

(Cotton Belt Rail Line - Spectrum Crossing Report
Prepared for Dart - 1996

r. Xing

FACSIMILE COVER PAGE

To: John Baumgartner
Time: 08:59:42
Pages (including cover): 5

From : Tony Tramel
Date: 8/8/96

Attached is a copy of the Agenda Report submitted as a consent item to the DART Committee of the Whole (afternoon session) and to the Board (evening session) for action on August 13, 1996.

I have spoken to Jan Seidner and she feels this item will be approved without comment. The town of Wylie also has a grade seperation issue on the agenda this same date. She feels that since Addison is a member city and this action is consistent with DART's encouragement of economic development that the item will pass with little if any comment. Additionally, this will be the first Board meeting after the scheduled Irving vote, therefore, she feels that much of the discussion will center on the outcome of this election rather than this consent agenda item.

Call me at 747-6336 ext. 28 if you have further questions.

Agenda Report

DART

Attachment: 1. Map	Voting Requirements: majority
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DATE: August 13, 1996

SUBJECT: Grant of a License for an At-Grade Public Road Crossing in Addison

RECOMMENDATION

Approval of a resolution authorizing the President/Executive Director or his designee to execute a license granting an at-grade public road crossing to the Town of Addison, subject to the Town of Addison providing additional warning protection devices at existing at-grade road crossings in Addison, Texas at a cost to the Town of \$300,000.

STRATEGIC PLAN CONSIDERATIONS

- Board Goal: (SFP) Establish a common vision for transportation that is regionally accepted, progressively implemented through a comprehensive system plan, and periodically revisited.
- Management Objective: (SPF01) Actively participate in planning activities in the region.
- Strategic Initiative: (SFP01.05) Identify and implement joint development opportunities.

DISCUSSION

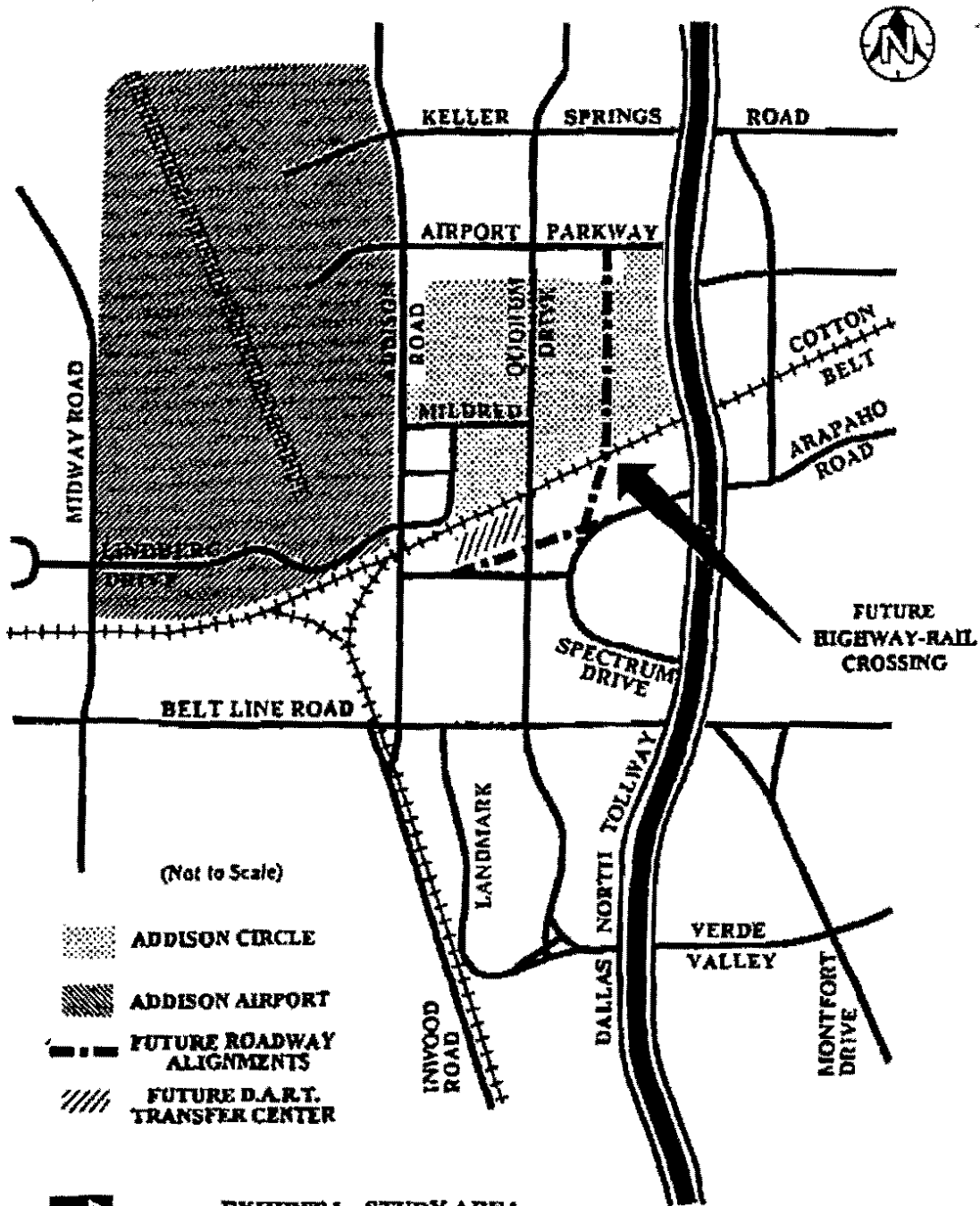
- The Town of Addison is requesting an at-grade crossing on Spectrum Drive to cross the Cotton Belt railroad right-of-way in Addison (see Attachment 1).
- Existing alternative access is available to the development 750 feet either side of the proposed at-grade crossing via Quorum Drive and the Southbound Service Road of Dallas North Tollway.
- By Board Resolution No. 960033, DART adopted a policy to reduce the number of public and private at-grade crossings.
- The Federal Railroad Administration and Texas Department of Transportation have similar policies encouraging railroads to reduce the overall number of at-grade crossings.
- DART, the Town of Addison, and the developer have worked to try to identify existing at-grade road crossings in the Town of Addison that could be closed. No realistic closure opportunities exist. In lieu of closure or elimination of existing at-grade public road crossings, the Town of Addison and the developer have proposed establishing a \$300,000 grade crossing improvement fund to design and install additional warning protection devices to increase protection at existing at-grade crossings. DART and the Town of Addison will develop a procedure for disbursement of funds.

FINANCIAL CONSIDERATION





As Addison is a member city, the license consideration is waived. Approval of this license has no budgetary impact to DART.

LEGAL CONSIDERATION

Section 452.054 of the Texas Transportation Code authorizes DART to exercise any power necessary or convenient to carry out its responsibility.



(Not to Scale)

-  ADDISON CIRCLE
-  ADDISON AIRPORT
-  FUTURE ROADWAY ALIGNMENTS
-  FUTURE D.A.R.T. TRANSFER CENTER



**EXHIBIT 1 - STUDY AREA:
FUTURE SPECTRUM DRIVE EXTENSION**

DRAFT

RESOLUTION

of the

**DALLAS AREA RAPID TRANSIT
(Executive Committee)**

Grant of a License for an At-Grade Public Road Crossing in Addison

WHEREAS, the Town of Addison has requested an at-grade public road crossing on Spectrum Drive to cross the Cotton Belt railroad right-of-way; and

WHEREAS, by Board Resolution No. 960033, DART adopted a policy to reduce the number of public and private at-grade crossings; and

WHEREAS, the Federal Railroad Administration and the Texas Department of Transportation have similar policies to eliminate or consolidate public and private at-grade, highway-rail crossings; and

WHEREAS, because no realistic closure possibilities exist, and the proposed at-grade road crossing is a critical element in Addison's proposed Addison Circle development, additional warning protection devices will be added at existing crossings in lieu of closure.

NOW, THEREFORE, BE IT RESOLVED by the Dallas Area Rapid Transit Board of Directors that the President/Executive Director or his designee is authorized to execute a license for an at-grade public road crossing in Addison, as shown in Attachment 1, subject to the Town of Addison providing additional warning protection devices at existing at-grade public road crossings in Addison, Texas at a cost to the Town of \$300,000.

Prepared by:

Lonnie E. Blaydes, Jr.
Vice President
Commuter Rail & Railroad Management

Approved as to form:

Office of General Counsel

Approved by:

Roger Snoble
President/Executive Director



DeShazo, Tang & Associates, Inc.
Engineers - Planners

400 South Houston, Suite 330
Dallas, Texas 75202

Telephone: (214) 748-6740
FAX: (214) 748-7037

Telecopier Transmittal

Date Faxed: 18-July-96
From: Steve Stoner
Project: Cotton Belt Rail Line
Project Number: 96066

Transmitted to:

Name: John Baumgartner, Director of Public Works
Company: Town of Addison
City/State: Addison TX
FAX Number: 450-2837 Telephone Number: 450-2886

- FYI
- Response
- Requested Due Date: _____

Message: Mr. Baumgartner, the attached spreadsheet is provided in response to your conversation with Tony Tramel. The spreadsheet includes detailed data used to calculate the benefit-cost ratio for the Spectrum Drive analysis as per the methodology included in the Appendix of the technical memorandum you ~~were~~ were issued. The spreadsheet includes updated information which incorporates the incremental difference in the construction cost of grade separation yielding a benefit-cost ratio of 0.11. Please call me with any questions and to discuss any modifications to our memorandum which you feel are appropriate. Thank you. Steve Stoner

Counting this cover letter, we are transmitting 3 pages.
If all pages are not received, please call: Linda
at (214) 748-6740

Application of the North Central Texas Council of Government's
 "Railroad/Roadway Grade Separation Needs Assessment:
 A Benefit-Cost Ratio Model," August 1987

Data Sources:

- DTA DeShazo, Tang & Associates, Inc.
- DART Dallas Area Rapid Transit
- COG North Central Texas Council of Governments
- TTI Texas Transportation Institute
- HE Huitt Zollars
- MODEL Data used from sample problem in the B/C model
- MODEL* Data used from sample problem in the B/C model multiplied by a Consumer Price Index of 1.45 (1983 to 1995)

Grade separation is warranted at grade crossings with a benefit-cost ratio equal to or exceeding One for the given benefit-cost equation. Equation numbers correspond to the document text.

Equation 1:	BLOCKING TIME (HOURS)	0.0668	
	WARNING DELAY (HOURS)	0.0147	MODEL
	NUMBER OF CARS PER TRAIN	50	DART
	AVERAGE LENGTH OF TRAIN CAR (FEET)	55	MODEL
	AVERAGE TRAIN SPEED (MPH)	10	DART
	CONSTANT VALUE (FT/MI)	5280	MODEL
Equation 2:	AVERAGE STOP TIME (HOURS)	0.0334	
	BLOCKING TIME (HOURS)	0.0668	EQN 1
	CONSTANT VALUE	0.50	MODEL
Equation 3:	DELAY PER VEHICLE STOP (PERSON HOURS/VEHICLE)	0.0483	
	AVERAGE DAILY AUTO OCCUPANCY (PERSONS/VEHICLE)	1.31	COG
	ACCELERATION DELAY (HOURS)	0.0035	MODEL
	AVERAGE STOPPING TIME (HOURS)	0.0334	EQN 2
Equation 4:	ROADWAY BLOCKAGE RATIO	0.0056	
	TRAIN FREQUENCY (TRAINS/DAY)	2	DART
	BLOCKING TIME (HOURS/TRAIN)	0.0668	EQN 1
	TRAIN OPERATION PERIOD (HOURS/DAY)	24	DART
Equation 5:	ANNUAL VEHICLE IMPACT (PERSON HOURS OF DELAY/YEAR)	1372	
	DELAY PER VEHICLE STOP (PERSON HOURS/VEHICLE)	0.0483	EQN 3
	AVERAGE DAILY TRAFFIC AT GRADE CROSSING (VEHICLES/DAY)	15000	DTA
	ROADWAY BLOCKAGE RATIO	0.0056	EQN 4
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 6:	TRANSIT PASSENGER DELAY (PERSON HOURS/TRAIN)	0.0000	
	TRAVEL TIME UNDER REDUCED SPEED (PERSON HOURS/TRAIN)	X	ASSUMED
	TRAVEL TIME UNDER NORMAL OPERATING SPEED (PERSON HOURS/TRAIN)	X	ASSUMED
Equation 7:	ANNUAL TRANSIT IMPACT (PERSON HOURS OF DELAY/YEAR)	0.0000	
	TRANSIT PASSENGER DELAY (PERSON HOURS/TRAIN)	0.0000	EQN 6
	DAILY LINE RIDERSHIP (PERSONS/TRAIN/DAY)	0	DART
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 8:	DELAY COST (\$/YEAR)	\$20,450	
	ANNUAL IMPACT (PERSON HOURS OF DELAY) (PASSENGER + TRANSIT)	1372	EQN 5+EQN 7
	VALUE OF TIME (\$/HOUR)	\$14.90	TTI
Equation 9:	FATALITY ACCIDENT RATE (ACCIDENTS/MILLION VMT/YEAR)	0.0013	COG
	NUMBER OF FATAL ACCIDENTS PER YEAR	1.67	COG
	AVERAGE DAILY TRAFFIC AT ALL GRADE CROSSINGS (VEHICLES)	3883396	COG
	CONSTANT VALUE (VEHICLE MILES TRAVELLED)	1000000	MODEL
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 10:	INJURY ACCIDENT RATE (ACCIDENTS/MILLION VMT/YEAR)	0.0066	COG
	NUMBER OF INJURY ACCIDENTS PER YEAR	8.67	COG
	AVERAGE DAILY TRAFFIC AT ALL GRADE CROSSINGS (VEHICLES)	3883396	COG
	CONSTANT VALUE (VEHICLE MILES TRAVELLED)	1000000	MODEL
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL

Equation 11:	PROPERTY DAMAGE ONLY ACCIDENT RATE (ACCIDENTS/MILLION VMT/YEAR)	0.0083	COG
	NUMBER OF PDO ACCIDENTS PER YEAR	11.00	COG
	AVERAGE DAILY TRAFFIC AT ALL GRADE CROSSINGS (VEHICLES)	3883396	COG
	CONSTANT VALUE (VEHICLE MILES TRAVELLED)	1000000	MODEL
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 12:	COST OF FATALITY ACCIDENTS (\$/YEAR)	\$5,934	
	FATALITY ACCIDENT RATE (ACCIDENTS/MILLION VMT/YEAR)	0.0013	EQN 9
	AVERAGE DAILY TRAFFIC AT GRADE CROSSING (VEHICLES/DAY)	15000	DTA
	ACCIDENT COST PER FATAL ACCIDENT (\$/ACCIDENT)	\$920,000	TTI
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 13:	COST OF INJURY ACCIDENTS (\$/YEAR)	\$1,145	
	INJURY ACCIDENT RATE (ACCIDENTS/MILLION VMT/YEAR)	0.0066	EQN 10
	AVERAGE DAILY TRAFFIC AT GRADE CROSSING (VEHICLES/DAY)	15000	DTA
	ACCIDENT COST PER INJURY ACCIDENT (\$/ACCIDENT)	\$34,200	TTI
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 14:	COST OF PDO ACCIDENTS (\$/YEAR)	\$280	
	PDO ACCIDENT RATE (ACCIDENTS/MILLION VMT/YEAR)	0.0083	EQN 11
	AVERAGE DAILY TRAFFIC AT GRADE CROSSING (VEHICLES/DAY)	15000	DTA
	ACCIDENT COST PER PDO ACCIDENT (\$/ACCIDENT)	\$6,600	TTI
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 15:	IDLING TIME PER VEHICLE STOP (HOURS)	0.0369	
	ACCELERATION DELAY (HOURS)	0.0035	MODEL
	AVERAGE STOPPING TIME (HOURS)	0.0334	EQN 2
Equation 16:	ANNUAL IDLING HOURS (HOURS/YEAR)	1048	
	AVERAGE DAILY TRAFFIC AT GRADE CROSSING (VEHICLES/DAY)	15000	DTA
	IDLING TIME PER VEHICLE STOP (HOURS/VEHICLE)	0.0369	EQN 15
	ROADWAY BLOCKAGE RATIO	0.0056	EQN 4
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 17:	ANNUAL IDLING COST (\$/YEAR)	\$838	
	ANNUAL IDLING HOURS (HOURS/YEAR)	1048	EQN 16
	IDLING COST (\$/HOUR)	\$0.80	MODEL*
B/C RATIO:	BENEFIT COST RATIO = (A+B+C+D+E+F+G) / (H+J)	0.11	
A	DELAY COST (\$)	\$20,450	EQN 8
B	COST OF FATALITY ACCIDENTS (\$/YEAR)	\$5,934	EQN 12
C	COST OF INJURY ACCIDENTS (\$/YEAR)	\$1,145	EQN 13
D	COST OF PDO ACCIDENTS (\$/YEAR)	\$280	EQN 14
E	ANNUAL IDLING COST (\$/YEAR)	\$838	EQN 17
F	ANNUAL AT-GRADE CROSSING MAINTENANCE COST (\$/YEAR)	\$1,740	MODEL*
G	ANNUAL AT-GRADE CROSSING SAFETY EQUIPMENT MAINTENANCE COST (\$/YEAR)	\$17,260	HZ
H	ANNUAL GRADE SEPARATION MAINTENANCE COST (\$/YEAR)	\$2,175	HZ
J	ANNUALIZED GRADE SEPARATION INCREMENTAL CONSTRUCTION COST (\$/YEAR)	\$418,761	HZ
CALCULATIONS FOR ANNUALIZED CONSTRUCTION COST USING CAPITAL RECOVERY FACTOR:			
	GRADE SEPARATION		
	Interest rate (%)	10	
	Time (years)	50	
	Capital recovery	0.1009	
	Total Cost--Grade Separation (\$)	\$6,051,934	
	Total Cost--At-Grade Crossing (\$)	\$1,900,000	
	Incremental Total Cost of Grade Separation (\$)	\$4,151,934	
	Annual Cost (\$/YEAR)	\$418,761	

COLUMBUS
R E A L T Y T R U S T

15851 N. Dallas Parkway
Suite 855
Dallas, Texas 75248
(214) 387-1492

Date:

July 15, 1996

To:

John Baumgartner

For Your Convenience...

