

Mitigation Treatments

Based on the above assessment and the proposed construction activity within the Proposed DART Rail to Rowlett corridor, the following recommendations would be incorporated as mitigation treatments during the final design and construction of the proposed DART Rail to Rowlett, in order to reduce potential impacts to a level less than significant.

Phase I and, if necessary, Phase II Site Assessments would be performed within the proposed DART Rail to Rowlett Corridor adjacent to the site identified as having a high hazard ranking so as to identify and delineate any contamination and affected soil or groundwater impacts requiring mitigation and/or cleanup. Depending on the type of construction scheduled within the proposed DART Rail to Rowlett Corridor (e.g. areas requiring substantial excavation), those sites with a moderate or low hazard ranking may need to be investigated further, as well. These studies may or may not include subsurface assessment.

Further assessments should be based on proposed construction within the suspect hazard areas, including utility setbacks and new utility installations requiring trenching or micro-tunneling, soil material cut and fill operations, and drilled shaft construction. These construction activities may require de-watering operations or disposal of excavated soils that could affect construction schedule, should affected groundwater or soil be encountered.

If unanticipated sources of hazardous or regulated materials are encountered during construction activities, the construction manager or designee would immediately notify DART's Environmental Compliance Manager. Specific mitigation activities that address the type, level, and quantity of contamination encountered would be immediately implemented.

In addition to any measures outlined in DART Mitigation Policies and Environmental Protection Guidelines, the following measures will be undertaken to safeguard the health and safety of the workers, the residents and the environment:

- A Work Plan and a Health and Safety Plan would be prepared prior to initiating construction and would be implemented on-site.
- Any materials suspected of containing hazardous or regulated waste would be properly characterized and disposed of at an approved facility.
- Upon discovery of any unexpected hazardous/regulated material, or in the event of a spill of such material, the local/regional hazardous waste agency or fire department would be notified immediately.

3.13 Short- and Long-term Construction Impacts

Short-term impacts and mitigation associated with constructing the proposed DART Rail to Rowlett are documented in the following section. The construction scenario describes the construction process by line segment and grade followed by sub-sections which analyze short-term construction impacts by impact category.

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3.13.1 Construction Scenario

It is anticipated that DART would award the construction contract for the Rowlett LRT Line Extension as one primary construction contract and still effectively manage the construction efforts of the build-out. Construction would progress from west to east and the construction contract is expected to last between 2 and 2-1/2 years. An overview of the four construction activity areas (Facilities, Trackwork, Systems, and Landscaping) is as follows:

Facilities Construction

DART's implementation plan calls for only one Line Section from the DART Downtown Garland LRT Station at 4th Street to the proposed DART Downtown Rowlett LRT Station at Martin Street. This Line Section would contain at-grade and aerial construction components. **Table 3-23** outlines the summary of work for each type of construction by elevation and equipment usage.



Table 3-23: Construction Elements by Elevation

Elements	Equipment (see listing below)
At-Grade LRT Construction	
Clearing and grubbing	1,4,5,6
Storm water and erosion control	6,10,24
Utility and street relocation	4,6,10,11,13,16
Demolition of existing facilities	1,4,5,6,17,26
Drainage and storm water systems	6,10,11,15
Excavation, embankment and subgrade preparation	1,4,11,23
Retaining walls and ballast walls	3,10,22,25
Lime subgrade	4,11,23
Subballast	4,11
Chain link fencing	6,22,24
At-Grade Stations	
Station platform slab and Special Use Platform	3,5,8,11,22,25
Structural steel canopies and roofing systems	2,12,14,15,20
Electrical systems	3,10,11,20
Mechanical systems	3,10,6,12
Architectural finishes	3,14,18
Painting	18,19,20
Street, Driveway and Parking Lot Construction	
Street pavement and LRT street at-crossing headers	3,4,6,11,13,22
Permanent street signage and pavement markings	12,18,24,27
Aerial LRT Construction	
Drilled shaft construction	2,8,21,22
MSE wall construction at bridge approaches	5,6,11,25
Bridge pier construction	2,3,22
Bridge deck and parapet	2,3,9,20,22
Grounding system	3,6

