CLOSING GENERAL SESSION

From Mule Tracks to Light Rail Transit Tracks

Integrating Modern Infrastructure into an Ancient City—Jerusalem, Israel

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In this article we will describe the Jerusalem, Israel, light rail project, its progress and prospects to date. Jerusalem is one of the world's oldest cities. The focus of three of the world's religions, the city has been a center of conflict for many years.

As a holy city for the three monotheistic faiths—Judaism, Christianity, and Islam—Jerusalem has always had a highly symbolic value. The stunning Dome of the Rock, built in the 7th century and decorated with beautiful geometric and floral motifs, is recognized by all three religions as the site of Abraham's sacrifice. To the Muslims, it is where the prophet Muhammad ascended to heaven. To the Christians, it is where the crucifixion and the resurrection of Jesus took place. The Wailing Wall is part of a remaining exterior wall surrounding the Ancient Temple of the Jewish people whilst the Resurrection Rotunda protects Christ's tomb.

The designers have succeeded in meeting the challenge of integrating state-of-the-art light rail transit (LRT) tracks into an historic city's mule tracks. The light rail line will replace existing automobile traffic lanes at street level and create a more aesthetic environment adjoining the Old City's walls. A new regional transportation plan, a revised and strengthened bus system, parking policies, downtown traffic management, and downtown revitalization all accompany this impressive effort at changing the way the public perceives their city.

Alongside the Old City, an international team of planners has outlined a network of LRT lines and focused on designing a first LRT line in Jerusalem. This is the story.

MULE TRACKS—FORCES SHAPING JERUSALEM'S DEVELOPMENT

Jerusalem—A Historical Review

Only in the 19th century did Jerusalem begin to expand beyond the walls of the Old City. Its growth was primarily along the ancient arterial roads to the west in the direction of the coastal plain (Jaffa Road), the watershed routes to Ramallah, Nablus, and Damascus (Ramallah/ Damascus Road), to the north, and Bethlehem and Hebron (Bethlehem and Hebron Roads) to the south, and Jericho (Jericho Road) to the east. Expansion eastward was limited by the steep topography, large burial grounds, and less favorable climate. Thus most of the expansion was to the west, north and south of the Old City walls.

The British Mandate marked the beginning of planning in Jerusalem. Planners brought to the Holy Land by the British delineated boundaries, initiated zoning and created a vision for

Jerusalem's future. The plans emphasized expansion to the west in the form of a series of "garden cities" while preserving the valleys in their natural state.

Until the 1967 Six Day War, Jerusalem was an isolated backwater, linked to Israel's coastal plain by one major road and an old, slow intercity railroad. With reconnection to its hinterland, the city's isolation ended and Jerusalem developed into a metropolis with transportation, economic, and social links with the area around it. The Jewish population in the metropolitan area increased from 198,000 in 1967 to 455,000 in 2001; and the Arab population grew from 69,000 to 415,000. This reflects an Arab growth rate larger than the Jewish one. Today, in the year 2003, the city's municipal jurisdiction is home to 681,000 persons. Jerusalem is the largest city in Israel in population and in area with 126 km^2.

From a transportation perspective, it is essential to consider all areas adjoining the municipal boundaries irrespective of political or demographic composition. Surrounding the municipality are Arab communities to the north, south and east. Government housing policies have created large Israeli satellite communities around Jerusalem and other small agricultural settlements have developed into suburbs of single-family homes. Together, the metropolitan area contains about 1.3 million residents.

Despite the economic progress and growth of the city, motorization remains below the national average, resulting in a higher than average modal split in favor of public transportation.

Topography and Ancient Road System

Jerusalem's rich past is present in the architecture of the Old City's walls, streets, and structures. Still surrounded by the high stonewalls built by the Ottoman Turks in the 1500s; the Old City is the historic heart of Jerusalem. It covers a rectangular area of approximately 1 km^2. The city walls are about 12 m (40 ft) high and 4 km (2.5 mi) long. Eight gates, built in the 2nd century and reconstructed in the 16th century, serve as entrances to the city. Until the late 1800s, these gates were locked at night to protect the city's inhabitants. The improved security in the countryside, the overcrowding inside the walls, and the rising standard of living around the world persuaded the first pioneers to establish communities outside the walls in the early 19th century.

Since ancient times, Jerusalem's form has been dictated by its location atop the hills of Judea and Samaria. Jerusalem sits astride the crest between two watersheds. To the east, the topography descends to the Jordan Valley and the Dead Sea (Syrian–African rift); to the west, a descent of 60 km to the Mediterranean Sea. Jerusalem's altitude ranges from 520 m to 836 m (1,706 ft to 2,742 ft) above sea level. Although the center city of West Jerusalem sits on a relative plateau, the topography is such that even in the north–south direction the alignment of any transportation infrastructure is difficult (Figure 1).

Jerusalem was a central point on the ancient Kings Highway that traversed the mountain ridge. The primary roads leading into the city all lead to separate gates to the Old City. Jaffa Gate and Damascus Gate are named after the roads that begin at the Old City wall and proceed west and north respectively. Many of the villages surrounding Jerusalem were located on hills linked to the city by these original roads. These early roads and small villages are the nuclei of the city that exists today (Figure 2).

