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RAILROAD IMPACT STUDY For The Central Business District

City of Muncie, Delaware County, Indiana

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With June 2001 Addendum

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RAILROAD
IMPACT STUDY

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1. PURPOSE

The Railroad Impact Study documents the engineering assessment phase, including an outline of the scope of work required to improve vehicular traffic through the city of Muncie, Indiana, by improving or eliminating vehicular/train exposure. The report describes the project at a preliminary level and will guide the secondary environmental and design phase.

2. PROJECT LOCATION

The project is located within the City of Muncie, Delaware County, Indiana. The study area includes that portion of a corridor within the downtown Muncie business district that extends from Ohio Avenue on the east to Batavia Avenue-White River Boulevard on the west and from Powers Street on the north to Memorial Drive on the south. Within this corridor are located twenty-six at-grade railroad crossings and one underpass (Exhibit 1 & Exhibit 1A).

3. PROJECT NEED AND PURPOSE

The CSX Transportation Company railroad corridor extends east and west through the central portion of Delaware County and through the central business district of the city of Muncie, Indiana. The Norfolk Southern Railroad has two railroad corridors that impact the city. One corridor extends from the north through the north central portion of Muncie and converges with the CSX track on the east side of the city. The corridor then parallels the CSX line through the central business district and turns south through the south central portion of the city or northwest from the city. The second line enters the east side of the city from the Northeast and utilizes the track corridor parallel to the CSX track through the central portion of the city business district and extends northwest or south from the city. With two major rail carriers utilizing the same corridor through the city, the downtown area is experiencing considerable growth in railway traffic and noise. Along with the increasing volume of train traffic utilizing the common corridor, the city of Muncie is experiencing a corresponding increase in train whistle noise and wheel screeching noise. Complaints from local businesses and residential property owners are on the rise due to the increase in the frequency of the train traffic and whistles. The City Council wants to examine possible ways to better control or eliminate the frequency of whistle blowing without compromising public safety. Norfolk Southern Railroad has begun remedying the wheel screech by installing flange oilers in several locations in the city in February 2000. These devices apply a small amount of lubricating oil to the flanges as train passes over them and when the train encounters the next set of curves there is minimal wheel screech.

This study will review the development of a whistle ban policy and its supporting requirements. The City Council has undertaken this study in an effort to improve and promote business development within the city's central business district. This study has been prepared in response to the legislation passed by the Indiana General Assembly allowing communities to enact local ordinance that would create a "Quiet Zone" for train traffic. Federal Regulation superseding Indiana law is expected in the winter of 2001.

4. EXISTING CONDITIONS

The study area is defined by the common corridor shared by CSX and Norfolk Southern Railroads that extends through the central portion of the city of Muncie, Indiana. The area includes that portion of a corridor within the downtown Muncie business district that extends from Ohio Avenue on the east to Batavia (Nichols) Avenue-White River Boulevard on the west and from Powers Street on the north to Memorial Drive on the south. Within this corridor are located twenty-six at-grade railroad intersection crossings and one underpass (Madison Avenue) (Exhibit 1 & Exhibit 1A).

The existing land use within this corridor is residential, commercial and industrial. The owners/ businesses at the selected intersection crossings have been identified on the exhibits where possible without researching deed ownership (Exhibits 2 through 23).

There is a Radisson Roberts Hotel and Horizon Convention Center located at the intersection of High Street and Seymour Street, one block north of the railroad corridor and one block west of Walnut Street in downtown Muncie. The convention center is a focal point of bringing guests to the city and in improving economic conditions. Guests staying at Radisson Roberts Hotel are disturbed at night by the loud train whistles.

Table 1 (Existing Railroad Crossings Within Corridor) provides information on the number of traffic lanes, vehicular speed limit and Federal Aid System designation for the street, along with the railroad ownership name, AAR crossing number, train speed limit and the existing safety devices at the intersection.

TABLE 1- EXISTING RAILROAD CROSSINGS WITHIN CORRIDOR

Exhibit #	Location	No.of Traffic Lanes	Vehicular Speed (mph)	FAS Street Designation	Railroad	AAR Crossing Number	Existing Safety Devices	Train Speed (mph)
2	Batavia Ave./ Nichols Ave.	4	30	Urban Collector	CSX	538902U	4 Crossbucks, 4 Gates, 4 Mast Mounted Flashing 2 Other Flashing Lights.	30
3	Perkins Ave.	2	30	Urban Collector	CSX	538901M	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing 2 Bells.	30
4	Kilgore Ave. (SR 32)	2	30	Urban Minor Arterial	NS	474550K	2 Crossbucks, 2 Cantilevered Flashing Lights, 2 Mast Mounted Flashing	30
5	Elliott St.	2	30	Urban Collector	CSX & NS	474549R	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing	20
7	Council St.(C)	2	30	Urban Local	NS	474547C	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing 1 Bell.	20
6	Council St.(B)	2	30	Urban Local	CSX	538900F	2 Crossbucks, 2 Mast Mounted Flashing	30
6	Council St.(A)	2	30	Urban Local	NS	537496W	2 Crossbucks, 2 Mast Mounted Flashing	10

Exhibit #	Location	No.of Traffic Lanes	Vehicular Speed (mph)	FAS Street Designation	Railroad	AAR Crossing Number	Existing Safety Devices	Train Speed (mph)
8	Liberty St.(A)	2	30	Urban Minor Arterial	NS	477180U	4 Crossbucks, 2 Gates, 1 Cantilevered Flashing Light, 2 Mast Mounted Flashing 1 Bell.	20
8	Liberty St.(B)	2	30	Urban Minor Arterial	CSX	538899N	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing	30
9	Liberty St.(C)	2	30	Urban Minor Aretrial	NS	879193G	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing	25
10	Walnut St.	4	30	Urban Minor Arterial	CSX & NS	477176E	2 Crossbucks, 2 Gates, 2 Cantilevered Flashing Lights 2 Mast Mounted Flashing	20
11	Jefferson St.	2	30	Urban Local	CSX & NS	477174R	2 Crossbucks 2 Gates 2 Mast Mounted Flashing 2 Bells.	30
12	Elm St.	2	30	Urban Local	CSX & NS	477173J	2 Crossbucks 2 Gates 2 Mast Mounted Flashing 1 Bell.	30
12	Madison St.	4		Urban Principle Arterial	CSX &	477172C	Grade Separated by Underpass	

Exhibit #	Location	No.of Traffic Lanes	Vehicular Speed (mph)	FAS Street Designation	Railroad	AAR Crossing Number	Existing Safety Devices	Train Speed (mph)
13	Monroe St.	2	30	Urban Local	CSX & NS	477171V	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights, 2 Bells.	30
14	Vine St.	2	30	Urban Local	CSX & NS	477170N	2 Crossbucks, 2 Gates, 1 Cantilevered Flashing Light, 2 Mast Mounted Flashing	30
15	Pershing Dr.	2	30	Urban Local	CSX & NS	477169U	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing	30
16	Hackley St.	2	30	Urban Collector	CSX & NS	477168M	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights, 2 Bells.	30
17	Ohio Ave.	2	30	Urban Minor Arterial	CSX & NS	477167F	3 Crossbucks, 3 Gates, 3 Mast Mounted Flashing Lights, 3 Bells.	10
18	Hoyt Ave.	2	30	Urban Minor Arterial	NS	537497D	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing	10
18	Willard St.	2	30	Urban Minor Arterial	NS	537498K	2 Crossbucks, 1 Gate, 2 Mast Mounted Flashing	10
18	Willard St.	2	30	Urban Minor	NS	879192A	2 Crossbucks, 1 Gate, 2 Mast Mounted Flashing	10

Exhibit #	Location	No.of Traffic Lanes	Vehicular Speed (mph)	FAS Street Designation	Railroad	AAR Crossing Number	Existing Safety Devices	Train Speed (mph)
19	6th Street	2	30	Urban Local	NS	537499S	2 Crossbucks, 2 Stop Signs	30
20	8th Street	2	30	Urban Minor Collector	NS	537501R	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing	30
21	9th Street	2	30	Urban Local	NS	537502X	2 Crossbucks, 2 Mast Mounted Flashing	30
22	10th Street	2	30	Urban Local	NS	537503E	2 Crossbucks, 2 Mast Mounted Flashing	30
23	Memorial Drive	4	30	Urban Principle Arterial	NS	537504L	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing 1 Bell.	10

The identified intersection crossings within the corridor are further described below:

Batavia Avenue / Nichols Avenue (Exhibit 2):

Batavia Avenue is a 4-lane north-south urban collector route intersecting with Kilgore Avenue just north of the railroad. This intersection is signalized. The south leg at the crossing has two southbound lanes, two northbound lanes and a northbound right turn lane. Kilgore Avenue runs parallel to the railroad and is less than 60 feet north of the railroad crossing. Turning traffic from Kilgore Avenue and southbound traffic from Nichols Avenue enters Batavia Avenue.

To the south of the railroad on Batavia Avenue, there is one quadrant gate with flasher for northbound traffic and one quadrant gate with flasher for northbound traffic turning right. The right turn lane is separated by a median.

To the north of the railroad just south of Kilgore Avenue, there is one quadrant gate with flasher for southbound traffic and one quadrant gate with flasher for east bound traffic turning right. Eastbound right turn lane is separated by a median.

Perkins Avenue (Exhibit 3):

Perkins Avenue is a 2-lane north-south urban collector route. One lane of travel is provided in each direction. Quadrant gates are installed on both sides of the railroad crossing.

Kilgore Avenue (Exhibit 4):

Kilgore Avenue is a 2-lane urban local route. One lane of travel is provided in each direction. Flashing lights are installed on both sides of the railroad crossing. Less than 60 feet northeast of the railroad crossing is 2nd Street and about 175 feet southwest of the railroad crossing is Perkins Avenue.

Elliott Street (Exhibit 5):

Elliott Street is a 2-lane north-south urban minor arterial route. One lane of travel is provided in each direction. Quadrant gates are installed on both sides of the railroad crossing.

Council Street (Exhibit 6 & 7):

Council Street is a 2-lane north-south urban local route. One lane of travel is provided in each direction. Powers Street intersects with Council Street at a distance less than 60 feet north of the railroad crossing. On Council Street, between Powers Street and Willard Street, there are three railroad crossings.

At the crossing just south of Powers Street, quadrant gates are installed on both side of the railroad crossing. Flashing lights are installed on both sides of the railroad crossing at the second and third crossing south of Powers Street.

Liberty Street (Exhibits 8 & 9):

Liberty Street is a 2-lane north-south urban minor arterial route. One lane of travel is provided in each direction. On Council Street, between Powers Street and Willard Street, there are three railroad crossings. 2nd Street is at a distance of about 80 feet south of the railroad, south of Hoyt Avenue. The crossing south of Powers Street is at about a distance of 60 feet. North of this crossing, east of Liberty Street, is an entrance to the railroad yard. Quadrant gates are installed on both sides of the railroad crossings except at the crossing about 60 feet south of Powers Street where crossbucks are installed.

Walnut Street (Exhibit 10):

Walnut Street is a 4-lane north-south urban minor arterial route. Two lanes of travel are provided in each direction. North of the railroad crossing, west of Walnut Street, is the convention center and the Hotel Roberts. Quadrant gates are installed on both sides of the railroad crossing.

Jefferson Street (Exhibit 11):

Jefferson Street is a 2-lane north-south urban local route and currently one-way street. The street was made one-way a few years ago to cut down on crime in the area. Quadrant gates are installed on both sides of the railroad crossing.

Elm Street (Exhibit 12):

Elm Street is a 2-lane north-south urban local route and currently a one-way street. The street was made one-way a few years ago to cut down on crime in the area. Quadrant gates are installed on both sides of the railroad crossing.

Madison Street (Exhibit 12):

Madison Street is a 4-lane north-south minor arterial route. Two lanes of travel are provided in each direction. This crossing is grade separated by an underpass. The underpass is the designated route for fire trucks and ambulances.

Monroe Street (Exhibit 13):

Monroe Street is a 2-lane north-south urban local route. One lane of travel is provided in each direction. Quadrant gates are installed on both sides of the railroad crossing.

Vine Street (Exhibit 14):

Vine Street is a 2-lane north-south urban local route. One lane of travel is provided in each direction. Quadrant gates are installed on both sides of the railroad crossing.

Pershing Drive (Exhibit 15):

Pershing Drive is a 2-lane north-south urban local route. One lane of travel is provided in each direction. Quadrant gates are installed on both sides of the railroad crossing.

Hackley Street (Exhibit 16):

Hackley Street is a 2-lane north-south urban collector route. One lane of travel is provided in each direction. Quadrant gates are installed on both sides of the railroad crossing.

Ohio Avenue (Exhibit 17):

Ohio Avenue is a 2-lane urban minor arterial route. Ohio Avenue runs north-south from Washington Street north of the railroad crossing. Just south of the railroad crossing, Ohio Avenue becomes Burlington Drive going in a southeasterly direction. Blaine Street is a 2-lane north-south urban local route, beginning just south of the railroad crossing. The three streets form a Y-intersection at the crossing. Quadrant gates are installed on the streets on both sides of the crossing.

Hoyt Avenue (Exhibit 18):

Hoyt Avenue is a 2-lane urban minor arterial route. It begins west of Liberty Street at about 175 feet south of the railroad crossing and extends in a southwesterly direction and intersects Willard Street. At the railroad crossing north of Willard Street, quadrant gates are installed on both sides of the railroad crossing.

Willard Street (Exhibit 18):

Willard Street is a 2-lane east-west urban minor arterial route. One lane of travel is provided in each direction. Between Hoyt Avenue and Liberty Street on Willard Street, there are two railroad crossings about 100 feet apart. At the crossing to the west, one quadrant gate is installed on the west side and a flashing light to the east. At the crossing to the east, one quadrant gate is installed on the east side and a flashing light to the west. Hoyt Avenue intersects Willard Street about 75 feet west of the railroad crossing.

6th Street (Exhibit 19):

6th Street is a 2-lane east-west urban local route. One lane of travel is provided in each direction. West of the railroad crossing, 6th Street extends in a northwesterly direction and intersects with Hoyt Avenue. 6th Street is a passive crossing. It is the only intersection in the impact area without gates or flashers. Stops signs and crossbucks are installed on both sides of the railroad crossing.

8th Street (Exhibit 20):

8th Street is a 2-lane east-west urban collector route. One lane of travel is provided in each direction. Quadrant gates are installed on both sides of the railroad crossing. About 30 feet west of the railroad is Cherry Street extending parallel to the railroad from 8th Street to Memorial Drive.

9th Street (Exhibit 21):

9th Street is a 2-lane east-west urban local route. One lane of travel is provided in each direction. Flashing lights are installed on both sides of the railroad crossing. 30 feet west of the railroad is Cherry Street extending parallel to the railroad from 8th Street to Memorial Drive.

10th Street (Exhibit 22):

10th Street is a 2-lane east-west urban local route. One lane of travel is provided in each direction. Flashing lights are installed on both sides of the railroad crossing. 30 feet west of the railroad is Cherry Street extending parallel to the railroad from 8th Street to Memorial Drive.

Memorial Drive (Exhibit 23):

Memorial Drive is a 4-lane east-west urban minor arterial route. Two lanes of travel are provided in each direction. Quadrant gates are installed on both sides of the railroad crossing (Exhibit 23). About 30 feet west of the railroad is Cherry Street extending parallel to the railroad from 8th Street to Memorial Drive.

5. VEHICULAR / TRAIN TRAFFIC AND ACCIDENT DATA

TABLE 2 (Existing Vehicular and Train Traffic Data) summarizes the vehicular average daily traffic and peak hour volume traffic, along with the average daily train count for each intersection within the study corridor. TABLE 3 (Accident Data and Existing Safety Devices) summarizes the accidents at each intersection and lists the present safety devices.

TABLE 2 - EXISTING VEHICULAR AND TRAIN TRAFFIC DATA

Exhibit #	Location	FAS Designation	Vehicle ADT	Peak Hour Volume	RAILROAD	AAR Crossing #	Train ADT
2	Batavia Avenue	Urban Collector			CSX	538902U	30
3	Perkins Avenue	Urban Collector	2884	340	CSX	538901M	30
4	Kilgore Avenue	Urban Minor Arterial	9344	793	NS	474550K	6
5	Elliott Street	Urban Collector	2357	219	CSX & NS	474549R	36
7	Council Street (C)	Urban Local	1205	105	NS	474547C	6
6	Council Street (B)	Urban Local	1205	105	CSX	538900F	30
6	Council Street (A)	Urban Local	1205	105	NS	537496W	12
8	Liberty Street (A)	Urban Minor Arterial	7322	584	NS	477180U	6
8	Liberty Street (B)	Urban Minor Arterial	7322	584	CSX	538899N	30
9	Liberty Street (C)	Urban Minor Arterial	7322	584	NS	879193G	24
10	Walnut Street	Urban Minor Arterial	5295	798	CSX & NS	477176E	46 to 54
11	Jefferson Street	Urban Local	651	67	CSX & NS	477174R	46 to 54
12	Elm Street	Urban Local	467	59	CSX & NS	477173J	46 to 54
12	Madison Street	Urban Principle Arterial			CSX & NS	477172C	46 to 54
13	Monroe Street	Urban Local	796	80	CSX & NS	477171V	46 to 54
14	Vine Street	Urban Local	383	30	CSX & NS	477170N	46 to 54
15	Pershing Drive	Urban Local	305	24	CSX & NS	477169U	46 to 54
16	Hackley Street	Urban Collector	2991	255	CSX & NS	477168M	46 to 54

Exhibit #	Location	FAS Designation	Vehicle ADT	Peak Hour Volume	RAILROAD	AAR Crossing #	Train ADT
17	Ohio Avenue	Urban Minor Arterial	5455	490	CSX & NS	477167F	46 to 54
18	Hoyt Avenue	Urban Minor Arterial	4675	384	NS	537497D	24
18	Willard Street	Urban Minor Arterial	2874	256	NS	537498K	24
18	Willard Street	Urban Minor Arterial	2874	256	NS	879192A	24
19	6th Street	Urban Local	488	51	NS	537499S	24
20	8th Street	Urban Minor Collector	4915	438	NS	537501R	24
21	9th Street	Urban Local	216	22	NS	537502X	24
22	10th Street	Urban Local	246	21	NS	537503E	24
23	Memorial Drive	Urban Principle Arterial	17958	1520	NS	537504L	24

TABLE 3 - ACCIDENT DATA AND EXISTING SAFETY DEVICES

Exhibit #	Location	Railroad	AAR Crossing #	Accidents	Existing Safety Devices
2	Batavia Avenue	CSX	538902U	No accidents in past 5 years. 1 accident in 1993. 1 accident in 1991. 1 accident in 1990. 1 accident in 1985. 3 accidents in 1982. 1 accident in 1980. 2 accidents in 1979. 2 accidents in 1978. 7 accidents in 1977. 2 accidents in 1976.	4 Crossbucks, 4 Gates, 4 Mast Mounted Flashing Lights, 2 Other Flashing Lights.
3	Perkins Avenue	CSX	538901M	No accidents in past 5 years. 1 accident in 1995. 1 accident in 1985. 1 accident in 1978. 1 accident in 1977. 1 accident in 1976.	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights, 2 Bells.
4	Kilgore Avenue	NS	474550K	No accidents in past 5 years. 1 accident in 1993. 1 accident in 1987. 1 accident in 1984.	2 Crossbucks, 2 Cantilevered Flashing Lights, 2 Mast Mounted Flashing Lights.
5	Elliot Street	CSX & NS	474549R	No accidents in past 5 years. 1 accident in 1987	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights.
7	Council Street (C)	NS	474547C	No accident Data Available.	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights, 1 Bell.

