PANORAMA: A COLLEGE TOWN
SPECIFIC PLAN

III. MASTER CIRCULATION PLAN

A. Introduction and Background

Introduction
The purpose of the Panorama Master Circulation Plan is to provide a safe and efficient local and regional transportation system that also anticipates and provides for traffic associated with the South Valley Implementation Program (SVIP) and the County Eastern Coachella Valley Area Plan. The Panorama Specific Plan also substantially conforms with the Draft Thermal Community Design Guidelines described below. The Specific Plan takes regional traffic and transportation infrastructure needs into consideration, and addresses project and area-wide traffic growth. The Panorama master circulation plan is also designed to assure that transportation issues are addressed in a manner that limits adverse impacts and enhances multi-modal mobility and accessibility.

The eastern Coachella Valley has become one of the fastest growing regions in California. As traffic has steadily increased, the County and the Coachella Valley Association of Governments (CVAG) are working to preserve the character of the Panorama area, while meeting the accessibility needs of the region's residents and visitors. Joining with the property owners in the vicinity of Avenue 62, the County has been coordinating the development and processing of the SVIP, the main focus of which is land use and transportation planning. The thoughtful distribution of land uses and the development of a logical hierarchy of local and regional streets will allow the SVIP and Panorama planning area to balance infrastructure and quality of life goals.

On an ongoing basis, the County monitors the road system and its operating conditions. Using focused versions of regional transportation models, the County also analyses future traffic impacts due to growth projected for the region. This information-based approach, which is an essential part of transportation planning, also incorporates regional plans and facilities, and helps assure cost-effective and comprehensive transportation management.

Goals of the Master Circulation Plan

The overarching goal of the Panorama Circulation Master Plan is the development of a sustainable and environmentally responsible transportation and circulation system that provides a wide range of facilities and transportation options that move people, vehicles, and goods through the community in an efficient, safe and economical manner. It is also essential that the Circulation Plan provide a logically distributed hierarchy of streets that meet the current and future demand of the planning area and region, while maintaining and protecting the Panorama residential neighborhoods and other sensitive areas.

Background

Due to its close interrelatedness, the Panorama Master Circulation Plan is an outgrowth of the County General Plan Circulation Element and SVIP and regional land use planning. The circulation plan and roadway system also affects and is affected by a variety of community and environmental factors. The Circulation Plan has a direct relationship to the land use, housing, air quality, noise, public services and facilities, and economic development. Planning community design guidelines, parks and recreation facilities, and drainage facilities are also affected by the Panorama Circulation Plan. The types, intensities and mix of land uses in the Panorama community influences the types and volumes of traffic traveling the community's roads now and in the future.

Specific guidelines and implementation programs are provided in the Circulation Master Plan, which address the existing traffic conditions in the Specific Plan study area, and are designed to assure the preservation of adequate long-term roadway capacity in the community. The County is coordinating the SVIP land use and circulation plans with several regional agencies, including the California Department of Transportation (Caltrans), the Coachella Valley Association of Governments (CVAG), the Southern California Association of Governments (SCAG) and the SunLine Transit Agency.

Local and regional air quality is also affected by traffic, and requires careful analysis and planning to protect the community from significant levels of locally generated pollutants. Vehicular pollutant emissions will increase with expanding population, miles traveled and less efficient travel conditions. However, the maintenance of adequate traffic flows, the prevention of traffic congestion caused by inadequate and/or failing roadways, and enhanced vehicle efficiencies will help preserve community air quality.

The Circulation Plan has been developed to serve as a comprehensive transportation management strategy incorporating analysis of existing conditions within the planning area, and projected future development based upon buildout of the County General Plan/Eastern Coachella Valley Area Plan and the SVIP land use plan. Growth in regional traffic has been based upon statistical trends, an assessment of long-term regional growth potential, the regional transportation model (CVATS) prepared by SCAG and CVAG. These data have also been used to develop the SVIP and panorama transportation models, described below.

Optimizing Land Use and Transportation Planning

The interrelationship of land uses and their effects on local traffic is well understood. Ideally, community planning should be directed toward the efficient mix and distribution of land uses so that the greatest number of land use interactions can occur within the shortest distance practical. This proximity of complementary land uses, such as homes and neighborhood shopping, requires shorter trips, allows more trips to be completed by walking or by bike or golf cart, and reduces demand for arterial roadway capacity.

Other considerations associated with transportation and land use planning include the benefits from increasing vehicle occupancy and use of mass transit systems, as well as facilitating the use of alternative modes of travel. Bus stops should be located within a ten-minute walk or easy bicycling distance of higher density residential neighborhoods and employment centers. Balanced and integrated land use planning will create optimum conditions for transit-based mixed use development, assure convenient and affordable housing in proximity to employment and neighborhood commercial services, and reduce impacts to the arterial roadway network. By shortening trips and making many of them local in nature, the quality of the community's neighborhoods can be protected and the impacts from noise and vehicle emissions can be minimized.

Transportation and Land Planning

A variety of land uses are best suited to take advantage of proximity to major transportations systems, including high-capacity roadways, rail lines and railroad stations, local and regional light rail lines, and rapid bus transit. Land uses in these areas optimize convenient and efficient access to employment centers, commercial services, regional institutions (college, etc.).

In addition to such community and neighborhood commercial centers, professional office and high-density housing are also appropriate uses. Employment centers, such as office and industrial parks, are also developed in proximity to a readily available high capacity roadway network.

Transportation-oriented land planning has evolved to maximize the access to and efficiency of the transit system and its users. In the Panorama Specific Plan, planning provides land uses that maximize the convenience and efficiency of the existing and future transportation system. Every effort has been made to provide short direct routes.

Typically, where residential development occurs in the vicinity of major transportation nodes comparable to the SR 86S/Avenue 62 intersection (and future interchange), it is oriented toward higher density and accessibility, implying a resident demographic more likely to take advantage of bus and other transit services as they become available. Bus stops and other transit facilities should be easily accessible by walking, bicycle or golf cart.

Mass-Transit

The Panorama Specific Plan provides significant opportunities for the establishment of intra-project and inter-area bus routes that provide efficient and cost effective serve within the planning area. The plan is expected to result in minimum headways for buses between the point of trip origin and destination within the project planning area and at major interconnections with the regional/arterial roadway network, in essence making trips quick and convenient. Frequent buses on a route reduce headway (waits between buses) and thereby encourage use. Thoughtful interconnectivity with other routes increases efficiency of transfers.

Transportation and Neighborhood Preservation

The Panorama land use plan was developed concurrent and in an iterative manner with traffic planning, testing land use and traffic consequences against one another. The roadway hierarchy within the Panorama Specific Plan planning area, from local streets to major arterials, has been distributed and scaled to address existing and projected demand, while assuring that local traffic stays local, and inter-area travel is efficiently channeled to collectors and arterials. The design of the roadway network facilitates arterial use while protecting local neighborhoods from cut-through and other non-local traffic. The use of traffic calming designs, such as narrower road widths, use of medians, and circuitous routes convenient primarily to local traffic, will also serve to preserve Panorama neighborhoods from undue traffic impacts.

Traffic Calming

Traffic calming is the term used to describe strategies and techniques designed to slow down traffic and improve safety. Traffic calming is also used to adjust the flow of traffic to levels compatible with surrounding land uses, such as residential neighborhoods, parks, schools and pedestrian-oriented shopping areas. Calming is typically accomplished by imposing constraints on movement and speed, and by providing less generous roadway paved sections. Such design features as curvilinear streets, narrow travel lanes and landscaped median islands will also act to slow down traffic in the Panorama planning area. More generous parkway landscaping, which is an integral component of the Panorama design, will assure adequate paved street cross-sections and will also improve neighborhood aesthetics.

Transportation and Utility Services

The Panorama area's transportation network will also provide important rights-of-way for other public infrastructure, including drainage, water and sewer lines, electricity, telephone and cable. These services and their infrastructure will generally be comparable in scale to the capacity of the roadway, and their design and location should facilitate installation and maintenance, while minimizing conflict with roadway operations.

Pedestrians, Bicycles and Other Modes of Travel

The Panorama Specific Plan has been designed to provide alternatives to the use of motor vehicles by providing a wide range of options for pedestrians, bicyclers and other non-motorized users. In addition to the generous sidewalks and bicycle and paths, the Specific Plan encourages integration of paths for non-motorized use within and between individual planned developments within Panorama. Walking and bicycling are not just an alternative means of transportation, but in the planning area are important for their use in recreation and exercise.

To the extent appropriate and practical, development within the Panorama planning area will be required to provide separate paths for bicycles and pedestrians to assure safety and avoid conflicts. Bicycle parking facilities shall be integrated into the design of commercial, office and public land uses.

Connectivity is also a primary goal of residential development in the Panorama community, and design shall emphasize easy access within and between neighborhoods, parks, schools and commercial services to maximize the opportunities for pedestrian and bicycle access by short and direct trips. This planning focus has helped to shortening vehicle trips for those residents who must use their automobiles.

Parking and Access Facilities

In addition to issues associated with roadway capacity at mid-block and intersection locations, the Panorama roadway network will also be affected by the design and location of access drives and on-site parking facilities. Commercial developments in the planning area will be required to provide safe and efficient access and adequate parking to serve their customers. The future Panorama development shall address the access and parking needs for service and maintenance personnel.

Development planning must provide adequate on-site parking to meet typical parking demand generated but should avoid creating a needless or largely unused expanse of parking lot. Parking lot ingress and egress must also be thoughtfully controlled and consolidation encouraged to minimize disruption to traffic flow and facilitate the preservation of capacity, while assuring safety. In mixed use development, the parking ratios may be adjusted downward in recognition of land use efficiencies, a local market not as dependent upon vehicle access, and bus service.

SunLine and Public Transportation

SunLine Transit Authority is the provider of public transportation services in the planning area and the Coachella Valley. The Line 91 bus route currently passes westerly along the entire length of the Panorama planning area and then proceeds north on the SR 86S Expressway. Although this (and other) Sunline services, which are further described and discussed in Section III.D., below, are relatively infrequent when compared to more highly used routes, its immediate availability will greatly enhance public access to the Panorama community, including the forthcoming East Valley Campus of the College of the Desert.

Air Transportation

The Coachella Valley is served by three airports, Palm Springs International Airport, The Jacqueline Cochran Regional Airport and the Bermuda Dunes Airport. Current facilities and operations, as well as long-term plans for these airports are briefly discussed below.

<u>Palm Springs International Airport</u>

Palm Springs International Airport is the primary air transportation link for the Coachella Valley. The airport is classified in the National Plan of Integrated Airport Systems (NPIAS) as a long-haul commercial service airport. It is capable of supporting non-stop commercial service to destinations over 1,500 miles and is classified as a small hub air passenger airport based upon the percentage of national airline enplanements it supports.

Since 1972, the airport has increased service from 143,809 passenger enplanements to 486,644 in 1994, with an average annual growth of about 5.5 percent. Major destination cities include San Francisco, Chicago, Seattle and New York. Commercial traffic is clearly seasonal, with the peak season being the January-February-March period and the slowest period occurring during the summer months. Commercial operations are expected to continue to grow, with passenger enplanements projected to have reached approximately 560,000 by 1999 and about 809,256 by the year 2015.

Bermuda Dunes Airport

Bermuda Dunes Airport is a General Aviation Airport located adjacent and parallel to the Union Pacific Railroad/US Interstate-10 transportation corridor. Currently (1995), a total of approximately 25,332 operations occur at this airport, of which about 6.6% are business jets. The expansion of facilities at this airport are essentially precluded by surrounding development. Annual future operations are expected to reach 26,852.

Jacqueline Cochran Regional Airport

The Jacqueline Cochran Regional Airport is located approximately three miles west northwest of the Panorama planning area and occurs at an elevation of 114 feet below sea level. The facility has two runways: the primary, north/south runway (17-35) is 8,500 feet in length; and a northwest/southeast runway (12-30) measures 5,000 feet. A new master plan for the airport, completed in 2004, calls for extension of Runway 17-35 southward to a length of 10,000 feet. A future parallel, north/south runway that had been included in previous plans has been deleted from the current master plan.

Annual aircraft operations at Jacqueline Cochran Regional Airport were estimated at 65,000 in 2002. The master plan projects this activity to reach some 110,000 by 2022 and continue to grow along with the urbanization of the Coachella Valley. Growth in business jet usage of the airport is expected to be particularly strong. For long-range compatibility planning purposes, an “ultimate” activity level of 220,000 annual operations is assumed. Neither air carrier nor commuter air service are anticipated at this airport before 2022, although existing "air taxis" services is expected to continue and expand somewhat during this time period. Noise impacts generated by the current, future and airport buildout operations levels are not expected to have a significant impact on land uses in the Panorama planning area (also please see the Panorama Specific Plan EIR)

B. Roadway Network and Hierarchy

Introduction

A detailed traffic impact analysis was prepared for the Panorama Specific Plan[1] in close consultation with the County Transportation Department and Caltrans. Long-term traffic projections for the Panorama project and surrounding lands were derived from the sub-regional demand model currently being used for long-term planning in the Coachella Valley[2]. The model has been updated to include land use and network changes as developed for the Draft South Valley Parkway Regional Study (April 2007).

