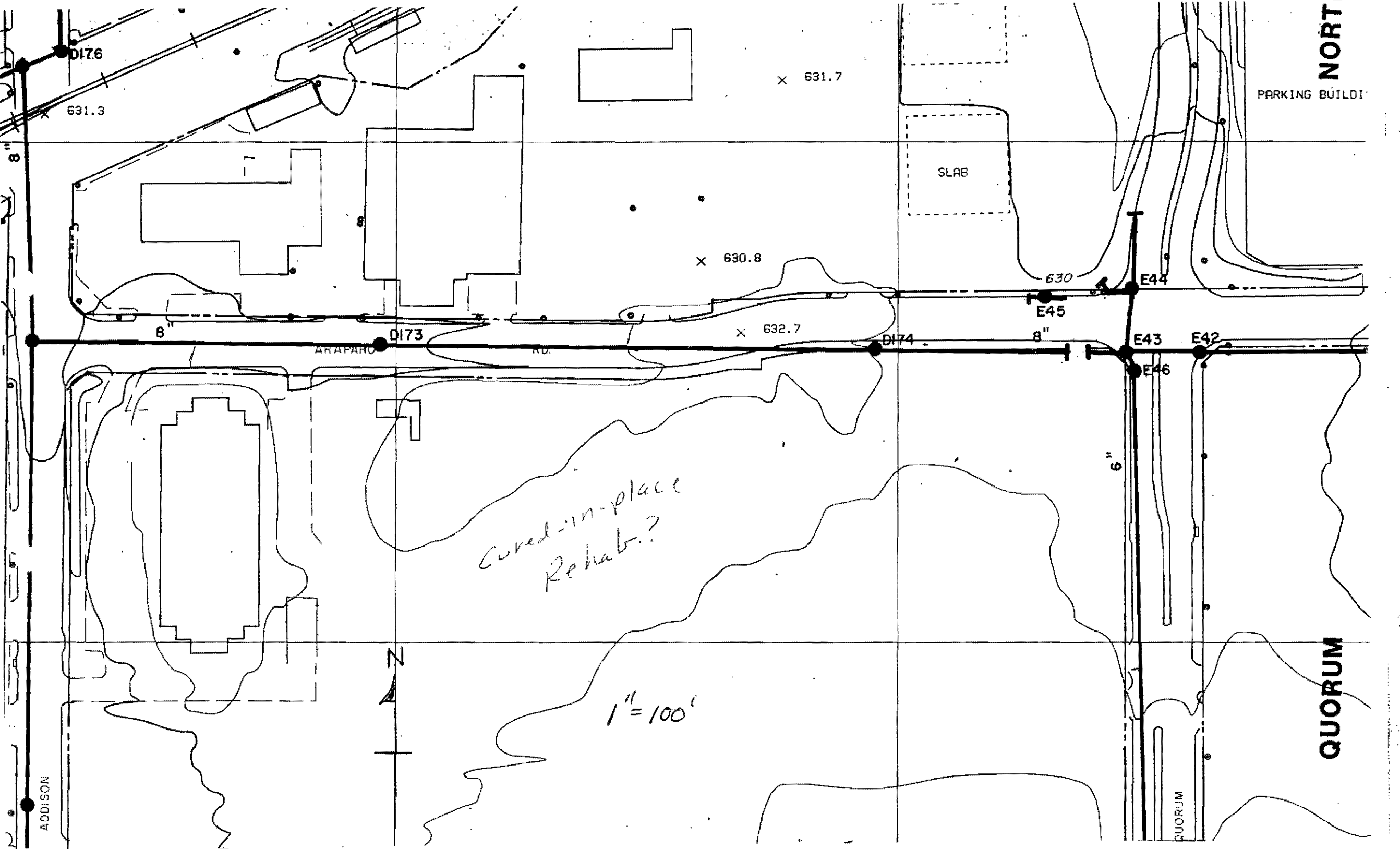


2000-3 Arapaho Road
Pavement Study - 1997

N/ENV/R-
onmentall



NORTH

PARKING BUILDING

SLAB

D176

631.3

X 631.7

X 630.8

630

E44

E45

X 632.7

D174

8"

E43

E42

E46

8"

D173

ARAPAHO RD.

6"

Cured-in-place Rehab.?