Exhibit #	Location	Railroad	AAR Crossing #	Accidents	Existing Safety Devices
6	Council Street (B)	CSX	538900F	No accidents in past 5 years. 1 accident in 1991. 1 accident in 1982.	2 Crossbucks, 2 Mast Mounted Flashing Lights,
6	Council Street (A)	NS	537496W	No accidents in past 5 years. 1 accident in 1985. 1 accident in 1981.	2 Crossbucks, 2 Mast Mounted Flashing Lights.
8	Liberty Street (A)	NS	477180U	No accidents in past 5 years. 1 accident in 1977.	4 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights, 1 Bell.
8	Liberty Street (B)	CSX	538899N	No accidents in past 5 years. 1 accident in 1989. 1 accident in 1984. 1 accident in 1983. 1 accident in 1978.	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights.
9	Liberty Street (C)	NS	879193G	1 accident in 1996. 1 accident in 1987.	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights
10	Walnut Street	CSX &NS	477176E	No accidents in past 5 years. 1 accident in 1994. 2 accidents in 1992. 2 accidents in 1991. 4 accidents in 1989. 1 accident in 1987. 1 accident in 1983. 1 accident in 1979.	2 Crossbucks, 2 Gates, 2 Cantilevered Flashing Lights. 2 Mast Mounted Flashing Lights, 2 Bells.
11	Jefferson Street	CSX&NS	477174R	1 accident in 2000 1 accident in 1979	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights, 2 Bells.

Exhibit #	Location	Railroad	AAR Crossing #	Accidents	Existing Safety Devices
12	Elm Street	CSX&NS	477173J	No accidents in past 5 years. 1 accident in 1982.	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights, 1 Bell.
12	Madison Street	CSX&NS	477172C	-	Grade Separated by Underpass
13	Monroe Street	CSX&NS	477171V	No accidents in past 5 years. 1 accident in 1989.	2 Crossbucks, 2 Gates, 1 Cantilevered Flashing Light, 2 Mast Mounted Flashing Lights, 2 Bells.
14	Vine Street	CSX&NS	477170N	No accident data available.	2 Crossbucks, 2 Gates, 1 Cantilevered Flashing Light, 2 Mast Mounted Flashing Lights, 2 Bells.
15	Pershing Drive	CSX&NS	477169U	No accidents in past 5 years. 1 accident in 1982. 1 accident in 1976.	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights, 2 Bells.
16	Hackley Street	CSX&NS	477168M	No accidents in past 5 years. 1 accident in 1993. 1 accident in 1983. 1 accident in 1977.	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights, 2 Bells.
17	Ohio Avenue	CSX&NS	477167F	No accidents in past 5 years. 1 accident in 1990. 1 accident in 1982. 2 accidents in 1981. 2 accidents in 1976.	3 Crossbucks, 3 Gates, 3 Mast Mounted Flashing Lights, 3 Bells.

Exhibit #	Location	Railroad	AAR Crossing #	Accidents	Existing Safety Devices
18	Hoyt Avenue	NS	537497D	No accidents in past 5 years. 2 accidents in 1981.	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights.
18	Willard Street	NS	537498K	No accident data available.	2 Crossbucks, 1 Gate, 2 Mast Mounted Flashing Lights.
18	Willard Street	NS	879192A	No accidents in past 5 years. 1 accident in 1988. 1 accident in 1986. 2 accidents in 1979. 1 accident in 1977	2 Crossbucks, 1 Gate, 2 Mast Mounted Flashing Lights.
19	6th Street	NS	537499S	1 accident in 1999. 1 accident in 1989. 1 accident in 1981.	2 Crossbucks, 2 Stop Signs
20	8th Street	NS	537501R	1 accident in 1998. 1 accident in 1982.	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights, 1 Bell.
21	9th Street	NS	537502X	No accident data available.	2 Crossbucks, 2 Mast Mounted Flashing Lights.
22	10th Street	NS	537503E	No accident data available.	2 Crossbucks, 2 Mast Mounted Flashing Lights.
23	Memorial Drive	NS	537504L	No accident data available	2 Crossbucks, 2 Gates, 2 Mast Mounted Flashing Lights, 1 Bell.

Accident data for each crossing was obtained from the Department of Transportation Federal Railroad Administration (FRA) Office of Safety Analysis website.

Over the past five years, Muncie has experienced four accidents at the 26 public at-grade crossings along the corridor. The accident at Jefferson Street crossing in February 2000 resulted in the death of a pedestrian. The accident at Liberty Street Crossing in January 1996 involved a truck but no personal injuries. The accident at 6th Street crossing (a passive crossing) in January 1999 injured the driver of the vehicle. The accident at 8th Street crossing in August 1998 involved an automobile but no personal injuries.

Looking at the accident data beyond five years, six public at-grade crossings had more than five accidents. Batavia Avenue crossing had the most accidents - 21 accidents between 1976-1991, Perkins Avenue had five accidents between 1976-1995, Liberty Street crossing had six accidents between 1978-1989, Walnut Street crossing had 12 accidents between 1979-1994, Ohio Avenue had six accidents between 1976-1990 and Willard Street had five accidents between 1977-1988.

Of all the accidents at the public at-grade crossings along the corridor, there were five deaths and twelve personal injuries.

6. RAILROAD WHISTLE NOISE, MEASUREMENT AND EMISSION STANDARDS

In 1994, Congress passed the Swift Rail Development Act, Public Law 103-440 (Swift Act), which added Section 20153, Audible Warnings at Highway-Rail crossings, to Title 49 of the United States Code. Section 20 directed the Federal Railroad Administration to issue a rule requiring the use of train horns at all public highway-rail crossings. The rule contains provisions that set the required distance for horn sounding in advance of the crossing to be the distance traveled in 20 seconds while operating at maximum speed. The minimum distance required to commence horn blowing in advance of the crossing is 1350 feet. The study corridor presently experiences from 24 to 54 train exposures each day at 23 of the 27 crossings within the study area. Horn blowing noise within the study corridor is ever present and is a source of constant exposure. Train whistle noise can be defined as any undesired sound. Several factors contribute to this definition, such as loudness, pitch, intermittency and irregularity, localization, noise level, exposure time and a general frustration.

To verify the severity of the horn sounds within the study corridor, noise measurements were conducted at the site on two different occasions. The result of the field survey is tabulated in the following TABLE 4 (Noise Measurement). Noise measurements were taken in the early evening hours of Wednesday,

Railroad Line	Track	Direction of Travel	Approximate Number of Blasts	Maximum Decibel Level	Time and Date	Distance from Track	Notes and Comments
CSX	Track C	East	3 (two longs and a short)	106.5 dBA	10.18.00 5:35 p.m.	177 feet	Whistle blown approximately 445 feet west of intersection
Norfolk Southern	Track D	East	4 (two longs a short and a long)	111.2 dBA	10.18.00 5:45 p.m.	207 feet	Whistle blown approximately 425 feet west of intersection
CSX	Track C	East	3 (two longs and a short)	115.9 dBA	10.18.00 7:00 p.m.	177 feet	
Norfolk Southern	Track D	East	3 (three longs)	114.1 dBA	10.18.00 7:17 p.m.	207 feet	
Norfolk Southern	Track D	West	5 (four shorts and one long)	113.0 dBA	10.19.00 8:25 a.m.	207 feet	Travelling significantly slower
Union Pacific	Track D	West	Constant	112.0	10.19.00 8:50 a.m.	207 feet	
Norfolk Southern	Track D	West	2 (2 shorts)	114.7 dBA	10.19.00 9:30 a.m.	207 feet	
Norfolk Southern	Track D	West	6 (three longs, two shorts and a long)	111.2 dBA	10.19.00 9:50 a.m.	207 feet	
CSX	Track D	West	2 (two longs)	113.3 dBA	10.19.00 10:30 a.m.	171 feet	
Norfolk Southern	Track D	West	4 (four longs)	108.6 dBA	10.19.00 10:55 a.m.	207 feet	

TABLE 4 - NOISE MEASUREMENTS

October 18, 2000 (4:30 P.M. to 7:30 P.M.) and in the morning hours of Thursday, October 19, 2000 (7:45 A.M. to 11:00 A.M.) near the intersection of Walnut Street and Seymour Street. A total of ten noise measurements were taken. For reference, each track was assigned a letter. The northernmost track is referred to as "Track A." Consecutive tracks were also assigned letters for reference (northernmost "Track A" through southernmost "Track D"). All decibel measurements were taken from the same point (100 feet north of "Track A"). The noise measurements recorded ranged in value from 106.5 dBA to 115.9 dBA. No consistency was determined for the method of sounding the train whistle. In cases where the initial train whistle blow could be associated with a physical location, the distance from the initial whistle blow to the intersection was measured and noted.

According to the Minnesota noise standards depicted in "Air Quality" by Dr. Thad Godish, the maximum decibel value in residential areas during the day is 80 dBA and during the evening is 70dBA.

7. QUIET ZONE CRITERIA

The Indiana General Assembly has legislation in place that allows for communities to enact local ordinances that would create "Quiet Zone" for train traffic. The present east-west route shared by Norfolk Southern and CSX would incorporate a "Quiet Zone" distance of approximately 1.8 miles and the north-south distance would be approximately 1,800 feet. These estimates are based on federal laws requiring trains to commence 'whistle blowing' 1,350 feet prior to reaching a street crossing. Trains entering the study corridor and heading east would cease 'whistle blowing' just after crossing Batavia-White River Blvd and not commence "whistle blowing' until just west of Hackley. Trains entering the corridor from the west would cease 'whistle blowing' just after crossing Ohio and would commence 'whistle blowing' just past Kilgore. Trains entering the study area from the south would cease 'whistle blowing' at Memorial Drive. Trains leaving the study area and headed south would begin "whistle blowing' after they cross Memorial Drive and before they reach 22nd Street. With the establishment of a "Quiet Zone," the following intersections would become silent crossings:

1. Perkins Avenue / KilgoreAvenue
2. Elliott Street
3. Council Street
4. Liberty Street
5. Walnut Street
6. Jefferson Street
7. Elm Street
8. Monroe Street
9. Vine Street
10. Pershing Drive

11. Hackley Street (westbound only)
12. Hoyt Avenue
13. Willard Street
14. 6th Street
15. 8th Street
16. 9th Street
17. 10th Street
18. Memorial Drive

In the establishment of a "Quiet Zone" by local jurisdictions, the Federal Railroad Administration (FRA) has set forth five supplementary safety measures (SSMs) in the proposed rule, any one of which can be applied to a crossing. At least one SSM is required for each highway-rail grade crossing within the "Quiet Zone". These safety measures have been determined by FRA to have a certain effectiveness rate that would effectively compensate for the absence of sound from the locomotive horn.

Following is a summary of each acceptable Supplementary Safety Measures:

1. Temporary Closure of a Public Highway-Rail Grade Crossing

This supplementary safety measure has the advantage of obvious safety and thus will more than compensate for the lack of a locomotive horn during the periods of crossing closure. The required conditions for closure are intended to ensure that vehicles are not able to enter the crossing. In order to avoid driver confusion and uncertainty, the crossing must be closed during the same hours every day and may only be closed during one period each 24 hours. FRA believes that such consistency will avoid unnecessary automobile to automobile collisions in addition to avoiding collisions with trains. Activation and deactivation of the system is the responsibility of the local traffic control authority or the entity responsible for maintenance of the street or highway crossing the railroad. Responsibility for activation and deactivation of the system may be contracted to another party, however the appropriate governmental entity shall remain fully responsible for compliance with the requirements of this section. In addition, the system must be tamper and vandal resistant to the same extent as other traffic control devices.

2. Four-Quadrant Gate System

A four-quadrant gate system involves the installation of gates at a public highway-rail grade crossing to fully block highway traffic from entering the crossing when the gates are lowered. This system includes at least one gate for each direction of traffic on each approach. A four-quadrant gate system is meant to prevent a motorist from entering the oncoming lane of traffic to avoid a fully lowered gate in the motorist's lane of traffic. Because an additional gate would

also be fully lowered in the other lane of the road, the motorist would be fully blocked from entering the crossing.

Four-quadrant gate systems have been in existence for many years, and FRA believes that they have been fully tried and proven. There have been installations in several states: Wyoming, Tennessee, New Jersey, North Carolina, and Ohio, as well as in Canada, which involve various railroads, including the Burlington Northern Santa Fe, Norfolk Southern, New Jersey Transit Rail Operations, and Calgary Transit.

FRA proposes that the following be required for all four-quadrant gate systems:

a. When a train is approaching the crossing, all highway approach and exit lanes on both sides of the grade crossing must be spanned by gates to deny to the highway user the option of circumventing the conventional approach lane gates by switching into the opposing (oncoming) traffic lane in order to enter the crossing and cross the tracks.
b. When the gates are fully lowered the gap between the ends of the gates must be less than two feet if no median between median or channelization device must be within one foot.
c. If break-away channelization devices are used they must be frequently monitored and broken elements replaced.
d. Constant warning time devices will be required to activate the gates. This requirement will ensure that the gates are activated for the same amount of time prior to the arrival of a train irrespective of its speed. This will minimize the time spent waiting at crossings being approached by very slow moving trains.
e. Signs must be posted alerting motorists that the train horn does not sound.
f. For new installations, FRA strongly recommends that the following conditions apply:

    1. Gate timing should be established by qualified traffic engineers based on site specific determinations. Consideration should be given to the need for a delay in the descent of the exit gates following the descent of the entrance gates (equivalent to conventional gates) to prevent a motorist from being ``locked in" between the gates. Factors that should be considered include available storage space between the gates that is outside the fouling limits of the tracks (beyond the width of trains) and the possibility that traffic flows may be interrupted as a result of nearby intersections.
    2. Fail-safe mode of the gate system should include exit gates failing in the raised, or up position.
    3. A determination should be made as to whether to provide vehicle presence detectors (VPDs) to open or keep open the exit gates until all vehicles are clear of the crossing. Among the factors to consider are the

presence of the intersecting roadways near the crossing, the priority that the traffic crossing the railroad is given at such intersections, the types of traffic control devices at those intersections, and the presence and timing of traffic signal preemption.

4. Highway approaches on one or both sides of the highway-rail crossing be provided with medians or channelization devices between the opposing lanes. Medians should be defined by barrier or mountable curb, with or without reflectorized devices.
5. Remote monitoring of the status of these crossing systems is preferable.

3. Gates With Medians or Channelization Devices

Keeping highway traffic on both highway approaches to a public highway-rail grade crossing in the proper lane denies the highway user the option of circumventing gates in the approach lanes by switching into the opposing (oncoming) traffic lane in order to drive around a lowered gate to cross the tracks. FRA therefore proposes to require that gates with medians or channelization devices be considered supplementary safety measures if the following conditions are met.

a Opposing traffic lanes on both highway approaches to the crossing must be separated by either medians bounded by barrier curbs, or medians bounded by mountable curbs if equipped with channelization devices.
b. Such medians must extend at least 100 feet from the gate, unless there is an intersection within that distance. If so, the median or channelization device must extent at least 60 feet from the gate. Intersections within 60 feet of the gate must be closed or moved.
c. The crossing warning system must be equipped with constant warning time system.
d. The horizontal gap between the lowered gate and the median or channelization device must be one foot or less in length, measured horizontally across the road from the end of the lowered gate to the median or channelization device or to a point over the curb edge of the median or channelization device.
e. Break-away channelization devices must be monitored frequently and broken elements replaced.
f. At all crossings within a Quiet Zone, signs must be posted alerting motorists to the fact that the train horns are not sounded.

4. One Way Street With Gates

This installation consists of one-way streets with gates installed so that all approaching highway lanes are completely blocked. FRA would require that the gate arms on the approach side of the highway-rail grade crossing extend across the road to within one foot of the far edge of the pavement. If two gates are used, with one on each side of the road, the gap between the ends of the gates

when they are in the down position should be no more than two feet if no median is present. If the highway approach is equipped with a median, the lowered gates should reach to within one foot of the median. In this and other similar measurements, the measurement should be horizontal across the road from the end of the lowered gate to the median or to a point over the median edge. The gate and the median top do not have to be at the same elevation. In situations in which only one gate is used, the edge of the road opposite the gate mechanism must have a barrier curb extending to and around the nearest intersection for at least 100 feet, so that the motorist cannot veer onto the shoulder of the road and drive around the gate tip.

FRA also proposes that the warning system be equipped with constant warning time systems as well as equipped with signs alerting motorists that the train horn does not sound.

5. Photo Enforcement

An automated means of gathering valid photographic or video evidence of violations of traffic laws relating to highway-rail grade crossings can be an effective supplementary safety measure if there is sufficient support and follow through by the law enforcement and judicial community. FRA would require that state law authorize use of photographic evidence both to bring charges against the vehicle owner and sustain the burden of proof that a traffic law violation has occurred. This would need to be accompanied by the commitment of the law enforcement and judicial communities to vigorously enforce the traffic laws in this area. Evidence of sufficient commitment would be traffic law violation penalties (and collection) sufficiently large to deter violations. Although we do not intend to mandate any specific penalty, we suggest that a fine of at least $100 be assessed against the violator. Some states have substantially higher penalties, such as Illinois and Florida with $500 fines. Other possible measures of sufficient deterrence could include one or more points posted against a violator's driving license.

The proposed rule would also require that the photo enforcement system have a means to reliably detect violations (such as loop detectors and video imaging technology) and photo or video equipment deployed to capture images sufficient to convict violators under state law. FRA does not propose to require that every public highway-rail grade crossing be equipped with cameras for continual monitoring. FRA believes the goal of deterrence may be accomplished by moving the surveillance equipment among several crossing locations, as long as the motorist perceives the strong possibility that a violation of the law will lead to sanctions. Therefore, each location should appear identical to the motorist, whether or not the camera or video equipment is actually within the housing or equivalent equipment.

FRA also proposes to require appropriate integration, testing and maintenance of the system to provide evidence supporting enforcement. Periodic data analysis

would be performed to verify that violation rates remain below a baseline level (level with train horns sounding). Also required would be signs alerting motorists that train horns are not sounded and that the crossings are monitored for compliance with the law.

Public awareness efforts are critical to the success of this program. The public must be informed that the horns are not being sounded and that violation of crossing laws will result in fines and penalties.

8. PROPOSED RECOMMENDATIONS

A. Establish "Railroad Safety Enhancement Zone" and Close Selective Crossings

It is proposed to establish a "Railroad Safety Enhancement Zone" that follows the criteria set for the establishment of a "Quiet Zone".

