The VISTAS

A Planned Residential Community

The City of Sparks

Office of the
CITY CLERK

October 14, 1988

M.A.P. Enterprises
3680 Grant Drive, Suite C-1-A
Reno, Nevada 89509

ATTN: Tim McDonald, Partner

RE: Special Use Permit Case No. SP-19-87-1
(The Vistas 1A & 1B)

Gentlemen:

This is to inform you that at the regular meeting of the Sparks City Council held October 10, 1988, the Council conducted the public hearing on your Special Use Permit application for an overall planned unit development for a 364 lot subdivision on approximately 129.9 acres in the R1-15/PUD zone situated northeast of Satellite Hills, Sparks, Nevada, having slopes in excess of 10% over 25% or more of the site.

After careful consideration of all the facts presented, the Council approved your application subject to the attached list of eighteen (18) conditions.

Please be advised that you may not conduct or establish the use for which this application was approved until you have been issued your Special Use Permit. Please contact the Zoning Inspector at 356-2384 to make arrangements to have your Special Use Permit issued.

If you have any questions or require further information, please contact Planning Director Greg Evangelatos at 356-2340.

Very truly yours,

Jane L. Stewart
City Clerk and
Clerk of the City Council

ef

Enc: (1)

cc: Planning/w/list (for distribution)
Licensing/w/list
Building Inspector/w/list
Fire Chief/w/list
File

RECOMMENDATION

The Planning Department is recommending approval of an overall planned unit development for a 129.09 acre portion inclusive of two subdivisions in an existing R1-15 PUD (single-family residential with planned unit development overlay) having slopes in excess of 10% over 25% of the site:

1. That the development be carried out largely in conformance with the developer provided in the Master Plan and Community Design Standards Handbook as submitted in the application as well as the conceptual "village" plan submitted in the application.

2. That the applicant conform to the recommendations relative to this development as submitted by the District Health Department.

3. That the applicant conform to the recommendations relative to this development as submitted by the Airport Authority of Washoe County.

4. That all the roof treatments of all buildings or structures found in this project be of tile or concrete slate for fire protection purposes.

5. That the applicant conform to the recommendations of the Regional Transportation Commission relative to modifications to access to the commercial corner located at the southeastern corner of Spanish Springs Road and the project entrance way to the satisfaction of the Public Works Director.

6. That each village or subdivision within a village be reviewed via the standard tentative map process and also with reference to the Master Plan/Community Standards Handbook submitted with the original application. Normal Park Construction Tax fees will be assessed on each building permit.

7. That the applicant pave two standard roadway lanes from the edge of the existing pavement on Vista Boulevard just north of Disc Drive to the project edge to the satisfaction of the Public Works Director prior to the issuance of a building permit on any structure in the development.

8. That the applicant secure and dedicate to the city two additional lanes of right-of-way for Vista Boulevard along an alignment acceptable to the Public Works Director prior to the issuance of a building permit.

9. That the applicant dedicate the site indicated as a fire station (1.5 acres) to the city prior to the issuance of a building permit and that this dedication occur in a manner acceptable to the Public Works Director.

10. That the applicant dedicate the elementary school site listed as 5 acres to the city prior to the issuance of a building permit in the area depicted in the master site development plan and that the dedication occur in a manner acceptable to the Public Works Director.

11. That the applicant dedicate the 4 acre parcel listed as a public facility site adjoining the elementary school to the city. This parcel is intended to be a joint use facility between the elementary school and the city. That this dedication occur prior to the issuance of any building permit for any structure on the property in a manner acceptable to the Public Works Director.

The following conditions relate to the project on a threshold basis. That is, as houses are finished at a certain numerical threshold improvements are made.

12.* That at the construction of 800 homes, that a fire station be constructed in a manner approved by the City of Sparks Fire Department on the aforementioned site. The station will consist of two bays and be approximately 5,000 square feet (estimated construction cost $500,000).

13. That at the construction of those 800 homes, a pumper be purchased by the developer but selected and approved by the city and dedicated to the city (estimated purchase price $150,000). (Combined cost of Items 12 and 13 will not exceed $750,000).

14. That at the construction of 600 homes, the developer either install a private recreational facility or build and dedicate to the city a community center facility on the designated 2 acre site. that the plans and specifications of the community center be approved by the City Councill. (Estimate $200,000)

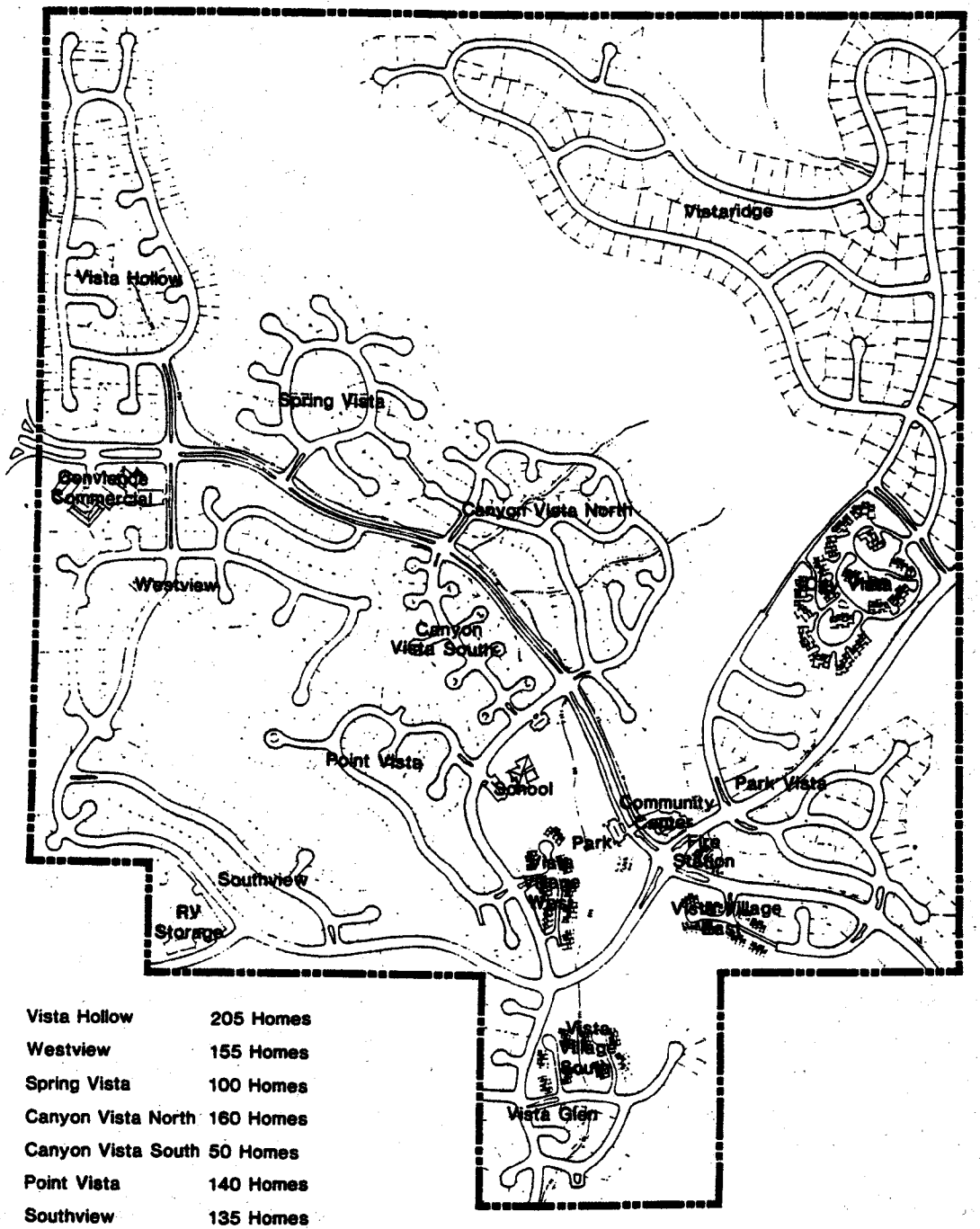
15.* That at the construction of 1000 homes, the applicant contribute a "fair share" of the funds needed to widen Spanish Springs Road an additional two lanes from the current edge of pavement to the project site entrance. That the "fair share" amount will be calculated by the Public Works Director and charged back to the project based on a "proportional benefit". (Not to exceed $200,000).

16.* That the applicant agrees to at 1,400 homes to contribute an amount of money to be determined to construct a multi-purpose field on an existing parcel of city-owned property following plans and specifications developed by the city. (Estimate $100,000). The combined total for items 14 and 16, if public, will not exceed $312,800.

17. That each village, subdivision, or amenity is proposed for construction that the specific components be reviewed by the Director of Public Works and the Planning Director to insure compliance with the original concept prior to the issuance of any building permits, tentative maps, parcel maps, etc.

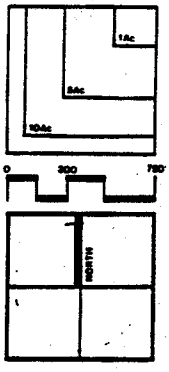
18. That the landscaped scenic corridor and jogging path that traverses the middle of the property be submitted in final form in a detailed manner prior to the issuance of a building permit and that the rate of installation mirror the schedule found on page 29-30 in the Master Plan and Community Design Standards Handbook.

* The not to exceed dollar figures will be adjusted in accordance with the Consumer Price Index at the time of construction or dedication.



Vista Hollow	205 Homes
Westview	155 Homes
Spring Vista	100 Homes
Canyon Vista North	160 Homes
Canyon Vista South	50 Homes
Point Vista	140 Homes
Southview	135 Homes
Vista Village West	64 Homes
Park Vista	105 Homes
City Vista	72 Homes
Vistaridge	235 Homes
Vista Village East	64 Homes
Vista Village South	64 Homes
Vista Glen	65 Homes
Total	1,614 Homes

School	5 Acres
Park	9 Acres
Community Center	2 Acres
Convenience Commercial	3 Acres
Fire Station	1.5 Acres
RV Storage	4 Acres



MASTER PLAN

ILLUSTRATIVE PLAN

Codega & Fricke, inc.
engineers + planners

The Vistas

Master Plan and Community Design Standards

prepared for: MAP Enterprises

prepared by:

Codega & Fricke, inc.

engineers + planners

3690 Grant Drive/Suite J Reno, Nevada 89509, (702)827-8833

Churn, Fittinghoff & Associates, Inc.

Planners, Engineers & Surveyors

Foothill Design Group

Architecture, Landscape Architecture, Planning

Environmental Analysis

May 1987

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Introduction

1. INTRODUCTION

The purpose of this document is to describe the master plan for The Vistas and to specify the community design standards that will guide the development of the project.

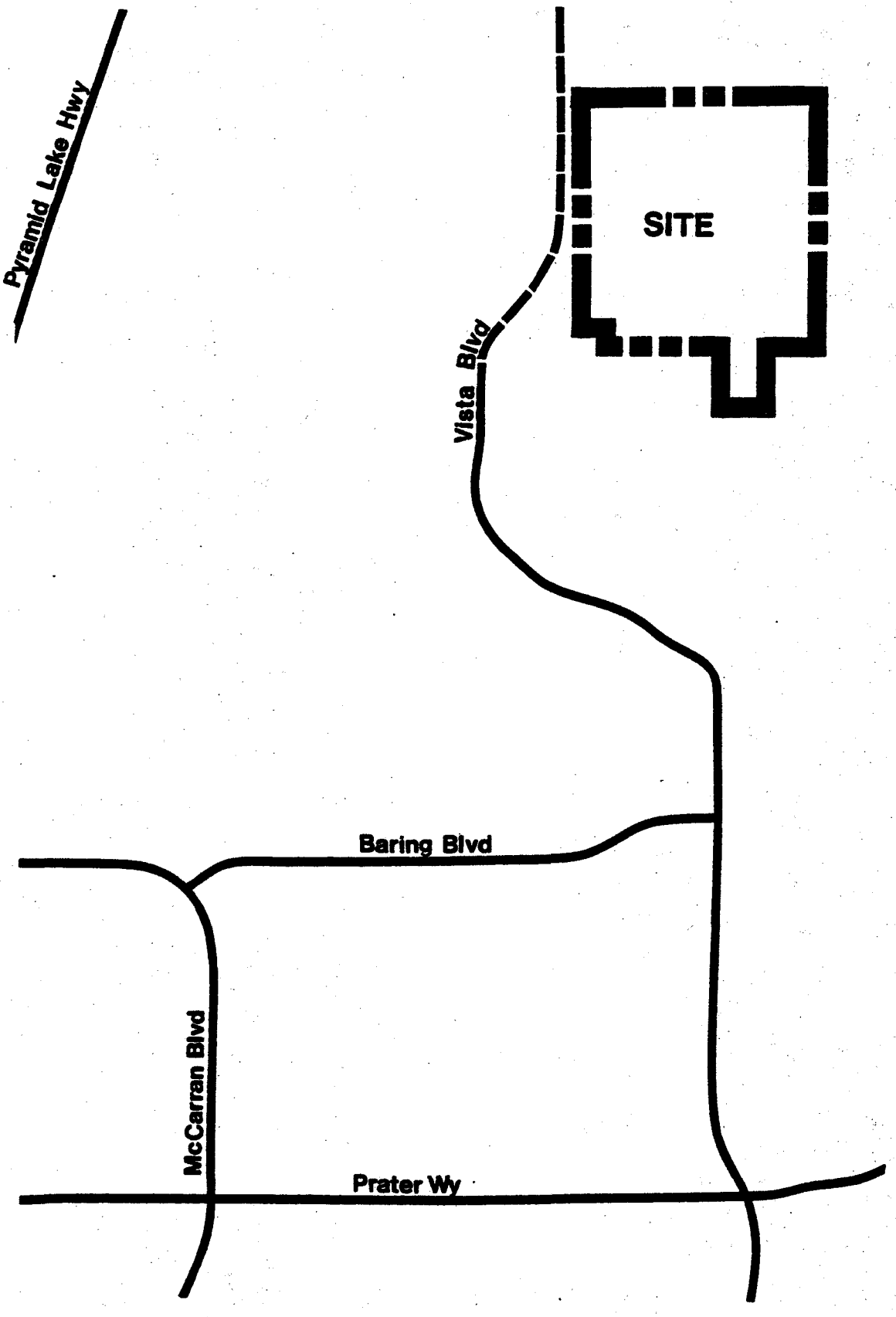
Project Location

The 660+ acre site is located to the northeast of the present terminus of Vista Boulevard. Spanish Springs Road, or the extension of Vista Boulevard, runs to the north and to the east into the subject property, forming the "front door" into The Vistas. The project's location is depicted in Figure 1.

The Master Developer

MAP Enterprises owns the property and is the master developer of The Vistas. Diversified Development and Construction, a Nevada limited partnership, and Pace-Tek, Inc., a Nevada corporation, are doing business as MAP Enterprises. Diversified Development and Construction builds homes throughout the Truckee Meadows, including two projects that are currently underway in the City of Sparks. Pace-Tek, Inc. is best known for their Satellite Hills project in the City of Sparks.

As the master developer of The Vistas, MAP Enterprises will be responsible for providing the major infrastructure to the site, implementing the common area improvements, and reviewing/monitoring development to ensure the community design standards are met.



1. Location Map

The Planning/Design Team

Sensitive and sensible planning dictates that the master plan must respect the natural characteristics of the property and nurture the many opportunities of the site to effect a desirable, marketable and efficient end result. The unique features of The Vistas site, combined with careful and innovative planning and implementation, will make the project a unique addition to the City of Sparks. To this end, a well-balanced planning and design team was assembled to provide a comprehensive and realistic master plan.

Team members are as follows:

Codega & Fricke, Inc.; engineers + planners - developed the master plan concept and oversaw the preparation of the community design standards.

Churn, Fittinghoff & Associates, Inc.; Planners, Engineers & Surveyors - evaluated the general infrastructure needs, provided land surveying services, and afforded general civil engineering and planning input.

Foothill Design Group; Architecture, Landscape Architecture, Planning & Environmental Analysis - developed landscape concepts and plans, prepared architectural character standards and plans, and developed community design elements for things such as graphics, lighting and fencing.

Barton Aschman Associates, Inc.; Traffic Engineers & Transportation Planners - prepared traffic impact analyses and developed mitigation measures for the project and the larger Spanish Springs Annexation Area.

Gil Patterson, Air Quality - evaluated the air quality effects associated with the project.

Pezonella & Associates, Geotechnical Engineers - conducted preliminary soils investigatory work.

Project Goals & Policies

This section presents the policy framework which is the foundation of The Vistas Master Plan and that will guide its implementation. The goals and policies state the master developer's positions on the development of The Vistas and define how the project will maintain and enhance the general public's welfare.

The goals and policies are presented under five headings: Housing, Environmental Protection and Enhancement, Resource Management, Community Design, and Growth Management.

Housing

Housing must be properly related to those who will live there and to community facilities and services. Housing must also be provided that meets projected demands. These statements of community concern are echoed by The Vistas' developers and reflected in the policies which follow.

Goal - To efficiently meet the projected housing needs of the community that are appropriate to the physical characteristics of the site and the socioeconomic demands of the marketplace.

Policy 1 - To provide a mix of housing densities, types, sizes, prices, and settings that reflect expected demands and The Vistas' ability to meet those demands.

Policy 2 - To orient the housing to complement the site's natural environment so that maximum "livability" will be achieved for those who will reside there.

Policy 3 - To develop the housing in a cohesive series of distinctive, well planned neighborhoods, each with its own identity that respects the various physical settings of the site.

Policy 4 - To build energy-efficient housing through the use of energy saving measures that are cost-effective and do not severely limit marketability and lifestyles.

Policy 5 - To require that all building materials reflect the general architectural character programmed for the project.

Environmental Protection & Enhancement

A variety of interesting and attractive environmental settings are present on the property. Development of the property should not be limited by these factors, but should instead strike a sensitive balance between man and nature. The issue is not density per se, but where and how the density occurs.

Goal · To achieve a reasonable balance between the preservation and enhancement of sensitive slopes on the site and the function of a property planned residential community.

Policy 1 · To preserve and enhance the sensitive hillsides and the natural drainage features found in The Vistas.

Policy 2 · To focus, or cluster, building and parking in certain areas designed to minimize environmental effects and to ensure that sensitive areas of The Vistas are left in a natural state.

Policy 3 · To require that all site planning, architectural design and materials selection respect the various natural characteristics of the site.

Policy 4 · To ensure this goal is achieved, all development must meet the meticulous requirements of The Vistas Protective Covenants and Restrictions and the architectural control committee, in addition to the standards of the City of Sparks.

Resource Management

The prudent use of natural resources is a key master plan criterion. The scope of The Vistas and the commitment of its developers affords the opportunity to manage resources on a meaningful scale. Resources given particular consideration include energy, water and open space.

Goal · To develop a community that uses and manages resources efficiently and effectively.

Policy 1 · To achieve an optimal level of resource efficiency, giving due consideration to design, marketability, livability and aesthetic implications.

Policy 2 · To build a community that highlights energy management where features are cost-effective, not speculative, so that The Vistas will serve as a model.

Policy 3 · To minimize landscape water requirements by limiting yard sizes, and thus the amount of irrigated yard areas, encouraging the use of water conserving irrigation techniques and drought tolerant planting, and by preserving or enhancing significant areas of natural landscape.

Policy 4 · To retain large amounts of natural open space that require minimal maintenance and yield significant natural beauty to the community.

Community Design

Sensitive and sensible community design is crucial to the successful implementation of the Master Plan. The expected outcomes of the proposed development hinge on both the "ground rules" set forth in this plan and the refinements that will occur as specific features of the project are designed and built. Policies, standards and criteria must ensure that the end product is a cohesive, well designed community, and at the same time retain a certain amount of flexibility to effect the best results.

Goal · To build a well-designed, unique and efficient community.

Policy 1 · To provide a variety of building types and lot sizes in a cohesive manner which is complementary and compatible with the site and its surroundings.

Policy 2 · To develop a system of neighborhoods, streetscapes, uses and open space that is logical and that capitalizes on the significance of the site.

Policy 3 · To landscape the project in a manner that fits the uses of the master plan and that blends in with the natural environment that is to be preserved or enhanced.

Policy 4 · To develop community support facilities; such as the convenience center, school, and park; where necessary or desirable that architecturally and functionally complement the residential areas and open spaces.

Policy 5 · To develop a coordinated and site/theme sensitive system of signage, lighting and fencing.

Policy 6 · To develop a comprehensive, efficient and safe transportation network, that will include appropriately designed streets and bicycle and pedestrian paths.

Policy 7 · To develop a utility system that provides efficient service and that respects the character of the planned development.

Policy 8 · To require that energy and water management be key design criteria as the master plan is implemented.

Policy 9 · To ensure compliance with the community design criteria through a comprehensive set of Protective Covenants and Restrictions and a balanced review committee.

Growth Management

Public services and facilities are the lifelines necessary to support The Vistas. Because The Vistas is a sizable project planned to be built over several years, all of the specifics related to the design and timing of public services and facilities cannot be precisely specified at this time. It would be unrealistic to either make definitive statements regarding availability or to require all of the improvements needed to implement the plan be provided up front. However, the plan must and does determine what facilities will eventually be needed and provides a framework for ensuring public facilities and services are built in concert with the project.

Goal · To ensure that necessary public services and facilities are provided as the project develops.

Policy 1 · To overcome the complexity and related uncertainty over the timing and staging of the development and public facilities and services, specific impacts and mitigations will be squarely addressed as individual project applications, such as tentative maps, are made.

Policy 2 · To effect prudent capital improvement planning by both the public and private parties, the individual projects and their associated services requirements are controlled under this master plan.

The chapters that follow describe The Vistas Master Plan and present the design principles and standards that will guide the implementation of the master plan. Two requests are being made of the City of Sparks. The first is to approve the 662± acre master plan with its community design standards. The second is to rezone the 260± acres of the project that were annexed into the city pursuant to the Sparks City Council's action of February 23, 1987. Within three years, the balance of the site is proposed for subsequent annexation and rezoning to permit the buildout of the master-planned community.

Project Description

2. PROJECT DESCRIPTION

The Master Plan Concept

The Vistas is designed to provide a unique addition to the City of Sparks.

A land use concept plan was presented to the Sparks Planning Commission on September 11, 1986. In summary, this plan called for 1,545 to 1,830 homes in The Vistas plus another 100 to 120 homes on the "Lucey" property. Thus, the total unit yield on the combined acreage amounted to a range of about 1,650 to 1,950 dwelling units. The "Land Use Concept" plan (September 1986) has been refined into The Vistas Master Plan. The new plan calls for 1,614 homes in The Vistas. This equates to a gross residential density of about 2.4 homes per acre. Additional uses are a small convenience center (3± acres), a park and elementary school site, a parkway and other landscaped common areas, and natural open space. Rounding out the uses are a fire station site, a community RV storage area, and a site for a day care center or an alternate community facility, such as a community building.

The land use concept leaves over one third of the site in open space. Much of the open area is comprised of sensitive slopes that are best left undeveloped. Development is generally proposed for areas that have a gradient of fifteen percent or less. In addition to focusing the development where it is most appropriate, a variety of site-sensitive grading and hillside adaptive construction techniques will be used to ensure a proper fit between the man-made and natural environments. Examples of these measures follow: The site has a fair amount of rocky terrain -- this native material will be used to mechanically stabilize slopes and as an integral landscape material. The visibility of cut and fill slopes will be limited by a combination of minimizing the extent of these slopes, steepening the slopes to the degree possible, strategic placement, and screening with structures or landscaping. Smaller and "split" road sections are proposed to minimize this critical aspect of site grading. Hillside adaptive building, where the home fits the topography rather than grading to fit the home, will be used. Site-sensitive and flexible structure siting (custom tailored setbacks) will also serve to minimize hillside related development concerns.

Several distinct precincts or villages will be developed within the project. Each will have its own identity and market appeal, but at the same time work together with integrated signage, lighting and fencing and compatible architectural styles. Open space separates most projects. Most of the housing will be developed at "typical" urban densities of four to six units per acre. Some of the housing may be attached (townhomes, duplexes or condominium/apartment flats) and reach a density of twelve units per acre. At the other end of the spectrum, estate-size lots for custom or semi-custom homes are planned at two to three units an acre. The Master Plan indicates that most of the housing will be detached (75% detached, 25% attached).

Vistaridge Parkway (a partially divided street with limited access that lies in a park-like corridor) extends from Spanish Springs Road through the site to "Section 25" and serves as the transportation "backbone". The residential projects feed off of this parkway corridor. From the Spanish Springs Road/Vista Boulevard extension, the parkway enters the site at a substantial, landscaped "entry statement." This landscaping is then extended up the parkway corridor and serves as the entry to most of the residential uses. The drainage channels that run through the parkway corridor, and elsewhere, will be "naturally" lined with native rock and intermittent vegetation, creating the illusion of a creek running through the project and also serving a stormwater management function. Pedestrian/bicycle paths, separated from the street, will be placed along the parkway to provide a recreation resource and to link the various uses together.

In order to nurture the rather unique addition to the City of Sparks that is envisioned, a number of detailed planning and design criteria have been developed for The Vistas. Specific topics or areas of concern are listed below.

-- Integrated signage, lighting & fencing standards.

-- A comprehensive set of conditions, covenants & restrictions that specify both how things will be built and how the project will be used and maintained. A master homeowners association will own and maintain general common areas. "Sub-associations" may be established and be responsible for features or amenities that serve only an individual project.

-- Landscaping concepts for both common areas and private yards.

- Architectural controls and architectural review. For example, an addition to a home will require architectural review and approval to ensure the "integrity" of the home and the neighborhood is maintained.

- The restriction of fencing in some areas (eg. estate lots rear ridge tops) where lot line delineation is undesirable and unwarranted.

- View protection and enhancement standards.

- Specific building envelopes (custom setbacks) and height limits.

- Measures to encourage energy conservation.

Site Analysis

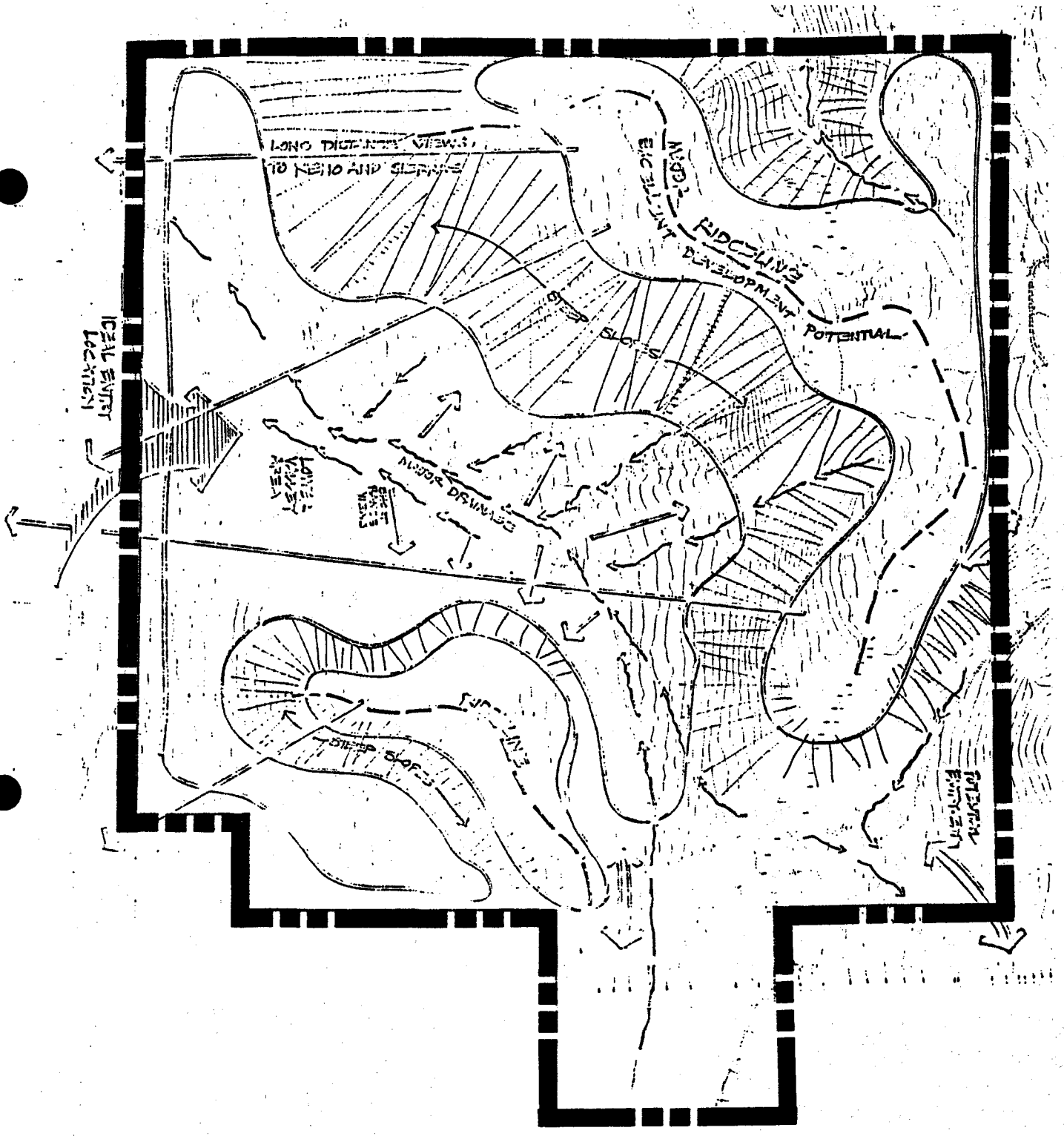
The subject property's physical characteristics have been inventoried so that the master plan properly respects these constraints and opportunities. The key site features are briefly described below.

Topography

Slopes in the project range from flat to isolated areas that exceed thirty percent in gradient. Development is generally confined to areas where slopes are fifteen percent or less. At the fringe of the "villages" or subareas of the master plan, development will take place on areas that exceed a fifteen percent slope, but this will be limited in extent and to mid-range topography (15-20%). Of course, streets and other infrastructure components will by necessity traverse some areas steeper than fifteen percent.

Drainageways

The natural drainage elements on the site will be retained so that a more natural, aesthetically pleasing and cost - effective approach to stormwater management can be used. Further, through the sensitive use of native rock and landscaping, these drainage ways will form a key element of the parkway/common area design.



MASTER PLAN

2. Site Analysis Map

Coddege & Fricke, inc.
engineers + planners

Views

A variety of important view elements exist, both on-and off-site. The canyons and hollows offer secluded, internal viewsheds. The upper reaches of the project allow one to look for miles, to the city lights to the south and southwest, to the Spanish Springs Valley to the west and north, and up and through the mountains to the east.

Soils

The site comprises roughly a one square mile area east of Spanish Springs Valley in the Pah Rah range. Vegetation consists predominantly of sagebrush, spring hopsage and cheatgrass. The central and eastern portions of the development are characterized by moderate to steeply sloping hills dissected by a system of dry stream channels. Based on geologic mapping completed by Bonham (1969) and Bell (1981, 1982; Preliminary Geologic Map, Vista Quad), the majority of materials underlying this portion of the site consist of Tertiary age basalt, basaltic andesite and pyroxene andesite flows. Quaternary age alluvial fan deposits underlie the gently sloping fan in the western portion of the development. These deposits consist generally of poorly sorted silts, sands and gravels. In addition, the U.S. Soil Conservation Service has identified several distinct soil types within the project area. No known faults transect the site, however, the project is located in a seismically active area (UBC Seismic Zone 3).

Based on the results of a preliminary investigation, the site is suitable for the proposed project. During a review of the pertinent geological information and a site reconnaissance, the following geotechnical considerations regarding site development have been identified:

1. Rippability of bedrock materials within the project.

2. Stability of cut slopes.

3. Local presence of expansive clay soils.

4. Flash-flood potential within the proposed development.

With the exception of the western portion of the site, the property is underlain by bedrock at shallow depths. Generally, the bedrock materials consist of

basalts and basaltic andesites. The degree of fracturing within these materials is unknown. A detailed seismic investigation should be performed prior to construction to determine the rippability of the bedrock materials. Grading plans will be reviewed to determine if utility trench excavations or deep cuts are proposed in materials which could require blasting. The materials generated by site work in the bedrock areas should be classified as rock fill. Seismic studies will provide an indication of the size distribution of these materials.

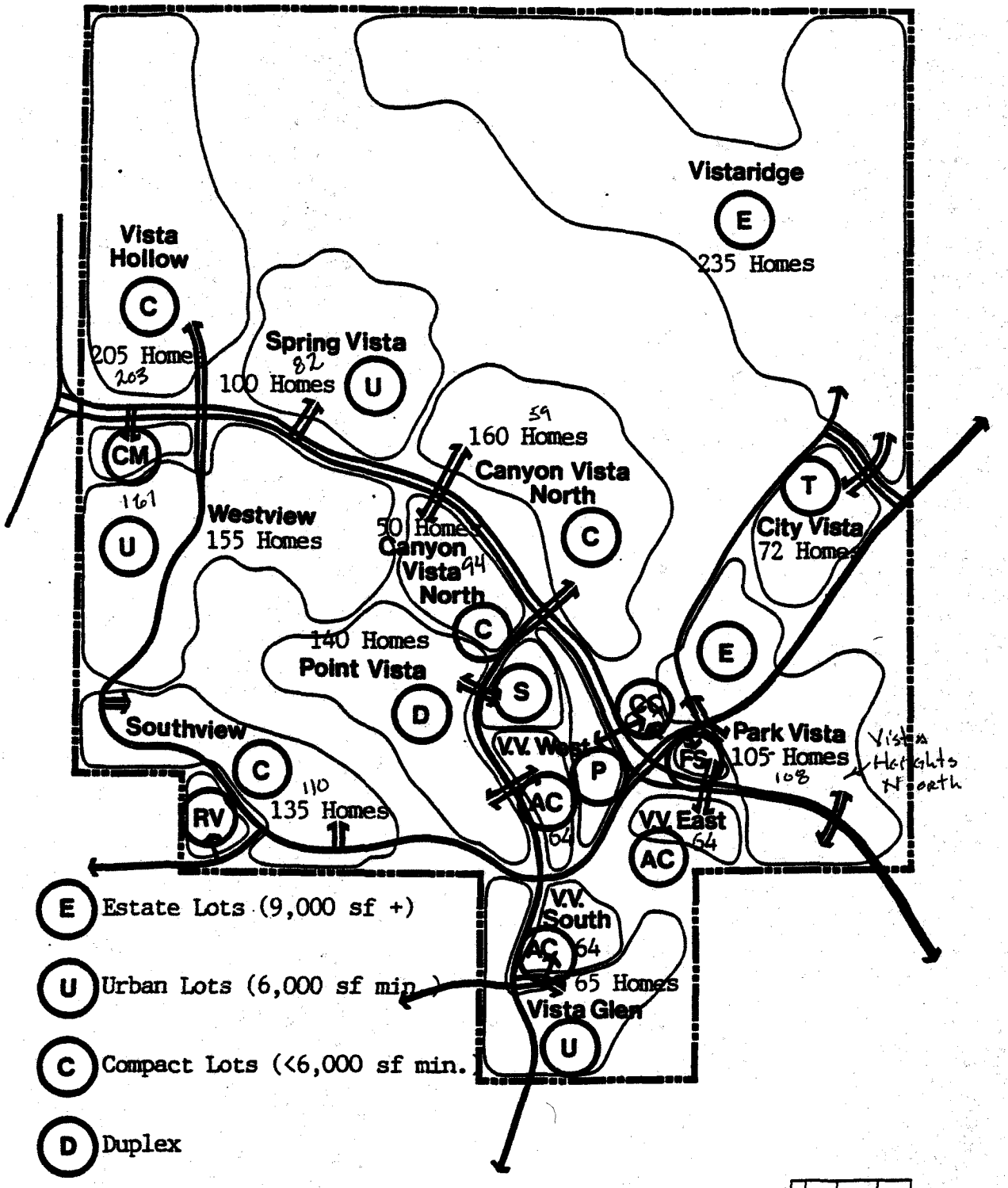
Bedrock cut slopes should be stable at maximum inclinations of one and one-half horizontal to one vertical (1 1/2:1). Locally, fracture orientations may create unstable conditions. Therefore, all slopes will require final evaluation in the field. Proper benching widths and intervals should be incorporated in the design of any slopes. Wire mesh may be necessary to protect areas downslope from rocks ravelling or toppling. In addition, rock traps or fences may be necessary. Permanent cut slopes constructed within alluvial materials and fill slopes should be designed at a maximum inclination of two horizontal to one vertical (2:1).

Studies completed by the U.S. Soil Conservation Service indicate that expansive clay soils are locally present within the development. Clay soils can experience volume changes (shrink and swell) with changes in moisture content, resulting in unfavorable movement of structural elements. Mitigation proce dures should be anticipated.

Complete geotechnical investigations will be performed to provide detailed information on the subsurface conditions in the final design stage. Engineering parameters of the underlying materials will then be determined to provide conclusions and recommendations concerning site preparation and grading, foundation design criteria, support of exterior flatwork and flexible pavement.

The Master Plan

The Land Use Plan for The Vistas is shown on the following page. The plan depicts the various villages, their densities, the major roadways, and the general location of the common area features. Both detached and attached housing are proposed. The plan largely envisions detached homes, but at tached homes serve to accomplish specific design objectives in some cases, and also cater will to certain segments of the housing market, such as empty nesters.



MASTER PLAN

3. Land Use Plan

The land use statistics for the master plan are presented in the following table:

Table #1
Land Use

Village/Plan Area	Acreage +/- (%)	Use	Density (du/ac)	Unit Yield +/-	Actual Unit Yield
1. Vista Hollow	42 (6.3)	Compact Lots	5.0	205	203 (-2)
2. Westview	44 (6.6)	UrbanLots	3.5	155	161 (+6)
3. Spring Vista	28 (4.2)	Urban Lots	3.5	100	82 (-18)
4. Canyon Vista N.	32 (4.8)	Compact Lots	5.0	160	59 (-101)
5. Canyon Vista S	11 (1.7)	Compact Lots	5.0	50	94 (+44)
6. Point Vista	26 (3.9)	Duplex	5.5	140	
7. Southview	27 (4.1)	Compact Lots	5.0	135	110 (-25)
8. Vista Village W.	5.5(0.8)	Apts./Condo.	12.0	64	
9. Park Vista	35 (5.3)	Mini-Estates	3.0	105	108 (+3)
10. City Vista	12 (1.8)	Townhomes	6.0	72	
11. Vistaridge	100(15.1)	Estates	2.4	235	
12. Vista Village E.	5.5(0.8)	Apts./Condo.	12.0	64	
13. Vista Village S.	5.5(0.8)	Apts./Condo.	12.0	64	
14. Vista Glen	18 (2.7)	Urban Lots	3.5	65	
RV Storage	4 (0.6)	RV Storage	N/A	N/A	
Fire Station	1.5(0.2)	Fire Station	N/A	N/A	
Convenience Center	3 (0.5)	Conven.Retail	N/A	N/A	
Community Center	2 (0.3)	Community	N/A	N/A	
Vista Village Park	9 (1.4)	Park	N/A	N/A	
Elementary School	5 (0.8)	School	N/A	N/A	
Major Roads	20 (3.0)	Transportation	N/A	N/A	
Open - Landscaped	16 (2.4)	Open Space	N/A	N/A	
Open - Natural	210(31.7)	Open Space	N/A	N/A	
TOTAL	662 (100)	N/A	2.4	1,614	

The master plan's overall density of 2.4± homes an acre fits within the master plan designation of 1 to 3 dwelling units per acre that was just adopted by the City of Sparks. The three-acre convenience center at the southeast corner of the intersection of Vistaridge Parkway and Vista Boulevard also matches the City's master plan designation.

The densities shown for each village are suggestive in nature. That is, the densities may be adjusted upward, within specified limits, or downward to meet the specific requirements of a particular project and developer. The densities shown will not be exceeded by more than fifteen percent without specific approval from the City of Sparks. In any event, the total unit yield will not exceed the maximum 1,614 envisioned in the master plan.

A description of each of the villages or projects in The Vistas follow. The use, acreage density and relationship to the overall plan is discussed. Each description is general in nature and may be changed, subject to master developer and City of Sparks approval, to encourage flexible and innovative land planning and housing solutions.

1. Vista Hollow

Vista Hollow flanks the north side of Vistaridge Parkway at the entrance to the project. The site is about 42± acres in size and is proposed to be built out at a density of about 5.0 units per acre. Thus, the total unit yield is about 205 homes. The lots are planned to be about 5,000 square feet in size, with widths of fifty feet or more. A divided, parkway-type entrance provides access to the subdivision from Vistaridge Parkway. This "first" intersection in the project is designed as the "frontispiece" for the entire planned community. The backbone of The Vistas' storm drain system, the open drainageway along Vistaridge Parkway heads north and west through Vista Hollow, providing a unique creeklike environment through the subdivision. Landscape elements will be placed where the drainageway meets the local streets and a pathway follows the "creek" to provide a useable open space element in the project. A tot lot might also be incorporated to enhance the value of this open corridor.

2. Westview

Westview lies across the parkway from Vista Hollow. Here, "typical" urban lots are proposed at a density of about 3.5 units per acre. About 155 homes will be situated on the 44± acre site. These lots have a minimum square footage of 6,000 and will be sixty plus feet in average width. Here again, the entry statement at the first parkway intersection provides an attractive, divided gateway to this project. Residents of Westview will have convenient access to the jogging/bicycle paths in the parkway corridor that lead to the park, school, convenience center and the remainder of The Vistas' villages. To the south and east, natural open space provides a suitable buffer yard and scenic backdrop for the housing.

3. Spring Vista

This project will be built at a density akin to that of Westview. The 28± acre parcel is planned at a density of 3.5 units per acre. The Illustrative Master Plan depicts a project with 100± lots somewhat smaller than those of Westview but with the incorporation of a "commons" in the center of the subdivision. This would provide a strategic open area at the center of the housing that could accommodate children's play apparatus, informal turf play areas and landscaped or seminatural passive "park space". The use of residential construction tax credit is proposed for consideration to provide such a commons.

4. Canyon Vista North

Canyon Vista North is situated on the north side of Vistaridge Parkway. The homes creep up the "sides" of the "canyon" to the point where the slopes become too steep to properly develop. Here, the homes have nice views across and through the canyon. This project also includes two minor drainageway corridors that run through the homesites to the major drainage element along Vistaridge Parkway. This allows both open, semi-natural drainage and provides strategic relief to the built environment. Where the two minor drainageways meet the parkway, there is a substantial widening of the parkway corridor where a park-like effect can be created. This area might also accommodate stormwater detention and, thus, have stormwater management benefits. This area contains 32± acres and is master-planned for 5.0± homes per acre, or about 160 units.

5. Canyon Vista South

Canyon Vista South is a smaller, "sister" project to Canyon Vista North. As its name implies, it lies along the southern edge of Vistaridge Parkway. Similar to Canyon Vista North, this 11± acre site is programmed for approximately fifty homes, with a gross density of 5.0± units to the acre.

6. Point Vista

Point Vista extends from the "Vista Village" area to the west out on a prominent knoll that overlooks the entry into The Vistas. This 26± acre site is planned for duplex units on individual lots that are designed to work with the topography. Homes are either oriented toward stepping "up the hill" or "down the hill" to minimize earthwork and maximize view potential. Conceptually, the duplex structures could be designed so that from above or below, they look like rather large single-family detached homes. Fencing and yards along the "downhill homes" that lie along the westerly knoll will be controlled to ensure a cluttered effect does not result and to nurture a sensitive transition to the natural, hillside open space below. Natural or semi-natural open space lies at the core of the project. At about 5.5 units per acre, 140± homes are planned for Point Vista.

