

# Guidelines and Standards for the Planning, Design, and Operation of Bus Park-and-Ride Facilities

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A set of guidelines and standards for the planning, design, and operation of express bus park-and-ride facilities are presented. Their purpose is to ensure that facility development activities will fulfill local needs while supporting efficient bus transit operations. The guidelines and standards have been developed for and are being applied to a statewide park-and-ride facility development program being undertaken by the New Jersey Transit Corporation (NJ TRANSIT). The goal of NJ TRANSIT's park-and-ride program is to develop within each bus service corridor a network of properly sized parking facilities located to support efficient bus operations and convenient user access. Parking needs at comparatively low-demand boarding points are addressed through joint-use development, while higher-demand boarding points are served with exclusive-use investments. Facility design standards ensure that park-and-ride facilities are safe, convenient, and easy to maintain. Exclusive-use facilities are designed to provide 15-20 years of low-maintenance service. NJ TRANSIT's park-and-ride program is a capital program and does not provide funds for facility operation. Operating costs are typically recouped through user fees. In cases where NJ TRANSIT does not operate a park-and-ride facility, operating oversight is maintained through a 15- to 20-year contract with the facility operator. This contract provides the user with a well-maintained facility at a reasonable cost.

Park-and-ride facilities improve the transportation system in many ways. Commuters benefit from reduced trip costs and avoid the frustration and hazards of automobile use on congested roadways. Passenger consolidation at park-and-ride facilities benefits transit operators by increasing vehicle loadings, extending the reach of service into low-density areas, and reducing the need for costly collector and distributor route segments. The transportation system as a whole benefits from reduced energy consumption, pollutant emissions, and roadway expansion and maintenance needs.

Park-and-ride activity in New Jersey is well established, widespread, and multipurpose. A statewide inventory of park-and-ride facilities performed in 1980 identified 16 497 stalls at 151 formal facilities and 8681 stalls at 59 informal facilities. These 210 facilities range in size from 20 to 1600 stalls and support passenger transfers to private ridesharing, commuter rail, and express and local bus services.

The benefits generated by a given park-and-ride facility vary with facility location and use characteristics. Facilities located at the central business district (CBD) periphery reduce downtown automobile use but do not reduce CBD approach traffic volumes or extend the reach of efficient transit services. Remote transit park-and-ride facilities can provide the full range of user, operator, and system benefits but only if the level of passenger consolidation is sufficient to support convenient and efficient transit service. Carpool-oriented facilities generate user benefits but have a more limited impact on the transportation system and are sometimes detrimental to transit services. Park-and-ride facilities can be designed and located to serve any of these various commuter market segments and, therefore, to achieve distinct transportation system objectives.

The New Jersey Transit Corporation (NJ TRANSIT) has recognized the potential for park-and-ride facility development to concentrate commuter demand to the benefit of its bus transit system and has embarked on a seven-year bus park-and-ride development program. The goal of this program is to construct a network of park-and-ride facilities that will im-

prove bus transit operating performance and expand the bus transit commuter market share. At the conclusion of the first year of the program, \$2.1 million will have been expended to construct 1895 stalls at eight new facilities, to renovate 1427 stalls at four existing facilities, and to support joint-use park-and-ride activity with shelters, signs, and modest capital improvements.

With the opportunity to create a network of operations supportive of park-and-ride facilities comes the danger that poorly planned development will fragment commutersheds and eliminate the sought-after benefits of passenger consolidation. NJ TRANSIT has declined to participate in three facility proposals because of potential intratransit competition. The following guidelines and standards have been drafted to guide facility development toward the intended goals.

Because a variety of local conditions stimulate park-and-ride activity in New Jersey, other transportation management agencies may find these guidelines and standards useful. The guidelines and standards have been effective in aligning public demands for facility development with transit system operating requirements. (NJ TRANSIT will be pleased to share more specific planning, engineering, and legal information gained in program implementation. Please direct all inquiries to the Director of Planning, NJ TRANSIT, P.O. Box 10009, Newark, New Jersey 07101.)

