DRAFT
Executive Summary

May 2002
DART General Planning Consultant
EXECUTIVE SUMMARY

Purpose of Report

The purpose of this Northwest Rail Operating Facility – Phase 1 Site Selection Study is to determine the most viable location for a new rail operating facility to serve Phase III expansion of the DART light rail system. Phase III includes the Northwest Corridor Light Rail Transit (LRT) Line to Farmers Branch and Carrollton, the future LRT branch to Irving/DFW, expansion along the existing blue and red lines, and possibly other LRT projects that may result from the current DART Transit System Plan update. Phase 2 of this effort will be Project Definition and Facility Layout for the Northwest Rail Operating Facility at the preferred site.

Overview of Existing Facility

DART's current light rail operating facility is located at the Central Rail Operations division immediately southeast of the Dallas CBD. The Central Rail Operating Facility performs light rail vehicle maintenance functions such as cleaning, washing, sanding, light and heavy repairs, and painting. DART also has an associated facility, the Facilities Maintenance Building (FMB) that is responsible for wayside maintenance—signals, traction electrification, track, and station.

Need for Facility

The current DART fleet consists of 95 vehicles. The fleet size reached 95 vehicles in late 2000 and includes those vehicles necessary for the build-out, including the North Central line to Richardson and Plano and the Garland line. The vehicle fleet will expand to 160 with the addition of the Southeast and Northwest Corridor lines in 2007-2008. The vehicle fleet will then expand to 195 with the addition of the Irving and Rowlett lines in 2010. An additional five to ten vehicles will be added for the SOC Phase III (2010), bringing the fleet size to 200 to 205.

The existing S&I facility is able to maintain and store 95 vehicles, and will be expanded to maintain and store 125 vehicles. This leaves approximately 80 vehicles to be maintained (and potentially stored) at the future rail operating facility, with the desired plan being for 100 vehicles to allow for growth. The project that will trigger the need for this new facility is operation of LRT in the Northwest Corridor to Farmers Branch and Carrollton.

DART has determined that for maximum operational efficiency, the new facility should be located along the Northwest Corridor. The new facility would have all the functions as the existing facility, with the exception that major repairs and overhauls and the system operations and controls would still be done at the Central facility.

Site Requirements

Site requirements for the maintenance facility that were used for this analysis include:
Close proximity to the main LRT line and the future Irving/DFW branch just south of Northwest Highway;
Level topography;
Appropriate geometry;
Access at both ends of the facility;
Compatible with local land use and existing zoning;
Good street access; and,
Minimal capital investment and demolition costs.

Size Requirements

A survey of transit systems and their light rail maintenance facilities nationwide showed a ratio of 0.2 acres per light rail vehicle. DART’s existing facility is approximately 40 acres and will ultimately support 125 vehicles, a ratio of 0.3 acres per vehicle. This results in a new facility (for 80 vehicles) target size of 24 acres, with approximately 30 acres minimum desired to accommodate 100 vehicles. Additional acreage beyond the 30 acres will allow for flexibility and maximum efficiency in the facility layout and design.

Long List of Candidate Sites

Eight areas along the Northwest Corridor alignment were initially examined as to their suitability for the new facility:

- Motor Street/Harry Hines;
- Inwood Road/Denton Drive;
- Webb Chapel Extension/Denton Drive;
- Cullum Lane/Denton Drive;
- Northwest Highway/Denton Drive;
- Lombardy Lane/Denton Drive;
- Walnut Hill/Denton Drive; and
- Northaven Road/Denton Drive.

Several sites were also considered to the west of the Stemmons Freeway, including two sites considered in an earlier DART evaluation (one on Manana Spur west of IH 35E, and one in Farmers Branch north of IH 635). While some of those sites offered considerable available acreage, DART determined that the new facility should remain adjacent to the Northwest Corridor LRT mainline to minimize deadheading travel times and minimize the expense of constructing structures for stub tracks through developed areas. In addition, DART determined that it was important to locate the new facility as close as possible to the Irving/DFW branch near Northwest Highway to promote operational efficiencies and, again, to minimize deadhead travel time for LRT vehicles.

