Much of San Francisco’s recent growth has been south of its traditional center, and public transportation has been following this growth with new service. The existing southern leg of the Route N Judah line service runs south from the foot of Market Street along the Embarcadero to its terminus at Fourth and King Streets near Pacific Bell Baseball Park and the Caltrain Terminal. The recent extension is proving successful in attracting riders. San Francisco is building the dual track Third Street Light Rail Project from the end of the current line near Pacific Bell Park to the city and county southern boundary. A public transportation terminal is needed at the southern end to complete the transportation infrastructure for the future urban corridor. The Southern Terminal at San Francisco’s southern boundary would be the southern gateway to the San Francisco Municipal Railway system. It would be the public transportation center for the southern end of the Third Street corridor. The proposed Southern Terminal location actually lies in the neighboring city of Brisbane, which increases the complexity of its development, but also increases it potential.

THIRD STREET LIGHT RAIL SYSTEM

Third Street will be a major north–south transportation corridor in San Francisco between the city’s downtown Market Street area and its southern boundary. The corridor begins at Market and Third in San Francisco’s downtown and continues south through the south of Market area, Mission Bay, Central Waterfront, and the communities of Baypoint and Visitation Valley. The San Francisco Municipal Railway (Muni) Metro Third Street Light Rail Project in the center of the corridor will provide light rail public transportation from Union Square and Chinatown in the city center on the north to Visitation Valley on the San Francisco southern boundary.

Phase 1 of the Third Street Light Rail Project is currently under construction. It begins at Fourth and King Streets and extends the existing Route N Judah Line approximately 5.4 mi further south along Third Street and Bayshore Boulevard to its southern terminus at the San Francisco county line. Phase 2, the new Central Subway, in preliminary engineering, will follow the initial operating segment and will complete the line segment. It will extend the Third Street light rail transit (LRT) system north from Fourth and King Streets to a new downtown terminus in Chinatown at Stockton and Clay Streets in a new subway section that begins near Bryant Street, crosses beneath Market Street, Geary, and Stockton Streets, and ends at the downtown terminus.

A primary objective of Phase 1 is to serve as a catalyst for new development through improved public transportation along Third Street. The city’s plan is for a public transportation corridor south of the downtown that will enhance the areas it passes through. It is investing in landscaping and street amenities in an established business district between Evans and Donner Avenues in the Bayview Hunter’s Point area, which will serve as the entrance to the new
redevelopment area of the former Hunters Point Naval Shipyard. Phase 1 construction will provide public transportation rail service connections to this corridor from the Muni light rail lines in the central downtown tunnel and Bay Area Rapid Transit (BART) to the north and from Caltrain at the San Francisco limits to the south.

**REDEVELOPMENT ALONG THIRD STREET**

San Francisco is structuring its urban development to balance employment and housing. Businesses have stated that affordable housing is the biggest problem facing them when considering San Francisco against other competing business locations. There is a lack of middle-income housing that is forcing non-executive workers to commute large distances, up to 60 mi or more from San Francisco. Most new development projects in San Francisco are required to include affordable housing to get permitted.

The Third Street LRT line passes through a traditional industrial and blue-collar residential area that is changing. Development plans for the corridor include 10,700 new residential units and 5 million ft² of new commercial space. The major north south commercial corridor south of the city’s center should develop along Third Street. The largest redevelopment projects underway in San Francisco are along the Third Street corridor in former industrial sites (Figure 1). Mission Bay, a former Southern Pacific rail yard and associated industrial area, is at the north end. Hunters Point is just east of the corridor at the central portion. Redevelopment of these sites is important part of San Francisco’s general plan. The available of the large sites reflect a loss of many traditional industries along the southern waterfront. The replacement of traditional housing and commercial uses in the area is a sensitive issue.

Mission Bay is a 300-acre redevelopment between Pacific Bell Park and 20th Street that is centered on the new University of California at San Francisco Medical Research Center. The 2.65 million ft² campus will employ 9,100 scientists, researchers and students. Adjacent to the medical center, the developer is planning to build a 500-room hotel, 6,000 residential units, 750,000 ft² of retail space, and 49 acres of parks and open space. Third Street bisects Mission Bay and will be the primary street access.

