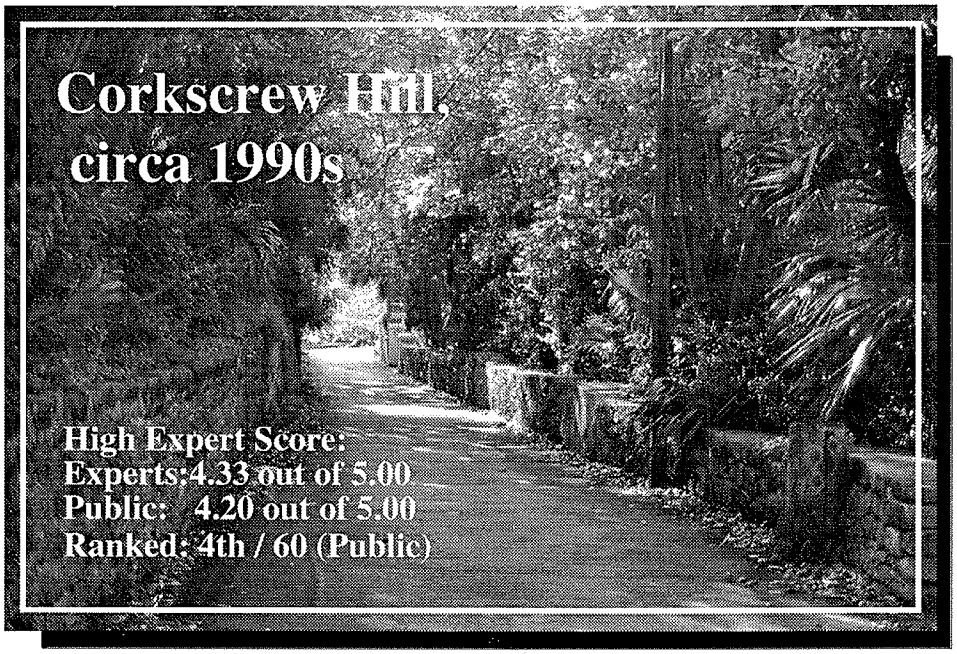
The Traditional Bermuda Roadscape:
Theory, Management and Design Principles



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In Partial Fulfillment of the Requirements for the Degree of

Master of Landscape Architecture

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- Commerce-Business 0505
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- History 0509
- Labor 0510
- Theory 0511

Folklore 0358
Geography 0366
Gerontology 0351
History
- General 0578
- Ancient 0579
- Medieval 0581
- Modern 0582
- Black 0328
- African 0331
- Asia, Australia and Oceania 0332
- Canadian 0334
- European 0335
- Latin American 0336
- Middle Eastern 0333
- United States 0337

History of Science 0585
Law 0398
Political Science
- General 0615
- International Law and Relations 0616
- Public Administration 0617

Recreation 0814
Social Work 0452
Sociology
- General 0626
- Criminology and Penology ... 0627
- Demography 0938
- Ethnic and Racial Studies 0631
- Individual and Family Studies 0628
- Industrial and Labor Relations 0629
- Public and Social Welfare 0630
- Social Structure and Development 0700
- Theory and Methods 0344

Transportation 0709
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- General 0306
- Anatomy 0287
- Biostatistics 0308
- Botany 0309
- Cell 0379
- Ecology 0329
- Entomology 0353
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- Nutrition 0570
- Obstetrics and Gynecology .. 0380
- Occupational Health and Therapy 0354
- Ophthalmology 0381
- Pathology 0571
- Pharmacology 0419
- Pharmacy 0572
- Physical Therapy 0382
- Public Health 0573
- Radiology 0574
- Recreation 0575
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Home Economics 0386

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- Biochemistry 0487
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- Nuclear 0738
- Organic 0490
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- Polymer 0495
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- General 0605
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Applied Mechanics 0346
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- General 0537
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- Biomedical 0541
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- Civil 0543
- Electronics and Electrical 0544
- Heat and Thermodynamics ... 0348
- Hydraulic 0545
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THE TRADITIONAL BERMUDA ROADSCAPE:

THEORY, MANAGEMENT AND DESIGN PRINCIPLES

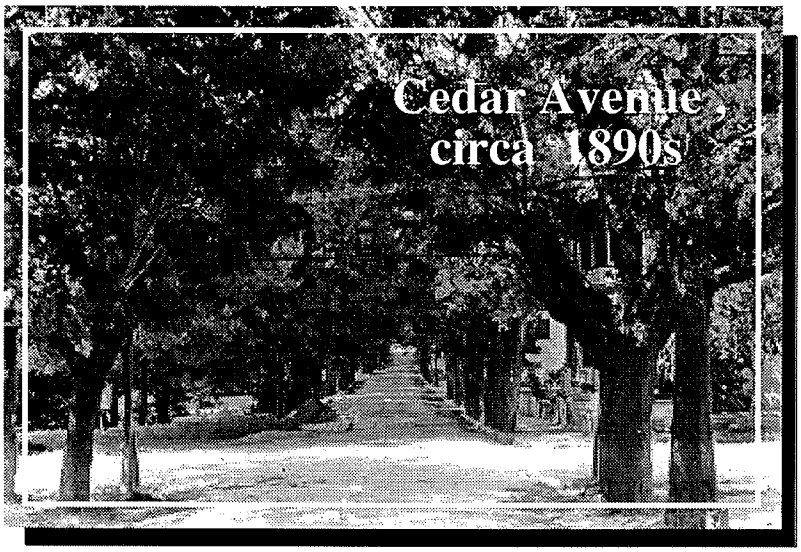
BY

DANNY RODNEY MARK SIMMONS

A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of Manitoba in partial fulfillment of the requirements for the degree

of

MASTER OF LANDSCAPE ARCHITECTURE



"There's a long long trail a'winding
Into the land of my dreams,
Where the nightingales are singing
And the white moon beams;
There's a long long (time ?) a'waiting
Until my dreams come true,
On the day when I'll be going
Down that long long trail with you !"

(June 17th, 1995: Sung impromptu and repeatedly by an elderly Bermuda resident while viewing heritage road scenes)

Abstract

This study focuses on the traditional roadsides of Bermuda, and the role they play as contributors to the island's cultural landscape and regional image.

Despite Bermuda's long-standing economic success as an international tourist resort, perceived declines in environmental and scenic quality, and a lack of an appropriate theoretical framework for change threaten Bermuda's lead in an increasingly competitive regional tourism market. As a means of gaining a better understanding of this perceived decline, an investigation of traditional roadside quality was proposed, drawing from principles previously developed in the field of environmental psychology and earlier scenic quality research in Bermuda. Correlational research was used to examine the effect of various physical and psychological attributes on scene attractiveness, and to clarify the relationship between scene attributes, visual quality and cultural significance. Respondents in Bermuda evaluated 60 images depicting general Bermuda scenes and various Bermuda road scenes, scoring each image on a 1 - 5 scale for "scene attractiveness". Using a grid overlay method, each image was later categorized by the researcher according to physical / psychological variables present in the scenes. "Expert" respondents from the design and natural resource professions in Bermuda also participated in image evaluation, providing 1 - 5 scaled responses for a range of cultural significance indices, including overall visual quality.

Four primary study findings were drawn from the resulting data, which served to (1) validate a high cultural importance of traditional Bermuda roads, (2) confirm visual quality decline over time in traditional Bermuda roads, (3) clarify the nature of visual quality decline, and (4) underscore the need for more careful treatment of traditional Bermuda roads and road-related design in Bermuda's immediate future.

Acknowledgements

I would like to gratefully acknowledge those individuals who selflessly gave of their time, expertise, advice and support throughout the development of this research project.

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The support and council of the members of my **Research Committee** have been invaluable throughout the development of this project. Special thanks go to **Prof. Carl Nelson** (Committee Chair), **Prof. Charles Thomsen** (Department Head, Landscape Architecture), and **Prof. Brian Sinclair** (CADLAB Director) of the University of Manitoba Faculty of Architecture, as well as Landscape Architectural Consultant / Principal **Mike Scatliff** (Scatliff & Associates), for their time and effort in this capacity.

Non - 1995 images contained in this study are gratefully used by permission of the **Bermuda Government Archives**, the **Bermuda Department of Works and Engineering**, and the **Bermuda Department of Planning**. Special thanks go to the **Bermuda Government Archives staff** for their help in locating historic images and other important historic source materials. Appreciation also goes out to surveyor **Cathy Gosling**, roads engineer **Mike Sampson,** and **staff of the Bermuda Department of Works and Engineering**, who provided advice, survey maps and additional source material on public road works. Many thanks go out to planning consultant and former Government Planning Director **Erwin Adderley**, for providing historical planning perspectives on the traditional Bermuda roads, and to **Dave Moore** of the **Bermuda Department of Planning** who provided helpful comments regarding survey methods used in the 1990 visual quality survey.

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February 19, 1996
D.R.M.S.

Table of Contents

Table of Contents (Continued)

Appendices

List of Illustrations

List of Illustrations (Continued)

List of Tables

[Tables 9 - 11 are located in Appendix 7]

Definitions

More so than other economic activities, tourism's success is dependent upon the **quality** of a community's cultural resources, which include the physical landscape (Mathieson and Wall, 1982:95). **Cultural significance** is a term frequently used to describe this quality, and refers to any "...historic, archaeological, architectural, technological, aesthetic, scientific, spiritual, social, traditional or other special significance associated with human activity..." by a given set of people (ICOMOS New Zealand, 1992). A widely examined and frequently discussed dimension of cultural significance is **scenic** or **visual quality**, which refers to the optical human perception of all sensory attributes associated with a given view (or set of views). As a landscape assessment approach, visual quality studies have grown in prominence because of their ability to relate definable and measured aspects of environmental quality to specific, manageable attributes in the cultural landscape.

Drawing from the definition above, **cultural significance** is taken to refer to human (psychological) perception as it relates to environmental objects and factors, and as such is a relative measure of perceived environmental worth or value. Useful to the following discussion is the notion of **roadscape**. Analogous to a "viewshed", which defines a geographic area of interest in terms of what can be seen from a given spatial vantage point, a **roadscape** refers to the total set of physical / spatial parameters and sensory phenomena associated with what can be seen from within a given road right-of-way (or portion of road-right-of-way). In this study, a **roadscape intervention** refers to a roadscape that has undergone any physical, spatial, or sensory change (in the past) due to direct human activity.

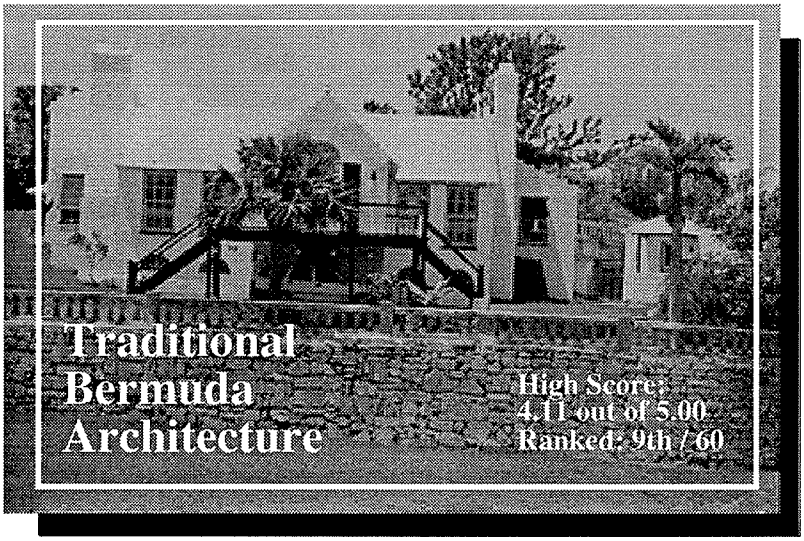
It cannot be assumed that contemporary roads in Bermuda have not undergone some level of intervention through time, and so arriving at a definition of a **traditional Bermuda roadscape** (for the purposes of resource management) requires a somewhat indirect approach. Specifically, this study defines a traditional Bermuda roadscape as a conceptual entity based on the archival description of historic Bermuda roadscapes. As the most dramatic landscape changes in the island began during or after the World War II period (that is, throughout 1940s - 1960s), the traditional Bermuda roadscape will be assumed to refer to the pre-1940 condition. As the archival record for many of Bermuda's roadscapes is uneven, in cases were no pre-1940 archival record is available, traditional Bermuda roadscapes will be defined using the earliest historic data available as compared to contemporary data.

Traditional roadscape quality will be taken to refer to those spatial, compositional and sensory attributes associated with the archival representation of Bermuda's pre-1940 roadscapes. This traditional quality is considered to be a sub-feature of a broader visual phenomenon locally known as **the Bermuda Image**. Analogous to visual quality and cultural significance, the Bermuda Image refers to that pleasurable visualization arising from the experience of all sensory phenomena exclusive and native to the islands of Bermuda. Table 1 lists (in order of importance) the salient features of the Bermuda Image as determined by a 1990 survey of 600 residents and tourists to the island (Bermuda Department of Planning, 1990).

Table 1: Rank Ordered List Of Characteristics Defining The "Bermuda Image" *

(Residents)		(Visitors)	
rank	salient feature / characteristic	rank	salient feature / characteristic
1	**vegetation**	**1**	**traditional architecture**
2	**traditional architecture**	**2**	**vegetation**
3	**beaches**	**3**	**cleanliness**
4	old buildings	4	sea
5	cleanliness	5	maintained gardens
6	sea	6	beaches
7	maintained gardens	7	maintained houses
8	**narrow roads**	**8**	**narrow roads**
9	maintained houses	9	old buildings

* Source: Bermuda Dept. Planning Report "Visual Quality In Bermuda" (1991). 600 respondents participated.



This is an example of the kind of imagery that is highly valued in Bermuda. On a scale of 1 to 5 measuring "attractiveness", respondents polled in Bermuda (1995) gave this image an average score of 4.11, which when compared to a wide range of local subject matter ranked 9th out of a group of 60 images viewed. The following range of scores and comments typify local sentiment towards such imagery:

"(3) -- quaint"
-- middle class black female resident, age 20 - 29.

"(5) -- very pleasing mix of old Bermuda architecture plus that great wall"
-- middle class black male resident, age 50 - 59.

"(5) -- maintained culture via stone wall"
-- anonymous

"(5) -- that's got to be a five"
-- middle class black male resident, age 70 - 79.

"(4) -- great 'Bermudian' scene with old wall and cottage (style)"
-- middle class female resident, age 20 - 29.

Section 1: Introduction

Cultural Significance and the Traditional Bermuda Roadscape: A Landscape Assessment Approach

Introduction

This study examines traditional roadsides in their role as contributors to the cultural landscape and shapers of regional image. Cultural landscapes are defined as those land-based artifacts, places and / or natural systems which are endowed with cultural significance. That is to say, cultural landscapes are conferred with "...historic, archaeological, architectural, technological, aesthetic, scientific, spiritual, social, traditional or other special significance associated with human activity..." by a given set of people (ICOMOS New Zealand, 1992).

Cultural landscapes play at least four important roles in the socio-economic health of communities: (1) they can provide a rich source of identity, image, pride and historic perspective to communities; (2) cultural landscapes are also "living" memorials to important historic events; (3) they provide tangible links to the cherished accomplishments and lessons of aging communities, and (4) cultural landscapes serve as learning environments; that is, they serve as both "in-progress" museums and extant databases for present and future generations.

While cultural landscapes benefit communities in many ways, there are certain cases in which enhancement of a regional image by these resources takes on a much more elevated role in a community. One important example of this is in the case of tourism. In the 1980s, some 270 million tourists spent US $92 billion annually in places outside their own countries, making tourism one of the largest economic activities in world foreign trade (Mathieson and Wall, 1982). With a world growth rate of nearly 6% per year in visitor arrivals, tourism is also one of the fastest growing economic sectors in the global market (Mathieson and Wall, 1982). While its significance is recognized in both developed and developing countries, tourism is particularly relevant to those regions that view it as a primary earner of foreign revenue or as an agent of socio-economic change. Many of these regions approach tourism from shared socio-geographic realities, such as isolation, small physical size relative to population, and scarce natural resources. This study endeavors to address the topic of cultural landscape in the context of these "microstate" regions by focusing on one such area, namely the west Atlantic islands of Bermuda (Figure 1).

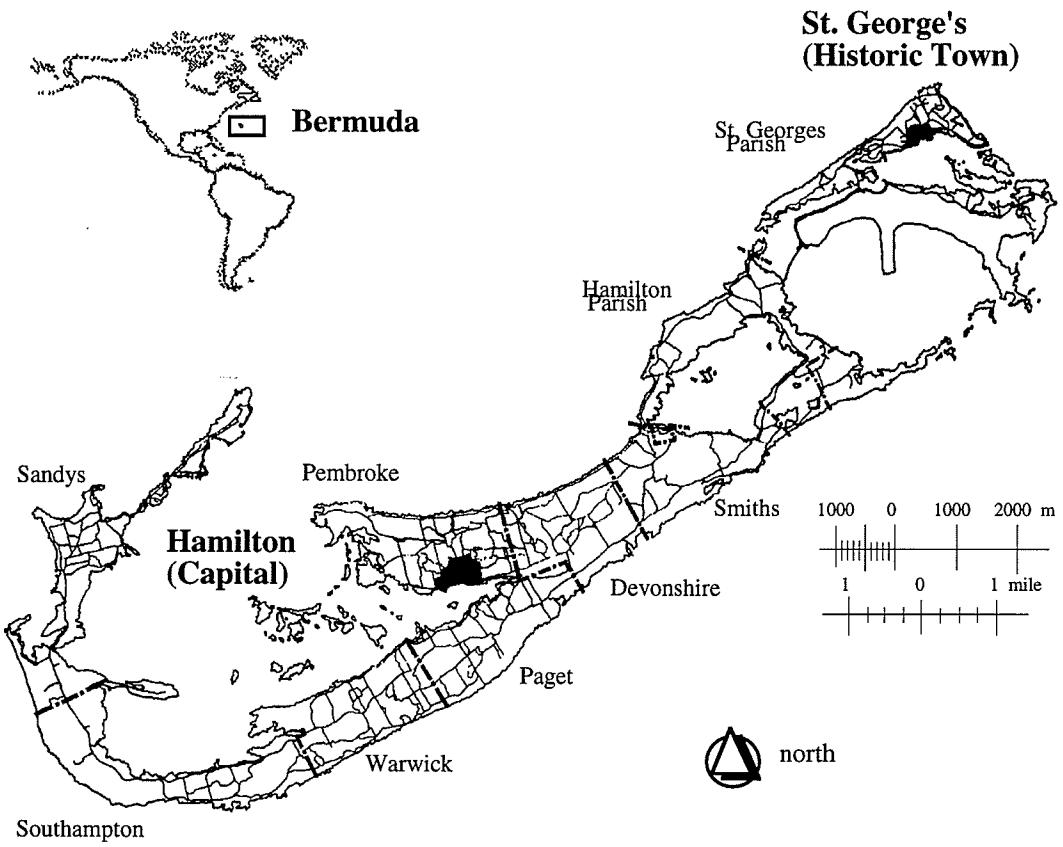
The Problem

Study Area and Problem Statement

As a highly successful and internationally recognized tourist resort / offshore financial center, Bermuda has commanded an enviable standard of living relative to countries many times its size and resource base (Figure 1). For example, In 1991, per capita GNP for the island reached an astonishing US$22,500, out-grossing both Canada (US$19,400 in 1991) and Japan (US$19,000 in 1991). By 1993, per capita GNP in Bermuda rose to US$24,000 (Bermuda Department of Statistics, 1995).

Undeniably, Bermuda owes much of its success to its tourist sector. 1995 Earning Figures released by the Bermuda Monetary Authority indicated a 47.8% sector contribution for tourism throughout the April to June 1995 period (Marchant, 1995). While "natural beauty" and "unique character" are unanimously cited as important reasons for Bermuda's tourism success, a 1989 island-wide attitude survey indicated a widely perceived concern that

changes in the island had resulted in a loss of the island's "environmental quality and attractiveness" (Bermuda Department of Planning, March 1989). 88% of these respondents "consider(ed) the physical appearance of the island to be 'very important' to the tourist industry", with 84% holding the conviction that tourism would not be successful if appearance of the island deteriorates.



Geography	Population	Political Status
32° 19' north latitude, 64° 46' west longitude. Area 53.09 sq. km. Max. elev. 79.06 m.	58,460 (1991). Settlement Density per sq. km: 8,184 (1991).	Dependent territory of UK (1995). Self-governing Crown Colony.
Climate	**Circulation**	**Economy**
Subtropical and frost-free. Max. temp 33°C, min. temp 5°C.	Primary destination: Hamilton 100% all commuter traffic / 24 hrs (1989).	Affluent and stable. per capita GNP: US$24,000 (1992 / 93).
History	**Ethnicity**	**Primary Sectors**
1511 First discovered by Spanish. 1609 First settled by English.	61% Black (1991). 39% White & Other (1991).	Tourism (47.8%, 1995) International Business (28.8%, 1995)

Figure 1: Study Area And Background Information

Perhaps the greatest victim of this perceived loss of visual quality has been the traditional Bermuda roadscape; although the loss of this cultural resource has been noted and addressed through the implementation of numerous management policies, perceived visual quality continues to decline (Bermuda Department of Planning, 1990). This perceived

decline has been paralleled by several disturbing economic declines in the tourist sector, aggravating earlier study fears and sparking renewed activity (Marchant, 1995; Masters, 1995). While still a major economic sector, Bermuda's tourist industry is now in its 15th year of decline, resulting in the closure of 8.4% the island's hotel rooms and the elimination of over 1,000 jobs since 1987. Tourist arrivals have been down 21.7% since 1987, with air arrivals down 8% in 1995 (Masters, 1995). Bermuda Monetary Authority Figures released for the April to June 1995 period also confirm tourist sector decline, reporting a 1.35% decrease in tourist earnings from the same period in 1994 (Marchant, 1995).

As a result of these concerns, current planning policies place strong emphasis on design - related issues. Thirteen of the Interim Discussion Paper Objectives and 1990 Bermuda Development Plan Objectives focus on visual quality concerns (Bermuda Department of Planning, December 1989; Bermuda Department of Planning, 1990; see Table 2).

Table 2: Design - Related Objectives Mandated By The Bermuda Government

- (1)"...overcome shortcomings in design or site preparation and final treatment" (Dept. Planning, "Bermuda 2000 Plan", 1990)
- (2)"...take account of site characteristics and the need for appropriate planting..." (Dept. Planning, "Bermuda 2000 Plan", 1990)
- (3)"...issu(e) guidelines for building and landscape design" (Dept. Planning, "Bermuda 2000 Plan", 1990)
- (4)"...seek positive improvements (to neglected areas which suffer from poorer environmental quality)..." (Dept. Planning, "Bermuda 2000 Plan", 1990)
- (5)"...(current research) reinforces the case for restricting the further development of existing open space...also lends support to policies which seek to protect open views or give impression of lower density development" (Dept. Planning, "Bermuda 2000 Plan", 1990)
- (6)"...encourage more landscaping and better design for commercial /industrial / service center buildings and associated areas" (Dept. Planning, "Bermuda 2000 Plan", 1990)
- (7)"...seek Advisory Architectural Panel (advice) on major developments..." (Dept. Planning, "Bermuda 2000 Plan", 1990)
- (8)"...protect the character and scenic quality of undeveloped areas which contribute to the visual amenity of Bermuda." (Dept. Planning, "Discussion Paper No. 5: Philosophy, Goals and Objectives", 1989)
- (9)"...ensure the scale, density and design of development are sensitive to the site's physical and environmental characteristics." (Dept. Planning, "Discussion Paper No. 5: Philosophy, Goals and Objectives", 1989)
- (10)"...encourage a high standard of design and landscaping in all new developments." (Dept. Planning, "Discussion Paper No. 5: Philosophy, Goals and Objectives", 1989)
- (11)"...promote improvements to areas of poor environmental quality. (Dept. Planning, "Discussion Paper No. 5: Philosophy, Goals and Objectives", 1989)
- (12)"...conserve buildings of architectural and historical importance and sites of archaeological significance." (Dept. Planning, "Discussion Paper No. 5: Philosophy, Goals and Objectives", 1989)
- (13)"...conserve and enhance the fabric and appearance of developed areas with a special character and visual quality." (Dept. Planning, "Discussion Paper No. 5: Philosophy, Goals and Objectives", 1989)

Environmental character concern is demonstrated in the growing attempt to clarify, define and protect the "intangible" qualities of place and image in Bermuda (e.g. Dyer, 1963; Bermuda Department of Planning, March 1989; Bermuda Department of Planning, July 1989; Bermuda Department of Planning, 1991). This increasing concern for environmental

quality and character implies a greater relevance for applied forms of research capable of addressing management objectives.

Landscape Assessment and Visual Quality Management in Bermuda

One of the more promising areas of environmental design research related to the management of visual quality is a form of investigation called landscape assessment. Landscape assessment offers a wide range of potential benefits to visual quality and cultural resource management in Bermuda. Work in this area has been used elsewhere to address the following eight research / management objectives:

- (1) facilitate identification, classification and inventory of local and regional resources (Amedeo, Pitt and Zube, 1989; Zube, Simcox and Law, 1987, *et cetera*);

- (2) provide quantitative methods for evaluating the range of scenic quality within and across resources (e.g. Hull, Buhyoff and Cordell, 1987; Hull, 1989, *et cetera*);

- (3) provide quantitative data upon which to develop visual performance standards for scenic resources (Iverson, Sheppard and Strain, 1993, *et cetera*);

- (4) clarify relationships between human intervention and behavior, resource attributes and environmental perception (Iverson, Sheppard and Strain, 1993; Daniel and Boster, 1976; Brown and Daniel, 1984, *et cetera*);

- (5) assess the impact of natural environmental damage or stress on perceived visual quality (Buhyoff and Leuschner, 1978, *et cetera*);

- (6) analyze, identify and compare various user groups based on comparison of scenic quality preferences (Kaplan and Talbot, 1989; Nasar and Kang, 1989 *et cetera*);

- (7) determine target user group preference criteria for given environmental attributes (Barrington, Chester & Verderber, 1984; Zube, Pitt and Evans, 1983 *et cetera*);

and

- (8) quantify and explain "intangible" perceptual - cognitive attributes and affective responses relating to landscape resources (Kelley, Molenar and Daniel, 1981; Stewart, Middleton and Ely, 1983; Nasar, 1989; Ruddell *et al*, 1989; Lamb and Purcell, 1990 *et cetera*).

Through these and other research efforts, landscape assessment has come to be viewed as an important diagnostic tool in the management of scenic and historic resources (Fein, Robert and Buggey, 1989; ICOMOS General Assembly, 1987).

Landscape assessment research has recently begun to be applied in Bermuda. In December of 1990, the Bermuda Department of Planning published the findings of a survey conducted to investigate visual quality concerns / issues raised in earlier Work Group sessions and surveys (Bermuda Department of Planning, 1990).The survey was based on over 600 personal interviews of island residents and visitors, who were asked to individually score 60 black and white photos according to a 6 point scale for attractiveness (0 = least attractive, 5 = most attractive). Respondents also answered questions (free response format) regarding their personal opinions on most / least attractive areas in Bermuda, perception of change, and features contributing (negatively or positively) to visual quality in Bermuda.

The 1990 study represents an important milestone in Bermuda, as it is the first of its kind in the island. Its strengths lie in the empirical validation of the Bermuda Image, and the empirical substantiation of the Image's assumed elements. Also benefiting the research are the prospects for future visual quality investigation, the use of easily accessible research equipment, simple sampling approaches and modest statistical techniques.

Perhaps the most intriguing issue raised by the 1990 study is that of the relative importance of the "Bermuda Image" - defining attributes examined. The statement on page 17 of the report, namely

> "the traditional roadside character of narrow winding roads...was identified as making a significant contribution towards Bermuda's visual quality" (Bermuda Department of Planning, 1990:17)

was made despite evidence to the contrary in the data presented. Specifically, Figure 11 (on page 17 in the above report) illustrates that "narrow roads" was ranked 8th out of 9 categories of characteristics identified as being particularly important to the Bermuda Image, receiving the second lowest mention among both residents and tourists in the sample (see Table 1). This "low relative importance" of the "narrow roads" component of the Bermuda Image is further reinforced when considering the average rank score of roadscape images in the study. The average rank of the top 30 most preferred roadscape images in the study is 16, well below the top 10 most preferred images. In fact, only 4 of the top 10 most preferred images are of roadscapes and related views.

Low relative importance of traditional roadscapes and the "narrow roads" component in the Bermuda Image is a rather unanticipated and puzzling observation. Why do the traditional roadscape images consistently elicit scores below the top 10 most preferred images in the sample ? What is the meaning of consistent, documented affirmations of the importance of "traditional roadside character" (Dyer, 1963; Alastair Dick and Associates, 1989, *et cetera*) in light of the above findings ?

Current planning policy demonstrates strong support in the area of environmental conservation and protection (Bermuda Department of Planning, 1990; Mayall, 1995; McWilliam, 1995); however, inventories of the island's scenic resources are still quite general in nature and are rarely studied in depth for more effective management. For example, the only comprehensive attempt at an inventory of Bermuda's scenic roads occurred in 1915 with the Bermuda Tribe Roads Commission. In spite of much research effort, the commissioners concluded their study by lamenting:

> "no definite information could be found on the subject...Although diligent search was made...unable to find any map or plan of the colony showing the Tribe Roads ... or to obtain any information which would enable (the Commissioners) to determine what considerations led to the location of these roads in their respective positions, or whether a uniform system was adopted in all the Tribes."
>
> (Smith, Hallet and Coad, 1915: item 8)

In the final report, the Commissioners ultimately based their recommendations on personal inspection of the resources and general impressions more than available archival evidence. No mention is made in their report of such sources as the 1898-99 Savage Ordnance Maps, which contain references to "foot paths" corresponding closely to the Tribe Roads studied, or a 1880 Colonial Survey Map by Philip Ness that references an "Old Tribal Road" in Warwick (Ness, 1880).

Subsequent recommendations proposed by more recent traffic consultants and others regarding roadscape resources occur in a similar theoretical vacuum (Tresidder, 1961;

Dyer, 1963; Freeman Fox and Associates, 1972; Alastair Dick and Associates, 1989). However, these later reports differ from the 1915 study in that they perpetuate recommendations at the expense of further archival research. For example, a 1989 Transportation Study was largely based on road data collected and reported in 1970; neither report focused significantly on the scenic resource issues related to transportation in Bermuda (Alastair Dick and Associates, 1989). Nonetheless, current road management is most influenced by the guidelines contained in these reports. Absence of research rigor is also manifested in the lack of post-evaluative studies describing visual performance of Bermuda roadscapes altered as a result of 1970s - 1980s traffic policy.

These examples contrast the growing consensus of opinion within the international community of heritage resource management professionals. For instance, National Committees for the International Council On Monuments and Sites (ICOMOS) have consistently stressed the need for comprehensive investigation of heritage resources before implementing interventions (ICOMOS Canada Charter, 1983; ICOMOS General Assembly Charter, 1987; ICOMOS New Zealand Charter, 1993; Hockey, 1993). Similarly, the International Institute for Conservation - Conservator's Group (IIC-CG) identify the importance of thorough research, careful documentation with written reports, documented defense of intervention decisions, specialized training amongst consultants in preservation approaches and technologies, as well as commitment to the historic integrity of the resource.

Other difficulties include gaining consensus on "subjective" scenic qualities, which have tended to work against the image - defining process, and lend support to calls for more objective tools and processes in managing "place" and "image" attributes (Bermuda Department of Planning, July 1989). While a general framework of visual quality has emerged in Bermuda (Bermuda Department of Planning, 1990), as yet there have been no studies investigating the potential for other benefits offered by landscape assessment research. In particular, managerially relevant issues, like resource classification and evaluation, environmental impact and quality correlation, user satisfaction, preference criteria and refined character-definition await investigation.

The Study Approach (Methodology)

Previous studies do not examine the traditional Bermuda road to the level of rigor expected for a "significant contribut(or) towards Bermuda's visual quality" (Bermuda Department of Planning, 1990:17). Studies are characteristically lean on research and theoretical development, give only cursory treatment to traditional road qualities, and tend to focus on action and implementation at the expense of investigation.

Several factors favor a more theoretical investigation of the traditional Bermuda roadsides prior to further design intervention.

Firstly, absence of an appropriate theoretical framework for change encourages inappropriate intervention to occur. Such solutions can lead to further losses in scenic quality, which are connected to tourist-related revenue losses, loss of significant heritage resources, increased Government expenditure for site remediation, and increased Government waste through "activity versus objective" conflicts.

The current vacuum in theoretical investigation also aggravates existing discontinuities between competing land use objectives of modern transportation, heritage resource management and environmental conservation. As has been noted elsewhere, increased pressure for transport - related development in the island (that is, car storage, road alterations, public transport development, *et cetera*) will create greater tensions against environmental and scenic quality objectives as traffic growth continues to escalate (Bermuda Department of Planning, July 1989; Alastair Dick & Associates, 1989). Much of this development is particularly expected to occur in and around the city of Hamilton, as this is the major destination point for the island.

Absence of theoretical direction and loss of heritage resources at the local level also has a regional impact, in that it contributes to a sense of disappearing regional heritage resources. Caribbean architectural historian William Chapman notes that throughout the region there has not been a strong history of attachment to notions of maintaining architectural authenticity and historic fabric (Chapman, 1992). Long histories of destruction, replacement and reconstruction have occurred, resulting in the loss of important heritage resources throughout the region. The resurgence of interest in heritage and eco-tourism in an area that is typically resource - poor (due to limited geographies and large population densities) indicates a need for careful management of existing resources.

Also of concern is the effect that a lack of research emphasis has on the possibilities of long-term compromises to historic integrity. Among the leading causes of regional heritage deterioration, Chapman (1992) lists a native disdain for "backward" local heritage in favor of "progressive" International Style Architectural ethics, and the spread of superficial "Caribbean Style" Architecture that undermines local authenticity. Chapman laments that

> "in some cases, the lessons of the historic fabric have been discarded in favor of superficial visual effects...the growing acceptance of the importance of heritage tourism in the Caribbean, along with the infusion of a generic Caribbean - Style architecture into the region, is creating architectural incongruities that are eroding the character and quality of historic properties and districts."
> (Chapman, 1992:58,66)

Chapman goes on to stress the need for further research into heritage conservation approaches that are appropriate for the region, calling for more careful and sensitive intervention in and around sites of historic importance (Chapman, 1992:66).

As a means of addressing these concerns, the following investigation proposes a more theoretical emphasis to scenic quality management in Bermuda. In particular, this study seeks to examine an important subset of Bermuda's scenic environment, namely traditional roadside quality. Due to the psychological dimension of this inquiry and the dependence on people's response to environmental stimuli, the proposed study methodology will be based on principles developed in the field of environmental psychology, and supplemented by earlier visual quality research in Bermuda. Correlational research will be used to (1) examine the effect of various physical and psychological attributes on scene attractiveness, and (2) to clarify the relationship between scene attributes, visual quality and cultural significance. In order to facilitate continuity and comparison with previous visual quality research in Bermuda, similar procedures and materials will be used where possible. Additionally, historic research methods will be used to provide an objective, accessible and reliable source of information on traditional roadsides. In particular, the historic background and authenticity of road scenes will be verified through archival research and through the use of archived images.

Literature Review

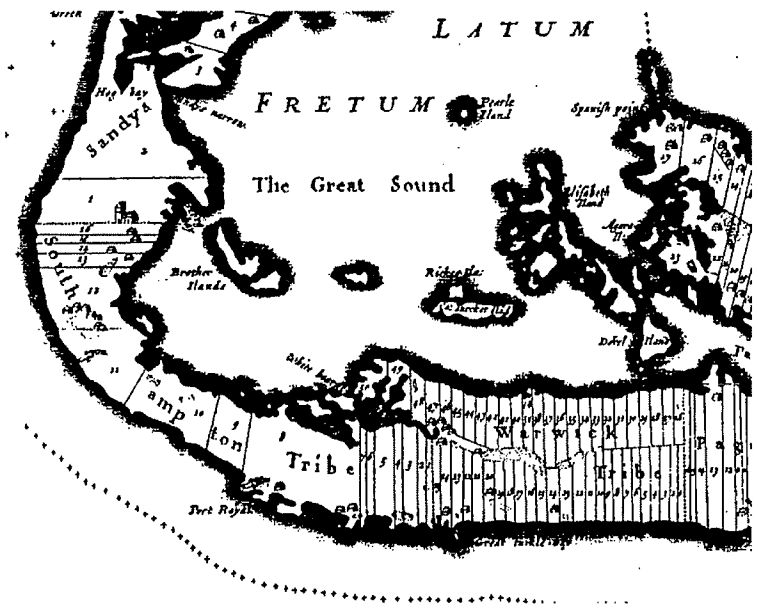
The Traditional Bermuda Road in Historic Literature

A long - admired feature of Bermuda's cultural landscape has been the island's traditional roads. Age, distinctiveness and acquired scenic value are the three attributes that best characterize these roads as portrayed in historic literature.

As one of England's earliest colonies, Bermuda possesses some of the oldest surviving examples of early colonial architecture and heritage within the Atlantic / Caribbean regions, with traditional roads being no exception to this categorization. As historic features closely associated with the earliest settlement periods of the island, some of Bermuda's roads have been in existence for over 375 years. For instance, historic records from a colonial assembly in 1620 verify the existence of a road along the north shore of Warwick and Paget parish (now called Harbor Road), as well as a road running from Somerset Bridge to Warwick (Lefroy, 1981: II, 76; Hallet, 1993: 370). Present - day traditional roads are a composite of three historic road development stages: early (1612 - 1813), transitional (1813 - 1870s) and scenic (1870s - 1970s). In many cases, a fourth stage, utilitarian (1940s - present) may be added.

Bermuda's traditional roads are distinctive in form, having developed in a truly vernacular manner due to the unique assemblage of localized influences and processes. Though the island was completely subdivided as early as 1616 by English surveyor Richard Norwood, curiously no provision was made for formalized roads or travel easements throughout the island. The long narrow form of the island gave most properties access to water, and as boat travel was a primary means of transport, road development may have been thought unnecessary and thus omitted. Whether by oversight or intent, this absence encouraged a pattern of shortcuts and footpaths to spring up over the land which became generally accepted as "roadways", though initially there was no legal basis for their existence, nor any comprehensive plan for their layout.

As "illegal" entities that existed because of the general goodwill and mutual need of travellers to access boat moorings, agricultural plots or the parish church, parish roads were never extensive but rather were often only wide enough to allow passage of a traveller with supplies. Later legislated road widths varied from 12 to 14 feet for the so-called "main



17th and early 18th century maps of Bermuda, such as this portion of Speed's (1627) Map, were primarily copies based on Richard Norwood's Surveys of the island in 1620-22 and 1662-3 (Palmer, 1965).

These early maps all omit references to roads, despite 1620 verification of a road from Sandys to Warwick Tribe, as well as a road along the north shore of Warwick and Paget. Such omissions are explainable if roads emerged initially as non-legal but mutually beneficial resources.

Figure 3: A Portion Of Speed's (1627) Map Based On Richard Norwood's (1622) Survey Of Bermuda

highway" extending from Somerset to Hamilton Parish, and from 8 to 14 feet for all other parish roads (Laws of Bermuda, 1813:13; Lefroy, 1981: II, 76). Yet, these dimensions were not always achieved in practice; lesser or even variable widths for a given road often occurred as well. For instance, the inventory of the 1915 Tribe Roads Commission located roads with 6 foot widths as well as roads which varied considerably in width (Smith, Hallet and Coad, 1915). In the mid- 18th century, the colonists complained that

> "...the highways and public paths in general, throughout the island, are not only much out of repair, but so irregular as not to have a road from one end of the islands to the other of sufficient width..." (Laws of Bermuda, 1761).

Routing as they did through hilly terrain, thickly vegetated woodsides and around irregular coastlines, the roads very early came to trace out the essential features of the island's landscape, reflecting its small - scale, localized and complex character.

Described as "extremely varied", "narrow" and "windy", the roads acquired their irregular form through the involvement of several interacting processes and influences. The initiating determinant in the historic development of Bermuda's roads was the absence of a single controlling authority governing their development (Smith, Hallet and Coad, 1915:15). From earliest legislation in 1620 to the late 19th century, each parish was charged with managing the roads that fell within its own boundaries, through parish church vestries made responsible for this task. Special church - appointed officials, usually working with simple tools and only a few others, were authorized to close, open or alter existing roads at parish discretion, as well as create new pathways or roads as needed by the parish (Hallet, 1993: 369; Laws of Bermuda, 1813:13). Very little legal basis or definition was given to these early roads, with no plans or drawings likely ever used and few (if any) records ever

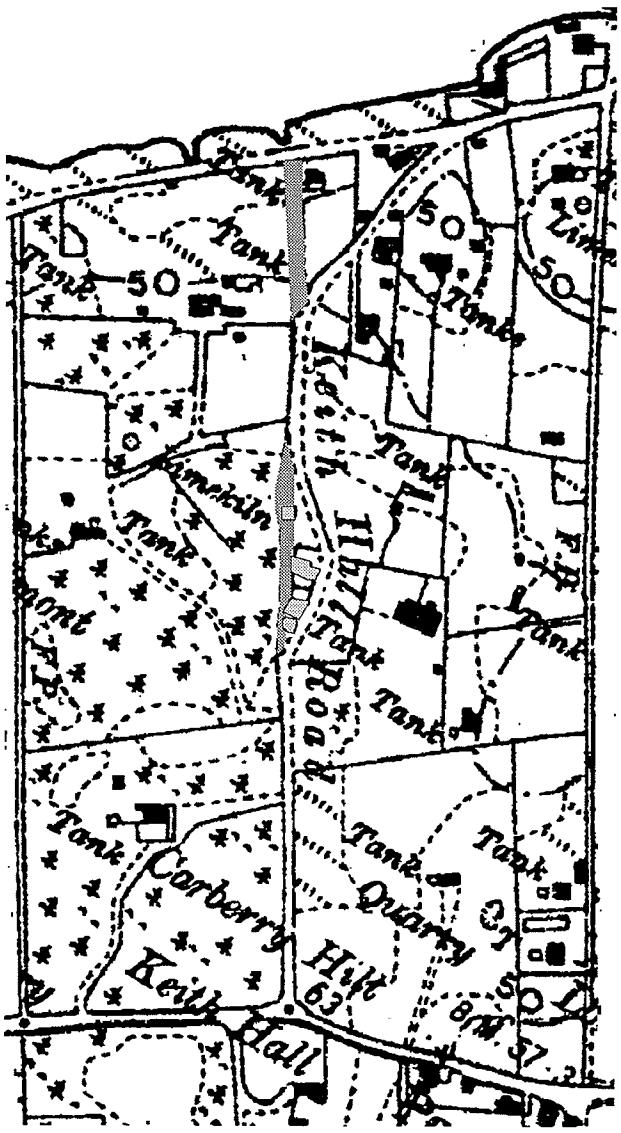
kept (Smith, Hallet and Coad, 1915). Bermuda historian A.C.H. Hallet, a specialist in 17th and 18th century parish church manuscripts, remarked that

> "...all decisions (in road development) appear to have been taken with the travelling convenience of the parishioners very much in mind, as one would expect from a body of neighbors reluctant to lose their habitual travel routes. If approval were given for the closure of a road, it was usually demanded that an alternative be opened, and that the alternative be made usable before closure." (Hallet, 1993: 372 - 373).

Several other factors contributed to the complexity of this flexible and de-centralized system of road development (Smith, Hallet and Coad, 1915). An "enclosures" act (1782) encouraged the erection of boundary walls, markers, fences and ditches (Hallet, 1993: 373), and as the roads tended to run between adjacent properties, many of these features became incorporated in their development. However, difficulty of upkeep and / or neglect of roads were insurmountable problems which "be-devilled" the colony's best attempts at road maintenance. Although a battery of legislative road acts were passed throughout the 17th to 19th centuries, poor road conditions constantly prevailed in the early period; as a result of limited labor and tools, rugged terrain, poor road surfacing and obstructive vegetation, the roads were usually uncomfortable to travel on, and often impassable by carriage or cart (Wilkinson, 1950; Laws of Bermuda, 1761: Hallet, 1993:370). Travellers gradually modified the roads and made altered routes as they walked around obstacles, often trespassing on private property when doing so was more convenient than using the public road (Smith, Hallet and Coad, 1915: 15). This encroachment was further encouraged by landowner indifference and / or inability in either (1) preventing the activity, (2) re-establishing boundaries or (3) maintaining access rights to the roads , and in time these "vernacular" road changes came to be tacitly accepted. Partial or total privatization of roads also occurred, through the gradual removal of boundary walls, erection of obstructions (including buildings), and absorption of road segments into private property over time (Smith, Hallet, and Coad, 1915: 15; Laws of Bermuda, 1813:13).

Bermuda's roads did not just serve a conveyance function, but also reflected festive, ceremonial, judicial, and social roles in Bermuda, both historically and currently. The festive role of Bermuda's roads is evidenced by the historic presence of the Gombeys, itinerant customed dance groups that traditionally use the roads as a performance stage. Ceremonial events such as weddings and military displays are also closely associated with the roads. Throughout the early colonial era, public meeting areas along the roads (including the Town Square) were used to make announcements or to administer punishments, corporal or otherwise. Traditional Bermuda roads serve social and recreational functions to a variety of interest groups, acting as equestrian, walking and nature trails for some groups and offering seating walls and / or gathering areas for others.

Gradually, the colony gained better control and management of the roads. In 1813, responsibility for managing the roads began to be transferred from the parish vestries to two colony - appointed District Commissions, which managed East and West parish roads (Laws of Bermuda, 1813: Hallet, 1993: 362). Under the District Commissioners (1813 - 1860) and later efforts under the Board of Roads (1860 - 1870s) and Board of Public Works (1870s - 1960s), road works throughout the 19th century were mostly remedial, and focused on "cutting off corners, reducing hills, filling in hollows, erecting guard walls and fences, increasing road width and easing bends in the roads" (Board of Public Works, 1888).



The designation "*F.P.*" (for "foot-path") on this 1898-9 Survey Map by A. J. Savage provides one of the earliest spatial references to the "tribe roads" or "cross-roads" of Bermuda (shown here along borders of Figure 3), which still exist in the island's current road system.

The qualities associated with these historic routes appear to be at the base of Bermuda's appreciation for its traditional roads.

Developing from one of these straight tribal roads, the alterations in Keith Hall Road (Warwick Parish) illustrate the effect of interacting historic processes on physical form. The shaded areas show privatized portions of the original tribe route and various erected structures which later affected the course of the road.