7. Southview

Southview is positioned in the southwest corner of The Vistas. Here, an efficient lifestyle is afforded on "compact lots" sited at a density of about 5 units per acre. Minimum lot standards under consideration include 50± feet wide by 80± feet deep or 60± feet wide by 70± feet deep. These relatively small, but also fairly wide, lots are being used elsewhere to provide a larger-looking home and to counter the "garage door syndrome" and the lack of street parking sometimes found in smaller lots with minimal street frontage. One hundred thirty-five homes are envisioned for the 27± acres.

8. Vista Village West

Vista Village West is an apartment or condominium project proposed next to the school and park sites. The intent is to create a "village" feeling in the natural bowl that includes this project and the school, the park, the fire station, the community center site, and the "built edges" of Vista Village South and Vista Village East. The apartment structures, being more massive than single family homes and with the landscaped grounds around them, add to the potential for creating the desired village effect at the community's core. This 5-6 acre site will fit about 64 homes at an approximate density of 12 units per acre.

9. Park Vista

Park Vista is an area of mini-estates that are situated just to the east and above the Vista Village Park. This project includes about 35 acres. At a density of 3.0± units per acre, 105 homes are planned for Park Vista. Here, the lots are scheduled to be 8,000± to 10,000± square feet in size. These upscale homes will afford views over the Vista Village area and beyond to mountains to the west.

10. City Vista

A prominent bluff is the location of City Vista. This site lies between the mini-estates of Park Vista and the estates planned to the north. Luxury townhomes are positioned for views to the south and the west. These homes are envisioned as "downhill units" with view-oriented rooms looking out and stepping down the moderate slopes. The twelve-acre site includes about 72 homes at a liberal density of 6± units to the acre.

11. Vistaridge

Vistaridge sits atop The Vistas with commanding views in every direction. Here, one-third± acre homesites will be geared toward custom home or "semi-custom" home construction. Each lot will have a specially designated building envelope that specifies both where the house is to be placed on the lot and how tall a structure may be. This accomplishes several things: (1) views from adjoining lots can be protected, (2) construction and driveway ac

cess can be confined to locations where most appropriate, and (3) the homes can be sited so that from below, stark "skyline silhouetting" and excessive grading impacts are avoided. Also in this area, lots along the perimeter will have fencing restricted or prohibited to nurture a "clean" hillside view and to effect a more sensitive transition from housing to natural common areas. Vistaridge's 100± acres has a density less than 2.5 units per acre. About 235 homes are planned for the area.

12. Vista Village East and 13. Vista Village South

These two projects are envisioned to be identical to that of Vista Village West. In fact, these two projects may be developed and operated together with Vista Village West to achieve scale economies in management. Each site includes 5 to 6 acres, about 64 homes and densities of a dozen units per acre.

14. Vista Glen

Vista Glen lies at the southernmost section of The Vistas. Traditional-sized single family lots occupy this area. Traversing Vista Glen is a drainageway that will include part of The Vistas' jogging/bicycle path network. About 65 homes are programmed for the 18± acres for a density of around 3.5 dwelling units per acre.

Vista Village Elementary School

A 5± acre site is depicted for an elementary school that lies at the approximate center of The Vistas. Preliminary discussions with Washoe County School District officials indicate that the population of The Vistas will warrant about "1.0" elementary school. The size of the site is based upon a joint use agreement concept with the adjoining park. The recommended 4.5 acre size is increased to 5± acres. The school is located off of Vistaridge Parkway so that the school crossings and the associated speed zones can be confined to the street in front of the school and not affect the relatively heavily-traveled parkway. Also, the path system is designed to provide safe and convenient access to the school from the various neighborhoods or villages.

Vista Village Park

Nine ± acres is set aside for the Vista Village Park. This park is intended to serve as an adjunct, joint use facility with the elementary school and to round out the open space and park-like features of the project. Informal turf playfields, children's play apparatus areas and passive park uses are envisioned for the park. No "formal" athletic or ballfields are proposed because the associated grading requirements would be out of context with the master plan and hillside grading concerns in general. The major drainageway separates the park from the apartments/condominiums abutting to the west and meanders through a portion of the subject property.

Vista Village Fire Station

A fire station site is situated at the easterly quadrant of the intersection of Vistaridge Parkway and Cityvista Road. 1.5± acres is alloted for the fire station. Discussions with Sparks Fire Department staff led to this location since it is on the major thoroughfare, Vistaridge Parkway, and because it serves both the areas downhill to the west and the balance of the Spanish Springs Annexation Area, which lies to the east, northeast, and southeast.

Vista Village Community Center

The two acres that occupy the northern quadrant of Vistaridge Parkway and Cityvista Road is reserved for a "non-commercial" community use. Possible uses include a community center that might be constructed, owned and operated by The Vistas Homeowners Association or a fitness facility. Construction of this facility may be left up to the homeowners association.

Vista Crossing Convenience Center

A convenience shopping center is planned for three acres that occupy the southern flank along Vistaridge Parkway at the front door to The Vistas. Uses envisioned for this location include a convenience market, a sales/project office for The Vistas, and small convenience shopping-oriented shops. The sales/project office is designed so that it can be converted into a day care center in the future.

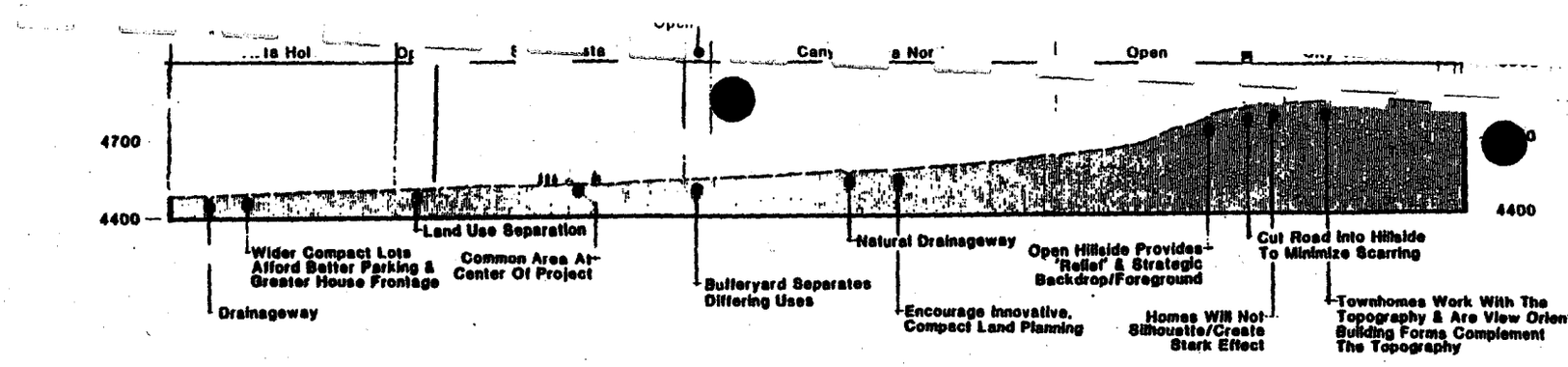
The Vistas Community RV Storage

A four-acre parcel in the extreme southwest corner of The Vistas will be used to store recreational vehicles of residents of The Vistas. On lot RV storage is prohibited in The Vistas unless it is in a totally enclosed structure. Therefore, residents can use the community facility for a nominal fee or use a "commercial" facility. The four-acre site should accommodate about 300 to 350 RV's. It is estimated that The Vistas buildout population will be about 4,000 to 4,500 persons. Nevada Department of Motor Vehicle data show that Nevadans have about 45 RV's per 1,000 population. At 45 RV's per 1,000 people, The Vistas projected population would have an estimated 160 to 200 RV's. Therefore, the 4-acre (300 to 350 RV capacity) site should more than meet the project's needs. Of vital importance with respect to the RV storage site are security and "buffering". The area will be securely fenced and properly lit with non-obtrusive (to neighboring properties) lighting. The site will also require extensive perimeter, as well as possibly some internal, landscaping to soften the edges and not impose a sea of trailers, boats and campers on the cityscape.

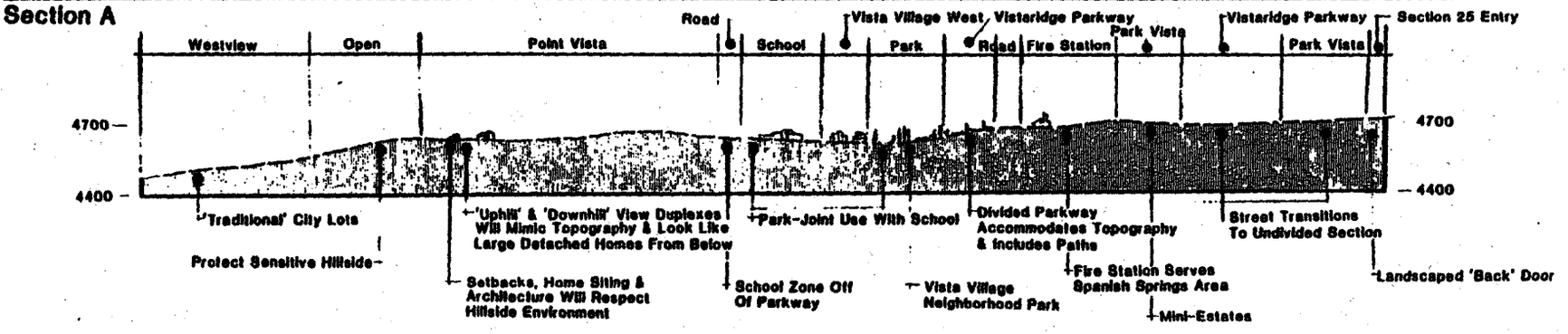
This site may be used as a plant nursery until demand warrants the RV storage facility. The nursery would gradually transition from holding plant material to recreational vehicles. Some of the nursery stock initially planted would remain (per an ultimate design scheme) so that relatively mature plant material would surround and fit between the RV's.

Site Sectional Studies

The site sections shown on the following pages illustrate how the villages relate to the topography, each other, and the common areas. They also depict how open space is used to provide strategic relief to the cityscape, protect sensitive viewsheds, and limit encroachment on sensitive hillside areas.



Section A



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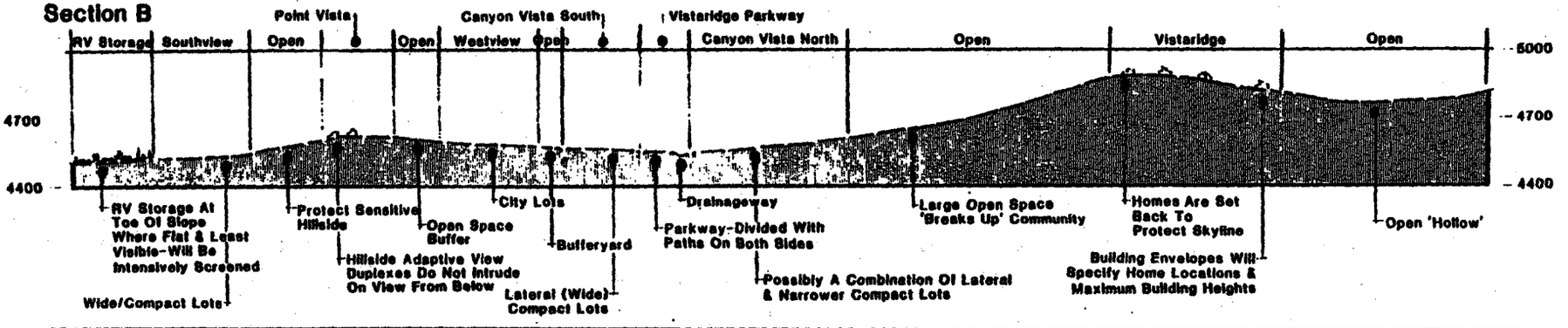

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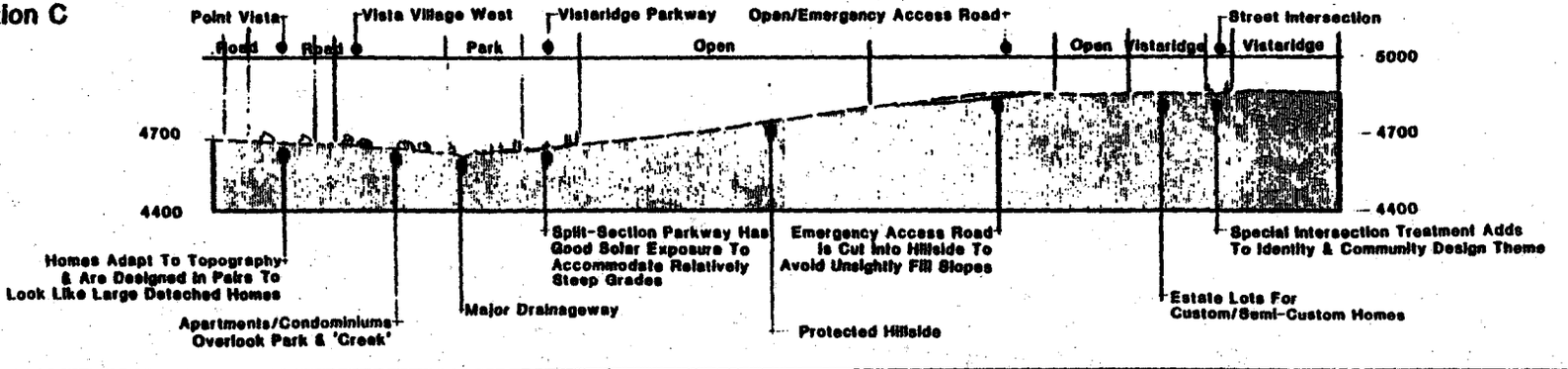

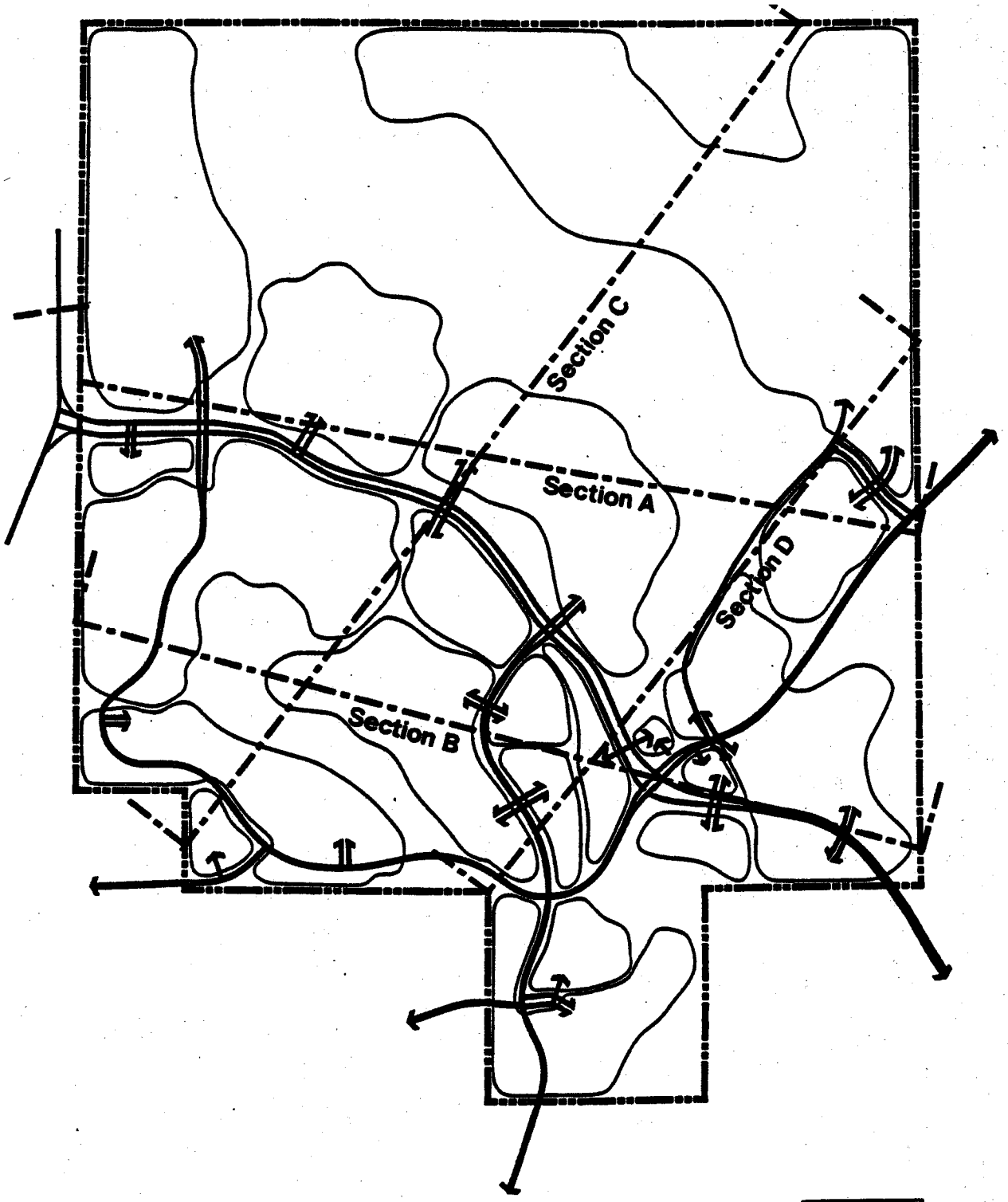

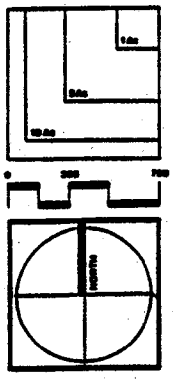

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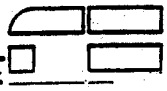
5 Sectional Study Key Map



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Zoning

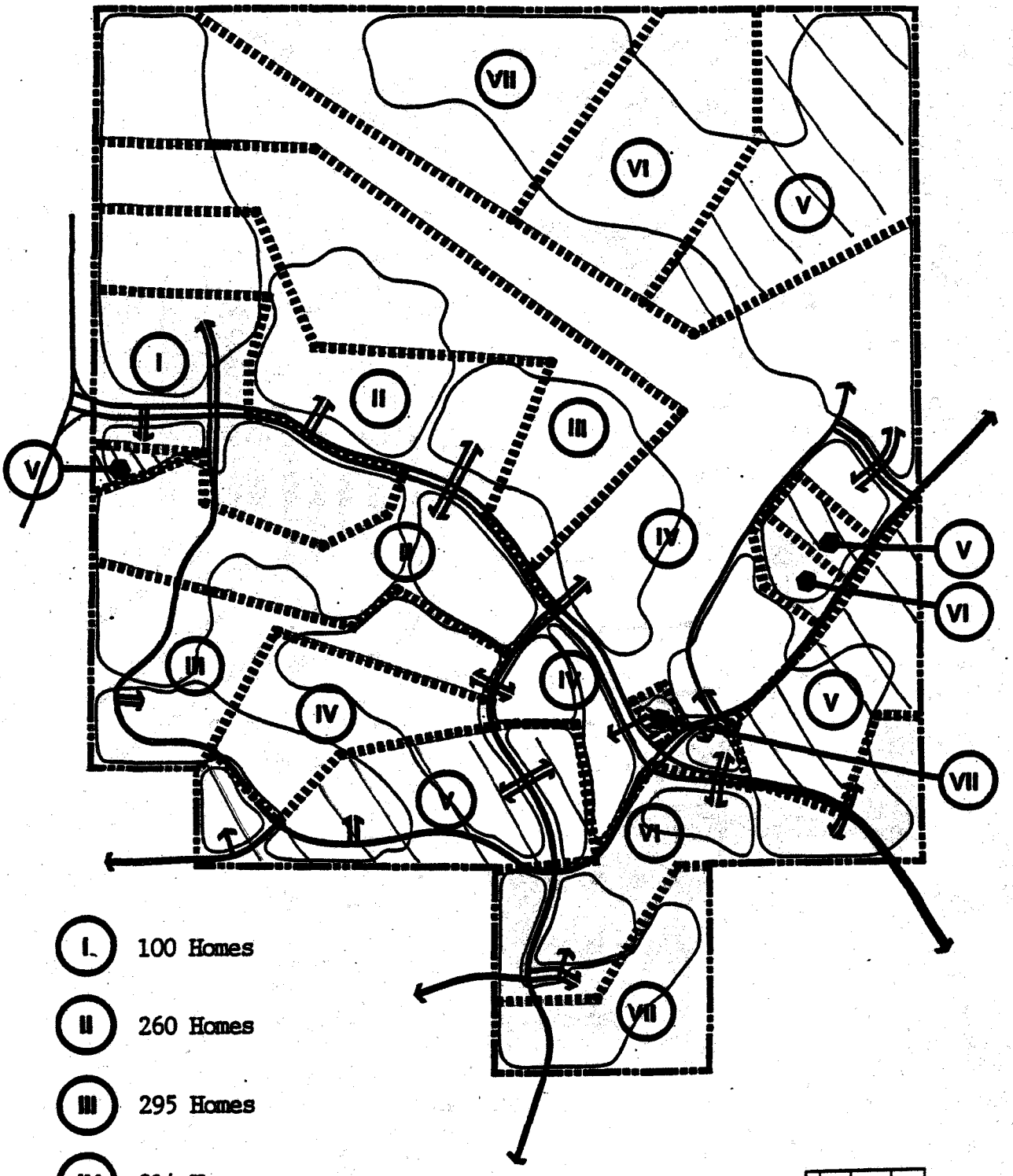
The entire site will, at least initially, be zoned R-1-15/PUD. This permits a density of up to 2.9 units per acre and affords flexibility in lot size and setbacks which is necessary to prudently implementing The Vistas Master Plan. As individual projects are designed (and legally described) pieces of The Vistas will be rezoned where necessary to accommodate a specific project. For example, an attached housing project is not now permitted under the R-1-15/PUD classification. The plan does envision some attached homes, so in that situation the subject property will be rezoned (eg. R-2) to accommodate the project when it is proposed for development. Also, the 3.0 acre convenience center (small-scale neighborhood retail) will be zoned C-1.

Phasing

The absorption rate for the project is estimated to run from 150 to 300 homes per year. Thus, the 1,604 homes project should take five to eleven years to complete. The phasing plan (Figure 6) shows the general sequence that will be followed during the buildout of the master plan. Note the significant common area/landscaping commitment that accompanies the first phase.

The intent of the phasing strategy presented here is to effect a balanced and efficient approach to the buildout of the project. The phasing plan is a statement of the developers' intentions related to the pattern and timing of construction. The phasing plan also permits governmental entities to undertake capital improvement and service programming. The phasing described is not "cast in concrete" -- it presents a likely and logical sequence for development of the project. Factors that will affect phasing plans include changes in interest rates, relative sales/demand for the various types of housing, the paces of individual developers of the project, and the availability of infrastructure.

The goal of the phasing is to at all times provide a mix of housing densities, types, sizes, prices and settings to the local housing market, to the extent feasible. The phasing schedule that follows shows how this mix is planned to be provided. The phasing plan strives to provide recreation facilities, shopping, services and the elementary school when justified to meet the needs of the project population and nearby residents. The phasing schedule also shows how support services are geared toward the residential buildout of the



I 100 Homes

II 260 Homes

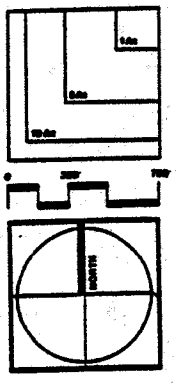
III 295 Homes

IV 314 Homes

V 278 Homes

VI 277 Homes

VII 90 Homes



MASTER PLAN

6. Phasing Plan

Cadigan & Fricke, Inc.
engineers + planners

project. As stated previously, if the final location or design of a project affects the distribution of acreage from one neighborhood or village to another, the units or density in the neighborhood or village that becomes smaller may be redistributed to an adjacent village or plan area.

Compliance Statements/Phased Implementation

Once this master plan is adopted, the submittal of any building permit application, tentative subdivision map or any other planning permit application will be accompanied by a statement that enumerates compliance with the master plan and that has been approved by the master developer. Should the application not be in compliance with the conditions of the master plan, the attached statement shall note the difference(s) from the conditions, the reasons for the differences and any measures proposed to mitigate any identified adverse impacts.

Following, is a phasing schedule that shows when and where The Vistas is projected for development. The schedule shows when and where the various housing elements, common area facilities, convenience and commercial uses, public facilities, and major infrastructure elements are forecasted to come online. The Phasing Plan graphically depicts this schedule. The schedule depicts a logical sequence for the development of the project. Actual starting and completion times for the phases will be a function of market conditions.

TABLE #2
Phasing Schedule

Phase	Year	Village, Use or Facility	# of Units or Amount of Nonresidential Use
1	1987	Vista Hollow	50 homes
	1987	Westview	50 homes
	1987	Vistaridge Parkway	900 lf
	1987	Off-site Sewer	complete
	1987	Off-site Storm Drain	complete
	1987	Vista Crossing Conv. Ctr.	sales center, nursery
		Phase 1 Housing	100 homes
2	1988	Vistaridge Parkway	2100 lf
	1988	Vista Hollow	55 homes
	1988	Westview	55 homes
	1988	Spring Vista	50 homes
	1988	Canyon Vista North	50 homes
	1988	Canyon Vista South	50 homes
		Phase 2 Housing	260 homes
3	1989	Vistaridge Parkway	1500 lf
	1989	Vista Hollow	50 homes
	1989	Westview	50 homes
	1989	Spring Vista	50 homes
	1989	Canyon Vista North	60 homes
	1989	Point Vista	40 homes
	1989	South View	45 homes
	1989	City Vista Road	3500 lf
		Phase 3 Housing	295 homes

Phase	Year	Village, Use or Facility	# of Units or Amount of Nonresidential Use
4	1990	Vista Hollow	50 homes
	1990	Canyon Vista North	50 homes
	1990	Point Vista	50 homes
	1990	Southview	45 homes
	1990	Park Vista	35 homes
	1990	City Vista	24 homes
	1990	Vistaridge	60 homes
	1990	Vista Village Elem. School	5 acres
	1990	Vista Village Park	6 acres
	1990	Vista Village Fire Station	2 acres
	1990	Vistaridge Parkway	1800 lf
	1990	City Vista Road	3500 lf
		Phase 4 Housing	314 homes
5	1991	Point Vista	50 homes
	1991	Southview	45 homes
	1991	Vista Village West	64 homes
	1991	Park Vista	35 homes
	1991	City Vista	24 homes
	1991	Vistaridge	60 homes
	1991	The Vistas Comm. RV Storage	4 acres
	1991	Vistaridge Parkway	1000 lf
	1991	Vista Crossing Conv. Ctr.	complete
		Phase 5 Housing	278 homes
6	1992	Park Vista	35 homes
	1992	City Vista	24 homes
	1992	Vistaridge	60 homes
	1992	Vista Village East	64 homes
	1992	Vista Village South	64 homes
	1992	Vista Glen	30 homes
	1992	Vistaridge Parkway	1500 lf
		Phase 6 Housing	277 homes
7	1993	Vistaridge	55 homes
	1993	Vista Glen	35 homes
	1993	Vista Village Comm. Ctr.	complete
		Phase 7 Housing	90 homes

Community Design Standards

3. COMMUNITY DESIGN STANDARDS

Circulation & Access

Several types of roadways are planned for The Vistas as shown in Figure 7. Each roadway classification is briefly described below and in Figure 8.

Parkway/Arterial

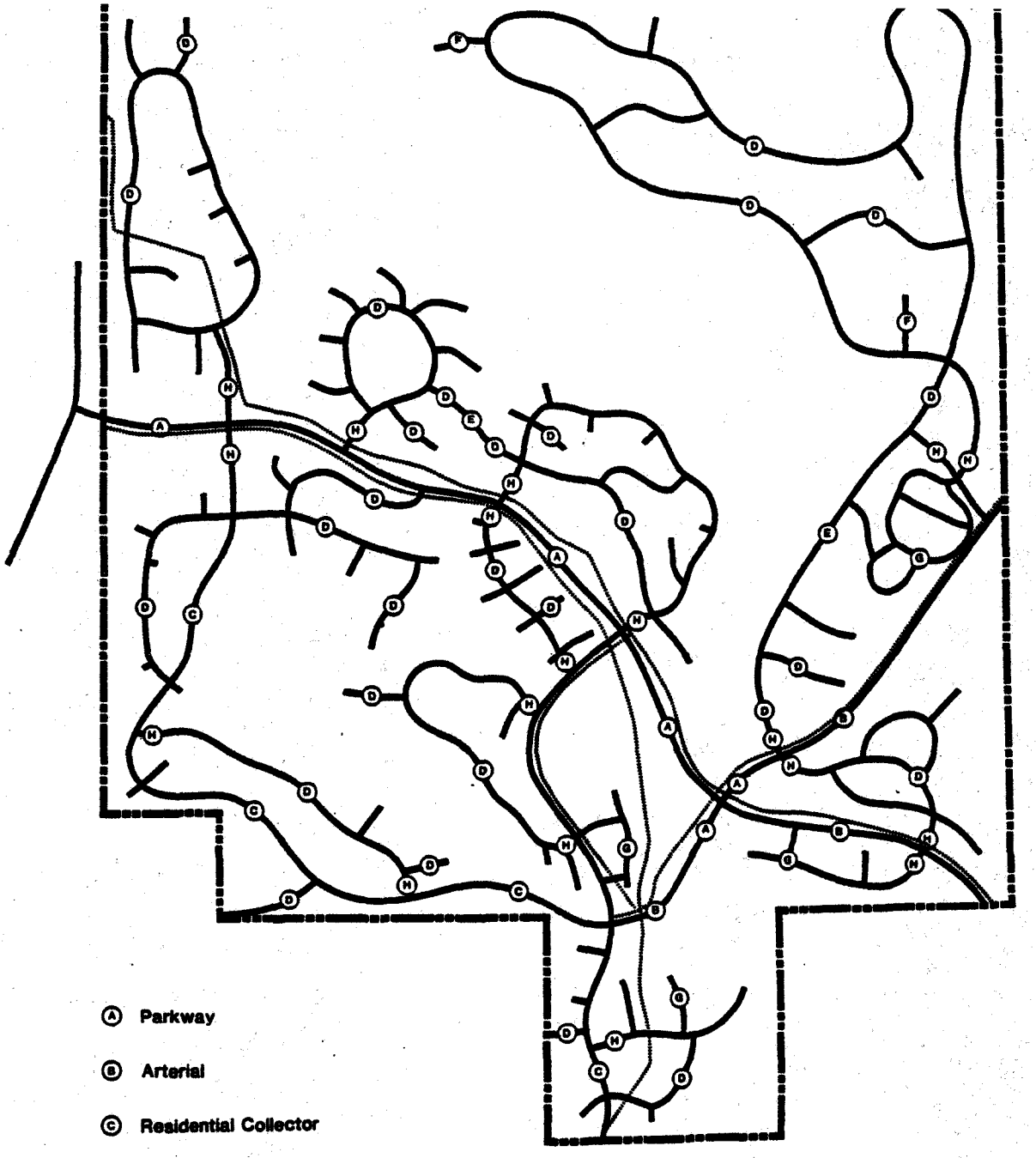
This is the major roadway serving the project. The street includes two 24-foot paved sections (each accommodating two 12-foot travel lanes) separated by a median. No parking lanes are provided because no uses directly abut the street and, therefore, on-street parking is both unnecessary and undesirable. Off-street paths are used in lieu of standard sidewalks.

Standard Arterial

This level of street is used where traffic volumes are projected to reach 5,000 (ADT) or more. Here, two or four 12-foot travel lanes will be provided depending on traffic warrants. Nine-foot parking lanes will be provided wherever adjoining uses are proposed such that the need will occur. Either sidewalks or separated pathways may be used to accommodate pedestrian movements.

Residential Collector

This street will be used to serve villages or clusters of villages where traffic volumes will range from 2,500 to 5,000 ADT. The street section is the same



Ⓐ Parkway

Ⓑ Arterial

Ⓒ Residential Collector

Ⓓ Residential Street

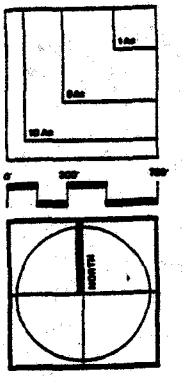
Ⓔ Emergency Access Road

Ⓕ Residential Place

Ⓖ Private Street

Ⓗ Parkway Entry

Primary Ped/Bike System



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7. Circulation Plan

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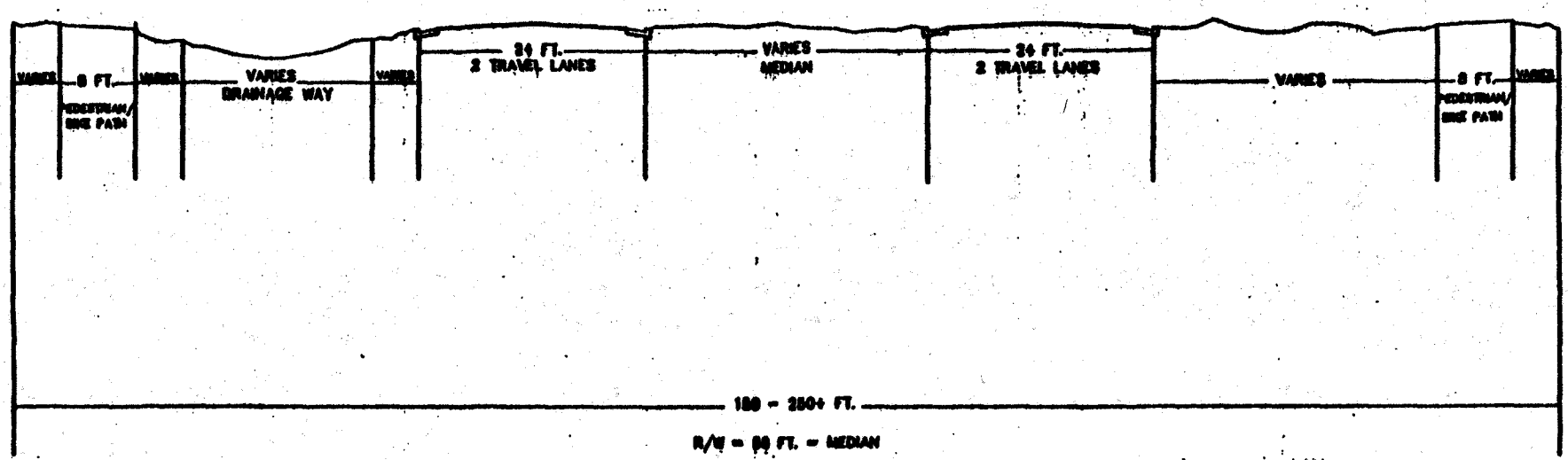
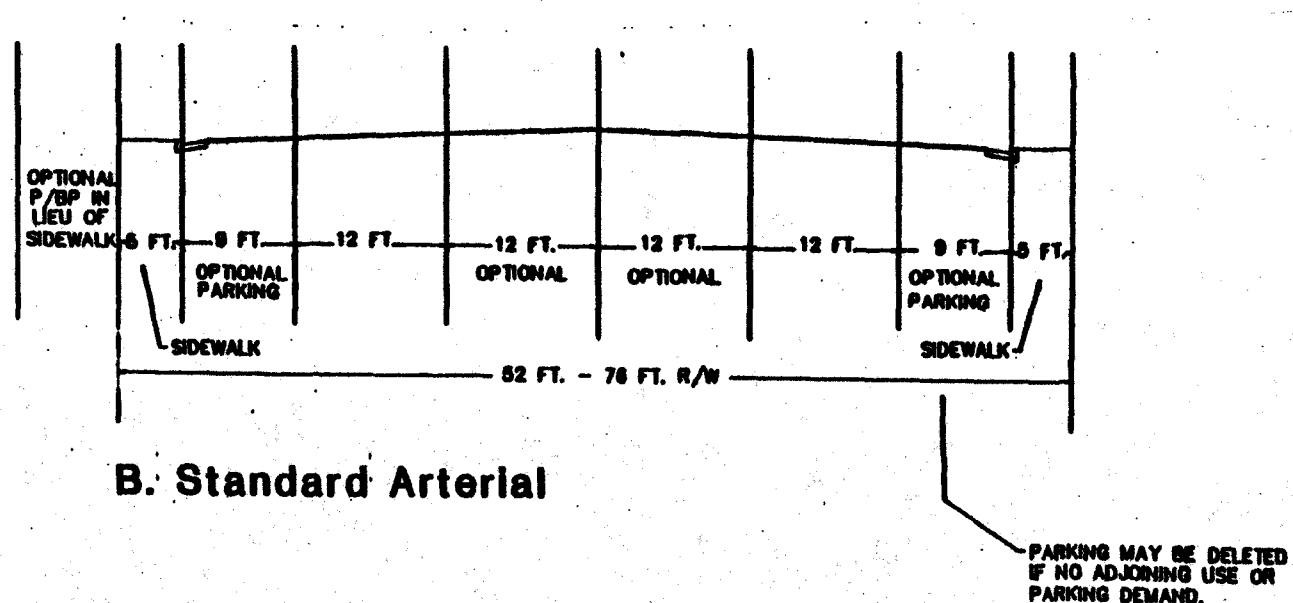
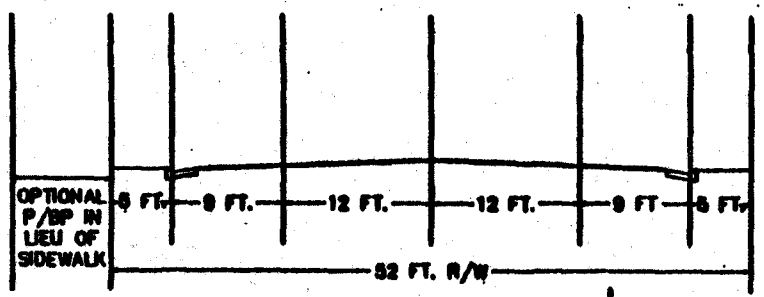


A. Parkway Arterial

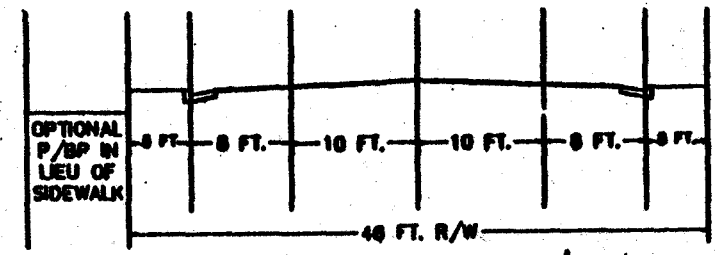


B. Standard Arterial



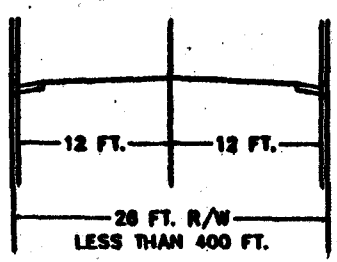
C. Residential Collector

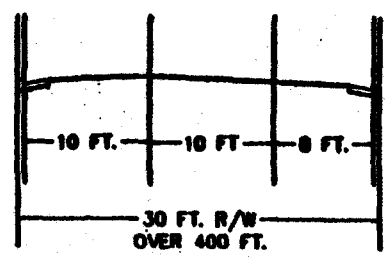
PARKING MAY BE DELETED IF NO ADJOINING USE OR PARKING DEMAND.



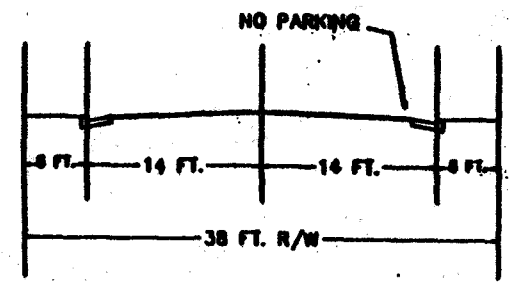
D. Residential Street

PARKING MAY BE DELETED IF NO ADJOINING USE OR PARKING DEMAND.

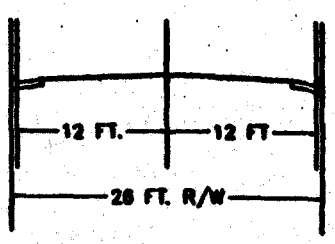




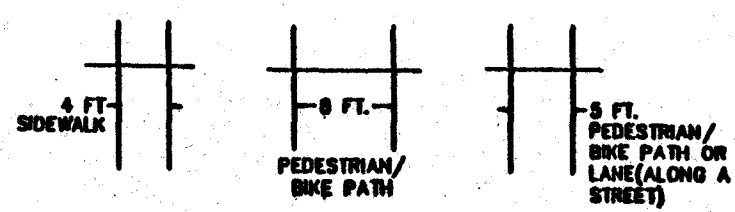
E. Access Road



F. Residential Place



G. Private Street



Pedestrian/Bicycle Ways

as for the Standard Arterial, with the exception that four lanes will never be required.

Residential Street

The standard public residential street (less than 2500 ADT) will provide two 10-foot travel lanes with 8-foot parking lanes. One parking lane may be deleted where, because of adjoining land uses (or non-use) or due to the particular design of a project, it is not needed.

Public Access Road

This roadway is used to provide public or secondary emergency access to a use or village(s). For short runs (up to 400 feet) a 24-foot paved section is adequate. For longer runs (over 400 feet) a 28-foot section will accommodate two 10-foot travel lanes plus an 8-foot emergency parking lane.

Residential Place

This section is proposed for dead end roads (cuis-de-sac) that serve ten or fewer lots and that have adequate off-street parking. The cross-section is the same as for the Public Access Road (over 400'), a 28-foot section.

Private Street

Private streets may or may not be included in the project. Any such streets will be at least 24-feet in width and have sufficient off-street parking, or use the appropriate public street section.

Parking

Parking will be provided as required in Sparks' code. Additionally, parking on cuis-de-sac where smaller lots (less than 6,000 square feet in size) are developed, additional parking will be developed by providing parking courts

or bays, increasing street frontage, or by increasing front yard setbacks to accommodate longer (eg. 4-car) driveways. Also, all parking lots will be developed in a "modular" format, with at least 20 percent of the lot landscaped or with a pervious surface.

Pedestrian/Bicycle Paths

Sidewalks or pedestrian paths will be four feet in width and paved. Bicycle paths will be paved with asphalt and eight feet in width, unless safely designed to be one-way, which in that case they can be reduced to five feet in width.

Architecture

Character/theme

A consistent architectural style will be developed for each project or village that is "compatible" with the overall community design of The Vistas. A combination of "western" forms and ranch-type materials, such as heavy wood timbers and rough sawn wood, is preferred. In general, the architecture is "contemporary" or "contemporized traditional" where traditional architectural elements, like mullioned windows or Victorian "facade" treatments are added. No adjacent homes along a street will be permitted to have the same plan/elevation.

Hillside adaptive construction, where topographic changes are accommodated across the structure are encouraged and in many cases required (refer to hillside adaptive construction section). Innovative housing and land planning concepts are highly encouraged. This includes things like "Z" lots (a double zero lot line house, where side yards are expanded and constricted to create more useable yard space and better integrate indoor and outdoor living spaces), zero lot lines (eg. one ten-foot side yard on one side of the home rather than a five-foot side yard on each side of the house), zipper lots (an interlocking lot where the back side of the garage is the year yard line of the house to the rear), "patio" homes, and "cluster" homes. A key to the proper use of these concepts is to relate the house to the yard, with prudent attention being paid to privacy concerns, landscaping, and a comprehensive project design strategy.

All building plans must be approved by the ACC prior to obtaining a building permit.

Massing/forms

A variety of forms and massing, that are at the same time compatible and complementary, is to be provided in a project to create an interesting environment. Landscaping will be used to soften and complement building forms. Roof lines should be oriented in differing directions. All one-story or a combination of one and two-story homes will be used to avoid the "row house" effect. Also, where two-story plans are used, the ratio of second floor to first floor living space should be substantially varied and oriented in differing directions (eg. windows to sides, to fronts, to rear). Building heights should relate to setbacks: the taller the structure, the greater the setback must be, particularly where window placement creates privacy concerns for neighboring homes. Window placement is particularly sensitive -- views should be considered and most importantly adequate privacy must be afforded.