Hunters Point is a redevelopment of the former U.S. Navy Shipyard. The shipyard is being developed in four parcels. Approximately 63 acres of Parcel A, being developed first, will include 1,600 new homes for ownership and rental, 300,000 ft² of commercial space, and a 5-acre multipurpose community campus. The developer will set aside 32% to 44% of the homes for low- and moderate-income residents. The current schedule is having build-able lots in early 2005 and the first housing units by the end of 2005. The primary street access into the first phase of the Hunters Point development is through Innes and Galvez Avenues to Third Street.

**SOUTHERN TERMINAL REDEVELOPMENT AREA**

The Southern Terminal is in a redevelopment area straddling the boundary between the cities of San Francisco and Brisbane. It is situated in an industrial area that includes a former Southern Pacific rail yard and adjacent factory sites. The development site is one of the last large redevelopment sites fronting San Francisco and an opportunity for a new direction. As a major residential and commercial center at the southern boundary, the southern terminal center can
FIGURE 1 Third Street light rail corridor.
anchor the southern end of the Third Street corridor. Infill development associated with the Mission Bay, Hunter’s Point, and Southern Terminal should grow towards each other along the corridor.

Universal Paragon Corporation (UPC), as the owner/developer, is redeveloping the site working with both the city of San Francisco and the city of Brisbane. UPC, in the planning and environmental phase of the project, is in the process of obtaining permits for this area is negotiating the type of development with both cities. UPC has recognized the advantages of good public transportation access to the development area from San Francisco to the north and the Peninsula to the south. In early planning efforts, UPC has studied building residential space in San Francisco coupled with commercial space in Brisbane. Both types of developed could be centered on the Southern Terminal. UPC would donate land to Muni to build the Southern Terminal in the redevelopment area. The land for the terminal was located just over the Brisbane city limits. The location would also serve as transportation center for new development in Brisbane.

Within San Francisco, the owner/developer will build a transit village that will provide much needed housing and associated residential activities. The transit village concept promotes a lifestyle that is centered on public transportation and orients development to public transit. Conversely, it also designs transit facilities to be compatible to the development. Its intention is to divert travel away from the single passenger automobile to public transit and other high vehicle occupancy alternatives. The Southern Terminal, as the village transit center will be the physical center for the redevelopment area’s transportation system.

**SOUTHERN TERMINAL JOINT DEVELOPMENT**

The Southern Terminal is an ideal site for joint development. It is adjacent to the major San Francisco Peninsula corridor for north and south regional travel. The combined Route 101/CalTrain transportation corridor connects San Francisco with the Peninsula and is the primary corridor for this market. The peak travel demand along this corridor is both north- and southbound, which reflects strong employment centers in both San Francisco to the north and the Silicon Valley to the south. Job growth has been good to the south creating a reverse commute business. Muni would also serve workers coming from the peninsula to jobs south of the downtown. The role of the Southern Terminal is to divert personal trips to public transportation along this corridor providing congestion relief to Route 101.

The convergence of alignments at the Southern Terminal site (Figure 2) offers opportunities for a public transportation center. At the southern end, the Third Street LRT tracks in the median of Bayshore Boulevard, cross over Route 101, and run parallel to the west of the original Southern Pacific track alignment, which is used for the Joint Power’s Board Peninsula Commuter Railroad (Caltrain) service. An intermodal station that provides bus and light rail connections to the Caltrain service by taking advantage of a convergence of alignments can be the primary connection for long haul commuter service south to the peninsula and San Jose. The Southern Terminal location adjacent to the Caltrain Bayshore Station can link the LRT and the commuter rail systems within walking distance.
FIGURE 2 Southern terminal site.
PUBLIC TRANSIT IMPROVEMENT

The natural features surrounding the city and county of San Francisco limit the available area for development and its associated transportation infrastructure. In response, the city has promoted public transportation as a solution to development within its confined area. Its goal is to significantly enhance the role of public transit in personal trips to decrease passenger car trips. This strategy is important in reducing traffic congestion impacts and the rate of traffic growth on major corridors.

Muni is the public transportation agency within San Francisco responsible for building and operating its bus and rail systems. Most Muni service is structured in a hub and spoke system with lines centered on the downtown business center along Market Street. The primary light rail lines radiate out from the foot of Market Street to the western areas. Connecting bus service is provided from the stations along the rail system. Because there is no current light rail service to the southeast, the area is served by buses. Routes 9, 15, and 52 provide bus service along Geneva Avenue, serving the southern end of San Francisco to the downtown; but the service tends to be indirect and slow.