Figure 3: Vernacular Development Of Keith Hall Road From A Tribe Road ("*F.P.*")

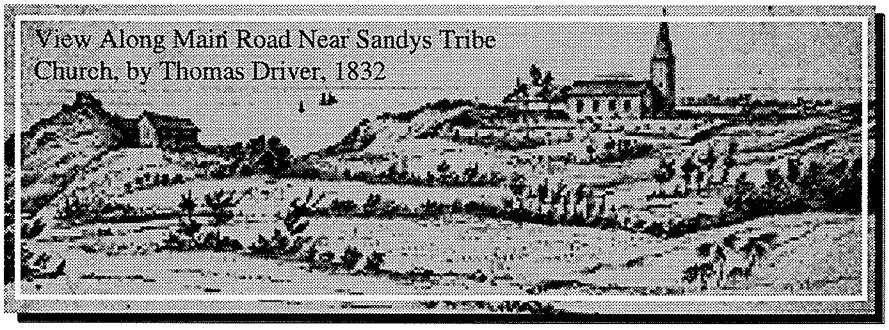
The notion of roads having "scenic" (and hence valuable) quality was virtually unheard of prior to 1800, and likely emerged during the mid to late 1800s, due to the outside influences of English Romanticism, the emergence of photography, and Bermuda's gradual transition to tourism during this period. Examination of 17th - 19th century road legislation, District Commissioners' Minutes, and Annual Reports for the Board of Roads reveals a characteristic utilitarian concern that is devoid of any aesthetic sentiment. Early colonists called the roads "foule (sic) and dangerous to march in " due to poor road conditions (Laws of Bermuda, 1620), and agonized over their upkeep, struggling literally for centuries just to make them serviceable (Wilkinson, 1950: 330).

It is likely that the earliest literary references mentioning an aesthetic aspect of Bermuda's roads are found in the 19th century writings of Englishwoman Suzette Lloyd. Lloyd visited

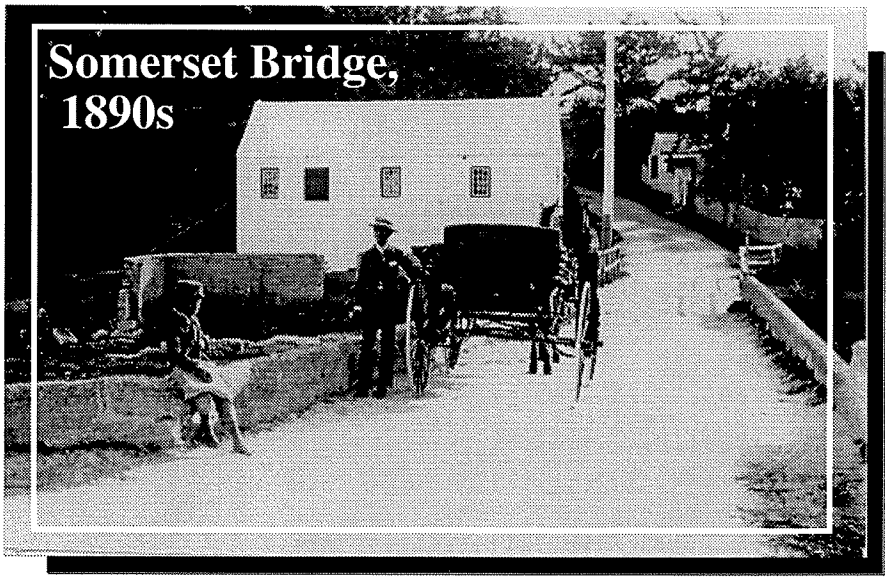
Bermuda from 1829 -31, and wrote detailed accounts of local people and the conditions of the day (Hallet, 1985). Describing her travels along the main road to Somerset, Lloyd remarked:

> "The road is extremely varied and picturesque, and less disfigured than the rest of Bermuda, by stone fences, which harmonize so ill with the scenery...the road...soon became more interesting, and merged into all the pleasing features of a Bermudian landscape."
> (Lloyd, 1835:189)

Other influences may have been the early 19th century landscape paintings of Thomas Driver, who produced scenes of Bermuda roads throughout the 1830s. Additionally, the work of mid to late 19th century photographers, whose earliest prints began to appear in the 1860s - 1870s, may have also influenced and encouraged the emergence of a positive roadscape aesthetic.



The early 19th century landscape paintings and drawings of Thomas Driver emerged during the time that writers like Suzette Lloyd began describing Bermuda's traditional roads in terms of English Romanticism .



Many of the earliest photographic prints of Bermuda prominently featured traditional roadscapes.

Images like this 1890s print were among the earliest to portray the traditional road as part of the touristic appeal of Bermuda; forerunners to Bermuda's promotional imagery

Growing tourism awareness of Bermuda's roads may also be seen in the changing content of a 19th century local publication called *The Bermuda Pocket Almanac* . First appearing in 1844, the *Almanac* became predecessor to the early Bermuda tourist handbooks, through its inclusion of feature articles for tourists begun in the 1870s. In 1874, a regular feature called "The Bermuda Itinerary" first appeared, which marked the earliest treatment of Bermuda's roads as important tourist attractions valued by locals. The first mention of road changes being linked to concerns for aesthetic appearance by

administrators does not occur until 1888, well after "The Bermuda Itinerary" articles were common knowledge:

> "Improvement of Road near Mangrove Bay...This work...has been completed in a very satisfactory manner...effects a decided improvement in the appearance of that locality..." (Board of Public Works, 1888)

Thus, by the end of the 19th century, the notions of scenic road quality and touristic value of roads were well in place. By the early 1900s, photographs, postcards, paintings and tourist guidebooks regularly featured images of traditional roads, affording for them a defining role in the emerging tourism image of 20th century Bermuda.

Findings in Landscape Assessment Research

Landscape assessment is a type of human - environment interaction that is commonly investigated within the field of environmental psychology. This branch of applied psychology emerged during the 1950s and 60s, though some of its antecedents are drawn from other areas of psychology with longer histories (Daniel and Vining, 1983; Coyne and Clack, 1981). Environmental psychology today is a widely recognized multi-disciplinary field that has direct relevance to design, planning, management and research interests. While there have been (and still are) a number of ideological approaches to the study of landscape assessment, by far the two that are the most widely used and managerially relevant are psychological investigation and psychophysical modeling (Daniel and Vining, 1983; Hull, Buhyoff and Daniel, 1984; Ruddell *et al* , 1989).

Psychological investigation grew in part out of 20th century developments in personality theory. In particular, psycho-analytic, behavioral and phenomenological personality theorists of the early and mid 20th century began to give implicit recognition to the environment as a shaper of personality, with a few researchers being explicit in their extrapolations of environmental effects on personality (Coyne and Clack, 1981: 20). These early investigations became catalyzed by the socio-environmental awareness movements of the 1950s - 60s, which came to place psychology at the forefront of environmental issues today (Coyne and Clack, 1981; Gifford, 1989).

Among the notable findings in psychological investigation has been research identifying attributes and attitudes common to a wide range of landscape types. Salient perceptual - cognitive qualities based on objective attributes of the environment include naturalness, complexity, openness, order, monumentality and meaningfulness (Nasar, 1989; Nasar and Kang, 1989). Salient affective qualities based on subjective responses to the environment include pleasantness, stimulation ("arousingness"), excitement and calmness (Ward and Russell, 1981; Nasar, 1989).

Psychophysics, a branch of psychology that developed in the 1800s, investigates mathematical relationships between physical stimuli and human perception / behavior. Successful modern applications of psychophysical modeling in marketing and forest management (Hull *et al* , 1987; Daniel and Vining, 1983) led to its development and general use in scenic quality assessment of landscapes (Zube, 1984). First widely used in the United States, scenic quality management based on psychophysical modelling has now been applied in a number of countries worldwide, including Nigeria (e.g. Choker, 1990); Japan and Scotland (e.g. Zube, 1984), and Australia (e.g. Bishop and Leahy, 1989).

Psychophysical research across several kinds of stimulus - perception conditions has shown a prevalence of non - linear relationships between environment and psychological

variables; of particular interest is a commonly observed "environment - perception threshold effect" (Hull *et al*, 1984; Hull *et al* , 1987). In this effect, which was early studied by Fechner and Weber [Fechner, 1966; Gifford, 1987), an optimal level (or levels) relating the variables is present, such that decreased perceptual response occurs relative to any increased / decreased stimulus. Such threshold effects have been used by researchers to explain human adaptation to air pollution (Sommer, 1972), human perception of insect - damaged forests (Buhyoff and Leschner, 1978) and other human responses to indices of environmental stress (Gifford, 1987).

Both psychological investigation and psychophysical modeling approaches are empirically compelling and statistically robust, with demonstrated high levels of objectivity, sensitivity, validity and reliability (Daniel and Vining, 1983; Porteous, 1982; Zube, 1984; Hull, 1989). These clear advantages are tempered, however, by the inherent limitations within each approach, namely reduced utility and a lack of theoretical elaboration and clarity (Daniel and Vining, 1983; Zube, 1984; Carlson, 1993). One strategy adopted by researchers for dealing with these limitations has been to take a multiple methods approach, combining psychological investigation with psychophysical modeling (Ruddell *et al*, 1989; Daniel and Vining, 1983). Reduced utility in psychophysical modeling can also be mitigated by taking into account the broadest relevant range of perceptual responses for the area in which the test environment sits (Hull, 1989). Anchoring the evaluation to a meaningful scenic context, such as to the most and least scenic landscapes in a test area, is deemed critical by researchers in that it facilitates comparison of the response to a framework that is meaningful to managers, planners and designers (Hull, 1989).

Psychological and psychophysical landscape assessment methods routinely employ photographs, photographic slides and computer simulated images as surrogates (that is, substitutes) for actual landscapes to elicit responses (Zube, Simcox and Law, 1987). Respondents are typically instructed to give responses based on the quality of the depicted area rather than the technical quality of the photographic image (Daniel and Vining, 1983). A large and extensive body of research validates the use of color slides (Malm *et al* , 1981; Stewart *et al* , 1983; Daniel and Boster, 1976; Buhyoff and Leuschner, 1978; Nassauer, 1983; *et cetera*), color photographic prints as well as black and white photographic prints as landscape surrogates (Shuttleworth, 1980; Zube, Pitt and Anderson, 1974; Shafer and Richards, 1974; Evans and Wood, 1980; *et cetera*). While research validating the use of computer generated surrogates is not as extensive as that for photographic slides and prints (Zube, Simcox and Law, 1987), current research supports within definable limits (namely, high resolution images with very close approximation to photographic quality and color balance) the use of digitized images instead of photographic prints and slides as landscape surrogates (Bishop and Leahy, 1989; Zube, Simcox and Law, 1987). These studies and numerous others suggest that photographic surrogates are reliable, effective and useful tools for use in the measurement and evaluation of landscape preferences (Clamp, 1981; Dearden, 1981).

Psychological and psychophysical landscape assessment methods typically depend upon the accurate, systematic description of landscape features to achieve the goal of relating specific (independent) physical feature variables to (dependent) assessment variables (Daniel and Vining, 1983; Buhyoff and Leuschner, 1978; Arthur, 1977). Physical landscape features can be defined in photographic terms, and thus quantified through measurements of the photographic surrogate itself (Shafer, Hamilton and Schmidt, 1969; Shafer and Tooby, 1973; Stamps and Miller, 1993). Conversely, features may also be defined in ecological terms using field measurements of characteristics recorded in photographic surrogates (Daniel and Schroeder, 1979; Schroeder and Daniel, 1981).

Relevance of Findings to Study Approach

In considering the previous literature, it is important to note those findings which appear to have the greatest relevance in terms of establishing criteria for the design of the study.

This literature review demonstrates the importance and usefulness of landscape assessment as a diagnostic tool in the management of scenic resources, and provides examples of its use in a wide variety of applications and environmental settings.

In particular, this review highlights the prominence and potential of psychological investigation and psychophysical modelling in the examination of human - environment interactions (landscape assessment); it also calls to attention several findings based on these methodologies which are relevant to the present study of Bermuda's traditional roads.

Several psychological and landscape variables were found to have central importance to a broad range of environmental settings and have relevance to the present study. The literature also suggests a high likelihood of observing non - linear models in human - environment interaction, and indicates that this tendency should be considered in the design, analysis and interpretation of the study.

The empirical use of digital images and photography in landscape assessment is supported throughout the literature, and the review provides clear and well-defined conditions for the use of this media in the present study. In particular, the careful inclusion of contextual scenes can provide relational depth to the study, while careful standardization, control and measurement of images forms the basis upon which correlational investigation may proceed. The validation of statistical techniques for standardized score comparison in the literature adds further strength to the study approach by providing opportunites to compare scores of common scenes across different study groups.

Design of the Study (Procedures)

Materials:

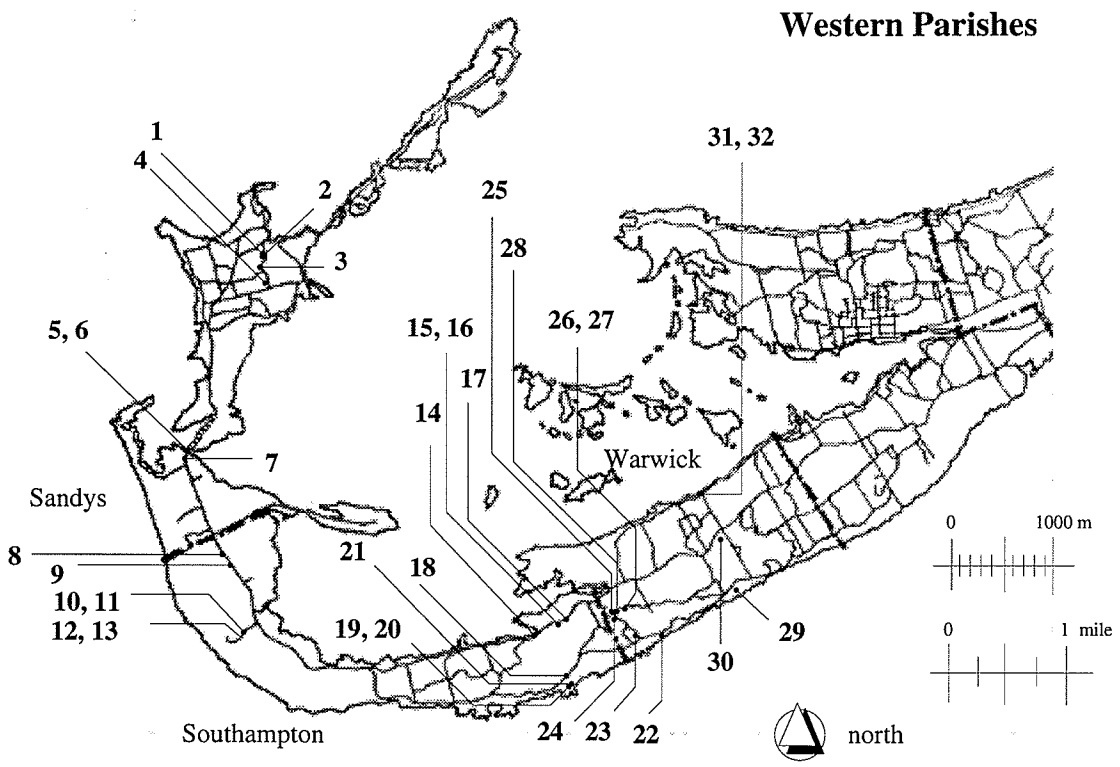
60 road scenes and general images representative of Bermuda's range of visual quality were selected for evaluation by respondents in Bermuda (Figure 1). Selection was based on three criteria, namely: (1) the availability of historic images, (2) desired continuity with previous visual quality research in Bermuda, and (3) desired comparison of current or recent roadworks with unaffected adjacent areas. High resolution black and white laser copied prints of uniform orientation ("landscape") and area (9322 mm^2) were used as surrogates for the scenes they depicted (Table 3, Figure 4 and Appendix 7 describe and categorize the images used in the study). Digital black and white print surrogates were chosen over the 8" x 10" black and white photographs used in the 1990 visual quality study of Bermuda (Moore, 1995). As the selection criteria for media prioritized economies of time and cost, the use of 8" x 10" black and white prints was seen as prohibitive for this study, especially in light of the likelihood of high quality black and white digital images eliciting similar responses to photographic surrogates (Bishop and Leahy, 1989: Zube, Simcox and Law, 1987).

25 of the 60 images (referred to as marker images) were used with permission from the Bermuda Department of Planning's (1990) visual quality study to facilitate cross-study continuity and comparison, with an additional 35 images (referred to as test images) depicting road scenes included.

Marker images were comprised of the highest and lowest ranked black and white images in the 1990 study as well as additional images in the study representative of Bermuda's full visual quality range. These selected marker images were chosen from 4 thematic areas: vegetation, architecture, beaches and roads. Thematic areas were chosen to correspond to the top three items in a ranked attributes list of important Bermuda scenic qualities (Bermuda Department Planning, 1990; see Table 1). High resolution ("publication quality") images contained in the 1990 study were Canon laser copied to produce high resolution black and white prints.

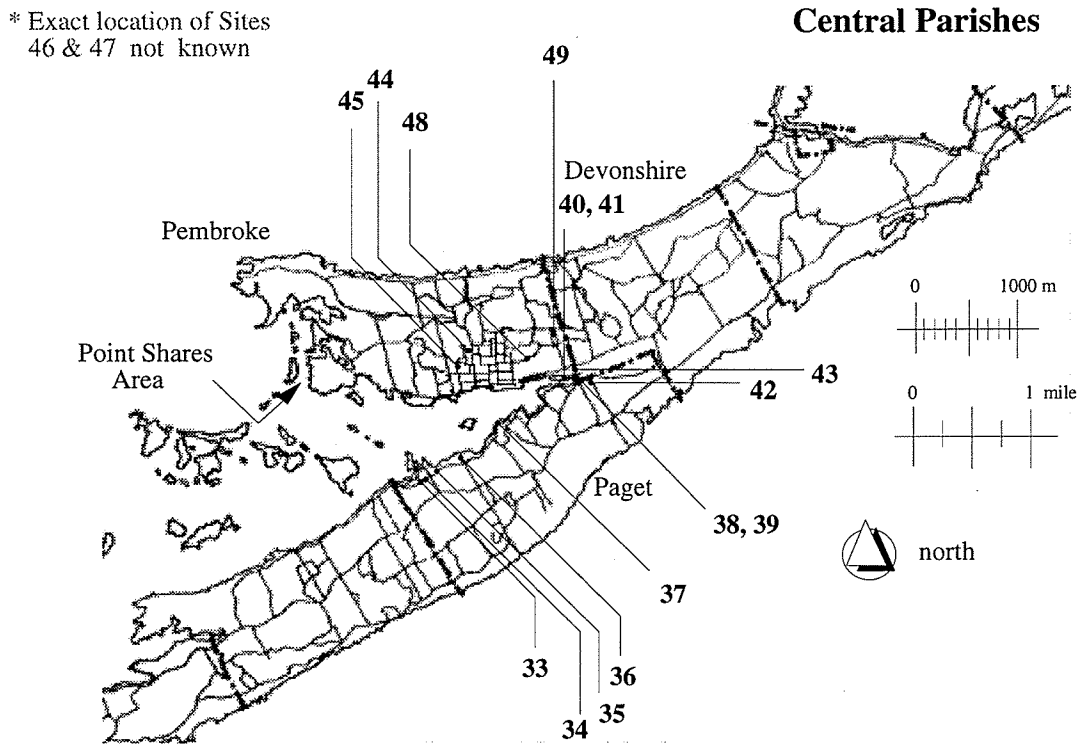
Test images included 13 historic scenes drawn from archival research, 19 scenes depicting recent road improvement projects, and 3 additional marker scenes not found in the 1990 study but with suspected high visual quality . Six of the archival scenes were matched with contemporary images of the same view to form location - matched "before and after" representations of a scene over time. Mean attractiveness scores for seventeen marker roadscapes were standardized and compared for the 1990 and 1995 evaluation periods. Original black and white as well as color photographs were scanned and laser printed at 600 dots per inch to produce high resolution black and white prints.

Multiple copies of identical quality were made of these images and compiled into 8 album sets, comprised of five sets of 60 images and three sets of 8 images. These 8 image sets, selected from the 60 images, depicted a smaller but representative range of contemporary Bermuda road scenes. The 8 image sets were to be more extensively evaluated by "expert" respondents drawn from Bermuda natural resource and design professions. Each of the 8 albums contained a differentially sequenced series of images to mitigate possible sequence effects on respondent scores.



site	photo number & name	parish	site	photo number & name	parish
1	p43: Beacon Hill / SDA 1995	Sandys	18	p57: Horseshoe Bay Coast View, 1980s*	Southampton
2	p37: Beacon Hill past SDA 1995	Sandys	19	p48: Horseshoe Bay (clean),1990s	Southampton
3	p3 : Beacon Hill /Broome St., 1995^	Sandys	20	p25: Horseshoe Bay (dirty),1980s	Southampton
4	p26: Beacon / Scott's Hill, 1995	Sandys	21	p30: Horseshoe Bay parking, 1980s	Southampton
5	p38: Somerset Bridge, 1890s	Sandys	22	p22: Coastal Vegetation (Spruce),1980s	Southampton
6	p31: Somerset Bridge, 1995	Sandys			
7	p41: Somerset Bridge Approach, 1995	Sandys	23	p50: Camp Hill Rd. / South Shore, 1995^	Southampton
8	p14: Middle Rd. (PR) North, 1995	Southampton	24	p12: Camp Hill Rd. past bend, 1995	Southampton
9	p7 : Middle Rd. (PR) South, 1995^	Southampton	25	p60: Camp Hill bend, 1995	Southampton
10	p51: Whale Bay Rd. / AME, 1995	Southampton	26	p56: Spice Hill Rd. East, 1995^	Southampton
11	p44: Whale Bay Rd. past AME, 1970s	Southampton	27	p59: Spice Hill Rd. West, 1995	Southampton
12	p54: Whale Bay Rd. / AME, 1970s	Southampton	28	p13: Spice Hill Rd.West walls, 1995	Southampton
13	p1: Whale Bay Rd. past AME, 1995	Southampton			
			29	p33: Astwood Parkland, 1980s*	Warwick
14	p58: Middle Rd / Waterlot Hill, 1980s^	Southampton	30	p36: Warwick Pond, 1980s*	Warwick
15	p8 : Mid Rd. Scenic Heights West1, 1995	Southampton			
16	p10: Mid Rd. Scenic Heights West2,1995^	Southampton	31	p4: Harbor / Longford,1936	Warwick
17	p9 : Mid Rd. Scenic Heights East,1995	Southampton	32	p17: Harbor / Longford, 1980s*	Warwick

Figure 4 (a): Location Map Showing Western Parish Study Image

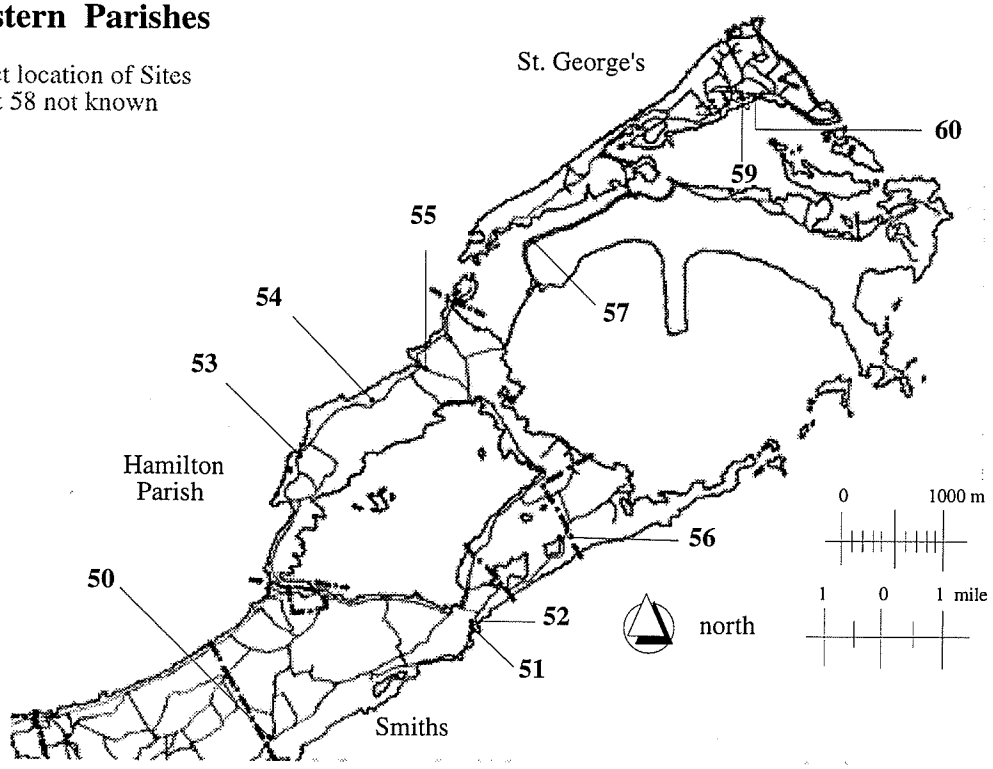


site	photo number & name	site	photo number & name	parish
33	p16: Harbor / Salt Kettle,1980s*	42	p53: Point Finger Rd. , 1890s	Pembroke
34	p24: Harbor past Manse,1936	43	p47: Corkscrew Hill,1990s^	Pembroke
35	p21: Harbor / Manse,1936	44	p6: Cedar Avenue,1890s	Pembroke
36	p15: Harbor Rd. House,1980s*	45	p19: City Hall parking, 1980s	Pembroke
37	p11: Harbor Rd. Paget,1936			
		46	p52: Traditional House (Pt. Shares),1980s*	???
38	p27: Foot-of-the-Lane, 1936	47	p55: Rubber Tree /Yard,1980s*	???
39	p46: Foot-of-the-Lane, 1970s	48	p42: Shelton Rd. / Happy Valley, 1980s*	
40	p32: East Broadway,1936	49	p29: Frog Lane, 1980s*	Devonshire
41	p39: East Broadway, 1970s			

Figure 4 (b): Location Map Showing Central Parish Study Images

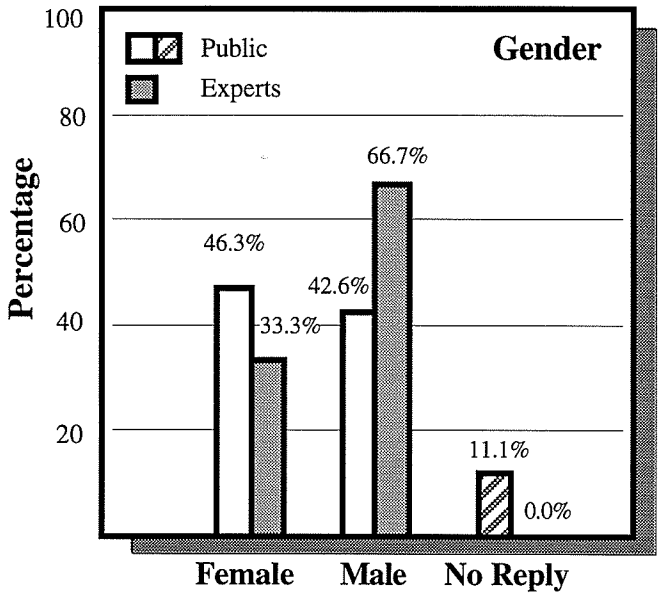
Eastern Parishes

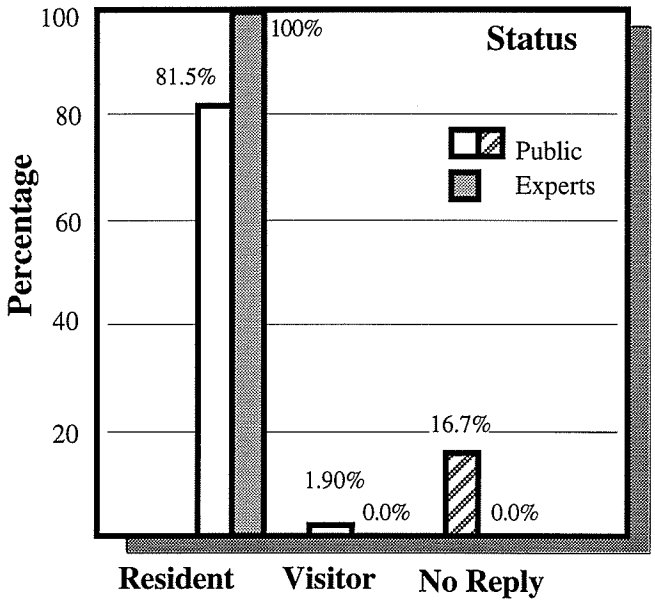
* Exact location of Sites
55 & 58 not known

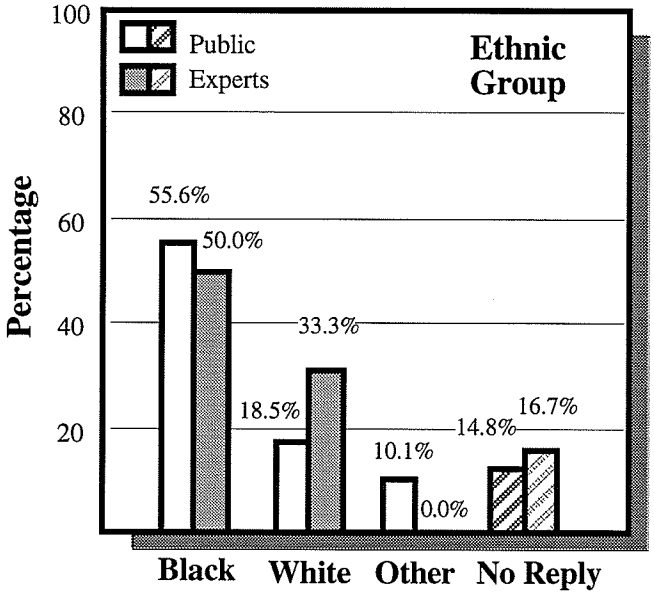


site	photo number & name	parish	site	photo number & name	parish
50	p45: Collector's Hill, 1980s	Smiths	58	p49: Traditional House (St. Geo),1980s*	???
51	p23: JSB Beach,1980s*	Smiths	59	p40: St. George Street,1980s*	St. George's
52	p5: JSB parking, 1980s*	Smiths	60	p2 : Convict Bay, 1980s	St. George's
53	p18: Shelly Bay plaza, 1980s	Hamilton			
54	p35: Claytown gate, 1980s	Hamilton			
55	p20: Wilkinson / Fractious,1980s*^				
56	p34: Mid-Ocean Rd. Palms,1980s*				
57	p28: Ferry Reach, 1980s*	St. George's			

Figure 4 (c): Location Map Showing Eastern Parish Study Images







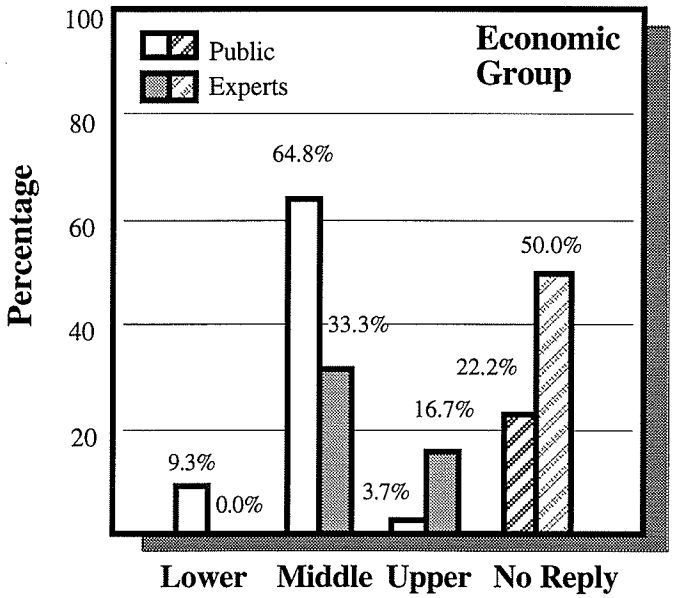
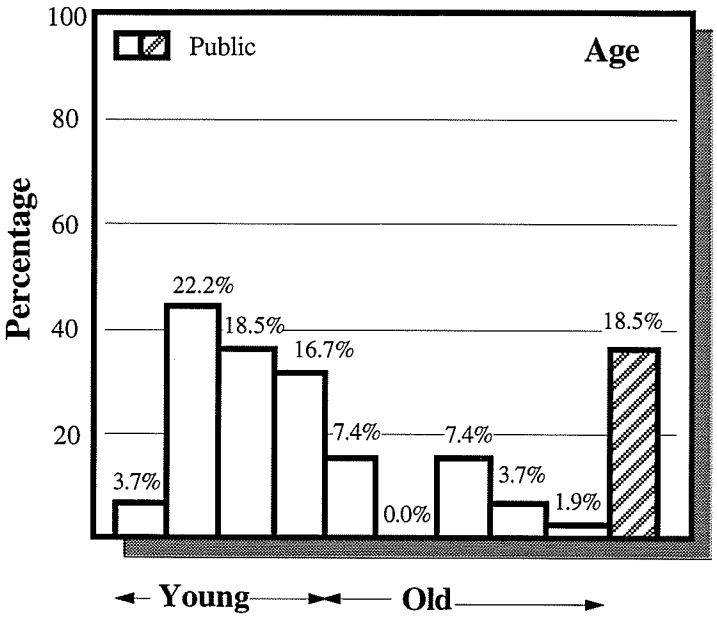
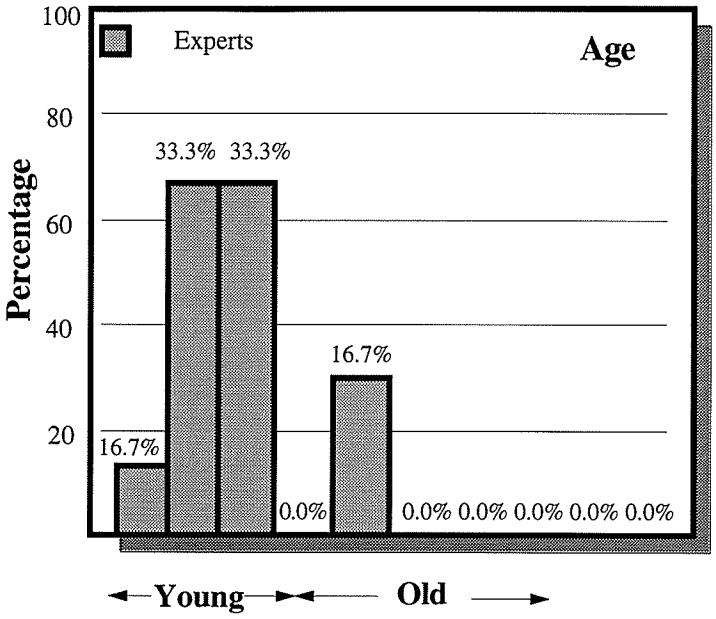
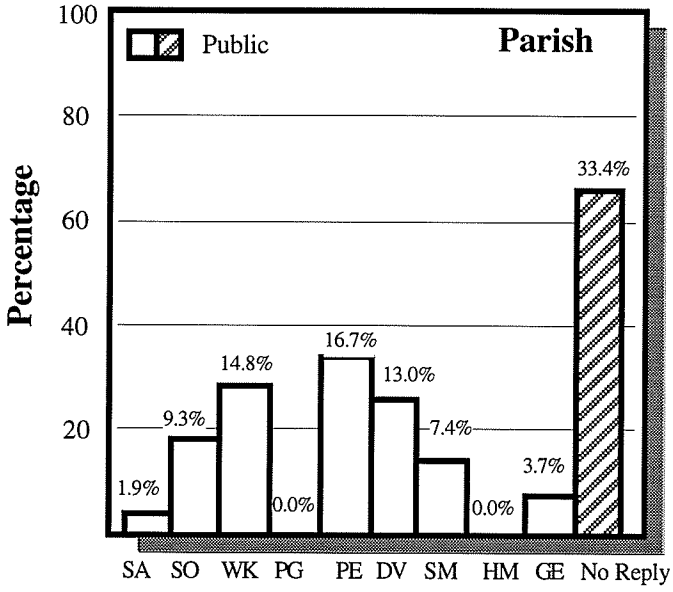
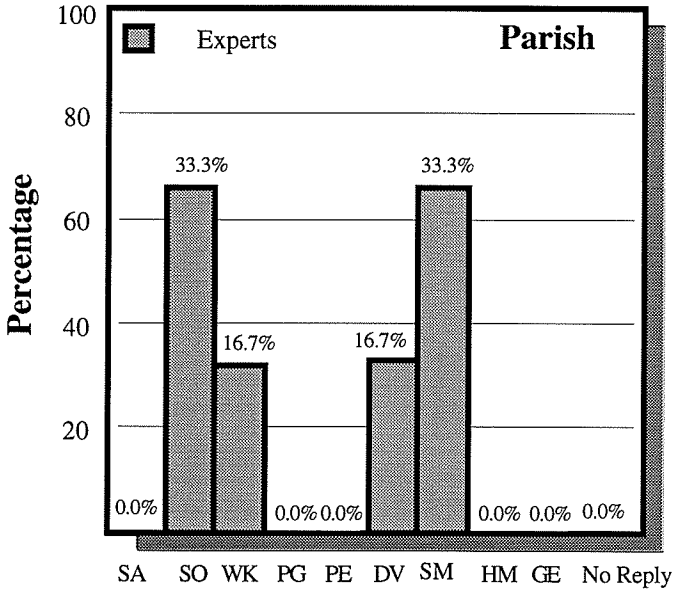


Figure 5 (a): Respondent Profiles -- Gender, Citizenship, Ethnicity And Economic Background









Parish Abbreviations

West	Central	East
SA Sandys	PG Paget	SM Smiths
SO Southampton	PE Pembroke	HM Hamilton Parish
WK Warwick	DV Devonshire	GE St. George's

Figure 5 (b): Respondent Profiles -- Age And Residency Distribution

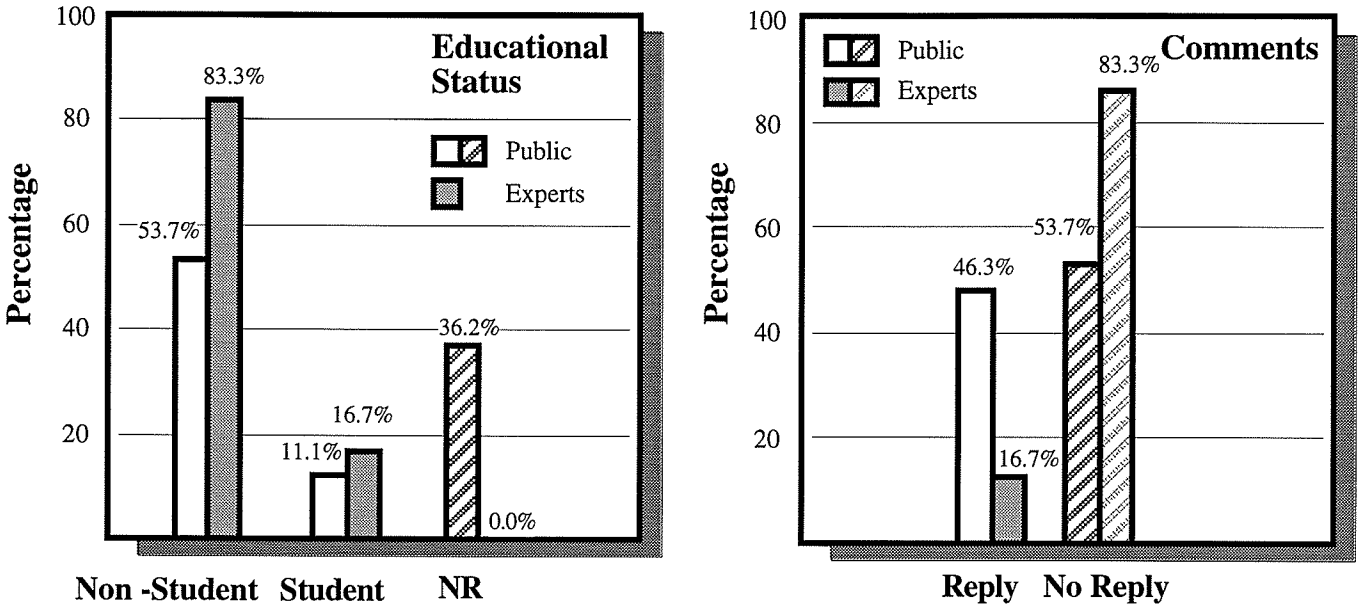


Figure 5 (c): Respondent Profiles -- Educational Status And General Comments Given By Respondents

Evaluation:

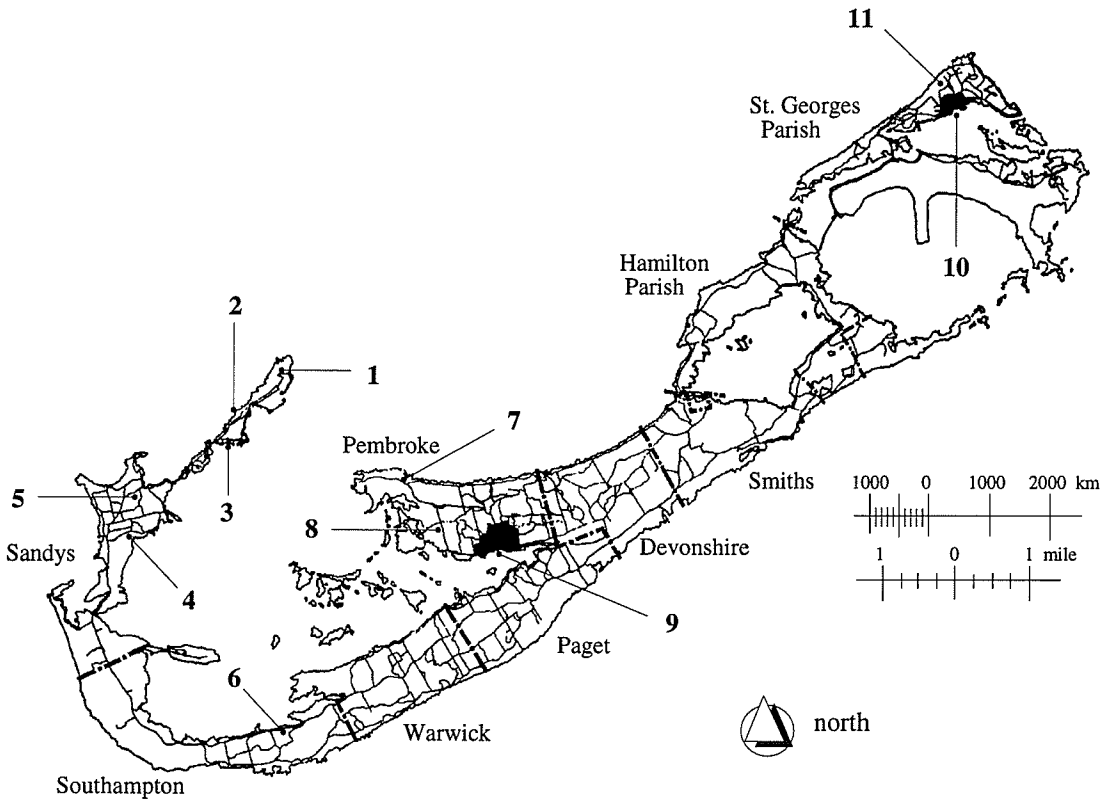
The evaluation period by respondents in Bermuda ran from June 15 - 18, 1995. Time of sampling was not controlled and varied considerably throughout the day, based on the limited availability and schedule of respondents, as well as the relatively short period of data collection. Sampling sites were geographically dispersed throughout the island in western, central and eastern parishes (Figure 6). Sample sites included parks, recreation and urban areas, special senior citizen's gatherings, elder care nursing homes, public sector as well as private sector offices. Nursing homes and private architectural firms were called at random and interviews with willing respondents arranged through Home Matrons or authorized members of staff. Respondents in public sampling sites were also approached randomly, while personnel from the Bermuda Department of Agriculture, Fisheries and Parks volunteered to participate and solicit for additional respondents.

In evaluating the 60 image sets, willing respondents (from the general public) were issued one of the five numbered photo albums, a response form (Appendix A) and a pen. Respondents were prompted with written and verbal instructions to rate each image for "degree of attractiveness", using a Likert scale of 1 to 5. On this scale, 1 represented the lowest level of attractiveness and 5 the highest level of attractiveness. Respondents could alternatively reply "not applicable" and / or include any open-ended response they wished for each of the 60 scenes viewed. Respondents were pre-prompted in writing that the "images represent(ed) scenes taken in Bermuda."

In evaluating the 8 image sets, willing respondents ("experts") were issued one of the three numbered albums, a response form (Appendix B) and a pen. Each expert was asked in writing to answer nine questions concerning historical, aesthetic, architectural and environmental aspects of each scene. Responses were to be

indicated on a Likert scale of 1 to 5, where 1 represented the lowest level of response and 5 the highest level of response. Experts could alternatively reply "not applicable" and / or include any open-ended response they wished for each of the 8 scenes viewed. As with the general public, experts were pre-prompted in writing that the "images represent(ed) scenes taken in Bermuda", and were additionally asked to indicate the "level of frequency" with which they passed through or visited each scene presented.

In some cases (namely, in collecting seniors' responses or at the request of a respondent), respondents "attractiveness" scores, personal data and / or comments were delivered verbally and recorded on response forms by the investigator. Such cases accounted for 10% of all respondents. Individual attractiveness scores for each image were averaged and ranked for the 60 image group, and the most and least attractive images (ranks 1 -10, 50 - 60, respectively) identified.



site	location	site	location
1	Naval Dockyard, Ireland Island, Sandys	7	Senior's Club, Pembroke
2	Black Bay, Boaz Island, Sandys	8	Rest Home, Pembroke
3	Lefroy House, Boaz Island, Sandys	9	Front Street, Hamilton
4	Rest Home, Somerset Railway Trail, Sandys	10	Town Square, St. George's
5	SDA Church, Beacon Hill Road, Sandys	11	Rest Home, St. George's
6	Rest Home, Southampton		

Figure 6: Location Map Showing Respondent Sampling Sites

Sample Description:

Sixty respondents participated in the study, with 54 evaluating the sets of 60 images, and 6 evaluating the sets of 8 images (Figure 5).

The 60 image sample group was composed primarily of young to middle aged (20 - 49) middle class, black Bermudian residents (both male and female) in non-design, non-resource management related occupations. Group ages ranged from under 20 to over 90, with no indicated ages within the 60 -69 age category. Six of the 54 respondents (11.1%) did not indicate age. The slightly higher number of females in the sample (female to male ratio 1.09:1) is similar to 1.06:1 female: male distribution recorded for the population (Bermuda Statistical Department, 1995). Similarly, respondents' indicated distribution by parish of residence approximates the geographic distribution of the population, with higher response from the central parishes despite the inclusion of western and eastern sampling sites; the sample gave no indicated representation from Paget or Hamilton Parishes, a noticeable deviation from the expected frequency. 18 of the 54 respondents (31.5%) refrained from indicating parish of residence.

The 8 image sample group was composed primarily of young to middle aged (20-39) black Bermudian residents (both male and female) from the design and resource management professions (design to resource management ratio was 4:2). Group ages ranged from 20 - 59, with no indicated ages within the 40-49 or over 60 age categories. All of the six respondents indicated age. Lower numbers of females were contained in the sample (female to male ratio 1.09:1) than that recorded for the population (Bermuda Statistical Department, 1995). Experts' reported parish of residence deviated more dramatically from the expected frequency than did the non-expert sample above. 83.3% of the expert respondents reported representation from non-central parishes, with the remaining 16.7% representation reported for the central parish of Devonshire.There were no abstentions to the parish of residence category.

