

route operator calls from AT&T Customer to AT&T operators at AT&T's option. Where technically feasible, GTE shall route local Operator Services calls (0+, 0-) dialed by AT&T Customers directly to the AT&T Local Operator Services platform, unless AT&T requests otherwise pursuant to Section 28.7.1. Such traffic shall be routed over trunk groups specified by AT&T which connect GTE end offices and the AT&T Local Operator Services platform, using standard Operator Services dialing protocols of 0+ or 0-. Where intraLATA presubscription is not available, GTE will provide the functionality and features within its local switch (LS), to route AT&T Customer dialed 0- and 0+ IntraLATA calls to the AT&T designated line or trunk on the Main Distributing Frame (MDF) or Digital Cross Connect (DSX) panel via Modified Operator Services (MOS) Feature Group C signaling. Where IntraLATA presubscription is available, AT&T Customer dialed 0- and 0+ intraLATA calls will be routed to the intraLATA PIC carrier's designated operator services platform. In all cases, GTE will provide post-dial delay at no greater than that provided by GTE for its end user customers. AT&T shall pay GTE's costs, if any, pursuant to the pricing standards of Section 252(d) of the Act, and in such amounts or levels as determined by the Commission for implementation of such routing.

- 4.2.1.29. If AT&T requests the termination of Local Switching, GTE shall promptly remove the class of service assignment from the line.
- 4.2.1.30. If an AT&T Customer subscribes to AT&T provided voice mail and messaging services, GTE shall redirect incoming calls to the AT&T system based upon presubscribed service arrangements (e.g., busy, don't answer, number of rings). GTE shall also provide to AT&T for purposes of AT&T providing voice mail to AT&T Local Service Customers, interfaces applicable to the provision of voice mail services that are Currently Available in GTE's network. Nothing in this section shall limit or change the obligations or rights of either Party under Section 26.7 of Part I of this Agreement (Local Service Resale).
- 4.2.1.31. Local Switching shall be offered in accordance with the technical references listed in Appendix A to this Attachment 2, under paragraph 3 thereof.

- 4.2.2. Interface References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):
- 4.2.2.1. GTE shall, subject to Section 23.19 of the General Terms and Conditions of this Agreement, provide the following interfaces (i.e., ports) to loops:
- 4.2.2.2. Standard Tip/Ring interface including loopstart or groundstart, on-hook signaling (e.g., for calling number, calling name and message waiting lamp);
- 4.2.2.3. Coin phone signaling;
- 4.2.2.4. Basic Rate Interface ISDN;
- 4.2.2.5. Two-wire analog interface to PBX;
- 4.2.2.6. Four-wire analog interface to PBX;
- 4.2.2.7. Four-wire DS1 interface to PBX or customer provided equipment (e.g. computers and voice response systems);
- 4.2.2.8. Primary Rate ISDN to PBX;
- 4.2.2.9. Switched Fractional DS1 with capabilities to configure Nx64 channels (where N = 1 to 24); and
- 4.2.2.10. GTE shall, where Currently Available, provide access to the following:
- 4.2.2.11. SS7 Signaling Network or Multi-Frequency trunking if requested by AT&T;
- 4.2.2.12. Interface to AT&T operator services systems or Operator Services through appropriate trunk interconnections for the system; and
- 4.2.2.13. Interface to AT&T directory assistance services through the AT&T switched network or to Directory Services through the appropriate trunk interconnections for the system; and 950 access or other AT&T required access to interexchange carriers as requested through appropriate trunk interfaces.
- 4.2.2.14. Interfaces to Loops provided under this Agreement shall meet or exceed the applicable interface references set forth in the technical

references listed in Appendix A to this Attachment 2, under paragraph 4 thereof.

4.3. Integrated Services Digital Network (ISDN)

Integrated Services Digital Network (ISDN) is defined in two variations. The first variation is Basic Rate ISDN (BRI). BRI consists of 2 Bearer (B) Channels and one Data (D) Channel. The second variation is Primary Rate ISDN (PRI). PRI consists of 23 B Channels and one D Channel. Both BRI and PRI B Channels may be used for voice, Circuit Switched Data (CSD) or Packet Switched Data (PSD). The BRI D Channel may be used for call related signaling, non-call related signaling or packet switched data. The PRI D Channel may be used for call related signaling.

4.3.1. Technical References - ISDN (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

- 4.3.1.1. Where available, GTE shall offer Data Switching providing ISDN that:**
- 4.3.1.2. Provides integrated packet handling capabilities;**
- 4.3.1.3. Allows for full 2B+D Channel functionality for BRI; and.**
- 4.3.1.4. Allows for full 23B+D Channel functionality for PRI.**
- 4.3.1.5. In the case of Each B Channel, allows for voice, 64Kbs CSD, and PSD of 128 logical channels at minimum speeds of 19Kbs throughput of each logical channel up to the total capacity of the B Channel.**
- 4.3.1.6. In the case of Each B Channel, provides capabilities for alternate voice and data on a per call basis.**
- 4.3.1.7. In the case of the BRI D Channel, allows for call associated signaling, non-call associated signaling and PSD of 16 logical channels at minimum speeds of 9.6 Kbs throughput of each logical channel up to the total capacity of the D channel.**
- 4.3.1.8. In the case of the PRI D Channel, allows for call associated signaling.**

4.3.2. Interface References - ISDN (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

4.3.2.1. GTE shall provide the BRI U interface using 2 wire copper loops.

4.3.2.2. GTE shall provide the BRI interface using Digital Subscriber Loops.

4.3.2.3. GTE shall offer PSD interfaces.

4.3.2.4. GTE shall offer PSD trunk interfaces operating at 56Kbs.

4.3.2.5. Interfaces to Loops for ISDN requirements provided under this Agreement shall meet or exceed the applicable interface references set forth in the technical references listed in Appendix A to this Attachment 2, under paragraph 5 thereof.

5. Operator Service

5.1. [Intentionally Deleted]

5.1.1. Definition.

Operator Service provides where Currently Available: (1) operator handling for call completion (for example, collect, third number billing, and manual credit card calls), (2) operator or automated assistance for billing after the customer has dialed the called number; and (3) special services including Busy Line Verification and Emergency Line Interrupt (ELI), Emergency Agency Call, Operator-assisted Directory Assistance, and Rate Quotes.

5.1.2. References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

5.1.2.1. Operator Services for calls which are routed from the local switch shall include but not be limited to the following, where Currently Available:

5.1.2.2. Completion of 0+ and 0- dialed local calls.

5.1.2.3. Completion of 0+ and 0- intraLATA toll calls.

5.1.2.4. Completion of calls that are billed to a GTE calling card and that use the same types of billing that are available to GTE customers. The Parties shall agree on the acceptable types of special billing.

- 5.1.2.5. Completion of person-to-person calls.
- 5.1.2.6. Completion of collect calls.
- 5.1.2.7. Provision of the capability for callers to bill to a third party and complete such calls.
- 5.1.2.8. Completion of station-to-station calls.
- 5.1.2.9. Processing emergency calls.
- 5.1.2.10. Processing Busy Line Verify and Emergency Line Interrupt requests.
- 5.1.2.11. Processing emergency call trace.
- 5.1.2.12. Processing of operator-assisted directory assistance calls in the same manner as GTE provides such service for GTE customers.
- 5.1.2.13. GTE shall provide rate quotes and process time-and-charges requests on 0- calls, and shall provide AT&T's rates, when the capability to provide rates other than GTE's is Currently Available.
- 5.1.2.14. Routing of 0- traffic directly to a "live" operator team.
- 5.1.2.15. Operator Services provided by GTE to AT&T local service customers under this Agreement will be customized exclusively for AT&T, where technically feasible, at rates specified in, or as to be determined pursuant to, Attachment 14.
- 5.1.2.16. Provision of caller assistance for the handicapped at parity with what is provided under GTE's tariff.
- 5.1.2.17. [Intentionally deleted.]
- 5.1.2.18. [Intentionally deleted.]
- 5.1.2.19. Provision of notification of the length of call.
- 5.1.2.20. [Intentionally deleted.]
- 5.1.2.21. GTE shall exercise at least the same level of fraud control in providing Operator Service to AT&T that GTE provides for its own operator service.

5.1.2.22. Billed Number Screening when handling Collect, Person-to-Person, and Billed-to-Third-Party calls.

5.1.2.23. [Intentionally Deleted]

5.1.2.24. Direction of customer inquiries to a single, AT&T-designated customer service center.

5.1.2.25. [Intentionally deleted.]

5.1.2.26. GTE will offer AT&T a level of Operator Services which is at parity with what it provides itself. To the extent that the level of service GTE provides to its own customers exceeds any criterion, requirement or guideline set by the applicable state regulatory commission, GTE shall offer the same level of service to AT&T.

5.1.2.27. GTE will make all of its automation and other new technology related to the provision of Operator Services available to AT&T as soon as the benefit of such automation and other technology is available to GTE's end-users.

5.2. **Interface References** (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

With respect to Operator Services for calls that originate on local switching capability provided by or on behalf of AT&T, the interface requirements shall conform to the then current established system interface specifications for the platform used to provide Operator Service and the interface shall conform to industry standards.

6. **Directory Assistance Service**

6.1. **Definition:**

Directory Assistance Service is a service that provides telephone number information to local end users that GTE serves on behalf of AT&T who dial 411, 1411 or 555-1212 to obtain directory assistance for local numbers within their NPA.

6.1.1. [Intentionally deleted.]

6.2. **Requirements:**

6.2.1. GTE shall offer Directory Assistance Service which allows AT&T Customers to obtain the same quantity of listings provided to similarly situated GTE customers.

- 6.2.2. Directory Assistance Service provided by GTE to AT&T local service customers under this Agreement will be customized exclusively for AT&T, where technically feasible, at rates specified in, or as to be determined pursuant to, Attachment 14.
- 6.2.3. GTE Directory Assistance Service will provide optional call completion service to AT&T Customers in areas where call completion denial is Currently Available; Call completion services shall be provided at parity with that which GTE provides to its own end users.
- 6.2.4. GTE shall provide data regarding billable events.
- 6.2.5. [Intentionally Deleted]
- 6.2.6. GTE shall ensure that any Directory Assistance information that is provided by ARU shall be repeated in the same manner as it is announced for GTE's end-users;
- 6.2.7. GTE Directory Assistance will provide emergency listings and related services to AT&T Customers at service levels equivalent to those provided to GTE Customers;
- 6.2.8. GTE Directory Assistance Services will include a service which intercepts calls placed to an AT&T Customer whose number has been disconnected or changed. GTE shall provide a recorded announcement to (i) notify a calling party that the end user customer has transferred to a new telephone number of AT&T and (ii) provide such calling party with details concerning the new telephone number to be dialed to reach the customer. GTE shall provide such announcement for the same length of time that GTE provides intercept or referral information for its customers that have changed telephone numbers.
- 6.2.9. [Intentionally deleted.]
- 6.2.10. Directory Assistance Service Updates
- 6.2.10.1. GTE shall update the GTE DA database with AT&T customer listing changes daily. These changes include:
- 6.2.10.2. New customer connections;
- 6.2.10.3. Customer disconnections; and

6.2.10.4. Customer changes, including but not limited to name, address and listing status.

6.2.10.5. These updates shall also be provided for non-listed and non-published numbers for use in emergencies.

7. **Common Transport**

7.1. **Definition:**

Common (i.e. shared) transport is a transmission facility shared by more than one carrier, including GTE, between end office switches, between end office switches and tandem switches, and between tandem switches, in GTE's network.

Common transport shall be provided in conjunction with, but priced separately from, Local Switching and/or Tandem Switching. GTE shall not be required to provide transport other than Dedicated transport between any GTE switch and an AT&T interconnection point or between any GTE serving wire center (as that term is used in Para. 29 of the Third Order on Reconsideration, CC Docket No. 96-98) serving an AT&T interconnection point and any GTE switch.

7.2. **Technical References** (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

7.2.1. [Intentionally deleted.]

7.2.2. Common Transport provided on DS1 or VT1.5 circuits at the DS0 rate, shall, at a minimum, subject to Section 23.19 of the General Terms and Conditions of this Agreement, meet the performance, availability, jitter, and delay references specified for Central Office to Central Office "CO to CO" connections in the technical reference in Appendix A to this Attachment 2, under paragraph 6 thereof.

7.2.3. Common Transport provided on DS3 circuits, STS-1 circuits, and higher transmission bit rate circuits, Common Transport shall, at a minimum, subject to Section 23.19 of the General Terms and Conditions of this Agreement, meet the performance, availability, jitter, and delay references specified for Central Office to Central Office "CO to CO" connections in the technical reference set forth in Appendix A to this Attachment 2, under paragraph 6 thereof.

7.2.4. GTE shall be responsible for the engineering, provisioning, and maintenance of the underlying equipment and facilities that are used to provide Common Transport.

- 7.2.5. Common Transport shall, subject to Section 23.19 of the General Terms and Conditions of this Agreement, meet all of the technical references in Appendix A to this Attachment 2, under paragraph 6 thereof (as applicable for the transport technology being used).

8. **Dedicated Transport**

8.1. **Definition:**

Dedicated Transport is an interoffice transmission path between AT&T designated locations. Such locations may include GTE central offices or other equipment locations, AT&T network components, or other carrier network components.

- 8.1.1. GTE shall offer Dedicated Transport in each of the following ways:

8.1.1.1. As capacity on a shared circuit.

8.1.1.2. As a circuit (e.g., DS1, DS3, STS-1) dedicated to AT&T.

8.1.1.3. As a system (i.e., the equipment and facilities used to provide Dedicated Transport such as SONET ring) dedicated to AT&T. Prices and availability of systems will be provided by GTE using the bona fide request process set forth in Attachment 12 to this Agreement.

8.1.2. When Dedicated Transport is provided as a circuit or as capacity on a shared circuit, it shall include (as appropriate):

8.1.2.1. Multiplexing functionality;

8.1.2.2. [Intentionally Deleted]

8.1.2.3. [Intentionally Deleted]

- 8.1.3. To the extent Dedicated Transport is provided pursuant to this Agreement as a system, it shall include: Transmission equipment such as multiplexers, line terminating equipment, amplifiers, regenerators; and inter-office transmission facilities such as optical fiber, copper twisted pair, and coaxial cable. To the extent Dedicated Transport is provided as a system, the Parties shall work together to design that system (including but not limited to facility routing and termination points and facility routing over existing transport facilities between GTE and a second carrier to carry traffic designated for that carrier);
- 8.1.3.1. [Intentionally deleted.]
- 8.1.3.2. [Intentionally deleted.]
- 8.1.3.3. Redundant equipment and facilities necessary to support protection and restoration; and,
- 8.1.3.4. Dedicated Transport includes the Digital Cross-Connect System (DCS) functionality as an option. DCS is described below in Section 8.4.
- 8.2. **Technical References**
This Section sets forth technical references, subject to Section 23.19 of the General Terms and Conditions of this Agreement, for all Dedicated Transport.
- 8.2.1. When GTE provides Dedicated Transport as a circuit or a system, the entire designated transmission circuit or system (e.g., DS1, DS3, STS-1) shall be dedicated to AT&T designated traffic.
- 8.2.2. GTE shall offer Dedicated Transport in all then Currently Available technologies including, but not limited to, DS1 and DS3 transport systems, SONET (or SDH) Bi-directional Line Switched Rings, SONET (or SDH) Unidirectional Path Switched Rings, and SONET (or SDH) point-to-point transport systems (including linear add-drop systems), at all available transmission bit rates.
- 8.2.3. For DS1 or VT1.5 circuits, Dedicated Transport shall, at a minimum, meet the performance, availability, jitter, and delay references specified for Customer Interface to Central Office "CI to CO" connections in the technical references listed in Appendix A to this Attachment 2, at paragraph 2.6 thereof.

- 8.2.4. For DS3 circuits, STS-1 circuits, and higher rate circuits, Dedicated Transport shall, at a minimum, meet the performance, availability, jitter, and delay references specified for Customer Interface to Central Office "CI to CO" connections in the technical reference listed in Appendix A to this Attachment 2, at paragraph 2.13 thereof.
- 8.2.5. When requested by AT&T, Dedicated Transport shall provide physical diversity. Physical diversity means that two circuits are provisioned in such a way that no single failure of facilities or equipment will cause a failure on both circuits.
- 8.2.6. When physical diversity is requested by AT&T, GTE shall provide the maximum available physical separation between intra-office and inter-office transmission paths (unless otherwise agreed by AT&T).
- 8.2.7. Upon AT&T's request, GTE shall provide Real Time and continuous remote access to performance monitoring and alarm data affecting, or potentially affecting, AT&T's traffic.
- 8.2.8. GTE shall offer the following interface transmission rates for Dedicated Transport:
- 8.2.8.1. DS1 (Extended SuperFrame - ESF, D4, and unframed applications shall be provided);
- 8.2.8.2. DS3 (C-bit Parity, M13, and unframed applications shall be provided);
- 8.2.8.3. SONET standard interface rates in accordance with ANSI T1.105 and ANSI T1.105.07 and physical interfaces per ANSI T1.106.06 (including referenced interfaces). In particular, VT1.5 based STS-1s will be the interface at an AT&T service node.
- 8.2.8.4. SDH Standard interface rates in accordance with International Telecommunications Union (ITU) Recommendation G.707 and Plesiochronous Digital Hierarchy (PDH) rates per ITU Recommendation G.704.
- 8.2.9. GTE shall provide cross-office wiring up to a suitable Point of Termination (POT) between Dedicated Transport and AT&T designated equipment. GTE shall provide the following equipment for the physical POT:

- 8.2.9.1. DSX1 for DS1s or VT1.5s;
- 8.2.9.2. DSX3 for DS3s or STS-1s; and
- 8.2.9.3. LGX for optical signals (e.g., OC-3 and OC-12)
- 8.2.10. [Intentionally deleted]
- 8.2.11. [Intentionally deleted]
- 8.2.12. Upon AT&T's request, GTE shall provide AT&T with electronic provisioning control of Dedicated Transport purchased by AT&T and connected to a Digital Cross Connect System (DCS), if the DCS is capable of partitioned access and control.
- 8.2.13. [Intentionally deleted]
- 8.2.14. At a minimum, Dedicated Transport shall meet each of the references set forth in Section 7.2 and in the technical references listed in Appendix A to this Attachment 2, under paragraph 7 thereof.
- 8.3. Technical References for Dedicated Transport Using SONET technology.

This Section sets forth additional technical references, subject to Section 23.19 of the General Terms and Conditions of this Agreement, for Dedicated Transport using SONET technology including rings, point-to-point systems, and linear add-drop systems.
- 8.3.1. All SONET Dedicated Transport provided as a system shall:
 - 8.3.1.1. Be synchronized from both a primary and secondary Stratum 1 level timing source. Additional detail on synchronization references are given in Section 13.4.
 - 8.3.1.2. Provide SONET standard interfaces which properly interwork with SONET standard equipment from other vendors. This includes, but is not limited to, SONET standard Section, Line, and Path performance monitoring, maintenance signals, alarms, and data channels.
 - 8.3.1.3. Provide Data Communications Channel (DCC) or equivalent connectivity through the SONET transport system. Dedicated

Transport provided over a SONET transport system shall be capable of routing DCC messages between AT&T SONET network components connected to the Dedicated Transport. For example, if AT&T leases a SONET ring from GTE, that ring shall support DCC message routing between AT&T SONET network components connected to the ring.

- 8.3.1.4. Support the following performance references for each circuit (STS-1, DS1, DS3, etc.):
 - 8.3.1.4.1. No more than 10 Errored Seconds Per Day (Errored Seconds are defined in the technical reference at Appendix A to this Attachment 2 at paragraph 7.5); and
 - 8.3.1.4.2. No more than 1 Severely Errored Second Per Day (Severely Errored Seconds are defined in the technical references set forth in Appendix A to this Attachment 2, at paragraph 7.5).
- 8.3.2. All SONET rings shall, subject to Section 23.19 of the General Terms and Conditions of this Agreement:
 - 8.3.2.1. Be provisioned on physically diverse fiber optic cables (including separate building entrances where available and diversely routed intra-office wiring). "Diversely routed" shall be interpreted as the maximum feasible and available physical separation between transmission paths, unless otherwise agreed by AT&T.
 - 8.3.2.2. Support dual ring interworking per SONET Standards.
 - 8.3.2.3. Provide the necessary redundancy in optics, electronics, and transmission paths (including intra-office wiring) such that no single failure will cause a service interruption.
 - 8.3.2.4. Provide the ability to disable ring protection switching at AT&T's direction (selective protection lock-out). This reference applies to line switched rings only.
 - 8.3.2.5. Provide the ability to use the protection channels to carry traffic (extra traffic). This reference applies to line switched rings only.
 - 8.3.2.6. Provide 50 millisecond restoration unless a ring protection delay is set to accommodate dual ring interworking schemes.
 - 8.3.2.7. Have settable ring protection switching thresholds that shall be set in accordance with AT&T's specifications.

- 8.3.2.8. Provide revertive protection switching with a settable wait to restore delay with a default setting of 5 minutes. This reference applies to line switched rings only.
- 8.3.2.9. Provide non-revertive protection switching. This reference applies to path switched rings only.
- 8.3.2.10. Be based upon the following availability references, where availability is defined in the technical reference listed in Appendix A to this Attachment 2, at paragraph 7.5 thereof.
 - 8.3.2.10.1. No more than 0.25 minutes of unavailability month; and
 - 8.3.2.10.2. No more than 0.5 minutes of unavailability per year.

8.4. **Digital Cross-Connect System (DCS)**

8.4.1. Definition:

When AT&T requests a functionality that GTE is required to provide to AT&T pursuant to this Agreement, GTE will provision this functionality at a level of quality equal to that which it provides to itself.