We are taking the opportunity of forwarding the attached information without a cover letter in the belief that promptness may be more important to you than formality.

By:

By report Mail

Remarks:

John,

This is the final report from Walsh & Associates regarding the Spectrum crossing.

The letter I sent you requesting the crossing for Scott references.

This report is an attachment. Please give me a call & let me know how it's going.



Facsimile Transmission

TO: John Baumgartner
FAX #: 931-6643
LOCATION: _____

FROM: Bryant Mail
Fax # 770-5129
Voice # 770-5151

Date: 7/11 Time: 1:30
4 # Pages (Including Cover Sheet)

COMMENTS: _____

_____ *A - Retype for Council Agenda* _____

NOTICE OF CONFIDENTIALITY

The information contained in and transmitted with this facsimile is: a) subject to attorney/client privilege; b) attorney work product; and/or c) confidential. It is intended only for the individual or entity designated above. You are hereby notified that any dissemination, distribution, copying, or use of or reliance upon the information contained in and transmitted with this facsimile by or to anyone other than the recipient designated above by the sender is unauthorized and strictly prohibited. If you have received this facsimile in error, please notify us immediately by telephone at the number listed. Any facsimile erroneously transmitted to you should be immediately returned to the sender by U.S. mail, or if authorization is granted by the sender, destroyed.



DeShazo, Tang & Associates, Inc.

Engineers - Planners

400 South Houston, Suite 330
Dallas, Texas 75202

Telephone: (214) 748-6740
FAX: (214) 748-7037

Telecopier Transmittal

Date Faxed: 11-July-1996
From: Tony Tranel
Project: Cotton Belt Rail Line
Project Number: 96066

Transmitted to:

Name: Bryant Nail
Company: Columbus Realty Trust
City/State: Dallas TX
FAX Number: 770-5129 Telephone Number: 770-5174

FYI

Response

Requested Due Date: _____

Message: Bryant, the revised draft letter (attached) has been edited by Jan Seidner. She acknowledged that the letter may be addressed to Lonnie Blaydes in ~~the~~ respect of the fact he actually schedules Board agenda items. We recommend copying Roger Snoble. Upon your review please forward to Ron Whitehead at your discretion. Thanks.

Steve Stoner for
Tony Tranel

Counting this cover letter, we are transmitting 3 pages.

If all pages are not received, please call:

Linda

at (214) 748-6740

DRAFT

Lonnie E. Blaydes, Jr.
July 11, 1996
Page 2

Please place this request on the Board's regular scheduled meeting of August 13, 1996.
If you have any further questions please contact me at 450-7028.

Sincerely,

Ron Whitehead
City Manager
Town of Addison

cc: Bryant Nail
Tony R. Tramel, DeShazo, Tang & Associates

DRAFT

July 11, 1996

Lonnie E. Blaydes, Jr.
Vice President
Commuter Rail & Railroad Management
Dallas Area Rapid Transit
PO Box 660163
Dallas, TX 75266-7210

**RE: Proposed Grade Separation of the DART-Cotton Belt Rail Line and
Spectrum Road Extension in Addison, Texas; DT&A No. 96066**

Dear Lonnie:

Please let this correspondence serve as the Town of Addison's request to allow an at-grade rail crossing of DART's rail facilities at Spectrum Drive in Addison. We have prepared a technical report concerning this issue which is enclosed. This report details the benefits and costs associated with the additional crossing located between the Dallas North Tollway and Quorum Drive, both of which are at-grade crossings.

The cost to grade separate the facilities is estimated to be approximately \$6,000,000. Currently, only three trains a day cross the Dallas North Tollway frontage roads and Quorum Drive. An analysis comparing the projected benefits and costs to the public and DART operations indicates that the grade separation is an extremely poor investment. The benefit/cost ratio of the grade separation is only 0.10. For each public dollar invested in this project, only a single dime (\$.10) is provided in public benefits.

We have met with members of your staff concerning this issue. DART staff advises that it is the practice of DART, TxDOT and FRA to require closure of two public or private crossings to obtain any new at-grade crossings. The Town's consultants and DART staff have reviewed Addison's crossings and determined that there are no potential closures within the town's limits. In lieu of two closures, the Town's consultants suggested the addition of two "four-quad, gated protection crossings" to approximate (as close as possible) the added safety benefits of two street closures. The additional cost of these quad-gate protections is approximately \$300,000 rather than the \$6,000,000 for a grade separation. After further discussion with DART staff, it was recommended that the Town of Addison set aside \$300,000 to provide additional warning devices at existing at-grade crossings in Addison.



330 Union Station
Dallas, Texas 75202
(214) 748-6740

Two Memorial Place
8023 E. 93rd Place
Suite 720
Tulsa, Oklahoma 74133

208 West 4th Street
Austin, Texas 78701
(512) 472-4214

Sundance Square
120 West Third Street, Suite 210
Fort Worth, Texas 76102-7401
(817) 332-2074

LETTER OF TRANSMITTAL

TO: John Baumgartner
Director of Public Works
16801 Westgrove
Addison, TX 75248

DATE: July 23, 1996
FROM: Tony Tramel/Steve Stoner
400 S. Houston, Suite 330
Dallas, TX 75202

JOB NO: 96066

RE: Cotton Belt Rail Line - Spectrum Drive Crossing

WE ARE ENCLOSING:

No. Copies	DESCRIPTION
1	Bound Technical Memorandum
1	Reproducible Technical Memorandum

For Your Use _____
For Your Approval _____

As Requested _____
Approved as Noted _____

Remarks: _____

Copy To: _____

Signed Linda S. Kendrick

DART

Dallas Area Rapid Transit
P.O. Box 660163
Dallas, Texas 75266-0163
214/749-3278

COPY

September 5, 1997

Mr. John R. Baumgartner, P.E.
Director of Public Works
Town of Addison
P. O. Box 144
Addison, Texas 75001

Re: License Agreement No. 970904 covering the proposed Spectrum Drive crossing

Dear Mr. Baumgartner:

Enclosed is a fully-executed agreement as referenced above. Should you need to contact us in the future regarding this document, please reference the agreement number above.

Please contact me at (214) 749-2917 if I can be of assistance with any future crossings of DART-owned railroad properties.

Sincerely,



Jan Seidner
Manager, Railroad Facilities
Commuter Rail & Railroad Management

JMS:
Enclosure

Send orig. to
Carmen
Keep copy?
"Spectrum Dr. Xten"

COPY

AGREEMENT # 970904

LICENSE AGREEMENT

THIS AGREEMENT, by and between DALLAS AREA RAPID TRANSIT, ("DART"), a regional transportation authority, created, organized and existing pursuant to Chapter 452, Texas Transportation Code, as amended (the "Act"), and the TOWN OF ADDISON, a home rule city ("Licensee"), acting herein by and through its duly authorized city manager, whose mailing address is P. O. Box 144, Addison, Texas 75001,

WITNESSETH:

1. **Purpose.** DART hereby grants a license to Licensee for the purpose of constructing, installing, and maintaining a paved four-lane Public Road Crossing (the "Permitted Improvements"), forty-eight (48) feet in width, extending Spectrum Drive across DART's tracks on the DART right-of-way at Mile Post 598.09 in Addison, Dallas County, Texas, more particularly described and shown on the plat marked Exhibit "A" attached hereto and incorporated herein for all pertinent purposes, (the "Property").

The term Permitted Improvements shall include the concrete pre-cast crossing material, pavement, grading, barricades, street lighting, drainage facilities, signs, warning protection devices and approaches as designated by DART.

The Property shall be used by Licensee solely for construction of the Permitted Improvements and use by the public, **EXCEPT, HOWEVER, AND IT IS UNDERSTOOD BY BOTH DART AND LICENSEE THAT THE GRANTING OF THIS LICENSE SHALL NOT BE CONSTRUED IN ANY WAY TO CONSTITUTE A DEDICATION OF THE PROPERTY TO THE PUBLIC.** Licensee's right to enter upon and use the Property shall be entirely subject to the terms and provisions of this License Agreement.

2. **Consideration.** The consideration for the granting of this License shall be the following:

2.01. The performance by Licensee of each of the obligations undertaken by Licensee in this License.

2.02. As further consideration for the granting of this License, and in lieu of closure of two (2) public or private at-grade highway/rail crossings within the town limits of Addison, Licensee shall place the sum of \$300,000.00 into a special fund (the "Crossing Fund") to be used for providing additional warning/median protection devices at certain high traffic count highway-rail crossings within the Town of Addison as mutually determined and agreed upon between DART and Licensee. Licensee shall monitor all expenditures from the Crossing Fund until money is depleted, subject to audit by DART.

3. **Term.** The term of this license shall be perpetual subject, however, to termination by either party as provided herein.

4. **Non Exclusive License.** This license is non-exclusive and is subject to (a) any existing utility, drainage or communication facility located in, on, under, or upon the Property owned by DART, any railroad, utility, or communication company, public or private; (b) to all vested rights presently owned by any railroad, utility or communication company, public or private, for the use of the Property for facilities

presently located within the boundaries of the Property; and (c) to any existing lease, license or other interest in the Property granted by DART to any individual, corporation or other entity, public or private.

5. Design, Construction, Operation and Maintenance. DART's use of the Property and adjoining property may include the use of electrically powered equipment. Notwithstanding DART's inclusion within its system of measures designed to reduce stray current which may cause corrosion, Licensee is hereby warned that such measures may not prevent electrical current being present in proximity to the Permitted Improvements and that such presence could produce corrosive effects to the Permitted Improvements.

5.01. All design, construction, reconstruction, replacement, removal, operation and maintenance of the Permitted Improvements on the Property shall be done in such a manner so as not to interfere in any way with the operations of DART or other railroad operations, (the "Railroad", whether one or more). In particular, cathodic protection or other stray current corrosion control measures of the Permitted Improvements as required shall be made a part of the design and construction of the Permitted Improvements.

5.02. During the design phase and prior to commencing any construction or installation on the Property, a copy of the construction plans showing the exact location, type and depth of the construction, any cathodic protection measures and any working area, shall be submitted for written approval to DART and the Railroad when the construction is going to be within the area of Railroad operations. Such approval shall not be unreasonably withheld. No work shall commence until said plans have been approved by DART and Railroad.

5.03. By acceptance of this license, Licensee agrees to design, construct, install and maintain the Permitted Improvements in such a manner so as not to create a hazard to the use of the Property, and further agrees to pay any damages which may arise by reason of Licensee's use of the Property under this Agreement.

5.04. By acceptance of this license, Licensee covenants and agrees to institute and maintain a reasonable testing program to determine whether or not additional cathodic protection of its Permitted Improvements is necessary and if it is or should become necessary, such protection shall be immediately instituted by Licensee at its sole cost and expense.

5.05. Absence of markers does not constitute a warranty by DART that there are no subsurface installations on the Property.

5.06. If at any time, traffic volume or other circumstances should warrant a grade separation for the crossing licensed hereunder, Licensee shall be responsible for the installation of such grade separation to DART's standards, at no cost to DART.

6. Governmental Approvals. Licensee, at its sole cost and expense, shall be responsible for and shall obtain, any and all licenses, permits, or other approvals from any and all governmental agencies, federal, state or local, required to carry on any activity permitted herein.

7. DART's Standard Contract and Insurance. No work on the Property shall be commenced by Licensee or any contractor for Licensee until such Licensee or contractor shall have executed DART's Standard Contractors Agreement covering such work, and has furnished insurance coverage in such amounts and types as shall be satisfactory to DART.

8. Duty of Care in Construction, Operation and Maintenance. Licensee or its contractor shall use reasonable care during the construction, operation and maintenance period and thereafter, to avoid damaging any existing buildings, equipment and vegetation on or about the Property and any adjacent property owned by or under the control of DART. If the failure to use reasonable care by the Licensee or its contractor causes damage to the Property or such adjacent property, the Licensee and/or its contractor shall immediately replace or repair the damage at no cost or expense to DART. If Licensee or its contractor fails or refuses to make such replacement, DART shall have the right, but not the obligation, to make or effect any such repair or replacement at the sole cost and expense of Licensee, which cost and expense Licensee agrees to pay to DART upon demand.

9. Environmental Protection.

9.01 Licensee shall not use or permit the use of the Property for any purpose that may be in violation of any laws pertaining to health or the environment, including without limitation, the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), the Resource Conservation and Recovery Act of 1976 ("RCRA"), the Texas Water Code and the Texas Solid Waste Disposal Act.

9.02. Licensee warrants that the Permitted Use of the Property will not result in the disposal or other release of any hazardous substance or solid waste on or to the Property, and that it will take all steps necessary to insure that no such hazardous substance or solid waste will ever be discharged onto the Property by Licensee or its Contractors.

9.03. The terms "hazardous substance" and "release" shall have the meanings specified in CERCLA and the terms "solid waste" and "disposal" (or "disposed") shall have the meanings specified in the RCRA; PROVIDED, HOWEVER, that in the event either CERCLA or RCRA is amended so as to broaden the meaning of any term defined thereby, such broader meaning shall apply subsequent to the effective date of such amendment; and PROVIDED FURTHER, that to the extent that the laws of the State of Texas establish a meaning for "hazardous substance", "release", "solid waste", or "disposal", which is broader than that specified in either CERCLA or RCRA, such broader meaning shall apply.

9.04. Licensee shall indemnify and hold DART harmless against all cost of environmental clean up to the Property resulting from Licensee's use of the Property under this Agreement.

10. Mechanic's Liens Not Permitted. Licensee shall fully pay for all labor and materials used in, on, or about the Property and will not permit or suffer any mechanic's or materialmen's liens of any nature to be affixed against the Property by reason of any work done or materials furnished to the Property at Licensee's instance or request.

11. Maintenance of Completed Improvements. After the Permitted Improvements have been constructed, they shall be maintained by the Licensee in such a manner as to keep the Property in a good and safe condition with respect to Licensee's use; PROVIDED, HOWEVER, with respect to the warning protection devices installed as Permitted Improvements, such devices shall be maintained by the Railroad, upon acceptance of installation in accordance with approved plans, subject to reimbursement therefor by Licensee. In the event the Licensee fails to maintain the Property as required, upon discovery, DART shall notify Licensee of such occurrence in writing. In the event Licensee shall not have remedied the failure within ten (10) days from the date of such notice, DART shall have the right, but not the obligation to remedy such failure at the sole cost and expense of Licensee. In the event DART exercises its right to

remedy Licensee's failure, Licensee agrees to immediately pay to DART all costs incurred by DART upon demand.

12. Future Use by DART.

12.01. This license is made expressly subject and subordinate to the right of DART to use the Property for any purpose whatsoever.

12.02. In the event that DART shall, at any time subsequent to the date of this Agreement, at its sole discretion, determine that the relocation of the Permitted Improvements shall be necessary or convenient for DART's use of the Property, or that the crossing must be modified, including but not limited to the installation of grade crossing signals, Licensee shall, at its sole cost and expense make such modifications or relocate said Permitted Improvements so as not to interfere with DART's or DART's assigns use of the Property. In this regard, DART may, but is not obligated to, designate other property for the relocation of the Permitted Improvements. A minimum of thirty (30) days written notice for the exercise of one or more of the above actions shall be given by DART, and Licensee shall promptly commence to make the required changes and complete them as quickly as possible.

13. **Duration of License.** This license shall terminate and be of no further force and effect (a) in the event Licensee shall discontinue or abandon the use of the Permitted Improvements; (b) in the event Licensee shall relocate the Permitted Improvements from the Property; (c) upon termination in accordance with paragraph 18 of this Agreement, whichever event first occurs.

14. **Compliance With Laws and Regulations.** Licensee agrees to abide by and be governed by all laws, ordinances and regulations of any and all governmental entities having jurisdiction over the Licensee and by railroad regulations, policies and operating procedures established by the Railroad, or other applicable railroad regulating bodies, and Licensee agrees to indemnify and hold DART harmless from any failure to so abide and all actions resulting therefrom. Licensee acknowledges the current applicability of federal and state railroad regulatory agency requirements for the blowing of whistles when approaching at-grade public and private road crossings.

15. Indemnification.

15.01. Licensee shall defend, protect and keep DART and Railroad forever harmless and indemnified against and from any penalty, or damage, or charge, imposed for any violation of any law, ordinance, rule or regulation arising out of the use of the Property by Licensee, whether occasioned by the neglect of Licensee, its employees, officers, agents, contractors or assigns, or those holding under Licensee;

15.02. Licensee shall at all times protect, indemnify and it is the intention of the parties hereto that Licensee hold DART and Railroad harmless against and from any and all loss, cost, damage or expense, including attorney's fees, arising out of, or from any accident or other occurrence on or about the Property causing personal injury, death, or property damage, except when caused by the willful misconduct or negligence of DART or Railroad, their officers, employees or agents, and then only to the extent of the proportion of any fault determined against DART for its willful misconduct or negligence;

15.03. Licensee shall at all times protect, indemnify and hold DART and Railroad harmless against and from any and all loss, cost, damage or expense, including attorney's fees, arising out of or from any and all claims or causes of action resulting from any failure of Licensee, its officers,

employees, agents, contractors or assigns in any respect to comply with and perform all the requirements and provisions hereof.

16. Action Upon Termination of License. At such time as this license may be terminated or cancelled for any reason whatever, Licensee, upon request by DART, shall remove all improvements and appurtenances owned by it, situated in, under or attached to the Property and shall restore the Property to the condition existing at the date of execution of this License, at Licensee's sole expense.

17. Assignment. Licensee shall not assign or transfer its rights under this Agreement in whole or in part, or permit any other person or entity to use the License hereby granted without the prior written consent of DART which DART is under no obligation to grant.

18. Methods of Termination. This Agreement may be terminated in any of the following ways:

- 18.01. Written Agreement of both parties;
- 18.02. By either party giving the other party thirty (30) days written notice.
- 18.03. By either party, upon failure of the other party to perform its obligations as set forth in this Agreement.

19. Miscellaneous.

19.01. Notice. When notice is permitted or required by this Agreement, it shall be in writing and shall be deemed delivered when delivered in person or when placed, postage prepaid, in the U.S. Mail, Certified, Return Receipt Requested, and addressed to the parties at the following addresses:

LICENSOR: Dallas Area Rapid Transit
P. O. Box 660163
Dallas, Texas 75266-7210
Attn: Railroad Management

LICENSEE: Town of Addison
P. O. Box 144
Addison, Texas 75001
Attn: Director of Public Works

Either party may from time to time designate another and different address for receipt of notice by giving notice of such change of address.