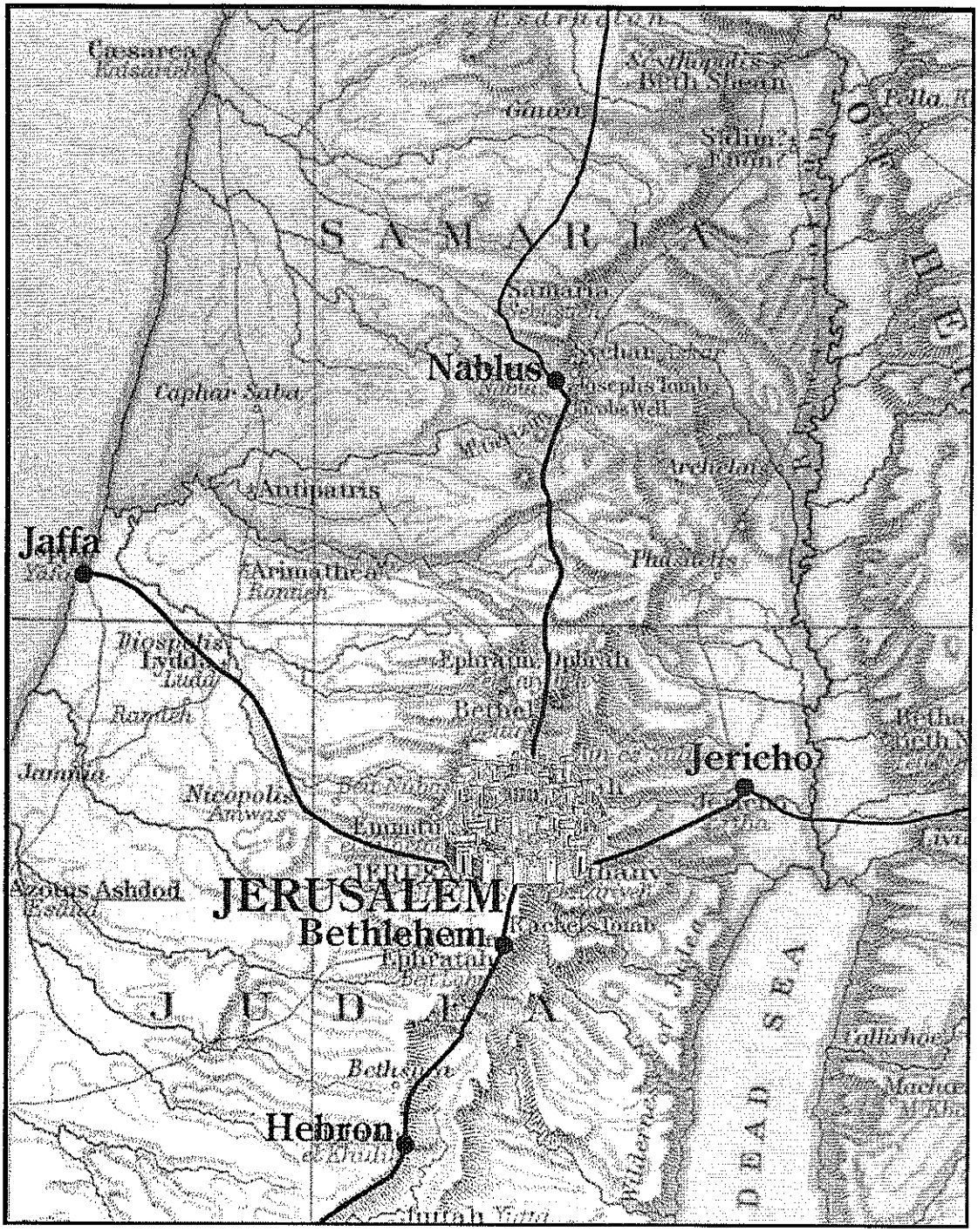

FIGURE 1 Jerusalem and its historic environs.

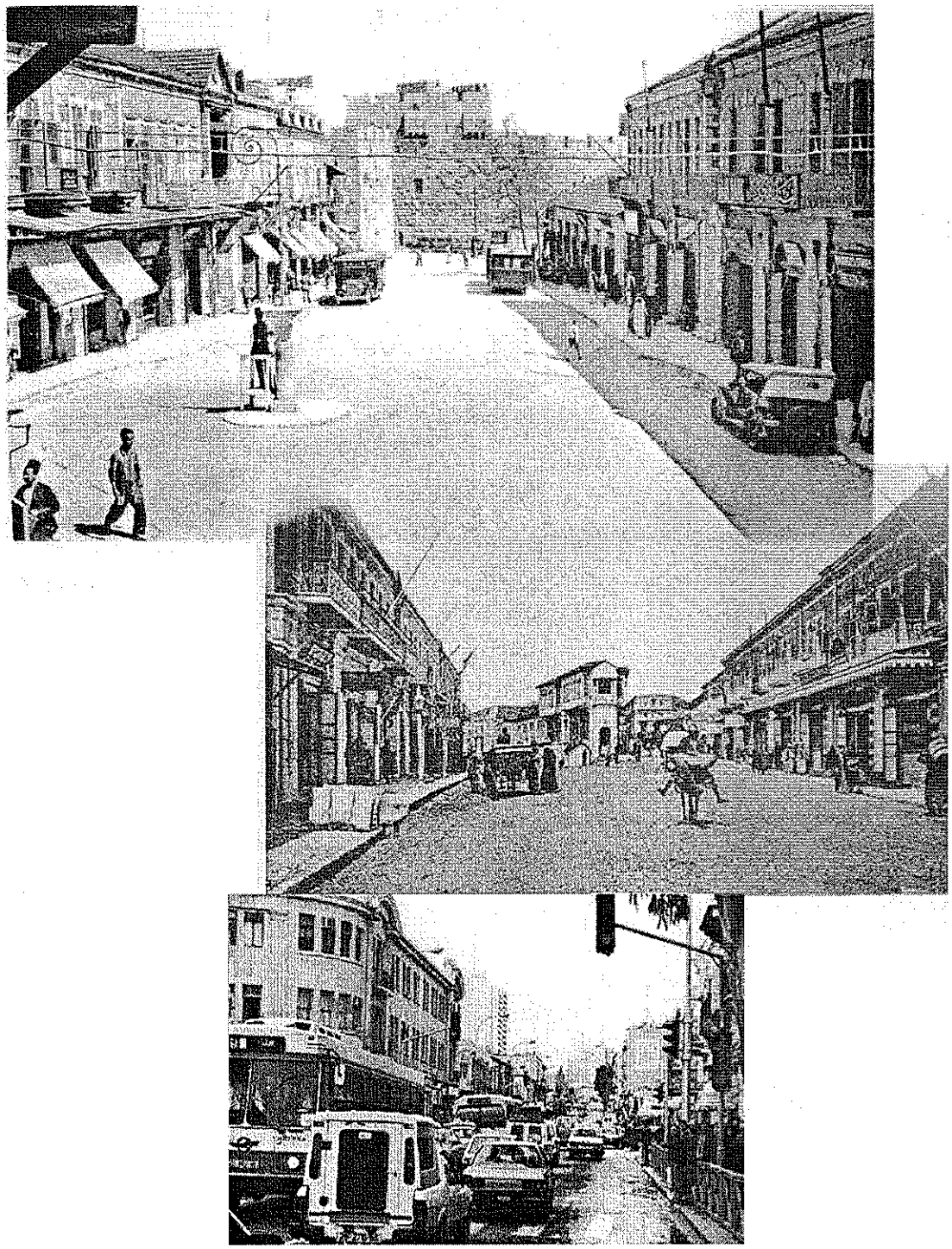

FIGURE 2 Jaffa Road – then and now.

The ancient form described above, with some additional roadways, is the skeleton of today's regional roadway system. The expanded and densely populated northern suburbs still link to Center City, Jerusalem through the Damascus–Ramallah Road. Jerusalem's urbanized area occupies the hilltops radiating from the Old City. In the sections where planning principles are implemented, the valleys are preserved as open space and the ridges and the upper part of the slopes are used for building. Thus, a unique urban form is achieved and preserved.