- 8.4.1.1. DCS is a function which provides automated cross connection of Digital Signal level 0 (DS0) or higher transmission bit rate digital channels within physical interface facilities. Types of DCSs include but are not limited to DCS 1/0s, DCS 3/1s, and DCS 3/3s, where the nomenclature 1/0 denotes interfaces typically at the DS1 rate or greater with cross-connection typically at the DS0 rate. This same nomenclature, at the appropriate rate substitution, extends to the other types of DCSs specifically cited as 3/1 and 3/3. Types of DCSs that cross-connect Synchronous Transport Signal level 1 (STS-1s) or other Synchronous Optical Network (SONET) signals (e.g., STS-3) are also DCSs, although not denoted by this same type of nomenclature. DCS may provide the functionality of more than one of the aforementioned DCS types (e.g., DCS 3/3/1 which combines functionality of DCS 3/3 and DCS 3/1). For such DCSs, the guidelines will be, at least, the aggregation of guidelines on the "component" DCSs.
- 8.4.1.2. In locations where automated cross connection capability does not exist, DCS will be defined as the combination of the functionality provided by a Digital Signal Cross-Connect (DSX) or Light Guide Cross-Connect (LGX) patch panels and D4 channel banks or other

DS0 and above multiplexing equipment used to provide the function of a manual cross connection.

- 8.4.1.3. Interconnection between a DSX or LGX, to a switch, another cross-connect, or other service platform device, is included as part of DCS.
- 8.5. DCS Technical References. GTE shall provide DCS at the same level of quality as GTE provides in its own network. For example, DCS shall, where Currently Available:
 - 8.5.1. Provide completed end-to-end cross connection of the channels designated by AT&T.
 - 8.5.2. Perform facility grooming, multipoint bridging, one-way broadcast, two-way broadcast, and facility test functions.
 - 8.5.3. Provide multiplexing, format conversion, signaling conversion, or other functions.
 - 8.5.4. [Intentionally deleted.]
 - 8.5.5. GTE shall continue to administer and maintain DCS, including updates to the control software to current available releases.
 - 8.5.6. GTE shall, to the extent Currently Available, provide various types of Digital Cross-Connect Systems including:
 - 8.5.6.1. DS0 cross-connects (typically termed DCS 1/0);
 - 8.5.6.2. DS1/VT1.5 (Virtual Tributaries at the 1.5Mbps rate) cross-connects (typically termed DCS 3/1);
 - 8.5.6.3. DS3 cross-connects (typically termed DCS 3/3);
 - 8.5.6.4. STS-1 cross-connects; and
 - 8.5.6.5. Other Currently Available cross-connects designated by the Parties.
 - 8.5.7. To the extent GTE provides such capability to itself, GTE shall provide in accordance with Section 8.2.12 of this Attachment 2, immediate and continuous configuration and reconfiguration of the channels between the physical interfaces.

- 8.5.8. To the extent GTE provide such capability to itself, GTE shall provide scheduled configuration and reconfiguration of the channels between the physical interfaces (i.e., GTE shall establish the processes to implement cross connects on the schedule designated by the Parties).
- 8.5.9. To the extent GTE provides such capability to itself, DCS shall continuously monitor protected circuit packs and redundant common equipment.
- 8.5.10. To the extent GTE provides such capability to itself, DCS shall automatically switch to a protection circuit pack on detection of a failure or degradation of normal operation.
- 8.5.11. To the extent GTE provides such capability to itself, the underlying equipment used to provide DCS shall be equipped with a redundant power supply or a battery back-up.
- 8.5.12. To the extent GTE provides such capability to itself, GTE shall provide to AT&T spare facilities and equipment if ordered by AT&T, at AT&T's expense to the extent such costs are not included in the cost of the unbundled network element, necessary for provisioning repairs, and to meet AT&T's Direct Measures of Quality (DMOQs) as specified in the Provisioning and Maintenance sections.
- 8.5.13. To the extent GTE provides such capability to itself, GTE shall provide to AT&T upon AT&T's request, and at AT&T's expense to the extent such costs are not included in the cost of the unbundled network element, Real Time performance monitoring and alarm data on the signals and the components of the underlying equipment used to provide DCS that actually impact or might impact AT&T's services.
- 8.5.14. At AT&T's option and to the extent GTE provides such services to itself and is capable of providing such service to AT&T on a partitioned access and control basis, GTE shall provide AT&T with Real Time ability to initiate tests on integrated equipment used to test the signals and the underlying equipment used to provide DCS, as well as other integrated functionality for routine testing and fault isolation.
- 8.5.15. Where Currently Available, DCS shall provide SONET to asynchronous gateway functionality (e.g., STS-1 to DS1 or STS-1 to DS3).

- 8.5.16. Where Currently Available, DCS shall perform optical to electrical conversion where the underlying equipment used to provide DCS contains optical interfaces or terminations (e.g., Optical Carrier level 3, i.e., OC-3 interfaces on a DCS 3/1).
- 8.5.17. Where Currently Available, DCS shall have SONET ring terminal functionality where the underlying equipment used to provide DCS acts as a terminal on a SONET ring.

8.5.18. Where Currently Available, DCS shall provide multipoint bridging of multiple channels to other DCSs. AT&T may designate multipoint bridging to be one-way broadcast from a single master to multiple tributaries, or two-way broadcast between a single master and multiple tributaries. Intentionally deleted

[Combinations]

- 8.5.19. Where Currently Available, DCS shall multiplex lower speed channels onto a higher speed interface and demultiplex higher speed channels onto lower speed interfaces as designated by AT&T.
- 8.6. **DCS Interface References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):**
- 8.6.1. GTE shall provide physical interfaces on DS0, DS1, and VT1.5 channel cross-connect devices at the DS1 rate or higher. In all such cases, these interfaces shall be in compliance with applicable Bellcore, ANSI, ITU, and AT&T standards.
- 8.6.2. GTE shall provide physical interfaces on DS3 channel cross-connect devices at the DS3 rate or higher. In all such cases, these interfaces shall be in compliance with applicable Bellcore, ANSI, ITU, and AT&T standards.
- 8.6.3. GTE shall provide physical interfaces on STS-1 cross-connect devices at the OC-3 rate or higher. In all such cases, these interfaces shall be in compliance with applicable Bellcore, ANSI, ITU, and AT&T standards.
- 8.6.4. Interfaces on all other cross-connect devices shall be in compliance with applicable Bellcore, ANSI, ITU, and AT&T standards.

- 8.6.5. DCS shall, at a minimum, meet all the references set forth in the technical references listed in Appendix A to this Attachment 12, under paragraph 8 thereof.

9. **Signaling Link Transport**

9.1. **Definition:**

Signaling Link Transport is a set of two or four dedicated 56 Kbps. transmission paths between AT&T-designated Signaling Points of Interconnection (SPOI) that provides appropriate physical diversity.

9.2. **Technical Guidelines (subject to Section 23.19 of the General Terms and Conditions of this Agreement):**

Signaling Link Transport shall consist of full duplex mode 56 kbps transmission paths. GTE shall provide Interfaces at the same level of quality as GTE provides in its own network:

- 9.3. Of the various options available, Signaling Link Transport shall perform in the following two ways:

9.3.1. As an "A-link" which is a connection between a switch and a home Signaling Transfer Point Switch (STPS) pair; and

9.3.2. As a "D-link" which is a connection between two STPS pairs in different company networks (e.g., between two STPS pairs for two Competitive Local Exchange Carriers (CLECs)).

- 9.4. Signaling Link Transport shall consist of two or more signaling link layers as follows:

9.4.1. An A-link layer shall consist of two links.

9.4.2. A D-link layer shall consist of four links.

9.4.3. A signaling link layer provided to AT&T pursuant to this Agreement shall perform at the same level of quality and performance levels as a similar signaling link layer in GTE's network. Examples of objectives may be:

9.4.3.1. There shall be no more than two minutes down time per year for an A-link layer; and

9.4.3.2. There shall be negligible (less than 2 seconds) down time per year for a D-link layer.

- 9.4.4. Where Currently Available, a signaling link layer shall satisfy interoffice and intraoffice diversity of facilities and equipment. Example objectives are:
- 9.4.5. No single failure of facilities or equipment causes the failure of both links in an A-link layer; and
- 9.4.6. No two concurrent failures of facilities or equipment shall cause the failure of all four links in a D-link layer.
- 9.5. **Interface References** GTE shall provide Interfaces at the same level of quality as GTE provides for Interfaces Currently Available in its own network. Subject to Section 23.19 of the General Terms and Conditions of this Agreement, such interfaces shall, for example, be based on but not limited to the following references:
 - 9.5.1. There shall be a dedicated DS1 (1.544 Mbps) interface at the AT&T-designated SPOIs. Each 56 kbps transmission path shall appear as a DS0 channel within the DS1 interface.
- 10. **Signaling Transfer Points (STPs)**
 - 10.1. **Definition:** Signaling Transfer Points is a signaling network function that includes all of the capabilities provided by the signaling transfer point switches (STPs) and their associated signaling links which enable the exchange of SS7 messages among and between switching elements, database elements and signaling transfer point switches.
 - 10.2. **Technical References** GTE shall provide access to STPs at the same level of quality as GTE provides access to Currently Available STPs in its own network, subject to Section 23.19 of the General Terms and Conditions of this Agreement. For example:
 - 10.2.1. STPs shall provide access to all other Network Elements connected to the GTE SS7 network. These include:
 - 10.2.1.1. GTE Local Switching or Tandem Switching;
 - 10.2.1.2. GTE Service Control Points/DataBases;
 - 10.2.1.3. Third-party local or tandem switching systems; and
 - 10.2.1.4. Third-party-provided STPs.

- 10.2.2. The connectivity provided by STPs shall fully support the functions of all other Network Elements connected to those STPs on the GTE SS7 network. This explicitly includes the use of the GTE SS7 network to convey messages which neither originate nor terminate at a signaling end point directly connected to the GTE SS7 network (i.e., transient messages). When the GTE SS7 network is used to convey transient messages, there shall be no alteration of the Integrated Services Digital Network User Part (ISDNUP) or Transaction Capabilities Application Part (TCAP) user data that constitutes the content of the message.
- 10.2.3. If a GTE tandem switch routes calling traffic, based on dialed or translated digits, on SS7 trunks between an AT&T local switch and third party local switch, the GTE SS7 network shall convey the TCAP messages that are necessary to provide Call Management features (Automatic Callback, Automatic Recall, and Screening List Editing) between the AT&T local STPs and the STPs that provide connectivity with the third party local switch, even if the third party local switch is not directly connected to the GTE STPs provided the third party's STPs and the AT&T local STPs are both connected to the GTE STPs to which the AT&T local switch is connected.
- 10.2.4. STPs shall provide all functions of the SCCP necessary for Class 0 (basic connectionless) service. In cases where the destination signaling point is a GTE local or tandem switching system or data base, or is an AT&T or third party local or tandem switching system directly connected to the GTE SS7 network, STPs shall perform final GTT of messages to the destination and SCCP Subsystem Management of the destination. In all other cases, STPs shall perform intermediate GTT of messages to a gateway pair of STPs in an SS7 network connected with the GTE SS7 network, and shall not perform SCCP Subsystem Management of the destination.
- 10.2.5. When such capability is deployed in the GTE network, STPs shall provide all functions of the OMAP commonly provided by STPs, as specified in the reference set forth in Appendix A to this Attachment 2, at paragraph 9.5. This includes:
- 10.2.5.1. MTP Routing Verification Test (MRVT); and,
- 10.2.5.2. SCCP Routing Verification Test (SRVT).
- 10.2.6. This Section 10.2.6 applies when such capabilities are deployed in the GTE network. In cases where the destination signaling point is

a GTE local or tandem switching system or DB, or is an AT&T or third party local or tandem switching system directly connected to the GTE SS7 network, STPs shall perform MRVT and SRVT to the destination signaling point. In all other cases, STPs shall perform MRVT and SRVT to a gateway pair of STPSs in an SS7 network connected with the GTE SS7 network. This reference shall be superseded by the specifications for Internetwork MRVT and SRVT if and when these become approved ANSI standards and available capabilities of GTE STPs.

- 10.2.7. AT&T and GTE agree to participate in the industry IN Forum "Interconnection and Access Group" project to address interconnection requirements for multiple third party AIN SCP access to GTE's switch triggers. AT&T and GTE recognize that actual commencement of tests under this project will be determined by all participants in the project.
- 10.3. **Interface References** GTE shall provide Interfaces at the same level of quality as GTE provides for Interfaces Currently Available in its own network, subject to Section 23.19 of the General Terms and Conditions of this Agreement. For example:
 - 10.3.1. GTE shall provide the following STPs options to connect AT&T or AT&T-designated local switching systems or STPSs to the GTE SS7 network:
 - 10.3.1.1. An A-link interface from AT&T local switching systems; and,
 - 10.3.1.2. A D-link interface from AT&T local STPSs.
 - 10.3.2. Subject to Section 23.19 of the General Terms and Conditions of this Agreement, each type of interface shall be provided by one or more sets (layers) of signaling links, as follows:
 - 10.3.2.1. An A-link layer shall consist of two links.
 - 10.3.2.2. A D-link layer shall consist of four links.
 - 10.3.3. [See Section 13.5.3.3 of this Attachment.]
 - 10.3.4. [See Section 13.5.3.4 of this Attachment.]

10.4. Message Screening

- 10.4.1. GTE shall set message screening parameters so as to accept messages from AT&T local or tandem switching systems destined to any signaling point in the GTE SS7 network with which the AT&T switching system is connected and has a legitimate signaling relation.
- 10.4.2. GTE shall set message screening parameters so as to accept messages from AT&T local or tandem switching systems destined to any signaling point or network interconnected within the GTE SS7 network with which the AT&T switching system is connected and has a legitimate signaling relation.
- 10.4.3. GTE shall set message screening parameters so as to accept messages destined to an AT&T local or tandem switching system from any signaling point or network interconnected within the GTE SS7 network with which the AT&T switching system is connected and has a legitimate signaling relation.
- 10.4.4. GTE shall set message screening parameters so as to accept and send messages destined to an AT&T SCP from any signaling point or network interconnected to those STPs within the GTE SS7 network with which the AT&T SCP is connected and has a legitimate signaling relation.
- 10.5. STPs shall meet or exceed the references for STPs set forth in the technical references listed in Appendix A to this Attachment 2, under paragraph 9 thereof.

11. Service Control Points/Databases

11.1. Definition:

Databases are the Network Elements that provide the functionality for storage of, access to, and manipulation of information required to offer a particular service and/or capability.

- 11.1.1. A Service Control Point (SCP) is a specific type of Database Network Element functionality deployed in a Signaling System 7 (SS7) network that executes service application logic in response to SS7 queries sent to it by a switching system also connected to the SS7 network. SCPs also provide operational interfaces to allow for provisioning, administration and maintenance of subscriber data and service application data. (e.g., an 800

database stores customer record data that provides information necessary to route 800 calls).

11.2. Technical References for SCPs/Databases (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

References for SCPs/Databases within this section address storage of information, access to information (e.g. signaling protocols, response times), and administration of information (e.g., provisioning, administration, and maintenance). All SCPs/Databases shall be provided to AT&T in accordance with the following references, except where such a reference is superseded by specific references set forth in Sections 11.3 to 11.7.

11.2.1. GTE shall make available physical interconnection to SCPs through the SS7 network and protocols, as specified in Section 10 of this Attachment, with TCAP as the application layer protocol.

11.2.2. Except for GTE's directory assistance databases, GTE shall provide physical interconnection to databases via industry standard interfaces and protocols. GTE will provide AT&T with copies of its directory assistance databases on magnetic tape. GTE will also provide to AT&T daily updates to its directory assistance databases on magnetic tape. AT&T and GTE shall agree on the type of magnetic tape, the format of the data on the tapes, the locations for delivery of the tapes, and all other implementation issues that the parties need to be resolved within ten days of the Effective Date of this Agreement. If the parties fail to reach agreement pursuant to this Section, the parties will submit the disputed issues to the alternative dispute resolution process as set forth in this Agreement.

11.2.3. The reliability of interconnection options shall be consistent with requirements for diversity and survivability as specified in Section 10 of this Attachment (which applies to both SS7 and non-SS7 interfaces).

11.2.4. [Intentionally deleted.]

11.2.5. GTE shall provide Database provisioning consistent with the provisioning requirements of this Agreement (e.g., data required, edits, acknowledgments, data format and transmission medium and notification of order completion).

- 11.2.6. GTE shall provide Database maintenance consistent with the maintenance requirements as specified in this Agreement.
- 11.2.7. GTE shall provide billing and recording information to track database usage consistent with connectivity billing and recording requirements as specified in this Agreement.
- 11.2.8. GTE shall provide SCPs/Databases in accordance with the physical security requirements specified in this Agreement.
- 11.2.9. GTE shall provide SCPs/Databases in accordance with the logical security requirements specified in this Agreement.
- 11.3. **Line Information Database (LIDB).**
This Subsection defines and sets forth additional references for the Line Information Database.
- 11.3.1. Definition:
The Line Information Database (LIDB) is a transaction-oriented database accessible through Common Channel Signaling (CCS) networks. It contains records associated with customer Line Numbers and Special Billing Numbers (in accordance with the references set forth in the technical reference listed in Appendix A to this Attachment 2, at paragraph 10.5.). LIDB accepts queries from other Network Elements and provides appropriate responses. The query originator need not be the owner of LIDB data. LIDB queries include functions such as screening billed numbers that provides the ability to accept Collect or Third Number Billing calls and validation of Telephone Line Number based non-proprietary calling cards. The interface for the LIDB functionality is the interface between the GTE CCS network and other CCS networks. LIDB also interfaces to administrative systems. The administrative system interface provides Work Centers with an interface to LIDB for functions such as provisioning, auditing of data, access to LIDB measurements and reports.
- 11.3.2. Technical References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):
- 11.3.2.1. Prior to the availability of a long-term solution for Local Number Portability, GTE shall enable AT&T to store in GTE's LIDB any customer Line Number or Special Billing Number record, for which the NPA-NXX or NXX-0/1XX Group is supported by that LIDB.

- 11.3.2.2. Prior to the availability of a long-term solution for Local Number Portability, GTE shall enable AT&T to store in GTE's LIDB any customer Line Number or Special billing Number record, and NPA-NXX and NXX-0/1XX Group Records, belonging to an NPA-NXX or NXX-0/1XX owned by AT&T. The terms and conditions upon which such storage shall be made available to AT&T shall be set forth in a LIDB storage agreement to be entered into between the Parties.
- 11.3.2.3. Subsequent to the availability of a long-term solution for Local Number Portability, GTE shall enable AT&T to store in GTE's LIDB any customer Line Number or Special Billing Number record, regardless of the number's NPA-NXX or NXX-0/1XX. The terms and conditions upon which such storage shall be made available to AT&T shall be set forth in a LIDB storage agreement to be entered into between the Parties.
- 11.3.2.4. GTE shall perform the following LIDB functions for AT&T's customer records in LIDB:
- 11.3.2.4.1. Billed Number Screening (provides information such as whether the Billed Number may accept Collect or Third Number Billing calls);
and
- 11.3.2.4.2. Calling Card Validation
- 11.3.2.5. GTE shall process AT&T's customer records in LIDB at least at parity with GTE customer records. With respect to other LIDB functions, GTE shall indicate to AT&T what additional functions (if any) are performed by LIDB in their network.
- 11.3.2.6. Within two (2) weeks after a request by AT&T, GTE shall provide AT&T with a list of the customer data items which AT&T would have to provide in order to support each required LIDB function. The list shall indicate which data items are essential to LIDB function, and which are required only to support certain services. For each data item, the list shall show the data formats, the acceptable values of the data item and the meaning of those values.
- 11.3.2.7. [Intentionally deleted.]
- 11.3.2.8. [Intentionally deleted.]
- 11.3.2.9. [Intentionally deleted.]

- 11.3.2.10. GTE shall make changes to NPA-NXX and NXX-0/1XX Group Records, and Line Number and Special Billing Number Records associated with AT&T Customer, as requested by AT&T, within time frames at parity with those time frames in which GTE makes such changes for its own or any other carrier's customers.
- 11.3.2.11. In the event that end user customers change their local service provider, GTE shall maintain customer data (for line numbers, card numbers, and for any other types of data maintained in LIDB excluding GTE-issued line based calling card numbers and associated PINs) so that such customers shall not experience any interruption of service due to the lack of such maintenance of customer data.
- 11.3.2.12. All additions, updates and deletions of AT&T data to the LIDB shall be solely at the direction of AT&T.
- 11.3.2.13. GTE shall provide priority updates to LIDB for AT&T data upon AT&T's request (e.g., to support fraud protection).
- 11.3.2.14. [Intentionally deleted.]
- 11.3.2.15. GTE shall perform backup and recovery of all of AT&T's data in LIDB in the same manner as GTE performs backup and recovery of GTE's data, including sending to LIDB all changes made since the date of the most recent backup copy.
- 11.3.2.16. GTE shall, to the extent GTE can partition LIDB measurements and reports, provide to AT&T access to LIDB measurements and reports at least at parity with the capability GTE has for its own customer.
- 11.3.2.17. To the extent GTE can partition LIDB measurements and reports, GTE shall provide AT&T with LIDB reports of data which are missing or contain errors, as well as any misroute errors to the degree and on the same schedule as GTE provides such reports to itself.
- 11.3.2.18. GTE shall prevent any access to or use of AT&T data in LIDB by GTE personnel or by any other party that does not have a need to know such information in order to provide services pursuant to this Agreement.
- 11.3.2.19. Where technically feasible and Currently Available, GTE shall provide AT&T performance of the LIDB Data Screening function,

which allows a LIDB to completely or partially deny specific query originators access to LIDB data owned by specific data owners, (in accordance with the technical reference listed in Appendix A to this Attachment 2, at paragraph 10.5.) for Customer Data that is part of an NPA-NXX or NXX-0/1XX wholly or partially owned by AT&T at least at parity with GTE Customer Data. AT&T will provide GTE the screening information associated with LIDB Data Screening of AT&T data in accordance with this requirement.