Source: Parsons, 2006

- Notes:**
- | | | | |
|----------------------------|-------------------------|-------------------------------|-------------|
| 1=Dozer | 9=Concrete pump | 17=Jackhammer, ramjack | 25=Bucket |
| 2=Tracked crane | 10=Ditcher/trencher | 18=Sand blaster | grading |
| 3=Rubber tired crane | 11=Compaction equipment | 19=Paint sprayers | machine |
| 4=Motor grader | 12=Air compressor | 20=Man lift | 26=Concrete |
| 5=Dump trucks, haul trucks | 13=Paving machine | 21=Water pump | saw |
| 6=Loader/Backhoe | 14=Welding machine | 22=Concrete vibrators | 27=Street |
| 7=Water truck | 15=Rubber tired loader | 23=Tiller (lime manipulation) | sweeper |
| 8=Drilled pier rig | 16=Excavator | 24=Tractor with hole auger | |

The typical construction scenario would start with utility and storm sewer relocations, followed by construction of permanent and temporary facilities to support rerouting of vehicular and rail traffic. Once the utilities are cleared and the permanent/temporary facilities constructed, the contractors would build construction items, such as bridge sections, that require construction periods of longer duration.



For bridge structures, the contractors would first construct the substructure / foundations, bridge piers and abutments. Once these items are complete, the contractor would place beams, pour the bridge deck and install parapet railing. Retained earth embankments would be constructed concurrently with the bridges. At-grade guideway construction would proceed concurrently with bridge construction, but be phased so as not to impede progress on the bridge work. In several areas, construction activities would be coordinated with on-going freight rail operations.

All station construction would commence with subsurface utility / drainage and foundation work. This would be followed by platform, canopy and ancillary construction including architectural finishes. Parking lots could be constructed at any time during the contract, but would likely follow construction of the proposed DART Downtown Rowlett LRT Station.

Trackwork Installation

Trackwork installation would follow substantial completion of the Facilities Construction work and include the installation of the following fixed guideway elements: ballast, ties, rail, concrete plinths on direct fixated bridges, and special trackwork. DART would provide the rails and ties to the Trackwork Installation contractor. These items would be strategically placed throughout the proposed DART Rail to Rowlett Corridor to minimize haul distances and facilitate construction. It is anticipated that track installation would last approximately one year and overlap the Facilities and Systems construction.

Systems Construction

Systems construction would follow substantial completion of Trackwork installation and provide for the installation of traction electrification, wayside signals, communication, and fare collection elements. Systems construction and testing is anticipated to last one year and would commence after substantial completion of the Facilities and Trackwork elements.

Landscape Installation

The Landscaping activities would include installing planting materials and irrigation systems at all the proposed DART Downtown Rowlett LRT Station and other selected locations in the proposed DART Rail to Rowlett Corridor. This work would be performed concurrent with the Trackwork and Systems contracts.

Construction Staging Areas

Several staging areas would be required for the storage of equipment and materials used for the construction of the proposed DART Rail to Rowlett. Some preliminary staging areas are identified adjacent to stations. Their final size and location will be determined as the project's design progresses. Anticipated impacts and mitigation required in lieu of these staging areas are provided below.

Construction Staging Areas Impacts

If exposed to the weather, some construction equipment and materials have the potential to release chemicals during storm events. The storage of construction equipment and materials on the ground also has the potential to disturb the soil and kill or prevent the growth of groundcover, which causes the soil to be susceptible to wind and water erosion. Construction

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equipment has the potential to leak oil and grease, hydraulic fluid, brake fluid and other petroleum hydrocarbons. There is also the possibility of spillage during fueling operations.

Construction Staging Areas Mitigation

The DART General Provisions, General Requirements and Standard Specifications for Construction Projects, Section 01560 (Part 1.3 C-6 and G, Construction Facilities and Staging Areas), states that the contractor must store equipment and materials in conformance with applicable local regulations. Unnecessary materials and equipment are not allowed to be stored at the job site. No structure is allowed to be loaded with a weight that would endanger its structural integrity or the safety of persons. Materials are not allowed to be stored on private property without written authorization of the owners of the property. Staging areas cannot be located on any property listed or eligible to be listed in NRHP without prior approval of the DART Contracting Officer.