The population increase, economic development, and the increase in motorization necessitate much planning activity to answer the demand for roadway infrastructure in the city itself and its links to the rest of the country. In the past decade civil engineering projects that were without parallel in any period in Jerusalem's history have been constructed. New roads, tunnels, and long bridges have become part of Jerusalem's landscape, in an expensive effort to overcome the natural topography of the area.

URBAN CRISIS

Transportation Crisis

Jerusalem's present population generates 433,000 motorized trips per day, with approximately 46,000 in the peak morning rush hour. In 1996, the modal split was 55% private car, 39% public transport, and 6% other modes. This still relatively high public transport use represents a dramatic decline from the 60% public transport use of the early 1980s, and continues to decline. Only the growth of the city's population keeps absolute ridership relatively stable, preventing massive service cutbacks. The profile of the average public transport user has also changed. While among the ultra-orthodox Jewish population bus use is still the norm, in the general population users are increasingly limited to the elderly, young, and adults without a driver's license (often women).

Congestion in peak hours is the norm. Except for limited stretches, buses suffer in traffic jams along with general traffic. On the other hand, bus routes rarely use the new Road 4 freeway, which remains relatively free flowing.

The present security situation only exacerbates these trends, encouraging private vehicle purchase and riders to abandon the vulnerable bus system.

Land Use Crisis

While the city grew, Jerusalem's downtown continued to deteriorate. When examining statistics between 1988 and 1994 the following trends emerge:

- The total number of dwelling units in the city increased by 13.2% while the number of units in the city center decreased by 2.4%
- The city's population increased by 15.6% while the population of the city center increased by only 1.4%
- The number of businesses and offices in the entire city decreased by 0.8% in contrast with a decrease in downtown of 3.3%
- On the other hand, shopping and office centers outside of downtown began to emerge in areas with wider streets, more parking, and easier accessibility to the roads to Tel Aviv. These

trends underscored the need to improve the attractiveness of downtown. Like other cities, Jerusalem faces a series of problems that must be solved with a multipronged, long-term approach.

- The relative attractiveness of cosmopolitan Tel Aviv, and the ease of commuting to alternative employment centers.
- Drift of young, educated people to other places in Israel.
- Businesses and families abandoning the city to suburbs.
- Backward, unaesthetic condition of downtown Jerusalem and the rapid expansion of outlying commercial and employment areas.
- A vicious cycle of deteriorating conditions, declining tax revenues, and poor prospects for improvement.

Environmental Crisis

Among the several causes that contribute to the deterioration of the downtown is traffic. Congestion on the city's streets repels visitors. The noise, air pollution, crowding, lack of security, and narrow sidewalks all add to the unpleasant ambience. This is contrasted with modern, climate-controlled shopping malls in the new commercial areas.

TRANSPORTATION SOLUTIONS

Priority for Public Transport

The dramatic growth in private vehicle use in Jerusalem in the 1990s paralleled an unprecedented rise in the standard of living fueled by the high-tech phenomenon. Growing tax rolls allowed the implementation of long-dormant road projects, politically popular with the increasing ranks of car owners. Yet by the end of the 1990s, drivers remained frustrated with growing delay and congestion. Despite the ever-expanding road network, the Ministry of Transportation was forced to reevaluate its policies of favoring road investment and decreasing support for the subsidized bus system. In the Tel Aviv area, a fledgling suburban rail service met with dramatic success, with 30% to 35% ridership growth from year to year. The precedent had been set for government public transport infrastructure investment, especially in new urban rail systems.

Support for public transport investment came from other quarters as well. The growing environmental movement linked rail investment directly with environmental benefits such as reduced air and noise pollution, increased building densities and limits on urban sprawl. Growing awareness and support for groups with special accessibility needs led to the passing of regulations requiring handicapped access in all new public transport vehicles. Urban rail was seen as the ideal solution for seamless, level accessibility for these groups.

Finally, the urban planning establishment in Israel recognized in earnest the linkage between urban vitality and the quality and quantity of accessibility provided by modern urban rail systems; and the destructive nature of a preference for private vehicle accessibility on historic cities such as Jerusalem.

The last few years have not been kind to public transport patronage in Israel, as the security situation drives passengers from the urban and intercity bus network. Yet interestingly

enough, the suburban Tel Aviv rail network continues to register dramatic yearly gains in patronage, attesting to the acceptance of this mode in a country with no historic tradition of rail use.

Integrated Transport Plan for Jerusalem

Since the reunification of the city in 1967, transport-planning policy for Jerusalem focused primarily on the development of new and widened urban arterial roads, allowing for the linking of newer, outlying areas of the city with the center in a radial pattern. Plans were prepared in the early 1970s to penetrate the historic core of the city with new roads requiring massive urban displacement, tunnels, and interchanges.

Public outcry and increasing political clout of neighborhood groups quashed these plans. Nevertheless, road development in the outer, newer areas continued unabated, culminating in the implementation of Road 4, a limited access north–south artery in the western part of the city. Road 4 broke the radial pattern, providing an alternative to the ancient north–south "Watershed" road, and allowing traffic to bypass the historic center. At the same time, and on a limited basis, bus lanes were implemented along some of the major radial corridors accessing center city.

The decision to expand the municipal boundaries of Jerusalem, center city decline, and the still mounting problems of congestion demanded a more comprehensive planning approach through the creation of an integrated transport strategy. The resulting plan has become widely accepted and is now awaiting formal approval in the framework of the new Jerusalem District Master Plan (Figure 3). Its major elements include:

- Creation of a ring road system around Jerusalem, consisting of a smaller, inner ring encompassing the contiguous built up area of the city and an outer ring including existing and planned outlying areas. The outer ring road will function to collect intercity and metropolitan traffic and distribute it to an urban arterial close to the trip destination, minimizing through traffic on city streets.
- Within the area encompassed by the outer ring road, clear priority will be given to the development of an extensive mass transit system, consisting of eight future light rail routes. Development of this system will include the appropriation of general traffic lanes for public transport; the lowering of geometric standards to slow traffic and allow LRT insertion; and increased areas for pedestrian and bicycle movements within the new traffic cross sections.
- At points where the mass transit system crosses the ring road or other outlying major arterial roads, a park and ride network is to be established allowing easy movement from private vehicle to mass transit. In the especially congested Tel Aviv–Jerusalem Route 1 Corridor, a high-occupancy toll (HOT) lane is to be established in the section inbound of a planned park-and-ride facility.
- The urban bus system is to be completely reoriented and integrated into the overall mass transit system. Radial routes are to be eliminated and replaced by the light rail network; local routes will be oriented to transit stops and circumferential routes. Thus, light rail stations will not only serve as transfer centers between the LRT and feeder buses, but also between the different feeder routes serving the same station (Figure 4).
- Bus penetration to the center city will be dramatically reduced, with a big savings in noise and air pollution.
- In the ancient and historic areas of the city, severe traffic restrictions and traffic calming measures are to be implemented.