- 11.3.2.20. GTE shall accept queries to LIDB associated with AT&T Customer records, and shall return responses in accordance with the references of this Section 11.
- 11.3.2.21. [Intentionally deleted.]
- 11.3.2.22. [Intentionally deleted.]
- 11.3.2.23. [Intentionally deleted.]
- 11.3.2.24. [Intentionally deleted.]
- 11.3.2.24.1. [Intentionally deleted.]
- 11.3.2.24.2. [Intentionally deleted.]
- 11.3.2.24.3. [Intentionally deleted.]
- 11.3.2.24.4. [Intentionally deleted.]
- 11.3.2.24.5. [Intentionally deleted.]
- 11.3.2.24.6. [Intentionally deleted.]
- 11.3.2.24.6.1. [Intentionally deleted.]
- 11.3.2.24.6.2. [Intentionally deleted.]
- 11.3.2.24.6.3. [Intentionally deleted.]
- 11.3.3. **LIDB Interface References** (subject to Section 23.19 of the General Terms and Conditions of this Agreement): GTE shall offer LIDB in accordance with the references of this Subsection.

- 11.3.3.1. The interface to LIDB shall be in accordance with the technical reference listed in Appendix A to this Attachment 2, at paragraph 10.3.
- 11.3.3.2. The CCS interface to LIDB shall be the standard interface listed in Appendix A to this Attachment 2, at paragraph 10.3.
- 11.3.3.3. The LIDB Data Base interpretation of the ANSI-TCAP messages shall comply with the technical reference listed in Appendix A to this Attachment 2, at paragraph 10.4. Global Title Translation shall be maintained in the signaling network in order to support signaling network routing to the LIDB.

11.4. Toll Free Number Database

The Toll Free Number Database is a SCP that provides functionality necessary for toll free (e.g., 800 and 888) number services by providing routing information and additional so-called vertical features during call set-up in response to queries from SSPs. GTE shall provide the Toll Free Number Database in accordance with the following:

11.4.1. Technical References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

- 11.4.1.1. GTE shall make the GTE Toll Free Number Database available for AT&T to query with a toll-free number and originating information.
- 11.4.1.2. The Toll Free Number Database shall return carrier identification and, where applicable, the queried toll free number, translated numbers and instructions as it would in response to a query from a GTE switch.

11.4.2. Signaling Interface References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

The signaling interface between the AT&T or other local switch and the Toll-Free Number database shall use the TCAP protocol as specified in the technical reference listed in Appendix A to this Attachment 2, at paragraph 10.1, together with the signaling network interface as specified in the technical reference listed in Appendix A to this Attachment 2, at paragraphs 10.2. and 10.6.

11.5. Automatic Location Identification/Data Management System (ALI/DMS)

11.5.1. The ALI/DMS Database contains customer information (including name, address, telephone information, and sometimes special information from the local service provider or customer) used to determine to which Public Safety Answering Point (PSAP) to route the call. The ALI/DMS database is used to provide more routing flexibility for E911 calls than Basic 911.

11.6. Technical References (subject to Section 23.19 of the General Terms and Conditions of this Agreement): GTE shall provision the Automatic Location Identification/Data Management System (ALI/DMS) and shall provide to AT&T the associated functions and capabilities of that system at the same level of quality as GTE provides to itself.

11.6.1. GTE may provide the Emergency Services Data Base in accordance with the following: GTE may offer AT&T a data link to the port connection for the ALI/DMS database or permit AT&T to provide its own data link to the port connection for the ALI/DMS database to AT&T immediately after AT&T inputs information into the ALI/DMS database. Alternatively, AT&T may utilize GTE to enter customer information into the database on a demand basis, and validate customer information on a demand basis.

11.6.2. The ALI/DMS database shall where Currently Available, contain the following customer information:

11.6.2.1. Name;

11.6.2.2. Address;

11.6.2.3. Telephone number; and

11.6.2.4. Other information as appropriate (e.g., whether a customer is blind or deaf or has another disability).

11.6.2.5. When GTE is responsible for administering the ALI/DMS database in its entirety, ported number NXXs entries for the ported numbers should be maintained and updated appropriately.

11.6.2.6. When Remote Call Forwarding (RCF) is used to provide number portability to the local customer and a remark or other appropriate field information is available in the database, the shadow or

"forwarded-to" number sent from AT&T to GTE and an indication that the number is ported shall be added to the customer record.

- 11.6.2.7. If GTE is responsible for configuring PSAP features (for cases when the PSAP or GTE supports an ISDN interface) the Parties shall work together to ensure that CLASS Automatic Recall (Call Return) is not used to call back to the ported number.
- 11.6.2.8. [Intentionally deleted.]
- 11.6.3. SCPs/Databases shall meet or exceed the references for SCPs/Databases set forth in the technical references listed in Appendix A to this Attachment 2, under paragraph 10.
- 11.7. Service Creation Environment and Service Management System (SCE/SMS) Advanced Intelligent Network (AIN) Access
 - 11.7.1. Advanced Intelligent Network (AIN) Database. AT&T shall have the right to obtain access to and to use GTE's service applications in the GTE SMS in addition to AT&T's own service applications that AT&T deploys via the GTE SMS to the GTE SCP, as required below. AT&T may use and access such service applications either through AT&T Switch(es) to the GTE AIN SCP via interconnection of the GTE SS7 and AT&T SS7 networks or through its purchase of unbundled elements, including local switching, from GTE. When AT&T obtains access to GTE's service applications using an AT&T switch, this interconnection arrangement shall result in the GTE AIN SCP recognizing the AT&T Switch as at least at parity with GTE's Local Switch in terms of interfaces, performance and capabilities.
 - 11.7.1.1. GTE STPs shall maintain global title translations necessary to direct AIN queries for select global title address and translation type values to and from the AT&T SS7 network, within the global title translation capacity to the STP.
 - 11.7.1.2. Requirements for billing and recording information to track AIN query-response usage shall be consistent with Connectivity Billing and Recording requirements as specified in Attachment 6 (e.g., recorded message format and content, timeliness of feed, data format and transmission medium).
 - 11.7.1.3. GTE shall provide to AT&T all necessary testing resources and staff to perform service certification testing prior to service

deployment in accordance with the Cooperative Testing section of this Agreement.

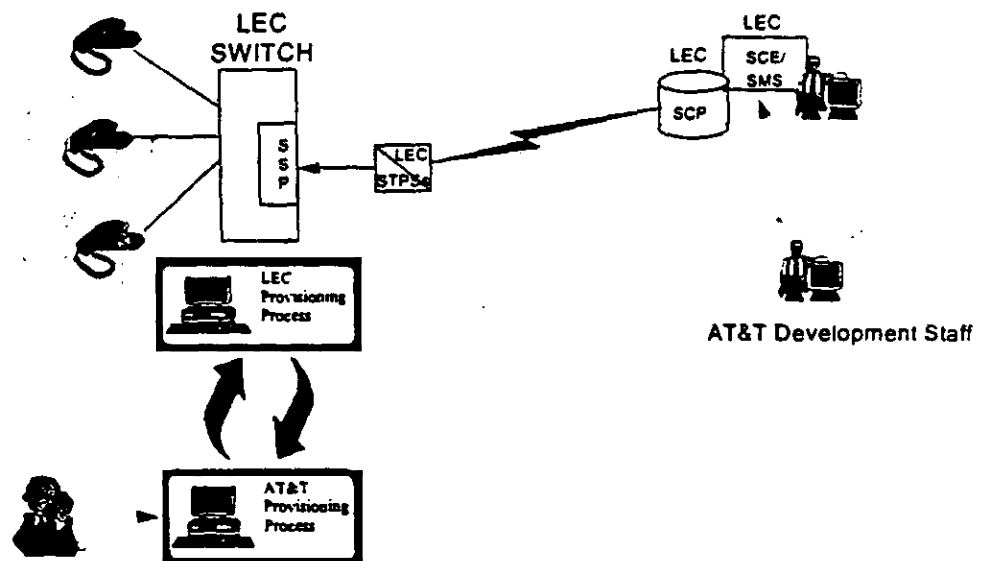
11.7.1.4. [Intentionally deleted]

11.7.1.5. When AT&T selects SS7 Access, GTE will provide interconnection of its SS7 network per Section 10 of this Attachment 2 with AT&T's SS7 network for exchange of AIN TCAP messages between AT&T's SSP and GTE's AIN SCP.

11.7.1.6. STPs shall offer SS7 AIN Access in accordance with the technical references listed in Appendix A to this Attachment 2, under paragraph 11.

11.7.2. SCE/SMS AIN Access shall provide AT&T the ability to create service applications in the GTE SCE and deploy those applications via the GTE SMS to the GTE SCP. This interconnection arrangement shall provide AT&T access to the GTE development environment and administrative system in a manner at least at parity with GTE's ability to deliver its own AIN-based services, subject to reasonable security arrangements. SCE/SMS AIN Access is the development of service applications within the GTE Service Creation Environment, and deployment of service applications via the GTE Service Management System. AT&T requests to use the GTE SCE will be subject to request, review and testing procedures to be agreed upon by the Parties. See Figure 2 below.

FIGURE 2



- 11.7.2.1. GTE shall make SCE hardware, software, testing and technical support (e.g., technical contacts, system administrator) resources available to AT&T. Scheduling of SCE resources shall allow AT&T at least equal priority to GTE.
- 11.7.2.2. The GTE SCE/SMS shall allow for multi-user access with proper source code management and other logical security functions as specified in the Security section of this Agreement.
- 11.7.2.3. The GTE SCP shall partition and protect AT&T service logic and data from unauthorized access, execution or other types of compromise.
- 11.7.2.4. GTE shall provide training and documentation for AT&T development staff only in cases in which such training or documentation is not reasonably available from another source. If training or documentation is required in accordance with this section, it will be provided in a manner at least at parity with that provided by GTE to its development staff. Training will be conducted at a mutually agreed upon location provided that AT&T shall reimburse GTE for the cost of providing such resources.

- 11.7.2.5. When AT&T selects SCE/SMS AIN Access, GTE shall provide for a secure, controlled access environment on-site, and, if Currently Available, via remote data connections (e.g., dial up, LAN, WAN).
- 11.7.2.6. When AT&T selects SCE/SMS AIN Access, GTE shall allow AT&T to download data forms and/or tables to GTE SCP via GTE SMS without intervention from GTE (e.g., customer subscription).
- 11.7.2.7. Service Control Points (SCP)/Databases shall offer SCE/SMS AIN Access in accordance with requirements of GR-1280-CORE, AIN SCP Generic Requirements.
- 11.7.3. Any mediation to GTE's AIN database that GTE decides to apply, including the application of network management controls determined by GTE to be necessary to protect the SCP from an overload condition, will be done in a competitively neutral and nondiscriminatory basis for all users of the AIN database, including GTE and its customers. For example, any load mediation will affect all links to the STP, including those of GTE or its customers, in a like manner. AT&T agrees to provide forecast information of its AIN requirements sufficient to permit GTE to engineer sufficient capacity on GTE's AIN SCP platform.

12. **Tandem Switching**

12.1. **Definition:**

Tandem Switching is the function that establishes a communications path between two switching offices through a third switching office (the tandem switch).

12.2. **Technical References** (subject to Section 23.19 of the General Terms and Conditions of this Agreement): GTE shall provide Tandem Switching capabilities where Currently Available and at the same level of quality as GTE provides in its own network, for example:

- 12.2.1. Signaling to establish a tandem connection;
 - 12.2.2. Screening and routing;
 - 12.2.3. Recording of all billable events;
 - 12.2.4. Connectivity to Operator Systems;
 - 12.2.5. Access to Toll Free number portability database;
- MO-at2

- 12.2.6. All trunk interconnections discussed under the "Network Interconnection" section (e.g., SS7, MF, DTMF, DialPulse, PRI-ISDN, DID, and CAMA-ANI (if appropriate for 911));
- 12.2.7. Connectivity to PSAPs where 911 solutions are deployed and the tandem is used for 911; and
- 12.2.8. Connectivity to transit traffic to and from other carriers.
- 12.2.9. Acceptance of connections (including the necessary signaling and trunking interconnections) between end offices, other tandems, IECs, ICOs, CAPs and CLEC switches.
- 12.2.10. Local tandeming functionality between two end offices including two offices belonging to different CLEC's (e.g., between an AT&T end office and the end office of another CLEC that subtends that tandem).
- 12.2.11. Preservation of CLASS/LASS features and Caller ID as traffic is processed. Additional signaling information and references are provided in Section 10.
- 12.2.12. Billing requirements are specified in Attachment 6 of this Agreement.
- 12.2.13. GTE shall perform routine testing and fault isolation on the underlying switch that is providing Tandem Switching and all its interconnections to the extent such testing and fault isolation is Currently Available. When requested by AT&T, and where Currently Available, the results and reports of the testing shall be made available to AT&T. If AT&T requests testing and fault isolation which GTE does not provide for itself, GTE may agree to perform such testing. If GTE agrees to perform such higher quality testing, GTE shall be entitled to recover costs associated therewith to the extent that such costs are not otherwise included in the cost of the element.
- 12.2.14. GTE shall maintain AT&T's trunks and interconnections associated with Tandem Switching at least at parity to its own trunks and interconnections.
- 12.2.15. Upon AT&T's request, GTE shall provide to AT&T readily available industry standard reports regarding AT&T traffic characteristics that are generated by the tandem switches performing Tandem Switching purchased by AT&T to the extent GTE has the ability to

segregate such information. For local and LEC carried intraLATA toll traffic, GTE shall provide Bellcore EMR industry standard formatted records. For interexchange carrier interLATA and intraLATA traffic, GTE shall provide EMI industry standard formatted records. If AT&T desires additional available information beyond that contained in industry standard reports, the Parties shall work together to satisfy AT&T's requirements to the extent GTE is obligated to meet such requirements under Applicable Law.

- 12.2.16. Tandem Switching shall control congestion using, for example, capabilities such as Automatic Congestion Control and Network Routing Overflow. Congestion control provided or imposed on AT&T traffic shall be at parity with controls being provided or imposed on GTE traffic (e.g., GTE shall not block AT&T traffic and leave its traffic unaffected or less affected).
- 12.2.17. Tandem Switching shall route AT&T calls to the GTE or AT&T endpoints or platforms (e.g., operator services and PSAPs) as designated by AT&T for each type of call. AT&T shall pay all costs associated therewith to the extent that such costs are not otherwise included in the cost of the element. Detailed primary and overflow routing plans for all AT&T interfaces, including AT&T traffic on GTE shared trunk groups, available within the GTE switching network shall be mutually agreed to by AT&T and GTE.
- 12.2.18. Tandem Switching shall process originating toll-free traffic received from an AT&T local switch. The Parties shall mutually agree on the methods and implementation procedures to be used to record and bill such traffic.
- 12.2.19. [Intentionally deleted.]
- 12.3. **Interface Guidelines** (subject to Section 23.19 of the General Terms and Conditions of this Agreement): GTE shall provide Interfaces for Tandem Switching at the same level of quality as GTE provides in its own network. For example:
- 12.3.1. Tandem Switching shall provide interconnection to the E911 PSAP where the underlying Tandem is acting as the E911 Tandem.
- 12.3.2. Tandem Switching shall interconnect, with direct trunks, to all carriers with which GTE interconnects.

- 12.3.3. GTE shall provide to the extent Currently Available, all signaling necessary to provide Tandem Switching with no loss of feature functionality.
- 12.3.4. Tandem Switching shall interconnect with AT&T's switch, using two-way trunks, for traffic that is transiting via the GTE network to interLATA or intraLATA carriers. GTE shall record tandem switching events necessary for GTE to bill AT&T for tandem switching and any applicable transport.
- 12.3.4.1. Notwithstanding Section 12.3.4 of this Attachment, where GTE's Tandems do not customarily record tandem switching events, the Parties shall jointly develop acceptable methods of tracking and billing for tandem switching.
- 12.3.5. At AT&T's request, Tandem Switching shall provide overflow routing of traffic from a given trunk group or groups onto another trunk group or groups according to the methodology upon which the Parties agree.
- 12.3.6. Subject to Section 23.19 of the General Terms and Conditions of this Agreement, Tandem Switching shall adhere to the Trunk Interface References provided in the "Network Interconnection" section.
- 12.4. Tandem Switching shall meet or exceed each of the technical references listed in Appendix A to this Attachment 2, under paragraph 12.
13. **Additional References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):**
- This Section 13 of Attachment 2 sets forth additional references for unbundled Network Elements offered to AT&T under this Agreement.
- 13.1. **Cooperative Testing**
- 13.1.1. **Definition:**
Cooperative Testing means that the Parties shall cooperate with each other upon request or as needed to (1) ensure that any Network Elements provided to AT&T by GTE under this Agreement are in compliance with the requirements of this Agreement, (2) test the overall functionality of Network Elements provided by GTE to

AT&T under this Agreement, and (3) ensure that all operational interfaces and processes are in place and functioning properly and efficiently for the provisioning and maintenance of Network Elements so that all appropriate billing data can be provided to AT&T.

13.1.2.

References

Subject to and in conjunction with Section 23.19 of the General Terms and Conditions of this Agreement, AT&T and GTE will agree upon a process to resolve technical issues relating to interconnection of AT&T's network to GTE's network and Network Elements and Ancillary Functions. The agreed upon process shall include procedures for escalating disputes and unresolved issues up through higher levels of each company's management. If AT&T and GTE do not reach agreement on such a process within sixty (60) days of the commencement of negotiations, upon thirty (30) days notice to the other Party, a Party may submit any issues that have not been resolved by the Parties with respect to such process to the ADR procedures set forth in Section 15 and Attachment 1 of this Agreement unless both Parties agree to extend the time to reach agreement on such issues.

13.1.2.1.

GTE will provision, test, and restore any Network Element that GTE provides to AT&T pursuant to this Agreement, in the same manner and to the same extent as GTE provisions, tests and restores such network elements in GTE's network that provide the same or similar functions and capabilities, and are located in similar central office conditions (e.g., central office or route) as the Network Elements provided to AT&T pursuant to this Agreement.

At AT&T's request, GTE will provide access to Network Elements provided pursuant to this Agreement sufficient for AT&T to test the performance of such Network Element(s) to AT&T's satisfaction, provided, however, GTE shall not be required to provide access where provision of such access would raise or create reasonable network security concerns. In cases where GTE does not allow AT&T access to the Network Element, GTE shall make other arrangements to provide AT&T with test data as the Parties mutually agree.

GTE shall provide AT&T access for testing at the MDF. Such test access shall be sufficient to ensure that the applicable requirements can be tested by AT&T. This access shall be available seven (7) days per week, 24 hours per day.

[Combinations]

- 13.1.2.2. AT&T may test any interfaces, Network Elements or Ancillary Functions and additional requirements provided by GTE pursuant to this Agreement.
- 13.1.2.3. Subject to Section 23.19 of the General Terms and Conditions of this Agreement, GTE shall provide engineering data as requested by AT&T for the loop components as set forth in Sections 2 and 3 of this Attachment which AT&T may desire to test. Such data shall include equipment engineering and cable specifications, signaling and transmission path data. GTE shall provide to AT&T the same type and quality of loop testing information that it provides to itself. Where GTE develops loop testing information as a matter of course, it will make that information available to AT&T where such information is relevant to AT&T's business. Where GTE maintains the internal discretion to test loops as needed, GTE will provide similar testing discretion to AT&T.
- 13.1.2.4. [Intentionally Deleted]
- 13.1.2.5. [Intentionally Deleted]
- 13.1.2.6. GTE shall temporarily provision selected Local Switching features for testing. Where applicable, rates and charges for unbundled ports and features, including but not limited to monthly rates, usage rates and nonrecurring charges, shall apply for the duration of such tests. Within 60 days of the Effective Date of this Agreement AT&T and GTE shall mutually agree on the procedures to be established between GTE and AT&T to expedite such provisioning processes for feature testing.
- 13.1.2.7. Upon AT&T's request, GTE shall provide technical staff to meet with AT&T representatives to provide required support for Cooperative Testing.
- 13.1.2.8. Dedicated Transport and Loop Feeder may experience alarm conditions due to in-progress tests. GTE shall not remove such facilities from service without obtaining AT&T's prior approval.
- 13.1.2.9. GTE shall conduct tests or maintenance procedures on Network Elements or Ancillary Functions or on the underlying equipment that is then providing a Network Element or Ancillary Function, that may cause a service interruption or degradation if such tests and

procedures are at a time that is mutually acceptable to AT&T and GTE.

13.1.2.10. GTE shall provide a single point of contact to AT&T that is available 7 days per week, 24 hours per day for trouble status, sectionalization, resolution, escalation, and closure. Such staff shall be adequately skilled to allow expeditious problem resolution.

13.1.2.11. [Intentionally Deleted]

13.1.2.12. GTE shall participate in Cooperative Testing with AT&T upon AT&T's request to test any operational interface or process used to provide any Network Elements to AT&T.

13.1.2.13. AT&T and GTE shall endeavor to complete Cooperative Testing expeditiously.

13.1.2.14. During Cooperative Testing, GTE provisioning processes may, at GTE's sound discretion, be enhanced to deliver Network Elements to AT&T in shorter intervals than during subsequent normal service periods upon development of a rate for premium service provisioning.

13.1.2.15. GTE shall participate in Cooperative Testing requested by AT&T as mutually required to insure service performance, reliability and customer serviceability of a Network Element.

13.1.2.16. AT&T may accept or reject the Network Element ordered by AT&T if upon completion of cooperative acceptance testing, the tested Network Element does not, subject to Section 23.19 of the General Terms and Conditions of this Agreement, meet the appropriate technical or performance requirements for such Network Element.

13.2. **Performance References** (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

13.2.1. Scope:

This section addresses performance references for Network Elements and Ancillary Functions to provide local service. It includes references for the reliability and availability of Network Elements and Ancillary Functions, and examples of quality parameters such as transmission quality (analog and digital), and speed (or delay) that serve as a reference to the Parties in providing services pursuant to this Agreement. In addition, an

overview of service performance references is given.