19.02. Attorney Fees. Any signatory to this Agreement who is the prevailing party in any legal proceeding against any other signatory brought under or with relation to this Agreement shall be entitled to recover court costs and reasonable attorney fees from the non-prevailing party.

19.03 Governing Law. This Agreement shall be construed under and in accordance with the laws of the State of Texas.

19.04 Entirety and Amendments. This Agreement embodies the entire agreement between the parties and supersedes all prior agreements and understandings, if any, relating to the Property and the matters addressed herein, and may be amended or supplemented only by a written instrument executed by the party against whom enforcement is sought.

19.05. Parties Bound. This Agreement shall be binding upon and inure to the benefit of the executing parties and their respective heirs, personal representatives, successors and assigns.

19.06. Number and Gender. Words of any gender used in this Agreement shall be held and construed to include any other gender; and words in the singular shall include the plural and vice versa, unless the text clearly requires otherwise.

IN WITNESS WHEREOF, the parties have executed this Agreement in multiple originals this 4th day of September, 1997.

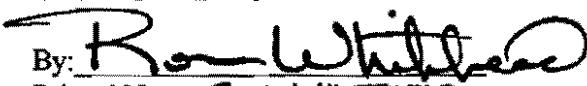
LICENSOR:

DALLAS AREA RAPID TRANSIT

By: 
Roger Snoble
President/Executive Director

LICENSEE:

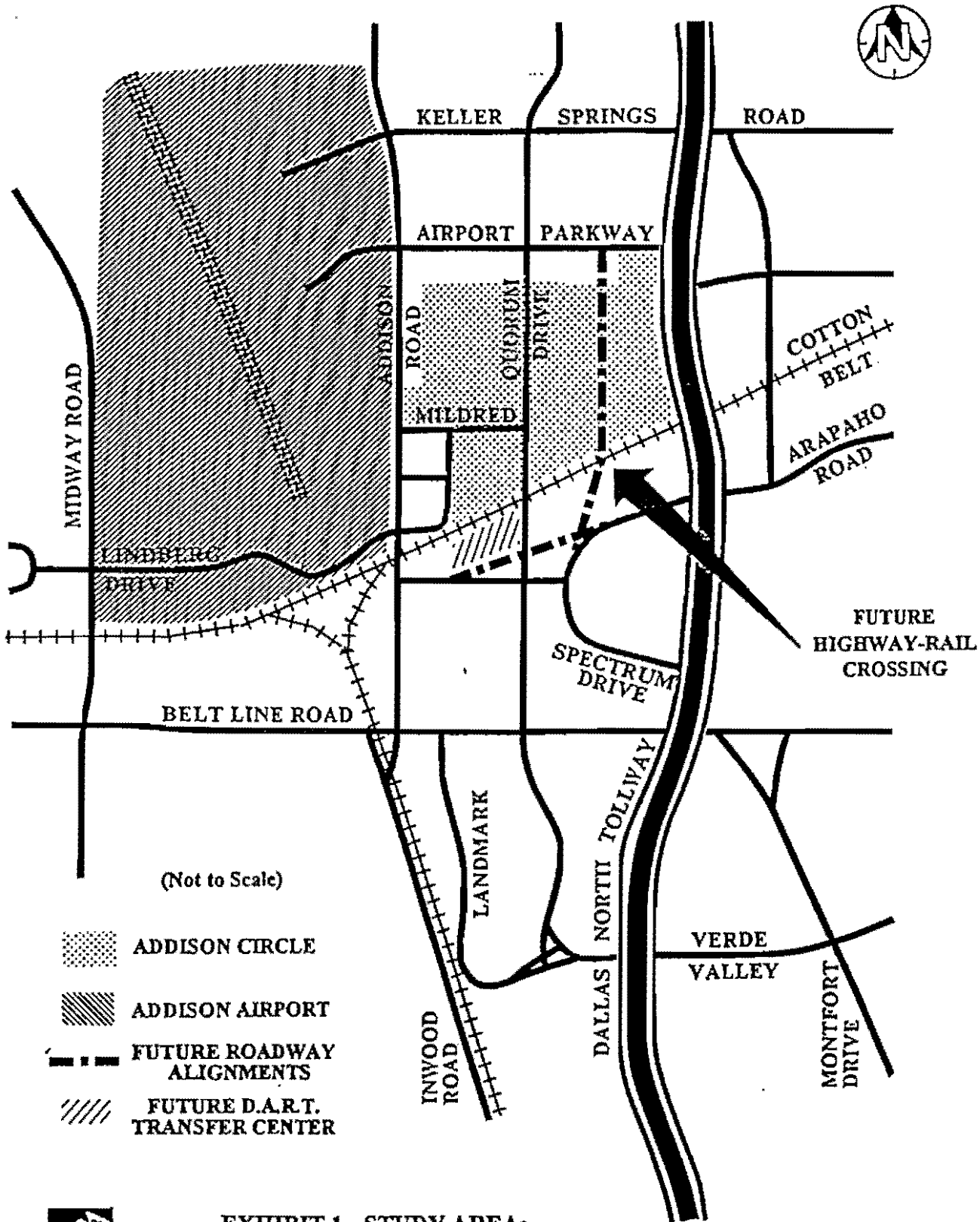
TOWN OF ADDISON

By: 
Printed Name: **RON WHITEHEAD**
Title: **CITY MANAGER**





APPROVED AS TO FORM:


Office of DART General Counsel

EXHIBIT A



(Not to Scale)

-  ADDISON CIRCLE
-  ADDISON AIRPORT
-  FUTURE ROADWAY ALIGNMENTS
-  FUTURE D.A.R.T. TRANSFER CENTER



**EXHIBIT 1 - STUDY AREA:
FUTURE SPECTRUM DRIVE EXTENSION**



Dallas Area Rapid Transit

960138

RESOLUTION

RESOLUTION

of the

DALLAS AREA RAPID TRANSIT
(Executive Committee)

Grant of a License for an At-Grade Public Road Crossing in Addison

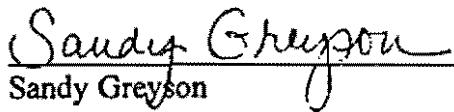
WHEREAS, the Town of Addison has requested an at-grade public road crossing on Spectrum Drive to cross the Cotton Belt railroad right-of-way; and


WHEREAS, by Board Resolution No. 960033, DART adopted a policy to reduce the number of public and private at-grade crossings; and

WHEREAS, the Federal Railroad Administration and the Texas Department of Transportation have similar policies to eliminate or consolidate public and private at-grade, highway-rail crossings; and

WHEREAS, because no realistic closure possibilities exist, and the proposed at-grade road crossing is a critical element in Addison's proposed Addison Circle development, additional warning protection devices will be added at existing crossings in lieu of closure.


NOW, THEREFORE, BE IT RESOLVED by the Dallas Area Rapid Transit Board of Directors that the President/Executive Director or his designee is authorized to execute a license for an at-grade public road crossing in Addison, as shown in Attachment 1, subject to the Town of Addison providing additional warning protection devices at existing at-grade public road crossings in Addison, Texas at a cost to the Town of \$300,000.


Sandy Greyson
Secretary


Billy J. Ratcliff
Chairman

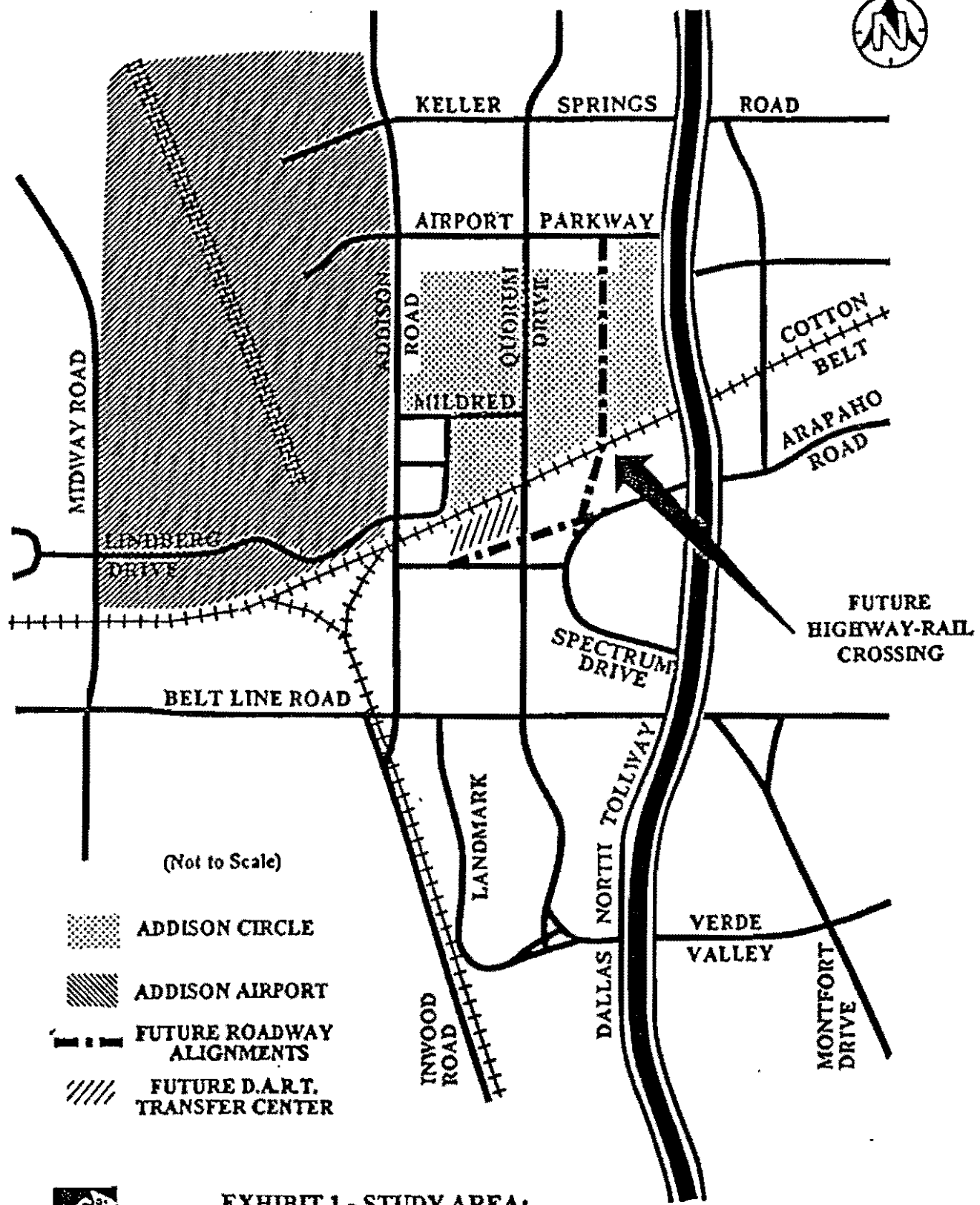
APPROVED AS TO FORM:

ATTEST:


DART Counsel


Roger Snoble
President/Executive Director

August 13, 1996
Date



(Not to Scale)





-  ADDISON CIRCLE
-  ADDISON AIRPORT
-  FUTURE ROADWAY ALIGNMENTS
-  FUTURE D.A.R.T. TRANSFER CENTER



EXHIBIT 1 - STUDY AREA:
FUTURE SPECTRUM DRIVE EXTENSION

Cotton Belt Rail Line- Spectrum Drive Crossing

Town of Addison

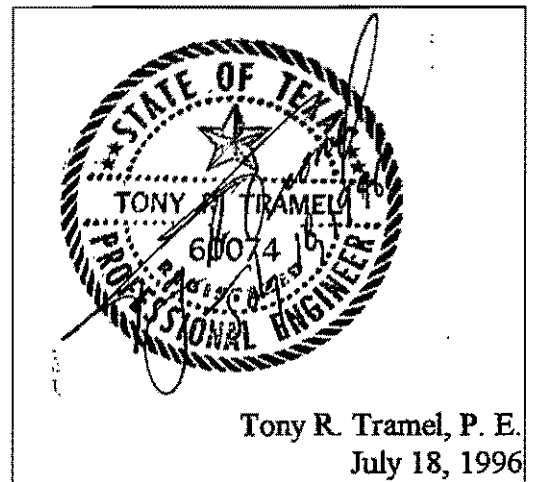
July 18, 1996



DeShazo, Tang & Associates, Inc.
400 S. Houston Street, Suite 330
Dallas, TX 75202-4802
phone 214.748.6740
fax 214.748.7037

Cotton Belt Rail Line- Spectrum Drive Crossing

Town of Addison



Tony R. Tramel, P. E.
July 18, 1996

DeShazo, Tang & Associates, Inc.
400 S. Houston Street, Suite 330
Dallas, TX 75202-4802
phone 214.748.6740
fax 214.748.7037



DeShazo, Tang & Associates, Inc.

Engineers ♦ Planners

400 South Houston, Suite 330

Dallas, Texas 75202-4802

214/748-6740 ♦ FAX 214/748-7037

Technical Memorandum

To: Bryant Nail, Columbus Realty Trust

From: DeShazo, Tang & Associates, Inc.

Date: July 18, 1996

Re: Cotton Belt Rail Line - Spectrum Drive Crossing; DT&A No. 96066

PURPOSE

The purpose of this memorandum is to provide the staff and Board of Directors of Dallas Area Rapid Transit (DART) with technical information for the evaluation of constructing a public at-grade crossing of the Cotton Belt rail line right-of-way and the future extension of Spectrum Drive in the Town of Addison, Texas.

RECOMMENDATION

The Town of Addison, Texas, plans to extend Spectrum Drive from its current terminus at Arapaho Road to Airport Parkway as shown in Exhibit 1. The roadway will serve as a major collector street with a four-lane cross-section. Alignment of the Spectrum Drive extension intersects the DART-owned Cotton Belt rail line. Based on analyses which consider impact to train operations, public investment justification, safety, and precedent, the construction of an appropriately designed at-grade highway-rail crossing is recommended.

BACKGROUND

The future Spectrum Drive and the existing Quorum Drive will be the major north-south corridors within the planned Addison Circle. Addison Circle, shown in Exhibit 2, is a major planned mixed-use neighborhood under construction just west of the Dallas North Tollway. The jointly conceived public-private development which is supported by local development tax incentives will ultimately consist of 3,000 multi-family residential units, 400,000 square feet of retail space, and 2,500,000 square feet of office space.

The extension of Spectrum Drive will intersect the existing, DART-owned Cotton Belt rail line. Implementation of an at-grade crossing at this location is recommended based on the following factors (supplemental information is provided in the Appendix):

⇒ Impact to Train Operations: The distance between the five existing at-grade crossings of the Cotton Belt rail line in the Town of Addison lie within a distance of approximately one mile as shown in Exhibit 3. The future Spectrum Drive crossing lies between the southbound service road of the Dallas North Tollway and Quorum Drive. The urban character and the proximity of at-grade highway-rail crossings along the Cotton Belt rail line manipulate the conditions under which trains must operate. Specifically, trains must travel at very low speeds, approximately ten miles per hour, to safely maneuver within the area. Due to these operational constraints, an additional at-grade crossing on the Cotton Belt rail line will have little effect, if any, upon existing and future train operations.

⇒ Public Investment: The justification of public investment is a common issue. A frequently applied economic evaluation tool is the benefit-cost (b/c) analysis. This analysis determines whether benefits accruing from public works projects exceed the costs of construction, maintenance, and operation. The North Central Texas Council of Governments (NCTCOG) has developed a procedure known as the "Railroad/Roadway Grade Separation Needs Assessment: A Benefit-Cost Model" for this purpose. As with other b/c ratio models, a calculated b/c ratio greater than 1.0 indicates the investment is justified; a calculated b/c ratio less than 1.0 indicates the investment is not justified; and a b/c ratio equal to 1.0, the "break-even" point, indicates the investment benefits are equal to the investment costs.

In the NCTCOG model, the "benefit" terms include eliminating the following annual costs:

- vehicle delay,
- fatality, injury, and property damage vehicle accidents,
- vehicle idling,
- crossing maintenance costs, and
- gate operation at grade crossings with freight and/or transit operations.

The "cost" term consists of the annualized cost of grade separation construction and maintenance. Values used in the application of the NCTCOG model were updated where available and are referenced in the Appendix.

Results of the economic evaluation for grade separating the Cotton Belt rail line at Spectrum Drive provided a benefit-cost ration of only 0.11. The benefits of the grade separation is only \$.11 for every \$1.00 invested. Therefore, the funding required for this public investment is a poor one and is not justified using this accepted engineering evaluation technique. Despite being identified as one of three rail lines being considered as the future right-of-way for DART's "North Crosstown Corridor", the magnitude of train activity required to justify grade separation from a benefit-cost perspective is not anticipated.

(NOTE: The North Crosstown Corridor is a future east/west travel corridor in the northern portion of DART's service area. The Cotton Belt, one of three corridors being considered, is shown in DART's Transit System Plan for Year 2010 in Exhibit 4.)

- ⇒ Safety: Nationally and in the State of Texas, about half of all at-grade highway-rail crossings incidents occur where traditional "active" warning devices (flashing lights or flashing lights with gates automatically activated by approaching trains) are in place. A new concept in active warning devices for at-grade highway-rail crossings is being implemented in the United States. These systems include full bi-directional approach-lane and departure-lane (i.e. "four quadrant") gates in concert with non-mountable curbs and medians of at least 100 feet conceptually illustrated in Exhibit 5.

At a test evaluation location in North Carolina, crossings of an at-grade rail line were video taped under four different rail/roadway protection conditions for 20 week periods. This included the base conditions, installation of a non-mounted median, installation of four-quadrant gated system, and the raised median and four-quadrant gate system. Violations of the devices were noted for each condition. The average number of violations of the grade crossing decreased from 43 per week with the traditional active warning devices to only one per week with the four-quadrant gate system with non-mountable medians, (a 98 percent decrease). This represents a significant reduction in risk and accident reduction of rail/roadway crossings. With the opportunity to construct a new highway-rail crossing at the future Spectrum Drive extension, implementation of a four-quadrant gate system with non-mountable medians and curbs is considered feasible and appropriate in view of this comprehensive study.