Figure 1 shows the relative location of the eight sites. A discussion of each site is provided on the following pages.
Northwest Rail Operating Facility
Sites Considered

Figure 1
SOURCE: DART, PTG
DATE: March 2002
Site 1: Motor Street/Harry Hines

This site is approximately 7.5 acres in size and would be located along the Northwest Corridor LRT line between the Market Center/Oak Lawn and Parkland LRT stations. The site runs roughly southwest to northeast between the LRT line and Denton Drive cut-off. This is the current site of Ferguson Industries, which is an active industrial site. It is directly across from Parkland Prescription Center and Amelia Court Professional Building (4917 Harry Hines), Parkland Support Services. This site is located near the high-traffic intersections of Motor/Harry Hines and Market Center/Harry Hines. The existing DART rail right-of-way travels behind the property. With the Medical Center design options, access to the site would be difficult since a tunnel section is in this area. Furthermore, freight access to the south would be removed. Given changing land uses in the area (most notably Trinity Industries proposal to be redeveloped as a mixed-use development) freight access from the north is not needed as is proposed to also be removed in this area as part of the Northwest Corridor LRT project. There is also a vacant lot that lies east of the railroad tracks. Owners of this vacant site have indicated to DART their desire to develop this site as mixed-use or medical center support type uses. Thus, expansion capabilities of this site to meet the 30-acre minimum desired size is unlikely.

Site 2: Inwood Road/Denton Drive

This site is approximately 3.2 acres in size and would be needed for one of the Northwest Corridor Medical Center Design Options (Option A). Options B and C would only require a partial acquisition of this site adjacent to Denton Drive. The site is located just south of the proposed Inwood station at the northwest corner of Denton Drive. The Lawns of Dallas business owner immediately to the north owns this vacant property. There is a dilapidated warehouse south of the property and brick buildings to the north and northeast of the building that are associated with Lawns of Dallas. Denton Drive bounds the property to the south and southeast. Expansion capabilities in this area are limited given adjacent schools, residential and planned medical center expansion.
Site 3: Webb Chapel Extension/Denton Drive

This site is approximately 36 acres in size and is located along the Northwest Corridor alignment immediately south of Webb Chapel Extension, about ½ mile south of the proposed Bachman LRT station. The rail line would be located along the west side of Denton Drive adjacent to the freight line. This site would require displacement and relocation of both the DART Northwest Bus Operating Facility, and the City of Dallas Solid Waste Transfer Facility. Surrounding land uses are parkland to the east and west and industrial to the south.

Site 4: Cullum Lane/Denton Drive

This site is approximately 4.0 acres in size and is located along the Northwest Corridor alignment just south of the proposed Bachman LRT station. The rail line would be located along the west side of Denton Drive; freight would remain on the east side of Denton Drive. There is a busy intersection west of the property on Harry Hines (which is six lanes in this area) at Webb Chapel Extension. Surrounding land uses are residential (mostly apartments to the east) and public (northwest operations division for police to the west). The junction to the Irving/DFW Line would take place just north of Community Drive, south of Northwest Highway. Expansion of this site to meet the desired 30-acre minimum size is very limited and would require re-siting of the proposed Bachman Station and likely closure of both Cullum Lane and Community Drive.
Site 5: Northwest Highway/Denton Drive

This site is approximately 17.3 acres in size and is located along the Northwest Corridor LRT line just north of the Bachman LRT station. This site is an active commercial site containing a bingo Parlor (2711 Story), which is housed in an historic structure (movie theatre) that is eligible for the National Register of Historic Places. There is also a fairly new two-story building. The parking lot is mostly paved on this site. The LRT rail line would be on the west side of Denton Drive and would begin transitioning back to the existing freight rail corridor east of Denton Drive just north of this site. An additional 5.7 acres is located immediately to the north of the primary site that would accommodate expansion, bringing the total potential area to 23 acres. Land uses along Denton Drive begin to transition from residential to more industrial uses at this point. Expansion to the 30-acre size would be fairly constrained given the location of Joe’s Creek to the north and Northwest Highway to the south.