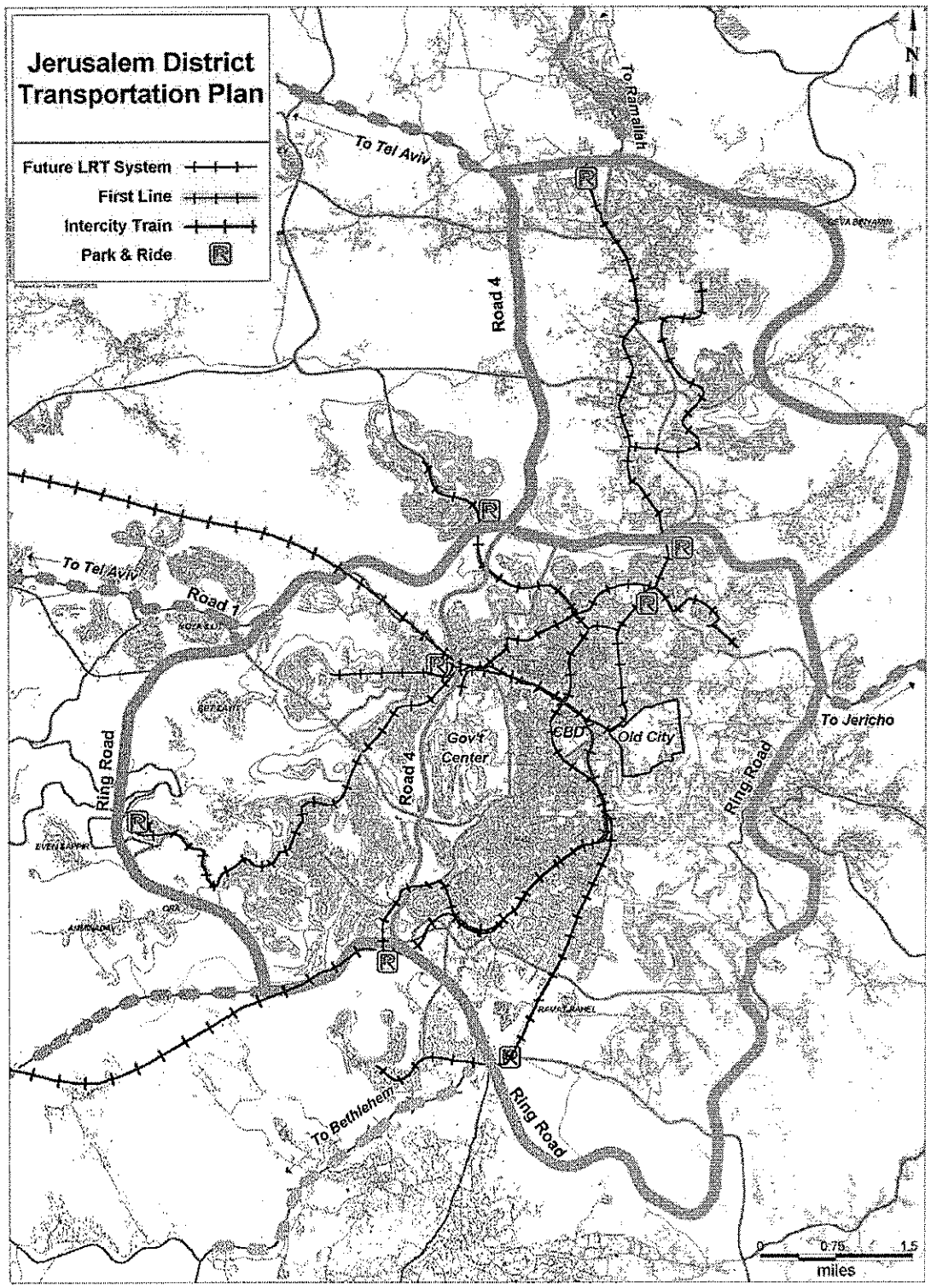

FIGURE 3 Jerusalem district transportation plan.