1" = 100'



QUORUM

QUORUM

ADDISON

CERTIFICATE

STATE OF TEXAS
COUNTY OF DALLAS

WHEREAS, Adelstein Investments/First Continental Development Corporation, are the owners of a tract of land situated in the City of Addison, Dallas County, Texas, and being a part of the City of Addison Survey, Abstract 482 Adams Street Willburn Survey, Abstract 1580, and also being a part of Quorum North, an addition to the City of Addison, Texas, as recorded in Volume 80005, Page 1768, of the Map Records of Dallas County, Texas; and being more particularly described as follows:

COUNTY CLERK'S OFFICE
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SPECIFIED

BEGINNING at a point for corner at the intersection of the westerly right-of-way line of Dallas North Parkway (100 feet from centerline), and the northerly right-of-way line of Arapaho Road (variable width at this point);
THENCE South 77° 05' 09" West along the said northerly line of Arapaho Road a distance of 103.88 feet (see angle point, TRENCE South 85° 25' 21" West continuing along said northerly line a distance of 177.18 feet to the beginning of a curve to the left;
THENCE in a westerly direction continuing along said northerly line of Arapaho Road and along said curve the left having a radius of 830.96 feet, a central angle of 21° 28' 35", and an arc length of 311.57 feet to the end of said curve to the left;
THENCE South 63° 56' 46" West continuing along said northerly line of Arapaho Road a distance of 93.80 feet to a point for corner;
THENCE North 26° 03' 10" West a distance of 414.80 feet to a point for corner in the southerly line of said 100.00 foot wide St. Louis and Southwestern Railroad right-of-way;
THENCE North 66° 12' East along said southerly line of said Dallas North Parkway a distance of 824.12 feet to a point for corner in the westerly line of said Dallas North Parkway;
THENCE South 13° 45'-00" along said westerly line of Dallas North Parkway a distance of 107.37 feet (same beginning of a curve to the right;

THENCE in a southerly direction continuing along said westerly line and along said curve to the right, being a radius of 2191.83 feet, a central angle of 11° 25' 11", and an arc length of 436.61 feet to the end of said curve to the right and to the POINT OF BEGINNING and containing 348,385 square feet, more or less, or 7.9578 acres.

NOT, THEREFORE NOW ALL MEN BY THESE PRESENTS:

THAT Adelstein Investments/First Continental Development Corporation do hereby adopt this plat designating the herein described property as **ADLESTEIN ADDITION**, in addition to the City of Addison, Texas. The easements shown thereon are hereby reserved for the purposes as indicated. No buildings, fences, trees, shrubs or other improvements or growths shall be constructed, reconstructed or placed upon, over or across the easements as shown. Said easements being hereby reserved for the mutual use and accommodation of all public utilities using or desiring to use same. And any public utility shall have the right to remove and keep removed all or parts of any buildings, fences, trees, shrubs or other improvements or growths which in any way may endanger or interfere with the construction, maintenance or efficiency of its respective system on the easements, and all public utilities shall at all times have the full right of ingress and egress to or from and upon said easements for the purpose of constructing, reconstructing, inspecting, patrolling, maintaining and adding to or removing all or parts of its respective system without the necessity of application of proceedings for the permission of anyone. All public utilities shall have the right of ingress and egress in place property for the purpose of reading meters and any maintenance and service required or ordinarily performed by such utility.

This plat approved subject to all platting ordinances, rules, regulations and resolutions of the City of Addison, Texas; and subject to all platting ordinances, rules, regulations and resolutions of the City of Addison, Texas; and subject to all platting ordinances, rules, regulations and resolutions of the City of Addison, Texas; and subject to all platting ordinances, rules, regulations and resolutions of the City of Addison, Texas;

WITNESS my hand at Addison, Texas, this the 11 day of February, 1981.

ADLESTEIN INVESTMENTS/FIRST CONTINENTAL DEVELOPMENT CORPORATION
By: Charles D. Schindl, President
Charles D. Schindl, President

STATE OF TEXAS
COUNTY OF DALLAS

BEFORE ME, the undersigned authority, on this day personally appeared Charles D. Schindl, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and considerations therein expressed and in the capacity therein stated.

GIVEN under my hand and seal of office this the 11 day of February, 1981

COUNTY CLERK'S OFFICE
POSITIONS OF THIS
DOCUMENT ARE
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SPECIFIED

SURVEYOR'S DECLARATION

KNOW ALL MEN BY THESE PRESENTS:

THAT I, Robert G. Mood of Raymond L. Goodson, Jr., Inc., do hereby declare that I prepared this plat from actual and accurate survey of the land in accordance with the platting rules and regulations of the City of Addison, Texas.