The Third Street Light Rail System will replace the Route 15 Third Street bus service. It will provide a higher speed service along the eastern end of the city and will connect to feeder bus service. The Southern Terminal will be a transfer point for Muni service for the southern part of San Francisco. It is a good location for connections to the Geneva Avenue corridor. Initially, the service will be bus service feeding the Third Street line. In the future, a light rail line could be built along Geneva Avenue connecting into existing systems on the western and eastern ends.

The Southern Terminal bus and LRT service with the adjacent commuter rail service at the Bayshore Caltrain station could provide service by three transportation agencies: Muni, San Mateo County Transportation Agency (SamTrans), and Caltrain. Muni will operate light rail service on the Third Street LRT and bus service to the north and west into San Francisco. SamTrans will operate bus service to the south into San Mateo County. Caltrain will operate commuter rail service to the peninsula down to San Jose and Gilroy.

INTERMODAL POTENTIAL

The terminal would be a major sub-regional transfer point for bus service. Three types of bus service could be provided. The primary service would be Muni and SamTrans scheduled bus service using the terminal as a layover and passenger transfer point for inter-county service. The second type of bus service would be Caltrain and BART shuttles operating between Bayshore and Balboa Park stations via San Mateo and San Francisco neighborhood collector routes. The third type of bus service would be dedicated shuttles sponsored by organizations such as UPC and the San Francisco 49ers Football Club operating between the Southern Terminal and nearby developments.

Caltrain and the Bay Area Air Quality Management District sponsor dedicated shuttles with participating employers. Caltrain also sponsors special service for events at Pacific Bell Park and Candlestick Park. An arrangement for dedicated shuttles with an organization like the 49ers is an example of the potential for expanding this type of service at Bayshore Station. Special service for events at the nearby Candlestick Stadium where the 49ers play would provide
an attractive alternative to private passenger cars. It would help eliminate vehicle congestion leaving the parking areas.

Caltrain has embarked on the largest track improvement program in its history. This ambitious track program is building express tracks to reduce the current 1½-h trip time between San Francisco and San Jose through a Baby Bullet express trains. The program improvement from Bayshore to Brisbane will add two express tracks and rebuild the train control system. The improved track section at Bayshore Station has two express tracks in the center and two local tracks on the outside. Although Bayshore Station has local service only, passengers could board local commuter trains at Bayshore and transfer to express trains at a station further south. The reconstructed track section will have a new centralized traffic control system. Constructing the new tracks for express service involves realigning tracks, reconstructing the signal system, and the relocation of the existing Bayshore Station south. A new intermodal station with BART has been built at Millbrae, two stations south of Bayshore Station. The Southern Terminal would be the intermodal station with Muni.

ORGANIZATIONAL ISSUES

The connection between these services involves the developer and three public transportation agencies with the resulting organizational issues. Muni, Caltrain, and UPC have continued to negotiate for several years to reach agreement on access and facilities. An agreement is needed that will allocate responsibilities based on the resources of each party. In general, Caltrain would retain commuter rail capital improvements, constructing a new station with outside boarding platforms to the south of the current Bayshore station and constructing track improvements within its right of way. Muni would construct the bus and LRT turnaround and platforms and construct heavy rail track improvements outside the Caltrain right of way. UPC will provide land for Muni bus and LRT turnarounds to the terminal and platforms including public access and substation. The three organizations have been planning the intermodal terminal and working on developing a conceptual plan that is acceptable to all parties.

A fourth participant is the Union Pacific Railroad (UP) because of operating rights for freight trains on the Caltrain tracks. Caltrain has to maintain UP’s customers sidings to accommodate the UP’s continuing freight operations. This requirement is complicated by the centralized traffic control system in the segment, which adds to the cost of siding relocation.

Stakeholder interests limit the potential size and cost of the Southern Terminal site. Cost is important to all the major stakeholders, who have budget constraints for various reasons. Market forces and investment return criteria limit the possible developer investment. Muni and Caltrain must work with funding limits. Revenue for both agencies is down in the current economic slowdown.

