Section 11
Ground Access System

The ground access system consists of the roadways and the parking areas that serve landside and airside facilities at the airport.

Figure 11-1 presents the recommended ultimate configuration of the ground access system. Primary facilities include regional roads, passenger access roads, service roads, cargo access roads, a perimeter (airside) road, terminal curb roadways, short-term parking structures, long-term parking lots, rental car staging, and employee parking.

Forecasts

Forecasts of vehicular traffic were prepared for future phases of airport development up to its ultimate capacity. The traffic forecasts were derived from forecasts of airside activity, including the volumes of air passengers that the airport will serve. Table 11-1 presents forecast activity for the ultimate development of GSP.

Table 11-1 Ultimate Ground Access Peak Hour Traffic

<table>
<thead>
<tr>
<th>Peak Hour Traffic</th>
<th>Vehicles to Airport</th>
<th>Vehicles from Airport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inbound peak hour</td>
<td>3,100</td>
<td>2,300</td>
</tr>
<tr>
<td>Outbound peak hour</td>
<td>1,700</td>
<td>3,100</td>
</tr>
</tbody>
</table>

For purposes of planning initial construction on the way to development of the airport to its ultimate capacity, it was determined that the road projects should be designed initially to serve traffic volumes anticipated in 2023 when the airport is expected to serve 5.3 million airline passengers annually.

The traffic volumes forecast for 2023 are approximately two-thirds of the volumes expected at ultimate airport capacity. It would be inefficient and uneconomical to build at this time the number of lanes, intersection controls and parking spaces required for ultimate development. Analyses of the internal ground access system as planned for 2023 show that the system will be adequate for the traffic volumes forecast for that year.

The same system configuration with some additional lanes and adjustments will also be adequate for the ultimate development.

Regional Road System

Primarily three routes provide ground access to GSP: I-85, SC14, and SC101. Proposed improvements to each of these routes as related to airport development are discussed below. Several other roads, which surround the airport, are discussed, including the Brockman-McClimon road, the existing dedicated cargo road to the BMW plant, and SC80 (J. Verne Smith Parkway), which will run along the western border of the airport.

Interstate 85

I-85 is a major Interstate freeway that parallels the southeast airport boundary; it carries a mix of traffic types. Traffic demand on this route will be related to both airport and regional growth.

Significant improvements are proposed for the road segment between the I-85/SC14 interchange and the I-85/GSP terminal access road interchange. Currently, this section of road is subject to unfavorable traffic conditions, which are largely due to inadequate number of lanes and the proximity of the two interchanges. This situation will worsen with time as airport-related and other traffic grows. It will be necessary to eliminate the complex weaving sections created by back-to-back interchanges. The proposed solution is presented in Figure 11-2. With this solution, the on- and off-ramp traffic of the two interchanges is completely separated by grade. I-85 is under the jurisdiction of the Department of Transportation and the proposed solution has been presented to the Department of Transportation as a recommendation. The plan will require some land acquisition.

SC101

SC101 is a major east/west route with a large amount of truck traffic. The traffic demand on this route will be generated primarily from regional growth and not from airport-related development. Because access to the northern area of the airport will be from this route, however, some airport-related improvements are proposed.

SC101 is a 5-lane road where the center lane is used a turn lane. At ultimate airport development, it is recommended to provide an additional lane to a portion of SC101, which runs through the northern border of the airport. This will allow through traffic on SC101 to flow uninterrupted and will create a safer turning situation for traffic entering the cargo area during peak periods.

SC14

SC14, which cuts through the southwest area of the airport, carries a mix of airport and non-airport related traffic. Its traffic demand, therefore, will be generated by both airport and regional growth. The route has been reconstructed with additional lanes and improvement at SC 14 and at the south airport service drive (GSP Drive).

Other Roads

Brockman-McClimon Rd. runs along the east side of the airport property. It begins at SC101, crosses Interstate 85, and continues south through Spartanburg County ending at Bennetts Bridge Rd. This road is likely to be widened and realigned to accommodate a proposed new interchange that will serve the BMW plant.

A dedicated cargo road connects the cargo apron directly to the property of the BMW assembly plant. The existing alignment of this two-lane road lies within the runway protection zone of future Runway 4R/22L. When the runway is built, the runway alignment will have to be shifted north.

