

**SAN ANTONIO BRAC 2005
GROWTH MANAGEMENT PLAN**

TASK 2 REPORT

**SAN ANTONIO MILITARY MEDICAL CENTER
PUBLIC TRANSPORTATION
EVALUATION OF MASS TRANSIT NEEDS**

**PREPARED FOR
CITY OF SAN ANTONIO
OFFICE OF MILITARY AFFAIRS**

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SEPTEMBER 2008

SAN ANTONIO BRAC 2005 GROWTH MANAGEMENT PLAN
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SAN ANTONIO BRAC 2005 GROWTH MANAGEMENT PLAN

EVALUATION OF MASS TRANSIT NEEDS

TASK 2 REPORT

INTRODUCTION

This report discusses preliminary findings associated with Task 2 of the San Antonio Base Realignment and Closure (BRAC) Growth Management Plan study. The goal of this plan is to develop strategies to manage BRAC-related population and employment growth in San Antonio at Fort Sam Houston and surrounding areas where redevelopment could occur. **Figure 1** illustrates the location of Fort Sam Houston relative to other military installations and major streets and highways in the San Antonio metropolitan area.

The transit needs assessment task was designed to be a “work in progress” that would be subject to ongoing revisions as new information materialized. A detailed data request was prepared in March 2008 describing the information required to conduct a mass transit assessment at successively higher levels of detail and certainty (see Appendix A). If enough information were available to prepare a transit ridership forecast, this information could be used to request changes in transit service from VIA Metropolitan Transit (the public transit agency for the San Antonio metropolitan area). Otherwise, limited information could be used to quantify certain characteristics of potential transit service enhancements. The results presented in this memorandum are based on available information and related decisions made as of late May 2008.

VIA TRANSIT SYSTEM DESCRIPTION

VIA Metropolitan Transit provides local bus, demand responsive shuttle and vanpool modes within a 1,200 square mile service area. **Figure 2** shows the bus transit routes on the VIA system. The system plan is a mixture of downtown-oriented service routes with a limited number of routes in a grid configuration conforming to the San Antonio arterial street grid. VIA Metropolitan Transit is in the process of evaluating an express bus line between the downtown San Antonio transfer center, and the northwest San Antonio medical center cluster located west of the junction of IH-10 north and IH-410 north. If provided, this service may be useful for military medical students for clinical training.

Based on 2006 data from the Federal Transit Administration, there were an average of 114,000 transit boardings per day (including Saturday and Sunday service days with lower ridership) on VIA’s bus transit service. The average weekday (Monday through Friday) ridership was about 130,000 boardings per day. These statistics count each boarding separately, even if two or more boardings are required to complete one transit trip. VIA has approximately 450 buses available. Based on 2006 statistics, the operating cost per hour of bus operation was \$70.71. This is an indicator of the cost to provide new service. Additional capital costs would be necessary to purchase new buses, or to construct transit station infrastructure (bus shelters, off-street loading areas or on-street bays, etc.)

