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Arizona Corporation Commission
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Transcript Exhibit(s)

Docket #(s): RR-03639A-15-0331

RR-03639A-15-0332

RR-03639A-15-0333

RR-03639A-15-0334

Arizona Corporation Commission
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AZ CORP COMMISSION
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Exhibit #: S-1

EXHIBIT
S-1
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STAFF MEMORANDUM

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2015 NOV 23 P 3: 41

AZ CORP COMMISSION
DOCKET CONTROL

To: THE COMMISSION

From: Robert Marvin
Director
Safety Division

Date: November 23, 2015

RE: IN THE MATTER OF THE FOUR APPLICATIONS OF THE ARIZONA DEPARTMENT OF TRANSPORTATION TO UPGRADE FOUR EXISTING CROSSINGS OF THE UNION PACIFIC RAILROAD AT BAFFERT DRIVE, USDOT NO 742-036-G, CALLE SONORA, USDOT NO 742-037-N, BANKARD AVENUE, USDOT NO 742-038-V, AND MORLEY AVENUE, USDOT NO 742-040-W, ALL IN THE CITY OF NOGALES, SANTA CRUZ COUNTY, ARIZONA.

DOCKET NO. RR-03639A-15-0331
DOCKET NO. RR-03639A-15-0332
DOCKET NO. RR-03639A-15-0333
DOCKET NO. RR-03639A-15-0334

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Background

On September 24, 2015, the Arizona Department of Transportation ("ADOT") filed with the Arizona Corporation Commission ("Commission") four applications for approval for the Union Pacific Railroad ("Railroad") to upgrade the following four existing crossings located at Baffert Drive USDOT No. 742-036-G; Calle Sonora USDOT No. 742-037-N; Bankard Avenue USDOT No. 742-038-V; and Morley Avenue USDOT No. 742-040-W in the City of Nogales, ("City") Santa Cruz County, Arizona.

The Safety Division's Railroad Safety Section, ("Staff"), ADOT, the City, and the Railroad participated in several diagnostic review meetings of the proposed improvements to these crossings. All parties present were in agreement to the proposed improvements at the crossings. The following is a breakdown of the crossings in this application, including information about the crossings that were provided to Staff by ADOT.

Federal Highway Administration ("FHWA") Section 130

This project is federally funded pursuant to 23 U.S.C. § 130 ("Section 130"). The purpose of Section 130 is to comply with legislation seeking to eliminate hazards to pedestrians and highway vehicles at public railway-highway crossings. Only crossings which are located on public roads, and which are not primarily for the benefit of the railroad, are eligible for Section 130 funding. In order to be eligible for Section 130 funding, a crossing must be designated on the Commission's Annual Crossing Array as being a priority to receive safety upgrades. Arizona Revised Statute § 40-337.03 states that:

> [T]he commission shall submit to the railroad involved and the city, county and department of transportation in which jurisdiction a public railroad grade crossing is located, an array of such crossings where the installation of automatic warning signals or devices should be considered during the year, or within a reasonable time thereafter depending upon the availability of monies, materials, labor and other factors involved in such installation.

These projects were approved for Section 130 funding as part of the 2012 Commission Annual Array approved by Decision No. 73610, dated December 12, 2012. After designation on the Annual Array, FHWA issues authorizations for design and construction of each project, reimburses ADOT for the cost and conducts a final inspection of each project. The Railroad will invoice ADOT for 100% of the cost of the project.

Baffert Drive

Baffert Drive is a two lane roadway consisting of one thru westbound and one thru eastbound lane. Currently, this crossing is equipped with flashing lights, automatic gates, constant warning time, and simultaneous preemption. The proposed project consists of installing two new automatic gate/flasher units with LED lights on the outside edges of the roadway, as well as upgrading the preemption to advanced preemption. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the State. The Railroad will maintain the warning devices after the upgrades are completed. The advanced preemption will be maintained by the Railroad and ADOT. The total cost for the project is $269,458 funded by FHWA's Section 130 program.

