



PUBLIC WORKS & UTILITIES DEPARTMENT
Engineering Services
901 West Bond Street Suite 100 Lincoln, NE 68521
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August 23, 2013

Board of Public Roads Classifications and Standards
Attn: LeMoyne D. Schulz
Secretary for the Board
P.O. Box 94759
Lincoln, NE 68509-4759

Re: Request for Relaxation of Minimum Design Standards for Lane Widths
Street Rehabilitation: Van Dorn Street from 33rd Street to 48th Street
City Project 701773

Dear LeMoyne,

The City of Lincoln is in the preliminary design phase for a rehabilitation project on Van Dorn Street from 33rd Street to 48th Street. With this letter, the City of Lincoln is formally submitting a request to the Nebraska Board of Public Roads Classifications and Standards Committee (Board of Classifications) for a Relaxation Request (RR) on this project. This RR would require a relaxation of the minimum lane width found in the "Nebraska Board of Public Roads Classifications and Standards Minimum Design Standards (MDS)". Title 428, Chapter 2, Section 001.15 of the MDS requires a minimum lane width of 11 feet for arterial streets. The City of Lincoln is requesting an RR to use 10-foot wide lane widths along three segments of Van Dorn Street; 1st - 33rd St. to 37th St., 2nd - 37th St. to 150 feet west of 40th St., and 3rd - 250 feet east of 40th St. to 48th St.. The City of Lincoln is seeking an RR for each of these segments and asks that each segment be considered and decided upon independently.

EXISTING SEGMENT

From 33rd St. to 37th St. along Van Dorn Street the existing roadway width is 26 feet as measured from back of curb to back of curb. This segment has head to head traffic with parking on the south side of the roadway during non-school hours. The posted speed limit for the segment is 30 mph.

From 37th St. to 150 feet west of 40th St. along Van Dorn Street the existing roadway width is 31 feet as measured from back of curb to back of curb. It is striped to provide two 10-foot wide through lanes and a 9.5-foot wide center two-way left turn lane (TWLTL). The posted speed limit for the segment is 35 mph.

From 250 feet east of 40th St. to 48th St. along Van Dorn Street the existing roadway width is 31 feet as measured from back of curb to back of curb. It is striped to provide two 10-foot wide through lanes and a 9.5-foot wide center two-way left turn lane (TWLTL). The posted speed limit for the segment is 35 mph.

PAVEMENT MANAGEMENT SYSTEM

These segments of Van Dorn Street were evaluated in the City of Lincoln's Pavement Management System. The system rates street segments in four categories based on an Overall Condition Index (OCI). The four categories of pavement rating and their associated OCI ranges are as follows: Poor 0-40, Fair 40-55, Good 55-70, and Very Good 70-100. Street segments that receive Fair and Good ratings are considered to be ideal candidates for rehabilitation work. Street segments that receive a rating of Poor are considered to be in a condition beyond rehabilitation and reconstruction would need to be considered.

The segment of Van Dorn Street from 33rd Street to 37th Street has an OCI of 32 which gives it a rating of Poor and is therefore considered to be in need of reconstruction.

The segment of Van Dorn Street from 37th Street to 40th Street has an OCI of 40 which gives it a rating of Poor and is therefore considered to be in need of reconstruction.

The segment of Van Dorn Street from 40th Street to 48th Street has an OCI of 35 which gives it a rating of Poor and is therefore considered to be in need of reconstruction.

ADJACENT SEGMENTS

Van Dorn Street has no adjacent segment at 33rd St. The existing cross-section on the adjacent segment of Van Dorn Street, east of 48th St., is a median divided five-lane roadway consisting of 11-foot lanes and a dedicated left turn lane. The National and Nebraska Functional Classifications for this adjacent segment do not match the segments within the project. The National and Nebraska Functional Classifications for this adjacent segment are Minor Arterial and Other Arterial, respectively.

PROJECT SCOPE

The scope of work for this project consists of widening the existing Van Dorn Street to a three-lane roadway with 10-foot lanes between 33rd St. and 37th St. – one through lane in each direction and a center TWLTL. The existing curb and gutter between 37th St. and 48th St. is in poor condition and is in need of replacement. This project will also replace the existing curb and gutter between 37th St. and 48th St. and widen it from 31 feet to 32 feet, adding only 6 inches to either side. All rehabilitation work includes replacing and/or building new 8-inch concrete base with a 2 ½-inch asphalt overlay on the through lanes, as well as milling 2 inches of existing asphalt over the TWLTL and overlaying with 2 ½ inches of new asphalt.

TRAFFIC/CRASH DATA COMPARISON

The segment of Van Dorn Street from 33rd Street to 40th Street currently has an average daily traffic (ADT) volume of 6,050 vehicles/day with 0.5% attributed to truck traffic. The design year (2040) ADT is 6,100 vehicles/day with truck traffic expected to remain constant at 0.5%.

The segment of Van Dorn Street from 40th Street to 48th Street currently has an average daily traffic (ADT) volume of 6,400 vehicles/day with 1.25% attributed to truck traffic. The design year (2040) ADT is 6,500 vehicles/day with truck traffic expected to remain constant at 1.25%.

In the past three years, the segment of Van Dorn Street from 33rd St. to 37th St. has had 6 crashes. The types of crashes are shown below:

Van Dorn Street, 33rd St. to 37th St., Existing 27-foot wide roadway

Sideswipe	Driveway	Backing	Parked	Rear End	Right Angle	Ran Off Road	Turning	Head On	Other	Total
0	0	0	0	3	2	0	1	0	0	6

In the past three years, the segment of Van Dorn Street from 37th St. to 150 feet west of 40th St. has had 15 crashes. The types of crashes are shown below:

Van Dorn Street, 37th St. to 150 feet west of 40th St., Existing 31-foot wide roadway

Sideswipe	Driveway	Backing	Parked	Rear End	Right Angle	Ran Off Road	Turning	Head On	Other	Total
0	2	1	0	1	6	2	2	0	1	15

In the past three years, the segment of Van Dorn Street from 250 feet east of 40th St. to 150 feet west of 48th St. has had 8 crashes. The types of crashes are shown below:

Van Dorn Street, 250 feet east of 40th St. to 150 feet west of 48th Street, Existing 31-foot wide roadway

Sideswipe	Driveway	Backing	Parked	Rear End	Right Angle	Ran Off Road	Turning	Head On	Other	Total
1	1	0	0	2	3	0	1	0	0	8

The City of Lincoln currently has no 34-foot wide streets with two through lanes plus a TWLTL against which to compare this data; however the City does have 33-foot wide roadways with the same lane configurations. Therefore, the City has compared this data to 33-foot wide roadways and other 31-foot wide streets with similar traffic volumes, speed limits and the same lane configuration. Data on those streets is listed below:

N. 33rd Street, Holdrege Street to Huntington Avenue, 31-foot wide roadway

Sideswipe	Driveway	Backing	Parked	Rear End	Right Angle	Ran Off Road	Turning	Head On	Other	Total
4	0	2	1	21	15	5	11	1	3	63

S. 48th Street, N Street to Randolph Avenue, 31-foot wide roadway

Sideswipe	Driveway	Backing	Parked	Rear End	Right Angle	Ran Off Road	Turning	Head On	Other	Total
5	3	2	0	44	16	6	6	0	4	86

S 48th Street, Pioneers Street to Highway 2, 33-foot wide roadway

Sideswipe	Driveway	Backing	Parked	Rear End	Right Angle	Ran Off Road	Turning	Head On	Other	Total
8	4	2	0	31	8	4	10	0	3	70

The total number of crashes for these segments of Van Dorn Street is 29. By comparison, these segments of Van Dorn Street experienced fewer overall crashes than both S. 48th Street and N. 33rd Street from Holdrege to Huntington. The difference can be seen in the number of "Rear End" crashes, and the number of "Right Angle" crashes. This segment of Van Dorn Street is through a residential area with numerous residential driveways as well as one High school with primary access driveways onto Van Dorn Street. The existing narrower roadway width (31 feet) has not led to an above average number of crashes.

