determines that the proposal is within a SPC area the developer submits the plans to the City's Planning Department for site plan approval. After the proposal has gone through the SPC process, has received City Council approval, and an SPC agreement has been executed and registered, the development proposal goes to the Building Department
where it is again reviewed for compliance with the agreement and other legislation. If all requirements have been met and SPC bonding, if required, is secured, the Building Department issues a building permit and the development may proceed. The "a priori" model assumes that the resulting development will reflect Council's objectives for SPC as stated in OPA 77 (Windsor, 1985) and other guideline documents (Windsor, 1986, 1989a, 1989b). It should be more functional and attractive (i.e. "better quality") than development which proceeded without SPC approval.

For this thesis it was possible to develop a evaluation process to provide a statistical measure of the benefits (or lack thereof) of SPC in Windsor because only a portion of the City of Windsor is designated as an area of SPC, and the City's objectives and performance guidelines for SPC are well documented. The evaluation process developed for this research was based on performance criteria which reflect the City's stated objectives for SPC.

This study tests the hypothesis that there will be a significant difference between the two outputs of the model (Figure 1) since the a priori model assumes that site plan control results in a better quality of development, as defined by performance criteria used in the evaluation process.

One may further hypothesize that such an evaluation process will help the City determine if the SPC process itself is functioning properly, by relating the outcome to the expected results. If SPC performance falls short of expectations, then steps could be taken to modify programs and policies related to SPC so as to rectify the situation.
3.2 The Study Area

The area of study is Windsor, Ontario, a city of about 192,000 inhabitants, lying south of the Detroit River in western Essex County. Windsor’s 122 square kilometre area has been divided into two categories, those areas subject to SPC and those areas not subject to SPC.

The designation of areas of SPC in Windsor has been on-going since the adoption of the City’s "Site Plan Control By-law 6326" in 1979. By the end of 1992 approximately 15 percent of the land in the city, more than 350 areas, had been placed under SPC. This is a very important 15 percent as far as the image of the city is concerned because it encompasses lands abutting major roadways. Many of these roadways, such as Huron Church Road, Walker Road, Dougall Ave. and Ouellette Ave, are considered entryways into the city. It includes downtown and the other seven business improvement areas as well as areas subject to secondary plans such as Sandwich and the Campbell/Caron neighbourhood. Many individual properties which were the subject of rezoning applications are also included.

Important for this study is the fact that there are still many commercial areas that are not under site plan control - most notably portions of Tecumseh Road and Wyandotte Street. This offers the opportunity to compare developments that proceeded in SPC versus NON-SPC areas.

The attached Information Map (Figure 2) shows the extent of site plan control in Windsor.
3.3 Study Procedure

3.3.1 Site Selections

Thirty SPC developments were compared to thirty NON-SPC developments which were built during the same period. The study was limited to commercially zoned developments which proceeded in the City during the five years from 1988 to 1992. The advantages of limiting the time frame and the land use for the developments are:

1) The zoning requirements for commercial uses are fairly consistent throughout the city, in contrast to zoning requirements for other types of development.

2) The period 1988 to 1992 is one for which data is available and during which the SPC process was well established.

3) A sufficient number of cases could be sampled for comparison purposes because numerous commercial developments had proceeded in both SPC and NON-SPC areas during the study period. This is in contrast to other types of development e.g. multiple-unit residential.

Of the 88 SPC developments that met the study criteria, 30 were chosen by random sampling. A random sample of 30 NON-SPC commercial developments was drawn from the 219 NON-SPC commercial developments which proceeded during 1988-1992. The developments were large enough to have been subject to SPC
approval if they had been located in a SPC area. This information was obtained from the City's Building Department, with a computer listing compiled by the Information Services division of the Finance Department. The location of the sixty subject sites is shown graphically on Figure 3.

In order to be subject to the SPC process, proposed construction must be determined to be a "development" by the City's Building Department. The City utilizes the Province's definition that a development is "The construction, erection or placing of one or more buildings or structures on land or the making of an addition or alteration to a building or structure that has the effect of substantially increasing the size or useability thereof, or the laying out and establishment of a commercial parking lot" (Ontario, 1983).

In Windsor, OPA 77 (1985) sets out certain classes of development that are exempt from the SPC process. Basically they are one family, semi-detached, duplex and double duplex dwellings, except in areas where there are environmental concerns i.e., areas subject to noise pollution, flood susceptibility or small lot size. Also exempt are commercial buildings or additions of less than 50 square meters (538 sq.ft.) and industrial or institutional buildings or additions of less than 100 square meters (1,076 sq.ft.). Parking lots with 5 or less spaces are also not subject to the SPC process.

3.3.2 Variable Classification

It was necessary to examine site-specific variables for comparison purposes and choose variables that were relevant to the goals and objectives of Windsor's site plan.
control guidelines (Windsor, 1985, 1986, 1989a, 1989b, 1992). The variables selected also had to be quantifiable and measurable.

The document that forms the basis for all planning decisions in Windsor, the Official Plan (1993) and more particularly Official Plan Amendment No. 77 (Windsor, 1985), identifies three basic GOALS for SPC:

1) Ensure that the development functions in a safe and orderly manner.
2) Ensure that the development is aesthetically pleasing.
3) Ensure that the development does not detract from adjacent development.

These three goals helped in the selection of the variables used in this study. Accordingly, the variables were classified into the following three groups:

a. Function/Vehicular & Pedestrian Access
b. Aesthetics/Landscaping
c. Relationship to Surrounding Development

The OBJECTIVES for site plan control, as set forth in OPA 77 (Windsor, 1985), have been categorized under these three separate goals.
OBJECTIVES

A. Objectives for Function/Vehicular & Pedestrian Access

<table>
<thead>
<tr>
<th>Required Facility</th>
<th>Reason Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Land Conveyance</td>
<td>To eliminate or reduce the cost to the City where widening of existing rights-of-ways is required for road improvements.</td>
</tr>
<tr>
<td>2. Easements</td>
<td>To eliminate or reduce the cost to the City to acquire easements necessary for the construction or maintenance of municipal services.</td>
</tr>
<tr>
<td>3. Storm Detention/ Lot Grading</td>
<td>To preclude or remedy any change in elevation or contour of the land which results in the discharge of surface water on adjacent lands, etcetera.</td>
</tr>
<tr>
<td>4. Access from Highways/Curbing</td>
<td>To construct access so that the safety &amp; convenience of vehicular &amp; pedestrian traffic to and from the site is assured and the safety &amp; flow of traffic on adjacent roads is not necessarily impeded.</td>
</tr>
<tr>
<td>5. Loading/Parking Facilities</td>
<td>To provide paved parking and loading facilities convenient to users while ensuring orderly and safe vehicular &amp; pedestrian movements.</td>
</tr>
<tr>
<td>6. Walkways/Ramps</td>
<td>To provide safe &amp; convenient walkways including handicap ramps, serving points of entry and exit to all buildings and facilities.</td>
</tr>
<tr>
<td>7. Lighting</td>
<td>To provide adequate on-site lighting of buildings, facilities, parking lots, driveways and walkways to ensure the safe movement of pedestrian &amp; vehicular traffic.</td>
</tr>
</tbody>
</table>

B. Objectives for Aesthetics/Landscaping

1. Landscaping                                    | To provide an attractive landscaped environment which enhances the overall appearance of the City, lessens the visual impact of the development on adjacent properties, reduces energy costs and mitigates the effects of extreme weather conditions. |
2. Garbage Enclosures To provide enclosed waste storage facilities adequate for the needs of the development in a suitable location which will not become a nuisance to adjacent properties or a health hazard.

C. Objectives for the Relationship to Surrounding Development

None of the objectives stated in OPA 77 (1985) directly address the third goal of ensuring that the development does not detract from adjacent development. However, the City's 1989 "Manual of Urban Design Principles" contains the following guidelines for relating a proposed development to adjacent existing development:

1) Relate building setback to adjacent development.

2) Relate massing to surrounding buildings.

3) Relate height to surrounding buildings.

4) Relate design to respect significant architectural features of nearby buildings.

Given the aforementioned goals, objectives and related "required facilities", a set of variables for analysis was developed for each of the three goals of SPC. Wherever possible variables were identified that were capable of being quantified and measured. Some of the variables, however, by their very nature are subjective, most notably those dealing with the "relationship" goal, for example comparing the "mass" of a building to neighbouring buildings.
VARIABLES

The following variables were examined for each of the sixty sites. They are categorized below under one of the three basic goals for SPC (i.e. function, aesthetics, and relationship).

a. Function Variables

Seven of the nine "required facilities" listed in the SPC section of the Official Plan (1985) are requirements that strive to ensure that the development functions in a "safe and orderly manner."

The variables chosen for analysis that deal with the "function" requirements are as follows:

- The granting of a gratuitous land conveyance for road improvement purposes.
- The provision of a storm detention/lot grading scheme.
- The minimizing of the number of access points to the development.
- The provision of shared access with adjacent development.
- The maximizing of the distance from the driveway to the driveway of the adjacent development.
- The provision of an adequate separation between the driveway and the corner, for corner sites.
- The provision of a minimum 3 m. (10 ft.) vehicular entrance "throat" on the site.
- The paving of the parking lot.
- The clear identification of the loading space.
- The clear marking of the parking spaces.
- The provision of an on-site sidewalk system.
- The accessibility of the building for the handicapped.
- The provision of on-site lighting.

b. Aesthetics Variables

Two requirements of the Official Plan (1985) deal specifically with the aesthetics of new development. Variables for analysis that deal with the "aesthetics" requirements are as follows:

- The provision of on-site landscaping expressed as a percentage of site area.
- The provision/retention of trees on site expressed as the number of trees provided per 92.9 m² (1,000 sq. ft.) of site area.
- The provision of shrubs/foundation plantings expressed as the number of shrubs provided per 92.9 m² (1,000 sq. ft.) of site area.
- The screening of the garbage receptacle.
- The provision of any of the following additional landscaping features: berms, decorative paving (brick), pedestrian/ornamental lighting, raised planters, flowers, mulch (stone/wood).
- The maintenance of the landscaping.
c. Relationship Variables

Variables for analysis for the "relationship" goal are as follows, with similarity being defined as having a general likeness to:

- The similarity of the building setback to surrounding buildings.
- The similarity of the building's massing to surrounding buildings.
- The similarity of the building's roof style to surrounding buildings.
- The similarity of the building's fenestration to that of surrounding buildings.
- The similarity of the building's architectural style to that of surrounding buildings.