## ORIENTATION

Park-and-ride development policy is oriented toward improving transit operating performance, increasing transit ridership, and reducing highway congestion. Although NJ TRANSIT can exert the greatest influence on park-and-ride network effectiveness through investments in comparatively large and permanent facilities, smaller exclusive-use and joint-use facilities also contribute to a balanced and effective network. Regardless of size, all park-and-ride facilities should achieve the following objectives:

1. Should provide adequate parking capacity to meet existing and future needs;
2. Should be permanent, durable, resistant to abuse, and easy to maintain;
3. Should provide an attractive, visible, high-quality environment that meets modern standards of comfort and safety;
4. Should be recognized as elements of a park-and-ride network, provide an extensive display of transit system information, and be identified for ease of location;
5. Should be designed to encourage commuter bus access by walking, bicycle, automobile drop off, and other shared-ride methods in addition to automobile driver access; and
6. Must be compatible with surrounding land uses and community needs and activities.

The size and type of park-and-ride facility appropriate to a specific site is primarily determined by the level of park-and-ride demand. In addition to the number of parking stalls, demand levels will

determine maintenance, security, and amenity requirements; the extent and intricacy of the internal circulation system; and the need to insulate the facility from adjoining land uses. The following guidelines and standards have been devised to reflect varying levels of facility use.

NJ TRANSIT supports the development of a rationally structured park-and-ride network through capital assistance for site acquisition and facility design and construction. In order to best use the limited capital resources available, NJ TRANSIT actively seeks the participation of both public and private organizations in facility development and operation. Such participation is sought from organizations whose employees or constituents will benefit from the facility as well as from those organizations that may be able to make use of a facility for purposes other than transportation. Examples of such involvement to date include private bus carriers, municipalities, and shopping centers. Although there is no matching requirement, funding priority will be given to those proposals that, otherwise fully justified, are supported with capital contributions from other sources.

On the completion of facility construction, all NJ TRANSIT-funded improvements become the property of the site owner. The public interest in the park-and-ride facility is preserved through a long-term agreement that grants NJ TRANSIT operating oversight. NJ TRANSIT does not have the resources to operate and maintain park-and-ride facilities and cannot provide funds for facility operation and maintenance.

#### PARK-AND-RIDE FACILITY LOCATION AND DESIGN

##### Location Criteria

Park-and-ride facilities improve transit service and operating performance by focusing demand near high-capacity roadway interchanges. Increased passenger loads collected over fewer boarding points can justify the levels of express service required to attract commuters, thereby making them willing to drive to reach the transit service. To intercept automobile trips and facilitate modal transfer with minimal delay, facilities must be properly located within the express bus commutershed, the regional highway system, and the transit network.

Park-and-ride facilities must be located within unique commutersheds to avoid fragmenting the area's ridership; competing facilities reduce the overall level of transit services provided. Average access distances are inversely proportional to the distance to the destination terminal, ranging from a high of 19.3 miles at distances of less than 1 mile to a low of 2.5 miles at distances more than 40 miles, and averaging across facilities at 3-6 miles. Currently, facility market areas are determined by using passenger origin data collected during a 1981 ridership survey performed by the Port Authority of New York and New Jersey. Although not yet fully processed, the survey data indicate that facilities developed beyond the CBD periphery should be located approximately 4-5 miles apart. This very general guideline should be applied with site-specific factors, including the locations of alternative transit facilities and the planned frequency of express bus service.

Although larger facilities tend to support improved transit services, the consolidation of boarding points over a wide area will also tend to increase automobile access travel distances. The intent of this program is to develop facilities that balance the positive aspects of passenger consolidation with the negative consequences of automobile travel.

Park-and-ride facilities must be located to intercept automobile trips along normal commuting paths. Circuitous access paths can increase overall trip times to unacceptable levels. Therefore, facilities will be most effective when located near high-capacity roadway interchanges. Appropriate measures must also be taken to avoid traffic delays when entering or exiting a facility and to ensure that adjoining land uses are not adversely impacted. The roadway and land use types found near highway interchanges are typically conducive to remedial treatments as needed.