AASHTO GREENBOOK

"A Policy on Geometric Design of Highways and Streets" (the Green Book) published by the American Association of State and Highway Transportation Officials has been recognized by the FHWA as "the principal source for design values and ranges for highway and roadway design criteria and other geometric elements" according to the July 2007 edition of FHWA's "Mitigation Strategies for Design Exceptions." Therefore, the City requests that design criteria outlined in the

2011 edition of the Green Book be taken into account, in addition to Nebraska state design standards, when considering this request.

As stated in Chapter 4 (Cross-Section Elements) of the 2011 Green Book, lanes within the traveled way should range in width from 9 to 12 feet. A lane width of 10 feet is considered acceptable for low-speed facilities in urban areas and continuous TWLTLs widths of 10 to 16 feet are described as “optimum design”. The amount of truck traffic also must be considered when determining the appropriate lane width for the facility. The applicable Nebraska standard for lane width on Arterial streets is currently more stringent than the accepted national criteria and Van Dorn Street has very little truck traffic (1.25%). Approving this Request for Relaxation of the State standard of 11-foot lane widths to allow for 10-foot lane widths still meets the national design criteria recognized by the FHWA.

Chapter 3 (Elements of Design) of the 2011 Green Book establishes minimum standards for sag vertical curves. The primary design criterion for a sag vertical curve is headlight sight distance; which serves as the basis for the tables presented in the Green Book. The Green Book states that “fixed-source lighting is desirable” for sag vertical curves shorter than the minimum standards. Van Dorn Street is lit by street lights for the whole length of the project. Therefore, the minimum standards for sag vertical curves in the Green Book are not a control for this project.

EVALUATION OF PROJECT SEGMENTS

The following is a summary of the segment conditions and reasons for the request.

LANE WIDTH FROM 33RD STREET TO 37TH STREET

This segment of roadway is centered on the section line. There is currently 30 feet of Right-of-Way to the north of the section line and 40 feet to the south of the section line. As a result the proposed roadway will be shifted to the south by an amount that minimizes the impact to adjacent trees while shifting the roadway closer to the center of existing Right-of-Way. That shift is 1.5 feet for 10-foot lanes and 3.5 feet for 11-foot lanes. It is estimated that 10* additional trees will be impacted in order to achieve 11-foot lanes in this section.

LANE WIDTH FROM 37TH STREET TO 150 FEET WEST OF 40TH STREET

This segment of roadway is centered on the section line. The amount of Right-of-Way varies greatly in this segment. As a result the proposed roadway will remain centered on the section line. The parkspace width becomes 2 feet narrower on each side of the road and would vary between 3.5 feet and 8.0 feet. The ideal parkspace width is typically 6 feet or greater on a collector to allow for snow storage, ease of mowing maintenance, and a sense of security for pedestrians. It is estimated that 6* additional trees will be impacted in order to achieve 11-foot lanes in this section.

LANE WIDTH FROM 250 FEET EAST OF 40TH STREET TO 48TH STREET

This segment of roadway is centered on the section line. The amount of Right-of-Way varies greatly in this segment. As a result the proposed roadway will remain centered on the section line. The parkspace width becomes 2 feet narrower on each side and would vary between 3.5 feet and 8.0 feet. The ideal parkspace width is typically 6 feet or greater on a collector to allow for snow storage, ease of mowing maintenance, and a sense of security for pedestrians. It is estimated that 2* additional trees will be impacted in order to achieve 11-foot lanes in this section.

*For purposes of this discussion a tree is considered impacted if the face of the tree will be within 2 feet of the new back of curb. Additional trees will likely be impacted, but that impact won't be discovered until excavation for construction occurs.

If the request for a Relaxation of the minimum lane width design standard is denied and these segments of Van Dorn Street is required to be widened to accommodate 11-foot lane widths, the following impacts would result.

From 33rd Street to 37th Street:

1. The total cost of construction would increase by \$29,150 from \$428,400 to \$457,550, a 7% increase.
2. Approximately 11 trees would be removed at an estimated value of \$13,200 including value lost to the adjacent properties and cost for tree replacement.

Based on the numbers above a total of at least \$42,350 of economic costs would result if this segment of Van Dorn Street was widened to accommodate 11-foot lane widths.

From 37th Street to 40th Street:

1. The total cost of construction would increase by \$55,850 from \$397,600 to \$453,450, a 14% increase.
2. Approximately 6 trees would be removed at an estimated value of \$7,200 including value lost to the adjacent properties and cost for tree replacement.

Based on the numbers above a total of at least \$63,050 of economic costs would result if this segment of Van Dorn Street was widened to accommodate 11-foot lane widths.

From 40th Street to 48th Street:

1. The total cost of construction would increase by \$52,000 from \$795,000 to \$847,000, a 7% increase.
2. Approximately 2 trees would be removed at an estimated value of \$2,400 including value lost to the adjacent properties and cost for tree replacement.

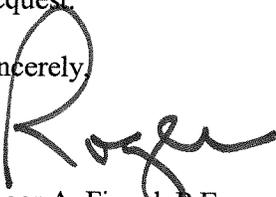
Based on the numbers above a total of at least \$54,400 of economic costs would result if this segment of Van Dorn Street was widened to accommodate 11-foot lane widths.

Plan sheets showing typical sections, aerials comparing the existing, proposed and design standard conditions for the Van Dorn Street project, pictures of the existing corridor, and a resolution from the City Council supporting the Relaxation of the Nebraska lane width standard for this project are also included for your reference.

With this letter, the City of Lincoln requests approval from the Nebraska Board of Public Roads Classifications and Standards for this Request for Relaxation (RR). This RR would require a relaxation of the minimum lane width found in the "Nebraska Board of Public Roads Classifications and Standards MDS".

Please arrange to have the City on the agenda for the next available Board meeting to be held in Lincoln. Please notify me if you have any questions concerning this matter. Thank you for your time and consideration of this Relaxation Request.