Physical Landscape Feature Description:

Nineteen physical landscape features (variables) of Bermuda roadscapes were derived from prior research and quantified through proportional measurement of photographic features, using a grid overlay method (Shafer *et al* , 1969). Physical landscape variables in each image were analyzed by overlaying a 5 by 5 cell grid over the images, which were of uniform orientation ("landscape") and area (9322 mm^2). The grid covered each scene in such a way that the entire image was subdivided into 25 cells of equal area. Variables were measured in 1 of 3 ways: by (1) determining the number of cells per scene containing the variable; (2) counting the number of cover types in each cell and calculating an average (mean) number of cover types for each scene; and / or (3) by simply recording the presence, absence or occurrence of a variable in the overall scene. Cells required 50% or more area coverage of a variable to be counted, with accumulated area coverage for cells below 50 % accounted for in the total cell count. Variables were selected on the basis of the highest ranked items in the Bermuda Department of Planning's (1990) list of important Bermuda scenic qualities, as well as relevant salient features of perceived landscapes and built structures in general (Nasar, 1989; Nasar and Kang, 1994). The complete list of landscape variables and method of measurement is contained in Table 5. A list of eight additional psychological variables tested is contained in Table 6.

Data Analysis:

This study engaged in three types of data analysis activities: (1) ranking of mean scores, (2) comparison of mean scores, and (3) examination of relationships between variables.

For the 60 image "general public" group, mean (average) attractiveness scores for each image were calculated across respondents and ranked in descending order of attractiveness (Table 3). In the 8 image "expert" group, the mean response for each question was calculated across respondents for each image.

Comparison of mean scores occurred for location - matched time differential images, "control" images common to 1990 and 1995 (current) study groups, and control images common to 1995 public and expert study groups. Mean attractiveness scores were compared for six pairs of location - matched time differential images used in the 60 image public group (Table 8). Mean attractiveness scores were standardized and compared for 17 images common to the Bermuda Department of Planning's (1990) visual quality study and the current study (Table 4). Public response (mean attractiveness) and expert response (mean overall visual quality) scores were also compared for the 8 images common to both study groups.

Examination of relationships between variables involved separate treatments for public and expert respondent data. Data from the public group were cross - classified into a special kind of table (called a contingency table) that allows particular statistical operations of comparison to be carried out. Statistical examination of this table is referred to as contingency table analysis. For the expert group, an index called the Pearson's correlation coefficient was used to compare variables.

Contingency table and correlation coefficient analyses were used to determine interrelationships among predictor variables (roadscape attributes and sample characteristics) and scenic (response) variables used in the two study groups. Nine response variables (aspects of cultural significance) were used by the expert group, while the general public group focused on one response variable (scenic attractiveness). The selected response variables were those commonly used in landscape assessment research, both in general (Daniel and Vining, 1983) as well as in historic landscapes (Fein, Harvey and Buggey, 1988).

Twenty seven contingency tables were constructed for the public group data in order to cross-classify relevant categorical variables, two at a time (Tables 5 - 6; Appendix 8). Age and scenic attractiveness were cross-classified for 6 photos selected to represent maximum likelihood of age stratified response. The hypothesis test statistic used throughout contingency table analysis was the Fisher's Exact Test. This test measures the exact probability (p value) of obtaining a table equal to or more extreme than the table observed.

Probability (p) values always range between 0 and 1, with the magnitude of the p value for each contingency table determining the strength of evidence available in the table for concluding that the variables are associated. As the p value approaches 0, the strength of the evidence increases. This study will assume that p values below a 0.10 threshold can be counted as sufficient evidence for concluding association of variables (this is a common and reasonable assumption found in statistical analysis). For analysis of the expert group data, the Pearson's correlation coefficient was used to measure the degree of linear association between all possible pairs of variables.

The formal hypothesis test statements, derived from the research objectives above, may be expressed generally in null (H_0) and alternate (H_1) form as follows:

case 1 (60 image group):

H_0: row and column classifications (<physical / respondent attributes> & < mean attractiveness>) are independent (not associated)

H_1: row and column classifications (<physical / respondent attributes> & < mean attractiveness>) are dependent (are associated)

case 2 (8 image group):

H_0: row and column classifications (<cultural response> & < mean visual quality response>) are independent (not associated)

H_1: row and column classifications (<cultural response> & < mean visual quality response>) are dependent (are associated)

These general hypotheses can be expressed much more quantitatively and are more fully developed and explained in Appendix 6. Hypothesis tests were conducted using SAS statistical software, with significant outcomes summarized in Tables 5 and 6. Full details of all test outcomes are contained in Appendix 8.

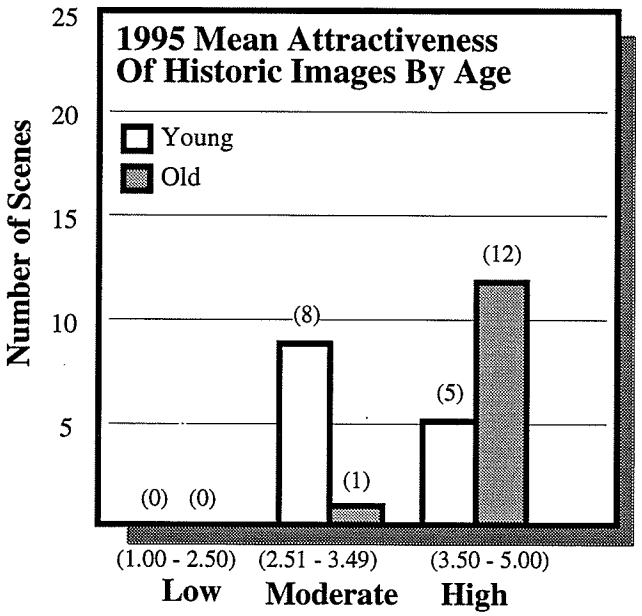
Results

Findings

Please refer to Tables 3 - 4, Figures 7 - 12, 14 and Appendix 7 for a description of the ranked mean scores and mean score comparisons undertaken.

Summaries of contingency table and correlation coefficient analyses are contained in Tables 5 - 7. The complete set of contingency tables analyzed, including full details of all significant contingency table tests, are contained in Appendix 8.

In analyzing the 60 image public group scores for relationships among variables, 8 of the 27 contingency tables tested were significant to below the 0.10 threshold, with 7 of the 8 tables below a 0.06 level of significance. In these significant tables, scene attractiveness was found to be positively associated with respondent age, presence and amount of non - heritage vegetation, and the amount of total vegetation in a scene (Tables 5 - 6). In contrast, scene attractiveness was negatively associated with the presence and amount of non-heritage structures, presence of road surfacing and scene complexity (Table 5). The anticipated effects of heritage roadscape attributes and intervention roadscape attributes on scene attractiveness could not be validated within the stated threshold of significance (that is, below 0.10). However, it was observed that 5 of the 6 pairs of location matched time - differential scenes decreased in mean attractiveness over time, total numbers of high attractiveness scenes decreased 1.6% from 1990 - 1995, while the total number of low attractiveness road scenes increased 3.3% over the same period (Table 8; Figure 12).



Seniors in the 60 image group rated a larger percentage (72%) of the historic scenes highly than did non-seniors in the sample.

Figure 7: Comparison Of Mean Attractiveness Across Age Groups

Respondent age had some effect on attractiveness. Seniors in the 60 image group rated a larger percentage (72%) of the historic scenes highly than did non-seniors in the sample (Figure 7). Seniors were also observed to be far more verbally responsive and interactive toward historic scenes, and routinely ignored or declined scoring non-historic images. Scene familiarity affected senior's responses considerably, as evidenced by seniors' comments:

Beacon / Broome Street, 1995:

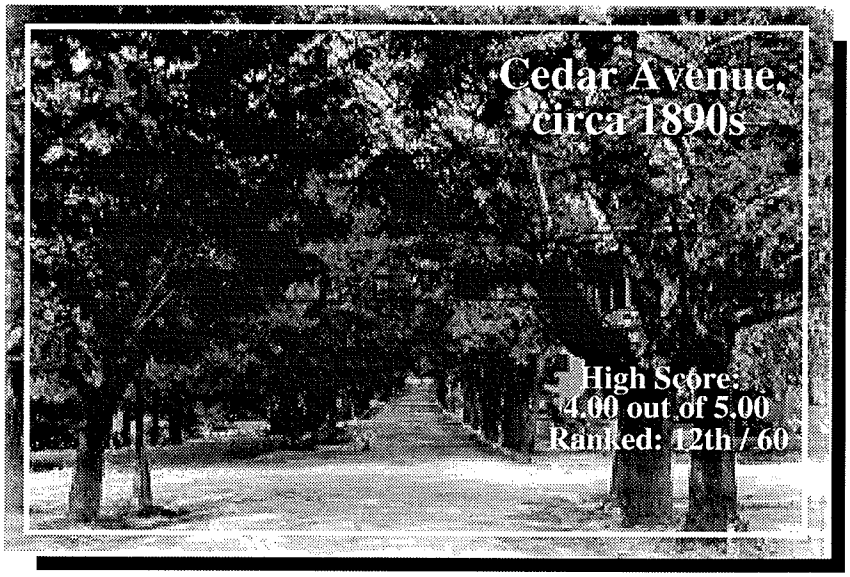
"I haven't been on it --- you have to go on it (the road to know) if its attractive...

"If you've never been on it you don't know how attractive they are...

"(highest score). . . That's where I live..."
-- black lower class female resident, age over 90

"(low score)...Hard to know where it (the scene) is..."
-- black male resident, age 80 - 89

"(high score)...We know this place..."
-- black male resident, elderly



Scene familiarity affected senior's responses considerably, as evidenced by written comments:

Cedar Ave, 1890s:

" (highest score). . . that's a 5 right off de bat ! "
-- black male resident, aged 80 - 89.

In examining the 8 image "expert" group scores, 4 of the 8 scenes were rated highly for overall visual quality (mean OVQ = 4.04) with 3 scenes receiving moderate overall visual quality ratings (mean OVQ = 3.26) and 1 scene receiving a low overall visual quality score (OVQ = 2.50).

In comparing high and moderate overall visual quality images, the "expert" group judged the high overall visual quality scenes to be less familiar and to have less architectural and less historic value; nonetheless, high overall visual quality scenes were also judged to have undergone less change over time, held higher aesthetic value across expert and non-expert groups, and contributed a more positive character to their surroundings (Figure 13; Appendix 7).

Expert visual quality response did not correlate highly with any of the cultural significance indices studied, though there was a weak correlation (0.532) between expert visual quality and effect of scene on surrounding area / character (Table 7). Six of the nine cultural significance variables were closely correlated with familiarity (Table 10). In particular, familiarity was moderately correlated with architectural values (namely, overall functional

quality, 0.670, and with quality of road workmanship, 0.702), and highly correlated with aspects of historic value (that is, historic phase, 0.965) and environmental value (namely, change over time, 0.813). High correlations were found between thematically related questions (such as theme and past association [historic values], 0.813), as well as across themes (such as historic phase and environmental change over time, 0.759 -- Table 10).

High correlation (0.937) and small standardized score differences (average $z = 0.18$) of mean attractiveness were observed for the 17 location and time matched black and white images tested by different respondent groups in 1990 and 1995 (Figure 11; Table 4).

Table 3: Rank Ordered List of Study Images Evaluated In 1995 By General Public

High Attractiveness Scenes

rank	photo number & name	avg. score
1	p34: Mid-Ocean Rd Palms, 1980s*	4.43
2	p15: Harbor Rd House, 1980s*	4.28
3	p53: Point Finger Rd, 1890s	4.26
4	p47: Corkscrew Hill, 1990s^	4.20
5	p33: Astwood Parkland, 1980s*	4.19
6	p20: Wilkinson / Fractious, 1980s*^	4.18
7	p38: Somerset Bridge, 1890s	4.13
8	p57: Horseshoe Bay Coast View, 1980s*	4.12
9	p52: Traditional House (Pt. Shares),1980s*	4.11
10	p23: JSB Beach, 1980s*	4.02
11	p55: Rubber Tree /Yard, 1980s*	4.02
12	p6: Cedar Avenue, 1890s	4.00
13	p56: Spice Hill Rd East, 1995^	3.96
14	p32: East Broadway, 1886	3.94
15	p16: Harbor / Salt Kettle, 1980s*	3.94
16	p58: Middle Rd / Waterlot Hill, 1980s^	3.87
17	p22: Coastal Vegetation (Spruce),1980s	3.84
18	p49: Traditional House (St. Geo.),1980s*	3.78
19	p48: Horseshoe Bay (clean),1990s	3.70
20	p24: Harbor past Manse, 1936	3.68
21	p31: Somerset Bridge, 1995	3.65
22	p50: Camp Hill Rd / South Shore, 1995^	3.62
23	p8: Mid Rd Scenic Heights West1, 1995	3.60
24	p11: Harbor Rd. Paget,1936	3.54

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* Selected Images (17) standardized across 1990 / 95 studies.

^ Selected Images (8) evaluated by "expert" respondents.

Table 3: Rank Ordered List of Study Images Evaluated In 1995 By General Public (continued)

Moderate Attractiveness Scenes

rank	photo number & name	avg. score
25	p41: Somerset Bridge Approach,1995	3.46
26	p51: Whale Bay Rd. / AME,1995	3.46
27	p59: Spice Hill Rd .West,1995	3.44
28	p14: Middle Rd. (PR) North,1995	3.40
29	p44: Whale Bay Rd. past AME,1970s	3.38
30	p27: Foot-of-the-Lane, 1936	3.31
31	p36: Warwick Pond,1980s*	3.29
32	p54: Whale Bay Rd. / AME,1970s	3.28
33	p40: St. George Street,1980s*	3.26
34	p10: Middle Rd. Scenic Heights West2,1995^	3.25
35	p7: Middle Rd. (PR) South, 1995^	3.24
36	p13: Spice Hill Rd.West walls, 1995	3.19
37	p12: Camp Hill Rd. past bend, 1995	3.17
38	p43: Beacon Hill / SDA 1995	3.17
39	p4: Harbor / Longford, 1936	3.02
40	p37: Beacon Hill past SDA 1995	3.02
41	p21: Harbor / Manse, 1936	3.00
42	p26: Beacon / Scott's Hill, 1995	2.98
43	p9: Mid Rd. Scenic Heights East, 1995	2.96
44	p25: Horseshoe Bay (dirty),1980s	2.92
45	p3: Beacon Hill /Broome St., 1995^	2.89
46	p1: Whale Bay Rd. past AME, 1995	2.88
47	p46: Foot-of-the-Lane, 1970s	2.87
48	p39: East Broadway, 1970s	2.83
49	p28: Ferry Reach, 1980s*	2.79
50	p60: Camp Hill bend, 1995	2.75
51	p42: Shelton Rd. / Happy Valley, 1980s*	2.71
52	p30: Horseshoe Bay parking, 1980s	2.63
53	p2: Convict Bay, 1980s	2.59
54	p19: City Hall parking, 1980s	2.54

Low Attractiveness Scenes

rank	photo number & name	avg. score
55	p18: Shelly Bay plaza, 1980s	2.50
56	p5: JSB parking, 1980s*	2.45
57	p17: Harbor / Longford, 1980s*	2.44
58	p45: Collector's Hill, 1980s	2.38
59	p35: Claytown gate, 1980s	2.35
60	p29: Frog Lane, 1980s*	1.96

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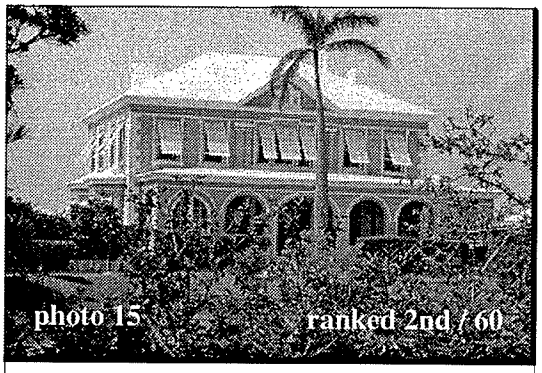
* Selected Images (17) standardized across 1990 / 95 studies.

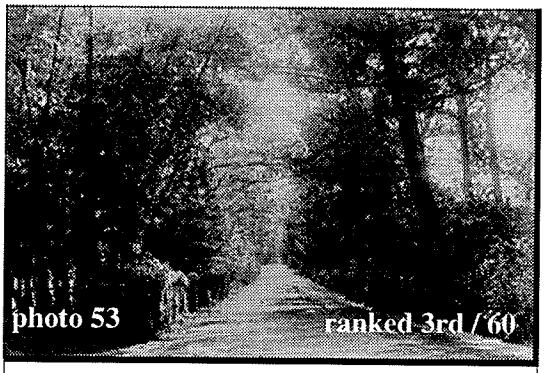
^ Selected Images (8) evaluated by "expert" respondents.

Section 6: Study Findings -- Images, Charts & Tables

Mid - Ocean Rd Palms , 1980s

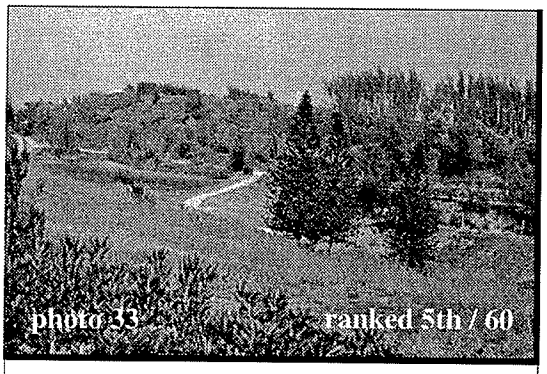


Harbor Rd House , 1980s

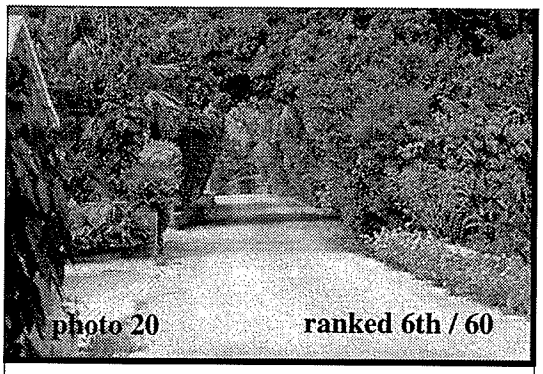


Point Finger Rd , 1890s

Corkscrew Hill , 1990s ^



Astwood Parkland , 1980s

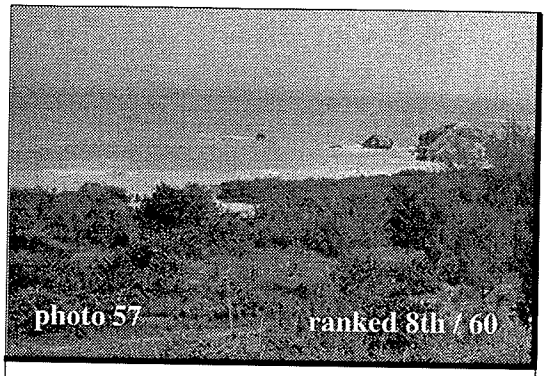


Wilkinson / Fractious , 1980s ^

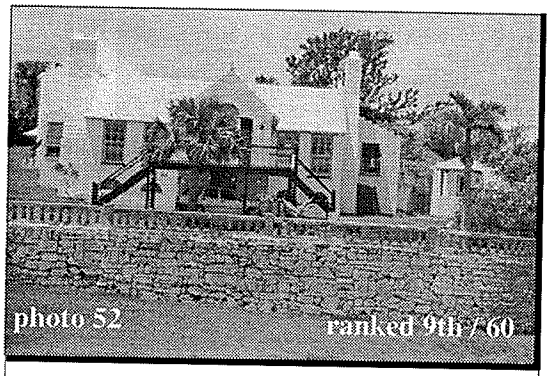
Figure 8 (a)

Highly Attractive Road Scenes

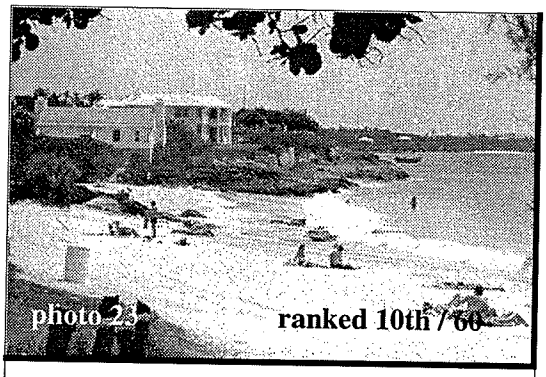
Somerset Bridge , 1890s



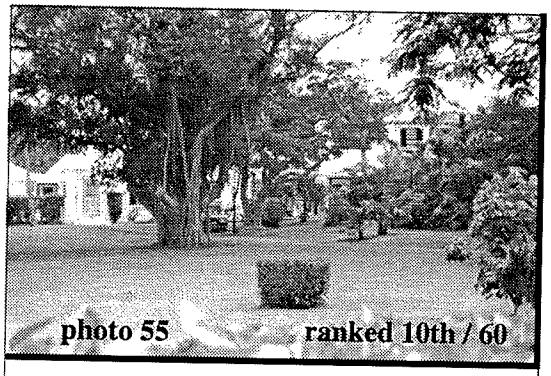
Horseshoe Bay Coast , 1980s



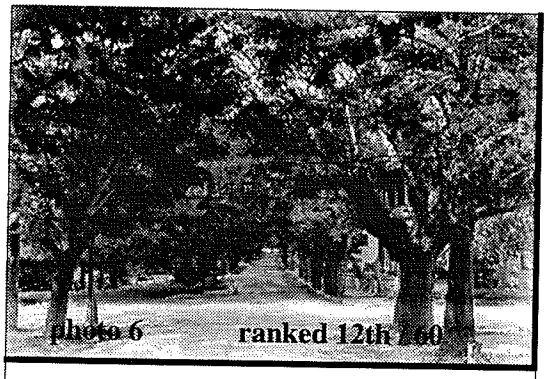
Traditional House (Point. Shares), 1980s



John Smiths Bay Beach , 1980s



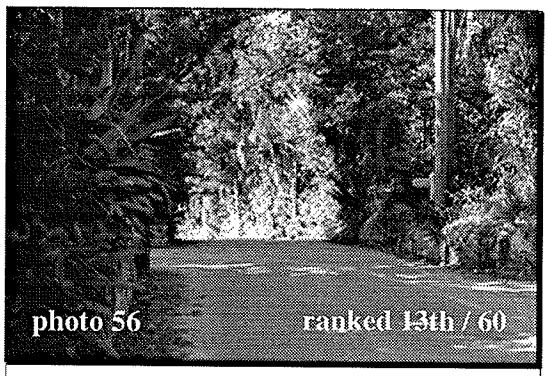
Rubber Tree / Yard , 1980s



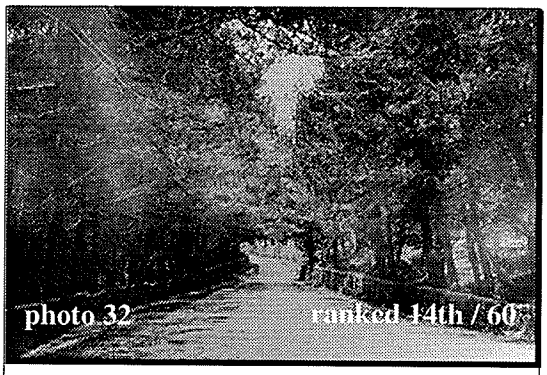
Cedar Avenue , 1890s

Figure 8 (b)

Highly Attractive Road Scenes

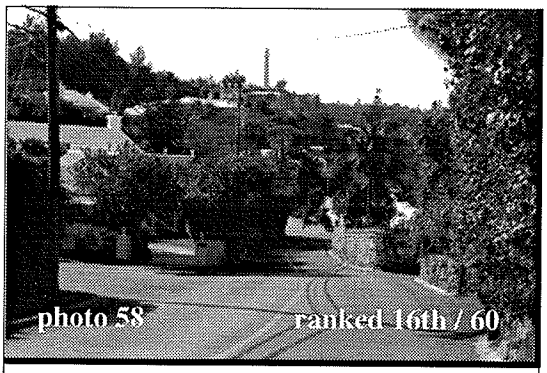


Spice Hill Rd East , 1995 ^



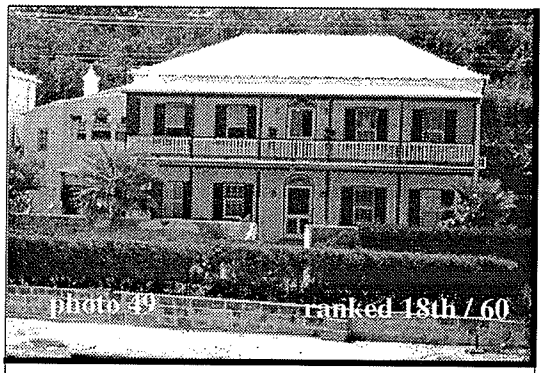
East Broadway , 1886

Harbor Rd / Salt Kettle , 1980s



Middle Rd (Waterlot Hill) , 1995 ^

Coastal Vegetation (Spruce) , 1980s

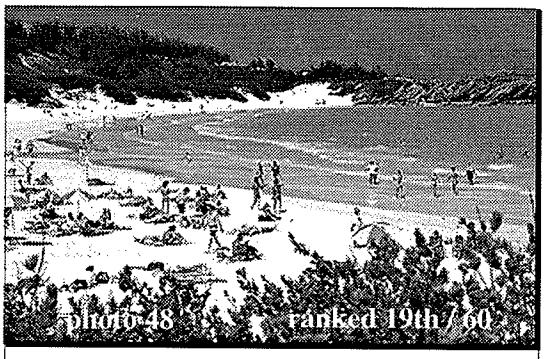


Traditional House (St. George) , 1980s

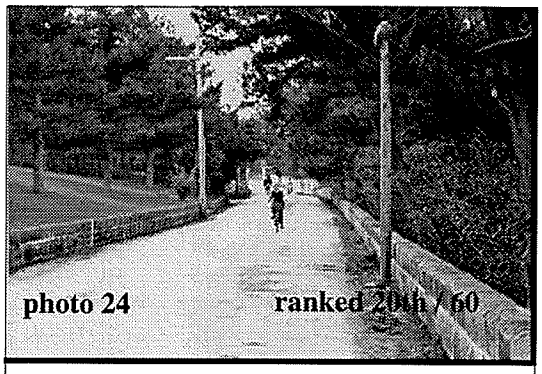
Figure 8 (c)

Highly Attractive Road Scenes

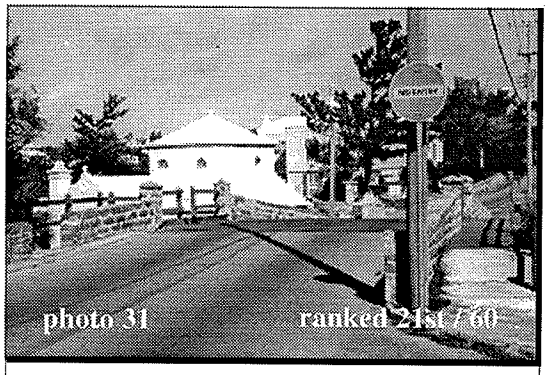
^ Image also evaluated by "expert" respondents



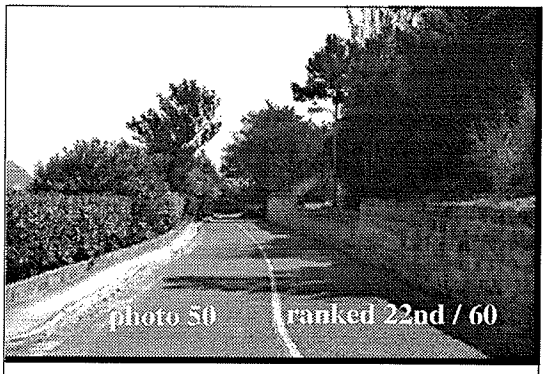
Horseshoe Bay (clean) , 1990s



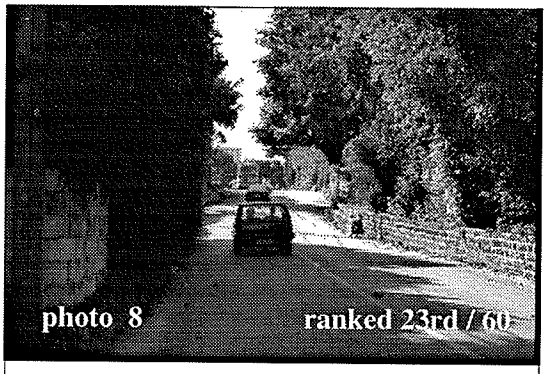
Harbor Rd past Manse , 1936



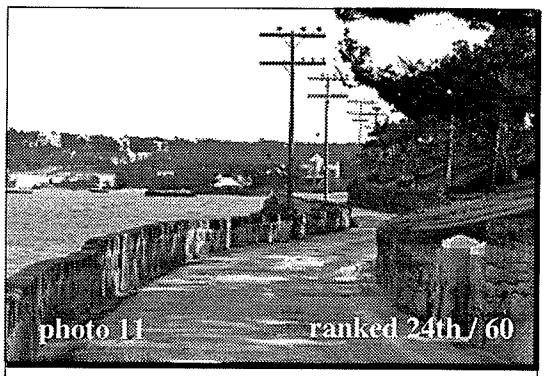
Somerset Bridge , 1995



Camp Hill Rd / South Shore , 1995^



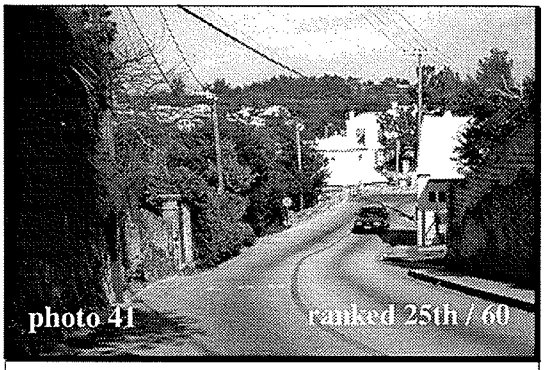
Middle Rd Scenic Heights West 1 , 1995



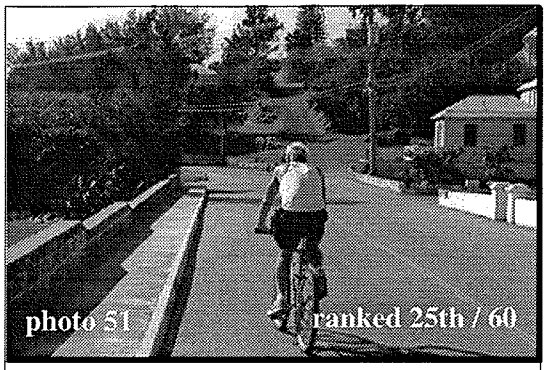
Harbor Rd Paget , 1936

Figure 8 (d)

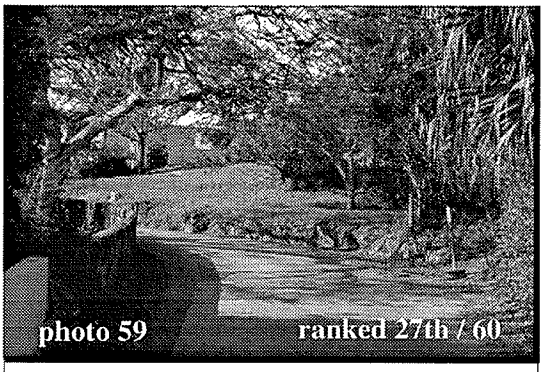
Highly Attractive Road Scenes



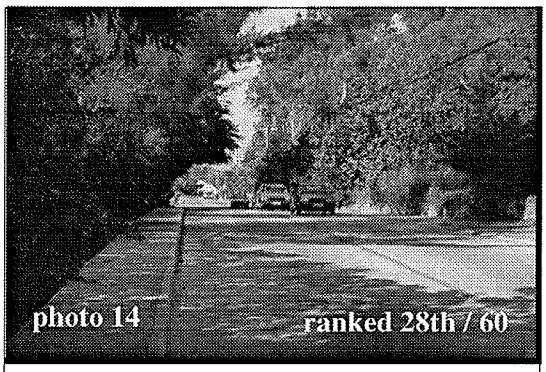
Somerset Bridge Approach , 1995



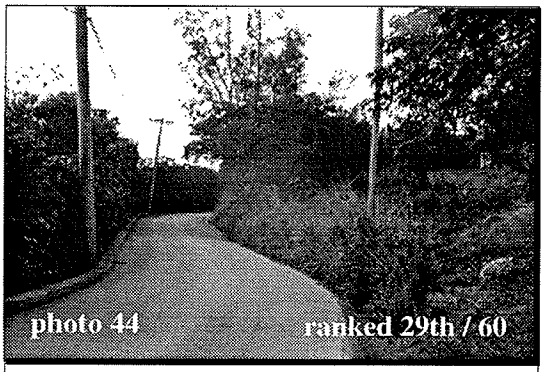
Whale Bay Rd / AME , 1995



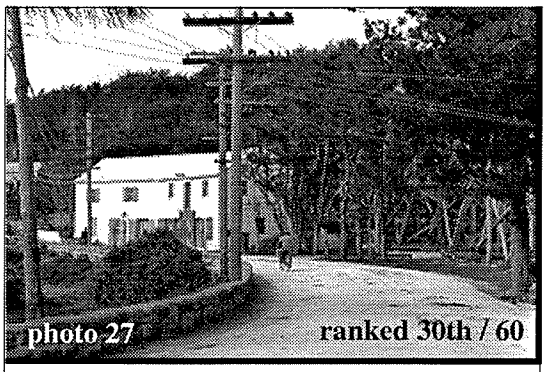
Spice Hill Rd West , 1995



Middle Rd (Port Royal) North , 1995



Whale Bay Rd past AME , 1970s

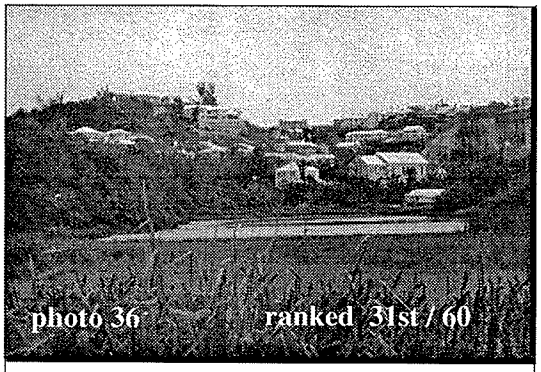


Foot-of-the-Lane , 1936

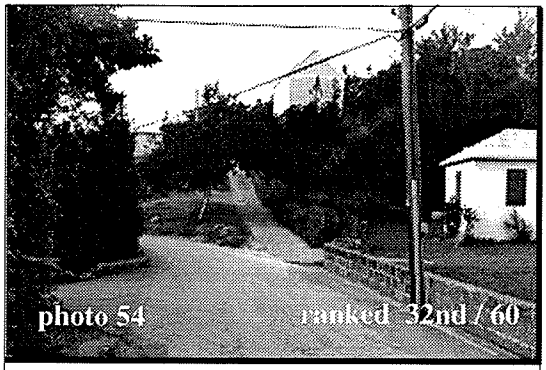
Figure 9 (a)

Moderately Attractive Road Scenes

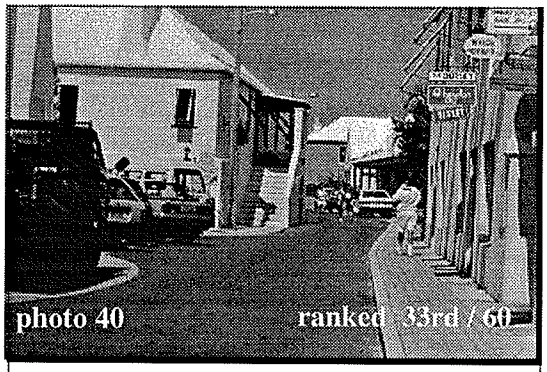
^ Image also evaluated by "expert" respondents



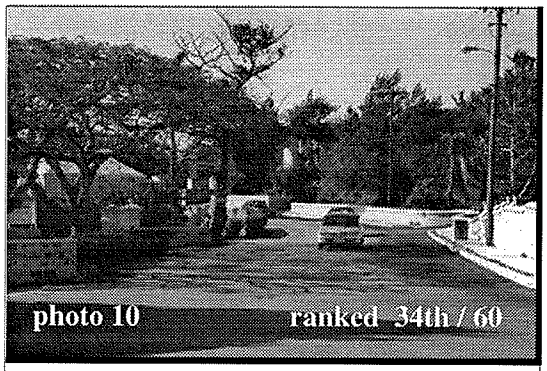
Warwick Pond , 1980s



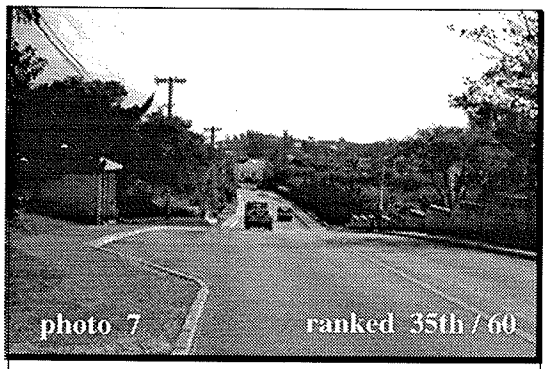
Whale Bay Rd / AME , 1970s



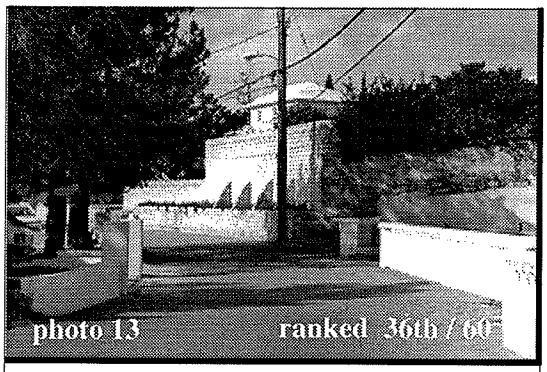
St. George's Street , 1980s



Middle Rd (Scenic Heights) West 2 ,1995^



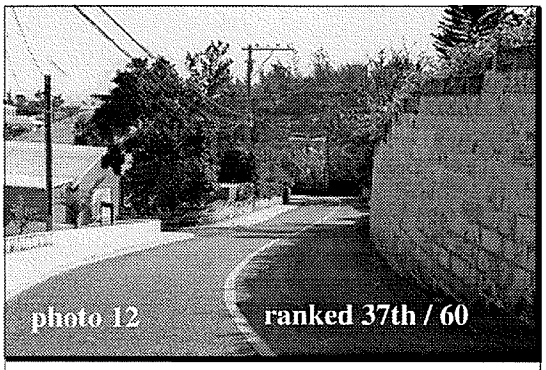
Middle Rd (Port Royal) South , 1995 ^



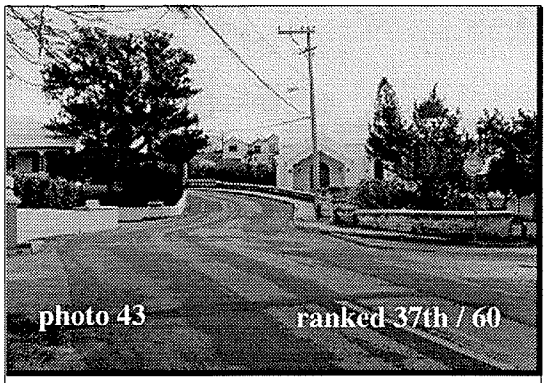
Spice Hill Rd West Walls , 1995

Figure 9 (b)

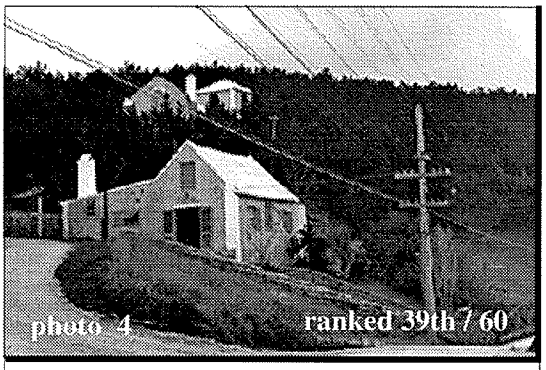
Moderately Attractive Road Scenes



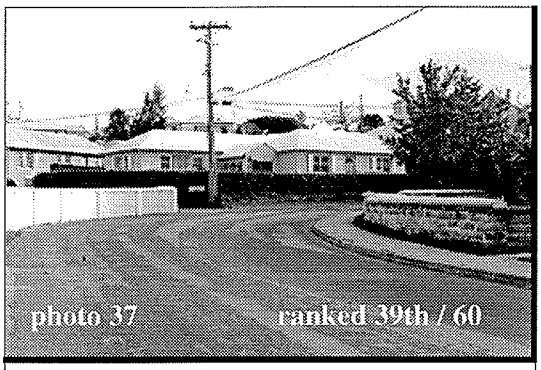
Camp Hill Rd past bend , 1995



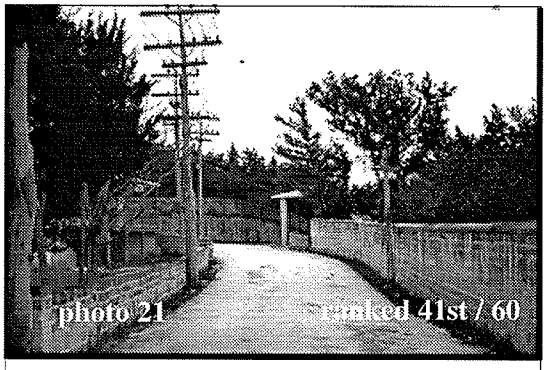
Beacon Hill Rd / SDA , 1995



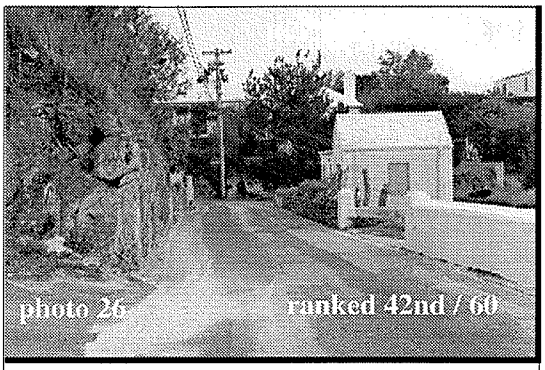
Harbor Rd / Longford , 1936



Beacon Hill Rd past SDA , 1995



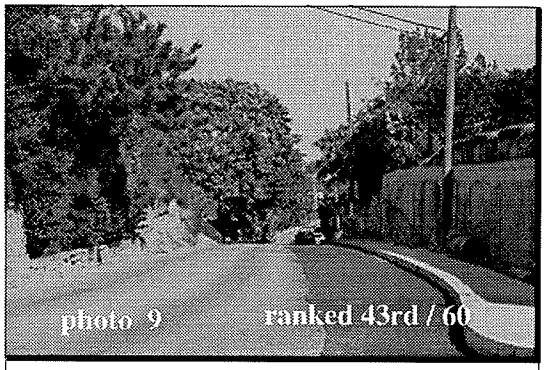
Harbor Rd / Manse , 1936



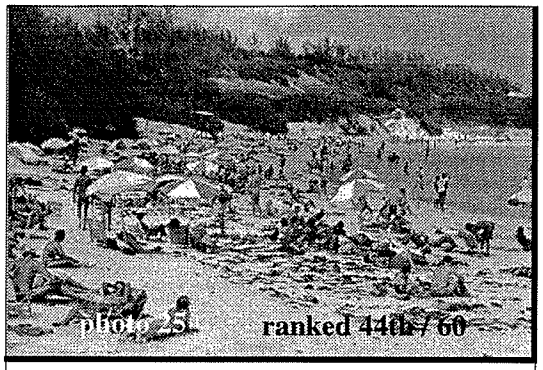
Beacon Hill / Scott's Hill , 1995

Figure 9 (c)

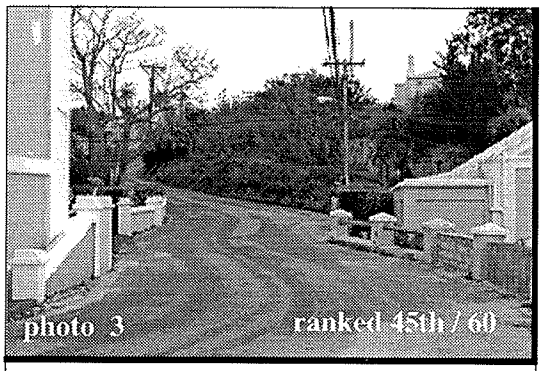
Moderately Attractive Road Scenes



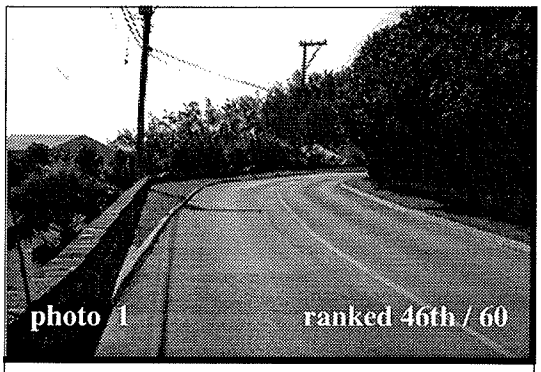
Middle Rd (Scenic Heights) East , 1995



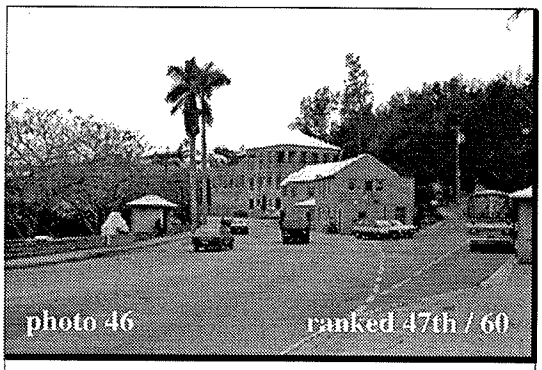
Horseshoe Bay (dirty) , 1980s



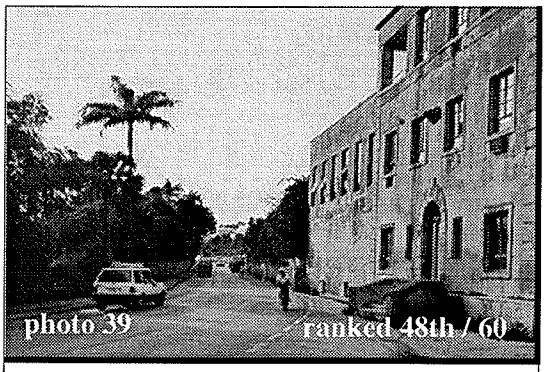
Beacon Hill / Broome St , 1995 ^



Whale Bay Rd past AME , 1995



Foot-of-the-Lane , 1970s

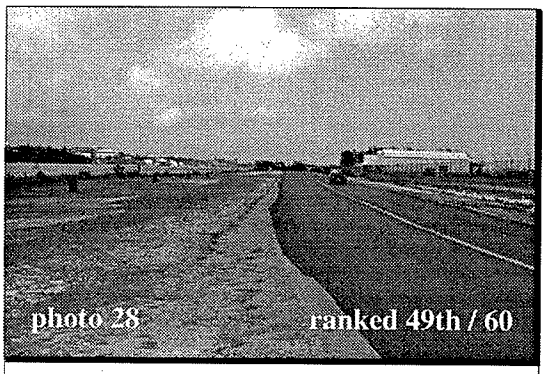


East Broadway , 1970s

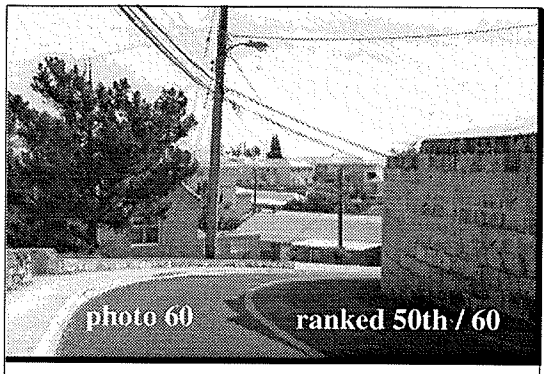
Figure 9 (d)