THE SITE

The temporary southern terminus for the Third Street LRT System is in the center of Bayshore Boulevard just north of Sunnydale Avenue. It is a double crossover with tail tracks that allows trains to reverse direction and change tracks. The tail tracks provide for train storage between runs. A double crossover was also used at the existing terminus at Fourth and Townsend near
Pacific Bell Park. A double crossover is not the most efficient track layout at a terminus, because the operator is required to change from one end of the train to the other end. But a more efficient loop track layout requires land outside the street right of way. The ultimate Southern Terminal would have a loop track south of Sunnydale Avenue and east of the temporary terminus. The terminal site is located just south and across the tracks from the existing Caltrain Bayshore Station.

Access to the Southern Terminal site from Bayshore Boulevard and the interim terminus needs to be improved. Sunnydale Avenue east of Bayshore Boulevard is a very narrow little used street. The public right of way on Sunnydale is 66 ft from property line to property line. The minimal public access easement width requirement is 53.5 ft for combined LRT and street access for buses and emergency vehicles. If LRT tracks were placed along the south right of way limit for Sunnydale Avenue, it would provide a 30-ft roadway width. This location affects access to the property owners on the south side of Sunnydale Avenue, but it could be a short-term expediency until a larger right of way is developed.

The new Bayshore Station will have a pedestrian overpass for pedestrians to reach the outbound platform on the west side of the tracks from the inbound platform and parking on the east side of the tracks. The existing Bayshore Station is on the east side of the tracks and has limited parking, which will be retained. The overpass connection to the outbound platform could also provide pedestrian access to the Third Street LRT System and the San Francisco and San Mateo bus systems.

Caltrain must maintain existing UP freight service in their track section, which affects the design of the Southern Terminal tracks. A still active existing freight spur cuts through the redevelopment site on a long arc leaving odd shape parcels on either side. The existing turnout for the freight siding is part of the track relocation. Caltrain will construct a new relocated UP freight spur switch and stub out to its right of way just south of the Southern Terminal, put the new switch into service and take the old switch out of service. Muni will construct the spur track from the Caltrain right of way to the freight customer’s sidings.

The relocation of the freight spur further south and out of the way will help the redevelopment planning. UPC is interested in developing large build able blocks on its site, and the freight spur cuts across a block of land on a diagonal. A new turnout and connecting spur are being built to the south using either a new track crossing of Bayshore Boulevard or the existing track crossing of Bayshore Boulevard. The existing crossing required a back in movement, which was acceptable to the UP. A new crossing requires California Public Utilities Commission (CPUC) approval, which is a time issue due to the schedule for Caltrain’s express tracks. A new Bayshore crossing for the spur remains an issue.

**TERMINAL REQUIREMENTS**

Adequate dedicated public land is needed for the LRT turnaround, LRT platform, and bus platform and traction power substation. The bus platform and substation require street access. The site allocated to the Southern Terminal is compact, providing enough land for the turnaround and connections using minimum criteria. The terminal is planned within a constrained space.

As the Third Street Light Rail southern terminus, the Southern Terminal requires a loop track for southbound LRT trains returning north, queuing tracks for service requirements and storage tracks for breakdowns. It also requires tracks for access to the revenue tracks on
Bayshore Boulevard at Sunnydale Avenue. The most direct access is along Sunnydale Avenue. The turnaround will operate in counter clockwise direction to avoid the need for a track crossing. Trains will not wait at the boarding platform prior to a scheduled departure, since Muni has found that passengers expect a train to leave shortly after they board.

Trains in revenue service can operate in one-, two-, and three- or four-car consists, but the platforms along the Third Street operating segment are sized for two-car consists. Required terminal track speed is within the terminal is low, 5-mph with a maximum speed through the turnouts of 3 mph. Following Muni practice, station facilities for light rail vehicle (LRV) operations at the turnaround will be minimal. There will not be an operations office or waiting room for operators.

Parking will not be provided for LRT passengers at the intermodal terminal, since Muni does not build parking around their platforms, relying instead on passenger use of feeder bus services. Parking is usually provided for commuter rail stations, but limited parking is provided at the existing Bayshore Station. There is a possibility that commuter rail passengers will park in the redevelopment area and then use the pedestrian walkways and grade separations to reach the commuter rail platforms. Diverting commercial development parking spaces to transportation parking use could reduce spaces available to commercial tenants. The control of parking will be addressed as the Southern Terminal planning progress.

Efficient and safe passenger movement between the different modes is a key to the success of the terminal. Pedestrians will move between the three public transportation modes and potential car parking areas nearby. Passenger circulation between the different modes involves three different property owners with different requirements. Within the Southern Terminal site, pedestrians will use sidewalks, signals, and gates to move safely between private property and public transportation platforms.