Site 6: Lombardy Lane/Denton Drive

This initial site identified at this location is approximately 22 acres in size and is located along the Northwest Corridor LRT line equidistant between the Northwest Highway and Walnut Hill Lane LRT stations. There is a recently vacated lumberyard (2801 Lombardy) that is fenced and contains several two-story corrugated metal buildings. A stone company also operates on the site. Much of the area is soft-paved. The at-grade freight line runs through the west side of the property allowing for easy freight rail access. The LRT Line would be elevated to the west of the freight line; thus, LRT access would come off the structure, over freight and drop into the site. There is also a parcel of an additional 10.5 acres adjacent to this property that could be considered for future expansion, bringing the total potential land area to 33 acres. Because the facility layout will likely need more length than width, and additional approximately 10 acres was identified to the north for possible expansion. Thus, 43 acres is available but all of this area would likely not be required.
Site 7: Walnut Hill/Denton Drive

This site is approximately 11.3 acres in size and is located along the Northwest Corridor LRT line at the site of the proposed Walnut Hill Lane LRT station. This is an active industrial site, home to Peerless Manufacturing (11010 Denton Drive). The site is fenced and the lot is mostly paved. It contains three or four corrugated metal buildings and is located directly adjacent to the rail line. United Parcel Service is located to the north of the site. Use of this site would require resiting the proposed Station to the south, and expansion to the east toward residential areas in order to avoid displacing UPS to the north.

Site 8: Northaven Road/Denton Drive

This site is approximately 32 acres in size and is located along the Northwest Corridor LRT line between the proposed Royal Lane LRT station and IH 635. There is an additional parcel of land on the east side of Denton Drive and the rail line, which is approximately 14 acres. This expansion area would be better if it were adjacent to the larger site and not separated by Denton Drive. There are significant hazardous materials issues involved with this location and this land has recently been targeted for new and redevelopment, since it is located in the Asian Trade District area. This area is also significantly further from the future junction with the Irving/DFW Line than the other sites.
Evaluation Criteria for the Site Location Analysis

The evaluation criteria for the site selection analysis were selected to focus on several important characteristics of a prototypical rail operating facility. The characteristics include attributes in four general categories:

- Site Characteristics
- Facility Operations
- System Operations
- Relative Costs

Within each of these categories, specific evaluation criteria were defined to facilitate a qualitative but objective assessment of the candidate sites.

Site Characteristics
The site should possess characteristics that minimize potential short- and long-term impacts to the surrounding area, and should not require significant modifications to accommodate the proposed facility. Specific evaluation criteria pertaining to site characteristics include the following:

- Terrain
  The site should have level terrain to simplify the storage and maintenance of vehicles, to minimize the potential for uncontrolled vehicle movement within the site or onto the mainline tracks, and to minimize the need for grading and earth retention structures.

- Adjacent Land Use
  The yard and shop site should have adjacent land uses that are generally compatible with anticipated operations and maintenance activities. It is likely that vehicle cleaning and/or maintenance will be conducted 24 hours a day, and varying levels of site lighting will be used at night. In addition, the frequent movement of vehicles through constrained trackwork on the site could result in adverse noise impacts.

- Environmental Impacts
  The site should minimize the potential for adverse impacts to the natural and built environments.

- Expansion
  The site should be large enough to accommodate future expansion of the facility with limited additional impacts to the surrounding area. If possible, the site should be configured to support the initial vehicle fleet and provide for construction of added capacity when the need arises.

Facility Operations
The site should efficiently accommodate the multiple functions associated with such facilities, including vehicle storage, cleaning, and maintenance; system operations and administration; and maintenance of way storage and operations. Specific evaluation criteria pertaining to facility operations include the following:

- Runaround Loop
  The site should ideally accommodate a full runaround loop, bypassing but allowing access to both the storage yard and the shop facility. In addition to providing operational
flexibility on the site, a continuous runaround loop minimizes the impact of vehicle testing on revenue operations. However, a runaround requires added space, and thus can reduce the overall capacity of a given site.