This property is subject to any and all easements shown and not recorded.

STATE OF TEXAS
COUNTY OF DALLAS

BEFORE ME, the undersigned authority on this day personally appeared Robert G. Mood, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and considerations therein expressed and in the capacity therein stated.

GIVEN under my hand and seal of office, this the 11 day of February, 1981.

CERTIFICATE OF APPEL

APPROVED BY THE CITY OF ADDISON, DALLAS COUNTY, TEXAS, this the 14 day of April, 1981.

Mayor Robert G. Mood
Secretary Robert G. Mood

DALLAS NORTH PARKWAY
D-1178117 E-219183 T-219183 T-456.65

FILED
COUNTY CLERK
DALLAS COUNTY
APR 17 1981
3:01 PM

FILE PLAT
ADLESTEIN ADDITION
A SUBDIVISION OF PART OF
G.A.L. FISHER SURVEY, ABST. 482
FEDERAL MILWAUKEE HIGHWAY, ADST. 1980
CITY OF ADDISON, TEXAS

FOR
ADLESTEIN INVESTMENTS / CONTINENTAL DEVELOPMENT CORPORATION
C/O SHEPHERD & BOYD ARCHTS.
3307 E. HICKENBURG BL. DALLAS, TEXAS

RAYMOND L. GOODSON, JR., INC. CONSULTING ENGINEERS
3409 OAK GROVE, DALLAS, TEXAS 75246-3409

1075 1676

81075/1696

COUNTY CLERK'S OFFICE
CITY OF DALLAS
1075 1676

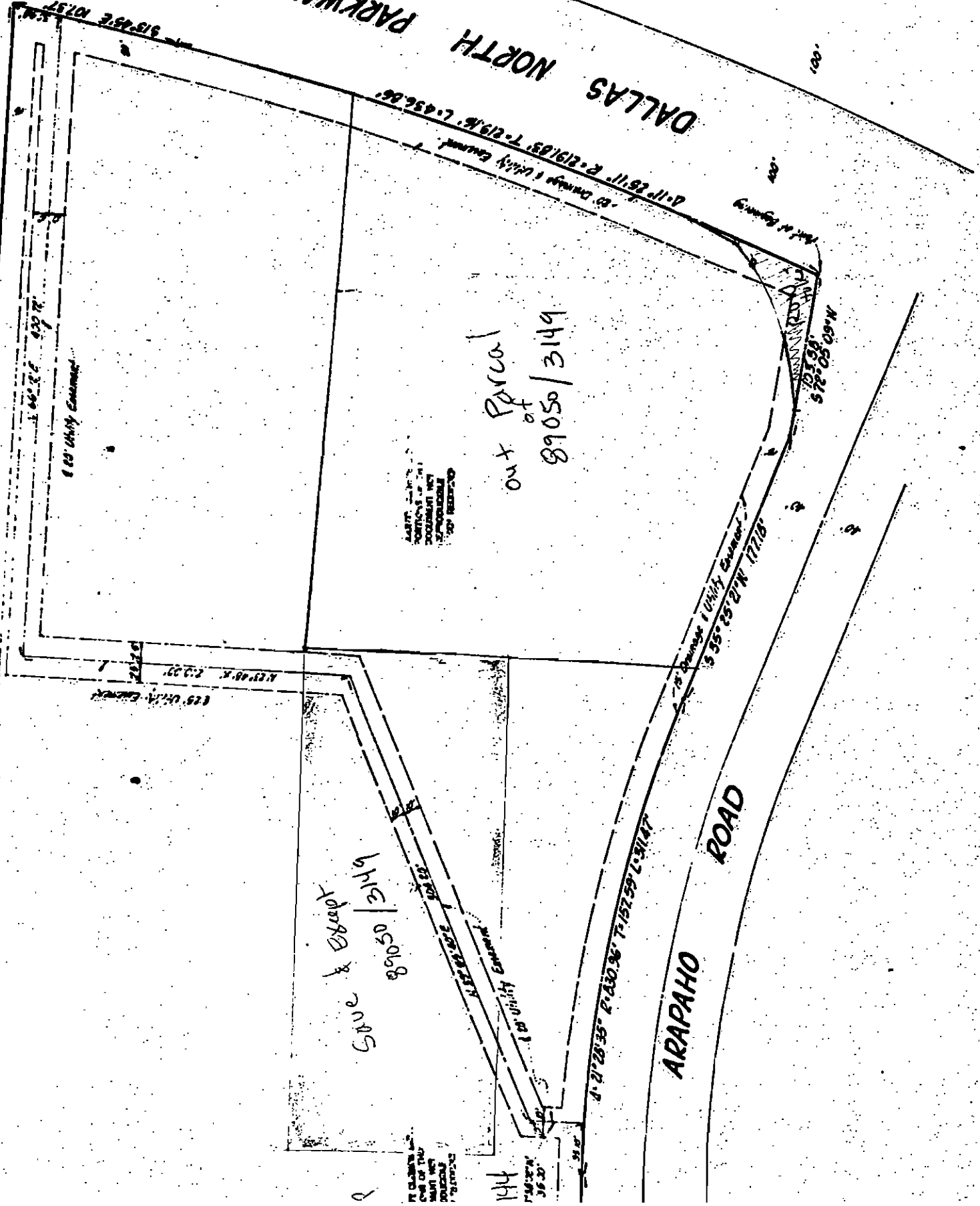
COUNTY CLERK'S OFFICE
CITY OF DALLAS
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COUNTY CLERK'S OFFICE
CITY OF DALLAS
1075 1676