A height factor was initially included in the field survey, but not included in the final analysis because building height can be regulated only by zoning (Ontario, 1990).

3.3.3 The Field Survey

A field survey sheet was developed based on the variables in Section 3.3.2. (See Appendix B.) Initial measurements and calculations were done in imperial measure because 54 of the 60 site plans under review (90 percent) were drawn using imperial measure. Results were later converted to metric measure. During the Fall of 1993, the author visited the 60 sites, completing the field survey form and photographing selected sites.
3.3.4 Determining Variable Values

The goal of this research was to compare quantitatively two sets of developments - those which went through the SPC process and those which didn't. Therefore a numerical value had to be assigned to each of the individual variables. A total of one hundred "points" was distributed to the individual variables based on the relative significance of the required facility to the City as stated in the Official Plan (Windsor, 1985). Seven of the nine objectives for site plan control stated in OPA 77 (Windsor, 1985) relate to function/safety, so "function" variables were assigned seventy points. Two of the nine relate to aesthetics/landscaping, so "aesthetics" variables were assigned twenty points. Because design compatibility is only implied in OPA 77 (1985), "relationship" variables were assigned only ten points, for an overall total of one hundred points.

Within each of the three basic categories (function, aesthetics, relationship) the points were divided between the variables relative to the importance of the variable as it contributes to the general goal, as determined by expert opinion. Points were assigned to the variables as follows:

a. Function Variables

- Give gratuitous land conveyance .......................... 20
- Access points .................................................. 20

Number of access points (10 points)

- Minimize number of access points .... 6
- Provide shared access ............................... 4
Location of access points (10 points)

- Maximize separation of driveways .......... 5
- Maximize distance to corner .............. 5

-Parking lots ................................................. 12
- Provide a 3m (10 ft.) driveway "throat" ........ 6
- Pave parking lot ................................. 2
- Provide clearly marked loading space ....... 2
- Clearly mark parking spaces ................. 2

-Pedestrian safety .................................................. 12
- Provide an on-site sidewalk system ......... 4
- Ensure handicapped accessibility .......... 4
- Provide on-site lighting ....................... 4

- Provide Storm detention/lot grading scheme ................. 6

-TOTAL FUNCTION POINTS ................................. 70

b. Aesthetics Variables:

- Percentage of site landscaped ......................... 5

(i.e. 20% or more of the site = 5, 15-19.9% = 4,
10-14.9% = 3, 5-9.9% = 2, >0-4.9% =1, 0% =0)

- Number of trees per 92.9 m² (1,000 sq.ft.) of site area ........ 3

(i.e. 1 or more = 3, .5 -.99 = 2, >0 -.49 =1, 0 = 0)

- Number of shrubs per 92.9 m² (1,000 sq. ft.) of site area ........ 3

(i.e. 4 or more = 3, 2 -3.9 = 2, >0 -1.9 =1, 0 = 0)
- **Screened garbage enclosure**  ........................................ 3

- **Landscaping elements**  ........................................ 3

  (i.e. 0.5 points per berm, decorative paving, pedestrian/
  ornamental lighting, raised planters, flowers, mulch)

- **Maintenance of landscaping**  .................................. 3

  (i.e. Good (all living, neat, healthy) = 3,
  Fair (most living, needs some maintenance) = 2,
  Poor (many dying/dead, little or poor maintenance = 1,
  Not Provided as Required -SPC sites only = 0)

- **TOTAL AESTHETICS POINTS**  .................................. 20

c. **Relationship Variables**

  - **Similar Setback**  ........................................ 2

  - **Similar Massing**  ......................................... 2

  - **Similar Roof Style**  .................................... 2

  - **Similar Fenestration**  .................................. 2

  - **Similar Architectural style**  ............................ 2

  - **TOTAL RELATIONSHIP POINTS**  ......................... 10

- **TOTAL POINTS**  ........................................... 100
The final scores that appear in the Analysis of Data section of this thesis relate to the actual score achieved as a percentage of the number of points possible for the development. For example, if the site had no landscaping, a rating of the quality of maintenance of the landscaping was not possible. In this instance, the total score for the variable dealing with maintenance of landscaping (i.e. 3 points) would be subtracted from the total points possible (100 points) before a percentage was calculated.

A matrix of raw field survey data and scores was developed and entered into a SPSS data file. A variety of statistical tests were run on the data, the results of which appear in the next section.
4.0 ANALYSIS OF DATA

The study findings are summarized in the tables in Sections 4.1 through 4.5. The first section (4.1) deals with the size and dimensions of the sixty sites. Section 4.2 describes raw survey data as it pertains to the FUNCTION variables. Section 4.3 reports the raw findings relative to AESTHETICS variables, while Section 4.4 does the same for RELATIONSHIP variables. Sections 4.2, 4.3 and 4.4 report only actual site information, that is, results of the field survey. The Section 4.5 introduces the scores for the variables. The scoring system weights the variables in importance and calculates the scores as a percent of possible points (see Section 3.3.4 - Determining the Variable Values).

4.1 Site Information

The first table (Table 1) summarizes site information relative to the area and frontage of the 30 SPC sites and the 30 NON-SPC sites. As Table 1 shows, the NON-SPC sites were on average 20.7 percent smaller than SPC sites. The average site area for SPC sites was 3,235 m² (34,825 sq.ft.), while the average site area for NON-SPC sites was 2,567 m² (27,637 sq.ft.). The average frontage of NON-SPC sites (35.5 m or 117 ft.) was 40.4 percent shorter than SPC sites (59.6 meters or 196 feet). To better understand the distribution of site size between SPC and NON-SPC developments, please refer to Table 2.
**Table 1**

Site Information

<table>
<thead>
<tr>
<th>Variable</th>
<th>SPC</th>
<th>Non-SPC</th>
<th>Difference</th>
<th>(#)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Site Area (sq. m.)</td>
<td>3235</td>
<td>2567</td>
<td>-668</td>
<td>-20.7</td>
<td></td>
</tr>
<tr>
<td>Largest site</td>
<td>27234</td>
<td>25454</td>
<td>-1780</td>
<td>-6.5</td>
<td></td>
</tr>
<tr>
<td>Smallest site</td>
<td>541</td>
<td>283</td>
<td>-258</td>
<td>-47.7</td>
<td></td>
</tr>
<tr>
<td>Median site</td>
<td>1902</td>
<td>1164</td>
<td>-738</td>
<td>-38.8</td>
<td></td>
</tr>
<tr>
<td>Average frontage (m)</td>
<td>59.6</td>
<td>35.5</td>
<td>-24.1</td>
<td>-40.4</td>
<td></td>
</tr>
<tr>
<td>Longest frontage</td>
<td>270.4</td>
<td>115.8</td>
<td>-154.6</td>
<td>-57.2</td>
<td></td>
</tr>
<tr>
<td>Smallest frontage</td>
<td>15.2</td>
<td>9.1</td>
<td>-6.1</td>
<td>-40.1</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2**

Distribution of Site Size

<table>
<thead>
<tr>
<th>Site Size**</th>
<th>SPC</th>
<th>NON-SPC</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>8 (27%)</td>
<td>16 (53%)</td>
<td>24 (40%)</td>
</tr>
<tr>
<td>Medium</td>
<td>14 (46%)</td>
<td>10 (33%)</td>
<td>24 (40%)</td>
</tr>
<tr>
<td>Large</td>
<td>8 (27%)</td>
<td>4 (13%)</td>
<td>12 (20%)</td>
</tr>
<tr>
<td>Total</td>
<td>30 (100%)</td>
<td>30 (100%)</td>
<td>60 (100%)</td>
</tr>
</tbody>
</table>

**Maximum Small Site Estimated at 1,300 m² (14,000 sq.ft.)
Maximum Medium Site Estimated at 3,716 m² (40,000 sq.ft.)
(Therefore Medium Sites range from 1,300 m² to 3,716 m² (14,000 to 40,000 sq.ft.))
Large Sites were considered to be anything over 3,716 m² (40,000 sq.ft.)

The fact that the sample NON-SPC sites were on average smaller than the SPC sites meant that the author had to develop a scoring system for comparing SPC and NON-SPC
developments that was equitable to all size developments. For example, one of the "function" variables deals with keeping the number of access points to the development to a minimum. Initially the number of points available for this variable (6) were to be assigned to each site on a pro-rated basis based on the length of the frontage per access (total length of primary and secondary frontage divided by the number of access points on those frontages). However this method would have been biased against small sites with short frontages (primarily NON-SPC sites). Instead each individual development was analyzed by two professional planners to determine if, given the constraints of the site, the number of access points were kept to a minimum. Every site, no matter how short the frontage, was given the full 6 points if the site had only one access point.

4.2 Function Variables

Table 3 shows the number of SPC and NON-SPC sites that did (YES) or did not (NO) provide the FUNCTION variable in question. It should be emphasized that the numbers presented in the table reflect only raw field survey data. They do not reflect the weighting system applied to the individual variables. The weighting system reflects the relative importance of the variable to the City of Windsor as stated in the Official Plan (Windsor, 1985). The numbers in the "Total # Applicable" column refer to the total number of sites for which provision of the variable was possible out of a maximum of 30.