**COMPLETED PLANNING**

Muni retained Korve Engineering, Inc. to help with conceptual track and bus design issues at the Southern Terminal. UP retained the services of Chi-Hsin Shao to develop transportation plans for development and to work with Muni on the Southern Terminal conceptual plan.

The LRT track layout for the conceptual design followed criteria established for the line segments of the Third Street Project, which is based on the basic physical and operating characteristics of the Breda Costruzioni Ferroviarie LRV-2 as the primary vehicle with provisions to accommodate Muni’s President’s Conference Committee (PCC) car and Historic Streetcar (HSC) fleets as the secondary vehicles. The Breda LRV-2 car is a double-ended, single-articulated car with six axles in three trucks. It is double-sided with four high/low-level doors per side. The Breda LRV-2 has a car length over couplers of 22.86 m (75 ft) and a minimum turning radius of 13.72 m (45 ft).

In California, CPUC General Orders determine track clearances for the LRT tracks. These are related to worker and pedestrian safety on and adjacent to the tracks. Relevant General orders include Nos. 95, 128, 143A, section 9.6 and 143B. On station platforms and other locations where passengers are permitted while trains are in motion, the minimum clearance is 30 in. At locations and in areas where passengers are normally prohibited while trains are in motion, the minimum clearance is 18 in. The minimum clearance can be less than 18 in. for fixed wayside structures less than 5 ft in length like catenary and signal pole.
The clearance envelope of the LRV-2 was set by combining the dynamic envelope, construction and maintenance tolerances plus mid-overhang, end-overhang, and super elevation adjustments. Construction and maintenance tolerances include track wear, wheel wear, track construction tolerances, and wayside structure construction tolerances. These clearances also accommodate the dynamic envelope of a number of historic PCC and the HSC street cars being used by Muni. The track alignment criteria are shown in Table 1.

**RAIL PLATFORM HEIGHTS**

A common platform and loading area for LRT and commuter rail passengers would improve efficiency of passenger movement between these systems, aid transfers and reduce loading times. Alternatives using a common platform between adjacent LRT and commuter rail tracks were studied, but use of different platform heights by the adjacent causes construction problems. The commuter rail platform height is at 8 in. (.192mm), while the LRT platform height is at 30 in. (813mm). To achieve a common track height, the LRT track would have to be lowered, since it would be costly to raise an active commuter rail track. There are technical problems with lowering the LRT tracks, involving drainage and grading within the plaza area, and unknown underground risks. It was determined that the preferred alternative is to keep the platforms at separate heights. Ramps approximately 34 ft in length and stairs have to be located at points along the platform to accommodate the height differences. The net affect on the terminal layout is a requirement for a greater site width for adjacent platforms.

**BUS PLATFORMS**

The Southern Terminal will provide bus platforms for Muni and SamTrans scheduled inter-county bus service, scheduled shuttles, and dedicated shuttles. This requires accommodating a range of different bus sizes. The platforms will accommodate buses that are loading and unloading passengers and holding on layover for later scheduled departures. The buses will have a turnaround off Sunnydale Avenue to enter, turnaround, and exit in the opposite direction similar to the LRT operation.

The bus platform layout is based on the basic physical and operating characteristics of the combination of articulated bus types as the primary buses with single unit bus types as the

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>LRT Track Geometry and Clearance Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferred minimum curve radius</td>
<td>22.9 m (75 ft)</td>
</tr>
<tr>
<td>Absolute minimum curve radius</td>
<td>19.8 m (65 ft)</td>
</tr>
<tr>
<td>Preferred minimum length of tangent between curves</td>
<td>7.62 m (25 ft)</td>
</tr>
<tr>
<td>Minimum length of tangent preceding a point of switch</td>
<td>3.05 m (10 ft)</td>
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<tr>
<td>Preferred curve length (one car length)</td>
<td>22.9m (75 ft)</td>
</tr>
<tr>
<td>Minimum track spacing for tracks without OCS poles between tracks</td>
<td>4.3 m (14 ft)</td>
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<tr>
<td>Minimum clearance from LRT track center to platform edge</td>
<td>1.5 m (5.2 ft)</td>
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<tr>
<td>Minimum clearance from LRT track center to fence line</td>
<td>6.1 m (20 ft)</td>
</tr>
<tr>
<td>Minimum clearance from freight track center to fence line</td>
<td>4.6 m (15 ft)</td>
</tr>
<tr>
<td>Minimum platform length (2 car train)</td>
<td>43.1 m. (150 ft.)</td>
</tr>
</tbody>
</table>
secondary bus type. The articulated bus is 60 ft long, and single-sided with three low-level doors. The standard single unit bus is 35 ft long, and single sided with two low-level doors. The articulated and standard buses would board at a low saw tooth platform with six articulated positions and four standard single unit positions. A single unit bus could also use an articulated position.