ST LOUIS & SOUTHWESTERN RAILROAD

1166-1215
1075 1676



COUNTY CLERK'S OFFICE
CITY OF DALLAS
1075 1676

COUNTY CLERK'S OFFICE
CITY OF DALLAS
1075 1676

1075 1700

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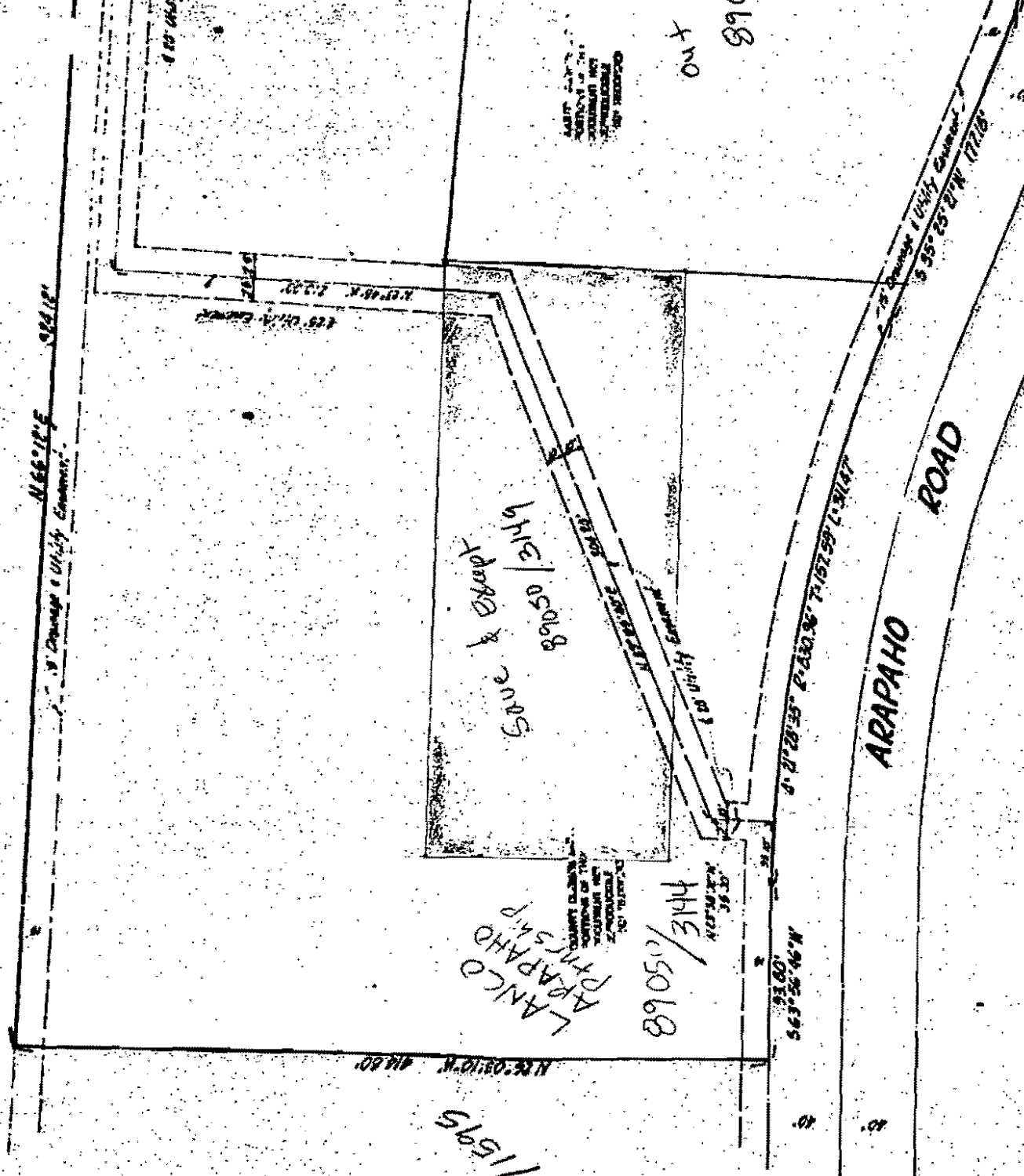
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81018 / 51018