DART Construction Guidelines Specifications Section 01560 Part 1.4B, Storm Water Pollution Prevention Plan, states that a Storm Water Pollution Prevention Plan (SW3P) should be developed for the Build Alternative. It should state that the construction contractor will be required to use BMPs to prevent storm water runoff from construction materials and equipment by covering such materials and equipment with awnings, roofs, or tarps; storing materials on asphalt or concrete pads; surrounding material stockpiling areas with diversion dikes or curbs; and using secondary containment measures such as dikes or beams around fueling areas. The contractor should also be required to mulch and reseed disturbed areas to prevent air and water erosion on the site after termination of construction operations.

Coordination with Affected Governmental Agencies and Property Owners

The construction of the proposed DART Rail to Rowlett would be coordinated with Dallas County, the City of Garland, the City of Rowlett, the City of Dallas, TxDOT, and KCS Railroad. Prior to the start of construction, DART would communicate with these entities in order to minimize construction-related impacts to residents, property owners and corridor users. **Table 3-24** provides a list of future construction projects that would influence the design and construction of the light rail project.

Table 3-24: Construction Coordination

Related Project or Study	Area of Impact	Issue
Rowlett Road Widening	At DART LRT Line crossing	Timing and coordination of DART design and construction with ultimate roadway cross-section.
Martin Street Extension and Widening	At DART LRT crossing and adjacent to the proposed DART Downtown Rowlett LRT Station	Timing and coordination of DART design and construction with ultimate roadway cross-section.

Source: Parsons, 2006



3.13.2 Land Use, Neighborhoods and Economic Development

Impact Assessment

Neighborhoods

Anticipated short-term impacts to neighborhoods and businesses would primarily be related to noise, dust, and traffic impacts associated with the construction of the Proposed DART Rail to Rowlett. The highest potential for short term construction impacts is to the residential communities bordering the alignment including: The Fifth Street Addition, Rainbow Estates, Dexham Estates and Oliver's neighborhoods. Additionally, some businesses may have accessibility issues during construction of the proposed DART Rail to Rowlett.

Construction staging sites would be located within the DART owned ROW to the greatest possible extent. However, DART would coordinate with private property owners, and city municipalities if staging areas are needed outside of the required ROW.

Disruption of Business Activities

Several businesses within the proposed DART Rail to Rowlett Corridor would be impacted during construction due to temporary disruption and blocking of nearby roadways. In most cases, construction of the proposed DART Rail to Rowlett would cause a short-term impact to area businesses due to access restrictions, general inconveniences to patrons and temporary blocking of adjoining roadway intersections.

Mitigation Treatments

Neighborhoods

Mitigation treatments for construction-related impacts to surrounding neighborhoods are outlined in the Environmental Protection guidelines of the *DART Light Rail Project-General Provisions, General Requirements, and Standard Specifications for Construction projects* and include environmental protection consideration for noise and dust control, including continuous, intermittent and construction noise emission limits. Traffic and accessibility impacts would be addressed in the appropriate traffic management plans. Furthermore, construction fencing to prevent persons from entering the construction areas would be provided where necessary.

Noise control provisions include the use of working machinery and equipment with noise suppression devices and other noise and vibration abatement measures. Working hours would be restricted to minimize impacts to the greatest extent feasible and in compliance with the Occupational Safety and Health Act (OSHA) of 1970 and current OSHA regulations. Temporary construction of physical sound barriers would be placed around construction staging sites and truck routes would be placed as to minimize noise impacts to surrounding neighborhoods.

Disruption of Businesses

Due to availability of alternative routes and the temporary duration of construction periods, the short-term roadway disruptions would cause only minimal disruptions to the businesses along the proposed DART Rail to Rowlett Corridor. Provisions in project specification plans would require the construction contractors to make every reasonable effort to minimize construction

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activities within the roadways during peak traffic periods. Abatement measures such as work hour controls and weekend construction would be included in project contracts. Private business parking areas and driveways should not be used for equipment maneuvering or parking. In addition, all possible measures should be taken to avoid blockages and disruption of business access driveways. As a courtesy, notification of roadway disruptions should be provided to neighboring property owners/operators. In cases of roadway blockages, neighboring property owners/operators would be notified and provided with descriptions of alternative routes.

3.13.3 Safety and Security/Public Health

Impact Assessment

Potential safety and welfare are closely related to potential impacts to public health. Construction sites present high activity levels and present potential safety impacts to the public. The security of the construction staging areas is also a concern, given the potential for vandalism or unauthorized use of equipment or materials. Due to road closures during construction activities, emergency vehicle response times may be impacted.