Along the western boundary of the airport, the SCDOT has the extension of SC80 under construction. This road, which is expected to be completed by 2005, will be named the J. Verne Smith Parkway. It will provide access to future on-airport commercial areas via dedicated turning lanes.
Figure 11-2  Interstate 85 Interchange
**Internal Road System**

The major elements of the internal road system include terminal area and passenger access, service, cargo access, and perimeter roads.

**Terminal Area Roads**

Alternatives for the terminal area road system were examined by dividing the system into four elements, and considering possible options for each one. Selected options were then combined to form alternative terminal area road system alternatives. The four elements as shown in Figure 11-3 are:

- The terminal loop road provides access to the terminal curbs, short-term and long-term parking, re-circulation within, and exit from, the terminal area.
- The short-term parking system provides access into the parking structures, circulation between them, and an exit, or exits, where parking fees are collected or tokens are received to open the exit gates.
- The long-term parking system will include two lots with access to and from GSP Drive.
- GSP Drive connects other activity areas to one another and to the terminal loop road.

Options for the terminal loop road were joint use of GSP Drive or alignment on either side of Dillard Creek.

Options for short-term parking included an exit from the first parking structure or an exit plaza near the fountain between the first and second parking structures.

Options for GSP Drive included relocation or realignment, grade separations at terminal loop road crossings and various intersection arrangements.

Two alternative plans shown in Figures 11-4 and 11-5 were prepared based on the examination of options.

Alternative A keeps the east side of the terminal loop road on the west side of Dillard Creek. The loop road passes through the existing long-term parking lot and removes some of the parking spaces, which can be replaced by extending the existing lot to the south. The short-term parking exit is located in the first parking garage.

Alternative B places the east side of the terminal loop on the east side of the creek. The short-term parking exit is through a plaza near the fountain between the first and second parking structures.

Alternative B places the east side of the terminal loop on the east side of the creek. The short-term parking exit is through a plaza near the fountain between the first and second parking structures.

Alternative B was selected for the master plan because it avoids the existing long-term parking lot and therefore does not require any southern extension as Alternative A does, its short-term parking exit is not inside a parking structure and it allows access into the first parking structure immediately after the terminal curbs.
It provides grade separations over and under GSP Drive, loop ramps for interconnection between GSP Drive and the terminal loop road, and a loop ramp onto the terminal loop road for traffic leaving the short-term parking system. It also provides more opportunities for effective landscaping.

**Passenger Access Roads**

The main access route for all passenger-related traffic (commercial and general aviation) is provided via a direct interchange from Interstate 85. The existing terminal access road corridor is maintained through future development. A roadway loop configuration in the terminal area provides smooth, clear movement of vehicles through this area. Along this access road, the inbound decision-making sequence at ultimate development can be described as a series of steps (see Figure 11-6):

1. Vehicles enter the airport from the interchange at I-85
2. First decision is a choice to turn off to long-term parking and general aviation or to proceed to the passenger terminal area
3. At the next decision point, drivers may exit to the short-term parking area or proceed to the terminal curbs
4. The final inbound decision point is a choice between the road to the departure curb and the road to the arrival curb

Outbound vehicles from both the terminal curbs and the parking area have the option to re-circulate in the terminal area or exit to I-85 and the regional road system.

The passenger access road will evolve over time from its present configuration to the one described above. Consistent with the objectives of the Airport Commission, the goal of the phasing plan is to maintain the current alignment and configuration well into the future. As portions of the passenger terminal expand, the access road will undergo appropriate changes as described below.

- The first stage of development included the construction of a new parking structure. The terminal access road maintained its current loop alignment; however, an additional exit was added to provide access to the new structure (see Figure 11-7a).
- At the next stage of development, the passenger terminal will be extended to the north, increasing its curb frontage. Access to the parking structures will remain the same; however, a new road to the north will provide loop system access to the now-extended terminal curb. A new surface lot for long-term parking will be built south of the terminal area. It will connect with the terminal loop road via GSP Drive (see Figure 11-7b).
- In the final stage of development, the passenger terminal will be further extended to the north and a third parking structure will be built. At this stage, the alignment of the loop system will be expanded, with the parking and terminal curb access roads shifting further to the north. The newer long-term surface parking lot can be expanded to the south. The existing long-term parking lot can remain unchanged in order to retain all the trees in the area to the south of it and opposite to the fountain on the other side of the GSP Drive. Both lots will continue to connect to the terminal loop road via GSP Drive (see Figure 11-7c).