Moderately Attractive Road Scenes

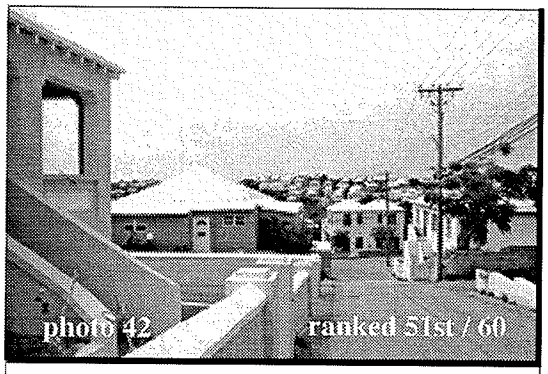
^ Image evaluated by "expert" respondents



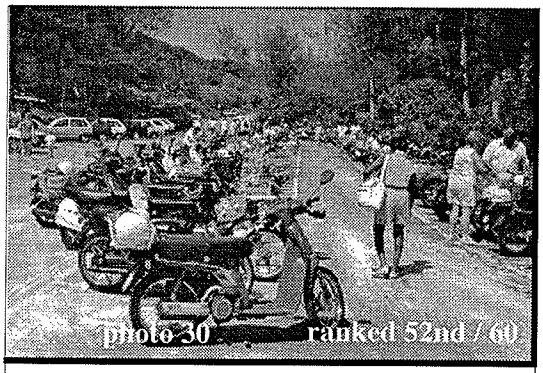
Ferry Reach , 1980s



Camp Hill Rd bend , 1995

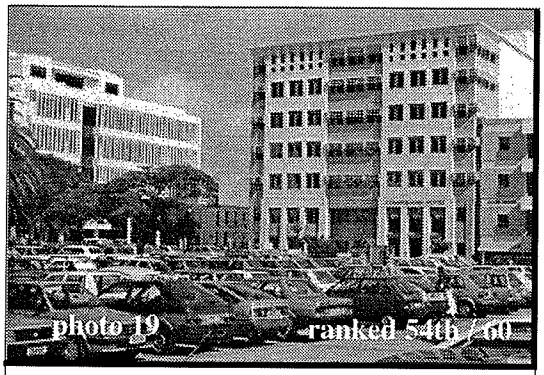


Shelton Rd / Happy Valley , 1980s



Horseshoe Bay parking , 1980s

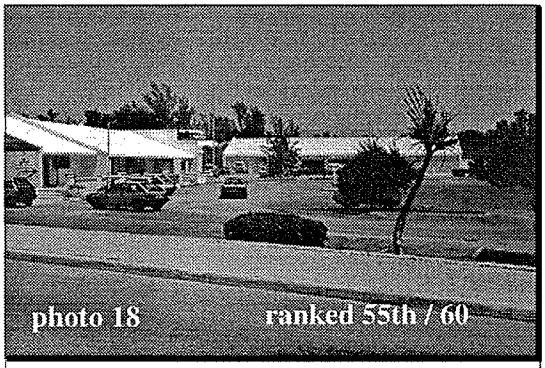
Convict Bay , 1980s



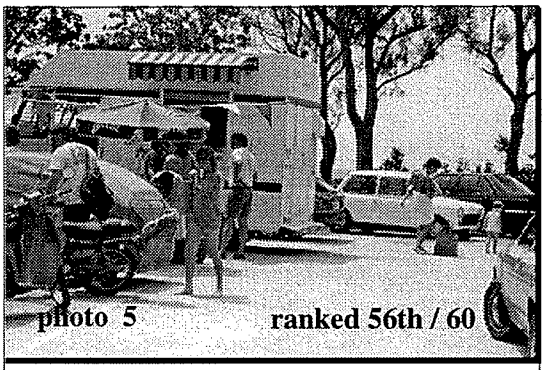
City Hall parking , 1980s

Figure 9 (e)

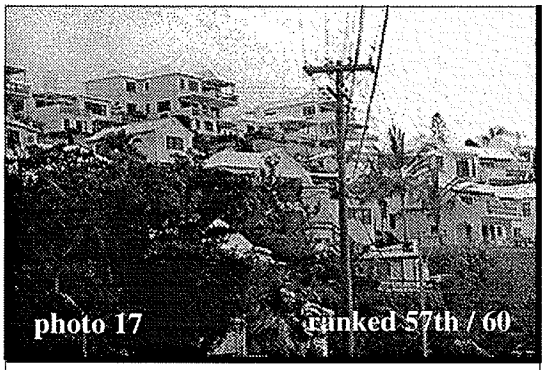
Moderately Attractive Road Scenes



Shelly Bay plaza , 1980s



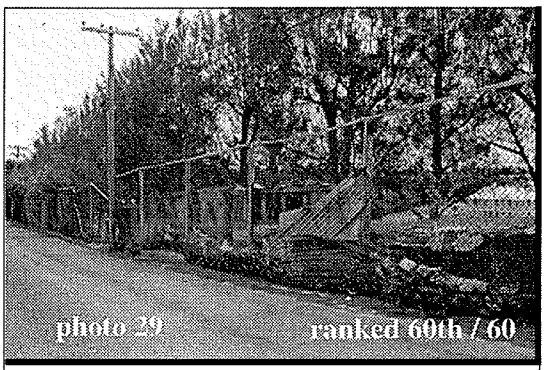
John Smiths Bay parking , 1980s



Harbor Rd / Longford Hill , 1980s

Collector's Hill , 1980s

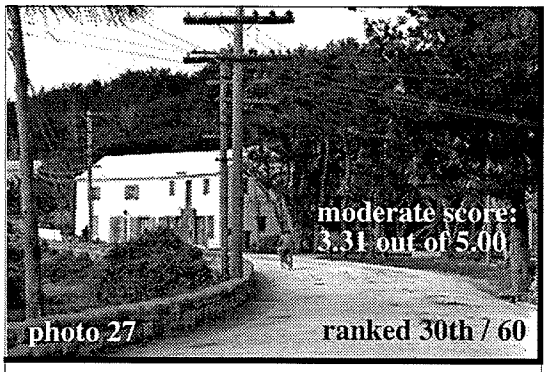
Claytown gate , 1980s



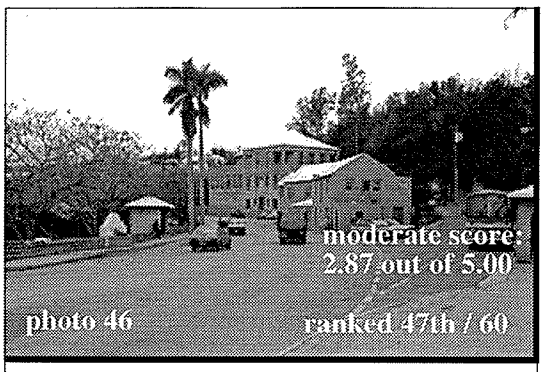
Frog Lane , 1980s

Figure 10

Least Attractive Road Scenes

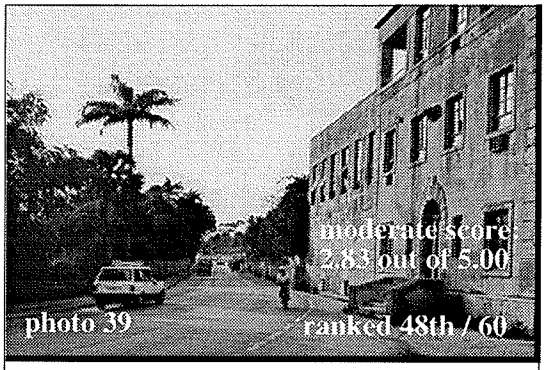


Foot-of-the-Lane , 1936

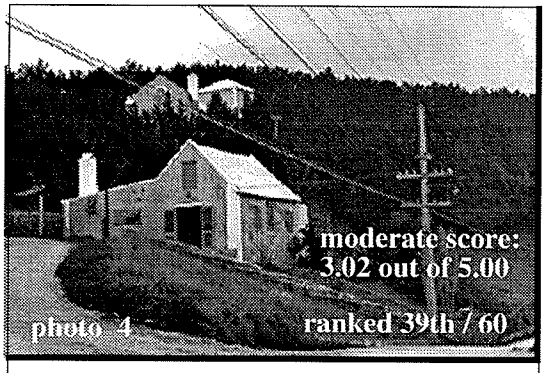


Foot-of-the-Lane , 1970s

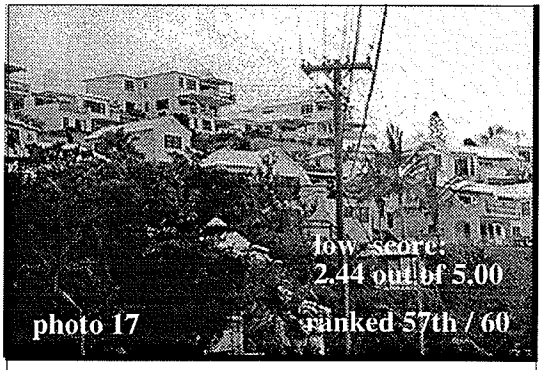
East Broadway , 1886



East Broadway , 1970s



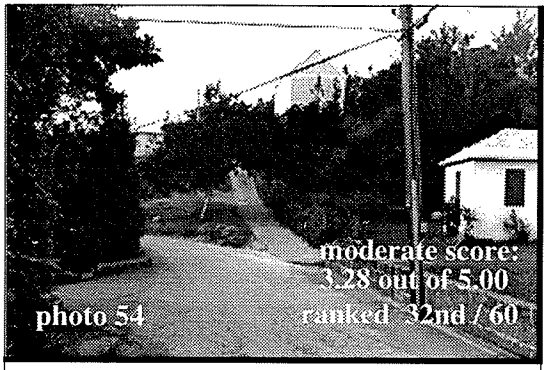
Harbor Rd / Longford , 1936



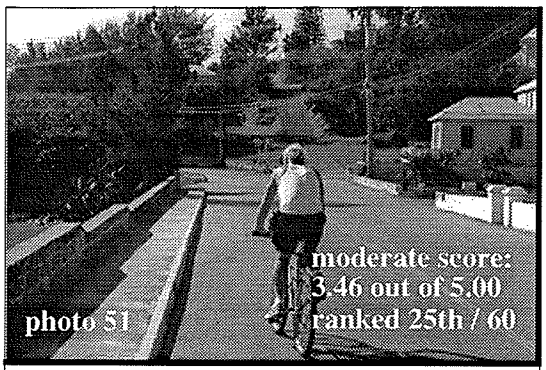
Harbor Rd / Longford Hill , 1980s

Figure 11 (a)

Comparison Of Location - Matched Time Differential Images

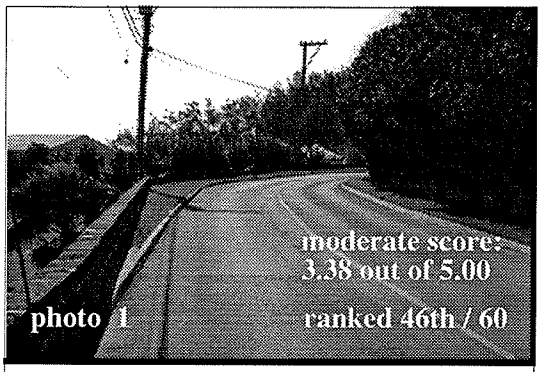


Whale Bay Rd / AME , 1970s



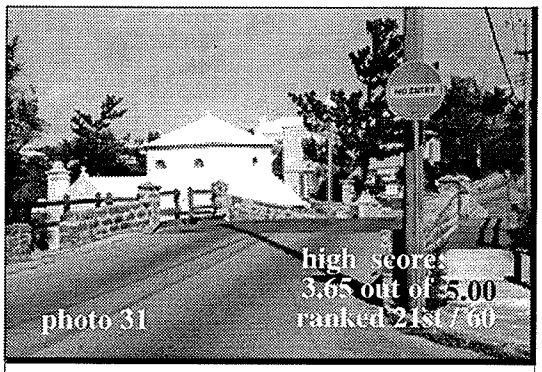
Whale Bay Rd / AME , 1995

Whale Bay Rd past AME , 1970s



Whale Bay Rd past AME , 1995

Somerset Bridge , 1890s



Somerset Bridge , 1995

Figure 11 (b)

Comparison Of Location - Matched Time Differential Images

^ Image also evaluated by "expert" respondents

Table 5: Location - Matched Time Differential Images By Mean Attractiveness & Rank Order

Western Parish Scenes

rank	photo number & name	avg score	time period	mean attractiveness over time
7	p38: Somerset Bridge,1890s	4.13	1890 - 1995	**decreased** (-) 0.48
21	p31: Somerset Bridge,1995	3.65		
32	p54: Whale Bay Rd / AME,1970s	3.28	1970 - 1995	increased (+) 0.18
26	p51: Whale Bay Rd / AME,1995	3.46		
29	p44: Whale Bay Rd past AME,1970s	3.38	1970 - 1995	**decreased** (-) 0.50
46	p1: Whale Bay Rd past AME,1995	2.88		
39	p4: Harbor / Longford,1936	3.02	1936 - 1980s	**decreased** (-) 0.58
57	p17: Harbor / Longford, 1980s*	2.44		
30	p27: Foot-of-the-Lane, 1936	3.31	1936 - 1970s	**decreased** (-) 0.44
47	p46: Foot-of-the-Lane, 1970s	2.87		
14	p32: East Broadway,1886	3.94	1886 - 1970s	**decreased** (-) 1.11
48	p39: East Broadway, 1970s	2.83		

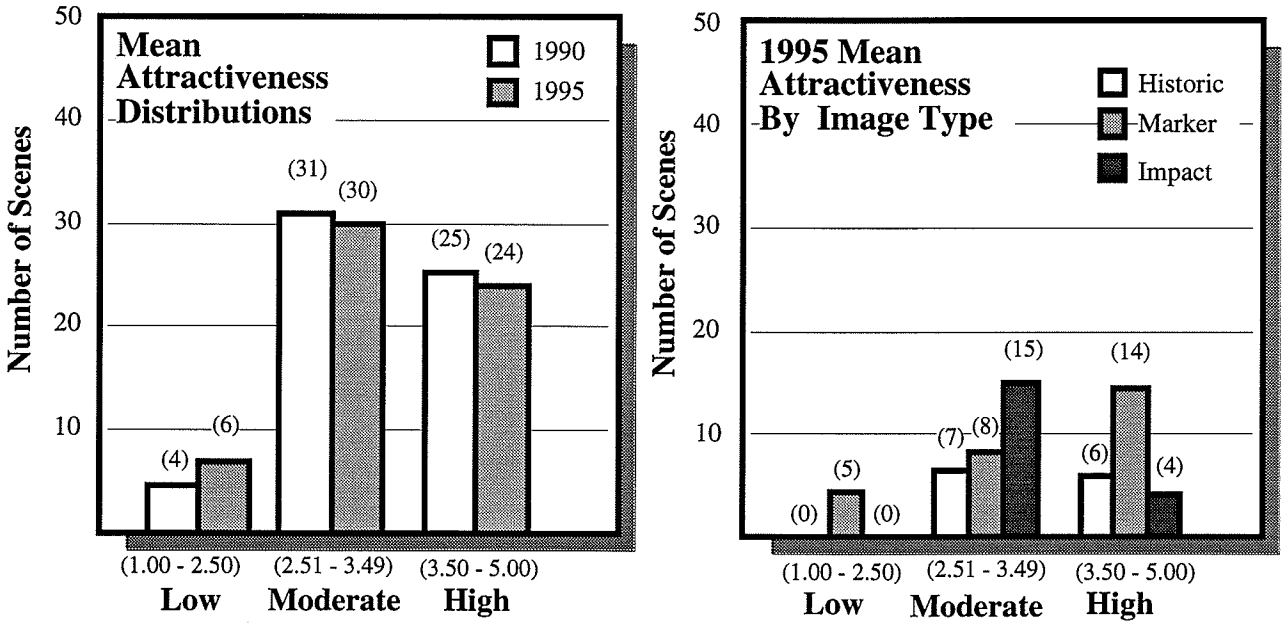


Figure 12 (a): Comparison Charts Of Mean Attractiveness

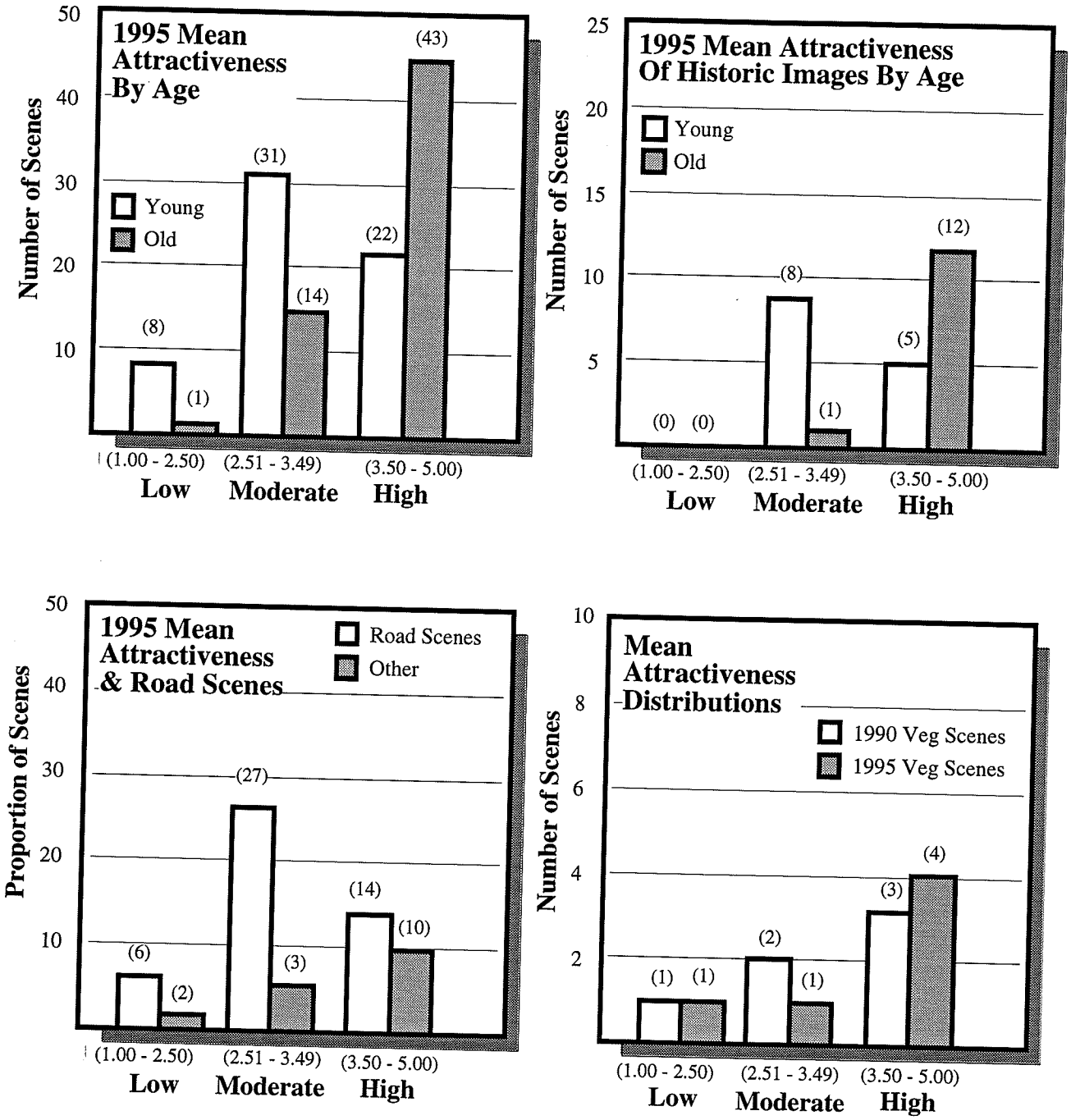
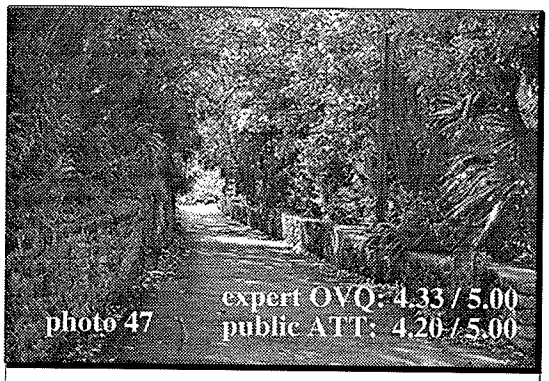
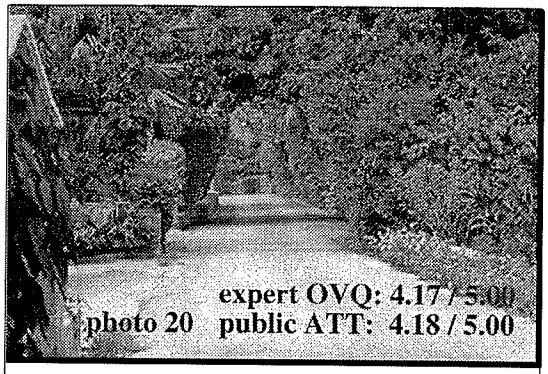


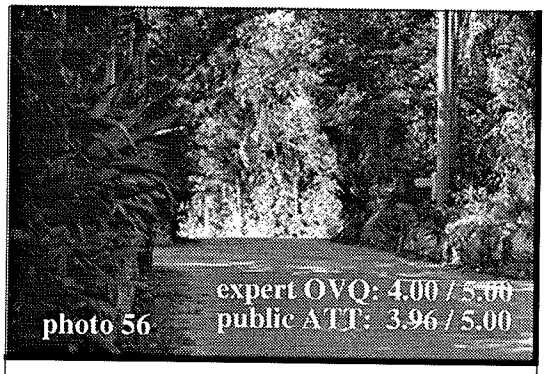
Figure 12 (b): Comparison Charts Of Mean Attractiveness



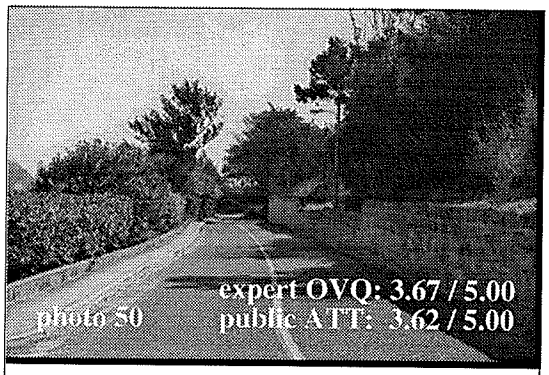
Corkscrew Hill , 1990s



Wilkinson / Fractious St , 1980s



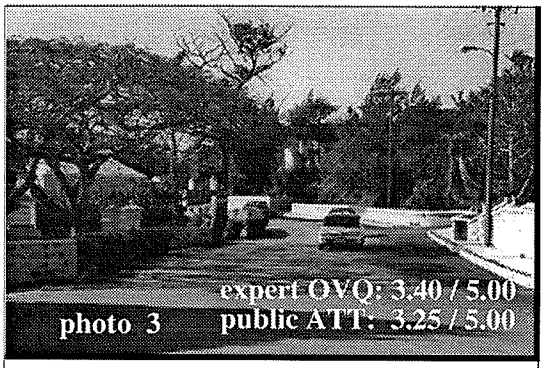
Spice Hill Rd East , 1995



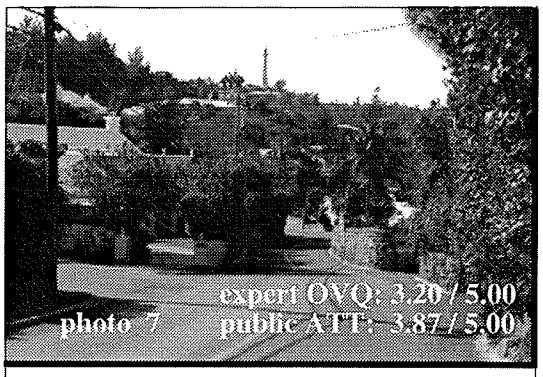
Camp Hill Rd / South Shore , 1995

Figure 13 (a)

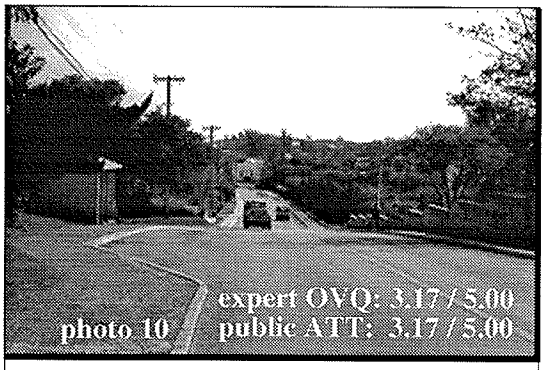
High Overall Visual Quality Road Scenes Evaluated By "Expert " Respondents And Compared With Public Mean Attractiveness Scores



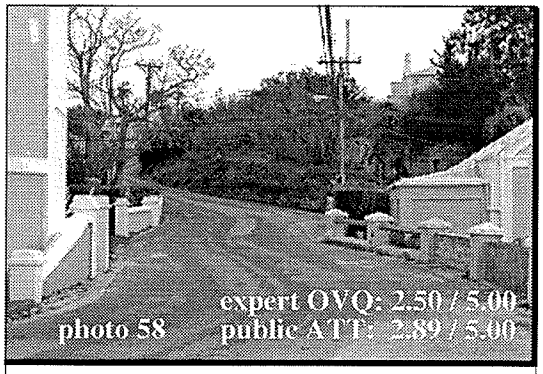
Middle Rd (Scenic Heights)West 2 , 1995



Middle Rd (Waterlot Hill) , 1995



Middle Rd (Port Royal) South , 1995



Beacon Hill Rd / Broome St , 1995

Figure 13 (b)

Moderate And Low Overall Visual Quality Road Scenes Evaluated By "Expert " Respondents And Compared With Public Mean Attractiveness Scores

Table 4: Comparison Of Standardized (z) Mean Attractiveness Scores Across 1990 And 1995 General Public Study Groups

photo number & name	1990 scores	1995 scores	1990 z scores	1995 z scores	z score diff
p15:Harbor Rd. House, 1980s	4.20	4.28	0.98	1.07	0.10
P57: Horseshoe Bay Coast View, 1980s	4.18	4.12	0.95	0.88	-0.07
p20:Wilkinson / Fractious, 1980s	4.16	4.18	0.93	0.95	0.02
p34: Mid-Ocean Rd. Palms, 1980s	4.00	4.43	0.74	1.25	0.51
p52: Traditional House (Pt. Shares), 1980s	3.90	4.11	0.62	0.87	0.25
P55: Rubber Tree / Yard, 1980s	3.87	4.02	0.58	0.76	0.18
p23: JSB Beach, 1980s	3.84	4.02	0.55	0.76	0.21
p16: Harbor / Salt Kettle, 1980s	3.83	3.94	0.54	0.67	0.13
p49: Traditional House (St. Geo), 1980s	3.78	3.78	0.48	0.48	0.00
p33: Astwood Parkland, 1980s	3.61	4.19	0.27	0.96	0.69
p40: St. George Street, 1980s	3.47	3.26	0.11	-0.14	-0.25
p36: Warwick Pond, 1980s	3.21	3.29	-0.20	-0.11	0.10
p42: Shelton Rd. / Happy Valley, 1980s	3.12	2.71	-0.31	-0.80	-0.49
p5: JSB parking, 1980s	2.51	2.45	-1.04	-1.11	-0.07
p17: Harbor / Longford, 1980s	2.34	2.44	-1.24	-1.12	0.12
p28: Ferry Reach, 1980s	2.17	2.79	-1.44	-0.70	0.74
p29: Frog Lane, 1980s	1.25	1.96	-2.54	-1.69	0.85

1990 / 95 Correlation (Pearsons)	1990 Mean	1995 Mean
0.937	3.38	3.53

1990 / 95 Mean z Diff	1990 StDev	1995 St Dev
0.18	0.84	0.78

1990 / 95 St Dev z Diff
0.35

Table 5: Summary Of Contingency Table Test Results Comparing Landscape Variables With Mean Attractiveness*

code	Variable: Levels	statistical test result
VEGC1	Vegetative Content: 1. low (>0 - 4 cells) 2. med (5 - 10 cells) 3. high (11-25 cells)	**Significant**: since p = 0.030< 0.05 thus reject Ho
HVEG2	Heritage Vegetation: 1. cedar (present) 2.mixed veg (present) 3.other (present) 4. none (absent)	Not Significant: since p = 0.680 > 0.10 cannot reject Ho
NHV3	Non Heritage Vegetation: 1. tree (present) 2.mixed veg (present) 3. none (absent)	**Significant**: since p = 0.059 < 0.06 thus reject Ho
HS4	Heritage Structures: 1. natural (present) 2.man-made (present) 3.mixed structures (present) 4. none (absent)	Not Significant: since p = 0.217 > 0.10 cannot reject Ho
HVC5	Heritage Vegetation Count: 1. none (= 0 cells) 2. low (>0 - 4 cells) 3. med (5 - 10 cells) 4. high (11-25 cells)	Not Significant: since p = 0.364 > 0.10 cannot reject Ho
NHVC6	Non Heritage Veg Count: 1. none (= 0 cells) 2. low (>0 - 4 cells) 3. med (5 - 10 cells) 4. high (11-25 cells)	**Significant**: since p = 9.41×10^{-3} < 0.01 thus reject Ho
HSC7	Heritage Structures Count: 1. none (= 0 cells) 2. low (>0 - 4 cells) 3. med (5 - 10 cells) 4. high (11-25 cells)	Not Significant: since p = 0.654 > 0.10 cannot reject Ho
NHS8	Non Heritage Structures: 1. present (not = 0 cells) 2. absent (= 0 cells)	**Significant**: since p = 4.43×10^{-5} < 0.01 thus reject Ho
NHSC9	Non Heritage Structures Count: 1. none (= 0 cells) 2. low (>0 - 4 cells) 3. med (5 - 10 cells) 4. high (11-25 cells)	**Significant**: since p = 4.47×10^{-5} < 0.01 thus reject Ho
PLEX10	Psychophysical Factors (1) - Scene Complexity: 1. med (= or > 2 - 5 objects/ cell) 2. high (>5 objects / cell)	**Significant**: since p = 0.034 < 0.05 thus reject Ho

---

* Test statistic: Fisher's Exact (2 Tailed) Test.

Table 5: Summary Of Contingency Table Test Results Comparing Landscape Variables With Mean Attractiveness* (contin'd)

code	Variable: Levels	statistical test result
VWT11	Psychophysical Factors (2) - View Type: 1. enframed 2. open 3. deflected 4. other	Not Significant: since p = 0.513 > 0.10 cannot reject Ho
VWO12	Psychophysical Factors (3) - View Orientation: 1. downhill 2. uphill 3. other	Not Significant: since p = 0.160 > 0.10 cannot reject Ho
MN13	Psychophysical Factors (4) - Maintenance: 1. maintained structures (present) 2. maintained vegetation (present) 3. maintained structures & vegetation (present) 4. no maintained structures or vegetation (absent)	Not Significant: since p = 0.204 > 0.10 cannot reject Ho
LIT14	Psychophysical Factors (5) - Litter: 1. present 2. absent	Not Significant: since p = 0.874 > 0.10 cannot reject Ho
USR15	Psychophysical Factors (6) - User Presence: 1. none (= 0 cells) 2. low (>0 - 4 cells) 3. med (5 - 10 cells) 4. high (11-25 cells)	Not Significant: since p = 0.243 > 0.10 cannot reject Ho
LOC16	Geographic Factors (1) - Location: 1. coast 2. rural 3. man-made 4. other	Not Significant: since p = 0.225 > 0.10 cannot reject Ho
WTR17	Water Presence: 1. none (= 0 cells) 2. low (>0 - 4 cells) 3. med (5 - 10 cells)	Not Significant: since p = 0.326 > 0.10 cannot reject Ho
ROA18	Road Surface Presence: 1. none (= 0 cells) 2. low (>0 - 4 cells) 3. med (5 - 10 cells) 4. high (11-25 cells)	**Significant**: since p = 0.052 < 0.06 thus reject Ho
SKY19	Sky Presence: 1. none (= 0 cells) 2. low (>0 - 4 cells) 3. med (5 - 10 cells) 4. high (11-25 cells)	Not Significant: since p = 0.600 > 0.10 cannot reject Ho

---

* Test statistic: Fisher's Exact (2 Tailed) Test.

Table 6: Summary Of Contingency Table Test Results Comparing Additional Variables With Mean Attractiveness*

code	Variable:Levels	statistical test result
PYEAR20	Year of Scene: 1. < 1940 (9 scenes) 2. > or = 1940 (9 scenes)	Not Significant: since p = 1.000 > 0.10 cannot reject Ho
IMP21	Scenic Impact: 1. project area (13 scenes) 2. surrounding area (9 scenes)	Not Significant: since p = 0.381 > 0.10 cannot reject Ho
AGE22	Age (photo1): 1. young (< 50 yrs) 2. old (> 60 yrs)	**Significant**: since p = 0.084 < 0.10 thus reject Ho
AGE23	Age (photo6): 1. young (< 50 yrs) 2. old (> 60 yrs)	Not Significant: since p = 0.841 > 0.10 cannot reject Ho
AGE24	Age (photo p8): 1. young (< 50 yrs) 2. old (> 60 yrs)	Not Significant: since p = 0.690 > 0.10 cannot reject Ho
AGE25	Age (photo13): 1. young (< 50 yrs) 2. old (> 60 yrs)	Not Significant: since p = 0.875 > 0.10 cannot reject Ho
AGE26	Age (photo19): 1. young (< 50 yrs) 2. old (> 60 yrs)	Not Significant: since p = 1.000 > 0.10 cannot reject Ho
AGE27	Age (photo 53): 1. young (< 50 yrs) 2. old (> 60 yrs)	Not Significant: since p = 1.00 > 0.10 cannot reject Ho

---

* Test statistic: Fisher's Exact (2 Tailed) Test.

Table 7: Correlation Results Comparing Cultural Significance Variables With Mean Overall Visual Quality**

code	Variable:Levels	correlation	result
Q1FAM	Scene Familiarity: 1. low (between 1 - 2) 2. moderate (3) 3. high (between 4 - 5)	Weak: - 0.425	
Q2THM	Historic Theme: 1. low (between 1 - 2) 2. moderate (3) 3. high (between 4 - 5)	Weak: 0.006	
Q3PAS	Past Association: 1. low (between 1 - 2) 2. moderate (3) 3. high (between 4 - 5)	Weak: - 0.381	
Q4PHS	Historic Phase: 1. low (between 1 - 2) 2. moderate (3) 3. high (between 4 - 5)	Weak: - 0.406	
Q6OFQ	Overall Functional Quality: 1. low (between 1 - 2) 2. moderate (3) 3. high (between 4 - 5)	Weak: - 0.311	
Q7ORW	Overall Road Workmanship: 1. low (between 1 - 2) 2. moderate (3) 3. high (between 4 - 5)	Weak: - 0.230	
Q8CHG	Scene Change Over Time: 1. low (between 1 - 2) 2. moderate (3) 3. high (between 4 - 5)	Weak: - 0.484	
Q9CHR	Scene Character: 1. negative (< 0) 2. neutral (= 0) 3. positive (> 0)	Slight: 0.532	

** Test statistic: Pearson's Least Squares Correlation.

Section 6: Interpretation of Findings

Interpretation of Findings

Four primary observations can be drawn from the resulting data.

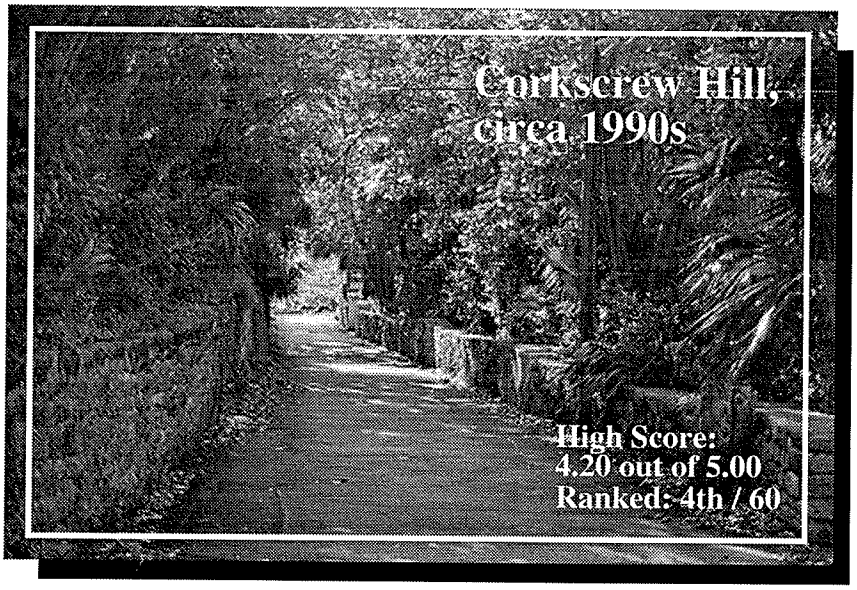
Firstly, the study findings validate the cultural importance of the traditional Bermuda road scenes. Compared to images representing the three most evocative features of the Bermuda Image, 33.3% of the road scenes received high attractiveness scores. Furthermore, contingency table analysis revealed that road scene attractiveness was observed to increase in direct nonlinear relation to the quantity of that feature most evocative of the Bermuda Image ("vegetation").

Figure 14: Contingency Table Showing How Mean Attractiveness (MATSCORE) Increases In Nonlinear Fashion As Vegetative Content (VEGC1) In Each Scene Increases

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
VEGC1	Low (0 to 4 cells)	**21.05**	3.45	0.00
	Medium (5 to 10 cells)	**47.37**	41.38	16.67
	High (11 to 25 cells)	31.58	55.17	**83.33**
	Total	100.00	100.00	100.00

Test Result Significant: Since $p = 0.030 < 0.05$, H_0 can be rejected.



A significant 33% of the road scenes obtained high mean attractiveness scores in relation to the most evocative features of the Bermuda Image (namely, "vegetation", "traditional architecture" and "beaches").

Historic "tribe-roads" are important precursors that appear to be at the base of scenic quality response.

Corkscrew Hill, 1990s:

"really '5++' off the scale"
-- *black middle class female resident, age 20 - 29.*

"(highest score)--wonderful"
-- *anonymous*

Historic literature indicates that the so-called "tribe roads" or "cross roads" are the precursors to Bermuda's current road system, and continue to be at the base of the island's scenic quality response to roads. Currently, the term refers to a limited number of historic routes which have been formally designated for heritage protection; however, such designated routes are only representative of a larger number of similar historic routes that have been incorporated into modern Bermuda travel, resulting in a significant contribution to visual quality. For example, Harbor Rd is one such undesignated tribe road referred to in 17th and 18th century legislation and parish vestry records (Lefroy, 1981: II, 76; Hallet, 1993: 368 - 373; Smith, Hallet and Coad, 1915); this route obtained high attractiveness scores across respondents yet supports light vehicular traffic. Traditional Bermuda roads, regardless of the "tribe roads" designation, developed under a common scenario (complex interacting processes of localized multi-agency management, absence of standardized approaches, poor records, neglect, obstruction, vernacular re-routing, encroachment, construction and privitization), with gradual , incremental adaptation over time being a prominent development feature.

Secondly, the study findings confirm visual quality decline in the traditional Bermuda road. In general, the scenic quality of Bermuda roadscapes appears to be good (Figure 12); 93% of the1990 scenes and 90% of the 1995 scenes were judged moderate to high in attractiveness, with few low rated scenes (6% in 1990, 10% in 1995). However, the findings indicate that road scene attractiveness decreased over time in 5 out of 6 location - matched time differential images, the total number of high attractiveness road scenes decreased 1.6% over time (1990 - 1995) and the total number of low attractiveness road scenes increased 3.3% over the same time period (1990 - 1995). As has been noted above, 84% of the respondents polled in a previous study were "concerned" or "very concerned" about a perceived deterioration of environmental quality and attractiveness" due to environmental change (Bermuda Department of Planning, March 1989). Given that most of the scenes evaluated in 1990 and 1995 were rated moderately by respondents (52% in 1990, 50% in 1995), and that there was a slight percentage decrease in highly attractive scenes and a percentage increase in scenes of low attractiveness between 1990 and 1995, it may be fair to ask what percentage of these moderate road scenes were once highly attractive areas that have been downgraded to moderate or low levels of attractiveness due to environmental change.

Thirdly, the findings clarify the nature of visual quality decline in the traditional Bermuda road. Sampled respondents were found to be far more sensitive to the presence of "distracting" non-heritage features and complexity effects in a scene than they were to heritage features themselves.

Distracting visual attributes in the perceived roadscape appear to be more closely associated with visual quality than heritage resources themselves. Sampled respondents in the current study were far more negatively affected by the presence of non-heritage features in a scene than they were affected by heritage features . In particular, non-heritage structures, road surfacing and visual complexity were found to be negatively associated with attractiveness scores (Tables 5; Appendix 8). This finding was also supported by the frequency of written comments concerning the presence of visually distracting objects in scenes, the most common being telephone poles, wires, non-traditional building forms and cars:

Harbor Road / Longford Hill, 1980s:
"poles should be underground"
"Condo's are the greatest ! (read with cynicism)... "
"Offensive housing, poles and wires"

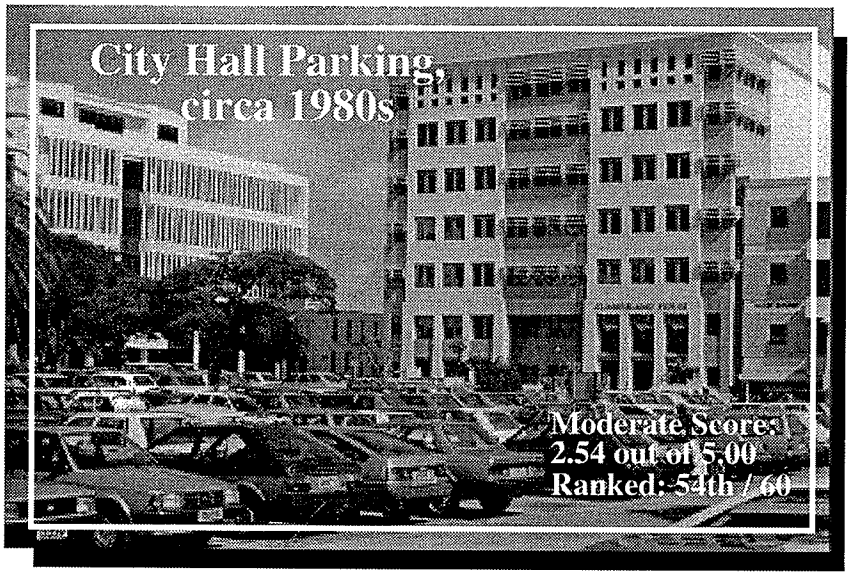
Horseshoe Bay parking, 1980s:
"the area is not manicured enough"
" Yuck ! Imagine the beach !"

Whale Bay / AME, 1995:
"overhead wires ruin image"
"Low hanging wire detract from attractiveness"
"The power lines spoil the picture"

Shelly Bay plaza, 1980s:
"sterile."
"too American; we don't need malls here"
"Needs less concrete more grass"

Convict Bay, 1980s:
"...human chicken boxes"
"offensive high rises = greedy investors"

Shelton / Happy Valley Rd, 1980s:
" Poor architecture" "Clean but crowded"
"too many houses, telephone pole (sic) and wire"



City Hall parking,1980s:

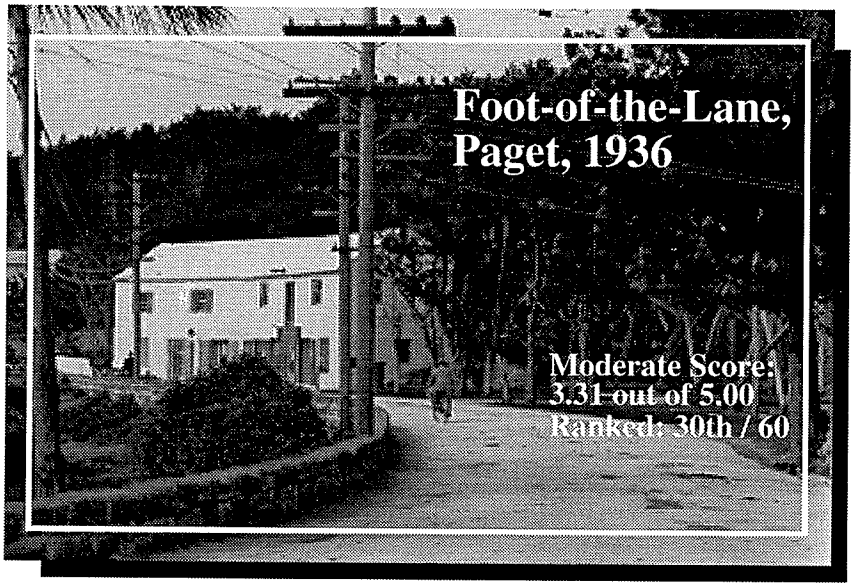
"ugly buildings, too many cars..."

-- male resident, aged 20-29.

"mish-mash of architectural styles...non-Bermudian in flavour and too high."

-- white middle class female resident, aged 40-49.

