

5. CIRCULATION ELEMENT

5.1 Introduction

The purpose of the Circulation Element is to ensure a complete, balanced and well-maintained circulation system that relies on vehicular travel and transit, and incorporates alternative modes including bikeways and pedestrian facilities. The Circulation Element is designed to support the land uses promulgated in the Land Use Element. The Circulation Plan also is designed to support regional traffic that crosses the City, and allows Moreno Valley residents and businesses to travel comfortably to and from other cities and counties.

A primary objective of the Circulation Element is to ensure that the affects of future new development on the City's transportation system are understood and that the improvements needed to support new growth are planned and properly funded. Primary funding sources for these needed improvements are the Transportation Uniform Mitigation Fee Program (TUMF) and the Development Impact Fee Program (DIF). These fee programs establish a fair share contribution for new development.

This section of the Circulation Element establishes the overall setting of the transportation system, along with the issues and opportunities. The goals, objectives, policies and programs of the Circulation Element are contained in Chapter 9.5.

5.1.1 State of California Guidelines

This Circulation Element is prepared in conformance with 65302 of the California Government Code and the State of California General Plan Guidelines (1998). This Element is consistent with the goals, objectives, policies and programs of the Land Use Plan contained in the Community Development Element, Chapter 2 of the Moreno Valley General Plan. Other issues

related to this Circulation Element are addressed in the Utilities Plan contained in the Community Development Element, Chapter 2; and the Emergency/Disaster Preparation and Response Plan and Air Quality Plan contained in the Safety Element Chapter 6 of the Moreno Valley General Plan.

5.2 Background

The City of Moreno Valley possesses an extensive transportation network that consists of state highways, arterials and local streets, public transit, and nearby rail. This section examines the physical and regulatory parameters of the transportation network as it currently exists. From this background information, issues and opportunities that will affect the City's future transportation network can be understood.

5.2.1 Existing Roadways

The major regional east-west roadway is State Route 60 (SR-60), linking Moreno Valley to both neighboring and outlying communities. Additional regional level east-west travel is provided by Sunnymead Boulevard and Alessandro Boulevard, both of which are maintained by the City: Sunnymead Boulevard serves as the traditional commercial corridor of Moreno Valley. Alessandro Boulevard serves as a commercial and industrial corridor at its westerly end. Other major east-west routes within the City are, from north to south, Ironwood Avenue, Eucalyptus Avenue, Cottonwood Avenue and Cactus Avenue.

Although immediately to the west of the City, Interstate 215 (I-215) is the primary regional route for north-south travel, linking Moreno Valley to both neighboring and outlying communities. Additional regional north-south routes include Perris Boulevard, Redlands Boulevard and Gilman Springs. Other north-south access is provided by Moreno Beach

Drive and Pigeon Pass Road/Frederick Street.

5.2.1.1 Interstate and State Highways

I-215, located on the western edge of the City, is the major north-south regional transportation route within the City, connecting Moreno Valley to Riverside, San Bernardino and San Diego Counties.

SR-60, or the Moreno Valley Freeway, is the major east-west transportation route within the City. The Moreno Valley Freeway connects Moreno Valley with the coastal cities and the greater Los Angeles area to the west. It also merges with Interstate 10 (I-10) to the east, and connects to the communities of Beaumont, Banning, and the cities of the Coachella Valley. I-10 is the major route connecting Southern California to the states of Arizona, New Mexico, Texas, and the Gulf States. As such, this route carries a significant amount of traffic through Moreno Valley.

5.2.1.2 Existing Roadway Deficiencies

For the purpose of identifying deficiencies on the General Plan circulation system, daily traffic volumes are compared to roadway capacity standards in the form of a volume to capacity ratio. The volume to capacity ratios are correlated to Levels of Service (LOS)¹. Roadway segments that exceed the City's LOS standard are defined as deficient. Existing deficiencies are identified and corrected through the City Capital Improvement Program.

Other deficiencies are caused by regional traffic, which is affected both by regional growth and state and regional transportation policies. These deficiencies are addressed through close coordination with State and regional agencies.

¹ Reference Section 5.2.6.1 for a definition of Level of Service, and Table 5-1

5.2.2 Regional Plans

Regional access is an important function of the transportation network, allowing safe and efficient travel between cities, counties and states. Efficient regional access supports the economic development and general welfare of the community and helps maintain acceptable levels of service on local streets.