⇒ Precedent: In recent years, several new at-grade highway-rail crossings have been requested from and granted by DART including the following:

- the SH-190 George Bush Turnpike service roads
- the Collins Boulevard connector to the US-75 North Central Expressway northbound service road in Richardson
- the Baylor Parkway in Grapevine
- Industrial Boulevard in Grapevine (under the stipulation that two existing crossings are to be closed)

DART resolution 960033 established a policy on the preservation and use of DART-owned railroad rights-of-way for future transit use. However, as shown by the cases identified above, regional growth and development and site-specific conditions indicate that each crossing request be evaluated on a case-by-case basis considering the feasibility, practicality, and merit.

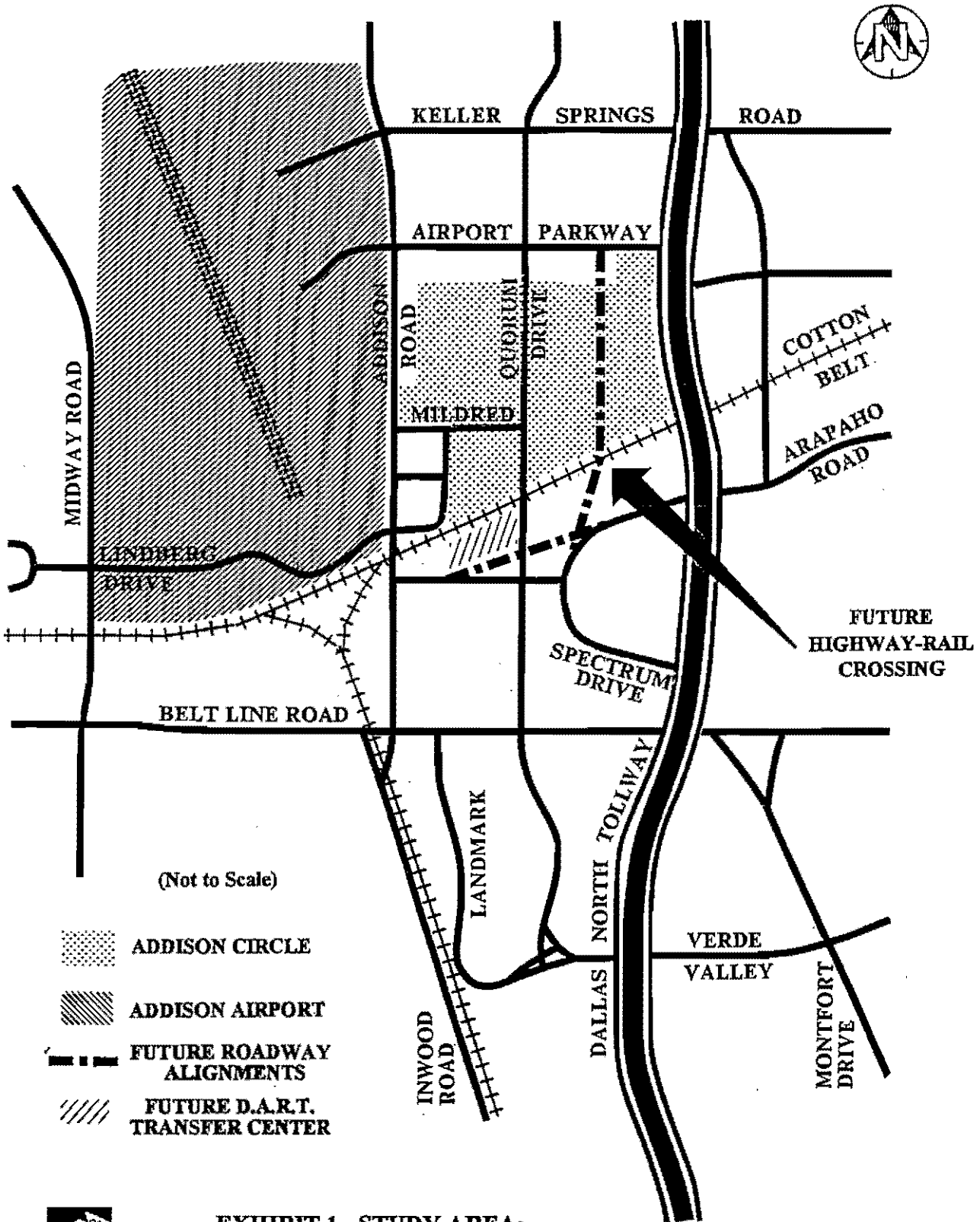
DART STAFF DISCUSSIONS

Representative's from Columbus Realty Trust met on two occasions with DART staff to discuss the issue of the future rail grade crossing of Spectrum Drive and the Cotton Belt rail line. During these

discussions, DART staff indicated their willingness to examine alternatives to a full grade separation at the future Spectrum Drive extension. Using material contained within this report and knowledge of alternate types of safety concepts, (i.e., four quadrant gate systems and non-mountable median barrier approaches to crossings), DART staff was conditionally receptive to the Town of Addison's request for an additional at grade crossing at Spectrum Drive. DART staff indicated that, if the Town was willing to modify other at-grade crossings in the town, such improvements would offset any misgivings created by the provision of this new crossing, thereby effecting an overall improvement in vehicle and rail safety. This appears to be a win-win proposal for the Town and DART.

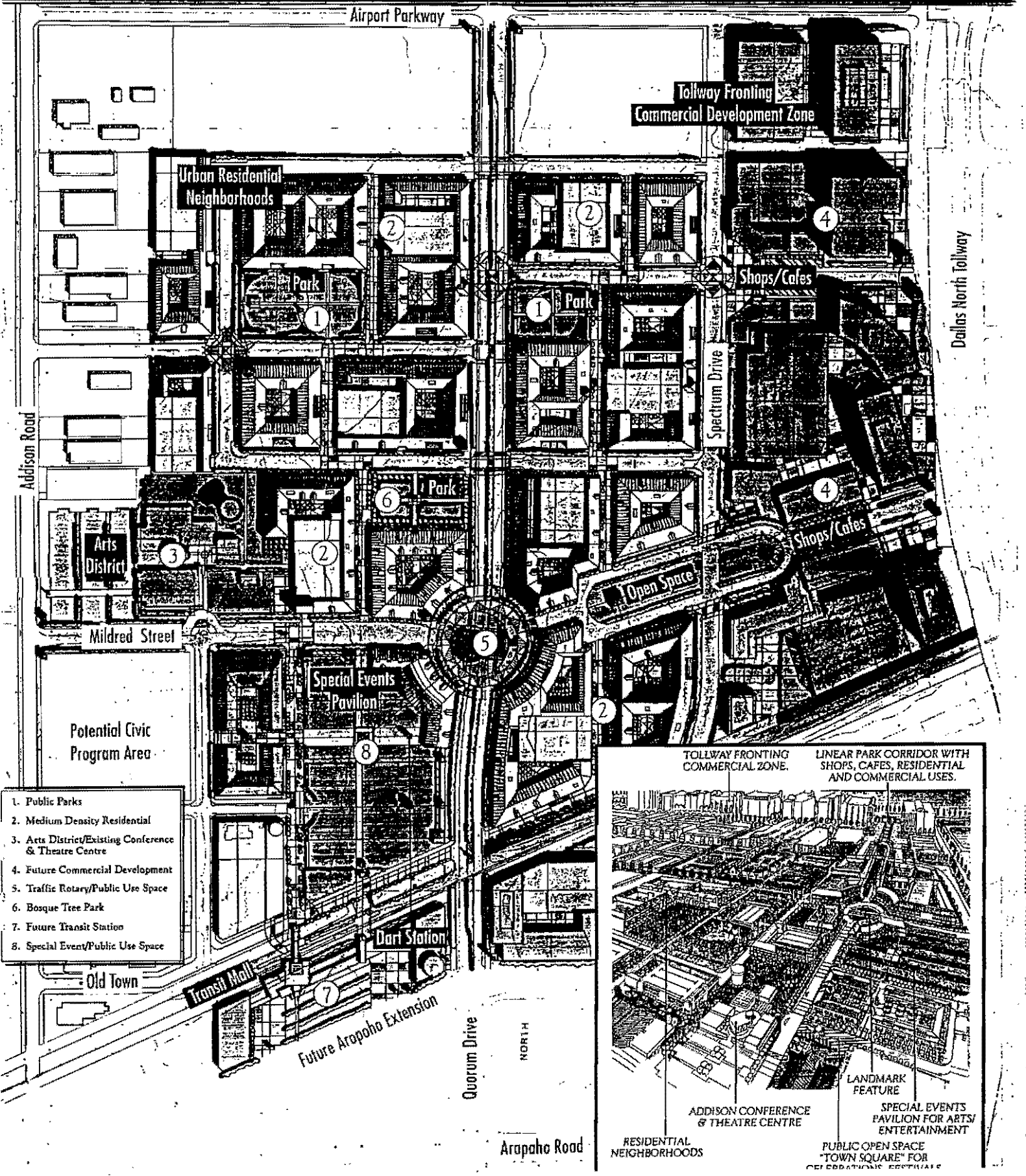
For purposes of the DART staff discussions, it was indicated that the incremental costs of a four-quadrant gated system with non-mountable medians and curbs over a conventional gated crossing was approximately \$150,000 at each crossing. It was originally proposed that a four-quadrant gated system be installed at Spectrum Drive and Quorum Drive. Upon closer inspection, applying the four-quadrant gated system at Quorum Drive was considered inappropriate given the existing conditions. Alternatively, the existing rail crossing at Addison Road was determined to be an ideal candidate location for safety enhancements considering the traffic volume, lack of a median, and the existing railroad gate protection.

Assuming two highway-rail crossings in the Town, a total of \$300,000 was identified as the potential funds required for rail/roadway investments considered for approval of an at-grade crossing at Spectrum Drive. DART staff indicated their support of such a request from the Town of Addison and would place the item on the DART Board's consent agenda. Due to the overall safety enhancements and operational improvements for rail activity, staff feels their support of the Town of Addison's request is justified. This approach provides a creative, more reasonable, alternative to grade-separating Spectrum Drive which achieves mutually positive results for both DART and municipal constituents such as the Town of Addison. It is believed that such a result is executable and negotiable that would allow for the implementation of an at-grade highway-rail crossing at the Cotton Belt rail line and the future extension of Spectrum Drive.

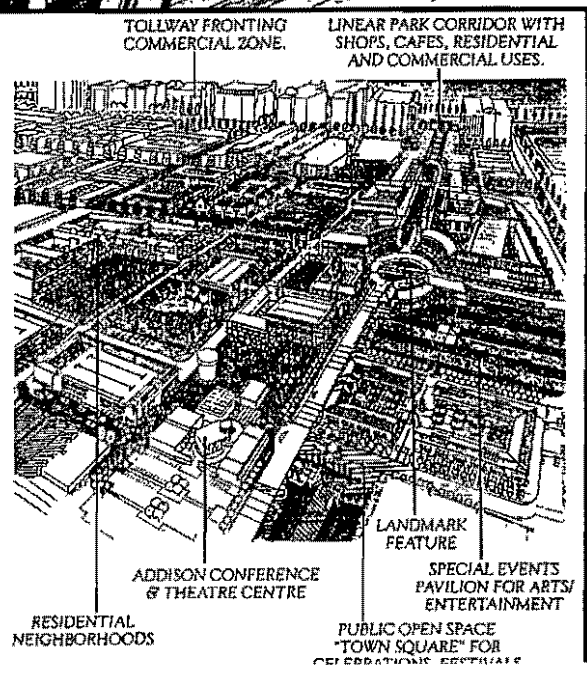


**EXHIBIT 1 - STUDY AREA:
FUTURE SPECTRUM DRIVE EXTENSION**

MASTER PLAN ADDISON CIRCLE



- 1. Public Parks
- 2. Medium Density Residential
- 3. Arts District/Existing Conference & Theatre Centre
- 4. Future Commercial Development
- 5. Traffic Rotary/Public Use Space
- 6. Bosque Tree Park
- 7. Future Transit Station
- 8. Special Event/Public Use Space



TOLLWAY FRONTING COMMERCIAL ZONE. LINEAR PARK CORRIDOR WITH SHOPS, CAFES, RESIDENTIAL AND COMMERCIAL USES.

ADDISON CONFERENCE & THEATRE CENTRE
SPECIAL EVENTS PAVILION FOR ARTS/ ENTERTAINMENT
PUBLIC OPEN SPACE "TOWN SQUARE" FOR CELEBRATIONS, FESTIVALS
LANDMARK FEATURE
RESIDENTIAL NEIGHBORHOODS



**EXHIBIT 3 - COTTONBELT RAIL LINE
EXISTING AT-GRADE HIGHWAY-RAIL CROSSINGS**

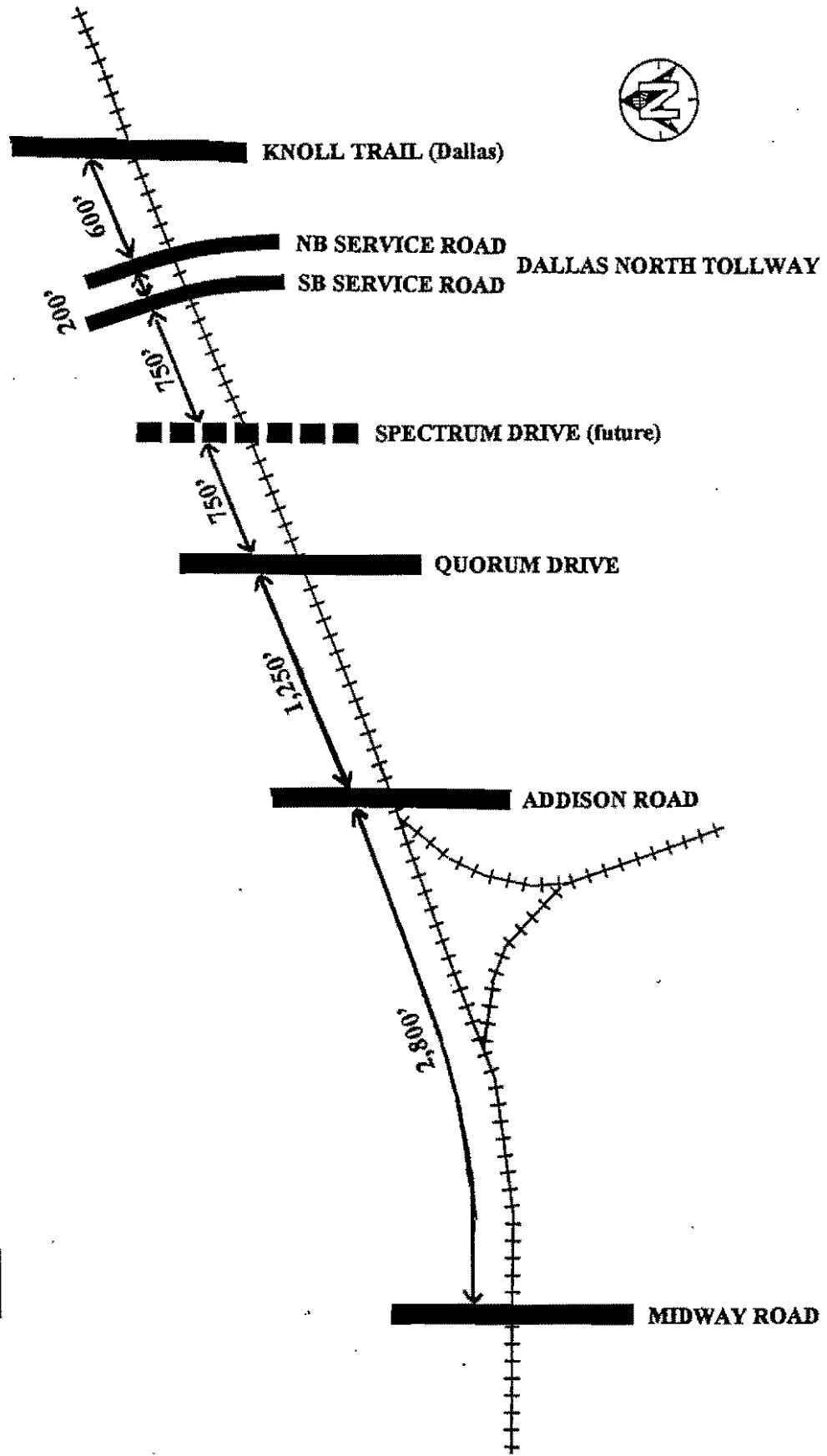
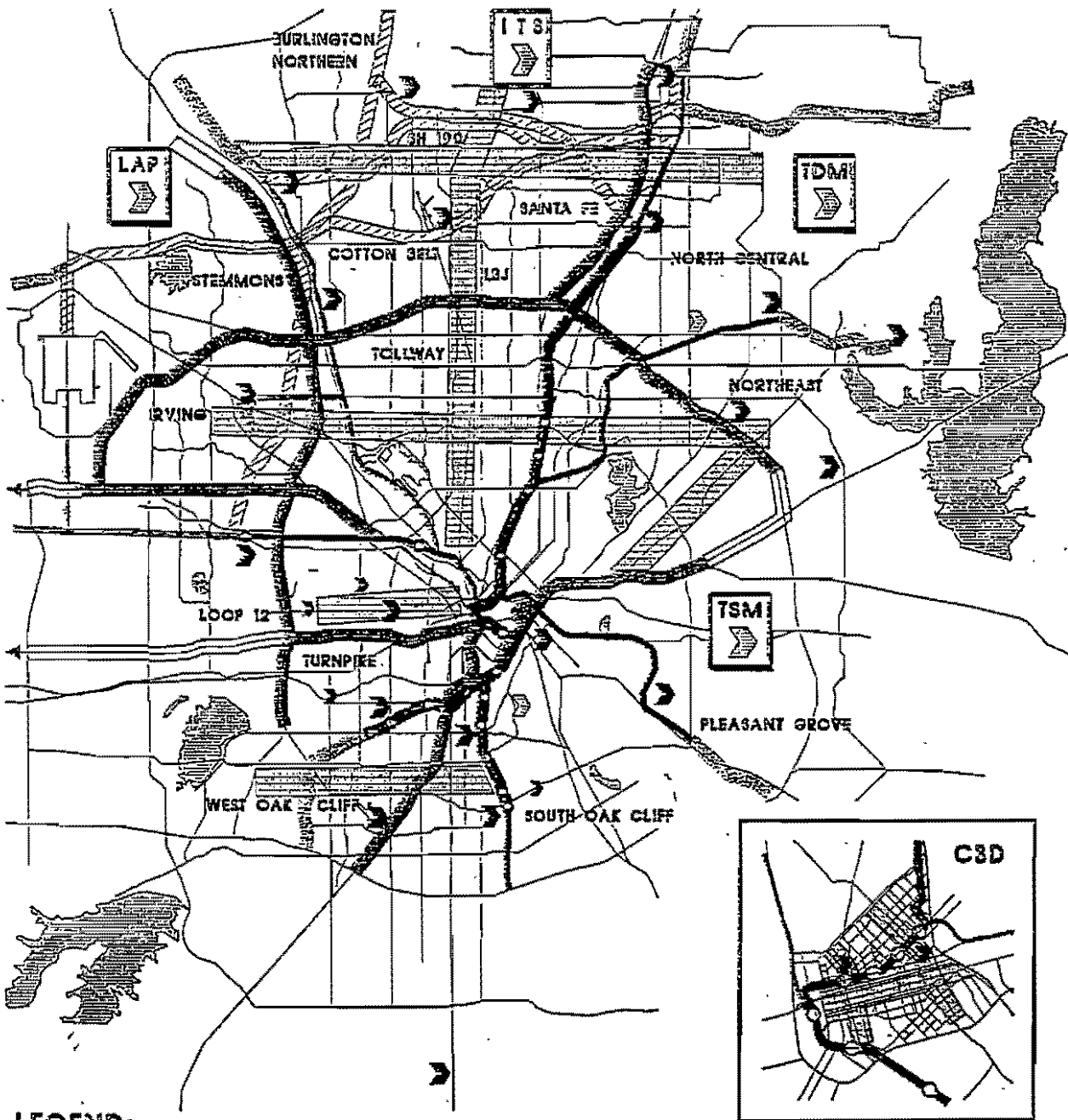