- **Redundancy**
The site should accommodate a redundant configuration that precludes entrapment of vehicles in the storage yard and/or maintenance facility during routine operations. Typically, this is accomplished by providing double-ended access to both the storage and maintenance tracks, and by limiting each maintenance bay to two vehicle positions. However, a redundant configuration requires added space, and thus can reduce the overall capacity of a given site.

- **Reverse Operation**
The site should accommodate the ability to turn vehicles end-for-end within the yard or through a combination yard and mainline movements. Typically, this is accomplished by providing a wye or loop track on the site. Light rail vehicles have operator cabs at both ends, and regularly alternating the travel direction of the vehicles can balance wear on vehicle components and maximize the interval between routine maintenance needs.

- **Functional Efficiency**
The site should accommodate an efficient configuration that provides direct access between the mainline and either the storage yard or the vehicle maintenance facility. In addition, the site should be configured so that other elements can be efficiently located, including maintenance-of-way operations and storage, a traction power substation, the system administration and operations center, internal roadways, parking, and loading docks.

- **Existing Utilities**
The availability of utilities at the site should be typical as to the type of utilities required to run and maintain a large operation.

**System Operations**
The site should be located and sized in a manner that supports efficient operations for the initial corridor and for potential system expansions. Specific evaluation criteria pertaining to system operations include the following:

- **System Connectivity**
The site should be in close proximity to and easily accessible from the mainline tracks and should be compatible with all initial and ultimate operating segment alternatives.

- **Railroad Connectivity**
The site should include a potential connection to an active freight railroad line to facilitate transport of materials, equipment, and vehicles to and from the system.

- **System Efficiency**
The site should be located to minimize the need for non-revenue operation (deadheading) on the mainline tracks. On a single radial line, the most efficient location for the yard and shop facility is generally at the end of the line. However, if the yard and shop facility is intended to serve multiple lines (current or future), then the most efficient location may be closer to the junction of two lines.
Relative Costs

The site should result in the lowest capital investment possible to obtain the necessary property and construct the proposed facility, and the lowest system-wide operating and maintenance costs. Specific evaluation criteria pertaining to relative costs include the following:

- **Acquisition Costs**
  The site should result in the lowest capital investment possible for property acquisition, relocation, and demolition. Relative acquisition cost is primarily a function of the existing uses of the site and the potential market value of the property.

- **Capital Costs**
  The site should result in the lowest capital investment possible to construct the proposed facility. Relative capital cost is primarily a function of the civil work necessary to provide a sufficiently level site for the yard and shop facility.

- **O&M Costs**
  The site should result in the lowest system-wide operating and maintenance costs. Relative operating and maintenance cost is a function of the efficiency of both the site configuration and its location on the system.
Summary Evaluation

Each of the candidate areas was assessed preliminarily for potential environmental impacts. Table 1 shows the results of that screening.

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<th>CRITERION</th>
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<td>1</td>
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<td>Motor/Harry Hines</td>
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<td>Inwood/Denton</td>
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<td>Webb/Chapel/Denton</td>
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<td>Cullum/Denton</td>
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<td>Northwest/Denton</td>
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<td>Lombardy/Denton</td>
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<td>Walnut Hill/Denton</td>
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<td>Northaven/Denton</td>
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Site Characteristics

| Terrain                              | + | + | + | + | + | + | + | + |
| Adjacent Land Use                    | + | - | + | - | + | + | + | + |
| Environmental Impacts                | - | - | - | - | - | - | - | - |
| Expansion                            | - | - | + | - | + | + | + | - |

Facility Operations

| Runaround Loop                        | - | - | + | - | + | + | - | + |
| Redundancy                            | - | - | + | - | + | + | - | + |
| Reverse Operation                     | - | - | + | - | + | + | - | - |
| Functional Efficiency                 | - | + | + | + | + | + | + | - |
| Utilities                             | + | + | + | + | + | + | + | + |