- 13.2.1.1. The General Performance References in this section apply to all aspects of Network Elements and Ancillary Functions. Additional references are given in this performance section and in the individual Network Elements sections.
- 13.2.1.2. GTE shall work cooperatively with AT&T to determine appropriate performance allocations across Network Elements.
- 13.2.2. Subject to Section 23.19 of the General Terms and Conditions of this Agreement, GTE shall meet or exceed the performance standards and references set forth in the technical references listed in Appendix A to this Attachment 2, under paragraph 13.
- 13.2.3. Services and Capabilities
- 13.2.3.1. Network Elements provided to AT&T pursuant to this Agreement shall provide services and capabilities consistent with Section 11.2 of the General Terms and Conditions of this Agreement. GTE shall not intentionally impair or degrade the services and capabilities of any Network Element(s) provided to AT&T pursuant to this Agreement.
- 13.2.3.1.1. [Intentionally deleted.]
- 13.2.3.1.2. [Intentionally deleted.]
- 13.2.3.1.3. [Intentionally deleted.]
- 13.2.3.1.4. [Intentionally deleted.]
- 13.2.3.1.5. [Intentionally deleted.]
- 13.2.3.2. [Intentionally deleted.]
- 13.2.3.2.1. [Intentionally deleted.]
- 13.2.3.2.2. [Intentionally deleted.]
- 13.2.3.2.3. [Intentionally deleted.]
- 13.2.3.2.4. [Intentionally deleted.]

- 13.2.3.2.5. [Intentionally deleted.]
- 13.2.3.2.6. [Intentionally deleted.]
- 13.2.3.2.7. [Intentionally deleted.]
- 13.2.4. Specific Technical References for Network Elements (subject to Section 23.19 of the General Terms and Conditions of this Agreement):
- 13.2.4.1. The following sections 13.2.4.2 through 13.2.4.5.6.2.9.2 describe technical references and performance parameters for Network Elements and Ancillary Functions. The technical references and performance parameters listed in the following sections shall be subject to and interpreted in conjunction with Section 23.19 of the General Terms and Conditions of this Agreement such that failure by GTE to meet any of the technical criteria or performance parameters listed in such sections shall not constitute a breach of contract by GTE. Notwithstanding the above, nothing in this section shall remove or release GTE from its obligations under Section 11.2 of the General Terms and Conditions of this Agreement.
- 13.2.4.2. Performance Allocation Transmission path impairments may be classified as either analog or digital, and will depend on the nature of the signal transmitted across the Network Element. Analog impairments are introduced on any analog portion of the loop, typically between the NID portion of Loop Distribution and the analog to digital (A/D) conversion, and are usually correlated with the length of the physical plant. Digital impairments are introduced by A/D conversion and by interfaces between digital Network Elements. In addition, noise can be introduced by either analog transmission or the A/D conversion.
- 13.2.4.3. Loop Architecture Parameters
- 13.2.4.3.1. The following parameters apply to the entire path between the NID and the GTE switch.
- 13.2.4.3.1.1. No more than 1 A-D conversion.
- 13.2.4.3.1.2. No more than 1, 2-to-4-wire hybrid.
- 13.2.4.3.1.3. No voice compression.

- 13.2.4.3.1.4. No echo cancelers or suppressers.
- 13.2.4.3.1.5. One digital loss pad per PBX.
- 13.2.4.3.1.6. No digital gain.
- 13.2.4.3.1.7. No additional equipment that might significantly increase intermodulation distortion.
- 13.2.4.4. Transmission Impairments
 - 13.2.4.4.1. Analog Impairments Analog impairments are those introduced on portions of the end-to-end circuit on which communications signals are transmitted in analog format. These portions of the transmission path would typically be between NID and an A/D conversion, most commonly on the metallic loop. The performance on the analog portion of a circuit is typically inversely proportional to the length of that circuit.
 - 13.2.4.4.1.1. Loss
 - 13.2.4.4.1.1.1. Electrical loss is measured using a 1004 Hz 0.0dB one Milliwatt 900 ohm test tone.
 - 13.2.4.4.1.1.2. Off-hook electrical loss between the NID and the switch shall be no more than 8.0 dB for any line, and the mean value for all lines shall be 3.5 dB \pm 0.5 dB. On-hook electrical loss between the NID and the switch shall be no more than 4.0 dB above the off-hook electrical loss for any line.
 - 13.2.4.4.1.2. Idle Channel Circuit Noise
 - 13.2.4.4.1.2.1. Idle channel circuit noise (C-message) is added by analog facilities, by the A/D conversion of signals, by digital processing equipment (e.g. echo cancelers, digital loss pads), robbed bit signaling, and errors on digital facilities.
 - 13.2.4.4.1.2.2. Idle channel circuit noise shall be less than or equal to 18 dBmC.
 - 13.2.4.4.1.3. Talker Echo
 - 13.2.4.4.1.3.1. The primary source of echo is improper impedance-matching at the 2-to-4 wire hybrid in the GTE network. The impact on customer perception is a function of both echo return loss and delay.

- 13.2.4.4.1.3.2. Echo Return Loss (ERL) shall be greater than 26dB to a standard termination (900 ohms, 2.16 mFd), and greater than 14 dB to a telephone set off-hook. Singing Return Loss (SRL) shall be greater than 21dB to a standard termination, and greater than 11 dB to a telephone set off-hook.
- 13.2.4.4.1.4. Listener Echo
Listener echo is a double reflection of a transmitted signal at two different impedance mismatches in the end-to-end connection. While in extreme cases it can degrade voice transmission performance, listener echo is primarily an issue for voiceband data. The requirements on Talker Echo shall apply to Listener Echo.
- 13.2.4.4.1.5. Propagation and Processing Delay
- 13.2.4.4.1.5.1. Propagation delay is the delay involved in transmitting information from one location to another. It is caused by processing delays of equipment in the network and delays associated with traveling across transmission facilities.
- 13.2.4.4.1.5.2. GTE shall cooperate with AT&T to limit total service propagation and processing delay to levels at parity with that within the GTE local network.
- 13.2.4.4.1.6. Signal-to-Noise Ratio
- 13.2.4.4.1.6.1. The Signal-to-Noise Ratio (S/N) is a critical parameter in determining voiceband data performance. It is typically measured with a 1004 Hz tone.
- 13.2.4.4.1.6.2. GTE must provide on the Loop a signal-to-noise ratio of at least 37 dB between the NID and the end office.
- 13.2.4.4.1.7. C-Notched Noise
The requirements for Signal-to-Noise Ratio shall apply to C-Notched Noise.
- 13.2.4.4.1.8. Attenuation Distortion
- 13.2.4.4.1.8.1. Attenuation distortion, also known as frequency distortion or gain slope, measures the variations in loss at different frequencies across the voice frequency spectrum (200 Hz - 3400 Hz). It is measured by subtracting the loss at 1004 Hz from the loss at the frequency of interest.

- 13.2.4.4.1.8.2. Attenuation distortion from the NID to the switch shall be within the range ± 0.5 dB for frequencies between 304 and 3004 Hz; from the switch to NID attenuation distortion shall be within the range ± 0.5 dB for frequencies between 204 Hz and 3004 Hz. In addition, attenuation distortion shall remain within the range +1dB/-3dB for frequencies between 200 Hz and 3500 Hz.
- 13.2.4.4.1.9. Envelope Delay Distortion
- 13.2.4.4.1.9.1. Envelope Delay Distortion (EDD) measures the difference in transit time of signals at different frequencies. EDD is measured relative to the transit time of a 1704 Hz. tone, and is given in microseconds. EDD is used as an approximation of the group delay of the channel.
- 13.2.4.4.1.9.2. EDD shall be: 1704 Hz to 604 Hz -- ≤ 350 msec.; 1704 Hz to 2804 Hz -- ≤ 195 msec.; 1704 Hz to 204 Hz -- ≤ 580 msec.; 1704 Hz to 3404 Hz -- ≤ 400 msec.
- 13.2.4.4.1.10. Phase Jitter
- 13.2.4.4.1.10.1. Phase jitter measures the unwanted angular modulation of a signal. It is caused by noise or the actual modulation of the signal by another unwanted signal. It displaces the zero crossings of a signal. It is measured in terms of peak-to-peak deviations of a 1004 Hz. tone from its nominal zero crossings, and in a particular frequency band (20-300 Hz and either 4-300 Hz or 2-300 Hz). Phase jitter impacts voiceband data performance and can make modems more susceptible to other impairments, including noise.
- 13.2.4.4.1.10.2. From the NID to the interexchange carrier point of termination, phase jitter shall be $<1.5^\circ$ point-to-point in the 20-300 Hz band, and $<1.8^\circ$ point-to-point in the 4-300 Hz. band.
- 13.2.4.4.1.11. Amplitude Jitter
- 13.2.4.4.1.11.1. Amplitude jitter is any deviation of the peak value of a 1004 Hz signal from its nominal value. Excessive amounts can impair voiceband data performance. It is primarily caused by noise but can also be caused by phase jitter, gain hits, or single frequency interference.
- 13.2.4.4.1.11.2. In NID-interexchange carrier point of termination, $\leq 2.5\%$ of amplitude jitter is permitted in the 20-300 Hz band and $\leq 2.9\%$ in the 4-300 Hz band.

13.2.4.4.1.12. Intermodulation Distortion

- 13.2.4.4.1.12.1. Intermodulation distortion (IMD) measures non-linear distortions of a signal. It compares the power of harmonic tones to the power of the transmitted tones. It is measured for both the 2nd and 3rd harmonics of the transmitted tones. IMD is caused by compression or clipping and can impair voiceband data performance. Both 2nd and 3rd order IMD between the NID and end office must be $\geq 52\text{dB}$.

13.2.4.4.1.13. Impulse Noise

- 13.2.4.4.1.13.1. Impulse noise is a sudden and large increase in noise on a channel for a short duration of time. Impulse noise is measured as a count of the number of times a noise threshold is exceeded during a given time period (typically 5 or 15 minutes). It is caused by protection switching, maintenance activities, electromechanical switching systems, digital transmission errors, and line coding mismatches. Impulse noise sounds like clicking noises or static on voice connections. Impulse noise impairs voiceband data performance.

- 13.2.4.4.1.13.2. The NID to interexchange carrier point of termination portions of connections shall introduce no impulse noise events within 6dB of the received signal power on 93% of all 15 minute connections. In addition, there shall be no more than 1 impulse noise event within 6 dB of the received signal power during any 30-minute period.

13.2.4.4.1.14. Phase Hits

- 13.2.4.4.1.14.1. Phase hits are a sudden change in the phase of a signal lasting at least 4 msec. Phase hits are measured using a threshold which indicates how much the phase of the signal has changed with respect to its nominal phase. Phase hits are caused by protection switching and slips or other synchronization errors. Phase hits can impair voiceband data performance.

- 13.2.4.4.1.14.2. Between the NID and interexchange carrier point of termination, 99.75% of all 15-minute connections shall have no phase hits exceeding 10° . In addition, there shall be no more than 1 phase hit exceeding 10° in any 30-minute period.

13.2.4.4.1.15. Gain Hits

- 13.2.4.4.1.15.1. Gain hits are sudden changes in the level of a signal that last at least 4 msec. Gain hits are measured against a threshold of

typically 2-5 dB relative to the signal's nominal level. Gain hits are usually caused by protection switches and can impair voiceband data performance.

- 13.2.4.4.1.15.2. Between the NID and the interexchange carrier point of termination, 99.5% of all 15-minute connections shall have no gain hits exceeding 3 dB. In addition, there shall be no more than 1 gain hit exceeding 3 dB in any 30-minute period.
- 13.2.4.4.1.16. Dropouts
- 13.2.4.4.1.16.1. Dropouts are drops in the level of a signal of 12 dB or more for at least 4 msec. They are caused by protection switching events, radio fading, and conditions causing digital carrier systems to lose frame. Dropouts are critical for voiceband data performance but, if severe enough, will also affect voice quality.
- 13.2.4.4.1.16.2. Between the NID and the interexchange carrier point of termination, 99.9% of all 15-minute connections shall have no dropouts and in addition, no connection shall suffer more than 1 dropout in any 60-minute period.
- 13.2.4.4.1.17. Frequency Shift
- 13.2.4.4.1.17.1. Frequency shift measures any frequency changes that occur when a signal is transmitted across a channel. It is typically measured using a 1004 Hz tone. Frequency shift has very little impact on voice or voiceband data performance; however, round-trip frequency shifts can affect the ability of echo cancelers to remain converged.
- 13.2.4.4.1.17.2. No more than 0.2 Hz frequency shift shall be on any connection. In addition, 99.5% of all calls shall have frequency shift < 0.1 Hz.
- 13.2.4.4.1.18. Crosstalk
- 13.2.4.4.1.18.1. Crosstalk is the presence of signals from other telephone connections on a circuit. Crosstalk can be either intelligible, when speech from other connections can be heard and understood, or unintelligible. Crosstalk is caused by inter-channel interference on the transmission system. Crosstalk is difficult to measure: it requires correlating signals on different circuits or using human listeners to identify its presence. Trouble reports may be used to estimate the probability of crosstalk.

- 13.2.4.4.1.18.2. 99% of Loop(s) shall have probability $\leq 0.1\%$ of experiencing crosstalk exceeding -65 dBm0.
- 13.2.4.4.1.19. Clipping
- 13.2.4.4.1.19.1. Clipping occurs when part of a transmitted signal is dropped and does not reach the receiving portion on a connection. It can be caused by Digital Speech Interpolation (DSI) equipment used in Digital Circuit Multiplication Systems (DCMS) which increase the amount of traffic that transmission facilities carry, and by echo cancelers or echo suppressers.
- No clipping incidents shall occur on any call.
- 13.2.4.4.2. Digital Impairments
- Digital impairments occur in the signal wherever it is transmitted in digital format. These errors are usually introduced upon conversion of the signal from analog to digital, as well as at interfaces between digital components. While many digital impairments have little impact on subjective voice quality, they can impact voiceband data performance.
- 13.2.4.4.2.1. Signal Correlated Distortion
- 13.2.4.4.2.1.1. Signal correlated distortion (SCD) is unwanted noise or distortion introduced into a signal through the conversion of a signal from analog to digital format or through digital processing that changes the transmitted signal. SCD affects performance when a sign is being transmitted. The primary sources of SCD are signal encoders, echo cancelers, digital loss pads, and robbed bit signaling. SCD affects both voice and voiceband data performance.
- 13.2.4.4.2.1.2. The NID-to-end-office connection shall allow:
- 13.2.4.4.2.1.2.1. A maximum of 1 A/D conversion, using 64Kbps m-law ($m=255$) PCM;
- 13.2.4.4.2.1.2.2. No voice compression;
- 13.2.4.4.2.1.2.3. No echo cancellation; and
- 13.2.4.4.2.1.2.4. Robbed bit signaling only if SS7 or ISDN are not used.

- 13.2.4.4.2.2. Slips
- 13.2.4.4.2.2.1. Slips occur when a frame of digital data is either deleted or repeated because of differences in the clocks used to synchronize digital facilities. Slips sound like clicks or pops on voice calls and have major impact on voiceband data performance.
- 13.2.4.4.2.2.2. The NID-to-interexchange carrier point of termination portion of connections shall have fewer than 0.45 slips every 24 hours on average.
- 13.2.4.4.2.3. Digital Timing Jitter and Wander
- 13.2.4.4.2.3.1. Digital timing jitter is the unwanted phase modulation of digital signals at rates above 10 Hz. Wander is the unwanted phase modulation of digital signals at rates below 10 Hz. Digital timing jitter is caused by imperfections in the timing recovery process of repeaters and the stuffing synchronization process used by multiplexer/demultiplexers. Wander is caused by slowly varying changes in digital signal phase due to clock frequency offset and drift, changes in propagation delay of terrestrial facilities due to temperature changes and changes in the distance of satellites from the earth. These events have a major impact on voiceband data performance.
- 13.2.4.4.2.3.2. The maximum digital timing jitter allowed in the 10 Hz to 8 kHz frequency band at any network interface or any terminal equipment in the network is 5 Unit Intervals (UI). The maximum digital timing jitter allowed in the 8 kHz to 40 kHz frequency band is 0.1 UI. The objective for wander is less than 28 UI at any network interface or terminal equipment.
- 13.2.4.4.2.4. DS-1 Errored Seconds
- 13.2.4.4.2.4.1. An Errored Second (ES) on a DS-1 facility is any second during which at least 1 bit is in error. The impact of an ES on performance depends on the number of errors that occur during a second. Typically, voice performance is not significantly impacted by ES but they can cause errors in voiceband data transmissions.
- 13.2.4.4.2.4.2. Each GTE network shall have less than 20 ESs per 24 hour period.

13.2.4.4.2.5. DS-1 Severely Errored Seconds

13.2.4.4.2.5.1. A severely Errored Second (SES) is any second during which a DS-1 has an error rate exceeding 0.001. An SES can be caused by a loss of framing, a slip, or a protection switch. SESs have impacts on both voice and voiceband data performance. For voice, an SES will sound like a burst of noise or static. SESs that occur during a voiceband data transmission cause a significant burst of errors and can cause modems to retrain.

13.2.4.4.2.5.2. The digital portion of each NID to POP connection shall have less than 2 SESs per 24 hour period).

13.2.4.4.2.6. Short Failure Events

13.2.4.4.2.6.1. A Short Failure Event (SFE) is a Loss of Frame (LOF) event of less than two minutes' duration. An LOF event is declared when, on detection of a Loss of Signal (LOS) or Out-of-Frame (OOF), a rise-slope-type integration process starts that declares a LOF after 2.5 ± 0.5 sec. of continuous LOS or OOF. If the LOS or OOF is intermittent, the integration process shall decay at a slope of 1/5 the rise slope during the period when the signal is normal. Thus, if the ratio of a LOS or OOF to a normal signal is greater than 1/2, a LOF will be declared. A LOS condition shall be declared when the Network Channel Terminating Equipment has determined that 175 ± 75 successive pulse positions with no pulses of either positive or negative polarity have occurred. An OOF condition shall be declared when either Network equipment or Digital Terminal Equipment detects errors in the framing pattern.

13.2.4.4.2.6.2. There shall be fewer than 1 SFE per month.

13.2.4.5. Service Availability and Reliability

Availability refers to the time period during which the service is up and usable for its intended purpose. Reliability refers to the probability that a task will be completed successfully, given that it is successfully begun.

13.2.4.5.1. Blocked Calls

13.2.4.5.1.1. Blocking is the fraction of call origination attempts denied service during a stated measurement period. Blocking occurs because of competition for limited resources within the network.

- 13.2.4.5.1.2. For intraLATA toll service as well as for local exchange service, the blocking level from originating network interface (NID) to terminating NID shall not exceed 1% in any hour, except under conditions of service disruption. For access to or egress from the AT&T long distance network, the blocking rate shall not exceed 0.5% in any hour, except under conditions of service disruption.
- 13.2.4.5.2. Blocked Dial Tone
- 13.2.4.5.2.1. Blocked dial tone occurs when the subscriber does not receive dial tone within 3 seconds of going off-hook.
- 13.2.4.5.2.2. Customers shall not experience more than 0.1% dial tone blocking during average busy season busy hour (ABSBH).
- 13.2.4.5.3. Downtime
Downtime is the period of time that a system is in a failed state.
- 13.2.4.5.3.1. The average downtime for all subscriber Loop(s) shall be less than 49 minutes per year. The maximum downtime for 99% of all subscriber Loop(s) shall be less than 74 minutes per year.
- 13.2.4.5.3.2. The average downtime for an end office switch shall be less than 3 minutes per year. The average downtime for individual trunks shall be less than 28 minutes per year. The average downtime for digital trunk groups shall be less than 20 minutes per year. The average downtime for an individual line appearance at the switch shall be less than 28 minutes per year. The average downtime for a Remote Terminal (RT) shall be less than 17 minutes per year. The average downtime for an individual line on a Remote Terminal (RT) shall be less than 13 minutes per year.
- 13.2.4.5.3.3. [Intentionally deleted.]
- 13.2.4.5.3.4. There shall be no downtime due to power failures at the switch.
- 13.2.4.5.3.5. The probability of a stable call being cut off shall be less than 20 cutoffs per one million 1 minute calls.
- 13.2.4.5.3.6. The rate of ineffective machine attempts at the end office shall be less than 0.0005 (5 failures per 10,000 call attempts).

- 13.2.4.5.3.7. GTE shall meet all references for private line services in TR-NWT-000335, ANSI T1.512-1994, and AT&T Technical References as listed in this Section 13.2.
- 13.2.4.5.4. Dial Tone Delay
- 13.2.4.5.4.1. Dial-Tone Delay is the time period between a customer off-hook and the receipt of dial tone from an originating end office. Dial-Tone Delay has a significant effect on customer opinion of service quality.
- 13.2.4.5.4.2. The average dial-tone delay shall not exceed 0.6 seconds. At most 0.5% of calls during the average-season busy hour (ABSBH) shall experience dial-tone delay greater than 3 seconds. At most 8% of calls during the ten-high-day busy hour (THDBH) shall experience dial-tone delay greater than 3 seconds. At most 10% of calls during the high-day busy hour (HDBH) shall experience dial-tone delay greater than 3 seconds.
- 13.2.4.5.5. Dial Tone Removal
- 13.2.4.5.5.1. Dial tone removal is the time between recognition of the first address digit to the removal of dial tone on the line.
The maximum dial tone removal interval shall be ≤ 500 milliseconds.
- 13.2.4.5.6. Post Dial Delay
- 13.2.4.5.6.1. Post Dial Delay (PDD) is the amount of time a caller must wait after entering or dialing the last digit of a Destination Telephone Number (DTN) before hearing a valid audible network response. The PDD for an end user is measured from the time the caller has pressed or dialed the last digit of a DTN until receipt of an audible network response.
- 13.2.4.5.6.2. The references given reflect an end-to-end CCS7 protocol for AT&T end users. Where a mixture of CCS7 and inband (MF) signaling protocols are employed, an increase in the PDD can be expected.
- 13.2.4.5.6.2.1. PDD 1 - A - Intra AT&T LSO
- 13.2.4.5.6.2.1.1. Intra-LSO calls do not employ external signaling protocols. The PDD for intra-LSO calls flows are dependent upon the processor

cycle time and traffic load conditions. This PDD is assumed to be between customers on the same AT&T LSO, between the Remote Switch Modules (RSMs) on the same Host, or between an RSM and 5ESS Host customers.