NOT TO SCALE
FOR INFORMATION ONLY
NO WARRANTIES
ARE MADE

ST LOUIS & SOUTHWESTERN RAILROAD

166.12' E
1.7' 1/2" Drainage & Utility Easement



RTD
92088/1595

LANCO
ARAPAHO
PTH 5/1
PTH 5/1

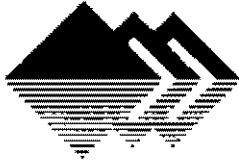
SAUCE & OILS

OUT
890

ARAPAHO ROAD

NO. 1522
81075 1700

81075



August 25, 1997
TMI Report No. DE 97-045

Mr. Kenneth A. Roberts, P.E.
Huitt-Zollars, Inc.
3131 McKinney Avenue, Suite 600
Dallas, TX 75204-2489

Re: Pavement Studies
Arapaho Road
Dallas Parkway To Quorum Drive
Addison, Texas

Dear Mr. Roberts:

Submitted here are the results of our pavement studies to evaluate the impact of DART bus traffic on our recommended concrete pavement thickness for Arapaho Road. This study was performed in accordance with our proposal dated July 22, 1997 (Proposal P971275DE).

PROJECT DESCRIPTION

Arapaho Road will be relocated from about 500 feet east of Dallas North Tollway west to Addison Road. The number of lanes will range from 4 to 6 lanes. The existing pavement section from the tollway to 500 feet west of the tollway is shown on street plans to consist of a 6-inch concrete pavement over a 6-inch lime stabilized subgrade.

Terra-Mar, Inc. performed a pavement study for the new Arapaho Road alignment in 1994. The results of this study were presented in our geotechnical Report No. DE 94040, dated September 29, 1994. A 10-inch reinforced PCC (Portland cement concrete) pavement over a 6-inch lime treated subgrade was recommended. This pavement section was based on the projected traffic provided by the Town of Addison and a concrete flexural strength of 550 psi.

A new DART bus transit center is planned near Arapaho Road. Due to the additional bus traffic, the recommended 10-inch thick pavement section was reevaluated. The

Mr. Kenneth A. Roberts, P.E.
Huitt-Zollars, Inc.
TMI Report DE97-045
August 21, 1997
Page 2 of 4

results of this evaluation are presented in this report. The remaining service life of the 500 feet of existing pavement was also evaluated to assist in determining whether or not this section of pavement should be removed and replaced with the same pavement thickness required for the new pavement.

PAVEMENT ANALYSIS AND RECOMMENDATIONS

METHOD OF ANALYSES

The pavement design analyses were performed in accordance with AASHTO Guide for Design of Pavement Structures (1986). The design criteria used in the analyses are presented in Table 1. Traffic data shown in Table 1 for the number of automobiles and trucks per day and the traffic growth rate for cars and trucks were provided by the Town of Addison's Public Works Department.

Anticipated DART bus traffic was provided by Mr. Gary Hufstedler with DART. Neoplan AN 440 and MCI buses are expected. The axle loads used in the analyses were based on the assumption that 50 percent of the buses would be full, and 50 percent of the buses would be half-full each day. The anticipated 400 daily bus trips on weekdays and an assumed 150 daily bus trips on weekends were assumed to occur as soon as the transit center opened. A one-percent growth in the number of bus trips was projected over the 20-year design period.