Planning and Transportation Issues

The planning area has experienced very little development and is currently dominated by agriculture and vacant lands. The construction of the SR 86S Expressway, which bounds the Panorama site on the west, has already and will continue to affect long-term buildout of the General Plan Circulation Plan in this area, requiring the future realignment of certain streets to facilitate network connectivity. With the

[1] "Panorama (Specific Plan No. 362) Traffic Impact Analysis", prepared Urban Crossroads, Inc., July 5, 2007.

[2] Coachella Valley Subarea Applications Traffic Model (CVSATM) is an updated regional model of the Coachella Valley Area Transportation Study (CVATS) regional model.

development of the SVIP project, the General Plan roadway classifications have been re-analysed in the context of planned urbanization in this area.

The planned development of the SR 86S/Avenue 62 interchange has been analysed as part of the Panorama project and the preliminary design of future expressway on-ramps has driven the need for the mid- to long-term realignment of Buchanan Street north of Avenue 62 farther to the east. This has resulted in the design of a reverse curve in Buchanan Street so that its intersection with Avenue 62 will fall approximately 800-feet east of its current location. This also affects the location of streets and access drives that can be safely and efficiently provided along Avenue 62. These issues have been addressed in the Panorama Specific Plan and associated traffic study.

Panorama Roadway Hierarchy

The Panorama roadway and traffic analysis has included consideration of arterial roadways bounding and passing through the planning area, as well as giving consideration to the future SR 86S/Avenue 62 interchange. Roadway classifications associated with this project include the "Expressway" designation of SR 86S, "Urban Arterial" on Avenue 62, "Major" on the southern segment and "Secondary" on the northern segment of Buchanan Street, "Major", "Secondary", with "Industrial Collector" and "Collector" street standards applied on the balance of the public streets. The following further describe these roadways.

Expressway

The Panorama Traffic Impact Report identifies the need for an "Expressway" classification for the portion of Avenue 62 extending from the easterly SR 86S off-ramp, westerly to at least SR 111. This classification provides for 8 travel lanes within a 220-foot right-of-way, plus a raised median of up to 36-feet to accommodate turn lanes and a 36-foot half-width parkway that can accommodate sidewalks or bike paths and landscaping.

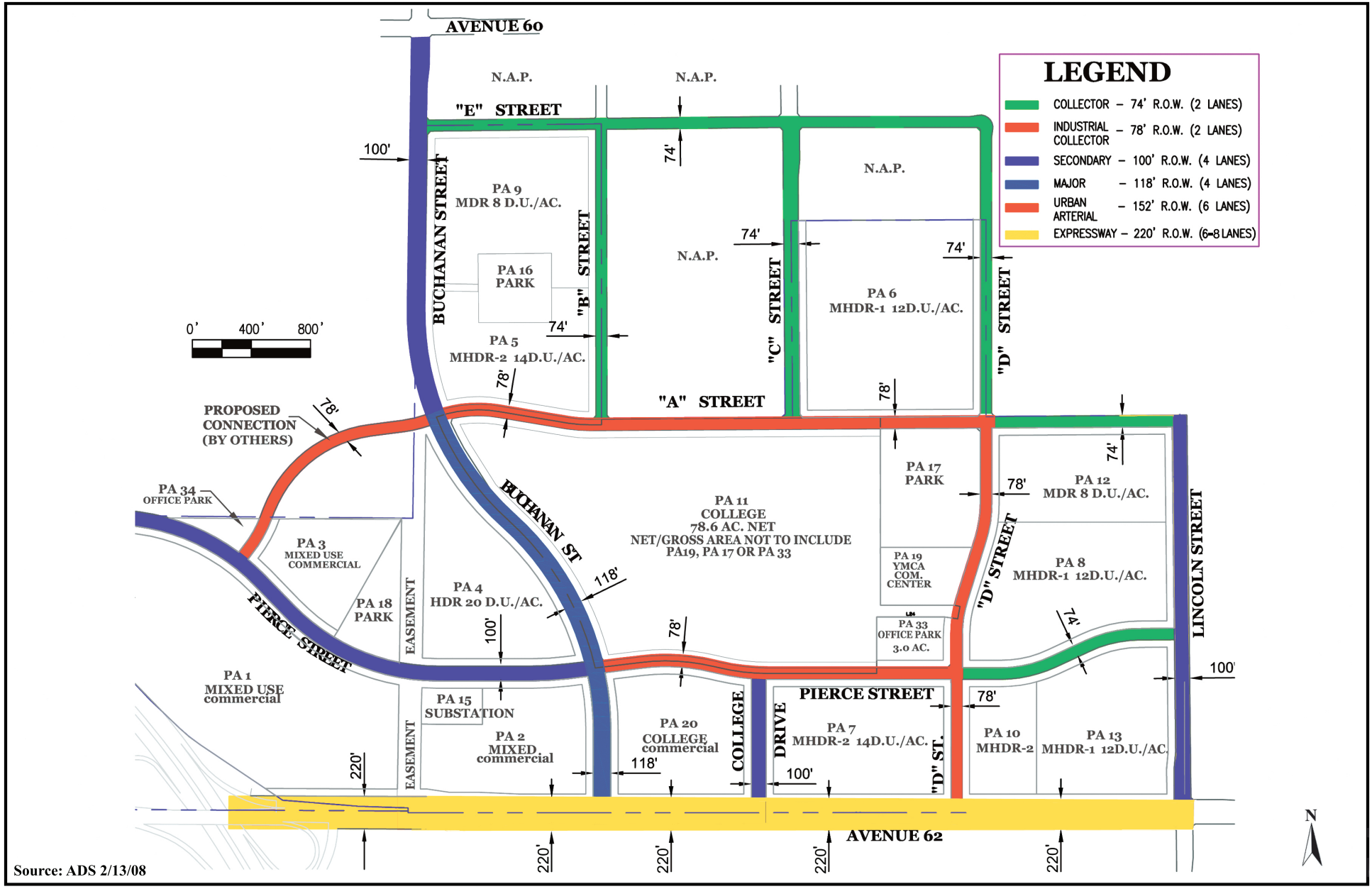
Urban Arterial Roadway

The Panorama Traffic Impact Report identifies the need for an "Urban Arterial" classification for the portion of Avenue 62 extending from the easterly off-ramp, easterly to College Drive, which is to be located approximately 800-feet east of the realigned Buchanan Street. This classification has been further extended to Lincoln Street to assure regional capacity. The Urban Arterial classification provides for 6 travel lanes within a 152-foot right-of-way, including a raised median of 14-feet to accommodate turn lanes and a 21-foot half-width parkway that can accommodate sidewalks or bike paths and landscaping. The parkway is being augmented by an additional 34-feet on each side to provide for landscape buffers and on-site stormwater retention, which will provide a full right-of-way of 220-feet.

The Circulation Plan also calls for intersection improvements and signalized traffic controls at the Avenue 62 intersections of Buchanan Street and College Drive.

Major Roadway

The project traffic report identifies the need for a "Major" roadway classification for the portion of Buchanan Street extending northerly from Avenue 62 to "A" Street, which will be located approximately one-half mile north of Avenue 62. This classification provides for 4 travel lanes within a 118-foot right-of-way, and a median of 12-feet to accommodate turn lanes and a 21-foot parkway that can accommodate sidewalks or bike paths and landscaping. The parkway is being augmented in those areas where landscape buffers and on-site stormwater retention are also planned. The Circulation Plan also calls for intersection improvements and signalized traffic controls at the "A: Street and Buchanan Street intersection.



Source: ADS 2/13/08

TERRA NOVA®
Planning & Research, Inc.

Panorama Specific Plan Draft EIR
Panorama Specific Plan Master Circulation
Riverside County, California

III-1

Secondary Roadway

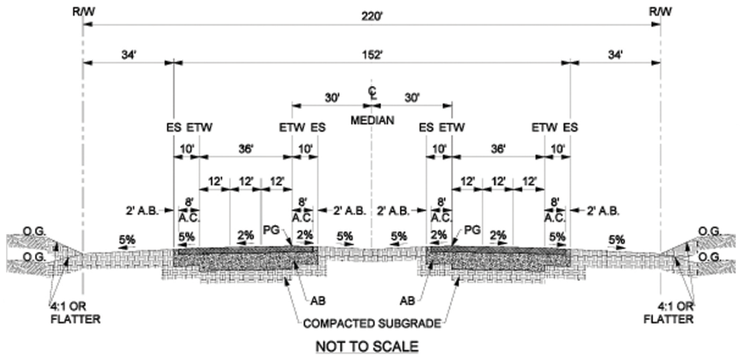
The Panorama traffic report identifies the need for a "Secondary" roadway classification for that portion of Buchanan Street extending northerly from "A" Street to Avenue 60. This classification is also called for on the portion of Avenue 62 extending east from College Drive to Lincoln Street, and the portion of Lincoln Street extending north from Avenue 62 to the end of the project planning area. The portion of Pierce Street extending west from Buchanan Street is also required to be built out to the "Secondary" roadway classification. This classification provides for 4 travel lanes within a 100-foot right-of-way, with no median. An 18-foot parkway is required that can accommodate sidewalks or bike paths and landscaping. The parkway is being augmented in those areas where landscape buffers and on-site stormwater retention are also planned. The Circulation Plan also calls for intersection improvements and signalized traffic controls at the Avenue 62/Lincoln Street intersection.

Industrial Collector Roadway

The Panorama traffic analysis identifies the need for "Industrial Collector" roadway classifications for the portion of "D" Street extending north from Avenue 62 to "A" Street, and the portion of "A" Street extending west from "D" Street to Pierce Street west of Buchanan Street. This roadway classification is also required along Pierce Street extending west from "D" Street to Buchanan Street. This classification provides for 2 travel lanes within a 78-foot right-of-way, with a painted 12-foot median, and includes 11-foot parkway that can accommodate sidewalks or bike paths and landscaping. The parkway is being augmented in those areas where landscape buffers and on-site stormwater retention are also planned.

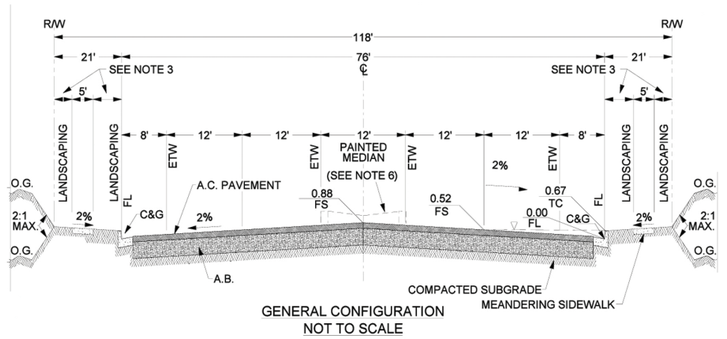
Collector (Local) Roadway

The Panorama traffic report identifies the need for "Collector" roadway classifications for the remaining project roadways, including "B", "C" and "E" Streets, as well as the portion of "D" Street extending north of "A" Street and the portion of "A" Street extending west of "D" Street to Lincoln Street. This classification provides for 2 travel lanes within a 74-foot right-of-way, with no median. This classification provides 15-foot parkway that can accommodate sidewalks or bike paths and landscaping. Portions of these parkways are being augmented in those areas where landscape buffers and on-site stormwater retention are also planned.