Traffic data for Baffert Drive was provided by ADOT. Per ADOT, in 2012, there were 4,058 vehicles per day ("vpd") at this crossing. No Level of Service ("LOS") was provided.

The American Association of State Highway and Transportation Officials ("AASHTO") Geometric Design of Highways and Streets, 2004, states that the Level of Service characterizes the operating conditions on a facility in terms of traffic performance measures related to speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. This is a measure of roadway congestion ranging from LOS A--least congested--to LOS F--most congested. LOS is one of the most common terms used to describe how "good" or how "bad" traffic is projected to be.

The posted speed limit on Baffert Drive is 25 mph. Staff records, as well as the Federal Railroad Administration's ("FRA") accident/incident records indicate one accident at this crossing. It occurred on October 10, 2006, when a vehicle stopped on the tracks and was struck by a train. There were no injuries reported. Records indicate the warning devices were working as intended.

Alternative routes from this crossing are: 0.3 miles to the south is Calle Sonora, and 0.8 miles to the north is Produce Row. Both are at grade crossings.

Train Data

Data provided by ADOT, through the Railroad, regarding train movements through this crossing are as follows:

Train Count: 5 trains per day with no passenger service
Maximum Train Speed: 25 mph
Thru Freight/Switching Moves: when needed, there are some switching movements through this crossings.

Schools and Bus Routes

The following are schools near these crossings:

- Pinnacle Charter High School 2055 N Grand Ave. Nogales, AZ
- Challenger Elementary School 901 E Calle Mayer Nogales, AZ

Per the Santa Cruz Valley Unified School District, Santa Cruz Valley Union High School District and Nogales Unified District – school buses cross these tracks 77 times per day.

Hospitals

ADOT gave the following response about hospitals and emergency services vehicles:

Carondelet Holy Cross Hospital is located at 1171 W Target Range Rd. Nogales. Baffert Dr. is not a major emergency service route.

Hazardous Materials

ADOT gave the following response when asked about vehicles transporting hazardous materials through this crossing:

The City of Nogales states that it's not aware of any vehicles carrying hazardous materials that utilize this crossing.

Zoning

Staff requested information from ADOT regarding the type of zoning in adjacent areas from this crossing. The following was the response given:

According to the City of Nogales' current Zoning Map, the areas around the crossing are zoned light industrial.

Grade Separation

ADOT gave the following response about grade separation:

Because this project is Section 130 (Highway-Rail Safety), grade separation was not considered. Cost estimates for grade separating this location would be in the $30,000,000 range, due to the urbanized location.

Vehicular Delays at Crossings

The City of Nogales has no information or complaints regarding delays, however the delay at the crossing is really a function of the average length of the train and the average speed that it is traveling.

Another commonly used measure outlined in the FHWA Guidelines; is the so-called Crossing Exposure Index (which is simply the product of the number of trains per day multiplied by the number of vehicles crossing daily) is not currently met at this crossing. The current crossing exposure is 20,290 at Baffert Drive far below the 1,000,000 threshold for urban areas. It should be noted that the criteria identified in the FHWA material are not mandates, but guidelines established by the FHWA, which serve to alert those having jurisdiction that potential problems may arise.

Staff has utilized the FHWA Guidelines to determine the potential need for grade separation at this crossing. Based on existing conditions, Baffert Drive meets none of the nine criteria for consideration of grade separation. Staff does not recommend a grade separation at the crossing.

Calle Sonora

Calle Sonora is currently used for two-way traffic, consisting of one right/left/thru westbound lane and one thru eastbound lane. The crossing currently is protected by flashing lights, automatic gates and bells located on the outside edges of the roadway. Currently, simultaneous preemption is installed at the crossing. The proposed project consists of new automatic gates with LED flasher units to be installed on the outside edge of both curbs. A new signal bungalow (instrument housing) with a finished raised floor, along with advance preemption and constant warning time will be installed. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the State. The Railroad will maintain the warning devices and their portion of the advance preemption, after the upgrades are completed. ADOT will maintain their portion of the advance preemption and the traffic signals. The total cost for this project is $366,314, paid by FHWA's Section 130 program.