Figure 1: Vicinity Map - Location of San Antonio Military Installations

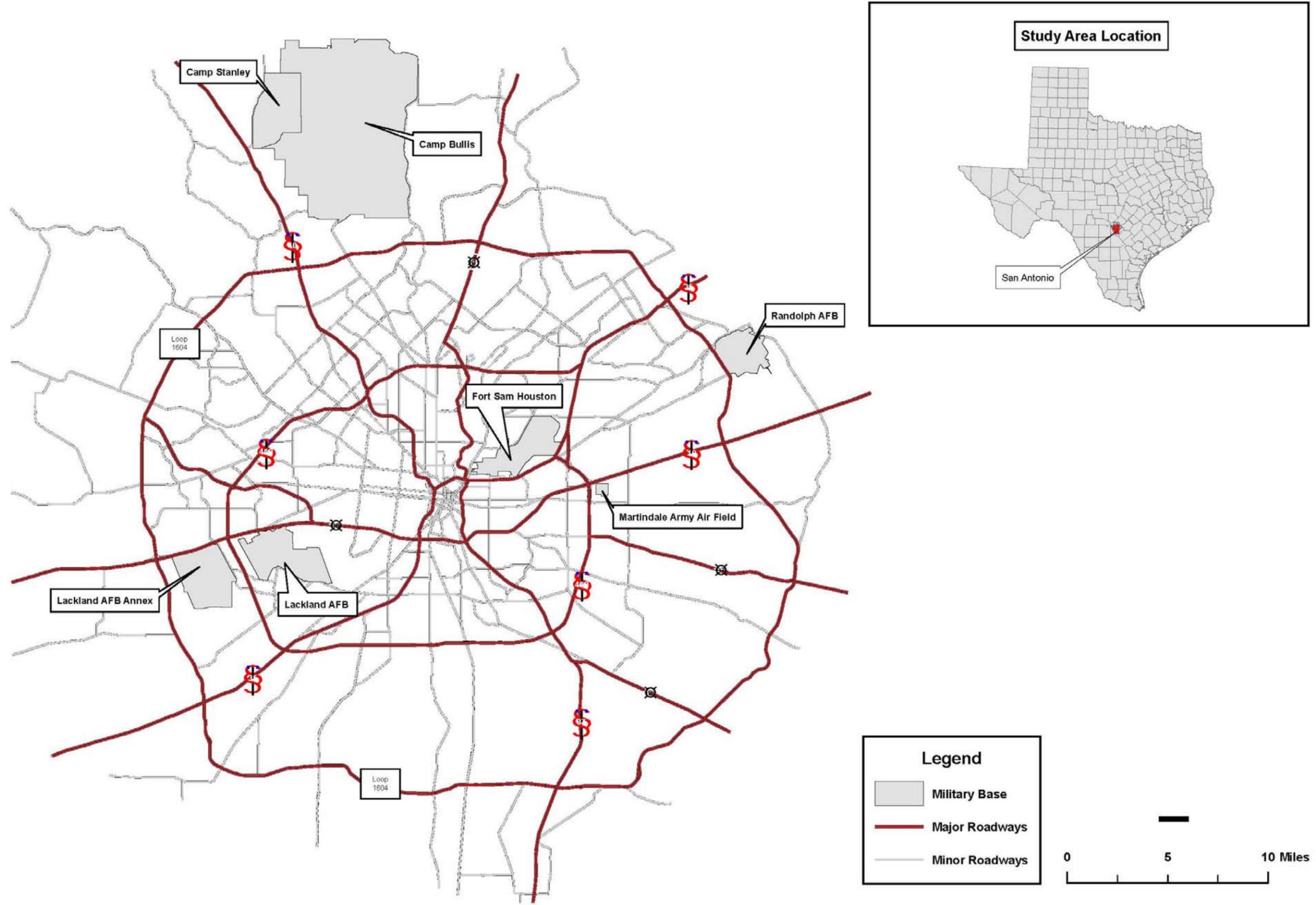
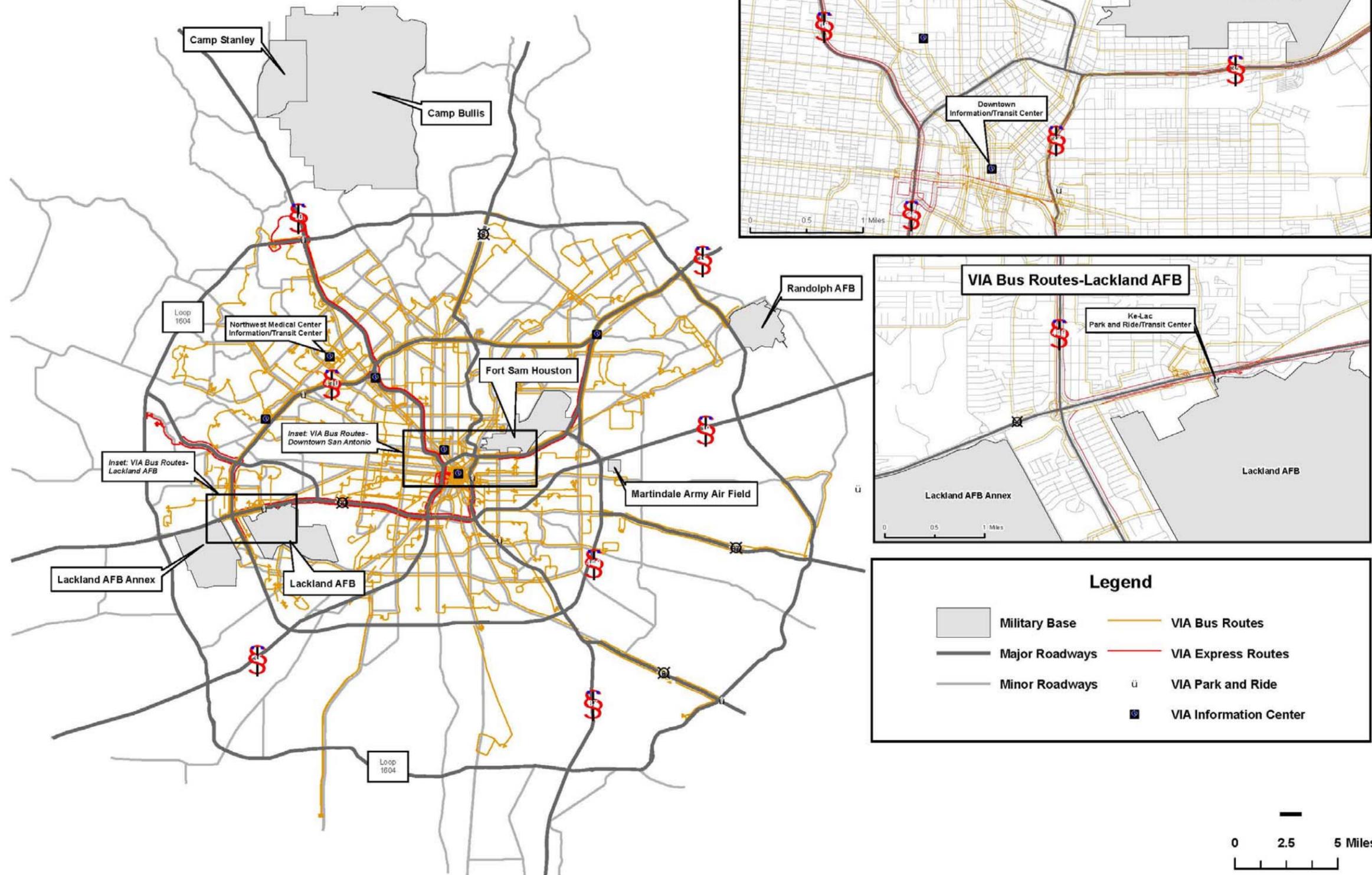