The present east-west train route shared by Norfolk Southern and CSX would incorporate a "Railroad Safety Enhancement Zone" distance of approximately 1.8 miles and the north-south distance would be approximately 1800 feet. These estimates are based on federal laws requiring trains to commence 'whistle blowing' 1,350 feet from prior to reaching a street crossing. Trains entering the study corridor and heading east would cease 'whistle blowing' just after crossing Batavia-White River Blvd and not commence 'whistle blowing' until just west of Hackley. Trains entering the corridor from the west would cease 'whistle blowing' just after crossing Ohio Avenue and would commence 'whistle blowing' just past Kilgore Avenue. Trains entering the study area from the south would cease 'whistle blowing' at Memorial Drive. Trains leaving the study area and headed south would begin "whistle blowing' after they cross Memorial Drive and before they reach 22nd Street.

Due to increased emphasis on crossing safety and the limitations of available resources, crossing consolidation is the surest way to reduce the potential for highway-rail crossing collisions.

As presented in TABLE 5 (Proposed Recommendations), the following seven at-grade crossing are considered for closing:

1. Jefferson Street
2. Monroe Street
3. Vine Street and
4. Pershing Drive to the east of downtown

5. 6th Street
6. 9th Street and
7. 10th Street to the south

In addition to the closing recommendations, the table summarizes the supplementary safety measures for the remaining nineteen railroad intersections.

The following list of closing criteria was used to identify crossings for possible elimination:

- Redundant crossings (i.e., more than four per mile in urban areas).
- Crossings with less than 2,000 vehicles per day and more than two trains per day.
- Crossings where a high number of collisions has occurred.
- Crossings that occur where the road crosses railroad tracks diagonally or any crossing with a reduced sight distance.
- An adjacent crossing when one is being upgraded or grade-separated.
- Several adjacent crossings when a new one is being built.
- Private crossings for which no responsible user can be identified.
- Private crossings for which the user is unable or unwilling to fund improvements.
- Complex crossings where it is difficult to provide adequate warning devices or that have severe operating problems (i.e., multiple tracks, extensive switching operations, long periods of blocked crossings).

TABLE 5 - PROPOSED RECOMMENDATIONS

EXHIBIT #	LOCATION	RAILROAD	AAR #	RECOMMENDATION	SUPPLEMENTARY SAFETY MEASURE OR CLOSURE TREATMENTS
2	Batavia Avenue	CSX	538902U	INSTALL SSM	Barrier curb median, 100 ft
					3-Quadrant Gate w/Flashing Light
					Advance Warning Signs
3	Perkins Avenue	CSX	538901M	INSTALL SSM	Barrier curb median, 100 ft
					Advance Warning Signs
4	Kilgore Avenue	NS	474550K	INSTALL SSM	4-Quadrant Gate w/Flashing Light
					Advance Warning Signs
5	Elliott Street	CSX & NS	474549R	INSTALL SSM	Barrier curb median, 100 ft
					Barrier curb median, 60 ft
					Advance Warning Signs
7	Council Street (C)	NS	474547C	INSTALL SSM	Advance Warning Signs
6	Council Street (B)	CSX	538900F	INSTALL SSM	2-Quadrant Gate w/Flashing Light
					Advance Warning Signs
6	Council Street (A)	CSX	537496W	INSTALL SSM	3-Quadrant Gate w/Flashing Light
					Advance Warning Signs
8	Liberty Street (A)	NS	477180U	INSTALL SSM	Barrier curb median, 60 ft
					Advance Warning Signs
8	Liberty Street (B)	CSX	538899N	INSTALL SSM	Barrier curb median, 100 ft
					Advance Warning Signs
9	Liberty Street (C)	NS	879193G	INSTALL SSM	Barrier curb median, 60 ft
					Advance Warning Signs
10	Walnut Street	CSX & NS	477176E	INSTALL SSM	Barrier curb median, 100 ft (Aesthetically Pleasing)
					Advance Warning Signs
11	Jefferson Street	CSX & NS	477174R	CLOSE CROSSING	Barricades
					Advance warning and regulatory signs
12	Elm Street	CSX & NS	477173J	INSTALL SSM	Barrier curb median, 60 ft
					Advance Warning Signs

EXHIBIT #	LOCATION	RAILROAD	AAR #	RECOMMENDATION	SUPPLEMENTARY SAFETY MEASURE OR CLOSURE TREATMENTS
12	Madison Street	CSX & NS	477172C	NONE	N/A
13	Monroe Street	CSX & NS	477171V	CLOSE CROSSING	Barricades Advance warning and regulatory signs
14	Vine Street	CSX & NS	477170N	CLOSE CROSSING	Barricades Advance warning and regulatory signs
15	Pershing Drive	CSX & NS	477169U	CLOSE CROSSING	Barricades Advance warning and regulatory signs
16	Hackley Street	CSX & NS	477168M	INSTALL SSM	Barrier curb median, 100 ft Advance Warning Signs
17	Ohio Avenue	CSX & NS	477167F	INSTALL SSM	Barrier curb median, 100 ft 2-Barrier curb median, 60 ft Advance Warning Signs
18	Hoyt Avenue	NS	537497D	INSTALL SSM	Barrier curb median, 60 ft Advance Warning Signs
18	Willard Street	NS	537498K 879192A	INSTALL SSM	4-Quadrant Gate w/Flashing Light Advance Warning Signs
19	6th Street	NS	537499S	CLOSE CROSSING	Barricades Advance warning and regulatory signs
20	8th Street	NS	537501R	INSTALL SSM	4-Quadrant Gate w/Flashing Light Advance Warning Signs
21	9th Street	NS	537502X	CLOSE CROSSING	Barricades Advance warning and regulatory signs
22	10th Street	NS	537503E	CLOSE CROSSING	Barricades Advance warning and regulatory signs
23	Memorial Drive	NS	537504L	INSTALL SSM	4-Quadrant Gate w/Flashing Light Advance Warning Signs

Batavia Avenue / Nichols Avenue (Exhibit 2):

The existing warning devices will remain. A raised concrete median barrier 100 feet from the gate is proposed on the south side of railroad. Kilgore Avenue intersection is less than 60 feet of the gate, thus a median cannot be provided to the north of the railroad. One quadrant gate will be required on the northbound lane to the north of the railroad to fully block highway traffic from entering the crossing when the gates are lowered, thus making it a three-quadrant gate system. Installing four-quadrant gates will not be an option as traffic signal preemption is required. The existing quadrant gates at the two right turn lanes will remain.

Perkins Avenue (Exhibit 3):

The existing warning devices will remain. A raised concrete median barrier will separate the opposing traffic lanes on both roadway approaches to the crossing. The median will extend 100 feet from the gate.

Kilgore Avenue (Exhibit 4):

A four-quadrant gate system is proposed. 2nd Street, northeast of the railroad and a commercial entrance, southwest of the railroad, are less than 60 feet from the railroad. Utilization of a curb median would restrict access to and from these facilities.

Elliott Street (Exhibit 5):

The existing warning devices will remain. A raised concrete median barrier will separate the opposing traffic lanes on both roadway approaches to the crossing. The medians will extend 60 feet from the gate on the north side and 100 feet from the gate on the south side.

Council Street (Exhibit 6 & 7)

Due to the commercial entrances being less than 75 feet from the railroad crossings and in order to provide access to and from Council Street, it is not feasible to provide curb median barrier on either side of the crossings. Powers Street, less than 60 feet north of the railroad, is an east-west route running between Kilgore Avenue and Liberty Street and relocation or closure of this street is not possible. The existing warning devices will remain at the north crossing. The train traffic at the north crossing is 6 trains per day and the trains will be allowed to blow the horn when they approach this crossing. The south crossing will require a three-quadrant gate system with two-quadrant gates on the south

side and one-quadrant gate on the north side of the southbound lane. The middle crossing will utilize a two-quadrant gate system with one-quadrant gate installed on both sides of the crossing.

Liberty Street (Exhibit 8 & 9):

The existing warning devices will remain at all the crossings. Raised concrete median barriers will separate the opposing traffic lanes on both roadway approaches to the crossings. At the crossing between Hoyt Avenue and 2nd Street, the median will extend 60 feet from the gate on both north and south sides of the railroad (Exhibit 9). At the crossing north of Hoyt Avenue, the median will extend 100 feet from the gate on both north and south sides of the railroad (Exhibit 8). At the crossing south of Powers Street, the median will extend 60 feet from the gate on both north and south sides of the railroad (Exhibit 8).

Walnut Street (Exhibit 10):

The existing warning devices will remain. Raised median barriers will separate the opposing traffic lanes on both roadway approaches to the crossing. The median will extend 100 feet from the gate. North of the railroad, at the Seymour Street and Walnut Street intersection, a roundabout is being proposed as a part of a beautification project. Any improvement at this crossing should blend with the proposed beautification in the area.

Jefferson Street (Exhibit 11)

Closure of the Jefferson Street crossing to roadway traffic is proposed. Jefferson Street currently is a one-way street and will be restored to two-way traffic after the improvement. The vehicle traffic at this crossing is 651 vehicles per day and train traffic is 46 to 54 trains per day . Madison Street, a grade separated crossing about 750 feet east of Jefferson Street, and Walnut Street about 600 feet west of Jefferson Street, can be used as the other north-south access to properties on either side of the crossing. Closure of the crossing meets the FRA identified crossing elimination criteria.

Elm Street (Exhibit 12):

The existing warning devices will remain. A raised concrete median barrier will separate the opposing traffic lanes on both roadway approaches to the crossing. The median will extend 60 feet from the gate. The street will be restored to two-way traffic to accommodate downtown redevelopment and future public housing.

Madison Street (Exhibit 12):

Madison Street crossing is grade separated by an underpass. The underpass is the designated route for fire trucks and ambulances, which will support potential street closings.

Monroe Street (Exhibit 13):

Closure of the Monroe Street crossing to roadway traffic is proposed. The vehicle traffic at this crossing is 796 vehicles per day and train traffic is 46 to 54 trains per day. Madison Street, a grade separated crossing about 300 feet west of Monroe Street, can be used as the other north-south access to properties on either side of the crossing. Closure of the crossing meets the FRA identified crossing elimination criteria.

Vine Street (Exhibit 14):

Closure of the Vine Street crossing to roadway traffic is proposed. The vehicle traffic at this crossing is 383 vehicles per day and train traffic is 46 to 54 trains per day. Madison Street, a grade separated crossing about 625 feet west of Vine Street, and Hackley Street about 675 feet east of Vine Street, can be used as the other north-south access to properties on either side of the crossing. Closure of the crossing meets the FRA identified crossing elimination criteria.

Pershing Drive (Exhibit 15):

Closure of the Pershing Street crossing to roadway traffic is proposed. The vehicle traffic at this crossing is 305 vehicles per day and train traffic is 46 to 54 trains per day. Hackley Street about 375 feet east of Pershing Drive can be used as the other north-south access to properties on either side of the crossing. Closure of the crossing meets the FRA identified crossing elimination criteria.

Hackley Street (Exhibit 16):

The existing warning devices will remain. Raised concrete median barriers will separate the opposing traffic lanes on both roadway approaches to the crossing. The median will extend 100 feet from the gate.

Ohio Avenue (Exhibit 17):

The existing warning devices will remain. Raised concrete median barriers will separate the opposing traffic lanes on the roadway approaches to the crossing. The median will extend 100 feet from the gate on Burlington Drive and 60 feet from the gate on Ohio Avenue and Blaine Street. 60 foot medians are proposed in order to provide access to the commercial entrance east of Blaine Street and west of Ohio Avenue. The 66-foot entrance to the corner parking lot east of

Blaine Street will be reduced to approximately 45 feet in order to accommodate the 60 foot median.

Hoyt Avenue (Exhibit 18):

The existing warning devices will remain. Raised concrete median barriers will separate the opposing traffic lanes on both roadway approaches to the crossing. The median will extend 60 feet from the gate. The south end of the median to south of the railroad crossing will be depressed to provide access for northbound traffic to the commercial entrance at the northwest corner of Hoyt Avenue and Willard Street.

Willard Street (Exhibit 18):

A four-quadrant gate system is proposed. The existing warning devices will remain. Two quadrant gates will be required on both sides of the railroad to fully block highway traffic from entering the crossings when the gates are lowered. Hoyt Avenue is about 75 feet west of the railroad, a railroad access road is to the south of Willard Street west of the west railroad crossing, a commercial entrance is to the north of Willard Street between the two railroad crossings, a residential entrance is about 45 feet east of the east crossing north of Willard Street and a commercial entrance is about 20 feet east of the east crossing south of Willard Street. In order to provide access to and from Willard Street to these entrances and Hoyt Avenue, it is not feasible to provide curb median barrier on either side of the crossing.

6th Street (Exhibit 19):

Closure of the 6th Street crossing to roadway traffic is proposed. The vehicle traffic at this crossing is 488 vehicles per day and train traffic is 24 trains per day. Also, 6th Street intersects the railroad diagonally west of the crossing. The angle of intersection is 35° from perpendicular and can restrict sight lines and turning movements. Willard Street about 650 feet north of 6th Street and 8th Street about 660 feet south of 6th Street can be used as the other east-west access to properties on either side of the crossing. Closure of the crossing meets the FRA identified crossing elimination criteria.

8th Street (Exhibit 20):

A four-quadrant gate system is proposed. The existing warning devices will remain. Two quadrant gates will be required on both sides of the railroad to fully block highway traffic from entering the crossing when the gates are lowered. Cherry Street, south of 8th Street and a commercial entrance north of 8th Street, is at a distance of about 30 feet west of the railroad and to the east of the railroad, south of 8th Street are residential driveways. In order to provide access

to and from 8th Street, it is not feasible to provide curb median barrier on either side of the crossing.

9th Street (Exhibit 21):

Closure of the 9th Street crossing to roadway traffic is proposed. The vehicle traffic at this crossing is 216 vehicles per day and train traffic is 24 trains per day. 8th Street, about 305 feet north of 9th Street, can be used as the other east-west access to properties on either side of the crossing. Closure of the crossing meets the FRA identified crossing elimination criteria.

10th Street (Exhibit 22):

Closure of 10th Street crossing to roadway traffic is proposed. The vehicle traffic at this crossing is 246 vehicles per day and train traffic is 24 trains per day. 8th Street about 600 feet north of 10th Street and Memorial Drive about 725 feet south of 10th Street, can be used as the other east-west access to properties on either side of the crossing. Closure of the crossing meets the FRA identified crossing elimination criteria.

Memorial Drive (Exhibit 23):

A four-quadrant gate system is proposed. The existing warning devices will remain. A Two-quadrant gate will be required on both sides of the railroad to fully block highway traffic from entering the crossing when the gates are lowered. Cherry Street residential and commercial entrances are at distance of less than 75 feet from the railroad crossing. In order to provide access to and from Memorial Drive to these entrances, it is not feasible to provide a curb median barrier on either side of the crossing.

B. Establish and Implement Supplemental Safety Programs

As a supplement to the Railroad Safety Enhancement Zone Program, it is recommended that the following program be implemented to enhance public education for the new initiative.

Operation Lifesaver is a nationwide, non-profit public information program dedicated to eliminating collisions, injuries and fatalities at highway-rail grade crossings and on railroad rights-of-way. Through a network of State Coordinators in 49 states (excluding Hawaii), Operation Lifesaver sends nearly 2,500 volunteers into the field to deliver a public safety message. It is sponsored cooperatively by federal, state, and local government agencies, civic organizations, and the nation's railroads.

Indiana Operation Lifesaver is comprised of a group of concerned individuals and companies throughout the state. Indiana residents can arrange to have a

presentation given to a group or organization. The party to contact is listed below:

Thomas Kinser, Coordinator
Indiana Operation Lifesaver
(317) 267-HELP

9. ALTERNATIVE SAFETY MEASURES – WAYSIDE HORNS

Wayside horns are instruments that are placed at a crossing and directed at incoming motorists. The device is activated by the same track circuits used to activate the other automated warning devices at the crossings. When a train approaches the crossing, it activates the wayside horn. The horn directs the sound towards the oncoming vehicular traffic within the intersection. The device does not eliminate the horn noise, but does improve the noise level by directing the sound towards the intersection. The wayside horn currently is not on the approved list of the Federal Rail Associations Supplemental Safety Measures. The FRA is continuing to evaluate the wayside horn to permit a determination of whether or not the wayside horn can fully substitute for train-borne audible warnings.

If the wayside horn can be found acceptable as a Supplemental Safety Measure, the Railroad Safety Enhancement Zone could be equipped with this device for approximately $850,000 (19 crossings @ $44,000 per crossing which includes equipment and installation).

10. FUTURE CONSIDERATIONS:

As train traffic continues to grow within the city, vehicular traffic will continue to experience more delays. To lessen this impact, long term planning should include provisions to construct grade separations within the downtown area and on Memorial Drive.

Walnut Street and Hackley Street are each located approximately 1300 feet west and 1,300 feet east respectively of Madison Street. Right-of-way costs for locations would be high due to close proximity of businesses. Approximate construction costs are $2,500,000 and $1,500,000 respectively for each site. The approximate cost for the Memorial Drive bridge construction would be $2,500,000. Right-of-way cost would be high due to involvement with local business and the post office.

11. TRAFFIC CONTROL DEVICES

Typical signs and pavement markings to be used at railroad-highway grade crossings are to be in conformance with the Manual of Uniform Traffic Control Devices (MUTCD). MUTCD standards should be met for any barricades and warning and regulatory signs used in the closure of a facility. Signs for alternate highway routes should be erected in accordance with MUTCD and state and local standards and should inform pedestrians and motorists that the streets are closed, the period for which they are closed and that alternative routes must be used.

The following two signs shall be provided on both sides of all at-grade crossings within the limits of the "Railroad Safety Enhancement Zone".

TRAIN HORNS DO NOT SOUND	Warning Sign will be placed 12 feet from the crossing
TRAIN HORNS ARE NOT SOUNDED AT THE CROSSING	Advanced Warning Sign will be placed at appropriate distance ahead of the crossing.

12. RIGHT-OF-WAY REQUIREMENTS

No right-of-way acquisitions are required for implementation of the Railroad Safety Enhancement Zone or the closing of selective crossings.

13. ESTIMATE OF COST

See TABLE 6 (Cost Estimates). The anticipated estimate of cost for implementing the Railroad Safety Enhancement Zone is approximately $1,900,000.00.