EXHIBIT 4 TRANSIT SYSTEM PLAN YEAR 2010

FIGURE 3
AUGUST 1995



LEGEND:

RAIL

- STARTER SYSTEM & STATIONS
- LIGHT RAIL (FULL CAPACITY)
- LIGHT RAIL (INTERMEDIATE CAPACITY)
- COMMUTER RAIL
- ALTERNATIVE FOR FUTURE STUDY
- FUTURE SYSTEM EXPANSION

HOV LANES

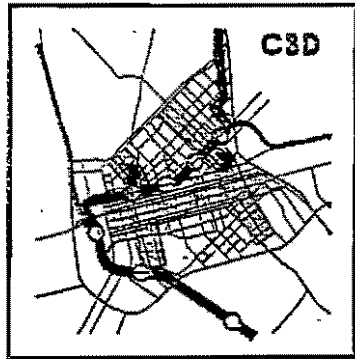
- DART PARTICIPATION
- NO DART PARTICIPATION

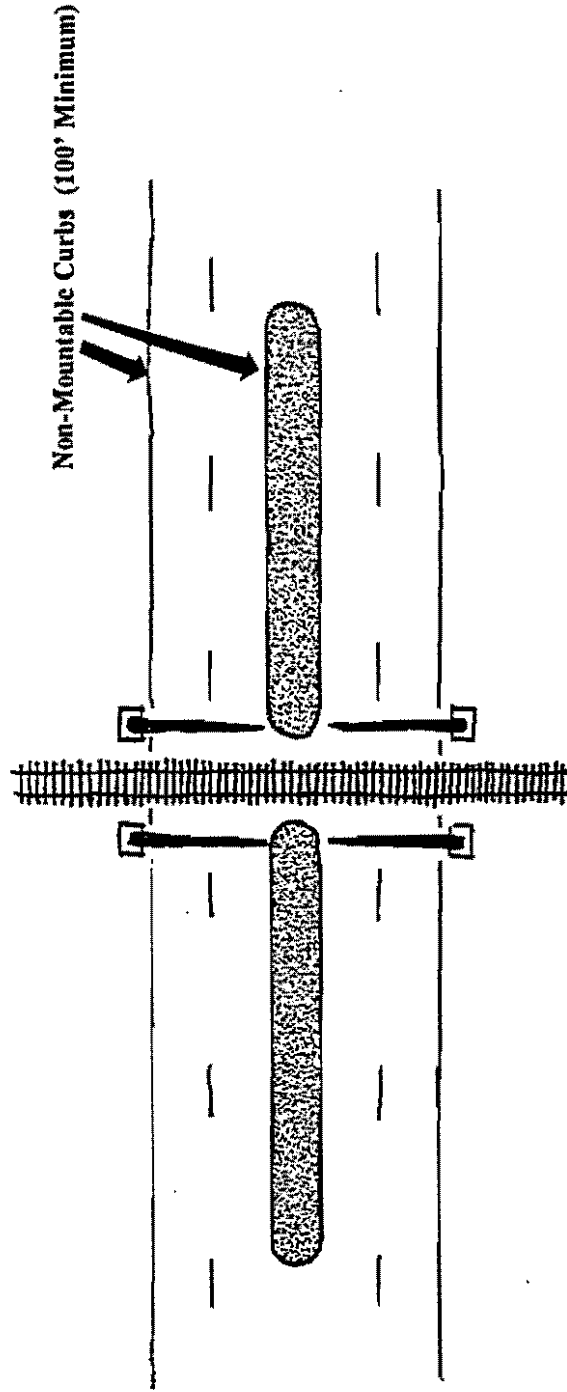
BUS

- TRANSIT CENTER
- PASSENGER TRANSFER LOCATION
- BUS OPERATING FACILITY
- BUS CORRIDORS

GENERAL MOBILITY

- TRANSPORTATION SYSTEM MANAGEMENT
- INTELLIGENT TRANSPORTATION SYSTEMS
- TRAVEL DEMAND MANAGEMENT
- LOCAL ASSISTANCE PROGRAM





**EXHIBIT 5 - CONCEPTUAL DESIGN OF A FOUR-QUADRANT GATE SYSTEM
WITH NON-MOUNTABLE CURBS AND MEDIAN BARRIERS**

APPENDIX

Application of the North Central Texas Council of Government's
 "Railroad/Roadway Grade Separation Needs Assessment:
 A Benefit-Cost Ratio Model," August 1987

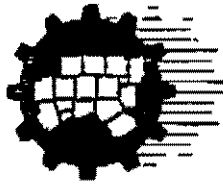
Data Sources:

DTA DeShazo, Tang & Associates, Inc.
 DART Dallas Area Rapid Transit
 COG North Central Texas Council of Governments
 TTI Texas Transportation Institute
 HZ Huitt Zollars
 MODEL Data used from sample problem in the B/C model
 MODEL* Data used from sample problem in the B/C model multiplied by
 a Consumer Price Index of 1.45 (1983 to 1995)

Grade separation is warranted at grade crossings with a benefit-cost ratio
 equal to or exceeding One for the given benefit-cost equation.
 Equation numbers correspond to the document text.

Equation 1:	BLOCKING TIME (HOURS)	0.0668	
	WARNING DELAY (HOURS)	0.0147	MODEL
	NUMBER OF CARS PER TRAIN	50	DART
	AVERAGE LENGTH OF TRAIN CAR (FEET)	55	MODEL
	AVERAGE TRAIN SPEED (MPH)	10	DART
	CONSTANT VALUE (FT/MI)	5280	MODEL
Equation 2:	AVERAGE STOP TIME (HOURS)	0.0334	
	BLOCKING TIME (HOURS)	0.0668	EQN 1
	CONSTANT VALUE	0.50	MODEL
Equation 3:	DELAY PER VEHICLE STOP (PERSON HOURS/VEHICLE)	0.0483	
	AVERAGE DAILY AUTO OCCUPANCY (PERSONS/VEHICLE)	1.31	COG
	ACCELERATION DELAY (HOURS)	0.0035	MODEL
	AVERAGE STOPPING TIME (HOURS)	0.0334	EQN 2
Equation 4:	ROADWAY BLOCKAGE RATIO	0.0056	
	TRAIN FREQUENCY (TRAINS/DAY)	2	DART
	BLOCKING TIME (HOURS/TRAIN)	0.0668	EQN 1
	TRAIN OPERATION PERIOD (HOURS/DAY)	24	DART
Equation 5:	ANNUAL VEHICLE IMPACT (PERSON HOURS OF DELAY/YEAR)	1372	
	DELAY PER VEHICLE STOP (PERSON HOURS/VEHICLE)	0.0483	EQN 3
	AVERAGE DAILY TRAFFIC AT GRADE CROSSING (VEHICLES/DAY)	15000	DTA
	ROADWAY BLOCKAGE RATIO	0.0056	EQN 4
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 6:	TRANSIT PASSENGER DELAY (PERSON HOURS/TRAIN)	0.0000	
	TRAVEL TIME UNDER REDUCED SPEED (PERSON HOURS/TRAIN)	X	ASSUMED
	TRAVEL TIME UNDER NORMAL OPERATING SPEED (PERSON HOURS/TRAIN)	X	ASSUMED
Equation 7:	ANNUAL TRANSIT IMPACT (PERSON HOURS OF DELAY/YEAR)	0.0000	
	TRANSIT PASSENGER DELAY (PERSON HOURS/TRAIN)	0.0000	EQN 6
	DAILY LINE RIDERSHIP (PERSONS/TRAIN/DAY)	0	DART
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 8:	DELAY COST (\$/YEAR)	\$20,450	
	ANNUAL IMPACT (PERSON HOURS OF DELAY) (PASSENGER + TRANSIT)	1372	EQN 5+EQN 7
	VALUE OF TIME (\$/HOUR)	\$14.90	TTI
Equation 9:	FATALITY ACCIDENT RATE (ACCIDENTS/MILLION VMT/YEAR)	0.0013	COG
	NUMBER OF FATAL ACCIDENTS PER YEAR	1.67	COG
	AVERAGE DAILY TRAFFIC AT ALL GRADE CROSSINGS (VEHICLES)	3883396	COG
	CONSTANT VALUE (VEHICLE MILES TRAVELLED)	1000000	MODEL
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 10:	INJURY ACCIDENT RATE (ACCIDENTS/MILLION VMT/YEAR)	0.0066	COG
	NUMBER OF INJURY ACCIDENTS PER YEAR	8.67	COG
	AVERAGE DAILY TRAFFIC AT ALL GRADE CROSSINGS (VEHICLES)	3883396	COG
	CONSTANT VALUE (VEHICLE MILES TRAVELLED)	1000000	MODEL
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL

Equation 11:	PROPERTY DAMAGE ONLY ACCIDENT RATE (ACCIDENTS/MILLION VMT/YEAR)	0.0083	COG
	NUMBER OF PDO ACCIDENTS PER YEAR	11.00	COG
	AVERAGE DAILY TRAFFIC AT ALL GRADE CROSSINGS (VEHICLES)	3883396	COG
	CONSTANT VALUE (VEHICLE MILES TRAVELLED)	1000000	MODEL
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 12:	COST OF FATALITY ACCIDENTS (\$/YEAR)	\$5,934	
	FATALITY ACCIDENT RATE (ACCIDENTS/MILLION VMT/YEAR)	0.0013	EQN 9
	AVERAGE DAILY TRAFFIC AT GRADE CROSSING (VEHICLES/DAY)	15000	DTA
	ACCIDENT COST PER FATAL ACCIDENT (\$/ACCIDENT)	\$920,000	TTI
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 13:	COST OF INJURY ACCIDENTS (\$/YEAR)	\$1,145	
	INJURY ACCIDENT RATE (ACCIDENTS/MILLION VMT/YEAR)	0.0066	EQN 10
	AVERAGE DAILY TRAFFIC AT GRADE CROSSING (VEHICLES/DAY)	15000	DTA
	ACCIDENT COST PER INJURY ACCIDENT (\$/ACCIDENT)	\$34,200	TTI
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 14:	COST OF PDO ACCIDENTS (\$/YEAR)	\$280	
	PDO ACCIDENT RATE (ACCIDENTS/MILLION VMT/YEAR)	0.0083	EQN 11
	AVERAGE DAILY TRAFFIC AT GRADE CROSSING (VEHICLES/DAY)	15000	DTA
	ACCIDENT COST PER PDO ACCIDENT (\$/ACCIDENT)	\$6,600	TTI
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 15:	IDLING TIME PER VEHICLE STOP (HOURS)	0.0369	
	ACCELERATION DELAY (HOURS)	0.0035	MODEL
	AVERAGE STOPPING TIME (HOURS)	0.0334	EQN 2
Equation 16:	ANNUAL IDLING HOURS (HOURS/YEAR)	1048	
	AVERAGE DAILY TRAFFIC AT GRADE CROSSING (VEHICLES/DAY)	15000	DTA
	IDLING TIME PER VEHICLE STOP (HOURS/VEHICLE)	0.0369	EQN 15
	ROADWAY BLOCKAGE RATIO	0.0056	EQN 4
	ANNUALIZATION FACTOR (DAYS/YEAR)	340	MODEL
Equation 17:	ANNUAL IDLING COST (\$/YEAR)	\$838	
	ANNUAL IDLING HOURS (HOURS/YEAR)	1048	EQN 16
	IDLING COST (\$/HOUR)	\$0.80	MODEL*
B/C RATIO:	BENEFIT COST RATIO = (A+B+C+D+E+F+G)/(H+J)	0.11	
A	DELAY COST (\$)	\$20,450	EQN 8
B	COST OF FATALITY ACCIDENTS (\$/YEAR)	\$5,934	EQN 12
C	COST OF INJURY ACCIDENTS (\$/YEAR)	\$1,145	EQN 13
D	COST OF PDO ACCIDENTS (\$/YEAR)	\$280	EQN 14
E	ANNUAL IDLING COST (\$/YEAR)	\$838	EQN 17
F	ANNUAL AT-GRADE CROSSING MAINTENANCE COST (\$/YEAR)	\$1,740	MODEL*
G	ANNUAL AT-GRADE CROSSING SAFETY EQUIPMENT MAINTENANCE COST (\$/YEAR)	\$17,280	HZ
H	ANNUAL GRADE SEPARATION MAINTENANCE COST (\$/YEAR)	\$2,175	HZ
J	ANNUALIZED GRADE SEPARATION INCREMENTAL CONSTRUCTION COST (\$/YEAR)	\$418,761	HZ
CALCULATIONS FOR ANNUALIZED CONSTRUCTION COST USING CAPITAL RECOVERY FACTOR:			
	GRADE SEPARATION		
	Interest rate (%)	10	
	Time (years)	50	
	Capital recovery	0.1009	
	Total Cost--Grade Separation (\$)	\$6,051,934	
	Total Cost--At-Grade Crossing (\$)	\$1,900,000	
	Incremental Total Cost of Grade Separation (\$)	\$4,151,934	
	Annual Cost (\$/YEAR)	\$418,761	



North Central Texas Council of Governments

TO: Tony Tramel
DeShazo, Tang and Associates

FROM: Wes Beckham

DATE: 05-08-96 TELEFAX NUMBER: 214/741-1937

Number of pages (including this cover sheet): 14

MESSAGE Please see attached.

We are transmitting from a Canon FAX-L775. Our telefax number is (817) 640-3026. If you have any problems with this transmittal, please call (817) 695-9240.

Thank you.

TRANSPORTATION DEPARTMENT

616 Six Flags Drive, Centerpoint Two
P. O. Box 5888, Arlington, Texas 76005-5888
(817) 695-9240

A BENEFIT-COST RATIO MODEL

The benefit-cost ratio model measures the benefits of eliminating the annual costs of delay; fatality, injury, and property damage accidents; vehicle idling; easement maintenance; and gate operation at grade crossings with freight and/or transit operation against the cost of grade separation between the railroad and the roadway. Grade separation is warranted at grade crossings with a benefit-cost ratio equal to or exceeding One.

$$\text{Benefit/Cost} = \frac{\begin{array}{l} \text{Delay Cost} \\ \text{Due to} \\ \text{Freight and/or} \\ \text{Transit} \\ \text{Operation} \end{array} + \begin{array}{l} \text{Cost of} \\ \text{Fatality, Injury} \\ \text{and Property} \\ \text{Damage Accidents} \end{array} + \begin{array}{l} \text{Idling Cost} \\ \text{Due to} \\ \text{Fuel, Oil} \\ \text{and} \\ \text{Maintenance} \end{array} + \begin{array}{l} \text{Grade} \\ \text{Crossing} \\ \text{Operation and} \\ \text{Maintenance} \\ \text{Cost} \end{array}}{\begin{array}{l} \text{Annualized Grade Separation} \\ \text{Construction and Maintenance Cost} \end{array}}$$

Calculations of the model's various components are outlined below in order of execution by means of equations.

The period of time during which a railroad/roadway crossing is blocked off to the vehicular traffic is a function of the speed of the passing train as well as the length and the number of its cars. An additional delay term is also added to the total intersection blocking time to account for the gate closure or flashing light warning time before and after the arrival of the train:

$$(1) \text{ Blocking Time} = \text{Warning Delay} + \left(\frac{\begin{array}{l} \text{Number of Cars} \\ \text{Per Train} \end{array} \times \frac{\begin{array}{l} \text{Average Car} \\ \text{Length (ft.)} \end{array}}{\begin{array}{l} \text{Average Train} \\ \text{Speed (mph)} \end{array}} \times 5,280 \right)$$

The average stop time for the roadway traffic encountering a blocked crossing is assumed to be one-half of the total blocking time:

$$(2) \text{ Average Stop Time} = 0.50 \times (\text{Blocking Time})$$

Delay per vehicle passenger stopped at a blocked crossing is a combination of the average stop time and the vehicle's acceleration delay. Thus, multiplying this term by the occupancy of the car will result in the total person hours of delay per vehicle stop:

$$(3) \text{ Person Hours of Delay per Vehicle Stop} = \text{Auto Occupancy} \times \left(\text{Acceleration Delay} + \text{Average Stop Time} \right) = \text{Person Hours Per Vehicle Stop}$$

The annual person hours of delay experienced by automobile passengers at intersections which are blocked due to the passage of trains is the product of the above term, the annual traffic volume at that intersection, and the roadway blockage ratio. The roadway blockage ratio defines the fraction of the daily operating hours of a train which results in the blockage of an at-grade crossing:

$$(4) \text{ Roadway Blockage Ratio} = \frac{\text{Train Frequency} \times \text{Blocking Time}}{\text{Operating Hours per Day}}$$

$$(5) \text{ Annual Impact (Vehicle Passenger Hours of Delay)} = \text{Person Hours of Delay per Vehicle Stop} \times \text{Average Daily Traffic Volume} \times \text{Roadway Blockage Ratio} \times \text{Annualization Factor}$$

Rail operations in urban corridors are usually subject to regulations requiring lower operating speeds when approaching at-grade crossings. Thus, passengers of transit trains experience delays due to the deceleration, maximum speed control, and reacceleration of trains at grade crossings. Person hours of transit passenger delay may be defined as the difference between the passenger's travel time under the regular operating speed and that under overall reduced speed due to the existence of grade crossings along the rail corridor:

$$(6) \text{ Person Hours of Transit Passenger Delay} = \text{Travel Time Under Reduced Speed} - \text{Travel Time Under Normal Operating Speed}$$

$$(7) \quad \begin{array}{l} \text{Annual Transit Impact} \\ \text{(Transit Passenger Hours} \\ \text{of Delay)} \end{array} = \begin{array}{l} \text{Person Hours of} \\ \text{Transit Passenger} \\ \text{Delay} \end{array} \times \begin{array}{l} \text{Daily Line} \\ \text{Ridership} \end{array} \times \begin{array}{l} \text{Annualization} \\ \text{Factor} \end{array}$$

When analyzing a transit corridor, the total annual person hours of delay should be a combination of the vehicle passenger as well as the transit passenger delays.