Figure 2: San Antonio Bus Transit Routes - VIA Metropolitan Transit



INTER-INSTALLATION TRANSIT SERVICE

One objective of the transit needs assessment was to determine what type of transit service would be needed for inter-installation travel. The intent was to provide shuttle service between Fort Sam Houston and Lackland Air Force Base for medical students that would be attending classes at both installations. By April 2008, an internal evaluation of military medical training course schedules and expected student populations concluded that there would be insufficient demand to warrant exclusive transit service between the two installations. However, evaluation of existing service and a planning level assessment of inter-installation service options resulted in the following findings:

- Use of existing VIA bus service between the two installations would require a transfer at the downtown San Antonio transfer center. With one downtown transfer, VIA Routes 21 and 76 can be used to make a 16.8 mile trip between the installations in about 73 minutes (one hour, thirteen minutes). The average speed would be 13.8 miles per hour.
- For future planning purposes, if a direct express route were to be provided between the installations using the regional freeway system, it should be possible to complete a one-way trip in approximately 30 minutes. Though the location of the terminal bus stops have not been defined, the installations are separated by about 16 miles, and at least 15 miles of this distance is by freeway (at 60 miles per hour, or one minute per mile of freeway travel time). Therefore, a single bus on this route could provide one transit service departure every hour from each installation. Two buses could provide one departure every 30 minutes. Note that the above performance assumes that a local feeder service would be provided for on-base/on-post travel at each installation, and that one stop on the feeder service would be at the express transfer station. Therefore, a local-to-express transfer may be necessary at the origin end of the trip, and an express-to-local transfer may be necessary at the destination end.
- Another likely scenario could consist of a combination express-local service. This would consist of running a bus on a local circulator route within one installation to pick up inter-installation travelers, then an express run to the other installation, followed by a circulator route within the other installation and an express run back to the first installation. Both the on-base/on-post circulator route and the between installation express route would be performed by the same bus, therefore eliminating the need for a transfer, and the associated waiting at the bus stop. The total one-way travel time depends on the on-base/on-post route selected, the number of stops, and any delays associated with installation entry at the access control points (ACP). To minimize ACP delays, a dedicated installation-to-installation bus service could be pre-certified for express entry under appropriate security measures.

TRANSIT SERVICE FOR MEDICAL INTERNS

Some military branches require internships at private hospitals and medical clinics as part of medical training requirements. One objective of the transit needs evaluation was to determine whether it could be feasible to provide transit service between installations (Fort Sam Houston or Lackland Air Force Base) and significant private medical centers throughout San Antonio that could host student interns. Information regarding the type of facilities that could provide eligible training was not provided. Though it was not clear what types of medical facilities would qualify for military medical training credit, it was assumed that the concentration of hospital beds would be a surrogate indicator of where students would need to travel for clinical training opportunities.

Using the database from the City of San Antonio Geographic Information System, a list of twenty major medical facilities with a total of 5,728 beds was identified (see Appendix B). The largest clusters of hospital beds are located in northwest San Antonio west of the junction of IH-10 north and IH-410 north (2,345 beds or 40% of total beds) and near downtown San Antonio (1,978 beds or 35% of total beds). **Figure 3** illustrates the location of major hospitals throughout San Antonio, including the clusters in the northwest and downtown areas.

An assessment of travel times to and from each major hospital or cluster was conducted based on information from the VIA Metropolitan Transit web page. With no changes in transit service assumed, Table 1 summarizes the bus routes, number of transfers, travel distance and travel time between Fort Sam Houston and major medical centers or clusters. **Figure 4** illustrates both the location of the major medical centers in San Antonio, and the transit route that would be used to reach each center. In most cases, the downtown transfer center must be used to make the appropriate connections to reach each medical center.