As Table 3 shows, SPC sites provided 80 percent (245) of the FUNCTION variables that were applicable or possible. In contrast, NON-SPC sites provided 60 percent (178) of the FUNCTION variables that were possible. A two sample Kolmogorov-Smirnov test was run
<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>SPC (n=30)</th>
<th>Non-SPC (n=30)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The granting of a gratuitous land conveyance for road improvements.</td>
<td>9 (100%)</td>
<td>0 (0%)</td>
<td>9 (100%)</td>
<td>0 (0%)</td>
<td>20 (100%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>The provision of a storm detention/lot grading scheme.</td>
<td>18 (100%)</td>
<td>0 (0%)</td>
<td>18 (100%)</td>
<td>4 (57%)</td>
<td>7 (43%)</td>
<td>30 (100%)</td>
</tr>
<tr>
<td>The minimizing of the number of access points to the development.</td>
<td>17 (61%)</td>
<td>11 (39%)</td>
<td>28 (100%)</td>
<td>26 (87%)</td>
<td>4 (13%)</td>
<td>30 (100%)</td>
</tr>
<tr>
<td>The provision of shared access with adjacent development.</td>
<td>10 (91%)</td>
<td>1 (9%)</td>
<td>11 (100%)</td>
<td>7 (70%)</td>
<td>3 (30%)</td>
<td>10 (100%)</td>
</tr>
<tr>
<td>The maximizing of the distance of the driveway to the driveway of adjacent development.</td>
<td>14 (78%)</td>
<td>4 (22%)</td>
<td>18 (100%)</td>
<td>9 (56%)</td>
<td>7 (44%)</td>
<td>16 (100%)</td>
</tr>
<tr>
<td>The provision of an adequate distance to the corner from the driveway (for corner sites).</td>
<td>16 (94%)</td>
<td>1 (6%)</td>
<td>17 (100%)</td>
<td>12 (75%)</td>
<td>4 (25%)</td>
<td>16 (100%)</td>
</tr>
<tr>
<td>The provision of a 3 metre 'throat' from the property line at the driveway.</td>
<td>24 (80%)</td>
<td>6 (20%)</td>
<td>30 (100%)</td>
<td>12 (44%)</td>
<td>15 (56%)</td>
<td>27 (100%)</td>
</tr>
<tr>
<td>The paving of the parking lot.</td>
<td>28 (93%)</td>
<td>2 (7%)</td>
<td>30 (100%)</td>
<td>23 (83%)</td>
<td>4 (15%)</td>
<td>27 (100%)</td>
</tr>
<tr>
<td>The clear identification of the loading space.</td>
<td>9 (32%)</td>
<td>19 (68%)</td>
<td>28 (100%)</td>
<td>6 (21%)</td>
<td>23 (79%)</td>
<td>29 (100%)</td>
</tr>
<tr>
<td>The clear marking of parking spaces.</td>
<td>24 (83%)</td>
<td>5 (17%)</td>
<td>29 (100%)</td>
<td>15 (56%)</td>
<td>12 (44%)</td>
<td>27 (100%)</td>
</tr>
<tr>
<td>The provision of an on-site sidewalk system.</td>
<td>25 (83%)</td>
<td>5 (17%)</td>
<td>30 (100%)</td>
<td>17 (57%)</td>
<td>13 (43%)</td>
<td>30 (100%)</td>
</tr>
<tr>
<td>The accessibility of the building for the handicapped.</td>
<td>25 (89%)</td>
<td>3 (11%)</td>
<td>28 (100%)</td>
<td>28 (93%)</td>
<td>2 (7%)</td>
<td>30 (100%)</td>
</tr>
<tr>
<td>The provision of on-site lighting.</td>
<td>26 (87%)</td>
<td>4 (13%)</td>
<td>30 (100%)</td>
<td>19 (63%)</td>
<td>11 (37%)</td>
<td>30 (100%)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>245 (80%)</td>
<td>61 (20%)</td>
<td>306 (100%)</td>
<td>178 (60%)</td>
<td>121 (40%)</td>
<td>299 (100%)</td>
</tr>
</tbody>
</table>
on the final figures in Table 3. It indicated that there was a significant statistical difference between the two sets of raw data (Dmax (0.20) > Dcrit (0.192)). These data do not reflect any weighting of variables.

In looking at the raw data presented, there were two variables for which NON-SPC sites fared better than SPC sites. One was the variable dealing with the accessibility of the building to the handicapped. Ninety-three percent of all NON-SPC buildings were handicapped accessible, while the percentage for SPC sites was 89 percent. The second was the variable dealing with minimizing the number of vehicular access points to the development. Eighty-seven percent of the NON-SPC sites kept their access points to a minimum, while 61 percent of the SPC sites for which the question was applicable did so. This is a reflection, at least in part, of the smaller frontage length of the NON-SPC sites (over 40 percent shorter on average). Every development is entitled to one access point no matter how short the frontage of its site. Sites with longer frontages (i.e. most SPC sites) may have more than one access point, making them more susceptible to failing the test of keeping the number of access points to a minimum.

As would be expected under the existing legislation, SPC sites provided gratuitous land conveyances every time they were necessary (i.e. 100 percent). In contrast NON-SPC sites never provided gratuitous land conveyances where they were deemed necessary because they are not required to do so under the law (An analysis of the necessity of a land conveyance for NON-SPC sites is located in Section 5.4).
SPC sites always provided storm detention/lot grading schemes when they were required. NON-SPC sites provided them 57 percent of the times they were deemed to be necessary (See Section 5.6).

While the provision of shared access was possible in only one third of the 60 sites, SPC sites did well in taking advantage of the opportunity to provide shared access (91 percent), while NON-SPC sites did less well (70 percent).

The SPC sites did better in the variables dealing with the location of the access points. While even SPC sites did not score well for the variable dealing with maximizing the distance from the driveway to the driveway of adjacent development (78 percent), they did better than NON-SPC sites (56 percent). SPC corner sites did well in maximizing the "distance from the driveway to the corner" (94 percent). Corner NON-SPC sites did not do as well (75 percent).

Eighty percent of SPC sites provided a 3m (10 ft.) "throat" from the property line at the vehicular access, while 44 percent of the applicable NON-SPC projects did the same.

Relative to parking lots, ninety-three percent of the SPC sites had paved parking lots. Of the NON-SPC sites with parking lots, 85 percent were paved. Parking spaces in SPC parking lots were generally well marked (83 percent). Of the NON-SPC sites with parking lots, 56 percent had clearly marked parking spaces. Neither SPC or NON-SPC developments had clearly marked loading spaces. SPC developments scored 32 percent and NON-SPC developments scored 21 percent for this variable.

Customer safety was better accommodated in SPC developments than in NON-SPC developments, as reflected in the scores for the variables "on-site sidewalk systems" and "on-site lighting." SPC sites scored 83 percent and 87 percent respectively for these variables,
while NON-SPC sites scored 57 percent and 63 percent.

4.3 Aesthetics Variables

The following table (Table 4) compares the raw data for the aesthetics variables for SPC and NON-SPC sites. It should be noted that these data reflect the findings of the field survey only. They do not indicate the relative importance of the variables in the context of the weighting system utilized in this study. The weighting system reflects the importance of the variable to the City of Windsor as stated in the Official Plan (Windsor, 1985). The results of the weighting system are found in Section 4.5 of this thesis.

As the table illustrates, on average, 14.6 percent of the site area of SPC developments was devoted to landscaping. This is almost two and a half times more than the corresponding figure for NON-SPC sites (6 percent).

SPC sites also provide more landscaping amenities. The number of trees per 92.9 m$^2$ of site area (1,000 sq.ft.) is .38 for SPC sites and .01 for NON-SPC sites. The number of shrubs per 92.9 m$^2$ of site area (1,000 sq.ft.) is 1.70 for SPC sites and .49 for NON-SPC sites, which is less than one third as much.

Looking at the variables indicative of the quality of landscaping provided i.e. planters, flowers, mulch, decorative paving, etcetera, SPC sites scored 34 percent while NON-SPC sites scored 18 percent.

Relative to landscaping maintenance, NON-SPC sites did extremely well, scoring 100 percent. All 15 NON-SPC sites that did provide landscaping, maintained it adequately.
TABLE 4
Results of Survey
Aesthetics Variables

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>SPC</th>
<th>(n=30)</th>
<th>Non-SPC</th>
<th>(n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of the site landscaped.</td>
<td>14.6</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Number of trees per 1000 sq. ft. (92.9 m²) of site area.</td>
<td>0.38</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of shrubs per 1000 sq. ft. (92.9 m²) of site area.</td>
<td>1.7</td>
<td>0.49</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provision of landscaping features:</th>
<th>Yes</th>
<th>No</th>
<th># Applicable</th>
<th>Yes</th>
<th>No</th>
<th># Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>- berm</td>
<td>4</td>
<td>26</td>
<td>30</td>
<td>1</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>- decorative paving</td>
<td>8</td>
<td>22</td>
<td>30</td>
<td>7</td>
<td>23</td>
<td>30</td>
</tr>
<tr>
<td>- pedestrian lighting</td>
<td>4</td>
<td>26</td>
<td>30</td>
<td>3</td>
<td>27</td>
<td>30</td>
</tr>
<tr>
<td>- raised planters</td>
<td>11</td>
<td>19</td>
<td>30</td>
<td>5</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>- flowers</td>
<td>11</td>
<td>19</td>
<td>30</td>
<td>5</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>- mulch</td>
<td>24</td>
<td>6</td>
<td>30</td>
<td>11</td>
<td>19</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>62</strong></td>
<td><strong>118</strong></td>
<td><strong>180</strong></td>
<td><strong>32</strong></td>
<td><strong>148</strong></td>
<td><strong>180</strong></td>
</tr>
<tr>
<td></td>
<td>(34%)</td>
<td>(66%)</td>
<td>(100%)</td>
<td>(18%)</td>
<td>(82%)</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Adequate maintenance of landscaping.</th>
<th>Yes</th>
<th>No</th>
<th># Applicable</th>
<th>Yes</th>
<th>No</th>
<th># Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>26</td>
<td>4</td>
<td>30</td>
<td>15</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>(87%)</td>
<td>(13%)</td>
<td>(100%)</td>
<td>(100%)</td>
<td>(0%)</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Screening of garbage receptacle.</th>
<th>Yes</th>
<th>No</th>
<th># Applicable</th>
<th>Yes</th>
<th>No</th>
<th># Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
<td>7</td>
<td>18</td>
<td>5</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>(61%)</td>
<td>(39%)</td>
<td>(100%)</td>
<td>(25%)</td>
<td>(75%)</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

| TOTAL                            | 99  | 129 | 228         | 52  | 163 | 215         |
|                                  | (43%) | (57%) | (100%) | (24%) | (76%) | (100%) |
Of the 30 SPC sites, 26 (87 percent) maintained their landscaping at least adequately. Two did a poor job of maintenance, and two did not provide the landscaping that was required in the SPC agreement approved by City Council.

Screened garbage is another important variable in the aesthetics of a site. Of the 18 SPC developments that had an outdoor garbage storage facility, 61 percent (11) had it screened. Of the 20 NON-SPC developments that stored garbage outdoors, 25 percent (5) had it screened.

The totals for the aesthetics variables indicate that for the three variables dealing with the provision of landscaping features, maintenance of the landscaping and the screening of garbage receptacles, SPC developments provided 43 percent of possible variables, while NON-SPC developments provided 24 percent. A two sample Kolmogorov-Smirnov test run on these final figures indicated that there was no significant statistical difference in the two sets of data ($D_{max} (0.19) < D_{crit} (0.192)$). These totals reflect only raw data for half of the aesthetics variables and do not take into account the relative importance of the individual variables as determined by the weighting system utilized in this thesis.