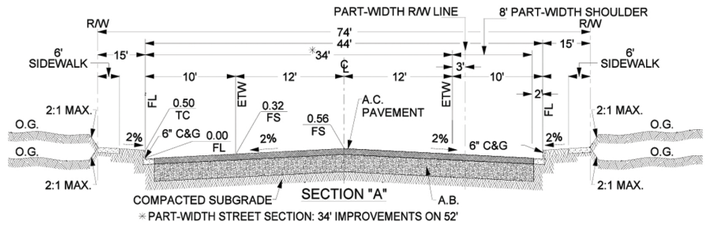
NOT TO SCALE

Standard No. 82
(6 Lane Expressway 220' R/W)



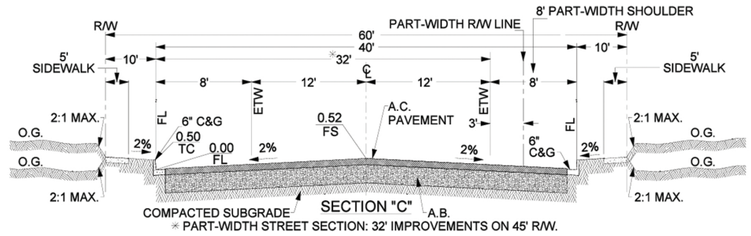
GENERAL CONFIGURATION
NOT TO SCALE

Standard No. 93
(Major HWY 118' R/W)



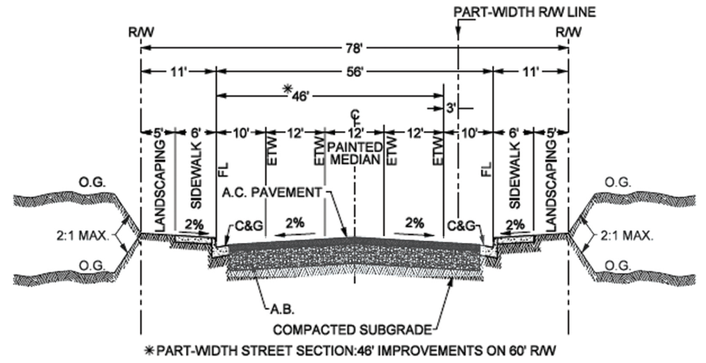
NOT TO SCALE

Standard No. 103
(Collector Street 74')



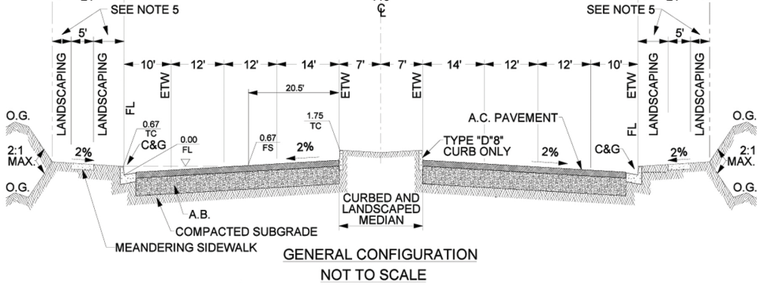
NOT TO SCALE

Standard No. 105
(Local Street 60' R/W)



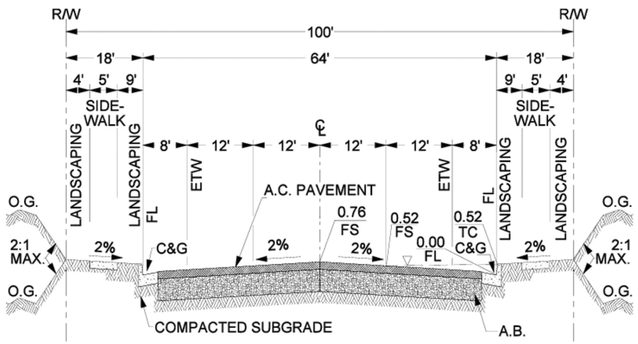
NOT TO SCALE

Standard No. 111
(Industrial Collector 78' R/W)



GENERAL CONFIGURATION
NOT TO SCALE

Standard No. 91
(Urban Arterial HWY 152' R/W)



GENERAL CONFIGURATION
NOT TO SCALE

Standard No. 94
(Secondary HWY 100' R/W)

Source: Riverside County Transportation Department

TERRA NOVA®
Planning & Research, Inc.

Panorama Specific Plan
Project Roadway Cross-Sections
Riverside County Unincorporated, California

Exhibit
III-2

C. Access and Internal Circulation System

As can be seen from the Master Land Use and Circulation Plans, the distribution of land uses and roadways is designed to maximize access and traffic flow, while also limiting through traffic to arterial roadways and restricting internal circulation and access to that needed to serve local land uses while limiting unnecessary through traffic. Complementary land uses have also been located in proximity to one another to enhance internal rates of capture and optimize opportunities for access via non-motorized modes of travel.

Access into each planning area has been designed to limit the creation of conflicting turning movements along arterial roadways, especially along Buchanan Street, Avenue 62 and Pierce Street west of Buchanan Street. Where possible, shared access should be pursued. High volume drives may warrant the provision of acceleration and/or deceleration lanes to limit the effects of tuning movements on roadway capacities. In several instances, some ingress and egress points to a planning area may be limited to right-turn in and right-turn out.

D. Roadway Financing and Phasing

The development of the local and regional roadway system serving the Panorama community will occur incrementally, and will be implemented by the Panorama master developer, individual planning area developers, the County and Caltrans. Major portions of roadway financing will include direct capital investments of the master and individual project developers. The payment of impact fees, including the regional Transportation Uniform Mitigation Fee (TUMF), signalization and other fees will also finance roadway development. Other sources of financing include Measure A revenues, state transportation bonds, Federal Highway Administration funding, and other sources.

Under the auspices of the SVIP planning process, the County and property owners and developers conducted demand and design analyses to lead to the development of a Road and Bridge Benefit Assessment District. This district will provide a major portion of the financing needed for regional transportation improvements to serve the SVIP planning area, of which Panorama is a part. Arterial roadways and highways both serve the Panorama site and the larger SVIP planning area, and include the SR 86S Expressway and SR 111, as well as Harrison Street (Old Highway 86) and Avenue 62. Other regional improvements that are anticipated are elevated interchanges of SR 86S and the Union Pacific Railroad lines with Avenue 62, as well as intersection improvements to the Avenue 62/SR 111 intersection.

The phasing of roadway development at the Panorama project is expected to follow the phasing plan set forth in this Specific Plan. Specific requirements will be established for each planning area development proposal, and will include construction of adjoining and needed connecting roadways. Improvement to nearby intersections expected to be impacted by each future development implementing the Specific Plan will also be required. Ultimate improvements needed to adequately serve the Panorama community and surrounding development are set forth in the Panorama Specific Plan traffic study.

Other development in the area may also affect the timing of certain roadway improvements in the vicinity of the Panorama community, including major intersections. The Panorama community has been given impetus by the planned development of the College of the Desert East Coachella Valley Campus, which will drive development in the immediate vicinity, especially on the balance of the Panorama planning area.

TERRA NOVA®
Planning & Research, Inc.

Panorama Specific Plan
Primary Planning Area Access
Riverside County Unincorporated, California

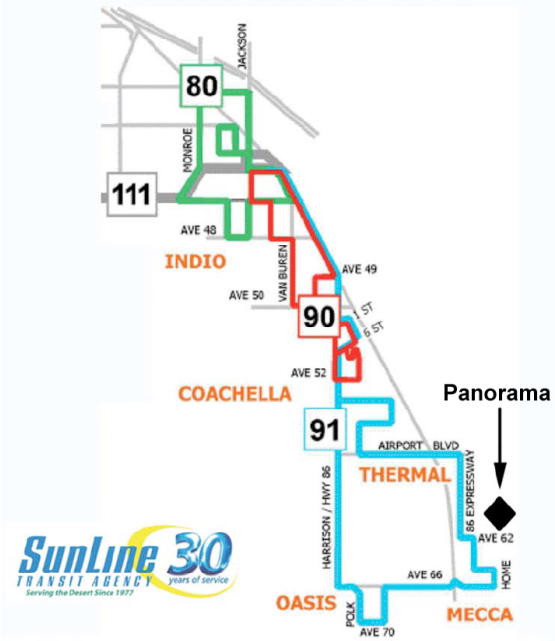
Exhibit
III-3

E. Mass-Transit Plan

SunLine and Public Transportation

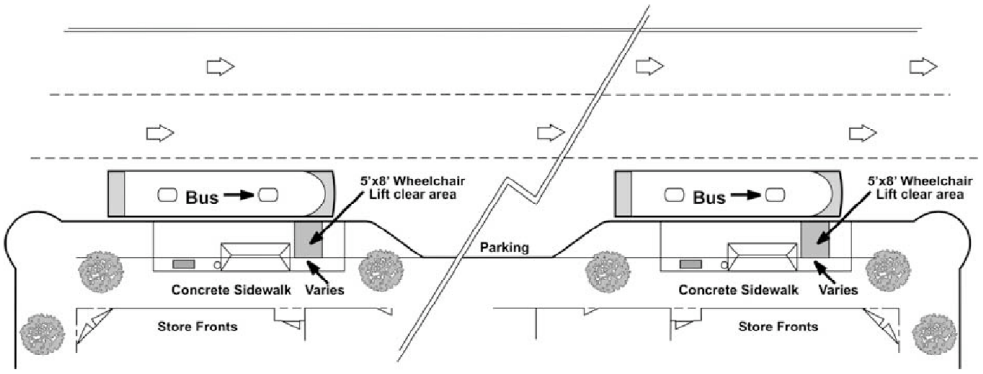
The provider of public transit service within the Panorama planning area and the Coachella Valley is the SunLine Transit Agency, which was created in 1977 and has since evolved to provide a wide range of public transit service within the County and the Coachella Valley cities in a service area of more than 360 square miles on its *SunBus* system. SunLine is required to have bus stops that comply with the federal Americans With Disability Act (ADA).

In addition to SunLine's fleet of new buses powered by compressed natural gas and other clean-burning fuels, SunLine is also integrating other innovative technologies and fuels into the local public transit system. In 2002 SunLine introduced a bus powered entirely by zero-emission fuel cell technology, sometime referred to as Non-Emission vehicles (NEVs). The Agency is also a leader in the implementation of photovoltaic systems to generate hydrogen as part a suite of zero-emission technologies. SunLine continues to be a test site for advanced clean air technology and alternative fuel vehicles, and is the winner of the National Clean Cities Award from the US Department of Energy.



Local Bus Service

One bus route, Line 91, currently provides service to the Panorama planning area, traveling south on Harrison Street, east along a short portion of Avenue 66, south on Polk Street, east again on Avenue 70, north on Pierce Street, east again on Avenue 66 and looping through the village of Mecca, north on Lincoln Street, west on Avenue 62 and north on the SR 86S expressway. Line 91 passes along the entire south boundary of the Panorama planning area, with headway ranging from approximately one hour in the early AM to nearly three hours in late morning and early afternoon.



Supplemental SunLine Services
SunLine also provides "Sun Dial" service, which consists of a fleet of small buses that offer curb-to curb service from home to destination. The *SunDial* is a valley-wide, ADA-compliant service providing curb-to-curb next day service that is wheelchair accessible. SunLine also operates the regional *SunLink* connection, which provides fast and comfortable freeway service between the Coachella Valley, Cabazon and the Inland Empire, with rail connections to Los Angeles and Orange Counties, Ventura County and San Diego via the *MetroLink* system.

SunLine Bus Rapid Transit (BRT) Route
SunLine has been developing the bus rapid transit or BRT concept for application in the Coachella Valley. The purpose of the BRT is to provide express service between major destinations, with a limited number of strategically selected stops along the route that limit travel time. SunLine is also investigating a variety of other systems and the future rights-of-way that may become available for different versions of the BRT system.

The BRT route may also provide opportunities for the development of transit-oriented mixed-use development west of the Panorama planning area that optimizes the use of the BRT system by local residents and employees. Areas of adequately intense development will constitute a potential market for this type of mass transit system. The County and Panorama shall coordinate with SunLine to assure optimum bus and other mass transit services to this community.

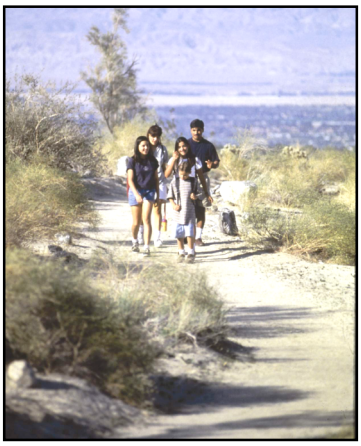
Railway Facilities
Rail lines of the Union Pacific Railroad (UPRR) are located approximately one-quarter mile west of the Panorama planning area. Rail freight service is provided to the Coachella Valley by the (former SPRR), with freight transfer facilities located in Indio and Coachella. There is also current Amtrak service to Indio and Palm Springs on Union Pacific's line. These facilities carry between 30 and 40 trains per day, almost all of which are freight. The UPRR right-of-way also includes Centralized Track Control (CTC) facilities, which include extensive electronic switching and communication facilities. While there is currently neither direct passenger or freight access to these rail lines, the Indio platform allows passenger boarding and rail sidings in Indio, and Coachella currently has direct freight access. It is understood that the proponents of the South Valley Implementation Program and the County Transportation Department are exploring possible future access to Union Pacific Rail lines for future passenger and freight service access.

F. Non-Motorized Circulation System

The Panorama Specific Plan has been designed to optimize pedestrian, bicycle and other non-motorized modes of travel throughout the planning area. No explicit provision has been made for equestrian riders, although the standards to be applied to the development of multi-use trails, as discussed below, should be able to accommodate equestrian use. As discussed throughout this Specific Plan, land uses have been distributed to achieve a synergy that optimizes non-vehicular access to commercial services, schools (COD), daycare, employment centers, and parks, community recreation facilities and open space areas.