Table 1: VIA Metropolitan Transit Bus Routes, Transfers, Travel Distance and Travel Time between Military Medical Training Installations and Major Medical Centers or Clusters

Origin/Destination¹	VIA Route(s)²	Transfers²	Route Distance (Miles)³	Travel Time²
FSH* to Downtown	21, 28	1	6.24	23 min
Lackland AFB** to Downtown	76, 28, 14	2	11.65	40 min
FSH to Lackland AFB	21, 76	1	16.77	1 hr 13 min
FSH to Northwest Medical Ctr.	21, 77, 91	2	15.49	1 hr 46 min
FSH to North Central Baptist	21, 77, 3, 648	3	22.61	2 hr 31 min
FSH to Northeast Methodist	21, 77, 14, 640	3	23.64	2 hr 42 min
FSH to Northeast Baptist	21, 632, 509	2	15.29	1 hr 6 min
FSH to Southeast Baptist	21, 28	1	13.99	54 min
FSH to Southwest General	21, 77, 51	2	14.86	1 hr 30 min

*Fort Sam Houston

**Air Force Base

¹ Trip O/D for FSH is BAMC, Trip O/D for Lackland is VIA Ke-Lac Transit Center

² VIA Routes, Transfers and Travel times calculated utilizing VIA internet trip calculator service