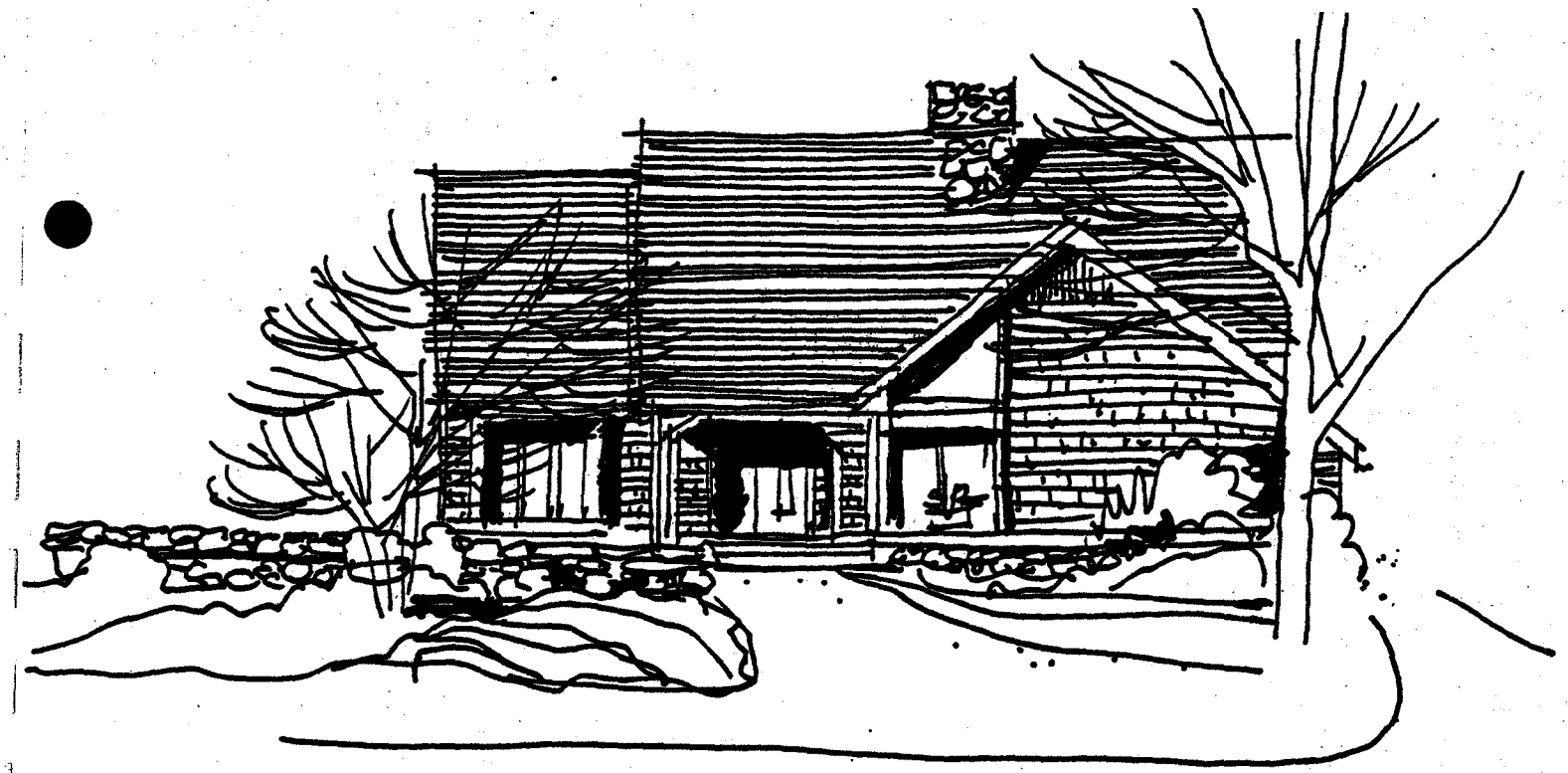
Steep roof pitches are preferred (eg. 6:12, 8:12+). Flat roofs are highly discouraged. Where it is feasible, it is desired that roof lines mimic the natural land forms. Where slopes are relatively steep (over ten percent), homes should step up, down or along the street to work with, rather than against, the site. Solar access will also be considered in home design -- at the very least problems (eg. one house entirely shading the useable yard space of an adjoining home) must be avoided.

Materials/textures

The use or incorporation of wood, stone and/or brick on exteriors is highly encouraged. All roofs will be concrete tile and of a uniform color throughout The Vistas. The permissible color or shades of a color will be established by the ACC.

Along the parkway, all developed common areas, and where the homes will be visible to the community in general, the sides and/or rears of the homes must receive a similar elevation treatment as that provided on the front of the home. Window and door materials and colors must be consistent throughout a project or village.

Single Family Variation with step roof over 2nd story, popped-out bays, roof overhang at entry & garage



Single Family Variation with roof over entry, garage away from street, roof line variation

9B.

Clustered homes with courtyards can connect to the pedestrian/open space system

9C.

Streetscape variation of massing, heights, forms, entrances, etc.

9D.

Higher elevation

homes to be kept back from

abrupt changes of ridgelines

9E.

Forms mimic or complement

landforms & are hillside adaptive

Living Area Standards

Each of The Vistas' villages or plan areas is listed below along with the minimum allowable liveable floor area per unit.

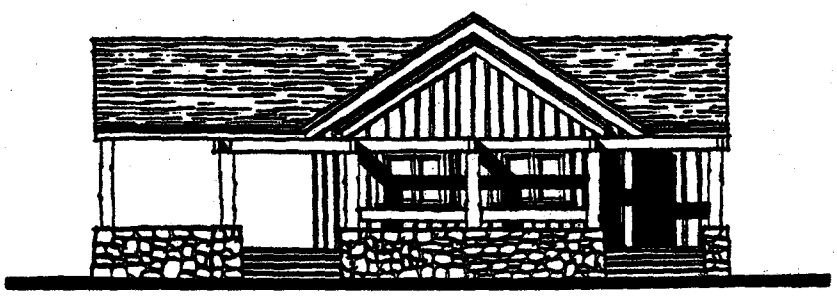
Table #3.
Living Area Standards

Village	Minimum Square Footage
1	1,200
2	1,500
3	1,500
4	1,200
5	1,200
6	1,200
7	1,200
8	800
9	1,650
10	1,500
11	1,800
12	800
13	800
14	1,500

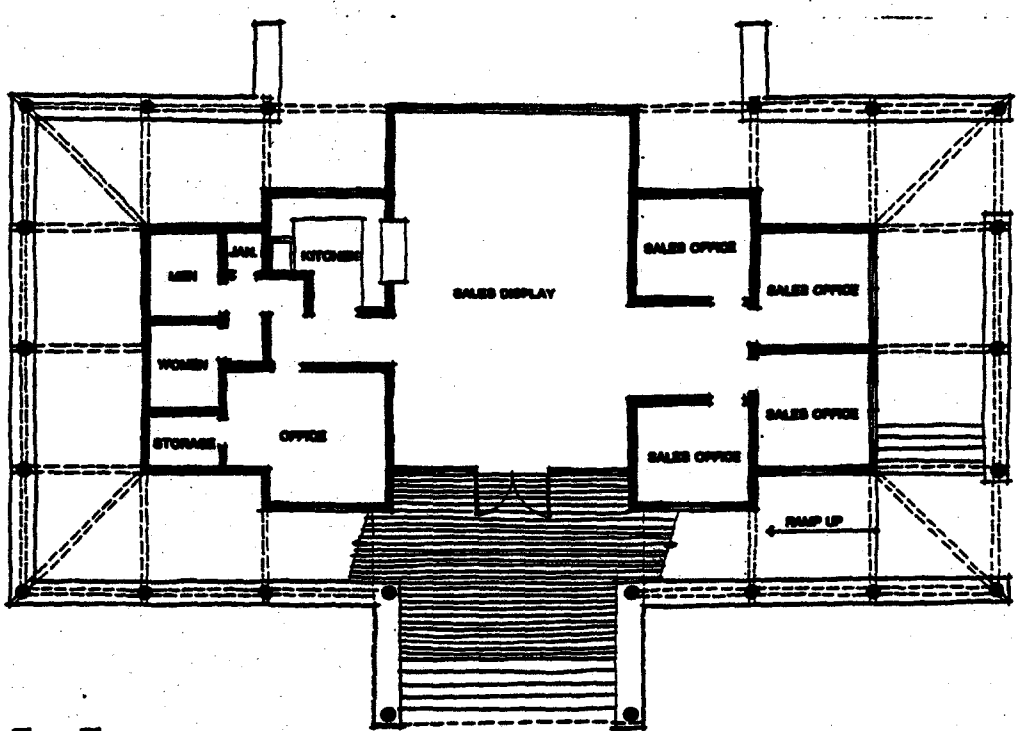
Entry Architecture

The architecture of the gate house and sales/marketing building is a rustic combination of western forms and "ranch" type materials. The buildings consist of low rock walls surrounding the structure, with heavy timbers forming rails and open trellis structures above an enveloping deck. The exterior walls are board and batten while roofing is earth tone asphaltics.

Front Elevation



Side Elevation



Floor Plan

10. Sales/Marketing Building

Landscaping

Common Areas

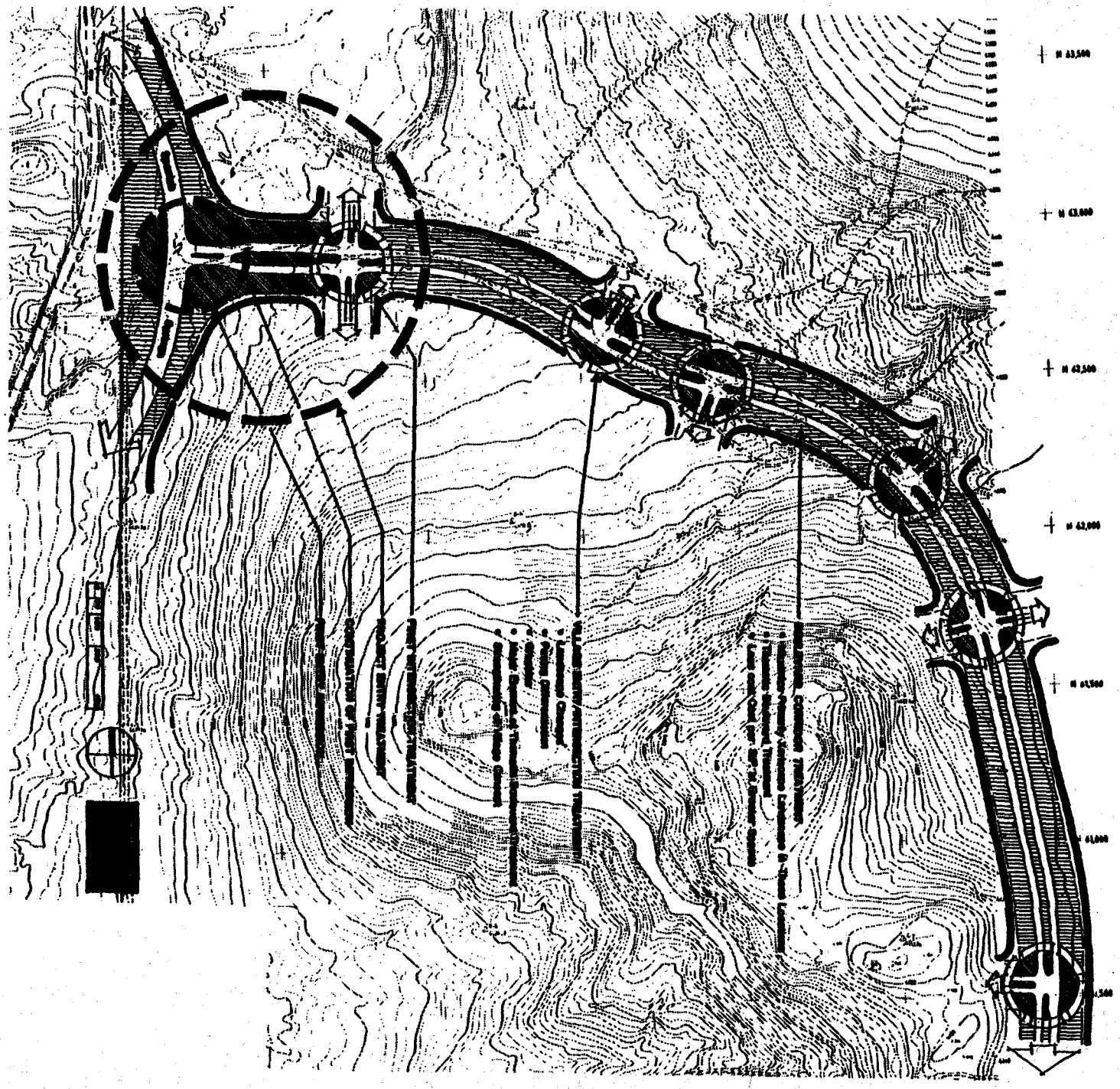
Schematic Plan -- The schematic plan demonstrates the alignment of the entry to the project, the nature of the median and landscape setback right of ways, and the location of individual village entries. The structure of the boulevard can be divided into three major components: the project entry, intersection treatments, and the boulevard corridors between village intersections. The schematic plan shows the structure of these elements and demonstrates the intent to create differentiation through landscape treatment.

Concept Plan -- The Boulevard is aligned on the site to take full advantage of existing conditions and to provide a backbone to the auto/pedestrian circulation system. Most of the Parkway (not including the entry from Spanish Springs Road) consists of four lanes of traffic divided by a 30' wide landscaped median. There is a 70' landscape setback on the side of the parkway where the major drainageway exists and a 50' setback on the other side. In addition, special paving in the roadway denotes both a pedestrian crossing and a village entry.

The Landscape Concept primarily consists of a dry, xeric landscape through the corridor and special treatment at the intersection entries. The village entries are punctuated with rock wall systems integrated into earth berms with dry, xeric landscaping on the berms. In the entry foreground, irrigated groundcover and flowing trees are provided as an accent. Individual signage and graphics are to be mounted on the curvatures of the rock walls and visibility is to remain unimpeded to the street.

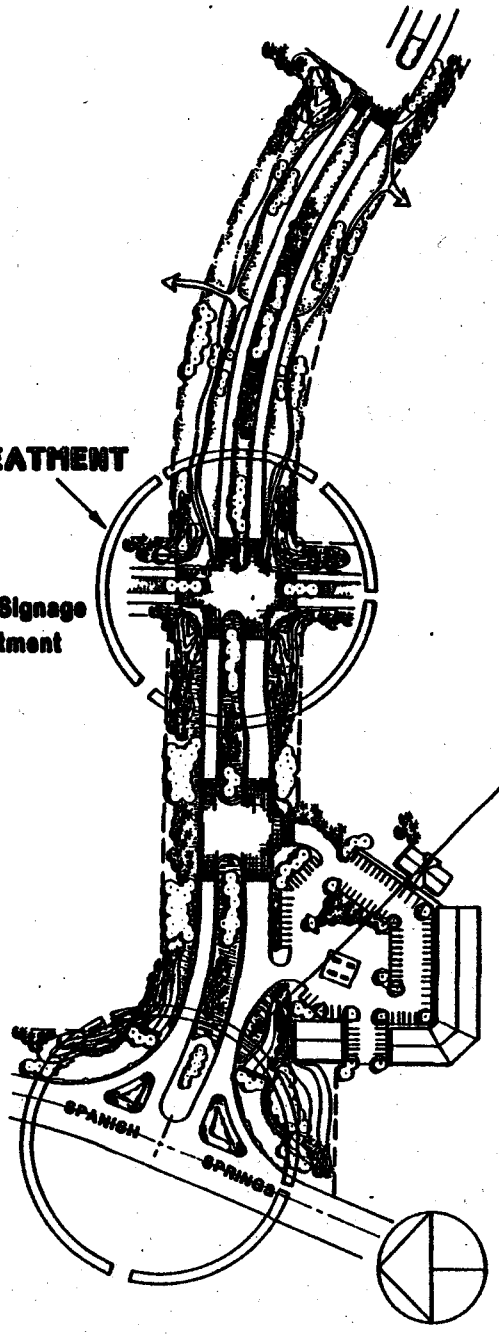
An enlarged landscape setback on one side of Vistaridge Parkway is provided in order to handle and take advantage of the natural drainage channel. The drainage system consists of a series of meandering, rock-lined swales feeding into and from a holding basin midway down the parkway.

Pedestrian walk systems are provided in the landscape setbacks on either side of the parkway. The walk is a layer of asphalt concrete over a gravel base. The pedestrian walk connects to all intersections and points of entry. The pedestrian walk meanders along the drainage channel and bridges over the channel at various points.



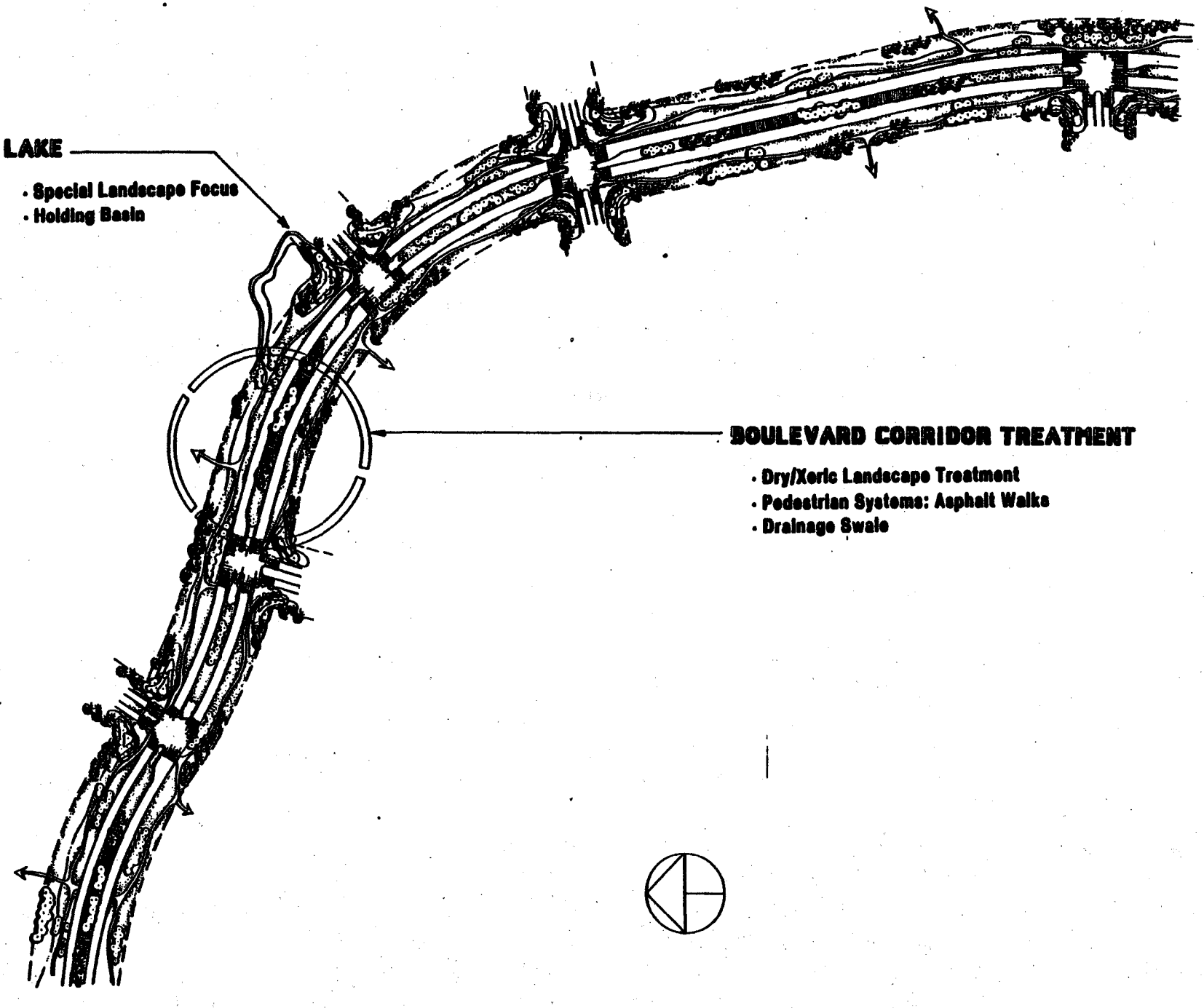
VILLAGE ENTRY / INTERSECTION TREATMENT

- Irrigated Groundcover Area With Flowering Trees
- Special Street Paving
- Rock Wall Systems With Village Entry Signage
- Berms With Dry/Xeric Landscape Treatment



PROJECT ENTRY TREATMENT

- Rock Wall Systems With Project Signage
- Earth Berm Systems
- Special Paving
- Groundcover Treatment
- Tree Groves
- Irrigated Turf Zones
- Sales/Marketing Facility


LAKE
• Special Landscape Focus
• Holding Basin
BOULEVARD CORRIDOR TREATMENT
• Dry/Xeric Landscape Treatment
• Pedestrian Systems: Asphalt Walks
• Drainage Swale

Lighting is to be achieved by providing 30 foot high sharp cutoff luminaires at the intersections and decorative luminaires on small 15 foot standards in the corridor zones. This provides for adequate lighting for traffic and pedestrian movement at intersections and good sidewalk delineation in the corridors, while simultaneously minimizing objectionable lighting on the windows of residences.

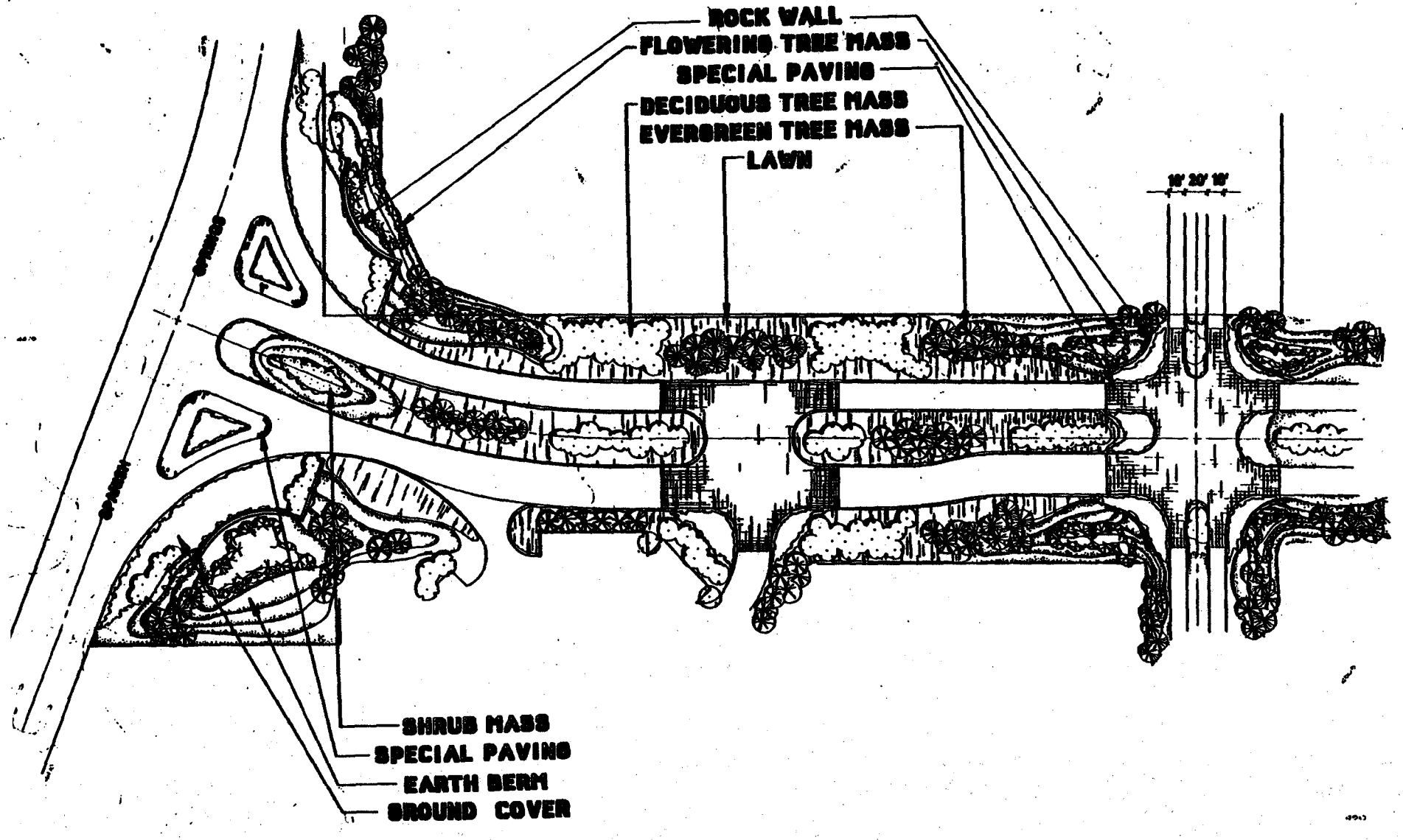
Entry Plan -- The project entry is similar to the intersection treatments. Here, the landscape setback is 50' to the north and south, and the median is 50' wide. A gate house or another architectural statement at the entry can provide information as well as lend a sense of security. Highly visible rock walls retain earth berms with dry, xeric landscaping. The overall planting treatment consists of dense masses of trees, flowering trees above the walls, and irrigated groundcover in the foreground. Project identification signage is to be mounted on the curvatures of the rock walls. Irrigated turf is proposed for the median and corridor between the project entry and the first village entry.

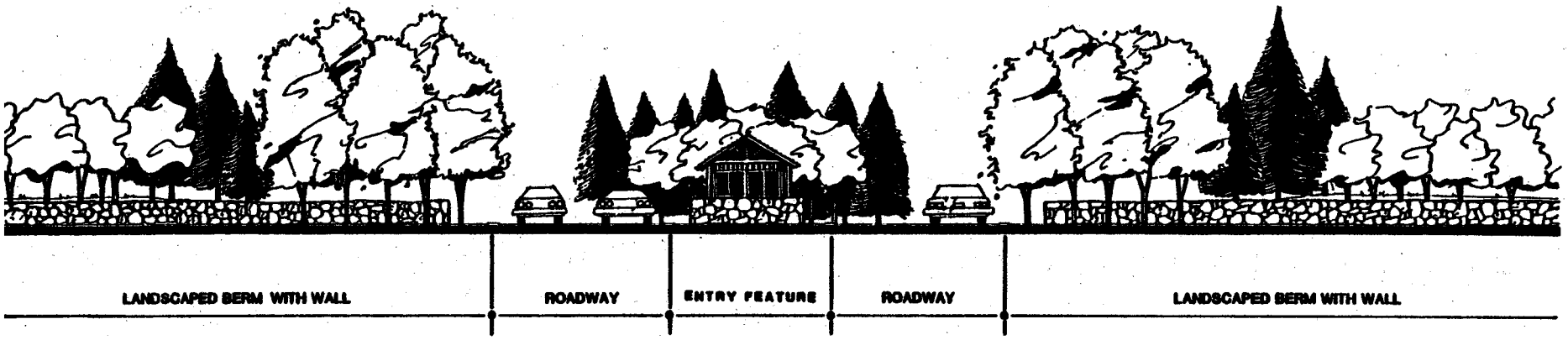
Private Yards

Landscaping requirements will ensure that private yard "design" both adds to "community value" and the individual homeowner's lifestyle.

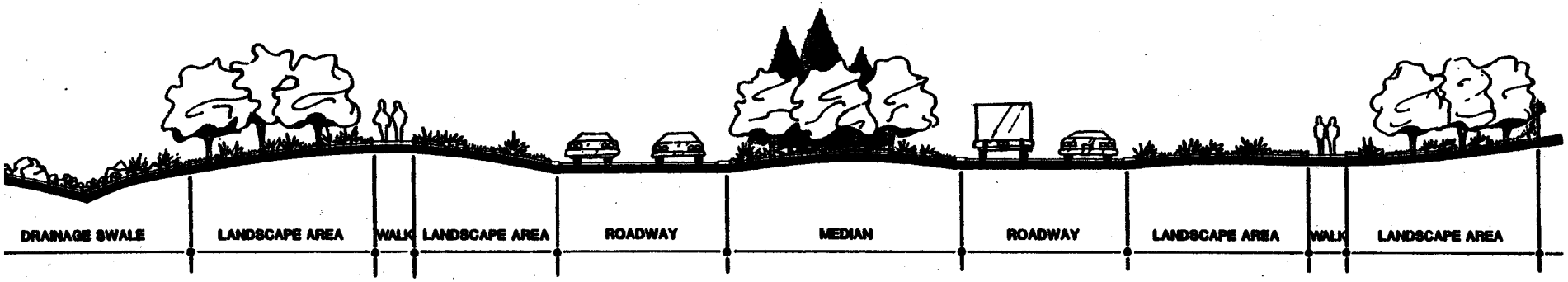
Merchant builders will be required to submit front yard/street tree landscape plans with final maps and building permits. Plans must also indicate fence locations, with fencing to be of a consistent style (except where "view" fencing is used along side or rear yards). A recommended plant list will be developed for each project -- they may vary from village to village to nurture different themes (eg. flowering tree, deciduous, evergreen). At least three trees will be required to be planted in front yards.

Yards will be required to be completely landscaped within eight months of occupancy. To aid in this effort, a "how to" booklet will be provided to homebuyers that addresses plant material selection, use of "hardscaping", protection and enhancement of views, privacy, xeriscape concepts, use of turf, and irrigation system design/water conservation. A program may be established to review and assist homeowners in preparing "plans" for their yards.


ROCK WALL
FLOWERING TREE MASS
SPECIAL PAVING
DECIDUOUS TREE MASS
EVERGREEN TREE MASS
LAWN
SHRUB MASS
SPECIAL PAVING
EARTH BERM
GROUND COVER

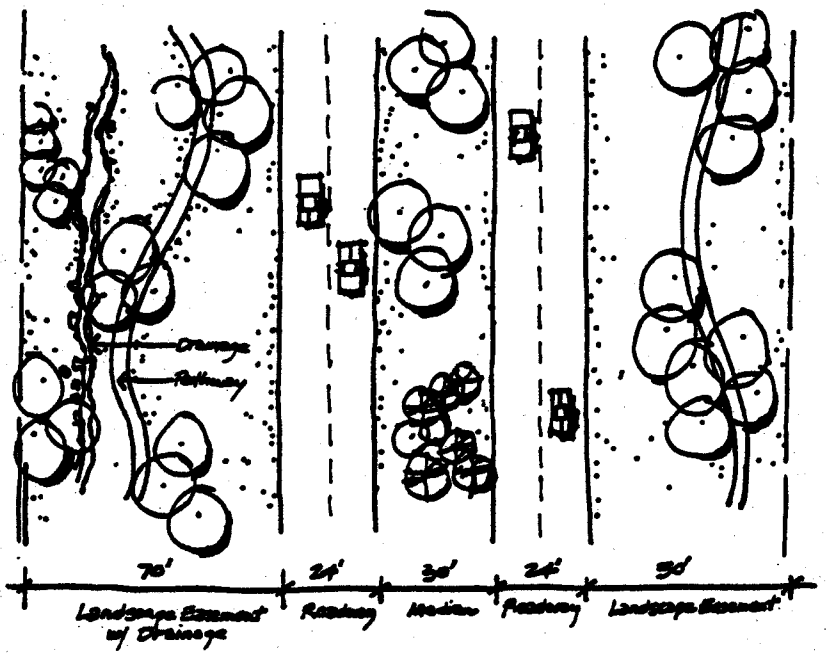


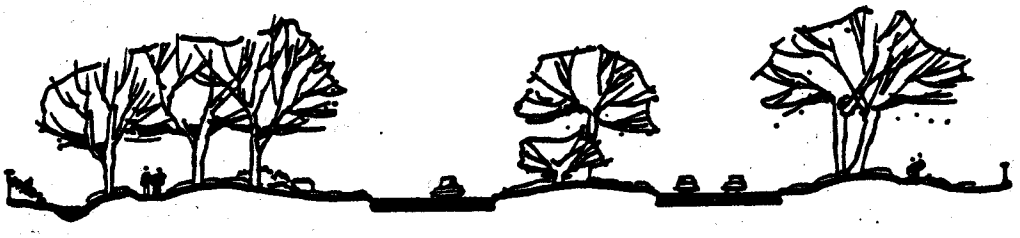
ENTRY ELEVATION A'-A'

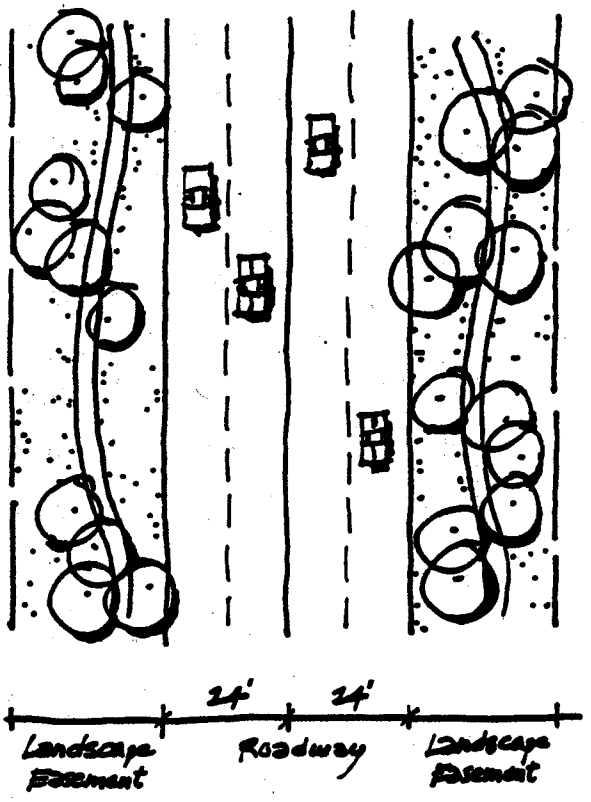


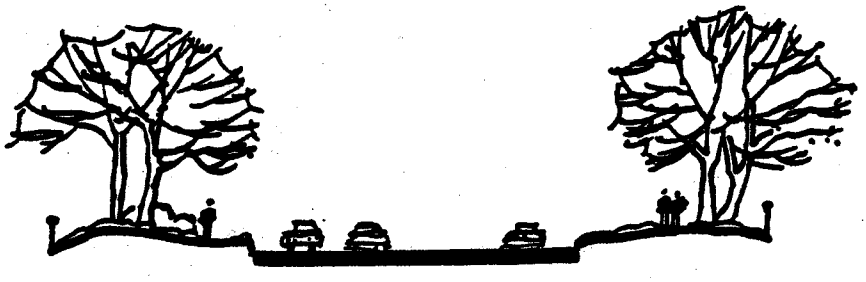
SECTION B'-B'

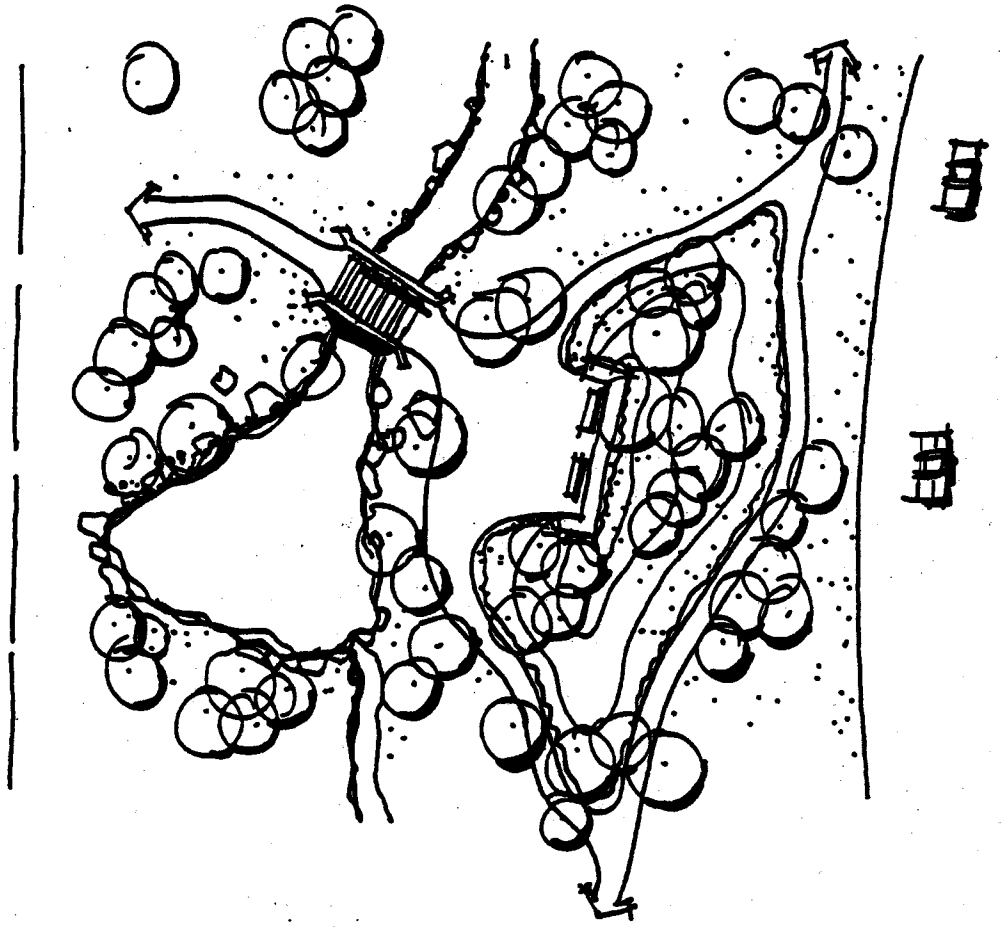
Footmill Design Group

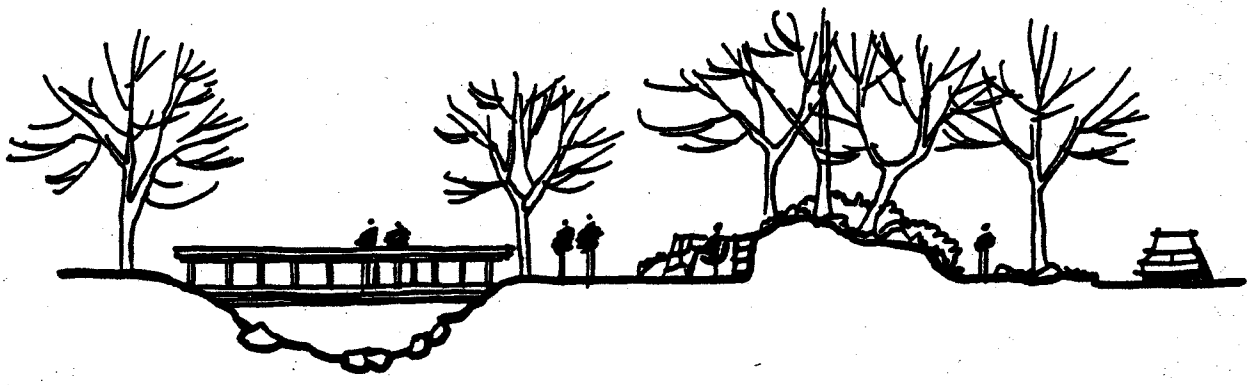

Drainage
Pathway
70'
24'
30'
24'
30'
Landscape Easement w/ Drainage
Roadway
Median
Roadway
Landscape Easement




24'
24'
Landscape Easement
Roadway
Landscape Easement







Erosion Control

All disturbed areas will be revegetated or renovated. With proper erosion control methods and topsoil stockpiling, erosion and the loss of valuable topsoil can be minimized. Sediments entering creeks and drainage channels and wind-carried dust can also be greatly reduced. The following practices will be carried out:

·· Large scale grading will be limited to late spring through fall to prevent erosion from strong winds and rain/snow runoff. Grading plans for all but custom/individual home building must show the order, timing, and extent of grading.

·· Construction sites will be graded in sections that are as small as is practical, so that large areas are not left exposed for any length of time.

·· Any existing vegetation will be saved whenever possible, since the roots bind soil together and protect the soil from water erosion and mudslides. Construction equipment will be limited to areas intended for specific improvements in order to minimize damage to vegetation, as specified in the Covenants, Conditions and Restrictions.

·· On steeper slopes, diversion channels will be constructed at the top of slopes and at regular intervals along the slopes to prevent water from accelerating down the slope and the resultant washing away of soil.

·· Temporary sediment control basins will be constructed in areas where silt type soils exist or where silt could enter a drainage channel.

Seeding, Planting and mulching methods are outlined below:

·· Seeding should be done as soon as possible after finish grading has been completed given consideration to the season and the type(s) of plant materials to be used. It is more successful if done in early spring after the ground softens, or in the early fall when the seeds have time to become established before winter. Spring and fall also provide enough rain to germinate the seeds. Seeding that is not to be irrigated will only be done in early spring or early fall. Where possible, seed will be drilled into the soil.

·· Steep slopes not accessible by machine should be seeded with a mechanical broadcaster and raked by hand. Accessible areas should be hydromulched.

·· Woody plants, shrubs and trees can be used for revegetation of disturbed areas, but for initial cover and quick protection, grasses are the most valuable. Many trees and shrubs can be established by direct seeding, others are best planted using cuttings. The random arrangement of trees and shrubs provide a more natural appearance for a newly graded area. Below are two plant lists, one for trees and shrubs, and the other for grasses. Four or five different plant types should be selected to ensure a good survival rate and healthy competition. The plant list is not intended for use in fire breaks. Initial coverage required is dependent on the species involved.

TREES AND SHRUBS

Bearberry	Pinemat Manzanita
*Big Sagebrush	Ponderosa Pine
*Big Saltbush	Jeffrey Pine
*Bitterbrush	*Rubber Rabbitbrush
Black Locust	Skunkbrush Sumac
*Fourwing Saltbush	Snowberry
Golden Currant	Woods Rose
Greenleaf Manzanita	Juneberry

*Establish well from seeds

GRASSES AND LEGUMES

Fairway Crested Wheatgrass	Siberian Wheatgrass
Desert Wheatgrass	Sodar Wheatgrass
Thickspike Wheatgrass	Indian Ricegrass
Sand Dropseed	Alkali Sacaton
Yellow Sweetclover	

·· A wood fiber material or jute matting should be used to prevent the seeds from being blown or washed away. Other mulches which can be used include straw, seed husks, and bark. The mulch should be anchored with a netting or one of a number of commercial tackifyers.

-- Fertilizer and additional water applications will be based on soil fertility tests and the general appearance of the vegetation during subsequent growing seasons.

-- On very low fertility areas, the application of 40 to 80 pounds of nitrogen, 50 to 75 pounds of phosphoric acid and 50 pounds of potash per acre will provide a good growing medium for the seeds.

Measures to protect top soil include these items:

-- Areas to be regraded will have the topsoil stripped and replaced to provide a better medium for plant growth. Existing topsoil contains native seeds and plant cuttings that will grow in conjunction with introduced seeds.

-- Topsoil that is removed will be stockpiled nearby to lessen the cost of transportation. The stockpile should be protected from erosion by seeding, watering, mulching, or covering.

-- Care should be taken in the placement of the topsoil stockpile. Existing drainageways must be kept clear to allow water to flow unimpeded. Ridge tops susceptible to high winds should also be avoided.

-- After grading has been completed, certain precautions must be taken to ensure the topsoil is not lost. Slopes should be scarified so that the topsoil does not slip off when saturated with water. In areas of fill, the soil should be placed in a series of lifts and compacted after each lift. Terraces should become a part of the slope, acting to slow down water, stabilize the soil and provide a flat surface for plants to become established on.