Hence, annual delay costs can now be determined as shown below:

$$(8) \quad \begin{array}{l} \text{Annual} \\ \text{Delay Costs} \end{array} = \begin{array}{l} \text{Annual Impact in Person} \\ \text{Hours of Delay} \end{array} \times \begin{array}{l} \text{Value of Time (\$/Hour)} \end{array}$$

Another important criterion in the benefits calculation is the prevention of accidents involving motor vehicles and trains at grade crossings. Such accidents are divided into three categories: fatality, injury, and property damage only (PDO) accidents. Accident rates used in this model are defined as the number of accidents per one million of annual traffic volume at grade crossings:

$$(9) \quad \begin{array}{l} \text{Fatality Accident} \\ \text{Rate} \end{array} = \frac{\begin{array}{l} \text{Number of Fatal Accidents per Year} \\ \text{Average Daily Traffic} \\ \text{At Grade Crossings} \end{array}}{1,000,000} \times \begin{array}{l} \text{Annualization} \\ \text{Factor} \end{array}$$

$$(10) \quad \begin{array}{l} \text{Injury Accident} \\ \text{Rate} \end{array} = \frac{\begin{array}{l} \text{Number of Injury Accidents per Year} \\ \text{Average Daily Traffic} \\ \text{At Grade Crossings} \end{array}}{1,000,000} \times \begin{array}{l} \text{Annualization} \\ \text{Factor} \end{array}$$

$$(11) \quad \begin{array}{l} \text{PDO Accident} \\ \text{Rate} \end{array} = \frac{\begin{array}{l} \text{Number of PDO Accidents per Year} \\ \text{Average Daily Traffic} \\ \text{At Grade Crossings} \end{array}}{1,000,000} \times \begin{array}{l} \text{Annualization} \\ \text{Factor} \\ (340) \end{array}$$

Annual accident costs by type of accident can then be obtained as shown below:

$$(12) \text{ Annual Cost of Fatality Accidents} = \text{Fatality Accident Rate} \times \frac{\text{Average Daily Traffic}}{1,000,000} \times \text{Cost of Fatal Accident} \times \text{Annualization Factor}$$

$$(13) \text{ Annual Cost of Injury Accidents} = \text{Injury Accident Rate} \times \frac{\text{Average Daily Traffic}}{1,000,000} \times \text{Cost of Injury Accident} \times \text{Annualization Factor}$$

$$(14) \text{ Annual Cost of PDO Accidents} = \text{PDO Accident Rate} \times \frac{\text{Average Daily Traffic}}{1,000,000} \times \text{Cost of PDO Accident} \times \text{Annualization Factor}$$

Fuel cost of vehicle idling is another type of disutility experienced by motorists stopped at grade crossings. Idling costs occur during vehicle's delay period due to the blockage of the crossing:

$$(15) \text{ Idling Time per Vehicle Stop (hours)} = \text{Acceleration Delay} + \text{Average Stop Time}$$

Calculation of annual idling hours is similar to that of the vehicle passenger hours of delay (equations 4 and 5) less the auto occupancy factor:

$$(16) \text{ Annual Idling Hours} = \text{Average Daily Traffic Volume} \times \text{Idling Time per Vehicle Stop} \times \text{Roadway Blockage Ratio} \times \text{Annualization Factor}$$

Annual idling costs incurred at blocked grade crossings can be calculated as:

$$(17) \text{ Annual Idling Cost} = \text{Annual Idling Hours} \times \text{Hourly Idling Cost}$$

Lastly, railroad/roadway grade separation eliminates the annual cost of materials, operation, and maintenance of safety equipment at grade crossings as well as the crossings' easement upkeep.

INPUT DATA

Table 1 summarizes the input variables and describes the appropriate units of measure. Also listed are some "typical values" which may be used for order of magnitude comparison, or in lieu of site-specific values. The user is encouraged to determine site-specific values for all input variables to provide the highest degree of accuracy possible. It should also be noted that some of these referenced values were derived using data specific to the Dallas-Fort Worth area or the State of Texas (e.g., auto occupancy, accident rates, accident costs).

Tables 2 and 3 pertain to accident data for use in the model. The accident data is segregated in these three tables by accident types which include accidents involving fatalities, injuries, or property damage. The model requires accident rates defined as the number of accidents per one million of annual daily traffic at grade crossings.

Table 4 lists the accident cost per accident from the National Safety Council (NSC) and the Texas Transportation Institute (TTI). NSC advises the use of the TTI accident rates for benefit-cost ratio analyses. TTI accident rates were generated from accident data collected throughout the State of Texas for accidents occurring between trains and automotive vehicles at grade crossings.

TTI's figure assumes a total cost of \$576,322 (in 1983 dollars) per fatality. This cost is composed of the value of a person's life to himself (\$461,506), the value of a person's life to others (\$114,111), insurance administration costs of \$554 per fatality, and accident investigation cost of \$151.

EXAMPLE

The application of the model is illustrated through the following example which demonstrates the model procedure for a hypothetical case of rail freight traffic only.

EXAMPLE 1: EXCLUSIVE FREIGHT OPERATION

Assumptions:

Freight Operation Period = 24 hours/day

Train Frequency = 15 trains/day

Average Daily Traffic at Grade Crossing = 25,000 vehicles

Number of Cars per Train = 35

Average Length of Car = 55 feet

Average Train Speed = 30 mph

Auto Occupancy = 1.38 passengers/vehicle

Warning Delay = 0.01472 hours

Acceleration Delay = 0.0035 hours

Roadway Annualization Factor = 340 days

Value of Time = \$4.00/hour

Fatality Accident Rate = 0.0038

Injury Accident Rate = 0.0162

PDO Accident Rate = 0.0342

Annualized Grade Separation Construction Cost = \$252,150

(\$2.5 Million Amortized Over 50 Years at 10 Percent Interest)

Annual Grade Separation Maintenance Cost = \$1500

Annual At-Grade Crossing Maintenance Cost = \$1200

Annual Crossing Safety Equipment Maintenance Cost = \$500

$$\text{Blocking Time} = 0.01472 + \frac{35 \times 55}{30 \times 5,280} = 0.0269 \text{ hours}$$

$$\text{Average Stop Time} = 0.50 \times 0.0269 = 0.0134 \text{ hours}$$

$$\text{Roadway Blockage Ratio} = (15 \times 0.0269)/24 = 0.0168$$

$$\text{Delay Per Vehicle Stop} = 1.38 \times (0.0035 + 0.0134) = 0.0234 \text{ person hours}$$

$$\text{Annual Impact} = 0.0234 \times 0.0168 \times 25,000 \times 340 = 3,342 \text{ person hours of delay}$$

$$\text{Delay Cost} = 3,342 \times 4.00 = \$13,368$$

$$\begin{aligned} \text{Cost of Fatality Accidents} &= (25,000/1,000,000) \times 340 \times 0.0038 \times 673,387 \\ &= 21,750 \text{ (\$/year)} \end{aligned}$$

$$\begin{aligned} \text{Cost of Injury Accidents} &= (25,000/1,000,000) \times 340 \times 0.0162 \times 12,832 \\ &= 1,767 \text{ (\$/year)} \end{aligned}$$

$$\begin{aligned} \text{Cost of PDO Accidents} &= (25,000/1,000,000) \times 340 \times 0.0342 \times 2,100 \\ &= 610 \text{ (\$/year)} \end{aligned}$$

$$\begin{aligned} \text{Idling Cost} &= 25,000 \times (0.0134 + 0.0035) \times 0.0168 \times 340 \times 0.55 \\ &= 1,327 \text{ (\$/year)} \end{aligned}$$

$$\begin{aligned} \text{Benefit/Cost Ratio} &= \frac{13,368 + (21,750 + 1,767 + 610) + 1,327 + 1,200 + 500}{252,150 + 1500} \\ &= 0.16 \end{aligned}$$

$$\begin{aligned} \text{Benefit/Cost Ratio} &= 38,822/252,150 = 0.16 < 1.00 \\ \text{Therefore, grade separation is not warranted.} \end{aligned}$$

SPREADSHEET APPLICATION

Table 5 illustrates the application of the model through a spreadsheet program format. The example shown specifies a mixed-use rail operation which involves operating freight trains and peak/off-peak transit service on the same right-of-way.

TABLE 1

REQUIRED INPUT DATA FOR NCTCCG
GRADE SEPARATION WARRANT MODEL

Required Input Data	Units	Typical Values
Average Daily Traffic at Grade Crossing	Vehicles/Day	100% Freight 60% Peak 40% Off-Peak
Total Average Daily Traffic at Grade Crossing	Vehicles/Day	
Train Frequency (Freight, Transit Peak, Transit Off-Peak)	Trains/Day	
Train Operation (Freight, Transit Peak, Transit Off-Peak)	Hours/Day	
Number of Cars Per Train	Train/Cars	
Average Length of Train Car	Feet	Freight = 55 Transit = 74
Average Train Speed	Miles/Hour	
Average Daily Auto Occupancy	Passengers Per Vehicle	1.38 Daily 1.25 Peak 1.49 Off-Peak

TABLE 1 (Cont.)

REQUIRED INPUT DATA FOR NCTCOG
GRADE SEPARATION WARRANT MODEL

Required Input Data	Units	Typical Values
Warning Delay	Hours	0.01472 (53 Seconds)
Acceleration Delay	Hours	0.0035 (13 Seconds)
Annualization Factor	Days/Year	340 Freight 280 Transit
Value of Time	\$/Hour	\$4.00 (In 1985 Dollars)
Number of Fatal Accidents at Grade Crossings	Accidents	(See Table 2)
Number of Injury Accidents at Grade Crossings	Accidents	(See Table 2)
Number of PDO Accidents at Grade Crossings	Accidents	(See Table 2)
Accident Cost Per Fatal Accident	\$/Accident	(See Table 4)
Accident Cost Per Injury Accident	\$/Accident	(See Table 4)
Accident Cost Per PDO Accident	\$/Accident	(See Table 4)
Idling Cost*	\$/Hour	\$0.55 (In 1985 Dollars)
Transit Average Travel Time	Hour/Passenger	
Transit Line Ridership	Persons	
Annualized Grade Separation Costs	\$/Year	\$252,150 (In 1985 Dollars)

* Source: AASHTO, "A Manual on User Benefit Analysis of Highway and Bus Transit Improvements," 1978. (Updated Values using CPI).

TABLE 2

DALLAS-FORT WORTH AREA
1985 GRADE CROSSING ACCIDENTS
(Train and Motor Vehicles)

Accident Type	Number of Accidents	
	Dallas County	Tarrant County
Fatal	4 (4 fatalities)	2 (2 fatalities)
Injury	17 (26 injured)	8 (9 injured)
Property Damage Only (PDO)	36	20
Average Daily Traffic At Grade Crossings	3,095,544	1,497,079

TABLE 3

DALLAS-FORT WORTH AREA

ACCIDENTS PER ONE MILLION OF ANNUAL TRAFFIC AT GRADE CROSSING

Accident Type	Accident Rates	
	Dallas County	Tarrant County
Fatal	0.0038	0.0039
Injury	0.0162	0.0157
PDO	0.0342	0.0393

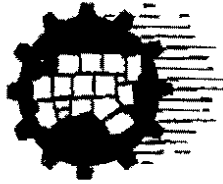
TABLE 4

ACCIDENT COST PER ACCIDENT

	NSC (a) (1985 dollars)	TTI (b) (1983 dollars)
Fatality	\$ 217,200	\$ 673,387
Injury	\$ 13,800	\$ 12,832
PDO	\$ 1,200	\$ 2,100

(a) NSC = National Safety Council

(b) = Texas Transportation Institute, Cost of Motor Vehicle Accidents in Texas, 1985.



North Central Texas Council of Governments

TO: Andy Royse

FROM: Wes Beckham, Senior Transportation Engineer

DATE: 05-24-96 TELEFAX NUMBER: 214/748-7037

Number of pages (including this cover sheet): 5

MESSAGE Attached are the pages showing the updates to the parameters for the
railroad grade separation benefit/cost ratio model as requested. Concerning the accident
cost per accident, please note that I suggest you contact TTI to verify the values. I have
provided updated values based on applying a Consumer Price Index (CPI). However,
the CPI may not be a reliable method of updating accident costs.

We are transmitting from a Canon FAX-L775. Our telefax number is (817) 640-3028. If you have any problems with this transmittal, please call (817) 695-9240.

Thank you.

TRANSPORTATION DEPARTMENT

616 Six Flags Drive, Centerpoint Two
P O Box 5888, Arlington, Texas 76005-5888
(817) 695-9240

TABLE 1

REQUIRED INPUT DATA FOR NCTCOG
GRADE SEPARATION WARRANT MODEL

Required Input Data	Units	Typical Values
Average Daily Traffic at Grade Crossing	Vehicles/Day	100% Freight 60% Peak 40% Off-Peak
Total Average Daily Traffic at Grade Crossing	Vehicles/Day	
Train Frequency (Freight, Transit Peak, Transit Off-Peak)	Trains/Day	
Train Operation (Freight, Transit Peak, Transit Off-Peak)	Hours/Day	
Number of Cars Per Train	Train/Cars	
Average Length of Train Car	Feet	Freight = 55 Transit = 74
Average Train Speed	Miles/Hour	
Average Daily Auto Occupancy	Passengers Per Vehicle	1.38 Daily 1.25 Peak 1.49 Off-Peak

REGIONAL AVG. AUTO OCC. = 1.31

TABLE 2

DALLAS-FORT WORTH AREA
 1985 GRADE CROSSING ACCIDENTS
 (Train and Motor Vehicles)

Accident Type	Number of Accidents	
	Dallas County	Tarrant County
Fatal	1.67 4 (4 fatalities)	2 (2 fatalities)
Injury	8.67 11 (26 injured)	8 (9 injured)
Property Damage Only (PDO)	11.0 36	20
Average Daily Traffic At Grade Crossings	3,095,544 3,883,396	1,497,079

CAR/TRAIN ACCIDENTS FOR DALLAS COUNTY

	1993	1994	1995	TOT	3-YEAR AVG
FATAL ACCIDENTS	3	1	1	5	1.67
INJURY ACCIDENTS	13	7	6	26	8.67
PDO	9	16	8	33	11.00

TABLE 3

DALLAS-FORT WORTH AREA

ACCIDENTS PER ONE MILLION OF ANNUAL TRAFFIC AT GRADE CROSSING

Accident Type	Accident Rates	
	Dallas County	Tarrant County
Fatal	$\frac{0.0013}{0.0038}$	0.0039
Injury	$\frac{0.0066}{0.0162}$	0.0157
PDO	$\frac{0.0083}{0.0342}$	0.0393

$$\text{FATALITY RATE} = \frac{1.67}{\frac{3,883,396}{1,000,000} \times 340} = 0.0013$$

$$\text{INJURY RATE} = \frac{8.67}{\frac{3,883,396}{1,000,000} \times 340} = 0.0066$$

$$\text{PDO RATE} = \frac{11.00}{\frac{3,883,396}{1,000,000} \times 340} = 0.0083$$

TABLE 4

ACCIDENT COST PER ACCIDENT

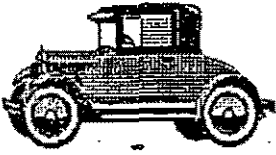
updated using CPI

	NSC (a) (1985 dollars)	TTI (b) (1993 dollars)	TTI (1995 dollars)
Fatality	\$ 217,200	\$ 673,387	\$ 976,411
Injury	\$ 13,800	\$ 12,832	\$ 18,606
PDO	\$ 1,200	\$ 2,100	\$ 3,045

(a) NSC = National Safety Council

(b) TTI = Texas Transportation Institute, Cost of Motor Vehicle Accidents in Texas, 1985.

I TOOK THE TTI VALUES AND UPDATED THEM FROM 1983 \$ TO 1995 \$ BY USING A CONSUMER PRICE INDEX. HOWEVER, IT MAY BE BEST IF YOU CONTACTED TTI TO VERIFY SINCE THE CPI MIGHT NOT TRACK OR TEND ACCORDING TO CPI TRENDS.



Texas Transportation Institute

The Texas A&M University System

Telephone: (817) 261-1661

Fax: (817) 461-1239

System Operation Management Program

Number of pages faxed: 3
(includes title page)

Date: 6/6/96

Time: 11 AM

Sent By: Don Szczesny

Texas Transportation Institute
1600 E. Lamar Blvd., Suite 120
Arlington, TX 76011

TO: Steve Stoner

DT

Special Comments/Instruction:

Here is the update accident analysis,

1995 Data should be available in August

Don



Estimating the Cost of Unintentional Injuries, 1994

The National Safety Council makes estimates of the average costs of fatal and nonfatal unintentional injuries to illustrate their impact on the nation's economy. The costs are a measure of the dollars spent and income not received because of accidents, injuries, and fatalities. It is another way to measure the importance of prevention work.

Estimating costs is not exact — they can only be approximated. The estimates depend on many factors. Effective with the 1993 bulletin, the Council extensively revised its cost estimating procedures. New components were added, new benchmarks and inflation factors adopted, and a new discount rate of 4 percent was assumed. For this reason, the cost estimates shown here are not comparable to those published in the 1992 or earlier bulletins.