³ Distance calculations utilize VIA GIS route data

Figure 3: Location of Major San Antonio Medical Centers

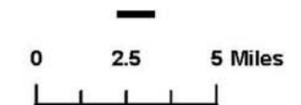
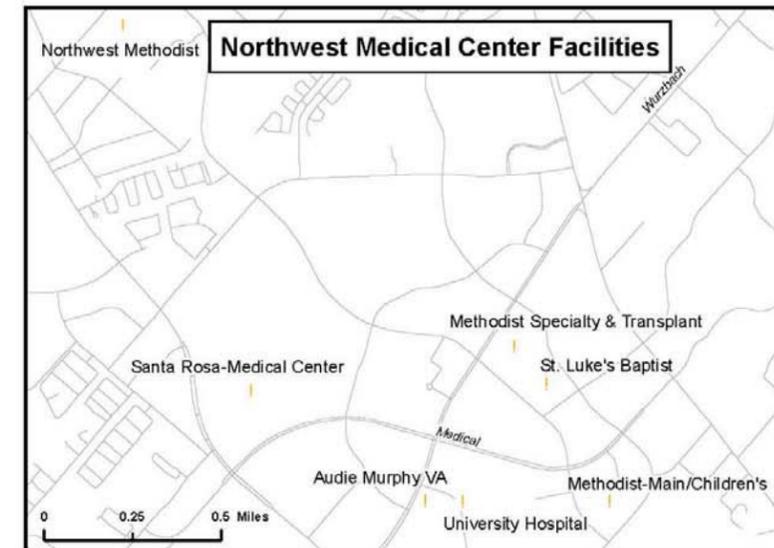
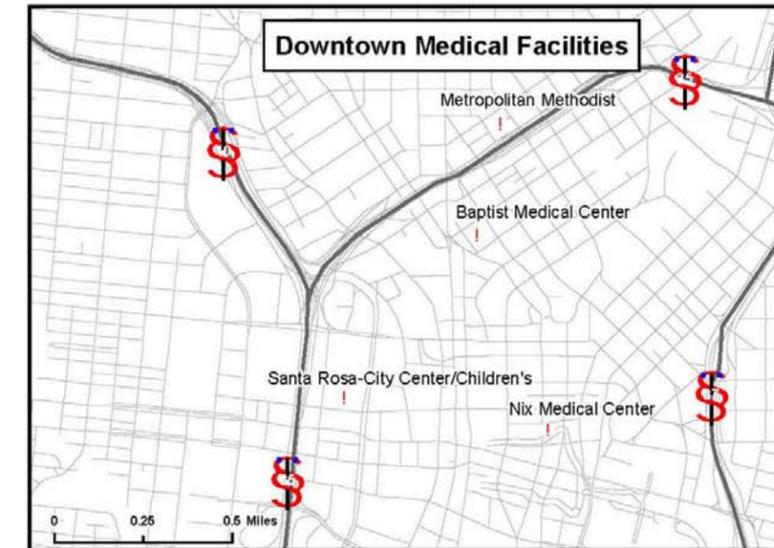
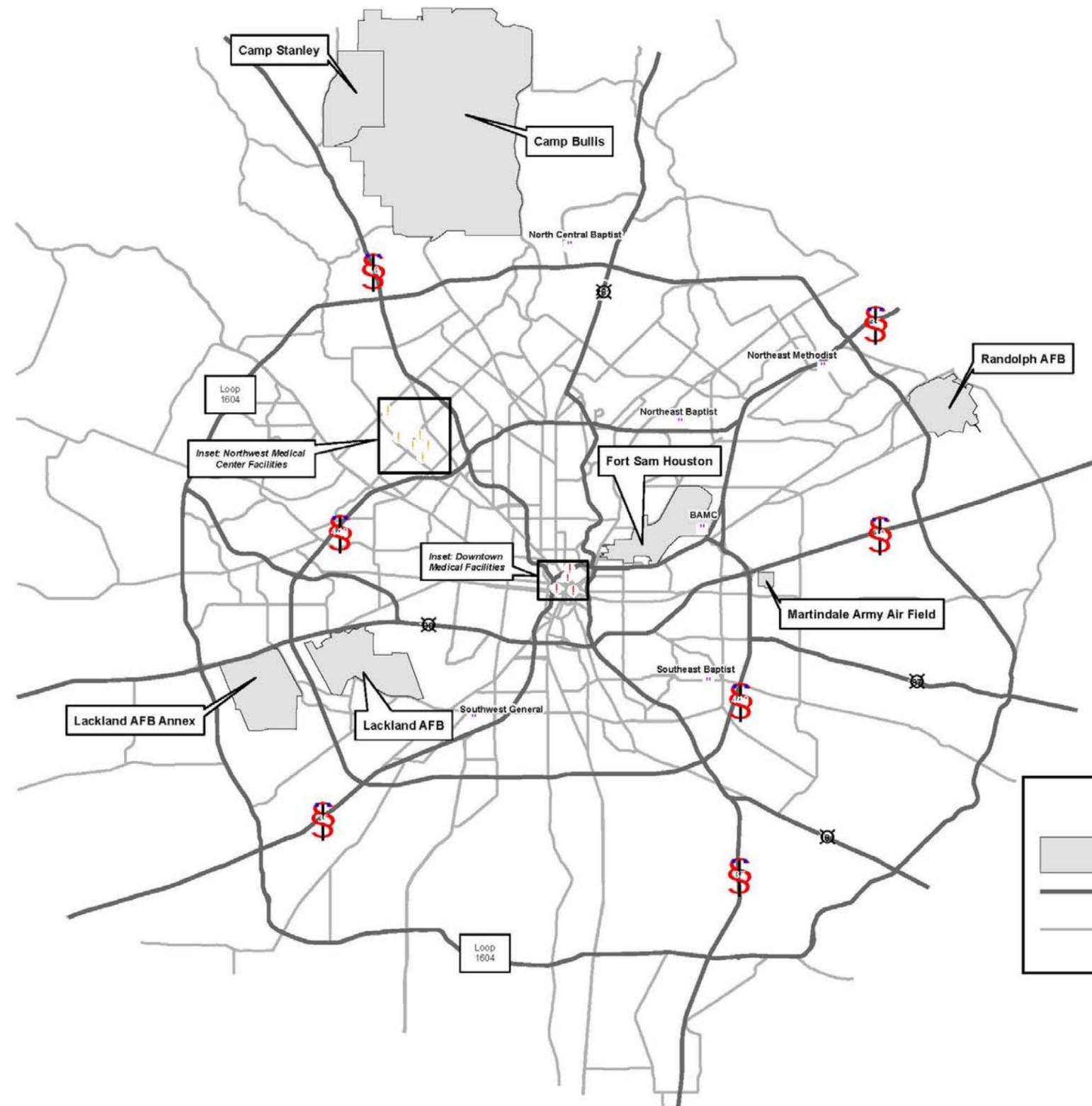
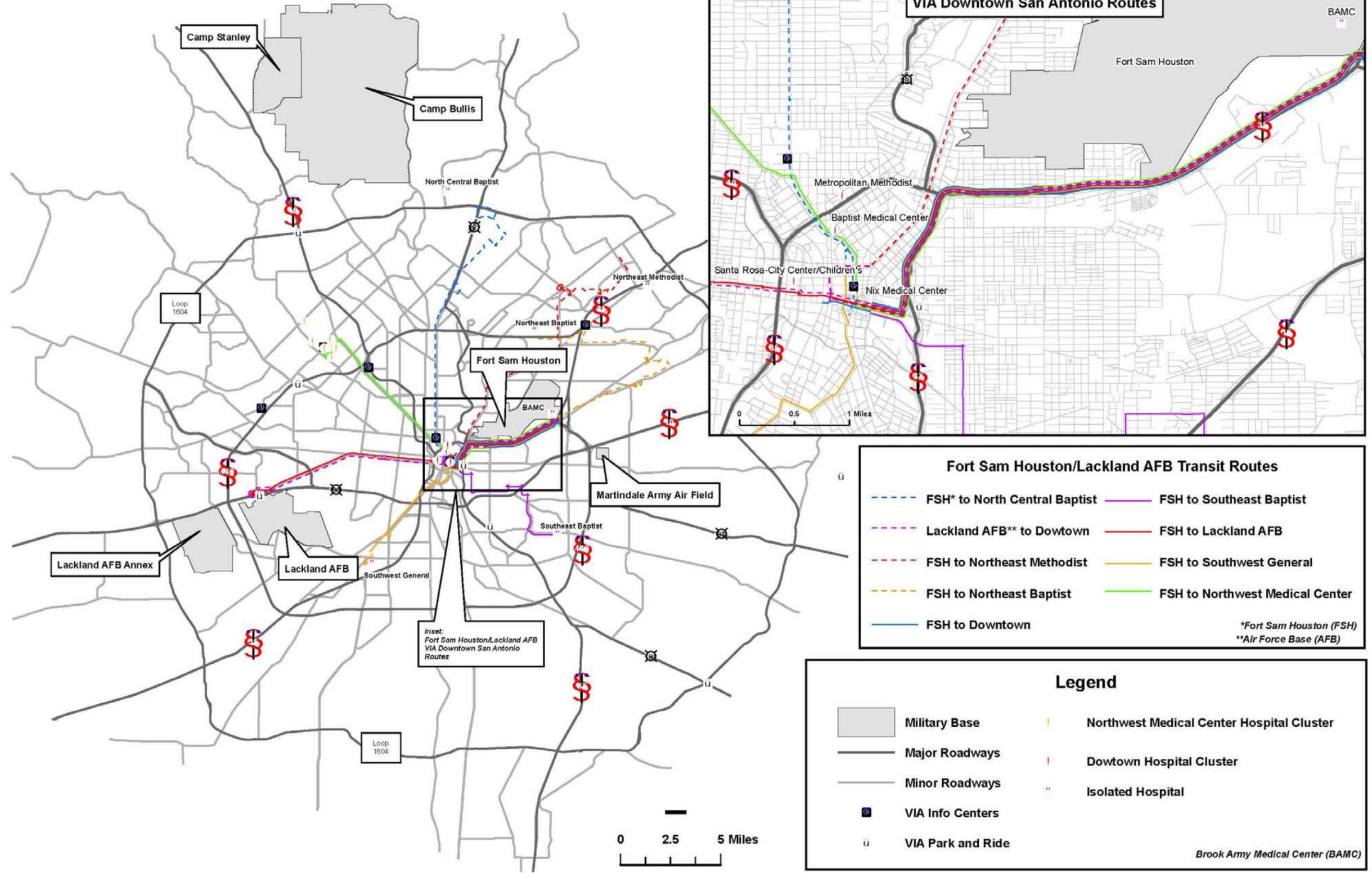