The non-motorized, multi-use trail system is also an increasingly important community asset to homebuyers, including families and retirees. Miles of paths and trails will result from buildout of this project, providing exercise and recreation opportunities for all members of the community. Attractive multi-use trails are also an important part of the streetscapes and its function as a key aesthetic feature of the Panorama community, providing convenient non-motorized access, opportunities for biking, roller-blading and other recreational activities, and safe and accessible linkage to parks and open space areas throughout the community (also see Exhibits III-6 through III-9).

G. Path, Trail and Pedestrian Design Standards



Design standards for paths, trails, sidewalks and associated pedestrian and other non-motorized modes of travel for the SVIP planning area are reflected in the Draft Thermal-Mecca Community Design Guidelines[3], which are designed to guide development of these facilities within a geographic area that includes the Panorama planning area. With the provision of parkway enhancements, stormwater retention facilities adjacent to street rights-of-way, and landscape buffer areas, the Panorama project will be consistent with and provide a model for application of the community design guidelines. The following discussion sets forth the scope and development standards to be implemented in the Panorama planning area. Also see Exhibits III-6 through III-9 for plan and cross section view of the major sidewalks, bikepaths and trails.

Trails, Paths, Sidewalks & Bikeways

Sidewalks, bike paths and multi-use trails are an important asset to a community. In addition to creating a buffer between land uses, and providing additional recreational opportunities, the establishment of the Panorama pedestrian path and trail system will ultimately provide important alternative transportation opportunities. These alternative routes will include greater accessibility to commercial areas and other neighborhood services, as well as recreational and open space areas.

Bicycle-ways not only provide a quick and convenient alternate form of transportation, they also reduce air and noise pollution attributed to motor vehicle use. Incentives for bicycle use, such as a reduction in required parking spaces in exchange for the placement of bicycle racks, are becoming more common, as traffic and pollution levels continue to increase, and shall be an integral part of the Specific Plan and development-specific approvals.

Types of Trails

There are generally two types of trails that are applicable to the project's active trail system: urban trails and open space trails. Urban trails, principally sidewalks and multi-use trails along roadways, are expected to serve as the most widely distributed system of alternative transportation routes through the community, linking residential neighborhoods with central areas of the community. While open space trails will function as an access to the Panorama project's parks and natural and scenic resource areas, it is expected that they will generally be used for jogging, horseback riding and bike riding. Together, urban and open space trails at Panorama will create a multi-use trail system that can accommodate all types of users, and provide access to a variety of areas.

Trail Development

When urban and open space trails are developed, certain design concepts must be taken into consideration. Accessibility and functionality are the most significant factors. Open space trails shall connect open space areas, parks, schools, and scenic routes and shall be located within naturalized surroundings wherever possible. The project's urban trails will connect the community's residential neighborhoods with commercial areas, schools, parks, and open space trails. Both types of trails will utilize appropriate signage for directional guidance, and consist of suitable designs and materials. Consideration must also be given for the provision of shade, especially during the summer months.

[3] "Draft Thermal-Mecca Community Design Guidelines", prepared by the Riverside County Planning Department, May 2008. These draft guidelines are meant to provide guidance to development occurring in the Thermal/Mecca planning area of the eastern Coachella Valley.

Table III-1
Panorama Trail Reference Standards
Urban Standards (Maximum Accessibility)

Item	Bicycle + Pedestrian [i]	Bicycle Only[i]	Hiking Only	Equestrian Only[iv]
Min. Width (one-way)	10'	5'	5'	8'
Min. width (two-way)	12'	8-10'	8-10'	10'
Surface	hardened e.g.asphalt[ii]	hardened	hardened	hard-packed
Shoulder	2' min.	2' min.	2' min.	2' min.
Vertical Clearance	12'	10'	10'	12'
Cross Slope	2% max.	2% max.	2% max.	2% max.
Max. Grade	5%	5%	5%	max. limit is erosion control

Open Space and Natural Area Standards

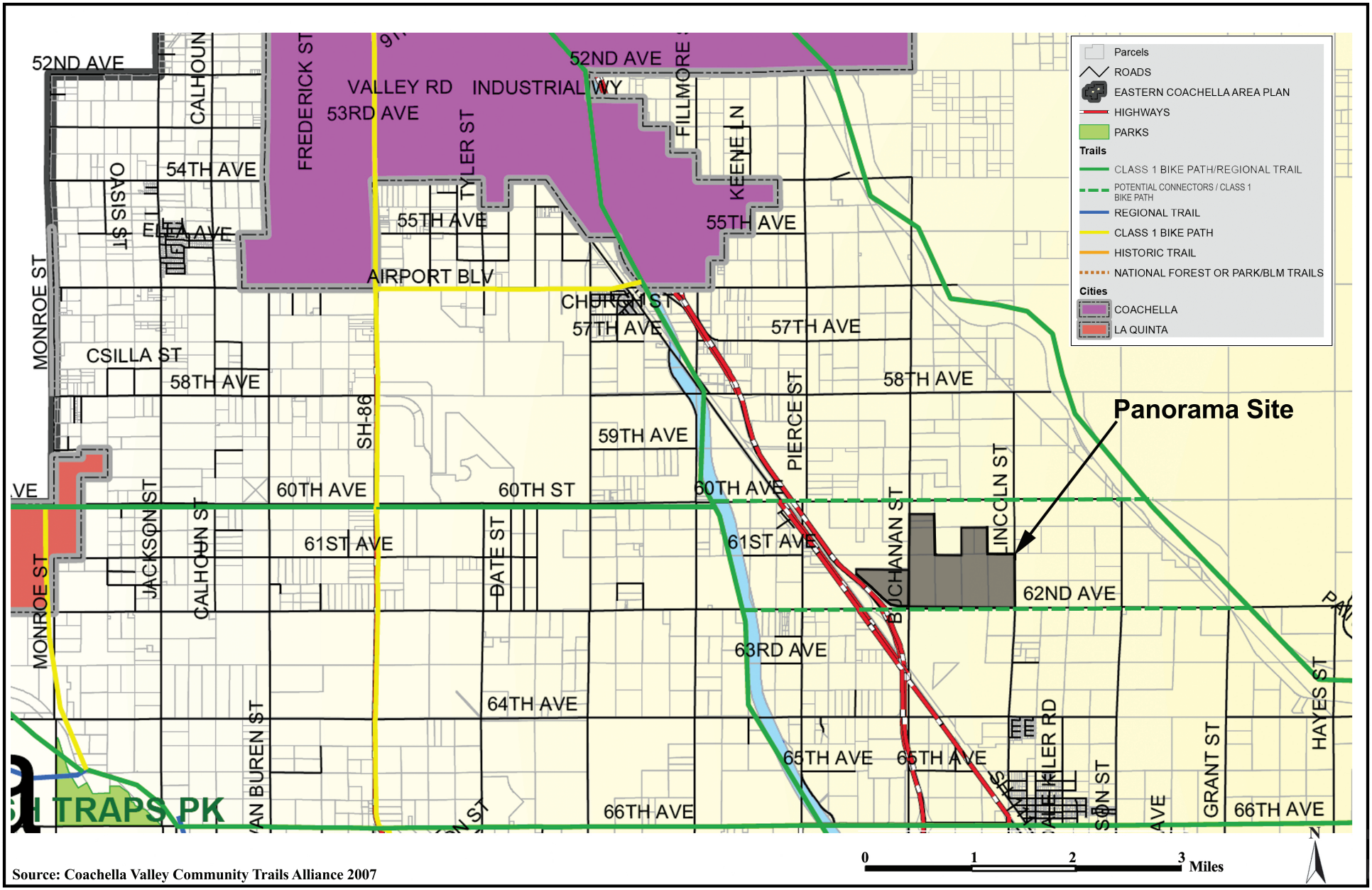
Item	Bicycle +Ped + Equestrian[iii]	Hiking Only	Mountain Bicycle Only (foothill & mtn. areas)	Equestrian Only
Min. Width (one-way)	6-8'	2'	2'	6'
Min. width (two-way)	8-10'	2'	4'	8'
Surface	firm all-weather & unobstructed	minimize erosion	minimize erosion	minimize erosion
Shoulder	2' min.	2' min.	2' min.	2' min.
Vertical Clearance	10'	8'	8'	12'
Cross Slope	3% max.	3% max.	3% max.	3% max.
Max. Grade	5%; rest & turning areas every 200ft. min.	max. limit is erosion control	max. limit is erosion control	max. limit is erosion control

Notes: i Standards meet Caltrans Class I Bicycle-way standards.

ii. Where equestrian uses occur, an appropriate trail material, such as decomposed granite, should be provided on the equestrian portion of the trail only; the remainder of the trail should use materials appropriate to its intended use.

iii. Multiple use trails with both bicyclists and equestrians should be no narrower than 6 feet. A combined use trail with hiking and bicycling only should be no narrower than 4 feet.

iv. A maximum of 20% vertical grade or as needed for erosion control, whichever is less. This can be exceeded for short distances (no more than 200').



Source: Coachella Valley Community Trails Alliance 2007

TERRA NOVA®
Planning & Research, Inc.

Panorama Specific Plan
County Regional Trails and Bikeway System
Riverside County Unincorporated, California

Bikeways and Associated Development Standards

Standards for travelway widths for safe operation of bicycles have been established by the Institute of Transportation Engineers (ITE). They include the following: A two-way urban bike trail should have a width of 8 to 10 feet. One-way urban bike trails should have a width of 6 to 8 feet to ensure safety. Trail standards for all types of trails are included in Table III-1: Panorama Trail Reference Standards, above. The guidelines in this table are representative of national trails standards and in the context of the Panorama Specific Plan are meant serve as a useful reference.

Bicycle ways and facilities are an essential component to meeting important transportation, exercise and recreational needs of the Panorama community. By exploiting these opportunities for bicycling the project will decrease vehicular traffic. Due to the favorable terrain and climatic conditions that exist at Panorama and the vicinity, bicycles are expected to account for a substantial number of daily trips in many parts of the community.

Bikeways Classifications

1. Class I bike way provides a completely separated right-of-way designated for the exclusive use of bicycle. Interaction between pedestrians and vehicles is minimized.

2. Class II bikeways are signed and striped bicycle lanes within the paved section of the street, providing for the exclusive or semi-exclusive use of bicycles with through-travel by motorists or pedestrians prohibited.

3. Class III bikeways provide for a right-of-way designated by signage or permanent markings with shared use with motorists, and with pedestrians when sidewalks are not provided.

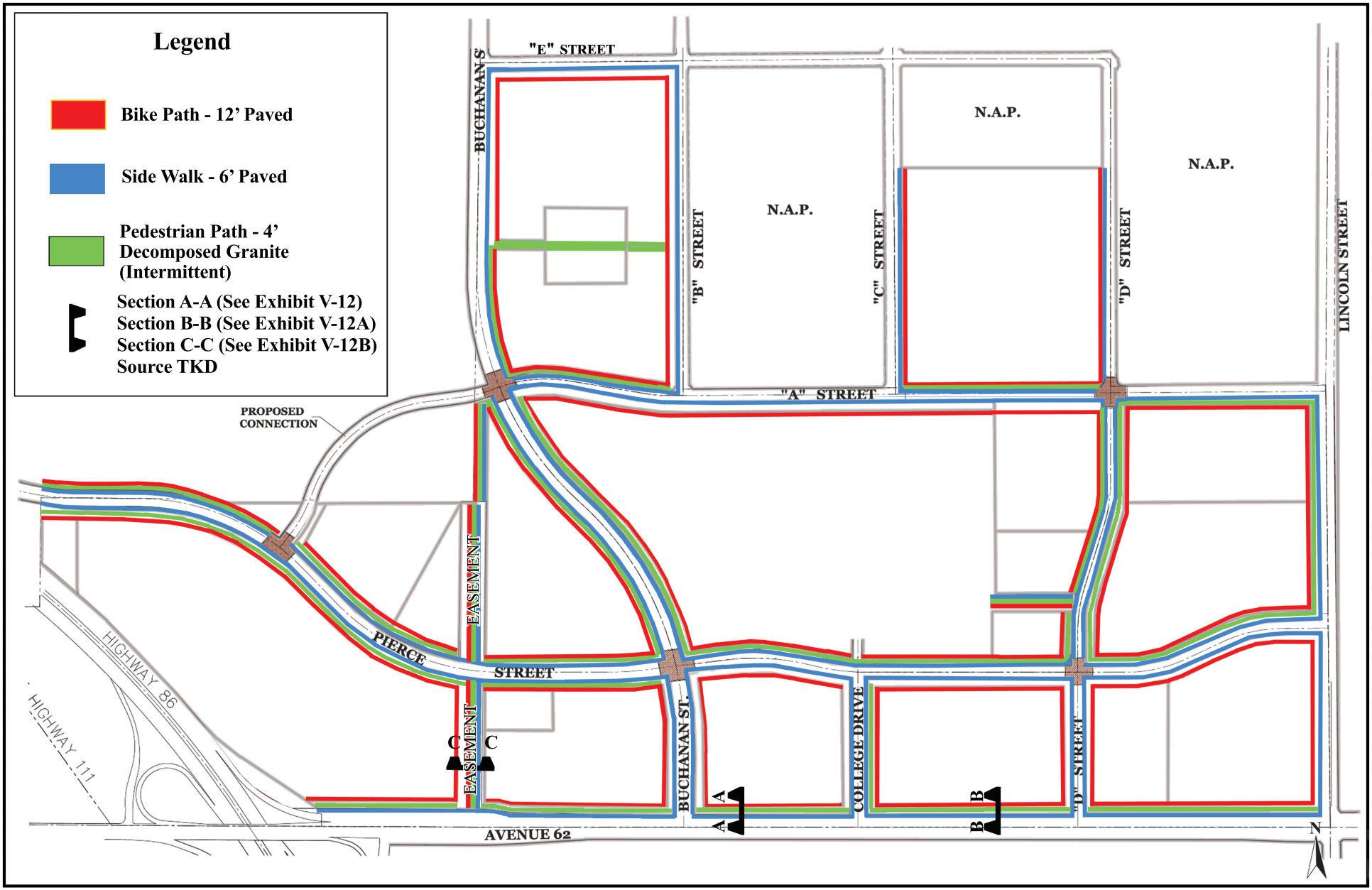
In the Eastern Coachella Valley Area Plan and the SVIP planning area south of Airport Boulevard (Avenue 56), the County General Plan only delineates Class I bike paths, none of which have yet been developed. These include a future regional bike path along the Coachella Valley Stormwater Channel (CVSWC), along Harrison Street, along Avenue 60 west of the CVSWC, and along the irrigation canal protective levee along the east margin of the valley. No County bike paths are proposed in the immediate vicinity of the Panorama project. The SVIP planning area does propose an area-wide linkage through the Panorama project site, which roughly parallels "A" Street.