-- Where topsoil is very thin or non-existent, scarification is necessary to provide at least one inch of loosened material for plant growth.

Irrigation

The following items will be used to reduce the domestic water used for irrigation:

-- Specific building envelopes will be specified for all single family estate development and landscaping will be limited to specific areas.

- Landscaping will be of a type that is commensurate with existing natural surroundings as specified under landscaping policies.

- Automatic and, where cost effective, drip irrigation systems will be installed in all landscaped common areas.

- Time clocks are encouraged for all irrigation systems and homebuyers will be instructed to set proper irrigation time durations and frequencies and to schedule irrigation for times of minimal evaporation by the Homeowners Association.

Building Siting/Setbacks

General Considerations

All building siting will be such that disruption to the environment will be minimized, important site features, such as rock outcrops, are protected and the use and enjoyment of neighboring properties is not unduly impaired. A prime consideration is "matching" building and access to the particular piece of property under consideration. The minimum front yard setbacks for single family homes is fifteen feet, with a minimum twenty foot length for driveways. The minimum rear yard setback for single family homes is fifteen feet. Minimum side yard setbacks will be five feet. All setbacks along streets will be measured from the "edge of improvements," rather than from the right-of-way. Also, lots will provide a minimum of "useable" (at least 10 feet in width and no steeper than 20%) yard area in an amount of 2/3 of the minimum allowable liveable floor area. These minimums do not apply to clustered single family homes or innovative land planning techniques like "Z" lots, zipper lots, etc., which may vary in concept from these standards to larger requirements on one extreme to "zero lot line" on the other, and must have a detailed site plan showing lot lines, building footprints and schematic architectural plans and be approved by both the A.C.C. and the City of Sparks.

Building Siting Criteria

The evaluation criteria specified in this policy will often conflict with one another. Thus, the objectives of each criterion must be weighted against those of the other criteria.

The master developer or the Architectural Control Committee (A.C.C.) will be responsible for evaluating building locations, using the following criteria:

-- Fit of building plans to the terrain. Finished grades surrounding buildings should carefully blend in with the existing, natural grades to minimize exposed cut and fill slopes.

-- Degree of slope/topography in general. The more gentle the slope is and the more even the topography in general, the more suitable an area is for building.

-- Existing rock outcrops and natural features. The less rock outcrops, unique landforms or other natural features an area has, the more suitable it is for building because retention of these features is desirable.

-- Views from the proposed structure. As much of any viewsheds from a building site should be retained as is possible. This is most important in the estate area.

-- Effects on views from neighboring properties. When establishing building envelopes, the relationships between envelopes, where one building site can affect the views from other envelopes, must be considered. Again, this is particularly crucial in the estate area.

-- Retention of usable open space. Useable open space includes, but is not limited to: areas that protect views, and areas that create space between homes, between differing land uses or between roadways and buildings.

-- Solar exposure and protection of solar access to adjoining properties. To the extent practical, the combined effect of envelope siting and height restrictions should be such that a building envelope will be in sunshine from 9 A.M. to 3 P.M. on December 21. Note that this is nearly impossible to achieve in a meaningful way except for the larger (1/4-acre +) lots.

-- Vehicular access. Access to the building envelope should be such that the amount of land disturbance required for such access (the driveway) is minimal.

Tentative subdivision maps will include individual or typical building envelope locations. The tentative map applications will also address how the above criteria were applied. Any special height restrictions designed to protect views and/or solar access will also be shown on the tentative map and final restrictions recorded at the final map stage.

Estate Lot Areas (Villages 9 & 11)

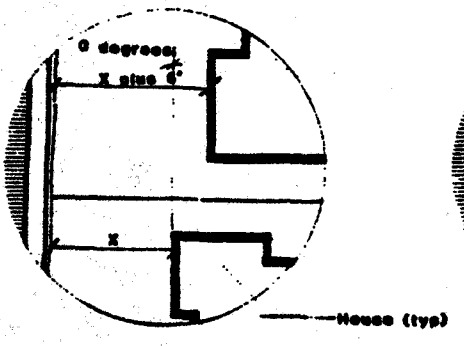
In estate lot areas, all building must be confined to a predetermined building envelope. The building envelopes will be of a variety of shapes and sizes which will be shown on final plat maps and marked in the field. Variances from these envelopes must be approved by the Architectural Control Committee and the City where the variance would allow building not in conformance with normal City setback requirements if the setback variances were not previously approved in the project approval process. Outbuildings, such as storage buildings or pool houses, are exempt from the building envelope requirement.

Setback Variation

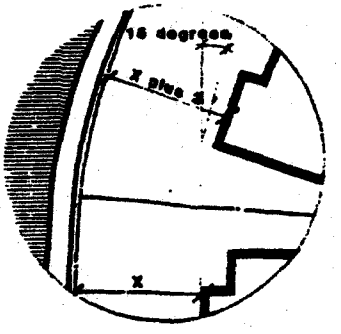
Within each project or village, front yard building setbacks will be staggered or curvilinear streets will be used so that the wall closest to the street of each home is off-set from the adjoining homes according to the following table.

TABLE #4
MINIMUM SETBACK VARIATION STANDARDS

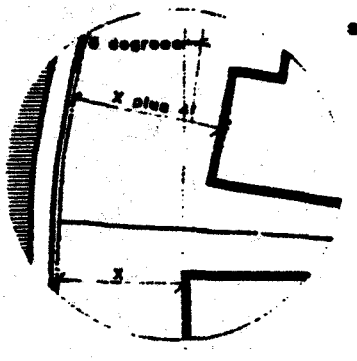
Minimum Front Yard Setback Variation	Minimum Angular Offset (refer to Figure 19)
5 feet	0 degrees
4 feet	5 degrees
3 feet	10 degrees
2 feet	15 degrees
1 foot	20 degrees
-0-	25 degrees



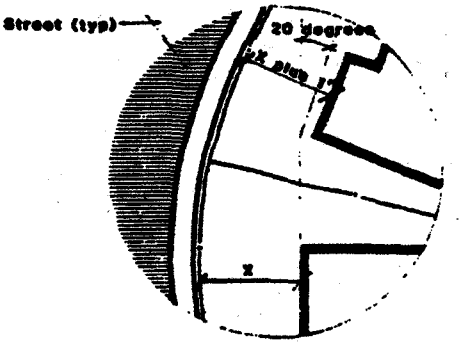
0 Degree Angular Offset



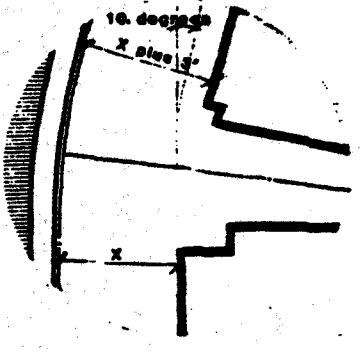
15 Degree Angular Offset



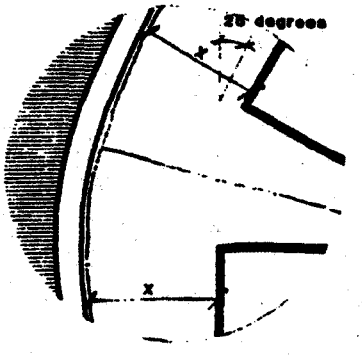
5 Degree Angular Offset



20 Degree Angular Offset



10 Degree Angular Offset



25 Degree Angular Offset

Grading & Erosion Control

Hillside Adaptive Architecture

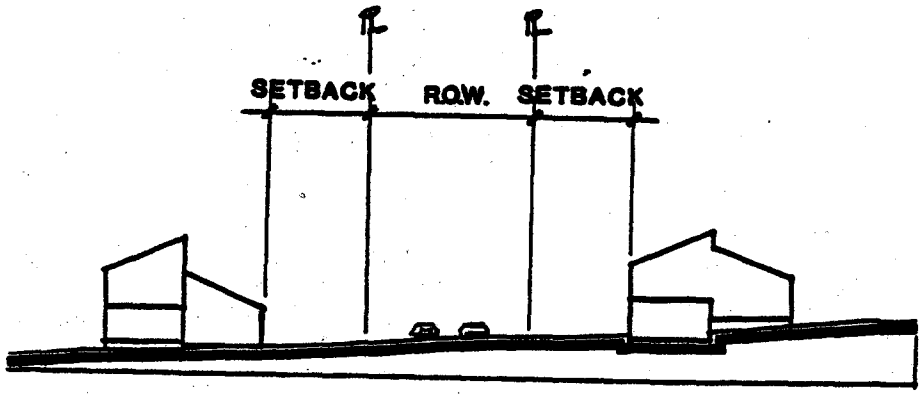
Hillside adaptive architecture is the use of the structure to accommodate significant grade changes on the property rather than (or in conjunction with) the use of cut and fill slopes at or along property lines. This technique can provide better yard space, interesting interior spaces and exterior forms, and minimize unsightly scarring or contrived land forms. As the slope of the natural ground increases, so does the benefit of hillside adaptive architecture. Hillside adaptive building also has a benefit of "creating" more useable space for construction or, alternatively, using less space for a given amount of housing. Table 5 presents the hillside adaptive building requirements for the various slope categories.

TABLE #5
HILLSIDE ADAPTIVE ARCHITECTURE REQUIREMENTS

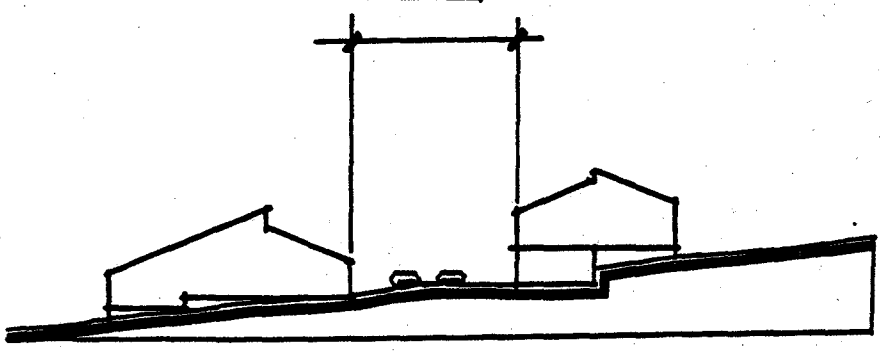
Gradient of Building Envelope	Requirements
0 - 10%	No restrictions
10 - 15%	1/2-story steps in buildings or a combination of 1/2-story, full-story, and no steps
15 - 20%	Combination of 1/2-story and full-story steps
Greater than 20%	Full-story steps

Slope Treatments

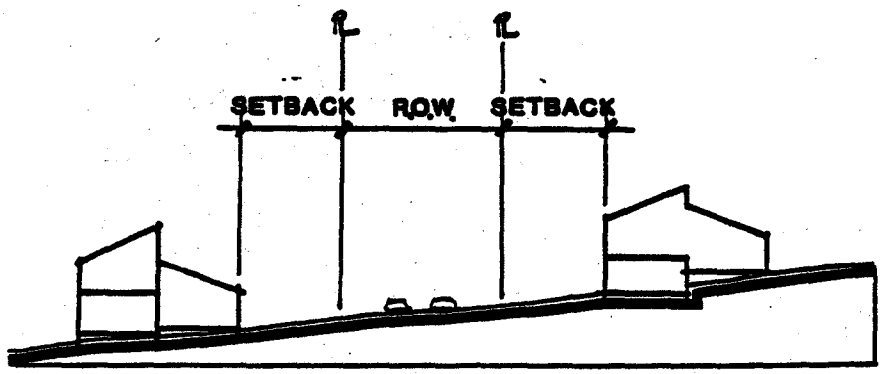
Due to the highly diverse topography within the project limits, many alternate slope stabilization practices will be used.



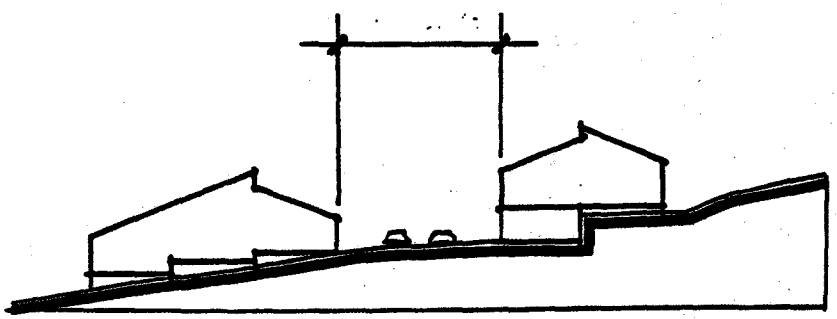
5% SLOPE



10% SLOPE



10% SLOPE



15% SLOPE

All cuts and fills within the landscape corridor located along Vistaridge Parkway will be landscaped according to the landscape plans. Landscaping will include the use of drainageways/creekbeds, irrigation systems, paths, trees, grass, etc. Please refer to landscaping plans for greater detail. All slopes located outside the landscape corridor will be stabilized as follows:

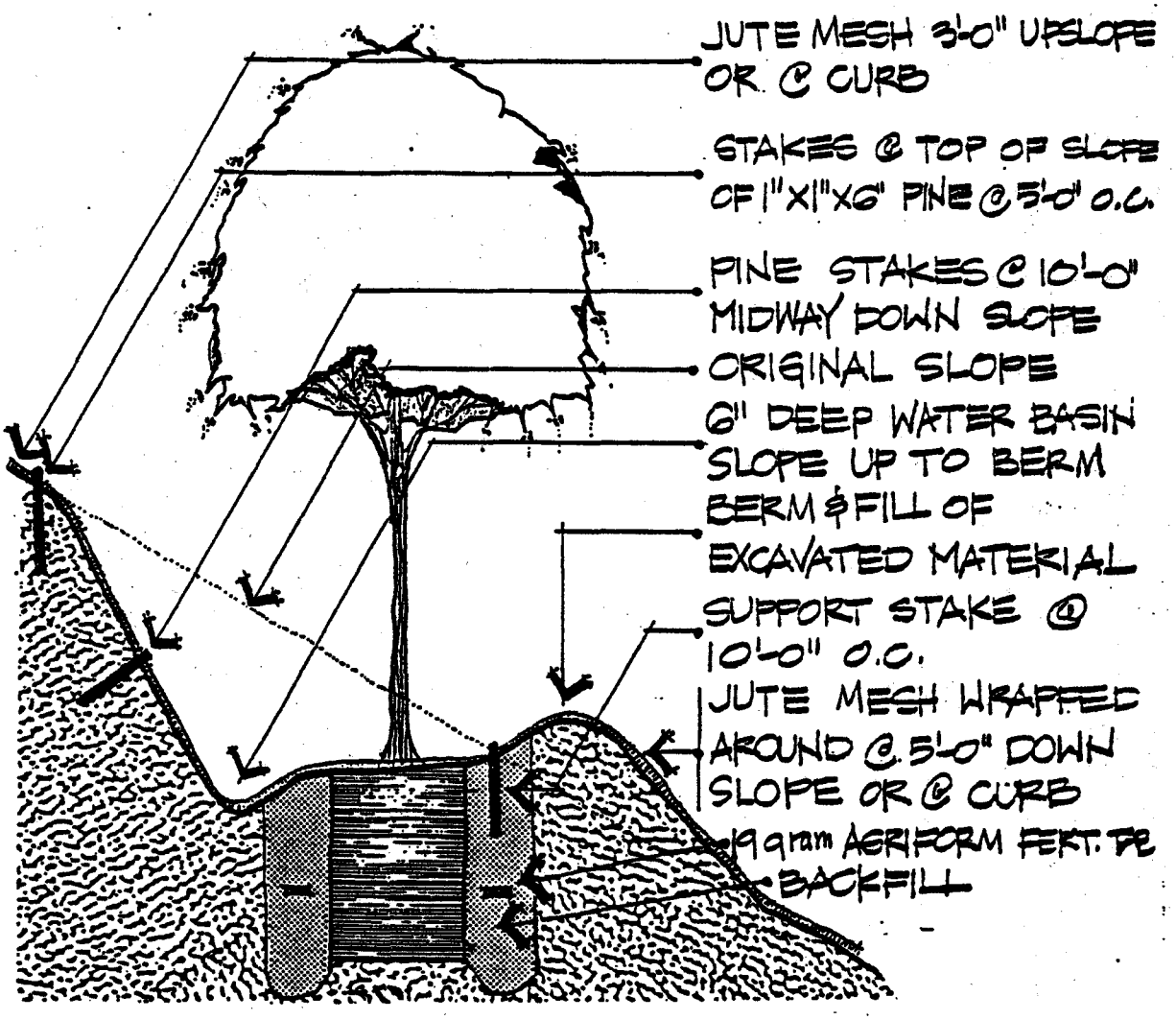
The construction of roadways will be limited to grades of 8 percent on streets with "poor" solar exposure and 10 percent where solar exposure is "good" unless approved by the public works director. Cut and fill slopes along roadways will be limited to 2:1 in areas where the natural ground has cross slopes of 15 percent or less. In areas of steeper cross slopes, cuts and fills of 1:1 gradient are proposed in order to reduce the visual impact of the slopes. Retaining walls may be used in cut slopes along areas of steep cross slopes. If a cut slope exposes stabilized rock, steeper slopes may be used subject to approval by the Washoe Storey Conservation District, the soils engineer and the project engineer.

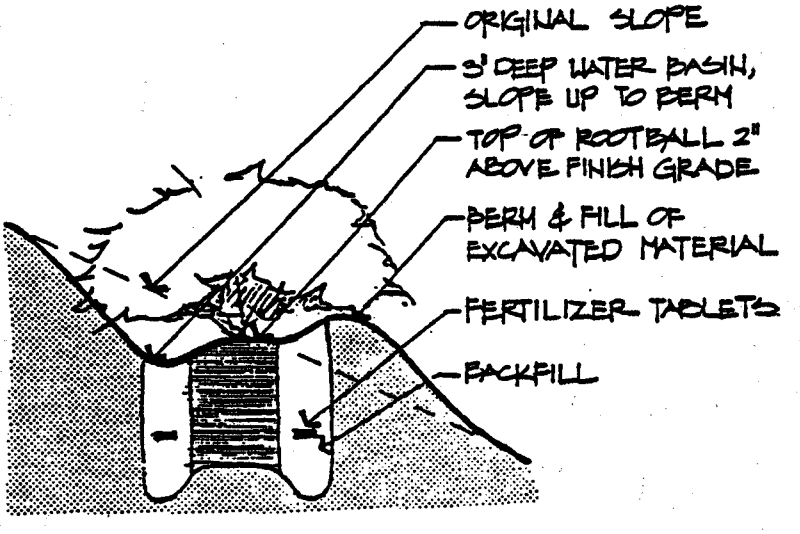
Areas located within the common areas but not affected by any land disturbing activities will remain in their natural state (other than limited enhancement planting such as wild flowers). Areas located within the common areas and where land is disturbed will be stabilized as follows:

1) Slopes flatter than 2:1 will either be mechanically stabilized or landscaped (planted with a seed mixture approved by Washoe Storey Conservation District). Permanent or temporary irrigation systems will be used if conditions warrant. Please refer to the landscape section of this report for suggested planting types and methods.

2) Slopes steeper than 2:1 will be mechanically stabilized, likely using rocks found on the site. Slopes which approach 1:1 will have the base layer of rocks anchored so as to prevent the rocks from sliding down the hill. Plant material and terracing will be incorporated where practical to soften the slopes. Other treatments may be used subject to approval by the public works director.

3) Due to the rocky nature of the soil, a cut slope exposing stabilized rock may remain steeper than 1:1. All rocky slopes with gradients steeper than 1:1 will be approved by the public works director, the soils engineer, the project engineer and the Washoe Storey Conservation District.


JUTE MESH 3'-0" UPSLOPE OR @ CURB
STAKES @ TOP OF SLOPE OF 1"X1"X6" PINE @ 5'-0" O.C.
PINE STAKES @ 10'-0" MIDWAY DOWN SLOPE
ORIGINAL SLOPE
6" DEEP WATER BASIN SLOPE UP TO BERM
BERM & FILL OF EXCAVATED MATERIAL
SUPPORT STAKE @ 10'-0" O.C.
JUTE MESH WRAPPED AROUND @ 5'-0" DOWN SLOPE OR @ CURB
19 gram AGRIFORM FERT. TB
BACKFILL


ORIGINAL SLOPE
3' DEEP WATER BASIN, SLOPE UP TO BERM
TOP OF ROOTBALL 2" ABOVE FINISH GRADE
BERM & FILL OF EXCAVATED MATERIAL
FERTILIZER TABLETS
BACKFILL

Slopes located on lots will generally be 3:1 or flatter. Slopes steeper than 3:1 will have an approved seed mixture applied in the form of hydromulching or use of other suitable techniques approved by the public works director.

Retaining walls may be required in some areas. These retaining walls will generally be located in cut slopes and shall be constructed of or incorporate the use of rocks and wood to the degree possible. (For "higher" slopes, a combination or series of walls is an effective retaining structure and blends well with the natural rock outcrops and slopes found throughout the area).

Grading of the lots will be accomplished as required for the construction of homes. Grading requirements will generally follow the FHA standards, with exceptions made on occasion to better reflect the site conditions. Elevation differences between adjoining lots will be taken up using either slopes, step footings, retaining walls, the use of split level homes or a combination of the above. Lots will be graded to drain toward the street where practical. Where common areas exist to the rear of the lots and conditions warrant, lots may be split drained to the front and rear. Earthen swales located in the common area will direct water as necessary.

During construction, all equipment will be restricted to areas of construction in order to reduce any impacts to the sensitive areas.

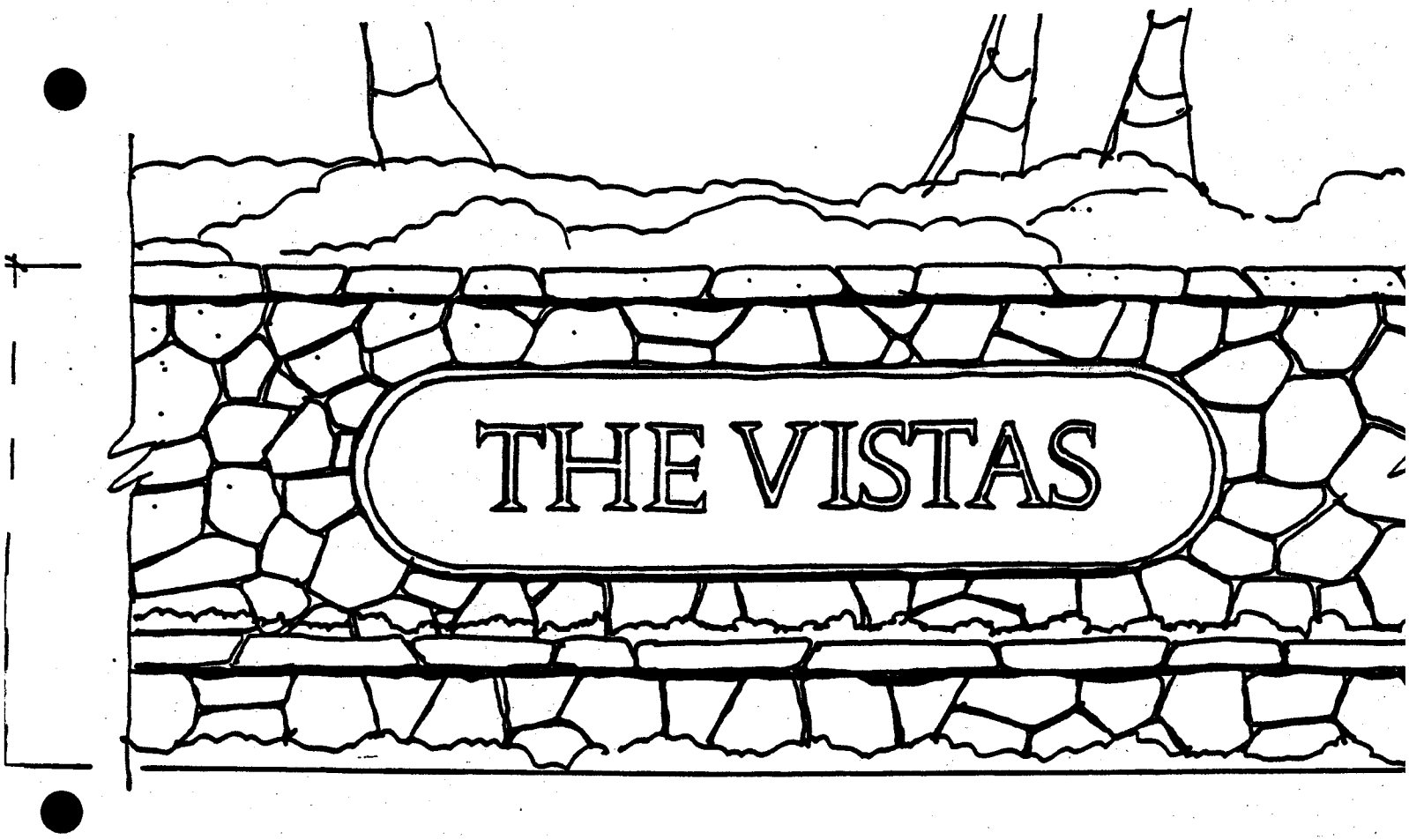
Design Details

All signage, lighting and fencing is to be consistent with the site/theme sensitive scheme for The Vistas. Lighting, signage, and fencing in the project will be of unified design. They are the threads tying the entire project together. Implementation of the design elements will support the emphasis placed on creating and enhancing the natural, outdoor ranch atmosphere of the project.

Conformity to this provision will rest solely with the ACC.

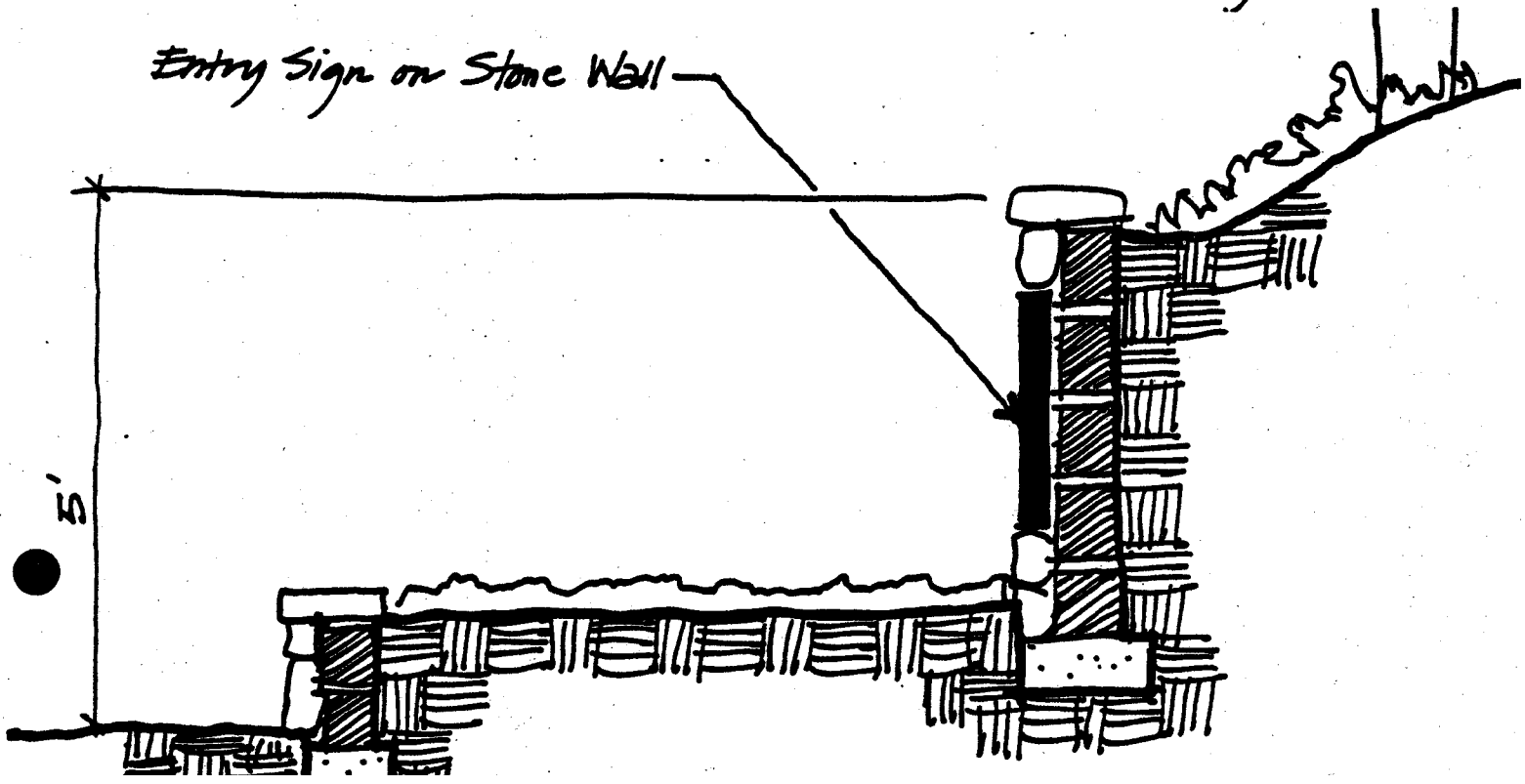
The lighting/signage/fencing scheme is described below.

Signage/Graphics



- SIGN AT MAJOR ENTRY

Similiar at entrance to each village cluster.



Signage will be used as project and activity center identification, for public traffic control (stop signs, road crossings, school zoning, etc.) and for public information (street names, subdivision names, special places, etc.) Signage will be clear and direct, relating the required information with minimal confusion. Certain restrictions related to signage are also specified in the Convenants, Conditions and Restrictions. All signage must be approved by the ACC.

-- The size and scale of signage will relate to its exposure to passing viewers. For example, smaller scale signage will be used for slow moving traffic and in residential areas.

-- Signs will employ the various "Vistas" logos as will be developed and other symbols where such symbols effectively convey meaning.

-- Signs will be an integral part of the design of commercial and recreational buildings. For example, commercial signage will be included on facades of buildings and illuminated with indirect lighting where feasible.

-- The use of standing or hanging signage will be minimized to the extent feasible.

-- Painted or bas relief lettering will be emphasized. Styles and graphic symbols should be as simple and bold as possible.

-- All signage will use a relatively uniform color scheme and style.

Fencing

Fencing will be used for security, privacy, the safety of small children, and to control pets. In conjunction with other mediums, fencing will be employed to delineate various uses and to eliminate unsightly areas from view. Separate fencing standards may be established and incorporated into this handbook for the various planning units or subareas of The Vistas. Design criteria are as follows:

-- Fences will be made of natural materials where possible unless it is proven to be impractical to the Architectural Control Committee.

-- Solid fencing will be used where security, safety and privacy is of primary concern.

- The use of chainlink fence will be minimized. Vinyl chainlink will be used where this type of fencing is required.

- Simple open fences will be used to delineate common areas from private property where privacy impacts are minimal.

- On residential lots that abut a street or common area, lot line fencing will be discouraged where privacy impacts are minimal.

Lighting

Lighting will be functional and aesthetically pleasing. It will illuminate streets and pathways, points of potential pedestrian/automobile conflict, foster a sense of security and light signs. Aesthetically, it will highlight entrances to buildings, key areas of the ranch, and points of interest. Lighting along public streets will be owned and operated by the governmental entity that owns the street.

Lighting used in residential areas will have three basic functions. It will provide a sense of security, mark a driveway at the street level and illuminate entryways and outdoor living areas. Lighting standards are presented below:

- The scale, placement and style will be determined by its function. Example: pedestrian and slow vehicular lighting will be less intense and close to the ground.

- Soft, indirect lighting will be employed wherever feasible, particularly in residential areas.

- The support structure for lighting will be made of a material that matches or complements that of the adjoining use(s).

- The light housings will be of materials and colors harmonious to the adjacent structure(s).

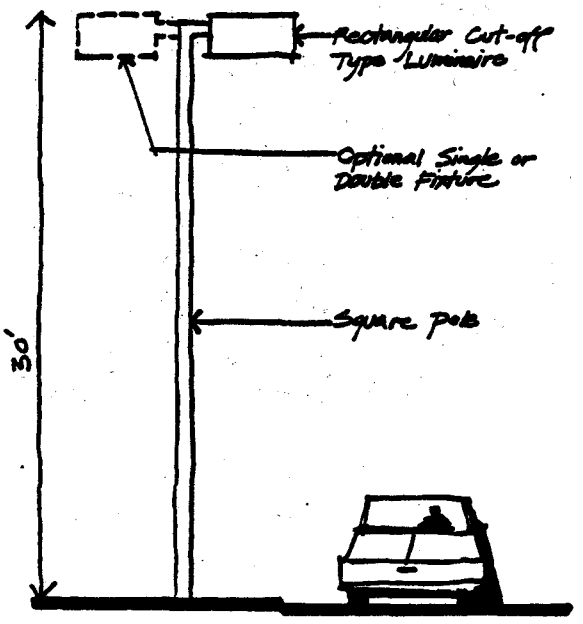
- Spillover, intrusive light will be minimized.

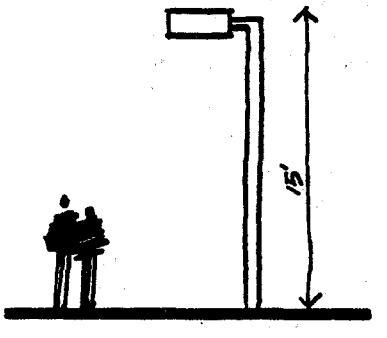
- Lighting color should be uniform throughout the development.

- Lights will be places where they are most useful rather than trying to light entire areas. For example, they should be used to illuminate informational and directional signage and for security, and not for flooding an entire backyard with light.

- Lighting levels will conform to standards recommended by the Illuminating Engineers Society in IES Lighting Handbook, 4th Edition, New York, where warranted.

- On public streets, the style of light standard will be unique to The Vistas.


Rectangular Cut-off Type Luminaire
Optional Single or Double Fixture
Square Pole
30'


15'

Infrastructure

4. INFRASTRUCTURE

Stormwater

Climate

The climate found in the Spanish Springs Valley is somewhat typical of the Sierra Nevada. Thunderstorms are most frequently observed in the middle of summer through early fall. Rainfall from this type of storm is almost always characterized by high intensity and short duration precipitation.

The average annual precipitation is less than ten inches (10"), with the wettest months December and January, and the driest months July, August and September.

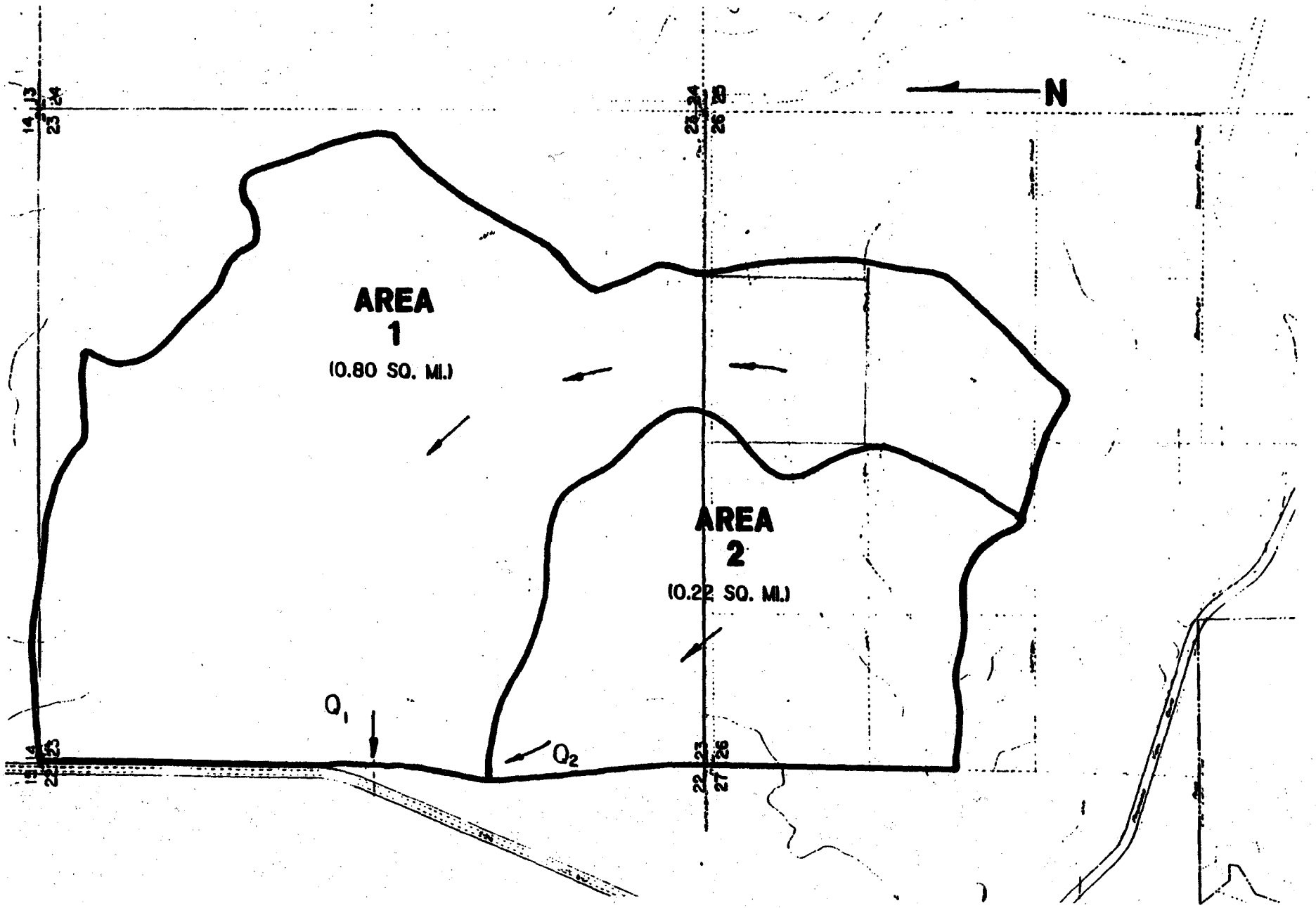
Temperatures have considerable daily ranges between maximum and minimum, sometimes exceeding 45 degrees F. Daytime temperatures average 60 degrees F. in the winter and 80 degrees to 90 degrees F. in the summer.

Winds fluctuate daily with light morning winds and strong afternoon winds. Winds are very strong in the months of July and August.

Physical Characteristics

The drainage basin for The Vistas is broken into two (2) major drainage sub-basins. Drainage basin 1 is located on the north side of the drainage basin and is composed of 515 acres. Drainage basin 2 is located on the south side and is composed of 142 acres. See Figure 24.

The project site is in hilly terrain, with vegetation and ground cover with light to heavy sagebrush and grass cover. The highest elevation is 4,860 in the


N
AREA
1
(0.80 SQ. MI.)
AREA
2
(0.22 SQ. MI.)
Q_1
Q_2

northeast area. These peak areas are rocky tertiary volcanic rocks. The Vistas generally slopes from east to west.

The soils found in this area are bedrock on the higher elevations and cemented pan soils on the lower elevations. The cemented pan is an impervious layer composed of silty clays.

General Drainage Patterns

Drainage and drainage facilities within The Vistas are practically nonexistent. The on-site runoff on the higher elevations of the sub-drainage area #1 is intercepted at about the center of the section next to a dirt access road. This drainage pattern continues west along the dirt road where it crosses over the Spanish Springs Road and then it continues west. The runoff of sub-drainage #2 flows in the northwestern direction and crosses over the Spanish Springs Road.

Methodology

Hydrology calculations were performed by two (2) methods - the HEC-1 Computer Program and the Rational Method. The peak discharge for the 5-year, 10-year and 100-year events were determined for both the undeveloped and developed conditions. A comparison was made between the results of the two (2) methods and showed relatively good agreement.

The input to the HEC-1 model was based on a synthetic hydrograph using the NOAA Atlas (Reference 2) and a loss rate using Soil Conservation Service (SCS) curve number. The procedure used was as follows:

- Determine precipitation depth for the 6-hour and 24-hour duration from the NOAA Atlas (Reference 2). North latitude used was 39 35'00" and west longitude used was 119 42'30".

- Precipitation values were then adjusted from the partialduration series to annual series based on multiplying factors provided in Reference 2. Results are shown in Table 6.

Table #6
Precipitation Values

	6-Hour Duration			24-Hour Duration		
Return Period (Years)	Map x Value	Partial Series = to Annual Series Correct'n	Annual Series Value	Map x Value	Partial Series = to Annual Series Correct'n	Annual Series Value
2	0.70	0.88	0.62	1.00	0.88	0.88
5	0.90	0.96	0.86	1.40	0.96	1.34
10	1.10	0.99	1.09	1.60	0.99	1.58
25	1.30	1.00	1.30	2.00	1.00	2.00
50	1.40	1.00	1.40	2.20	1.00	2.20
100	1.60	1.00	1.60	2.40	1.00	2.40

Precipitation Data Taken at 39/35/00, north lat. 119/42/30, west long.

-- The 2-year and 100-year, 1-hour duration values were determined by equations 1 and 2 (Reference 2).

-- Five-minute and 15-minute duration values were determined by equations 3 and 4 (Reference 2).

-- Six-hour and 24-hour duration values were plotted on Figure 3 for the 2-, 5-, 10- and 100-year events. The resulting 12-hour duration values were determined from the graph.

-- One-hour and 6-hour duration values were plotted on Figure 4 for the 2-, 5-, 10-, and 100-year events. The resulting 2-hour and 3-hour duration values were read from the graph. Also, equations 5 and 6 (Reference 2) could be used to determine these values.

-- The 5-minute, 15-minute, 1-hour, 2-hour, 3-hour, 6-hour, 12-hour and 24-hour duration values for the 5-, 10- and 100-year events were then used as input to the HEC-1 program to form the synthetic hydrograph. These are shown as Table 7.

Table #7
Interpolated Precipitation Data

Duration		Return Period (Years) 2	5	10	100
5 min.	Eg. 3	0.11	0.17	0.19	0.34
15 min.	Eg. 4	0.22	0.33	0.38	0.66
1 hr.	Eg's 1 & 2 Fig. 3	0.38	0.58	0.67	1.16
2 hr.	Fig. 5 Eg. 5	0.45	0.66	0.80	1.29
3 hr.	Fig. 5 Eg. 6	0.51	0.73	0.89	1.39
6 hr.	NOAA ATLAS	0.62	0.86	1.09	1.60
12 hr.	Fig. 4	0.75	1.10	1.34	2.00
24 hr.	NOAA ATLAS	0.88	1.34	1.58	2.40

-- The loss rate was based on an SCS curve number of 82.

-- The SCS unit hydrograph was the output hydrograph. The shape of this hydrograph is only dependent on the lag time. The lag time was determined by the equation:

$$Lag = \frac{0.72\ (Llc)^{0.38}}{5.5}$$ (Reference 3)

-- For the developed condition, an impervious area of twenty-five percent (25%) was used in order to reduce the loss rate determined by the SCS curve number.

The resulting HEC-1 peak flow-rates for the undeveloped and developed conditions are tabulated in Tables 8 and 9.

Table #8

HEC-1
Peak Runoff Summary - Undeveloped
Flow in Cubic Feet per Second

Area No.	Area (Sq.Miles)	Return Period 5-yr.	10-yr.	100-yr.
1	0.80	36	59	173
2	0.22	12	20	60
1&2	1.02	47	78	226

Table #9

HEC-1
Peak Runoff Summary - Developed
Flow in Cubic Feet per Second

Area No.	Area (Sq. Miles)	Return Period 5-yr.	10-yr.	100-yr.
1	0.80	78	105	231
2	0.22	27	35	79
1&2	1.02	103	137	303

The Rational Method calculations were based on the formula Q = CIA. An undeveloped runoff coefficient of 0.15 and a developed runoff coefficient of 0.29 were used. The intensities (I) were derived from the City of Sparks rainfall intensity curves for the 5-, 10- and 100-year storm events. The results of

the Rational Method calculations are shown in Tables 10 and 11 for both the undeveloped and developed conditions.