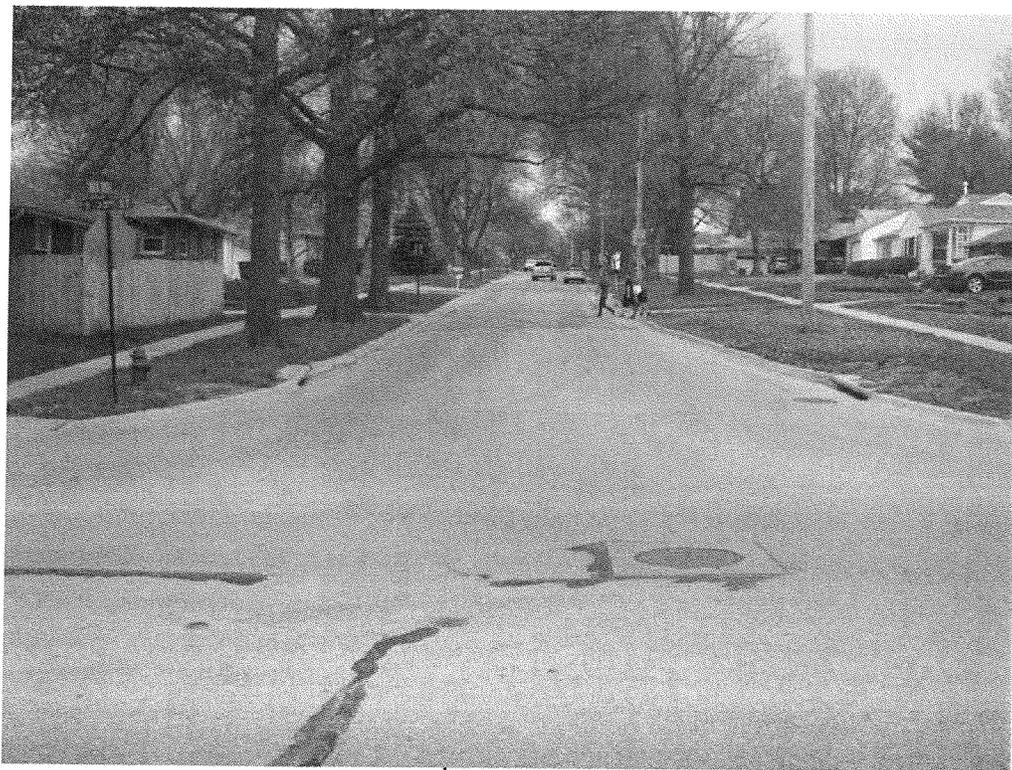
Sincerely,



Roger A. Figard, P.E.
City Engineer & City Street Superintendent
City of Lincoln, Nebraska

Encl.

cc: Thomas Shafer, City of Lincoln
Kent Evans, City of Lincoln



1. At 33rd Street Looking East



2. West of 37th Street Looking East



3. East of 37th Street Looking West



4. East of 40th Street Looking West



5. West of 44th Street Looking East



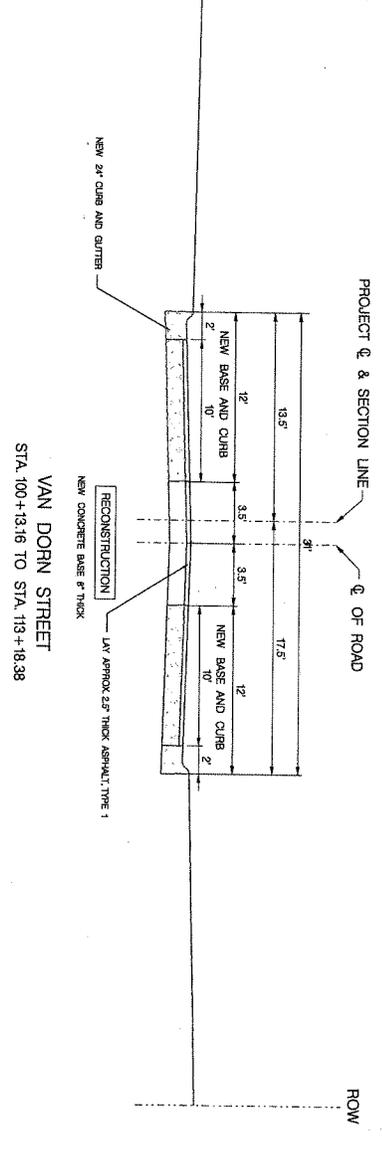
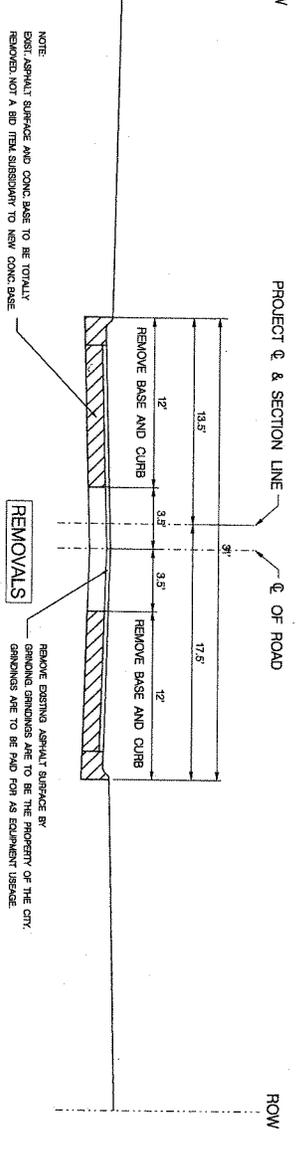
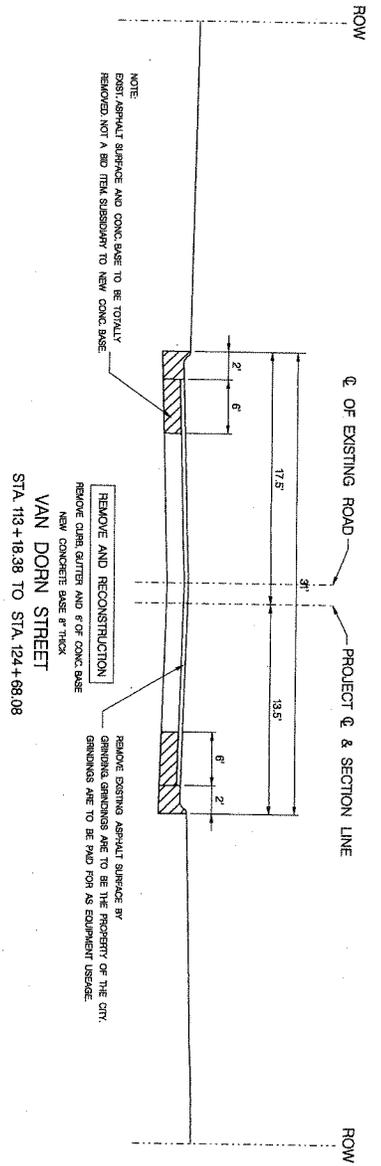
6. East of 44th Street Looking West