This implies that community perceived environmental quality concerns, namely "protection of visual quality", could refer more to mitigating "visual stress" or "distractor attributes" in the perceived environment than to a concern for "protection of historic or cultural quality" *per se* . In fact, no strong consensus was observed across respondents to indicate that heritage roadscape attributes (such as historic vegetation, buildings and other structures) were related to attractiveness (Table 5). Non-seniors scored more historic road scenes moderately (62% of scenes) than did seniors (8% of scenes -- Figure 7), and overall visual quality scores by "expert" respondents did not correlate highly with any of nine commonly used cultural significance indices (Tables 7 and 10).



Respondents were found to be far more sensitive to the presence of "distracting" non- heritage features and complexity effects in a scene than they were to heritage features themselves:

Foot-of-the-Lane, 1936:

"wires detract from beauty"
-- black middle class male resident, aged 30 - 39.

Distracting features in a scene may contribute to respondent ambivalence and an attachment of low cultural value to the road scenes studied (at least by non-seniors) despite high aesthetic values. This may help to explain why 1990 respondents gave "narrow roads" such a relatively low ranking (8th out of 9) in a ranked list of important Bermuda visual quality attributes (Bermuda Department of Planning, 1990). Distinction between aesthetic value and cultural value was also observed in some of the written comments given by current study respondents:

Middle Road / Waterlot Hill, 1995:
"no longer practical but quaint"

Somerset Bridge, 1890s:
"(highest score) but not practical"

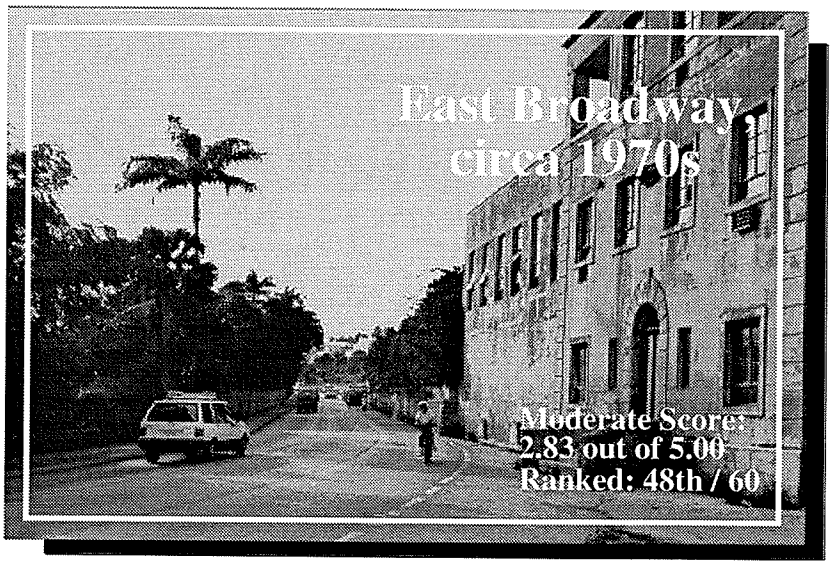
Harbor Road / Longford Hill, 1936:
"houses appear historic and are focal point of picture -- not attractive but important"

These findings underscore the point that "mitigation of distractor attributes" or "protection of visual quality" is not necessarily synonymous with "protection of historic integrity" or "protection of the Bermuda Image", and as such cannot be relied upon to safeguard the historic - cultural integrity of Bermuda's roadscapes. In fact, low to moderate visual quality of historic roadscapes could lead to loss of heritage in cases where high visual quality is the objective even at the expense of historic integrity. For example, recent (1990s) improvement to East Broadway drew favourable remarks concerning its visual quality even though the contemporary roadscape referred to was not examined in this study:

" The recent widening / development of East Broadway is a triumph... a beautiful way to enter a city !"

-- *white middle class female resident, age 50 - 59.*

" I like what they've done in many ways. I felt safer on my bike at night and think that pedestrians are better off too, with better pathways and lighting... I was proud to drive through with my Canadian friends, wondering if they remembered the old, dark East Broadway. I won't forget the old bus terminal, but I think this is a much more efficient use of land. " (Brackstone, 1995).



East Broadway, 1970s:

"The recent widening / development of East Broadway is a triumph... a beautiful way to enter a city !"

-- white middle class female resident, age 50 - 59.

Yet, there is a perception that the scale and detailing of the newly improved roadscape are non-traditional and not representative of the island's indigenous character:

> "Is this an accurate image of Bermuda? I don't think so. Perhaps the areas would have made a better park. . . Early pictures of the "Lane" depict a most picturesque area with lovely waterside homes. Many of them are still there. But now we have that unsightly highway. Plantings could help to shield what damage has already been done." (Zuill, 1995)

> "I think it's merely 'okay'. . . we're not going to have everything as a good example of the traditional Bermuda Image. There are new developments now that were never part of traditional Bermuda. We've had houses and shops and docks and parks for a long time. But multi-lane highways are new, and the question isn't "are they in themselves exemplary of the Bermuda Image?" - because they're not. The question is can we design them to embody the traditional Bermuda Image, and thus expand our definition of that image...is it exemplary of the Bermuda Image? No. Is it a fairly good attempt at it? I think so, fairly good." (Mayall, 1995b)

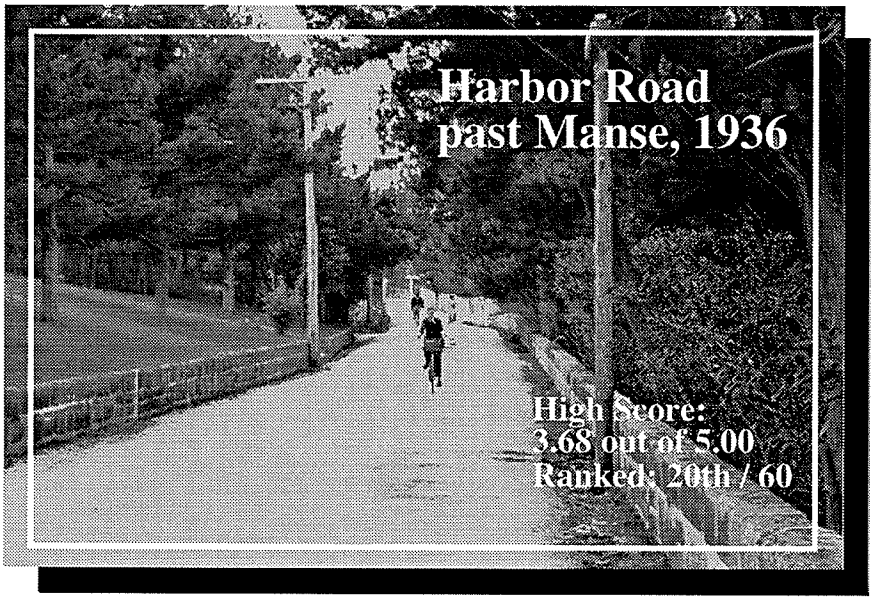
Respondent age also appears to have some effect on attractiveness of historic photos, as evidenced by differences in senior / non-senior response. The findings indicated that seniors valued historic roadscapes differently than did non-seniors, giving a greater percentage (92%) of the historic scenes high attractiveness scores than did the non-seniors sampled (38% -- see Figure 7). While much of the high attractiveness response of seniors may be linked to age - related variables (familiarity, memory, nostalgic distortion), it may also be fair to ask if seniors are more attracted to the environment of their past than non-seniors are, and to what extent (if any) does this difference in response to historic road scenes reflect changes in respondent perceptions concerning heritage roadscape resources. Furthermore, to what extent is perceived environmental loss due to other psychological indices of wellness, such as satisfaction or quality of life ? To what extent is physical change a factor ?

Affective response to traditional roadscapes may also be more subtle and complex than initially anticipated. Bermuda roadscapes span a very wide range (49% spread) of mean attractiveness (Figure 12). This broad range not only indicates the major visual impact that roadscapes have on scenic quality, but also the large amount of visual discrepany within the resource (Hull, 1989). Non-linear relationships and sensory thresholds appear to characterise two of the attribute - response relationships observed, namely, vegetative presence and scene complexity. The presence of such relationships can make it harder to gauge the actual impact of visual quality decline. Effects like "environmental numbness", in which people become less responsive to further decreases in visual quality, allow people to become adapted to lower or different levels of visual and environmnetal quality (Gifford, 1987). While this effect has been observed in many environmentally - damaged settings (Sommer, 1972; Buhyoff and Leuschner, 1978), its impact perhaps has the greatest consequence for tourist - dependent economies, where visual quality is more closely associated with economic survival. Such thresholds have already been used in other management programs to develop quantifiable performance standards for scenic resources (e.g. Iverson, Sheppard and Strain, 1995).

Expert distinctions between perceived aspects of traditional road scenes also complicates affective response. Expert respondents in the study tended to draw distinctions between visual quality and other cultural values; that is, while they were less familar with the moderate overall visual quality roadscapes rated, they still gave them higher mean architectural and historical value than the high overall visual quality roadscapes. Such responses suggest that both visual and historic quality objectives need to be identified as distinct concerns and integrated appropriately into the management of scenic roadscape resources.

Subtlity and complexity of affective response also have an effect on assumptions made at the onset of this study. Specifically, findings suggest that the definition of "traditional roadscape" as initially proposed may be too narrow to adequately describe the kind of roadscapes that are valued in Bermuda. While 5 out of the 6 historic road scenes tested were judged to be more

attractive than their location - matched modern versions, 75% of the highest scoring scenes (scenes with mean attractiveness ≥ 4.00) were modern roadscapes (Figure 8; Table 3).



Historic images were not as highly valued by non-seniors as modern road scenes, despite the widely perceived concern for loss of "environmental quality and attractiveness" on the island.

Historic images that predated World War II (1940s) changes in Bermuda's landscape were not as highly valued by non-seniors despite the widely perceived concern for loss of "environmental quality and attractiveness" on the island. It could be that the historic images do not portray the period of "environmental quality" referenced by the concerns of earlier respondents. Additionally, value for modern scenes indicates that the differing historic time frames for roadscape components should be acknowledged. Important roadscape components (such as road alignments, widths, vegetation, walls, fences, vistas, *et cetera*) will likely require differential or specialized consideration and treatment.

Similarly, initial assumptions about what constitutes heritage and non-heritage vegetation may also be too narrow to adequately describe the kind of "heritage vegetation" that is valued in Bermuda. The ecological profile of Bermuda changed drastically as a result of the Bermuda Cedar scale epidemic (1945 - circa 1970s). This insect epidemic decimated the historic landscape island-wide, killing 98% of Bermuda's indigenous cedar forest (an estimated 4 million trees) and nearly eliminating the primary tree cover of the island (Simmons, 1986). Vegetative diversity climbed rapidly throughout this period as special government gangs (forerunners to the Bermuda Parks Service) cleared bleak hillsides of gray dead cedars and replanted the countryside with fast growing exotics, which today form the basis of much of the island's inland vegetative structure. While the psychological impact of such a dramatic event is presently unknown, high positive respondent sensitivity to non-heritage vegetation (namely, naturalized species introduced during the Bermuda Cedar scale period, 1945 - 1960s), was indicated. Thus, it may be fair to ask to what extent is positive association of non-heritage vegetation and attractiveness influenced by this historic period.

In considering these observations, initial assumptions regarding the traditional Bermuda roadscape should be effectively broadened by shifting historic focus from the pre-world war II period (pre-1940) to the post - world war II period (1945 - 60) when vegetative diversity began to climb rapidly. The initial concept of heritage vegetation should also be expanded beyond native and endemic species to include important naturalized species of the 1945 - 1960 period.

Finally, the study findings underscore the need for a more careful treatment of road design in Bermuda. This point brings us to the heart and *crux* of this dissertation -- namely, what this research offers to the design profession as well as the Bermudian community.

Association of the most evocative feature of the Bermuda Image (vegetation) with road scene attractiveness demonstrates how closely road scenes can convey the essence of Bermuda. Road travel in this context is not simply a means of getting from one place to another -- it is essential to gaining a "sense of place" in Bermuda. Thus, travelling on Bermuda's roads represents a uniquely positioned opportunity to showcase the island's indigenous character. A significant percentage of the roadscapes examined still provide some of the strongest possible images of what people feel is deeply Bermudian.

This "image - defining" potential of the Bermuda road also sets up a cultural expectation for something more than the typical or utilitarian treatment in road - related design. Bermudians and visitors have historically and culturally come to expect much more from island travel than mere conveyance; traditional roads serve aesthetic / existential, historic, cultural and economic functions in addition to the conveyance role, and this "multi-functionality" deserves to be considered in current road - related design, intervention and the movement of people in Bermuda.

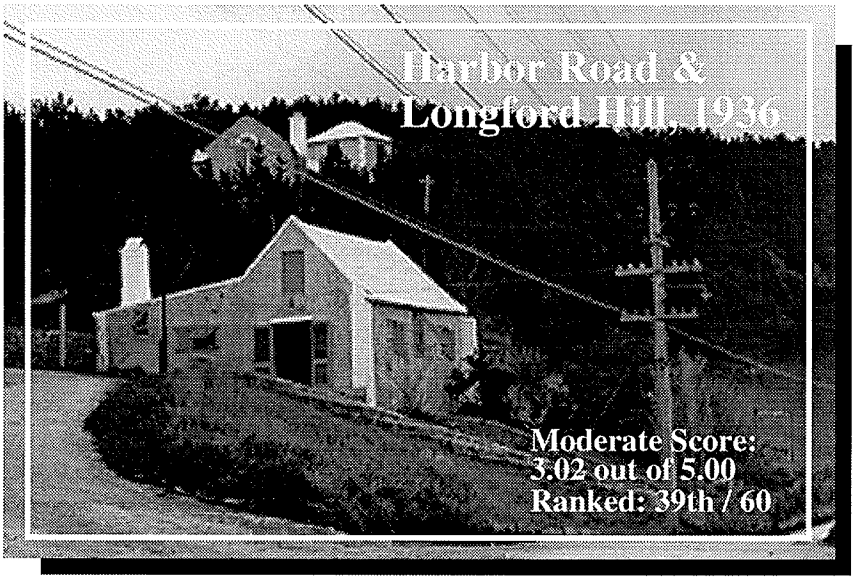
Unfortunately, there are negative impacts linked to the neglect of these roles. At the least, this study suggests that uninformed intervention, as well as utilitarian, conventional or even certain "non-traditional" approaches carry great risk of oversimplifying the role of Bermuda's roads in ways that may potentially create significant design disservice to the island. Aesthetic depreciation of road scenes through inappropriate design compromises island visual quality and hence tourist - related economies; it also destroys the unique "sense of place" and "image - defining" potential embodied in these resources. Road alteration also compromises historic integrity in cases were roads have retained important historic features such as views, stone walls, fences or special vegetation. Significant alteration of traditional roads results in the depreciation or loss of non-renewable cultural artifacts, not only because of the inability to replicate the processes and influences leading to their formation, but also because there is currently insufficient photographic / descriptive data to permit authentic replication of the resources, even if such an undertaking were desired in the future.

Furthermore, scenic depreciation in roads is an economic drain; it wastes money, time and energy that must be spent on scenic remediation. More specifically, Government mandate and strategies to address current transportation, circulation and development issues in the city of Hamilton have the potential to increase poor scene quality through intervention in several key areas. Potential problem areas include proposed development of all aspects of road and road - related design, including:

- multi - story car parks
- inter - city shuttle stops
- expanded parking for ferry facilities, down - town development, and commercial sites
- transit terminals
- multi - modal transit interchange areas
- bridge and / or causeway development

Such areas may invite scenic depreciation through the absence of appropriate design precedents and / or inappropriate detailing; but this need not, indeed should not be the case. Negative potentials may not only be mitigated through demonstrated care in research, design, construction and maintenance, but new, innovative design in road - related areas can also play a vital role in expanding the vocabulary of the Bermuda Image to embrace modern issues.

Section 7: Conclusions & Recommendations



Harbor Road / Longford Hill, 1936:

"houses appear historic and are focal point of picture -- not attractive but important"

-- black middle class female resident, age 20-29.

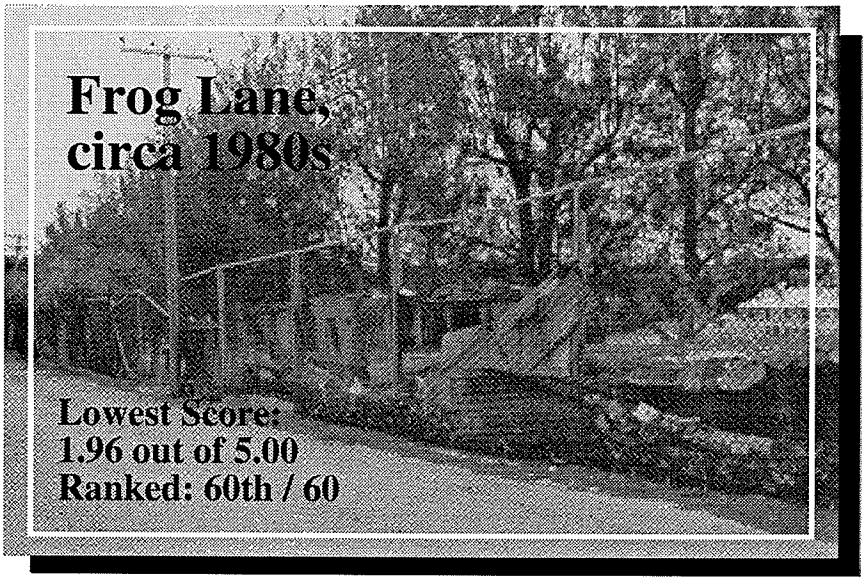
Conclusions and Recommendations

The traditional Bermuda roadscape is a highly visible scenic resource that has a long and significant impact on Bermuda's cultural landscape. As a defining element in the Bermuda Image, and valued by tourists and locals alike, its visual quality may be greatly enhanced or damaged through the management of its physical and psychological components. This damage may also be further masked by "environmental conditioning effects" which enable future generations to accept lower or different visual quality standards than those of their predecessors. To safeguard this resource, several steps should be taken to further elevate scenic quality objectives and standards in current management and design initiatives.

This landscape assessment study of the traditional Bermuda roadscape attempted to advance current knowledge of Bermuda's scenic resources by more closely investigating the relationship between physical attributes and socio-economically relevant human perceptions. This study further sought to build on previous visual quality research in Bermuda (Bermuda Department of Planning, March 1989, July 1989, December 1989; Bermuda Department of Planning, 1990) as well as draw on work from related research elsewhere. This study had a smaller respondent sample size (n = 54) than previous Bermuda studies, and an even smaller sample of "expert" respondents (n = 6). Sample respondents emphasized middle-aged, black Bermudian "non - expert" resident views and may not adequately represent the views of non-blacks, lower and upper economic groups, non-central parish residents, tourists and / or seniors. Comparisons were drawn between 1990 visual quality studies and 1995 (current) research based on similarity of 1990 and 1995 resident sample profiles and mean attractiveness responses for common images (despite sample size and media differences for the two evaluation years). Statistical associations and correlations found in this study do not state causality, nor do observed correlations address the possibility of non-linear relationships found frequently in landscape assessment research (Hull, 1989). This study joins several others in the commonly held assumption that statistically related variables are a logical place to begin looking and testing for causal relationships.

Given these conditions and caveats, the following recommendations are made with respect

to the application of study findings to the management of roadscape resources in Bermuda:



This road scene consistently received the lowest score in both 1990 and 1995 evaluation periods.

Frog Lane, 1980s:

"too low to make the scale"
-- middle class black female resident, age 20 - 29.

"...Nasty. "
-- middle class black female resident, age 30 - 39.

"...unsightly"
-- middle class white female resident, age 40 - 49.

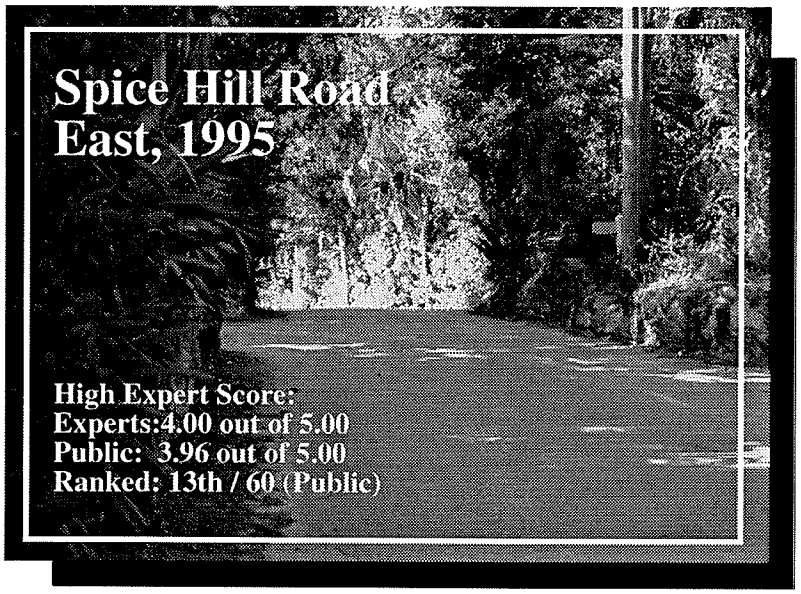
- **Renew interest in visual quality management of Bermuda's traditional roadscapes**

  The 49% spread of roadscape visual quality observed in this study represents a broad range of visual impact in Bermuda's scenic quality continuum. High attractiveness scores of many contemporary road scenes suggest a large potential capacity for visual enhancement of the island through sensitive design and / or historic preservation, where appropriate. Recent perceptions of a declining tourist sector have prompted local business and political leaders to develop wide - ranging strategies and new alliances aimed at economic revitalization, growth and awareness (Bermuda Sun, 1995). The success of these revitalization strategies will depend in part upon the care given to the management of unique local character, which includes roadscape visual quality management.

- **Provide a detailed inventory of Bermuda's roadscapes**

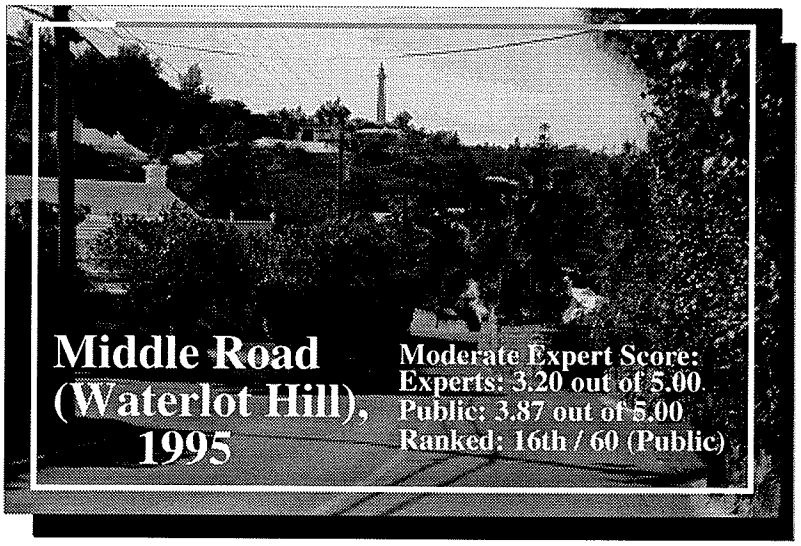
  As local cultural resources facing imminent pressure for change, data on Bermuda's roadscapes should be gathered now. In particular, photo-documentation of road scenes prior to intervention is an essential prerequisite to proper management of these scenic resources. Photographed resources can be evaluated to determine a base level of relative visual quality against which photographed or digitally generated interventions can be assessed. Scenic performance standards for given roadscapes could be drawn from previously assessed image databases. Photo-documentation also "preserves" a roadscape for future evaluation or reference in the event the roadscape is demolished or its quality altered. With a few notable exceptions (like Harbor Road, Front Street and Cedar Avenue), most of Bermuda's roadscapes, particularly its rehabilitated tribe roads, are undocumented and highly vulnerable to the current road widening and safety improvement schemes being conducted on the island. Many road scenes have already been altered with no photographic record of the site prior to intervention, thus losing an important means of monitoring the success or failure of future changes. In the United States, legalization mandates the photo-documentation of potentially

valuable historic resources scheduled for substantial alteration or demolition (Borchers, 1977: 2). Photogrammetric techniques (methods of measurement by means of photography) are the most widely used in these cases due to the accuracy, efficiency and speed with which they can record endangered cultural resources before imminent demolition or collapse. Some photogrammetric projects can gather valuable data on a cultural resource with as little as one week's notice prior to demolition (Borchers, 1977:1).



Most of Bermuda's scenic roadscapes are undocumented and highly vulnerable to the current road widening and safety improvement schemes being conducted on the island.

Many road scenes have already been altered with no photographic record of the site made prior to intervention, thus losing an important means of monitoring the success or failure of future changes.



Waterlot Hill, 1995:

"My favorite passage in Southampton"

--black middle class male resident, age 50 -59.

"(highest score)... no longer practical but quaint"

-- *anonymous.*

- **Inventoried roadscapes should also be assessed and categorized according to distinctions in visual quality and cultural relevance**

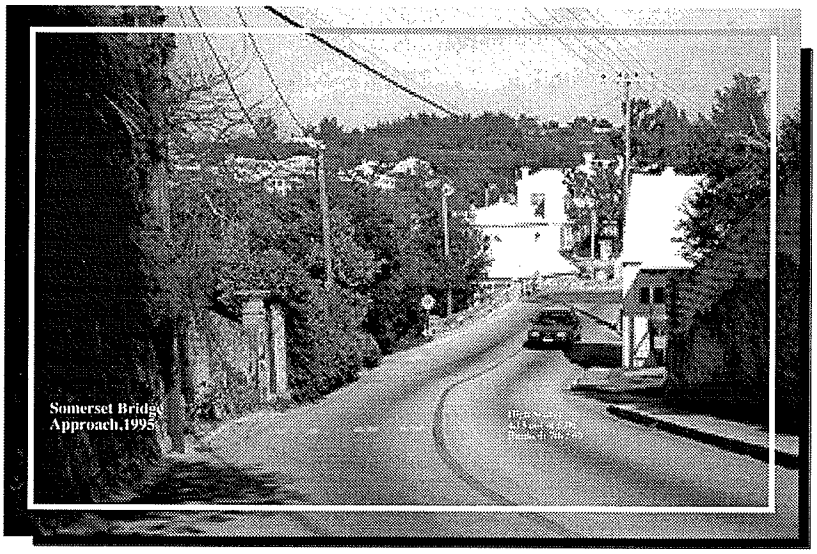
Determining the type of quality valued in each site (e.g. scenic or historic) and the relative importance of that quality can give direction and focus to the management of valued roadscape resources. For example, in Boston and Chicago, historic Landmark Commissions used four basic designations of perceived cultural character in order to categorize historic

resources (Bradford, 1994:11): (1) *significant resources* are designated on the basis of outstanding historic or cultural merit; (2) *background resources* generally contribute to the overall character of an area but are not individually outstanding historic resources; (3) *non-contributing resources* neither enhance nor detract from the qualities that give an area its overall historic or architectural character, while (4) *intrusive objects* are recognized as those which detract from valued and culturally significant qualities (Bradford, 1994:11). Many communities in the U.S. also use similar designations of their historic resources (Bradford, 1994: 11).

Clear definition of valued character and relative significance also assists in the prioritization of visual quality concerns and potential problem areas which may affect future design rehabilitation or preservation of Bermuda roadscapes.

- **Categorization should be coupled with strategies to address roadscapes of low cultural value**

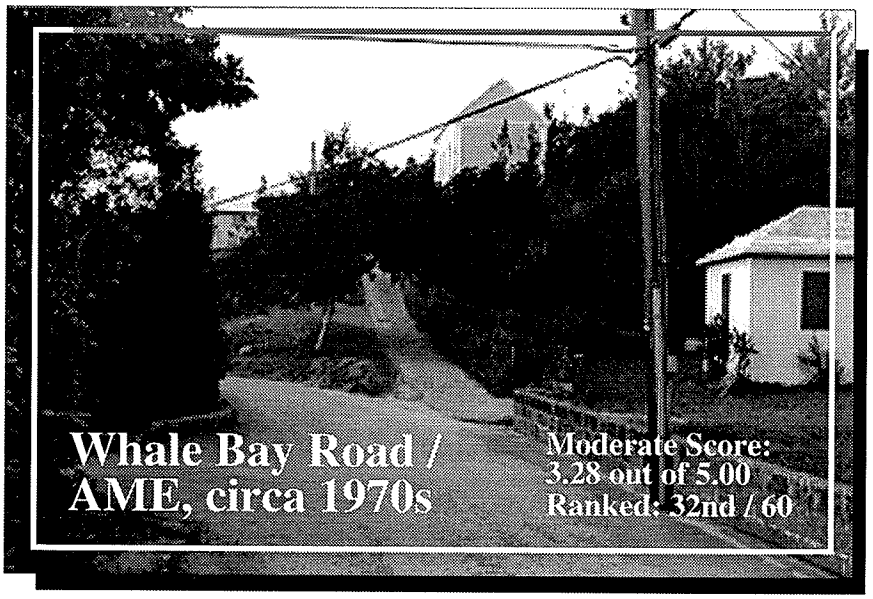
Categorization may lead to the perception that resources with lower cultural importance are more expendable. However, cultural character can still be lost if only the "best" resources are protected, albeit stripped of their culturally supportive context; the unique character of a resource may not be defined in terms of distinctive or outstanding objects but by an accumulated "sense of place" created by the holistic experience of a given area (Bradford, 1994:11). While some roadscapes and roadscape attributes are exemplary, a high percentage (50%) of Bermuda's roadscapes are moderate in attractiveness, and could have only moderate to low levels of perceived cultural value. Strategies should be developed (alongside resource categorization) in order to deal with the management of these roadscape resources in ways that deal sensitively and appropriately with historic, scenic and environmental issues.



While some roadscapes and roadscape attributes are exemplary, a high percentage (50%) of Bermuda's roadscapes are moderate in attractiveness, and may have only moderate to low levels of perceived cultural value.

- **Take advantage of opportunities to mitigate environmental distractor attributes**

Simply controlling such distracting attributes in the perceived environment may be all that is needed to promote significant increases in perceived visual quality. Additionally, the control of visual complexity, particularly for non-heritage structures, may also promote dramatic changes in scenic / cultural value. It is only through careful evaluation of before and after intervention changes can these and other such hypotheses be established or adjusted.



Whale Bay Road / AME, 1995:

"overhead wires ruin image"

-- black middle class male resident, aged 30 - 39.

"we thought the electric cables overhead in most pictures were very unattractive"

-- white middle class female resident, under 20.

"Bermuda will definitely benefit when all power lines are buried. It is such a scenic place without them"

--black middle class male resident, 50- 59.

- **Take advantage of opportunities to utilize plant materials to maximum potential**

The vegetative component of Bermuda's roadscapes appears to have great relevance to attractiveness and could do much to increase visual quality or mitigate distracting site attributes. Relatively little attention has been given to the historic - cultural uses of plants, local precedents of planting design, or "expansion" of the Bermuda Image in contemporary design problems. Where importance and objectives permit, design solutions should strive to enhance this dimension in ways that extend Bermuda's image - defining character.

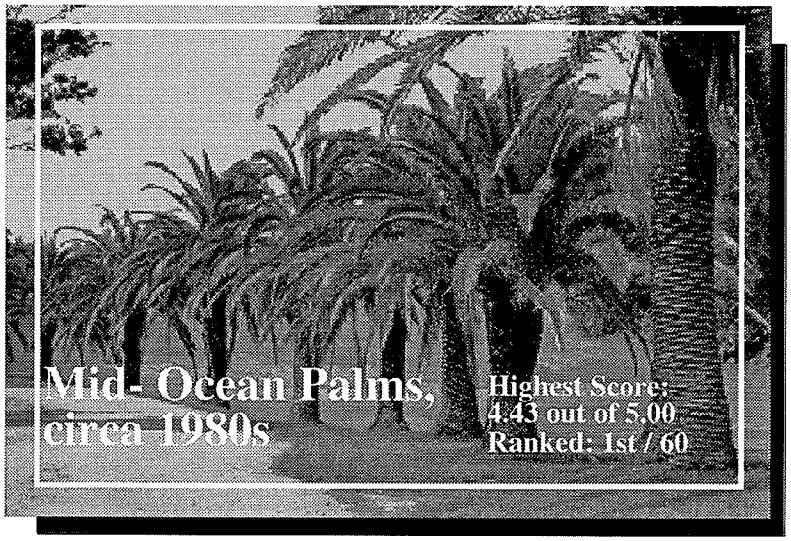
- **Take advantage of opportunities to gather image - defining assessment data from seniors with first -hand experience of historic roads**

The character of the island has changed dramatically within the last 50 years, with the result that future generations of Bermudians will have a much dimmer sense of earlier visual and sensory qualities. Concerted efforts should be undertaken to collect valuable assessment and anecdotal data from island respondents who have experienced pre-1940 Bermuda, before failing health and the passage of time take their toll.

- **Conduct further research to clarify relevant variables, assess improvement projects and monitor cultural value changes**

The cultural value attached to a given site may not be stable: changes in population age, environmental conditions and socioeconomic characteristics are associated with changes in scenic or cultural value. As a result, periodic testing is recommended in order to monitor scenic resource values over time and to adjust policies and objectives as necessary.

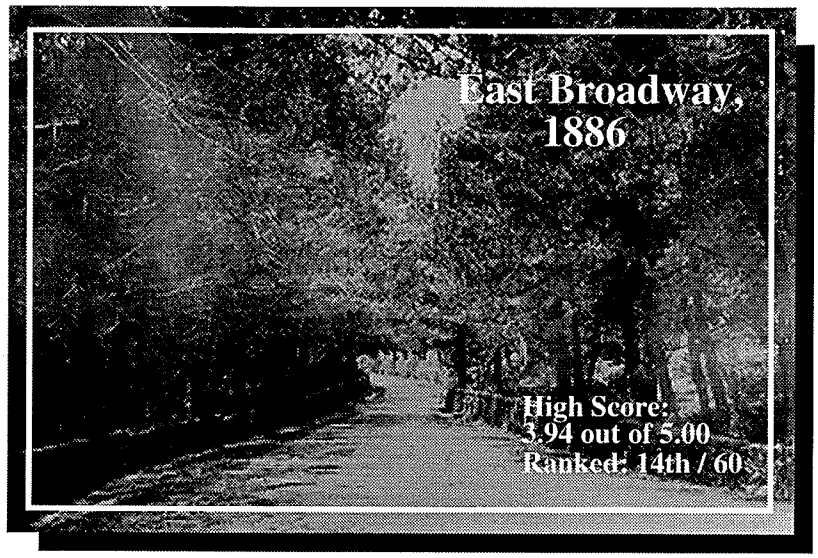
Similarly, relevant environmental variables, particularly vegetation, should be examined more closely to clarify the perceived value they bring. Other psychological variables not tested (such as incongruence of intervention to surrounding fabric) may provide additional or more effective instruments with which to monitor roadscape resource quality. Ongoing research in the field of landscape assessment should also be periodically evaluated in order to apply relevant findings to the management of cultural landscape resources in Bermuda.



Mid-Ocean Rd Palms, circa 1980s:

"...I would like Bermuda to look like one big manicured garden !"

-- black middle class male resident, age 30 - 39.



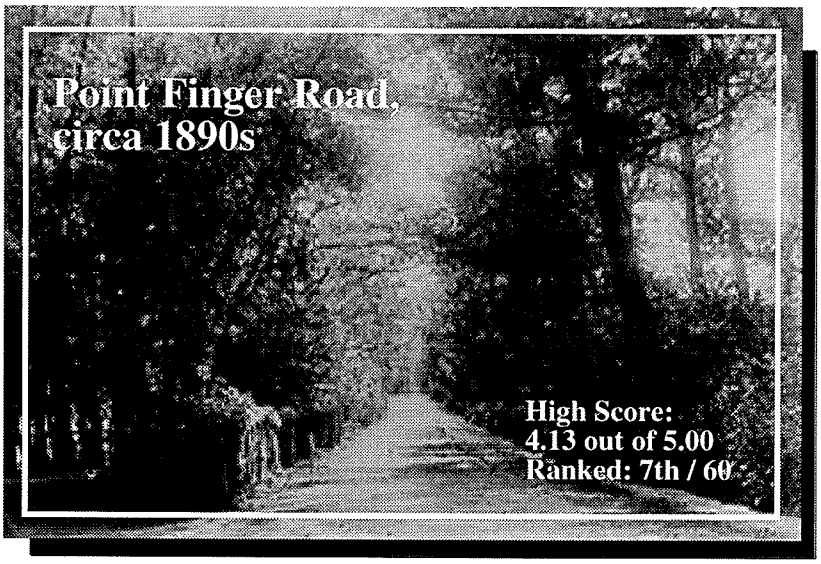
East Broadway, 1886:

"Combination of foliage trees and Bermuda stone walls is appealing...(it's) as what I perceive to be as Old Bermuda Charm"

-- Portuguese middle class male resident, age 30 - 39.

"I especially enjoyed the scenes that were a combination of lots of trees and few traffic, or that were bordered by stone walls... Traditional scenes, especially uncluttered ones, were my favorite"

-- black middle class female resident, age 30 - 39.



" Roads that are neatly paved with well kept hedges and overhanging trees are much more attractive"

-- middle class black female resident, age 30 - 39.

" ...more concern needs to be put into retaining the scenic quality of Bermuda's roads. Not to mention the manner of driving on them..."

-- middle class female resident, age 20 - 29.

Epilogue

One of the hardest aspects of preparing a dissertation of this nature is to preserve the emotional content of the subject manner. Amid the effort to define theoretical needs and provide sound statistical and logical arguments, it is easy to appear overly clinical in presentation, and to overlook some important nuances available in the "softer" aspects of this research.

How do people in Bermuda really feel about the traditional roads of the island ? It is unfortunate that the most charged and potent answers to this question are paradoxically the most difficult to communicate. How can one communicate to a reader the sense of delight, written on the face of one 84 year old man, as he cradles the image of "Cedar Avenue, 1890s" like a long - lost friend. "Young man, you've really just made my day !" he beams warmly, as we part company. Until he saw this scene he almost wasn't interested. I am reminded also of the amiability of several elderly men, as they share a "time - worn" secret and chuckle for long moments over childhood memories, sparked by a historic scene. And the thinly - veiled interest of the elderly women who came to "peek" at the pictures after the men had left. Or the glimmer of recognition as an Alzheimer's patient stumbles across a familiar scene.

These and many such experiences gathered throughout the study have a value to their owners that is perhaps impossible to price. Karl Marx is said to have declared, "If you can separate a people from their memories, you can persuade them with anything." So is the stabilizing power of collective memory, of cultural memory in a community embodied in its artifacts. The intensity of emotion, the sense of affection and deep - felt "connectedness" that the elderly expressed toward historic road scenes of their day is almost without parallel among younger residents; it is an observation that is hard to overlook.

In my mind, the impact of the traditional Bermuda roads on seniors appears to be an important indicator of cultural worth and deserving of further examination. The traditional Bermuda road still offers "time - worn" lessons and insights into a Bermudian way of life. It is my earnest hope that these pages, images and thoughts will inspire us all to act positively toward this resource, while it is still within our grasp.

Appendices, Bibliography & Credits

Appendix 1: Complete List Of Written Comments By Survey Respondents*

Astwood Park, 1980s (mean: 4.19):

"4.5 - 4.75"
-- middle class black female resident, age 20 - 29.

"(5) -- We have lost a lot of open land"
-- middle class black male resident, age 30 - 39.

"(4) -- a lot of greenery"
-- middle class black female resident, age 70 - 79.

"(NA) -- I don't know I ain't seen it ! "
-- lower class black female resident, age above 90.

"(5) -- Open spaces wonderful ! "
-- middle class white female resident, age 50 - 59.

Beacon Hill / Broome Street, 1995 (mean: 2.89):

"(NA) -- Mizzentop is a requirement of 20th century "
-- anonymous

"(3) -- Overhead cables unsightly"
-- middle class white female resident, age 40 - 49.

"(3) -- poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Beacon / Scott's Hill, 1995 (mean: 2.98):

"3.75 -- quaint and cozy"
-- middle class black female resident, age 20 - 29.

"(2) -- Don't know too much about Somerset"
-- middle class black female resident, age 70 - 79.

"(1) -- Very little vegetation"
-- anonymous

"(5) -- That's where I live -- I was married in town and grew up in Somerset"
-- lower class black female resident, age above 90.

"(2) -- poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Beacon / SDA, 1995 (mean: 3.17):

"(5) -- low walls more landscape"
-- anonymous

"(2) -- Help !! Bad streaks and poles."
-- middle class black female resident, age 20 - 29.

"(3) -- Multi-shaded road, telephone pole and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Beacon Hill past SDA, 1995 (mean: 3.02):

"(NA) -- ugly houses !"
-- middle class white female resident, age 40 - 49.

"(4) -- poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Camp Hill Bend, 1995 (mean: 2.75):

"1.5"
-- middle class black female resident, age 20 - 29.

"(2) -- too much bricks and mortar"
-- middle class black female resident, age 50 - 59.

"(2) -- too many houses walls too high"
-- middle class white female resident, age 40 - 49.

"(2) -- too many houses seen, too many wires, but nice cedar tree and wall"
-- middle class non-black, non-white male resident, age 20 - 29.

Camp Hill past Bend, 1995 (mean: 3.17):

"(4) -- lines subtract from scene."
-- middle class black female resident, age 30 - 39.

"(NA) -- need hedges not walls ! "
-- middle class white female resident, age 40 - 49.

"(3) -- ugly cables"
-- middle class white female resident, age 40 - 49.

"(3) -- poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

---

* numbers in brackets indicate score given by respondent.

Camp Hill Rd / South Shore, 1995 (mean: 3.62):

"(4) -- a necessary evil, but tastefully done"
-- anonymous

"(4) -- modern Bermudian scenic (sic) and well manicured"
-- middle class female resident, age 20 - 29.

"(3) -- good balance of greenery on left and aged wall on right"
-- middle class black male resident, age 50 - 59.

Cedar Avenue, 1890s (mean: 4.00):

"(5) -- conjures feelings of tranquillity"
-- middle class black female resident, age 30 - 39.

"(5) -- shady and green - Cedar Avenue ? "
-- middle class white female resident, age 40 - 49.

"(5) -- that's a five right off de bat ! "
-- black male resident, age 80 - 89.

"(5) -- Cedar Avenue ? "
-- middle class non-black, non-white male resident, age 20 - 29.

City Hall Parking, 1980s (mean: 2.54):

"(NA) -- manadrin's (sic) whore house !"
-- middle class white female resident, age 40 - 49.

"(2) -- mish-mash of architectural styles -- non- Bermudian in flavour and too high"
-- middle class white female resident, age 40 - 49.

"(1) -- overcrowding Bermuda Style."
-- middle class female resident, age 20 - 29.

"(4) -- this picture is telling you what it's supposed to."
-- black male resident, age 80 - 89.

"(2) -- ugly buildings, too many cars"
-- middle class non-black, non-white male resident, age 20 - 29.

Claytown gate, 1980s (mean: 2.35):

"(NA) -- ugly !"
-- middle class white female resident, age 40 - 49.

"(2) -- Needs trees and to lose the poles."
-- middle class female resident, age 20 - 29.

"(1) -- walls unattractive as are telephone poles."
-- middle class white female resident, age 50 - 59.

---

* numbers in brackets indicate score given by respondent.

Claytown gate, 1980s (mean: 2.35):

"(3) -- poles, wires and high buildings"
-- middle class non-black, non-white male resident, age 20 - 29.

Coastal Vegetation(Spruce), 1980s (mean: 3.84):

"(2) -- no sense of depth or colour / character"
-- middle class black female resident, age 20 - 29.

"(4) -- last of Bermuda's open land"
-- middle class black male resident, age 30 - 39.

"(5) -- this is unique"
-- lower class Portuguese male resident, age 50 - 59.

"(1) -- I don't think this is attractive"
-- lower class black female resident, age above 90.

Collector's Hill, 1980s (mean: 2.38):

"(NA) -- very poor use of land and development planning"
-- middle class white female resident, age 40 - 49.

"(NA) -- I don't know nothing 'bout that"
-- lower class black female resident, age above 90.

Convict Bay, 1980s (mean: 2.59):

"(1) -- cold, domineering."
-- middle class black female resident, age 30 - 39.

"(NA) -- poor use of land conflicts with natural landscape"
-- middle class white female resident, age 40 - 49.

"(2) -- High rise"
-- middle class white female resident, age 40 - 49.

"(1) -- Human chicken boxes."
-- middle class female resident, age 20 - 29.

"(2) -- offensive high rises = greedy investors"
-- middle class non-black, non-white male resident, age 20 - 29.

Corkscrew Hill, 1990s (mean: 4.20):

"really '5++' off the scale"
-- middle class black female resident, age 20 - 29.

"(3) -- they could clear (this)"
-- middle class black female resident, age 70 - 79.

"(5) -- wonderful"
-- anonymous

"(4) -- Sanity !!"
-- middle class female resident, age 20 - 29.

Corkscrew Hill, 1990s (mean: 4.20):

"(4) -- telephone pole"
-- middle class non-black, non-white male resident, age 20 - 29.

East Broadway, 1886 (mean: 3.94):

"(5) -- Beautiful"
-- middle class white female resident, age 50 - 59.

East Broadway, 1970s (mean: 2.83):

"(3) -- building detracts from beauty"
-- middle class black female resident, age 20 - 29.

"(5) -- Memories"
-- middle class black female resident, age 30 - 39.

"I give it a five because of its looks today"
-- middle class black male resident, age 30 - 39.

"(1) -- Bus terminal should have had more thought as to transportation within Hamilton"
-- middle class white female resident, age 40 - 49.

"(1) -- Help ! I need paint."
-- middle class female resident, age 20 - 29.

"(4) -- The bus garage"
-- middle class non-black, non-white male resident, age 20 - 29.

Ferry Reach, 1980s (mean: 2.79):

"(1) -- focal point of picture i.e. the road is not attractive but the sky and water are."
-- middle class black female resident, age 20 - 29.

"(2) -- improved finally !"
-- middle class white female resident, age 40 - 49.

"(NA) -- I don't know nothing about that"
-- lower class black female resident, age above 90.

"(3) -- no utility poles ? "
-- middle class white female resident, age 40 - 49.

"(2) -- messy but serviceable, has since been planted with trees."
-- middle class female resident, age 20 - 29.

"(3) -- patchy grass and bare fence"
-- middle class non-black, non-white male resident, age 20 - 29.

"(2) -- naked - waste"
-- middle class female resident, age 50 - 59.

Foot-of-the-Lane, 1936 (mean: 3.31):

"3.5 -- wires detract from beauty"
-- middle class black female resident, age 20 - 29.

"(NA) -- picturesque"
-- middle class white female resident, age 40 - 49.

"(5) -- I know where that is -- very attractive"
-- lower class black female resident, age above 90.

Foot-of-the-Lane, 1936 (mean: 3.31):

"(4) -- Crow Lane Bakery ? Ugly utility poles"
-- middle class white female resident, age 40 - 49.

"(2) -- poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

"(3) -- wires"
-- middle class white female resident, age 50 - 59.

Foot-of-the-Lane, 1970s (mean: 2.87):

"(3) -- too much building"
-- middle class black female resident, age 70 - 79.