Mitigation Treatments

The safety and welfare of the public would be reflected in the selection and preparation of construction staging areas and traffic/pedestrian access plans that avoid high pedestrian and emergency vehicle activity areas such as schools and public facilities. Construction materials and equipment would be generally secured and maintained in construction staging areas overnight with appropriate signs and temporary fencing. All applicable OSHA regulations and DART construction safety plans would be compiled to ensure maximum worker and public health safety during construction.

3.13.4 Visual and Aesthetic Resources

Impact Assessment

Potential construction-related visual impacts relate to the placement of construction staging areas and equipment/materials storage that are viewable from sensitive uses, which include residences and recreation areas abutting the proposed DART Rail to Rowlett Alignment. For instance, potentially significant short-term visual impacts could affect the Rowlett Creek Preserve users by impacting the visual and aesthetic quality of the park. Additionally, potentially significant long term adverse impacts could result from the removal of existing vegetation that visually screens the existing rail ROW.

Mitigation Treatments

The DART contractor would attempt to minimize the removal of existing vegetation and restore areas to their pre-construction appearance to the greatest extent possible. Prior to construction, a plan for protecting existing trees and vegetation that are to remain or could be impacted during construction activity would be developed. In accordance to with the *DART Light Rail*



Project-General Provisions, General Requirements, and Standard Specifications for Construction Projects, all trees and other landscape features scarred or damaged during construction would be repaired and restored to their original condition.

3.13.5 Historic, Cultural and Archeological Resources

Eighty-five historic-age resources were identified in the Proposed DART Rail to Rowlett APE. Of these six historic-age resources are being recommended to the THC as potentially eligible for inclusion in the NRHP.

No archeological sites have yet to be identified in the study area.

Impact Assessment

Current plans for the proposed DART Rail to Rowlett consist of constructing a series of footings for several sections of elevated track and straightening the S-curve that exists between Centerville Road and an eastern tributary of Rowlett Creek. This may necessitate replacement of approximately 1,800 feet of existing DGNO track. In addition, there a portion of the existing freight rail and associated freight rail storage sidings are proposed for relocation, which may require modification of at least two bridge or stream crossings of the existing rail line, one of which is at Rowlett Creek and the other at Mills Branch. These modifications may consist of structural repairs or replacement of the bridges, including new retaining wall locations. Further construction activities include improvements to storm sewer systems, culverts, and water conveyors within the proposed DART Rail to Rowlett Corridor, and the installation of new aerial tracks for the light rail, which would require footings. Finally, the construction of the proposed DART Downtown Rowlett LRT Station is proposed at the terminus of the proposed DART Rail to Rowlett Corridor. The station will include passenger boarding areas, generalized bus and auto circulation, pedestrian access, and linkages to adjacent land uses.

Historic-age resource impacts include the possible replacement or modification of one historic-age bridge. Impacts from the construction of the proposed DART Downtown Rowlett LRT Station to a cotton gin located on Coyle Street in Rowlett are also possible. Four additional historic-age resources were identified in close proximity to the proposed DART Rail to Rowlett Corridor. However, impacts to these resources are expected to be minimal or non-existent as much of the construction is expected to remain within the existing ROW.

Archeological impacts are considered minimal or non-existent as much of the construction is expected to remain within existing ROW. In areas where construction will necessitate the acquisition of new ROW, archeological resources may be impacted.

Mitigation Treatments

Mitigation treatments would be developed in consultation with THC if any of the above historic-age resources are found to be eligible for inclusion in the NRHP.



While no impacts to archeological resources would result from the implementation of the proposed DART Rail to Rowlett within existing ROW, intensive archeological survey would be conducted in areas where new ROW would be acquired. Coordination with THC will continue in order to identify and evaluate these areas.

If, during the course of construction, artifacts or other evidence of archeological, historic, or scientific value, with regards to cultural resources, are discovered or accidentally exposed, this would be reported immediately to DART. Work would be halted until a qualified official could conduct appropriate investigations.

3.13.6 Access and Distribution of Traffic

During the construction of any roadway or rail line project, road and traffic disruption is expected on minor and major roadways. The following sections address traffic impacts due to construction of the proposed DART Rail to Rowlett and mitigation treatments to alleviate these problems.