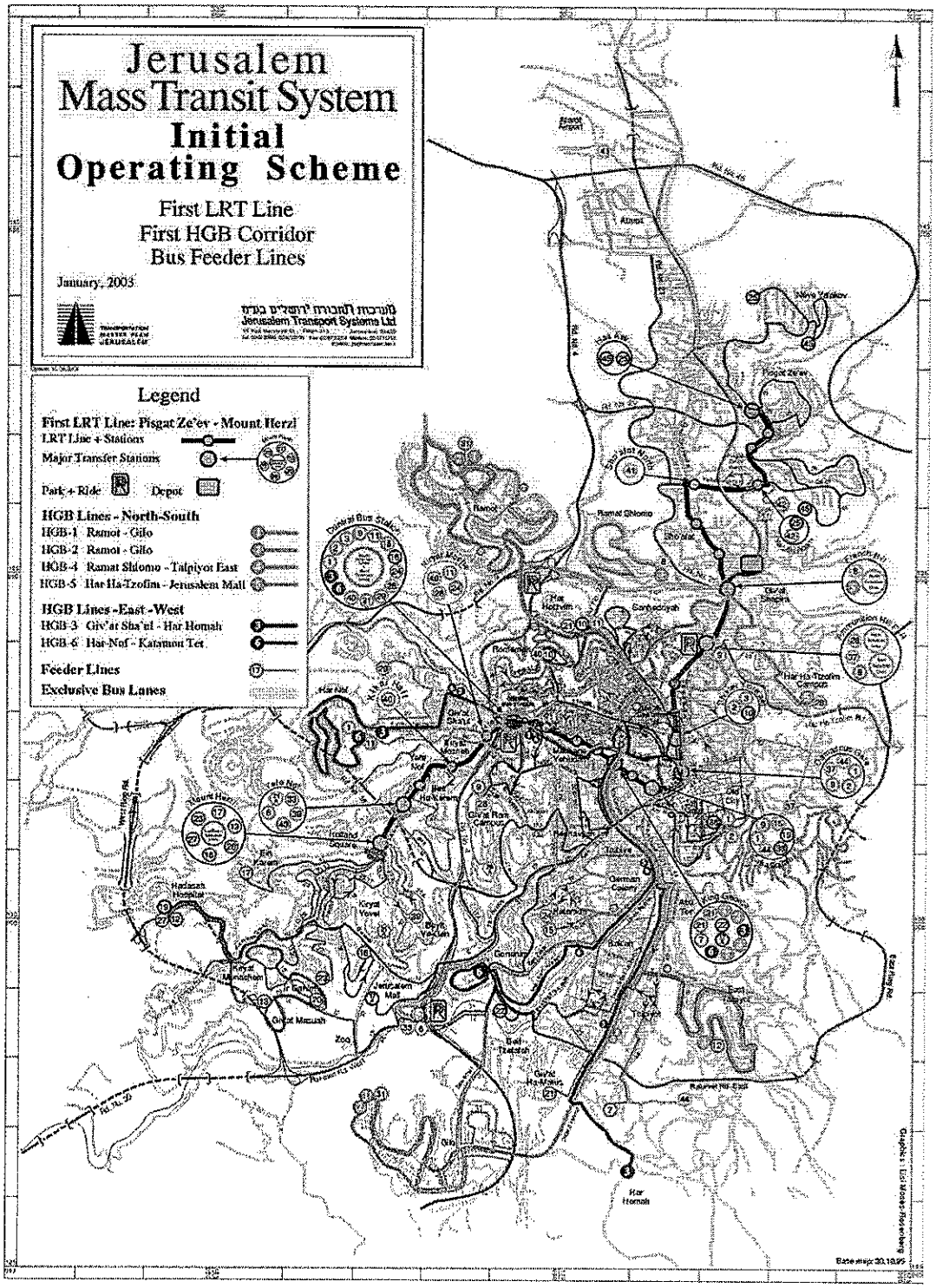

FIGURE 4 First LRT and busway system map.

The new transport policy is to be implemented in stages. Major parts of the inner ring road are currently under construction or have been completed. The first stage of the mass transit system, consisting of the first LRT line 13.8 km (8.6 mi) and a 7.5 km (4.6 mi) north–south busway in the alignment of a future LRT route are also in implementation. Park-and-ride facilities adjoining the first system are in advanced planning stages for construction. Most importantly, a clear mindset has been created in the entire planning community and in the public sees mass transit and transit-oriented land uses, including downtown revitalization, as the key to the quality of urban life.

Parking Policy

Nowhere has the revolution in transportation policy been felt more keenly than in the new parking code which has been adopted by the municipality of Jerusalem with the backing of the Ministry of Transportation.

The new code sets an upper limit on parking allowed in all areas of the city. In outlying areas not serviced by mass transit, these limits are similar to today's demanding requirements. But in projects within the central city area, or within 500 m (1,640 ft) of a mass transit line (light rail or busway), parking is restricted to between 10% and 20% of previous codes. In addition, planning authorities are increasingly using their power to regulate parking facilities by restricting employee-only parking and encouraging only higher cost, hourly parking for visitors to new and existing facilities.

Center City Traffic Changes

The Center City traffic plan is the last element of the new transport policy for Jerusalem to be put in place and is now in the implementation stage (Figure 5).

The plan creates a "Center City Ring" consisting of existing streets integrated into a continuous system. Within the area inside the Center City ring, through traffic is physically prevented, with only short loops leaving and rejoining the ring. Only the mass transit corridors penetrate and cross the center itself. The entire area within the ring has been defined as a traffic-calming (30 kmph–18 mph) zone. The existing highly successful pedestrian area is to be doubled in size; streets left open to traffic will see carriageways narrowed, parking restricted, and sidewalks widened. In combination with the traffic work, the project is upgrading the public domain with extensive tree planting, new street lighting, and expensive granite paving materials.

Mandate for Change

Seen together, the road and public transport policies, park-and-ride, parking policy, and Center City traffic changes form a unified whole which the city of Jerusalem is gambling will create a new transport paradigm for the city. With the current economic downturn and collapse of tourism (spring 2003), it is too early to judge what effects these policies will have on the long-term economic health of the city. But without a doubt, the relative calm with which businesses and residents have received the extensive public works disrupting the city at present is a result of the belief that just building more roads is not the solution to the quality of life issues most on people's minds.