- 13.2.4.5.6.2.1.2. The objective for intra-LSO PDD is less than 310 milliseconds for 50% of all calls and less than 460 milliseconds for 95% of all calls.
- 13.2.4.5.6.2.2. PDD1 - B - AT&T LSO to Another AT&T Local LSO
 - 13.2.4.5.6.2.2.1. The signaling protocols from an AT&T LSO to another AT&T LSO are assumed to employ out-of-band Common Channel Signaling System 7 (CCS7) format. Local calls, that is, calls from an AT&T LSO to another AT&T LSOs are assumed to have no more than one pair of Signaling Transfer Point Switches (STPSs) and no more than one data base dip.
 - 13.2.4.5.6.2.2.2. This PDD is expected to be better than the AT&T Long Distance objective with an average PDD of $\leq .870$ seconds with $95\% \leq 1.34$ seconds.
- 13.2.4.5.6.2.3. PDD1 - C - AT&T LSO to Other LSO
 - 13.2.4.5.6.2.3.1. Calls from an AT&T LSO to other LSOs are dependent upon the interface agreements between AT&T and the LSO service provider and may employ CCS7, inband (MF) or a combination of both protocols.
 - 13.2.4.5.6.2.3.2. Calls from an AT&T LSO to another LSO via the Public Switched Telecommunications Network (PSTN), using end-to-end CCS7 signaling protocols, can expect to meet the AT&T PDD objectives of an average of 2.0 seconds with 95% in ≤ 2.5 seconds. Calls from an AT&T LSO via the PSTN to LSOs outside the local service area are assumed to use CCS7 signaling protocols to the AT&T #4ESS. The egress signaling protocols from the AT&T Switched Network (ASN) to the many different local telephone company service providers however does not necessarily utilize CCS7 signaling. There are three basic egress signaling configuration. They are:
 - 13.2.4.5.6.2.3.2.1. Network Inter-Connect, CCS7 between AT&T and the local telephone company.
 - 13.2.4.5.6.2.3.2.2. Inband Multifrequency (MF) signaling protocols without a GTE egress tandem in the connection.

- 13.2.4.5.6.2.3.2.3. Inband MF signaling protocols with a GTE egress tandem in the connection.
- 13.2.4.6.3.2.3.2.3.1 Calls from an AT&T LSO to other LSOs outside the local service area are assumed to have multiple STPSs for 1+ traffic in the access and ASN portion of the connection. The egress from the ASN for 1+ traffic is again dependent upon the interface agreements in that service area and may consist of CCS7 or inband MF protocols.
- 13.2.4.6.3.2.3.2.3.2 Calls from an AT&T's LSO to another AT&T LSO with a mixture of CCS7 or all inband signaling protocols are expected to receive PDDs on the average of 2.9 seconds with 95% in ≤ 6.5 seconds.
- 13.2.4.5.6.2.4. PDD2 - AT&T LSO to Operator Services
 - 13.2.4.5.6.2.4.1. The signaling protocols between an AT&T LSO and the AT&T ASN 5ESS® Operator Services Position Systems (OSPS) will employ IN-band Feature Group C Modified Operator Services Multifrequency signaling format. As with 1+ traffic, the egress from the ASN to the local service providers LSO is dependent upon the interface.
 - 13.2.4.5.6.2.5. PDD2 - A - AT&T LSO to 5ESS® OSPS 0 Only
 - 13.2.4.5.6.2.5.1. When a "0" has been entered by the customer, timing is applied in the absence of a DTMF "#". If a "#" is not entered, the objective is for the timer to expire in 4 seconds +/- 1 second. After the timer has expired, or the "#" has been entered, the average PDD shall not exceed 2.2 seconds.
 - 13.2.4.5.6.2.6. PDD2 - B - 0 Plus Calls
 - 13.2.4.5.6.2.6.1. On calls where analysis of the first 6 digits (area code + central office code) is required, the PDD shall not exceed 2.0 seconds on the average, and 2.5 seconds in 95% of all occurrences. For calls that require analysis of the 10-digits CALLED number and the 7 digits of calling number (ANI, e.g. Automatic Charge Quotation Service) the PDD is expected to be 4.5 seconds on the average and < 5.0 seconds in 95% of all occurrences. These delays are based on the calling customer receiving a network response as described above, specifically the calling card alerting tone from the 5ESS® OSPS. The remaining call completion PDD to the DTN, after the customer has completed the Operator Service function, will take the form of the PDDs discussed in PDD1-C.

13.2.4.5.6.2.7. **Impact of Local Number Portability (LNP)**

13.2.4.5.6.2.7.1. Local Number Portability will increase PDDs. If a call forwarding option is used as an interim solution for LNP, the delay due to additional switching in the local access is estimated to be 0.3 seconds (mean) and 0.4 seconds (95th percentile) in addition to the PDDs described earlier. These estimates assumes CCS7 signaling between LSOs. If inband signaling is used between LSOs, the PDD will be increased by 1.9 to 3.6 (1.7+1.9) seconds compared to the PDDs provided in the section on Post Dial Delay.

13.2.4.5.6.2.8. **Custom Local Area Subscriber Services (CLASS)**

13.2.4.5.6.2.8.1. CLASSSM features such as Calling Name Delivery can contribute to the PDD of a call. This delay is caused by the additional time (GTE option) before the ringing interval commences. This default delay is 3 seconds. Optional settings are available in 1 second intervals from 1 to 6 seconds. Calls to DTNs that have CLASSSM features, particularly with calling name delivery, can expect to experience from 1 to 6 seconds (3 seconds default) of additional PDD compared to the PDDs shown for PDD1-C.

13.2.4.5.6.2.9. **Partial Dial Timing**

13.2.4.5.6.2.9.1. The interval between each information digit from a customer's line, until the LSO or switching system has determined that the digit string is incomplete.

13.2.4.5.6.2.9.2. For customer lines, partial dial timing shall be ≥ 16 seconds and ≤ 24 seconds. For trunks, inband signaling time-out shall be ≥ 5 seconds and ≤ 20 seconds.

13.2.5. [Intentionally deleted.]

13.2.5.1. [Intentionally deleted.]

13.2.5.1.1. [Intentionally deleted.]

13.2.5.1.2. [Intentionally deleted]

13.3. **Protection, Restoration, and Disaster Recovery**

13.3.1. Scope:

This Section refers specifically to references on the use of redundant network equipment and facilities for protection,

restoration, and disaster recovery.

13.3.2. Technical References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

13.3.2.1. GTE shall provide protection, restoration, and disaster recovery capabilities at parity with those capabilities provided for GTE's own services, facilities and equipment (e.g., equivalent circuit pack protection ratios, facility protection ratios).

13.3.2.2. GTE shall provide Network Elements and Ancillary Functions equal priority in protection, restoration, and disaster recovery as provided to GTE's own services, facilities and equipment.

13.3.2.3. GTE shall provide Network Elements and Ancillary Functions equal priority in the use of spare equipment and facilities as provided to GTE's own services, facilities and equipment.

13.3.2.4. Where AT&T designates an AT&T customer priority list, GTE shall restore Network Elements provided to AT&T, which have been identified by the Parties as serving the customers on the priority list, in accordance with AT&T's priority designation. AT&T will work jointly with GTE in identifying those Network Elements associated with the priority customer list.

13.4. Synchronization

13.4.1. Definition:

Synchronization is the function which keeps all digital equipment in a communications network operating at the same average frequency. With respect to digital transmission, information is coded into discrete pulses. When these pulses are transmitted through a digital communications network, all synchronous Network Elements are traceable to a stable and accurate timing source. Network synchronization is accomplished by timing all synchronous Network Elements in the network to a stratum 1 traceable timing source so that transmission from these network points have the same average line rate.

13.4.2. Technical References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

The following references are applicable to the case where GTE provides synchronization to equipment that AT&T owns and operates within a GTE location. In addition, these references apply

to synchronous equipment that is owned by GTE and is used to provide a Network Element to AT&T.

- 13.4.2.1. The synchronization of clocks within digital networks is divided into two parts: intra-building and inter-building. Within a building, a single clock is designated as the Building Integrated Timing Supply (BITS), which provides all of the DS1 and DS0 synchronization references required by other clocks in such building. This is referred to as intra-building synchronization. The BITS receives synchronization references from remotely located BITS. Synchronization of BITS between buildings is referred to as inter-building synchronization.
- 13.4.2.2. To implement a network synchronization plan, clocks within digital networks are divided into four stratum levels. All clocks in strata 2, 3, and 4 are synchronized to a stratum 1 clock, that is, they are traceable to a stratum 1 clock. A traceable reference is a reference that can be traced back through some number of clocks to a stratum 1 source. Clocks in different strata are distinguished by their free running accuracy or by their stability during trouble conditions such as the loss of all synchronization references.
- 13.4.2.2.1. Intra-Building
 - 13.4.2.2.1.1. Within a building, there are different kinds of equipment that require synchronization at the DS1 and DS0 rates. Synchronization at the DS1 rate is accomplished by the frequency synchronizing presence of buffer stores at various DS1 transmission interfaces. Synchronization at the DS0 rate is accomplished by using a composite clock signal that phase synchronizes the clocks. Equipment requiring DS0 synchronization frequently does not have adequate buffer storage to accommodate the phase variations among different equipment. Control of phase variations to an acceptable level is accomplished by externally timing all interconnecting DS0 circuits to a single clock source and by limiting the interconnection of DS0 equipment to less than 1,500 cable feet. Therefore, a BITS shall provide DS1 and composite clock signals when appropriate. The composite signal is a 64-kHz 5/8th duty cycle, return to zero with a bipolar violation every eighth pulse (B8RZ).
 - 13.4.2.2.2. Inter-Building
 - 13.4.2.2.2.1. Subject to Section 23.19 of the General Terms and Conditions of this Agreement, GTE shall provide inter-building synchronization at

the DS1 rate, and the BITS shall accept the primary and secondary synchronization links from BITS in other buildings. From hierarchical considerations, the BITS shall be the highest stratum clock within the building and GTE shall provide operations capabilities (this includes, but is not limited to: synchronization reference provisioning; synchronization reference status inquiries; timing mode status inquiries; and alarm conditions).

13.4.3.

Synchronization Distribution References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):

13.4.3.1.

Central office BITS shall contain redundant clocks meeting or exceeding the references for a stratum 2 clock as specified in ANSI T1.101-1994 and Bellcore TR-NWT-001244 Clocks for the Synchronized Network: Common Generic Criteria.

13.4.3.2.

Central office BITS shall be powered by primary and backup power sources to the extent GTE utilizes such backup power sources in GTE's own network.

13.4.3.3.

If both reference inputs to the BITS are interrupted or in a degraded mode (meaning off frequency greater than twice the minimum accuracy of the BITS, loss of frame, excessive bit errors, or in Alarm Indication Signal), then the stratum clock in the BITS where Currently Available, shall provide the necessary bridge in timing to allow the network to operate without a frame repetition or deletion (slip free) with better performance than 1 frame repetition or deletion (slip) per week.

13.4.3.4.

DS1s multiplexed into a SONET synchronous payload envelope within an STS-n (where n is defined in ANSI T1.105-1995) signal shall not be used as reference facilities for network synchronization.

13.4.3.5.

The total number of Network Elements cascaded from the stratum 1 source shall be minimized in accordance with GTE's standards for such minimization.

13.4.3.6.

To the extent that GTE provides such stratum level to itself, a Network Element shall receive the synchronization reference signal only from another Network Element that contains a clock of equivalent or superior quality (stratum level).

13.4.3.7.

[Intentionally deleted.]

- 13.4.3.8. Where possible, all primary and secondary synchronization facilities shall be physically diverse (this means the maximum available physical separation of synchronization equipment and cabling).
- 13.4.3.9. No timing loops shall be formed in any combination of primary and secondary facilities unless GTE utilizes such combinations in its network.
- 13.4.3.10. GTE shall continuously monitor the BITS for synchronization related failures or degradation to the extent GTE provides such monitoring to itself.
- 13.4.3.11. GTE shall continuously monitor all equipment transporting synchronization facilities for synchronization related failures or degradation to the extent GTE provides such monitoring to itself.
- 13.4.3.12. For non-SONET equipment, GTE shall provide synchronization facilities which, at a minimum, comply with the standards set forth in ANSI T1.101-1994.
For SONET equipment, GTE shall provide synchronization facilities that have time deviation (TDEV) for integration times greater than 0.05 seconds and less than or equal to 10 seconds, that is less than or equal to 10 nanoseconds. TDEV, in nanoseconds, for integration times greater than 10 seconds and less than 1000 seconds, shall be less than 3.1623 times the square-root of the integration time. For example, for integration times of 25 seconds, TDEV shall be less than 15.8 nanoseconds.
- 13.5. **SS7 Network Interconnection**
- 13.5.1. Definition:
SS7 Network Interconnection is the Interconnection of GTE Signal Transfer Points (STPs) with AT&T STPs or AT&T local or tandem switching systems, for the purpose of providing local exchange or exchange access services. This connectivity enables the exchange of SS7 messages between AT&T local or tandem switching systems and GTE's local or tandem switching systems, and between AT&T local or tandem switching systems and other third-party local or tandem switching systems with signaling connectivity to the same STPs. This connectivity also enables the exchange of messages between AT&T local or tandem switching systems, and GTE call-related databases.

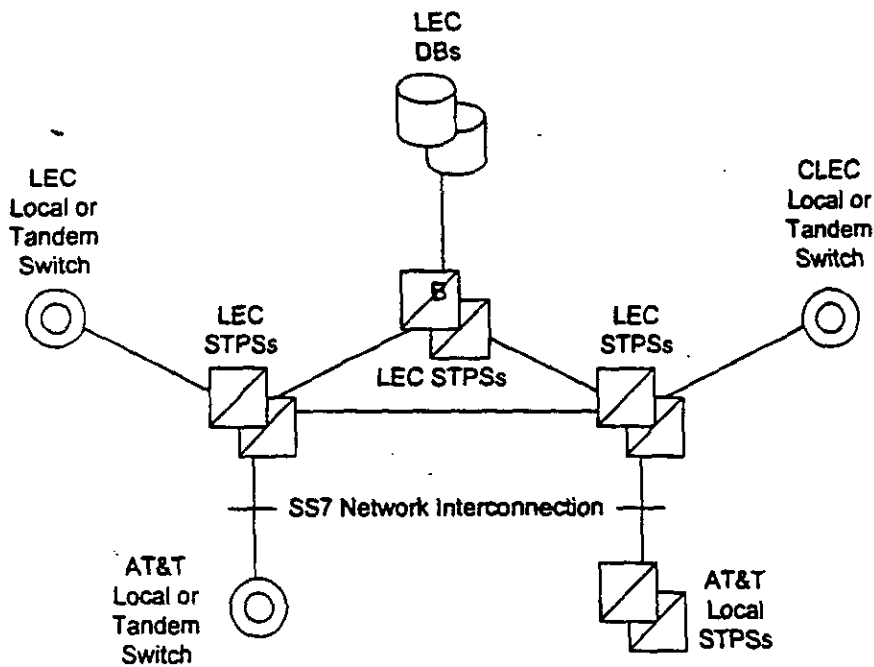


Figure 3. SS7 Network Interconnection

- 13.5.2. Technical References (subject to Section 23.19 of the General Terms and Conditions of this Agreement): GTE shall provide SS7 Network Interconnection at the same level of quality as GTE provides for such network interconnection in its own network. For example:
- 13.5.2.1. SS7 Network Interconnection provides connectivity to all components of the GTE SS7 network. These include:
- 13.5.2.1.1. GTE local or tandem switching systems;
- 13.5.2.1.2. GTE DBs; and
- 13.5.2.1.3. Other third-party local or tandem switching systems.
- 13.5.2.2. The connectivity provided by SS7 Network Interconnection fully supports the functions of GTE switching systems and DBs and AT&T or other third-party switching systems with A-link access to the GTE SS7 network.
- 13.5.2.3. In particular Figure 4 depicts a circumstance where SS7 Network Interconnection provides transport for certain types of Transaction Capabilities Application Part (TCAP) messages. If traffic is routed based on dialed or translated digits between an AT&T local

switching system and a GTE or other third-party local switching system, either directly or via a GTE tandem switching system, then GTE SS7 network conveys via SS7 Network Interconnection the TCAP messages that are necessary to provide Call Management services (Automatic Callback, Automatic Recall, and Screening List Editing) between the AT&T local STPSs and the GTE or other third-party local switch.

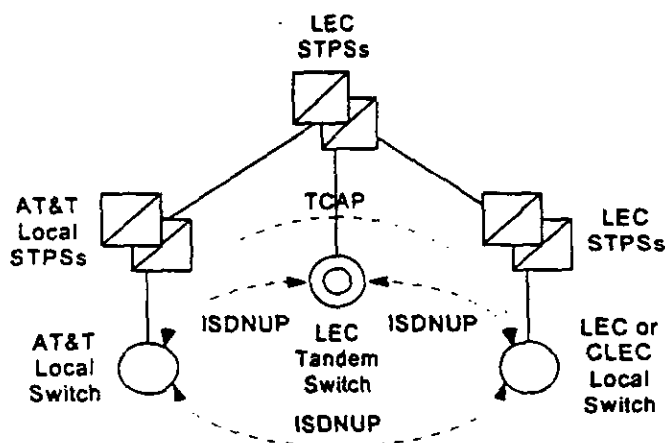


Figure 4. Interswitch TCAP Signaling for SS7 Network Interconnection

- 13.5.2.4. When the capability to route messages based on Intermediate Signaling Network Identifier (ISNI) is generally available on GTE STPSs, the GTE SS7 Network also conveys TCAP messages using SS7 Network Interconnection in similar circumstances where the GTE switch routes traffic based on a Carrier Identification Code (CIC).
- 13.5.2.5. SS7 Network Interconnection shall provide all functions of the MTP as specified in ANSI T1.111. This includes Signaling Data Link functions, as specified in ANSI T1.111.2; Signaling Link functions, as specified in ANSI T1.111.3; and Signaling Network Management functions, as specified in ANSI T1.111.4.
- 13.5.2.6. SS7 Network Interconnection shall provide all functions of the SCCP necessary for Class 0 (basic connectionless) service, as specified in ANSI T1.112 (Reference 13.5.2.5). In particular, this includes Global Title Translation (GTT) and SCCP Management procedures, as specified in T1.112.4. Where the destination

signaling point is a GTE switching system or DB, or is another third-party local or tandem switching system directly connected to the GTE SS7 network, SS7 Network Interconnection shall include final GTT of messages to the destination and SCCP Subsystem Management of the destination. Where the destination signaling point is an AT&T local or tandem switching system, SS7 Network Interconnection shall include intermediate GTT of messages to a gateway pair of AT&T local STPSs, and shall not include SCCP Subsystem Management of the destination.

- 13.5.2.7. SS7 Network Interconnection shall provide all functions of the Integrated Services Digital Network User Part (ISDNUP), as specified in ANSI T1.113 (Reference 13.5.2.5).
- 13.5.2.8. SS7 Network Interconnection shall provide all functions of the TCAP, as specified in ANSI T1.114 (Reference 13.5.2.5).
- 13.5.2.9. If and when Internetwork MTP Routing Verification Test (MRVT) and SCCP Routing Verification Test (SRVT) become approved ANSI standards and available capabilities of GTE STPSs, SS7 Network Interconnection shall provide these functions of the OMAP.
- 13.5.3. Link Interface References (subject to Section 23.19 of the General Terms and Conditions of this Agreement):
 - 13.5.3.1. GTE shall offer the following SS7 Network Interconnection options to connect AT&T or AT&T-designated local or tandem switching systems or STPSs to the GTE SS7 network:
 - 13.5.3.1.1. A-link interface from AT&T local or tandem switching systems; and
 - 13.5.3.1.2. D-link interface from AT&T STPSs.
 - 13.5.3.2. Subject to Section 23.19 of the General Terms and Conditions of this Agreement, each interface shall be provided by one or more sets (layers) of signaling links, as follows:

13.5.3.2.1. An A-link layer shall consist of two links, as depicted in Figure 5.

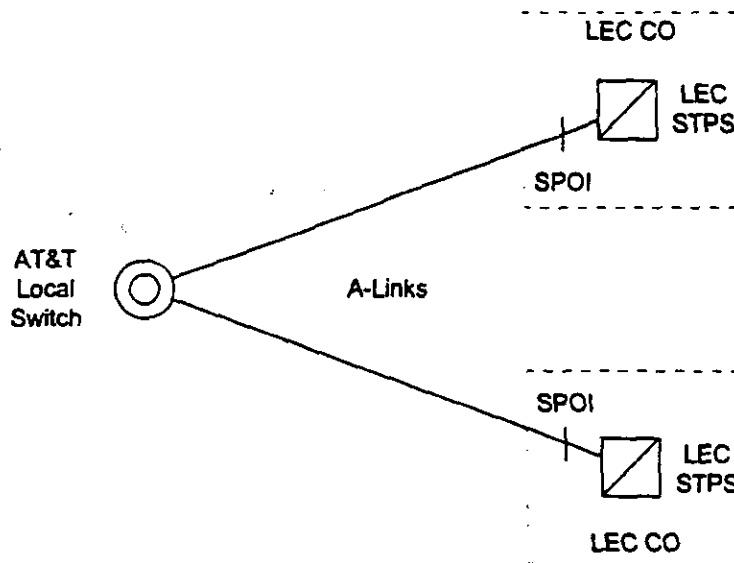


Figure 5. A-Link Interface

13.5.3.2.2. A D-link layer shall consist of four links, as depicted in Figure 6.

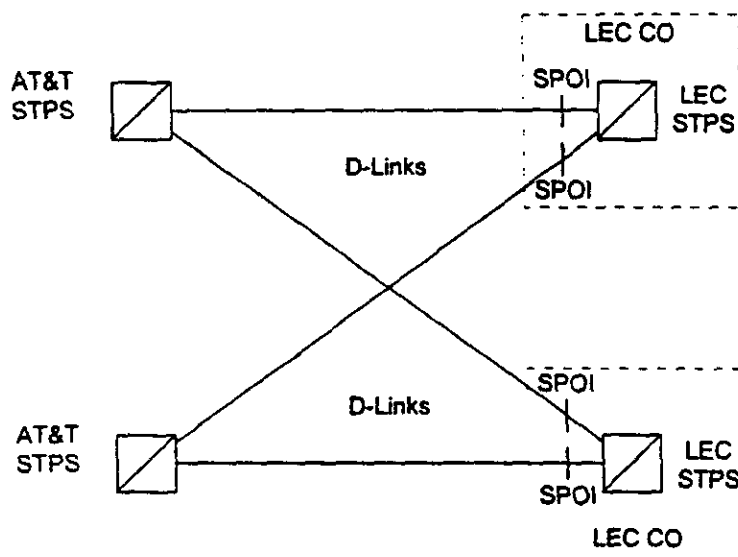


Figure 6. D-Link Interface

- 13.5.3.3. The Signaling Point of Interconnection (SPOI) for each link shall be located at a cross-connect element, (e.g., a DCS, DSX-1, etc.), in the Central Office (CO) where the GTE STPs are located. There shall be a 56kbps or higher rate transport interface at each of the SPOIs located in a GTE CO. Each signaling link shall appear as a DS0 channel within the DS1 or higher rate interface. GTE shall offer higher rate DS1 signaling links for interconnecting AT&T local switching systems or STPs with GTE STPs as soon as these become approved ANSI standards and available capabilities of GTE STPs.
- 13.5.3.4. To the extent GTE provides such capability to itself, its Affiliates or its subsidiaries in the particular GTE office, GTE shall provide intraoffice diversity between the SPOIs and the GTE STPs in that office, so that no single failure of intraoffice facilities or equipment shall cause the failure of both D-links in a layer connecting to a GTE STP.
- 13.5.3.5. The protocol interfaces for SS7 Network Interconnection include the MTP, ISDNUP, SCCP, and TCAP. These protocol interfaces shall, subject to Section 23.19 of the General Terms and Conditions of this Agreement, conform to the specifications contained in the technical references listed in Appendix A to this Attachment 2, under paragraph 14.
- 13.5.3.6. SS7 Network Interconnection shall be provided to AT&T in accordance with the technical references listed in Appendix A to this Attachment 2, under paragraph 15.