Table #10

Rational Method
Peak Runoff Summary - Undeveloped
Flow in Cubic Feet per Second

Area No.	Area (acres)	Return Period 5-yr.	10-yr.	100-year
1	515	46	61	112
2	142	12	17	31
1&2	657	57	78	143

Table #11

Rational Method
Peak Runoff Summary - Developed
Flow in Cubic Feet per Second

Area No.	Area (acres)	Return Period 5-yr.	10-yr.	100-yr.
1	515	87	118	217
2	142	24	32	59
1&2	657	111	150	276

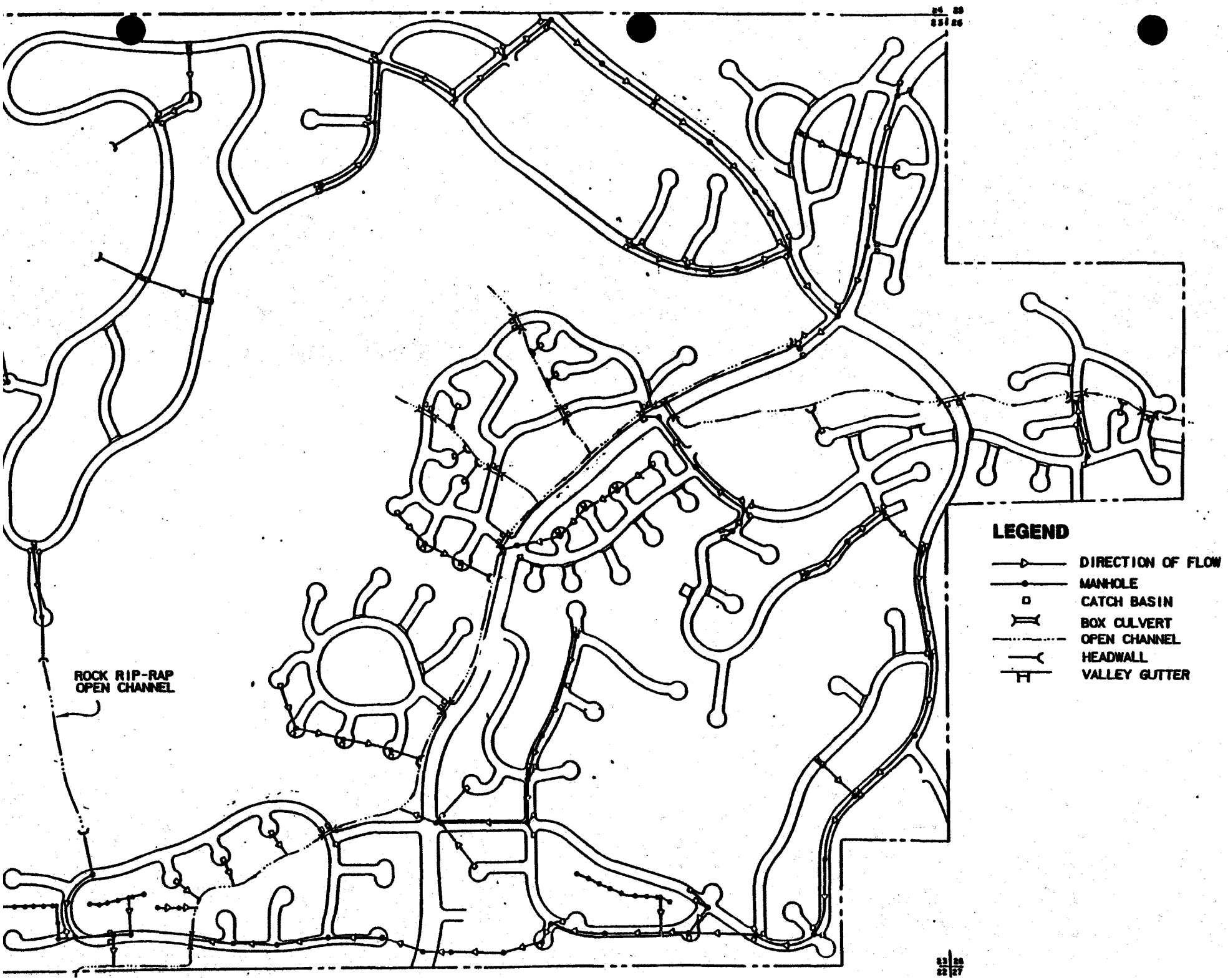
Storm Water Management

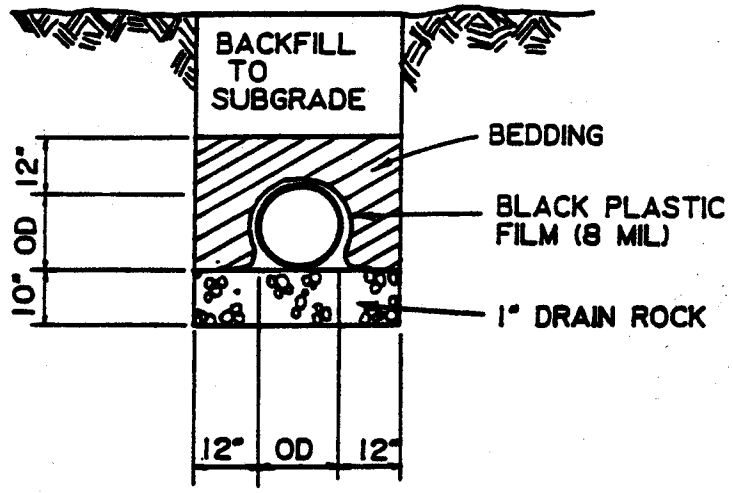
Storm water management and ground water recharge have received considerable attention in recent times in the Truckee Meadows and more especially in the Spanish Springs area. The storm water management plan includes two (2) levels. First, a storm water collection system will be designed to inject the storm water to the ground water aquifer. Second, the increased runoff from the 5-year storm that is caused by the development will be reduced to a minimum, with the proposed infiltration drainage system. Only forty percent (40%) of the proposed site will be covered with impervious area. Details of the infiltration systems are shown in Figure 26. The proposed groundwater recharge system will function as follows:

a) The storm drain system will be constructed with tongue and groove reinforced concrete pipe laid "open joint". The pipe may be bedded and backfilled with suitable material. No clay material will be used in bedding or backfill.

b) Trapezoidal channels or open drainage interceptors shall be constructed throughout the subdivisions.

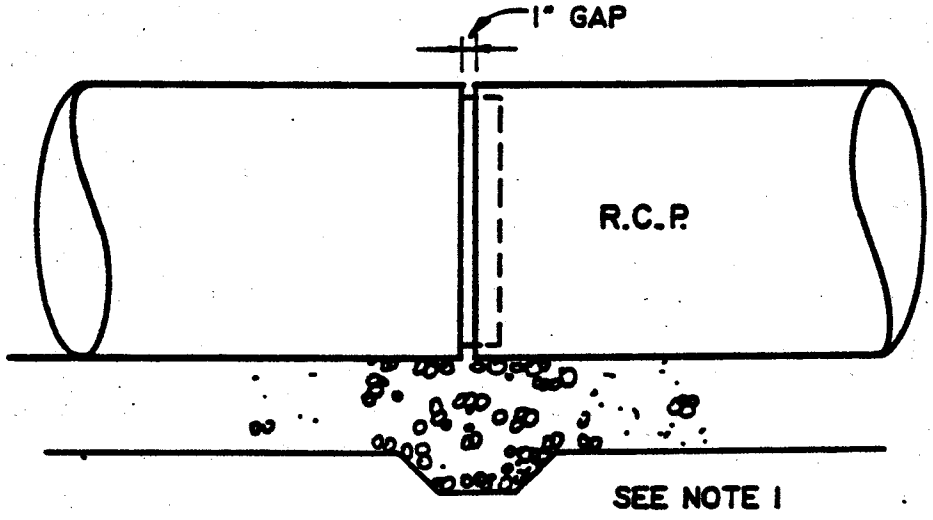
In summary, the peak storm water runoff will be reduced considerably by the infiltration and storm drainage system. This infiltration system will reduce the storm flows well beyond the increased runoff (5-year recurrence). Thus lending itself to groundwater recharge that is definitely needed in the Spanish Springs Valley.


ROCK RIP-RAP
OPEN CHANNEL
LEGEND
DIRECTION OF FLOW
MANHOLE
CATCH BASIN
BOX CULVERT
OPEN CHANNEL
HEADWALL
VALLEY GUTTER



STORM TRENCH DETAIL N.T.S.

(SEE OPEN JOINT DETAIL BELOW)



OPEN JOINT DETAIL N.T.S.

NOTES

1. CONTRACTORS SHALL INSTALL DRY WELLS IN AREAS WHERE LAYERS OF CLAY ARE ENCOUNTERED. LOCATION AND SPACING SHALL BE DETERMINED IN THE FIELD BY THE SOILS ENGINEER.

2. BACKFILL SHALL MEET THE REQUIREMENTS FOR CLASS "E" BACKFILL WITH NO ROCKS OVER 4".

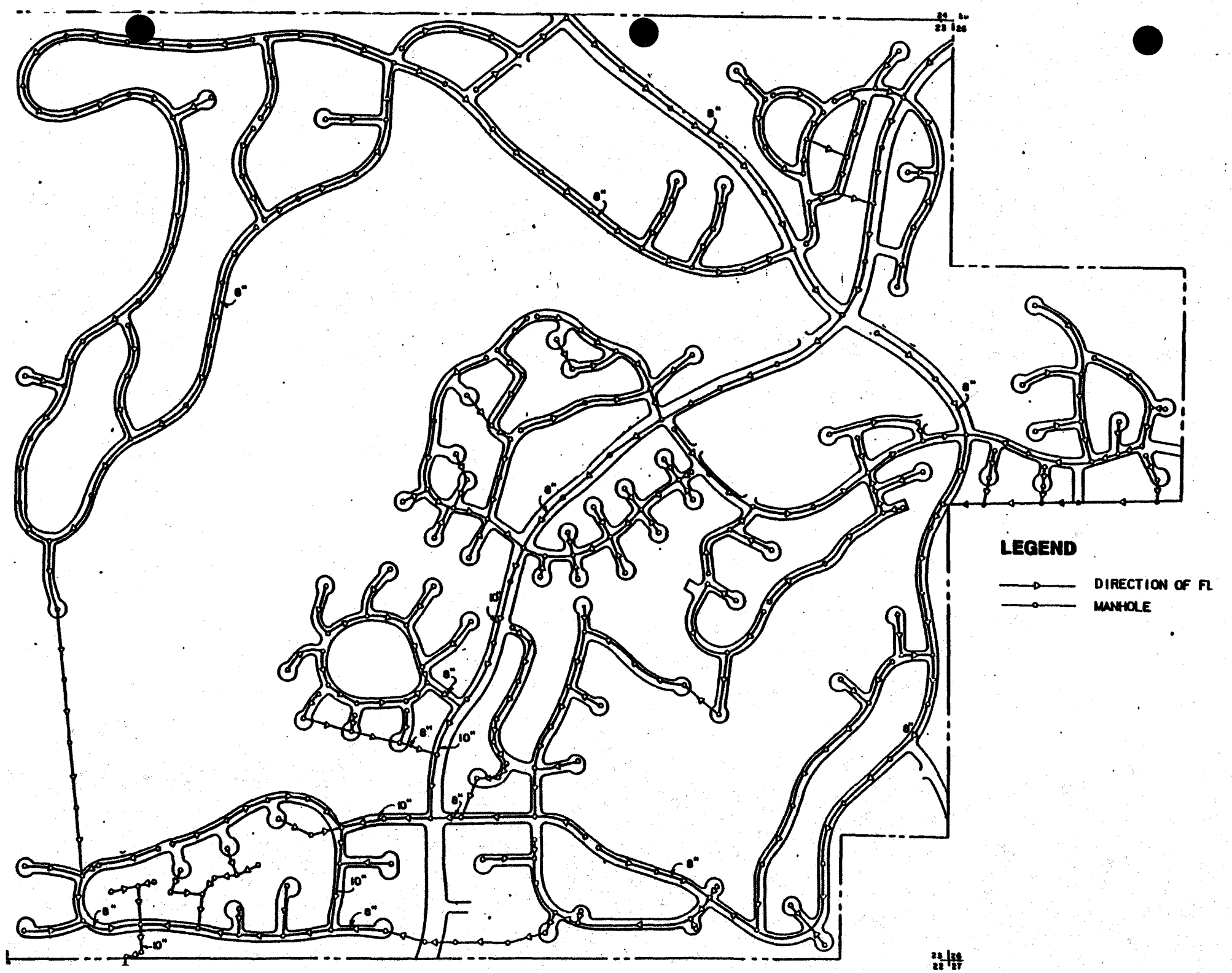
3. BEDDING MATERIAL SHALL MEET THE REQUIREMENTS OF CLASS "A" BACKFILL AS SHOWN IN SUBSECTION 200.03.02 OF STANDARD SPECIFICATIONS.

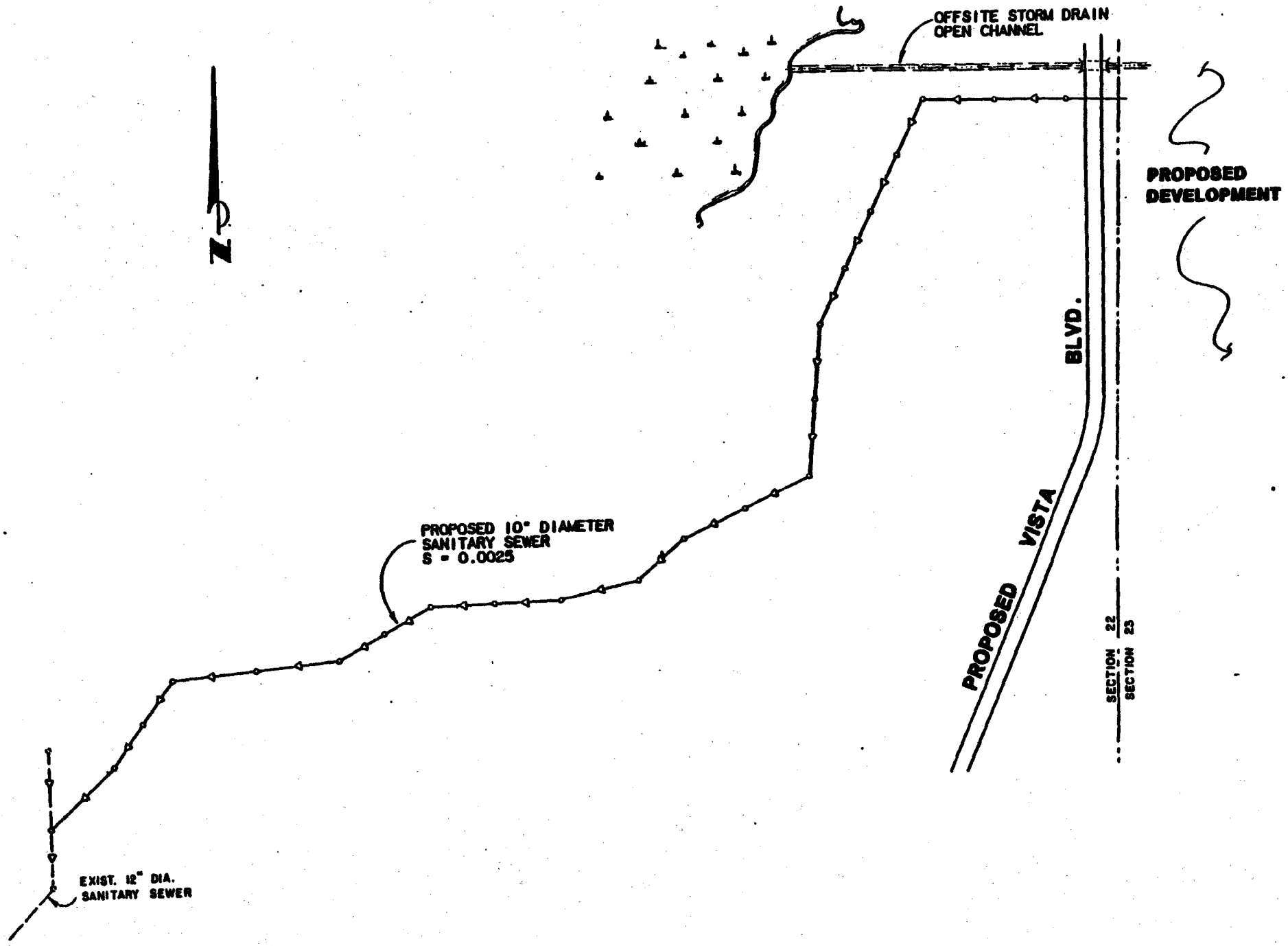
Sewerage

Sewerage for this project will be provided by the Reno-Sparks joint treatment plant. Based on the 325 gallons per day per unit treatment standard, and an anticipated build-out of 1,600 units, the required capacity is 520,000 gallons per day.

Connection will be provided to the City of Sparks collection system by an outfall sewer, approximately 7,445 feet in length. This outfall sewer will connect to the existing twelve-inch (12") trunk sewer, which serves the Spring Creek Subdivision in Spanish Springs Valley. (See Figure 25.)

The ten-inch (10") diameter outfall sewer will have a full-flow capacity of 923,000 gpd. at a minimum slope of 0.0025. This will be adequate to serve all the 1,600 units planned for this project.


8"
10"
LEGEND
DIRECTION OF FL
MANHOLE


OFFSITE STORM DRAIN
OPEN CHANNEL
PROPOSED
DEVELOPMENT
BLVD.
PROPOSED VISTA
SECTION 22
SECTION 23
PROPOSED 10" DIAMETER
SANITARY SEWER
S = 0.0025
EXIST. 12" DIA.
SANITARY SEWER

Traffic Impact Analysis

Here, the traffic impacts associated with The Vistas are described. Along with the analysis of existing conditions, level of service analyses are presented for the following two scenarios:

- Year 2002 Background Conditions (no development); and

- Year 2002 Background plus The Vistas Project (1600 ± units)

Based upon discussions with RTC staff, the analyses of the above scenarios assume the construction of a full interchange at the Sparks Boulevard/I-80 juncture.

Background Growth

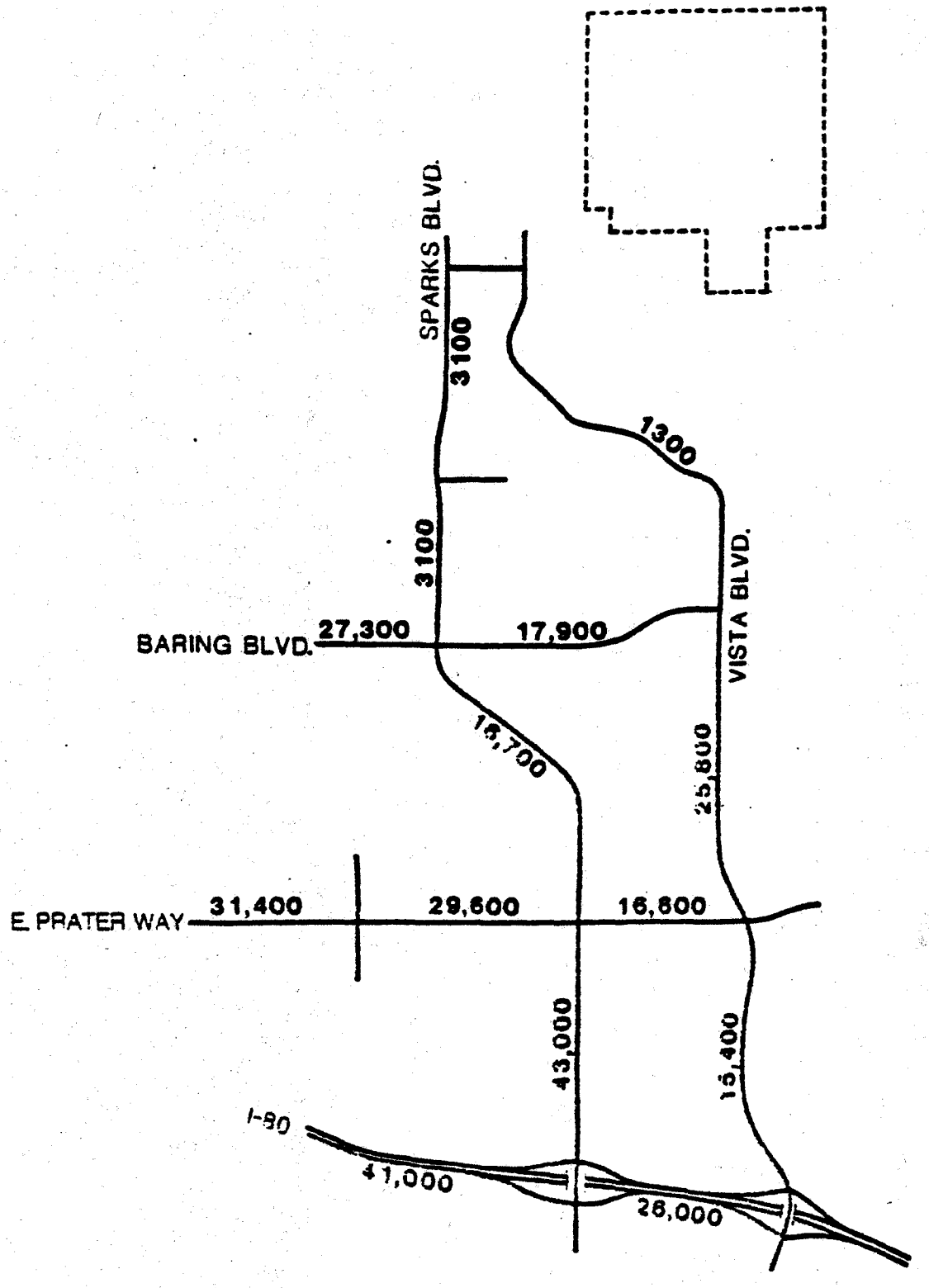
Based on projected residential, commercial and industrial growth within the study area, year 2002 background volumes were developed from RTC model runs. Figure 29 illustrates the weekday average daily traffic (ADT) volumes on the key roadway links. These figures show that background traffic is expected to increase between 2.5 to 61 times the existing volumes.

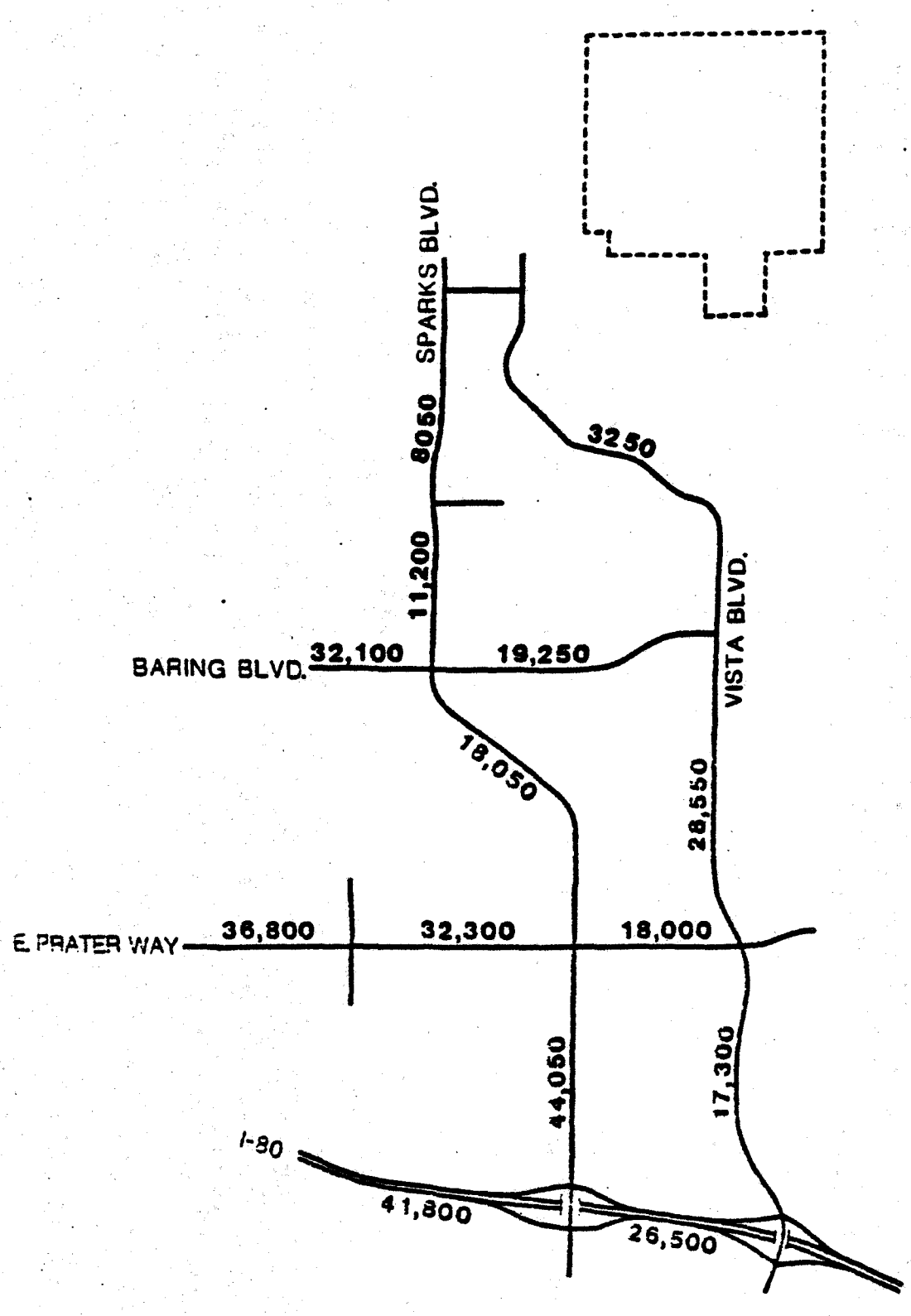
Project Trip Generation and Distribution

Current plans call for about 1,600 residential units to be constructed in The Vistas. Approximately 10,050 trips will be generated from this development on an average weekday. From the RTC model, these trips were then distributed onto the roadways in the study area. Figure 30 shows the future 2002 ADT volumes with the project traffic added.

Level of Service Analysis

The traffic impacts due to a proposed development are typically assessed in terms of the ability of the supporting road system to accommodate site-generated traffic. The operating characteristics and the volume-to- capacity ratios of various levels of service are described in the appendix.


SPARKS BLVD.
3100
3100
1300
VISTA BLVD.
BARING BLVD.
27,300
17,900
13,700
25,800
E. PRATER WAY
31,400
29,600
16,600
43,000
16,400
I-90
41,000
28,000


SPARKS BLVD.
8050
3250
11,200
VISTA BLVD.
BARING BLVD.
32,100
19,250
18,050
28,550
E. PRATER WAY
36,800
32,300
18,000
44,050
17,300
I-80
41,800
26,500

Capacity calculations were conducted for both of the scenarios described earlier. Table 12 shows the results of these calculations for the key roadway links.

As shown, the background growth to the year 2002 will cause considerable congestion along several roadway links within the study area. Five links will operate unacceptably in the year 2002, with three of those operating at Level of Service F: Sparks Boulevard from East Prater to I-80, East Prater Way from McCarran to Howard, and East Prater Way from Howard to Sparks Boulevard.

TABLE 12
FUTURE ROADWAY LINK[1]
OPERATING CONDITIONS

Link	Existing V/C	Existing LoS	Year 2002 Background V/C	Year 2002 Background LoS	Year 2002 w/Project V/C	Year 2002 w/Project LoS
Sparks Boulevard:						
Disc to Shadow	0.06	A	0.22	A	0.56	A
Shadow to Baring	0.03	A	0.11	A	0.39	A
Baring to E. Prater	0.09	A	0.58	A	0.63	B
E. Prater to I-80	0.02	A	1.49	F	1.55	F
			0.75	C[2]	0.77	C[2]
Vista Boulevard:						
Disc to Baring	0.03	A	0.09	A	0.23	A
Baring to E. Prater	0.14	A	0.90	D	0.99	E
			0.60	A[3]	0.66	B[3]
E. Prater to I-80	0.15	A	0.53	A	0.60	A
Baring Boulevard:						
McCarran to Sparks	0.46	A	0.95	E	1.11	F
			0.63	B[3]	0.74	C[3]
Sparks to Vista	0.08	A	0.62	B	0.67	B
E. Prater Way:						
McCarran to Howard	0.63	B	1.09	F	1.28	F
			0.73	C[3]	0.85	D[3]
Howard to Sparks	0.41	A	1.03	F	1.12	F
			0.69	B[3]	0.75	C[3]
Sparks to Vista	0.17	A	0.58	A	0.63	B
Interstate 80:						
McCarran to Vista	0.30	A	0.64	B	0.65	B
Sparks to Vista	0.30	A	0.41	A	0.41	A

NOTES:

1. At-grade roadway calculations based upon capacity of 7,200 vehicles/lane ADT, freeway calculations based upon capacity of 16,000 vehicles/lane ADT.
2. Widen cross section to eight lanes.
3. Widen cross section to six lanes.

The other nine links will continue to operate efficiently with V/C ratios ranging from 0.09 to 0.64 (Levels of Service A to B).

With the addition of project traffic, the same five congested links (with unacceptable levels of service) will become somewhat worse. The Baring Boulevard McCarran-to-Sparks link will experience an increase in V/C ratio from 0.95 (LoS E)to 1.11 (Los F). Also, the V/C ratio for Vista Boulevard between Baring Boulevard and East Prater will increase from 0.90 (LoS D) to 0.99 (LoS E). The three other congested links will remain at Level of Service F.

Although the other nine roadway links are impacted by project traffic, they will still operate well within acceptable levels with V/C ratios ranging from 0.22 to 0.67.

Mitigation Measures

Based upon the results of the capacity calculations, it is apparent that the roadway links that will operate unacceptably with the project developed are links that will already be operating unacceptably due to just the projected 2002 background traffic. Therefore, the following mitigation measures will be needed by the design year, and are made necessary in large part by non-project development:

- Widen Sparks Boulevard between E. Prater and I-80 from four to eight lanes;

- Widen Vista Boulevard between Baring Boulevard and E. Prater Way from four to six lanes;

- Widen Baring Boulevard to six lanes between McCarran Boulevard and Sparks Boulevard; and

- Widen E. Prater Way to six lanes between McCarran Boulevard and Sparks Boulevard.

As shown in Table 12, the addition of these mitigation measures will allow all of the key roadway links to operate acceptably (V/C = 0.85 or less) for both the year 2002 background and year 2002 background plus project scenarios.

Air Quality Impact Analysis

The Truckee Meadows is presently in "non-attainment" for carbon monoxide and total suspended particulates. To be considered in non-attainment, only two exceedences of the Federal Air Quality standards per year are required. 1987 is the year in which attainment must be accomplished or the EPA will impose sanctions such as withholding certain highway funds. The present attainment strategy is based on a roll back analysis of the relationship between gross emissions in the Truckee Meadows and the magnitude of the present exceedences. The gross emissions are "rolled back" or reduced to an allowable "tons per winter day" as a percentage of the Federal Air Quality standard and the current emission violation value.

The primary sources of carbon monoxide are motor vehicles and wood stoves, with wood stoves contributing a large percentage of the total suspended particulates that gives the air the "hazy" look due to light scattering by the small particulates. The magnitude of all other sources for carbon monoxide such as natural gas combustion is only a few percent of the total for motor vehicles and wood smoke.

The Pollution Standard Index (PSI) is a weighted measure of the various pollutant concentrations and is indexed so that a PSI of 100 indicates an air quality exceedence of one of the five pollutants which are carbon monoxide (CO), sulphur oxides (SOx), nitrogen oxides (NOx), hydrocarbons (HC) and total suspended particulates (TSP). These pollutants are monitored by the Washoe County District Health Department.

Air quality violations for CO values typically occur in December and January during periods when cold air in the valley is trapped by a layer of warm air above the valley. These "inversions" last for several days and allow little mixing or replacement of the air in the valley. Air quality monitoring data of CO show that the highest values occur late at night around 11 PM and that the lowest values occur during the mid afternoon. The CO exceedences are of the eight hour standard of 9 ppm. The one hour standard of 35 ppm has never been exceeded in the Truckee Meadows. Current CO monitoring being conducted by Comprehensive Planning in the immediate vicinity of Plumb Lane and Kietzke Lane in February of 1987 shows values of 5 ppm at 5 AM in the morning when no traffic is present. At peak hour conditions, the upwind monitors show only a few parts per million while the downwind monitors are showing higher values contributed by the adjacent traffic.

The fact that the highest CO values occur late at night and are quite significant even with no nearby local contributing activity indicates that air quality violations are contributed to on a region wide basis over a twenty-four hour or longer period depending on the length of the inversion. Individual intersections do not directly cause exceedences but rather contribute along with all other activities in the Truckee Meadows.

To improve or at least not further degrade the air quality, it is necessary to reduce emissions during those several days a year when the Truckee Meadows is under an inversion condition. Improved wood burning practices and catalytic equipped stoves will help. Free burning fireplaces emit significantly less CO and TSP than do tightly banked wood stoves. The Washoe COunty Health Department currently has the authority to require the cessation of wood burning when the PSI exceeds 100. Since wood burning occurs in the evening, this has a direct impact on that time period when concentrations are the highest. Such episodic solutions are not recognized by the EPA as an acceptable non-attainment strategy, however.

Additional reductions in air quality emissions can be made by reducing traffic congestion, especially in reducing the number of vehicles required to stop and then accelerate as acceleration emissions are 10 times higher than cruise emissions. Such reductions can be accomplished by intersection improvements, timing of the traffic signals so that traffic flows through the streets rather than from intersection to intersection and by dispersing trip attractions so that traffic is not concentrated on particular corridors or channeled through certain intersections.

The attainment of the Federal Air Quality standards in the Truckee Meadows is almost at the whim of the weather. Given a severe inversion lasting four to six days in December or January, violations are almost certain. There are, however, things such as traffic flow which can be improved and wood burning which can be made more efficient or curtailed as necessary to improve air quality the entire year and lessen the severity and frequency of the violations.

Fire Protection/Prevention

Several measures are being taken to ensure adequate fire protection is afforded in The Vistas.

Class A roofing (concrete tiles) is required for all residential structures in The Vistas. Also, where deemed necessary by the Sparks Fire Department, fire fuel breaks will be placed around development projects.

Of note is the proposed impact fees that will fund the land acquisition, construction and equipping of the fire station to serve the Spanish Springs Annexation Area. This $700,000± project is a "first phase" capital improvement project in the Spanish Springs area and will be located in The Vistas.

Parks & Recreation

A nine ± acre park site is designated in The Vistas master plan for use as a public park and as a joint use facility with the adjoining elementary school. The joint use feature serves to make better use of the area and also allows shared maintenance responsibilities for the park area. The park site is located near the population center of The Vistas and generally meets the 0.5 mile "service standard". No ballfields or organized athletic fields are proposed because this would be contrary to hillside concerns and also because the 4,000 to 4,500 project population doesn't warrant those kinds of facilities. The park is envisioned as being oriented around children play areas (ie. "tot lots"), informal turf play areas, and passive park space. The Vistas' population does justify the inclusion of 2± tennis courts and one or two game courts (eg. outdoor basketball courts).

The Vistas' developers would also like the City of Sparks to consider Residential Construction Tax (RCT), or park tax, credits for certain private facilities in the project. Specifically, the bicycling/jogging trails will be open to the public and, along with the associated landscaping, serve important and useful recreation purposes. Therefore, these facilities should be considered for RCT credit. Also, small "pocket parks", accommodated tot lots, etc. could be interspersed within each or some of the villages to provide very convenient recreational resources. Again, this would serve to meet RCT objectives. The "beauty" of this concept is that operation and maintenance (O & M) costs are voluntarily shifted to the private sector (the homeowners association). With the

association in place and its existing O & M commitments, the additional burden would be relatively minor for The Vistas' residents.

Impact Fees & Other Mitigation Measures

The use of impact fees to ensure the costs of growth are properly accommodated in the Spanish Springs area is endorsed by The Vistas as long as the fees are fair, predictable, equitably administered, and serve to provide the necessary facilities in a timely and cost-effective fashion.

One noteworthy point is that the use of RCT credit is proposed with The Vistas. At $1,100 per home (the estimated RCT revenue on a $100,000 home), The Vistas will generate over $1,750,000 in RCT and the larger Spanish Springs area will provide about $7,700,000 in RCT revenue (7,000 homes @ $1,100). There are a minimum of six neighborhood parks proposed in the Spanish Springs area. If these parks each cost, say $500,000, about $3,000,000 (6 parks) to $4,000,000 (8 parks) would be needed to meet the projected needs. Thus, with the impact fees at least partially covering the $3,600,000 in leisure services capital costs projected for the Spanish Springs Annexation area, $3,500,000 to $4,500,000 in RCT may be available for RCT credits or other uses. The use of RCT credits may be a desirable "tool" for the City of Sparks to use in encouraging site-sensitive, innovative planned unit development in the area and to voluntarily shift the operating and maintenance burden to the private sector.

The staff report that was reviewed by the City of Sparks Planning Commission on April 23, 1987 and recommended for public hearing follows.

CITY OF SPARKS

PLANNING COMMISSION AGENDA ITEM

MEETING DATE: April 23, 1987

Subject:	Fiscal impact fees for development in Spanish Springs Valley
Petitioner:	Planning Department

Recommendation: The Planning Department is recommending that the Planning Commission review the cost/revenue analysis and determine if the proposed fiscal impact fees are appropriate for development in Spanish Springs Valley.

Background/Analysis/Alternatives

BACKGROUND

Historically, when a developer sought to subdivide property, city regulations required that the developer was responsible for providing all the improvements within the subdivision. For decades, it was the developer paying for internal subdivision improvements while the public assumed the cost for providing necessary external off-site improvements such as roads, water mains, sewer interceptors, parks, fire stations, police services, and other public services as may be required. Lacking any specific authority, cities were not able to require developers to pay for off-site improvements through their subdivision regulations. This was despite the fact that these off-site improvements could be specifically attributed to the proposed new developments.

Times have changed, cities are struggling to meet their annual budgets and people have realized that subdivisions have an impact on city services beyond the subdivision boundaries. What has evolved is the requirement for off-site improvements to be provided by developers through the use of exactions or impact fees. The rapid use of such systems by cities has been akin to a tidal wave. However, in the rush to use these systems to shift the cost burdens, there has been a concern that these systems could be misused. In order to avoid the claim of misuse by developers there have been at least six key issues which should be addressed by cities in developing a legally sound impact fee system. These are:

1. Linkage with comprehensive plan

The most defensible impact fee systems are those supported by a comprehensive plan. Competent plans are evidence of a communities' commitment to plan for future growth and development.

2. Defining facility service areas

Definition of service facility areas are necessary because a defined service area should be related to the programming of capital improvements. An example of this is that Sparks has defined its fire station service area as a maximum two mile running distance from the fire station. As new development occurs, new fire stations are programmed into the Capital Improvements Program to comply with this standard (i.e. Greg Street Station to be constructed this summer).

3. Evaluating Service Adequacy

All impact fee systems must address the initial question of impact upon existing facilities or capacities. If existing facilities and service levels are adequate by adopted standards to absorb the impact of new development, then there is not a need for impact fees. However, if the existing facilities and service levels are not adequate to absorb the impact of new development, then there is a justification for impact fees.

4. Pricing of Impacts

Charging more than the total cost of the facility to be improved from one or all projects whose total impacts equal the total facility need, could constitute "double taxation". The common solution to the double taxation issue is to conduct sufficient fiscal and economic analysis to define the nature of the revenue and costs incurred due to all projects involved. Once this is done you need to demonstrate that the combination of impact fees and revenues will not exceed one hundred percent of the cost of facility expansion.

5. Administering Revenues

The adoption and implementation of an impact fee system constitutes the beginning of a variety of operational and administrative activities. Trust funds for earmarked fees must be established by ordinance. Of necessity a series of policy and procedural issues must also be addressed.

First, the transaction point at which the impact assessment and fee payment are to occur must be established. Some systems initiate assessment at any point within the development process but defer payment until issuance of the building permit. Others assess and collect entirely at the building permit stage. A second issue involves permitting the construction or installation of improvements by the developer in lieu of making payments to the trust fund. Such options must rely upon the use of contractural development agreements. A third issue involves the adjustment of assessments which have been deferred to recognize fluctuating construction and land costs through inflation/deflation indexes.

6. Administering Expenditures

Another critical issue involved in the management of an impact fee system involves the administration of expenditures to insure reasonable developer benefits in the provision of expanded facilities and services. All fees must be expended for the purposes collected within a reasonable period of time. And futher, any methodology should insure that total fees collected and expended do not exceed 100 percent of the cost of the needed facility. If collected fees have provided 100 percent of the cost and a fee is still being collected for the same facility purpose, the system has either overcharged everyone, mis-estimated the total facility cost, or failed in apportioning fair share.

ANALYSIS

The Planning Commission and City Council recently approved the Spanish Springs Annexation Study. Part of this study contained a fiscal impact analysis to determine if development in Spanish Springs would cause greater costs to the City than what revenues could be generated. It was determined that costs would be greater than revenues and a policy was adopted to develop an impact fee system. Development of this proposed impact fee system is based on the comprehensive planning done in the Spanish Springs Study as well as the City Master Plan. In addition, both of these studies define the facility service areas and the adequacy or inadequacy of these facilities to handle the projected development in Spanish Springs Valley.

A substantial amount of financial analysis has been done to determine the magnitude of financial impacts on the City from development in Spanish Springs Valley. This analysis is illustrated by the seven tables following this report. A brief summary of each table follows:

Table I - This table illustrates the different sources of recurring revenues generated by a typical single family home valued at $100,000 in the City of Sparks. Total revenues generated by this typical home are $571.85 per year.

Table II - This table projects the revenues which would be generated by development of the proposed 7000 homes in the Spanish Springs area over the next fourteen years. Total revenues generated during this fourteen year period would be $26,494,400.

Table III - This table illustrates the additional City personnel that would be required as a result of development into the Spanish Springs area.

Table IV - This table illustrates the financial costs incurred by the hiring of additional City personnnel.

Table V - This table illustrates the additional non-recurring costs for road, fire, police, public works, and recreational improvements necessitated by development in Spanish Springs Valley. Total capital costs for development of the 7000 homes is $8,390,000.

Table VI - This table illustrates recurring and non-recurring costs incurred by the Spanish Springs development. The total costs incurred to develop the 7000 homes in Spanish Springs Valley is $30,573,990.

Table VII - This table summarizes the previous six tables. The total costs incurred to complete development in Spanish Springs is $30,573,990. The total revenues generated during this period are $26,494,400. The total deficit incurred by the City from this development is $4,079,590. If you divide this deficit equally among the 7000 homes built in this area you come up with a proposed development impact fee of $582.80 per house based on current prices.

The conclusion drawn from this financial analysis is that a impact fee of $582.80 per house would be required along with the projected revenues from these homes to meet 100 percent of the costs incurred from this development. Administratively it would be the simplest to collect this fee at the time of issuance of a building permit. Because the development period of this area will extend over fourteen years the impact fee should be tied to a cost of living or inflation index. This would protect the City from gathering these fees and not having sufficient funds to provide improvements because of inflation.

RECOMMENDATION

The Planning Department is recommending that the Planning Commission review this report and decide whether they would like to schedule this for an additional review session or a public hearing.