**Figure 11-6 Terminal Inbound Decision-Making Sequence**

**Figure 11-7 Phasing of Passenger Access Roads**
Service Roads

Service traffic to the south end of the Midfield Zone is separated from passenger-related traffic via GSP Drive, a service access road from SC14. This is currently a two-lane, bi-directional road which will be expanded to four lanes by ultimate development. Major facilities in the south midfield served along this road include GSE maintenance, facility maintenance, catering, central plant, and rental car storage. GSP Drive further extends into the middle of the Midfield Zone, providing an alternative access route to general aviation and the air traffic control tower. This road has unrestricted access with the exception of the northernmost segment of the road leading to the control tower.

Cargo Access Road

Access to the cargo area in the north is direct via a four-lane road with a center turn lane from SC 101. The layout of the roadways within the cargo complex is to be configured at a time when the shape and layout of the cargo buildings in the complex are known.

Perimeter Airside Road

Perimeter airside roads are provided to allow controlled access to airfield facilities and for security.

Terminal Curbs

At ultimate development, the total terminal curb length is 2,500 feet with 1,500 feet adjacent to the building and the additional 1,000 feet located at an island curb. With a single level terminal configuration, departure traffic (drop-off) will be accommodated at the north end, and arrival traffic (pickup) at the south end. This configuration is very flexible to accommodate the peak traffic for both departures and arrivals.

A cross section of the terminal curb roadway is shown in Figure 11-8. The lanes will function in the following manner:

- Pickup/drop-off lane – Vehicles momentarily park in this lane to load and unload passengers and baggage.
- Maneuvering lane – This lane provides a buffer for vehicles pulling into or out of the pickup and drop-off lane. At the adjacent curb, some double parking may be allowed during peak periods.
- Through traffic lane – Faster moving traffic travels in this lane.

Figure 11-8 Terminal Curb Section

Parking Areas

Parking facilities located throughout the airport include:

- Structures for short-term parking and rental car ready and return
- At-grade lots for long term parking, rental car storage, and employee parking

Short-Term Parking

Passenger terminal short-term parking is provided in three parking garages, two of which exist and one to be built in the future. The new structure will be very similar to the existing garages but larger. The three garages will provide approximately 5,000 parking stalls. At ultimate development, the garages will be connected to one another with a through traffic lane on the second floor of the structures.

The majority of ticket dispensers are centrally located at the main parking entrance north of the northernmost structure. Additional ticket dispensers will be provided at one alternative entrance to the southernmost (existing) garage. Fee collection booths will be located at a centralized parking exit next to the fountain between the existing two garages.

Pedestrian access to terminal will be via at-grade crosswalks across the terminal curb roadway. Pedestrian vertical circulation within the garages will be by elevators and stairs.

Long-Term Parking

The existing long-term parking surface lots will continue to serve the airport through the foreseeable future. Incremental expansion may be required to satisfy demand.

For the final stage of the development of passenger access roads (see Figure 11-7c), long-term parking will be located in an open lot southeast of the parking garages. The capacity of this lot is planned to reach approximately 2,000 stalls, which will bring the total number of long-term parking spaces to more than 3,000 stalls.

Both long-term lots will have access from the main terminal access road via GSP Drive. Continuous shuttle service will provide transportation between the lot and the passenger terminal.

Rental Car Staging

Rental car pickup and drop-off now occurs in dedicated spaces on the first level of the southernmost short-term parking garage. Additional rental car parking is located in the rental car service facility adjacent to GSP Drive. At ultimate development, rental cars may be removed from the parking garage and relocated to a consolidated rental facility adjacent to the rental car service center.

Employee Parking

Approximately 500 parking stalls will be provided airport-wide for employees. This employee parking will be provided at various lots near key employment areas. For passenger terminal employees, an area is located within the long-term parking lot. For all cargo-related employees, centralized parking is provided adjacent to the cargo complex. General Aviation employees will park in lots adjacent to the G/A facilities.

Rail Access

An on-airport rail station should be provided once the Southeast High-Speed Rail corridor has been defined.