14. Unused Transmission Media

14.1 Definitions:

- 14.1.1. Unused Transmission Media is physical inter-office transmission media (e.g., optical fiber, from an LGX in one central office to another LGX in another central office, copper twisted pairs from the MDF of one central office to the MDF in another central office, coaxial cable) which has no lightwave or electronic transmission equipment terminated to such media to operationalize its transmission capabilities. This media may exist in aerial or underground structure or within a building.
- 14.1.2. Dark Fiber, one type of unused transmission media, is unused strands of optical fiber. Dark Fiber also includes strands of optical fiber existing in aerial or underground structure which have

lightwave repeater (regenerator or optical amplifier) equipment interspliced to it at appropriate distances, but which has no line terminating elements terminated to such strands to operationalize its transmission capabilities.

14.1.3. GTE is not responsible for the end-to-end performance in those applications where AT&T is utilizing unused transmission media.

14.2. **Requirements**

14.2.1. GTE shall make available, for lease by AT&T, its dark fiber in the feeder segment of GTE's loops and, when AT&T has collocation space in a GTE tandem or end office, in the dedicated interoffice transport segment of GTE's network, subject to the conditions and requirements set forth in sections 14.2.2 through 14.3.2.

14.2.1.1. AT&T will bear the cost of extending dark fiber in the feeder segment of GTE's network to AT&T end-user premises or AT&T's facility access locations within the loop access network.

14.2.2. GTE shall provide a Single Point of Contact (SPOC) for negotiating all Unused Transmission Media lease agreements.

14.2.3. AT&T may test the quality of the Unused Transmission Media to confirm its usability and performance specifications. AT&T may only test from its point of physical collocation, AT&T's end-user premises or AT&T's facility access locations at which AT&T has access to such unused Transmission Media. For virtual collocation applications, GTE will perform test(s) on the dark fiber as requested by AT&T and provide the results of the test(s) to AT&T, at AT&T's expense. Should such test results not meet AT&T specifications, GTE will only be obligated to perform those maintenance activities it would have performed for itself.

14.2.4. Upon receipt of a bona fide request, GTE shall provide to AT&T information regarding the location, availability of Unused Transmission Media within twenty (20) business days after receiving a request for a specific location from AT&T.

14.2.5. GTE shall make Unused Transmission Media available to AT&T within twenty (20) business days after it receives written confirmation from AT&T that the Unused Transmission Media previously deemed available by GTE is wanted for use by AT&T at the price established by the Commission. If a written confirmation is not received from AT&T within thirty (30) business days after

verification of availability, GTE may make such Unused Transmission Media available for its own use or, may make it available to another requesting party.

- 14.2.6. In leasing loop feeder dark fiber and dedicated interoffice dark fiber to AT&T, GTE will allocate its dark fiber capacity among requesting CLECs on a first-come, first-served basis and in a competitively neutral manner. GTE lease agreements for such fiber may provide that they are revocable upon twelve months' notice by GTE, provided that, in order to exercise its right of revocation, GTE must demonstrate that the subject fiber is needed to meet GTE's bandwidth requirements or the bandwidth requirements of another LSP. In addition, if GTE can demonstrate within a twelve month period after the date of a dark fiber lease that AT&T is using the leased capacity at a transmission level less than OC-12 (622.08 million bits per second), GTE may revoke the lease agreement. Whenever GTE revokes a dark fiber lease agreement under this section 14.2.6, it will provide AT&T a reasonable and sufficient alternative means of transporting the traffic.
- 14.2.7. GTE is not required to make available for lease by AT&T more than twenty-five percent (25%) of its dark fiber capacity in a particular feeder or dedicated interoffice transport segment.
- 14.3 **Requirements Specific to Dark Fiber**
- 14.3.1. AT&T will provide sufficient fiber cable from their LGX located in their physical collocation space to allow GTE personnel to terminate the GTE LGX. Where AT&T is obtaining access to dark fiber through virtual collocation, AT&T will provide the appropriate electronic equipment to terminate the fiber and GTE will provide the cross connection of the fiber to AT&T's equipment at AT&T's expense.
- 14.3.2. In those applications where AT&T requests optical regenerators, such regeneration will be provided by GTE on a case by case basis with additional costs to be borne by AT&T. However, in all events, AT&T may provide its own optical regenerators within AT&T's physical/virtual collocation space.

APPENDIX A

Introduction

To the extent sections contained in this Appendix set forth technical references, technical standards, technical requirements, and/or performance standards, GTE's obligation to comply with such references, requirements, and/or standards shall be subject to Section 23.19 of the General Terms and Conditions of this Agreement.

1. The Network Interface Device (NID) shall be provided to AT&T in accordance with the following technical references:
 - 1.1 Belcore Technical Advisory TA-TSY-000120 "Customer Premises or Network Ground Wire";
 - 1.2 Belcore Generic Requirement GR-49-CORE "Generic Requirements for Outdoor Telephone Network Interface Devices";
 - 1.3 Belcore Technical Requirement TR-NWT-00239 "Indoor Telephone Network Interfaces";
 - 1.4 Belcore Technical Requirement TR-NWT-000937 "Generic Requirements for Outdoor and Indoor Building Entrance"; and,
 - 1.5 Belcore Technical Requirement TR-NWT-000133 "Generic Requirements for Network Inside Wiring."
2. The Loop shall be equal to or better than each of the applicable interface references set forth in the following technical references:
 - 2.1 Belcore TR-NWT-000049, "Generic Requirements for Outdoor Telephone Network Interface Devices," Issued December 1, 1994;
 - 2.2 Belcore TR-NWT-000057, "Functional Criteria for Digital Loop Carrier Systems," Issued January 2, 1993;
 - 2.3 Belcore TR-NWT-000393, "Generic Requirements for ISDN Basic Access Digital Subscriber Lines";

- 2.4 Belcore TR-NWT-000253, SONET Transport Systems: Common Criteria (A module of TSGR, FR-NWT-000440), Issue 2, December 1991;
- 2.5 AT&T Data Communications Technical Reference TR 62310, DS0 Digital Local Channel Description and Interface Specification, August 1993; Also Addendum 1 and Addendum 2; and
- 2.6 AT&T Technical Reference TR 62411, ACCUNET T1.5 Service Description and Interface Specification, December 1990; Addendum 1, March 1991; Addendum 2, October 1992.
- 2.7 AT&T Technical Reference TR 62421, ACCUNET Spectrum of Digital Services Description and Interface Specification, December 1989; Also TR 62421A Addendum 2, November 1992.
- 2.8 ANSI T1.106 - 1988, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (Single Mode).
- 2.9 ANSI T1.105 - 1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Basic Description including Multiplex Structure, Rates and Formats.
- 2.10 ANSI T1.102 - 1993, American National Standard for Telecommunications - Digital Hierarchy - Electrical Interfaces.
- 2.11 ANSI T1.403- 1989, American National Standard for Telecommunications - Carrier to Customer Installation, DS1 Metallic Interface Specification
- 2.12 Belcore GR-253-CORE, Synchronous Optical Network Systems (SONET), Common Generic Criteria.
- 2.13 AT&T Technical Reference TR 54014, ACCUNET T45 Reserved Services - Service Description and Interface Specification, May 1992.
- 2.14 AT&T Technical Reference TR 54018, ACCUNET T155 Service Description and Interface Specification.
- 2.15 Belcore TR-TSY-000008, Digital Interface Between the SLC 96 Digital Loop Carrier System and a Local Digital Switch, Issue 2, August 1987.

- 2.16 Bellcore TR-NWT-000303, Integrated Digital Loop Carrier System Generic Requirements, Objectives and Interface, Issue 2, December 1992; Rev.1, December 1993; Supplement 1, December 1993.
- 2.17 Bellcore TR-TSY-000673, Operations Systems Interface for an IDLC System, (LSSGR) FSD 20-02-2100, Issue 1, September 1989.
- 2.18 AT&T Technical Reference TR-62415 "Access Specifications for High Capacity DS1/DS3 Dedicated Digital Service";
- 2.19 Bellcore Technical Requirement TR-NWT-000499, Issue 5, December 1993, section 7 for DS1 interfaces.
- 3. Local Switching shall be equal to or better than the references for Local Switching set forth in Bellcore's Local Switching Systems General Requirements (FR-NWT-000064) and shall be offered in accordance with the following technical references:
 - 3.1 GR-1298-CORE, AIN Switching System Generic Requirements;
 - 3.2 GR-1299-CORE, AIN Switch-Service Control Point (SCP)/Adjunct Interface Generic Requirements;
 - 3.3 TR-NWT-001284, AIN 0.1 Switching System Generic Requirements;
 - 3.4 SR-NWT-002247, AIN Release 1 Update.
- 4. Interface to Loop References:
 - 4.1 Basic Rate Interface ISDN adhering to ANSI standards Q.931, Q.932 and appropriate Bellcore Technical Requirements;
 - 4.2 Primary Rate ISDN to PBX adhering to ANSI standards Q.931, Q.932 and appropriate Bellcore Technical Requirements;
 - 4.3 Loops adhering to Bellcore TR-NWT-08 and TR-NWT-303 specifications to interconnect Digital Loop Carriers.

5. Interface to Loop for ISDN References
 - 5.1 GTE shall provide the BRI U interface using 2 wire copper loops in accordance with TR-NWT-000393, January 1991, Generic Requirements for ISDN Basic Access Digital Subscriber Lines.
 - 5.2 GTE shall provide the BRI interface using Digital Subscriber Loops adhering to Bellcore TR-NWT-303 specifications to interconnect Digital Loop Carriers.
 - 5.3 GTE shall offer PSD interfaces adhering to the X.25, S.75 and S.75' ANSI and Bellcore requirements.
6. At a minimum, Common Transport shall be provided to AT&T in accordance with the following technical references (as applicable for the transport technology being used):
 - 6.1 ANSI T1.101-1994, American National Standard for Telecommunications - Synchronization Interface Standard Performance and Availability;
 - 6.2 ANSI T1.102-1993, American National Standard for Telecommunications - Digital Hierarchy - Electrical Interfaces;
 - 6.3 ANSI T1.102.01-199x, American National Standard for Telecommunications - Digital Hierarchy - VT1.5;
 - 6.4 ANSI T1.105-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Basic Description including Multiplex Structure, Rates and Formats;
 - 6.5 ANSI T1.105.01-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Automatic Protection Switching;
 - 6.6 ANSI T1.105.02-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Payload Mappings;
 - 6.7 ANSI T1.105.03-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Jitter at Network Interfaces;

- 6.8 ANSI T1.105.03a-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET): Jitter at Network Interfaces - DS1 Supplement;
- 6.9 ANSI T1.105.05-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Tandem Connection;
- 6.10 ANSI T1.105.06-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Physical Layer Specifications;
- 6.11 ANSI T1.105.07-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Sub STS-1 Interface Rates and Formats;
- 6.12 ANSI T1.105.09-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Network Element Timing and Synchronization;
- 6.13 ANSI T1.106-1988, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (Single Mode);
- 6.14 ANSI T1.107-1988, American National Standard for Telecommunications - Digital Hierarchy - Formats Specifications;
- 6.15 ANSI T1.107a-1990 - American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications (DS3 Format Applications);
- 6.16 ANSI T1.107b-1991 - American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications;
- 6.17 ANSI T1.117-1991, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (SONET) (Single Mode - Short Reach);
- 6.18 ITU Recommendation G.707, Network node interface for the synchronous digital hierarchy (SDH);
- 6.19 ITU Recommendation G.704, Synchronous frame structures used at 1544, 6312, 2048, 8488 and 44736 kbit/s hierarchical levels;

- 6.20 Bellcore FR-440 and TR-NWT-000499, Transport Systems Generic Requirements (TSGR): Common Requirements;
- 6.21 Bellcore GR-820-CORE, Generic Transmission Surveillance: DS1 & DS3 Performance;
- 6.22 Bellcore GR-253-CORE, Synchronous Optical Network Systems (SONET); Common Generic Criteria;
- 6.23 Bellcore TR-NWT 000507, Transmission, Section 7, Issue 5 (Bellcore, December 1993). (A module of LSSGR, FR-NWT-000064.);
- 6.24 Bellcore TR-INS-000342, High-Capacity Digital Special Access Service-Transmission Parameter Limits and Interface Combinations, Issue 1 February 1991;
- 6.25 Bellcore ST-TEC 000052, Telecommunications Transmission Engineering Textbook, Volume 2: Facilities, Third Edition, Issue 1 May 1989;
- 6.26 Bellcore ST-TEC-000051, Telecommunications Transmission Engineering Textbook Volume 1: Principles, Third Edition. Issue 1 August 1987;
- 7. At a minimum, Dedicated Transport shall be provided to AT&T in accordance with the following technical references:
 - 7.1 ANSI T1.105.04-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Data Communication Channel Protocols and Architectures;
 - 7.2 ANSI T1.119-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Operations, Administration, Maintenance, and Provisioning (OAM&P) Communications;
 - 7.3 ANSI T1.119.01-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Operations, Administration, Maintenance, and Provisioning (OAM&P) Communications Protection Switching Fragment;
 - 7.4 ANSI T1.119.02-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) -

Operations, Administration, Maintenance, and Provisioning
(OAM&P) Communications Performance Monitoring Fragment;

- 7.5 ANSI T1.231-1993 -American National Standard for Telecommunications - Digital Hierarchy - Layer 1 In-Service Digital Transmission performance monitoring.
- 7.6 AT&T Technical Reference TR 54016, Requirements For Interfacing Digital Terminal Equipment To Services Employing The Extended Superframe Format, September 1989;
- 7.7 AT&T Technical Reference TR 62421 ACCUNET Spectrum of Digital Services Description And Interface Specification, December 1989 and all addenda;
- 7.8 AT&T Technical Reference TR 62310, DS0 Digital Local Channel Description And Interface Specification, August 1993 and all addenda; and
- 7.9 AT&T Technical Reference TR 62415, Access Specification For High Capacity (DS1/DS3) Dedicated Digital Service, June 1989 and all addenda.
- 8. Digital Cross-Connect System (DCS) shall be provided to AT&T in accordance with the following technical references:
 - 8.1 AT&T Technical Reference TR 62421 ACCUNET® Spectrum of Digital Services Description And Interface Specification, December 1989 and TR 62421A Addendum 2, November 1992;
 - 8.2 AT&T Data Communications Technical Reference TR 62310 DS0 Digital Local Channel Description and Interface Specification, August 1993, and all addenda;
 - 8.3 AT&T Technical Reference TR 62415 Access Specification For High Capacity (DS1/DS3) Dedicated Digital Service, June 1989, and all addenda including TR 62415A3 July, 1992;
 - 8.4 AT&T Technical Reference TR 62411 ACCUNET® T1.5 Service Description And Interface Specification, December 1990 and all addenda including Addendum 2, October 1992;
 - 8.5 AT&T Technical Reference TR 54014 ACCUNET® T45 and T45 Reserved Services - Service Description And Interface Specification;

- 8.6 AT&T Technical Reference TR 54018 OC-3 Optical Interface Specifications, November 1991;
- 8.7 AT&T Technical Reference TR 54016 Requirements For Interfacing Digital Terminal Equipment To Services Employing The Extended Superframe Format, September 1989;
- 8.8 ANSI T1.102-1993, American National Standard for Telecommunications - Digital Hierarchy - Electrical Interfaces;
- 8.9 ANSI T1.102.01-199x, American National Standard for Telecommunications - Digital Hierarchy - VT1.5;
- 8.10 ANSI T1.105-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Basic Description including Multiplex Structure, Rates and Formats;
- 8.11 ANSI T1.105.03-1994, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Jitter at Network Interfaces;
- 8.12 ANSI T1.105.03a-1995, American National Standard for Telecommunications - Synchronous Optical Network (SONET): Jitter at Network Interfaces - DS1 Supplement;
- 8.13 ANSI T1.105.06-199x, American National Standard for Telecommunications - Synchronous Optical Network (SONET) - Physical Layer Specifications;
- 8.14 ANSI T1.106-1988, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (Single Mode);
- 8.15 ANSI T1.107-1988, American National Standard for Telecommunications - Digital Hierarchy - Formats Specifications;
- 8.16 ANSI T1.107a-1990 - American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications (DS3 Format Applications);
- 8.17 ANSI T1.107b-1991 - American National Standard for Telecommunications - Digital Hierarchy - Supplement to Formats Specifications;

- 8.18 ANSI T1.117-1991, American National Standard for Telecommunications - Digital Hierarchy - Optical Interface Specifications (SONET) (Single Mode - Short Reach);
- 8.19 ANSI T1.403-1989, Carrier to Customer Installation, DS1 Metallic Interface Specification;
- 8.20 ANSI T1.404-1994, Network-to-Customer Installation - DS3 Metallic Interface Specification;
- 8.21 ITU Recommendation G.707, Network node interface for the synchronous digital hierarchy (SDH);
- 8.22 ITU Recommendation G.704, Synchronous frame structures used at 1544, 6312, 2048, 8488 and 44736 kbit/s hierarchical levels;
- 8.23 FR-440 and TR-NWT-000499, Transport Systems Generic Requirements (TSGR): Common Requirements;
- 8.24 GR-820-CORE, Generic Transmission Surveillance: DS1 & DS3 Performance;
- 8.25 GR-253-CORE, Synchronous Optical Network Systems (SONET); Common Generic Criteria; and
- 8.26 TR-NWT-000776, Network Interface Description for ISDN Customer Access.
- 9. Signaling Transfer Points (STPs) shall be provided to AT&T in accordance with the following technical references:
 - 9.1 ANSI T1.111-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Message Transfer Part (MTP);
 - 9.2 ANSI T1.111A-1994 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Message Transfer Part (MTP) Supplement;
 - 9.3 ANSI T1.112-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Signaling Connection Control Part (SCCP);

- 9.4 ANSI T1.115-1990 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Monitoring and Measurements for Networks;
- 9.5 ANSI T1.116-1990 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Operations, Maintenance and Administration Part (OMAP);
- 9.6 ANSI T1.118-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Intermediate Signaling Network Identification (ISNI);
- 9.7 Bellcore GR-905-CORE, Common Channel Signaling Network Interface Specification (CCSNIS) Supporting Network Interconnection, Message Transfer Part (MTP), and Integrated Services Digital Network User Part (ISDNUP); and
- 9.8 Bellcore GR-1432-CORE, CCS Network Interface Specification (CCSNIS) Supporting Signaling Connection Control Part (SCCP) and Transaction Capabilities Application Part (TCAP).
- 10. SCPs/Databases shall be equal to or better than all of the references for SCPs/Databases set forth in the following technical references:
 - 10.1 GR-246-CORE, Bell Communications Research Specification of Signaling System Number 7, ISSUE 1 (Bellcore, December 1995);
 - 10.2 GR-1432-CORE, CCS Network Interface Specification (CCSNIS) Supporting Signaling Connection Control Part (SCCP) and Transaction Capabilities Application Part (TCAP). (Bellcore, March 1994);
 - 10.3 GR-954-CORE, CCS Network Interface Specification (CCSNIS) Supporting Line Information Database (LIDB) Service 6, Issue 1, Rev. 1 (Bellcore, October 1995);
 - 10.4 GR-1149-CORE, OSSGR Section 10: System Interfaces, Issue 1 (Bellcore, October 1995) (Replaces TR-NWT-001149);
 - 10.5 GR-1158-CORE, OSSGR Section 22.3: Line Information Database 6, Issue (Bellcore, October 1995)
 - 10.6 GR-1428-CORE, CCS Network Interface Specification (CCSNIS) Supporting Toll Free Service (Bellcore, May 1995); and

- 10.7 BOC Notes on the RLEC Networks, SR-TSV-002275, ISSUE 2, (Bellcore, April 1994).
- 11. Signaling Transfer Points (STPs) shall offer SS7 AIN Access in accordance with the references of the following technical references:
 - 11.1 GR-2863-CORE, CCS Network Interface Specification Supporting Advanced Intelligent Network (AIN);
 - 11.2 GR-2902-CORE, CCS Network Interface Specification (CCSNIS) Supporting Toll-Free Service Using Advanced Intelligent Network (AIN).
- 12. Tandem Switching shall meet or exceed the following technical references:
 - 12.1 Bell Communications Research TR-TSY-000540 issue 2R2, Tandem Supplement, 6/1/90.
 - 12.2 GR-905-CORE covering CCSNIS;
 - 12.3 GR-1429-CORE for call management features; and GR-2863-CORE and GR-2902-CORE covering CCS AIN interconnection.
- 13. GTE performance under Section 13 of Attachment 2 shall meet or exceed the performance standards and references set forth in the technical references listed below;
 - 13.1 Bell Communications Research, Inc. Documents
 - 13.1.1 FR-64, LATA Switching Systems Generic Requirements (LSSGR). This document contains 117 Technical References and Generic Requirements. Sections provide the requirements for local switching systems (also referred to as end offices) that serve customers' lines. Some modules of the LSSGR are also referenced separately in this document.
 - 13.1.2 TR-NWT-000499, Issue 5, Rev 1, April 1992, Transport Systems Generic Requirements (TSGR): Common Requirements.
 - 13.1.3 TR-NWT-000418, Issue 2, December 1992, Generic Reliability Assurance Requirements For Fiber Optic Transport Systems.