Park-and-ride facilities must be directly served by express bus services to minimize excessive walking distances. Experiences at railroad station parking facilities indicate that commuters consider a 400-ft walk to the boarding point acceptable, but resist walking more than 1500 ft. Facility location must provide direct express bus access to nearby high-capacity roadways. Although new park-and-ride facilities of comparatively small size must be served by existing bus routes, service modifications will be considered if needed to exploit available development sites for larger facilities.

##### Size Criteria

Park-and-ride facilities identify the presence and structure of commuter bus services. In addition to the fulfillment of current needs, facilities should be sized to stimulate and serve ridership growth. Capacity requirements are estimated from the projected year-2000 population level within the facility market area. Commuter bus use can range up to 25 percent of market area population, and access by park-and-ride can capture up to 70 percent of boarding passengers. Data are currently being evaluated to further quantify the relation between market area characteristics and park-and-ride demand. Park-and-ride facilities should be constructed or expanded to service year-2000 estimated parking demand by using a 95 percent occupancy design standard.

NJ TRANSIT-funded park-and-ride facilities are intended to be long-term investments in the transportation system. Development sites should currently evidence the minimum level of park-and-ride activity needed to support frequent bus service into the foreseeable future. Boarding points with an estimated year-2000 demand of less than 100 daily boarding automobile drivers are inadequate in themselves to support this level of service and should not be considered for exclusive-use facility development.

In general, park-and-ride facilities improve transit service and reduce operating costs by concentrating demand. The larger the facility, the greater its impact on service quality and cost. As an example, a corridor that consists of four park-and-ride boarding points can support 10-min peak period headways if each facility serves approximately 150-175 automobile drivers.

Joint-use facilities offer an opportunity to serve commuters at low-demand boarding points. Such facilities typically occupy vacant or excess parking capacity at retailing centers. NJ TRANSIT will pursue a formal joint-use agreement with the owners of such properties and will provide shelters, signs, and minor capital improvements as needed. These agreements have been successful in preserving the public use of private facilities while maintaining the commercial benefits and community goodwill derived by the site owner. Improvements to a joint-use facility should reflect the temporary nature of its public use and will be limited to portable or very low-cost capital improvements. NJ TRANSIT does not have the resources to maintain joint- or ex-

clusive-use facilities and does not have the authority to pay fees for the use of parking stalls.

As commuter parking demand grows, commuter activity may begin to conflict with the host's normal business operations. Joint-use facilities that serve more than 100 boarding automobile drivers daily evidence sufficient demand to justify an exclusive-use facility and should be viewed as a medium- to short-range solution to commuter parking needs.

### Design

Park-and-ride facilities should be designed to provide the maximum quantity of parking consistent with safe and efficient operations. The most effective facility design is determined by lot size and shape and will be site specific. The following guidelines present the preferred design orientation. Facility design shall conform with the current Transportation and Traffic Engineering Handbook of ITE (1).

The boarding and discharge area will preferably be located along the perimeter of the parking area to avoid congestion and delays. Larger facilities that require a central boarding area location to reduce walking distances will be designed to limit feeder mode interference with line-haul operations. Boarding and discharge areas shall be easy to identify and shall be signed.

Perimeter boarding areas shall use raised platforms for definition and safety. Platforms will ideally be 10-12 ft wide by 60 ft long and constructed with a concrete or blacktop surface. A hard surface edge designed to act as a curb shall be provided at the loading side of the platform. Centrally located boarding areas that use raised platforms should be designed to reduce snow removal and other maintenance difficulties. Passenger shelter needs at boarding platforms are discussed under the section on Shelter and Passenger Amenities.

The parking area shall be designed as double-loaded 90° bays whenever possible. Circulating roadways shall provide for two-way traffic. One-way circulation, single-loaded bays, and parallel and angle parking shall be used only as required by site-specific constraints. The average walking distance between parking stalls and the nearest boarding area should be no more than 400 ft, with the maximum walking distance in the 1500-ft range.

Parking stalls shall be striped whenever possible, and shall conform with the design standards of Parking Principles, an HRB special report (2). Compact car parking stalls shall be a minimum 7.5 ft wide and 15 ft long within a total bay width of 50 ft for double-loaded perpendicular parking.