4.4 Relationship Variables

The results of the field study relative to "Relationship" variables are summarized in Table 5. These data do not reflect any weighting of the importance of the individual variables.

As Table 5 shows, the only "relationship" variable for which SPC developments did better than NON-SPC developments was the variable for "Similar Architectural Style," with
### TABLE 5
Results of Survey - Relationship Variables

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>SPC (n=30)</th>
<th>Non-SPC (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Similar setback.</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>(38%)</td>
<td>(62%)</td>
</tr>
<tr>
<td>Similar massing.</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>(46%)</td>
<td>(54%)</td>
</tr>
<tr>
<td>Similar height.</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>(52%)</td>
<td>(38%)</td>
</tr>
<tr>
<td>Similar roof style.</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>(73%)</td>
<td>(27%)</td>
</tr>
<tr>
<td>Similar fenestration.</td>
<td>3</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>(12%)</td>
<td>(88%)</td>
</tr>
<tr>
<td>Similar architectural style.</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>(27%)</td>
<td>(73%)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>68</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>(43%)</td>
<td>(57%)</td>
</tr>
</tbody>
</table>

SPC developments scoring 27 percent and NON-SPC developments scoring 20 percent. Both SPC and NON-SPC developments related to surrounding buildings best when looking at the variable for "Similar Roof Style" (73 percent and 80 percent respectively). Most commercial buildings in Windsor have flat roofs so unless the development was adjacent to non-commercial uses, it was likely that it would have a similar roof style to its neighbours. Eighty percent of all NON-SPC developments were of a similar height when compared to the surrounding development. The corresponding figure for SPC sites was 62 percent. NON-SPC sites also did better than SPC sites when comparing setbacks (57 percent versus 38
percent), massing (57 percent versus 46 percent) and fenestration (23 percent versus 12 percent).

A two sample Kolmogorov-Smirnov test was run on the total scores in Table 5. It showed that there was no significant statistical difference in the two sets of data (Dmax of 0.10 < Dcrit of 0.192).

4.5 Scores For All Variables

Table 6 is the summary table of the "scores" assigned each variable for each of the 60 developments surveyed. These figures reflect the relative importance of the variable to the City as stated in the Official Plan (Windsor, 1985). The importance of the individual variable is reflected in the score or weighting it has been assigned. (See Section 3.3.4 for individual variable values.) As explained previously, each development was assigned a "score" for each variable based on a binary Yes/No credit system. A "standard" was set for each variable contingent on the constraints of the site. If the standard was achieved, the pre-determined score was assigned. If the standard was achievable, but not achieved, a score of zero was assigned. If the standard was not achievable, the pre-determined score for that variable was subtracted from the total score "possible." The points for four of the aesthetics variables (the ratio of trees and shrubs per site area, the percentage of the site used for landscaping and the maintenance of landscaping) were awarded on a pro-rated basis (See Section 3.3.4.b). The column headings are further explained below.

**TOTAL SCORE =** Total number of points accumulated for achieving development standards (i.e. providing the facilities/amenities described by the variables).
TOTAL SCORE POSSIBLE = Total number of points that were possible to be accumulated given the constraints of the site/type of development.

FINAL SCORE (percent of Possible) = The number of points accumulated (Total Score) divided by the number of points that were possible to be accumulated (Total Score Possible).

Table 6 breaks down the results into the three major categories of analysis, function variables, aesthetic variables, and relationship variables.

**TABLE 6**
Summary of Survey Results
Scores for all Variables

<table>
<thead>
<tr>
<th>Category</th>
<th>Total Score</th>
<th>Total Score Possible</th>
<th>Final Score (%)</th>
<th>Difference in Final Score</th>
<th>K-S Test (p&lt;.05)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>SPC</td>
<td>1198</td>
<td>1393</td>
<td>86</td>
<td>41.3 significant</td>
</tr>
<tr>
<td></td>
<td>Non-SPC</td>
<td>669</td>
<td>1498</td>
<td>44.7</td>
<td>(+92%) difference</td>
</tr>
<tr>
<td>Aesthetic</td>
<td>SPC</td>
<td>315</td>
<td>564</td>
<td>55.9</td>
<td>32.3 significant</td>
</tr>
<tr>
<td></td>
<td>Non-SPC</td>
<td>119</td>
<td>505</td>
<td>23.6</td>
<td>(+137%) difference</td>
</tr>
<tr>
<td>Relationship</td>
<td>SPC</td>
<td>104</td>
<td>264</td>
<td>39.4</td>
<td>-7.9 not a significant</td>
</tr>
<tr>
<td></td>
<td>Non-SPC</td>
<td>142</td>
<td>300</td>
<td>47.3</td>
<td>(-17%) difference</td>
</tr>
<tr>
<td>TOTAL</td>
<td>SPC</td>
<td>1617</td>
<td>2221</td>
<td>72.8</td>
<td>32.4 significant</td>
</tr>
<tr>
<td></td>
<td>Non-SPC</td>
<td>930</td>
<td>2303</td>
<td>40.4</td>
<td>(+80%) difference</td>
</tr>
</tbody>
</table>

As Table 6 illustrates, SPC developments had a final score of 86.0 for the function variables, a score 92 percent higher than the comparable NON-SPC score of 44.7.
As was hypothesized, the SPC developments also did better than NON-SPC developments in the aesthetics category. Here the SPC developments scored 55.9 which was 137 percent higher than the NON-SPC score of 23.6.

In the category dealing with the relationship of the new development to surrounding development, the NON-SPC sites did better than the SPC sites. The SPC developments had a score of 39.4, which was 17 percent lower than the NON-SPC score of 47.3.

Overall the SPC sites scored 72.8 and the NON-SPC scored 40.4, a difference of 32.4 or 80 percent. The scores for all variables are graphically depicted on the following bar graph (Figure 4).

The results of the Kolmogorov-Smirnov test are indicated in the last column. As can be seen, the difference between the two samples (SPC and NON-SPC) is statistically significant in all but one case, that being the comparison of "relationship" variables. The detailed results of the Kolmogorov-Smirnov tests appear in Appendix C of this report.
5.0 DISCUSSION

The following discussion section outlines some of the procedural problems encountered and insights obtained by the author during the research for this report. The first three sections (5.1 through 5.3) deal with the selection of case studies and the field survey. Sections 5.4 through 5.8 look at several individual variables and how they were analyzed. Sections 5.9 and 5.10 look in depth at some of the results of the field survey, specifically the use of garbage enclosures and the influence of the franchise. The last section discusses the lack of legislative power that SPC has to influence the relationship of new buildings to neighbouring buildings.

5.1 Determining the 30 SPC Case Studies

There were 370 SPC applications filed during the five year period from 1988-1992. In order to select 30 test cases, it had to be determined which of the 370 were commercially zoned and had a building permit issued for work indicated in the SPC approval. This involved accessing the Building Department’s records for all 370 sites, utilizing the City Hall computer system which pulls up the subject property by assessment roll number or a municipal address. Often at the time of the SPC application there was no municipal address for the property and the Planning Department’s SPC computer screen does not record the assessment roll number for the SPC sites. This caused problems in identifying the property involved without researching the actual SPC file. Another logistical problem was that over time, as properties are severed/developed, they are issued new (different) roll numbers.
Once the subject property was identified, the researcher had to ensure that there was a building permit issued for the work approved by the SPC agreement. This task was complicated by the fact that many of the properties had pages of building, heating, cooling and/or sign permits listed on the computer.

From this work, a listing of 88 SPC developments that had proceeded to the construction stage was made:

<table>
<thead>
<tr>
<th>Year</th>
<th>Files</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>5 files</td>
<td>(6%)</td>
</tr>
<tr>
<td>1991</td>
<td>11 files</td>
<td>(13%)</td>
</tr>
<tr>
<td>1990</td>
<td>18 files</td>
<td>(20%)</td>
</tr>
<tr>
<td>1989</td>
<td>22 files</td>
<td>(25%)</td>
</tr>
<tr>
<td>1988</td>
<td>32 files</td>
<td>(36%)</td>
</tr>
</tbody>
</table>

Thirteen of the files (15 percent of total) were for parking lots.

Using a table of random numbers, 30 sites were selected from the population of 88. They were organized by year and numbered.

<table>
<thead>
<tr>
<th>Year</th>
<th>Files</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>2 files</td>
<td>(7%)</td>
</tr>
<tr>
<td>1991</td>
<td>3 files</td>
<td>(10%)</td>
</tr>
<tr>
<td>1990</td>
<td>4 files</td>
<td>(13%)</td>
</tr>
<tr>
<td>1989</td>
<td>11 files</td>
<td>(37%)</td>
</tr>
<tr>
<td>1988</td>
<td>10 files</td>
<td>(33%)</td>
</tr>
</tbody>
</table>

The relevant information recorded for each file was: address, assessment roll number, use, date of SPC approval, council resolution number, date the agreement was registered, zoning, building permit number and date, site area, frontage and other site dimensions, special
requirements in the SPC agreement such as a storm detention scheme, landscaping plan, bonding, land conveyance, easement, additional landscaping of boulevard, etcetera.

Scaled drawings were used to determine the dimensions of the landscaped areas in order to calculate the percentage of on-site landscaping/open space for each development. Some decisions were made as to what was to be considered "on-site" for the purpose of the calculation. For example, in some cases a land conveyance was given to the city for future road improvements, but in the interim the applicant would be landscaping/maintaining the area. These areas were included in the calculations. If, because of site limitations, the applicant was required to landscape a portion of the boulevard, this too was included in the landscaping calculations. Consultation with Mr. Don Wilson, Site Plan Control Officer in the Planning Department, revealed that islands in parking lots were considered open space for the purposes of site plan control, but not the walkways/sidewalks adjacent to the buildings.

On very large sites, where the development was only to occur in a small portion of the site, the calculation of "site area" was reduced accordingly.

5.2 Determining 30 NON-SPC Case Studies

In order to obtain a population of all commercial developments that proceeded from 1988-1992 in NON-SPC areas the Information Services division of the Finance Department was contacted and a program was developed to pull out relevant data. 219 developments were found to have proceeded in NON-SPC, commercially zoned areas, with building permits issued in the years 1988 to 1992. Information recorded included: municipal address, assessment roll number, type of permit, and the description of the work undertaken. The 219
developments were checked to make sure that the development would have been subject to the site plan control process if it had been located in an area of site plan control. Many were too small to use, being under 50 m² or 539 sq. ft. Other developments were temporary uses or canopies or decks, etcetera.