Multi-Use Trails

Consistent with the concept of a rural and agrarian character as the theme of the SVIP planning area, multi-use trails are a recommended means of facilitating alternative modes of travel. The use of compacted natural materials, the use of split-rail and comparable fencing, and the integration of rest areas and interpretive stops that describe the scenery and the region are to be set forth in the final Thermal-Mecca Community Design Guidelines. Some of the preliminary guidelines that would be applicable to the development of multi-use trails in the Panorama project include the following:

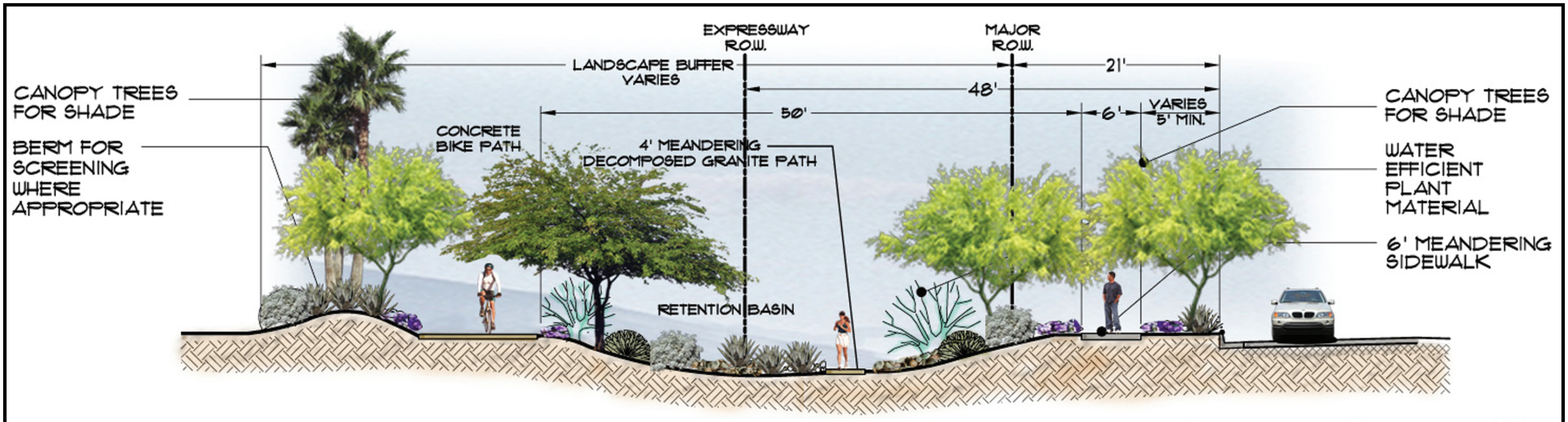
A. Construct multi-use trails of compacted, decomposed granite or other natural material with comparable performance capabilities and in keeping with the greater community's rural character.

B. To the greatest extent practicable, multi-use trails shall be located along major arterial roads between the landscaped parkway and adjoining property lines. Where additional parkway has been dedicated for buffering or to accommodate stormwater retention, the multi-use trail system may be integrated into this area. This trail may be discontinuous, joining and leaving adjoining sidewalks.

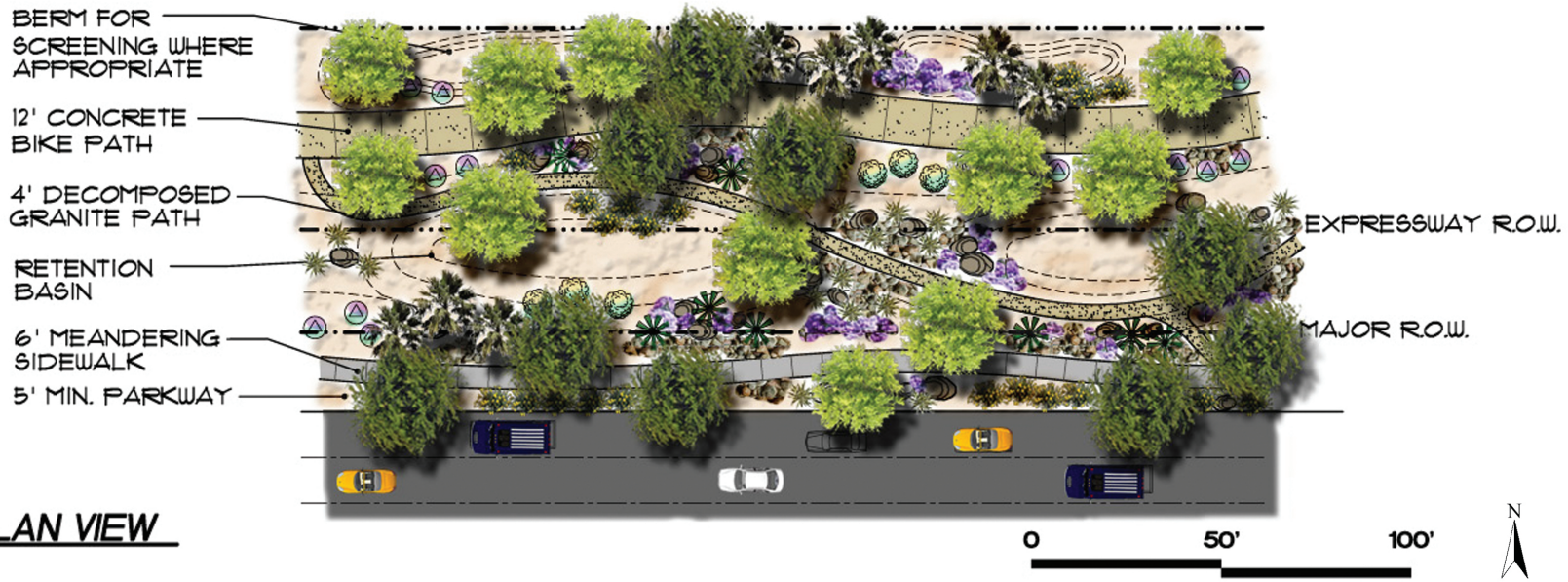


TERRA NOVA®
Planning & Research, Inc.

Panorama Specific Plan
Panorama Conceptual Bike & Pedestrain Routes
Riverside County Unincorporated, California



TRAIL SECTION WITH RETENTION BASIN



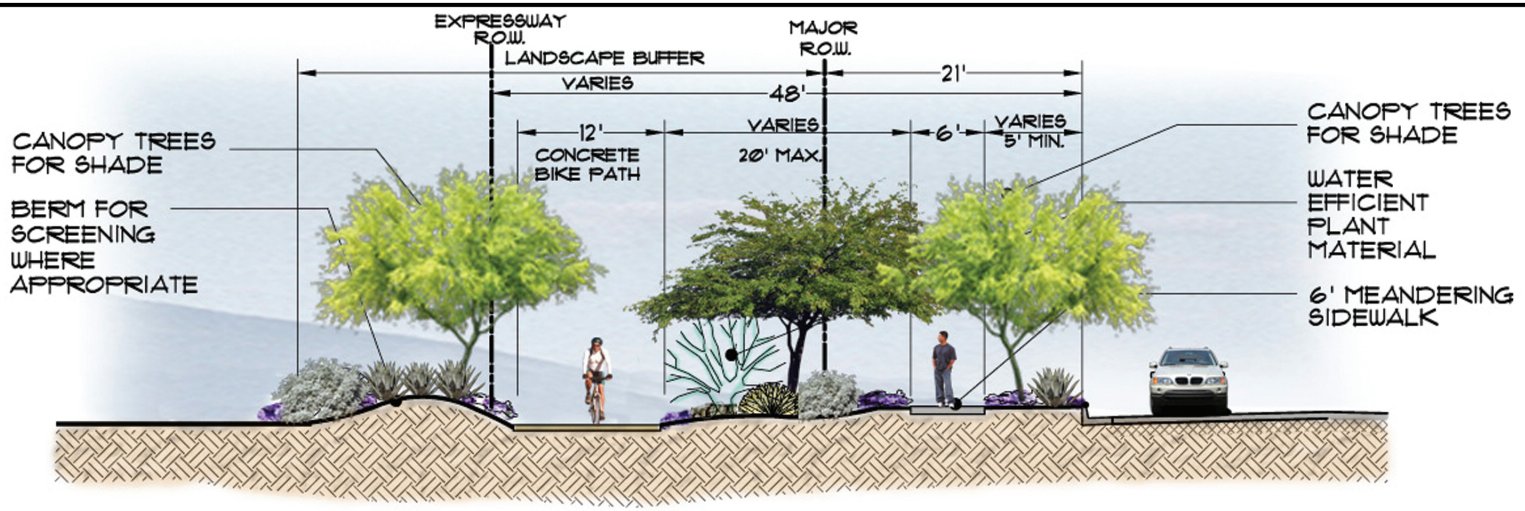
PLAN VIEW

TERRA NOVA®
Planning & Research, Inc.

TKD ASSOCIATES, INCORPORATED
LAND PLANNING - LANDSCAPE ARCHITECTURE
41-750 RANCHO LAS PALMAS DRIVE SUITE K-2
RANCHO MIRAGE, CALIFORNIA 92270
PH: (760) 776-1751
FAX: (760) 776-1753
email: tkd@tkdinc.com

Panorama Specific Plan
Trail Section with Retention Basin
Riverside County Unincorporated, California

Exhibit
III-6



TRAIL SECTION WITHOUT RETENTION BASIN

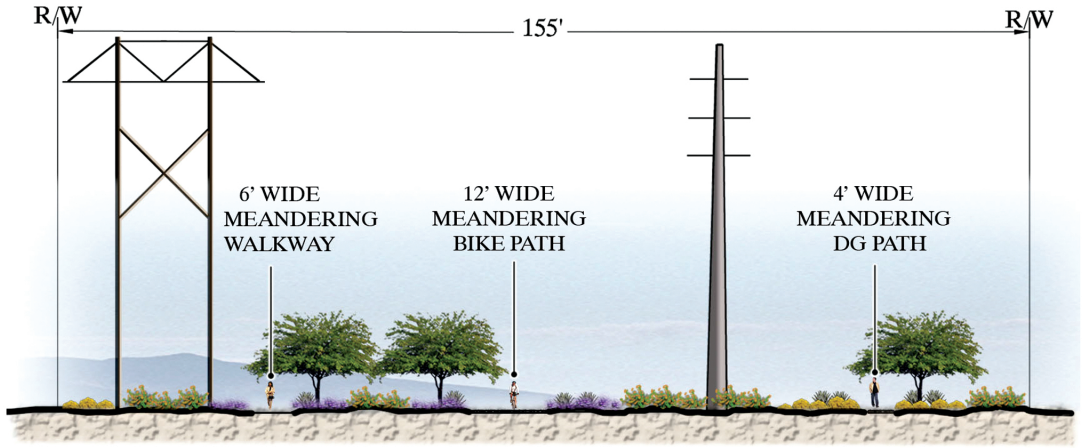
PLAN VIEW

TERRA NOVA®
Planning & Research, Inc.