Full-sized car parking stalls shall be a minimum 8.5 ft wide and 18.5 ft long within a total bay width of 63 ft for double-loaded perpendicular parking. Parallel parking stalls shall be 8 ft wide and 22 ft long. The division of parking capacity between compact and full-sized stalls shall be evaluated within the context of site-specific constraints and observed use patterns.

Parking stalls for individuals with physical handicaps shall be 12 ft wide and 18 ft long with an unobstructed access to walkways and boarding areas suitable for wheeling and walking. A minimum of two handicapped stalls or one handicapped stall per 100 parking spaces shall be provided, whichever is greater. Parking stalls for the handicapped shall be reserved for the exclusive use of the handicapped and shall be well marked, proximate to the boarding area, and otherwise conform with the New Jersey barrier-free design regulations (3).

Space for bicycle parking shall be provided at the facility boarding area or other supervised loca-

tion on a well-drained hard surface with overhead protection, if possible. Bicycle parking demand will be estimated at the time of facility design through surveys or informed local knowledge. Bicycle racks should be provided for short-term and infrequent users, while bicycle lockers should be provided for regular users on a lease basis only. Because lockers should be leased, bicycle lockers can be procured incrementally as demand warrants.

### Construction Standards

Construction standards are formulated to ensure that park-and-ride facilities will be durable, easy to maintain, and continuously available during periods of inclement weather. Because the level of use is the primary determinant of facility design, maintenance requirements and potential for long-term use, construction methods, and materials should become progressively oriented toward greater durability with increasing facility size.

Proper surface drainage is attained through careful grading. A minimum 1 percent slope and a maximum 3 percent longitudinal and 6 percent cross slope are desirable. Sharply sloping sections should not be used for parking, but may be developed to provide space definition, mode separation, or screening.

Parking facilities of more than 200 parking spaces shall use a minimum 2-in fine aggregate base coat, a 2-in bituminous concrete stabilized base, and a 6-in gravel base. Facilities with less than 200 parking spaces may employ an 8- to 12-in gravel base only, depending on soil conditions at the site.

Concrete, granite, or bituminous concrete curbs will be provided at the edges of parking areas where required for drainage or vehicle containment. Guardrails will be used instead of concrete wheel stops where needed to limit vehicle overhang or incursion. All curbs shall be ramped where appropriate along pedestrian and bicycle pathways. Curbs or barriers between stalls and bays should be avoided because they make efficient snow removal impossible.

All park-and-ride facilities shall be illuminated to a minimum two to three maintained footcandles throughout. Boarding areas shall be illuminated to a level of 10 footcandles. Facility illumination shall provide a light uniformity ratio not exceeding 6:1 and shall otherwise be in conformance with the current ITE Transportation and Traffic Engineering Handbook. A time clock shall be used to activate and extinguish facility lighting before and after the normal period of bus service. The time clock shall be governed by a light-sensor override to eliminate resetting for seasonal sunrise and sunset variation.

### Site Access and Circulation

Park-and-ride facilities shall be designed to provide safe and convenient access with minimum delay. Vehicular access points should be a minimum 150 ft apart and conform with current AASHTO highway design standards when connecting with the public right-of-way. The facility name and entrance location will be clearly identified, as will all warnings and instructions necessary for the safe and expeditious flow of traffic.

Pedestrian walkways shall be provided to channel pedestrian movement as required for safety and operational efficiency. Painted crosswalks, rather than grade-separated walkways, shall be used to channel pedestrians across open parking areas. Pedestrian circulation paths should provide direct access to public walkways and should follow pedestrian travel desire lines irregardless of planned automobile access routes.

Walkways shall have a typical width of 5 ft to permit ease of passage for two pedestrians. Walkways shall be continuously paved and use ramped curbs in order to smooth edge discontinuities. All walkways shall be designed for use by the transportation handicapped and shall conform with the New Jersey barrier-free design regulations.