"(5) -- I remember this -- TCD used to be here"
-- lower class Portuguese male resident, age 20 - 29.

"(4) -- sore point !"
-- middle class white female resident, age 50 - 59.

(respondent, undecided about a score, finally blurted out):
"Put something down ! Nobody will know !"
(<Laughter> -- respondent later gave it a 5)
-- lower class black female resident, age above 90.

"(1) -- Improved at last ! Urban nightmare via bad town planning"
-- middle class female resident, age 20 - 29.

"(3) -- the drabby old building."
-- middle class non-black, non-white male resident, age 20 - 29.

Frog Lane, 1980s (mean: 1.96):

"(1) -- focal point of picture i.e. the road is not attractive but the sky and water are."
-- middle class black female resident, age 20 - 29.

"(2) -- improved finally !"
-- middle class white female resident, age 40 - 49.

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* numbers in brackets indicate score given by respondent.

Frog Lane, 1980s (mean: 1.96):

"too low to make the scale"
-- middle class black female resident, age 20 - 29.

"(1) -- Nasty. "
-- middle class black female resident, age 30 - 39.

"(3) -- Looks much more pleasent (sic) in recent times"
-- middle class black male resident, age 30 - 39.

"(1) -- refuse and fence"
-- anonymous

"(NA) -- old Bermuda telephone poles made of cedar tree -- not well kept."
-- elderly black male resident.

"(NA) -- unsightly"
-- middle class white female resident, age 40 - 49.

"(NA) -- never been that way"
-- lower class black female resident, age above 90.

"(1) -- Nasty ! I hope this is an old picture. It needs recycling. "
-- middle class white female resident, age 40 - 49.

"(3) -- fence , garbage, poles and wires"
-- middle class female resident, age 20 - 29.

"(1) -- disrepair"
-- middle class black female resident, age 20 - 29.

General Comments:

"Roads that are neatly paved with well kept hedges and overhanging trees are much more attractive"
-- middle class black female resident, age 30 - 39.

"We need to keep a balance of walls and trees. Old buildings must be maintained. I would like Bermuda to look like one big manicured garden !"
-- middle class black male resident, age 30 - 39.

"The scenic quality of Bermuda's roads and views in general have depreciated over the years. No one really seems overly concerned about it as long as we are not as bad as _____...I'll always prefer the dense green, lush blue and green Bermuda with houses etc. blended into the scenery rather than trees unnaturally positioned to make buildings look natural or environmentally conscious."
-- middle class female resident, age 20 - 29.

"I especially enjoyed the scenes that were a combination of lots of trees and few traffic, or that were bordered by stone walls. Traditional scenes, especially uncluttered ones were my favorite."
-- middle class black female resident, age 30 - 39.

"Bermuda roads are narrow in some areas, however, some of these roads have been made wider yet without them losing their style or attractiveness"
-- middle class female resident, age 50 - 59.

"We thought the electric cables overhead in most pictures were very unattractive"
-- middle class white female resident, age under 20.

"It's wonderful -- more people should be involved in it -- shows...where we come from and were we are"
-- middle class black male resident, age 70 - 79.

"I was wondering why all the pictures are in black and white. I think it would be a lot more interesting and you would get more honest responses if the pictures are in colour."
-- middle class black male resident, age 20 - 29.

" It's a beautiful island"
-- middle class female resident, age 70 - 79.

"Bermuda will definitely benefit when all power lines are buried. It is such a scenic place without them. In spite of the high density building programmes there is still enough beauty left for our visitors."
-- middle class male resident, age 50 - 59.

"too many houses...standard of living a little too high (for) rent and groceries"
-- lower class male Portuguese resident, age 50 - 59.

"I've noticed a great improvement in Bermuda Roads in the past 5 years."
-- middle class white male resident, age 20 - 29.

"The picture quality may have distorted the realistic presentation of the areas photographed."
-- middle class black female resident, age 20 - 29.

"most of the pictures are very nice"
-- anonymous

When asked if respondent wanted to include any final comments, the reply was: "(no let'em) find out for their selves"
-- lower class black female resident, age above 90.

"Combination of foliage trees and Bermuda stone walls is appealing -- (it's) as what I perceive to be as old Bermuda charm"
-- middle class male Portuguese resident, age 50 - 59.

"Some of the old pictures look pretty good -- some places look pretty much up to date"
-- lower class black male resident, age 40 - 49.

"This booklet did not have the numbers on the pictures. Some of these could do with some more sidewalks and trees." [editor's note: Pictures were promptly numbered and booklet re-circulated]
-- black female resident, age under 20.

General Comments:

"Archives should be able to do this more up on postcards...or even on a stamp. The archives should really come right open with it."
-- lower class black male resident, age 40 - 49.

"The installation of underground cables to replace ugly poles -- cables would greatly enhance the general visual quality of the island. Maintain greenery everywhere."
-- middle class white female resident, age 40 - 49.

"I am more inclined to favor natural beauty as approsed (sic) to man made structure"
-- middle class black male resident, age 30 - 39.

"The scenic quality of Bermuda's road(s) have decreased. They are too narrow, obstructive (trees) and of poor quality (workmanship)."
-- middle class black male resident, age 30 - 39.

"Quality of roads in recent pictures are poor, in old pictures are better than ever. I enjoyed the scenes were (sic) greenery was shown. The roads on the south and north shore are in better state than middle. BELCO, TELCO and CableVision needs to work together."
-- middle class white female resident, age 40 - 49.

"Survey is well designed. More concern needs to be put into retaining the scenic quality of Bermuda's roads. Not to mention the manner of driving on them. At least the poles are disappearing."
-- middle class female resident, age 20 - 29.

"(1) our roads would be even more spectacular in the absence of so much vehicular traffic ! (2) The recent widening / development of East Broadway is a triumph - a beautiful way to enter a city !

"n.b. The sheet for comments on pictures 1 - 25 was missing but all the photos which showed lack of progress and large open spaces were the ones I found most appealing. I particularly liked #'s 2 - 12, 14, 17 - 18, 20, 23."
-- middle class non-black, non-white male resident, age 20 - 29.

[Editor's note:
2 = Spice Hill Rd West 1995,
3 = Middle Rd / Waterlot Hill 1995,
4 = Horseshoe coast view 1980s,
5 = Spice Hill Rd East 1995,
6 = Rubber tree / yard 1980s,
7 = Whale Bay Rd / AME 1970s,
8 = Point Finger Rd 1890s,
9 = Traditional House (Pt. Shares) 1980s,
10 = Whale Bay Rd / AME 1995,
11 = Camp Hill / South Shore 1995,
12 = Traditional House (St. Geo.) 1980s,
14 = Corkscrew Hill 1990s,
17 = Whale Bay Rd past AME 1970s,
18 = Beacon Hill / SDA 1995,
20 = Somerset Bridge Approach 1995,
23 = Somerset Bridge 1890s]

Harbor Road House, 1980s (mean: 4.28):

"4.5 - 4.75"
-- middle class black female resident, age 20 - 29.

"(5) -- Beautiful. "
-- middle class black female resident, age 30 - 39.

"(5) -- house has nice clean (clear ?) lines"
-- middle class black female resident, age 50 - 59.

"(NA) -- you have to be on that place to (say)"
-- lower class black female resident, age above 90.

Harbor Rd / Longford Hill, 1936
(mean: 3.02):

"(NA) -- houses appear historic and are focal point of picture -- not attractive but important"
-- middle class black female resident, age 20 - 29.

"(3) -- enjoy buildings and hillside. Lines ruin it."
-- middle class black female resident, age 30 - 39.

"(5) -- that's a five easy"
-- middle class black male resident, age 70 - 79.

"(NA) -- hard to describe -- they're all attractive"
-- lower class black female resident, age above 90.

"(2) -- those poles again"
-- middle class female resident, age 20 - 29.

"(3) -- poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Harbor Rd / Longford Hill, 1980s
(mean: 2.44):

"(1) -- congested."
-- middle class black female resident, age 30 - 39.

"(1) -- the worst of the lot -- give it a minus one"
-- middle class black male resident, age 50 - 59.

"(1) -- Bermuda has too many houses"
-- lower class Portuguese male resident, age 50 - 59.

"(2) -- Mizzentop"
-- middle class white female resident, age 40 - 49.

"(3) -- Dwellings too dense, although perhaps look will improve when plants mature ?"
-- middle class white female resident, age 40 - 49.

"(NA) -- that's something new...I always said that's 'non-Bermudian' "
-- middle class black male resident, age 70 - 79.

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* numbers in brackets indicate score given by respondent.

Harbor Rd / Longford Hill, 1980s (mean: 2.44):

"(1) -- Condo's are the greatest! (read with cynicism)"
-- middle class female resident, age 20 - 29.

"(1) -- offensive housing, poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Harbor Rd / Manse, 1936 (mean: 2.44):

"(2) -- overhead wires "(respondent drew a frowning face symbol)
-- middle class white female resident, age 40 - 49.

"(NA) -- I wouldn' t know"
-- lower class black female resident, age above 90.

"(2) -- The early days of island-wide electricity ?"
-- middle class white female resident, age 40 - 49.

"(2) -- Rough on edges."
-- middle class female resident, age 20 - 29.

"(3) -- poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

"(2) -- wires again"
-- middle class female resident, age 50 - 59.

Harbor Rd Paget, 1936 (mean: 3.54):

"(4) -- colour would have increased the grade # "
-- middle class black female resident, age 20 - 29.

"(5) -- That's my road -- I think that is one of the most beautiful spots"
-- middle class white female resident, age 70 - 79.

"(5) -- dangerous curves"
-- middle class white female resident, age 40 - 49.

"(4) -- Good except for utility poles"
-- middle class white female resident, age 40 - 49.

"(4) -- poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Harbor Rd past Manse, 1936 (mean: 3.68):

"3.5"
-- middle class black female resident, age 20 - 29.

"(4) -- spoilt by utility poles"
-- middle class black male resident, age 50 - 59.

"(NA) -- never been there"
-- lower class black female resident, age above 90.

"(4) -- poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Harbor Rd / Salt Kettle, 1980s (mean: 3.94):

"maybe 4.5"
-- middle class black female resident, age 20 - 29.

"(NA) -- I've never been on that road either"
-- lower class black female resident, age above 90.

Horseshoe Bay coastal view, 1980s (mean: 4.12):

"4.75 colour would make it a definite '5+' "
-- middle class black female resident, age 20 - 29.

"(4) -- natural...everything's natural...nothing built up."
-- middle class black female resident, age 70 - 79.

"(5) -- peaceful scene. No habitation visible."
-- middle class female resident, age 20 - 29.

Horseshoe Bay (clean), 1990s (mean: 3.70):

"(5) -- too many people for '5++' "
-- middle class black female resident, age 20 - 29.

"(NA) -- I don't know nothing about that "
-- middle class black female resident, age 70 - 79.

"(5) -- clean beach !"
-- middle class female resident, age 20 - 29.

"(2) -- Yick ! the beginning of summer overcrowding"
-- middle class female resident, age 20 - 29.

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* numbers in brackets indicate score given by respondent.

Horseshoe Bay (dirty), 1980s
(mean: 2.92):

"(2) -- looks messy "
-- middle class black female resident, age 20 - 29.

"(5) -- Today you can find more locals"
-- middle class black male resident, age 30 - 39.

"(3) -- looks like a lot of seaweed"
-- middle class black male resident, age 70 - 79.

"(5) -- I like to see the people -- many people"
-- middle class white female resident, age 70 - 79.

"(NA) -- never been on it"
-- lower class black female resident, age above 90.

"(3) -- pre-beach cleaning ?"
-- middle class white female resident, age 40 - 49.

"(3) -- Sea weed !"
-- middle class black male resident, age 30 - 39.

"(1) -- Yuck !"
-- middle class female resident, age 20 - 29.

"(2) -- seaweed, lack of sand"
-- middle class non-black, non-white male resident, age 20 - 29.

"(1) -- rat syndrome !"
-- middle class white female resident, age 50 - 59.

Horseshoe Bay parking, 1980s
(mean: 2.63):

"(3) -- people are enjoying it "
-- middle class black female resident, age 70 - 79.

"(NA) -- improvements have helped"
-- middle class white female resident, age 40 - 49.

"(NA) -- I don't know 'cause I never been on it"
-- lower class black female resident, age above 90.

"(1) -- Yuck ! Imagine the beach !"
-- middle class female resident, age 20 - 29.

"(4) -- the area is not manicured enough"
-- middle class non-black, non-white male resident, age 20 - 29.

"(3) -- evidence of man !"
-- middle class white female resident, age 50 - 59.

John Smith's Bay beach, 1980s
(mean: 4.02):

"colour would be a '5++' "
-- middle class black female resident, age 20 - 29.

"(NA) -- I wouldn't know 'cause I never been on it"
-- lower class black female resident, age above 90.

"(5) -- Except for the oil drum trash can"
-- middle class white female resident, age 40 - 49.

"(3) -- houses too visible"
-- middle class non-black, non-white male resident, age 20 - 29.

John Smith's Bay parking, 1980s
(mean: 2.45):

"(NA) -- I think they're all attractive"
-- lower class black female resident, age above 90.

"(3) -- Bermuda ??"
-- middle class white female resident, age 40 - 49.

"(3) -- too messy"
-- middle class non-black, non-white male resident, age 20 - 29.

Mid - Ocean Rd Palms, 1980s
(mean: 4.43):

"(5) -- natural !"
-- middle class white female resident, age 50 - 59.

Middle Rd Scenic Heights East, 1995
(mean: 2.96):

"(2) -- more roadworks ! Too much for poor state of roads"
-- middle class white female resident, age 40 - 49.

"(NA) -- I haven't been on it -- you have to go on it (to know) if its attractive"
-- lower class black female resident, age above 90.

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* numbers in brackets indicate score given by respondent.

Middle Rd Scenic Heights West1, 1995 (mean: 3.60):

"really 3.5 - 4.0"
-- middle class black female resident, age 20 - 29.

"(4) -- reminds me of Village Road"
-- middle class black female resident, age 30 - 39.

"(NA) -- I wouldn't know I haven't been there"
-- lower class black female resident, age above 90.

"(4) -- shady, green old walls"
-- middle class white female resident, age 40 - 49.

Middle Rd Scenic Heights West2, 1995 (mean: 3.25):

"3.5 -- wall on right detracts from beauty"
-- middle class black female resident, age 20 - 29.

"(NA) -- If you've never been on it you don't know how attractive they are"
-- lower class black female resident, age above 90.

"(2) -- Bermuda's worst driving"
-- middle class female resident, age 20 - 29.

"(4) -- poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Middle Rd Port Royal South, 1995 (mean: 3.24):

"(4) -- Orderly."
-- middle class black female resident, age 30 - 39.

"(4) -- except for poles the lines of the road are very pleasing."
-- middle class black male resident, age 50 - 59.

"(2) -- modern but uninspired"
-- middle class female resident, age 20 - 29.

"(3) -- poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Middle Rd / Waterlot Hill, 1995 (mean: 3.87):

"4.75 colour would make it a '5++' "
-- middle class black female resident, age 30 - 39.

"(4) -- nice scenery"
-- middle class black male resident, age 50 - 59.

"(5) -- My favourite passage in Southampton"
-- middle class female resident, age 20 - 29.

Middle Rd / Waterlot Hill, 1995 (mean: 3.87):

"(5) -- no longer practical but quaint"
-- middle class non-black, non-white male resident, age 20 - 29.

"(NA) -- overhead lines are unsightly"
-- middle class black female resident, age 30 - 39.

"(4) -- good except for cables"
-- middle class black male resident, age 50 - 59.

"(4) -- houses visible but hidden by trees"
-- middle class female resident, age 20 - 29.

"(4) -- wires !"
-- middle class non-black, non-white male resident, age 20 - 29.

Point Finger Road, 1890s (mean: 4.26):

"(5) -- unblemished by bricks and mortar"
-- middle class black male resident, age 50 - 59.

"(5) -- wonderful"
-- anonymous

"(5) -- Beautiful"
-- middle class white female resident, age 40 - 49.

"(5) -- the scenery -- that's what I'm rating it on"
-- lower class black male resident, age 40 - 49.

"(4) -- awakens the imagination"
-- middle class female resident, age 20 - 29.

Rubber tree / yard, 1980s (mean: 4.02):

"(4) -- nice blend of plants and man- made materials"
-- middle class black female resident, age 30 - 39.

"(5) -- not well landscaped"
-- middle class white female resident, age 40 - 49.

"(2) -- hard to know where it is"
-- black male resident, age 80 - 89.

"(4) -- pleasing to eye with manicured lawn"
-- middle class female resident, age 20 - 29.

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* numbers in brackets indicate score given by respondent.

Shelly Bay plaza, 1980s (mean: 2.50):

"(2) -- Sterile."
-- middle class black female resident, age 30 - 39.

"(2) -- supermarket -- good that it's low rise, but needs more plants"
-- middle class white female resident, age 40 - 49.
"(2) -- Needs less concrete more grass"
-- middle class female resident, age 20 - 29.

"(2) -- too American; we don't need malls here."
-- middle class non-black, non-white male resident, age 20 - 29.

"(1) -- ugly...lack of flora"
-- middle class black male resident, age 50 - 59.

"(NA) -- Poor architecture"
-- middle class white female resident, age 40 - 49.

"(NA) -- not familiar with this"
-- black male resident, age 80 - 89.

"(NA) -- not familiar with this"
-- elderly black male resident.

"(3) -- Clean but crowded"
-- middle class non-black, non-white male resident, age 20 - 29.

"(3) -- too many houses telephone pole and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Somerset Bridge Approach, 1995 (mean: 3.46):

"(4) -- telephone poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Somerset Bridge, 1890s (mean: 4.13):

"4.75 vintage"
-- middle class black female resident, age 20 - 29.

"(5) -- but not practical"
-- middle class white female resident, age 40 - 49.

"(3) -- Scene is picturesque but needs manicuring on edges"
-- middle class female resident, age 20 - 29.

"(4) -- the pole"
-- middle class non-black, non-white male resident, age 20 - 29.

Somerset Bridge, 1995 (mean: 3.65):

"(4) -- that's another beautiful spot"
-- middle class black female resident, age 70 - 79.

"(NA) -- I don't know if it's attractive"
-- lower class black female resident, age above 90.

"(5) -- we can recognize this one"
-- black male resident, age 80 - 89.

"(4) -- poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Spice Hill Rd East, 1995 (mean: 3.96):

"(4) -- 'quiet and secluded lane' look"
-- middle class female resident, age 20 - 29.

"(4) -- telephone pole is a minus"
-- middle class non-black, non-white male resident, age 20 - 29.

Spice Hill Rd West, 1995 (mean: 3.96):

"4.75"
-- middle class black female resident, age 20 - 29.

"(4) -- houses visible but hidden by trees"
-- middle class female resident, age 20 - 29.

"(4) -- the different coloured trench filling looks bad."
-- middle class non-black, non-white male resident, age 20 - 29.

Spice Hill Rd West walls, 1995 (mean: 3.19):

"(4) -- attractive stone."
-- middle class black female resident, age 30 - 39.

"(4) -- Right on Spice Hill is very nice"
-- middle class black female resident, age 70 - 79.

"(NA) -- Hideous walls !"
-- middle class white female resident, age 40 - 49.

"(3) -- wall needs softening with greenery"
-- middle class white female resident, age 40 - 49.

"(2) -- A bit imposing"
-- middle class female resident, age 20 - 29.

"(4) -- pole and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

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* numbers in brackets indicate score given by respondent.

St. George Street, 1980s (mean: 3.26):

"(3) -- quaint"
-- middle class black female resident, age 20 - 29.

"(4) -- signs take away from picture"
-- middle class black male resident, age 30 - 39.

"(2) -- Cars subtract from picture"
-- middle class black male resident, age 50 - 59.

"(3) -- New trying to squeeze into the old causing unsightleyness (sic)"
-- anonymous

"(4) -- the cars !"
-- middle class non-black, non-white male resident, age 20 - 29.

Traditional House (Point Shares), 1980s (mean: 4.11):

"(3) -- quaint"
-- middle class black female resident, age 20 - 29.

"(5) -- that's got to be a five"
-- middle class black male resident, age 70 - 79.

"(5) -- very pleasing mix of old Bermuda architecture plus that great wall"
-- middle class black male resident, age 50 - 59.

"(5) -- maintained culture via stone wall"
-- anonymous

"(4) -- great 'Bermudian' scene with old wall and cottage (style)"
-- middle class female resident, age 20 - 29.

Traditional House (St. George's), 1980s (mean: 3.78):

"(2) -- historic"
-- middle class black female resident, age 20 - 29.

"(3) -- pleasing architecture"
-- middle class black male resident, age 50 - 59.

"(4) -- poor addition not architecturally sympathetic poor foreground"
-- middle class white female resident, age 40 - 49.

"(4) -- home sweet home Bermuda style"
-- middle class female resident, age 20 - 29.

"(4) -- wires !"
-- middle class non-black, non-white male resident, age 20 - 29.

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* numbers in brackets indicate score given by respondent.

Warwick Pond, 1980s (mean: 3.29):

"3.5"
-- middle class black female resident, age 20 - 29.

"(NA) -- building in area should have been better controlled in context"
-- middle class white female resident, age 40 - 49.

"(NA) -- I don't know anything about that"
-- lower class black female resident, age above 90.

"(2) -- Thank heavens for black and white photos, they tame the mess of houses."
-- middle class female resident, age 20 - 29.

"(3) -- the quarry"
-- middle class non-black, non-white male resident, age 20 - 29.

Whale Bay Rd / AME, 1970s (mean: 3.28):

"(4) -- That's it, low walls, high trees"
-- anonymous

"(2) -- the concrete block wall detracts"
-- anonymous

"(NA) -- house on right no landscape no planting"
-- middle class white female resident, age 40 - 49.

"(5) -- we know this place"
-- black male resident, age 80 - 89.

"(5) -- we know this place"
-- elderly black male resident.

"(3) -- a bit messy with telephone line"
-- middle class female resident, age 20 - 29.

"(4) -- telephone pole ! "
-- middle class non-black, non-white male resident, age 20 - 29.

Whale Bay Rd / AME, 1995 (mean: 3.46):

"(3) -- low hanging wire detract (sic) from attractiveness"
-- middle class black female resident, age 20 - 29.

"(4) -- overhead wires ruin image"
-- middle class black male resident, age 30 - 39.

"(4) -- enjoy the quietness and solitude"
-- middle class black female resident, age 30 - 39.

"(3) -- the power lines spoil the picture"
-- middle class black male resident, age 50 - 59.

"(4) -- modern Bermudian scenic (sic) and well manicured"
-- middle class female resident, age 20 - 29.

Whale Bay Rd / AME, 1995 (mean: 3.46):

"(4) -- telephone pole and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Whale Bay Rd past AME, 1970s (mean: 3.38):

"(3) -- spoilt by power lines and poles"
-- middle class black male resident, age 50 - 59.

"(4) -- rural attractiveness"
-- middle class white female resident, age 40 - 49.

"(2) -- cute but lose the poles."
-- middle class female resident, age 20 - 29.

"(3) -- unmanicured foliage, telephone poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Whale Bay Rd past AME, 1995 (mean: 2.88):

"2.5 - 2.75"
-- middle class black female resident, age 20 - 29.

"(4) -- 'cause I like the greenery -- I'm a green person !"
-- middle class black female resident, age 70 - 79.

"(2) -- wall too low. And poles"
-- middle class female resident, age 20 - 29.

"(4) -- poles and wires"
-- middle class non-black, non-white male resident, age 20 - 29.

Wilkinson Avenue / Fractious Street, 1980s (mean: 4.18):

"too attractive to limit to # 5"
-- middle class black female resident, age 20 - 29.

"(2) -- Natural."
-- middle class black female resident, age 30 - 39.

"(NA) -- I've never been on that road either"
-- lower class black female resident, age above 90.

"(5) -- the way we were ?"
-- middle class white female resident, age 40 - 49.

---

* numbers in brackets indicate score given by respondent.

Appendix 2: Records In The Bermuda Archives Documenting The Development Of Roads In Bermuda

By John Adams, Archivist, Bermuda Government Archives,

Secondary Sources

A.C.H.Hallet, Chronicle of a Colonial Church (1993).
Describes system for roadworks responsibility / maintenance to 1812.

Sir J.H. Lefroy, Memorials of the Bermudas (1981).
Transcripts of Government records to 1690, includes earliest references to roads.

H.C. Wilkinson, Adventurers of Bermuda ; Bermuda in the Old Empire; Bermuda from Sail to Steam (1958, 1950, 1973).
Overviews of Bermudian history to 1900.

Government Records

Records of the Legislature

Acts, 1690 - 1990. The legislative authority for Bermuda's road works.

Journals of House of Assembly, 1690 - 1990.
House of Assembly Debates, 1877 - 1934.
Includes references to roadworks prior to passage of legislation;
appendices contain reports and petitions relating to roadworks.

Sessional Papers of House of Assembly, circa 1750 - 1950.
Includes 19th century roadwork and accounts submitted to House for approval.

Records of the Colonial Secretariat

Blue Books, 1822 - 1950.
Annual Government statistics, including summaries of roadworks expenditure.

Report of the Tribe Roads Commission, 1915.
History and status of tribe roads, found in p.acc.62.

Records of the Department of Public Works

Papers of the Commissioner of Roads, Western District, 1820s.
Held in Astwood - Watson papers, p.acc. 218.

Minutes of the Road Commissioners, 1862 - 1874.

Colonial Surveyor's Letter Books, 1887 - 1914.
Includes references to roadworks; permission must be sought to use individual volumes, as some are fragile.

Records of the Department of Public Works (continued)

Public Works Administrative Files, circa 1885 - 1925.
Includes files on roadworks, military roads, and acquisition of land for roads. Subsequent administrative files are held at the Ministry of Works and Engineering.

Annual Reports, 1884 - 1981.
Includes detailed summaries of work done on roads.

Maps and Plans, circa 1750 - 1950.
Includes 18th and early 19th century versions of Norwood's 1663 survey of Bermuda; 18th and early 19th century property surveys; 1870's plan of Somerset; 1899 and 1964 Ordnance surveys; an miscellaneous plans of roads (mainly 20th century). Drawer lists available.

Records of the Department of Planning

Annual Reports and Development Plans, 1965 - 1994.
Documentation of Government's growing role in monitoring the physical appearance of Bermuda.

Records of the Department of Tourism

Minutes of the Trade Development Board, 1913 - 1968 (many gaps).
May contain references to interest in appearance of roads for tourist promotional purposes.

Annual Reports, 1926 - 1985.
Indications of aesthetic values for tourist promotion. Early promotional literature of the Trade Development Board is held in the Gray Robinson (p.acc. 93) and Lenk collections.

Records of the Department of Agriculture

Annual Reports, 1898 - .
Includes detailed descriptions of roadworks done on Department of Agriculture properties and parks.

Records of the Private Sector

Records of the Anglican Church

Records of Parish Vestries, circa 1650 - .
Documents local maintenance of roads until Government assumed sole responsibility. Information summarized in A.C.H. Hallet, Chronicle of a Colonial Church (and also in the 1915 Tribe Roads Commission Report). Access by catalogue.

Municipal Records

Corporation of Hamilton Minute Books, 1793 - .
Corporation of St. George's Minute Books, 1797 - .
Documentation of municipalities' attempts to control maintenance and appearance of their roadways.

Private Accessions

Pembroke Arbour Society papers, 1919 - 1947.
Sandys Arbour Society papers, 1949 - .
Private groups concerned with physical appearance of their parishes, including roadways. Other miscellaneous references to roads in private accessions are available on index cards.

Tourist Guidebooks

The following publications include road-trip guides and pictures of roads:

The Bermuda Pocket Almanack, 1842 - 1927.
Euphemia Bell, *Beautiful Bermuda, 1902 - 1946.*
John Bushell, *Bushell's Handbook , 1899 - 1939.*

W.E.S. Zuill, *Bermuda Journey , 1946* (consists primarily of historical anecdote).

Furness-Withy tourist promotional brochures of the 1920's and 1930s, held in the Lenk collection, also document appearance of roadways desirable for tourism, as does R.J. Williams, *Bermudiana , 1936.*

Photographs

The photographs of Nicholas Ethelbert Lusher, produced at the end of the 19th century for the tourist market, were used to accompany guidebooks and feature roads prominently.

Tourist albums of the late 19th and early 20th centuries, including the Coit, Gruger, Plimpton and Wickwire albums, show Bermuda's roads from a visitor's perspective. For the Coit and Plimpton albums, contacts should be used for reference.

Albums of postcards also show many views of roads, intended for a tourist market.

The Dunscombe collection of photographs includes random views of Bermuda from *circa* 1890 - 1940.

The photographs of Fred Hamilton, produced during the 1930s through to the 1950s, provide extensive image sequences of early 20th century roads in Bermuda from a visitor's perspective.

Appendix 3: Survey Response Form (60 Image Group) Showing Individual Respondent Attractiveness Scores

The UNIVERSITY OF MANITOBA
Winnipeg, MB, Canada R3T 2N2

FACULTY OF ARCHITECTURE
Department of Landscape Architecture
201 Russell Building

advisors: C. T. Thomsen, Professor & Department Head
M. Scatliff, Scatliff & Associates
C. Nelson, Professor and Committee Chair
B. Sinclair, CADLAB Director

Feb 6, 1995

Dear Respondent:

Re: Research Study of Bermuda Roads

Many people are interested in the kind of places they spend time in, and have developed their own opinions and beliefs about the qualities of those places. As you know, the scenic quality of our island ultimately affects the livelihood and future of each of us, through its impact on tourism. It would seem that by learning more about the phenomena of scenic quality in Bermuda we will be in a better position to safeguard and ensure its proper management for generations to come.

As a graduate student in landscape architecture, I am interested in recording the perceptions and views that Bermudians and visitors have about the character of the island, and in particular the island's road scenes. In contacting you, it is my hope that you would be willing to help answer some of my questions.

You are under no obligation to participate and have the right to refuse to complete this survey. However, I believe that you have important and valuable insights to offer that will enrich this investigation of scenic quality in Bermuda, and so I hold out the hope that you will be willing to fill out the enclosed forms. All survey responses will be held in the strictest of confidence and anonymity; under no circumstances will your name be reported along with your responses, so please feel free to answer all questions truthfully and candidly.

This survey is created for independent research work made possible in part by funding from the Canadian Bureau of International Education, and will be included in a report released in October 1995. Please indicate in the respondent information portion of the questionnaire if you would like a summarized copy of the findings. You're also welcome to keep the specially designed Bermuda Road Research souvenir, as a small token of my appreciation for your commitment, time and effort.

In concluding, please feel free to contact me with additional comments, questions or advice about this survey or my research project in general.

Looking forward to hearing from you,

Danny Simmons, Graduate Studies,
Dept. of Landscape Architecture,
UNIVERSITY OF MANITOBA

tel: (204) 275-8544 overseas
(809) 236-1664 local
email: dsimmon@ccu.umanitoba.ca

INSTRUCTIONS

Dear Respondent:

This questionaire kit contains 4 SEPERATE ITEMS. Please ensure that your kit is complete, and obtain a replacement if items are missing.

The complete kit includes:

(1) a small photo album marked "Bermuda Images"
(2) an instruction sheet (this document)
(3) a score sheet and respondent data form
(4) a questionaire pen

If you choose to complete this survey in stages, the following instructions are recommended:

- Please read though and follow enclosed instructions carefully, answereing the entire questionnaire truthfully.

- Please work on the survey in a quiet, well-lit area

- Please work alone; the responses should reflect your OWN opinions, not those of someone else - if friends wish to respond, send them to obtain their own questionnaire; I'd love to have their responses as well !

PLEASE NOTE

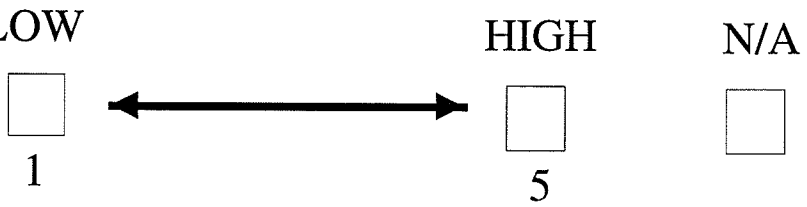
This survey has an estimated completion time of 10 - 30 minutes.

THANK-YOU AGAIN FOR YOUR COMMITTMENT AND TIME !!!

INSTRUCTIONS

This photo album contains 60 black and white images representing scenes taken in Bermuda.

Using the SCORE SHEET provided, please RATE EACH IMAGE for 'degree of attractiveness' on a scale of 1 to 5, where:



lowest level of attractiveness

highest level of attractiveness

Feel free to select the "N/A" box if the question is "not applicable". You may also include comments at any time.

PLEASE NOTE

This survey has an estimated completion time of 10 - 30 minutes.

THANK-YOU AGAIN FOR YOUR COMMITTMENT AND TIME !!!

BERMUDA ROADS SCORE SHEET

IMAGE NUMBER 1	r = 48	COMMENTS:
LOW ◄——► HIGH	N/A	
4 13 18 11 2	0	
1 2 3 4 5		

IMAGE NUMBER 2	r = 46	COMMENTS:
LOW ◄——► HIGH	N/A	
13 8 14 7 4	0	
1 2 3 4 5		

IMAGE NUMBER 3	r = 47	COMMENTS:
LOW ◄——► HIGH	N/A	
2 14 21 7 3	0	
1 2 3 4 5		

IMAGE NUMBER 4	r = 47	COMMENTS:
LOW ◄——► HIGH	N/A	
5 12 13 9 7	1	
1 2 3 4 5		

IMAGE NUMBER 5	r = 48	COMMENTS:
LOW ◄——► HIGH	N/A	
12 13 11 11 0	1	
1 2 3 4 5		

IMAGE NUMBER 6	r = 49	COMMENTS:
LOW ◄——► HIGH	N/A	
1 4 10 13 21	0	
1 2 3 4 5		

IMAGE NUMBER 7	r = 50	COMMENTS:
LOW ◄——► HIGH	N/A	
4 7 15 19 4	1	
1 2 3 4 5		

IMAGE NUMBER 8	r = 48	COMMENTS:
LOW ◄——► HIGH	N/A	
1 14 15 15 3	0	
1 2 3 4 5		

IMAGE NUMBER 9	r = 49	COMMENTS:
LOW ◄——► HIGH	N/A	
3 12 20 12 2	0	
1 2 3 4 5		

IMAGE NUMBER 10	r = 49	COMMENTS:
LOW ◄——► HIGH	N/A	
1 9 22 9 7	1	
1 2 3 4 5		

IMAGE NUMBER 11	r = 48	COMMENTS:
LOW ◄——► HIGH	N/A	
1 7 15 15 10	0	
1 2 3 4 5		

IMAGE NUMBER 12	r = 48	COMMENTS:
LOW ◄——► HIGH	N/A	
3 9 19 11 6	0	
1 2 3 4 5		

IMAGES 1- 12

BERMUDA ROADS SCORE SHEET

IMAGE NUMBER 13 r = 49 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
5	7	15	16	5	1

IMAGE NUMBER 14 r = 50 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
3	6	17	16	8	0

IMAGE NUMBER 15 r = 50 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
1	1	7	15	26	0

IMAGE NUMBER 16 r = 49 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
1	2	13	16	17	0

IMAGE NUMBER 17 r = 50 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
14	10	15	7	2	2

IMAGE NUMBER 18 r = 50 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
9	16	14	8	1	2

IMAGE NUMBER 19 r = 50 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
14	12	8	10	4	2

IMAGE NUMBER 20 r = 52 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
1	3	6	16	24	2

IMAGE NUMBER 21 r = 50 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
2	20	13	6	9	0

IMAGE NUMBER 22 r = 49 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
2	4	12	15	16	0

IMAGE NUMBER 23 r = 48 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
0	4	10	15	19	0

IMAGE NUMBER 24 r = 50 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
2	3	15	19	11	0

IMAGES 13 - 24

BERMUDA ROADS SCORE SHEET

IMAGE NUMBER 25 r = 50 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
8	11	15	7	8	1

IMAGE NUMBER 26 r = 50 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
8	9	17	6	9	1

IMAGE NUMBER 27 r = 49 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
1	10	17	13	7	1

IMAGE NUMBER 28 r = 49 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
7	14	14	8	5	1

IMAGE NUMBER 29 r = 50 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
23	12	6	3	3	3

IMAGE NUMBER 30 r = 50 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
11	12	12	10	3	2

IMAGE NUMBER 31 r = 50 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
0	8	14	14	13	1

IMAGE NUMBER 32 r = 52 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
3	7	4	13	24	1

IMAGE NUMBER 33 r = 48 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
2	2	6	13	25	0

IMAGE NUMBER 34 r = 49 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
0	2	5	12	30	0

IMAGE NUMBER 35 r = 47 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
13	14	11	6	2	1

IMAGE NUMBER 36 r = 49 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
3	6	22	8	9	1

IMAGES 25 - 36

BERMUDA ROADS SCORE SHEET

IMAGE NUMBER 37	r = 46	COMMENTS:
LOW ◄——► HIGH	N/A	
2 11 18 12 2	2	
1 2 3 4 5		

IMAGE NUMBER 38	r = 48	COMMENTS:
LOW ◄——► HIGH	N/A	
0 2 10 15 20	1	
1 2 3 4 5		

IMAGE NUMBER 39	r = 48	COMMENTS:
LOW ◄——► HIGH	N/A	
10 9 14 7 7	1	
1 2 3 4 5		

IMAGE NUMBER 40	r = 47	COMMENTS:
LOW ◄——► HIGH	N/A	
1 10 17 14 5	1	
1 2 3 4 5		

IMAGE NUMBER 41	r = 50	COMMENTS:
LOW ◄——► HIGH	N/A	
2 7 15 15 9	2	
1 2 3 4 5		

IMAGE NUMBER 42	r = 48	COMMENTS:
LOW ◄——► HIGH	N/A	
10 7 16 10 2	3	
1 2 3 4 5		

IMAGE NUMBER 43	r = 48	COMMENTS:
LOW ◄——► HIGH	N/A	
2 8 23 8 6	1	
1 2 3 4 5		

IMAGE NUMBER 44	r = 48	COMMENTS:
LOW ◄——► HIGH	N/A	
3 5 12 11 9	1	
1 2 3 4 5		

IMAGE NUMBER 45	r = 46	COMMENTS:
LOW ◄——► HIGH	N/A	
14 13 10 3 5	1	
1 2 3 4 5		

IMAGE NUMBER 46	r = 47	COMMENTS:
LOW ◄——► HIGH	N/A	
7 9 18 7 5	1	
1 2 3 4 5		

IMAGE NUMBER 47	r = 47	COMMENTS:
LOW ◄——► HIGH	N/A	
0 2 10 11 23	1	
1 2 3 4 5		

IMAGE NUMBER 48	r = 46	COMMENTS:
LOW ◄——► HIGH	N/A	
4 8 4 12 18	0	
1 2 3 4 5		

IMAGES 37 - 48

BERMUDA ROADS SCORE SHEET

IMAGE NUMBER 49 r = 46 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
2	5	7	19	13	0

IMAGE NUMBER 50 r = 48 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
1	5	15	16	10	1

IMAGE NUMBER 51 r = 47 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
1	6	17	15	7	1

IMAGE NUMBER 52 r = 47 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
0	2	10	15	19	1

IMAGE NUMBER 53 r = 47 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
1	4	3	13	26	0

IMAGE NUMBER 54 r = 47 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
0	12	15	13	6	1

IMAGE NUMBER 55 r = 50 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
0	3	11	16	18	2

IMAGE NUMBER 56 r = 47 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
0	2	12	19	14	0

IMAGE NUMBER 57 r = 49 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
2	1	12	8	26	0

IMAGE NUMBER 58 r = 47 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
1	6	6	19	15	0

IMAGE NUMBER 59 r = 48 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
4	2	20	13	9	0

IMAGE NUMBER 60 r = 48 COMMENTS:

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
6	19	8	11	4	0

IMAGES 49 - 60

RESPONDENT INFORMATION

The following statistical information will allow me to give your comments maximum benefit and value. RESPECT and CONFIDENTIALITY concerning your responses is absolutely assured.

However, if for some reason you are offended or uncomfortable in answering a question, please refrain from answering and feel free to skip to the next question.

AGE

respondents = 54

under 20	20 - 29	30 - 39	40 - 49	50 - 59
2	12	10	9	4

60 - 69	70 - 79	80 - 89	90 and over	no reply
0	4	2	1	10

GENDER

respondents = 54

male	female	no reply
23	25	6

STATUS

respondents = 54

resident	visitor	no reply
44	1	9

ECONOMIC GROUP

respondents = 54

lower	middle	upper	no reply
5	35	2	12

ETHNIC GROUP

respondents = 54

Black	White	Other (please specify):	no reply
30	10	6	8

COUNTRY OF BIRTH respondents = 54

Bermuda	other	no reply
27	11	16

PARISH / COUNTRY OF RESIDENCE respondents = 54

central	non- central	no reply
16	20	17

OCCUPATION / FIELD OF STUDY respondents = 54

design/ resource	other	no reply
7	28	19

student	6
non-students	29
no reply	19

respondents = 54

OPEN ENDED RESPONSES

Please include additional comments concerning this survey
in particular or the topic of scenic quality of Bermuda's roads:

replied	25
no reply	29

THANK YOU ! ! !

I am confident that your responses will contribute greatly to
a better understanding of Bermuda's heritage resources.
Please let me know if you would like to receive a summarized copy
of the survey results when they are available in October 1995.

SEND SUMMARIZED RESULTS ? ☐ Yes ☐ No

RETURN ADDRESS:

_____

_____

_____

Also, please feel free to contact me or my advisors at any time if you
have additional questions, comments or advice concerning this survey or
the research topic in general.

Yours Sincerely,

(Danny Simmons)

Appendix 4: Survey Response Form (8 Image Group) Showing Individual Respondent Attractiveness Scores

The UNIVERSITY OF MANITOBA
Winnipeg, MB, Canada R3T 2N2

advisors: C. T. Thomsen, Professor & Department Head
M. Scatliff, Scatliff & Associates
C. Nelson, Professor & Committee Chair
B. Sinclair, CADLAB Director

FACULTY OF ARCHITECTURE
Department of Landscape Architecture
201 Russell Building
tel: (204) 474 - 9286 fax: (204) 275 - 7198

Dear _____

Re: Research Study of Bermuda Roads

Many people are interested in the kind of places they spend time in, and have developed their own opinions and beliefs about the qualities of those places. As you know, the scenic quality of our island ultimately affects the livelihood and future of each of us, through its impact on tourism. It would seem that by learning more about the phenomena of scenic quality in Bermuda we will be in a better position to safeguard and ensure its proper management for generations to come.

As a graduate student in landscape architecture, I am interested in recording the perceptions and views that Bermudians and visitors have about the character of the island, and in particular the island's road scenes. As a design / land resource professional, you are one of a small group of people I have contacted who represent important segments of Bermudian society, and it is my hope that you would be willing to help answer some of my questions.

You are under no obligation to participate and have the right to refuse to complete this survey. However, I believe that you have important and valuable insights to offer that will enrich this investigation of scenic quality in Bermuda, and so I hold out the hope that you will be willing to fill out the enclosed forms. All survey responses will be held in the strictest of confidence and anonymity; under no circumstances will your name be reported along with your responses, so please feel free to answer all questions truthfully and candidly.

This survey is created for independent research work made possible in part by funding from the Canadian Bureau of International Education, and will be included in a report released in October 1995. Please indicate in the respondent information portion of the questionnaire if you would like a summarized copy of the findings. You're also welcome to keep the specially designed Bermuda Roads Research souvenir, as a small token of my appreciation for your commitment, time and effort.

In concluding, please feel free to contact me with additional comments, questions or advice about this survey or my research project in general.

Looking forward to hearing from you,

Danny Simmons, Graduate Studies,
Dept. of Landscape Architecture,
UNIVERSITY OF MANITOBA

tel: (204) 275-8544 overseas
(809) 236-1664 local
email: dsimmon@ccu.umanitoba.ca

INSTRUCTIONS

Dear Respondent:

This questionaire kit contains 4 SEPERATE ITEMS. Please ensure that your kit is complete, and obtain a replacement if items are missing.

The complete kit includes:

(1) a small photo album marked "Bermuda Images"
(2) an instruction sheet (this document)
(3) a score sheet and respondent data form
(4) a questionaire pen

If you choose to complete this survey in stages, the following instructions are recommended:

- Please read though and follow enclosed instructions carefully, answering the entire questionnaire truthfully.

- Please work on the survey in a quiet, well-lit area.

- Please work alone; the responses should reflect your OWN opinions, not those of someone else - if friends wish to respond, send them to obtain their own questionnaire; I'd love to have their responses as well !

PLEASE NOTE

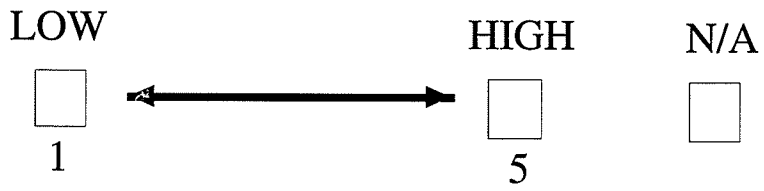
This survey has an estimated completion time of 1 hour.

THANK-YOU AGAIN FOR YOUR COMMITTMENT AND TIME !!!

INSTRUCTIONS

This photo album contains 8 black and white images representing scenes taken in Bermuda.

Using the SCORE SHEET and questions provided, please RATE EACH IMAGE USING THE SCALE INDICATED, e.g.:



lowest degree of response

highest degree of response

Feel free to select the "N/A" box if the question is "not applicable". You may also include comments at any time.

PLEASE NOTE

This survey has an estimated completion time of 1 hour.

THANK-YOU AGAIN FOR YOUR COMMITTMENT AND TIME !!!