System Operations

| System Connectivity                   | + | + | + | + | + | + | - | - |
| Railroad Connectivity                 | + | + | + | - | + | + | - | - |
| System Efficiency                     | - | + | + | + | + | + | - | - |

Relative Costs

| Acquisition Costs                     | + | + | - | + | + | + | - | - |
| Capital Costs                          | - | + | + | + | + | + | + | + |
| O & M Costs                            | + | + | + | + | + | + | - | - |

Rating Summary

| TOTAL “+” ratings                      | 7 | 9 | 13 | 8 | 14 | 14 | 5 | 9 |
| TOTAL “-” ratings                      | 8 | 6 | 2  | 7 | 1  | 1  | 10| 6 |

SOURCE: URS/BRW; Wendy Lopez & Associates; DART; March 2002.
Short List of Candidate Sites

After initial analysis related to size, suitability, and proximity to the Northwest/Irving line junction, three sites were identified as the most promising and were subject to additional analysis:

1. Webb Chapel/Denton Drive;
2. Northwest Highway/Denton Drive; and
3. Lombardy Lane/Denton Drive.

Table 2 provides a summary of the pros and cons associated with the three remaining sites. Based on the evaluation, Site 3 at Lombardy/Denton is the preferred site.

### TABLE 2

<table>
<thead>
<tr>
<th>Site</th>
<th>Pros</th>
<th>Cons</th>
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<tbody>
<tr>
<td>1 – Webb Chapel/Denton</td>
<td>• Size: 30+ acres  &lt;br&gt; • Adjacent rail access  &lt;br&gt; • 2 property owners (City/DART)  &lt;br&gt; • South of Irving/DFW junction</td>
<td>• DART would have to relocate Northwest Bus Facility in area  &lt;br&gt; • City of Dallas does not support; City would need 5-10 years to relocate solid waste facility at high cost - need DART facility by 2007</td>
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<tr>
<td>2 – Northwest Highway/Denton</td>
<td>• Proximity to Irving/DFW junction</td>
<td>• Historic resource on site  &lt;br&gt; • Freight rail not adjacent (across Denton Dr)  &lt;br&gt; • Multiple property owners  &lt;br&gt; • Proximity to Bachman station – land has high likelihood for redevelopment</td>
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<tr>
<td>3 – Lombardy/Denton</td>
<td>• Size: 30+ acres  &lt;br&gt; • Property owners willing to work with DART  &lt;br&gt; • Freight rail through site  &lt;br&gt; • Zoning allows rail yard uses  &lt;br&gt; • City supports site  &lt;br&gt; • Surrounded by industrial uses  &lt;br&gt; • ¾ mile from Bachman and Walnut Hill/Denton stations</td>
<td>• Multiple property owners  &lt;br&gt; • Small portion of site (to south) is in 100-year floodplain of Joe’s Creek</td>
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Next Steps

In order to advance the recommended site into further design, DART is processing a Service Plan Amendment to locate the site at Lombardy/Denton. DART held public meetings on April 16 and 18, 2002 presenting the three candidate sites, and held a public hearing for the proposed Service Plan Amendment on April 29, 2002. Due to some community concerns related to the recommendation of Site 3 at Lombardy/Denton, DART held a tour with interested community members on May 11, 2002 to view the existing Central Rail Operating Facility and visit the Lombardy/Denton Site. All three sites are included in the Draft EIS, with the recommendation noted for Site 3. The Final EIS will include Site 3 as the recommended site, subject to approval of the Service Plan Amendment by the DART Board. The DART Board action is scheduled for July 9, 2002.
Following the Service Plan Amendment, a more detailed project definition and facility layout will be developed for the recommended site to more accurately determine the exact amount of land and property needed. The layout will include locations for tracks, offices, employee parking, maintenance facilities and other associated facilities. The layout will consider the most efficient methods for site access and interface with both the mainline and the active freight line. After completion of project definition, DART would initiate final design for a period of 1-2 years, followed by construction. The facility would be in operation by early 2007.