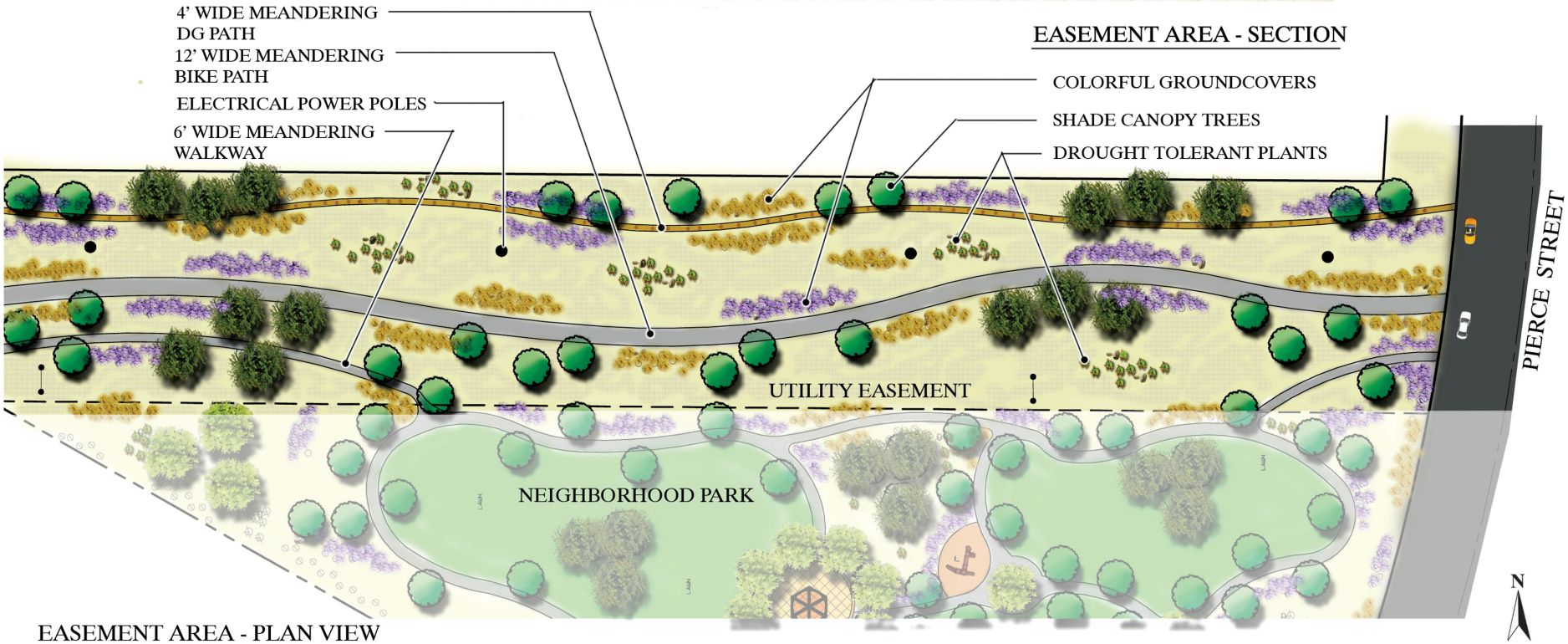
TKD ASSOCIATES, INCORPORATED
LAND PLANNING - LANDSCAPE ARCHITECTURE
41-750 RANCHO LAS PALMAS DRIVE SUITE K-2
RANCHO MIRAGE, CALIFORNIA 92270
PH: (760) 776-1751
FAX: (760) 776-1753
email: tkd@tkdinc.com

Panorama Specific Plan
Trail Section without Retention Basin
Riverside County Unincorporated, California

Exhibit
III-7



EASEMENT AREA - SECTION



EASEMENT AREA - PLAN VIEW

TERRA NOVA®
Planning & Research, Inc.

TKD ASSOCIATES, INCORPORATED
LAND PLANNING - LANDSCAPE ARCHITECTURE
41-750 RANCHO LAS PALMAS DRIVE SUITE K-2
RANCHO MIRAGE, CALIFORNIA 92270
PH: (760) 776-1751
FAX: (760) 776-1753
email: tkd@tkdinc.com

Panorama Specific Plan
Utility Easement Plan and Cross-Section
Riverside County Unincorporated, California

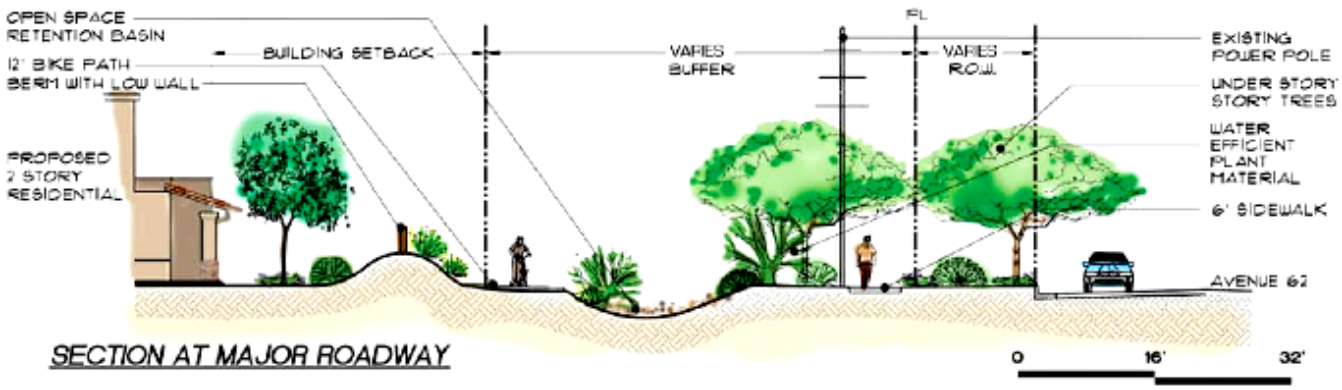
C. Multi-use trails will generally be 8'-10' in width to accommodate equestrian, biking and hiking.

D. Multi-use trails shall be integrated into the parkway landscape plan and shall be provided with a minimum of 40% shade during summer months utilizing appropriate desert and other drought-tolerant trees from the Specific Plan plant palette. Shade at seating areas, bus stops and other places of stopping and congregation shall be provided with 65 to 70% summer shade

Sidewalks
The design and location of sidewalks is dictated by the Riverside County Roadway Standards, as they may be modified by the SVIP and this Specific plan. Sidewalks shall be constructed of concrete and shall provide a minimum of five-feet of unobstructed travelway.

Sidewalk and Trail Crossings
There are many cases where sidewalks, multi-purpose and other trails must cross roads to maintain network connectivity. All of street crossings should include a cross-walk with a roughened surface to provide stability for users. When approved by County Transportation Department, the crossing streets should have a stop sign. Crossings of busy streets (secondary highways) must have crossing lights, but with activation button mounted at an elevation that can be easily reached by all prospective users.

Exhibit III-9
Typical Trails System Cross-Section



H. Circulation Master Plan Standards

Streets and Roadways
The development standards for streets and arterial roadways in the Panorama planning area are established to a large degree by the demands of the planning area and anticipated surrounding development. They implement a slightly modified or enhanced version of the County roadway standards, as set forth in the Draft South Valley Parkway Regional Study (April 2007). While the design parameters for projects streets and roadways are well defined, the following standards will also help to assure that the Panorama Specific Plan achieves its design goals.

A. The County and Panorama developer shall make good-faith efforts to achieve LOS C along roadway segments and for peak hour intersection operations. LOS D shall be acceptable in instances when physical constraints, land use compatibility or other urban design considerations make achieving LOS C impractical.

B. Over the course of implementing the Panorama Master Circulation Plan, the County and the developer shall coordinate and cooperate with Caltrans and CVAG to assure preservation of capacity and maximized efficiency along Avenue 62, the Avenue 62/SR 86S intersection and/or interchange, Buchanan Street, Pierce Street, and other major roadways.

C. Consistent with this Specific Plan and the project traffic study, access onto major arterials should be limited, and shall also rely upon alignment and/or consolidation of access drives in a manner that minimizes conflicting turning movements, and maximizes the use of well-spaced access drives and intersections.

D. On "Urban Arterials" and "Major" roadways, the minimum intersection spacing should be approximately one-quarter mile. Full access shall be by limited to signalized intersection only, unless traffic volumes and visibility allow safe turning movements onto or off of arterial streets. All access configurations not in substantial conformance with Specific Plan recommendations and/or design guidelines shall be subject to County review and approval.

E. On secondary roadways, the minimum intersection spacing should be 600 feet. All access configurations not in substantial conformance with Specific Plan recommendations and/or design guidelines shall be subject to County review and approval.

F. On collector (local) roadways, the minimum intersection spacing should be 250 feet. All access configurations shall be subject to County Transportation review and approval. All access configurations not in substantial conformance with Specific Plan recommendations and/or design guidelines shall be subject to County review and approval.

G. To relieve congestions, preserve roadway capacity, and enhance transportation opportunities, the County and developer shall encourage bus ridership, regular updating of the service area, and the use of advanced systems, fuels and technologies in the public transit systems operated by the SunLine Transit Agency within the planning area.

H. The County and developer shall regularly consult and coordinate with the SunLine Transit Agency in the course of reviewing development proposals, and shall solicit comments and suggestions on how bus stops, facilitating Transportation Management Organizations (TMO) among project employers, and other public transit facilities and design concepts, including enhanced lighting, security and handicapped access, which should be integrated into project designs.

I. Within mixed use areas of the panorama planning area, the County and developer shall encourage site planning that locates jobs and commensurate housing opportunities near each other to reduce vehicle-dependent work commutes, and provide housing for those employed in the planning area.

J. Facilitate pedestrian and other non-motorized access in the COD East Valley Campus planning area, specifically between the campus and residential and commercial lands. The County and developer shall further consider design solutions that optimize safe and efficient access between land uses located east and west of Buchanan Street.

K. The master developer shall provide a clear and coherent public signage program directing traffic to major community resources, including park and recreational facilities, libraries, college, police and fire stations, and community centers. Signage should also provide direction to major area destination and shopping districts.

L. Individual development projects may propose alternative design standards for private streets within planned residential developments, with the intent of minimizing paved street cross sections, reducing traffic speeds in these residential village neighborhoods, and facilitating safe and efficient use of bicycles and other alternative modes of transportation.

M. To the greatest extent practicable, intersection and development access drive enhancements such as dedicated deceleration and acceleration lanes, and dedicated left-turn lanes, shall be incorporated into street designs to optimize traffic flow and defer or preclude the need for intersection controls such as stop signs or traffic signals.

Trails, Paths, Sidewalks & Bikeways

Essential goals of the Master Circulation Plan include the provision of a high-quality non-motorized, multi-use system of trails, paths and sidewalks that meets the Panorama community's active and passive recreation needs with facilities that provide a mix of alternative modes of travel for the community's residents. The Panorama project is also intent on providing a comprehensive sidewalk, path and open space trails network to meet the walking and running, biking and equestrian needs of the community's residents and visitors. Exhibits V-11 through 14 illustrate the major components of the multiple trails system planned for the Panorama community. The following guidelines are meant to facilitate achieving these important goals.

A. Enhanced accessibility shall be included in the planning and development of sidewalks and multi-use trails, in accordance with the Americans With Disabilities Act, including increased wheelchair accessibility, restroom, and other requirements needed for the elderly and physically handicapped.

B. Maximize visibility and access for pedestrians and encourage the removal of barriers (walls, easements, and fences) for safe and convenient movement of pedestrians. Special emphasis should be placed on the needs of disabled persons considering Americans with Disabilities Act (ADA) regulations.

C. Plan for convenient and safe pedestrian access that is consistent with road design standards. Provisions for pedestrian paths or sidewalks and timing of traffic signals to allow safe pedestrian street crossing shall be included.

PANORAMA: A COLLEGE TOWN SPECIFIC PLAN

IV. MASTER HYDROLOGY AND GRADING PLAN

A. Introduction

Introduction
The Panorama Master Hydrology and Grading Plan has been prepared, in conjunction with land use and circulation planning, to minimize site grading, and provide development areas that are safe from flooding or inundation. The purpose of this plan also includes taking maximum advantage of drainage facilities and integrating them with the open space amenities of the overall development.

The Panorama Specific Plan addresses potential drainage and flooding hazards within the community with the foremost goal of protecting the general health, safety and welfare of the community from potential flood and associated hazards. It references and coordinates with other components of the Specific Plan, including circulation and landscape master plans. The potential for and extent of major future flooding is also evaluated. It is the intention of the Plan to analyse, plan and implement the phased development of drainage and retention facilities, and to provide for open space and multiple uses, wildlife, and pedestrian and equestrian corridors within major drainages wherever feasible.