Figure 4: VIA Metropolitan Transit Bus Routes between Military Medical Installations and Medical Centers



CONCLUSIONS

- Based on the documented evaluation of existing travel times between Fort Sam Houston and Lackland Air Force Base, as well as the travel times between each installation and major medical centers, use of existing mass transit service between these activity centers would result in fairly long travel times that are not likely to be tolerated for such trips.
- Any request to change existing public transportation service must include a transit ridership forecast study to help VIA Metropolitan Transit justify the service change, and determine what changes in service are required.
- If significant concentrations of commuter or student travel are identified as ongoing plans are refined, vanpools are one option that could be explored where bus transit may not be feasible.

NEXT STEPS

- An evaluation of local transit services should be conducted based on redevelopment that may occur in the areas surrounding Fort Sam Houston. Commitments from developers would be needed to produce reasonable transit ridership forecasts that could be used to modify or upgrade mass transit services in the area.
- An analysis of a spatial database indicating the areas in which current installation employees live could lead to the development of a traditional carpool-vanpool program. A database of this type was requested as part of the initial data request for this transit needs assessment task. Such a program could be administered by an on-base/on-post transportation management coordinator. The coordinator would be responsible for identifying ridesharing opportunities, coordinating with VIA and other agencies to provide van pool service or bus transit service changes, coordinating carpool opportunities, disseminating incentive programs such as transit passes, and monitoring the effectiveness of such programs and ongoing funding needs.
- In the event that transit ridership forecasts are too low to justify new service in advance of redevelopment, demonstrated changes in transit demand that occur after redevelopment can be used to provide convincing evidence for new service. The most common approach is to “build ridership” by helping to create carpools and vanpools. If sufficient demand is generated by these modes, and is documented by the transportation management coordinator, this would provide evidence to lobby for new bus service patterns from VIA Metropolitan Transit.

**SAN ANTONIO BRAC 2005 GROWTH MANAGEMENT PLAN
EVALUATION OF MASS TRANSIT NEEDS
TASK 2 REPORT**

APPENDIX A

**TRANSIT NEEDS ASSESSMENT WORKING
PAPER AND INFORMATION REQUEST**

Preliminary Transit System Planning

Initial Data Request

Introduction

The purpose of this document is to identify data requirements for development of a transit system plan to support travel patterns of military personnel generated by Fort Sam Houston and Lackland Air Force Base as a result of Base Realignment and Closure Activities (BRAC). The document identifies what level of detail can be achieved in the transit service plan given the amount of data obtained, and lists various questions that will facilitate the first stage of transit system planning.