**PEDESTRIAN SAFETY**

Passenger movement across LRT tracks will be controlled by signals similar to the rest of the Third Street system. Train speeds will be low coming into the terminal and LRT system operators are trained to move with pedestrians crossing or near the tracks. Pedestrian crossings are only permitted across commuter rail tracks with gates or grade separation for safety reasons because of the train speeds and train stopping capabilities. The connection to Bayshore Station within Caltrain right of way will use a pedestrian overpass, and it is logical that the overpass would be continued for access to the LRT area.

**CONCEPTUAL PLAN**

The initial alternative track and bus platform layouts for the Southern Terminal were reduced to three alternatives that had the most potential. These were continued and developed further. At the completion of the initial conceptual work, one alternative was selected as a basis for an agreement and further development. Based on planned scheduled service and operating procedures, the turnaround has two loading positions on two sides at the platform that accommodate up to eight LRVs in two to four trains depending upon consist size. There is an additional five LRV queuing positions on the inbound side and return curve. On the inbound side there is one siding track for train breakdowns.

The developer has recommended shortening the 99.06- (325-ft) outbound platform to 74 m (242 ft), which reduced the platform length capacity from two two-car trains to one three-car train, and replacing the lost storage track length with a second storage track on the inbound platform side. This would shorten the track turnaround to match the shorter platform. Their second suggestion was to shorten the bus platform and to use a saw tooth edge layout, reducing the platform length capacity from eight buses to six buses, and shortening the bus turnaround to match the shorter platform.

There was concern about reducing the bus platform length at that time, since the extent of bus service anticipated was unknown and the requirement for the number and type of buses loading at the platform was still not determined. The types and levels of feeder service at the commuter rail Bayshore Station is being studied by the Caltrain and the bus service routes that would serve the Southern Terminal are being studied by Muni. As this work becomes available, the Southern Terminal layout can be refined to incorporate the recommendations.

The city of Brisbane has taken an interest in the project. Since the Southern Terminal is located within its boundary, it will be an active stakeholder for further development and will be providing its requirements and goals. The addition of another interested public entity at the site increases the number of issues, but it also increases the planning area and expands the joint development potential. The addition of a larger area should improve the joint development plan.
The growth of the Southern Terminal planning area means that the project is early in its development and could be revised substantially before it is built.

CONCEPTUAL PLAN REFINEMENT

One joint development goal is a terminal that is efficient and fits into new commercial and retail and even residential developments. The models would also work with other similar intermodal locations. The most efficient intermodal exchange between commuter trains, light rail, and buses is by a parallel arrangement of alignments. The most restrictive alignment is the commuter rail system, which is established in a straight alignment. The second most restrictive alignment is the light rail tracks, which typically have a minimum radius of approximately 75 ft. The Third most restrictive alignment is for buses, which typically have a minimum radius of 45 ft. Automobiles provide the fourth tier.

Conceptual alternatives have been developed based on a tight loop versus large loop track layout. Alternative 1 uses Sunnyvale Avenue as the entrance and exit corridor while Alternative 2 uses separate streets for an entrance and exit. Two options were developed for Alternative 1. The primary difference was the location of LRT and bus platforms in relation to the commuter rail platform. One option is to have separate debarking and boarding platforms and the second is to have one platform for both debarking and boarding.

ALTERNATIVE 1A

LRT inbound platform for debarking is on west side of terminal (Figure 3). The outbound platform for boarding is adjacent to the commuter rail southbound platform. The commuter rail and LRT outbound platform could be merged and at the same height or at different heights. In the figure the commuter rail and LRT outbound platforms are at different levels. The platform could be placed either on the left or right of the outbound track or on both sides. The bus platform is in the center of the terminal close to the LRT platforms. Drop off parking is along curbs adjacent to the LRT platforms that could be used by small vans, cabs and passenger cars. Pedestrian access between passenger vehicles, buses, and LRT/commuter rail is at the north and south ends of the terminal platforms.