B. Regional and Local Drainage Conditions

The Panorama site is located in a low valley basin of the Coachella Valley and is surrounded by mountains, which effectually cuts off moist and cool air from the coast, and creates a subtropical desert climate. Summer temperatures are frequently above 110°F, and winter temperatures in the area frequently drop below freezing. It is part of the West Basin of the Colorado River Watershed, which drains into the Salton Trough. Mean annual rainfall is between 2 and 4 inches, and while in some years no measurable rainfall is recorded, the region is occasionally subjected to flash flood events typically resulting from intense late-summer thunderstorms. Flooding events play a key role in shaping the valley's hydrological setting and general result from one of the following storm conditions: winter storms with high-intensity rainfall in combination with rapidly melting snow, tropical storms out of the Southern Pacific Ocean, or summer thunderstorms.

The Coachella Valley Water District (CVWD) manages drainage for some of the Coachella Valley and is responsible for flood planning and construction of drainage facilities including the Coachella valley Stormwater Channel, which is located west of the subject property. Drainages are important in that they provide habitat to a number of species, provide ecological processes of erosion, conduct fluvial transport, and sort and deposit sand and gravel.

Site Specific Conditions

The Coachella Valley Stormwater Channel (aka Whitewater River west of Point Happy) is located one mile to the west of the site and flows in a southeast direction to the Salton Sea. The Whitewater riverbed was channelized east of Point Happy and now functions as Coachella Valley's main drainage feature. To the east are the Coachella Branch Canal and its protective levee system, which also protects the valley floor from flooding originating in the Indio and Mecca Hills. These protective levees have not yet been certified by the Federal Emergency Management Agency (FEMA). This system protects 590 square miles from flooding, including the subject property. The Panorama site is also protected from flooding events originating from the Santa Rosa Mountains to the west by the intervening Coachella Valley Stormwater Channel, as well as the elevated roadbeds of State Routes 86S and 111, and the Union Pacific Railroad (UPRR). Furthermore, analysis indicates that a breach in the levees for the Coachella Valley Stormwater Channel is not expected to occur in a 100-year storm event.

According to the preliminary hydrological investigation[1] there are currently no FEMA flood insurance studies or maps for the subject or surrounding properties. In the absence of FEMA-certified levees for the Mecca Hills area, it is possible that areas downstream, including the subject property, may be placed in a 100-year flood zone by FEMA.

In addition, the Eastern Coachella Valley Area Plan delineates at least part of the Panorama site within a 100-year flood zone.[2] Analysis indicates the potential for flooding or inundation in the project vicinity as a result of localized and intense rainfall on lands to the north and northwest. Further, tributary flows from a 100-year local storm event could generate volumes ranging from 30 to 200 cubic feet per second (cfs) impinging on the site from the north and east (also see Panorama Environmental Impact Report (EIR)). In order to address the potential for flooding in this area, CVWD has initiated a master flood control study for eastern Coachella Valley that includes the assessment of the canal's protective levees.

C. Agricultural Tile Drain System

Much of the agricultural land in the eastern Coachella Valley is underlain with a system of tiles comprised of concrete, PVC and comparable materials, and set at a depth ranging from six to eight feet below the surface. Soil conditions in large portions of this area include lenses and deposits of clay, which serve to prevent irrigation water from percolating into the deep ground water table, and resulting in an elevated or perched water table. To address this issue and continue to make lands suitable for farming, a system of agricultural drains has been constructed, and into which individual farm plots drain the excess water in their fields. Subsurface drainage removes excess water from the soil profile, usually through this network of perforated tubes installed below the soil surface. These tubes are commonly called "tiles" because they were originally made from short lengths of clay pipes known as tiles. As irrigation water percolates into the soil column it seeps into the small spaces between the tiles and drains away.

1 "Flood Hazard Constraints for Proposed Panorama Development, Riverside County, California," prepared by Douglas L. Hamilton on November 22, 2006.

2 "Eastern Coachella Valley Area Plan," flood map pg 69, source information Earth Consultants International, adopted October 2003.

The Panorama site currently contains a system of private agricultural tile drains consisting of pipes range from 4-inches to 10-inches in size, and which discharges into 8-inch CVWD concrete pipes located in existing Buchanan Street, Avenue 62, and within an existing easement lying in proximity of proposed "A" Street. The on-site tile drain system is expected to provide an important function at the Panorama development site by assuring that upstream irrigation, which may continue for years to come, will not contribute to an unmitigated high water condition on the Panorama site. A combination of existing and new tile drains are expected to be an integral part of the site drainage system. It will assure that off-site contributions to groundwater are conveyed through the property to CVWD agricultural drains, that on-site perched groundwater levels are controlled and managed, and that the on-site stormwater retention facilities will drain in an effective and predictable manner.

It is expected that the existing private tile drain system within the Panorama site will be crushed and compacted in place in order to eliminate future development related conflicts. Existing offsite private tile drains located upstream of the Panorama site will be protected in place with their existing CVWD drain connections within the existing easement in the proximity of "A" Street also to be protected in place to allow for the existing offsite system to remain.

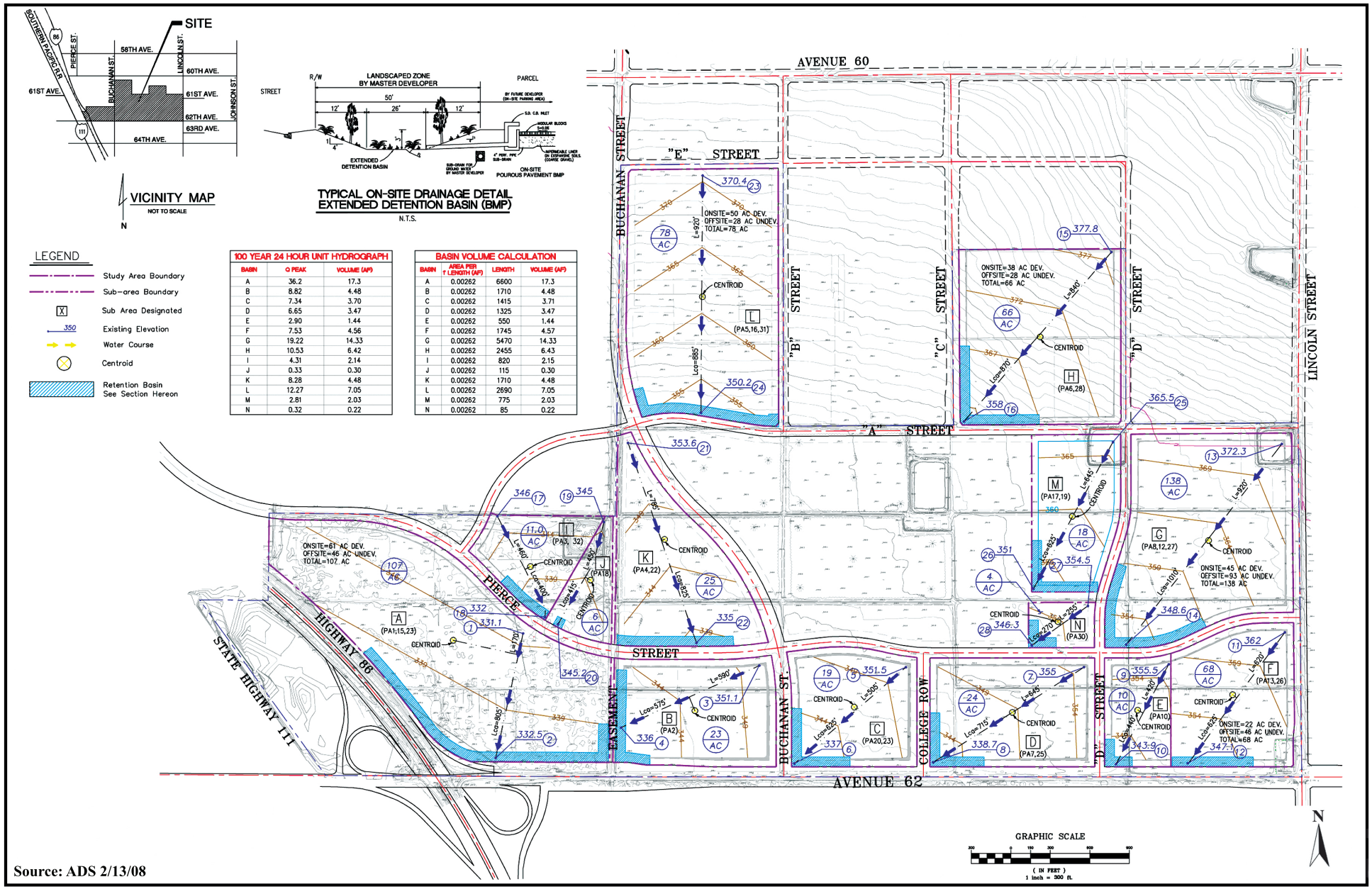
In order to control groundwater elevations in the Panorama site's developed stage, the private tile drains will be replaced by a sub-drain system located within the north landscape greenbelt areas of Pierce Street and Avenue 62. This sub-drain system will then drain into the existing 8-inch CVWD concrete irrigation drains in Avenue 62 and existing Buchanan Street. CVWD has indicated that it would like to see a drain maintenance district established to assure funding for CVWD's maintenance of these facilities.

Surface and subsurface drainage facilities in the vicinity of the Panorama project were designed and constructed for agricultural drainage. CVWD has indicated that they will consider the use of these drainage facilities for urban drainage if: (1) the surface and subsurface drainage facilities can physically handle the new urban drainage, (2) the area is incorporated into the National Pollution Discharge Elimination System Permit and Waste Discharge Requirements for the discharge of stormwater into the Whitewater River Watershed, which is known as the MS4 Permit, and (3) the project is annexed into a future district(s) for recovery of capital and operation/maintenance costs associated with the new urban drainage.

D. Stormwater Detention/Retention Facilities

Consultations with the regional flood control agency, CVWD, as well as on-site and off-site hydrology analysis conducted for the Panorama Specific Plan, indicate the need for the Panorama project to retain on site the additional stormwater runoff that will result from project development. In its current state of cultivation, the site generates limited volumes of runoff even in major storms. However, in its developed state, the project will include extensive areas of impermeable surfaces from which rain will run off; this "additional" runoff (difference between existing and future) is the responsibility of the project to retain on site.

To capture, convey and retain this on-site runoff, a system of on-site stormwater retention facilities have been designed, located and sized to accommodate the projected stormwater volumes. The retention basins have been primarily integrated into the augmented roadway parkway system and are to be situated at the low portion of each planning area, consistent with the Conceptual Grading Plan (see Exhibit IV-2, below).



100 YEAR 24 HOUR UNIT HYDROGRAPH

BASIN	Q PEAK	VOLUME (AF)
A	36.2	17.3
B	8.82	4.48
C	7.34	3.70
D	6.65	3.47
E	2.90	1.44
F	7.53	4.56
G	19.22	14.33
H	10.53	6.42
I	4.31	2.14
J	0.33	0.30
K	8.28	4.48
L	12.27	7.05
M	2.81	2.03
N	0.32	0.22

BASIN VOLUME CALCULATION

BASIN	AREA PER 1' LENGTH (AF)	LENGTH	VOLUME (AF)
A	0.00262	6600	17.3
B	0.00262	1710	4.48
C	0.00262	1415	3.71
D	0.00262	1325	3.47
E	0.00262	550	1.44
F	0.00262	1745	4.57
G	0.00262	5470	14.33
H	0.00262	2455	6.43
I	0.00262	820	2.15
J	0.00262	115	0.30
K	0.00262	1710	4.48
L	0.00262	2690	7.05
M	0.00262	775	2.03
N	0.00262	85	0.22

Source: ADS 2/13/08

TERRA NOVA®
Planning & Research, Inc.