Transit System Planning Process

The development of a transit service plan involves a sequential series of planning activities. Each sequential activity requires more and more specific information about the pattern and magnitude of travel to go from a rough to a detailed definition of service requirements. Working from the roughest to most detailed levels, the planning process defines the units of service needed to develop a cost estimate for the service. From these cost estimates, it is possible to conduct a trade-off evaluation to establish a balance between costs and service coverage.

The extent to which a service plan can be determined for installation-related travel at this starting point in the planning process is dependent on what data can be accumulated to develop a service specification. The *Transit Planning Data Requirements* section later in this document describes the sequence of planning process outputs that lead to a detailed specification of transit service. Though there is interaction among some of the processes, they are more or less in a sequential order suitable for sketch planning purposes.

Transit Market Segments

Before discussing data requirements for each part of the system planning process, it is useful to answer the relevant questions separately for each transit market segment. Recommended market segments are listed for consideration. It is anticipated that more data will be available to develop a more refined transit service plan for some market segments. For others, only a rough definition of service requirement may be possible due to the lack of supporting data.

- Inter-installation Travel – This is envisioned as a point-to-point shuttle service between Lackland Air Force Base and Fort Sam Houston. The route could include local circulation among multiple locations within each installation at each end of the express trip between installations.
- Commuter Travel – Consists of students and other staff that use some form of mass transit to travel between home and the nearest installation. Travel modes could include carpools, vanpools, use of public mass transportation, or mass transportation services administered by the military.
- Clinical Training Travel – Consists of travel between military installations and private medical facilities throughout the metropolitan area for purposes of providing hands-on clinical training to medical students.

- Intra-installation Circulation – Consists of travel within the access controlled confines of each installation. Purposes could include travel among various on-base/on-post buildings, or shuttle service between buildings and remote parking areas, express transit transfer areas, or interface transfer centers with public transit routes located adjacent to the installation.

Transit Planning Process Outputs

The following paragraphs describe sequentially more detailed planning outputs associated with the development of a detailed transit service plan. Though it is not anticipated that this project effort will result in a detailed plan for all market segments, this section at least identifies what level of detail can be achieved from available data, and what additional information would be needed to develop a more-detailed specification of service requirements, cost estimates, and cost-benefit analysis information.

Network Plan – The network plan identifies the location of land uses that generate transit trips, and identifies a two-dimensional network of transit linkages that would be needed to connect these uses.

Route Plan – The route plan requires that the patterns of travel among land uses be understood enough to identify high-volume movements. The route plan consists of a pattern of transit routes (or corridors) that provide full coverage of the network plan, and provide the most direct service for the highest-volume travel patterns.

Operating Hours – The plan for hours of operation considers constraints on the times in which travel is expected to occur. Hours of operation can vary by day of week. In some cases, hours of operation are specific to each route, but there is normally a general overall schedule of operation for the system (i.e., from 6:00 am to 9:00 pm, Monday through Friday).

Service Headway – Service headway refers to the time between the arrival of successive transit vehicles on a route. Though passenger demand and vehicle size affect the determination of service headway, the schedule for activities could also dictate service frequencies. (i.e., if there are classes in a college that occur at 90 minute intervals, transit vehicles need to be available at the start/end time of each class in 90 minute intervals).

Transit Mode – The most effective transit mode is determined by considering the trade off between travel time and frequency of stops. Transit modes either provide fast travel times or they stop frequently. Thus the frequency of stops and the route travel time are trade off decisions affecting the selection of a travel mode.

Vehicle Type – The key characteristic of the type of vehicle is the number of passengers it can carry. The type of vehicle required is dependent on the concentration of travel during peak ridership periods. Peak ridership levels can be accommodated by providing transit vehicles with different carrying capacities depending on route demand, or by using the same type of vehicle, but providing more frequent service, or both. Assessment of a vehicle type requires a passenger travel forecast for each transit route, normally by time of day. The time of day segmentation could be as simple as peak period and off peak, or could consider more detailed travel pattern segmentations in space and time.

Number of Vehicles per Route – The number of vehicles required to service a route is computed by considering the necessary headway and the travel time required to circulate the route. For example, if the round trip travel time on a specific transit route is two hours (120 minutes), and a 30 minute service headway is desired, then four (120/30) buses are needed to provide this service headway.

Transit Planning Data Request

Development of a transit plan for the two installations is envisioned to be an iterative process. This particular effort will provide limited decision information that will go into ongoing studies to refine transit service requirements. The list of questions and data requests following this section will provide the most basic (and essential) information that can not be otherwise obtained from World Wide Web and other sources.