The Alternate 1A terminal site requires an area approximately 232 ft by 400 ft for the LRT turnaround and platforms, bus turnaround, and platform and drop-off curb. Retail, commercial and residential land uses that are compatible with a transportation center could be placed along the west side of the terminal opposite the commuter rail station.

ALTERNATIVE 1B

The combined LRT inbound platform for debarking and LRT outbound platform is adjacent to the commuter rail southbound platform separated by an outbound track (Figure 4). The commuter rail and LRT platforms are at different heights. The platform is a center platform between two outbound tracks. There is a siding on the west side of the terminal for one two-car train. The bus
SOUTHERN TERMINAL
ALTERNATIVE 1A
Figure 3

FIGURE 3 Alternative 1A.
platform is in the center of the terminal close to the LRT platform. One drop-off parking curb is adjacent to the LRT platform, and the second is along the siding on the west side of the terminal for small vans, cabs, and passenger cars. Pedestrian access between passenger vehicles, buses, and LRT/commuter rail is at the north and south ends of the terminal platforms.

The Alternate 1B terminal also requires an area approximately 232 ft by 400 ft for the LRT turnaround and platform, bus turnaround, and platform and drop off curb. Retail, commercial, and residential land uses that are compatible with a transportation center could be placed along the west side of the terminal opposite the commuter rail station.

ALTERNATIVE 2

Alternative 2 uses a large loop circling one block (Figure 5). The combined inbound/outbound platform for debarking and boarding is a center platform between two outbound tracks adjacent to the commuter rail southbound platform. One LRT track separates the platforms. The commuter rail and LRT platforms are at different heights. There are two approach tracks on the south side of the terminal. Each track for has space to hold one two-car train. The bus platform is in the center of the terminal close to the LRT platform. One drop-off parking curb is on the west side of the terminal for small vans, cabs, and passenger cars. Pedestrian access between passenger vehicles, buses, and LRT/commuter rail is at the north and south ends of the terminal platforms.

The Alternate 2 terminal site requires an area approximately 116 ft by 520 ft for the LRT turnaround and platform, bus turnaround, and platform and drop off curb. Retail, commercial, and residential land uses that are compatible with a transportation center could be placed along the west side of the terminal opposite the commuter rail station. Since this alternative requires less area, the additional space could be used for a plaza serving the passengers or as additional retail, commercial, and residential space.

Planning efforts are continuing. A conceptual layout and facility requirement analysis have defined land and access requirements for a successful operation. The next phase will depend upon the developer and city of Brisbane. The developers will establish their requirements at the terminal site based on market conditions and costs. The city of Brisbane, who is the public entity, will confirm the plan. Input from local residents, officials from the cities involved, Caltrain, and landowners will address land use in the Southern Terminal vicinity and station access for pedestrians and vehicles.

CONCLUSION

Redevelopment of the Third Street corridor is an important part of the general plan for San Francisco. The area is one of the few available for development. The Third Street corridor provides sites for large urban centers at either end and the center. Redevelopment of these sites will anchor infill development generated between the centers. The resulting developed corridor should provide a balanced mix of residential, commercial, and industrial land uses with a mix of buildings reflecting different periods. It will also provide public transportation access.
FIGURE 4 Alternative B.
ALTERNATIVE 2

Figure 5

FIGURE 5 Alternative 2.
The Southern Terminal is a key element of that plan. It provides a public transit center for the southern end. It works well with the Transit Village concept favored by San Francisco for development in its limits. It is important to the commercial development planned for the city of Brisbane in its limits. Building a major intermodal station at the southern terminus for the Third Street LRT will generate benefits to the stakeholders in the redevelopment, which include the owner/developer and the cities of San Francisco and Brisbane. It could become a major public transportation interchange. The Southern Terminal will provide residents and workers with a selection of public transportation services.

The Southern Terminal, as a joint development, could become a center and focus for the redevelopment based on good public transportation. The city and county of San Francisco could achieve a transit village that provides needed housing served by public transportation. The city of Brisbane could achieve a commercial center served by three different public transportation systems. It has potential to become an asset for the owner/developer, the transportation agencies and the cities, but it requires a collaborative effort between these parties to address and resolve the major issues early with their goal of a major intermodal public transportation facility that enhances the adjacent community.