Respectfully submitted,

RICK JOHNSON, A.I.C.P.
SENIOR PLANNER

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TABLE I

PROJECTED RECURRING REVENUE PER DWELLING UNIT

RECURRING REVENUES	ANNUAL PER DWELLING UNIT
GENERAL FUND	
PROPERTY TAXES	$ 69.09
SUPPLEMENTAL CITY/COUNTY RELIEF TAXES	189.77
BASIC CITY/COUNTY RELIEF TAXES	159.55
CIGARETTE SALES TAXES	46.28
LIQUOR EXCISE TAXES	7.18
MOTOR VEHICLE PRIVILEGE TAX	21.60
DOG LICENSES	.72
BICYCLE LICENSE	.01
UTILITY FRANCHISE FEES	
GAS, ELECTRIC, WATER	32.00
TELEPHONE	9.00
GARBAGE	1.20
CABLE TELEVISION	3.60
MUNICIPAL COURT FINES	31.85
TOTAL GENERAL FUND OPERATIONS	$571.85

TABLE II

SPANISH SPRINGS VALLEY REVENUE ANALYSIS

YEAR	ANNUAL NO. HOMES BUILT	TOTAL NO. HOMES BUILT	TOTAL ANNUAL REVENUE (571) TIMES TOTAL NUMBER OF HOMES
1987	100	100	$ 57,100
1988	300	400	228,400
1989	500	900	513,900
1990	500	1400	799,400
1991	500	1900	1,084,900
1992	500	2400	1,370,400
1993	500	2900	1,655,900
1994	500	3400	1,941,400
1995	600	4000	2,284,000
1996	600	4600	2,626,600
1997	600	5200	2,969,200
1998	600	5800	3,311,800
1999	600	6400	3,654,400
2000	600	7000	3,997,000

TOTAL REVENUES GENERATED FROM BEGINNING (1987) TO COMPLETION (2000) OF APPROVED ANNEXATION IN SPANISH SPRINGS VALLEY $26,494,400.

TABLE III

ADDITIONAL PUBLIC PERSONNEL REQUIRED

	2500 HOMES	5000 HOMES	7000 HOMES
FIRE DEPARTMENT			
CAPTAINS	3	3	3
PUMP OPERATORS	3	3	3
FIREFIGHTERS	6	6	6
POLICE DEPARTMENT			
PATROL OFFICERS	5	10	10
PUBLIC WORKS DEPARTMENT			
MAINTENANCE YARD	3	4	5
STREET CREW	3	6	9
SEWER LINES CREW	1	2	3
PARKS CREW	3	5	7
TRAFFIC CREW	1	2	3
LEISURE SERVICES			
RECREATION SUPERVISOR	1	1	1
COURTS			
CLERKS & MARSHAL	1	2	3
ADMINISTRATION			
FINANCE DEPARTMENT	1	1	1
PERSONNEL	1	1	1
PURCHASING	1	1	1
EQUIPMENT SERVICES	1	1	1
TOTAL ADDITIONAL PERSONNEL REQUIRED	34	48	57

TABLE IV

ADDITIONAL ANNUAL PUBLIC COSTS

	2500 HOMES	5000 HOMES	7000 HOMES
FIRE DEPARTMENT			
PERSONNEL & EQUIPMENT	$ 457,000	$ 457,000	$ 457,000
POLICE DEPARTMENT			
PERSONNEL, EQUIPMENT AND VEHICLES	205,000	410,000	410,000
PUBLIC WORKS			
MAINTENANCE YARD PERSONNEL & EQUIPMENT	90,000	120,000	150,000
STREET DEPARTMENT			
PERSONNEL & EQUIPMENT	157,000	315,000	450,000
SEWER DEPARTMENT			
PERSONNEL & EQUIPMENT	24,885	49,770	71,110
PARKS DEPARTMENT			
PERSONNEL & EQUIPMENT	97,664	225,848	262,472
TRAFFIC DEPARTMENT			
PERSONNEL & EQUIPMENT	60,375	120,750	169,050
LEISURE SERVICES			
PERSONNEL & EQUIPMENT	40,000	40,000	40,000
COURTS			
PERSONNEL & EQUIPMENT	30,000	60,000	90,000
ADMINISTRATION			
PERSONNEL & EQUIPMENT	100,000	100,000	100,000
UTILITIES			
ELECTRICITY FOR STREET LIGHTS TRAFFIC SIGNALS	91,800	181,800	258,000
WATER FOR PARKS & FIRE HYDRANTS	46,200	98,400	129,600
TOTAL ADDITIONAL ANNUAL PUBLIC COSTS	$1,400,424	$2,178,568	$2,587,232

TABLE V

ADDITIONAL NON-RECURRING PUBLIC COSTS

	0-2500 HOMES	2500-5000 HOMES	5000-7000 HOMES
FIRE DEPARTMENT			
FIRE STATION, ~~LAND~~ & ENGINES	$ 700,000		
POLICE DEPARTMENT			
RADIO REPEATER	5,000		
PUBLIC WORKS DEPARTMENT			
MAINTENANCE YARD, ~~LAND~~, BUILDING & EQUIPMENT		$ 700,000	
MAINTENANCE CREWS PICKUP TRUCKS	45,000	45,000	$ 45,000
PARKS CREWS MAINTENANCE EQUIPMENT	30,000	60,000	30,000
TRAFFIC SIGNALS	180,000	80,000	120,000
ROAD IMPROVEMENTS			
ADD 2 LANES ON SPARKS BLVD. FROM DISC TO BARING BLVD.			375,000
ADD 2 LANES ON SPARKS BLVD. FROM PRATER TO I-80		250,000	
ADD 2 LANES ON VISTA BLVD. FROM BARING TO PRATER			250,000
ADD 2 LANES ON BARING BLVD. FROM MC CARRAN TO SPARKS BLVD.		125,000	
ADD 2 LANES ON PRATER WAY FROM MC CARRAN TO SPARKS BLVD.	250,000		
LEISURE SERVICES			
MULTI-PURPOSE ATHLETIC FIELDS AND LAND	~~1,000,000~~	~~600,000~~	~~600,000~~
ALF SORENSEN EXPANSION		900,000	
SHADOW MOUNTAIN BARN			500,000
MISCELLANEOUS CAPITAL EXPENDITURES	500,000	500,000	500,000
TOTAL ADDITIONAL NON-RECURRING PUBLIC COSTS	$2,710,000	$3,260,000	$2,420,000
TOTAL ADDITIONAL NON-RECURRING PUBLIC COSTS, 0-7000 HOMES			$8,390,000

TABLE VI

SPANISH SPRINGS VALLEY COST ANALYSIS

YEAR	RECURRING ANNUAL COSTS	NON-RECURRING (TOTAL CAPITAL COSTS DIVIDED BY 14 YEARS)	TOTAL ANNUAL RECURRING AND NON-RECURRING COSTS
1987	$ 233,400	$599,285	$ 832,685
1988	466,800	599,285	1,066,085
1989	700,200	599,285	1,299,485
1990	933,600	599,285	1,532,885
1991	1,167,000	599,285	1,766,285
1992	1,400,400	599,285	1,999,685
1993	1,594,925	599,285	2,294,210
1994	1,789,450	599,285	2,388,735
1995	1,983,975	599,285	2,583,260
1996	2,178,500	599,285	2,777,785
1997	2,280,675	599,285	2,879,960
1998	2,382,850	599,285	2,982,135
1999	2,485,025	599,285	3,084,310
2000	2,587,200	599,285	3,186,485

TOTAL COSTS INCURRERD FROM BEGINNING (1987) TO COMPLETION (2000) OF APPROVED ANNEXATION IN SPANISH SPINGS VALLEY $30,573,9090.

TABLE VII

COST/REVENUE SUMMARY AND DEVELOPMENT IMPACT FEE DETERMINATION

TOTAL COSTS INCURRED FROM BEGINNING (1987) TO COMPLETION (2000) OF APPROVED ANNEXATION IN SPANISH SPRINGS VALLEY	=	$30,573,990
TOTAL REVENUES GENERATED FROM BEGINNING (1987) TO COMPLETION (2000) OF APPROVED ANNEXATION IN SPANISH SPRINGS VALLEY	=	$26,494,400
TOTAL DEFICIT INCURRED BY CITY FROM APPROVED ANNEXATION IN SPANISH SPRINGS VALLEY	=	$4,079,590
TOTAL DEFICIT ($4,079,590) DIVIDED BY 7,000 HOMES BUILT IN SPANISH SPRINGS VALLEY	=	$582.80 PER HOUSE DEVELOPMENT IMPACT FEE

Appendix

5. Appendix

List of Appendices

- **Protective Covenants, Conditions & Restrictions**
- **Traffic Study**
- **Planting List**
- **Geotechnical Report**
- **Hydrology Report**

PROTECTIVE COVENANTS, CONDITIONS & RESTRICTIONS

These Covenants apply generally to The Vistas in its entirety. Supplementary Covenants, Conditions and Restrictions may be filed with any final map or with the issuance of building permit or in conjunction with any land sale where slight modifications to these covenants are deemed necessary and desirable. These changes may be either more stringent or more lenient as the specific case may require in the opinion of the Declarant.

INDEX

DECLARATION OF PROTECTIVE COVENANTS

THE VISTAS

THIS DECLARATION is made on ____(date)____ by (the Declarant), (Legal description).

RECITALS

Declarant is the developer of that certain real property located in the County of Washoe, State of Nevada, known as The Vistas, as shown on the master plan thereof attached hereto as Exhibit "A" and made a part hereof.

Declarant intends to sell and convey the lots and parcels situated within The Vistas and before doing so, desires to impose upon them mutual and beneficial restrictions, covenants, equitable servitudes and charges under a general plan or scheme of improvement for the benefit of all of the lots and parcels therein and the owners and future owners thereof.

NOW, THEREFORE, Declarant declares that all of the lots and parcels in The Vistas, as hereinafter defined are held and shall be held, conveyed, hypothecated of encumbered, leased, rented, used, occupied and improved, subject to the provisions of this Declaration, all of which are declared and agreed to be in furtherance of a plan for the development and sale of said lots and parcels, and are established and agreed upon for the purpose of enhancing and protecting the value, desirability and attractiveness thereof. The provisions of the Declaration are intended to create mutual equitable servitudes upon each of said lots and parcels in favor of each and all other lots and parcels; to create reciprocal rights between the respective owners of all such lots and parcels; to create a privity of contract and estate between the grantees of such lots and parcels, their heirs, successors and assigns; and shall, as to the owner of such lot or parcel, his heirs, successors or assigns operate as covenants running with the land for the benefit of each and all other such lots and parcels in the development as hereinafter defined and their respective owners, present and future.

I DEFINITIONS

. The following terms as used in this Declaration are defined as follows:

A. "Articles" means the Articles of Incorporation of the Association.

B. "Association" means The Vistas Homeowners Association, the property owners' association which is a Nevada nonprofit corporation.

C. "Board" means the Board of Directors of the Association.

D. "By-Laws" means the By-Laws of the Association.

E. "Committee" means The Vistas Architectural Committee.

F-1. "Common Area" means all of the real property designated as such in the Supplemental Declaration; all real property which may be later described by Supplemental Declarations as common area; and all real property acquired by the Association, whether from Declarant or otherwise, together in each instance with all improvements which may at any time be constructed thereon and owned by the Association, including, but not limited to recreational and community facilities, lakes, parks, paths and trails. Common area, as used in this Declaration does not include land owned in common or held in undivided interests by owners of multiple family dwellings within the Development.

F-2. "Construction Plans" means a set of drawings and specifications for the construction of residential or nonresidential building(s).

G. "Declarant" means the developers of The Vistas, their Successors and assigns.

H. "Declaration" means this Declaration of Protective Covenants and any amendments hereto.

I. "Development" means all that property situated in the County of Washoe, State of Nevada, described in the Supplemental Declaration and all other real property which may be described in additional Supplemental declarations recorded from time to time with the Washoe County Recorder which Development is commonly known as the The Vistas.

J. "Improvements" means all buildings, outbuildings, streets, roads, trails, pathways, driveways, parking areas, fences, retaining and other walls, docks,

piers, landscaping, light standards, antenna and any other structures of any type or kind.

K. "Land Owned in Common" means land owned in common or held in undivided interests by the owners of multiple family dwellings.

L. "Lot means any numbered lot as designated on the map or any living unit in a multiple family dwelling. Land owned in common as part of a multiple family dwelling shall not be considered to be a separate lot for purposes of this Declaration. Non-recorded lots or multiple family living units under the ownership of the declarant shall be considered lots with one vote for each such lot or unit available to the declarant in association matters. Said non-recorded lots shall not be subject to any association fees or assessments.

M. "Map" means the maps of the development as they are from time to time recorded.

N. "Multiple Family Dwelling" means a residential structure such as a townhouse or condominium structure containing two or more individual apartments or living units and constructed on a lot or parcel whose use is designated in the Supplemental Declaration as multi-family residential.

O. "Owner" means:

1. Any person or legal entity, including Declarant, who holds fee simple title to any lot, unit, or parcel within the development.

2. Any person or legal entity who has contracted to purchase fee title to a lot pursuant to a written agreement recorded in the Washoe County, Nevada, Recorder's Office in which case the seller under said agreement shall cease to be the owner while said agreement is in effect; or

3. A lessee of a lot under a recorded lease from the owner of fee simple title to said lot for a term of not less than fifty (50) years, in which case the lessor under said lease ceases to be the owner while said lease is in effect.

4. Owner does not include the Association.

P. "Parcel" means any portion of the development other than a lot or common area.

Q. "Single Family Dwelling" means a residential structure for the owner and his immediate family, his casual guests and his domestic servants and domestic employees, which dwelling is constructed on a lot designated in the Supplemental Declaration as a single family residential lot.

R. "Supplemental Declaration" means:

1. The recorded Supplemental Declaration of Declarant attached hereto as Exhibit "A"; or

2. In the case of parcels being subsequently annexed to the development, the recorded Supplemental Declaration of Declarant which incorporates the provisions of this Declaration herein by reference.

In either event, the Supplemental Declaration shall include a description of the real property covered thereby subject to the provisions of this Declaration and shall designate the permitted uses of such property.

II. LAND USE

Lots and parcels in the Supplemental Declaration shall be designated therein as to their permissible uses and shall thereupon become subject to the restrictive or other provisions of this Declaration and of The Vistas Development Standards Handbook relating to such uses. In the event a use is designated for which no such provisions are contained herein (e.g., single family dwelling, multiple family dwelling, etc.), the same may be set forth in such Supplemental Declaration. Only activities connected with the designated uses may be carried out on any lot or parcel. There shall be no use of a lot or parcel other than the designated use.

A. Single Family Residential. Only single family dwellings and such outbuildings as are usually accessory thereto and as may be permitted by the Committee shall be permitted on any lot designated as single family residential. The following restrictions shall apply specifically to such lots.

1. Minimum Area. Each dwelling constructed shall have fully enclosed floor area (exclusive of roofed or unroofed porches, terraces, garages, carports, guest houses or other outbuildings) not less than 1200 square feet.

2. Height Limitation. No structure or portion thereof (except chimneys) constructed on any lot within the development shall extend to a point higher than

that designated for such lot on an applicable supplement to this Declaration of Protective Covenants filed with the Washoe County Recorder from time to time with respect to each unit of the development, which supplement shall be so filed prior to the Declarant conveying any lots within any such unit. In the absence of such filing, height limitations within any unit shall be those for each lot within such unit established by the Committee. Such height limits shall be shown on final subdivision plats. No height limits can exceed City of Sparks ordinance requirements unless expressly permitted by the City of Sparks through approval of supplemental declarations.

3. Building Envelope. The Declarant shall establish a building envelope and recommended point of access for each lot. This envelope will be based upon the topography of the lot, it's relationship to neighboring lots, and any unique feature that the lot may have such as trees, meadows, rock outcroppings, etc. The size and shape of the building envelope may vary from lot to lot. If, in the opinion of the declarant, certain lots do not warrant the establishment of a specially designated envelope, the envelope for those lots shall be set according to the normal setbacks of the governing local agency for that type of lot in question. In general, all building construction, shall be confined to the building envelope area. If, in the opinion of the Committee, the building envelope caused the lot owner undue hardship in the siting of his home or in the case of any outbuilding requested by the owner and deemed desirable by the Committee, small variances may be permitted by the Committee as long as County or City setback requirements are met. Any such variance must be in writing and signed by the chairperson of the Committee. No variance may be granted that would be contrary to any setback requirements of the City unless expressly permitted by the City of Sparks.

B. Multiple Family Residential. Only multi-family dwellings and such outbuildings as are usually accessory thereto shall be permitted on any parcel designated as multiple family residential. The following restrictions and covenants shall apply specifically to such lots or parcels:

1. Location. Multiple family residential use shall be allowed only within areas approved for such use and as designated on Supplemental Declarations.

2. Minimum Living Area. The amount of fully enclosed floor area devoted to living purposes in each such unit shall not be less than 800 square feet for an apartment, patio home or condominium unit or 1000 square feet for a townhome.

3. Carport, Garage or Screened Parking Area. A carport or garage shall be constructed for each townhome unit. Apartments, patio homes or condominium units may be allowed with screened parking areas in lieu of or in combination with garages or carports, if approved in writing by the declarant and the committee.

4. Areas Held in Undivided Interests Within Multiple Family Residential Parcels: (Referred to above as land owned in common.) Areas held in undivided interests within multiple family residential parcels shall not be conveyed to the Association but shall be owned, developed and managed consistent with the development plan or scheme for the multiple family residential parcels.

5. Draperies in Multiple Family Residential Units. The Committee may, prior to the sale of any units in a multiple family residential unit structure establish a uniform color scheme for all drapery liners on exterior windows. In the event such a color scheme is established, the Committee shall notify the Association which shall notify all real estate persons selling such units so that the buyers of such units will be advised of such requirement prior to purchase. Such color scheme shall be maintained until changed by the Committee or with the consent of eighty percent (80%) of the owners of the structure involved.

C. Common Areas. All areas in the development designated as common areas, (owned and to be owned by the Association) are and shall remain private property and Declarant's recordation of a map showing such common areas shall not be construed as a dedication to the public of any such common areas located therein.

1. Ownership. Declarant will convey all such common areas to the Association (except as set forth herein) free and clear of all liens and encumbrances (other than liens for taxes), but subject to such easements and rights-of-way as then appear of record, such conveyances shall be accomplished in segments from time to time as improvements, if any, to be located thereon as shown on the recorded maps of the development are completed.

2. Use. The use and enjoyment of said common areas and improvements thereon, whether before or after conveyance to the Association, shall be subject to the powers of the Association as set forth in its articles and by-laws and to rules and regulations governing the use of such property and improvements as may from time to time be adopted by the Board of the Association.

3. Maintenance. Maintenance of such common areas and repairs to any improvements thereon shall be the obligation and responsibility of Declarant until conveyance thereof to the Association; thereafter the Association shall have sole responsibility therefor.

4. Subsequent Dedication. At any time after conveyance to the Association of any common areas, the Association may, upon the affirmative vote of seventy percent of its membership offer any such property for dedication to public use. Such offer shall be subject to acceptance by the appropriate governmental authority pursuant to its then applicable standards. During the period of control of the Association by Declarant as set forth hereinafter in Section VI B, Declarant shall not offer for dedication any of the common areas of the Association.

III. RESIDENTIAL RESTRICTIONS

The following shall be applicable to all lots and parcels within the development, whether single family or multiple family, and each owner, as to his lot or parcel, covenants to observe and performs the same:

A. Accessory Outbuildings. No accessory outbuildings (e.g. garages or sheds) shall be erected on any lot or parcel prior to the erection thereon of a dwelling. In no event shall any accessory outbuilding or temporary structure or trailer or tent, ever be used for human occupancy or habitation except such guest houses or servants quarters as may be approved in writing by the Committee. Unattached accessory outbuildings may be constructed only as may be approved in writing by the Committee.

B. Completion of Construction. Construction of any improvement, once commenced, shall be pursued diligently to completion. Improvements not so completed or upon which construction has ceased for ninety (90) consecutive days or which have been partially or totally destroyed and not rebuilt within a reasonable period shall be deemed nuisances. Declarant or the Association may remove any such nuisance or repair or complete the same at the cost of the owner provided the owner has not commenced required work within thirty (30) days from posting a notice to commence such work upon the property. Such notice shall state the steps to be taken to eliminate the nuisance.

C. Prohibition Against Used Structures. No used or existing or previously constructed buildings or structures, intended for use as a dwelling or outbuilding, shall be placed on any lot from the date of recording this Declaration.

D. Maintenance of Lots. All lots and parcels, whether vacant or improved, occupied or unoccupied, and any improvements placed thereon, shall at all times be maintained in such manner as to prevent their becoming unsightly, unsanitary, or a hazard to health. If not so maintained, the Association shall have the right, after giving thirty (30) days written notice in like manner as above set forth in subparagraph BB, through its agents and employees, to undertake such work as may be necessary and desirable to remedy the unsightly, unsanitary or hazardous condition, the cost of which shall be added to and become a part of the annual assessment to which such lot is subject. The Board of Directors has sole discretion as to what is unsightly or unsanitary. Neither the Association nor any of its agents, employees or contractors shall be liable for any damage which may result from any maintenance work as performed nor shall the Association or any of its agents or employees be liable for any failure to exercise its right to also maintain any parcel or lot.

E. Disposal of Sanitary Waste. All permanent plumbing fixtures, dishwashers, toilets or garbage disposal systems shall be connected to the sanitary sewer system in the development.

F. Fences. Unless specifically restated in a Supplemental Declaration, the following general fencing guidelines shall apply. All property lines from single family dwelling houses to the street shall be kept free and open. There shall be no fences or walls over five (5) feet in height anywhere within the Development without Committee approval. There shall be no fences or walls surrounding multiple family dwellings without Committee approval. There shall be no chainlink, woven wire or any type of wire fence within the Development except to back yard pet enclosures and swimming pools or as approved by the Committee for security or safety purposes. All fences and walls shall be approved by the Committee prior to installation and detailed plans therefor shall be submitted to the Committee as in the case of other structures. Nothing herein contained shall prevent necessary erection of retaining walls required by topography and approved by the Committee. City of Sparks height restrictions for fences in front yards also apply to The Vistas.

G. Nuisances. No noxious or offensive activities or nuisances shall be permitted on any lot or parcel in the development. No refuse, unsightly or abandoned vehicles, debris, noxious material, discarded personal effects, construction materials not for immediate use, compost materials and similar matter,

shall be permitted on any lot or portion thereof. It is incumbent upon all property owners to maintain their lots and yards in a neat, orderly and well-groomed manner, whether said lots are vacant or improved.

H. Signs. Other than during construction of house, no sign, billboards or advertising structures of any kind may be displayed on any lot or parcel except upon application to and receipt of written permission from the Committee. The Committee shall not unreasonably withhold permission with respect to signs advertising a lot or parcel for sale, however the Committee may provide such signs of a standard size and color with space provided for the name and telephone number of the seller or seller's agent, which signs only shall be used if provided. One sign, identifying the contractor during construction or advertising a home for sale, is permitted, provided it is single sided, tan in color with black or green lettering, with a maximum area of 800 square inches and the longest dimension not greater than 36 inches. The sign is to be on its own post and shall not be placed higher than 42 inches from the prevailing ground plain. The sign must be placed no closer then 20 feet from the nearest roadway and be approximately parallel to the centerline of the roadway. Wording of contractor signs shall be limited to the name and phone number of the contractor, the words "contractor" or "general contractor", if not contained in the firm name, and the architect or designer and owner(s) of the home. Subcontractor and materialmen signs are prohibited. Contractor signs must be removed upon completion of construction. All residences shall have a designated lot number that is easily viewable from the road of such design that is consistent with the community and approved by the Committee. Signs not meeting ACC standards of size, color and other specifications will be removed from premises where displayed. They will be held for 14 days in the Administrative office to be claimed by owner. Exceptions to the above criteria may be granted by the committee upon application. No other signs shall be permitted except as specified in this section.

I. Animals. No animals shall be kept or maintained on any lot except the usual household pets not kept for commercial purposes which shall be kept reasonably confined so as not to become a nuisance. Household pets shall not unreasonably interfere with the comfort, privacy or safety of other owners within the Development. No lot shall have more than four such household pets. The Declarant may file Supplemental Declaration allowing horses and/or 4-H animals limited to cattle and sheep on specific lots, providing those lots are a minimum of one acre in size and are in an area where such use would be in keeping with the physical constraints of the land and in character with the uses of the surrounding properties.

J. Garbage and Refuse Disposal. There shall be no exterior burning of trash, garbage or other like household refuse without a permit from the Committee. nor shall any owner accumulate on his lot junked or unsightly vehicles or litter, refuse or garbage, except in receptacles provided for such purposes.

K. Concealment of Fuel Storage Tanks and Trash Receptacles. Fuel storage tanks and every receptacle for ashes, trash, rubbish or garbage shall be installed underground or be so placed and kept as not to be visible from any street, lake, lot, parcel or common area within the Development except at the times when refuse collections are made.

L. Antennas. Television antennas, satellite discs, and antennas for shortwave or ham radio installations will not be installed on any lot or parcel without the express written permission of the Committee..

M. Travel Trailers, Motor Homes and Boat Storage. No travel trailer, motor home (R.V.) or boat trailer shall be parked within the Development for more than twenty-four consecutive hours nor for more than five (5) days in a thirty (30) day consecutive period unless kept within a fully enclosed roofed garage so as not to be visible from any street, lot, parcel, lake or common area. The intent of this paragraph is to allow only for loading and unloading such vehicles within the Development unless kept in a garage as aforesaid.

N. Defacing or Removal of Common Area Improvement. No tree, shrub or improvement within a common area shall be defaced or removed except at the express direction of the Association.

O. Limited Access. There shall be no access to any lot or parcel on the perimeter of the development except from designated streets or roads as shown on recorded maps of the Development.

P. Resubdivision or Joinder of Lots. No lot or parcel shall be further subdivided except those designated multi-family residential and then only to the extent required or permitted by governmental authority nor shall there be any severance of the surface and subsurface rights. The owner of two or more contiguous lots may apply to the Committee for permission to use such lots as the site of a single dwelling. Notwithstanding such permission, said lots shall remain as separate lots for all purposes except as set forth in II.A.3 above.

Q. Operation of Motor Vehicles. Except as to authorized maintenance vehicles, no motorized vehicle shall be operated in any area within the development except on a street or driveway. All speed limit and other traffic

control signs erected within the Development shall be observed at all times. Motorized vehicles are specifically prohibited on all paths, trails, or walkways.

R. Utility Lines. All utility lines and connections within the development shall be placed underground. No light shall be suspended from a pole in excess of ten (10) feet from the ground within the development except those owned and maintained by the Declarant or the Association or as expressly approved in writing by the Committee.

S. No Commercial Enterprise. No business or commercial enterprise shall be performed or conducted upon any residentially zoned lot or within any dwelling or outbuilding within the Development except for a home business as allowed by the City of Sparks and for construction and sales activities directly related to and during the development stage of the Development. Permission for any temporary construction or sales facility must be approved in writing by Declarant and may be revoked at any time by Declarant. Nothing herein contained shall be construed as preventing the construction of improvements within the Development approved by the Committee.

T. Temporary Structures. No temporary structure of any form or type shall be permitted on any lot or parcel except during construction of a specific unit on that lot or parcel and as approved by the Committee.

U. Peaceful Enjoyment. No use of any lot or structure within the development shall annoy or adversely affect the use, value, occupation and enjoyment of adjoining property or the general neighborhood. Final determination within these bounds shall be left to the discretion of the Association.

V. Excavation. No excavation for minerals, stone, gravel or earth shall be made upon any lot other than excavation for necessary construction purposes relating to main dwelling units, retaining walls, outbuildings and pools, and for the purpose of contouring, shaping, and landscaping, or in the erection of permitted fencing generally improving any lot.

W. Certificate of Occupancy. A certificate of occupancy must be issued by the City of Sparks Building Department prior to occupancy of any dwelling unit.

X. Clothes Lines. No clothes line shall be constructed or erected which would be visible from any street, common area or other lot.

Y. Landscaping. Within eight (8) months of completion of the main dwelling unit, each lot or parcel shall be completely landscaped consistent with ap-

proved landscape plans in a manner suitable to the character and quality of The Vistas Development, and all landscaping shall be maintained to harmonize with and sustain the attractiveness of the Development. A minimum of three 15 gallon evergreen trees will be planted between the front lot line and dwelling unit as part of the overall landscape plan.

Z. Garage. Every single family dwelling unit constructed within the subdivision shall have on the same lot or parcel enough covered automobile and completely enclosed storage space for at least two automobiles.

AA. No Commercial Leasing. No owner of any lot shall participate in any plan or scheme for the rental of the improvements on such lot, nor shall any such lot be operated as a commercial venture. Nothing in this paragraph shall prevent an owner of a lot from renting the lot and improvements thereon during periods of such owner's absence, nor shall the renting of multiple family units be prohibited.

BB. Building Height. Building height limitations may be imposed by the Declarant in order to preserve views from neighboring homes into common areas and to minimize the impact of structures on sensitive natural areas of The Vistas. No height limits can exceed City of Sparks requirements unless expressly permitted by the City of Sparks through approval of supplemental declarations.

CC. Exterior Lighting. All exterior lighting plans must be submitted with construction or alteration plans submitted for approval. Exterior lighting which can be seen from the roads, the greenbelts, or a neighboring homesite must be indirect. The light source may not be visible in such circumstances.

DD. Exterior Walls and Trims. Materials deemed in the character of the development for a specific site by the ARC, are required for all exterior walls. All reflective metal such as chimney stacks, flashings, exhaust vents and pipes must be painted to match or blend with surrounding materials. All such colors are also subject to approval by the Committee. The Declarant may file subsequent Declarations specifying acceptable colors of stains and paints. All draperies and window coverings should also be of materials and colors which harmonize with the surroundings and should be chosen with consideration to neighbors and neighboring views, especially along greenbelts and roads. Aluminum windows, door frames, solar panels, and skylights must be bronzed anodized. Steel window and door frames must be painted to match or blend with surrounding materials. Colors are subject to approval by the Committee.

EE. Roofs. Concrete tile roofing, in a color and texture suitable to the Committee, is required. Other materials will be considered if deemed in character with the The Vistas by the Committee. Flat roofs are highly discouraged.

FF. Construction Procedures. Prior to the commencement of any construction activity on any lot or parcel, the owner and/or contractor shall rope off those areas not intended for actual construction or staging to protect the site from unnecessary damage and to reduce erosion and dust problems. The site shall be kept in a clean and orderly fashion at all times and the contractor shall have approved sanitary facilities on site as well as a garbage dumpster or other suitable device for regular disposal of trash. No construction materials shall be dumped or stored on roadways, pathways, trails, greenbelts, open space or any common area. Construction work hours shall be limited to 7 A.M. to 6 P.M. Monday through Saturday. The Committee may require the contractor to submit an erosion protection plan to control possible sedimentation travel to parks, greenbelts, streams, or other common areas when in the opinion of the Committee it is deemed necessary or when required by the County or City as a condition of approval of a project. If requested, this plan will be submitted prior to any construction activity and carried out diligently.

IV. THE ARCHITECTURAL CONTROL COMMITTEE.

A. General Powers. All improvements constructed or placed on any lot or parcel must first have the written approval of the Committee. Such approval shall be granted only after written application has been made to the Committee in the manner and form prescribed by it. The application, to be accompanied by not less than two (2) sets of plans and specifications, shall show the location of all improvements, if any, existing upon said lot, the location of the improvement proposed to be constructed, proposed material staging area, the existing topography to two foot contours; front, rear and all side elevations, showing the structures' relationship to the existing and finished topography, all cuts and fills, the color and composition of all exterior materials to be used, landscape plan, the screening proposed for any wood storage area, and any other information which the Committee may require, including soil and engineering reports and recommendations, if requested by the Committee. All nonresidential and multi-family residential building plans must also include grading plans that specify the timing, sequence and extent of proposed grading. In the event a lot owner desires to redecorate the exterior of any existing structure, it shall only be necessary to submit the new proposed color

scheme to the Committee for its approval. Remodeling or adding to existing structures or making structural or architectural changes shall require the lot owner to submit complete plans therefore to the Committee as in the case of erecting new structures. Failure of the Committee to comment on any application, properly submitted, within forty-five (45) days of receipt by the Committee at its office shall be deemed approval of such application by the Committee. The Committee shall have the power to render decisions on such other matters as are referred to the Committee under this Declaration, or as may be referred to the Committee by the Association with the Committee's consent, with applications for such decisions and the renderings thereof to be in ac cordance with such rules and regulations as may from time to time be adopted by the Committee. Committee comments with respect to any application shall be strictly followed. If requested by the Committee, Applications must be resubmitted to the Committee, in which case the Committee shall have forty-five (45) days after the resubmission to comment thereon. The Committee may also adopt supplemental standards to meet the City Council's and/or the Board of County Commissioners' intent in their approval.

B. Committee Membership. The Committee shall be composed of not less than three (3) nor more than seven (7) members, to be appointed by Declarant, at least one of whom shall be a qualified member of one of the allied physical design professions (i.e., civil engineer, architect, land planner, etc.), with the first Committee to consist of

C. Grounds for Disapproval. The Committee may disapprove any application:

1. If such application does not comply with this Declaration and/or the Master Plan and Community Design Standards;

2. Because of the reasonable dissatisfaction of the Committee with grading plans, location of the proposed improvement on a lot, finished ground elevation, color scheme, exterior finish, design, proportions, architecture, shape, height or style of the proposed improvement, the materials used therein, the kind, pitch or type of roof proposed to be placed thereon, or for purely aesthetic reasons.

D. Rules and Regulations. The Committee may from time to time adopt written rules and regulations of general application governing its procedures and approval criteria which may include, among other things, provisions for the form and content of application; required number of copies of plans and specifications; provisions for notice of approval or disapproval, and various

approval criteria. Copies of such rules shall, if adopted, be available to each buyer of a lot or parcel within the Development at the time of close of escrow and shall be maintained at the office of the Committee.

E. Variances. The Committee may grant reasonable variances or adjustments from the provisions in this Declaration where literal application thereof results in unnecessary hardship and if the granting hereof in the opinion of the Committee will not be materially detrimental or injurious to owners of other lots. The Committee may not grant variances to City of Sparks land use regulations.

F. Certification of Compliance. At any time prior to completion of construction of an improvement, the Committee may require a certification, upon such form as it shall furnish, from the contractor, owner or a licensed surveyor that such improvement does not violate any set-back rule, ordinance or statute, nor encroach upon any easement or right-of-way of record and/or that all construction is in strict compliance with plans approved by the Committee.

G. Administrative Fees. As a means of defraying its expenses, the Committee shall require a filing fee of $50.00 to accompany the submission of plans and specifications for a new home and a filing fee of $25.00 for submitting plans for remodeling or additions or exterior redecorating color scheme. A filing fee of $150.00 shall be required for any multi-family or commercial building. No additional fee shall be required for resubmissions, nor shall a fee be required for proposals for erection of a fence not as part of the original construction.

H. Liability. Notwithstanding the approval by the Committee of plans and specifications neither it, the Declarant, the Association, nor any person acting in behalf of any of them shall be responsible in any way for any defects in any plans or specification or other material submitted to the Committee, nor for any defects in any work done pursuant thereto. Each person submitting such plans or specifications shall be solely responsible for the sufficiency thereof and the adequacy of improvements constructed pursuant thereto. No member of the Committee shall be held liable to any person, whether an owner of a lot or parcel within the development or not, on account of any action or decision of the Committee or failure of the Committee to take any action or make any decision.

I. Principal Office. The principal office of the Committee shall be at ___(address)_____, or at such other address as the Committee shall notify the Association in writing from time to time.

J. Enforcement. In the event any improvement shall be commenced without Committee approval as herein required or in the event any improvement is constructed not in conformance with plans therefor approved by the Committee, or not in conformance with this or any applicable supplemental declaration, the same shall constitute a violation of this Declaration. In addition to the remedies for violation of any portions of this Declaration set forth in Section X below, the Committee shall also have the power and authority to institute legal or other appropriate proceedings to enjoin or otherwise prevent a violation of the provisions of this section provided, however, that no suit or other proceeding shall be commenced by the Committee after the expiration of sixty (60) days from such violation coming to the attention of the Committee in writing.

V. THE VISTAS HOMEOWNERS ASSOCIATION, A NONPROFIT CORPORATION.

A. General. The Association is a Nevada nonprofit corporation organized to maintain, develop and operate the common areas of the development and improvements located thereon. The Association shall have such powers in the furtherance of its purposes as are set forth in its Articles and By Laws.

B. Control of Association by Declarant. For the initial period of thirteen (13) years from and after ___(date)___, or until the final map for the last unit in The Vistas Development has been recorded, whichever shall last occur or at such sooner date at Declarant's option, but in any event not more than twenty (20) years from said date, Declarant shall have sole management of the Association and the right to vote all memberships therein on all matters which may properly be voted on by members and such right herein set forth shall constitute, without further documentation, an irrevocable proxy couple with an interest in favor of the Declarant for the period of control herein set forth. From and after said initial period, all owners of lots within the development shall exercise full membership rights with respect to said Association; assessments may be levied as herein provided against lot owners (including Declarant to the extent Declarant is the owner of a recorded lot or lots) during said initial period. Declarant shall not during said initial period, (a) cause any of the Association's property to be dedicated for public use nor (b) cause the Association to be dissolved, nor cause the Association to borrow funds, except such as may be necessary for current expenses of the Association.

C. Membership. Membership in the Association is limited to owners of single family lots and multiple family dwelling units (also defined as lots herein) and to owners of undeveloped portions of the development and is automatic with and appurtenant to such ownership and may be represented by a membership certificate; provided, however, that no such certificate shall be transferred on the books of the Association until all prior charges and assessments against said membership shall have been paid in full. No other persons may become members. There may be different classes of memberships as provided in the Association's Articles and By-Laws.

D. Membership, Rights, Privileges and Obligations. The rights and duties, privileges and obligations appertaining to various classes of memberships in the Association, including voting rights and assessment obligations, and penalties for failure to comply with the Association's Rules and Regulations are as set forth in its Articles and By-Laws. One owner of more than one lot or parcel shall be considered as one member for the purpose of use of the facilities of the Association. In the event a corporation, partnership or association shall own any lot or parcel, such corporation, partnership or association shall designate, by corporate resolution certified by the secretary or by written consent of all partners or members delivered in each case to the Association, the name of the person who, together with his family, shall have the right to utilize the facilities of the Association.

E. Duties of Association. The Association shall have the duty of enforcing the provisions of this Declaration including the duty to commence and maintain an action to enjoin any breach or threatened breach of the provisions hereof. In addition to such enforcement, remedies as may be contained in the Articles and By-Laws of the Association, failure of any member to comply with the Rules and Regulations of the Association shall be deemed to be a violation of this Declaration and enforceably by the Association as other violations of this Declaration. The Association shall from and after January 1, (initial year), be expressly required to maintain and repair and otherwise to manage to high standards all common areas owned or controlled by the Association, including all lakes within the development and all facilities thereof including, but not limited to, all roads or paths or trails owned by the Association and all improvements located on any of the foregoing.

The Association shall purchase any and all equipment, materials and supplies necessary to undertake its duties imposed by these Declaration of Protective Covenants or its Articles and By-Laws. Declarant may sell any of such equipment, materials and supplies to the Association and the Association may

purchase any of such equipment, materials and supplies provided the purchase price shall be the fair market value thereof.

VI. ASSESSMENTS

A. General. Pursuant to the powers granted to it in its Articles and By-Laws, the Association is hereby expressly authorized and empowered to levy annual and special assessments against all lots in the development, including those of Declarant. Such assessments shall be u7niform as to membership class. There shall be no assessments by the Association for maintenance of and/or repair to improvements within the areas held in undivided interests within multiple family residential areas (land owned in common). All costs and expenses incurred in connection with operation, maintenance, repair (including all taxes) or making improvements on, areas held in undivided interests within multiple family residential areas shall be borne by the owners of units within the multiple family area and not the Association.

B. Annual Assessments. Within thirty (30) days prior to the commencement of each calendar year, beginning with the year ___, the Board shall consider the current and future needs of the Association (excluding expenditures for which Special Assessments may be levied) and, in light of those needs, shall fix by resolution the amount of annual assessment for purposes, other than capital improvements for acquisitions, to be levied against each lot in the development, which amount shall be a debt of the owner thereof at the time such charge is made. Prior to January 1, (initial year), all costs of undertaking and carrying out the duties of Association shall be paid by Declarant, its successor or assigns. During the calendar year (initial year), Declarant, its successor or assigns, will pay all costs of undertaking and carrying out the duties of the Association covered by annual assessments in excess of the sum of $30.00 per month for each existing membership.

C. Special Assessments. Special assessments may be made by the Board upon an affirmative vote of a majority of the memberships representing lots so assessed, upon a determination by the Board that such assessment is necessary for capital improvements of Association property or for purposes related to the health, safety and welfare of such lot owners or for the acquisition of additional Association property. No such special assessment shall be levied without benefit of a hearing for which at least thirty (30) days' written notice shall be given to all affected lot owners. Special assessments may be made by the Board against any lot to secure the liability of the owner thereof to the

Association arising out of any breach of the provisions of this Declaration by such owner, which breach shall require the Association to expend funds by virtue thereof.

D. Notice. The secretary shall mail to each owner whose lot is assessed, at such owner's address within the development, written notice of each annual or special assessment and the time and manner for payment thereof at least thirty (30) days prior to the time such assessment is due and payable to the Association.

E. New Units. The lots in new units shall be subject to pay the next quarterly or monthly installment of the previously established annual assessment, after the expiration of six (6) months from recording the final map for such unit with the Washoe County Recorder and shall be subject to pay all special assessments levied after recordation of such final map. In the case of multi-family units, unit owners shall be required to pay the next quarterly or monthly installment after a certificate of occupancy has been issued for the subject unit.

F. Collection and Lien. Annual assessments shall be paid either quarterly on January, April, July and October on the first day of each said month or monthly on the first day of each month as determined by the Board. The amount of any special assessment levied by the Association shall be paid to it on or before the date fixed by resolution of the Board. If any assessment payment is not paid on the date required, with ten days (10) grace, the entire amount of such assessment, including any deferred portion of any annual assessment, plus any other charges thereon, including interest at ten percent (10%) per annum from date of delinquency and costs of collection, including attorney's fees, if any, shall constitute and become a lien on the lot so assessed when the Board causes to be recorded in the Office of the County Recorder of Washoe County, Nevada, a notice of delinquent assessment which shall state the amount of such assessment and such other charges and a description of lot which has been assessed. Such notice shall be signed by the President or Secretary of the Association on behalf of the Association. Upon payment of said assessment and charges, or other satisfaction thereof, the Board shall, within a reasonable time, cause to be recorded a further notice stating the satisfaction and the release of said lien.

G. Priority of Lien. Conveyance of any lot shall not affect any lien for assessments provided herein. Such lien shall be prior to all other liens recorded subsequent to said notice of assessment.

H. Enforcement. The lien provided for herein may be enforced by sale of the property which is subject to a notice of delinquent assessment, such sale to be made by the Association or any of its authorized officers or attorneys in accordance with the provisions of Covenants numbered 6, 7 and 8 of NRS 107.030 and in accordance with the provisions of NRS 107.080 and 107.090 applicable to the exercise of powers of sale in deeds of trust, or in any other manner provided by law. In exercising the power of sale herein contained, the Association shall be deemed to occupy the position of Trustee and Beneficiary and the delinquent lot owner the position of defaulting Trustor. In addition to the above enumerated items constituting the lien, the Association may also realize from the sale the costs of such sale together with a reasonable attorney's fee. The Association may be a bidder at the sale.

I. Proof of Payment. Upon request, the Association shall furnish a statement certifying that all assessments then due have been paid or indicating the amount then due.

J. Suspension. The Association shall not be required to transfer memberships on its books or to allow the exercise of any rights or privileges of membership, including voting rights, on account thereof to any owner or to any person claiming under them unless or until all assessments and charges to which they are subject have been brought current.