It was discovered that several of the 219 developments pulled were within SPC areas, so each site had to be double checked to ensure it was really in a NON-SPC area. A review of those developments that were located in SPC areas revealed that most of them were not required to go through the SPC process for such reasons as; too small, temporary use, special considerations (Docherty’s Compri Hotel, Provincial Tourist Information Centre, etcetera).

However there were some developments which proceeded in SPC areas that would have qualified for SPC that did not go through the process. This would indicate that there is a problem with the Building Department catching these developments when they come in for a building permit.

Once the 30 case study sites had been identified, site plans were obtained for all of them. This information was accessed from the Building Department’s files. Problems were encountered in obtaining the 30 plans. Some plans were not in the files or in the stacks of rolled plans, each roll number might have several plans/permits in the file unrelated to the development/addition under study, plans were of strange scales/ poor quality, etcetera.

5.3 The Field Survey

Some of the problems/experiences encountered during the visits to the 60 study sites during the Fall of 1993 are listed below.
5.3.1 Number of Access Points.

At two of the sites curb cuts were not currently being used for access points. The concern was whether they should be used in the analysis of the number and location of access points. It was decided that they should be because the use of these curb cuts could change at any time. The design of the site allowed for access at these locations whether or not the current tenant chose to utilize them.

5.3.2 Screening of Garbage.

On a few sites there were situations where a garbage enclosure was provided on site, but in reality the garbage/garbage bin was located outside the enclosure. The concern was whether the development should be given "credit" for having a garbage enclosure. It was decided that they should not because the garbage itself was not screened.

On one SPC site, the building was designed to house the garbage bin completely within the structure. However, on the day of the field survey the garbage bin was outside the building, fully exposed. Again, the concern was whether the site should be credited for having enclosed garbage. It was decided that it should not since the garbage bin was not enclosed at the time of the field survey.

5.3.3 Number of Shrubs on Site

On several of the sites the number of shrubs provided proved to be very large. Either the landscaping had been in place for some time, and the number of bushes had multiplied significantly, or the site had been intensely landscaped with shrubs to begin with. Should
each one be counted? Yes, because the ratio of bushes provided per site area was an important indicator of the quality of landscaping provided. 369 shrubs were counted on one site, 187 on another, 159 on another and so on.

5.3.4 SPC Developments That Did Not Conform to the Approved Plan

A small number of SPC developments did not conform to the site plan, as approved by City Council, even though a system of bonding was in place to ensure that developers provide the amenities shown on the plans. One particularly blatant example that was examined revealed that while there were memos to the files indicating that the required work had not been done, the bonds were inadvertently returned to the applicant. Hence the City has no leverage in getting the developer to provide the agreed-upon amenities. Because the site plan agreement is registered on title to the property, in theory the owners would have to clear the title by providing the required amenities before selling the property.

5.3.5 Recording Field Data

All data were recorded on individual "Field Survey Data Sheets" (See Appendix II) as well as upon the site plan itself. Photographs were taken of some of the sites to illustrate salient features of the study. The data collected was laid out on a 60 x 59 matrix and entered into the computer for analysis.
5.4 Land Conveyance Analysis - NON-SPC Sites

Site Plan Control legislation allows the City to take a gratuitous land conveyance for road improvement purposes. OPA 77 states the objective for the conveyances is "to eliminate or reduce the cost to the City where widening of existing rights of ways is required for road improvements." (Windsor, 1985) While such conveyances were taken as-a-right during the site plan control process for the SPC developments, for this analysis, the author had to determine whether a land conveyance would have been required of any of the NON-SPC developments had they been in an area of SPC.

Initially Section 19.5 and Schedule "C1" of the Official Plan (1993) were referred to, which set out which roads would be subject to road widenings. If the NON-SPC site was not located on a roadway identified on "C1", it would not have been subject to a land conveyance requirement. If it was located on a road identified on Schedule "C1", the next condition was tested, namely, "Does the existing right-of-way meet the standard established for the roadway type that the development fronts onto?" For this question Section 6.4.2.1 of the Official Plan (OPA 150) was referred to, which sets out minimum roadway right-of-way widths by roadway type. The listing of existing rights-of-way widths (Public Works Department) was consulted to determine the width of the existing right-of-way abutting the subject NON-SPC development. Three questions were then answered utilizing this information. The first question was does the actual width meet the standard? (If not, a land conveyance would have been required. If the answer was "yes" - go on to question 2). Question two asked whether a turning lane/land conveyance would have been required. This relates to the further stipulation in Section 6.4.2.1 which states that additional right-of-way (beyond the stated minimum
width) may be required at intersections to provide for "exclusive turning lanes and/or other special treatments." It was determined for the remaining NON-SPC sites, whether a turning lane/land conveyance would have been required - assuming that a turning lane would be required for corner sites on Class II Arterial (or higher) roadways. The final question asked, was any land conveyance possible given the constraints of the site? The site plans for the individual developments were examined. If the existing building was too close to the limit of the roadway to permit a land conveyance, it was assumed that none would have been required.

Having answered the question, "Would a land conveyance have been required?", a score was assigned to the individual sites. If a conveyance was required and provided, the site was assigned a score of 20. If a conveyance was/would have been required but was not provided, it received a score of 0. If a conveyance was not required, the site received a "not applicable" and the score (20 points) was subtracted from the "total possible score" for that site.

5.5 Utility Easements

Section 11.2.4.8. of the Official Plan (1985) states that gratuitous utility easements may be required as a condition of site plan control approval to "eliminate or reduce the cost to the City to acquire easements necessary for the construction or maintenance of municipal services". The research revealed that four out of the 30 SPC sites studied were required to give such a gratuitous utility easement. However there were difficulties in determining how
many of the NON-SPC developments would have been required to give an utility easement had they been in an area of site plan control.

As part of the site plan control process, the applicant's site plan is circulated to the Windsor Utilities Commission for their comments/requirements. The Windsor Utilities Commission circulates the application to two separate divisions, Hydro and Water. Both divisions submit separate responses to the Planning Department. Since no one at City Hall was involved in this analysis, resource maps/plans were not available. The WUC could not be asked to take staff time to analyze the 30 NON-SPC sites to determine if an utility easement would have been required. This variable was therefore eliminated from the comparison/scoring used in this report.

5.6 Storm Detention Schemes

Often for large developments or where sewer capacity is limited, a storm detention scheme will be required of the SPC applicant to provide for the proper "disposal of storm, surface and waste water from the land and from any buildings or structures thereon" (Windsor, 1985). This is a Public Works Department requirement and is part of the normal SPC approval process. Eighteen (60 percent) of the 30 SPC sites were required to provide a storm detention/lot grading scheme as a condition of SPC approval. In order to analyze how effective SPC had been, it had to be determined which NON-SPC sites would have been required to provide a storm detention scheme under the closer scrutiny of the SPC process.

With the assistance of Mr. Mario Sonego (Engineer - Public Works Department) the 30 NON-SPC developments were reviewed and cross-referenced with Public Works records. It was
determined that five of the 30 NON-SPC sites had been required to provide a storm detention scheme as part of the normal building permit process. Three more sites should have had a storm detention scheme, and would have been required to provide one had they come under the closer scrutiny of the SPC process.

If a development was required to provide a storm detention scheme and did so, a score of 6 was assigned. If a storm detention scheme was determined to be necessary, but was not provided, a score of zero was assigned. If a storm detention scheme was not necessary/required, the variable was determined to be "Not Applicable" and six points were subtracted from the "total score possible" for that particular site.

5.7 Access Point Analysis

Several of the "function" variables utilized in this analysis relate to the location and number of access points to the development, namely:

- Minimizing the number of access points to the development.
- Providing shared access where possible.
- Maximizing the distance from the driveway to the driveway of adjacent development.
- Maximizing or ensuring an adequate distance to the corner from the driveway, for corner sites.

Since every development is entitled to at least one access point regardless of frontage/lot size, all developments with one access were determined to have "kept the number of access points to a minimum." The remaining developments were reviewed independently by the author and Mr. Doug Caruso, Senior Planner in the Planning Department to determine
if, given the restraints of the site, access points were kept to a minimum. In the event the two of us were in disagreement (as in one case), Mr. Michael Hynes, Traffic Engineer, City of Windsor Traffic Engineering Department, was consulted. A similar system of analysis was used for the other questions (i.e. distances between driveways, from corners and shared access).

For each of the variables, a pre-determined number of points were assigned the subject site for a YES answer. If the answer was NO, a score of zero was recorded. If the variable was "not applicable", the points would be subtracted from the "total points possible" for the subject site.

5.8 Mature Trees on Site

One of the goals of SPC is the preservation of important landscape features on site. This generally translates into saving mature trees on site. There was difficulty in finding an easily quantifiable way to measure how successful SPC has been in preserving mature trees on site versus NON-SPC sites.

To determine how effective the SPC process had been in preserving large trees relative to the NON-SPC sites one would have to know:

1) How many mature trees there are on site

2) How many mature trees there were on the site prior to development

Discussions with Parks Department staff revealed that a tree with a 15.24 cm. (six inch) diameter (as measured 25.4 cm. or 10 inches from the ground) would be considered a
"mature" tree. During the field survey portion of the study, the number of trees with a trunk diameter of over 15.24 centimetres (6 inches) were identified on each of the subject sites.

It was the author's experience that determining the number of trees on site of 15.24 cm. (6 inches) diameter or more did not necessarily reflect the number of trees existing on the site prior to development. For example, the Caboto Club at 2175 Parent (NON-SPC Site #23) had 35 trees of more than 15.24 centimetres (six inches) in diameter planted on the berm along the Tecumseh Road frontage. None of these were there prior to development, but these trees (primarily evergreens) are now large trees with thick trunks. The same can be said for the 15 "mature" trees found at the McDonald's restaurant at 2780 Tecumseh Road, E. (SPC Site #4).

The considerable number of large "new" trees means that the figures for the number of trees of more than 15.24 centimetres (6 inches) in diameter do not reflect simply trees existing on site prior to development - but also those trees that have been transplanted as fairly mature trees, and that have thrived in their new environment. The 35 large trees on the Caboto Club site account for 81 percent of the 43 large trees found on all NON-SPC sites. The 15 large trees on the McDonalds site account for 27 percent of the 56 large trees found on all SPC sites. The factor on the field survey sheet dealing with the size of trees does not then accurately reflect the number of mature trees "saved" on site.