7. East of 46th Street Looking West



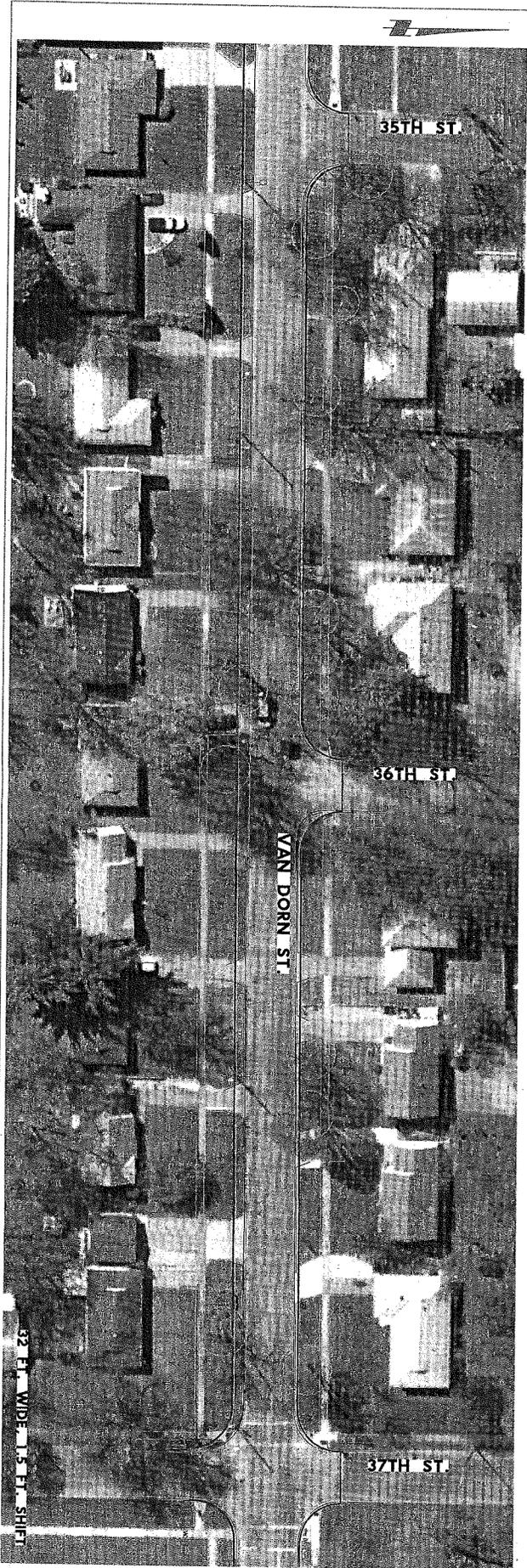
8. At 48th Street Looking West



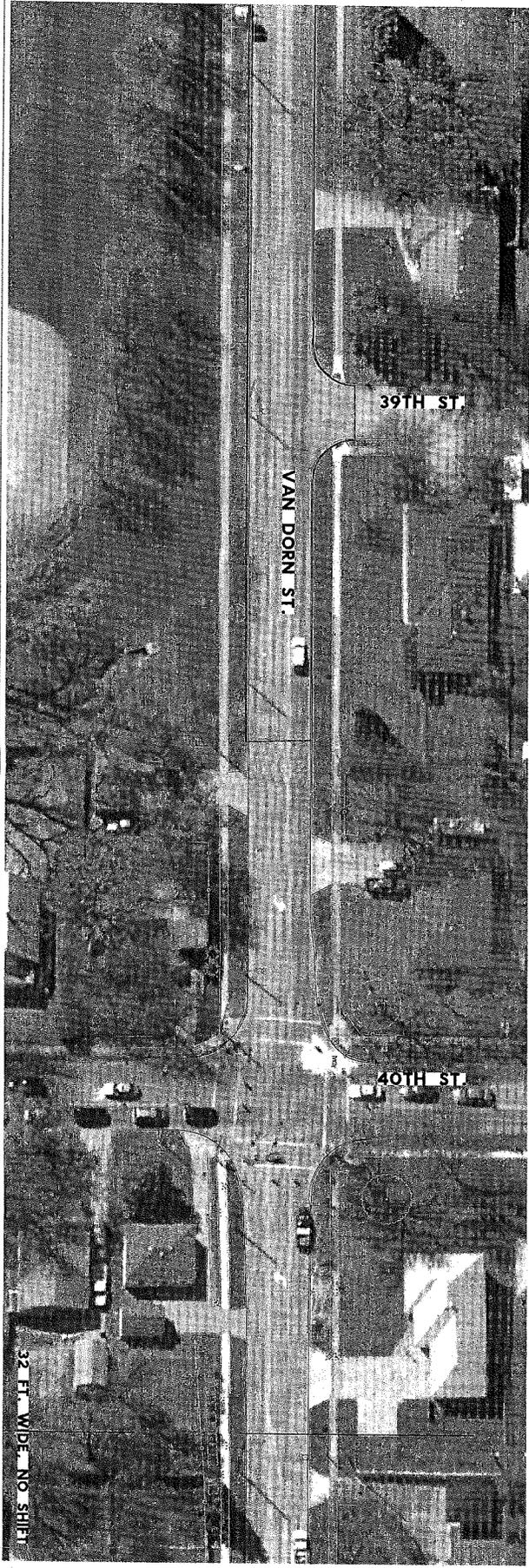
NOTE:
 CONTRACTOR SHALL CONSTRUCT WHEEL
 CHAIR PAIRS AT EACH INTERSECTION
 AS DIRECTED BY ENGINEER.

TYPICAL SECTIONS

PROJECT NO.	70773	SHEET NO.	3
CITY OF LINCOLN	DATE	DESIGNED BY	11/11
117-E-81	APPROVED BY	DATE	11/11



70173 32-1
SPEECE LEWIS SITE DESIGN
ARCHITECTS
1000 S. ...
DENVER, CO ...

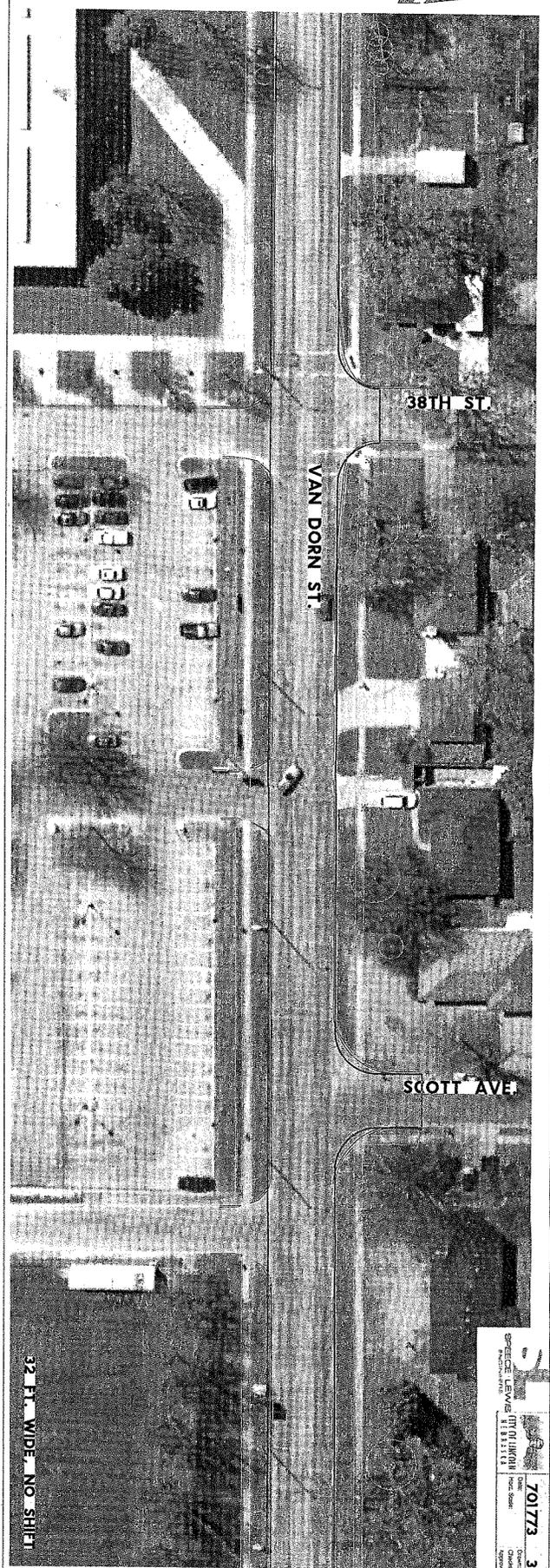


39TH ST.

VAN DORN ST.

40TH ST.

32 FT. WIDE NO. SHI 11



38TH ST.

VAN DORN ST.