TABLE 6 - COST ESTIMATE

EXHIBIT #	LOCATION	RAILROAD	AAR #	SUPPLEMENTARY SAFETY MEASURE (SSM) OR CLOSURE	QUANTITY (EACH)	UNIT	AMOUNT
2	Batavia Ave.	CSX	538902U	Barrier curb median, 100ft	1	$12,000	$12,000
				3-Quadrant Gate w/Flashing Light	1	$225,000	$225,000
				Advance Warning Signs	4	$200	$800
3	Perkins Ave.	CSX	538901M	Barrier curb median, 100ft	2	$12,000	$24,000
				Advance Warning Signs	4	$200	$800
4	Kilgore Ave.	NS	474550K	4-Quadrant Gate w/Flashing Light	1	$250,000	$250,000
				Advance Warning Signs	6	$200	$1,200
5	Elliott St.	CSX & NS	474549R	Barrier curb median, 100ft	1	$12,000	$12,000
				Barrier curb median, 60ft	1	$7,500	$7,500
				Advance warning and regulatory signs	4	$200	$800
7	Council St. (C)	NS	474547C	Advance Warning Signs	3	$200	$600
6	Council St. (B)	CSX	538900F	2-Quadrant Gate w/Flashing Light	1	$150,000	$150,000
				Advance Warning Signs	2	$200	$400
6	Council St. (A)	CSX	537496W	3-Quadrant Gate w/Flashing Light	1	$225,000	$225,000
				Advance Warning Signs	3	$200	$600
8	Liberty St (A)	NS	477180U	Barrier curb median, 60ft	2	$7,500	$15,000
				Advance Warning Signs	3	$200	$600
8	Liberty St (B)	CSX	538899N	Barrier curb median, 100ft	2	$12,000	$24,000
				Advance Warning Signs	2	$200	$400
9	Liberty St (C)	NS	879193G	Barrier curb median, 60ft	2	$7,500	$15,000
				Advance Warning Signs	3	$200	$600
10	Walnut St	CSX & NS	477176E	Barrier curb median, 100ft (Aesthetically Pleasing)	2	$16,000	$32,000
				Advance Warning Signs	4	$200	$800
11	Jefferson St.	CSX & NS	477174R	Barricades	1	$2,500	$2,500
				Advance warning and regulatory signs	6	$200	$1,200

TABLE 6 - COST ESTIMATE

EXHIBIT #	LOCATION	RAILROAD	AAR #	SUPPLEMENTARY SAFETY MEASURE (SSM) OR CLOSURE	QUANTITY (EACH)	UNIT	AMOUNT
12	Elm St.	CSX & NS	477173J	Barrier curb median, 60ft	2	$7,500	$15,000
				Advance warning and regulatory signs	4	$200	$800
12	Madison St.	CSX & NS	477172C	None	0	$0	$0
13	Monroe St	CSX & NS	477171V	Barricades	1	$2,500	$2,500
				Advance warning and regulatory	6	$200	$1,200
14	Vine St	CSX & NS	477170N	Barricades	1	$2,500	$2,500
				Advance warning and regulatory signs	6	$200	$1,200
15	Pershing Dr.	CSX & NS	477169U	Barricades	1	$2,500	$2,500
				Advance warning and regulatory signs	6	$200	$1,200
16	Hackley St	CSX & NS	477168M	Barrier curb median, 100ft	2	$12,000	$24,000
				Advance Warning Signs	4	$200	$800
17	Ohio Ave	CSX & NS	477167F	Barrier curb median, 100ft	1	$12,000	$12,000
				Barrier curb median, 60ft	2	$7,500	$15,000
				Advance Warning Signs	6	$200	$1,200
18	Hoyt Ave	NS	537497D	Barrier curb median, 60ft	2	$7,500	$15,000
				Advance Warning Signs	4	$200	$800
18	Willard St.	NS	537498K	4-Quadrant Gate w/Flashing Light	1	$250,000	$250,000
			879192A	Advance Warning Signs	4	$200	$800
19	6th Street	NS	537499S	Barricades	1	$2,500	$2,500
				Advance warning and regulatory signs	6	$200	$1,200
20	8th Street	NS	537501R	4-Quadrant Gate w/Flashing Light	1	$250,000	$250,000
				Advance Warning Signs	6	$200	$1,200

TABLE 6 - COST ESTIMATE

EXHIBIT #	LOCATION	RAILROAD	AAR #	SUPPLEMENTARY SAFETY MEASURE (SSM) OR CLOSURE	QUANTITY (EACH)	UNIT	AMOUNT
21	9th Street	NS	537502X	Barricades	1	$2,500	$2,500
				Advance warning and regulatory signs	6	$200	$1,200
22	10th Street	NS	537503E	Barricades	1	$2,500	$2,500
				Advance warning and regulatory signs	6	$200	$1,200
23	Memorial Dr.	NS	537504L	4-Quadrant Gate w/Flashing Light	1	$250,000	$250,000
				Advance Warning Signs	6	$200	$1,200
						Total	$1,862,800

14. FUNDING SOURCES FOR CROSSING SAFETY, CONSOLIDATION AND CLOSURE

Some funding options are available to assist the city of Muncie in the modification of highway-rail grade crossings. Federal funds are available for eliminating crossing hazards, crossing closures or modifications. State funds are also designated for highway-rail grade crossing improvements and to provide incentive payments to local authorities.

A. Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)

In 1991, Congress enacted the Intermodal Surface Transportation Efficiency Act (ISTEA). This Act specifies that most of the funds for crossing improvements come through the Federal Highway Administration (FHWA). In 1973, Congress established and funded a categorical Highway Trust Fund program for improving highway-rail grade crossing safety. Congress has funded the crossing safety program continuously since then. Most recently, through passage of the ISTEA, Congress authorized more than $3.4 billion in fiscal year (FY) 1992 and nearly $4.1 billion per year in FY 1993 through 1997. Of this amount, 10 percent is set aside for safety programs, including crossing safety.

At least 50 percent of the funds must be spent on the installation or upgrading of warning devices or on other means of eliminating crossing hazards. States also receive more than $116 million in the set-aside amount that can be spent on hazard elimination at crossings or on highways. All public crossings are eligible. Projects may include the installation of train-activated warning devices, signs and pavement markings, crossing closures, the building of bridges, and other modifications. In FY 1996, the safety set-aside totals $456 million. Approximately $152 million of this amount must be reserved for carrying out the purpose of the Section 130 Program designed to allow for incentive payments for crossing consolidations.

Many of the provisions originated in ISTEA have been continued or expanded in its follow-up legislation, the Transportation Efficiency Act for the 21st Century (TEA-21).

B. The Transportation Equity Act for the 21st Century (TEA-21)

The Transportation Equity Act for the 21st Century was enacted June 9, 1998 as Public Law 105-178. TEA-21 authorizes the Federal surface transportation programs for highways, highway safety, and transit for the 6-year period 1998-2003. Approximately $2.3 billion is authorized for highway safety grant programs. In addition, two transfer programs were authorized. The Act authorizes a consolidated behavioral and roadway State and Community Highway Safety formula grant program under Title 23 U.S.C. 402. Funding of

$932.5 million is provided over 6 years. The Section 402 program provides funds to all States, territories, the District of Columbia, and the Indian Nations for performance-based highway safety programs. The grants support planning to identify highway safety problems, set goals and performance measures for highway safety improvements, provide start-up money for new programs, give new direction and support to existing safety programs, and fund analyses to determine progress in improving safety. At least 40 percent of these funds is to be used by States and communities to address local traffic safety problems.

C. Section 130 Program: Crossing Safety Improvement

To encourage incentive programs nationwide, the American Association of State Highway Transportation Officials recently approved a resolution to support changes in the United States Code and the Code of Federal Regulations. These amendments would allow states to use some of their ISTEA federal funds reserved for highway-rail grade crossing improvements to provide incentive payments to local highway authorities for crossing consolidations and eliminations.

Currently proposed legislation by the U.S. Department of Transportation would allow cash payments from the Surface Transportation Program set-aside funds reserved for carrying out Title 23, Section 130 (the crossing safety improvement program) to local jurisdictions for the permanent surrendering of a crossing easement. However, the amounts paid would be limited to $7,500 and the amount paid would have to be matched by the railroad company owning the affected track. Congress is proposing legislation to modify Title 23, Section 120(c), Increased Federal Share for Certain Safety Projects, to include crossing closure projects as among those projects eligible for 100 percent federal funding. In its highway-rail action plan the Federal Railroad Administration takes the position that the current legislation acts as a disincentive to close a crossing by requiring a state or local match for a closure project.

15. COORDINATION

In an effort to be responsive to the public and gain public input in the process of investigation and assessment for the implementation of these ordinances, the city has established a Railroad Safety Enhancement Zone Committee. Members from various different organizations are the part of this committee. During the development of the study, several meetings were held to gather data and share ideas. See Appendix A for the dates and minutes of the Project Co-ordination Meetings.

16. PUBLIC INVOLVEMENT

There is no right-of-way acquisition anticipated for the implementation of the "Railroad Safety Enhancement Zone" or for the closing of selective crossings. Since there is no right-of-way acquisition, a public hearing will not be anticipated. Prior to implementing the Railroad Safety Enhancement Zone or proceeding with the closing of selective crossings, the City of Muncie will hold public information meetings to communicate and gain local input. The dates for the meetings will be determined at a later date.

17. ADDENDUM 1

The City of Muncie requested that the stationary horn be used as a design alternate. Three locations were modified to incorporate the wayside horn as a supplemental safety device. They are as follows:

Exhibit #	Location
2A	Batavia Avenue
4A	Kilgore Avenue
23A	Memorial Drive

Attached in the succeeding pages are revised exhibits 2A, 4A, and 23A and the revised Tables 5A and 6A.

The sites selected are on the western and southern edges of the proposed project area. The stationary horn device will add an additional safety measure to the existing safety devices. The stationary horn is proposed in lieu of more expensive 4 quadrant gate installations at Kilgore Avenue and Memorial Drive and will reduce project costs. Use of the wayside horn will meet the objective of enhancing railroad safety in the study area and reducing noise impacts.

The City of Muncie has had preliminary discussions with Railroad Controls Limited (RCL) about the use of the stationary horn device. RCL has indicated the willingness to work out an insurance liability agreement with the City at the locations where the stationary horn is used in conjunction with existing safety devices.

TABLE 5A - PROPOSED RECOMMENDATIONS

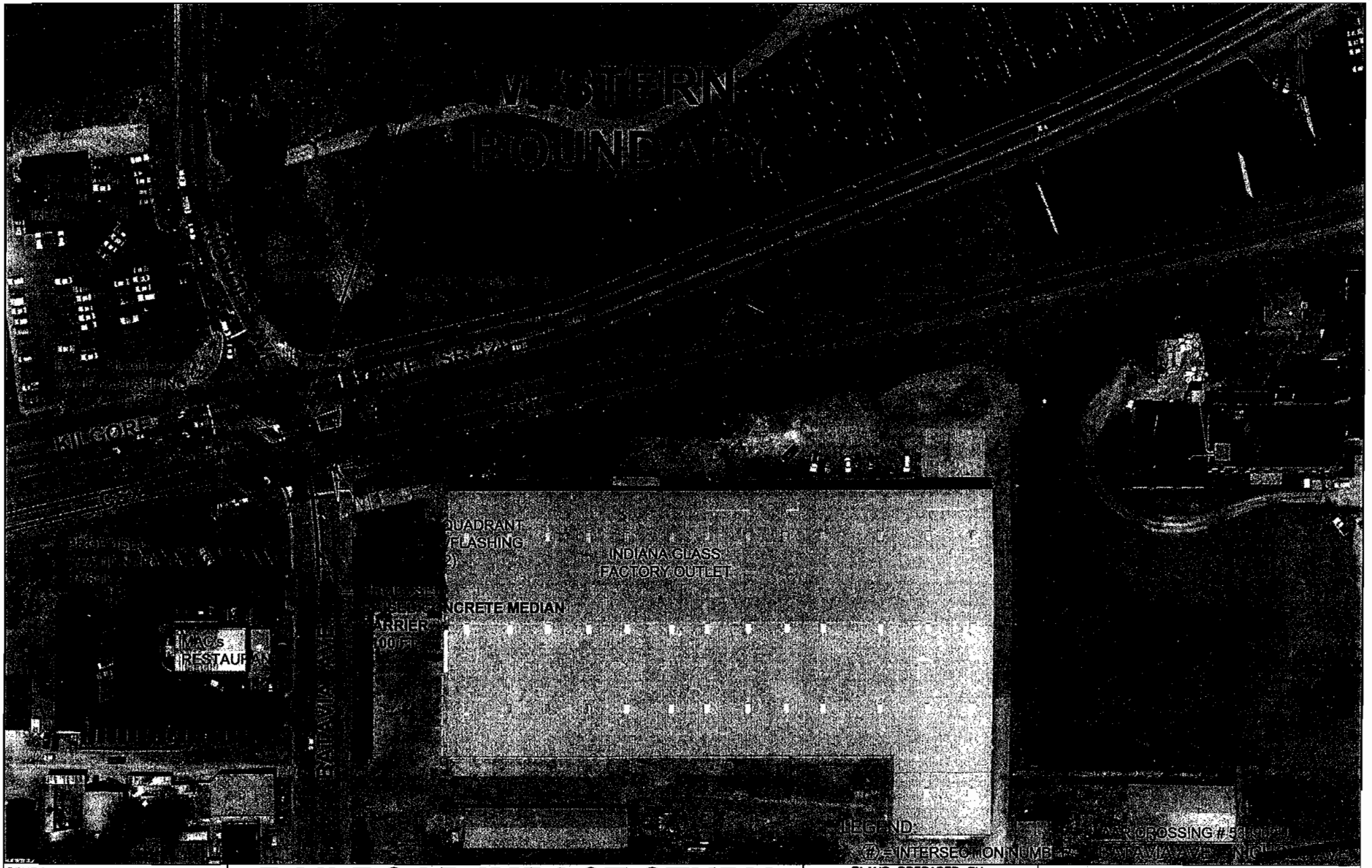
Per Addendum 1, 6/2001

EXHIBIT #	LOCATION	RAILROAD	AAR #	RECOMMENDATION	SUPPLEMENTARY SAFETY MEASURE OR CLOSURE TREATMENTS
2	Batavia Avenue	CSX	538902U	INSTALL SSM	Barrier curb median, 100ft
					Stationary Horn System
					Advance Warning Signs
3	Perkins Avenue	CSX	538901M	INSTALL SSM	Barrier curb median, 100ft
					Advance Warning Signs
4	Kilgore Avenue	NS	474550K	INSTALL SSM	**Stationary Horn System**
					Advance Warning Signs
5	Elliott Street	CSX & NS	474549R	INSTALL SSM	Barrier curb median, 100ft
					Advance Warning Signs
7	Council Street (C)	NS	474547C	INSTALL SSM	Quadrant Gate w/Flashing Light
					Advance Warning Signs
6	Council Street (B)	CSX	538900F	INSTALL SSM	Quadrant Gate w/Flashing Light
					Advance Warning Signs
6	Council Street (A)	CSX	537496W	INSTALL SSM	Advance Warning Signs
8	Liberty Street (A)	NS	477180U	INSTALL SSM	Barrier curb median, 60ft
					Advance Warning Signs
8	Liberty Street (B)	CSX	538899N	INSTALL SSM	Barrier curb median, 100ft
					Advance Warning Signs
9	Liberty Street (C)	NS	879193G	INSTALL SSM	Barrier curb median, 60ft
					Advance Warning Signs
10	Walnut Street	CSX & NS	477176E	INSTALL SSM	Barrier curb median, 100ft (Beautification)
					Advance Warning Signs
11	Jefferson Street	CSX & NS	477174R	CLOSE CROSSING	Barricades
					Advance warning and regulatory signs
12	Elm Street	CSX & NS	477173J	INSTALL SSM	Barrier curb median, 60ft
					Advance Warning Signs
12	Madison Street	CSX & NS	477172C	NONE	N/A Existing Underpass
13	Monroe Street	CSX & NS	477171V	CLOSE CROSSING	Barricades
					Advance warning and regulatory signs
14	Vine Street	CSX & NS	477170N	CLOSE CROSSING	Barricades
					Advance warning and regulatory signs
15	Pershing Drive	CSX & NS	477169U	CLOSE CROSSING	Barricades
					Advance warning and regulatory signs
16	Hackley Street	CSX & NS	477168M	INSTALL SSM	Barrier curb median, 100ft
					Advance Warning Signs
17	Ohio Avenue	CSX & NS	477167F	INSTALL SSM	Barrier curb median, 100ft
					Barrier curb median, 60ft
					Advance Warning Signs
18	Hoyt Avenue	NS	537497D	INSTALL SSM	Barrier curb median, 60ft
					Advance Warning Signs
18	Willard Street	NS	537498K 879192A	INSTALL SSM	Quadrant Gate w/Flashing Light
					Advance Warning Signs
19	6th Street	NS	537499S	CLOSE CROSSING	Barricades
					Advance warning and regulatory signs
20	8th Street	NS	537501R	INSTALL SSM	Quadrant Gate w/Flashing Light
					Advance Warning Signs
21	9th Street	NS	537502X	CLOSE CROSSING	Barricades
					Advance warning and regulatory signs
22	10th Street	NS	537503E	CLOSE CROSSING	Barricades
					Advance warning and regulatory signs
23	Memorial Drive	NS	537504L	INSTALL SSM	**Stationary Horn System**
					Advance Warning Signs

TABLE 6A - COST ESTIMATE

Per Addendum 1, 6/2001

EXHIBIT #	LOCATION	RAILROAD	AAR #	SUPPLEMENTARY SAFETY MEASURE (SSM) OR CLOSURE	QUANTITY (EACH)	UNIT	AMOUNT
2	Batavia Ave.	CSX	538902U	Barrier curb median, 100ft	1	$12,000	$12,000
				Stationary Horn System	1	$40,000	$40,000
				Advance Warning Signs	4	$200	$800
3	Perkins Ave.	CSX	538901M	Barrier curb median, 100ft	2	$12,000	$24,000
				Advance Warning Signs	4	$200	$800
4	Kilgore Ave.	NS	474550K	**Stationary Horn System**	1	$40,000	$40,000
				Advance Warning Signs	6	$200	$1,200
5	Elliott St.	CSX & NS	474549R	Barrier curb median, 100ft	2	$12,000	$24,000
				Advance warning and regulatory signs	6	$200	$1,200
7	Council St. (C)	NS	474547C	Quadrant Gate w/Flashing Light	3	$75,000	$225,000
				Advance Warning Signs	3	$200	$600
6	Council St. (B)	CSX	538900F	Quadrant Gate w/Flashing Light	2	$75,000	$150,000
				Advance Warning Signs	2	$200	$400
6	Council St. (A)	CSX	537496W	Advance Warning Signs	3	$200	$600
8	Liberty St (A)	NS	477180U	Barrier curb median, 60ft	2	$7,500	$15,000
				Advance Warning Signs	3	$200	$600
8	Liberty St (B)	CSX	538899N	Barrier curb median, 100ft	2	$12,000	$24,000
				Advance Warning Signs	2	$200	$400
9	Liberty St (C)	NS	879193G	Barrier curb median, 60ft	2	$7,500	$15,000
				Advance Warning Signs	3	$200	$600
10	Walnut St	CSX & NS	477176E	Barrier curb median, 100ft (Beautification)	2	$16,000	$32,000
				Advance Warning Signs	4	$200	$800
11	Jefferson St.	CSX & NS	477174R	Barricades	1	$2,500	$2,500
				Advance warning and regulatory signs	6	$200	$1,200
12	Elm St.	CSX & NS	477173J	Barrier curb median, 60ft	2	$7,500	$15,000
				Advance warning and regulatory signs	6	$200	$1,200
12	Madison St.	CSX & NS	477172C	None	0	$0	$0
13	Monroe St	CSX & NS	477171V	Barricades	1	$2,500	$2,500
				Advance warning and regulatory	6	$200	$1,200
14	Vine St	CSX & NS	477170N	Barricades	1	$2,500	$2,500
				Advance warning and regulatory signs	6	$200	$1,200
15	Pershing Dr.	CSX & NS	477169U	Barricades	1	$2,500	$2,500
				Advance warning and regulatory signs	6	$200	$1,200
16	Hackley St	CSX & NS	477168M	Barrier curb median, 100ft	2	$12,000	$24,000
				Advance Warning Signs	4	$200	$800
17	Ohio Ave	CSX & NS	477167F	Barrier curb median, 100ft	1	$12,000	$12,000
				Barrier curb median, 60ft	2	$7,500	$15,000
				Advance Warning Signs	6	$200	$1,200
18	Hoyt Ave	NS	537497D	Barrier curb median, 60ft	2	$7,500	$15,000
				Advance Warning Signs	4	$200	$800
18	Willard St.	NS	537498K 879192A	Quadrant Gate w/Flashing Light	4	$62,500	$250,000
				Advance Warning Signs	4	$200	$800
19	6th Street	NS	537499S	Barricades	1	$2,500	$2,500
				Advance warning and regulatory signs	6	$200	$1,200
20	8th Street	NS	537501R	Quadrant Gate w/Flashing Light	4	$62,500	$250,000
				Advance Warning Signs	6	$200	$1,200
21	9th Street	NS	537502X	Barricades	1	$2,500	$2,500
				Advance warning and regulatory signs	6	$200	$1,200
22	10th Street	NS	537503E	Barricades	1	$2,500	$2,500
				Advance warning and regulatory signs	6	$200	$1,200
23	Memorial Dr.	NS	537504L	**Stationary Horn System**	1	$40,000	$40,000
				Advance Warning Signs	6	$200	$1,200
						Total	$1,263,100