There was also difficulty in determining how many mature trees were on site prior to development. While under SPC the City can require the developer to provide a tree survey which shows the exact location, type and size of existing trees on site, this type of survey is rarely called for. It is generally only required for large sites that have extensive tree cover.
More commonly, large trees worthy of preservation are identified by the Planning and/or Parks Department staff when the site is visited as part of the SPC process. If at all possible, the staff ensures that the location of the new development recognizes and preserves the large trees on site. The administration is also very concerned that the proposed access to the site does not disturb mature trees on the city right-of-way. The number of mature trees preserved on the right-of-way would not be reflected in the field survey results because only on-site trees were counted.

In summary, while no tree surveys were done for the 30 SPC sites, the individual files in the Planning Department may tell one the number of trees existing on-site prior to development. This information however, is of little use, if the pre-development condition of the 30 NON-SPC sites is unknown. While the idea of trying to count the number of mature trees on NON-SPC sites from old aerial photographs of the city was explored, it was determined to be too arduous a task in the context of this study. While it is interesting to note that the SPC sites had 30 percent more mature trees than NON-SPC sites (i.e. 56 versus 43), it cannot be claimed that this reflects the SPC process's success in preserving large trees on site. Therefore the field survey information dealing with the size of trees was not utilized in the final analysis. The only variable in the final scoring that deals with trees is the variable that looks at the number of trees per site area.

5.9 Use of Garbage Enclosures

A detailed breakdown of the results of the field survey relative to garbage enclosures is presented in Table 7.
Table 7
GARBAGE ENCLOSURE ANALYSIS

<table>
<thead>
<tr>
<th></th>
<th>SPC</th>
<th>NON-SPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>FULLY ENCLOSED</td>
<td>10</td>
<td>34%</td>
</tr>
<tr>
<td>PARTIALLY ENCLOSED</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>NOT ENCLOSED</td>
<td>7</td>
<td>23%</td>
</tr>
<tr>
<td>NOT APPLICABLE</td>
<td>12</td>
<td>40%</td>
</tr>
<tr>
<td>(No outside garbage)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>100%</td>
</tr>
</tbody>
</table>

As Table 7 depicts, half of the NON-SPC sites had exposed garbage, as compared to 23 percent (7) of the SPC sites. It is alarming however that the figure for SPC sites is even this high considering it is one of the goals of SPC in Windsor to ensure that garbage stored outside is enclosed/screened. While enclosures are being required and are being provided, the above figures reveal that they are not being used in the manner for which they were designed. Reasons for this lack of use may include:

1) The occupant finds the enclosure difficult to use because of the poor design of the enclosure.

2) The occupant finds the enclosure difficult to use because of the improper location of the enclosure.

3) The occupant just finds it more expedient not to use the enclosure, and doesn’t care about the aesthetics of the situation.

The first two reasons can be addressed during the SPC review process. The Planning Department staff, now being aware that the continued use/maintenance of the required garbage
enclosure is sometimes a problem, can consult with the applicant to ensure that the location and design of the enclosure meets their needs. The third reason cited, laziness/indifference, while probably the most significant, is more difficult to deal with. The SPC process can ensure that the applicant provides a garbage enclosure, but it can’t ensure that they use it.

5.10 Influence of the Franchise

During the course of the field survey, it was noticed that franchise operations in NON-SPC areas provided landscaping and other amenities, even though they were not "required" to do so. Presumably this was done in an effort to maintain a good corporate image. Table 8 compares the scores for three comparable franchise operations in SPC and NON-SPC areas. The average of the scores of the three franchise operations in each group is compared to the total scores for SPC and NON-SPC sites.

As one might expect, the franchise operations in both SPC and NON-SPC areas scored much better than the average for "aesthetics" variables, which include landscaping considerations. In SPC areas, the average score for the three franchise developments was 67.8 as compared to 55.9 for the total number of SPC developments - a difference of 11.9 or 21 percent. In NON-SPC areas, the average score for the three franchise developments was 51.7 as compared to 23.6 for the total number of NON-SPC developments - a difference of 28.1 or 119 percent. This clearly shows that franchise operators have taken measures to make their developments more aesthetically appealing even when they are not required to do so by means of a site plan control agreement. However, franchise operations in SPC areas still scored higher in all aspects of the analysis than did their counterparts in NON-SPC areas.
<table>
<thead>
<tr>
<th>SPC SITES</th>
<th>FUNCTION</th>
<th>AESTHETICS</th>
<th>RELATIONSHIP</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Tim Horton's</td>
<td>100.0</td>
<td>72.5</td>
<td>na</td>
<td>92.8</td>
</tr>
<tr>
<td>- McDonald's</td>
<td>90.0</td>
<td>75.0</td>
<td>0</td>
<td>78.0</td>
</tr>
<tr>
<td>- Minit Lube</td>
<td>77.1</td>
<td>55.9</td>
<td>60.0</td>
<td>68.6</td>
</tr>
<tr>
<td>Average of the 3</td>
<td>89.0</td>
<td>67.8</td>
<td>30.0</td>
<td>79.8</td>
</tr>
<tr>
<td>Total SPC Average</td>
<td>86.0</td>
<td>55.9</td>
<td>39.4</td>
<td>72.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NON-SPC SITES</th>
<th>FUNCTION</th>
<th>AESTHETICS</th>
<th>RELATIONSHIP</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Tim Horton's</td>
<td>58.6</td>
<td>52.5</td>
<td>0</td>
<td>51.5</td>
</tr>
<tr>
<td>- Kentucky Fried</td>
<td>45.8</td>
<td>55.0</td>
<td>60</td>
<td>49.4</td>
</tr>
<tr>
<td>- Mr. Lube</td>
<td>41.7</td>
<td>47.5</td>
<td>20</td>
<td>40.6</td>
</tr>
<tr>
<td>Average of the 3</td>
<td>48.7</td>
<td>51.7</td>
<td>26.7</td>
<td>47.2</td>
</tr>
<tr>
<td>Total NON-SPC Average</td>
<td>44.7</td>
<td>23.6</td>
<td>47.3</td>
<td>40.0</td>
</tr>
</tbody>
</table>

For "function" variables the franchise operations scored only marginally better than average in both SPC and NON-SPC areas. For "relationship" variables the franchise operations scored lower than the average in both SPC and NON-SPC areas (a 9.4 and 20.6 point difference respectively). This is understandable since franchise operations tend to utilize "corporate" architecture. They adopt certain building shapes, colours, and/or features as an identity or marketing tool and use the same design on any site. This corporate architecture rarely fits comfortably with the visual character of established urban areas.
In summary, while franchise operations provide more landscaping than the average even when not "required" to do so, they still benefit from the site plan control process in all aspects of the development (i.e., function, aesthetics, relationships).

5.11 "Relationship" Variables and the Lack of Legislative Power

The Official Plan of the City of Windsor (1985) states that site plan control is used to ensure that the proposed new development; functions in a safe and orderly manner; is aesthetically pleasing; and, does not detract from adjacent development. The interpretation of the last phrase is the subject of this section and is undoubtedly the most difficult to interpret.

In the narrowest interpretation, it could mean that the adjacent development should not be made subject to adverse affects by the new development, in other words no additional storm water run-off, no smelly open garbage bins, no interfering flood-lighting, etcetera.

However, since the Windsor Official Plan (1985) asks for plans showing "the massing and conceptual design of the proposed building and its relationship to adjacent buildings, streets and open spaces" (Section 11.2.3), the phrase has generally been given a broader interpretation. The broader interpretation embraces concepts of urban design which are reflected in the City's draft "Manual of Urban Design Principles" (1989).

The manual sets out design guidelines for urban and suburban environments. The manual points out that cities are composed of many different developments built over time by many different parties. If building activity is not based on some shared guidelines, the potential result of all this activity is a disorganized and often unattractive city. While the manual sets out numerous guidelines, the following have been singled out as reflecting the
City’s policy on how a new development should "not detract from adjacent development," and how they should "relate" to adjacent development.

-Relate Building **Setback** to Adjacent Development

Ensure that a proposed building is set back the same distance from the front lot line as its neighbours so that it will be visually compatible with surrounding development.

-Relate **Massing** to Surrounding Buildings

The massing of a building refers to its three-dimensional appearance. The massing of a proposed building should be designed to relate to the size and shape(s) of the buildings adjacent to it. This practice ensures that the building is compatible in scale with its surroundings.

-Relate **Height** to Surrounding Buildings

The height of a proposed building should be consistent with the heights of other buildings nearby. This is most important for buildings located close together. (Sometimes it may be appropriate to design a building with two heights; the shorter portion near the sidewalk - or an adjacent shorter building - with the taller portion having a greater setback).
- Relate Design to Respect Significant Architectural Features of Nearby Building

The proposed building should incorporate some of the basic architectural elements of nearby buildings. For example, it may be appropriate to repeat the roof line, window proportions and/or architectural style of adjacent buildings.

Visual harmony in both urban and suburban settings is most easily achieved by relating adjacent buildings to one another using compatible architectural features. However the Planning Act (1983) specifically excludes matters such as colour, texture and type of materials, window detail, construction details, architectural detail...and height from the SPC process. This then eliminates the height factor as something that can be controlled by SPC and since building height is a significant element in the "massing" of a building, the influence of the SPC process on "massing" is also diminished. It is equally difficult to ensure the use of "compatible architectural features" given the limitations in the Act. These limitations on the SPC process have been the source of controversy in Toronto, where the attempt by planners to more closely control the style/form of new buildings has been resisted by the building architects/owners (Daily Commercial News, 6/25/92).

A change in the legislation effecting SPC is not forthcoming in the near future however, since it was the recommendation of the Sewell Commission on Planning and Development Reform that the "current provisions of site plan control not be expanded to include colour, texture, type of materials, window detail, construction details, architectural detail, and interior design" (Commission on Planning and Development Reform in Ontario, 1993, p. 95).
Why does the City of Windsor bother with establishing design guidelines to influence the compatibility of adjacent structures when the existing legislation sets such clear limits on the power of SPC to effect change in this regard? For one, the Province (1984) calls for municipalities to establish guidelines "setting out minimum municipal requirements for various types of development." Secondly, guidelines confirm and are a reminder of good urban design principles. Lastly, it is common practice. Even though all Ontario municipalities must deal with the same "lack of power" problem - a review of design guideline documents from nine other Ontario municipalities revealed that they all contain similar design principles. Be they enforceable or not, these largely communal design principles set the standard for urban design in Ontario.