- 13.1.4 TR-NWT-000057, Issue 2, January 1993, Functional Criteria for Digital Loop Carriers Systems.
- 13.1.5 TR-NWT-000507, Issue 5, December 1993, LSSGR - Transmission, Section 7.
- 13.1.6 GR-303-CORE, Issue 1, September 1995, Integrated Digital Loop Carrier System Generic Requirements, Objectives, and Interface.
- 13.1.7 GR-334-CORE, Issue 1, June 1994, Switched Access Service: Transmission Parameter Limits and Interface Combinations.
- 13.1.8 TR-NWT-000335, Issue 3, May 1993, Voice Grade Special Access Services - Transmission Parameter Limits and Interface Combinations.
- 13.1.9 TR-TSY-000529, Issue 2, July 1987, Public Safety - LSSGR.
- 13.1.10 GR-1158-CORE, Issue 2, October 1995, OSSGR Section 22.3: Line Information Database.
- 13.1.11 TR-TSY-000511, Issue 2, July 1987, Service Standards, a Module (Section 11) of LATA Switching Systems Generic Requirements (LSSGR, FR-NWT-000064).
- 13.1.12 TR-NWT-000393, January 1991, Generic Requirements for ISDN Basic Access Digital Subscriber Lines.
- 13.1.13 TR-NWT-000909, December 1991, Generic Requirements and Objectives for Fiber In The Loop Systems.
- 13.1.14 TR-NWT-000505, Issue 3 , May 1991, LSSGR Section 5, Call Processing.
- 13.1.15 FR-NWT-000271, 1993, Operator Services Systems Generic Requirements (OSSGR).
- 13.1.16 TR-NWT-001156, Issue 2, July 1993, OSSGR Operator Services Systems Generic Requirements, Section 21, Operator Subsystem.
- 13.1.17 SR-TSY-001171, Issue 1, January 1989, Methods and Procedures for System Reliability Analysis.
- 13.1.18 Bellcore Telecommunications Transmission Engineering, 3rd Ed, 1990.

- 13.2 ANSI Standards
 - 13.2.1 ANSI T1.512-1994, Network Performance - Point-to-Point Voice-Grade Special Access Network Voiceband Data Transmission Objectives.
 - 13.2.2 ANSI T1.506-1990, Network Performance - Transmission Specifications for Switched Exchange Access Network.
 - 13.2.3 ANSI T1.508-1992, Telecommunications - Network Performance - Loss Plan for Evolving Digital Networks. Also supplement T1.508a-1993.
 - 13.2.4 ANSI T1.101-1994, Digital Synchronization Network Plan.
- 13.3 TIA/EIA Standards
 - 13.3.1 Requirements not specifically addressed here shall be found in the documents listed in Electronic Industries Association/Telecommunications Industries Association Standards and Engineering Publications.
 - 13.3.2 TIA/EIA TSB-37A, Telephone Network Transmission Model for Evaluating Modem Performance.
 - 13.3.3 TIA/EIA TSB-38, Test Procedure for Evaluation of 2-wire 4 kHz Voiceband Duplex Modems.
- 13.4 IEEE Standards
 - 13.4.1 IEEE Standard 743-1984, IEEE Standard Methods and Equipment for Measuring Transmission Characteristics of Analog Voice Frequency Circuits.
 - 13.4.2 ANSI/IEEE Standard 820-1984, Telephone Loop Performance Characteristics.
- 13.5 AT&T Standards
 - 13.5.1 Outside Plant Engineering Handbook, August 1994.
 - 13.5.2 AT&T Pub. 60220, Issue 1, April 1991, 5ESS OSPS Interface Technical Specification for Domestic Toll And Assistance Applications.

- 13.5.3 AT&T Technical Reference TR 43202, May 1985, AT&T Analog Voice Total and Coordinated Services.
- 13.5.4 AT&T Technical Reference TR 41458, April 1990, Special Access Connection to the AT&T Network.
- 13.5.5 AT&T Technical Reference TR 62415, June 1989, Access Specification For High Capacity (DS1/DS3) Dedicated Digital Service. Also TR 62415A2 November 1990, and TR 62415A3 July 1992 which are addenda to TR 62415.
- 13.5.6 AT&T Technical Reference TR 54016, September 1989, Requirements For Interfacing Digital Terminal Equipment To Services Employing The Extended Superframe Format.
- 13.5.7 AT&T Technical Reference TR 62411, December 1990, ACCUNET T1.5 Service Description And Interface Specification. Also Addendum 1 March 1991 and Addendum 2 October 1992.
- 13.5.8 AT&T Technical Reference TR 62421, December 1989, ACCUNET Spectrum of Digital Services Description And Interface Specification. Also TR 62421A Addendum 2 November 1992.
- 13.5.9 AT&T Data Communications Technical Reference TR 62310, August 1993, DS0 Digital Local Channel Description And Interface Specification. Also Addendum 2 November 1992.
- 13.5.10 AT&T Technical Reference TR 54014, 1992, ACCUNET T45 and T45 Reserved Services - Service Description And Interface Specification.
- 13.5.11 AT&T Technical Reference TR 54018, most current issue, ACCUNET T155 Service Description And Interface Specification.
- 14. The protocol interface references for SS7 Network Interconnection include the MTP, ISDNUP, SCCP, and TCAP. These protocol interfaces shall conform to the following specifications:
 - 14.1 Bellcore GR-905-CORE, Common Channel Signaling Network Interface Specification (CCSNIS) Supporting Network Interconnection, Message Transfer Part (MTP), and Integrated Services Digital Network User Part (ISDNUP);
 - 14.2 Bellcore GR-1428-CORE, CCS Network Interface Specification (CCSNIS) Supporting Toll Free Service;

- 14.3 Belcore GR-1429-CORE, CCS Network Interface Specification (CCSNIS) Supporting Call Management Services; and
- 14.4 Belcore GR-1432-CORE, CCS Network Interface Specification (CCSNIS) Supporting Signaling Connection Control Part (SCCP) and Transaction Capabilities Application Part (TCAP).
- 14.5 GTE shall set message screening parameters to block accept messages from AT&T local or tandem switching systems destined to any signaling point in the GTE SS7 network with which the AT&T switching system has a legitimate signaling relation.
- 15. SS7 Network Interconnection shall be provided to AT&T in accordance with the following technical references:
 - 15.1 ANSI T1.110-1992 American National Standard Telecommunications - Signaling System Number 7 (SS7) - General Information;
 - 15.2 ANSI T1.111-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Message Transfer Part (MTP);
 - 15.3 ANSI T1.111A-1994 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Message Transfer Part (MTP) Supplement;
 - 15.4 ANSI T1.112-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Signaling Connection Control Part (SCCP);
 - 15.5 ANSI T1.113-1995 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Integrated Services Digital Network (ISDN) User Part;
 - 15.6 ANSI T1.114-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Transaction Capabilities Application Part (TCAP);
 - 15.7 ANSI T1.115-1990 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Monitoring and Measurements for Networks;

- 15.8 ANSI T1.116-1990 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Operations, Maintenance and Administration Part (OMAP);
- 15.9 ANSI T1.118-1992 American National Standard for Telecommunications - Signaling System Number 7 (SS7) - Intermediate Signaling Network Identification (ISNI);
- 15.10 Bellcore GR-905-CORE, Common Channel Signaling Network Interface Specification (CCSNIS) Supporting Network Interconnection, Message Transfer Part (MTP), and Integrated Services Digital Network User Part (ISDNUP);
- 15.11 Bellcore GR-954-CORE, CCS Network Interface Specification (CCSNIS) Supporting Line Information Database (LIDB) Service;
- 15.12 Bellcore GR-1428-CORE, CCS Network Interface Specification (CCSNIS) Supporting Toll Free Service;
- 15.13 Bellcore GR-1429-CORE, CCS Network Interface Specification (CCSNIS) Supporting Call Management Services; and,
- 15.14 Bellcore GR-1432-CORE, CCS Network Interface Specification (CCSNIS) Supporting Signaling Connection Control Part (SCCP) and Transaction Capabilities Application Part (TCAP).

ATTACHMENT 3

SERVICE DESCRIPTION: ANCILLARY FUNCTIONS

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SERVICE DESCRIPTION: ANCILLARY FUNCTIONS

1. Introduction

This Attachment sets forth the descriptions and requirements for Ancillary Functions that GTE agrees to offer to AT&T under this Agreement. To the extent sections contained in this Appendix set forth technical references, technical standards, technical requirements, and/or performance standards, GTE's obligation to comply with such references, requirements, and/or standards shall be subject to Section 23.19 of the General Terms and Conditions of this Agreement.

2. Collocation

2.1 Definition: Collocation is the right of AT&T to obtain dedicated space in GTE's Local Serving Office (LSO) or other GTE locations and to place equipment in such spaces to interconnect with the GTE network or obtain access to unbundled network elements. Collocation also includes GTE providing resources necessary for the operation and economical use of collocated equipment.

2.1.1 Terms: Collocation shall be provided in accordance with this Agreement as supplemented by the applicable GTE federal and state collocation tariffs in effect as of the effective date of this Agreement. To the extent any matter relating to collocation is not already addressed in the terms of the Agreement, the terms of the tariffs will control. _

2.2 Technical References

2.2.1 Upon request by AT&T, GTE shall provide space, as required by 47 CFR § 51.323 and as requested by AT&T, to meet AT&T's needs for placement of equipment, interconnection, or provision of services. Such space shall be provided in GTE's proposed central offices, serving wire center and tandem switches and at controlled environmental vaults, huts and cabinets. GTE will provide collocation as follows: physical collocation will be provided on a first-come, first-served basis, provided there is space available for collocation and provided there are reasonable security arrangements. If GTE determines that space is not available GTE shall provide virtual collocation for AT&T equipment, unless GTE demonstrates that virtual collocation is not available under currently Applicable Law. GTE and AT&T shall adhere to reasonable industry standard security measures, applied on a non-discriminatory basis.

- 2.2.1.1 [Intentionally deleted.]
- 2.2.1.2 GTE is not required to construct additional space when none is available to meet a physical collocation request. However, in determining whether space is available to meet a request for physical collocation, GTE will offer contiguous space to AT&T where available. GTE will also take AT&T and other collocator demand into account when renovating existing facilities and constructing or leasing new facilities.
- 2.2.2 GTE shall provide intraoffice facilities (e.g., DS0, DS1, DS3, OC3, OC12, OC48, and STS-1 terminations) as requested by AT&T to meet AT&T's need for placement of equipment, interconnection, or provision of service.
- 2.2.3 Other than reasonable security restrictions, where AT&T's physical collocated space is located in space that is partitioned separately from GTE facilities, GTE shall place no restriction on access to the AT&T collocated space by AT&T's employees and designated agents. Such space shall be available to AT&T designated agents twenty-four (24) hours per day each day of the week. Where AT&T's collocated space is located in space that is not partitioned separately from GTE's facilities, GTE shall provide AT&T designated personnel escort service to and from AT&T's collocated space. Such escort service shall be available twenty-four (24) hours per day each day of the week. In no case should any reasonable security restrictions be more restrictive than those GTE places on their own personnel.
- 2.2.4 GTE will not place any restrictions on AT&T's use of its collocated space, other than limitations specified in this Agreement or limitations based on space availability and reasonable security requirements, applied in a nondiscriminatory manner. AT&T may collocate the amount and type of equipment in its collocated space that is necessary for interconnection functions (which include interconnection with GTE's network and other collocated carriers or access to GTE's unbundled network elements), including but not limited to transmission equipment, multiplexing equipment, and remote switching modules in GTE's central offices; provided, however, that AT&T may not collocate enhanced services equipment.
- 2.2.5 GTE shall allow the interconnection of AT&T to other carriers who have collocated space within GTE's facility (e.g., GTE shall not require AT&T to interconnect with other carriers outside of GTE's facilities). This connection will be provisioned using EISCC (expanded interconnection

service cross connect jumper) and will be priced as set forth in Attachment 14.

- 2.2.6 AT&T may select its own vendors for all required engineering and installation services associated with its physically collocated equipment subject to GTE's reasonable restrictions on third party vendors that GTE has decertified with good cause. GTE shall maintain and provide AT&T with a list of all such decertified vendors. Notwithstanding GTE decertification of a third party vendor, AT&T may use such vendor for work associated with its collocated equipment if such vendor is the only third party vendor reasonably available to AT&T to perform such work. In no event shall GTE require AT&T to utilize GTE's internal engineering or installation work forces for the engineering and installation of AT&T's physically collocated equipment.
- 2.2.7 GTE shall provide basic telephone service with a connection jack as requested by AT&T from GTE for the collocated space. Upon AT&T's request, this service shall be available at the AT&T collocated space on the day that the space is turned over to AT&T by GTE.
- 2.2.8 GTE shall provide adequate lighting, ventilation, power, heat, air conditioning, and other environmental conditions for AT&T's space and equipment. These environmental conditions shall, subject to Section 23.19 of the General Terms and Conditions of this Agreement, adhere to Bell Communication Research (Bellcore) Network Equipment-Building System (NEBS) standards TR-EOP-000063.
- 2.2.9 [This section intentionally deleted.]
- 2.2.10 GTE shall provide all ingress and egress of fiber and power cabling to AT&T collocated spaces in compliance with AT&T's cable diversity standards to the extent such standards do not exceed GTE's cable diversity standards or the level of diversity it provides to itself. The specific level of diversity required for each site or Network Element will be provided in the collocation request. If AT&T's requirements exceed the level of diversity which GTE provides to itself in such site or to such Network Element, GTE shall at its sole discretion decide whether to provide such superior diversity. If GTE agrees to provide such superior diversity, AT&T will pay for the provision of the diversity. In such event the price will be established on an individual case basis in accordance with the applicable GTE intrastate access tariff. AT&T will also pay for the provision of such diversity in circumstances where AT&T's requirements do not exceed those provided by GTE for itself in such site or to such Network Element, but where capacity does not exist in

the fiber or power cabling to accommodate the provision of diversity requested by AT&T. In such circumstances, the price will be established on an individual case basis in accordance with the applicable GTE intrastate access tariff.

- 2.2.11 This Section 2.2.11 left intentionally blank.
- 2.2.12 GTE shall adhere to the DMOQs, set forth in Attachment 12.
- 2.2.13 GTE will provide answers to AT&T's Environmental, Health & Safety Questionnaire at the first contact meeting for each collocated space in each building in which collocated space is provided.
- 2.2.14 GTE shall provide AT&T with written notice at least two (2) business days prior to those instances in which GTE or its subcontractors may be performing non-emergency work in the general area of the collocated space occupied by AT&T, or in the general area of the AC and DC power plants which support AT&T equipment that is, or potentially may be, service affecting. GTE will inform AT&T by telephone of any emergency related activity that GTE or its subcontractors may be performing in the general area of the collocated space occupied by AT&T, or in the general area of the AC and DC power plants which support AT&T equipment. GTE will use diligent efforts to notify AT&T of any emergency related activity prior to the start of the activity so that AT&T can take any action required to monitor or protect its service.
- 2.2.15 GTE shall construct the collocated space in compliance with AT&T's collocation requests for cable holes, ground bars, doors, and convenience outlets as long as such request is in compliance with Applicable Laws and GTE's grounding requirements. To the extent that such request involves additional work beyond that required to construct the standard GTE collocation space, the price for such construction will be on an individual case basis or as established in accordance with Attachment 14. The standard collocation space shall be equipped with the following:
 - 2.2.15.1 Four 8ft high 9 gauge chain link panels;
 - 2.2.15.2 One AC outlet;
 - 2.2.15.3 An electrical outlet sub-panel;
 - 2.2.15.4 Adequate lighting;

- 2.2.15.5 Cage ground bar; and
- 2.2.15.6 One padlock set.
- 2.2.16 AT&T and GTE will complete an acceptance walk through of all collocated space requested from GTE. Exceptions that are noted during this acceptance walk through shall be corrected by GTE within five (5) business days after the walk through. The correction of these exceptions from the original collocation request shall be at GTE's expense.
- 2.2.17 GTE shall provide Telephone Equipment detailed drawings depicting the exact location, type, and cable termination requirements (i.e., connector type, number and type of pairs, and naming convention) for GTE Point of Termination Bay(s) to AT&T at the first mutually scheduled GTE/AT&T collocation meeting with respect to the specific request which meeting shall occur within thirty five (35) days of AT&T's request for collocated space, except in unusual cases.
- 2.2.18 GTE shall provide Telephone Equipment detailed drawings depicting the exact path, with dimensions, for AT&T Outside Plant Fiber ingress and egress into AT&T collocated space at the first mutually scheduled collocation meeting which meeting shall occur within thirty five (35) days of AT&T's request for collocated space, except in unusual cases. Such path and any areas around it in which AT&T must work to perform installation shall be free of friable asbestos, lead paint (unless encapsulated), radon and other health or safety hazards.
- 2.2.19 GTE shall provide detailed power cabling connectivity information including the sizes and number of power feeders to AT&T no later than five (5) days in advance of the first mutually scheduled collocation meeting.
- 2.2.20 GTE shall provide positive confirmation to AT&T when construction of AT&T collocated space is approximately 50% completed. This confirmation shall also include confirmation of the scheduled completion and turnover dates.
- 2.2.21 GTE will make every reasonable effort to meet the negotiated completion and turnover dates, which dates shall be no greater than 120 days from the original collocation request, except in unusual cases or in instances where GTE is precluded from meeting such dates because of delay caused by the need to obtain building permits,

despite the use of every reasonable effort by GTE to obtain such permits in time to meet the negotiated dates.

- 2.2.22 GTE shall provide the following information to AT&T no later than five (5) business days in advance of the first mutually scheduled collocation meeting:
 - 2.2.22.1 Work restriction guidelines.
 - 2.2.22.2 GTE or Industry technical publication guidelines that impact the design of AT&T collocated equipment.
 - 2.2.22.3 GTE contacts (names and telephone numbers) for the following areas:
 - Engineering
 - Physical & Logical Security
 - Provisioning
 - Billing
 - Operations
 - Site and Building Managers
 - Environmental and Safety
 - 2.2.22.4 Escalation process for GTE representatives (names, telephone numbers and the escalation order) for any disputes or problems that might arise pursuant to AT&T's collocation.
- 2.2.23 Power as referenced in this Attachment 3 refers to any electrical power source supplied by GTE for AT&T equipment. It includes all superstructure, infrastructure, and overhead facilities, including, but not limited to, cable, cable racks and bus bars. GTE will supply power to support AT&T equipment at equipment specific DC and AC voltages. At a minimum, GTE shall supply power to AT&T at parity with that provided by GTE to itself for similar equipment.
 - 2.2.23.1 Central office power supplied by GTE into the AT&T equipment area, shall be supplied in the form of power feeders (cables) on cable racking into the designated AT&T equipment area. The power feeders (cables) shall perform in a manner equal to the efficiency and economy of the power feeders (cables) GTE provides for use with similar GTE equipment. The termination location shall be mutually agreed upon by the Parties.
 - 2.2.23.2 [Intentionally deleted.]

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- 2.2.23.3 GTE power equipment supporting AT&T's equipment shall, subject to Section 23.19 of the General Terms and Conditions of this Agreement:
 - 2.2.23.3.1 Comply with applicable industry standards (e.g., Bellcore, NEBS and IEEE) or manufacturer's equipment power requirement specifications for equipment installation, cabling practices, and physical equipment layout;
 - 2.2.23.3.2 Have redundant DC power through battery back-up as required by the equipment manufacturer's specifications for AT&T equipment, or, at minimum, at parity with that provided for similar GTE equipment;
 - 2.2.23.3.3 GTE shall immediately notify AT&T if an alarm condition exists with respect to such monitoring or if backup power has been engaged for any power supporting AT&T's equipment;
- 2.2.23.4 Provide central office ground, in accordance with GTE's grounding requirements; and
- 2.2.23.5 Provide power feeder capacity and quantity to support the equipment layout for AT&T equipment in accordance with AT&T's collocation request and in accordance with Section 2.2.23.1 of this Attachment 3.
- 2.2.23.6 GTE shall, subject to Section 23.19 of the General Terms and Conditions of this Agreement:
 - 2.2.23.6.1 Provide installation sequences and access that will allow installation efforts in parallel without jeopardizing personnel safety or existing AT&T services;
 - 2.2.23.6.2 Provide power plant alarms that adhere to Bell Communication Research (Bellcore) Network Equipment-Building System (NEBS) standards TR-EOP-000063;
 - 2.2.23.6.3 Provide cabling that adheres to Bell Communication Research (Bellcore) Network Equipment-Building System (NEBS) standards TR-EOP-000063;
 - 2.2.23.6.4 Provide Lock-Out Tag Out and other electrical safety procedures and devices in accordance with OSHA or industry guidelines.
- 2.2.23.7 GTE will provide AT&T with written notification within ten (10) business days of any scheduled non-emergency AC or DC power work or related activity in the collocated facility that will or might cause an outage or any type of power disruption to AT&T equipment located in the GTE

facility. GTE will use diligent efforts to notify AT&T by telephone of any emergency power activity that would impact AT&T equipment.