- *Who* is the service intended to be provided for?
- *What* type of transportation service is needed?
- *When* during the week, and during the day, is the service needed?
- *Where* are the major origins and destinations for the service?

Answers to these questions will help start the planning process for each market segment. Careful consideration of responses to these questions is greatly appreciated. Preliminary information or educated guesses (such as a range of possible values) are always better than no response. The study team will make assumptions regarding parameters that are not quantified by the response to these questions.

Questions about the North & South campuses

- Are campus maps available, for both the North and South campuses?
- Which entrance gates can the proposed service use to access each campus?
- What is the security screening process at the entrance gates?
- How long on average, in terms of minutes, does it take for a bus to make it through a security gate?
- Once on campus, where does the proposed service need to stop?
- Are there any roads, or areas on campus where the proposed service will not be allowed to go?

Questions about transportation between the campuses

- What days during the week will service need to be provided?
- What hours during the day will service need to be provided?
- How frequently will service need to be provided? (every hour, twice a day,)

- Peak demand – on any given day, at any given time, what is the estimate of the maximum number of passengers that will need to be transported between the two campuses?
- Will service be provided at fixed stops, or flag stops?
- Will service be provided via printed schedules, or “on demand” (dial-a-ride)?
- Will any stops need to be made between the two campuses?
- What is the maximum allowable travel time between campuses?

Questions about transportation to and from the private clinics

- How many private clinics are there?
- Where are the private clinics located?
- What days during the week will service need to be provided to the clinics?
- What hours during the day will service need to be provided?
- Will there be a central location, from which trips to the private clinics will originate?

Questions about the passengers

- Will any of the passengers have special needs or disabilities?
- What will be the age range of the passengers?
- Will the service only be provided to military personnel, or can passengers be both military and private citizens?
- How many trips per day, on average, will they need to use the service?
- Will they pay for the service, or will it be provided to them for free? i.e., can they just show a valid ID card to board the vehicle?
- Will they be carrying anything with them (luggage, backpacks, medical equipment,)?
- Will anyone want to bring his/her bike onto the vehicle?

Questions about the vehicles

- Are any types of vehicles “off-the-table”? (25-30 foot long mini-bus, standard 40 foot bus, 60 foot single articulated bus, 80 foot long double articulated bus)
- Are there any requirements in terms of passenger capacity?

- Are there any requirements in terms of how passengers board the bus (like the ability to “kneel”)?
- Are there any requirements in terms of passenger security / safety?
- Are there any requirements in terms of fuel / emissions?
- Are there any requirements in terms of turning radius?
- Are there any requirements in terms of speed?
- Are there any requirements in terms of the appearance of the vehicles, i.e., should there be any outward indication, in terms of insignia or other symbols, that military personnel are on-board?

Questions about the budget for the proposed service

- What is the annual budget to provide the proposed service?
[If operated in-house, the annual Operating & Maintenance budget.
If contracted out, the annual line-item expenditure for proposed service]

Priorities / Trade-Offs

- Which is more important?

Geographic Coverage: Go everywhere that anyone wants to go

Versus

Frequency: Lots of service between a handful of major destinations

Speed: Express service (direct and fast) between 2 major points

Versus

Many stops: Local service that is diverted from main roads and stops at every block

Many small vehicles: So that you can take a handful of passengers to many destinations

Versus

A few large vehicles: So that you can take many passengers to 1 or 2 main destinations

Revenue generation: A service that has sufficient patronage (fare-box recovery) to pay for itself, or maybe even make a profit

Versus

Public good: A service that will be totally subsidized by SAMMC.

Any Additional Information

- Is there any additional information that you feel will assist us with the planning effort?

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APPENDIX B

**SAN ANTONIO MEDICAL CENTERS AND
NUMBER OF HOSPITAL BEDS**

**SAN ANTONIO METROPOLITAN AREA HOSPITALS AND
NUMBER OF HOSPITAL BEDS**

Hospital Name/Cluster	Number of Beds
Downtown Hospital Cluster (Total)	1,978
Baptist Medical Center	654
Santa Rosa	407
Santa Rosa Children's	196
Santa Rosa Rehab Center	262
Metropolitan Methodist	279
Nix Medical Center	180
 Northwest Hospital Cluster (Total)	 2,345
St. Luke's Baptist	291
Santa Rosa Medical Center	137
Methodist - Main	672
Methodist Children's	150
Methodist Specialty & Transplant	20
Methodist - Northwest	37
University	604
Audie Murphy VA	434
 Isolated Hospitals (Total)	 1,405
Southwest General	319
Southeast Baptist	181
Northeast Baptist	213
Brooke Army Medical Center (BAMC)	450
Northeast Methodist	116
North Central Baptist	126
 Total Beds – All Hospitals	 5,728