BERMUDA ROADS SCORE SHEET

LEVEL OF FAMILIARITY **IMAGE NUMBER 1**

(1) Please indicate how often you pass through or visit the scene shown:

VERY INFREQUENTLY ⟷ VERY FREQUENTLY

1	2	3	4	5
0	1	1	2	2

respondents = 6

HISTORIC VALUE (QUESTIONS 2 - 5)

On a scale of 1 - 5, please check the box which best indicates the following:

(2) Degree to which scene illustrates an important theme in Bermudian history ?

respondents = 6

LOW ⟷ HIGH

1	2	3	4	5	N/A
1	2	1	2	0	0

COMMENTS: "fire station in West End well staffed"

(3) Degree to which scene is associated with an important person / event in Bermudian history ?

respondents = 6

LOW ⟷ HIGH

1	2	3	4	5	N/A
2	0	1	0	1	2

COMMENTS:

(4) Degree to which scene illustrates an important phase in the development of Bermuda ?

respondents = 6

LOW ⟷ HIGH

1	2	3	4	5	N/A
0	0	2	1	3	0

COMMENTS:

ARCHITECTURAL ASSOCIATION (QUESTIONS 6 - 8)

On a scale of 1 - 5, please check the box which best indicates the following:

(6) Overall visual quality of the scene ?

respondents = 6

POOR ⟷ EXCELLENT

1	2	3	4	5	N/A
1	0	3	1	1	0

COMMENTS:

(7) Overall functional quality of the road ?

respondents = 6

POOR ⟷ EXCELLENT

1	2	3	4	5	N/A
0	0	0	1	5	0

COMMENTS:

(8) Overall quality of road workmanship ?

respondents = 6

POOR ⟷ EXCELLENT

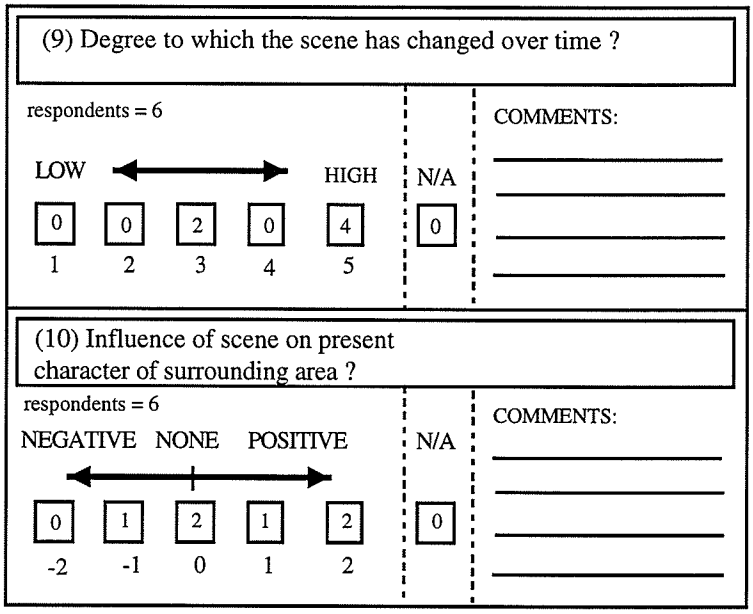
1	2	3	4	5	N/A
0	0	0	1	5	0

COMMENTS:

BERMUDA ROADS SCORE SHEET

ENVIRONMENTAL IMPACT (QUESTIONS 9 - 10)

On the scales below, please check the box which best indicates the following:



BERMUDA ROADS SCORE SHEET

LEVEL OF FAMILIARITY **IMAGE NUMBER 2**

(1) Please indicate how often you pass through or visit the scene shown:

VERY INFREQUENTLY ◄——► VERY FREQUENTLY

1	2	3	4	5
1	2	3	0	0

respondents = 6

HISTORIC VALUE (QUESTIONS 2 - 5)

On a scale of 1 - 5, please check the box which best indicates the following:

(2) Degree to which scene illustrates an important theme in Bermudian history ?

respondents = 6

LOW ◄——► HIGH

1	2	3	4	5	N/A
1	1	4	0	0	0

COMMENTS:

(3) Degree to which scene is associated with an important person / event in Bermudian history ?

respondents = 6

LOW ◄——► HIGH

1	2	3	4	5	N/A
3	1	1	0	0	1

COMMENTS:

(4) Degree to which scene illustrates an important phase in the development of Bermuda ?

respondents = 6

LOW ◄——► HIGH

1	2	3	4	5	N/A
1	1	3	0	0	1

COMMENTS:

ARCHITECTURAL ASSOCIATION (QUESTIONS 6 - 8)

On a scale of 1 - 5, please check the box which best indicates the following:

(6) Overall visual quality of the scene ?

respondents = 6

POOR ◄——► EXCELLENT

1	2	3	4	5	N/A
0	1	0	3	2	0

COMMENTS:

(7) Overall functional quality of the road ?

respondents = 6

POOR ◄——► EXCELLENT

1	2	3	4	5	N/A
0	1	3	1	0	1

COMMENTS:

(8) Overall quality of road workmanship ?

respondents = 6

POOR ◄——► EXCELLENT

1	2	3	4	5	N/A
0	1	5	0	0	0

COMMENTS:

BERMUDA ROADS SCORE SHEET

ENVIRONMENTAL IMPACT (QUESTIONS 9 - 10)

On the scales below, please check the box which best indicates the following:

(9) Degree to which the scene has changed over time ?

respondents = 6

LOW ← → HIGH

2	3	1	0	0
1	2	3	4	5

N/A: 0

COMMENTS:

(10) Influence of scene on present character of surrounding area ?

respondents = 6

NEGATIVE NONE POSITIVE

0	1	3	0	1
-2	-1	0	1	2

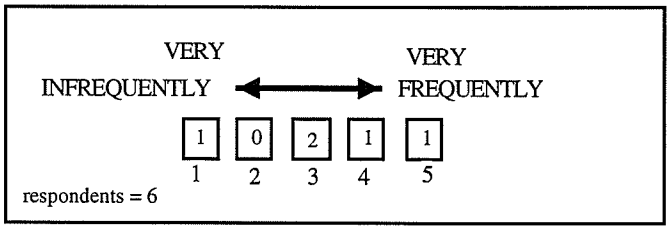
N/A: 0

COMMENTS:

BERMUDA ROADS SCORE SHEET

LEVEL OF FAMILIARITY **IMAGE NUMBER 3**

(1) Please indicate how often you pass through or visit the scene shown:



HISTORIC VALUE (QUESTIONS 2 - 5)

On a scale of 1 - 5, please check the box which best indicates the following:

(2) Degree to which scene illustrates an important theme in Bermudian history ?

respondents = 6

LOW ◄——► HIGH N/A COMMENTS:

1	2	3	4	5	N/A
0	0	1	2	2	1

(3) Degree to which scene is associated with an important person / event in Bermudian history ?

respondents = 6

LOW ◄——► HIGH N/A COMMENTS:

1	2	3	4	5	N/A
1	0	1	1	1	2

(4) Degree to which scene illustrates an important phase in the development of Bermuda ?

respondents = 6

LOW ◄——► HIGH N/A COMMENTS:

1	2	3	4	5	N/A
1	0	1	3	0	1

ARCHITECTURAL ASSOCIATION (QUESTIONS 6 - 8)

On a scale of 1 - 5, please check the box which best indicates the following:

(6) Overall visual quality of the scene ?

respondents = 6

POOR ◄——► EXCELLENT N/A COMMENTS:

1	2	3	4	5	N/A
0	1	2	2	0	1

(7) Overall functional quality of the road ?

respondents = 6

POOR ◄——► EXCELLENT N/A COMMENTS:

1	2	3	4	5	N/A
0	1	1	2	1	1

(8) Overall quality of road workmanship ?

respondents = 6

POOR ◄——► EXCELLENT N/A COMMENTS:

1	2	3	4	5	N/A
0	1	2	1	1	1

BERMUDA ROADS SCORE SHEET

ENVIRONMENTAL IMPACT (QUESTIONS 9 - 10)

On the scales below, please check the box which best indicates the following:

(9) Degree to which the scene has changed over time ?

respondents = 6

LOW ← → HIGH

1	2	3	4	5	N/A
1	0	3	1	0	1

COMMENTS:

(10) Influence of scene on present character of surrounding area ?

respondents = 6

NEGATIVE NONE POSITIVE

-2	-1	0	1	2	N/A
0	1	2	1	1	1

COMMENTS:

BERMUDA ROADS SCORE SHEET

LEVEL OF FAMILIARITY **IMAGE NUMBER 4**

(1) Please indicate how often you pass through or visit the scene shown:

VERY INFREQUENTLY ⟷ VERY FREQUENTLY

1	2	3	4	5
2	2	2	0	0

respondents = 6

HISTORIC VALUE (QUESTIONS 2 - 5)

On a scale of 1 - 5, please check the box which best indicates the following:

(2) Degree to which scene illustrates an important theme in Bermudian history ?

respondents = 6

LOW ⟷ HIGH

1	2	3	4	5	N/A
3	0	1	1	0	1

COMMENTS:

(3) Degree to which scene is associated with an important person / event in Bermudian history ?

respondents = 6

LOW ⟷ HIGH

1	2	3	4	5	N/A
5	0	0	0	0	1

COMMENTS:

(4) Degree to which scene illustrates an important phase in the development of Bermuda ?

respondents = 6

LOW ⟷ HIGH

1	2	3	4	5	N/A
3	1	1	0	0	1

COMMENTS:

ARCHITECTURAL ASSOCIATION (QUESTIONS 6 - 8)

On a scale of 1 - 5, please check the box which best indicates the following:

(6) Overall visual quality of the scene ?

respondents = 6

POOR ⟷ EXCELLENT

1	2	3	4	5	N/A
0	0	3	2	1	0

COMMENTS:

(7) Overall functional quality of the road ?

respondents = 6

POOR ⟷ EXCELLENT

1	2	3	4	5	N/A
0	0	2	1	2	1

COMMENTS:

(8) Overall quality of road workmanship ?

respondents = 6

POOR ⟷ EXCELLENT

1	2	3	4	5	N/A
0	0	3	1	2	0

COMMENTS:

BERMUDA ROADS SCORE SHEET

ENVIRONMENTAL IMPACT (QUESTIONS 9 - 10)

On the scales below, please check the box which best indicates the following:

(9) Degree to which the scene has changed over time ?

respondents = 6

LOW ← → HIGH

1	2	3	4	5	N/A
0	2	3	0	0	1

COMMENTS:

(10) Influence of scene on present character of surrounding area ?

respondents = 6

NEGATIVE NONE POSITIVE

-2	-1	0	1	2	N/A
0	0	2	3	0	1

COMMENTS:

BERMUDA ROADS SCORE SHEET

LEVEL OF FAMILIARITY **IMAGE NUMBER 5**

(1) Please indicate how often you pass through or visit the scene shown:

VERY INFREQUENTLY ◄——► VERY FREQUENTLY

1	2	3	4	5
2	1	1	1	1

respondents = 6

HISTORIC VALUE (QUESTIONS 2 - 5)

On a scale of 1 - 5, please check the box which best indicates the following:

(2) Degree to which scene illustrates an important theme in Bermudian history ?

respondents = 6

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
1	2	1	0	1	1

COMMENTS:

(3) Degree to which scene is associated with an important person / event in Bermudian history ?

respondents = 6

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
3	2	0	0	0	1

COMMENTS:

(4) Degree to which scene illustrates an important phase in the development of Bermuda ?

respondents = 6

LOW ◄——► HIGH N/A

1	2	3	4	5	N/A
1	1	2	0	1	1

COMMENTS:

ARCHITECTURAL ASSOCIATION (QUESTIONS 6 - 8)

On a scale of 1 - 5, please check the box which best indicates the following:

(6) Overall visual quality of the scene ?

respondents = 6

POOR ◄——► EXCELLENT N/A

1	2	3	4	5	N/A
0	0	1	2	3	0

COMMENTS:

(7) Overall functional quality of the road ?

respondents = 6

POOR ◄——► EXCELLENT N/A

1	2	3	4	5	N/A
2	2	0	2	0	0

COMMENTS:

(8) Overall quality of road workmanship ?

respondents = 6

POOR ◄——► EXCELLENT N/A

1	2	3	4	5	N/A
1	1	3	0	1	0

COMMENTS:

BERMUDA ROADS SCORE SHEET

ENVIRONMENTAL IMPACT (QUESTIONS 9 - 10)

On the scales below, please check the box which best indicates the following:

(9) Degree to which the scene has changed over time ?

respondents = 6

LOW ← → HIGH

1	2	3	4	5	N/A
1	3	0	0	0	2

COMMENTS:

(10) Influence of scene on present character of surrounding area ?

respondents = 6

NEGATIVE NONE POSITIVE

-2	-1	0	1	2	N/A
0	0	1	0	4	1

COMMENTS:

BERMUDA ROADS SCORE SHEET

LEVEL OF FAMILIARITY **IMAGE NUMBER 6**

(1) Please indicate how often you pass through or visit the scene shown:

VERY INFREQUENTLY ← → VERY FREQUENTLY					
	2	2	2	0	0
	1	2	3	4	5

respondents = 6

HISTORIC VALUE (QUESTIONS 2 - 5)

On a scale of 1 - 5, please check the box which best indicates the following:

(2) Degree to which scene illustrates an important theme in Bermudian history ?

respondents = 6

LOW ← → HIGH					N/A
0	1	1	1	2	1
1	2	3	4	5	

COMMENTS:

(3) Degree to which scene is associated with an important person / event in Bermudian history ?

respondents = 6

LOW ← → HIGH					N/A
1	2	2	0	0	1
1	2	3	4	5	

COMMENTS:

(4) Degree to which scene illustrates an important phase in the development of Bermuda ?

respondents = 6

LOW ← → HIGH					N/A
2	2	1	0	0	1
1	2	3	4	5	

COMMENTS:

ARCHITECTURAL ASSOCIATION (QUESTIONS 6 - 8)

On a scale of 1 - 5, please check the box which best indicates the following:

(6) Overall visual quality of the scene ?

respondents = 6

POOR ← → EXCELLENT					N/A
0	0	1	3	2	0
1	2	3	4	5	

COMMENTS:

(7) Overall functional quality of the road ?

respondents = 6

POOR ← → EXCELLENT					N/A
1	2	1	0	1	1
1	2	3	4	5	

COMMENTS:

(8) Overall quality of road workmanship ?

respondents = 6

POOR ← → EXCELLENT					N/A
1	2	2	1	0	0
1	2	3	4	5	

COMMENTS:

BERMUDA ROADS SCORE SHEET

ENVIRONMENTAL IMPACT (QUESTIONS 9 - 10)

On the scales below, please check the box which best indicates the following:

(9) Degree to which the scene has changed over time ?

respondents = 6

LOW ← → HIGH

1	2	3	4	5	N/A
1	3	1	0	0	1

COMMENTS: _____

(10) Influence of scene on present character of surrounding area ?

respondents = 6

NEGATIVE NONE POSITIVE

-2	-1	0	1	2	N/A
0	0	3	0	2	1

COMMENTS: _____

BERMUDA ROADS SCORE SHEET

LEVEL OF FAMILIARITY **IMAGE NUMBER 7**

(1) Please indicate how often you pass through or visit the scene shown:

VERY INFREQUENTLY ⟷ VERY FREQUENTLY

0	1	2	1	2
1	2	3	4	5

respondents = 6

HISTORIC VALUE (QUESTIONS 2 - 5)

On a scale of 1 - 5, please check the box which best indicates the following:

(2) Degree to which scene illustrates an important theme in Bermudian history ?

respondents = 6

LOW ⟷ HIGH N/A

2	2	0	1	0	1
1	2	3	4	5	

COMMENTS:

(3) Degree to which scene is associated with an important person / event in Bermudian history ?

respondents = 6

LOW ⟷ HIGH N/A

3	2	0	0	0	1
1	2	3	4	5	

COMMENTS:

(4) Degree to which scene illustrates an important phase in the development of Bermuda ?

respondents = 6

LOW ⟷ HIGH N/A

0	1	1	2	1	1
1	2	3	4	5	

COMMENTS:

ARCHITECTURAL ASSOCIATION (QUESTIONS 6 - 8)

On a scale of 1 - 5, please check the box which best indicates the following:

(6) Overall visual quality of the scene ?

respondents = 6

POOR ⟷ EXCELLENT N/A

0	0	3	2	0	1
1	2	3	4	5	

COMMENTS:

(7) Overall functional quality of the road ?

respondents = 6

POOR ⟷ EXCELLENT N/A

0	0	0	2	3	1
1	2	3	4	5	

COMMENTS:

(8) Overall quality of road workmanship ?

respondents = 6

POOR ⟷ EXCELLENT N/A

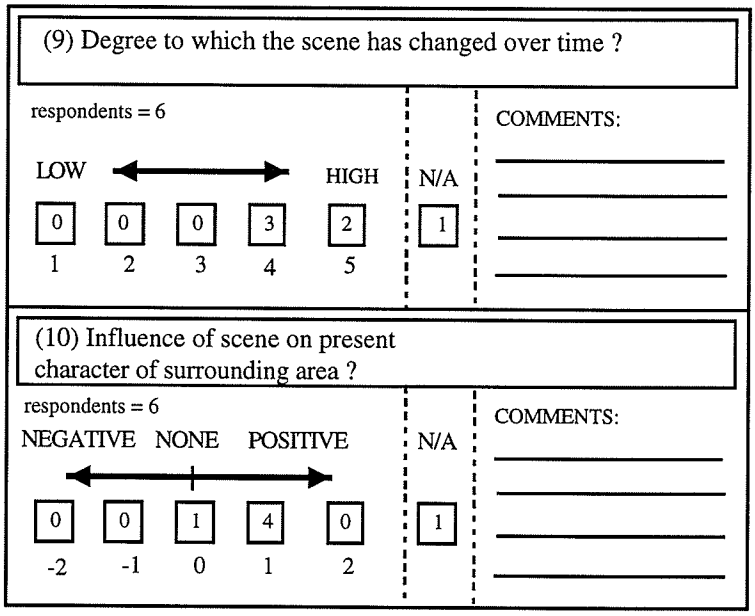
0	0	0	2	3	1
1	2	3	4	5	

COMMENTS:

BERMUDA ROADS SCORE SHEET

ENVIRONMENTAL IMPACT (QUESTIONS 9 - 10)

On the scales below, please check the box which best indicates the following:



BERMUDA ROADS SCORE SHEET

LEVEL OF FAMILIARITY **IMAGE NUMBER 8**

(1) Please indicate how often you pass through or visit the scene shown:

VERY INFREQUENTLY ⟷ VERY FREQUENTLY

1	2	3	4	5
1	3	1	0	1

respondents = 6

HISTORIC VALUE (QUESTIONS 2 - 5)

On a scale of 1 - 5, please check the box which best indicates the following:

(2) Degree to which scene illustrates an important theme in Bermudian history ?

respondents = 6

LOW ⟷ HIGH

1	2	3	4	5	N/A
0	3	2	0	1	0

COMMENTS:

(3) Degree to which scene is associated with an important person / event in Bermudian history ?

respondents = 6

LOW ⟷ HIGH

1	2	3	4	5	N/A
1	3	1	0	0	1

COMMENTS:

(4) Degree to which scene illustrates an important phase in the development of Bermuda ?

respondents = 6

LOW ⟷ HIGH

1	2	3	4	5	N/A
0	3	1	1	0	1

COMMENTS:

ARCHITECTURAL ASSOCIATION (QUESTIONS 6 - 8)

On a scale of 1 - 5, please check the box which best indicates the following:

(6) Overall visual quality of the scene ?

respondents = 6

POOR ⟷ EXCELLENT

1	2	3	4	5	N/A
1	2	2	1	0	0

COMMENTS:

(7) Overall functional quality of the road ?

respondents = 6

POOR ⟷ EXCELLENT

1	2	3	4	5	N/A
1	1	4	0	0	0

COMMENTS:

(8) Overall quality of road workmanship ?

respondents = 6

POOR ⟷ EXCELLENT

1	2	3	4	5	N/A
0	4	2	0	0	0

COMMENTS:

BERMUDA ROADS SCORE SHEET

ENVIRONMENTAL IMPACT (QUESTIONS 9 - 10)

On the scales below, please check the box which best indicates the following:

(9) Degree to which the scene has changed over time ?

respondents = 6

LOW ← → HIGH

2	1	0	2	0
1	2	3	4	5

N/A: 1

COMMENTS: _____

(10) Influence of scene on present character of surrounding area ?

respondents = 6

NEGATIVE NONE POSITIVE

0	1	3	0	2
-2	-1	0	1	2

N/A: 0

COMMENTS: _____

RESPONDENT INFORMATION

The following statistical information will allow me to give your comments maximum benefit and value. RESPECT and CONFIDENTIALITY concerning your responses is absolutely assured.

However, if for some reason you are offended or uncomfortable in answering a question, please refrain from answering and feel free to skip to the next question.

AGE

respondents = 6

under 20	20 - 29	30 - 39	40 - 49	50 - 59
1	2	2	0	1

60 - 69	70 - 79	80 - 89	90 and over	no reply
0	0	0	0	0

GENDER

respondents = 6

male	female	no reply
4	2	0

STATUS

respondents = 6

resident	visitor	no reply
6	0	0

ECONOMIC GROUP

respondents = 6

lower	middle	upper	no reply
0	2	1	3

ETHNIC GROUP

respondents = 6

Black	White	Other	no reply
3	2	0	1

(please specify): _____

COUNTRY OF BIRTH respondents = 6

Bermuda	Other	no reply
4	2	0

PARISH / COUNTRY OF RESIDENCE respondents = 6

Central	non - Central	no reply
1	5	0

OCCUPATION / FIELD OF STUDY respondents = 6

Design / Resource	Other	no reply
6	0	0

student	1
non- student	5
no reply	0

OPEN ENDED RESPONSES

Please include additional comments concerning this survey in particular or the topic of scenic quality of Bermuda's roads:

replies	1
no reply	5

THANK YOU ! ! !

I am confident that your responses will contribute greatly to a better understanding of Bermuda's heritage resources. Please let me know if you would like to receive a summarized copy of the survey results when they are available in October 1995.

SEND SUMMARIZED RESULTS ? ☐ Yes ☐ No

RETURN ADDRESS:

_____

_____

_____

Also, please feel free to contact me or my advisors at any time if you have additional questions, comments or advice concerning this survey or the research topic in general.

Yours Sincerely,

(Danny Simmons)

Appendix 5: Raw Data ("General Public" and "Expert" Groups) Showing Individual Respondent Attractiveness Scores

Dataset Description (General Public):

1-to-5 Semantic Scale Scores for "Attractiveness" of 60 Bermuda Scenes.

54 respondents viewed the images and supplied scores for "degree of attractiveness" on a scale of 1 to 5, with 1 being the "lowest level of attractiveness " and 5 being the " highest level of attractiveness ".

General Code	Meaning
N	not applicable; written comment given
n	not applicable; no written comment given
X,XX,x	no response (absent or spoiled value)
F,M	Female, Male
R,V	Resident, Visitor
L,M,U	Lower, Middle, Upper (Economic Group)
B,W,O	Black, White, Other (Ethnic Group)
Y	Reply (Other Comments)

Age Code	Meaning
1	under 20
2	20-29
3	30-39
4	40-49
5	50-59
6	60-69
7	70-79
8	80-89
9	90 and over

Country Code	Meaning
BD	Bermuda
US	United States of America
CD	Canada
UK,EN	United Kingdom, England
CA	Caribbean
PO	Portugal

Parish Code	Meaning
SA	Sandys
SO	Southampton
WA	Warwick
PA	Paget
PE	Pembroke
DE	Devonshire
SM	Smith's
HA	Hamilton Parish
SG	St. George's

Job Code	Meaning
DP	Design Professional (Architecture / Planning)
NP	Non - Design Professional

Individual Respondent Profile Data (General Public):

sample	age	gender	status	Econ-g	Ethn-g	parish	c-code	job	Ed-b	o-com
1	8	F	R	L	O	PE	CA	NP	A	x
2	3	F	R	M	B	PE	BD	NP	A	Y
3	3	M	R	M	B	PE	BD	XX	X	Y
4	2	F	R	M	B	SO	NR	XX	X	Y
5	X	X	X	X	X	NR	NR	XX	X	x
6	3	M	R	M	B	SM	BD	RP	A	x
7	3	F	R	M	B	SM	BD	RP	A	Y
8	7	M	R	M	B	PE	BD	DP	A	x
9	3	F	R	M	B	DE	BD	NP	A	x
10	5	F	R	M	B	PE	BD	XX	X	Y
11	3	M	R	M	B	NR	BD	XX	X	x
12	4	M	R	M	B	SO	BD	NP	A	x
13	2	F	V	M	W	XX	CD	NP	A	x
14	1	F	R	M	W	XX	BD	DP	A	Y
15	3	F	R	M	W	DE	BD	NP	A	x
16	4	M	R	M	W	SO	EN	NP	A	x
17	7	F	R	M	B	WA	BD	XX	X	x
18	7	M	R	M	B	WA	BD	XX	X	Y
19	2	M	R	M	B	PE	BD	NP	S	Y
20	7	F	R	M	X	WA	CD	NP	A	Y
21	5	M	R	M	B	SO	BD	NP	A	Y
22	5	M	R	L	O	WA	PR	NP	A	Y
23	X	X	X	X	X	XX	XX	XX	X	x
24	X	X	X	X	X	XX	XX	XX	X	x
25	2	F	R	M	W	PE	CD	NP	S	x
26	4	F	R	M	W	XX	BD	NP	A	x
27	4	M	X	U	B	XX	XX	XX	X	x
28	X	F	R	X	B	XX	XX	XX	X	x
29	2	M	R	U	B	SM	BD	NP	S	x
30	2	M	R	M	W	SA	BD	RP	A	Y
31	2	F	R	M	B	SG	BD	DP	A	Y
32	X	F	R	M	B	XX	XX	XX	X	x
33	X	X	X	X	X	XX	XX	XX	X	Y
34	9	F	R	L	B	PE	BD	DP	A	Y
35	3	M	R	M	P	DE	CD	NP	A	Y
36	4	M	R	L	B	DE	BD	NP	A	Y
37	X	X	X	X	X	XX	XX	XX	X	x
38	1	F	R	X	B	DE	BD	NP	S	Y
39	2	M	X	M	P	XX	BD	XX	X	x
40	4	M	R	L	B	SG	BD	NP	A	Y
41	4	F	R	X	B	PE	BD	NP	A	x
42	4	F	R	M	W	SO	EN	NP	A	Y
43	2	F	R	M	B	DE	XX	NP	A	x
44	3	M	R	M	B	SM	US	NP	A	Y
45	3	M	R	M	B	WA	BD	NP	A	Y
46	4	F	R	M	W	XX	XX	XX	X	Y
47	X	X	X	X	X	XX	XX	XX	X	x
48	8	M	R	X	B	XX	XX	NP	A	x
49	X	M	R	X	B	XX	XX	XX	X	x
50	2	F	R	M	O	WA	SG	NP	A	Y
51	2	M	R	M	O	WA	EN	NP	S	x
52	5	F	R	M	W	WA	UK	NP	A	Y
53	2	F	R	M	B	DE	BD	NP	S	x
54	X	M	X	X	X	XX	XX	XX	X	x

Dataset Description (Experts):

1-to-5 Semantic Scale Scores For "Historic", "Architectural" and "Environmental" Aspects Of 8 Bermuda Road Scenes.

6 respondents viewed the images and supplied scores for "degree of attractiveness" on a scale of 1 to 5, with 1 being the "lowest level of attractiveness" and 5 being the "highest level of attractiveness".

General Code	Meaning
N	not applicable; written comment given
n	not applicable; no written comment given
X,XX,x	no response (absent or spoiled value)
F,M	Female, Male
R,V	Resident, Visitor
L,M,U	Lower, Middle, Upper (Economic Group)
B,W,O	Black, White, Other (Ethnic Group)
Y	Reply (Other Comments)

Age Code	Meaning
1	under 20
2	20-29
3	30-39
4	40-49
5	50-59
6	60-69
7	70-79
8	80-89
9	90 and over

Country Code	Meaning
BD	Bermuda
US	United States of America
CD	Canada
UK,EN	United Kingdom, England
CA	Caribbean
PO	Portugal

Parish Code	Meaning
SA	Sandys
SO	Southampton
WA	Warwick
PA	Paget
PE	Pembroke
DE	Devonshire
SM	Smith's
HA	Hamilton Parish
SG	St. George's

Job Code	Meaning
DP	Design Professional (Architecture / Planning)
NP	Non - Design Professional

Question Code	Meaning
q1	level of familiarity
q2	important theme in BDA history
q3	association with person/event in BDA history
q4	important phase in development of BDA
q5	overall visual quality
q6	overall functional quality
q7	overall road workmanship
q8	degree of change over time
q9	influence on surrounding area

Image Code	Meaning
1	Middle Rd Port Royal South, 1995
2	Spice Hill Rd East, 1995
3	Middle Rd / Waterlot Hill, 1995
4	Camp Hill / South Shore, 1995
5	Corkscrew Hill, 1990s
6	Wilkinson Avenue / Fractious St.,1980s
7	Middle Rd Scenic Heights West 2, 1995
8	Beacon Hill / Broome Street,_1995

Individual Respondent Profile Data (Experts):

sample	age	gender	status	Econ-g	Ethn-g	parish	c-code	job	Ed-b	o-com
1	3	M	R	M	B	SM	BD	RP	A	x
2	1	F	R	X	B	DE	BD	RP	S	x
3	2	F	R	M	B	SO	BD	DP	A	x
4	3	F	R	X	X	SO	BD	DP	A	Y
5	5	M	R	X	W	SM	NB	DP	A	x
6	2	M	R	U	W	HA	NB	DP	A	x

image number

respondent	p1 <---------- 10 ---------- 20 ---------- 30 ---------- 40 ---------- 50----------> p60
1	3 4 4 4 3 3 3 2 4 3 4 3 3 4 4 3 4 2 5 1 3 3 3 4 5 3 3 4 2 4 3 2 4 4 4 4 3 4 2 2 4 4 5 2 2 3 3 5 4 2 3 4 2 3 4 3 3 2 3 4
2	4 3 2 2 3 4 3 4 3 3 3 4 4 4 4 4 2 2 2 4 3 3 3 4 3 3 3 3 1 2 4 4 4 4 2 3 2 3 2 3 4 2 3 3 2 4 4 5 4 4 4 4 4 3 4 4 4 4 4 2
3	4 1 2 4 2 3 4 5 3 3 3 3 4 4 5 5 3 2 3 5 3 4 4 4 3 3 2 3 5 3 2 4 4 5 1 3 3 3 1 4 4 1 2 4 2 2 5 5 4 4 3 5 4 4 5 5 5 4 4 3
4	2 1 2 N 1 4 1 3 2 3 4 2 2 3 4 4 1 1 1 N 2 2 5 3 2 3 3 1 N 1 2 5 4 5 1 3 1 4 3 3 3 1 3 3 1 1 5 5 2 3 3 3 5 3 4 4 4 4 4 1
5	1 2 2 2 1 4 1 2 2 3 2 3 1 2 4 3 1 1 1 5 2 4 3 4 1 2 4 1 1 1 3 5 5 4 1 3 2 3 1 3 2 1 1 4 1 1 5 2 3 2 2 4 5 3 3 4 5 4 3 1
6	2 1 2 3 1 5 3 4 3 3 4 3 1 3 5 5 1 1 1 5 4 5 5 5 4 1 4 2 1 2 4 5 5 5 1 3 2 4 1 4 4 1 3 3 1 3 4 5 4 4 4 5 4 3 5 4 5 4 3 1
7	3 1 3 3 2 5 4 4 4 3 4 4 4 4 5 4 1 2 2 5 4 5 4 4 3 2 4 3 1 1 2 5 5 4 3 4 3 5 5 2 2 2 3 3 1 4 5 4 5 4 4 4 4 4 4 4 5 5 4 4 4
8	3 5 3 5 X 5 X X 3 5 5 5 4 3 5 5 X X X 4 3 4 5 3 5 3 5 4 3 X X 4 5 5 3 5 5 5 5 3 5 X X X 5 5 5 5 5 5 3 5 5 X X X 5 5 3 4
9	4 5 3 3 2 4 3 3 3 3 3 2 3 4 5 2 3 4 2 5 3 3 5 4 4 3 5 4 1 1 2 4 5 5 2 4 4 4 4 4 4 3 1 3 1 1 3 4 5 5 4 4 5 3 2 4 3 3 4 4 2
10	5 3 4 4 1 3 2 2 4 3 5 5 4 4 5 5 2 2 1 5 2 4 5 5 5 5 4 4 1 2 4 5 5 5 3 5 4 4 3 4 3 3 3 4 4 1 3 5 5 4 5 5 4 5 3 5 4 5 5 5 4
11	2 3 3 3 N 4 4 2 4 2 3 3 4 2 3 3 3 N N 3 2 4 5 4 5 3 4 4 3 N 4 5 5 5 3 5 3 5 5 4 4 2 3 5 4 5 5 5 3 3 3 4 5 4 3 5 5 3 3 2
12	1 1 2 3 2 3 4 2 2 2 3 3 4 2 4 4 2 3 1 4 2 4 4 3 3 3 3 2 2 2 2 5 5 5 2 2 3 4 1 2 2 3 2 3 2 2 3 3 4 3 3 3 4 3 3 4 5 4 4 2
13	3 2 4 2 1 3 3 4 3 5 4 4 2 4 4 4 4 2 1 4 2 4 4 4 1 3 3 3 1 1 4 5 5 4 2 5 3 2 2 3 4 4 4 2 1 3 5 2 4 4 2 4 5 3 5 5 5 5 4 4
14	1 3 1 1 4 2 3 3 3 3 2 1 2 3 4 3 3 4 2 4 2 4 4 3 2 1 2 1 1 1 3 5 4 5 1 3 3 4 4 4 3 3 1 1 2 2 5 5 4 4 3 5 4 2 5 5 5 2 3 1
15	4 3 3 2 1 3 3 4 1 3 4 3 2 4 5 4 3 3 4 3 4 3 4 3 5 1 2 1 2 2 2 3 4 1 5 5 4 3 2 3 2 2 3 1 3 5 2 2 4 2 4 5 4 3 5 4 2 4 4 5 5 5
16	1 1 1 1 1 4 1 2 1 1 5 2 1 3 3 4 1 1 1 5 2 4 2 2 1 2 3 1 1 1 3 5 4 5 1 2 1 3 1 2 1 1 2 3 1 1 5 1 2 4 1 2 5 2 5 4 5 4 3 1
17	4 X X 4 X X 4 4 4 3 5 3 4 3 5 5 2 3 2 4 3 X X 5 3 2 3 4 2 3 4 3 4 X X 3 X 4 3 3 3 3 X X X 3 3 4 X X X X X X X X X X X
18	X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X
19	4 3 3 3 2 4 3 4 3 4 4 4 3 4 4 5 2 3 2 5 4 4 5 3 4 4 4 2 2 2 3 5 5 5 2 3 4 4 3 4 5 4 3 4 3 5 5 5 4 4 4 4 5 4 5 5 5 5 4 3
20	3 4 3 2 3 5 3 4 3 5 3 3 1 3 5 4 3 4 3 n 4 1 5 4 5 1 3 3 4 3 4 4 X 5 X 4 3 5 3 3 5 5 X X X X X 5 X X X X X 3 3 5 2 4 X
21	3 1 3 1 1 5 4 3 3 3 3 1 1 3 5 5 1 1 1 5 1 5 4 4 3 4 4 5 1 2 4 5 5 5 1 3 2 5 2 2 3 1 2 3 1 1 5 4 3 3 3 5 5 3 3 4 5 5 3 2
22	3 1 3 5 1 5 3 1 1 3 5 5 3 1 5 3 1 1 1 3 3 5 3 5 1 5 5 3 1 1 3 1 3 5 3 1 3 5 5 5 3 1 3 1 3 5 5 1 5 3 5 5 5 5 5 3 1 5 3 1
23	4 1 2 1 1 5 4 3 3 4 5 2 3 5 5 5 3 1 2 5 5 5 5 5 2 5 5 3 1 2 5 5 5 5 1 5 3 5 1 5 5 3 5 4 1 2 5 5 5 4 2 5 5 4 5 5 5 5 3 2
24	2 1 4 4 2 5 1 3 2 2 3 1 3 3 3 4 2 2 1 4 2 5 4 3 1 1 3 1 1 1 2 4 5 3 2 3 2 4 3 3 2 2 2 3 1 1 4 3 3 2 2 3 4 2 4 5 5 3 3 2
25	5 5 2 2 4 1 5 3 3 3 1 4 5 3 5 3 1 3 4 3 2 1 2 2 1 2 2 1 1 1 3 2 1 3 1 1 3 2 1 4 4 3 3 3 3 3 2 1 1 4 5 5 2 3 4 3 3 4 2 4
26	2 X 2 X 2 5 2 2 2 2 5 X X 5 5 4 2 X X 5 2 5 X 5 3 5 X 2 X X X 5 5 5 X X X 5 1 4 4 X 2 2 X 4 5 2 2 3 3 5 5 X 5 5 5 X 3 2
27	2 3 2 4 4 5 4 2 2 2 4 2 4 2 3 3 1 3 4 4 2 3 5 5 5 3 4 3 2 5 5 2 4 4 3 4 4 5 3 3 4 4 3 3 4 3 3 4 4 4 1 4 2 5 2 4 4 5 2 3 2
28	2 2 2 2 3 3 3 2 2 2 3 2 2 2 3 3 2 2 1 5 2 3 3 3 2 2 2 4 2 3 4 2 4 4 2 2 3 5 3 3 2 2 3 3 3 3 2 2 2 2 3 3 3 2 3 2 3 2 3 2
29	3 5 3 1 2 2 4 2 2 4 2 4 4 2 5 3 3 4 3 4 4 2 4 1 2 1 2 X 1 4 4 2 4 5 4 3 4 3 2 1 5 4 3 3 4 2 4 2 2 3 3 4 5 2 3 4 2 5 5 4
30	3 3 4 4 3 5 3 3 3 3 4 3 3 3 5 5 3 2 2 5 3 5 5 5 4 4 4 2 3 3 5 5 5 5 2 3 5 5 1 4 3 3 3 3 3 2 5 4 4 4 3 4 5 3 3 4 4 4 3 2

General Public Respondent Scores Of Mean Attractiveness Given For Bermuda Scenes

respondent	image number: p1<------------- 10 ---------------- 20 ---------------- 30 ----------------- 40 ---------------- 50-----------------> p60
31	2 2 2 2 2 4 2 2 2 3 3 2 3 3 5 3 2 2 2 4 2 4 3 3 3 2 3 1 2 2 2 4 4 4 2 4 2 4 2 3 2 2 3 3 1 1 3 3 3 3 3 5 3 4 3 4 3 3 2
32	3 3 4 3 4 4 4 3 3 4 5 3 3 4 5 4 5 4 3 5 2 2 4 3 5 4 4 2 2 3 3 3 3 3 2 5 3 5 3 4 4 4 5 5 2 3 5 5 5 4 4 3 5 3 5 5 3 4 3 2
33	4 4 3 5 4 3 5 4 4 4 4 5 5 5 4 4 3 3 4 4 5 3 4 4 2 2 3 5 3 4 5 3 X 5 3 3 3 5 4 5 5 3 4 4 5 5 4 4 4 3 2 5 4 2 4 3 3 3 3 4
34	X X X X X X N 5 5 N X X n 5 4 X X n N 5 5 5 5 5 N N N N n n N N 5 5 N N n n N N 1 N n n N N N X X N N N 5 N N 5 5 X X 5
35	3 4 5 5 4 5 4 2 2 2 5 5 4 5 5 5 4 5 5 3 5 5 2 5 3 5 1 5 5 5 2 4 1 4 5 5 3 5 5 5 5 5 4 4 5 3 3 5 5 5 3 4 1 4 5 2 5 5 1 3
36	3 4 5 3 4 4 4 3 3 3 3 4 4 4 3 4 4 2 5 4 3 3 4 4 4 3 3 2 3 4 4 3 2 3 3 4 4 4 3 3 3 4 4 4 5 3 3 1 1 3 4 5 2 2 2 3 1 1 3 4
37	X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X 3 3 3 3 5 4 3 x 3 3 1 2
38	4 3 3 2 1 4 4 3 3 2 2 3 3 3 4 4 1 1 4 4 1 2 3 3 2 1 3 2 1 2 3 4 3 5 2 3 3 3 2 2 3 3 3 2 2 3 3 4 4 3 4 3 5 2 3 3 3 4 1 3
39	3 4 5 4 4 2 4 4 4 5 4 5 5 4 4 3 4 3 5 4 5 3 3 4 3 4 5 3 3 4 5 2 3 4 4 3 4 4 4 3 4 4 5 3 5 4 5 4 5 5 3 5 4 4 3 4 3 3 5 5
40	3 3 3 5 3 5 5 5 5 5 4 4 4 5 5 5 4 4 3 5 5 5 5 4 5 5 5 4 5 4 5 5 5 5 4 5 4 5 5 5 4 3 4 5 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 3
41	2 3 3 5 4 5 5 3 3 5 5 4 4 5 5 5 3 3 4 5 5 5 4 5 4 4 5 5 1 3 5 5 5 5 1 5 4 5 3 2 4 3 4 5 2 3 5 4 5 5 5 5 5 3 5 5 5 5 5 5
42	2 2 3 3 3 5 3 4 4 3 4 3 3 4 5 5 3 2 2 5 2 5 5 4 3 3 4 3 1 2 4 5 5 5 1 3 2 4 4 3 5 3 3 5 2 3 5 5 5 5 4 5 5 4 5 5 5 4 5 2
43	2 3 3 3 2 3 2 2 2 2 2 2 2 1 1 1 3 3 1 3 3 4 4 3 3 3 3 3 4 5 3 4 3 2 3 3 2 5 2 2 3 3 3 3 2 2 3 3 5 3 3 3 4 2 4 4 3 4 4 3
44	3 2 3 3 2 3 3 4 4 4 2 3 3 3 4 3 4 3 4 5 5 4 4 2 2 1 2 3 3 3 3 2 5 4 4 3 2 3 3 3 3 4 4 4 3 3 3 4 3 4 4 4 4 4 4 4 4 5 5 4
45	3 1 2 3 2 5 4 3 3 3 4 3 3 3 4 3 1 3 3 2 2 3 5 3 3 3 3 5 1 2 5 4 5 5 2 3 3 5 3 4 5 1 3 3 3 2 5 X 4 2 2 4 2 2 4 3 5 4 1 2
46	3 3 3 5 3 5 2 2 2 4 2 4 4 4 5 4 2 2 2 4 3 4 5 4 3 3 4 2 1 3 5 5 5 5 1 2 4 5 3 3 4 2 3 4 2 3 5 4 4 3 4 5 5 5 5 4 4 5 5 3
47	X X X X X X X X X X X 3 5 1 5 5 3 3 3 5 5 3 5 4 3 5 4 2 2 3 5 4 4 3 3 3 4 5 5 4 3 3 3 4 1 4 4 4 4 4 5 5 4 4 4 3 3 5 4 3
48	X X X X 4 5 4 X X X X X X X X X n 4 4 5 X X X X X X X X X 4 5 5 X X X X X X X X n N 5 5 X X X X X X X X X 5 2 X X X X X
49	X X X X 4 5 4 X X X X X X X X X N 4 4 5 X X X X X X X X N 4 5 5 X X X X X X X X N N 5 5 X X X X X X X X X 5 n X X X X X
50	2 1 3 2 2 4 2 3 3 3 3 2 2 3 4 4 1 2 1 4 2 5 2 3 1 3 2 2 1 1 3 4 4 4 2 2 3 3 1 3 3 3 2 2 2 1 4 2 4 4 4 4 4 3 4 4 5 4 4 2
51	4 2 3 3 3 5 3 4 4 4 4 3 4 4 5 5 1 2 2 5 3 5 3 4 2 3 2 3 2 4 4 5 5 5 3 3 4 4 4 4 4 3 3 3 3 3 4 5 4 5 4 5 5 4 5 4 5 4 4 2
52	4 1 4 2 1 5 4 4 4 5 3 3 3 5 5 5 1 1 1 5 2 5 4 4 1 5 3 2 1 3 3 5 5 5 1 4 X X X X X X X X X X X X X X X X X X X X X X X X
53	3 4 3 4 3 4 4 4 4 4 3 4 5 4 2 5 5 3 4 2 3 4 5 3 4 5 2 3 4 4 5 5 3 5 5 2 2 3 4 2 2 4 3 5 1 4 3 2 5 5 5 4 3 5 5 4 3 2 2 4
54	2 2 2 2 3 2 2 3 3 3 3 3 3 3 3 2 3 2 3 2 2 3 3 3 2 2 3 2 2 2 3 1 2 2 2 1 X X X X X X X X X X X X X X X X X X X X X X X X

General Public Respondent Scores Of Mean Attractiveness Given For Bermuda Scenes

photo 1: Middle Rd Port Royal South, 1995

respondent	familiarity	theme	person/event	phase	visual	functional	workmanship	degree change	influence
1	4	1	N	4	3	5	5	3	-1
2	5	2	1	3	5	5	5	3	0
3	5	4	5	5	3	5	5	5	2
4	4	4	n	5	4	5	5	5	2
5	3	2	1	3	3	4	4	5	0
6	2	3	3	5	1	5	5	5	1

photo 2: Spice Hill Rd East, 1995

respondent	familiarity	theme	person/event	phase	visual	functional	workmanship	degree change	influence
1	3	2	1	3	5	3	3	1	2
2	3	3	1	2	5	4	3	1	0
3	3	3	2	3	4	3	3	2	0
4	1	3	n	n	4	n	3	2	0
5	2	1	1	1	4	3	3	2	1
6	2	3	3	3	2	2	2	3	-1

photo 3: Middle Rd / Waterlot Hill, 1995

respondent	familiarity	theme	person/event	phase	visual	functional	workmanship	degree change	influence
1	5	5	5	1	4	3	2	1	2
2	4	3	1	3	4	4	3	3	0
3	1	n	n	n	n	n	n	n	n
4	5	4	n	4	3	5	5	3	0
5	3	4	4	4	3	4	4	4	1
6	3	5	3	4	2	2	3	3	-1

Expert Respondent Scores Of Cultural Significance Questions Given For 8 Bermuda Scenes

photo 4: Camp Hill / South Shore, 1995

respondent	familiarity	theme	person/event	phase	visual	functional	workmanship	degree change	influence
1	2	1	1	1	3	4	5	3	1
2	3	1	1	1	3	3	3	2	0
3	1	4	1	1	5	5	5	2	0
4	2	n	n	n	4	n	3	n	n
5	3	1	1	2	3	3	4	3	1
6	1	3	1	3	4	5	3	3	1

photo 5: Corkscrew Hill, 1990s

respondent	familiarity	theme	person/event	phase	visual	functional	workmanship	degree change	influence
1	5	3	1	3	5	4	5	1	2
2	4	2	2	3	4	4	3	2	0
3	1	1	1	1	5	2	1	n	n
4	2	n	n	n	3	2	3	n	2
5	1	2	1	2	4	1	3	2	2
6	3	5	2	5	5	1	2	2	2

photo 6: Wilkinson Avenue / Fractious Street, 1980s

respondent	familiarity	theme	person/event	phase	visual	functional	workmanship	degree change	influence
1	3	5	3	1	5	5	4	1	2
2	2	4	2	2	5	3	3	2	0
3	3	5	2	2	4	1	1	2	2
4	1	n	n	n	4	n	3	n	n
5	2	2	1	1	3	2	2	2	0
6	1	3	3	3	4	2	2	3	0

Expert Respondent Scores Of Cultural Significance Questions Given For 8 Bermuda Road Scenes

photo 7: Middle Rd Scenic Heights West 2, 1995

respondent	familiarity	theme	person/event	phase	visual	functional	workmanship	degree change	influence
1	5	1	1	5	3	5	5	5	0
2	4	1	2	4	4	5	5	5	1
3	2	n	n	n	n	n	n	n	n
4	5	4	1	4	3	5	4	4	1
5	3	2	1	2	3	4	4	4	1
6	3	2	2	3	4	4	4	4	1

photo 8: Beacon Hill / Broome Street, 1995

respondent	familiarity	theme	person/event	phase	visual	functional	workmanship	degree change	influence
1	3	2	1	3	3	3	3	1	2
2	2	2	2	2	2	2	2	2	0
3	5	2	2	2	2	3	2	1	2
4	2	3	n	n	3	3	2	n	0
5	2	3	2	2	1	1	2	4	-1
6	1	5	3	4	4	3	3	4	0

Expert Respondent Scores Of Cultural Significance Questions Given For 8 Bermuda Scenes

Appendix 6: Detailed Hypothesis Statements & Cross Classification Results

By Fred Holdbrook, Research Assistant, Department of Statistics,
University Of Manitoba, Winnipeg, MB, Canada. R3T 2N2

This study investigated (1) the effect of historic and modern roadscape attributes on scene attractiveness, as well as (2) the relationship between attributes, visual quality and cultural significance.