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DATE OF PHOTO: SPRING 1996

RAILROAD IMPACT STUDY
CITY OF MUNCIE, INDIANA

PLANS PREPARED BY:
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EXHIBIT 2A

DATE: JUNE, 2001

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DATE OF PHOTO: SPRING 1996

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CITY OF MUNCIE, INDIANA

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EXHIBIT 4A

DATE: JUNE, 2001

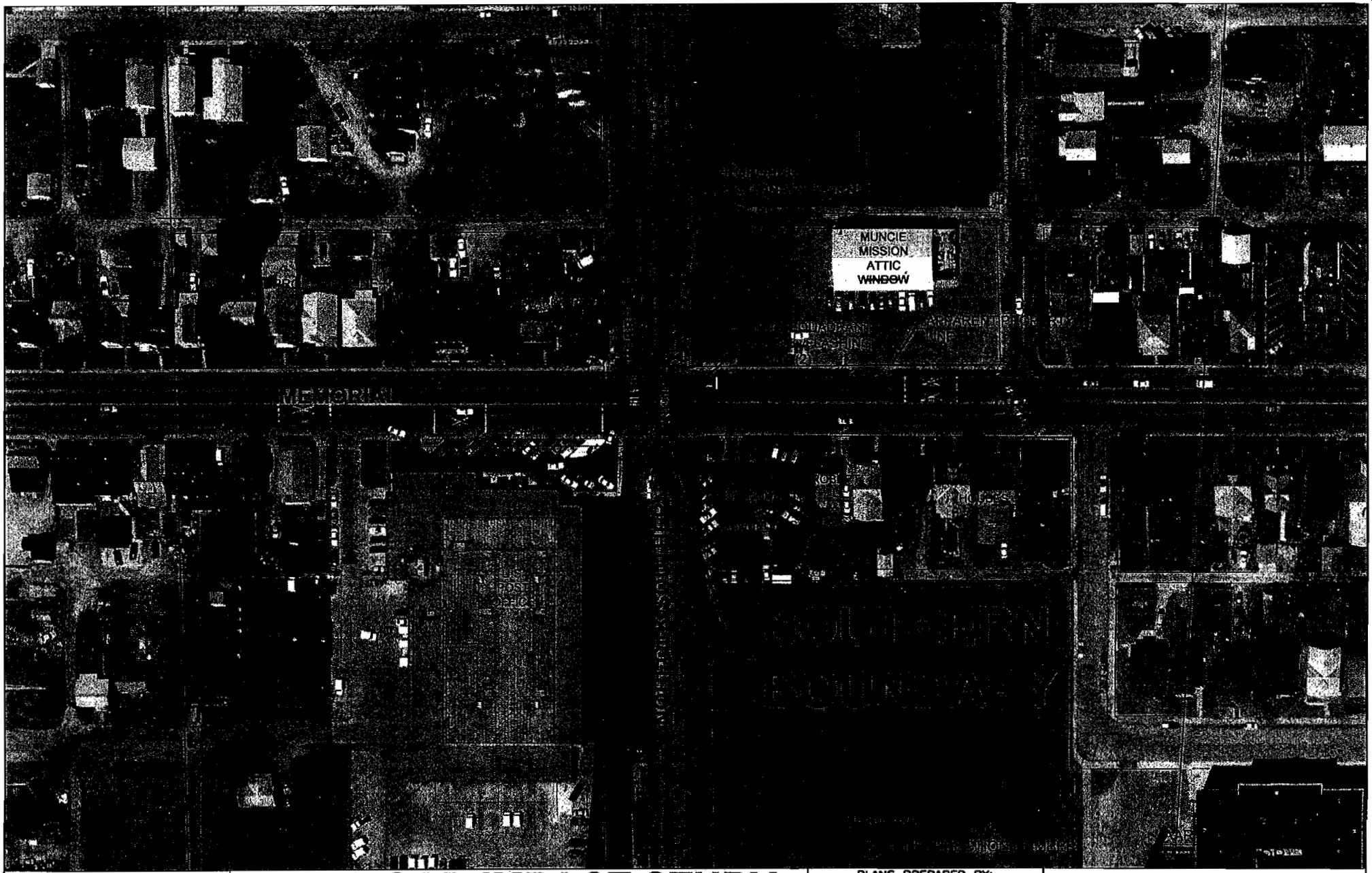

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EXHIBIT 23A

DATE: JUNE, 2001

REFERENCES

U. S. Department of Transportation Federal Railroad Administration. (1999). Draft Environmental Impact Statement – Proposed Rule for the Use of Locomotive Horns at Highway-Rail Grade Crossings. Washington, DC: Office of Railroad Development.

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U. S. Department of Transportation Federal Railroad Administration. (2000). Railroad Accident Analysis - www.safetydata.fra.dot.gov/crossing/ default.htm. Washington, DC: Office of Safety.

LIST OF EXHIBITS

Exhibit 1	General Location Map
Exhibit 1A	Key Map
Exhibit 2	Batavia Avenue (AAR #538902U)
Exhibit 3	Perkins Avenue (AAR #538901M)
Exhibit 4	Kilgore Avenue (AAR #474550K)
Exhibit 5	Elliot Street (AAR #474549R)
Exhibit 6	Council Street (A) – (AAR #537496W)
Exhibit 6	Council Street (B) – (AAR #538900F)
Exhibit 7	Council Street (C) – (AAR #474547C)
Exhibit 8	Liberty Street (A) – (AAR #477180U)
Exhibit 8	Liberty Street (B) – (AAR #538899N)
Exhibit 9	Liberty Street (C) – (AAR #879193G)
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Exhibit 18	Hoyt Avenue (AAR #537497D)
Exhibit 18	Willard Street (AAR #537498K/879192A)
Exhibit 19	6th Street (AAR #537499S)
Exhibit 20	8th Street (AAR #537501R)
Exhibit 21	9th Street (AAR #537502X)
Exhibit 22	10th Street (AAR #537503E)
Exhibit 23	Memorial Drive (AAR #537504L)

muncie
Delaware County, Indiana

N

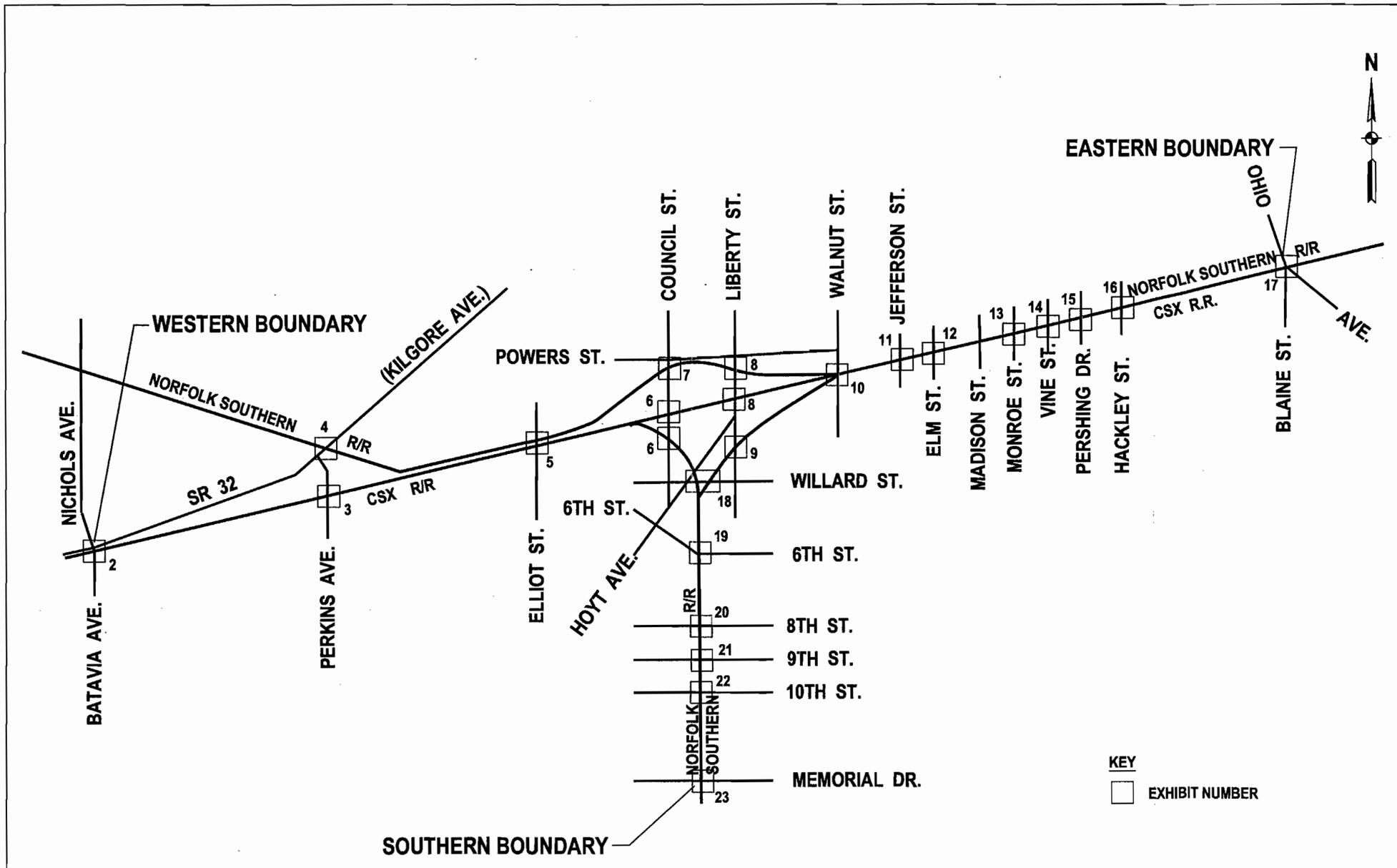
Legend

General Location Map
Muncie, Indiana

EXHIBIT 1

LEGEND:

Project Limits



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RAILROAD IMPACT STUDY
CITY OF MUNCIE, INDIANA
EXHIBIT 1A - KEY MAP

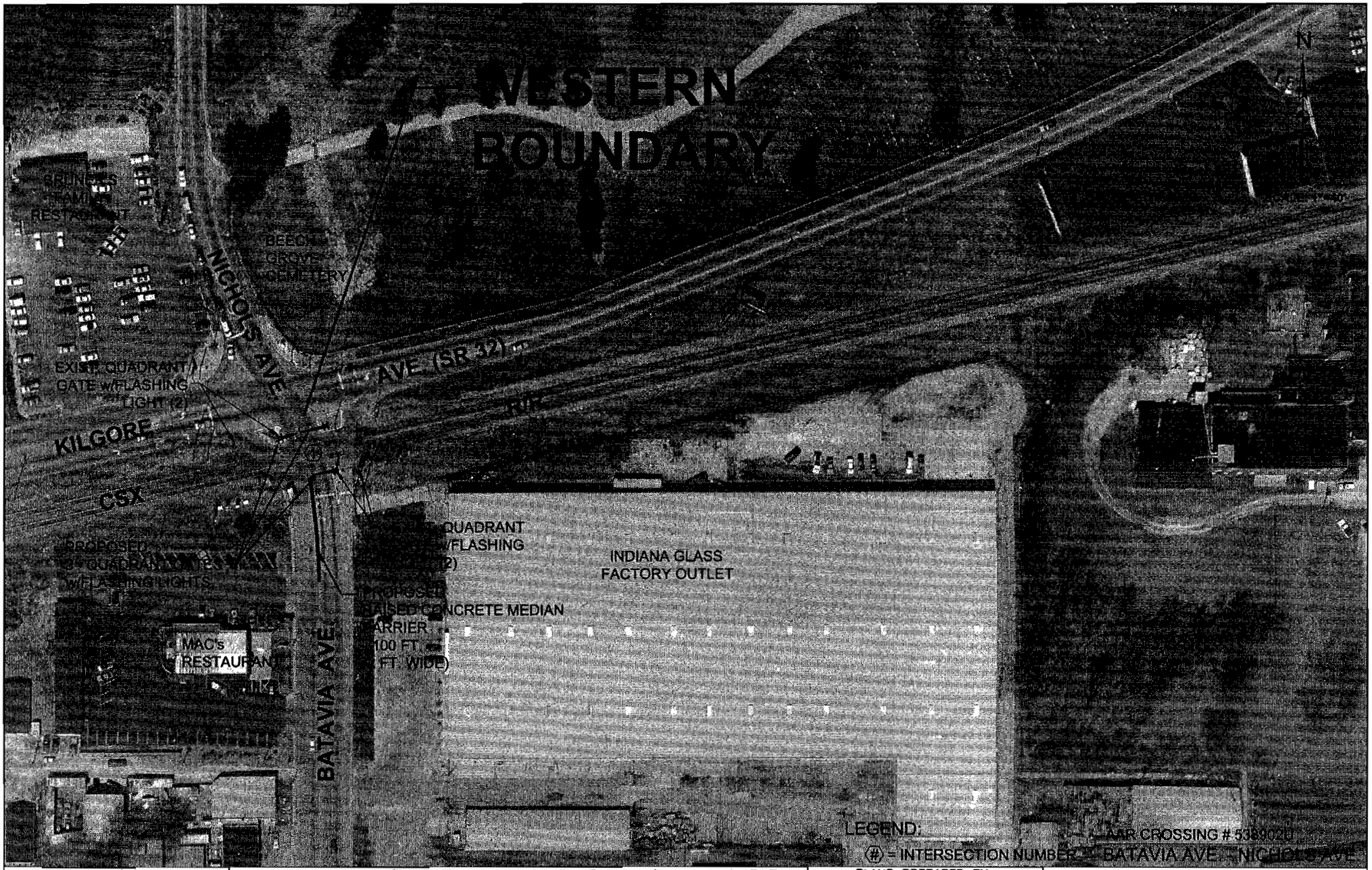

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EXHIBIT 2

DATE: MARCH, 2001

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EXHIBIT 3

DATE: MARCH, 2001

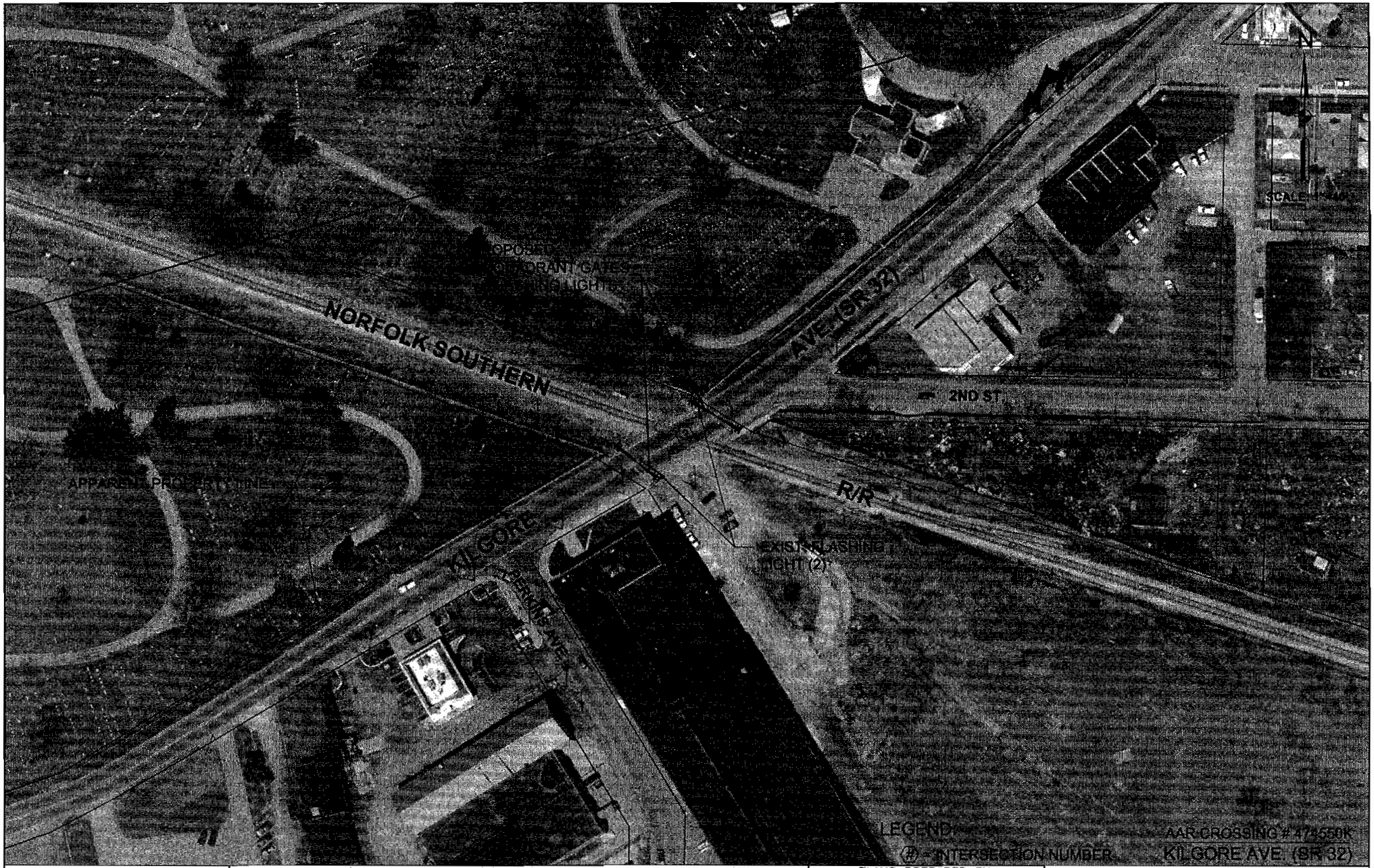

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EXHIBIT 4

DATE: MARCH, 2001

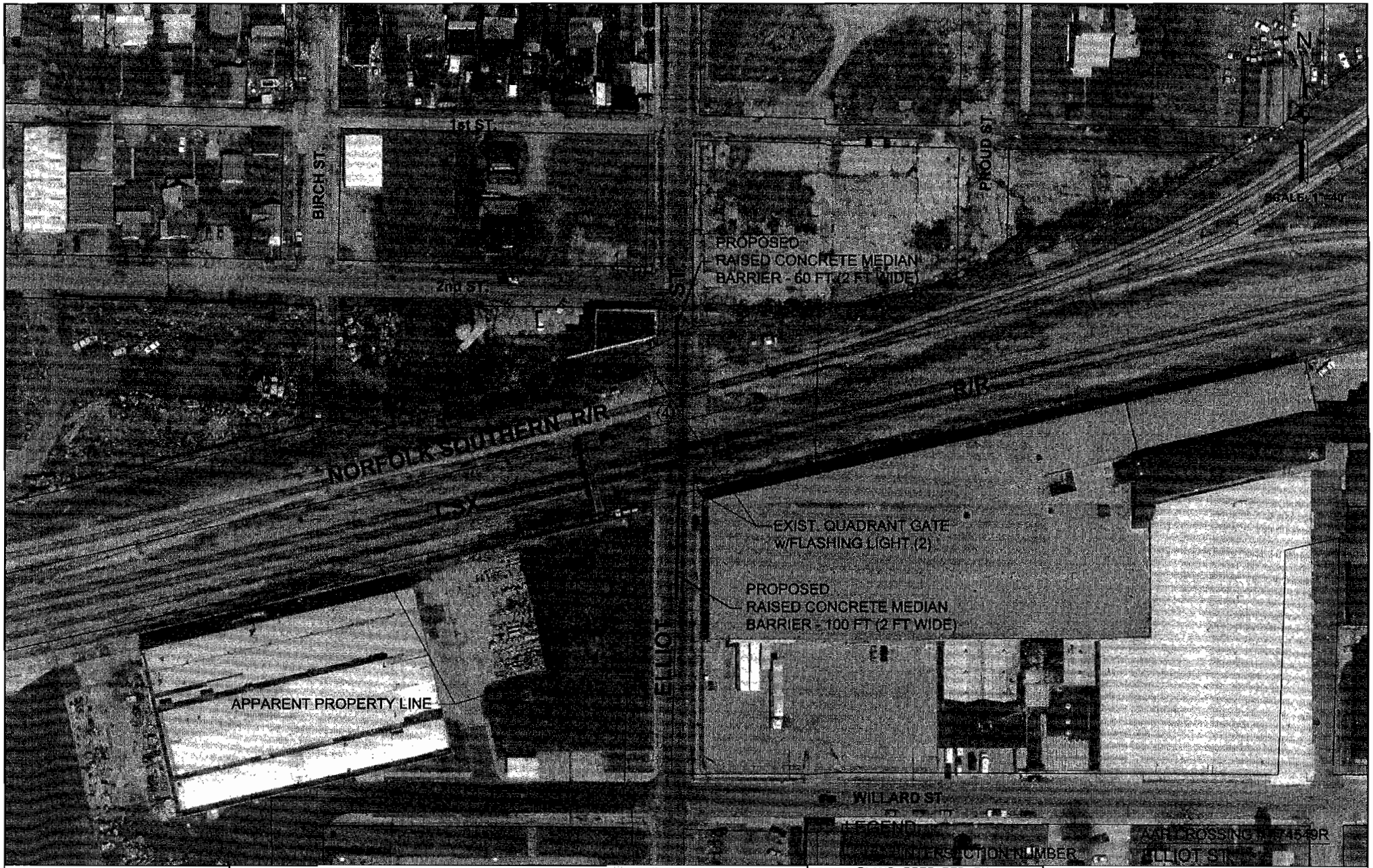

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EXHIBIT 5

DATE: MARCH, 2001

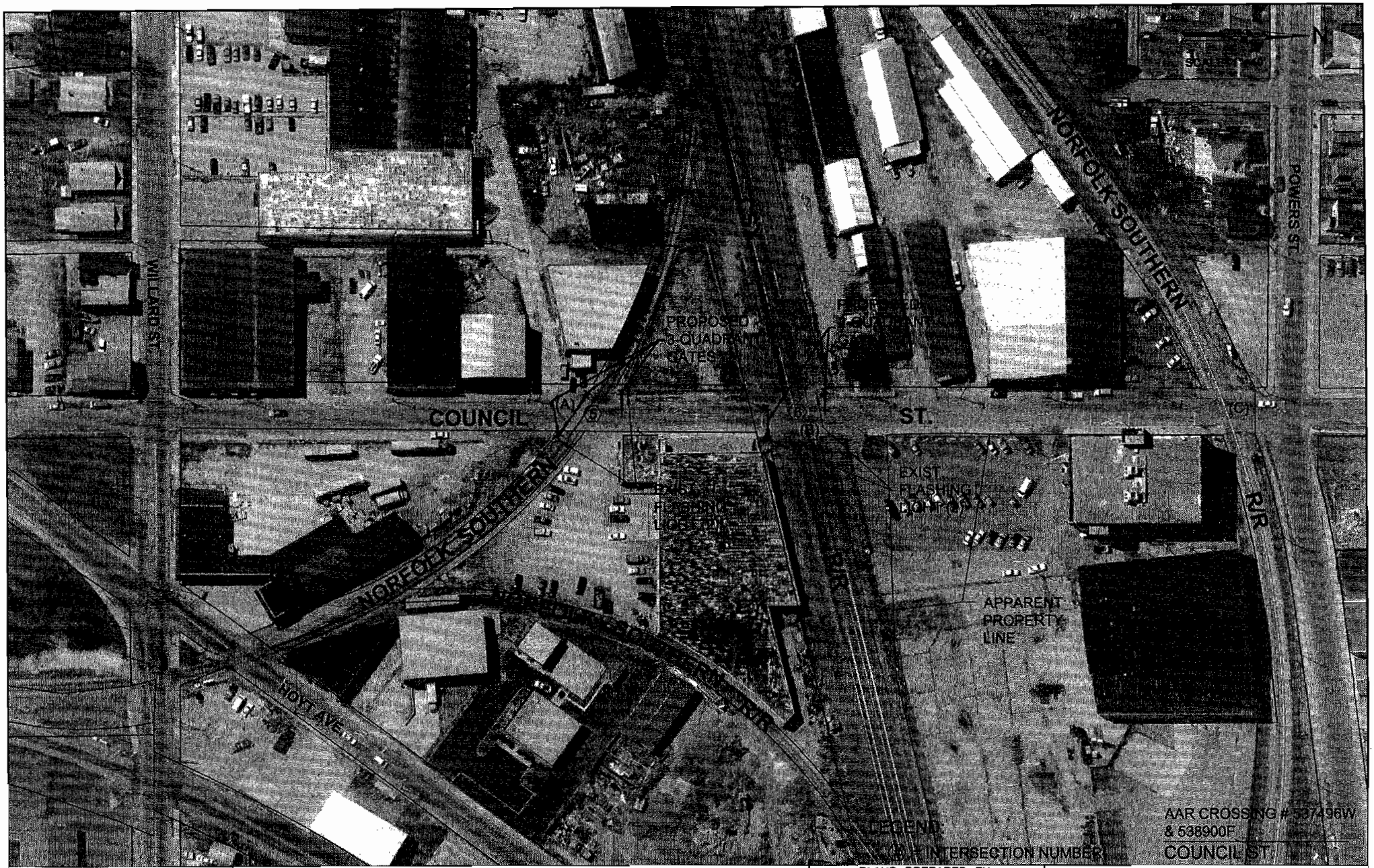

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EXHIBIT 6

DATE: MARCH, 2001

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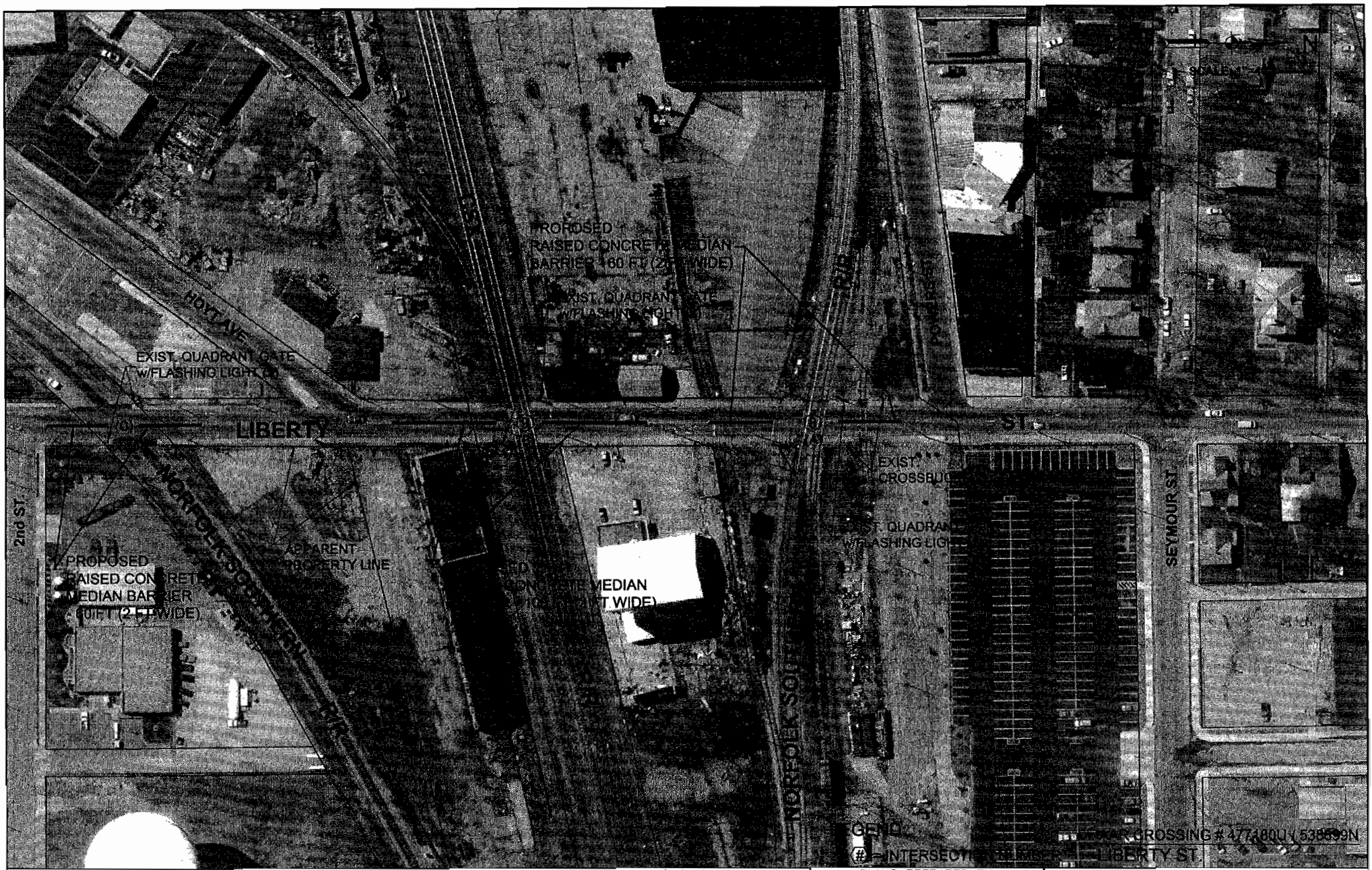
EXHIBIT 7

DATE: MARCH, 2001



SOURCE OF PHOTO / R.O.W.:
DELAWARE-MUNCIE METROPOLITAN PLAN COMMISSION

DATE OF PHOTO: SPRING 1996

RAILROAD IMPACT STUDY
CITY OF MUNCIE, INDIANA

PLANS PREPARED BY:
BEAM, LONGEST & NEFF, L.L.C.
CONSULTING ENGINEERS
8126 CASLETON ROAD
INDIANAPOLIS, INDIANA 46250
(317) 849-5832 FAX : (317)841-4280

EXHIBIT 8

DATE: MARCH, 2001

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EXHIBIT 9

DATE: MARCH, 2001

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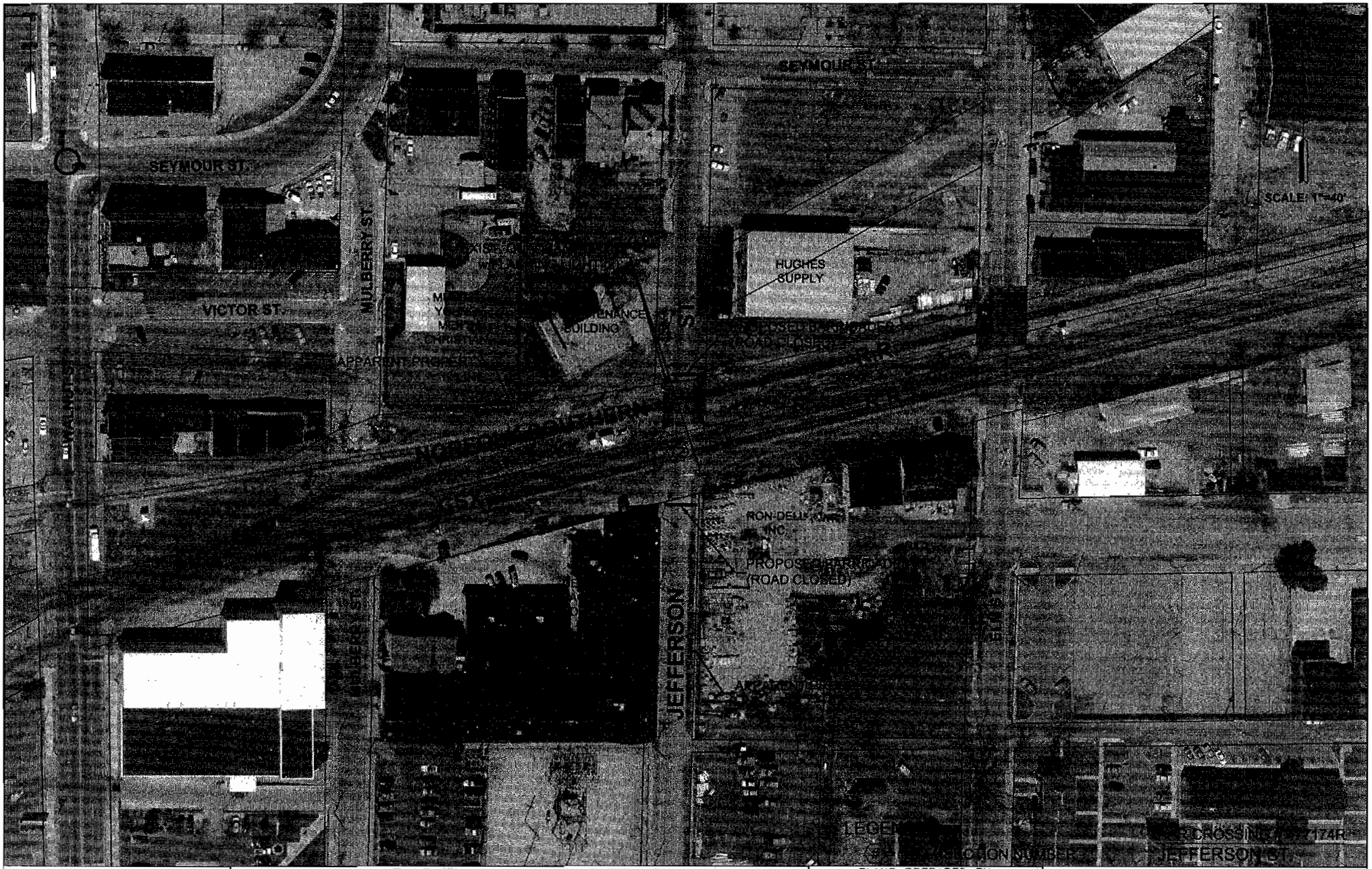
EXHIBIT 10

DATE: MARCH, 2001



SOURCE OF PHOTO / R.O.W.:
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EXHIBIT 11