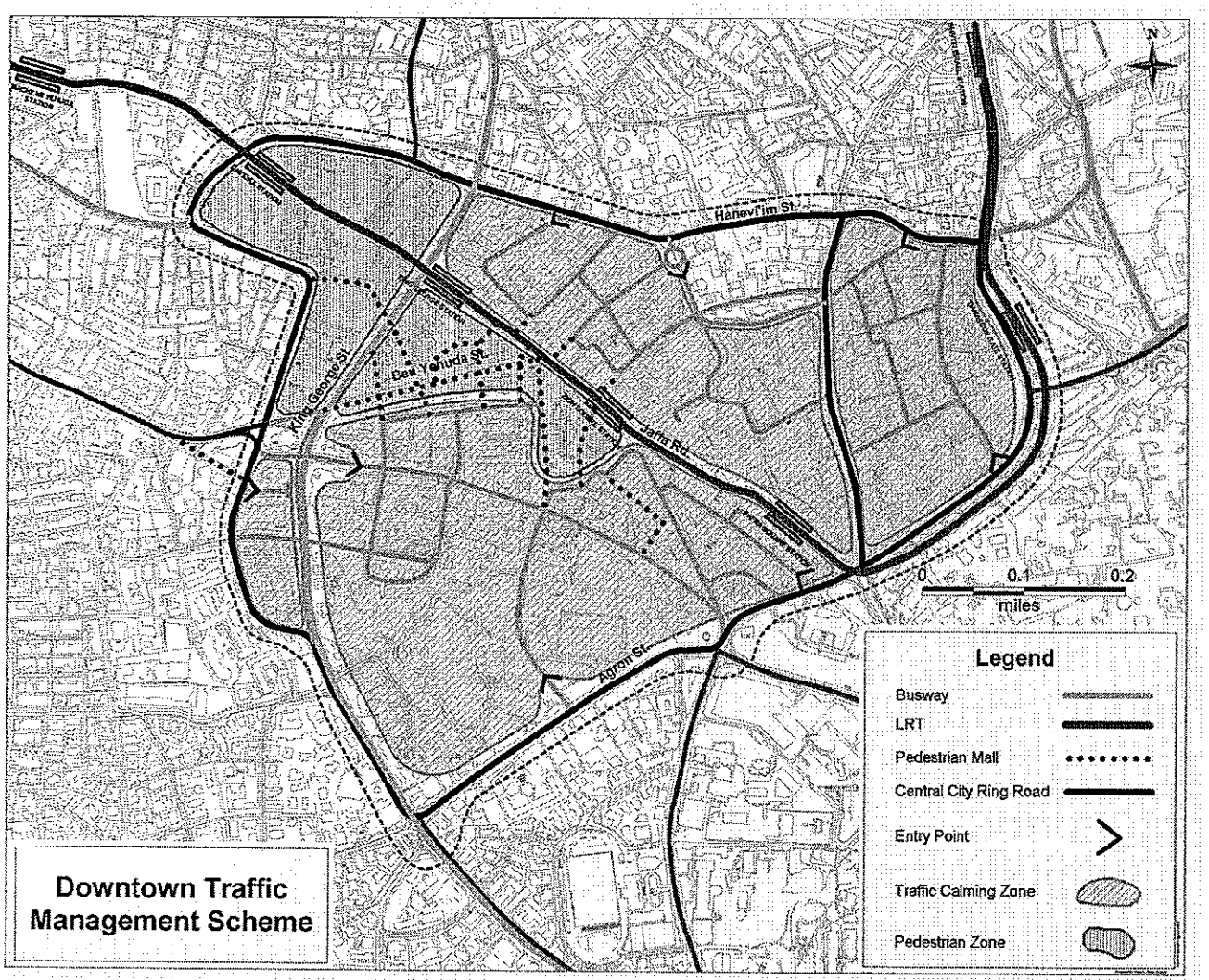

FIGURE 5 Downtown traffic management scheme.

TRAIN TRACKS—PLANNING A LIGHT RAIL LINE FOR JERUSALEM

This section will focus on how mule tracks are being physically translated into a plan for the city's first light rail corridor.

Why Not the Bus?

The decision to build a mass transit system based on light rail technology did not go unchallenged. In a city where 43 urban bus lines move 412,000 passenger boardings each day, the question was asked: Why invest $400,000,000 in a new technology when the existing system can be upgraded at a fraction of the cost?

The answer lies in a combination of physical constraints and the psychology of a rapidly motorizing public.

- Jaffa Road, the urban heart of Jerusalem, already serves almost exclusively as a public transport corridor. With over 250 buses crowding its narrow width in the peak hour, travel speeds are low (10 kmph—6.2 mph) and noise and air pollution unbearable. Of 43 bus routes, 38 use this section; yet bus utilization is low (along this section especially) due to overlapping direct services to almost every neighborhood of the city. Clearly a city poised to grow from 680,000 today to a master plan goal of 900,000 residents had outgrown this small town transit structure.
- The bus network serves primarily a captive population without access to private vehicles. New car owners are reluctant to go back to the bus, even when provided a busway that saves travel time. The Tel Aviv experience indicates that Israeli motorists will use rail, and in large numbers.
- Traffic planners have never succeeded in giving absolute priority to busses at signalized intersections when high bus volumes are present. This limits the effectiveness of busways as compared to high capacity, lower frequency LRT vehicles.
- The bus network is incremental by nature and has successfully resisted attempts at structural reform over the years. The new light rail system is conceived and being presented as an integrated new transport system involving major changes in road, rail, and bus arrangements.

In the end, the first phase of the mass transit system for the city includes 7.5 km (4.6 mi) busway in addition to the LRT line, accompanied by a restructuring of bus lines. Busway infrastructure is seen as a temporary phase before the implementation of a light rail line in its place in the future.

LRT Project Calling Card

The light rail line is planned to be dual track, 13.8 km (8.6 mi) in length. Twenty-three stations are planned, almost exclusively with side platforms. An overhead catenary system will supply electricity at 750V/dc. Traffic signalization and arrangements at 99 intersections will be adjusted and linked to a central system in order to give priority to approaching LRT vehicles. To eliminate conflicts with street traffic, a bridge will be constructed over the complex roadway intersection at the city's western entrance. This bridge, to be designed by the world renowned Santiago Calatrava, will be 260 m (853 ft) long, 135 m (443 ft) between abutments. The ramps sloping up over the bridge will have maximum gradient of 7°.

The LRT will operate exclusively in a right-of-way separated from parallel automobile traffic. Along Jaffa Road in Center City Jerusalem, the light rail line travels along a pedestrian mall. This will be the centerpiece of an urban upgrading of the downtown. A fleet of 23 trains, consisting of three LRVs each, will be needed to provide service for about 7,500 passengers in peak sections of the route. These low-floor vehicles will have a capacity of up to 155 passengers each, or up to 465 passengers per train.

The concessionaire will have sufficient vehicles to provide base service with headways of 3 to 5 min during the morning peak (and not exceeding the maximum density of passengers per square meter). The peak periods will be 1½ h in the morning and 1½ h in the afternoon. Maximum LRT speed will be 30 kmph (18.5 mph) in the city center and 70 kmph (43.5 mph) on other sections.

Design Dilemmas and Solutions

This section will describe the unique and challenging issues that continue to face the planners of the Jerusalem light rail project. Many of these issues are common with other projects in other places around the world but several of them are unique to Jerusalem. The alignment of the tracks adjacent to the Old City is certainly a unique feature of the Jerusalem project.

One of the major challenges in designing any light rail system is the macro planning of the alignments and locating fatal flaws as early as possible in the process. In Jerusalem, this process began in 1995 with Parsons Brinkerhoff of the United States; it continued with the German firm Lahmeyer International in a joint venture with Hamburg Consult and for the first line essentially ended with the value engineering report by French consultant Semaly in 1999. Further urban insertion improvements suggested by the French architect Alfred Pieter were incorporated in the final design drawings prepared in 2002. The topography of the city makes light rail planning especially difficult, as there are many roadways that have grades of 10°, making them infeasible for LRVs. These grades, acceptable as mule tracks, have to be modified or bypassed horizontally or vertically in order to create a viable LRT system.

The high travel demand projected between the northern suburbs and the city center required a connection to Jaffa Road. A macro-level evaluation of alignments indicated that all ways of linking north and south are flawed topographically and that an unusual solution is required. After exhausting the range of alternative north–south routes, it was initially decided that Jerusalem's first line would run in a tunnel under Hatzanchanim Street, only 2 to 3 m (6.5 to 10 ft) at its closest point from the walls of the Old City. This solution presented an acceptable slope, based on the German criterion used in the planning process. The consultants judged an at-grade alignment as nonfeasible. This was later re-evaluated by the French (see following section).