Planning for regional access requires strong coordination between the City and regional and state agencies, including: Western Riverside Council of Governments (WRCOG), Riverside County Transportation Commission (RCTC), the Southern California Association of Governments (SCAG) and Caltrans. This coordination must involve both the land use and infrastructure decision-making.

The following regional plans have been established to organize and implement regional transportation planning efforts:

5.2.2.1 Regional Transportation Plan

The Regional Transportation Plan (RTP) is a component of the Regional Comprehensive Plan and Guide prepared by the Southern California Association of Governments (SCAG) to address regional issues, goals, objectives, and policies for the Southern California region into the early part of the 21st century. The RTP, which SCAG periodically updates, sets broad goals for the region and provides strategies to reduce problems related to congestion and mobility.

The RTP identifies transportation facilities that are of regional significance. In order to be eligible for federal funding assistance, transportation projects must be consistent with the RTP.

5.2.2.2 Riverside County Integrated Project

Transportation corridors in the general vicinity of the City of Moreno Valley are being

analyzed as part of the Community and Environmental Transportation Acceptability Process (CETAP) undertaken jointly by the County of Riverside and the Riverside County Transportation Commission (RCTC). CETAP is one component of the Riverside County Integrated Project (RCIP), which also includes the Riverside County General Plan update and a Multi-Species Habitat Conservation Plan (MSHCP) for Western Riverside County. A primary objective of the RCIP is to accommodate projected population growth within Riverside County by focusing development within areas that will be readily accessible, will provide a good quality of life for future residents, and will minimize environmental and community impacts, including impacts to sensitive habitats and endangered species. The CETAP process seeks to create four transportation corridors in Western Riverside County. Two of these are internal to Riverside County (Winchester to Temecula; Hemet to Corona/Lake Elsinore), and two are inter-county corridors (from Moreno Valley County to San Bernardino County and Riverside County to Orange County).

5.2.2.3 Congestion Management Program

The Riverside County Congestion Management Program (CMP) is updated every five years by RCTC in accordance with Proposition 111, passed in June 1990. The CMP was established in the State of California to more directly link land use, transportation and air quality and to prompt reasonable growth management programs that would more effectively utilize new and existing transportation infrastructure to alleviate traffic congestion and improve air quality. Local agencies are required to monitor how new development projects will impact the CMP network. This is an important component for congestion management because deficiency plans must be prepared for locations on the CMP network that decline below a Level of Service (LOS) E. The ability to address such deficiencies before they occur is critical.

Understanding the reason for these deficiencies and identifying ways to reduce the impact of future growth and development along a critical CMP corridor will conserve scarce funding resources and help target those resources appropriately.

5.2.3 Bikeway System

The Moreno Valley Bikeway Plan consists of Class I, Class II and Class III routes. Class I bikeways are dedicated trails, separated from vehicular traffic. Class II are designated, striped bikeways generally located along the right shoulder of the roadway. Class III routes are designated bikeways, not striped, and are shared with vehicles. These bikeways provide the opportunity for an alternative mode of transportation for both recreational and commuting uses.

5.2.4 Public Transit

Public transit in the City of Moreno Valley consists primarily of bus service. In the future, it is anticipated that Moreno Valley will also have access to commuter rail and Bus Rapid Transit (BRT) services. Major components of the public transit system are described below:

5.2.4.1 Bus Service

The ability to efficiently maneuver within and outside Moreno Valley is predominantly dependent on the automobile. Moreno Valley is working closely with the Riverside County Transportation Commission, the Riverside Transit Agency and other local governments to establish efficient transit connections among areas of activity and concentrated development.

Transit Oasis: The Transit Oasis is a mobility concept that has been promoted as part of the RCIP, and may provide a viable option to the automobile. The concept of the Transit Oasis is to provide an integrated system of local-serving, rubber-tired transit

that is linked with commuter transit systems (either rail or bus). To operate efficiently, this system should be located in areas of concentrated development, and areas of high activity. A Transit Center allows ease of transfer between transit lines. Its use should be considered wherever three or more lines converge (e.g. Moreno Valley Mall).

In Moreno Valley, a Transit Oasis would serve to transport commuters to the proposed Metrolink station near the I-215 and Alessandro Boulevard interchange (see next section).