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EXHIBIT 12

DATE: MARCH, 2001

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EXHIBIT 13

DATE: MARCH 2001

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CITY OF MUNCIE, INDIANA

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EXHIBIT 14

DATE: MARCH, 2001

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CITY OF MUNCIE, INDIANA

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EXHIBIT 15

DATE: MARCH, 2001

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EXHIBIT 16

DATE: MARCH, 2001

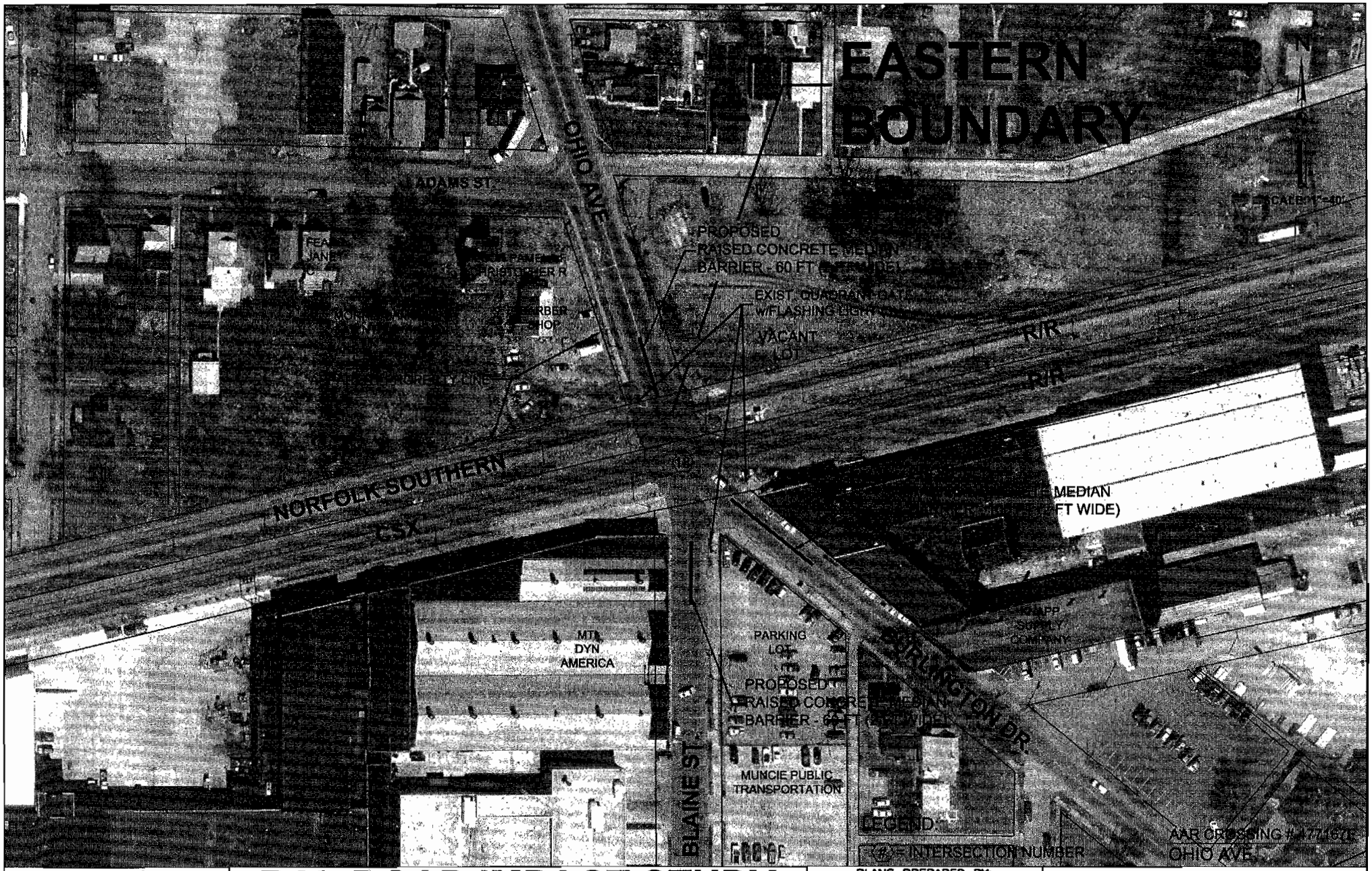

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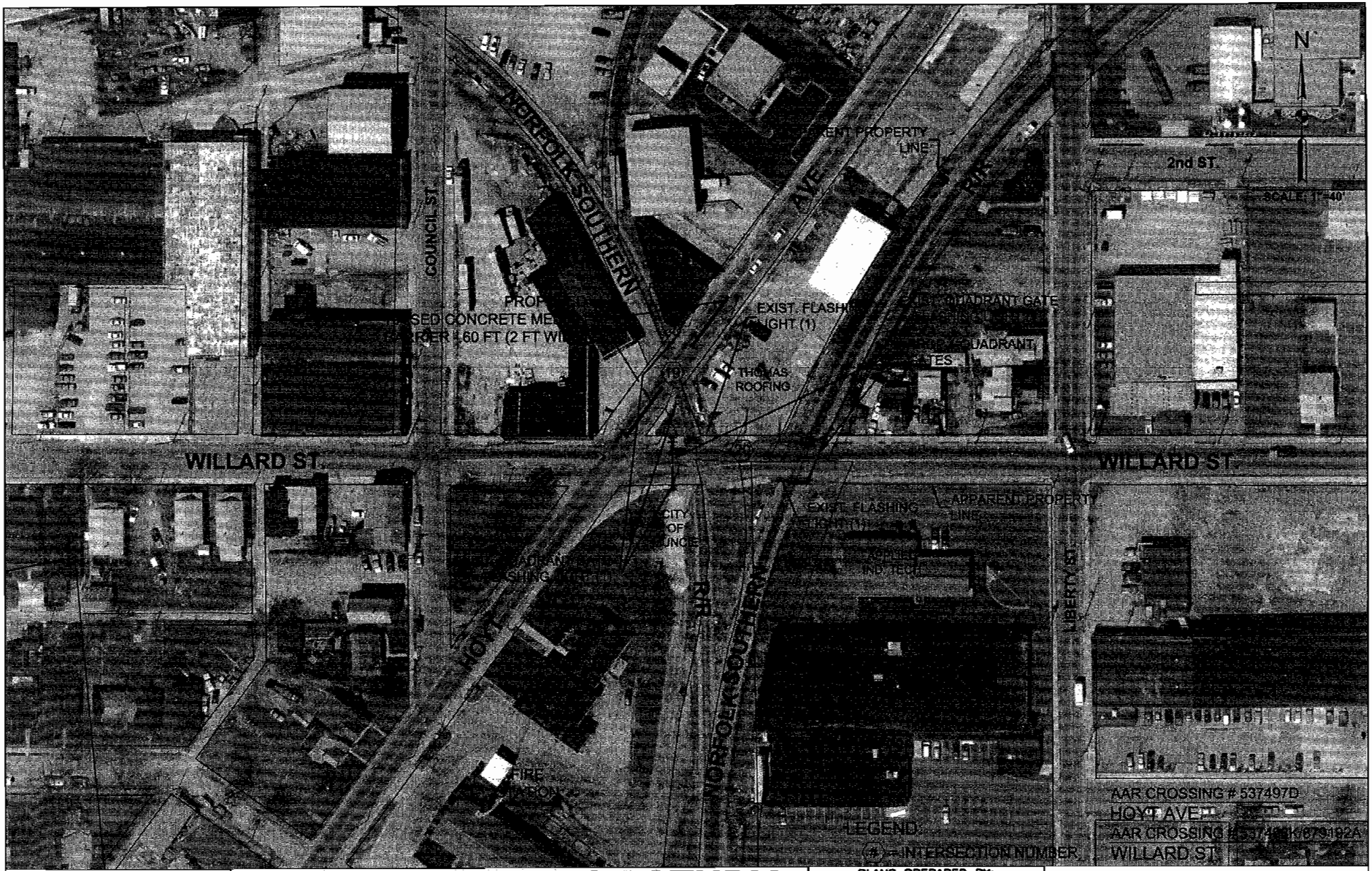
EXHIBIT 17

DATE: MARCH, 2001



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CITY OF MUNCIE, INDIANA

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EXHIBIT 18

DATE: MARCH 2001

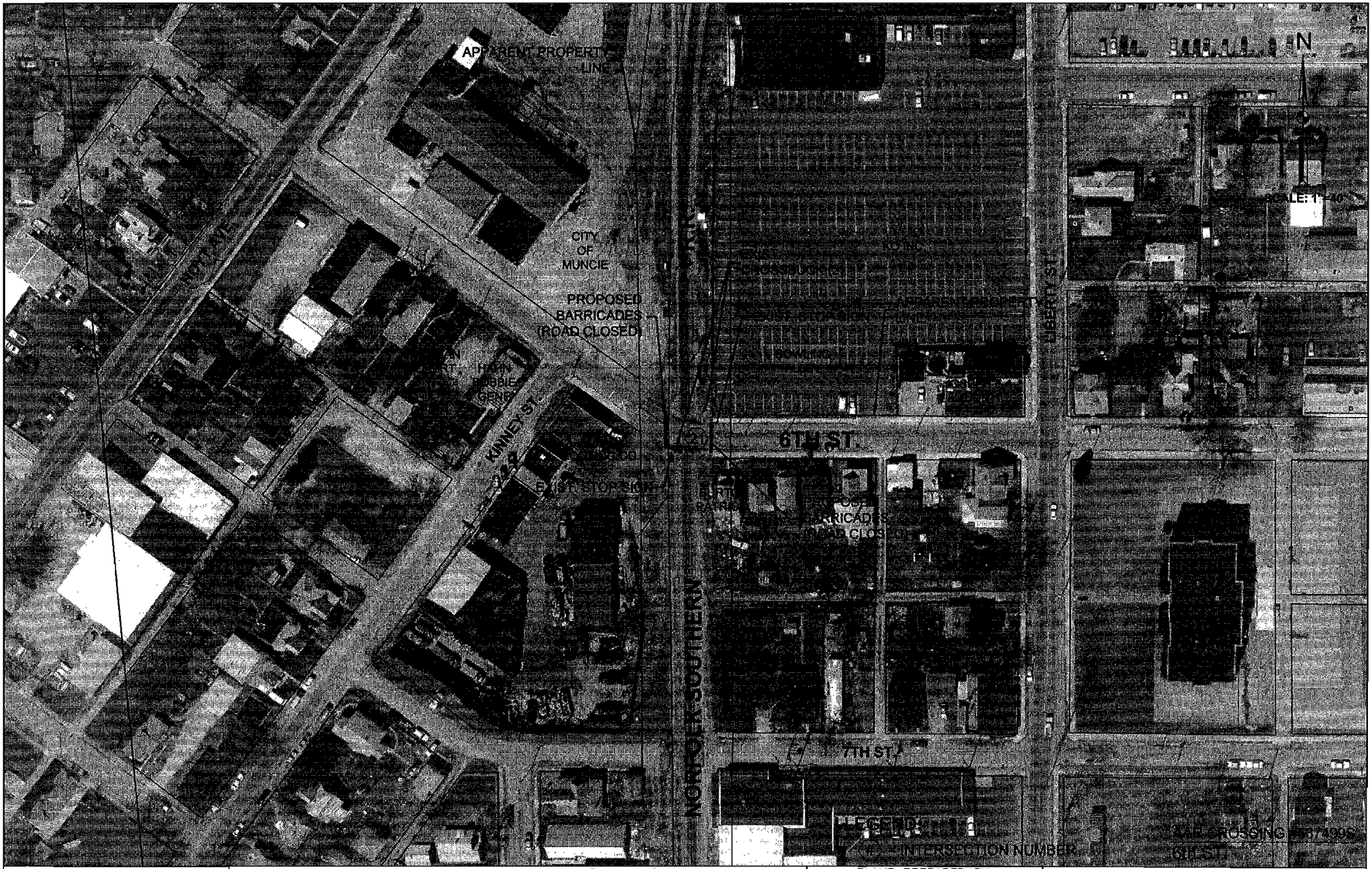

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EXHIBIT 19

DATE: MARCH, 2001

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EXHIBIT 20

DATE: MARCH, 2001

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EXHIBIT 21

DATE: MARCH, 2001

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EXHIBIT 22

DATE: MARCH, 2001

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RAILROAD IMPACT STUDY
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EXHIBIT 23

DATE: MARCH, 2001

APPENDIX A

8126 Castleton Road
Indianapolis, Indiana 46250
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(317) 841-4280 FAX

Beam, Longest and Neff, L.L.C. ——— **Consulting Engineers**

February 21, 2001

Mr. Stan Hiatt, P.E.
Muncie City Engineer
307 North High Street
Muncie, Indiana 47305

Re: City of Muncie
Railroad Impact Study
Des. No. 9982758

Dear Mr. Hiatt:

A committee meeting for the Muncie Railroad Impact Study was held at the Urban Enterprise conference room in Muncie on February 20, 2001 at 1:00 P.M. Those in attendance were:

Lynn Thornburg	Eastside Central Neighborhood Association (ECNA)
Stan Hiatt	Muncie City Engineer
Norm Hawkins	Industry Neighborhood Association
Steve Price	Chamber of Commerce
Marta Moody	Delaware/Muncie Plan Commission (MPO)
Brian Lough	Mayor's Downtown Redevelopment Partnership (MDRP)
Monte Mildenberg	Beam, Longest and Neff, L.L.C. (BLN)

The following items were discussed:

Brian Lough informed the committee that based on conversations with the City's Washington lobbyist, "there would be no decision on proposed FRA Quiet Zone rules for 2 to 3 years." This is a delay from the previously discussed date of summer 2001. This will allow more research of Supplemental Safety Measures (SSM) such as the Wayside Horn.

BLN informed the committee that Mike Scime had left his position with Norfolk and Southern, and was now working as the quiet zone coordinator for the Indiana Department of Transportation (INDOT) multi-modal division. His new phone number is 317-232-1491.

BLN informed the committee that discussions with Steve Hull, of INDOT Design, indicated that there was no funding for railroad safety enhancement projects outside of the INDOT priority list. BLN was informed that safety enhancement funding could be done with STP funding through the MPO. Further, BLN should contact Mike Scime to discuss implementation of a quiet zone.

The existing quiet zone in Mishawaka was discussed. Their quiet zone will require new safety measures when the new Federal Railroad Administration (FRA) guidelines are approved.

The committee decided to invite Mike Scime to discuss the INDOT requirements for implementing a quiet zone in Muncie before contacting the railroads. Tentative meeting dates of March 9th or March 19th were agreed upon. Steve Price will contact Mr. Scime and set the meeting date. The purpose of the meeting will be to discuss the INDOT requirements and funding to implement a quiet zone in Muncie. BLN will revise the draft study report after discussing the project with INDOT.

Phasing the project in smaller parts was discussed. Stan Hiatt explained how Hackley Street could be changed to a one-way north route from the railroad crossing to S.R. 32. It would also be desirable to taper Hackley Street into a single lane railroad crossing using curb or barrier.

Marta Moody will be working on the 2002 Transportation Improvement Program (TIP) for the Muncie MPO. Adding this project to the TIP was discussed. It was not known how the INDOT would fund railroad enhancements on non-federal aid routes.

Brian Lough submitted a railroad planning study, "Get Moving (Quietly)," completed by a Ball State undergraduate student for review by the committee.

The next meeting will be determined after contacting INDOT.

This represents our understanding of this meeting. If there are any additions or corrections, please contact this office.

Very truly yours,

BEAM, LONGEST AND NEFF, L.L.C.

Monte Mildenberg

Monte Mildenberg, P.E.
Project Manager

MM/sb
xc: Attachment
Committee Members
Steve Luther, Vice President, BLN
File #3609

8126 Castleton Road
Indianapolis, Indiana 46250
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(317) 841-4280 FAX

Beam, Longest and Neff, L.L.C. — **Consulting Engineers**

January 25, 2001

Mr. Stan Hiatt, P.E.
Muncie City Engineer
307 North High Street
Muncie, Indiana 47305

Re: City of Muncie
Railroad Impact Study
Des. No. 9982758

Dear Mr. Hiatt:

A committee meeting for the Muncie Railroad Impact Study was held at the Mayor's Downtown Redevelopment Office conference room in Muncie on January 24, 2001 at 10:00 A.M. Those in attendance were:

Stan Hiatt	Muncie City Engineer
Kurt Anderson	Railroad Controls Limited (RCL)
Ed Conatser	Former Delaware County Commissioner
Steve Price	Chamber of Commerce
Brian Lough	Mayor's Downtown Redevelopment Partnership (MDRP)
Allison Miller	Beam, Longest and Neff, L.L.C. (BLN)
Monte Mildenberg	BLN

Representatives from INDOT and Norfolk and Southern did not attend.

The following items were discussed:

Brian Lough informed the committee that he would be meeting with official from the City of Mishawaka to discuss their quiet zone.

Kurt Anderson from RCL discussed the product developed by his company, the wayside horn. The Wayside horn is an alternative safety measure to the 4 quadrant gate system. It is not currently on the approved FRA list of SSM's. Cost per intersection is approximately $25,000 per intersection, which includes one horn and one confirmation signal. Installation and the mounting pole are an additional cost of $10,000.

The FRA has delayed their new rulings on quiet zones until summer of 2001. There is a possibility that the US Congress will take the authority away from the FRA and give it back to individual state DOTs.

Kurt emphasized that the main focus should be to improve safety. It will require a cooperative effort between the City, the railroads, and the INDOT. First the city should approach the railroad and get an agreement on the project. Next, the city should approach the INDOT. The city should not close any crossings until agreements are formed. Kurt estimated that it would take 9 months to reach agreement with the railroad and the INDOT once a local plan is agreed upon. The railroads will be responsible for the installation of the safety devices such as gates. The construction could take one year to complete. The city should seek to get the latest technology using constant warning time circuitry.

Kurt met recently with Steve Hull of INDOT to discuss railroad safety projects. The INDOT has $5,000,000 each year that is used to fund railroad safety enhancement projects that are on their priority list. There is also an additional $10,000,000 for non-priority list projects.

4 Quadrant Gates

The NS is not excited about installing 4 quadrant gates. There are no current standards for their design. NS may require an annual maintenance agreement of $5,000 from the City for each 4 quadrant gate installation.

Wayside Horn Demonstration

The committee observed a field demonstration of the Wayside horn used at the Walnut St. intersection north of the NS track. The following decibel measurements were gathered;

Distance from the North NS track	db Reading
100 Feet	90
300 Feet	74
600 Feet	61-64
Roberts Hotel	
Lobby	<40 Not Detectable
2nd Floor Ballroom	<40
6th Floor room	<40

The results showed that the Wayside horn installed at one intersection would reduce the noise impact at the Hotel Roberts. The Wayside horn could be a backup or design alternate to using the FRA listed SSM's. The FRA is still studying and testing the viability of using Wayside horns. The Wayside horn would not be beneficial to install at just one intersection.

Brian Lough submitted a graphic exhibit showing the Audio-impact area boundary for the 70 decibel levels due to train whistles at each intersection in the study area.

Curt Anderson submitted a video and additional information about the Wayside horn.

This represents our understanding of this meeting. If there are any additions or corrections, please contact this office.

Very truly yours,

BEAM, LONGEST AND NEFF, L.L.C.

Monte Mildenberg

Monte Mildenberg, P.E.
Project Manager

MM/sh
xc: Attachment
Committee Members
Steve Luther, Vice President, BLN
File #3609

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Beam, Longest and Neff, L.L.C.——————————Consulting Engineers

January 25, 2001

Mr. Stan Hiatt, P.E.
Muncie City Engineer
307 North High Street
Muncie, Indiana 47305

Re: City of Muncie
Railroad Impact Study
Des. No. 9982758

Dear Mr. Hiatt:

A committee meeting for the Muncie Railroad Impact Study was held at the Mayor's Downtown Redevelopment office conference room in Muncie on January 9, 2001 at 2:00 P.M. Those in attendance were:

Lynn Thornburg	Eastside Central Neighborhood Association (ECNA)
Stan Hiatt	Muncie City Engineer
Bill Smith	Muncie Public Works
Ed Conatser	Former Delaware County Commissioner
Steve Price	Chamber of Commerce
Dan Allen	Chamber of Commerce
Marta Moody	Delaware/Muncie Plan Commission (MPO)
Brian Lough	Mayor's Downtown Redevelopment Partnership (MDRP)
Allison Miller	Beam, Longest and Neff, L.L.C. (BLN)
Monte Mildenberg	BLN

The following items were discussed:

Brian Lough informed the committee that Wayside Horn representative would be doing a demonstration in Muncie on 1-24-01 at 10:00. The entire committee is invited to attend. Brian will invite Mike Scime from NS and Ron Thomas from INDOT. Wayside Horn is not on the approved list of SSMs. Wayside Horn would reduce horn noise by targeting the noise at the intersection.

Use of the Wayside horn was discussed as a short range solution.

Local funding for the project was discussed including TIF money and shifting funds from the parking garage. Currently the city has $200,000 of undesignated funds for downtown projects.

The committee agreed to change the terminology from "Quiet Zone" to "Railroad Safety Enhancement Zone".

BLN reviewed the FRA criteria for closing of crossings that was used to prepare the exhibits.

BLN submitted 6 tables, 23 graphical intersection exhibits, and an intersection catalog for review by the committee. BLN presented proposed intersection treatments and street closings listed in Table 5. The committee reviewed and discussed the proposed treatments. Plans were reviewed beginning from the South end of the study area. The following comments and recommendations were made for the numbered exhibits and intersections:

Exhibit #23 - 25 Memorial Drive

The committee discussed the potential closing of Cherry Street. It was also suggested that Cherry Street become a one-way north. The final recommendation was to install four quadrant gates, as shown.

Exhibit #22 - 24 10th Street

The final recommendation was to close 10th Street, as shown.

Exhibit #21 - 23 9th Street

The final recommendation was to close 9th Street, as shown.

Exhibit #20 - 22 8th Street

The final recommendation was to install four quadrant gates, as shown.

Exhibit #19 - 21 6th Street

The final recommendation was to close 6th Street, as shown.

Exhibit #18 - 20 Willard Street - 19 Hoyt Avenue

The final recommendation was to install raised concrete medians on Hoyt Avenue, as shown.