Provisions for kiss-and-ride circulation shall be made at all park-and-ride facilities and separated from parking and bus movement to the degree necessary to ensure the expeditious flow of traffic. Drop-off and pick-up areas shall include short-term automobile waiting spaces. Waiting-space requirements are directly proportional to the level of kiss-and-ride activity and inversely proportional to the frequency of bus service. Waiting-space requirements are, therefore, site specific and should be evaluated within the context of the facility and area under consideration.

#### Shelter and Passenger Amenities

Passenger amenities promote transit use through the provision of comfortable, safe, and attractive services and facilities. Passenger amenities are necessary and cost-effective transit improvements.

Park-and-ride facilities are most heavily used during the peak periods when they receive frequent service. Ticket offices and station buildings are not required for the efficient operation of a park-and-ride facility and may be provided only at the full expense of the facility or service operator. Passenger shelter needs can be adequately fulfilled through the provision of bus shelters.

Shelter needs are determined by the number of passengers boarding each bus and, to a lesser extent, by passenger arrival patterns. As a guideline, shelter should be provided to accommodate approximately 85 percent of the highest boarding load at a given site. The standard bus shelter used by NJ TRANSIT accommodates 13 people. Site illuminations shall provide the shelter area with a minimum 10 maintained footcandles of illumination, and shelter maintenance is the responsibility of the facility operator.

Public telephones enable commuters to arrange for private automobile, taxi, or paratransit pick-up services. At least one public telephone shall be available near the automobile drop-off and pick-up area but must not obstruct passenger or vehicle movement or obscure sight lines. The provision of public telephones shall be pursued during facility construction.

Trash receptacles and ashtrays will be placed near all boarding and discharge areas and within the parking area as practical. Anchored vending machines or mailboxes may be provided at the discretion and responsibility of the facility operator.

#### Planting, Screening, and Landscaping

Planting and landscape materials can be used to provide a suitable facility setting, provide screening from adjacent properties, shape large parking areas, stabilize slopes and embankments, and keep unpaved horizontal surfaces in good condition.

Six- to eight-foot evergreens provide effective screening to block view and headlight glare from adjacent areas. Ten-foot-wide screening areas are generally desirable. Caliper deciduous trees 2.5 ft high are appropriate for general planting. Vertical screens or fences may be used to protect the privacy of neighboring parcels.

Low-maintenance landscape materials should be used to cover unpaved horizontal surfaces. Brick or stone set in sand is recommended for unpaved sur-

faces of less than 75 ft<sup>2</sup>. Low-maintenance ground covers used with wood-chip mulch are desirable for areas of between 75 and 200 ft<sup>2</sup>, and grass is appropriate for areas greater than 200 ft<sup>2</sup> if used with the concurrence of the facility operator.

#### Information Systems

Information systems shall be provided to identify public transportation services and to direct their safe and efficient use. An effective information system is an essential element of a public transportation facility and should be considered during the early phases of facility development. All information system elements shall conform with specifications set forth in NJ TRANSIT's Graphics Standards Manual.

A facility information system will identify and direct access to the facility, direct traffic within the facility, and locate and instruct the use of facility services, service areas, and equipment. On-site sign placement should be coordinated with the facility illumination system to avoid the need for additional lighting fixtures. The system should include trailblazer signs; facility identification signs; direction and regulatory signs to identify parking, boarding, and waiting areas; and a map of the regional (corridor) transit system, available line-haul and feeder service routing, boarding points, and operating schedules.

Major approach routes to all park-and-ride facilities shall be identified with trailblazer signs. In general, trailblazers will be placed at intersections of all arterial roadways within 3 miles upstream and 1 mile downstream of the facility and at 0.5-mile intervals along the approach route. Special bike route access signs may be appropriate, depending on local conditions.

#### MAINTENANCE AND OPERATION GUIDELINES

##### Operating Agreement Guidelines

At the completion of construction, all NJ TRANSIT-funded improvements become the property of the site owner. The public interest in the park-and-ride facility is protected by NJ TRANSIT through an operating agreement with the facility owner or management representative. Operating agreements ensure that the facility will function for the benefit of the commuter public and the public transportation system as a whole, and that the facility shall be properly maintained.