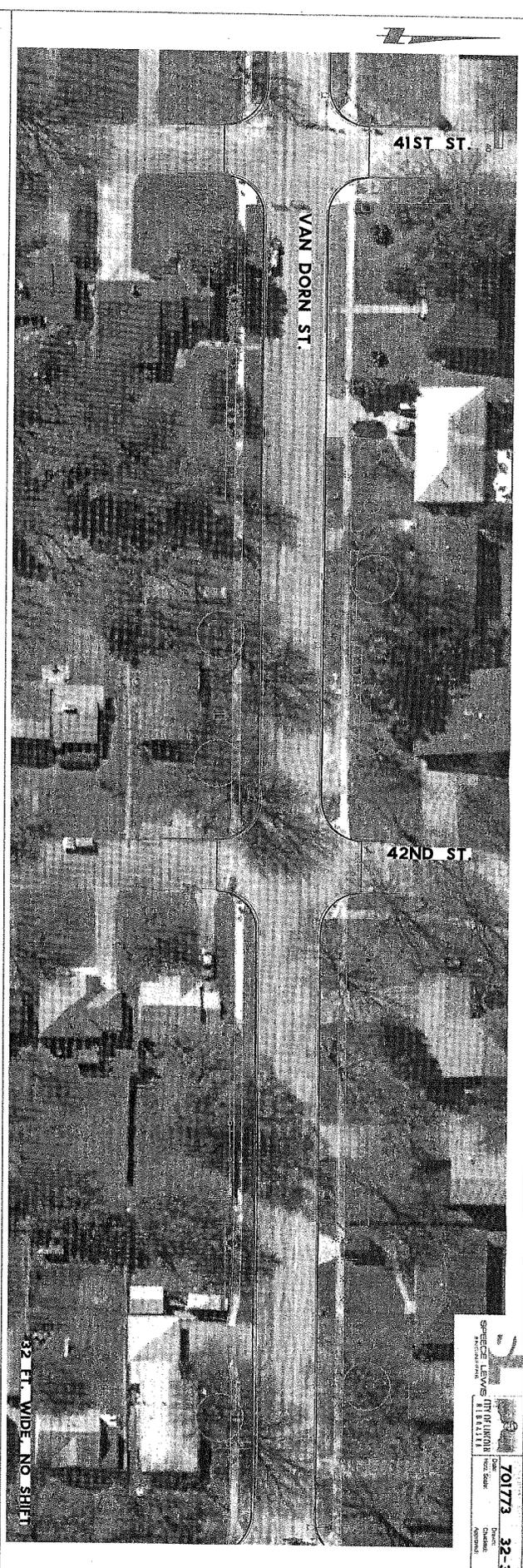
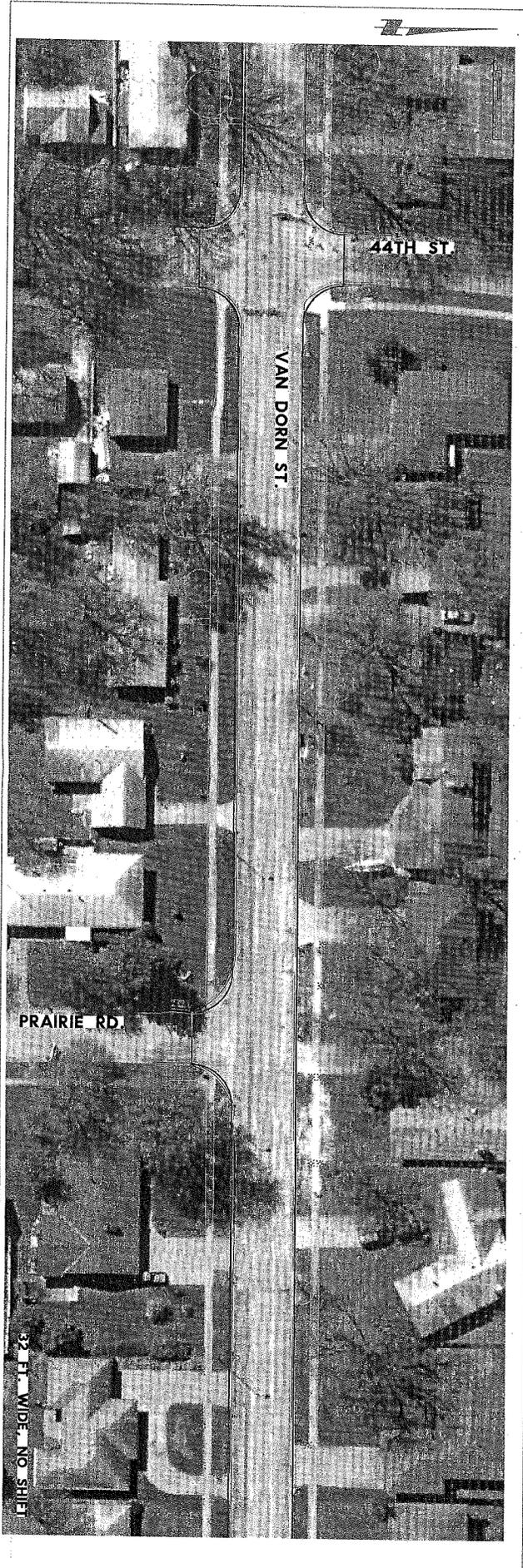
SCOTT AVE.