The following hypotheses were proposed for critical evaluation:

(a) "Pre-1940 Bermuda roadscapes and roadscape interventions differ significantly from post - 1940 Bermuda roadscapes and roadscape interventions in traditional roadscape quality, as determined by residents with first-hand experience of pre-1940 Bermuda."

(b) "The difference in traditional roadscape quality assigned to pre-1940 and post-1940 Bermuda roadscapes varies according to (i) resident age and (ii) educational background."

Two study groups (an "expert" group and a "general public" group) evaluated sets of randomly sequenced images. "Traditional roadscape quality" was measured using ten response variables of historic, aesthetic, architectural and environmental value. Nine response variables (aspects of cultural significance) were used by the 8 - image group of "experts", while the 60 image "general public" group focused on one response variable ("scenic attractiveness").

Categorical data analysis was used to determine interrelationships among roadscape / sample (predictor) variables and scenic (response) variables. Forty five "row by column" contingency tables were constructed for the study groups to cross-classify relevant categorical variables (two at a time), with simultaneous hypothesis tests for homogeneity, dependence and association run for each table at a 0.10 level of sensitivity. The formal hypothesis test statements, derived from the research objectives above, may be expressed generally in null (H_0) and alternate (H_1) form as follows:

case 1: (60 image group)

H_0: row and column classifications (<physical / respondent attributes> & < mean attractiveness>) are **independent** (not associated)

H_1: row and column classifications (<physical / respondent attributes> & < mean attractiveness>) are **dependent** (are associated)

case 2: (8 image group)

H_0: row and column classifications (<cultural response> & < mean visual quality response>) are **independent** (not associated)

H_1: row and column classifications (<cultural response> & < mean visual quality response>) are **dependent** (are associated)

These general hypotheses can be expressed much more quantitatively. Combining cases 1 and 2 into a single argument, if:

P_{ij} = probability of an individual being classified in row i, column j (that is, physical attribute [i] and response variable [j], when $i = 1,2,3,...i$ and $j = 1,2,3,...j$

and

P_{i+} = marginal probability for the row (that is, physical attribute) classification, with
P_{+j} = marginal probability for the column (that is, response variable) classification,
then

$H_0: P_{ij} = P_{i+} P_{+j}$
$H_1: P_{ij} \neq P_{i+} P_{+j}$, (when i = 1,2,3,...i and j = 1,2,3,...j),

Using a significance level of 0.10 (noting that this is a two - tailed test).

Due to the fact that some of the observed and expected cell counts (frequencies) in the resultant contingency tables were less than 5, it was more appropriate to use "Fisher's Exact Test" as the test statistic as opposed to the Chi Square Test. All two tailed p-values ≤ 0.10 were considered significant (or, have acceptable levels of significance).

By way of illustration, consider Contingency Tables 1(a) and 1(b), which examine the cross-classification of "vegetative content" (physical attribute) and "mean attractiveness score" (response variable). Detailed analysis given in this example is identical to that applied to each cross-classification table in the study, and so in this Appendix the full argument is only presented once in its entirely. The main report provides a summary the analyses conducted.

Contingency Table 1(a): Cross-classification Analysis of "Vegetative Content" (VEGC1) by "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
VEGC1	Low (0 to 4 cells)	4 6.67 80.00 **21.05**	1 1.67 80.00 **3.45**	0 0.00 0.00 **0.00**	5 8.33
	Medium (5 to 10 cells)	9 15.00 39.13 **47.37**	12 20.00 52.17 **41.38**	2 3.33 8.70 **16.67**	23 38.33
	High (11 to 25 cells)	6 10.00 18.75 **31.58**	16 26.67 50.00 **55.17**	10 16.67 31.25 **83.33**	32 53.33
	Total	19 31.67	29 48.33	12 20.00	

STATISTICS FOR TABLE "VEGC1" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.030**

Sample Size = 60

Test Result Positive: Since p = 0.030 < 0.05 thus reject H_0 **(significance below 5%)**

The resultant two tailed p-value = 0.03 < 0.05 indicates significance at the 5% level. In particular, the probability of obtaining a table equal to, or more extreme than the one observed is 0.03, which is a very small likelihood. This means that the data contain

enough evidence to conclude that the observed association reflected in the table is significantly large, and is attributable to underlying differences across photos.

Contingency Table 1(b): Column Percentage Analysis of "Vegetative Content" (VEGC1) by "Mean Attractiveness" (MATSCORE)

Cell Contents: Column %		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
VEGC1	Low (0 to 4 cells)	**21.05**	3.45	0.00	5 8.33
	Medium (5 to 10 cells)	**47.37**	41.38	16.67	23 38.33
	High (11 to 25 cells)	31.58	55.17	**83.33**	32 53.33
	Total	19 31.67	29 48.33	12 20.00	

Analysis of the column percentages in Contingency Table 1 indicates an apparent increase in the percentage of high vegetative content (VEGC1) as the mean attractiveness score (MATSCORE) varies from low to medium to high. There is a similar, but decreasing trend for medium and low vegetative contents. Thus, the column percentages seem to suggest that there is a positive association between vegetative content in the photo and its mean attractiveness score: Highly vegetated photos tend to be highly attractive; similarly, photos with medium and low vegetative content tend to have low attractiveness scores.

Table 9(a): Rank Ordered & Categorized List of Images Evaluated In 1995 By General Public

Marker Scenes

rank	photo number & name	avg. score
1	p34: Mid-Ocean Rd Palms, 1980s*	4.43
2	p15: Harbor Rd House, 1980s*	4.28
4	p47: Corkscrew Hill, 1990s^	4.20
5	p33: Astwood Parkland, 1980s*	4.19
6	p20: Wilkinson / Fractious,1980s*^	4.18
8	p57: Horseshoe Bay Coast View,1980s*	4.12
9	p52: Traditional House (Pt. Shares),1980s*	4.11
10	p23: JSB Beach,1980s*	4.02
11	p55: Rubber Tree /Yard,1980s*	4.02
15	p16: Harbor / Salt Kettle,1980s*	3.94
16	p58: Middle Rd / Waterlot Hill,1980s^	3.87
17	p22: Coastal Vegetation (Spruce),1980s	3.84
18	p49: Traditional House (St. Geo),1980s*	3.78
19	p48: Horseshoe Bay (clean),1990s	3.70
31	p36: Warwick Pond,1980s*	3.29
33	p40: St. George Street,1980s*	3.26
44	p25: Horseshoe Bay (dirty),1980s	2.92
49	p28: Ferry Reach, 1980s*	2.79
51	p42: Shelton Rd / Happy Valley, 1980s*	2.71
52	p30: Horseshoe Bay parking, 1980s	2.63
53	p2: Convict Bay, 1980s	2.59
54	p19: City Hall parking, 1980s	2.54
55	p18: Shelly Bay plaza, 1980s	2.50
56	p5: JSB parking, 1980s*	2.45
57	p17: Harbor / Longford, 1980s*	2.44
58	p45: Collector's Hill, 1980s	2.38
59	p35: Claytown gate, 1980s	2.35
60	p29: Frog Lane, 1980s*	1.96

Impact Scenes

rank	photo number & name	avg score
13	p56: Spice Hill Rd East,1995^	3.96
21	p31: Somerset Bridge,1995	3.65
22	p50: Camp Hill Rd / South Shore,1995^	3.62
23	p8: Mid Rd Scenic Heights West1,1995	3.60
25	p41: Somerset Bridge Approach,1995	3.46
26	p51: Whale Bay Rd / AME,1995	3.46
27	p59: Spice Hill Rd West,1995	3.44
28	p14: Middle Rd (PR) North,1995	3.40
34	p10: Mid Rd Scenic Heights West2,1995^	3.25
35	p7: Middle Rd (PR) South,1995^	3.24
36	p13: Spice Hill Rd West walls,1995	3.19
37	p12: Camp Hill Rd past bend,1995	3.17
38	p43: Beacon Hill / SDA 1995	3.17
40	p37: Beacon Hill past SDA 1995	3.02
42	p26: Beacon / Scott's Hill, 1995	2.98
43	p9: Mid Rd Scenic Heights East, 1995	2.96
45	p3: Beacon Hill /Broome St, 1995^	2.89
46	p1: Whale Bay Rd past AME, 1995	2.88
50	p60: Camp Hill bend, 1995	2.75

Historic Scenes

rank	photo number & name	avg score
3	p53: Point Finger Rd, 1890s	4.26
7	p38: Somerset Bridge, 1890s	4.13
12	p6: Cedar Avenue, 1890s	4.00
14	p32: East Broadway, 1886	3.94
20	p24: Harbor past Manse, 1936	3.68
24	p11: Harbor Rd Paget, 1936	3.54
29	p44: Whale Bay Rd past AME,1970s	3.38
30	p27: Foot-of-the-Lane, 1936	3.31
32	p54: Whale Bay Rd / AME, 1970s	3.28
39	p4: Harbor / Longford, 1936	3.02
41	p21: Harbor / Manse, 1936	3.00
47	p46: Foot-of-the-Lane, 1970s	2.87
48	p39: East Broadway, 1970s	2.83

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* Selected Images (17) standardized across 1990 / 95 studies.

^ Selected Images (8) evaluated by "expert" respondents.

Common Images Evaluated By Experts & General Public in 1995

photo number & name	expert OVQ	public ATT
p47: Corkscrew Hill, 1990s	4.33	4.20
p20: Wilkinson / Fractious, 1980s	4.17	4.02
p56: Spice Hill Rd East, 1995	4.00	3.96
p50: Camp Hill Rd / South Shore, 1995	3.67	3.62
p3: Beacon Hill /Broome St., 1995	2.50	2.89
p7: Middle Rd (PR) South, 1995	3.17	3.17
p10: Mid Rd Scenic Heights West2, 1995	3.40	2.96
p58: Middle Rd / Waterlot Hill, 1980s	3.20	3.87

Table 9(b): Rank Ordered & Categorized List of Images By Parish and Road Scene

Western Parish Scenes

rank	photo number & name	avg. score
38	p43: Beacon Hill / SDA 1995	3.17
40	p37: Beacon Hill past SDA 1995	3.02
45	p3: Beacon Hill /Broome St., 1995^	2.89
42	p26: Beacon / Scott's Hill, 1995	2.98
7	p38: Somerset Bridge, 1890s	4.13
21	p31: Somerset Bridge, 1995	3.65
25	p41: Somerset Bridge Approach, 1995	3.46
28	p14: Middle Rd (PR) North, 1995	3.40
35	p7: Middle Rd (PR) South, 1995^	3.24
26	p51: Whale Bay Rd / AME, 1995	3.46
29	p44: Whale Bay Rd past AME, 1970s	3.38
32	p54: Whale Bay Rd / AME, 1970s	3.28
46	p1: Whale Bay Rd past AME, 1995	2.88
16	p58: Middle Rd / Waterlot Hill, 1980s^	3.87
23	p8: Mid Rd Scenic Heights West1, 1995	3.60
34	p10: Mid Rd Scenic Heights West2,1995^	3.25
43	p9: Mid Rd Scenic Heights East,1995	2.96
8	p57: Horseshoe Bay Coast View,1980s*	4.12
19	p48: Horseshoe Bay (clean),1990s	3.70
44	p25: Horseshoe Bay (dirty),1980s	2.92
52	p30: Horseshoe Bay parking, 1980s	2.63
17	p22: Coastal Vegetation (Spruce),1980s	3.84
22	p50: Camp Hill Rd / South Shore, 1995^	3.62
37	p12: Camp Hill Rd past bend, 1995	3.17
50	p60: Camp Hill bend, 1995	2.75
13	p56: Spice Hill Rd East, 1995^	3.96
27	p59: Spice Hill Rd West, 1995	3.44
36	p13: Spice Hill Rd West walls, 1995	3.19
5	p33: Astwood Parkland, 1980s*	4.19
31	p36: Warwick Pond, 1980s*	3.29
39	p4: Harbor / Longford, 1936	3.02
57	p17: Harbor / Longford, 1980s*	2.44

Central Parish Scenes

rank	photo number & name	avg. score
15	p16: Harbor / Salt Kettle, 1980s*	3.94
20	p24: Harbor past Manse, 1936	3.68
41	p21: Harbor / Manse, 1936	3.00
2	p15: Harbor Rd House, 1980s*	4.28
24	p11: Harbor Rd Paget, 1936	3.54
30	p27: Foot-of-the-Lane, 1936	3.31
47	p46: Foot-of-the-Lane, 1970s	2.87
14	p32: East Broadway, 1886	3.94
48	p39: East Broadway, 1970s	2.83
3	p53: Point Finger Rd, 1890s	4.26
4	p47: Corkscrew Hill, 1990s^	4.20
12	p6: Cedar Avenue, 1890s	4.00
54	p19: City Hall parking, 1980s	2.54
9	p52: Traditional House (Pt. Shares),1980s*	4.11
11	p55: Rubber Tree /Yard, 1980s*	4.02
51	p42: Shelton Rd / Happy Valley, 1980s*	2.71

Eastern Parish Scenes

rank	photo number & name	avg. score
60	p29: Frog Lane, 1980s*	1.96
58	p45: Collector's Hill, 1980s	2.38
10	p23: JSB Beach, 1980s*	4.02
56	p5: JSB parking, 1980s*	2.45
55	p18: Shelly Bay plaza, 1980s	2.50
59	p35: Claytown gate, 1980s	2.35
6	p20: Wilkinson / Fractious, 1980s*^	4.18
1	p34: Mid-Ocean Rd Palms, 1980s*	4.43
49	p28: Ferry Reach, 1980s*	2.79
18	p49: Traditional House (St. Geo.),1980s*	3.78
33	p40: St. George Street, 1980s*	3.26
53	p2: Convict Bay, 1980s	2.59

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* Selected Images (17) standardized across 1990 / 95 studies.

^ Selected Images (8) evaluated by "expert" respondents.

Table 10(a): List Of Cultural Significance Variables And Correlation Results With Mean Familiarity**

code	Variable: Levels	correlation result
Q2THM	Historic Theme: 1. low (between 1 - 2) 2. moderate (3) 3. high (between 4 - 5)	Weak: - 0.036
Q3PAS	Past Association: 1. low (between 1 - 2) 2. moderate (3) 3. high (between 4 - 5)	Weak: 0.471
Q4PHS	Historic Phase: 1. low (between 1 - 2) 2. moderate (3) 3. high (between 4 - 5)	**Strong**: 0.965
Q5OVQ	Overall Visual Quality: 1. low (between 1 - 2) 2. moderate (3) 3. high (between 4 - 5)	Weak: - 0.425
Q6OFQ	Overall Functional Quality: 1. low (between 1 - 2) 2. moderate (3) 3. high (between 4 - 5)	**Moderate**: 0.670
Q7ORW	Overall Road Workmanship: 1. low (between 1 - 2) 2. moderate (3) 3. high (between 4 - 5)	**Moderate**: 0.702
Q8CHG	Scene Change Over Time: 1. low (between 1 - 2) 2. moderate (3) 3. high (between 4 - 5)	**Moderate**: 0.813
Q9CHR	Scene Character: 1. negative (< 0) 2. neutral (= 0) 3. positive (> 0)	Weak: - 0.023

** Test statistic: Pearson's Least Squares Correlation.

Table 10(b): List Of Correlated Cultural Significance Variables (In Descending Order Of Correlation Strength)**

correlation	code	Correlated Variables
Strong: 0.983	Q7ORW Q6OFQ	Overall Road Workmanship & Overall Functional Quality
Strong: 0.965	Q4PHS Q1FAM	Historic Phase & Scene Familiarity
Strong: 0.907	Q8CHG Q6OFQ	Scene Change Over Time & Overall Functional Quality
Strong: 0.900	Q8CHG Q7ORW	Scene Change Over Time & Overall Road Workmanship
Moderate: 0.813	Q8CHG Q1FAM	Scene Change Over Time & Scene Familiarity
Moderate: 0.813	Q2THM Q3PAS	Historic Theme & Past Association
Moderate: 0.759	Q8CHG Q4PHS	Scene Change Over Time & Historic Phase
Moderate: 0.702	Q7ORW Q1FAM	Overall Road Workmanship & Scene Familiarity
Slight: 0.670	Q6OFQ Q1FAM	Overall Functional Quality & Scene Familiarity
Slight: 0.631	Q7ORW Q4PHS	Overall Road Workmanship & Historic Phase
Slight: 0.578	Q6OFQ Q4PHS	Overall Functional Quality & Historic Phase
Slight: 0.532	Q9CHR Q5OVQ	Scene Character & Overall Visual Quality

Table 11: Comparison of High & Moderate Overall Visual Quality Scene Scores^ Across Cultural Significance Questions**

Code & Variable:	high OVQ	moderate OVQ
(Q1FAM)		
Scene Familiarity:	2.67	2.50
	2.00	3.83
	2.33	3.67
	2.00	3.50
avg. FAM =	2.25	3.38
(Q2THM)		
Historic Theme:	2.60	2.83
	3.80	2.67
	2.50	2.00
	2.00	3.80
avg. THM =	2.72	2.82
(Q3PAS)		
Past Association:	1.40	2.00
	2.20	2.50
	1.60	1.40
	1.00	3.25
avg. PAS =	1.55	2.29
(Q4PHS)		
Historic Phase:	2.80	2.60
	1.80	4.17
	2.40	3.60
	1.60	3.20
avg. PHS =	2.15	3.39
(Q5OVQ)		
Overall Visual Quality:	4.33	2.50
	4.17	3.17
	4.00	3.40
	3.67	3.20
avg. OVQ =	4.04	3.07

Code & Variable:	high OVQ	moderate OVQ
(Q6OFQ)		
Overall Functional Quality:	2.33	2.50
	2.60	4.83
	3.00	4.60
	4.00	3.60
avg. OFQ =	2.98	3.88
(Q7ORW)		
Overall Road Workmanship:	2.67	2.33
	2.50	4.83
	2.83	4.40
	3.83	3.40
avg. ORW =	2.96	3.74
(Q8CHG)		
Scene Change Over Time:	1.75	2.40
	2.00	4.33
	1.83	4.40
	2.60	2.80
avg. CHG =	2.04	3.48
(Q9CHR)		
Scene Character:	1.60	0.50
	0.80	0.67
	0.30	0.80
	0.60	0.40
avg. CHR =	0.82	0.59

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^ Images used in descending order of tables:

(High OVQ)
p47: Corkscrew Hill, 1990s
p20: Wilkinson / Fractious, 1980s
p56: Spice Hill Rd East, 1995
p50: Camp Hill Rd / South Shore, 1995

(Moderate OVQ)
p3: Beacon Hill /Broome St., 1995
p7: Middle Rd (PR) South, 1995
p10: Mid Rd Scenic Heights West2, 1995
p58: Middle Rd / Waterlot Hill, 1980s

**Test Statistic: Mean Variable Scores across respondents.

Appendix 8: Complete Set Of Cross - Classified Variables And Contingency Table Test Results

Contingency Table 1: Contingency Table Analysis Of "Vegetative Content" (VEGC1) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
VEGC1	Low (0 to 4 cells)	4 6.67 80.00 **21.05**	1 1.67 80.00 **3.45**	0 0.00 0.00 **0.00**	5 8.33
	Medium (5 to 10 cells)	9 15.00 39.13 **47.37**	12 20.00 52.17 **41.38**	2 3.33 8.70 **16.67**	23 38.33
	High (11 to 25 cells)	6 10.00 18.75 **31.58**	16 26.67 50.00 **55.17**	10 16.67 31.25 **83.33**	32 53.33
	Total	19 31.67	29 48.33	12 20.00	60 100.00

Column Percentage Analysis Of "Vegetative Content" (VEGC1) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
VEGC1	Low (0 to 4 cells)	**21.05**	3.45	0.00
	Medium (5 to 10 cells)	**47.37**	41.38	16.67
	High (11 to 25 cells)	31.58	55.17	**83.33**
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "VEGC1" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.680**

Sample Size = 60

Test Result Positive: Since $p = 0.030 < 0.05$ thus reject H_0 **(significance below 5%)**

Contingency Table 2: Contingency Table Analysis Of "Heritage Vegetation" (HVEG2) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
HVEGC2	Cedar (present)	3 5.00 23.08 **15.79**	8 13.33 61.54 **27.59**	2 3.33 15.38 **16.67**	13 21.67
	Mixed Veg (present)	2 3.33 16.67 **10.53**	7 11.67 58.33 **24.14**	3 5.00 25.00 **25.00**	12 20.00
	Other (present)	2 3.33 50.00 **10.53**	1 26.67 50.00 **55.17**	1 16.67 31.25 **83.33**	4 6.67
	None (absent)	12 20.00 38.71 **63.16**	13 21.67 41.94 **44.83**	6 10.00 19.35 **50.00**	31 51.67
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "HVEG2" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
HVEG2	Cedar (present)	15.79	**27.59**	16.67
	Mixed Veg (present)	10.53	24.14	**25.00**
	Other (present)	**10.53**	3.45	8.33
	None (absent)	**63.16**	44.83	50.00
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "HVEG2" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.680**

Sample Size = 60

Test Result Negative: Since $p = 0.680 > 0.10$, cannot reject H_0 (not significant above 10%)

Contingency Table 3: Contingency Table Analysis Of "Non Heritage Vegetation" (NHV3) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
NHV3	Trees (present)	1 1.67 100.00 **5.26**	0 0.00 0.00 **0.00**	0 0.00 0.00 **0.00**	1 1.67
	Mixed Veg (present)	18 30.00 35.29 **94.74**	24 40.00 47.06 **82.76**	9 15.00 17.65 **75.00**	51 85.00
	None (absent)	0 0.00 0.00 **0.00**	5 8.33 62.50 **17.24**	3 5.00 37.50 **25.00**	8 13.33
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "NHV3" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
NHV3	Trees (present)	**5.26**	0.00	0.00
	Mixed Veg (present)	**94.74**	82.76	75.00
	None (absent)	0.00	17.24	**25.00**
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "NHV3" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.059**

Sample Size = 60

Test Result Positive: Since $p = 0.059 < 0.06$ thus reject H_0 (significance below 6%)

Contingency Table 4: Contingency Table Analysis Of "Heritage Structures" (HS4) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
HS4	Natural (present)	1 1.67 50.00 **5.26**	1 1.67 50.00 **3.45**	0 0.00 0.00 **0.00**	2 3.33
	Man-made (present)	9 15.00 36.00 **47.37**	9 15.00 36.00 **31.03**	7 11.67 28.00 **58.33**	25 41.67
	Mixed Structs (present)	6 10.00 21.43 **31.58**	18 30.00 64.29 **62.07**	4 6.67 14.29 **33.33**	28 46.67
	None (absent)	3 5.00 60.00 **15.79**	1 1.67 20.00 **3.45**	1 1.67 20.00 **8.33**	5 8.33
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "HS4" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
HS4	Cedar (present)	**5.26**	3.45	0.00
	Mixed Veg (present)	47.37	31.03	**58.33**
	Other (present)	31.58	**62.07**	33.33
	None (absent)	**15.79**	3.45	8.33
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "HS4" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.217**

Sample Size = 60

Test Result Negative: Since $p = 0.217 > 0.10$, cannot reject H_0 (not significant above 10%)

Contingency Table 5: Contingency Table Analysis Of "Heritage Vegetation Count" (HVC5) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
HVC5	Cedar (present)	12 20.00 38.71 **63.16**	13 21.67 41.94 **44.83**	6 10.00 19.35 **50.00**	31 51.67
	Mixed Veg (present)	5 8.33 31.25 **26.32**	8 13.33 50.00 **27.59**	3 5.00 18.75 **25.00**	16 26.67
	Other (present)	2 3.33 33.33 **10.53**	4 6.67 66.67 **13.79**	0 0.00 0.00 **0.00**	6 10.00
	None (absent)	0 0.00 0.00 **0.00**	4 6.67 57.14 **13.79**	3 5.00 42.86 **25.00**	7 11.67
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "HVC5" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
HVEG2	Cedar (present)	**63.16**	44.83	50.00
	Mixed Veg (present)	26.32	**27.59**	25.00
	Other (present)	10.53	**13.79**	0.00
	None (absent)	0.00	13.79	**25.00**
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "HVC5" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.364**

Sample Size = 60

Test Result Negative: Since $p = 0.364 > 0.10$, cannot reject H_0 (not significant above 10%)

Contingency Table 6: Contingency Table Analysis Of "Non Heritage Vegetation Count" (NHVC6) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
NHVC6	None (= 0 cells)	0 0.00 0.00 **0.00**	5 8.33 62.50 **17.24**	3 5.00 37.50 **25.00**	8 13.33
	Low (> 0 - 4 cells)	9 15.00 64.29 **47.37**	5 8.33 35.71 **17.24**	0 0.00 0.00 **0.00**	14 23.33
	Medium (5 - 10 cells)	6 10.00 42.86 **31.58**	6 10.00 42.86 **20.69**	2 3.33 14.29 **16.67**	14 23.33
	High (11 - 25 cells)	4 6.67 16.67 **21.05**	13 21.67 54.17 **44.83**	7 11.67 29.17 **58.33**	24 40.00
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "NHVC6" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
NHVC6	None (= 0 cells)	0.00	17.24	**25.00**
	Low (> 0 - 4 cells)	**47.37**	17.24	0.00
	Medium (5 - 10 cells)	**31.58**	20.69	16.67
	High (11 - 25 cells)	21.05	44.83	**58.33**
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "NHVC6" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**9.41E - 03**

Sample Size = 60

Test Result Positive: Since $p = 9.41 \times 10^{-3} > 0.01$, thus reject H_0 **(significance below 1%)**

Contingency Table 7: Contingency Table Analysis Of "Heritage Structures Count" (HSC7) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
HSC7	None (= 0 cells)	3 5.00 60.00 **15.79**	1 1.67 20.00 **3.45**	1 1.67 20.00 **8.33**	5 8.33
	Low (> 0 - 4 cells)	9 15.00 32.14 **47.37**	12 20.00 42.86 **41.38**	7 11.67 25.00 **58.33**	28 46.67
	Medium (5 - 10 cells)	5 8.33 23.81 **26.32**	13 21.67 61.90 **44.83**	3 5.00 14.29 **25.00**	21 35.00
	High (11 - 25 cells)	2 3.33 33.33 **10.53**	3 5.00 50.00 **10.34**	1 1.67 16.67 **8.33**	6 10.00
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "HSC7" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
HSC7	None (= 0 cells)	**15.79**	3.45	8.33
	Low (> 0 - 4 cells)	47.37	41.38	**58.33**
	Medium (5 - 10 cells)	26.32	**44.83**	25.00
	High (11 - 25 cells)	**10.53**	10.34	8.33
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "HSC7" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.654**

Sample Size = 60

Test Result Negative: Since p = 0.654> 0.10, cannot reject H_0 (not significant above 10%)

Contingency Table 8: Contingency Table Analysis Of "Non Heritage Structures" (NHS8) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
NHS8	Present	17 28.33 36.96 **89.47**	26 43.33 56.52 **89.66**	3 5.00 6.52 **25.00**	46 76.67
	Absent	2 3.33 14.29 **10.53**	3 5.00 21.43 **10.34**	9 15.00 64.29 **75.00**	14 23.33
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "NHS8" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
NHS8	Present	89.47	**89.66**	25.00
	Absent	10.53	10.34	**75.00**
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "NHS8" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**4.43E - 05**

Sample Size = 60

Test Result Positive: Since $p = 4.43 \times 10^{-5} > 0.01$, thus reject H_0 (significance below 1%)

Contingency Table 9: Contingency Table Analysis Of "Non Heritage Structures Count" (NHSC9) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
NHSC9	None (= 0 cells)	2 3.33 14.29 **10.53**	3 5.00 21.43 **10.34**	9 15.00 64.29 **75.00**	14 23.33
	Low (> 0 - 4 cells)	11 18.33 29.73 **57.89**	23 38.33 62.16 **79.31**	3 5.00 8.11 **25.00**	37 61.67
	Medium (5 - 10 cells)	2 3.33 40.00 **10.53**	3 5.00 60.00 **10.34**	0 0.00 0.00 **0.00**	5 8.33
	High (11 - 25 cells)	4 6.67 100.00 **21.05**	0 0.00 0.00 **0.00**	0 0.00 0.00 **0.00**	4 6.67
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "NHSC9" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
NHSC9	None (= 0 cells)	10.53	10.34	**75.00**
	Low (> 0 - 4 cells)	57.89	**79.31**	25.00
	Medium (5 - 10 cells)	**10.53**	10.34	0.00
	High (11 - 25 cells)	**21.05**	0.00	0.00
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "NHSC9" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**4.47E - 05**

Sample Size = 60

Test Result Positive: Since $p = 4.47 \times 10^{-5} > 0.01$, thus reject H_0 (significance below 1%)

Contingency Table 10: Contingency Table Analysis Of "Psychophysical Factors (1): Scene Complexity "(PLEX10) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
PLEX10	Medium (between 2 - 5 cover types / cell)	9 15.00 23.68 **47.37**	18 30.00 47.37 **62.07**	11 18.33 28.95 **91.67**	38 63.33
	High (over 5 cover types / cell)	10 16.67 45.43 **52.63**	11 18.33 50.00 **37.93**	1 1.67 4.55 **8.33**	22 36.67
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "PLEX10" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
PLEX10	Medium (between 2 - 5 cover types / cell)	47.37	62.07	**91.67**
	High (over 5 cover types / cell)	**52.63**	37.93	8.33
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "PLEX10" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.034**

Sample Size = 60

Test Result Positive: Since $p = 0.034 > 0.05$, thus reject H_0 (significance below 5%)

Contingency Table 11: Contingency Table Analysis Of "Psychophysical Factors (2): View Type "(VWT11) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
VWT11	Enframed	2 3.33 15.38 **10.53**	7 11.67 53.85 **24.14**	4 6.67 30.77 **33.33**	13 21.67
	Open	2 3.33 33.33 **10.53**	2 3.33 33.33 **6.90**	2 3.33 33.33 **16.67**	6 10.00
	Deflected	6 10.00 28.57 **31.58**	11 18.33 52.38 **37.93**	4 6.67 19.05 **33.33**	21 35.00
	Other	9 15.00 45.00 **47.37**	9 15.00 45.00 **31.03**	2 3.33 10.00 **16.67**	20 33.33
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "VWT11" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
VWT11	Enframed	10.53	24.14	**33.33**
	Open	10.53	6.90	**16.67**
	Deflected	31.58	**37.93**	33.33
	Other	**47.37**	31.03	16.67
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "VWT11" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.513**

Sample Size = 60

Test Result Negative: Since $p = 0.513 > 0.10$, cannot reject H_0 (not significant above 10%)

Contingency Table 12: Contingency Table Analysis Of "Psychophysical Factors (3): View Orientation" (VWO12) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
VWO12	Downhill	4 6.67 28.57 **21.05**	5 8.33 35.71 **17.24**	5 8.33 35.71 **41.67**	14 23.33
	Uphill	1 1.67 9.09 **5.26**	8 13.33 72.73 **27.59**	2 3.33 18.18 **16.67**	11 18.33
	Other	14 23.33 40.00 **73.68**	16 26.67 45.71 **55.17**	5 8.33 14.29 **41.67**	35 58.33
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "VWO12" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
VWO12	Downhill	21.05	17.24	**41.67**
	Uphill	5.26	**27.59**	16.67
	Other	**73.68**	55.17	41.67
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "VWO12" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.160**

Sample Size = 60

Test Result Negative: Since $p = 0.160 > 0.10$, cannot reject H_0 (significant above 10%)

Contingency Table 13: Contingency Table Analysis Of "Psychophysical Factors (4): Maintenance" (MN13) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

MN13	MATSCORE: Low (1)	Medium(2)	High (3)	Total
Maintained Structures (present)	8 13.33 34.78 **42.11**	14 23.33 60.87 **48.28**	1 1.67 4.35 **8.33**	23 38.33
Maintained Vegetation (present)	1 1.67 25.00 **5.26**	1 1.67 25.00 **3.45**	2 3.33 50.00 **16.67**	4 6.67
Maintained Struct & Veg (present)	7 11.67 33.33 **36.84**	9 15.00 42.86 **31.03**	5 8.33 23.81 **41.67**	21 35.00
No Maintained Struct or Veg (absent)	3 5.00 25.00 **15.79**	5 8.33 41.67 **17.24**	4 6.67 33.33 **33.33**	12 20.00
Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "MN13" BY "MATSCORE"

Cell Contents:
Column %

MN13	MATSCORE: Low (1)	Medium(2)	High (3)
Maintained Structures (present)	42.11	**48.28**	8.33
Maintained Vegetation (present)	5.26	3.45	**16.67**
Maintained Struct & Veg (present)	36.84	31.03	**41.67**
No Maintained Struct or Veg (absent)	15.79	17.24	**33.33**
Total	100.00	100.00	100.00

STATISTICS FOR TABLE "MN13" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.204**

Sample Size = 60

Test Result Negative: Since $p = 0.204 > 0.10$, cannot reject H_0 (not significant above 10%)

Contingency Table 14: Contingency Table Analysis Of "Psychophysical Factors (5): Litter" (LIT14) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
LIT14	Litter Present	3 5.00 42.86 **15.79**	3 5.00 42.86 **10.34**	1 1.67 14.29 **8.33**	7 11.67
	No Litter	16 26.67 30.19 **84.21**	26 43.33 49.06 **89.66**	11 18.33 20.75 **91.67**	53 88.33
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "LIT14" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
LIT14	Litter Present	**15.79**	10.34	8.33
	No Litter	84.21	89.66	**91.67**
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "LIT14" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.874**

Sample Size = 60

Test Result Negative: Since $p = 0.874 > 0.10$, cannot reject H_0 (not significant above 10%)

Contingency Table 15: Contingency Table Analysis Of "Psychophysical Factors (6): User Presence" (USR15) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
USR15	None (= 0 cells)	7 11.67 22.58 **36.84**	16 26.67 51.61 **55.17**	8 13.33 25.81 **66.67**	31 51.67
	Low (> 0 - 4 cells)	8 13.33 33.33 **42.11**	12 20.00 50.00 **41.38**	4 6.67 16.67 **33.33**	24 40.00
	Medium (5 - 10 cells)	1 1.67 50.00 **5.26**	1 1.67 50.00 **3.45**	0 0.00 0.00 **0.00**	2 3.33
	High (11 - 25 cells)	3 5.00 100.00 **15.79**	0 0.00 0.00 **0.00**	0 0.00 0.00 **0.00**	3 5.00
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "USR15" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
USR15	None (= 0 cells)	**21.05**	3.45	0.00
	Low (> 0 - 4 cells)	**47.37**	41.38	16.67
	Medium (5 - 10 cells)	31.58	55.17	**83.33**
	High (11 - 25 cells)	31.58	55.17	**83.33**
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "USR15" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.243**

Sample Size = 60

Test Result Negative: Since $p = 0.243 > 0.10$, cannot reject H_0 (not significant above 10%)

Contingency Table 16: Contingency Table Analysis Of "Geographic Factors (1): Location" (LOC16) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

LOC16	MATSCORE: Low (1)	Medium(2)	High (3)	Total
Coast	3 5.00 42.86 **15.79**	2 3.33 28.57 **6.90**	2 3.33 28.57 **16.67**	7 11.67
Rural	4 6.67 16.00 **21.05**	15 25.00 60.00 **51.72**	6 10.00 24.00 **50.00**	25 41.67
Urban / Man-made	8 13.33 50.00 **42.11**	5 8.33 31.25 **17.24**	3 5.00 18.75 **25.00**	16 26.67
Other	4 6.67 33.33 **21.05**	7 11.67 58.33 **24.14**	1 1.67 8.33 **8.33**	12 20.00
Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "LOC16" BY "MATSCORE"

Cell Contents:
Column %

LOC16	MATSCORE: Low (1)	Medium(2)	High (3)
Coast	15.79	6.90	**16.67**
Rural	21.05	**51.72**	50.00
Urban	**42.11**	17.24	25.00
Other	21.05	**24.14**	8.33
Total	100.00	100.00	100.00

STATISTICS FOR TABLE "LOC16" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.225**

Sample Size = 60

Test Result Negative: Since $p = 0.225 > 0.10$, cannot reject H_0 (not significant above 10%)

Contingency Table 17: Contingency Table Analysis of "Water Presence" (WTR17) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
WTR17	None (= 0 cells)	16 26.67 30.19 **84.21**	27 45.00 50.94 **93.10**	10 16.67 18.87 **83.33**	53 88.33
	Low (> 0 - 4 cells)	3 5.00 60.00 **15.79**	1 1.67 20.00 **3.45**	1 1.67 20.00 **8.33**	5 8.33
	Medium (5 - 10 cells)	0 0.00 0.00 **0.00**	1 1.67 50.00 **3.45**	1 1.67 50.00 **8.33**	2 3.33
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "WTR17" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
WTR17	None (= 0 cells)	84.21	**93.10**	83.33
	Low (> 0 - 4 cells)	**15.79**	3.45	8.33
	Medium (5 - 10 cells)	0.00	3.45	**8.33**
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "WTR17" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.326**

Sample Size = 60

Test Result Negative: Since $p = 0.326 > 0.10$, cannot reject H_0 (not significant above 10%)

Contingency Table 18: Contingency Table Analysis Of "Road Surface Presence" (ROA18) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

ROA18	MATSCORE: Low (1)	Medium(2)	High (3)	Total
None (= 0 cells)	2 3.33 25.00 **10.53**	3 5.00 37.50 **10.34**	3 5.00 37.50 **25.00**	8 13.33
Low (> 0 - 4 cells)	4 6.67 33.33 **21.05**	4 6.67 33.33 **13.79**	4 6.67 33.33 **33.33**	12 20.00
Medium (5 - 10 cells)	7 11.67 21.88 **36.84**	20 33.33 62.50 **68.97**	5 8.33 15.63 **41.67**	32 53.33
High (11 - 25 cells)	6 10.00 75.00 **31.58**	2 3.33 25.00 **6.90**	0 0.00 0.00 **0.00**	8 13.33
Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "ROA18" BY "MATSCORE"

Cell Contents:
Column %

ROA18	MATSCORE: Low (1)	Medium(2)	High (3)
None (= 0 cells)	10.53	10.34	**25.00**
Low (> 0 - 4 cells)	21.05	13.79	**33.33**
Medium (5 - 10 cells)	36.84	**68.97**	41.67
High (11 - 25 cells)	**31.58**	6.90	0.00
Total	100.00	100.00	100.00

STATISTICS FOR TABLE "ROA18" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.052**

Sample Size = 60

Test Result Positive: Since p = 0.052 < 0.06 thus reject H_0 **(significance below 6%)**

Contingency Table 19: Contingency Table Analysis Of "Sky Presence" (SKY19) By "Mean Attractiveness" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
SKY19	None (= 0 cells)	0 0.00 0.00 **0.00**	2 3.33 50.00 **6.90**	2 3.33 50.00 **16.67**	4 6.67
	Low (> 0 - 4 cells)	8 13.33 27.59 **42.11**	15 25.00 51.72 **51.72**	6 10.00 20.69 **50.00**	29 48.33
	Medium (5 - 10 cells)	10 16.67 40.00 **52.63**	11 18.33 44.00 **37.93**	4 6.67 16.00 **33.33**	25 41.67
	High (11 - 25 cells)	1 1.67 50.00 **5.26**	1 1.67 50.00 **3.45**	0 0.00 0.00 **0.00**	2 3.33
	Total	19 31.67	29 48.33	12 20.00	60 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "SKY19" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
SKY19	None (= 0 cells)	0.00	6.90	**16.67**
	Low (> 0 - 4 cells)	42.11	**51.72**	50.00
	Medium (5 - 10 cells)	**52.63**	37.93	33.33
	High (11 - 25 cells)	**5.26**	3.45	0.00
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "SKY19" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.600**

Sample Size = 60

Test Result Negative: Since p = 0.600 > 0.10, cannot reject H_0 (not significant above 10%)

Contingency Table 20: Contingency Table Analysis Of "Photo Year" (PYEAR20) By "Mean Attractiveness Score" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
PYEAR20	Before 1940s (present)	2 11.11 22.22 **40.00**	4 22.22 44.44 **44.44**	3 16.67 33.33 **75.00**	9 50.00
	After 1940s (absent)	3 16.67 33.33 **60.00**	5 27.78 55.56 **55.56**	1 5.56 11.11 **25.00**	9 50.00
	Total	5 27.78	9 50.00	4 22.22	18 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "PYEAR20" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
PYEAR20	Cedar (present)	40.00	44.44	**75.00**
	None (absent)	**60.00**	55.56	25.00
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "PYEAR20" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.689**

Sample Size = 18

Test Result Negative: Since $p = 0.689 > 0.10$, cannot reject H_0 (not significant above 10%)

Contingency Table 21: Contingency Table Analysis Of "Environmental Impact" (IMP21) By "Mean Attractiveness Score" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
IMP21	Project Area (site)	1 4.55 7.69 **25.00**	11 50.00 84.62 **68.75**	1 4.55 7.69 **50.00**	13 59.09
	Adjacent Area (context)	3 13.64 33.33 **75.00**	5 22.73 55.56 **31.25**	1 4.55 11.11 **50.00**	9 40.91
	Total	4 18.18	16 72.73	2 0.00	22 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "IMP21" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
IMP21	Project Area (site)	25.00	**68.75**	50.00
	Adjacent Area (context)	**75.00**	31.25	50.00
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "IMP21" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.381**

Sample Size = 22

Test Result Negative: Since $p = 0.381 > 0.10$, cannot reject H_0 (not significant above 10%)

Contingency Table 22: Contingency Table Analysis Of "Age Effect On Photo 1" (AGE22) By "Mean Attractiveness Score" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
AGE22	Young (below 60)	13 31.71 39.39 **100.00**	12 29.27 36.36 **70.59**	8 19.51 24.24 **72.73**	33 80.49
	Old (above 60)	0 0.00 0.00 **0.00**	5 12.20 62.50 **29.41**	3 7.32 37.50 **27.27**	8 19.51
	Total	13 31.71	17 41.46	11 26.83	41 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "AGE22" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
AGE22	Young (below 60)	**100.00**	70.59	72.73
	Old (above 60)	0.00	**29.41**	27.27
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "AGE22" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.084**

Sample Size = 41

Test Result Positive: Since p = 0.084 < 0.10 thus reject H_0 **(significance below 10%)**

Contingency Table 23: Contingency Table Analysis Of "Age Effect On Photo 6" (AGE23) By "Mean Attractiveness Score" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
AGE23	Young (below 60)	4 9.76 12.12 **100.00**	6 14.63 18.18 **75.00**	23 56.10 69.70 **79.31**	33 80.49
	Old (above 60)	0 0.00 0.00 **0.00**	2 4.88 25.00 **25.00**	6 14.63 75.00 **20.69**	8 19.51
	Total	4 9.76	8 19.51	29 70.73	41 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "AGE23" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
AGE23	Young (below 60)	**100.00**	75.00	79.31
	Old (above 60)	0.00	**25.00**	20.69
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "AGE23" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.841**

Sample Size = 41

Test Result Negative: Since $p = 0.841 > 0.10$, cannot reject H_0 (not significant above 10%)

Contingency Table 24: Contingency Table Analysis Of "Age Effect On Photo 8" (AGE24) By "Mean Attractiveness Score" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
AGE24	Young (below 60)	10 24.39 30.30 **76.92**	10 24.39 30.30 **90.91**	13 31.71 39.39 **76.47**	33 80.49
	Old (above 60)	3 7.32 37.50 **23.08**	1 2.44 12.50 **9.09**	4 9.76 50.00 **23.53**	8 19.51
	Total	13 31.71	11 26.83	17 41.46	41 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "AGE24" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
AGE24	Young (below 60)	76.92	**90.91**	76.47
	Old (above 60)	23.08	9.09	**23.53**
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "AGE24" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.690**

Sample Size = 41

Test Result Negative: Since $p = 0.690 > 0.10$, cannot reject H_0 (not significant above 10%)

Contingency Table 25: Contingency Table Analysis Of "Age Effect On Photo 13" (AGE25) By "Mean Attractiveness Score" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
AGE25	Young (below 60)	8 20.00 25.00 **80.00**	8 20.00 25.00 **72.73**	16 40.00 50.00 **84.21**	32 80.00
	Old (above 60)	2 5.00 25.00 **20.00**	3 7.50 37.50 **27.27**	3 7.50 37.50 **15.79**	8 20.00
	Total	10 25.00	11 27.50	19 47.50	40 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "AGE25" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
AGE25	Young (below 60)	80.00	72.73	**84.21**
	Old (above 60)	20.00	**27.27**	15.79
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "AGE25" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**0.875**

Sample Size = 40

Test Result Negative: Since $p = 0.875 > 0.10$, cannot reject H_0 (not significant above 10%)

Contingency Table 26: Contingency Table Analysis Of "Age Effect On Photo 19" (AGE26) By "Mean Attractiveness Score" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
AGE26	Young (below 60)	17 43.59 54.84 **77.27**	4 10.26 12.90 **80.00**	10 25.64 32.26 **83.33**	31 79.49
	Old (above 60)	5 12.82 62.50 **22.73**	1 2.56 12.50 **20.00**	2 5.13 25.00 **16.67**	8 20.51
	Total	22 56.41	5 12.82	12 30.77	39 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "AGE26" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
AGE26	Young (below 60)	77.27	80.00	**83.33**
	Old (above 60)	**22.73**	20.00	16.67
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "AGE26" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**1.000**

Sample Size = 39

Test Result Negative: Since p = 1.000 > 0.10, cannot reject H_0 (not significant above 10%)

Contingency Table 27: Contingency Table Analysis Of "Age Effect On Photo 53" (AGE27) By "Mean Attractiveness Score" (MATSCORE)

Cell Contents:
Frequency
Percent
Row %
Column %

		MATSCORE			
		Low (1)	Medium(2)	High (3)	Total
AGE27	Young (below 60)	4 10.26 12.12 **80.00**	2 5.13 6.06 **100.00**	27 69.23 81.82 **84.38**	33 84.62
	Old (above 60)	1 2.56 16.67 **20.00**	0 0.00 0.00 **0.00**	5 12.82 83.33 **15.63**	6 15.38
	Total	5 12.82	2 5.13	32 82.05	39 100.00

COLUMN PERCENTAGE ANALYSIS FOR TABLE "AGE27" BY "MATSCORE"

Cell Contents:
Column %

		MATSCORE		
		Low (1)	Medium(2)	High (3)
AGE27	Young (below 60)	80.00	**100.00**	84.38
	Old (above 60)	**20.00**	0.00	15.63
	Total	100.00	100.00	100.00

STATISTICS FOR TABLE "AGE27" BY "MATSCORE"

Statistic	DF	Value	Prob
Fisher's Exact Test (2 - Tailed)	--------	--------	**1.000**

Sample Size = 39

Test Result Negative: Since p = 1.000 > 0.10, cannot reject H_0 (not significant above 10%)

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