5.2.4.2 Commuter Rail

Currently, the RCTC owns a rail line located west of Moreno Valley, parallel to I-215. This is a service line track that carries a low volume of freight trains to and from industrial, commercial, and agricultural areas, south of Moreno Valley. As a Measure A project, RCTC intends to initiate commuter rail service on this line that would extend to San Jacinto. A commuter rail station is planned for the southwest quadrant of Alessandro at I-215 that would provide direct access for Moreno Valley residents. Service is scheduled to commence in 2008.

5.2.5 Truck Circulation

Roads upon which trucks travel need to be both wider and thicker to accommodate truck turning radii and the heavier weights of their structure. Chapter 12.36 of the City Municipal Code regulates the travel and access of trucks on the City road system, and designates official truck routes. Designated truck routes change over time as new arterials are built, and commercial and industrial projects are completed.

Regionally, triple trailer trucks hinder circulation on state and local highways.

5.2.6 Traffic Levels of Service

5.2.6.1 Level of Service Definitions

The quality of traffic flow is measured in terms of Levels of Service (LOS). The Transportation Research Board of the National Academy of Science has developed the Highway Capacity Manual that provides standards and methods for measuring LOS. The manual is updated periodically. The most current edition is the Fourth Edition, which was initially published in 2000.

Six LOS measures are defined for each type of roadway facility. Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions and the driver's perception of those conditions. Safety is not included in the measures that establish service levels.

Table 5.1, which follows, describes the levels of service by associated traffic condition.

5.3 Issues and Opportunities

This section identifies the issues and opportunities associated with expected future development and its effect on the City's transportation system. From this assessment, a strategy of goals, objectives, policies and programs will be developed to ensure that the improvements needed to support new growth are planned and properly funded.

5.3.1 Level of Service

An important goal when planning the transportation system is to maintain an acceptable level of service along the roadway network. It is recognized, however, that roadway operations at Level of Service "D" may occur during peak hours and at certain intersections. In particular,

north-south roadways in the vicinity of State Route 60 have geometric constraints that will prevent Level of Service "C" from being achieved. In other cases, peak hour intersection traffic may operate at Level of Service "D" due to high employment concentrations.

The City of Moreno Valley roadway network currently meets the City Level of Service standards of "C" or "D", with the exception

of a limited number of segments. The segments that do not meet the standards are primarily located on Perris Boulevard, Cactus Avenue and Frederick Street/Pigeon Pass Road in the vicinity of State Route 60. Subsequent segment studies will be performed to determine additional improvements necessary to maintain an acceptable Level of Service at General Plan buildout.

**TABLE 5-1
LEVEL OF SERVICE DESCRIPTIONS**

LOS	Traffic Flow Conditions
A	Free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual behavior.
C	Stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.
D	High-density, but stable, flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.
E	Operating conditions at or near the capacity level. All speeds are reduced to a low but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high. Operations at this level are usually unstable, because small increases in flow or minor perturbations within the traffic stream will cause breakdowns.
F	Level-of-Service F. Forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount, which can traverse the point. Queues form behind such locations. Arrival flow exceeds discharge flow.

Source: 2000 Highway Capacity Manual (HCM) (Transportation Research Board Special Report 209)

5.3.2 Development Monitoring

Any individual development proposal may be required to provide a traffic analysis to assess peak hour impacts at affected intersections, identifying needed mitigation measures to achieve or maintain the recommended peak hour Level of Service standard. Such impacts may be mitigated by construction of improvements necessary to achieve the target Level of Service, by payment of a fee or fees if an appropriate funding mechanism is in place, and/or by any other appropriate means.

5.3.2.1 Arterial Segments that Require Further Study

Several arterial segments on the City's circulation system will require further study for at least one of three reasons discussed below:

(1) Segments will need improvements but require inter-jurisdictional coordination.