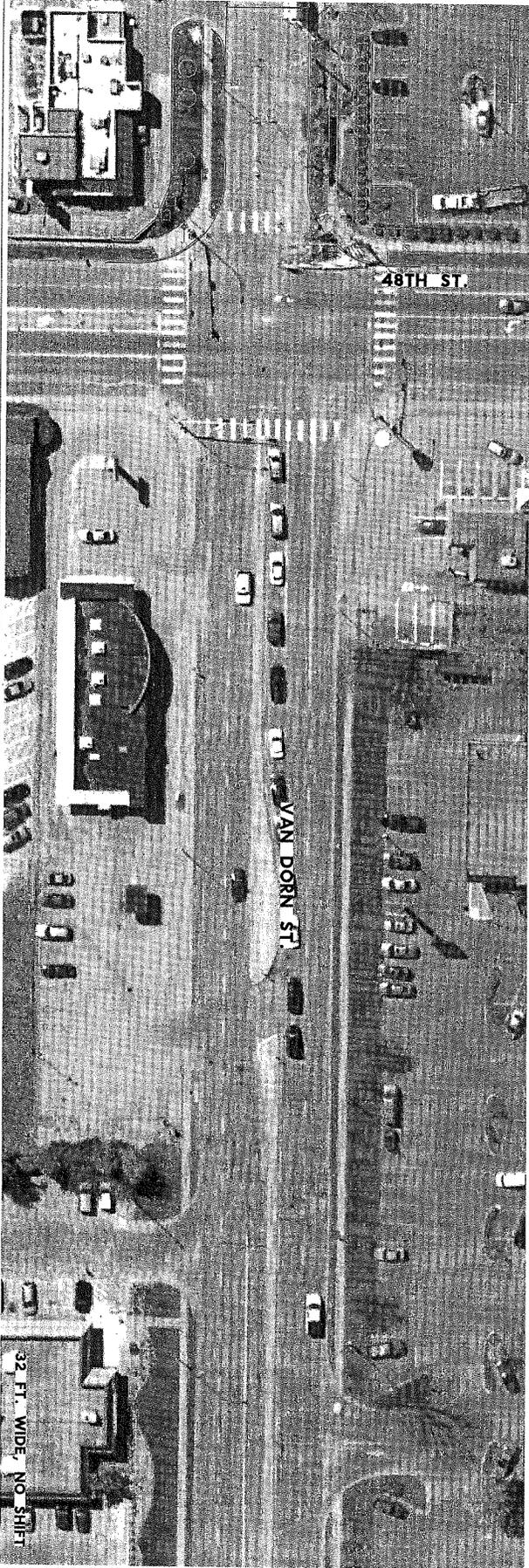
32 FT. WIDE NO. SHI 11

701773 32-2

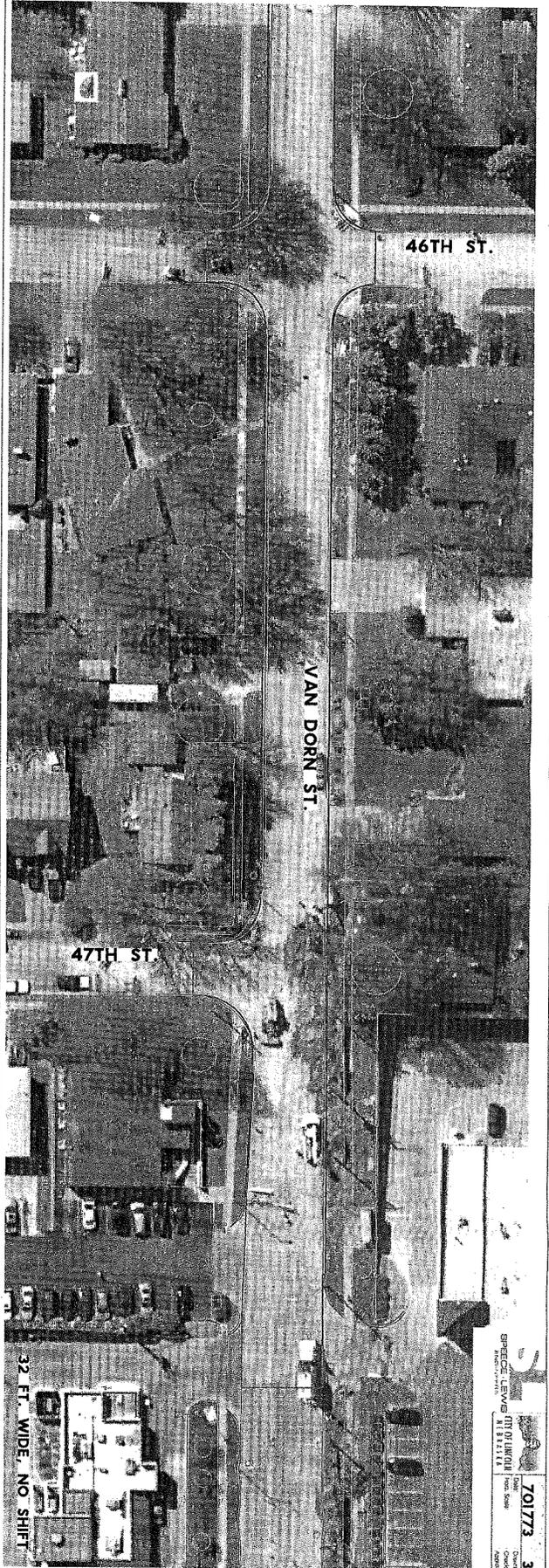
SPENCE LEAVIS CITY OF LINCOLN
 11/11/11

DATE: 11/11/11
 NAME: SPENCE LEAVIS
 COUNTY: LINCOLN



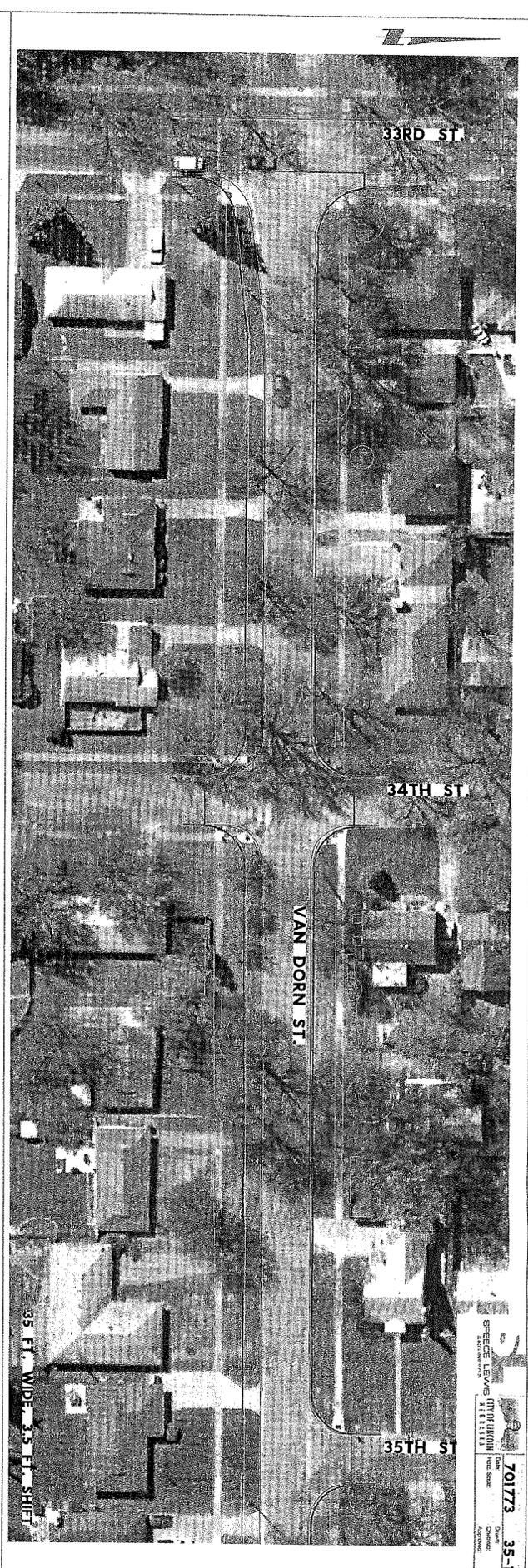
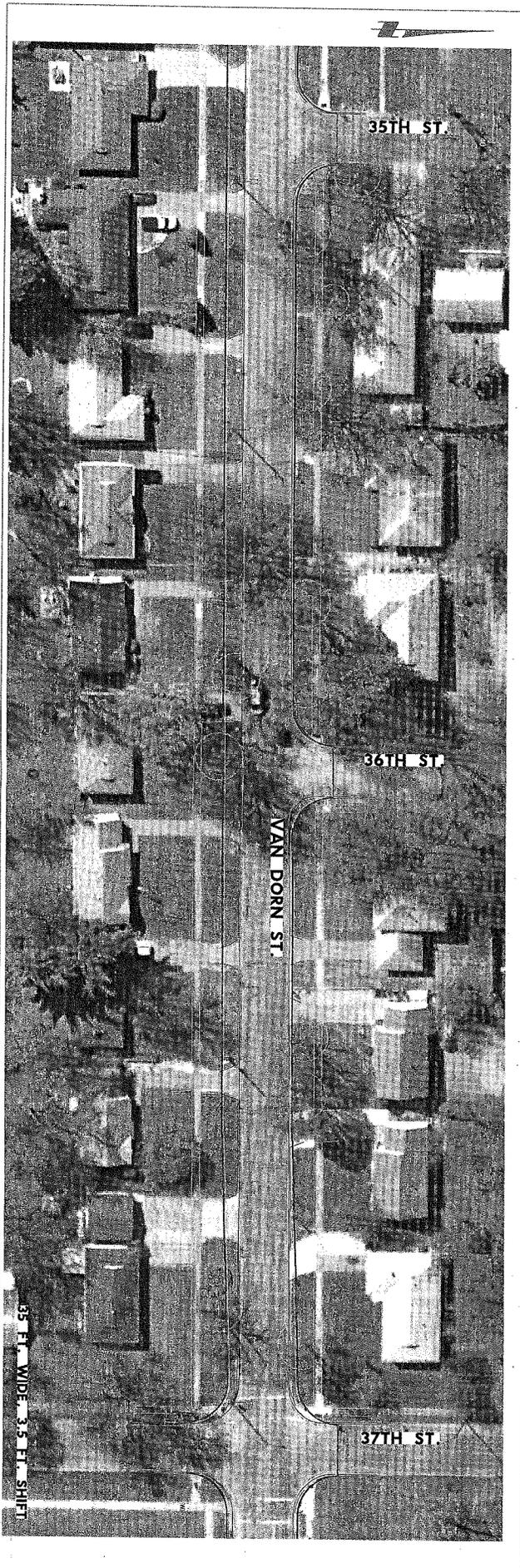