NEW PAVEMENT SECTION

The 10-inch pavement section was evaluated for the additional bus traffic. These analyses indicated that the pavement should be increased to 11.0 inches for a concrete pavement with flexural strength of 550 psi. If the concrete flexural strength was increased to 650 psi, a 10.0-inch thick pavement section was found to be adequate.

We recommend that a 10-inch thick pavement with a 650 psi flexural strength over a six-inch lime treated subgrade be used. The concrete flexural strength should be based on the third-point method of testing, ASTM C 78.

Mr. Kenneth A. Roberts, P.E.
Huitt-Zollars, Inc.
TMI Report DE97-045
August 21, 1997
Page 3 of 4

TRAFFIC CAPACITY OF EXISTING PAVEMENT SECTION

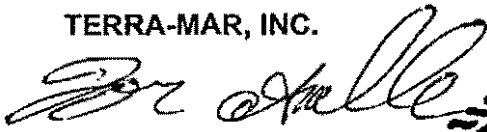
The existing pavement section consists of a 6-inch concrete pavement over a 6-inch lime stabilized subgrade. The traffic capacity of this pavement section was estimated to be 424,500 E-18s over a design period of 20 years. If the existing pavement section is subjected to the proposed traffic loading, then its design life could be less than 5 years.

CLOSURE


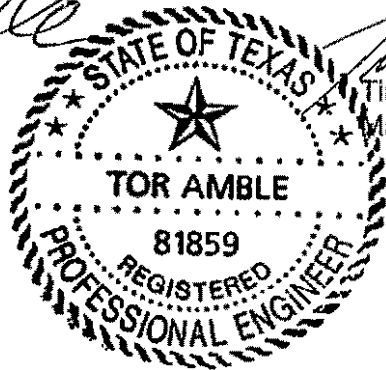
We appreciate the opportunity to be of further assistance on this project. Please call if there are any questions, or when we may be of further service.

Sincerely,

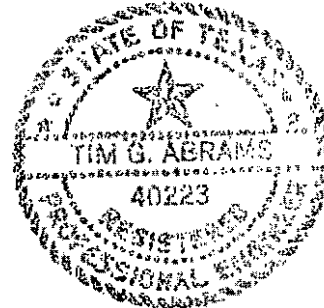
TERRA-MAR, INC.



Tor Amble, P.E.
Staff Engineer



Tim G. Abrams, P.E.
Manager, Geotechnical Services



Copies Submitted: (3)

TABLE 1 – PAVEMENT DESIGN PARAMETERS

Pavement Design Criteria

Roadway Class:	Major Arterial
Traffic Count (1993):	9,120 vehicles per day in one direction
Annual Traffic Growth:	3.5 % for passenger cars and fully loaded 18-wheelers 1.0 % for buses
Traffic Count (1997):	10,465 vehicles per day in one direction
Heavy Truck Traffic:	220 vehicles per day (2.1 %)
Bus Traffic:	400 vehicles per day Monday through Friday 150 vehicles per day Saturday and Sunday
Number of Lanes:	2 lanes in each direction
Design Life:	20 years
Beginning Serviceability Index	4.5
Terminal Serviceability Index:	2.5
Reliability:	90 %
Percentage of E-18s in design lane:	90 %
Traffic Loading, design lane:	14,664,293 E-18s / design life

Subgrade Soil Design Parameters

Soil Type	Clay
USCS classification:	CH
Modulus of subgrade reaction (k):	100 psi / inch
Modified modulus of subgrade reaction with a 6-inch lime stabilized subgrade:	150 psi / inch

Design Axle Loads

Passenger Cars:	2 kip front single axle 2 kip rear single axle
Heavy Trucks:	12 kip front single axle 34 kip middle tandem axle 34 kip rear tandem axle
Axle Load Empty Neoplan AN 440 Bus:	10.2 kip front single axle 17.88 kip rear single axle
Axle Load Half-Full Neoplan AN 440 Bus:	11.85 kip front single axle 20.94 kip rear single axle
Axle Load Full Neoplan AN 440 Bus:	13.5 kip front single axle 24.0 kip rear single axle
Axle Load Empty MCI Bus:	10.4 kip front single axle 19.8 kip rear single axle
Axle Load Half-Full MCI Bus:	12.4 kip front single axle 20.9 kip rear single axle
Axle Load Full MCI Bus:	14.4 kip front single axle 22.0 kip rear single axle