K. Fiscal Year. The Board may adopt a fiscal year other than the calendar year.

VII. EASEMENTS.

A. Reservation. The following easements also constituting irrevocable licenses over each lot or parcel and the common areas and the right of ingress and egress to the extent reasonably necessary to exercise such easements and irrevocable licenses are reserved to declarant and its licensees and where applicable for the benefit of the Association, the Declarant, its successors and assigns.

1. Utilities. Such utility easements as are shown on maps of various units within The Vistas development recorded from time to time together with the right to extend all utility services within such easements to other areas being developed within the development itself for the installation, maintenance and operation of all utilities, including street lights and the accessory right to locate

or to cut, trim or remove trees and plantings wherever necessary in connec tion with such installation, maintenance and operation.

2. Slope and Drainage. A ten (10) foot wide easement across all lot lines coincident with street right-of-way lines for the purpose of cutting, filling, drainage and maintenance of slopes and drainage courses.

3. Paths, Trails and Greenbelts. An easement on, over and under all paths, trails and greenbelts in the development for the purpose of installing, maintaining and operating utilities thereon or thereunder to all portions of the over-all The Vistas, for purposes of drainage control; for access to any lot or parcel within the development; and for the purposes of maintenance of such paths, trails and greenbelts and for providing access to undeveloped portions of the development for any and all purposes at any and all times, including, but not by way of limitation, the right to use said paths, trails and greenbelts during construction of improvements on undeveloped portions of the development and as may be necessary from time to time in connection with maintenance and repair and operation of any lake, ditch or stream.

4. Other Easements. Any other easements shown on the maps of the development recorded from time to time with the Washoe County Recorder.

5. Transfer of Easements. A conveyance of common areas to the Associa tion shall transfer to such Association all easements herein reserved to Declarant which are necessary or convenient to the obligation of the Association to carry out its duties prescribed herein and in its Articles and By-Laws, which transfer shall not diminish the rights in and to said easements herein reserved. Nothing set forth herein shall be construed to impose on Declarant any duty or obligation of maintenance of paths, trails and greenbelts, utility lines, common areas or improvements thereon after conveyance of the common areas on which such may be located to the Association, except that Declarant shall maintain such improvements until January 1, _____. Declarant reserves to itself and its licensees the right to extend any and all utility lines (water, sewer, electrical, etc.), roads and any other improvements necessary to complete the entire development and as may be necessary with respect to The Vistas project as a whole, except that the roads shall not be extended beyond the development, except for fire and emergency roads as may be required.

6. Use or Maintenance by Owners. The areas of any lot affected by the easements reserved herein shall be landscaped and maintained continuously by the owner of such lot, but no structures shall be placed or permitted to

remain or other activities undertaken thereon which may damage or interfere with the use of said easements for the purposes herein set forth.

C. Liability for Use of Easement. No owner shall have any claim or cause of action against Declarant.

D. Modification. None of the easements and rights granted under this Section VIII may be modified, terminated or abridged without the written consent of the persons in whose favor such easements run.

VIII. ANNEXATION.

A. Property to be Annexed. Declarant may, from time to time and in its sole discretion, annex to any unit or units of The Vistas, any other real property which constitutes a portion of the development.

B. Manner of Annexation. Declarant shall effect such annexation by recording a map of the real property to be annexed and by recording a Supplemental Declaration which shall:

1. Describe the real property being annexed and designate the permissible uses thereof;

2. Declare that such annexed property is held and shall be held, conveyed, hypothecated, encumbered, leased, rented, used, occupied and improved subject to the provisions of this Declaration; and

3. Set forth any new or modified restrictions or covenants which may be applicable to such annexed property. Upon the recording of such map and Supplemental Declaration, the annexed area shall become a part of the development and shall be subject to the provisions hereof, as supplemented, as fully as if such area were part of the development on the date of recording of this Declaration.

IX. REMEDIES.

A. Enforcement. Declarant and each person to whose benefit this Declaration inures, including the Association, may proceed at law or in equity to prevent the occurrence, continuation or violation of any provision of this Declaration, and the court in such action may award the successful party reasonable expenses in prosecuting such action, including attorneys' fees. If special funds are required to commence action, a special assessment may be imposed to cover such costs.

B. Suspension of Privileges. The Board may, anything herein to the contrary notwithstanding, suspend all voting rights and all rights to use the Association's common areas of any owner for any period during which any Association assessment against such owner's property remains unpaid, or during the period of any continuing violation of the provisions of this Declaration by such owner after the existence thereof has been declared by the Board, including a violation by virtue of the failure of a member to comply with the Rules and Regulations of the Association.

C. Cumulative Rights. Remedies specified herein are cumulative and any specifications of them shall not be taken to preclude an aggrieved party's resort to any other remedy at law or in equity. No delay or failure on the part of any aggrieved party to invoke an available remedy in respect of a violation of any provision of this Declaration shall be held to be a waiver by that party of any right available to him upon the recurrence or continuance of said violation or the occurrence of a different violation.

X. GRANTEE'S ACCEPTANCE

Each grantee or purchasers of any lot or parcel shall, by acceptance of a deed conveying title thereto, or the execution of a contract for the purchase thereof, whether from Declarant or a subsequent owner of such lot or parcel, accept such deed or contract upon and subject on each and all of the provisions of this Declaration and to the jurisdiction, rights, ,powers, privileges and immunities of Declarant and of the Association. By such acceptance, such grantee or purchaser shall for himself, his heirs, personal representatives, successors and assigns, covenant, consent and agree to and with Declarant, and to and with the grantees and subsequent owners of each of the

other lots or parcels in the development to keep, observe, comply with and perform all of the provisions of this Declaration and shall further agree to the continuation of the completion of the development and all parts and projected units therein in substantially the manner heretofore approved by the Board of County Commissioners.

XI. SEVERABILITY.

Each provision of this Declaration is hereby declared to be independent of and severable from every other provision hereof. If any provision hereof shall be held by a court of competent jurisdiction to be invalid, or unenforceable, all remaining provisions shall continue unimpaired and in full force and effect.

XII. CAPTIONS

Paragraph captions in this Declaration are for convenience only and do not in any way limit or amplify the terms or provisions hereof.

XIII. TERM AND AMENDMENT

The provisions of this Declaration shall affect and run with the land and shall exist and be binding upon all parties claiming an interest in the development until January 1, ____, after which time the same shall be extended for successive periods of ten (10) years each. Prior to January 1, (date shown above), this Declaration may be amended (except for Paragraph VI-B which may not be amended without the consent of Declarant and except as to any rights set forth herein in favor of Declarant), by the affirmative vote of seventy percent (70%) of the then owners of all lots in the Development entitled to vote and thereafter by a majority of said owners by recording an amendment to this Declaration duly executed by (a) the requisite number of such owners required to effect such amendment or (b) by the Association, in which latter case such amendment shall have attached to it a copy of the resolution of the Board attesting to the affirmative action of the requisite number of such owners to effect such amendment, certified by the secretary of the Association. THE CITY OF SPARKS MUST APPROVE ANY AMENDMENTS THAT DIRECTLY AFFECT THE ENFORCEMENT OF THE CITY

COUNCIL'S INTENT AS EXPRESSED THROUGH THEIR APPROVAL OF THE VISTAS DEVELOPMENT REPORT.

XIV. INTERPRETATION.

The Association shall have sole right and authority to interpret any of the provisions of this Declaration of Protective Covenants, which interpretation shall, so long as the same is reasonable, be conclusive.

XV. DISCLAIMER OF LIABILITY.

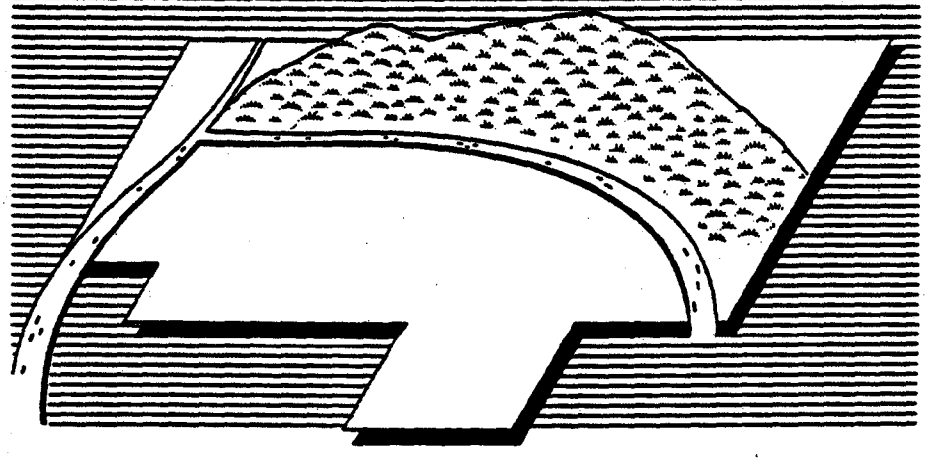
Declarant disclaims any liability for repairs or maintenance of roads, or other improvements, including utility lines located within the common areas of the development from and after the date of conveyance of such common areas to the Association.

IN WITNESS WHEREOF, Declarant has executed this Declaration the day and year first above written.

DECLARANT_____

BY_____

TRAFFIC IMPACT STUDY FOR THE SECTION 23 ANNEXATION



PREPARED FOR

CHURN, FITTINGHOFF AND ASSOCIATES, INC.

PREPARED BY

BARTON-ASCHMAN ASSOCIATES, INC.

TRAFFIC IMPACT STUDY

FOR THE

SECTION 23 ANNEXATION PROJECT

Prepared for

Chunn, Fittinghoff and Associates, Inc.

Prepared by

Barton-Aschman Associates, Inc.

December 2, 1986

CONTENTS

FIGURES

TABLES

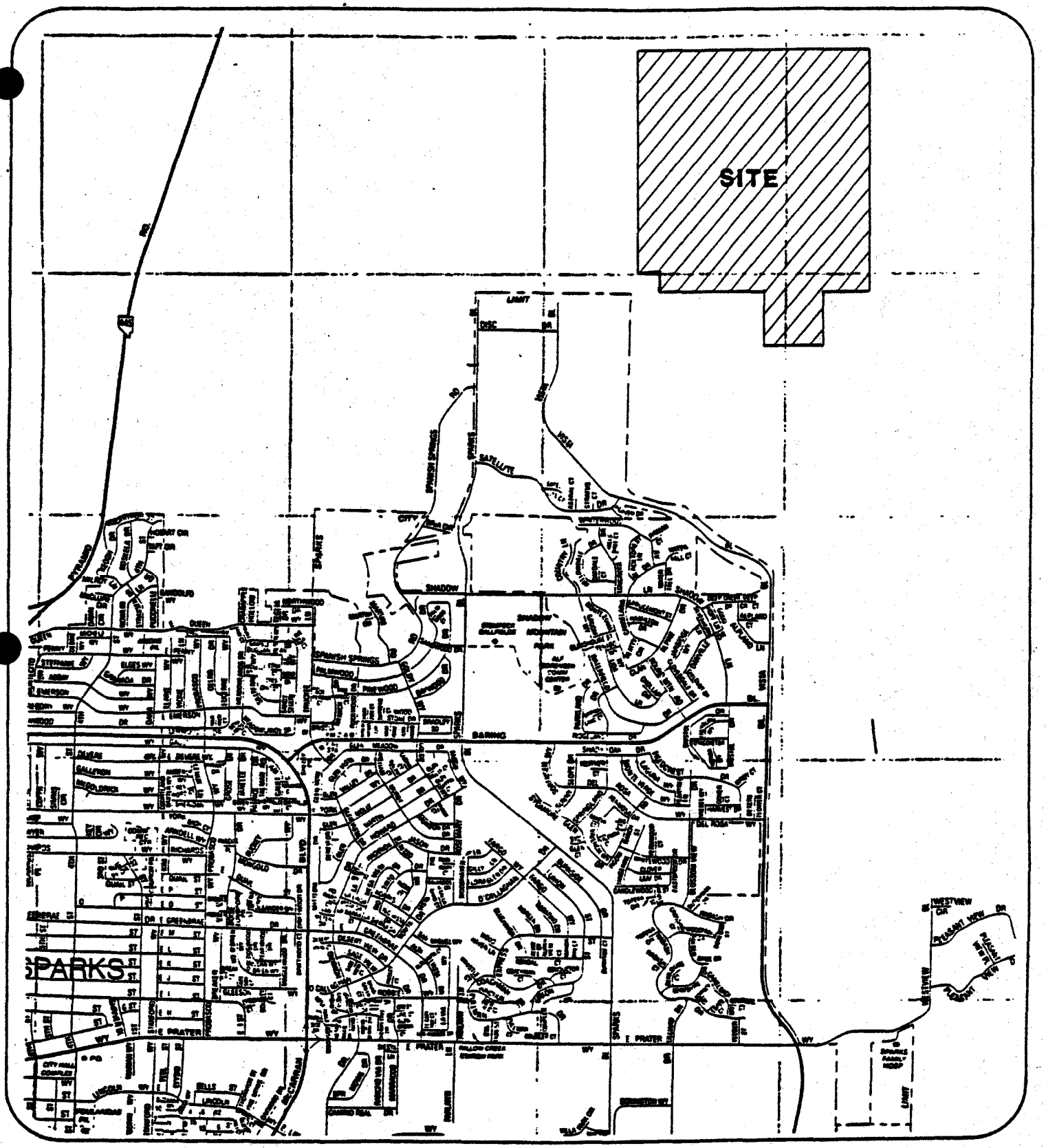
1.

INTRODUCTION

SITE LOCATION AND PROPOSED LAND USE

Barton-Aschman Associates, Inc. was retained to perform the Traffic Impact Study for the proposed Section 23 residential development. The approximately 671 acre site, shown in Figure 1, is included within an area of land under consideration for annexation by the City of Sparks.

Current plans call for the construction of between 1,545 and 1,830 single-family and townhouse units over the next 15 years. For the purpose of this study, the "worst case" figure of 1,830 units will be assumed.



SITE LOCATION

BARTON-ASCHMAN ASSOCIATES, INC.

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FIGURE 1

Study Purpose and Procedure

The objectives of this study were to:

- Evaluate the traffic impacts upon roads in the surrounding area that are due to the Section 23 Project.

- Evaluate the traffic impacts due to development (approximately 7,000 units) of the maximum annexation plan; and

- Recommend external roadway configurations that would be necessary to accommodate future traffic volumes.

Barton-Aschman worked in close coordination with the Regional Transportation Commission (RTC) in order to obtain the most accurate future conditions data for the study area. The RTC model runs performed for this study served as the most important data source. Discussion with the RTC staff, in addition to the model run data, helped Barton-Aschman perform the following analyses to determine the site traffic impacts associated with the proposed development:

1. Data Collection. In addition to the existing average daily traffic (ADT) data received from RTC, information was gathered concerning roadway configurations in the project vicinity. Possible future roadway additions were also identified.

2. Trip Generation and Distribution. The trips generated from the project were calculated and then distributed over the study area roadway system, by the model runs at RTC.

3. Capacity Analyses. Capacity analyses were performed for the key roadway links within the study area. These analyses are done in order to evaluate the ability of the roadways to accommodate future traffic volumes.

4. Determination of Roadway Requirements. The external roadway facilities needed to accommodate future traffic volumes, for both project-related and full annexation-related traffic, were identified.

2.

EXISTING CONDITIONS

The area roadway network in the vicinity of the site, includes the following key roadways:

- Vista Boulevard. Vista Boulevard is the north-south collector that will provide the main access to the project site. It has a four-lane cross section from I-80 up to a location approximately one-half mile north of Baring Boulevard, where it narrows to two lanes. There is a full interchange at Vista Boulevard and I-80. Vista Boulevard carries between 500 vehicles (north end) and 4,300 vehicles (near I-80) during the average weekday.

- Sparks Boulevard. This north-south roadway also has a four-lane cross section, extending from East Lincoln Way, north to Shadow Lane. North of this point, it has a two-lane cross section. South of East Lincoln Way it becomes a long westbound on-ramp onto I-80. On an average weekday, Sparks Boulevard carries approximately 1,000 vehicles between Baring Boulevard and Shadow Lane, and about 2,700 vehicles between Baring Boulevard and East Prater Way.

- Baring Boulevard. Baring Boulevard is one of two major east-west collectors within the study area. Its four-lane cross section carries between 2,300 and 13,300 vehicles on an average weekday.

- East Prater Way. The other east-west collector in the study area, East Prater Way also has a four-lane cross section within the study area. This roadway experiences volumes between 4,800 and 11,700 vehicles on an average weekday.

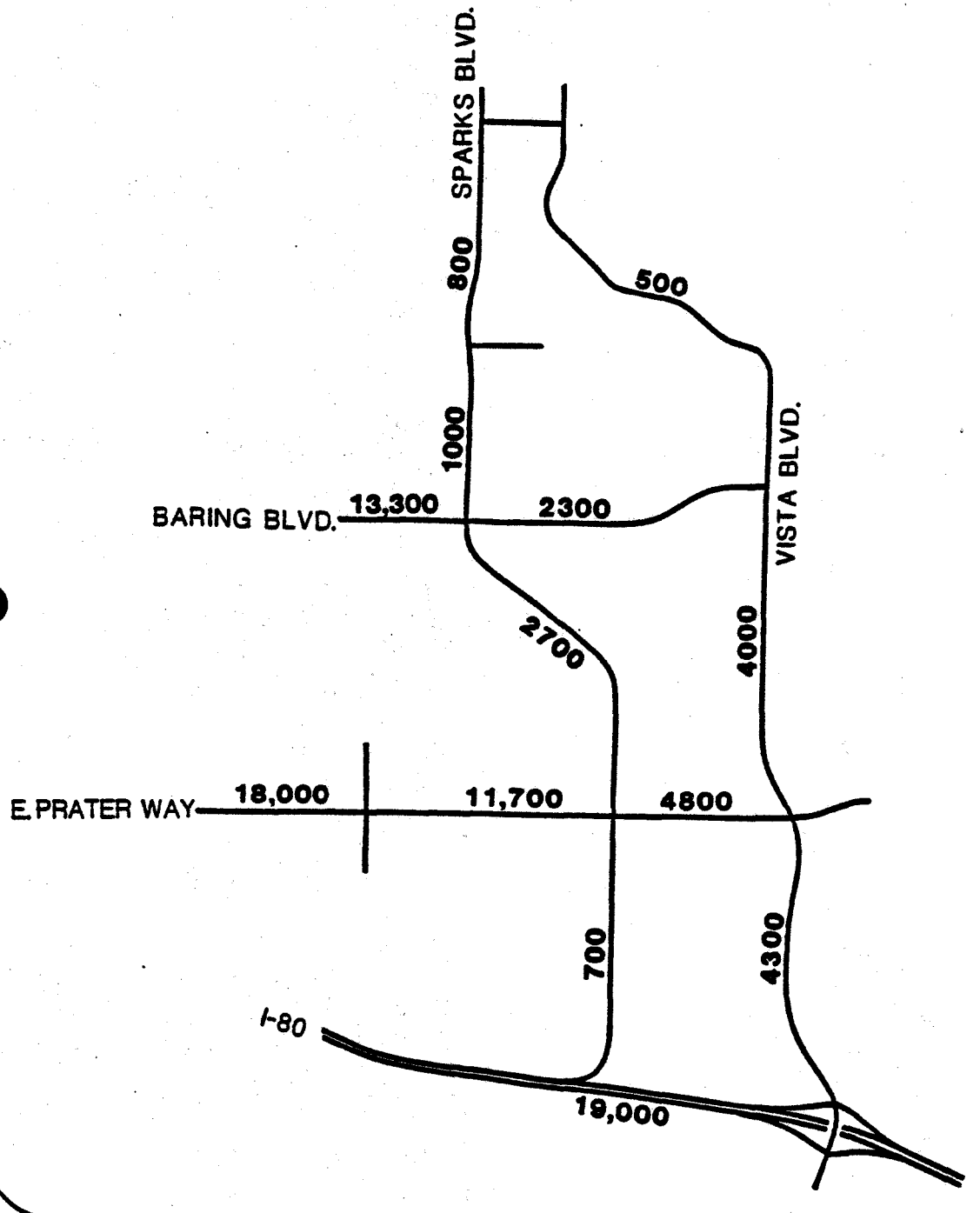
- Interstate 80. This four-lane divided freeway is located at the southern end of the study area. It carries approximately 19,000 vehicles on an average weekday.

These key roadways are shown in Figure 2 with the existing average daily traffic (ADT) volumes for each link.

EVALUATION OF EXISTING CONDITIONS

A series of roadway capacity calculations were performed in order to evaluate the operational efficiency of the key roadway links within the study area. These calculations compare the traffic volumes on a particular link to the available capacity of the roadway cross section and yield an overall volume-to-capacity (V/C) ratio. Based on this ratio, the operation of a roadway link can be described in terms of a "Level of Service."

As shown in Table 1, Levels of Service range from A to F. Level of Service A indicates free-flow conditions, while Level of Service F represents extreme congestion. In an urban area, Level of Service D (V/C of 0.8) is generally considered the minimum acceptable level of service.



EXISTING ADT VOLUMES

BARTON ASCHMAN ASSOCIATES, INC.

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FIGURE 2

TABLE 1

DEFINITIONS OF LEVEL OF SERVICE FOR ROADWAYS (UNINTERRUPTED FLOW)

Level of Service A - V/C ratio: 0.00 - 0.60

This is a condition of free flow, accompanied by low volumes and high speeds. Traffic density will be low, with uninterrupted flow speeds controlled by driver desires, speed limits, and physical roadway conditions. There is little or no restriction in maneuverability due to the presence of other vehicles, and drivers can maintain their desired speeds with little or no delay.

Level of Service B - V/C ratio: 0.61 - 0.70

This occurs in the zone of stable flow, with operation speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed and lane of operation. Reductions in speed are not unreasonable, with a low probability of traffic flow being restricted. The lower limit (lowest speed, highest volume) of this level of service has been used in the design of rural highways.

Level of Service C - V/C ratio: 0.71 - 0.80

This is still in the zone of stable flow, but speeds and maneuverability are more closely controlled by the higher volumes. Most of the drivers are restricted in their freedom to select their own speed, change lanes, or pass. A relatively satisfactory operating speed is still obtained, with service volumes suitable for urban design practice.

Level of Service D - V/C ratio: 0.81 - 0.90

This level of service approaches unstable flow, with tolerable operating speeds being maintained, though considerably affected by changes in operation conditions. Fluctuations in volume and temporary restrictions to flow may cause substantial drops in operating speeds. Drivers have little freedom to maneuver, and comfort and convenience are low. These conditions can be tolerated, however, for short periods of time.

Level of Service E - V/C ratio: 0.91 - 1.00

This cannot be described by speed alone, but represents operations at lower operating speeds, typically, but not always, in the neighborhood of 30 miles per hour, with volumes at of near the capacity of the highway. Flow is unstable, and there may be stoppages of momentary duration. This level of service is associated with operation of a facility at capacity flows.

Level of Service F - V/C ratio: 1.01+

This describes a forced-flow operation at low speeds, where volumes are below capacity. In the extreme, both speed and volume can drop to zero. These conditions usually result from queues of vehicles backing up from a restriction downstream. The section under study will be serving as a storage area during parts or all of the peak hour. Speeds are reduced substantially and stoppages may occur for short or long periods of time

Table 2 illustrates the existing levels of service on the aforementioned key roadway links. As shown, all of these links are currently operating well within acceptable levels of service.

TABLE 2

EXISTING ROADWAY

OPERATING CONDITIONS

Link	V/C	LoS
Sparks Boulevard:		
Disc to Shadow	0.06	A
Shadow to Baring	0.03	A
Baring to E. Prater	0.09	A
E. Prater to I-80	0.02	A
Vista Boulevard:		
Disc to Baring	0.03	A
Baring to E. Prater	0.14	A
E. Prater to I-80	0.15	A
Baring Boulevard:		
McCarran to Sparks	0.46	A
Sparks to Vista	0.08	A
E. Prater Way:		
McCarran to Howard	0.63	B
Howard to Sparks	0.41	A
Sparks to Vista	0.17	A
Interstate 80:		
McCarran to Vista	0.30	A

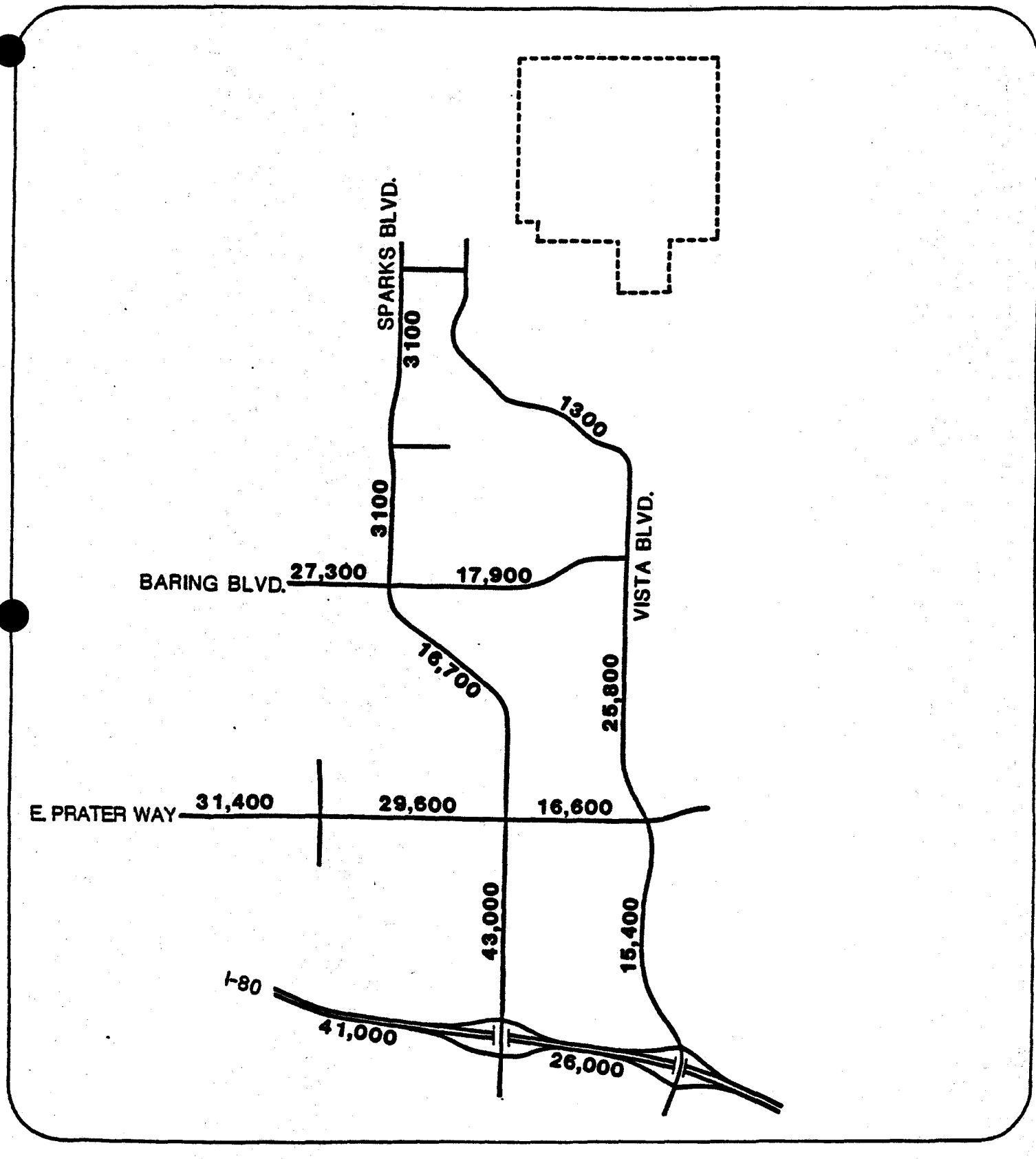
3.

FUTURE CONDITIONS - SECTION 23 ANNEXATION

This chapter describes the traffic impacts due to the proposed Section 23 development. Along with the analysis of existing conditions, level of service analyses are presented for the following two scenarios:

- Year 2002 Background Conditions (no annexation development); and
- Year 2002 Background plus Section 23 Project (1830 units)

Based upon discussions with RTC staff, the analyses of the above scenarios assume the construction of a full interchange at the Sparks Boulevard/I-80 juncture. This construction is currently part of the Nevada Department of Transportation Ten Year Highway Construction Plan, therefore it is safe to assume construction within 15 years.



YEAR 2002 BACKGROUND ADT VOLUMES

BARTON-ASCHMAN ASSOCIATES, INC.

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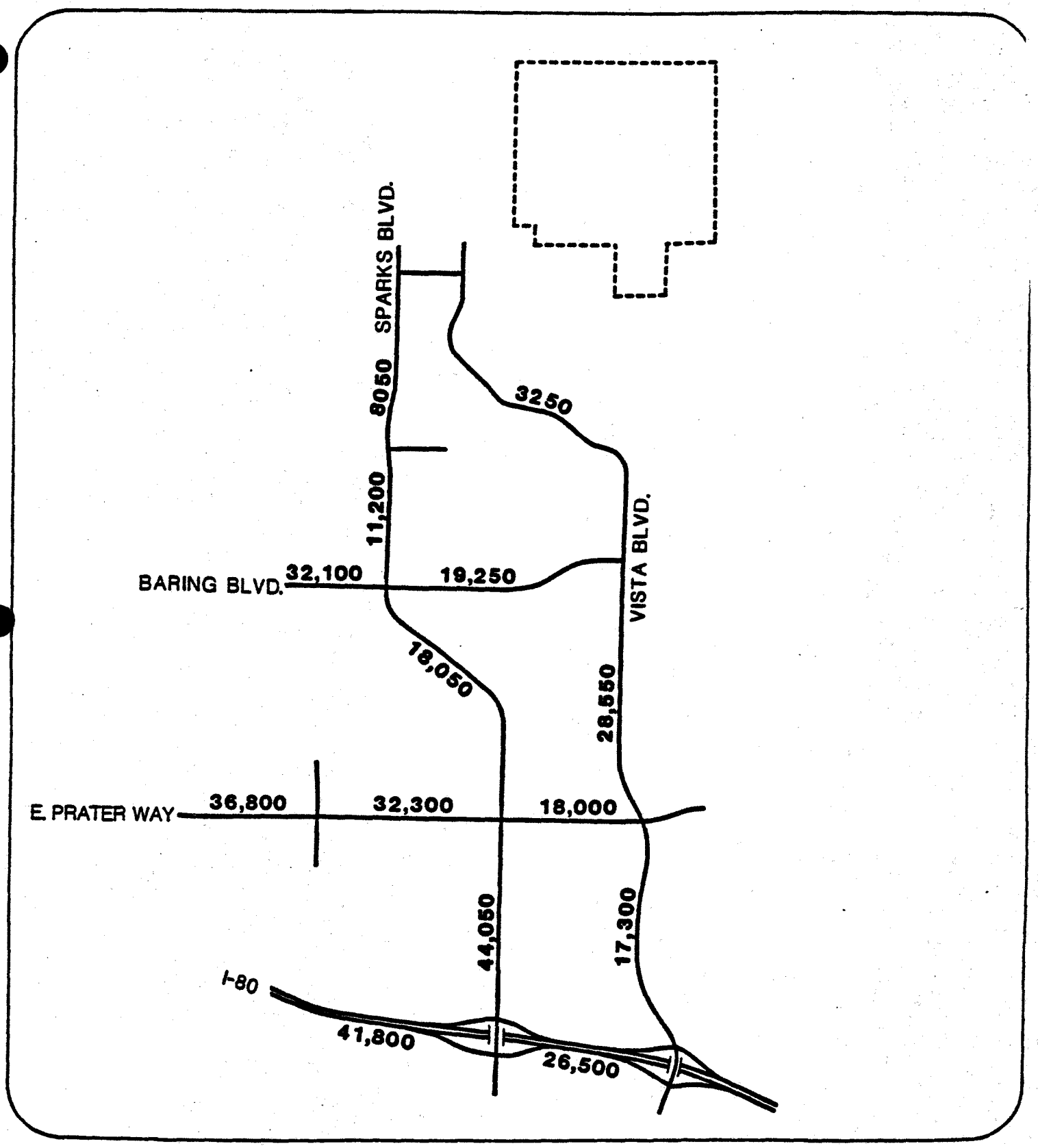
FIGURE



YEAR 2002 BACKGROUND PLUS PROJECT ADT VOLUMES

BARTON-ASCHMAN ASSOCIATES, INC.

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FIGURE

BACKGROUND GROWTH

Based on projected residential, commercial and industrial growth within the study area, year 2002 background volumes were developed from RTC model runs. Figure 3 illustrates the weekday average daily traffic (ADT) volumes on the key roadway links. These figures show that background traffic is expected to increase between 2.5 to 61 times the existing volumes.

PROJECT TRIP GENERATION AND DISTRIBUTION

Current plans call for up to 1,830 residential units to be constructed by the proposed project. Approximately 10,050 trips will be generated from this development on an average weekday. From the RTC model, these trips were then distributed onto the roadways in the study area. Figure 4 shows the future 2002 ADT volumes with the project traffic added.

LEVEL OF SERVICE ANALYSIS

The traffic impacts due to a proposed development are typically assessed in terms of the ability of the supporting road system to accommodate site generated traffic. The operating characteristics and the volume-to-capacity ratios of various levels of service were described in Table 1.

Capacity calculations were conducted for both of the scenarios described earlier. Table 3 shows the results of these calculations for the key roadway links.

TABLE 3

FUTURE ROADWAY LINK[1]

OPERATING CONDITIONS

Link	Existing V/C	Existing LoS	Year 2002 Background V/C	Year 2002 Background LoS	Year 2002 w/Project V/C	Year 2002 w/Project LoS
Sparks Boulevard:						
Disc to Shadow	0.06	A	0.22	A	0.56	A
Shadow to Baring	0.03	A	0.11	A	0.39	A
Baring to E. Prater	0.09	A	0.58	A	0.63	B
E. Prater to I-80	0.02	A	1.49	F	1.55	F
			0.75	C[2]	0.77	C[2]
Vista Boulevard:						
Disc to Baring	0.03	A	0.09	A	0.23	A
Baring to E. Prater	0.14	A	0.90	D	0.99	E
			0.60	A[3]	0.66	B[3]
E. Prater to I-80	0.15	A	0.53	A	0.60	A
Baring Boulevard:						
McCarran to Sparks	0.46	A	0.95	E	1.11	F
			0.63	B[3]	0.74	C[3]
Sparks to Vista	0.08	A	0.62	B	0.67	B
E. Prater Way:						
McCarran to Howard	0.63	B	1.09	F	1.28	F
			0.73	C[3]	0.85	D[3]
Howard to Sparks	0.41	A	1.03	F	1.12	F
			0.69	B[3]	0.75	C[3]
Sparks to Vista	0.17	A	0.58	A	0.63	B
Interstate 80:						
McCarran to Vista	0.30	A	0.64	B	0.65	B
Sparks to Vista	0.30	A	0.41	A	0.41	A

NOTES:

1. At-grade roadway calculations based upon capacity of 7,200 vehicles/lane ADT, freeway calculations based upon capacity of 16,000 vehicles/lane ADT.

2. Widen cross section to eight lanes.

3. Widen cross section to six lanes.

As shown, the background growth to the year 2002 will cause considerable congestion along several roadway links within the study area. Five links will operate unacceptably in the year 2002, with three of those operating at Level of Service F: Sparks Boulevard from East Prater to I-80, East Prater Way from McCarran to Howard, and East Prater Way from Howard to Sparks Boulevard.

The other nine links will continue to operate efficiently with V/C ratios ranging from 0.09 to 0.64 (Levels of Service A to B).

With the addition of project traffic, the same five congested links (with unacceptable levels of service) will become somewhat worse. The Baring Boulevard McCarran-to-Sparks link will experience an increase in V/C ratio from 0.95 (LoS E) to 1.11 (LoS F). Also, the V/C ratio for Vista Boulevard between Baring Boulevard and East Prater will increase from 0.90 (LoS D) to 0.99 (LoS E). The three other congested links will remain at Level of Service F.

Although the other nine roadway links are impacted by project traffic, they will still operate well within acceptable levels with V/C ratios ranging from 0.22 to 0.67.

MITIGATION MEASURES

Based upon the results of the capacity calculations, it is apparent that the roadway links that will operate unacceptably with the project developed are links that will already be operating unacceptably due to just the projected 2002 background traffic. Therefore, the following mitigation measures will

be needed by the design year, and are made necessary in large part by non-project development:

- Widen Sparks Boulevard between E. Prater and I-80 from four to eight lanes;
- Widen Vista Boulevard between Baring Boulevard and E. Prater Way from four to six lanes;
- Widen Baring Boulevard to six lanes between McCarran Boulevard and Sparks Boulevard; and
- Widen E. Prater Way to six lanes between McCarran Boulevard and Sparks Boulevard.

As shown in Table 3, the addition of these mitigation measures will allow all of the key roadway links to operate acceptably (V/C = 0.85 or less) for both the year 2002 background and year 2002 background plus project scenarios.

Traffic impacts due to maximum annexation development are discussed in the next chapter.

4.

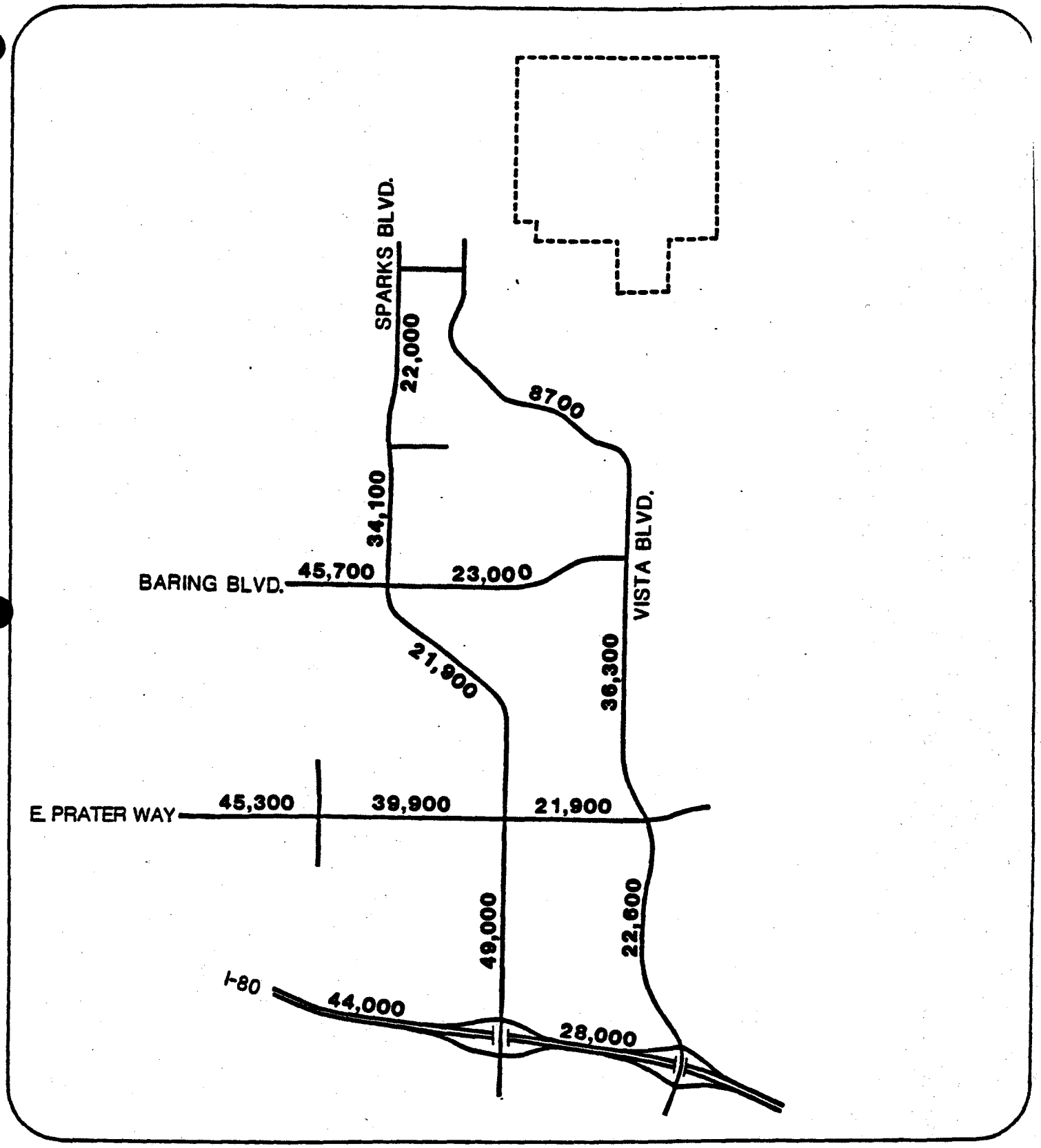
FUTURE CONDITIONS - MAXIMUM ANNEXATION

The maximum annexation under consideration by the City of Sparks would include an area large enough to accommodate approximately 7,000 residential units.

The trips generated by this projected development (which includes the Section 23 project) were calculated and then distributed onto the study area roadways by the RTC model. Figure 5 illustrates the year 2002 volumes with full buildout of the maximum annexation area.

Capacity calculations were performed to indicate the traffic impacts this development would have upon the roadway system. The results of these calculations are shown in the last column of Table 4.

As shown, the most heavily impacted roadway links are those along the north end of Sparks Boulevard. Sparks Boulevard, between Disc Drive and Shadow



YEAR 2002 BACKGROUND PLUS MAXIMUM ANNEXATION ADT VOLUMES

BARTON-ASCHMAN ASSOCIATES, INC.