32 FT. WIDE, NO SHIFT

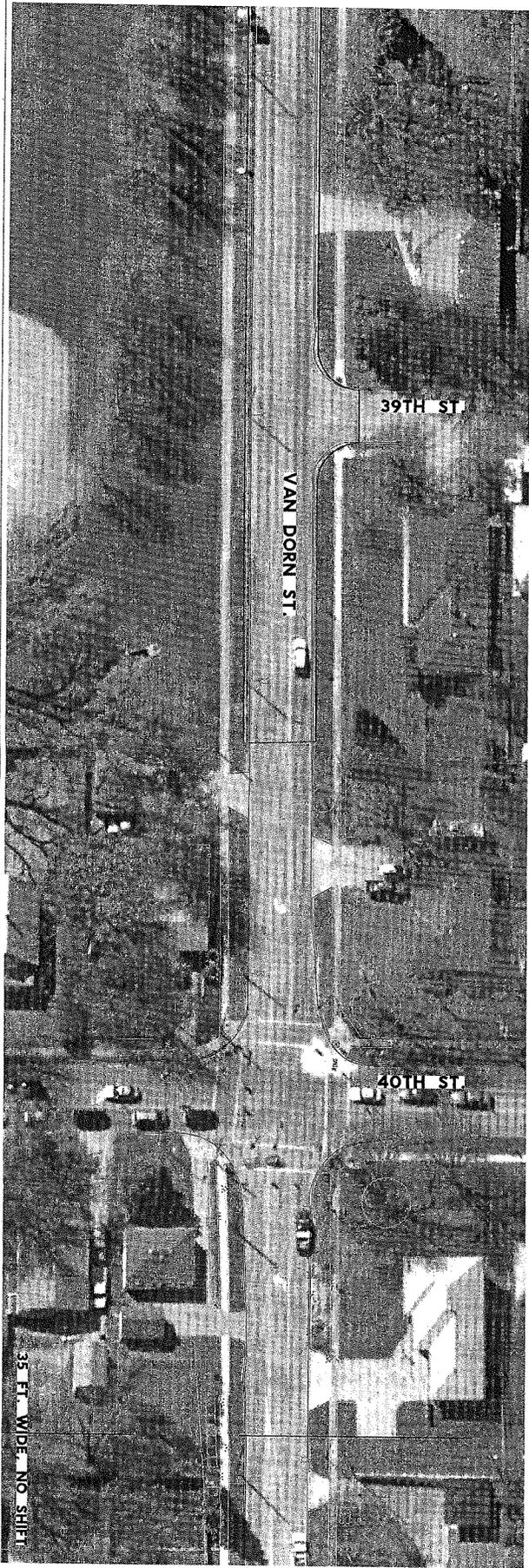


32 FT. WIDE, NO SHIFT

701773 32-4
CITY OF LINCOLN
SPECIAL SERVICES
PLANNING & DESIGN
DIVISION



701773 35-1
SPEECE LEWIS
CITY OF LONDON
11/13/11

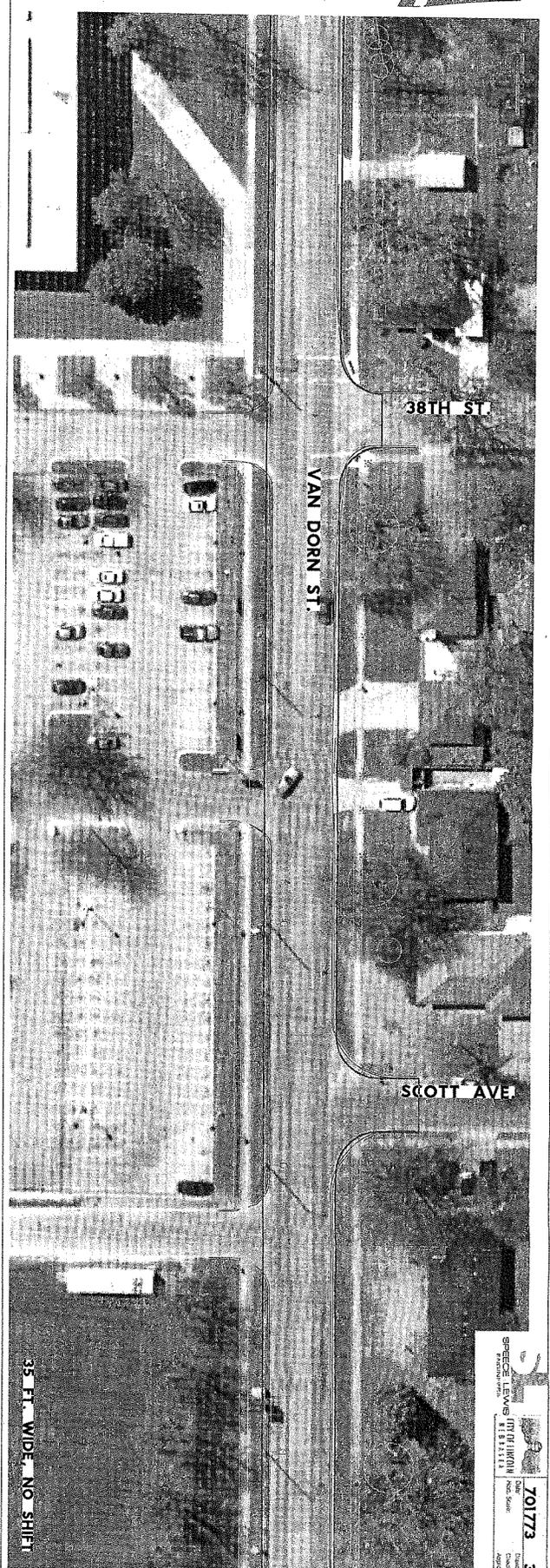


39TH ST

VAN DORN ST.

40TH ST

35 FT. WIDE NO. SHIRT



38TH ST

VAN DORN ST.

SCOTT AVE.