Hatzanchanim Street is an extremely congested artery for many hours of the day (Figure 6). The project readily accepted the LRT below-grade alternative, which would allow the existing vehicular traffic to continue at street level without any negative impact on LRT operations. An underground alignment would neither be influenced by or improve this situation. In addition it was felt by some that the proximity of the light rail line, with its accompanying catenary system, would be an aesthetic blight on the Old City's ancient walls. Keeping the status quo of five traffic lanes at street level with the light rail descending into a tunnel became a convenient

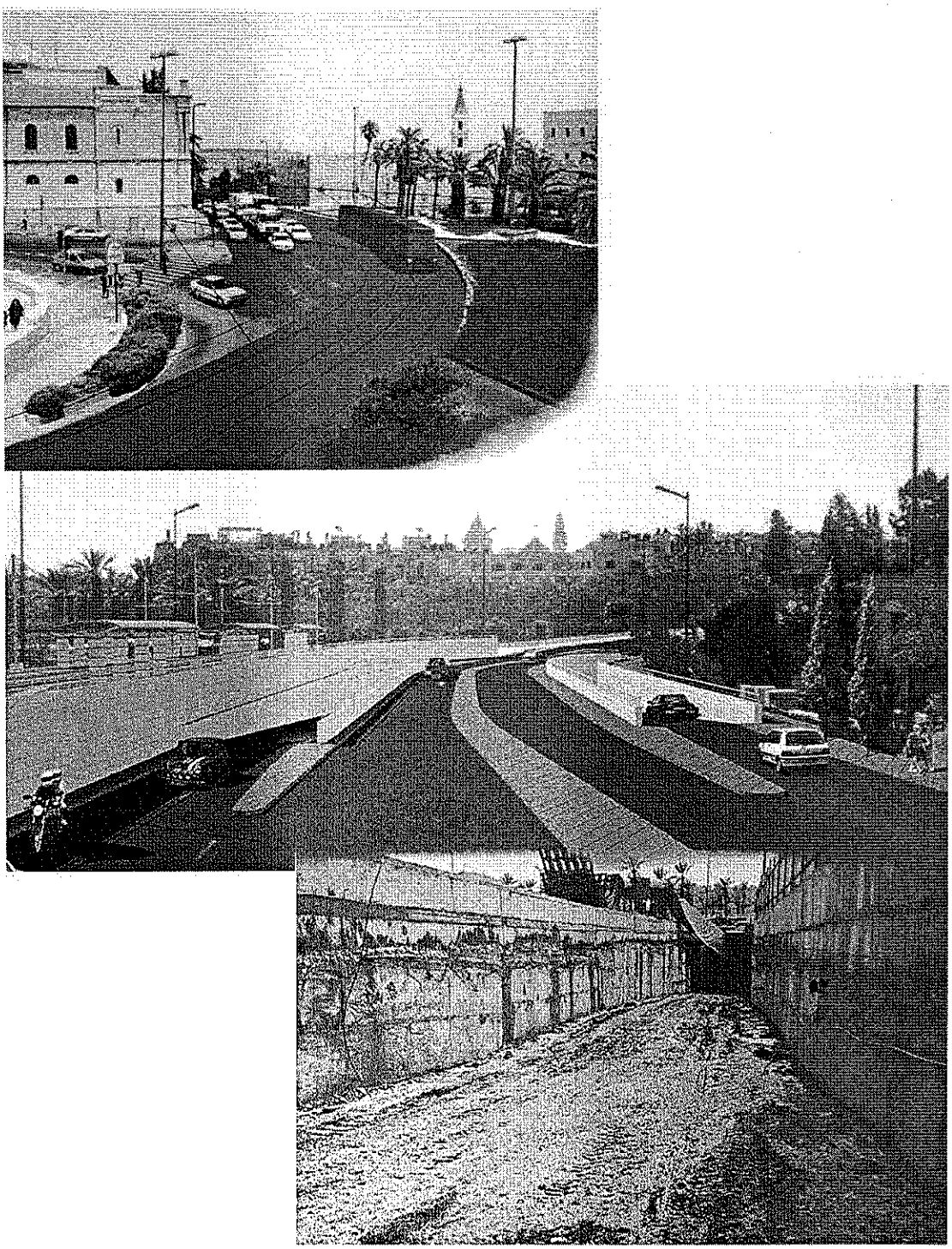

FIGURE 6 Old City walls—Hatzanchanim Street.

alternative. The choice of this alternative came with the price tag of an underground station next to the Safra (City Hall) Square.

A closer evaluation by project sponsors of planned alignments, cross-sections, and anticipated costs brought on a re-appraisal of this design. The Old City walls, built in the 1500s, are surrounded by a national park established in 1970. The notion of surrounding the Old City's walls with an open belt of green space was included in the very first plans prepared by planners of the British Mandate in the 1930s. Archaeological excavations were undertaken to expose the full height and grandeur of the walls and the city's gates. Today the Old City is surrounded by a "green belt" of parks.

The French Semaly reexamined the planning criterion and process that produced an LRT tunnel along the Old City. French criterion allows for a slope of 9° along short sections of a line while the German criterion only permitted a maximum grade 8°. Using new technologies to be specified for the Jerusalem system could solve safety and braking issues. If the LRT could be at-grade in the Hatzanchanim Street section, then the Safra Square station could also be at-grade. Thus the question of vertical alignment near the Old City was directly tied to the design of the nearby station, one of the most important and prominent stations along the first line.

All of the designers were pleased when the value engineering of the French consultants led to an at-grade solution. An environmental benefit was achieved by putting two traffic lanes in the tunnel instead of the LRT, greatly reducing noise and pollution next to the City Walls. The trackway, located in the vacated road space, can be designed and landscaped with much greater success than general traffic lanes. LRT riders will enjoy a view of one of the city's major attractions. This switch of alternatives produced significant cost savings due to the elimination of the underground station, estimated at about $15,000,000.

Center City Revitalization

Modern Jerusalem's central business district only began to develop outside the Old City Walls in the late 19th century, at the point where the road from the coastal port of Jaffa entered the old city. From this modest beginning, a thriving commercial area flourished in the British Mandate period (1920s–1930s), centered on the Triangle bounded by King George V Street, Jaffa Road, and Ben Yehudah Street. Jerusalem's first light rail line hopes to revive the glory and prosperity of Jaffa Road, which has served mostly as a passage for scores of diesel busses in an unflattering urban setting, despite lying on the natural path of thousands of tourists and city residents alike.

From the corner of the Old City and as far as the large Machaneh Yehudah Market, Jaffa Road will serve as a transit mall, with only the quiet light rail replacing a cacophony of busses, taxis, and private cars (Figure 7). Stations will be carefully integrated into the design of widened and renewed urban squares at three critical points: the Safra Square/Tzahal Square Station; the Zion Square Station; and the Davidka Square Station. The King George Street Station, adjacent to the oldest traffic light in the city, is the transfer station to the busway and future second light rail line. Jaffa Road itself will be lined with mature trees, creating a totally new and green image, integrated into the pedestrian precinct centered on Ben Yehudah Street. All these works are part of the Concessionaire's responsibilities and will open to the public along with the first line by 2006.