Panorama Specific Plan
Conceptual Hydrology / Drainage Plan
Riverside County Unincorporated, California

IV-1

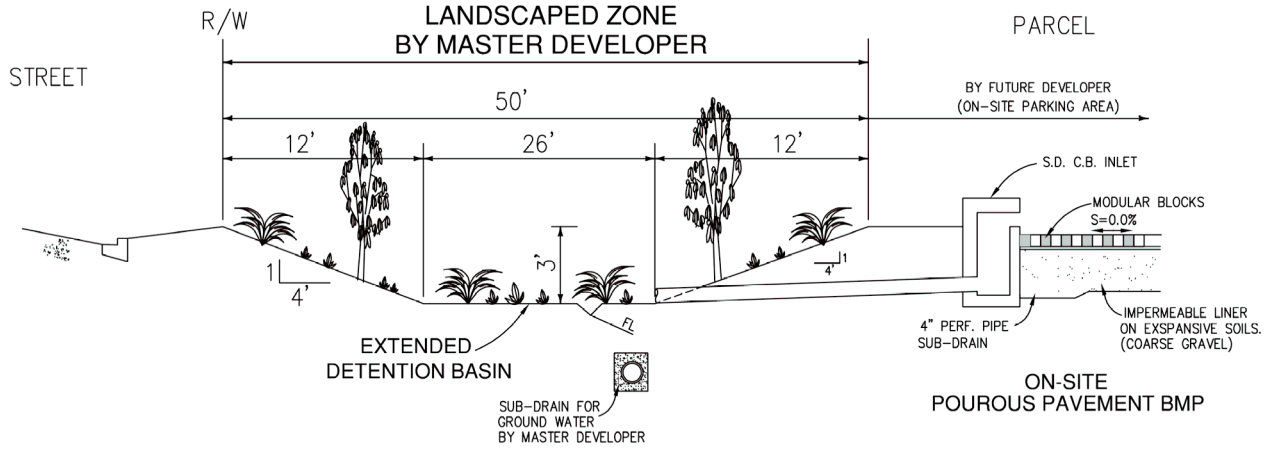
The Conceptual Hydrology Plan exhibit (Exhibit IV-1, above) shows the planned stormwater flow lines and retention basins. In the event stormwater tops these facilities, these waters will sheet flow onto the adjoining street and emulate the existing drainage pattern. There are currently no regional flood control facilities or master plan for the project area, although CVWD has initiated the aforementioned master flood control plan for the eastern Coachella Valley.

Flood Control and Recreation and Wildlife Habitat Enhancement

The controlling of stormwater flows, which is consistent with the goals and policies set forth in the Specific Plan, is viewed as an opportunity for multiple uses, including passive and active recreation, and wildlife enhancement. The on-site retention basins are to be designed with this multi-use function in mind.

In addition to the opportunity to integrate pedestrian, bike and equestrian trails into these facilities, these areas will be landscaped to encourage use by the numerous birds, small mammals and lizards that inhabit the site and planning area, and will provide meaningful areas for passive enjoyment. As a retreat from the more urban environments of the planning area, the retention areas will be important as a source of forage and cover, and offer opportunities for the continued integration of the natural desert habitat into the built environment.

Exhibit IV-2
Typical On-Site Stormwater Retention Basin



E. Drainage Plan Development Standards & Guidelines

The South Valley Implementation Program (SVIP) Design Guidelines provide some direction for the planning and design of stormwater retention facilities. The SVIP envisions the integration of these retention facilities into the linear park system, which is an integral part of the Panorama project design. Some of the standards set forth in the SVIP Design Guidelines and modified herein include the following:

A. The size and depth of on-site retention basins shall be designed to contain the project's additive contribution to the 100-year stormwater runoff calculated for the developed project.

B. A series of basins is highly recommended to achieve an undulation in the landscape and create interesting landscapes.

C. Basin sides and bottoms shall be either a living or inert groundcover. Inert ground cover should be at least 3/8–inch minus decomposed granite with a 60% large aggregate and 40% minus material at a 3-inch minimum final depth. Larger cobble and or rubble sized inert material is highly recommended and should be used in conjunction with the decomposed granite to create visual interest.

D. Boulders will be utilized with the other inert materials to create attractively designed landscapes.

E. Colors for all boulders and all inert materials shall be in the natural tans and beiges based on local natural earth tones.

Panorama Drainage Design Guidelines

In addition to the guidance provided by the SVIP Design Guidelines, the following guidelines are also provided to assure that stormwater facilities are effective, efficient and aesthetically satisfying complements to the overall master landscape design. These additional guidelines are as follows.

A. Major drainage facilities, including retention basins, shall be designed to maximize their use as multi-purpose recreational or open space sites, consistent with the functional requirements of these facilities.

B. All roof and canopy drainage shall be conveyed to the street or off-site in an approved, non-erosive manner. Drainage from development sites shall be conveyed in an approved manner so as to prevent erosion or instability. Water from off-site sources should not be allowed to discharge onto development sites or should be conducted through the site in a non-erosive manner.

C. Individual development proposals with the potential of generating significant runoff shall be required to prepare and submit a development-specific hydrology study and mitigation plan which implements regional and local requirements, policies, and programs.

D. Future flood control plans required of developers shall include specific recommendations and/or designs regarding pollution control techniques to be applied to keep pollutants, including herbicides, pesticides, and other hydrocarbons out of surface water and groundwater. Management measures may include specifically-designed open space areas such as artificial wetlands where nuisance and otherwise contaminated on-site runoff shall be retained separate from channels conveying off-site flow.

E. Hazards resulting from ponding at roadway intersections shall be engineered and improved to maximize drainage capacity of the streets and reduce associated driving hazards.

F. Pollution control techniques/facilities shall be incorporated into the project's design to keep pollutants out of surface and ground waters. Management measures shall include periodic street cleaning, the careful control/monitoring of pesticides and fertilizers, and the intercepting and/or pre-treatment of urban runoff prior to discharge into the retention areas.

F. Conceptual Grading Plan

The Panorama project site has been in active cultivation for several decades and has been fine graded to minimize runoff and maximize the efficacy of crop irrigation. As a result, the site is quite flat and rates of runoff are slow. The site is also subject to and has been designed to tie into the regional agricultural subsurface drain system that continues to make farming feasible despite high groundwater levels. These conditions and the general topographic slope of the site and vicinity to the south have helped to shape the project grading concept.

The grading concept results in a gently sloping series of contours all generally trending north to south. The refined proposed grades are designed to convey tributary and on-site runoff into the retention basins strategically located throughout the project. The analysis has been done project-wide and on a planning area level. Preliminary cut and fill calculations have been generated and result in an overall need to import approximately 40,000 cubic yards of fill over the life of project buildout. The following exhibit illustrates the conceptual grading plan development for the Panorama project.

Grading Standards & Guidelines

The South Valley Implementation Program (SVIP) Design Guidelines provide some direction for the earthwork planning and grading design. The grading plan has been directed by the relatively flat terrain and the need to integrate retention facilities into the community plan. The following standards are required by the County to assure that grading plans and permitting comply with applicable County and state regulations:

A. All grading activities shall conform to Riverside County Standards and shall meet the requirements of California Building Code, Riverside County General Plan, and Riverside County Ordinance 457 and all other laws, rules and regulations governing grading in Riverside County.

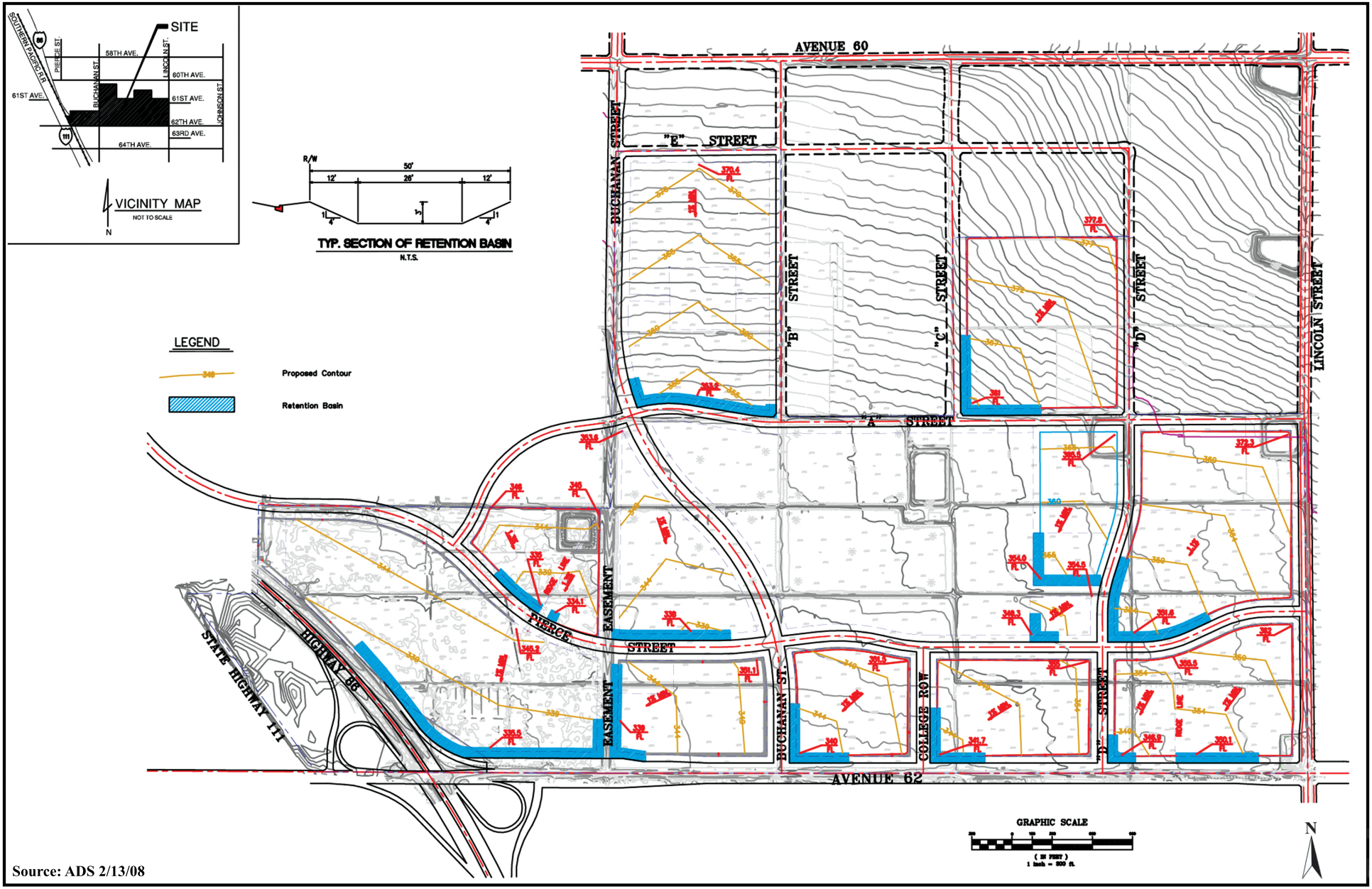
B. Grading shall be in substantial conformance with the overall conceptual grading plan and shall implement any grading-related mitigation measures outlined in the appropriate sections of EIR 489.

C. Grading shall conform to Riverside County regulations. If Riverside County requirements conflict with the Conceptual Grading Plan, the Riverside County regulations shall take precedence.

D. Erosion and sediment control plans shall be submitted concurrent with the submittal of grading plans, and shall assure that grading-related erosion and/or sedimentation are avoided or minimized. Erosion and sediment control plans shall conform to the applicable mitigation measures set forth in EIR 486 for Specific Plan 362.

E. Grading plans shall be submitted for portions or the entire site, with each plan serving as a discrete and self-sufficient site preparation activity with limited effect on adjoining lands.

F. Manufactured slopes shall be clearly shown and delineated on project grading plans, and shall conform to the geotechnical mitigation measures set forth in EIR 486 for Specific Plan 362, and appropriate subsequent geotechnical analysis.



Source: ADS 2/13/08

TERRA NOVA®
Planning & Research, Inc.

Panorama Specific Plan
Conceptual Grading Plan
Riverside County Unincorporated, California

G. Drainage Facilities Phasing, Financing and Ownership

Subsurface Drain System

The Panorama proponents are currently consulting with the CVWD on the phasing and financing of on and off-site facilities that maintain, expand and renovate the subsurface drain system. At least on an interim basis, the Panorama subsurface drainage system will remain connected to CVWD collector lines in Avenue 62 and Buchanan Street. It is anticipated that the backbone on-site collector system will be constructed concurrent with the construction of Pierce and "A" Street, as well as Avenue 62. The design and development of the on-site backbone collector system will be the responsibility of the master developer, and is expected to include all aspects of preliminary design, construction of new connections to CVWD facilities and the installation of on-site collectors, as described in Section IV-C, above.

Construction financing for the backbone subsurface drain system is expected to be the responsibility of the master developer, as well as individual planning area developers. Based on discussions with CVWD, it is currently envisioned that the backbone subsurface drain system will be constructed to CVWD specifications and conveyed to CVWD for ownership and maintenance. CVWD is considering the establishment of a facilities maintenance district to fund the long-term maintenance of these and associated facilities. Payments to the maintenance district would be made by the Panorama Master Property Owners Association and/or sub-associations.

On-Site Stormwater Drainage System

The proposed on-site stormwater management system will be constructed on a phased basis and has been designed to allow the on-site stormwater collection and retention system to be developed incrementally on a planning area basis (please see Exhibit IV-1). Each planning area provides a system of broad landscape and buffers and retention areas sufficient to accommodate the 100-year storm. Development of the Panorama site does not depend upon the development master on-site or expansion of off-site facilities. Therefore, financing and construction of these facilities will be the responsibility of the individual planning area developers. Each planning area's surface drainage facilities will be owned and maintained by its respective sub-association, with the ability of the Panorama Master Property Owners Association to assume responsibility, if necessary.