It was suggested that Thomas Roofing be purchased and relocated to modify the proposed design to utilize two quadrant gates. The final recommendation was to keep the four quadrant gate design on Willard Street, as shown.

Exhibit #17 - 18 Ohio Avenue

The final recommendation was to install concrete median barriers, as shown.

Exhibit #16 - 17 Hackley

The final recommendation was to install concrete median barriers, as shown.

Exhibit #15 - 16 Pershing

The final recommendation was to close Pershing Drive, as shown.

Exhibit #14 - 15 Vine

The final recommendation was to close Vine Street, as shown.

Exhibit #13 - 14 Monroe

The final recommendation was to close Monroe Street, as shown.

Exhibit #12 - 13 Elm

The final recommendation was to install concrete median barriers at the Elm Street crossing and leave the crossing open. Access should be maintained to accommodate downtown redevelopments and future public housing.

Exhibit #11 - 12 Jefferson

The final recommendation was to close Jefferson Street, as shown.

Exhibit #10 - 11 Walnut

The final recommendation was to install concrete median barriers, as shown. The design of the concrete median barriers will be revised to provide aesthetically pleasing medians.

Exhibits 9 and 8 - Liberty 8A, 8B, 9C

The final recommendation was to install concrete median barriers at all Liberty crossings (A, B and C).

Exhibit #7 - 7C Council

The final recommendation was to install three quadrant gates, as shown.

Exhibit #6 - Council 6A, 6B

#6A BLN is to correct numbering on Exhibit 6. 5 changes to 6A. 6 changes to 6B. Add 6C at the north end. No easy solution was determined for these crossings. 6C is to be left unchanged. Let train blow horn for 6 train/day usage. Powers Street is to remain open. 6B use 2 quadrant gates, as shown. Lumber yard needs access and median barrier does not appear feasible. 6A, leave as shown.

Exhibit #5 - 5 Elliott

The final recommendation was not to close the Elliott Street Crossing, as shown. New Venture Gear would be severely impacted by the closure. BLN is to correct numbering on Exhibit from 4 to 5. Leave existing gate and add median barrier for south approach. Add new median barrier for north approach. Steve Price is to check on access requirements for junk yard in northwest quadrant.

Exhibit #4 - 3 Kilgore Avenue

Keep as shown with four quadrant gates.

Exhibit #3 - 2 Perkins

The final recommendation was to install concrete median barriers, as shown.

Exhibit #2 - 1 Batavia

Keep as shown. Extending the existing quadrant gate arm in the southwest quadrant was suggested.

The committee is planning to take a tour of all the intersections to review BLN's proposal in February. The next step for the committee will be to begin making local contacts to develop widespread community support.

The next meeting is January 24th at 10:00 A.M.

This represents our understanding of this meeting. If there are any additions or corrections, please contact this office.

Very truly yours,

BEAM, LONGEST AND NEFF, L.L.C.

Monte Mildenberg

Monte Mildenberg, P.E.
Project Manager

MM/sb
xc: Committee Members
Steve Luther, Vice President, BLN
File #3609

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Beam, Longest and Neff, L.L.C.——————————Consulting Engineers

November 29, 2000

Mr. Stan Hiatt, P.E.
Muncie City Engineer
307 North High Street
Muncie, Indiana 47305

Re: City of Muncie
Railroad Impact Study
Des. No. 9982758

Dear Mr. Hiatt:

A committee meeting for the Muncie Railroad Study was held at the new Mayor's Downtown Redevelopment Office at 407 S. Walnut Street in Muncie on November 29, 2000 at 3:30 P.M. Those in attendance were:

Chuck Leonard	Muncie City Councilman	765-741-9625
Ed Conatser	Delaware County Commissioner	765-747-7730
Steve Price	Chamber of Commerce	765-751-9133
Dan Allen	Delaware/Muncie Plan Commission (MPO)	765-751-9101
Brian Lough	Mayor's Downtown Redevelopment Partnership (MDRP)	765-282-7897
Chad Costa	Beam, Longest and Neff, L.L.C. (BLN)	317-849-5832
Monte Mildenberg	BLN	317-849-5832

The following items were discussed:

1. BLN reviewed the project objective.

2. BLN reviewed the results of the noise summary (see attached results). The noise survey determined that a 114 decibel train horn was present at a site on Walnut Street 100 feet North of the CSX tracks. BLN determined that a full noise survey was not required to implement a quiet zone. Antidotal evidence of train noise was discussed. An assisted living center and a project with the Baptist Church were not developed due to noise concerns.

3. Melissa Hayes King reported on the West End neighborhood meeting. The neighborhood

was generally favorable to the concept.

McCarty Lumber attended the meeting. A center barrier will interfere with their traffic flow and truck unloading on Council Street. A median barrier would direct traffic away from the checkout booth.

Perkins Street was discussed and the neighbors requested it not be closed for the following reasons

a. Residential access
b. School bus route
c. New Venture Gear access

Parsons Mortuary was concerned about children walking on the track with no horn.

4. BLN contacted Becky Webber, Delaware County Lobbyist, to discuss funding sources and current railroad regulation status. Becky Webber suggested that a cost estimate be submitted to secure potential federal funding.

4. The committee discussed the proposed design shown on the aerial exhibits for the first 11 intersections. BLN is to prepare a table or spreadsheet for the next meeting listing the proposed improvements and the preliminary costs.

5. Some of the design to the east was discussed at the previous meeting. The city public works department fixed the flooding problem at the Madison St. underpass. The underpass is the designated route for fire trucks and ambulances which would allow for proposed street closings.

6. The proposed design for the south side was not discussed. An organized neighborhood group does not exist. Brian will contact Libby Pitro for input.

7. The, Industry Neighborhood Association met last month but did not discuss the project fully.

8. The city of Muncie has a downtown redevelopment plan that includes a roundabout at the Walnut/Seymour Street intersection. The project will require removal of old non-historic building to accommodate the roundabout. Median barrier in this area to be aesthetically attractive.

9. Steve Price will contact Debrow and other affected businesses about street closing and project impacts.

10. The concept of future public input meetings were discussed. The first would be for public input. The second would present proposed study results.

11. The next meeting is Tuesday January 9th 2001 in the Mayor's Downtown Redevelopment Office at 2:30 P.M.

This represents our understanding of this meeting. If there are any additions or corrections, please contact this office.

Very truly yours,

BEAM, LONGEST AND NEFF, L.L.C.

Monte Mildenberg

Monte Mildenberg, P.E.
Project Manager

MM/sh
xc: Attachment
Committee Members
Steve Luther, Vice President, BLN
File #3609

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Beam, Longest and Neff, L.L.C. ——————— **Consulting Engineers**

October 12, 2000

Mr. Stan Hiatt, P.E.
Muncie City Engineer
307 North High Street
Muncie, Indiana 47305

Re: City of Muncie
Railroad Impact Study
Des. No. 9982758

Dear Mr. Hiatt:

A committee meeting for the Muncie Railroad Study was held at the Mayor's conference room in Muncie on September 6, 2000 at 10:00 A.M. Those in attendance were:

Chuck Leonard	Muncie City Councilman	765-741-9625
Ed Conatser	Delaware County Commissioner	765-747-7730
Steve Price	Chamber of Commerce	765-751-9133
Dan Allen	Delaware/Muncie Plan Commission (MPO)	765-751-9101
Brian Lough	Mayor's Downtown Redevelopment Partnership (MDRP)	765-282-7897
Chad Costa	Beam, Longest and Neff, L.L.C. (BLN)	317-849-5832
Monte Mildenberg	BLN	317-849-5832

The following items were discussed:

1. Lynn Thornburg from the East Central Reinvestment Corp., Norman Hawkins from the Industry Neighborhood Council, and Melissa Hayes King from the Old West End Neighborhood were added to the committee.

2. BLN prepared a preliminary display of the entire study area using the digital aerial photography and parcel information received from the MPO. BLN discussed the problems with the missing data for some property owners. The MPO does not expect to have the property ownership data corrected until early next year. BLN will submit the aerial exhibits and get direct input from the neighborhood groups to resolve the property ownership.

3. BLN presented preliminary 1":20' aerial exhibits using digital information received from the MPO for four intersections.

BLN requested digital property and right-of-way information to determine railroad and private property near the crossings from the county. BLN is to check on the status of data request.

4. BLN needs to contact Becky Weber, Delaware County Lobbyist, to discuss funding sources and current railroad regulation status.

5. BLN has conducted an intersection inventory for 25+ crossings with a data sheet, sketch, and pictures. Railroad crossings within a 1 mile radius of the project center were cataloged. BLN is to forward a copy to Brian Lough.

6. BLN discussed sound measurement (see attached handout). The first site to be evaluated will be the Hotel Roberts.

7. Steve Price and Brian Lough will be meeting with Old West End, Industry, and East Central Neighborhood Association presidents. At this time, they will ask the presidents to be responsible for disseminating information to the neighborhoods and also to ask the presidents to join this committee.

8. Chuck Leonard will look into the police and fire routes and report back at the next meeting what the effect of closing or barricading any streets would be. BLN is to supply him with a study area map from the intersection catalog.

9. The city of Muncie has a downtown redevelopment plan that includes a roundabout at the Walnut/Seymour Street intersection. The project is proceeding slowly due to impacts to adjacent historic buildings. BLN asked the city for a plan view showing proposed traffic movements.

10. A two-base plan was developed to notify businesses along the study area. The first step would be to talk to and explain the process. The second step would be to show the people the proposed designs and get their input.

11. BLN contacted Mike Scime, from Norfolk Southern, about attending a committee meeting. He stated that he would like to stay out of the development stage until we have a plan to present to his group.

12. There is one underpass (Madison Street) in the study area. Chuck Leonard informed the committee that this underpass routinely flooded during storm events. The recent Walnut Street project did not solve the problem. After a storm event, the city places a barricade to block traffic for a few hours.

13. There was a discussion of a possible demonstration project using Qwick Kurb "barrier curb medians." Steve Price had previously asked the sales representative to submit a proposal to BLN for a demonstration project. BLN has not received the proposal. A discussion of the pros and cons ensued. The committee decided to wait and re-evaluate a demonstration project at a later date.

14. Monte will be receiving traffic counts from engineering and displaying them on the aerial exhibits.

15. The next meeting is October 4th in the Mayor's Conference Room at 10:00 A.M.

This represents our understanding of this meeting. If there are any additions or corrections, please contact this office.

Very truly yours,

BEAM, LONGEST AND NEFF, L.L.C.

Monte Mildenberg

Monte Mildenberg, P.E.
Project Manager

MM/sh
xc: Attachment
Committee Members
Steve Luther, Vice President, BLN
File #3609

8126 Castleton Road
Indianapolis, Indiana 46250
(317) 849-5832
(317) 841-4280 FAX

Beam, Longest and Neff, L.L.C.——————Consulting Engineers

July 24, 2000

Mr. Stan Hiatt, P.E.
Muncie City Engineer
307 North High Street
Muncie, Indiana 47305

Re: City of Muncie
Railroad Impact Study
Des. No. 9982758

Dear Mr. Hiatt:

A committee meeting for the Muncie Railroad Study was held at the Mayor's conference room in Muncie on July 20, 2000 at 9:00 A.M. Those in attendance were:

Stan Hiatt	Muncie City Engineer	765-747-7765
Ed Conatser	Delaware County Commissioner	765-747-7730
Steve Price	Chamber of Commerce	765-751-9133
Marta Moody	Delaware/Muncie Plan Commission (MPO)	765-747-7740
Nikki Grigsby	Mayor's Downtown Redevelopment Partnership (MDRP)	765-747-4742
Steve Luther	Beam, Longest and Neff, L.L.C. (BLN)	317-849-5832
Monte Mildenberg	BLN	317-849-5832

The following items were discussed:

1. Ms. Grigsby will distribute minutes of this meeting and inform the committee of the next meeting.

2. BLN prepared a display of the study area using the digital aerial photography received from the MPO. Street centerlines, hydrology and railroad track layers were provided. BLN added text. Accident data, the thoroughfare plan, and some traffic volumes were also provided.

3. The committee voted that the center of the study would be the Hotel Roberts and Convention Center at the intersection of Walnut and Seymour.

4. BLN discussed sound measurement. It suggested a 24 hour sound measurement at the hotel be conducted to determine the existing or base condition. Also, the sound at the hotel should be measured at various intersections, when the whistle blows. The Munsyana Homes Project importance was discussed. Thad Godish, of Ball State University, may be able to assist with the decibel noise inventory. Ed Conatser will contact Thad Godish prior to BLN.

5. Monte discussed using wayside horns at the crossings. The Federal Railroad Association (FRA) has not yet accepted this product as an approved supplemental safety measure (SSM). Wayside horns would not eliminate noise but would be targeted at the specific cross intersection.

6. Steve Price said the FRA is looking for a pilot project to install median barrier with a wayside horn. BLN has met with a vendor for the barrier. A Qwik Kurb sales brochure was distributed to the committee for review. Barriers should be installed beginning at 100 feet from the crossing gate, 60 feet is a minimum.

7. BLN needs to contact Becky Weber to discuss funding sources and current railroad regulation status. CSpan covered recent congressional hearings on the proposed regulations.

8. The FRA documents were summarized by Monte. The following SSMs could compensate for the lack of a locomotive horn:

   A. Four quadrant gates
   B. Mountable curb medians with channelization devices (Qwik Kurb)
   C. Paired one-way streets with gates
   D. Temporary night closures of street/rail grade crossing
   E. Photo enforcement technology
   F. Barrier curb medians

   Alternate safety measures include a police enforcement program and a public education program. BLN is to provide a list of publications and internet sites for the committee to reference. Main sources of information include www.fra.dot.gov, www.railroadcontrols.com, and www.qwickkurb.com.

9. BLN has conducted an intersection inventory for 25+ crossings with a data sheet, sketch, and pictures. Railroad crossings within a 1 mile radius of the project center were cataloged. BLN supplied a copy of the intersection data sheets and sketches to Stan Hiatt. BLN is to forward copies of the sketches to Steve Price.

10. BLN presented a 1":200' aerial exhibit using digital information received from the MPO. Street names and crossing numbers were added by BLN.

    BLN requested property and right-of-way information to determine railroad and private property near the crossings. MPO has some information that could be supplied to BLN.

11. BLN discussed conversations with INDOT. Indiana law allows for a local ordinance with INDOT approval, to establish a quiet zone. The railroad may not recognize state law and threaten to appeal through courts. The railroads will follow federal regulations.

12. Ed Conatser suggested adding neighborhood associations to the noise reduction process. Steve Price will coordinate local involvement.

13. Steve Price will contact businesses close to the tracks before BLN contacts the businesses.

14. The committee suggested contacting Patti Smith, from FRA, to attend a future meeting.

15. BLN will contact Mike Scime, from Norfolk & Southern, before setting the next meeting date and ask him to attend.

16. Stan Hiatt requested that BLN develop criteria for street closings at railroad intersections. Bus routes, along with fire and safety routes, need to be determined.

17. BLN received some accident and traffic data from MPO. BLN requested that MPO supply existing traffic ADT for each crossing in order to develop closing criteria.

18. BLN reported observing vehicular and pedestrian crossing violations during field investigations.

Following the meeting, BLN met with the general manager of the Hotel Roberts to discuss existing noise conditions and to inform them of the study initiation.

This represents our understanding of this meeting. If there are any additions or corrections, please contact this office.

Very truly yours,

BEAM, LONGEST AND NEFF, L.L.C.

Monte Mildenberg

Monte Mildenberg, P.E.
Project Engineer

MM/sh
xc: Attendees
Steve Luther, Vice President, BLN
File #3609

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Beam, Longest and Neff, L.L.C.——————Consulting Engineers

June 27, 2000

Mr. Stan Hiatt, P.E.
Muncie City Engineer
307 North High Street
Muncie, Indiana 47305

Re: City of Muncie
Railroad Impact Study
Des. No. 9982758

Dear Mr. Hiatt:

A project meeting for the Muncie Railroad Study was held at the Mayor's conference room in Muncie on June 24, 2000 at 9:00 A.M. Those in attendance were:

Stan Hiatt	Muncie City Engineer	765-747-7765
Ed Conatser	County Commissioner	765-747-7730
Steve Price	Chamber of Commerce	765-751-9133
Bill Smith	City of Muncie	
Allison Miller	Beam, Longest and Neff, L.L.C. (BLN)	317-849-5832
Steve Luther	BLN	
Monte Mildenberg	BLN	

The purpose of this meeting was to share information and plan how to reduce train noise in downtown Muncie. Steve Luther distributed copies of the Scope of Work that was contained in the contract. It was agreed to concentrate and put emphasis on the quiet zone study and to consider railroad relocation secondarily.

Stan Hiatt said that a previous decision not to build a grade separation at Walnut Street led to the study to reduce railroad noise impacts. The owner of the hotel has expressed interest in expanding the hotel if the railroad noise could be reduced. Expanding the hotel is desired for the larger conventions that could be attracted to Muncie.

BLN is to study a quiet zone proposal and determine the costs to implement. BLN will develop a report that will document how to establish a quiet zone in accordance with the new Federal Railroad Association (FRA) guidelines. Steve Price submitted a memo dated May 19, 2000 to BLN that outlined some preliminary recommendations for a downtown quiet zone. Included with the memo was an exhibit showing the existing at-grade crossings and safety devices.

Ed suggested calling Becky Webber, a Washington lobbyist, for help in obtaining latest railroad regulations and sources of funding. Mick Scime, in Indianapolis, and Patty Smith, the regional FRA representative in Chicago, were mentioned as railroad contacts.

BLN will investigate noise levels at the hotel when a railroad whistle is blown approximately ¼ mile from the site. BLN will use the list of closings from the memo and will explore supplemental safety measures to establish a quiet zone. Supplemental safety measures could include:

1. Four quadrant gates
2. Channelization devices at gated crossings
3. Paired one-way streets
4. Temporary closure
5. Use of photo-enforcement technology

A proposal to have the city of Muncie assume all liability for railroad operations in the city was discussed and rejected.

The city of Muncie is pursuing a $30 million Hope 6 grant to rebuild and redevelop lower density public housing just south of the downtown area. This might make street closures more difficult.

Recently, the railroad operations have caused traffic problems on the east and west sides of Muncie with buses being delayed one hour and crossing blocked all night. Railroad operations and siding usage in Muncie were discussed. There are some sidings and stops to drop off and receive railroad freight in Muncie that will require continued train service.

Before the next meeting, BLN will get base mapping from the county and develop an outline for a plan of attack. BLN will also develop a timeline and refine the scope of work.

The next progress meeting is to be held on Thursday, July 20th at 9:00 a.m. in Muncie. Steve Price will coordinate informing committee members with a reminder letter.

After the meeting, BLN met with Martha Moody, of the MPO, to discuss obtaining digital information. BLN will send a request letter, along with a Delaware County order form, to obtain GIS information at no charge. The county does not expect that the request will be processed for at least a week and a half.

This represents our understanding of this meeting. If there are any additions or corrections, please contact this office.

Very truly yours,

BEAM, LONGEST AND NEFF, L.L.C.

Monte Mildenberg

Monte Mildenberg, P.E.
Project Engineer

MM/mm
xc: Attendees
Steve Luther, Vice President, BLN
File #3609