This bulletin shows how costs can be estimated for a community or state. The figures should be used to estimate the actual costs to the nation of deaths and injuries. The comprehensive cost figures (discussed below) should be used for cost benefit analyses.

It is important to round an estimate, to show it is an approximation, not an exact figure. The recommended rule is: if the estimate is less than \$3,000,000, round to the nearest \$100,000; if \$3,000,000 to \$10,000,000 round to nearest \$500,000; if \$10,000,000 to \$30,000,000 round to nearest \$1,000,000; if more than \$30,000,000 round to nearest \$5,000,000.

COST OF MOTOR-VEHICLE ACCIDENTS

The calculable costs of motor-vehicle accidents are wage and productivity losses, medical expenses, administrative expenses, motor vehicle damage, and employer costs. (See the definitions on the reverse for a description of what is included in each component.) In 1994, the costs of all these items for each death (not fatal accident), injury (not injury accident), and property damage accident were:

Death	\$ 920,000
Nonfatal Disabling Injury	\$ 34,200
Property Damage Accident (including minor injuries)	\$ 6,600

To estimate the cost of motor-vehicle accidents that occur while on the job, see "Cost of Other Injuries" below.

Motor-vehicle injuries by severity. Estimates are given here of the 1994 costs by severity of injuries, as defined in

sections 2.3.4 through 2.3.6 of the *Manual on Classification of Motor Vehicle Traffic Accidents* (Fifth Edition) ANSI Standard D16.1-1989. These injury severity designations are sometimes referred to as "A," "B," and "C."

"Incapacitating injury"	\$46,000
"Nonincapacitating evident injury"	\$14,000
"Possible injury"	\$ 8,800

These estimates may be helpful for cities and states that do not use the concept of "disabling" injury (see definitions). Estimates used for deaths or property damage accidents are not changed by using these estimates.

Cost-benefit analysis. The figures above are appropriate for measuring the economic loss to a community resulting from past motor-vehicle accidents. They should not be used, however, in computing the dollar value of future benefits due to traffic safety measures because they do not include the value of a person's natural desire to live longer or to protect the quality of one's life. That is, the economic loss estimates do not include what people are willing to pay for improved safety. Recent work has been done to create the necessary theoretical groundwork and empirical valuation of injury costs under the "willingness to pay" or comprehensive cost concept. Estimates in the following section are based on the comprehensive cost concept and should be used for cost-benefit analyses wherever feasible.

Comprehensive costs of motor-vehicle accidents. In addition to the economic cost components listed above, the following comprehensive cost estimates also include a measure of the value of lost quality of life which was obtained through empirical studies of what people actually pay to reduce their safety and health risks. In 1994 the average comprehensive costs on a per person basis were:

Death	\$2,890,000
Incapacitating injury	\$193,000
Nonincapacitating evident injury	\$44,000
Possible injury	\$23,000
No injury	\$2,600

Because the lost quality of life included in these figures does not represent real income not received or expenses incurred, they should not be used to determine the economic impact of past accidents.

COST OF OTHER INJURIES

Because obtaining information on the number and severity of nonfatal injuries from home, public nonmotor-vehicle, and work is difficult, the best approach is to estimate total costs on the "per death" basis using these averages:

Home injuries, per death	\$3,500,000
Public nonmotor-vehicle injuries, per death	\$3,200,000
Work injuries, per death,	
without employer costs	\$22,000,000
with employer costs	\$24,100,000

Multiplying the number of deaths times these average costs gives an estimate of the economic loss due to both deaths and injuries in these categories.

The \$24,100,000 work injury figure with employer costs includes the monetary value of time lost by uninjured workers who were directly or indirectly involved in injuries. Losses from fires are the only property damage costs included in the work, home and public figures. No satisfactory estimates of other property damage costs are available.

While multiple-fatality accidents, such as those discussed for motor-vehicle accidents, probably are not common, one fire, explosion, or other disaster may account for most of a small community's annual accidental fatality total. If this happens, estimate the costs by: (1) counting only one death for the disaster using the cost from the above figures; and (2) adding to this figure the cost for other disaster deaths using the \$920,000 cost per death from the motor vehicle section.

Even though a community generally will not be able to estimate the number of disabling injuries that occur in work, home, and public nonmotor-vehicle injuries, it may be useful to know the approximate economic loss per death and per disabling injury in these three classes of accidents. The table below shows the per case average cost of wage and productivity losses, medical expenses, and administrative expenses.

	DEATH	DISABLING INJURY
Home injuries	\$620,000	\$9,500
Public nonmotor-vehicle injuries	\$620,000	\$ 7,400
Work injuries		
without employer costs	\$780,000	\$26,000
with employer costs	\$790,000	\$29,000

These figures do not include any estimate of property damage or nondisabling injury costs and should not be used to estimate the total economic loss to a community from these kinds of injuries.

To estimate the cost of a work-motor-vehicle accident (motor-vehicle accident while on the job), use work injury costs, including employer costs, if there is reason to believe that uninsured costs resulted from the injury. If no uninsured costs occurred, use figures for either motor-vehicle accidents or work injuries excluding employer costs.

DEFINITIONS

Wage and productivity losses include the total of wages and fringe benefits together with an estimate of the replacement-cost value of household services. Also includes travel delay for motor-vehicle accidents.

Medical expenses include doctor fees, hospital charges, the cost of medicines, future medical costs, and ambulance, helicopter, and other emergency medical services.

Administrative expenses include the administrative cost of public and private insurance, and police and legal costs. Private insurance administrative costs are the difference between premiums paid to insurance companies and claims paid out by them. It is their cost of doing business and is part of the cost total. Claims paid out by insurance companies are not identified separately, as every claim is compensation for losses such as wages, medical expenses, property damage, etc.

Motor-vehicle damage includes the value of property damage to vehicles from motor-vehicle accidents. The cost of normal wear and tear to vehicles is not included.

Employer costs are an estimate of the uninsured costs incurred by employers and represents the money value of time lost by uninjured workers. It includes time spent investigating and reporting injuries, giving first aid, production slowdowns, training of replacement workers, and extra cost of overtime for uninjured workers.

Disabling injury is one which results in death, some degree of permanent impairment, or renders the injured person unable to effectively perform his or her regular duties for a full day beyond the day of injury.

[Note: A brief description of the National Safety Council's cost estimating procedures may be found in the Technical Appendix of *Accident Facts, 1995 Edition*.]

Prepared by Statistics Department
National Safety Council

1121 Spring Lake Drive, Itasca, Illinois 60143

THOMAS WILKINS

Engineers / Architects

Dallas • Fort Worth • Houston • El Paso • Phoenix • Orange County

FACSIMILE TRANSMITTAL

Date: 6/10/96

Fax No.: 748-7037

H-Z Proj. No. 01182221

No. of Pages: 2
(Including Cover Sheet)

TO: Dehua Tang
ATTN: STEVE STOVER

URGENT For Your Review Please Call Upon Receipt Orig. To Follow By Mail

RE: ADDISON CIRCLE

Maintenance Costs for GATED Road-Street
Crossing.

FROM: David Meyer

SENT BY: _____ TIME: _____ DATE: _____

If you had any problems receiving this Facsimile Transmittal please contact Ms. Janet Willis or the individual listed above at (214) 871-3311. Thank you.

June 9, 1996
Ft. Worth, Texas

FAX 1-214-871-0757 - 2 sheets

Hutti-Zollars, Inc.
3131 McKenny Ave. Suite 600
Dallas, TX 75204
Att: Mr. Bill Brown

Dear Sir;

Per our telephone conversation listed below are anticipated annual cost associated with maintenance of a 4 quadrant gated Rail-Street crossing warning system.

At time of Installation;

Test Relays, Cross and Grounds and Megger Underground cables
and set up record sheets ----- \$ 350.00

Vandalism;

This can vary according to area from \$300.00 to 5000.00, average ----- \$2000.00

Gate Arm Damage; 6 gate arms @\$700.00 each = \$4200.00
and 4 hours overtime to replace each, @\$18.00 + 150 % =
\$ 180.00 X 6 = \$1080.00-----Total----- \$5280.00

Gate /Flasher knockdown damage can vary with Auto and Truck traffic
average 1 each year ----- \$6500.00

Normal Maintenance ----- \$2500.00

Normal maintenance Parts and supplies ----- \$1000.00

Cost of Utilities (Electricity) ----- \$ 360.00

If you have any questions concerning the above please advise.

B.B.Gaddis
Signal & Comm. Consultants Corp.
1125 Oak Glen Circle
Ft. Worth, Texas 76114

HUTTZOLI.WPD

HUITT-ZOLLARS, INC.
 3131 McKinney Avenue, Suite 600
 DALLAS, TEXAS 75204

LETTER OF TRANSMITTAL

(214) 871-3311

TO DESHAZO, TANG & ASSOCIATES, INC.
400 SOUTH HORTON, SUITE 330
DALLAS, TX 75202-9802

DATE	5/23/96	JOB NO.	25001182221
ATTENTION	MR. STEVE STONER		
RE:	ADDISON CIRCLE		

WE ARE SENDING YOU Attached Under separate cover via Courier the following items:

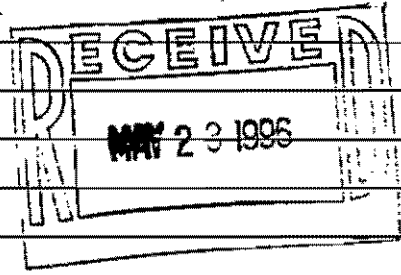
- Shop drawings Prints Plans Samples Specifications
 Copy of letter Change order _____

COPIES	DATE	NO.	DESCRIPTION
1		1	PRELIMINARY OPINION OF PROBABLE COST
1		1	PLANS & PROFILE ALIGNMENT (PRELIMINARY)

THESE ARE TRANSMITTED as checked below:

- For approval Approved as submitted Resubmit _____ copies for approval
 For your use Approved as noted Submit _____ copies for distribution
 As requested Returned for corrections Return _____ corrected prints
 For review and comment _____
 FOR BIDS DUE _____ 19 _____ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____



COPY TO _____ SIGNED: Daniel Mancini

CLIENT: TOWN OF ADDISON

PAGE: 1 OF 4

PROJECT: SPECTRUM DRIVE UNDERPASS

DATE: 1/26/95

DESCRIPTION: FROM NEW ARAPAHO RD., UNDER THE
RAILROAD TO FUTURE MILDRED ST.

BY: HUITT-ZOLLARS, INC.

SUMMARY
OPINION OF PROBABLE CONSTRUCTION COSTS

PAVING	\$1,368,114
STRUCTURES	\$2,287,124
STORM SEWER	\$570,740
WATER AND WASTEWATER	\$213,300
FRANCHISED UTILITIES	\$604,000
CONSTRUCTION SUBTOTAL	\$5,043,278
CONTINGENCIES (20%)	\$1,008,656
CONSTRUCTION TOTAL	\$6,051,934

NOTES: 1. ENGINEERING, TESTING, INSPECTION, GEOTECHNICAL AND SURVEYING
ARE NOT INCLUDED IN THESE COSTS.

2. THE LIMITS OF THESE COSTS ARE FROM STA. 19+50 TO STA. 29+00 AS SHOWN ON
THE DRAWING DATED 1/26/95 PREPARED BY HUITT-ZOLLARS, INC.

PAVING

<u>DESCRIPTION</u>	<u>UNIT</u>	<u>QTY.</u>	<u>UNIT PRICE</u>	<u>TOTAL COST</u>
MOBILIZATION	LS	1	\$300,000.00	\$300,000
CLEARING AND GRUBBING	STA	9.5	\$1,000.00	\$9,500
UNCLASSIFIED STREET EXCAVATION (SOIL)	CY	14518	\$6.00	\$87,108
UNCLASSIFIED STREET EXCAVATION (ROCK)	CY	26443	\$20.00	\$528,860
SIGNALIZATION AT ARAPAHO	LS	1	\$60,000.00	\$60,000
REMOVE EXIST. CONC. PVMT.	SY	70	\$8.00	\$560
REMOVE EXIST. CONC. SIDEWALK	SF	625	\$1.35	\$844
REINF. CONC. STREET HEADER	LF	65	\$7.00	\$455
10" REINF CONC. PAVEMENT	SY	6272	\$25.00	\$156,800
6" LIME STAB. SUBGRADE	SY	2050	\$1.75	\$3,588
HYDRATED LIME	TON	33	\$90.00	\$2,970
4" THERMOPLASTIC LANE MARKER (WHITE)	LF	2380	\$1.00	\$2,380
4" THERMOPLASTIC LANE MARKER (YELLOW)	LF	1900	\$1.00	\$1,900
CONCRETE TRAFFIC BARRIER	LF	950	\$30.00	\$28,500
2" PVC STREET LIGHT CONDUIT	LF	1900	\$3.50	\$6,650
STREET LIGHT & FOUNDATION	EA	10	\$2,500.00	\$25,000
STREET LIGHT PULL BOXES	EA	10	\$200.00	\$2,000
DETOURS AND BARRICADES	MO	18	\$1,500.00	\$27,000
FENCE	LF	1200	\$20.00	\$24,000
MISC. PRIVATE PROPERTY MOD.	LS	1	\$100,000.00	\$100,000
				<hr/>
			PAVING TOTAL	\$1,368,114

STRUCTURES

<u>DESCRIPTION</u>	<u>UNIT</u>	<u>QTY.</u>	<u>UNIT PRICE</u>	<u>TOTAL COST</u>
<u>RETAINING WALL</u>				
STRUCTURAL EXCAVATION (SOIL)	CY	4482	\$6.00	\$26,892
STRUCTURAL EXCAVATION (ROCK)	CY	3903	\$20.00	\$78,060
SHOTCRETE/SUPPORT OF EXCAVATION	SF	20900	\$3.00	\$62,700
DEWATERING	LS	1	\$135,000.00	\$135,000
WALL FOOTING	CY	1906	\$225.00	\$428,850
PRECAST WALL PANELS	SF	28900	\$25.00	\$722,500
CAST IN PLACE WALL PANELS	SF	3000	\$25.00	\$75,000
SELECT FILL	CY	4236	\$12.00	\$50,832
BACKFILL	CY	4028	\$7.50	\$30,210
RETAINING WALL SUBTOTAL				\$1,610,044
<u>DART RAILROAD OVERPASS (LIGHT RAIL)</u>				
42" DIA. DRILLED SHAFTS	LF	500	\$125.00	\$62,500
ABUTMENT CONC.	CY	71	\$375.00	\$26,625
PRESTRESSED TYPE IV BEAMS	LF	600	\$65.00	\$39,000
REINFORCED SLAB	SF	3300	\$10.00	\$33,000
SERVICE WALKWAY	CY	53	\$400.00	\$21,200
APPROACH SLAB	CY	30	\$275.00	\$8,250
WATERPROOFING	SY	378	\$35.00	\$13,230
BALLAST, TIES, RAILS	LF	150	\$120.00	\$18,000
DART OVERPASS SUBTOTAL				\$221,805
<u>SERVICE ROAD OVERPASS</u>				
42" DIA. DRILLED SHAFTS	LF	783	\$125.00	\$97,875
ABUTMENT CONC.	CY	78	\$375.00	\$29,250
PRESTRESSED BOX BEAM 4B34	LF	900	\$95.00	\$85,500
REINFORCED SLAB	CY	45	\$250.00	\$11,250
SIDEWALKS	CY	23	\$225.00	\$5,175
APPROACH SLAB	CY	74	\$275.00	\$20,350
T501 RAIL	LF	355	\$30.00	\$10,650
SER. RD. OVERPASS SUBTOTAL				\$260,050
<u>8'X6' BOX CULVERT (INCLUDES 15" SS)</u>				
42" DIA. DRILLED SHAFTS	LF	200	\$125.00	\$25,000
ABUTMENT CONC.	CY	17	\$375.00	\$6,375
BOX CONCRETE	LF	167	\$450.00	\$75,150
WATERPROOFING	SY	250	\$35.00	\$8,750
8'X6' BOX CULVERT SUBTOTAL				\$115,275
<u>4'X5' BOX CULVERT</u>				
42" DIA. DRILLED SHAFTS	LF	100	\$125.00	\$12,500
ABUTMENT CONC.	CY	10	\$375.00	\$3,750
BOX CONCRETE	LF	126	\$450.00	\$56,700
WATERPROOFING	SY	200	\$35.00	\$7,000
4'X5' BOX CULVERT SUBTOTAL				\$79,950
STRUCTURES TOTAL				\$2,287,124

STORM SEWER

<u>DESCRIPTION</u>	<u>UNIT</u>	<u>QTY.</u>	<u>UNIT PRICE</u>	<u>TOTAL COST</u>
24" CLASS III RCP	LF	350	\$43.00	\$15,050
54" CLASS III RCP	LF	600	\$110.00	\$66,000
7'X6' BOX CULVERT (520 LF)	CY	305	\$450.00	\$137,250
GROUTED RIP-RAP	CY	150	\$100.00	\$15,000
LIFT STATION	EA	1	\$300,000.00	\$300,000
14' INLET	EA	6	\$3,000.00	\$18,000
MISC. EROSION CONTROL	LS	1	\$15,000.00	\$15,000
TRENCH SAFETY DESIGN	LS	1	\$2,000.00	\$2,000
TRENCH SAFETY	LF	1220	\$2.00	\$2,440
STORM SEWER TOTAL				\$570,740

WATER AND WASTEWATER

<u>DESCRIPTION</u>	<u>UNIT</u>	<u>QTY.</u>	<u>UNIT PRICE</u>	<u>TOTAL COST</u>
CONCRETE BLOCKING	CY	50	\$100.00	\$5,000
FITTINGS	TON	4	\$3,000.00	\$12,000
12" WATER MAIN IN SPECTRUM	LF	950	\$120.00	\$114,000
FIRE HYDRANT	EA	2	\$1,200.00	\$2,400
MISC. WATER LINE APPURTENANCES	LS	1	\$25,000.00	\$25,000
TRENCH SAFETY	LF	1550	\$2.00	\$3,100
WATER TEST	LS	1	\$5,000.00	\$5,000
15" WASTEWATER LINE	LF	800	\$40.00	\$32,000
WASTEWATER MANHOLE	EA	4	\$1,200.00	\$4,800
WASTEWATER TEST	LS	1	\$5,000.00	\$5,000
DROP MANHOLE	EA	1	\$5,000.00	\$5,000
WATER & WASTEWATER TOTAL				\$213,300

FRANCHISED UTILITIES

<u>DESCRIPTION</u>	<u>UNIT</u>	<u>QTY.</u>	<u>UNIT PRICE</u>	<u>TOTAL COST</u>
GAS	LF	200	\$20.00	\$4,000
FIBER OPTIC TELEPHONE	LS	1	\$300,000.00	\$300,000
12" PETROLEOUM LINE (250 LF)	LS	1	\$300,000.00	\$300,000
FRANCHISED UTILITIES TOTAL				\$604,000



Dallas Area Rapid Transit

RESOLUTION

RESOLUTION

of the

Dallas Area Rapid Transit
(Executive Committee)

License Agreement for Crossing DARTPAC-Owned Right-of-Way in the City of Grapevine

WHEREAS, in January 1991, DART purchased 52 miles of St. Louis Southwestern Railroad right-of-way (Cottonbelt) from Wylie to Fort Worth; and


WHEREAS, development along the Cottonbelt corridor in the City of Grapevine has resulted in the need for one, at-grade crossing of the DARTPAC-owned St. Louis Southwestern Railroad right-of-way; and

WHEREAS, the City of Grapevine seeks a License Agreement for construction and maintenance of one, at-grade crossing between State Highway 26 (Ira E. Woods Avenue) and Lancaster Drive on the DARTPAC-owned St. Louis Southwestern Railroad right-of-way, outside the DART Service Area.