Two arterial segments have been identified that require further study in cooperation with neighboring jurisdictions. Specifically, these are:

a) Day Street from Box Springs Road/Ironwood Avenue to Campus Parkway: Most of this arterial segment is located in the City of Riverside, with portions in the City of Moreno Valley. The Circulation Element traffic study has shown that traffic volumes will significantly exceed the design capacity of this arterial segment. In addition, the arterial segment under crosses State Route 60. Therefore, Caltrans would also be a participant in planning for any improvements on this segment of Day Street.

b) Kitching Street from south City limits to Oleander Avenue: This segment of Kitching Street would cross a flood control channel and intersect with Oleander Avenue in the City of Perris. This segment is needed to

ensure that travel demand is kept in balance with the design capacities of the north/south arterials in the southern part of the City of Moreno Valley at General Plan build-out conditions. Although Kitching Street is shown in the City of Moreno Valley Circulation Element, it is not currently included in Perris' future year roadway network. Coordination with Perris is required to facilitate full development of Kitching Street from the City limits to Oleander Avenue. At Lateral B, Kitching Street should jog to the east to align with Redlands Avenue as depicted in the 2004 City of Perris Circulation Element.

(2) Segments will require significant encroachment on adjacent development if built-out to their Circulation Element designations.

Two arterial segments are currently built-out as two-lane streets, although identified as four-lane streets in the City's Circulation Plan (Figure 9-1). These are Indian Street from Sunnymead Boulevard to Cottonwood Avenue and Eucalyptus Avenue from Heacock Street to Perris Boulevard.

Most of the areas adjacent to these streets are built-out. The construction of additional lanes as called for in the City's Circulation Plan would encroach on existing development. The City will need to perform area-wide circulation studies to determine the impact of retaining the above cited segments as two lane streets and to identify alternative mitigation measures if they are down graded.

(3) Segments will need improvements but their ultimate traffic volumes slightly exceed design capacities.

For certain roadway segments, the Circulation Element traffic study shows that at General Plan build-out conditions, traffic volumes are expected to exceed design capacities. Although the Circulation Plan specifies the number of through lanes for

each arterial segment in the City, it does not specify additional lane improvements at intersections or various other traffic operational improvements that would typically be needed to remediate excess demand and achieve acceptable level of service conditions. These segments will require further study to determine if additional improvements will be needed to maintain an acceptable LOS at General Plan build-out. Generally, these segments will be identified and studied as new developments are proposed in their vicinity. Measures will be identified that are consistent with the Circulation Element designation of these roadway segments, such as additional turn lanes at intersections, signal optimization by coordination and enhanced phasing, and travel demand management measures.

5.3.2.2 Industrial Development

Industrial and business park development is concentrated in the southern part of the City, generally located south of Iris Avenue and north of San Michele Road to the Perris city limits. This development is an important component of the City land use pattern, providing significant local employment opportunities for Moreno Valley residents and municipal revenue to support high levels of public services and facilities. To support this development, a sound network of arterial and collector streets is needed.

5.3.2.3 School Circulation

Schools generate significant traffic, particularly during the weekday morning peak hours. This condition is expected to continue through City build-out because of the large existing and expected population of families with children and the lack of school district funding to support bussing. Coordination with school districts and adjacent jurisdictions is and will continue to be an important method for ensuring that adequate vehicular and pedestrian circulation to schools is provided.

5.3.2.4 Geographical Constraints

Moreno Valley is bordered by the Box Springs Mountains on the north and the Badlands on the northeast and east. South of the City is the San Jacinto fault line and Lake Perris, and to the west in the March Air Reserve Base/March Inland Port. Because of these constraints, effective regional circulation is critical to Moreno Valley's continued growth and maintenance of the quality of life. This will require coordination with adjacent local governments and County and regional agencies to monitor future regional growth.

5.3.3 Regional Issues

An effective regional transportation network will require that regional growth and development trends are understood and accommodated.

5.3.3.1 Regional Growth

Population and Employment: Demographic data compiled by SCAG in support of the 2001 RTP demonstrates that the Western Riverside region, inclusive of Moreno Valley, is currently a jobs poor region with only 0.31 jobs for every Western Riverside County resident. Most of the population commutes outside the Western Riverside region, and many outside the County to work. This demographic profile puts a greater demand on both local and regional roadways.

By 2025, the proportion of jobs to population in Western Riverside County is expected to increase to 0.35. Between 2000 and 2025, the population of Western Riverside County is expected to increase from 1,199,004 persons to 2,232,983 persons, an increase of 86.2% over the 25-year period or 2.5% per year. During this same period, employment is projected to increase from 371,318 jobs to 801,806 jobs, an increase of 115.9% over the 25-year period or 3.1% per year, a

notably larger rate of increase than for population.