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FIGURE

TABLE 4

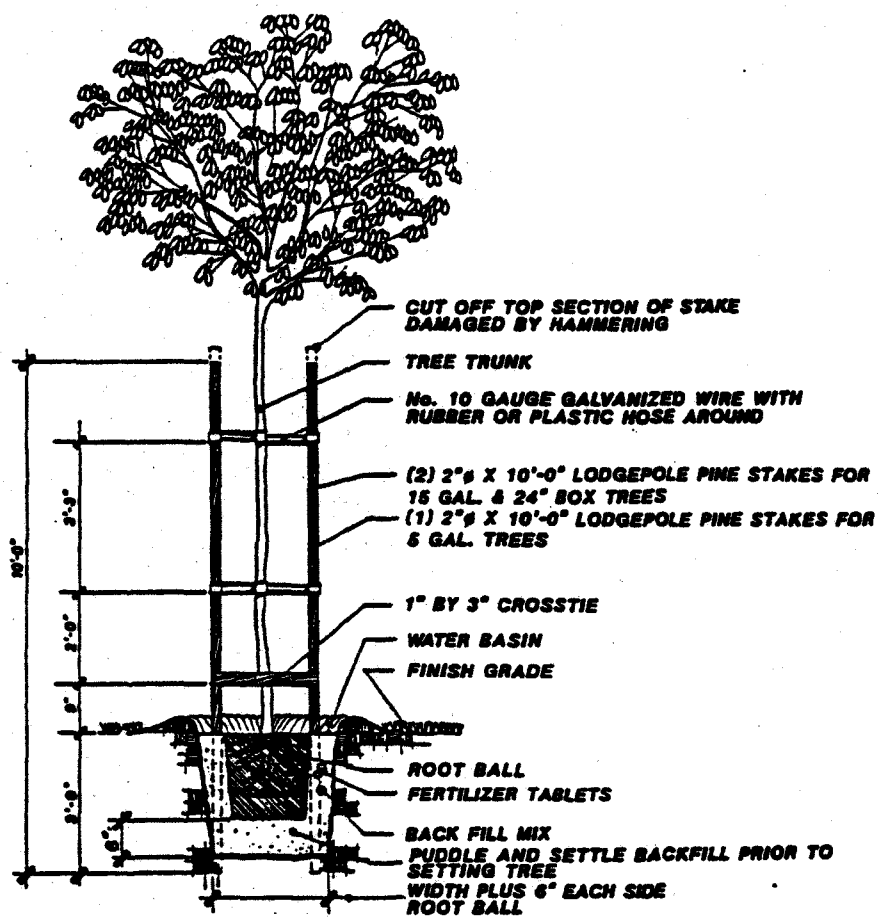
FUTURE ROADWAY LINK[1]

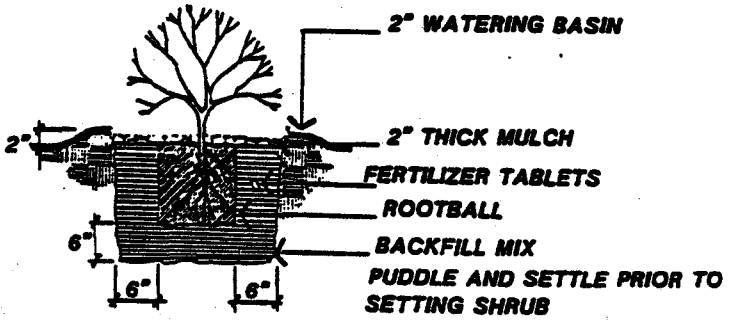
OPERATING CONDITIONS

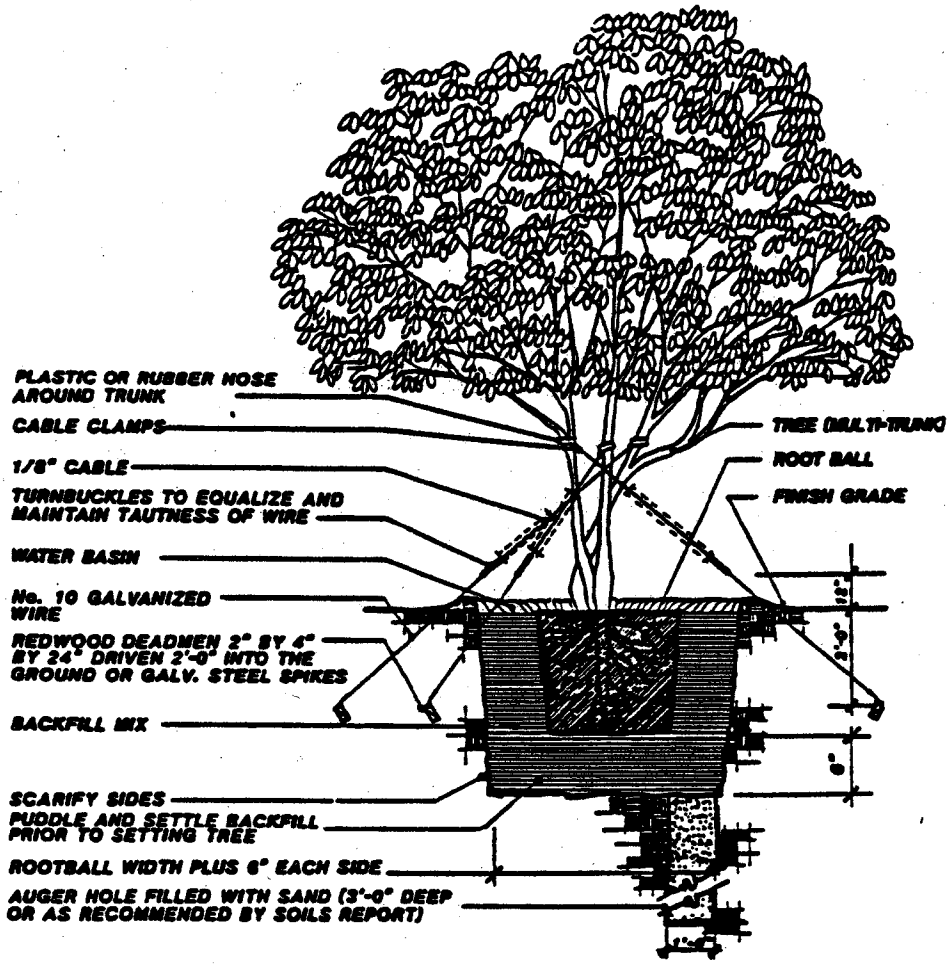
Link	Existing V/C	Existing LoS	Year 2002 Background V/C	Year 2002 Background LoS	Year 2002 w/Project V/C	Year 2002 w/Project LoS	Year 2002 w/Full Annexation V/C	Year 2002 w/Full Annexation LoS
Sparks Boulevard:								
Disc to Shadow	0.06	A	0.22	A	0.56	A	1.53	F
							0.76	C[2]
Shadow to Baring	0.03	A	0.11	A	0.39	A	1.18	F
							0.79	C[3]
Baring to E. Prater	0.09	A	0.58	A	0.63	B	0.76	C
E. Prater to I-80	0.02	A	1.49	F	1.55	F	1.70	F
			0.75	C[4]	0.77	C[4]	0.85	D[4]
Vista Boulevard:								
Disc to Baring	0.03	A	0.09	A	0.23	A	0.60	A
Baring to E. Prater	0.14	A	0.90	D	0.99	E	1.26	F
			0.60	A[3]	0.66	B[3]	0.84	D[3]
E. Prater to I-80	0.15	A	0.53	A	0.60	A	0.78	C
Baring Boulevard:								
McCarran to Sparks	0.46	A	0.95	E	1.11	F	1.59	F
			0.63	B[3]	0.74	C[3]	1.06	F[3]
Sparks to Vista	0.08	A	0.62	B	0.67	B	0.80	C
E. Prater Way:								
McCarran to Howard	0.63	B	1.09	F	1.28	F	1.57	F
			0.73	C[3]	0.85	D[3]	1.05	F[3]
Howard to Sparks	0.41	A	1.03	F	1.12	F	1.39	F
			0.69	B[3]	0.75	C[3]	0.92	E[3]
Sparks to Vista	0.17	A	0.58	A	0.63	B	0.76	C
Interstate 80:								
McCarran to Vista	0.30	A	0.64	B	0.65	B	0.69	B
Sparks to Vista	0.30	A	0.41	A	0.41	A	0.44	A

NOTES:

1. At-grade roadway calculations based upon capacity of 7,200 vehicles/lane ADT, freeway calculations based capacity of 16,000 vehicles/lane ADT.
2. Widen cross section to four lanes.
3. Widen cross section to six lanes.
4. Widen cross section to eight lanes.


CUT OFF TOP SECTION OF STAKE DAMAGED BY HAMMERING
TREE TRUNK
No. 10 GAUGE GALVANIZED WIRE WITH RUBBER OR PLASTIC HOSE AROUND
(2) 2"ø X 10'-0" LODGEPOLE PINE STAKES FOR 15 GAL. & 24" BOX TREES
(1) 2"ø X 10'-0" LODGEPOLE PINE STAKES FOR 5 GAL. TREES
1" BY 3" CROSSTIE
WATER BASIN
FINISH GRADE
ROOT BALL
FERTILIZER TABLETS
BACK FILL MIX
PUDDLE AND SETTLE BACKFILL PRIOR TO SETTING TREE
WIDTH PLUS 6" EACH SIDE ROOT BALL
10'-0"
3'-3"
2'-0"
6"
3'-0"
6"


2" WATERING BASIN
2"
2" THICK MULCH
FERTILIZER TABLETS
ROOTBALL
6"
BACKFILL MIX
PUDDLE AND SETTLE PRIOR TO SETTING SHRUB
6"
6"


PLASTIC OR RUBBER HOSE AROUND TRUNK
CABLE CLAMPS
1/8" CABLE
TURNBUCKLES TO EQUALIZE AND MAINTAIN TAUTNESS OF WIRE
WATER BASIN
No. 10 GALVANIZED WIRE
REDWOOD DEADMEN 2" BY 4" BY 24" DRIVEN 2'-0" INTO THE GROUND OR GALV. STEEL SPIKES
BACKFILL MIX
SCARIFY SIDES
PUDDLE AND SETTLE BACKFILL PRIOR TO SETTING TREE
ROOTBALL WIDTH PLUS 6" EACH SIDE
AUGER HOLE FILLED WITH SAND (3'-0" DEEP OR AS RECOMMENDED BY SOILS REPORT)
TREE (MULTI-TRUNK)
ROOT BALL
FINISH GRADE
6"

Pezonella Associates, Inc.
Consulting Engineers and Geologists
1030 MATLEY LANE • RENO, NEVADA 89502 • (702) 323-5566

APR 01

March 31, 1987

Codega and Fricke, Inc.
3690 Grant Drive, Suite J
Reno, Nevada 89509

Attention:

Gentlemen:

Site Feasibility Study
The Vistas
Washoe County, Nevada

Introduction

This letter discusses the results of the site feasibility study we performed for the proposed Vistas Development to be located in Washoe County, Nevada. The scope of our work was to review available published and unpublished geological literature and maps, aerial photographs, and to complete a site reconnaissance in order to address primary geotechnical concerns regarding site development.

We understand the proposed development will be constructed in phases as a planned residential community. The majority of the project will be located within Section 23 of Township 20 North, Range 20 East in Washoe County, Nevada. The planned community will consist of single family residences, shopping centers, paved roadways and parks. All development will be connected to community sewer and water service.

Site and Soil Conditions

The site comprises roughly a one square mile area east of Spanish Springs Valley in the Pah Rah range. Vegetation consists predominantly of sagebrush, spring hopsage and cheatgrass. The central and eastern portions of the development are characterized by moderate to steeply sloping hills dissected by a system of dry stream channels. Based on geologic mapping completed by Bonham (1969) and Bell (1981, 1982; Preliminary Geologic Map, Vista Quad), the majority of materials underlying this portion of the site consist of Tertiary age basalt, basaltic andesite and pyroxene andesite

flows. Quaternary age alluvial fan deposits underlie the gently sloping fan in the western portion of the development. These deposits consist generally of poorly sorted silts, sands and gravels. In addition, the U.S. Soil Conservation Service has identified several distinct soil types within the project area. No known faults transect the site, however, the project is located in a seismically active area (UBC Seismic Zone 3).

Discussion

Based on the results of our preliminary investigation, we conclude that the site is suitable for the proposed development. During our review of the pertinent geological information and our site reconnaissance, the following geotechnical considerations regarding site development have been identified:

1. Rippability of bedrock materials within the project.
2. Stability of cut slopes.
3. Local presence of expansive clay soils.
4. Flash-flood potential within the proposed development.

With the exception of the western portion of the site, the property is underlain by bedrock at shallow depths. Generally, the bedrock materials consist of basalts and basaltic andesites. The degree of fracturing within these materials is unknown. A detailed seismic investigation should be performed to determine the rippability of the bedrock materials. We should review grading plans to determine if utility trench excavations or deep cuts are proposed in materials which could require blasting. We believe that the materials generated by site work in the bedrock areas will be classified as rock fill. Seismic studies will provide an indication of the size distribution of these materials.

We anticipate bedrock cut slopes will be stable at maximum inclinations of one and one-half horizontal to one vertical (1-1/2:1). Locally, fracture orientations may create unstable conditions therefore; all slopes will require final evaluation in the field. Proper benching widths and intervals should be incorporated in the

design of any slopes. Wire mesh may be necessary to protect areas downslope from rocks ravelling or toppling. In addition, rock traps or fences may be necessary. Permanent cut slopes constructed within alluvial materials and fill slopes should be designed at a maximum inclination of two horizontal to one vertical (2:1).

Studies completed by the U.S. Soil Conservation Service indicate that expansive clay soils are locally present within the development. Clay soils can experience volume changes (shrink and swell) with changes in moisture content, resulting in unfavorable movement of structural elements. Mitigation procedures should be anticipated.

A hydrologic investigation should be completed to determine the potential for flash-flooding of the area.

We recommend that a complete geotechnical investigation be performed to provide detailed information on the subsurface conditions. Engineering parameters of the underlying materials should be determined to provide conclusions and recommendations concerning site preparation and grading, foundation design criteria, support of exterior flatwork and flexible pavement design.

We trust this provides the information needed at this time, however, if you should have any questions, please contact us.

Yours very truly,

PEZONELLA ASSOCIATES, INC.

Richard H. Louisell

Richard H. Louisell
Geologist

RHL/llb

HYDROLOGY REPORT

For

SECTION 23

T20 N , R 20 W , M. D. M.
Sparks, Washoe County, Nevada

Prepared for

M.A.P.

By

Churn, Fittinghoff & Associates, Inc.
1150 Corporate Blvd. Reno, NV 89502
(702) 786-1150

March 1987

TABLE 1

Precipitation Data Taken at 39°35'00", north lat. 119°42'30", west long.

Return Period (Years)	Precipitation Values					
	6-Hour Duration			24-Hour Duration		
	Map x Value	Partial Series = to Annual Series Correction	Annual Series Value	Map x Value	Partial Series = to Annual Series Correction	Annual Series Value
2	0.70	0.88	0.62	1.00	0.88	0.88
5	0.90	0.96	0.86	1.40	0.96	1.34
10	1.10	0.99	1.09	1.60	0.99	1.58
25	1.30	1.00	1.30	2.00	1.00	2.00
50	1.40	1.00	1.40	2.20	1.00	2.20
100	1.60	1.00	1.60	2.40	1.00	2.40

TABLE 2

INTERPOLATED PRECIPITATION DATA

Return Period (Years)	Duration							
	5 min	15 min	1 hr	2 hr	3 Hr	6 Hr	12 Hr	24 Hr
	Eg. 3	Eg.4	Eg's 1 & 2 Fig 3	Fig 5 Eg 5	Fig 5 Eg 6	NOAA ATLAS	Fig 4	NOAA ATLAS
2	0.11	0.22	0.38	0.45	0.51	0.62	0.75	0.88
5	0.17	0.33	0.58	0.66	0.73	0.86	1.10	1.34
10	0.19	0.38	0.67	0.80	0.89	1.09	1.34	1.58
100	0.34	0.66	1.16	1.29	1.39	1.60	2.00	2.40.

Equations for estimating 1-hr values in Nevada Region (2)

(Eq. 1) $Y_2 = 0.005 + 0.852 [(X_1)(X_1/X_2)]$

(Eq.2) $Y_{100} = 0.322 + 0.789 [(X_3)(X_3/X_4)]$

List of variables:

Y_2 = 2-yr 1-hr estimated value

Y_{100} = 100-yr 1-hr estimated value

X_1 = 2-yr 6-hr value from precipitation-frequency maps in in.

X_2 = 2-yr 24-hr value from precipitation-frequency maps in in.

X_3 = 100-yr 6-hr value from precipitation-frequency maps in in.

X_4 = 100-yr 24-hr value from precipitation-frequency maps in in.

Equations for estimating 5-min and 15-min durations

(Eq. 3) 5-min value = 0.29 x (1-hr value)

(Eq. 4) 15-min value = 0.57 x (1-hr value)

TABLE 3
HEC-1
Peak Runoff Summary - Undeveloped
Flow in Cubic Feet per Second

Area No.	Area (Sq. Miles)	Return Period 5-year	10-year	100-year
1	0.80	36	59	173
2	0.22	12	20	60
1 & 2	1.02	47	78	226

TABLE 4
HEC-1
Peak Runoff Summary - Developed
Flow in Cubic Feet per Second

Area No.	Area (Sq. Miles)	Return Period 5-year	10-year	100-year
1	0.80	78	105	231
2	0.22	27	35	79
1 & 2	1.02	103	137	303

TABLE 5
RATIONAL METHOD
Peak Runoff Summary - Undeveloped
Flow in Cubic Feet per Second

Area No.	Area (Acres)	Return Period 5-year	10-year	100-year
1	515	45	61	112
2	142	12	17	31
1 & 2	657	57	78	143

TABLE 6
RATIONAL METHOD
Peak Runoff Summary - Developed
Flow in Cubic Feet per Second

Area No.	Area (Acres)	Return Period 5-year	10-year	100-year
1	515	87	118	217
2	142	24	32	59
1 & 2	657	111	150	276

References

1. U.S. Army, Corps of Engineers, Hydrology Engineering Center, HEC-1 Computer Program (IBM XT 512K Version), February 1985.

2. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, NOAA Atlas 2, Precipitation - Frequency Atlas of the Western United States, Volume VII - Nevada, 1973

3. Linsley/Kohler/Paulhus, Hydrology for Engineers, Second Edition, McGraw Hill, Inc. 1975

Appendix A

HEC-1

COMPUTER RESULTS

1 ****

FLOOD HYDROGRAPH PACKAGE HEC-1 (IBM XT 512K VERSION) -FEB 1.1985
U.S. ARMY CORPS OF ENGINEERS. THE HYDROLOGIC ENGINEERING CENTER. 609 SECOND STREET. DAVIS. CA. 95616
****

THIS HEC-1 VERSION CONTAINS ALL OPTIONS EXCEPT ECONOMICS. AND THE NUMBER OF PLANS ARE REDUCED TO 3

1 HEC-1 INPUT PAGE 1

```
      LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*** FREE ***
           1        ID   SECTION 23 - SPANISH SPRINGS VALLEY HEC-1 ANALYSIS
           2        ID   UNDEVELOPED HYDROLOGY FROM 5-YEAR STORM EVENT (UND5)
           3        IO     4       0
           4        IT     5                    288

           5        KK   AREA1
           6        BA    .80
           7        PH     0       0    0.17    0.33    0.58    0.66    0.73    0.86    1.10    1.34
           8        LS     0      82       0
           9        UD   1.05

          10        KK   AREA2
          11        BA    .22
          12        LS     0      82       0
          13        UD    .78

          14        KK   1&2
          15        KM   COMBINE HYDROGRAPHS FROM AREAS 1 AND 2
          16        HC     2
          17        ZZ
```

1 ****

FLOOD HYDROGRAPH PACKAGE HEC-1 (IBM XT 512K VERSION) -FEB 1.1985
U.S. ARMY CORPS OF ENGINEERS. THE HYDROLOGIC ENGINEERING CENTER. 609 SECOND STREET. DAVIS. CA. 95616
****

SECTION 23 - SPANISH SPRINGS VALLEY HEC-1 ANALYSIS
UNDEVELOPED HYDROLOGY FROM 5-YEAR STORM EVENT (UND5)

3 IO OUTPUT CONTROL VARIABLES

```
                QSCAL         0.  HYDROGRAPH PLOT SCALE

  IT        HYDROGRAPH TIME DATA
              NMIN          5  MINUTES IN COMPUTATION INTERVAL
             IDATE      1    0  STARTING DATE
             ITIME         0000  STARTING TIME
                NQ          288  NUMBER OF HYDROGRAPH ORDINATES
            NDDATE      1    0  ENDING DATE
            NDTIME         2355  ENDING TIME

          COMPUTATION INTERVAL     .08 HOURS
              TOTAL TIME BASE   23.92 HOURS

      ENGLISH UNITS

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *

        ***************
        *             *
5 KK    *     AREA    *    1
        *             *
        ***************

          SUBBASIN RUNOFF DATA

6 BA        SUBBASIN CHARACTERISTICS
              TAREA         .80  SUBBASIN AREA

            PRECIPITATION DATA

7 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
            ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
            5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR    2-DAY   4-DAY   7-DAY  10-DAY
              .17    .33    .58     .66     .73     .86    1.10    1.34     .00     .00     .00     .00

                                              STORM AREA =     .80

8 LS        SCS LOSS RATE
              STRTL         .44  INITIAL ABSTRACTION
             CRVNBR       82.00  CURVE NUMBER
              RTIMP         .00  PERCENT IMPERVIOUS AREA

9 UD        SCS DIMENSIONLESS UNITGRAPH
              TLAG        1.05  LAG

                                          ***

                                        UNIT HYDROGRAPH
                                      65 END-OF-PERIOD ORDINATES
              8.      24.      45.      70.     102.     143.     190.     240.     283.     315.
```

197.	170.	149.	131.	115.	102.	91.	81.	72.	64.
56.	49.	44.	38.	34.	30.	26.	23.	20.	18.
16.	14.	13.	11.	10.	9.	8.	7.	6.	5.
5.	4.	4.	3.	3.	3.	2.	2.	2.	1.
1.	1.	1.	0.	0.					

*** ***

```
***************
*             *
10 KK *     AREA    *     2
*             *
***************
```

SUBBASIN RUNOFF DATA

1 BA SUBBASIN CHARACTERISTICS

TAREA .22 SUBBASIN AREA

PRECIPITATION DATA

7 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40					TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.17	.33	.58	.66	.73	.86	1.10	1.34	.00	.00	.00	.00

STORM AREA = .22

12 LS SCS LOSS RATE

STRTL .44 INITIAL ABSTRACTION

CRVNBR 82.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

13 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .78 LAG

***

UNIT HYDROGRAPH

49 END-OF-PERIOD ORDINATES

4.	13.	25.	41.	63.	87.	107.	121.	128.	129.
127.	119.	109.	98.	85.	70.	57.	48.	41.	35.
30.	26.	22.	18.	16.	13.	11.	9.	8.	7.
6.	5.	4.	4.	3.	3.	2.	2.	2.	1.
1.	1.	1.	1.	1.	0.	0.	0.	0.	

```
              **************
              *            *
   14 KK      *     1&2    *
              *            *
              **************
                          COMBINE HYDROGRAPHS FROM AREAS 1 AND 2

   16 HC            HYDROGRAPH COMBINATION
                        ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE
```

***

1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS. AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	AREA	36.	13.17	16.	5.	5.	.80		
+	HYDROGRAPH AT	AREA	12.	12.92	5.	2.	2.	.22		
+	2 COMBINED AT	1&2	47.	13.08	21.	7.	7.	1.02		

*** NORMAL END OF HEC-1 ***
^Z

1 ****

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****

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1 HEC-1 INPUT PAGE 1

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      LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*** FREE ***
          1        ID   SECTION 23 - SPANISH SPRINGS VALLEY HEC-1 ANALYSIS
          2        ID   UNDEVELOPED HYDROLOGY FROM 10-YEAR STORM EVENT (UND10)
          3        IO     4       0
          4        IT     5                    288

          5        KK   AREA1
          6        BA    .80
          7        PH     0       0    0.19    0.38    0.67    0.80    0.89    1.09    1.34    1.58
          8        LS     0      82       0
          9        UD   1.05

         10        KK   AREA2
         11        BA    .22
         12        LS     0      82       0
         13        UD    .78

         14        KK   1&2
         15        KM   COMBINE HYDROGRAPHS FROM AREAS 1 AND 2
         16        HC     2
         17        ZZ
```

1 ****

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****

SECTION 23 - SPANISH SPRINGS VALLEY HEC-1 ANALYSIS
UNDEVELOPED HYDROLOGY FROM 10-YEAR STORM EVENT (UND10)

3 IO OUTPUT CONTROL VARIABLES

IPRNT A PRINT CONTROL

```
                QSCAL          0.  HYDROGRAPH PLOT SCALE

  IT        HYDROGRAPH TIME DATA
              NMIN           5  MINUTES IN COMPUTATION INTERVAL
             IDATE      1    0  STARTING DATE
             ITIME         0000  STARTING TIME
                NQ          288  NUMBER OF HYDROGRAPH ORDINATES
            NDDATE      1    0  ENDING DATE
            NDTIME         2355  ENDING TIME

          COMPUTATION INTERVAL      .08 HOURS
              TOTAL TIME BASE    23.92 HOURS

      ENGLISH UNITS

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


        ***************
        *             *
5 KK    *     AREA    *    1
        *             *
        ***************

     SUBBASIN RUNOFF DATA

6 BA      SUBBASIN CHARACTERISTICS
            TAREA         .80  SUBBASIN AREA

          PRECIPITATION DATA

7 PH                           DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
          ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
          5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
            .19    .38    .67     .80     .89    1.09    1.34    1.58     .00     .00     .00     .00

                                          STORM AREA =     .80

8 LS      SCS LOSS RATE
            STRTL         .44  INITIAL ABSTRACTION
            CRVNBR      82.00  CURVE NUMBER
            RTIMP         .00  PERCENT IMPERVIOUS AREA

9 UD      SCS DIMENSIONLESS UNITGRAPH
            TLAG         1.05  LAG

                                          ***

                                    UNIT HYDROGRAPH
                                  65 END-OF-PERIOD ORDINATES
          8.      24.      45.      70.     102.     143.     190.     240.     283.     315.
```

197.	170.	149.	131.	115.	102.	91.	81.	72.	64.
56.	49.	44.	38.	34.	30.	26.	23.	20.	18.
16.	14.	13.	11.	10.	9.	8.	7.	6.	5.
5.	4.	4.	3.	3.	3.	2.	2.	2.	1.
1.	1.	1.	0.	0.					

*** ***

```
          **************
          *            *
10 KK     *    AREA    *    2
          *            *
          **************
```

SUBBASIN RUNOFF DATA

11 BA — SUBBASIN CHARACTERISTICS

TAREA	.22	SUBBASIN AREA

PRECIPITATION DATA

7 PH — DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40					TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.19	.38	.67	.80	.89	1.09	1.34	1.58	.00	.00	.00	.00

STORM AREA = .22

12 LS — SCS LOSS RATE

STRTL	.44	INITIAL ABSTRACTION
CRVNBR	82.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

13 UD — SCS DIMENSIONLESS UNITGRAPH

TLAG	.78	LAG

***

UNIT HYDROGRAPH
49 END-OF-PERIOD ORDINATES

4.	13.	25.	41.	63.	87.	107.	121.	128.	129.
127.	119.	109.	98.	85.	70.	57.	48.	41.	35.
30.	26.	22.	18.	16.	13.	11.	9.	8.	7.
6.	5.	4.	4.	3.	3.	2.	2.	2.	1.
1.	1.	1.	1.	1.	0.	0.	0.	0.	

```
            **************
            *            *
14 KK       *      1&2   *
            *            *
            **************
```

COMBINE HYDROGRAPHS FROM AREAS 1 AND 2

16 HC HYDROGRAPH COMBINATION
ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	AREA	59.	13.17	26.	8.	8.	.80		
HYDROGRAPH AT	AREA	20.	12.92	7.	2.	2.	.22		
2 COMBINED AT	1&2	78.	13.08	33.	10.	10.	1.02		

*** NORMAL END OF HEC-1 ***
^Z

1 ****

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****

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```
      LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*** FREE ***
            1         ID   SECTION 23 - SPANISH SPRINGS VALLEY HEC-1 ANALYSIS
            2         ID   UNDEVELOPED HYDROLOGY FROM 100-YEAR STORM EVENT (UND100)
            3         IO     4      0
            4         IT     5                    288

            5         KK   AREA1
            6         BA    .80
            7         PH     0      0    0.34    0.66    1.16    1.29    1.39    1.60    2.00    2.40
            8         LS     0     82       0
            9         UD   1.05

           10         KK   AREA2
           11         BA    .22
           12         LS     0     82       0
           13         UD    .78

           14         KK   1&2
           15         KM   COMBINE HYDROGRAPHS FROM AREAS 1 AND 2
           16         HC     2
           17         ZZ
```

1 ****

FLOOD HYDROGRAPH PACKAGE HEC-1 (IBM XT 512K VERSION) -FEB 1.1985
U.S. ARMY CORPS OF ENGINEERS, THE HYDROLOGIC ENGINEERING CENTER, 609 SECOND STREET, DAVIS, CA. 95616
****

SECTION 23 - SPANISH SPRINGS VALLEY HEC-1 ANALYSIS
UNDEVELOPED HYDROLOGY FROM 100-YEAR STORM EVENT (UND100)

3 IO OUTPUT CONTROL VARIABLES
IPRNT 4 PRINT CONTROL

```
                QSCAL         0.  HYDROGRAPH PLOT SCALE

  IT        HYDROGRAPH TIME DATA
              NMIN          5  MINUTES IN COMPUTATION INTERVAL
             IDATE      1    0  STARTING DATE
             ITIME         0000  STARTING TIME
               NQ          288  NUMBER OF HYDROGRAPH ORDINATES
            NDDATE      1    0  ENDING DATE
            NDTIME        2355  ENDING TIME

          COMPUTATION INTERVAL     .08 HOURS
              TOTAL TIME BASE   23.92 HOURS

      ENGLISH UNITS

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


      ***************
      *             *
5 KK  *     AREA    *    1
      *             *
      ***************

        SUBBASIN RUNOFF DATA

6 BA      SUBBASIN CHARACTERISTICS
            TAREA         .80  SUBBASIN AREA

          PRECIPITATION DATA

7 PH                          DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
          ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
          5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
            .34     .66    1.16    1.29    1.39    1.60    2.00    2.40     .00     .00     .00     .00

                                          STORM AREA =     .80

8 LS      SCS LOSS RATE
            STRTL         .44  INITIAL ABSTRACTION
           CRVNBR       82.00  CURVE NUMBER
            RTIMP         .00  PERCENT IMPERVIOUS AREA

9 UD      SCS DIMENSIONLESS UNITGRAPH
            TLAG         1.05  LAG

                                          ***

                                        UNIT HYDROGRAPH
                                      65 END-OF-PERIOD ORDINATES
          8.      24.      45.      70.     102.     143.     190.     ---      ---
```

197.	170.	149.	131.	115.	102.	91.	81.	72.	64.
56.	49.	44.	38.	34.	30.	26.	23.	20.	18.
16.	14.	13.	11.	10.	9.	8.	7.	6.	5.
5.	4.	4.	3.	3.	3.	2.	2.	2.	1.
1.	1.	1.	0.	0.					

*** ***

```
          **************
          *            *
10 KK     *    AREA    *    2
          *            *
          **************
```

SUBBASIN RUNOFF DATA

11 BA SUBBASIN CHARACTERISTICS

TAREA	.22	SUBBASIN AREA

PRECIPITATION DATA

7 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

..... HYDRO-35			..... TP-40					..... TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.34	.66	1.16	1.29	1.39	1.60	2.00	2.40	.00	.00	.00	.00

STORM AREA = .22

12 LS SCS LOSS RATE

STRTL	.44	INITIAL ABSTRACTION
CRVNBR	82.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

3 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.78	LAG

***

UNIT HYDROGRAPH
49 END-OF-PERIOD ORDINATES

4.	13.	25.	41.	63.	87.	107.	121.	128.	129.
127.	119.	109.	98.	85.	70.	57.	48.	41.	35.
30.	26.	22.	18.	16.	13.	11.	9.	8.	7.
6.	5.	4.	4.	3.	3.	2.	2.	2.	1.
1.	1.	1.	1.	1.	0.	0.	0.	0.	

```
          **************
          *            *
14 KK     *      1&2   *
          *            *
          **************
```

COMBINE HYDROGRAPHS FROM AREAS 1 AND 2

16 HC HYDROGRAPH COMBINATION

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	AREA	173.	13.08	62.	19.	19.	.80		
HYDROGRAPH AT	AREA	60.	12.83	17.	5.	5.	.22		
2 COMBINED AT	1&2	226.	13.00	79.	25.	25.	1.02		

*** NORMAL END OF HEC-1 ***

****

FLOOD HYDROGRAPH PACKAGE HEC-1 (IBM XT 512K VERSION) -FEB 1.1985
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****

THIS HEC-1 VERSION CONTAINS ALL OPTIONS EXCEPT ECONOMICS, AND THE NUMBER OF PLANS ARE REDUCED TO 3


```
      LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*** FREE ***
          1        ID  SECTION 23 - SPANISH SPRINGS VALLEY HEC-1 ANALYSIS
          2        ID  DEVELOPED HYDROLOGY FROM 5-YEAR STORM EVENT (DEV5)
          3        IO      4       0
          4        IT      5                     288

          5        KK   AREA1
          6        BA    .80
          7        PH     0       0    0.17    0.33    0.58    0.66    0.73    0.86    1.10    1.34
          8        LS     0      82      25
          9        UD  1.05

         10        KK   AREA2
         11        BA    .22
         12        LS     0      82      25
         13        UD    .78

         14        KK   1&2
         15        KM  COMBINE HYDROGRAPHS FROM AREAS 1 AND 2
         16        HC     2
         17        ZZ
```

1

****

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****

SECTION 23 - SPANISH SPRINGS VALLEY HEC-1 ANALYSIS
DEVELOPED HYDROLOGY FROM 5-YEAR STORM EVENT (DEV5)

3 IO OUTPUT CONTROL VARIABLES

IPRNT 4 PRINT CONTROL

197.	170.	149.	131.	115.	102.	91.	81.	72.	64.
56.	49.	44.	38.	34.	30.	26.	23.	20.	18.
16.	14.	13.	11.	10.	9.	8.	7.	6.	5.
5.	4.	4.	3.	3.	3.	2.	2.	2.	1.
1.	1.	1.	0.	0.					

*** *

```
**************
*            *
10 KK  *  AREA  *   2
*            *
**************
```

SUBBASIN RUNOFF DATA

11 BA SUBBASIN CHARACTERISTICS

TAREA	.22	SUBBASIN AREA

PRECIPITATION DATA

7 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40					TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.17	.33	.58	.66	.73	.86	1.10	1.34	.00	.00	.00	.00

STORM AREA = .22

12 LS SCS LOSS RATE

STRTL	.44	INITIAL ABSTRACTION
CRVNBR	82.00	CURVE NUMBER
RTIMP	25.00	PERCENT IMPERVIOUS AREA

13 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.78	LAG

***

UNIT HYDROGRAPH
49 END-OF-PERIOD ORDINATES

4.	13.	25.	41.	63.	87.	107.	121.	128.	129.
127.	119.	109.	98.	85.	70.	57.	48.	41.	35.
30.	26.	22.	18.	16.	13.	11.	9.	8.	7.
6.	5.	4.	4.	3.	3.	2.	2.	2.	1.
1.	1.	1.	1.	1.	0.	0.	0.	0.	

*** *

```
            **************
            *            *
14 KK       *      1&2   *
            *            *
            **************
```

COMBINE HYDROGRAPHS FROM AREAS 1 AND 2

16 HC HYDROGRAPH COMBINATION
ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS. AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	AREA	78.	13.08	30.	11.	11.	.80		
+	HYDROGRAPH AT	AREA	27.	12.83	8.	3.	3.	.22		
+	2 COMBINED AT	1&2	103.	13.00	38.	14.	14.	1.02		

*** NORMAL END OF HEC-1 ***
^Z

1 ****

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****

THIS HEC-1 VERSION CONTAINS ALL OPTIONS EXCEPT ECONOMICS. AND THE NUMBER OF PLANS ARE REDUCED TO 3


```
      LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*** FREE ***
            1         ID   SECTION 23 - SPANISH SPRINGS VALLEY HEC-1 ANALYSIS
            2         ID   DEVELOPED HYDROLOGY FROM 10-YEAR STORM EVENT (DEV10)
            3         IO     4       0
            4         IT     5                    .288

            5         KK   AREA1
            6         BA    .80
            7         PH     0       0    0.19    0.38    0.67    0.80    0.89    1.09    1.34    1.58
            8         LS     0      82      25
            9         UD  1.05

           10         KK   AREA2
           11         BA    .22
           12         LS     0      82      25
           13         UD    .78

           14         KK    1&2
           15         KM   COMBINE HYDROGRAPHS FROM AREAS 1 AND 2
           16         HC     2
           17         ZZ
```

1 ****

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****

SECTION 23 - SPANISH SPRINGS VALLEY HEC-1 ANALYSIS
DEVELOPED HYDROLOGY FROM 10-YEAR STORM EVENT (DEV10)

3 IO OUTPUT CONTROL VARIABLES
IPRNT 4 PRINT CONTROL

```
                QSCAL         0.  HYDROGRAPH PLOT SCALE

  IT        HYDROGRAPH TIME DATA
              NMIN          5  MINUTES IN COMPUTATION INTERVAL
             IDATE      1    0  STARTING DATE
             ITIME         0000  STARTING TIME
                NQ          288  NUMBER OF HYDROGRAPH ORDINATES
            NDDATE      1    0  ENDING DATE
            NDTIME         2355  ENDING TIME

          COMPUTATION INTERVAL      .08 HOURS
              TOTAL TIME BASE    23.92 HOURS

      ENGLISH UNITS

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


      ***************
      *             *
5 KK  *     AREA    *     1
      *             *
      ***************

        SUBBASIN RUNOFF DATA

6 BA      SUBBASIN CHARACTERISTICS
            TAREA         .80  SUBBASIN AREA

          PRECIPITATION DATA

7 PH                          DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
          ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
          5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
            .19     .38     .67     .80     .89    1.09    1.34    1.58     .00     .00     .00     .00

                                              STORM AREA =     .80

8 LS      SCS LOSS RATE
            STRTL         .44  INITIAL ABSTRACTION
           CRVNBR       82.00  CURVE NUMBER
            RTIMP       25.00  PERCENT IMPERVIOUS AREA

9 UD      SCS DIMENSIONLESS UNITGRAPH
            TLAG        1.05  LAG

                                        ***

                                                UNIT HYDROGRAPH
                                            65 END-OF-PERIOD ORDINATES
          8.      24.      45.      70.     102.     143.     190.     240.     283.     316.
```

197.	170.	149.	131.	115.	102.	91.	81.	72.	64.
56.	49.	44.	38.	34.	30.	26.	23.	20.	18.
16.	14.	13.	11.	10.	9.	8.	7.	6.	5.
5.	4.	4.	3.	3.	3.	2.	2.	2.	1.
1.	1.	1.	0.	0.					

*** ***

```
          ***************
          *             *
10 KK     *     AREA    *    2
          *             *
          ***************
```

SUBBASIN RUNOFF DATA

11 BA SUBBASIN CHARACTERISTICS

TAREA	.22	SUBBASIN AREA

PRECIPITATION DATA

7 PH DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40					TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.19	.38	.67	.80	.89	1.09	1.34	1.58	.00	.00	.00	.00

STORM AREA = .22

12 LS SCS LOSS RATE

STRTL	.44	INITIAL ABSTRACTION
CRVNBR	82.00	CURVE NUMBER
RTIMP	25.00	PERCENT IMPERVIOUS AREA

13 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.78	LAG

***

UNIT HYDROGRAPH
49 END-OF-PERIOD ORDINATES

4.	13.	25.	41.	63.	87.	107.	121.	128.	129.
127.	119.	109.	98.	85.	70.	57.	48.	41.	35.
30.	26.	22.	18.	16.	13.	11.	9.	8.	7.
6.	5.	4.	4.	3.	3.	2.	2.	2.	1.
1.	1.	1.	1.	1.	0.	0.	0.	0.	

*** ***

```
                **************
                *            *
14 KK           *      1&2   *
                *            *
                **************
                        COMBINE HYDROGRAPHS FROM AREAS 1 AND 2

16 HC           HYDROGRAPH COMBINATION
                     ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                        ***
1
                                                RUNOFF SUMMARY
                                            FLOW IN CUBIC FEET PER SECOND
                                          TIME IN HOURS.  AREA IN SQUARE MILES
```

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+					6-HOUR	24-HOUR	72-HOUR			
	HYDROGRAPH AT									
+		AREA	105.	13.08	41.	14.	14.	.80		
	HYDROGRAPH AT									
+		AREA	35.	12.83	11.	4.	4.	.22		
	2 COMBINED AT									
+		1&2	137.	13.00	53.	18.	18.	1.02		

```
 *** NORMAL END OF HEC-1 ***
^Z
```

1 ****

FLOOD HYDROGRAPH PACKAGE HEC-1 (IBM XT 512K VERSION) -FEB 1.1985
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****

THIS HEC-1 VERSION CONTAINS ALL OPTIONS EXCEPT ECONOMICS, AND THE NUMBER OF PLANS ARE REDUCED TO 3

1 HEC-1 INPUT PAGE 1

```
      LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*** FREE ***
           1          ID   SECTION 23 - SPANISH SPRINGS VALLEY HEC-1 ANALYSIS
           2          ID   DEVELOPED HYDROLOGY FROM 100-YEAR STORM EVENT (DEV100)
           3          IO     4     0
           4          IT     5                  288

           5          KK   AREA1
           6          BA   .80
           7          PH     0     0   0.34   0.66   1.16   1.29   1.39   1.60   2.00   2.40
           8          LS     0    82     25
           9          UD  1.05

          10          KK   AREA2
          11          BA   .22
          12          LS     0    82     25
          13          UD   .78

          14          KK   1&2
          15          KM   COMBINE HYDROGRAPHS FROM AREAS 1 AND 2
          16          HC     2
          17          ZZ
```

1 ****

FLOOD HYDROGRAPH PACKAGE HEC-1 (IBM XT 512K VERSION) -FEB 1.1985
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****

SECTION 23 - SPANISH SPRINGS VALLEY HEC-1 ANALYSIS
DEVELOPED HYDROLOGY FROM 100-YEAR STORM EVENT (DEV100)

3 IO OUTPUT CONTROL VARIABLES
IPRNT 4 PRINT CONTROL

```
                QSCAL          0.  HYDROGRAPH PLOT SCALE

  IT        HYDROGRAPH TIME DATA
              NMIN           5  MINUTES IN COMPUTATION INTERVAL
             IDATE      1    0  STARTING DATE
             ITIME        0000  STARTING TIME
                NQ         288  NUMBER OF HYDROGRAPH ORDINATES
             NDDATE      1    0  ENDING DATE
             NDTIME         2355  ENDING TIME

           COMPUTATION INTERVAL      .08 HOURS
              TOTAL TIME BASE    23.92 HOURS

      ENGLISH UNITS


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

        ***************
        *             *
5 KK    *     AREA    *     1
        *             *
        ***************

          SUBBASIN RUNOFF DATA

6 BA        SUBBASIN CHARACTERISTICS
              TAREA         .80  SUBBASIN AREA

            PRECIPITATION DATA

7 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
            ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
            5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
              .34     .66    1.16    1.29    1.39    1.60    2.00    2.40     .00     .00     .00     .00

                                                STORM AREA =     .80

8 LS        SCS LOSS RATE
              STRTL         .44  INITIAL ABSTRACTION
             CRVNBR       82.00  CURVE NUMBER
              RTIMP       25.00  PERCENT IMPERVIOUS AREA

9 UD        SCS DIMENSIONLESS UNITGRAPH
              TLAG        1.05  LAG

                                                ***

                                                UNIT HYDROGRAPH
                                              65 END-OF-PERIOD ORDINATES
              8.      24.      45.      70.     102.     143.     190.     240.     283.     315.
```

197.	170.	149.	131.	115.	102.	91.	81.	72.	64.
56.	49.	44.	38.	34.	30.	26.	23.	20.	18.
16.	14.	13.	11.	10.	9.	8.	7.	6.	5.
5.	4.	4.	3.	3.	3.	2.	2.	2.	1.
1.	1.	1.	0.	0.					

*** ***

```
**************
*            *
*    AREA    *    2
*            *
**************
```

10 KK

SUBBASIN RUNOFF DATA

11 BA

SUBBASIN CHARACTERISTICS

TAREA	.22	SUBBASIN AREA

PRECIPITATION DATA

7 PH

DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40					TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
.34	.66	1.16	1.29	1.39	1.60	2.00	2.40	.00	.00	.00	.00

STORM AREA = .22

12 LS

SCS LOSS RATE

STRTL	.44	INITIAL ABSTRACTION
CRVNBR	82.00	CURVE NUMBER
RTIMP	25.00	PERCENT IMPERVIOUS AREA

13 UD

SCS DIMENSIONLESS UNITGRAPH

TLAG	.78	LAG

***

UNIT HYDROGRAPH
49 END-OF-PERIOD ORDINATES

4.	13.	25.	41.	63.	87.	107.	121.	128.	129.
127.	119.	109.	98.	85.	70.	57.	48.	41.	35.
30.	26.	22.	18.	16.	13.	11.	9.	8.	7.
6.	5.	4.	4.	3.	3.	2.	2.	2.	1.
1.	1.	1.	1.	1.	0.	0.	0.	0.	

*** ***

```
            **************
            *            *
14 KK       *      1&2   *
            *            *
            **************
```

COMBINE HYDROGRAPHS FROM AREAS 1 AND 2

16 HC HYDROGRAPH COMBINATION
ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	AREA	231.	13.08	81.	27.	27.	.80		
+	HYDROGRAPH AT	AREA	79.	12.75	22.	8.	8.	.22		
+	2 COMBINED AT	1&2	303.	13.00	103.	35.	35.	1.02		

*** NORMAL END OF HEC-1 ***
^Z