35 FT. WIDE NO. SHIRT



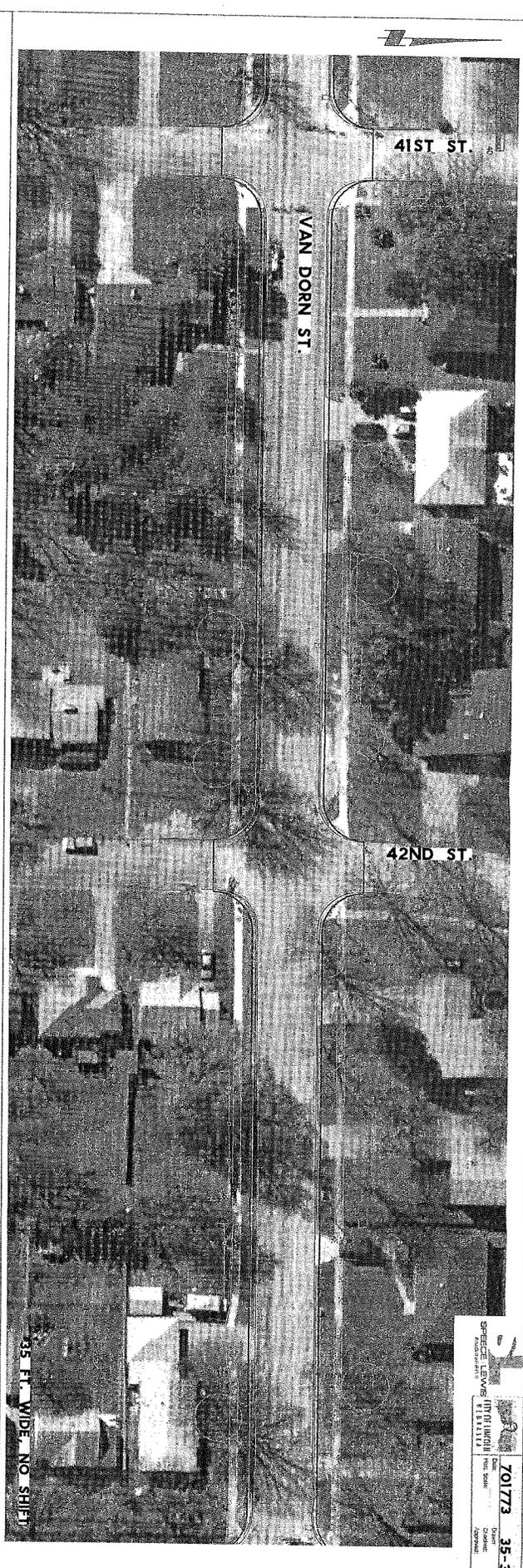
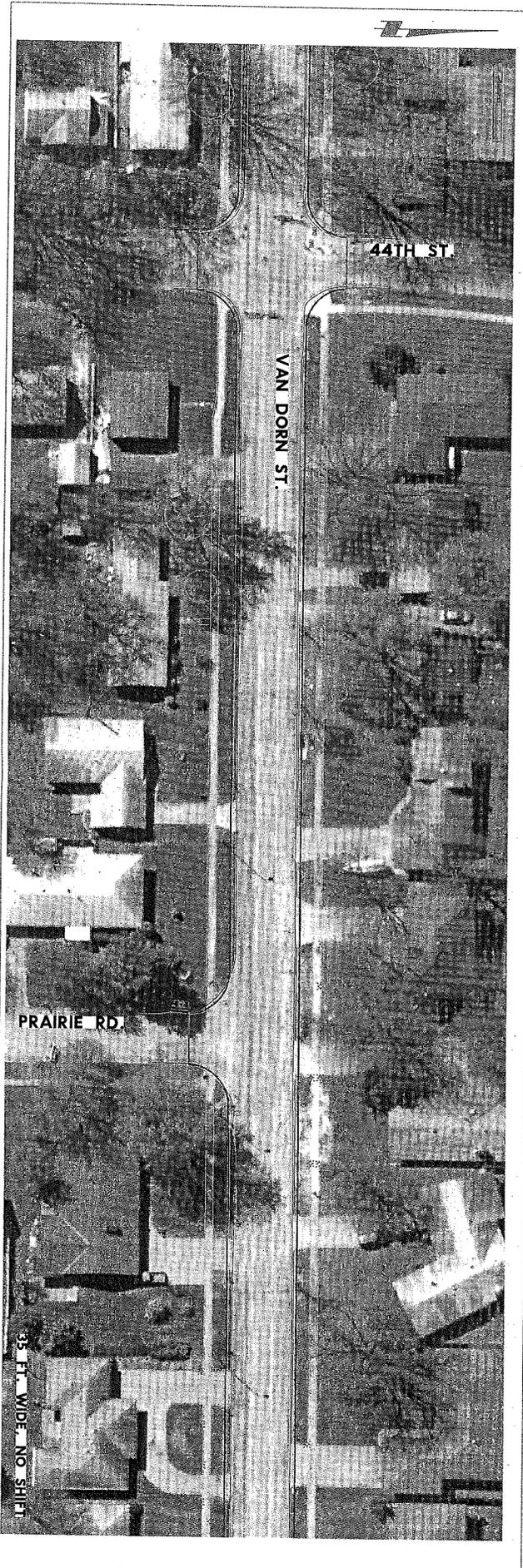
 CITY OF IRVING

 Planning Dept.

 701773 35-2

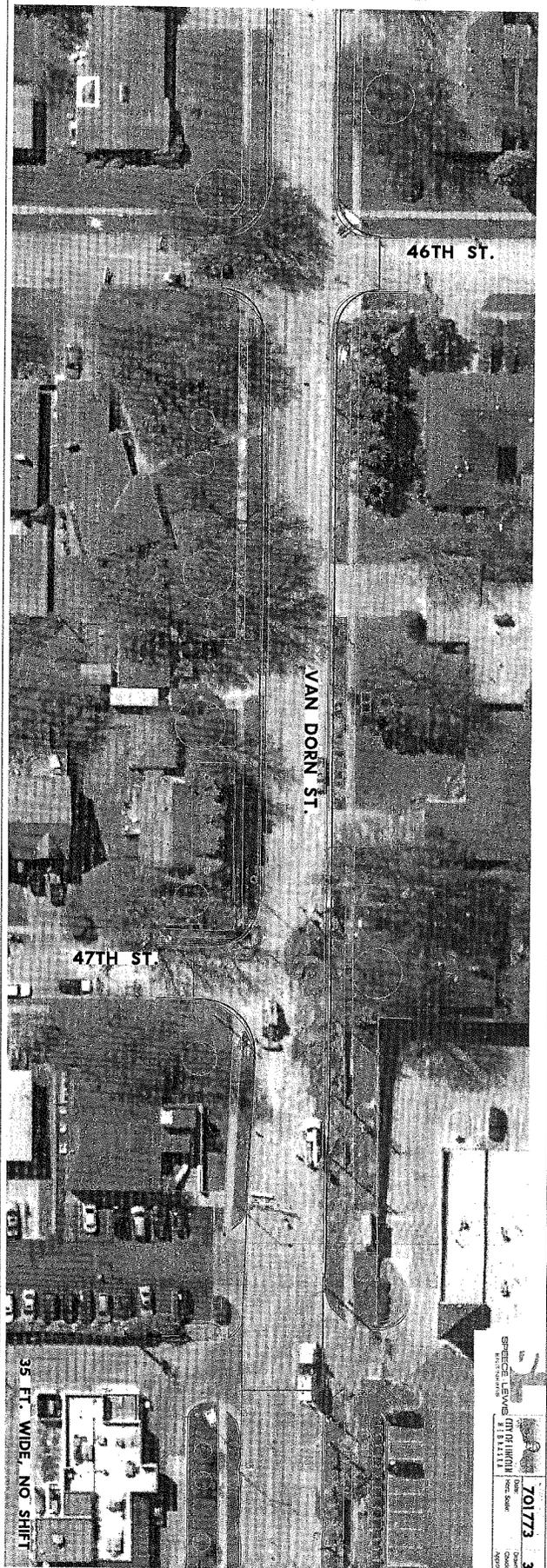
 SPECIAL EVENTS

 813.513.1113





35 FT. WIDE, NO SHIFT



35 FT. WIDE, NO SHIFT

701773 35-4
DATE: 11/11/11
PROJECT: GRIFFIN
SHEET: 11 OF 11
SCALE: AS SHOWN
DRAWN BY: [unreadable]
CHECKED BY: [unreadable]
APPROVED BY: [unreadable]