Impact Assessment

Construction of the proposed DART Rail to Rowlett would affect a number of major and minor roadways in the cities of Garland and Rowlett. When roadway or lane closures are required during construction of the proposed DART Rail to Rowlett, DART and its contractors would coordinate with the traffic control divisions of the Cities of Garland and Rowlett to maintain reasonable and safe traffic operations at affected crossings. **Table 3-25** illustrates how crossings and adjacent roadways in the corridor would be impacted by project construction.

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Table 3-25: Construction-Related Traffic Impacts

Street	LRT Location	Lanes Blocked	Closings/Lane Restrictions/Alternate Routes Available
North First St.	Elevated	X	Restricted lanes open; Alt. Routes - N. First St. to Walnut St. to Fifth St. to Austin St. to N. First St. N. First St. to Walnut St. to Walnut Cir. To State Hwy. 78 to N. First St.
State Hwy. 78 – Lavon Dr.	Elevated	X	Restricted lanes open; Alt. Route - State Hwy. 78 to Walnut Cir. to Walnut St. to N. First St. to State Hwy. 78,
GP&L Driveway	At-grade	X	Crossing permanently closed; property access via Avenue B
State Hwy. 66	Elevated	X	Restricted lanes open; Alt Routes – State Hwy. 66 to Country Club Dr. to Commerce St. to State Hwy. 66, State Hwy. 66 to Country Club Dr. to Walnut St. to First St. to State Hwy 66
Commerce St., in Garland	Elevated	X	Weekend Closings; Commerce St. to State Hwy. 66 to Country Club Dr. to Commerce St.
Centerville Rd.	At-grade	X	Restricted lanes open; Centerville Rd. to Commerce St./State Hwy. 66 to Dairy Rd. to Miller Rd. to Centerville Rd., Centerville Rd. to State Hwy. 66 to Dexham Rd. to Miller Rd. to Centerville Rd.
Dexham Rd.	At-grade	X	Restricted lanes open; Dexham Rd. to State Hwy. 66 to Centerville Rd. to Miller Rd. to Dexham Rd. Dexham Rd. to State Hwy. 66 to Main St. to Rowlett Rd. to Miller Rd. to Dexham Rd.
Main St.	Elevated	X	Weekend Closings; Main St. to State Hwy. 66 to Dexham Rd. to Miller Rd. to Rowlett Rd. to Main St. Main St. to State Hwy. 66 to Rowlett Rd. to Main St.
Rowlett Rd.	Elevated	X	Restricted lanes open; Rowlett Rd. to Miller Rd. to Dexham Rd. to State Hwy. 66 to Centerville Rd. Rowlett Rd. to State Hwy. 66 to Main St. to Rowlett Rd.
Commerce St., in Rowlett	At-grade	X	Crossing permanently closed; property access via new Martin St. crossing & driveway

Source: Parsons, 2006

Mitigation Treatments

The cities of Garland and Rowlett require notification of all construction activities within city ROW. The construction contractors should identify the appropriate regulations and incorporate mitigation treatments in the construction specifications (*DART Construction Guidelines*)

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**DART Rail to Rowlett
Final Local Environmental Assessment**

Specifications Section 01570, Maintenance and Control of Traffic). **Table 3-26** provides applicable local and state regulation guides for the proposed DART Rail to Rowlett construction.

Table 3-26: Construction in City ROW

City	Applicable Publications
Garland	NCTCOG-Standard Specifications for Public Works Construction TxDOT-Texas Manual on Uniform Traffic Control Devices
Rowlett	TxDOT-Texas Manual on Uniform Traffic Control Devices

Sources: Parsons, 2006; City of Garland, 2006; City of Rowlett; 2006

All construction specifications, traffic control plans, and mitigation treatments must be approved by local traffic engineering authorities prior to initiation of construction. Barricading and flag staff should be used when appropriate. Private business parking areas and driveways should not be used for equipment maneuvering or parking. Construction specifications should include provisions for a maximum number of lanes blocked during peak traffic hours, maintenance and removal of traffic control devices, efficient traffic rerouting measures, and scheduling of construction activities within the roadways for times other than during peak traffic periods.