To the west of Machaneh Yehudah, the narrow and winding alignment of the street was inadequate even for LRT passage. Here a carefully planned and executed operation was carried

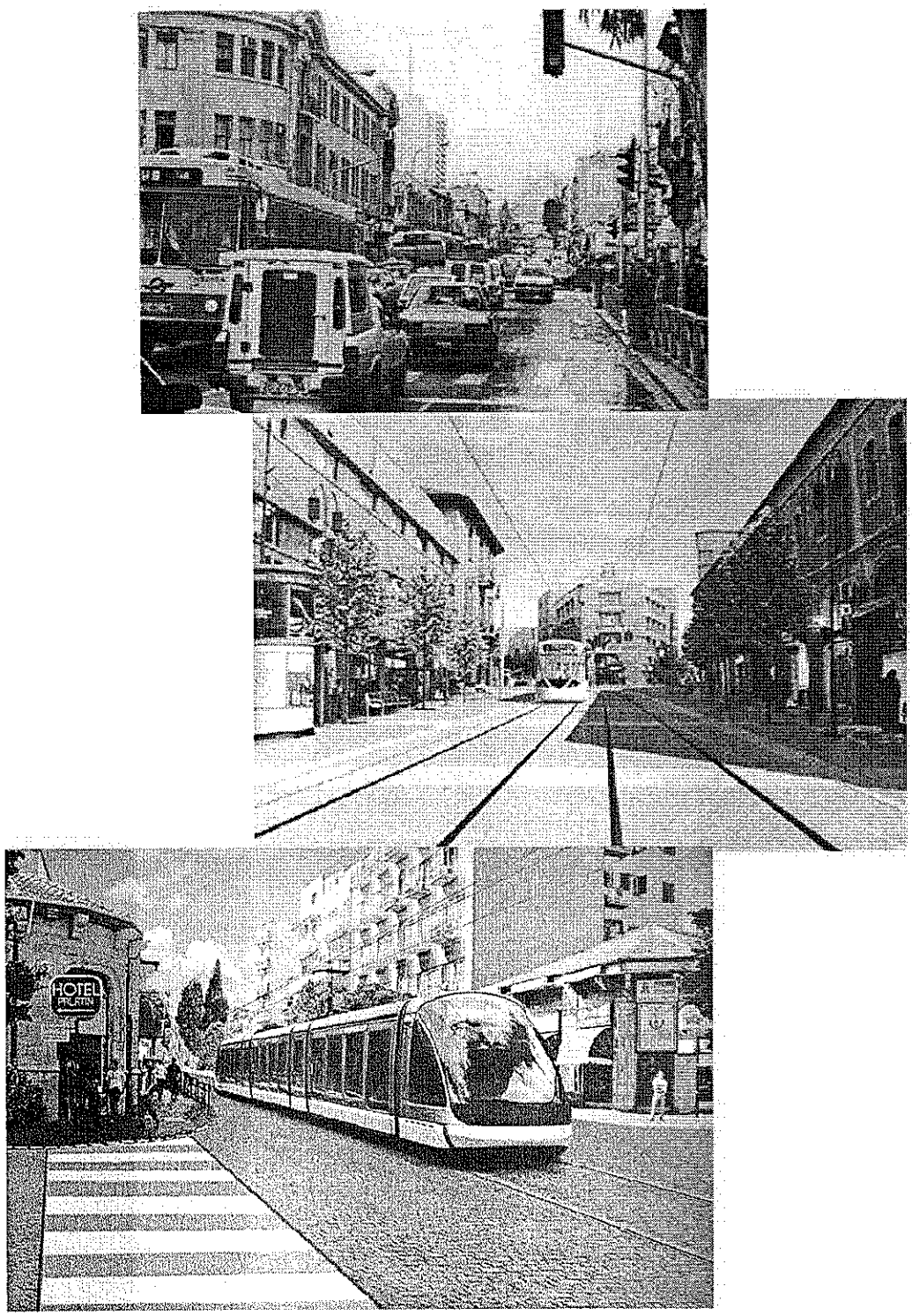

FIGURE 7 Jaffa Road–before and after.

out to preserve and relocate old building facades to a new street line. In this section, a wide boulevard will encourage the possibility of new high-density development along the north face of the street. The cumulative effect of these efforts is to elevate Jaffa Road to its previous status as the premiere commercial address in the city, with its immediate access to the light rail line and renewed, aesthetic appearance and ambience.

The city of Jerusalem has taken an added step in parallel to light rail development. It has created a new municipal corporation with the mission of renewing the remainder of downtown streets and public spaces, with joint funding of the Ministries of Transportation, Tourism, and the city of Jerusalem. To be finished in parallel to the light rail in 2006, the works will create a unified design palate for paving, street furniture, lighting, and plantings throughout the area enclosed by the Center City ring road.

Without a doubt, light rail implementation has been the impetus for these works, based on a synergy between renewed downtown activity, ridership on the light rail line, and vice versa.

Community Relations

Jerusalem is a patchwork of neighborhoods, ethnically and religiously, and often physically distinct. The magnetism, mystique, and beauty of the city drew its residents here; but in many ways there is little other common ground between them.

It is a welcome surprise that the light rail project has met with only minimal objections, and has garnered impressive support from all sides, down to the grass roots level.

This achievement did not come about by chance. A concerted community relations program, administered by the project's management, has accompanied all stages of the planning and execution of the project. The main elements of this effort include:

- The establishment of Neighborhood Transportation Committees in conjunction with community centers and other local institutions along the LRT route. All plans are presented and discussed in these local forums; residents bring their requests and complaints here for resolution.
- Establishment of a dedicated website, multimedia presentations, pamphlets, and exhibitions, all available in high profile at public events, museums, and festivals.
- Distribution of special explanatory materials to individual homes near work sites.
- Extensive meetings and presentations to community groups, schools, associations, business groups, etc.
- Press briefings, tours, and promotions that keep the light rail in the public mind well before the actual appearance of trains or tracks.
- Placement of explanatory construction signing at all work sites (Figure 8).
- Meetings with special needs groups such as the disabled to check designs.
- Thanks to these efforts, the optimism accompanying the development of the Jerusalem light rail project has weathered stormy times and remains strong. If the project succeeds in achieving the ambitious goals it has set for revitalization of the city and increasing the level of accessibility for the city's residents, it will be in no small part due to the efforts to include community relations and input as an integral part of the planning process.

FIGURE 8 A new transportation plan for Jerusalem–Public Relations.

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