The effectiveness of the SPC process in achieving design compatibility between existing and new development in Windsor was tested in this study. As reported in the "Analysis of Data" section, SPC developments did not fare well in the review, scoring 17 percent lower than NON-SPC developments when considering the relationship of new buildings to surrounding buildings (height being excluded). While this difference is not statistically significant (See the results of the Kolmogorov-Smirnov test - Appendix C.), the author was initially surprised with any negative score. Upon reflection however, this finding is hardly surprising given factors such as; the lack of power afforded municipalities to control such matters through site plan control; the lack of attention given relationship matters during the SPC process; the fact that SPC sites are on average 26 percent larger than NON-SPC sites; and, the choice of "relationship" variables utilized in the analysis.
The variables used in the "relationship" analysis were based on guidelines from the city's "Manual of Urban Design Principles" (1989). They had the advantage of being largely objective, and could be reduced to a binary response. For example, in looking at a development anyone could ascertain if YES, the setback is similar to neighbouring buildings, or NO, the setback is not similar, or N/A, the question is not applicable. In reality however, an analysis of good urban design is not so easily quantifiable. Good design is so multi-dimensional, and so many variables may be relevant, that it is not easily broken down into simple, specific, binary variables.

The fact that 53 percent of NON-SPC sites are considered "small" as compared to 27 percent of the SPC sites (See Table 2) may have had an influence on how developments "related" to neighbouring buildings, as reflected in the final scoring. The variables chosen for this analysis would tend to better reflect good urban design in a more urban context, where buildings are more closely spaced. In a suburban milieu, large lots reduce the importance of being "similar" to neighbouring buildings in order to achieve a "good" relationship. While buildings on large lots would tend to be more autonomous in design, buildings on small lots would be more inclined to fit into the context of the neighbourhood.

The lack of attention given relationship matters during the SPC process may also be cited as a reason for the poor showing of SPC developments. This lack of attention is understandable given the lack of power afforded municipalities to control such matters through SPC and the time constraints on the SPC staff in the Windsor Planning Department, who are under pressure to process applications as expediently as possible. It is only in
exceptional cases (as in prominent downtown sites) that time is allotted to staff to look at such matters as building style and scale and to negotiate with developers to revise their plans.

SPC staff are sometimes successful in negotiating a change in building design even though they have no real legislative power to do so. This reflects a willingness on the part of the developer to co-operate if the reasons for the requested change are well addressed. Efforts should be made to inform developers and property owners of the city's design guidelines and the benefits of adhering to them.
6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

It may be concluded, given the findings of this research, that the SPC process in Windsor resulted in better quality commercial developments during the study period (1988-1992), at least as "better quality" is defined by City of Windsor documents.

If the findings are broken down into the three major aspects of "quality" (function, aesthetics and relationship to surrounding buildings) further conclusions may be made.

FUNCTION

The site plan control developments were significantly superior to NON-SPC developments when considering variables relating to the function/safety of the development.

Variables for comparison were:

- minimizing the number of access points,
- locating access points so that the safety of vehicular and pedestrian traffic to and from the property is assured,
- providing paved parking and loading facilities for the convenience and safety of users,
- providing safe walkways, including handicap ramps,
- providing lighting on the site to ensure the safe movement of pedestrian and vehicular traffic,
- grading the site to preclude any detrimental impact on adjacent properties, and
- donating land needed for road improvement purposes.
Since these functional variables are important to the city, accounting for 7 out of 9 of the "required facilities" in the Official Plan (Windsor, 1985), it is clearly a sign of success for the SPC process that it has made a significant impact in the area of function and safety. Of added benefit is that the SPC process eliminates or reduces the cost to the City where widening of the existing right-of-way is required for improvements to the travelled portion of the road.

AESTHETICS

SPC developments were far superior to NON-SPC developments in aspects relating to aesthetics. Variables for comparison were:

- the provision and maintenance of landscaping/trees/shrubs; and
- the screening of garbage enclosures.

These aesthetics variables are important to the image of the City as a clean and attractive place to live and do business. They account for 2 out of 9 of the "required facilities" in the Official Plan (1985). It is one of the major accomplishments of the SPC process that SPC developments are more aesthetically pleasing than their NON-SPC counterparts.

RELATIONSHIP TO SURROUNDING DEVELOPMENT

While the margin of difference was not great, NON-SPC developments did better than SPC developments in terms of similar setback, massing, roof style, fenestration and
architectural style. This result may be explained at least in part by the fact that existing provincial legislation does not permit the control of architectural details under SPC.

One may conclude, given the results of this research, that the null hypothesis must be rejected. There was a significant statistical difference between the two outputs of the a priori model, SPC and NON-SPC developments (See Section 3.1). The SPC process in Windsor has resulted in a "better quality" of development, as defined by performance criteria found in City of Windsor documents (Windsor, 1985, 1986, 1989a, 1989b).

6.2 Recommendations

The major recommendation of this study, given the success of the SPC process in producing a "better quality" development, is that the area of site plan control be expanded to include the entire City of Windsor, subject to the exemptions outlined in Section 3.3.1 of this thesis. Not only would this be a move towards the development of a more attractive and safe community through improved site design, but it would put an end to the inequity that now exists between different areas of the city with some areas being subject to the SPC process and its requirements and some not.

It is also recommended that, relative to the relationship of the development to adjacent development, the Province be encouraged to expand the role of SPC to include factors such as colour, texture, type of materials, window detail, construction details and architectural details of the building. This was not a recommendation of the recent Sewell Commission (Commission of Planning and Development Reform in Ontario, 1993) and this expansion in SPC powers will most likely not be achieved for some time. One can envision a process
much like the one that resulted in the SPC legislation itself. Municipalities will find ways of expanding the limits of the existing legislation until someone finally initiates a court challenge forcing the Province to respond and amend the law. To this end, the Planning Department should endeavour to refine its design guidelines relative to the relationship of building forms, seek Council approval for the guidelines and apply the guideline principles during the SPC process as best it can (i.e. moral persuasion, design assistance). In areas where streetscape preservation is especially important, as in downtown and other traditional commercial areas such as Walkerville and Ottawa St., appropriate building setbacks, heights, and floor area ratios should be incorporated into the zoning by-law in order to ensure that the design guidelines are met. When the time comes, the City of Windsor should support a change in the Provincial legislation to expand the powers of site plan control.

Windsor would benefit from the consolidation of its urban design principles into one officially approved document, similar to Ottawa’s new Official Plan. To this end the Windsor Planning Department should consider including a chapter on urban design in the Official Plan when this document undergoes a major review in 1995.

It is also recommended that the following administrative adjustments be made to tighten up the SPC process in its Windsor application;

1) Until such time as the whole city is designated as an area of site plan control, personnel in the Building Department should be made more aware of those areas/developments which are subject to the SPC process in an effort to apply the process equitably to all eligible developments.
2) The bonding process should be carefully administered by the Legal Department to ensure that no bonds are returned before the required amenities are provided.

3) The Planning Department should be provided with adequate personnel to administer the SPC process efficiently and comprehensively. If the entire city is placed under SPC, additional staffing or a reassignment of duties within the Department may be required.

4) The assessment roll number of each subject development should be included on the Planning Departments screen Number 9, "Planning Information System for Rezoning and Site Plan Control Applications," for cross-reference purposes.

5) A program of public education should be initiated by the Planning Department to better inform developers, property owners, other civic departments and the general public of design guidelines, SPC policies and procedures. This should assist in ensuring that people are aware of the demonstrated benefits of the process.

6.3 Limitations of the Study

This research was limited to one type of development (commercial), during a limited time period (1988-1992) in one municipality (Windsor). Whether the results obtained reflect the experience of other Ontario municipalities is yet to be seen.

As indicated previously, the choice of variables and the value placed on the variables for comparison purposes was based as much as possible on the Official Plan of the City of Windsor (Windsor, 1985). It is evident however that the final decision on these matters was subject to the author's discretion. A somewhat different choice of variables/values could
have produced somewhat different results. Of interest, there were no specific objectives in the Official Plan relative to the "relationship" goal, and the "relationship" goal was the only one for which the final score for SPC developments was lower than for NON-SPC developments. Had the author eliminated reference to "relationship to surrounding buildings" in the value rating, the difference between SPC and NON-SPC sites would have been even more significant than it was. Its inclusion is important, however, in ascertaining the breadth of influence of the SPC process.

As mentioned in Section 5.11, trying to reduce concepts of context to specific, binary variables was difficult given the multi-dimensional nature of the subject. Future researchers may wish to use an alternative approach. For example a group of urban design experts (or a cross section of the public at large) could be shown a series of slides of each development and asked to rate them as to how well the new buildings relate to their context.

6.4 Implications for Further Research

This study could be expanded by applying this research technique to residential developments. One of the concerns expressed during the course of the research was that in examining only commercial developments, the results of the research would not reveal the full value of the SPC process. This is because it was felt that SPC is particularly effective in improving the design of multi-unit residential developments. A somewhat different set of variables would have to be developed based on criteria deemed appropriate for residential developments e.g. the provision of recreational facilities appropriate to the user group. Since all residential developments of 25 units or more are subject to the site plan control process,
NON-SPC developments for comparison would have to pre-date the site plan control legislation.

The research technique developed in this study could also be applied to industrial developments in the City of Windsor in order to learn what difference, if any, there is between industrial developments that went through the SPC process and those which were processed by the Windsor-Essex County Development Commission's "Industrial Review Committee".

This research should also be expanded by applying the SPC evaluation system to other Ontario cities of comparable size. It would be very interesting to see how effective other municipalities have been in applying their design guidelines through the SPC process. Many aspects of this research could be easily transferred to another municipality. Since other Ontario cities have similar design guidelines, the choice of variables for analysis would likely be quite similar. While the scoring system developed for this thesis is based upon the Windsor Official Plan, the relative importance of the variables in other cities would not be dissimilar, and could be easily modified to more closely reflect local conditions. Since most other Ontario cities have the entire city under site plan control, NON-SPC developments for comparison may have to be chosen from developments that pre-date site plan control.

Alternatively, the results of this study, in terms of the "final scores" (the ratio of the number of points achieved to the number of points possible) particularly as they relate to the NON-SPC sites, may be used for comparison purposes.

It would also be of interest to apply this evaluation system to another time period, for example looking at 1994 SPC developments in commercial areas in Windsor to see how they
compare to developments from the 1988-1992 period. The monitoring system should be reapplied at some future date to determine if the suggested improvements to the SPC process have had a positive effect.
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APPENDIX A

SITE PLAN CONTROL PROCESS

ENTER

Preliminary Contact (1)
- Developer approaches S.P.A. Officer to discuss proposed development in Planning Department.