The term of the operating agreement specifies the period of time a facility will be available for public transportation use under NJ TRANSIT operating oversight. As a policy guideline, a 20-year term has been determined to reflect the useful life of capital improvements and the period of time public need for a facility can be reasonably forecast.

Terms of less than 20 years may be negotiated if NJ TRANSIT-funded improvements are inexpensive or portable or if the cost of the NJ TRANSIT-funded improvements can be recovered through operating revenue. Terms of less than 20 years shall be negotiated only to the extent that the level of user charges does not discourage facility use, that facility quality is not compromised, and that the facility will be available during the anticipated period of need. The principle purpose of park-and-ride facilities is to encourage transit ridership and to support transit operations.

Facility owners may withdraw from an operating agreement on 90 days notice by compensating NJ TRANSIT for the depreciated value of the improvements it has funded. The value of NJ TRANSIT-funded

improvements shall be depreciated on a straight-line basis over the term of the operating agreement.

#### Facility Use Restrictions

Park-and-ride facilities developed with state and/or federal funds will be available to all commuters and transit operators on a nondiscriminating basis. Facility use shall not be restricted to residents of any particular community, and differential parking fees may not be used to favor specific user groups.

#### Operating Cost Responsibility

The facility operator is responsible for all costs necessary for the safe operation and maintenance of the facility, including security and utility costs and taxes. The primary source of operating cost recovery is likely to be parking fee revenues.

Parking facilities are to be maintained for the benefit and service of the commuter public. Parking fees will be based on the total cost of maintaining and operating the facility less other fees and revenues, plus a 10 percent contingency fund. In an instance where federal monies are used to construct or improve parking facilities, federal guidelines and regulations shall govern.

The operator shall include within its annual operating budget an analysis of how the fee structure was determined for that coming year. Parking fee schedules for the first year of operation shall be established in consultation with NJ TRANSIT by using cost data from selected cases. Fee schedules for subsequent years shall be based on prior operating and maintenance costs. The method of fee collection shall not reduce the attractiveness of the facility to infrequent and off-peak users.

All user fees are subject to NJ TRANSIT approval, and NJ TRANSIT explicitly reserves the right to limit the fee to a level that may not recover total operating and maintenance costs. Such an action may be taken only if the proposed user fee will significantly inhibit facility use. Site-specific conditions may enable or require the operator to set fees above those mandated by the above procedures and considerations. In these instances, the operator shall submit a written justification for the proposed fee schedule to NJ TRANSIT for approval.

#### Marketing

Effective marketing can both increase the level of park-and-ride facility use and hasten the rate of user growth. Both outcomes are particularly beneficial to new facilities, which require immediate revenue to meet operating expenses. Over the longer term, park-and-ride facilities become a useful focus for promotion and information campaigns that benefit the facility as well as its transit services.

NJ TRANSIT recognizes the importance of marketing in realizing full facility potential and will fund an initial promotion and information effort within the facility design and construction budget. The type and extent of the initial effort will be determined by NJ TRANSIT's Department of Marketing Services during the facility design process. Subsequent marketing activities needed either to stimulate additional facility demand or to promote the area's transit services shall be funded through the operating fund contingency account, as jointly directed by the Department of Marketing Services and the facility operator.

Advertising revenues are an additional source of income to defray operating expenses. NJ TRANSIT uses an independent advertising agency to manage its advertising resources and, with the approval of the

site owner, will direct this agency to evaluate the feasibility of on-site advertising. All advertising on NJ TRANSIT-funded facilities shall be managed and maintained by the advertising agency currently under contract to NJ TRANSIT, and all graphics and advertising shall be approved by NJ TRANSIT prior to installation. Advertising revenues shall be shared among NJ TRANSIT, the site owner, and/or the facility operator according to an agreement negotiated on a case-by-case basis.

#### Excess Revenues

In the event that facility revenues and fees exceed those required for operation and maintenance, excess funds will first be used for required facility improvements as determined jointly by NJ TRANSIT and the operator. If required improvements are projected within a five-year period, excess revenues and contingency funds may be accumulated to finance or provide matching funds for required improvements. If the operator and NJ TRANSIT agree that no improvements are required, excess revenues shall next be used to reduce parking fees or to finance other public transportation services directly related to the continued use of the facility on NJ TRANSIT's prior written approval.