- 2.2.23.8 With respect to any work to provide or prepare collocation space (including, without limitation, power supplies and cage construction) proposed to be performed by GTE or its subcontractors or vendors on behalf of AT&T:
 - 2.2.23.8.1 GTE shall, within thirty (30) days after a request by AT&T, provide AT&T with a written price for any such work. The price will be accompanied by the following written information: (a) any terms under which the work is proposed to be performed, (b) a reasonably detailed breakdown or explanation of costs underlying the price, and (c) a reasonably detailed description of the technical specifications of the work to be performed. AT&T must approve the price, terms, cost breakdown and technical specifications prior to any work being performed.
 - 2.2.23.8.2 Following completion of the work, AT&T and GTE will complete an acceptance walk through of the collocated space in accordance with Section 2.2.16.
- 2.2.24 GTE shall be required to take AT&T demand for collocation space into account when expanding, adding to or altering existing facilities and constructing or leasing new facilities.
- 2.3 Technical References - GTE shall, subject to Section 23.19 of the General Terms and Conditions of this Agreement, provide collocation in accordance with the following standards:
 - 2.3.1 Institute of Electrical and Electronics Engineers (IEEE) Standard 383, IEEE Standard for Type Test of Class 1 E Electric Cables, Field Splices, and Connections for Nuclear Power Generating Stations.
 - 2.3.2 National Electrical Code (NEC) use latest issue.
 - 2.3.3 TA-NPL-000286, NEBS Generic Engineering Requirements for System Assembly and Cable Distribution, Issue 2, (Bellcore, January 1989).
 - 2.3.4 TR-EOP-000063 Network Equipment-Building System (NEBS) Generic Equipment Requirements, Issue 3, March 1988.
 - 2.3.5 TR-EOP-000151, Generic Requirements for 24-, 48-, 130-, and 140-Volt Central Office Power Plant Rectifiers, Issue 1, (Bellcore, May 1985).

- 2.3.6 TR-EOP-000232, Generic Requirements for Lead-Acid Storage Batteries, Issue 1 (Bellcore, June 1985).
- 2.3.7 TR-NWT-000154, Generic Requirements for 24-, 48-, 130, and 140-Volt Central Office Power Plant Control and Distribution Equipment, Issue 2, (Bellcore, January 1992).
- 2.3.8 TR-NWT-000295, Isolated Ground Planes: Definition and Application to Telephone Central Offices, Issue 2, (Bellcore, July 1992).
- 2.3.9 TR-NWT-000840, Supplier Support Generic Requirements (SSGR), (A Module of LSSGR, FR-NWT-000064), Issue 1, (Bellcore, December 1991).
- 2.3.10 TR-NWT-001275 Central Office Environment Installations/Removal Generic Requirements, Issue 1, January 1993.
- 2.3.11 Underwriters' Laboratories Standard, UL 94.

3. Poles, Ducts, Conduits, Rights of Way (ROW)

3.1 Definitions

- 3.1.1 An "Attachment" is any placement of AT&T's Facilities in or on GTE's poles, ducts, conduits, or rights of way.
- 3.1.2 A "conduit" is a tube or protected trough that may be used to house communication or electrical cables. Conduit may be underground or above ground and may contain one or more inner ducts.
- 3.1.3 A "duct" is a single enclosed path to house facilities to provide telecommunications services.
- 3.1.4 For the purpose of this Section 3, the terms "Facility" and "Facilities" include anchors, pole hardware, wires, cables, strands, apparatus enclosures, equipment boxes, optical conductors and associated hardware and other telecommunications equipment located on or in a Structure.
 - 3.1.4.1 For purposes of this Section 3, the terms "Structure" and "Structures" refer to poles, ducts, conduits and ROW and, to the extent owned or controlled by GTE, shall also include controlled environmental vaults, huts, cabinets and similar structures.

- 3.1.5 An "inner duct" is one of the single enclosed pathways located within a duct, or buried separately without the benefit of conduit.
- 3.1.6 The term "make ready work" refers to all work performed or to be performed to prepare GTE's conduit systems, poles or anchors and related facilities for the requested occupancy or attachment of AT&T's Facilities. "Make ready work" includes, but is not limited to, clearing obstructions, the rearrangement, transfer, replacement, and removal of existing Facilities on a pole or in a conduit system where such work is required solely to accommodate AT&T's Facilities and not to meet GTE's business needs or convenience. "Make ready work" may include the repair, enlargement, or modification of GTE's Structures (including, but not limited to, conduits, ducts, or manholes) or the performance of other work required to make a pole, anchor, conduit or duct usable for the initial placement of AT&T's Facilities.
- 3.1.7 A "manhole" is a subsurface enclosure that personnel may enter and use for the purpose of installing, operating, maintaining and repairing communications Facilities.
- 3.1.8 A "pole attachment" is the connection of a Facility to a utility pole.
- 3.1.9 A "Right of Way" ("ROW") is the right to use the land or other property of another party to place poles, conduits, cables, other structures and equipment, or to provide passage to access such structures and equipment. A ROW may run under, on, or above public or private property (including air space above public or private property) and may include the right to use discrete space in buildings, building complexes, or other locations. The existence of a ROW shall be determined in accordance with Applicable Law.
- 3.2 **General Duties**
- 3.2.1 GTE hereby grants to AT&T and AT&T accepts from GTE a non-exclusive license to occupy, place and maintain in or on specified GTE poles, ducts, conduits and ROW, AT&T's Attachments and Facilities on the terms and conditions set forth in this Attachment 3. AT&T shall have no further right, title, or other interest in connection with GTE's poles, ducts, conduits and ROW. GTE shall have the right to grant, renew or extend privileges to others not parties to this Agreement to occupy, place, or maintain Attachments on or otherwise use any or all GTE poles, ducts, conduits and ROW. GTE grants this license in reliance on the representation of AT&T that AT&T intends to provide Telecommunications Services.

- 3.2.2 GTE shall provide AT&T equal and non-discriminatory access to pole space, ducts, inner ducts, conduit, and ROW, including ancillary pathways as provided below, it owns or controls. Such access shall be provided to AT&T on terms and conditions as favorable as is provided by GTE to itself or to any other party. Further, GTE shall not preclude or delay allocation of these Structures to AT&T because of the potential needs of itself or of other parties, except as provided below. This general duty is subject to any agreements or easements that would prohibit GTE from providing such access on specific pole space, ducts, conduit, or ROW to AT&T. If GTE determines that access to specific pole space, ducts, conduit, or ROW is precluded by an agreement or easement, AT&T shall have the right to review the pertinent provisions of the agreement or easement.
- 3.2.3 GTE will not enter into any agreements with owners that restrict the ability of the owner to reach agreements with AT&T regarding access to ROW and ancillary pathways to the customer, such as entrance facilities, cable vaults, telephone closets, equipment rooms, risers, and other similar passageways. For those ancillary pathways to the customer, such as entrance facilities, cable vaults, telephone closets, equipment rooms, risers, and other similar passageways, that GTE controls access to and where spare capacity exists, GTE will provide access to those facilities to AT&T on a nondiscriminatory basis.
- 3.2.4 GTE shall provide to AT&T a Regional Single Point of Contact to resolve issues that arise in the implementation of this Agreement.
- 3.2.5 Excepting maintenance and emergency ducts as provided below, all useable but unused space on poles, conduits, ducts or ROW owned or controlled by GTE shall be available for the attachments of AT&T, GTE or other providers of Telecommunications Services or cable television systems; provided, however, GTE may exclude or condition access for reasons of safety, reliability and generally applicable engineering standards, provided that such exclusions and conditions are consistent with those that GTE applies to its own use of poles, ducts, conduits and ROW. Neither AT&T, GTE nor any other person may reserve space on GTE owned or controlled poles, conduits, ducts or ROW for its future needs, unless GTE permits AT&T, GTE or any other person to reserve space on GTE-owned or controlled poles, conduits, ducts or ROW for specific planned projects over the same time period. To the extent that GTE decides to permit such reservations it shall do so in a nondiscriminatory and competitively neutral manner and shall not favor itself or any of its affiliates and it shall notify AT&T in writing 30 days in advance of implementing such decision of the reservation process it

intends to follow. Such reservations may only be for specific projects for which a party, including GTE or any of its affiliates, can demonstrate a specific commitment by producing detailed engineering plans. GTE may reserve for emergency and maintenance purposes one duct in each conduit section of its facility routes. Such duct shall be equally accessible and available by any party with Facilities in such conduit section to use to maintain its Facilities or to restore them in an emergency.

3.3 Pre-Ordering Disclosure Requirements

- 3.3.1 AT&T may request information regarding the availability and conditions of poles, ducts, conduits, and ROW prior to the submission of Attachment Requests. GTE shall provide information regarding the availability and condition of GTE's poles, ducts, conduits, or ROW for Attachments within thirty (30) business days. If it is unable to inform AT&T about availability and conditions within the thirty-day interval, GTE shall advise AT&T within ten (10) days after receipt of AT&T's information request and will seek a mutually satisfactory time period for GTE's response. If GTE's response requires a field-based survey, AT&T shall have the option to be present at the field-based survey and GTE shall provide AT&T at least twenty-four (24) hours notice prior to the start of such field survey. During and after this period, GTE shall allow AT&T personnel to enter manholes and view pole structures to inspect such structures in order to confirm usability or assess the condition of the structure.
- 3.3.2 GTE shall make available to AT&T for inspection marked street maps and as-built drawings showing existing poles, conduit or other ROW at GTE's area engineering offices, upon reasonable advance notification. If the Parties can ascertain the availability of a specific point-to-point route at the time of viewing, GTE will make the maps and pole prints available for copying. In making these maps and prints available, GTE makes no express or implied warranty as to the accuracy of these maps and prints, other than to represent that they are the maps and prints GTE uses in its day-to-day operations. GTE reserves the right to deny subsequent requests to see previously viewed maps and prints if AT&T does not have a good faith intention to submit an Attachment Request relating to the areas described.
- 3.3.3 AT&T shall pay GTE a reasonable administrative fee to cover the direct cost of providing conduit maps and prints.

3.4 Attachment Requests

3.4.1 GTE agrees to permit AT&T to place AT&T's Facilities on or in GTE's poles, ducts, conduits, and ROW pursuant to Attachment Requests from AT&T approved in accordance with this Section 3.4 on the terms and conditions set forth herein. GTE may not restrict AT&T's ability to construct, maintain and monitor its facilities at these sites to any greater extent than GTE restricts its own ability to construct, maintain and monitor the same facilities.

3.4.2 For access to GTE owned or controlled poles, AT&T will follow this process provided that AT&T may follow any more expedited or less costly process that may be applied by GTE to itself, its affiliates, or other persons in the State of Missouri: (a) AT&T forwards a completed pole attachment inquiry/request form to GTE; (b) GTE reviews inquiry/request form and verifies the availability of space and communicates availability information back to AT&T within 30 business days; (c) AT&T decides whether it wants space; (d) If AT&T wants space, it will provide three (3) copies of maps, pole lease application and permit, permit compliance letter, rearrangement worksheet ("make ready" sheet); (e) AT&T will provide a check to cover the costs of GTE inspection and the first year's rent pro-rated to the next (annual) billing period. At this point, AT&T is guaranteed space and GTE opens a work order; (f) GTE uses make ready sheets to inspect the poles for proper build and identification of possible infractions. This process could take up to 45 days depending upon the size of the job; (g) GTE provides to AT&T a corrected copy of the make ready sheets and gives AT&T permission to start its build; (h) AT&T has 60 to 90 days to begin construction, but can start construction immediately upon receiving permission; (i) After construction is complete AT&T will notify GTE. GTE will complete a final inspection and identify infractions on a "gig" sheet provided back to AT&T. AT&T has 30 days to fix infractions; and (j) AT&T will notify GTE when work is complete and GTE will do one last inspection and close work order.

3.4.3 For access to GTE owned or controlled ducts or conduit, AT&T will follow this process provided that AT&T may follow any more expedited or less costly process that may be applied by GTE to itself, its affiliates, or other persons in the State of Missouri: (a) AT&T forwards a completed conduit/duct occupancy inquiry/request form to GTE; (b) GTE reviews inquiry/request form for availability, but not integrity of conduit/duct and communicates availability information back to AT&T within 30 business days; (c) AT&T decides whether it wants conduit/duct, and if so requests to know the integrity of the

conduit/duct. Prior to integrity verification, GTE will require either an engineering deposit or an escrow account for the inspector's or single source provider's (SSP) time; (d) Upon receipt of the deposit or escrow funds, AT&T can request GTE (SSP) to pull a slug through the duct to validate integrity. If and when requested, GTE will do so and will also attach a mule tape to the back end of the slug to get an accurate read (footage) from point A to point B of the conduit/duct. Alternatively, AT&T can have its approved vendor pull a slug with GTE's inspector watching; (e) Once the integrity of the conduit/duct is validated, AT&T will provide a check for the first year's rental associated with the amount of the actual footage to be leased pro-rated to the next (annual) billing period and an engineering design within 30 business days, which will provide procedures for access to the conduit/duct including, but not limited to a gas test procedure, a procedure for dealing with water in manholes which are used to access the conduit/duct, and how AT&T will guard the other Facilities in the manhole during its work. At this point conduit/duct is guaranteed to AT&T; (f) AT&T will access the conduit/duct through a manhole, a cable equipment vault or another mutually agreed means; (g) AT&T will be given 60 to 90 days to start construction, but can start construction immediately, at the point conduit/duct is guaranteed to AT&T; (h) After construction is complete, AT&T will notify GTE; and (i) GTE will complete a visual inspection of the job as well as any inspections during construction that GTE deems are necessary.

- 3.4.4 GTE's single point of contact will provide or will arrange to provide to AT&T any information known or available to GTE regarding environmental, health and safety matters for each GTE Structure in or on which AT&T seeks an Attachment no later than the time that GTE approves an AT&T Attachment Request. Information is considered available if it is in GTE's possession. GTE represents that the information provided by GTE will be the best information available to GTE at the time the information is provided. GTE does not represent that any information provided reflects the actual condition of the Structure at the time the information is provided, or at the time AT&T enters or seeks an Attachment at the Structure, nor that no change has occurred in such conditions between the time such information is provided and the time AT&T enters or seeks an Attachment at the Structure, and AT&T acknowledges that no such representations are made, however, GTE shall inform AT&T of any changes in the information provided to AT&T as soon as practicable after the change is known or available to GTE.

3.5 Authority to Place Attachments

- 3.5.1** Before AT&T places any Attachment pursuant to an approved Attachment Request, AT&T shall submit evidence of its authority to erect and maintain the Facilities to be placed on GTE's Structures within the public streets, highways and other thoroughfares or on private property, where such authority is required by law. AT&T shall be solely responsible for obtaining all licenses, authorizations, permits, and consent from federal, state and municipal authorities or private property owners that may be required to place Attachments on GTE's Structures.
- 3.5.2** GTE shall not unreasonably intervene against or attempt to delay the granting of any licenses, authorizations, permits or consents from federal, state and municipal authorities or private property owners that may be required for AT&T to place its Attachments on or in any poles, ducts, conduits, or rights of way, including those that GTE owns or controls.
- 3.5.3** If any license, authorization, permit or consent obtained by AT&T from an authority, which for the purposes of this Section 3.5.3 does not include GTE, is subsequently revoked or denied for any reason, permission to attach to GTE's Structures shall terminate immediately and AT&T shall remove its Attachments within the time required by such authorities, or absent such time, within ninety (90) days after AT&T receives notification of revocation or denial. AT&T may, at its option, litigate or appeal any such revocation or denial and if AT&T is diligently pursuing such litigation or appeal, AT&T may continue to maintain its Attachment. In doing so, AT&T agrees to indemnify GTE from and against any and all costs resulting from GTE's continuation of the Attachment which is the subject of such litigation or appeal. If AT&T does not appeal and AT&T fails to remove AT&T's Attachments within the above specified time period, GTE shall have the option to remove AT&T's Attachments and store them in a public warehouse at the expense of and for the account of AT&T without GTE being deemed guilty of trespass or conversion, and without GTE becoming liable for any loss or damage to AT&T's Attachments occasioned thereby. Alternatively, GTE may remove AT&T's Attachments and store them upon GTE's premises, in which event, GTE shall use the same standard of care to protect AT&T's Attachments that GTE uses for protecting GTE's own facilities and equipment. All reasonable costs incurred by GTE to remove AT&T's Attachments shall be reimbursed to GTE by AT&T upon demand.

3.6 Capacity

- 3.6.1 When there is insufficient space on a GTE pole or in a GTE conduit to accommodate an AT&T requested Attachment or occupancy, GTE shall take all reasonable steps to accommodate AT&T's requests for Attachments or occupancy where such access would require expansion of capacity. The costs of modifications required for expansion will be paid as provided in the FCC First Report and Order Paras. 1211-1216.
- 3.6.2 With GTE's consent, which consent shall not be unreasonably withheld, AT&T may break out of GTE conduit where there is no reasonable engineering alternative. Where required by GTE and upon forty-eight (48) hours prior notice from AT&T unless emergency circumstances dictate otherwise, GTE shall provide AT&T designated personnel with an escort service. Such escort service shall be available during normal business hours for such assignments. Prior to the start of work, AT&T and the GTE escort will discuss the manner in which the work will be performed and GTE's reasonable requirements for ensuring the integrity of the conduit, protecting the Facilities contained in the conduit, protecting personnel and public safety and for preventing service interruptions. GTE Outside Plant Personnel will determine whether escort services are required on a case by case basis. This determination will be based on AT&T's adherence to GTE's requirements for plant protection procedures and the industry-standard construction and access procedures used by AT&T. Nonetheless, GTE may require escort service in its sound discretion, provided, however, that AT&T shall not be required to reimburse GTE for more than the number of persons as are necessary and prudent for providing the appropriate escort service.
- 3.6.3 GTE shall permit manhole interconnections and breaking out of GTE manholes. Where required by GTE and upon forty-eight (48) hours prior notice from AT&T unless emergency circumstances dictate otherwise, GTE shall provide AT&T designated personnel with an escort service. Such escort service shall be available during normal business hours for such assignments. Prior to the start of work, AT&T and the GTE escort will discuss the manner in which the work will be performed and GTE's reasonable requirements for ensuring the integrity of the manhole structure, protecting the Facilities contained in the manhole structure, protecting personnel and public safety and for preventing service interruptions. GTE Outside Plant Personnel will determine whether escort services are required on a case by case basis. This determination will be based on AT&T's adherence to GTE's requirements for plant protection procedures and the industry-standard

construction and access procedures used by AT&T. Nonetheless, GTE may require escort service in its sound discretion, provided, however, that AT&T shall not be required to reimburse GTE for more than the number of persons as are necessary and prudent for providing the appropriate escort service. GTE reserves the right to deny AT&T requests to break out of manholes where the break out does not occur at precast knockout locations or where the location in which AT&T wants to break out is blocked by cable rack.

3.6.4 GTE shall take all reasonable measures to allow access and/or egress to all conduit systems. This shall include but not be limited to GTE's removal, upon AT&T's request and at AT&T's expense by paying GTE the actual costs incurred, of any retired cable from conduit systems to allow for the efficient use of conduit space within a reasonable period of time. If the Parties are unable to agree on what is reasonable (in terms of measures or time intervals), the matter may be submitted according to the Alternate Dispute Resolution Process, described in Attachment 1, by either Party. The costs of removal will be paid as provided in the FCC First Report and Order Paras. 1211-1216.

3.6.5 [Intentionally deleted.]

3.6.6 Where a spare inner duct does not exist, GTE shall allow and AT&T shall be required to install all inner duct in a spare GTE conduit. If another attaching entity, including GTE, uses the inner duct installed by AT&T, GTE shall inform AT&T and such entity shall share in the depreciated cost of the installation of the inner duct in proportion to the amount of the inner duct being used by that entity.

3.6.7 GTE shall not attach, or permit other entities to attach Facilities on existing AT&T Facilities without AT&T's prior written consent.

3.7 **Sharing of Rights of Way**

3.7.1 GTE shall offer the use of such ROW it has obtained from a third party to AT&T, to the extent that GTE's agreement or easement with the third party does not prohibit GTE from granting such rights to AT&T. AT&T shall have the right to review the pertinent parts of the agreement or easement between GTE and the third party when GTE asserts that the agreement or easement prohibits the granting of such rights or if, having agreed to grant such rights, GTE refuses to warrant that it has the authority to grant such rights. In cases where GTE does not have the authority to grant access, GTE shall provide the owner contact information if known to GTE and will not interfere in AT&T's obtaining

such access and shall not prevent or delay any third party assignment of rights-of-way to AT&T.

- 3.7.2 To the extent GTE owns or controls any path to a customer, GTE shall provide pursuant to and in accordance with Applicable Law, and consistent with GTE's ownership and control rights, access to such path, subject to the same restrictions and limitations applicable to GTE's use of such path.

3.8 **Emergency Situations**

- 3.8.1 Within fifteen (15) business days after the Effective Date, GTE shall establish a non-discriminatory priority method to access GTE manholes and conduits in emergency situations.

3.9 **Attachment Fees**

- 3.9.1 AT&T shall pay to GTE an Attachment Fee, consistent with Applicable Law for each GTE Structure upon which AT&T obtains authorization to place an Attachment.
- 3.9.2 GTE shall maintain an inventory of the GTE Structures occupied by AT&T based upon the cumulative Facilities specified in all Requests for Attachment approved in accordance with Section 3.4 of this Attachment 3. AT&T shall have the right to remove any Attachment at any time, and it shall be AT&T's sole responsibility to notify GTE of any and all removals by AT&T of its Attachments from GTE's Structures. Such notice shall be provided to GTE at least thirty (30) days prior to the removal of the Attachments and shall take the form of a Notice of Removal. AT&T shall remain liable for an Attachment Fee for each GTE facility included in all approved Attachment Requests until the Attachment is removed by AT&T. GTE may, at its option, conduct a physical inventory of AT&T's Attachments for purposes of determining the Attachment Fees to be paid by AT&T under this section.

3.10 **Additions and Modifications to Existing Attachments**

- 3.10.1 AT&T shall not modify, add to or replace Facilities on any pre-existing Attachment without first notifying GTE in writing of the intended modification, addition or replacement at least thirty (30) days prior to the date the activity is scheduled to begin. The required notification shall include: (1) the date the activity is scheduled to begin, (2) a description of the planned modification, addition or replacement, (3) a representation that the modification, addition or replacement will not require any space other than the space previously designated for