3.13.7 Water Resources, Floodplains and Natural Resources

Impact Assessment

Potential short-term impacts to water resources, including floodplains, wetlands, and other surface waters, associated with the construction of the proposed DART Rail to Rowlett relate to increased erosion and sedimentation. During construction of the proposed DART Rail to Rowlett, there is the potential of temporary construction impacts to surface waters and associated wetlands. Construction of the proposed aerial structure over the Rowlett Creek floodplain would require the use of construction equipment such as foundation drill rigs, cranes, and concrete mix trucks. Travel and access for this equipment may have impacts to waters and wetland areas that have been identified immediately adjacent to the proposed DART Rail to Rowlett. In addition, the possibility for dewatering exists within the Rowlett Creek and Mills Branch watersheds if high water levels are encountered during construction. During final design, methods to minimize temporary construction impacts will be further investigated. Specific wetland areas would be identified in the field prior to construction. In addition, the construction contractor would be required to replace and rebuild the surrounding area to its original condition if any damage should occur during construction. Any required enhancement and restoration of these areas would be coordinated with the USACE.

Mitigation Treatments

Measures for the protection of existing water resources, including waterways, floodplains, and wetlands, are outlined in the *DART Light Rail Project – General Provisions, General Requirements, and Standard Specifications for Construction Projects*. Floodplain management would comply with the *National Flood Insurance Act of 1968* and the *Flood Disaster Protection*



Act of 1973. Executive Order 11988, *Floodplain Management*, as amended, would be coordinated with all work undertaken in floodplain areas. Impacts would be mitigated through the incorporation of appropriate construction site erosion control techniques. These techniques should be coordinated with state and federal guidelines and include:

- Soil erosion and sediment controls including silt fencing, water interceptor dikes and swales, sediment traps, ditch checks, storm sewer inlet protection, pipe slope drains, and water spreaders
- Stormwater storage in the form of detention or infiltration basins
- Construction waste disposal (brush, paper, cloth, etc.) on a daily basis
- Hazardous waste transportation, handling, storage, and use in strict accordance with local, state, and federal regulations and manufacturers' recommendations
- Sanitary waste collection in portable units by a licensed contractor and disposal at an approved facility in accordance with local and state regulations
- Control of off-site vehicle tracking of mud, dirt, or rock onto public roadways
- Minimization of exposure due to vehicle leakage, fueling operations, or minor maintenance including vehicle positioning, drip pans, containment diking, and other appropriate BMPs

Identified wetland areas would be protected during construction to prevent damage and filling. The *DART Environmental Protection Guidelines* outline the protection of existing wetlands to prevent adverse impacts upon these areas. Measures would reduce any potential impacts to a level less than significant.

3.13.8 Noise and Vibration

Construction noise varies greatly depending on the construction process, type and condition of equipment used, and layout of the construction site. Many of these factors are traditionally left to the contractor's discretion, which makes it difficult to accurately estimate levels of construction noise. Overall, construction noise levels are governed primarily by the noisiest pieces of equipment. For most construction equipment, the engine, which is usually diesel, is the dominant noise source. This is particularly true of engines without sufficient muffling. For special activities such as impact pile driving and pavement breaking, noise generated by the actual process dominates. **Table 3-27** summarizes some of the available data on noise emissions of construction equipment from the FTA Guidance Manual. Shown are the averages of the maximum sound pressure level values at a distance of 50 feet. Although the noise levels in the table represent typical values, there can be wide fluctuations in the noise emissions of similar equipment. Construction noise at a given noise-sensitive location depends on the magnitude of noise during each construction phase, the duration of the noise, and the distance from the construction activities. Projecting construction noise requires a construction scenario of the equipment likely to be used and the average utilization factors or duty cycles (i.e. the percentage of time during operating hours that the equipment operates under full power during each phase). Using the typical sound emission characteristics, as given in **Table 3-27**, it is then possible to estimate Leq or Ldn at various distances from the construction site. The noise impact assessment for a construction site is based on:

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- An estimate of the type of equipment that would be used during each phase of the construction and the average daily duty cycle for each category of equipment,
- Typical noise emission levels for each category of equipment such as those in **Table 3-27**, and
- Estimates of noise attenuation as a function of distance from the construction site.