#### Indemnification and Insurance

##### Indemnification

The facility operator shall defend, indemnify, protect, and save harmless NJ TRANSIT, its agents, officials, employees, and servants against all claims that occur as a result of incidents on the facility, with the exception of those incidents directly related to bus transit operations. The facility operator shall make no claim against NJ TRANSIT for or on account of any loss or damage whatsoever.

##### Insurance

The facility operator shall provide public liability insurance covering the park-and-ride facility with minimum limits of \$2 000 000 per person and per incident. The facility operator's policy shall cover all incidents that occur on the facility with the exception of those accidents directly related to bus transit operations. NJ TRANSIT shall be designated a named insured on all insurance coverage that is the responsibility of the facility operator and shall have the right to require the facility operator to add other named insureds as circumstances require.

The maintenance of insurance shall not release the facility operator from any liability when such liability for injury, death, and/or property damage is either within deductible policy limits or is greater than the insurance coverage.

#### Maintenance Standards

Facility maintenance is required to provide a clean, comfortable, and safe environment and to minimize reconstruction needs and otherwise prolong facility life. The facility operator is responsible for all regular maintenance activities required to keep the facility in a clean and safe condition. Regular maintenance requirements will include, as a minimum on an as-needed basis, the following:

1. Sweeping and cleaning of shelters, platforms, parking areas, and access roadways, and the removal of litter and rubbish;
2. Grounds keeping, including weed control, the cutting of grass, and other landscaping activities;

3. Ice control and snow removal; and
4. Oversight of licensees responsible for the maintenance of on-site facilities and equipment (e.g., vending machine operators).

Although park-and-ride facilities are more or less permanent, specific elements require periodic repairs or replacement for uninterrupted operation. The facility operator is responsible for all periodic maintenance activities necessary for continuous structural integrity and aesthetic appearance. Periodic maintenance requirements are dependent on facility design, construction, and use and must be identified to permit the accumulation of needed reserve funds and construction scheduling. Examples of periodic maintenance needs include surface repairs and patching, replacement of luminaires, and striping of crosswalks and parking stalls.

The facility operator shall perform all minor structural, electrical, lighting fixture, pavement, and fee-collection equipment repairs promptly as needed. The operator shall also promptly remove graffiti and repair other damage due to vandalism. Major repairs, improvements, or expansions of existing facilities will be undertaken by the facility owner as contractor under cost reimbursement and performance agreements to be negotiated with NJ TRANSIT on a case-by-case basis. Pavement resurfacing is an example of a major repair item. Expenditures for major repairs, improvements, or expansions will typically result in an extension of the operating agreement.

#### Financial Reports

If the operator receives revenues from the use of the facility, it shall submit an annual operating budget 90 days prior to the start of each fiscal year and an annual financial report 90 days following the close of the fiscal year. The financial report shall be certified as accurate by a certified public accountant. Revenues and expenses related to

the park-and-ride facility shall not be aggregated with other revenues and expenses and shall be maintained and reported in a separate account.

The annual operating budget submission shall contain line items for all projected operating and maintenance expenditures. NJ TRANSIT may require budget line item changes based on its review of the annual operating budget. NJ TRANSIT will submit changes prior to the end of the fiscal year.

In the event that no revenues are received by the operator or are not contemplated being received, the operator shall submit in writing a statement to this effect.

In determining the budget, a 10 percent contingency fund should be reserved. The transfer of contingency funds and excess revenues to other line items related to facility operation and maintenance shall be subject to NJ TRANSIT's prior written approval.

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#### REFERENCES

1. ITE. Transportation and Traffic Engineering Handbook. Prentice-Hall, Englewood Cliffs, NJ, 1976.
2. Parking Principles. HRB, Special Rept. 125, 1971, 217 pp.
3. Facilities for the Physically Handicapped in Public Buildings: Site Development. Barrier-Free Design Task Force, New Jersey Department of Treasury, Trenton, Oct. 1975.

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