NOW, THEREFORE, BE IT RESOLVED by the Dallas Area Rapid Transit Board of Directors that:


Section 1: The License Agreement terms and consideration as presented in Closed Session is approved by the Board in principle.

Section 2: The Executive Director or his designee is authorized to negotiate and execute a License Agreement containing the terms and conditions presented to the Board in Closed Session with the City of Grapevine for one, at-grade crossing between State Highway 26 (Ira E. Woods Avenue) and Lancaster Drive, outside the DART Service Area.


Norma Stanton
Secretary


David R. McAtee
Chairman

APPROVED AS TO FORM:

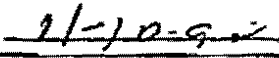


DART Counsel

ATTEST:



Jack W. Evans
Executive Director



Date October 27, 1992



Policy Report

DATE: October 20, 1992

TO: Rail Planning and Development Committee

SUBJECT: License Agreement for Crossing DARTPAC-Owned Right-of-Way in the City of Grapevine

INTRODUCTION

The purpose of this item is to approve an agreement to grant a license to the City of Grapevine for construction and maintenance of one, at-grade public roadway crossing on DARTPAC (Cottonbelt) right-of-way between State Highway 26 (Ira E. Woods Ave.) and Lancaster Drive to provide direct access to Baylor Medical Center. The Committee will be briefed in Closed Session on this item.

RECOMMENDATION

Approval of a resolution authorizing the Executive Director or his designee to negotiate and execute a License Agreement for construction and maintenance of one, public at-grade crossing on DARTPAC (Cottonbelt) right-of-way between State Highway 26 and Lancaster Drive to provide direct access to the Baylor Medical Center.

BACKGROUND

In January, 1991 DART purchased 52 miles of St. Louis Southwestern Railroad right-of-way (Cottonbelt) from Wylie to Ft. Worth for the purpose of right-of-way preservation in the northern segment of the DART Service Area consistent with the approved 1989 System Plan.

The City of Grapevine, a non-member city of the DART Service Area, has requested a License Agreement to cross DART right-of-way for the purpose of constructing street improvements to improve access to Baylor Medical Center. On March 28, 1992, the voters in the City of Grapevine approved bonds for construction of the improvements as shown in Attachment 1. DART staff has examined the proposed crossing location and has determined that the crossing will not prohibit or significantly or unreasonably impair DART's future use of the right-of-way.

At the May 5, 1992 Rail Planning and Development Committee meeting, staff was instructed to develop a policy governing new grade crossings of DART-controlled right-of-way. That policy is under development and is being discussed with the DART member cities and the Texas Department of Transportation (TxDOT) through the Technical Advisory Staff Committee (TASC). Although the

policy is still in draft form, this License Agreement is consistent with the key terms of the proposed policy as discussed with the Rail Planning and Development Committee on July 21, 1992, with the addition of financial consideration.

The Grapevine City Council has been briefed by their staff and supports the License Agreement. Financial consideration is currently under discussion with the Grapevine staff.

DART staff has reviewed the proposed concept design with the City of Grapevine. Staff will brief the Committee on the terms of the proposed License Agreement, and financial consideration in Closed Session.

FINANCIAL CONSIDERATIONS

This agreement will not require the expenditure of funds by DART.

LEGAL CONSIDERATIONS

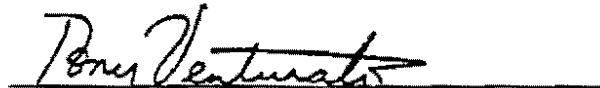
Section 10 (m) of DART's enabling statute authorizes DART to lease, convey, or otherwise dispose of any of DART's rights or interests in real property which are not inconsistent with the efficient operation and maintenance of the system.

Prepared by:

Approved by:



Bowen Weems
Director
Real Estate



Anthony P. Venturato
Assistant Executive Director
Engineering & Construction



Dallas Area Rapid Transit

RESOLUTION

of the

DALLAS AREA RAPID TRANSIT
(Executive Committee)

RESOLUTION

Grant of a License for an At-Grade Public Road Crossing in Grapevine

WHEREAS, the City of Grapevine has requested an extension of Industrial Boulevard to cross the Cotton Belt railroad right-of-way at-grade; and

WHEREAS, by Board Resolution No. 960033, DART adopted a policy to reduce the number of public and private at-grade crossings; and

WHEREAS, the Federal Railroad Administration and the Texas Department of Transportation have similar policies to eliminate or consolidate public and private at-grade, highway-rail crossings; and

WHEREAS, DART in a cooperative effort with the Cities of Grapevine and Southlake have worked to consolidate and/or close two at-grade crossings in Grapevine.

NOW, THEREFORE, BE IT RESOLVED by the Dallas Area Rapid Transit Board of Directors that the President/Executive Director or his designee is authorized to execute a license for an at-grade public road crossing in Grapevine, as shown in Attachments 1 and 2, subject to DART and Grapevine approving and agreement providing that Grapevine will identify two public or private at-grade crossings in Grapevine, Texas, which shall be closed at no expense to DART.

Sandy Greyson
Sandy Greyson
Secretary

Billy J. Ratcliff
Billy J. Ratcliff
Chairman

APPROVED AS TO FORM:

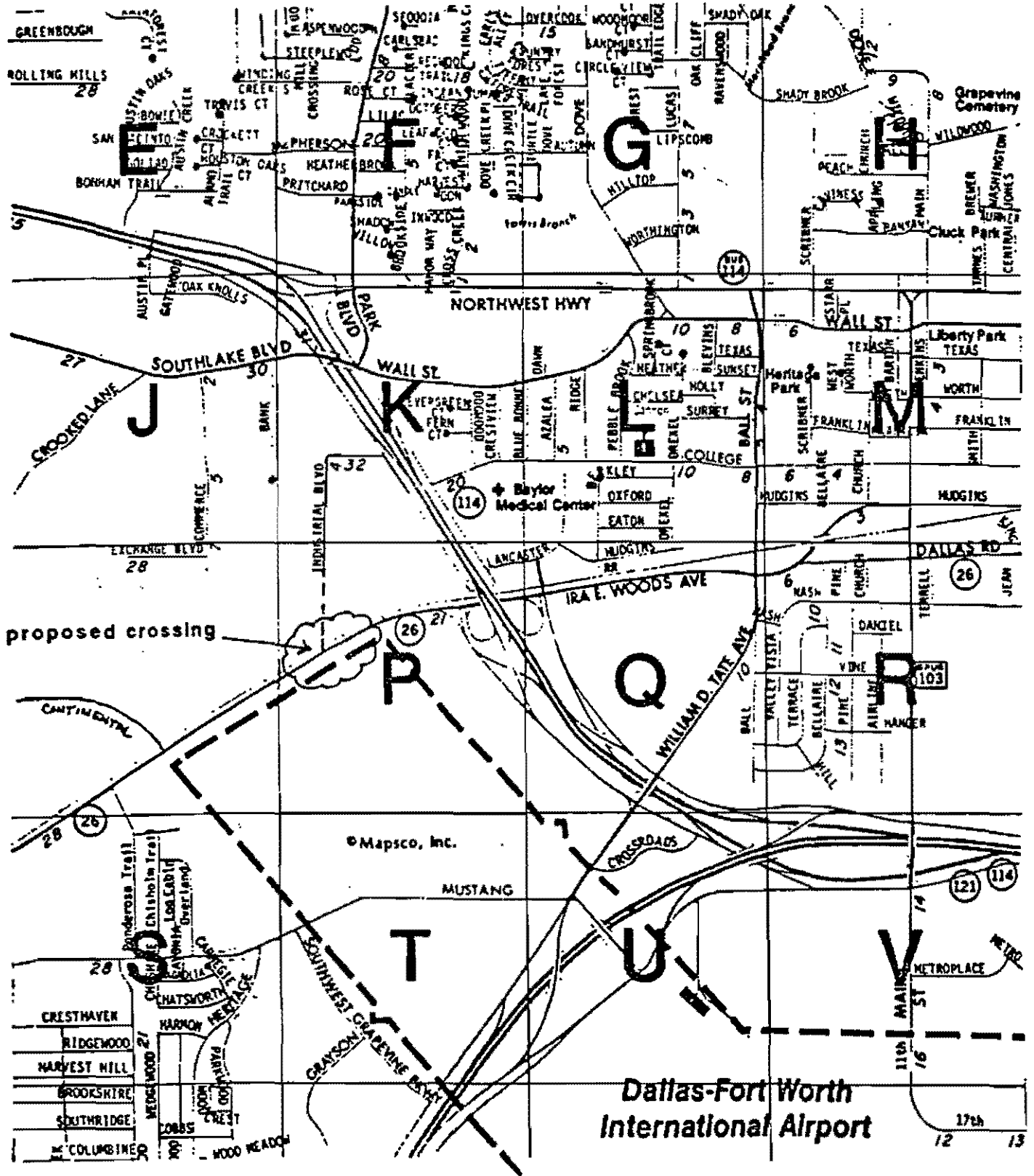
ATTEST:

Jillie A. Crosby
DART Counsel

Roger Snoble
Roger Snoble
President/Executive Director

May 28, 1996
Date

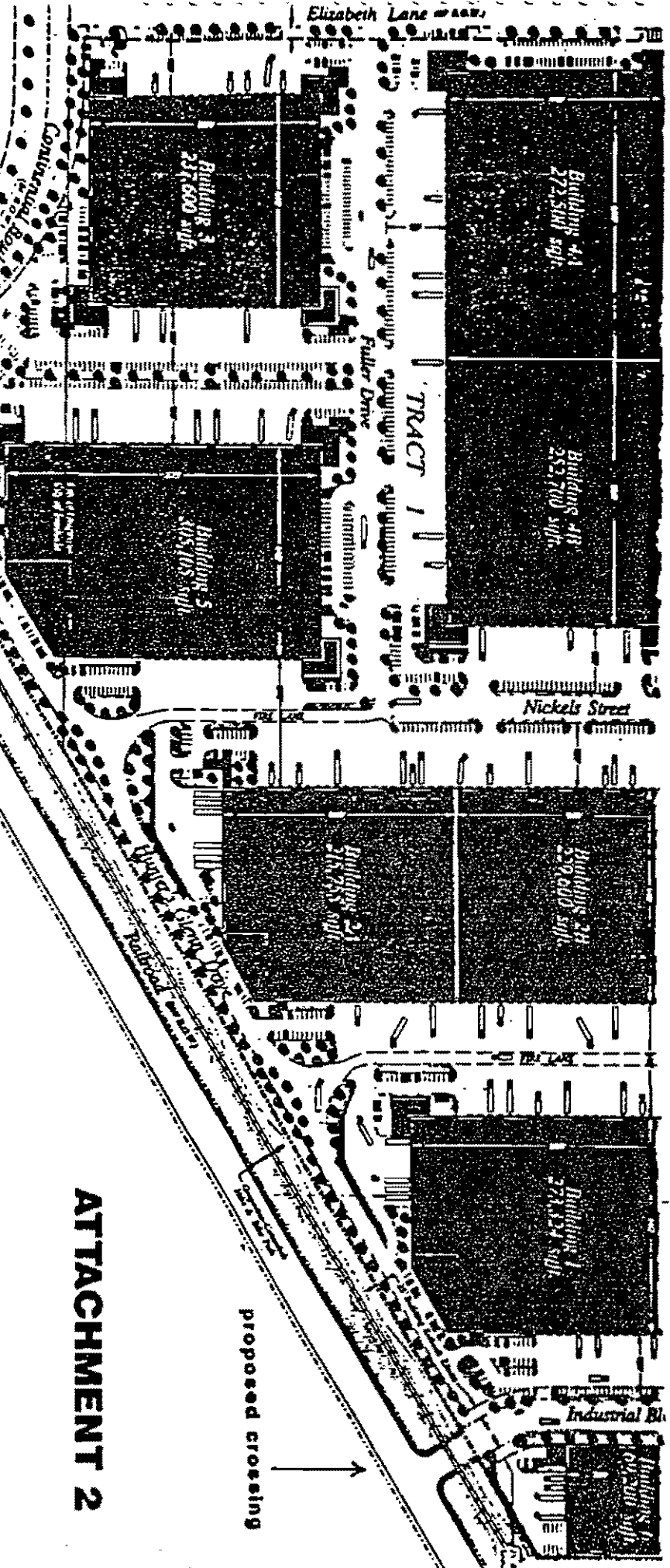
ATTACHMENT 1



960109

TRACT 2

Elizabeth Lane

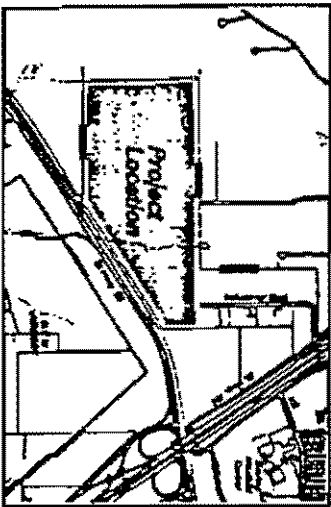


State Highway 26

Nickels Street

Industrial Bl.

proposed crossing



ATTACHMENT 2

Agenda Report

DART

Attachments 1 and 2: Maps	Voting Requirements: majority
------------------------------	----------------------------------

DATE: May 28, 1996

SUBJECT: Grant of a License for an At-Grade Public Road Crossing in Grapevine

RECOMMENDATION

Approval of a resolution authorizing the President/Executive Director or his designee to execute a license granting an at-grade public road crossing to the City of Grapevine, subject to the elimination and closure of at least two public or private at-grade road crossings elsewhere in Grapevine, Texas.

DISCUSSION

- The City of Grapevine is requesting an extension of Industrial Boulevard to cross the Cotton Belt in Grapevine at-grade (see Attachments 1 and 2).
- Existing alternative access is available to the site, including an existing at-grade crossing within 1/2 mile of the proposed crossing.
- By Board Resolution No. 960033, DART adopted a policy to reduce the number of public and private at-grade crossings.
- The Federal Railroad Administration and Texas Department of Transportation have similar policies encouraging railroads to reduce the overall number of at-grade crossings.
- DART, the City of Grapevine, the City of Southlake, developers and property owners have worked to consolidate and/or close two existing private road crossings in Grapevine to help accommodate the new at-grade public crossing.
- The recommended resolution conditions approval of the at-grade license to the closure of two public or private at-grade crossings in Grapevine.

LEGAL CONSIDERATION

Section 452.054 of the Texas Transportation Code authorizes DART to exercise any power necessary or convenient to carry out its responsibility.

DRAFT

**RESOLUTION
of the**

**DALLAS AREA RAPID TRANSIT
(Executive Committee)**

Grant of a License for an At-Grade Public Road Crossing in Grapevine

WHEREAS, the City of Grapevine has requested an extension of Industrial Boulevard to cross the Cotton Belt railroad right-of-way at-grade; and

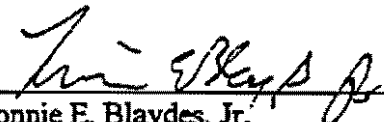
WHEREAS, by Board Resolution No. 960033, DART adopted a policy to reduce the number of public and private at-grade crossings; and

WHEREAS, the Federal Railroad Administration and the Texas Department of Transportation have similar policies to eliminate or consolidate public and private at-grade, highway-rail crossings; and

WHEREAS, DART in a cooperative effort with the Cities of Grapevine and Southlake have worked to consolidate and/or close two at-grade crossings in Grapevine.

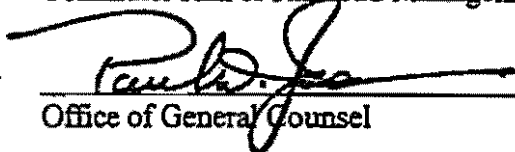
NOW, THEREFORE, BE IT RESOLVED by the Dallas Area Rapid Transit Board of Directors that the President/Executive Director or his designee is authorized to execute a license for an at-grade public road crossing in Grapevine, as shown in Attachments 1 and 2, subject to closure of two public or private at-grade road crossings in Grapevine, Texas.

Prepared by:



Lonnie E. Blaydes, Jr.
Vice President
Commuter Rail & Railroad Management

Approved as to form:



Office of General Counsel

Approved by:



Roger Snoble
President/Executive Director

WM. KYLE KEAHEY

frontage roads and coordinated with TxDOT. The result was that TxDOT was comfortable with DART's crossing of the frontage roads.

~~The~~ Collins Boulevard crosses over the DART R-O-W and is not an issue. However, several years ago, Richardson requested two "connectors" across DART's tracks. The DART Board approved these connectors between Collins + the NB frontage roads for h. Central (US 75).

As for Plano Parkway, staff has conducted the analysis which shows substantial volumes, but adequate queuing capacity. We are still in discussions with



Plano staff, but they are

FROM THE DESK OF

3

WM. KYLE KEAHEY

very much in favor of staff's recommen-
dation for an at-grade crossing.

I hope this info will help
with your response to Tony Tranel.
If more detail is necessary, please
call or see me.

- Kyle.