Table 3-27: Construction Equipment Noise Emission Levels

Equipment Type	Typical Sound Level at 50 ft (dBA)
Backhoe	80
Bulldozer	85
Compactor	82
Compressor	81
Concrete Mixer	85
Concrete Pump	82
Crane, Derrick	88
Crane, Mobile	83
Loader	85
Pavement Breaker	88
Paver	89
Pile Driver, Impact	101
Pump	76
Roller	74
Truck	88

Source: FTA, 1995

Construction noise estimates are always approximate because of the lack of specific information available at the time of the LEA. Decisions about the procedures and equipment to be used are made by the contractor. Project designers usually try to minimize constraints on how the construction would be performed and what equipment would be used so that contractors can perform construction in the most cost effective manner. **Table 3-27** is an example of the noise projections for equipment that is often used during tie-and-ballast track construction. For the calculations it is assumed that all the equipment is located at the geometric center of the construction work site. Based on this scenario, an 8-hour Leq of 88 dBA should be expected at a distance of 50 feet from the geometric center of the work site. The calculation in **Table 3-28** does not assume any noise mitigation treatments or any limits on the contractor about how much noise can be made. With at-grade track construction, the duration of the activities at a specific location along the alignment would be relatively limited, usually a matter of several weeks. As a result, even when there may be noise impacts, the limited duration of the construction can mean that mitigation is not cost effective.



Table 3-28: Typical Equipment List, At-Grade Track Construction

Equipment Item	Total Maximum Sound Level at 50 feet (dBA)	Equipment Utilization Factor (%)	Leq (dBA)
Air Compressor	83	50%	80
Backhoe	80	40%	76
Crane, Derrick	82	10%	72
Dozer	85	40%	76
Generator	81	80%	80
Loader	85	40%	81
Pavement Breaker	84	4%	70
Shovel	80	40%	76
Dump Truck	88	16%	80
Total Workday Leq at 50 feet (8-hour workday)			88

Source: Parsons, 2006

3.13.9 Air Quality

Impact Assessment

During construction, various pollutants and particulate matter would be emitted from the operation of construction equipment and vehicles. These would be short-term emissions. However, localized air quality impacts could be significant during the short-term due to the high level of construction activity necessary to construct the proposed DART Rail to Rowlett including proposed DART downtown Rowlett LRT station.

Construction emissions would be short-term and differ in traffic emissions including:

- Construction emissions only last for the duration of the construction period
- Construction activities are short-term and may last from a couple of seconds (e.g., truck passing) to months (construction of a structure)
- Construction emission sources also include fugitive dust from ground disturbance, and
- Construction emissions are intermittent and depend on type of operation, location, and function and usage of equipment. Traffic emissions are continuous

Mitigation Treatments

Construction emissions would be minimized by utilizing BMPs and standard construction mitigation treatments including controlling fugitive dust by watering or covering exposed soil/dust areas, maintaining equipment, using emission control devices on construction equipment, and prohibiting idling of inactive equipment or vehicles.



3.13.10 Utilities

Impact Assessment

The potential for impacts to existing utilities during the construction of the proposed DART Rail to Rowlett exists.

Mitigation Treatments

An allowance is included in the project cost estimate developed during the preliminary engineering phase of the proposed project to cover relocation, protection, and/or consolidation of the utilities along the proposed DART Rail to Rowlett Alignment. Facilities conflicting with the proposed DART Rail to Rowlett Alignment would be relocated prior to construction or maintained and protected during construction. Utility relocation and protection would be closely coordinated with the affected utility companies. Any required relocations would be carried out without disruption of service.

3.13.11 Hazardous Materials

The *DART Environmental Protection Guidelines* outline procedures for toxic substances encountered during construction.

Impact Assessment

Potential construction impacts related to toxic substances and hazardous wastes include the unexpected encounter of hazardous materials and the potential impacts resulting from the disturbance, transport, emission, and disposal of hazardous materials during construction of the proposed DART Rail to Rowlett. One high risk site was identified in the DART Rail to Rowlett Study Area.

Mitigation Treatments

Mitigation treatments for hazardous materials are outlined in Section 3.12 of this document. Additional mitigation and coordination efforts are outlined in *DART Environmental Protection Guidelines*. In the event that hazardous materials are encountered during construction, the contractor must notify DART and stop work immediately. Mitigation and control measures would be coordinated with the EPA, Texas Air Control Board, Texas Water Commission, and the Texas Department of Health.

3.14 Cumulative Impacts

The cumulative effects of a project are those effects which are the result of a series of incremental, human-induced changes in the environment in the past, present, and foreseeable future (40 CFRs 1508.7). Cumulative effects include both direct and indirect effects of the project activity, as well as effects of unrelated activities. If any of these effects combine to create an impact on the environment, the combined impact is referred to as the cumulative impact.