Age: The population of Moreno Valley, similar to Riverside County and the nation, is aging. According to 1990 and 2000 United States Census information, the median age for Riverside County increased from 31.5 years in 1990 to 33.1 years in 2000. This aging trend is expected to continue through 2025. An aging population will require clearly readable road signage and more public transit.

5.3.3.2 March Air Reserve Base/March Inland Port

March Air Reserve Base/March Inland Port is currently active as a center for military reserve activities and as a military communication center. Although its long-term future is uncertain, it is not slated for expansion or closure at this time. From a transportation standpoint, all vehicular access to and from the Base must travel through Moreno Valley on Cactus Avenue or Elsworth Street.

5.3.3.3 Regional Roadway Deficiencies

The Box Springs segment of SR-60 / I-215 is one of the most congested segments of the Riverside County freeway system. It is also the primary access route for Moreno Valley commuters to employment and activity centers that are located in Orange County, Los Angeles County, and western portions of Riverside and San Bernardino Counties. Currently, the Box Springs segment carries about 160,000 vehicles per day, and generally operates at LOS F during peak travel periods. Besides high traffic volumes and limited lane capacity, other factors that contribute to severely congested conditions on this segment are a significant percentage of large trucks, a steep road grade, and the merging of two state highways.

Although the Box Springs segment is outside of the City of Moreno Valley, mitigation of this bottleneck is of utmost importance because its congestion affects a vast number of city residents, and ultimately could impede fruition of the City's General Plan.

Currently, Caltrans has a plan to improve the Box Springs segment by adding auxiliary lanes, High Occupancy Vehicle (HOV) lanes, and construction of an eastbound grade separated truck by-pass lane at the SR-60 / I-215 interchange. The City of Moreno Valley advocates these improvements and additional improvements including at least two new general-purpose lanes and a grade separated HOV lane from westbound SR-60 to southbound I-215. In addition, the City advocates for alternatives that would divert traffic from the Box Springs segment. Examples include extension of the San Jacinto branch line for Metrolink, CETAP improvements proposed for the Moreno Valley to the San Bernardino Corridor, and TUMF improvements proposed for Cajalco Road, Alessandro Boulevard, Central Avenue and Van Buren Boulevard.

5.3.4 Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) are utilized to improve the safety and performance of the surface transportation system using new technology in detection, communication, computing, and traffic control. These systems increase the efficiency and safety of the regional transportation system and can be applied to arterials, transit, trucks, and private vehicles. Further, traveler information can lessen the impact of accidents and other special events in the City, which ultimately may reduce delay and congestion.

The Riverside County Transportation Commission (RCTC) approved the Inland Empire ITS Strategic plan in 1997. The Strategic Plan contains a list of goals and

policies to be followed by responsible agencies within the County to achieve a viable ITS infrastructure that improves mobility and enhances safety. Nine core ITS components have been identified by RCTC. These components include traffic signal control, transit management, incident management, electronic fare payment, electronic toll collection, railroad grade crossings, emergency management services and regional multimodal traveler information.

The City should encourage the integration of Intelligent Transportation Systems consistent with the principles and recommendations referenced in the Inland Empire ITS Strategic Plan as the transportation system is implemented.

5.3.5 Transportation Demand Management

Transportation demand management (TDM) strategies reduce dependence on the single-occupant vehicle, and increase the ability of the existing transportation system to carry more people. The goal of TDM is to reduce single occupant vehicle trips during peak hours and modify the vehicular demand for travel.

A reduction in peak hour trips and a decrease in non-attainment pollutants can be achieved through the implementation of TDM strategies. Examples of the strategies include: carpooling, telecommuting, flexible work hours, and electronic commerce that enables people to work and shop from home.

In the last decade, the region's number of trips and amount of travel has grown at a faster rate than the population growth. TDM strategies are designed to counter this trend. The region cannot build its way out of congestion; it has neither the financial resources nor the willingness to bear the environmental impacts of such a strategy. TDM is one of the many approaches that will be used to maintain mobility and access as the region continues to grow and prosper.

5.3.6 Funding

New developments are responsible for participation in Transportation Uniform Mitigation Fee Program (TUMF) and the Development Impact Fee Program (DIF). In many cases, individual developments will be able to dedicate right-of-way and/or construct improvements that are part of the TUMF and DIF programs in lieu of paying fees.