ENTER

S.P.A. Application (4)
- S.P.A. Application filed with Planning Department

Preliminary Review S.P.A. Officer (5)
- Application complete - accept
- File set up and Clerk notified
- Check use permitted by zoning
- Advise applicant of status
- Application circulated for comment

Department/Agency Review (6)
- Building
- Public Works
- Traffic Engineering
- Parks and Recreation
- Fire
- Police
- Transit Windsor
- Utilities
- Other - as appropriate

Detailed Review S.P.A. Officer (7)
- Requirements confirmed or modified
- Applicants advised of requirements, negotiations if required
- Report to Council prepared for signature of Commissioner of Planning

ENTER

Building Permit (2)
- Application for building permit filed with Building Department

Development Check (2)
- Building Department determines proposal is a development within an area of site plan approval.
- Applicant advised to file S.P.A. application.
- Building Department continues processing application for building permit if S.P.A. application is processed concurrently.

TO COUNCIL

SOURCE: Report to City Administrator from Commissioner of Planning
RE: Site Plan Approval/Delegations CR 601/92
Date: September 22, 1992

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APPLICATION REJECTED OR CONDITIONS NOT SATISFACTORY
- Clerk advises applicant of Council's decision.
- Information provided on appeal procedure, on request.

C.P.E. APPEAL
- Applicant decides to initiate appeal.

APPLICATION APPROVED
- Clerk advises applicant and administration of Council's decision and requirements.
- S.P.A. Officer provides instructions to Legal to prepare S.P.A. agreement if required.

S.P.A. AGREEMENT
- Legal prepares draft agreement with input from concerned departments.
- Legal/Clerk co-ordinate signatures of Mayor, Clerk, applicant (owner).
- Legal registers the agreement on title.

APPLICANT'S RESPONSIBILITY
- Fulfill requirements of S.P.A. agreement if required.
- Apply for building permit if not previously applied for.
- Advise Building Department that S.P.A. has been obtained.

BUILDING PERMIT
- Start or re-commence processing the application for a building permit.
- Obtain clearances from other departments that S.P.A. requirements fulfilled.
- Issue building permit, assuming all other requirements of the building permit application are fulfilled.
APPENDIX B
FIELD SURVEY SHEET

SITE NUMBER ASSIGNED: SPC SITE ____ or NON-SPC SITE _______
ADDRESS ______________________________ ROLL NUMBER _______
BUSINESS NAME ________________________________
ZONING _______ BY-LAW ____8600 or ____3072
SITE DIMENSIONS _____________________________ SITE AREA _______

IF SPC SITE; SPC NUMBER ________ APPROVAL DATE ____________
    C/R ______ DATE AGREEMENT REGISTERED __________
IF NON-SPC SITE; BLDG.PERMIT # ______ DATE ISSUED __________

FUNCTION

-For SPC sites;
  -Gratuitous land conveyance ___ Yes ___ No
  -Gratuitous easement ___ Yes ___ No
  -Was a storm detention/lot grading scheme required? ___ Yes ___ No

-For all sites;
  -# of access points per main frontage ____ Frontage ____ in ft.
    Frontage feet per access ______
  # of access points per secondary frontage ____
    Secondary frontage (ft.) ____ Sec. frontage ft./access ______
Total: Frontage feet per access ______

-Shared access with adjacent development ___ Yes ___ No

-Distance from driveway of subject site to driveway serving adjacent development (main frontage) _______

-Distance of access driveway to corner (if corner site) _______

-Is there a 10’ driveway "throat" from property line? ___ Yes ___ No

-Is the parking lot paved? ____ Yes ___ No
-Is the loading space clearly marked? ____ Yes ___ No
-Are parking spaces clearly marked? ____ Yes ___ No
-Is there an on-site sidewalk system? _____ Yes _____ No
-Is the building handicapped accessible? _____ Yes _____ No _____ Part _____ NA
-Is the on-site lighting provided? _____ Yes _____ No

COMMENTS RELATIVE TO FUNCTION:

AESTHETICS/ LANDSCAPING

-Site area ______ sq.ft. Landscaped area ______ sq. ft.
% of site that is landscaped ______%  
Notes:______________________________________________

-# of trees on site ______ # of trees per frontage ______ # of trees per 1000 sq.ft of site area ______
-Size of trees: #less than 6” dia. _____ #more than 6” dia. _____

-# of shrubs on site _____ Shrubs per 1000 sq.ft. of site _____
-Is the garbage receptacle screened? Yes:_____ Fully _____ Partially No:_____ NA(none):_____  

- Are any of the following provided?
  _____ berm (_____front _____side)
  _____ decorative paving (brick)
  _____ pedestrian/ ornamental lighting
  _____ raised planters
  _____ flowers
  _____ mulch (stone/brick/wood)

-How well is the landscaping maintained?
  _____ Not provided as required (SPC sites only)
  _____ Provided but poorly maintained (dead/overgrown)
  _____ OK (living but maintenance could be better ie. weeds/litter/mulch needs renewing/ bushes need trimming)
  _____ Great (living/well maintained)
  _____ NA - No landscaping on site
COMMENTS RELATIVE TO AESTHETICS/LANDSCAPING:

RELATIONSHIP TO SURROUNDING DEVELOPMENT:

- Similar setback?  ____ Yes  ____ No  ____ NA
- Similar massing?  ____ Yes  ____ No  ____ NA
- Similar height?  ____ Yes  ____ No  ____ NA
- Design:
  - Similar roof style?  ____ Yes  ____ No  ____ NA
  - Similar fenestration?  ____ Yes  ____ No  ____ NA
  - Similar architectural style  ____ Yes  ____ No  ____ NA

COMMENTS RELATIVE TO THE RELATIONSHIP OF THE DEVELOPMENT TO SURROUNDING DEVELOPMENT:
APPENDIX C

KOLMOGOROV-SMIRNOV TEST CALCULATIONS

All formulas and information relative to the Kolmogorov-Smirnov test were obtained from Essentials of Statistical Geography (1986) by P.D. La Valle (Kendall/Hunt, Dubuque, Iowa) pages 144-146.

Calculation of $D_{crit}$:

$$D_{crit} = 1.36 \times \sqrt{(n_1+n_2)/(n_1 \cdot n_2)}$$

$$= 1.36 \times \sqrt{(100+100)/100 \cdot 100}$$

$$= 1.36 \times \sqrt{200/10000}$$

$$= 1.36 \times \sqrt{0.02}$$

$$= 1.36 \times 0.14142$$

$$= 0.192$$

RULE: $D_{max} > D_{crit}$ - Reject Null
$D_{max} < D_{crit}$ - Accept Null

NOTE: The data meets the requirements of the K-S test i.e. random sample, ordinal data. The test is 95.5 percent power efficient.

Calculation of $D_{max}$:

1. Function Variables

<table>
<thead>
<tr>
<th></th>
<th>Success</th>
<th>Failure</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPC</td>
<td>86/100</td>
<td>14/100</td>
<td>100/100</td>
</tr>
<tr>
<td>NON-SPC</td>
<td>44.7/100</td>
<td>55.3/100</td>
<td>100/100</td>
</tr>
<tr>
<td></td>
<td>41.3/100</td>
<td>41.3/100</td>
<td>0/100</td>
</tr>
</tbody>
</table>

$D_{max} = 41.3/100 = 0.413$

$D_{max} (0.413) > D_{crit} (0.192)$ - therefore we can reject the null hypothesis and conclude that there is a significant statistical difference in the two sets of data.
2. Aesthetics Variables

<table>
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</tr>
</thead>
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<tr>
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<td>55.9/100</td>
<td>44.1/100</td>
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</tr>
<tr>
<td>NON-SPC</td>
<td>23.6/100</td>
<td>76.4/100</td>
<td>100/100</td>
</tr>
<tr>
<td></td>
<td>32.3/100</td>
<td>32.3/100</td>
<td>0/100</td>
</tr>
</tbody>
</table>

\[ D_{\text{max}} = 32.33/100 = 0.323 \]

\[ D_{\text{max}} (0.323) > D_{\text{crit}} (0.192) \] - therefore we can reject the null hypothesis and conclude that there is a significant statistical difference in the two sets of data.

3. Relationship Variables

<table>
<thead>
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<tbody>
<tr>
<td>SPC</td>
<td>39.4/100</td>
<td>60.6/100</td>
<td>100/100</td>
</tr>
<tr>
<td>NON-SPC</td>
<td>47.3/100</td>
<td>52.7/100</td>
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</tr>
<tr>
<td></td>
<td>7.9/100</td>
<td>7.9/100</td>
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</tr>
</tbody>
</table>

\[ D_{\text{max}} = 7.9/100 = 0.079 \]

\[ D_{\text{max}} (0.079) < D_{\text{crit}} (0.192) \] - therefore we must accept the null hypothesis and conclude that there is no significant statistical difference in the two sets of data.

4. Total Scores

<table>
<thead>
<tr>
<th></th>
<th>Success</th>
<th>Failure</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPC</td>
<td>72.8/100</td>
<td>27.2/100</td>
<td>100/100</td>
</tr>
<tr>
<td>NON-SPC</td>
<td>40.4/100</td>
<td>59.6/100</td>
<td>100/100</td>
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<tr>
<td></td>
<td>32.4/100</td>
<td>32.4/100</td>
<td>0/100</td>
</tr>
</tbody>
</table>

\[ D_{\text{max}} = 32.4/100 = 0.324 \]

\[ D_{\text{max}} (0.324) > D_{\text{crit}} (0.192) \] - therefore we can reject the null hypothesis and conclude that there is a significant statistical difference in the two sets of data, SPC and NON-SPC.
VITA AUCTORIS

Nancy (Gast) Morand was born in 1950 in Detroit, Michigan and grew up in Royal Oak, Michigan, graduating from Kimball High School in 1968. She graduated summa cum laude from Oakland University in Rochester Michigan in 1972 with a Bachelor of Arts degree. She was employed with Vilican-Leman & Assoc., Planning Consultants, Southfield, Michigan from 1973-75. In 1975, Nancy joined the City of Windsor Planning Department, Special Projects Section. In addition to working in the Planning Department, she and her husband, Christopher, have raised three children, Jean-Paul (15), Michael (13) and Annette (10). Nancy graduated in Spring 1995 with a Master’s degree in Geography (Planning) at the University of Windsor.