Traffic data for Calle Sonora was provided by ADOT. Per ADOT, in 2012, there were 4,027 vehicles per day ("vpd") at this crossing. No Level of Service ("LOS") was provided for this crossing.

The American Association of State Highway and Transportation Officials ("AASHTO") Geometric Design of Highways and Streets, 2004, states that the Level of Service characterizes the operating conditions on a facility in terms of traffic performance measures related to speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. This is a measure of roadway congestion ranging from LOS A--least congested--to LOS F--most congested. LOS is one of the most common terms used to describe how "good" or how "bad" traffic is projected to be.

The posted speed limit on Calle Sonora is 25 mph. Staff records, as well as the FRA's accident/incident records indicate no accidents at this crossing.

Alternative routes from this crossing are: to the south 1.1 miles is Bankard Road and to the north, Baffert is 0.25 miles away. Both are at-grade crossings.

Train Data

Data provided by ADOT, through the Railroad, regarding train movements through this crossing are as follows:

Train Count: 5 trains per day with no passenger service
Maximum Train Speed: 25 mph
Thru Freight/Switching Moves: when needed there are some switching movements through this crossing.

Schools and Bus Routes

The following are schools near these crossings:

- Nogales High School 1905 N Apache Blvd. Nogales, AZ

Per the Santa Cruz Valley Unified District, Santa Cruz Valley Union High School District and Nogales Unified District – school buses cross this crossing 9 times per day.

Hospitals

ADOT gave the following response about hospitals and emergency services vehicles:

Carondelet Holy Cross Hospital is located at 1171 W. Target Range Rd. Nogales, AZ. Calle Sonora is not a major emergency service route.

Hazardous Materials

ADOT gave the following response when asked about vehicles transporting hazardous materials through this crossing:

The City of Nogales states that it's not aware of any vehicles carrying hazardous materials that utilize this crossing.

Zoning

Staff requested information from ADOT regarding the type of zoning in adjacent areas from this crossing. The following was the response given:

According to the City of Nogales' current Zoning Map, the areas around the crossing are zoned light industrial.

Grade Separation

ADOT gave the following response about grade separation:

Because this project is Section 130 (Highway-Rail Safety), grade separation was not considered. Cost estimates for grade separating this location would be in the $30,000,000 range, due to the urbanized location.

Vehicular Delays at Crossings

The City of Nogales has no information or complaints regarding delays, however the delay at the crossing is really a function of the average length of the train and the average speed that it is traveling.

Another commonly used measure outlined in the FHWA Guidelines; is the so-called Crossing Exposure Index (which is simply the product of the number of trains per day multiplied by the number of vehicles crossing daily) is not currently met at this crossing. The current crossing exposure is 20,135 at Calle Sonora far below the 1,000,000 threshold for urban areas. It should be noted that the criteria identified in the FHWA material are not mandates, but guidelines established by the FHWA, which serve to alert those having jurisdiction that potential problems may arise.

Staff has utilized the FHWA Guidelines to determine the potential need for grade separation at this crossing. Based on existing conditions, Calle Sonora meets none of the nine criteria for consideration of grade separation. Staff does not recommend a grade separation at the crossing.

Bankard Avenue

Bankard Avenue is used for two-way traffic, consisting of one right/left/thru westbound and one thru eastbound lane. Currently, this crossing is equipped with flashing lights, automatic gates and bells as well as constant waring time and simultaneous preemption. The proposed project consists of installing new automatic gates with LED flasher units, on the outside edge of the curb as well as upgrading to advanced preemption. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the State. The Railroad will maintain the warning devices and their portion of the advanced preemption after the upgrades are completed. ADOT will be responsible for the traffic signals and their portion of the advance preemption. The total cost for this project is $260,337, funded by FHWA's Section 130 program.

Traffic data for Bankard Avenue was provided by ADOT. Per ADOT, in 2012, there were 2,500 vehicles per day ("vpd") at this crossing. No Level of Service ("LOS") was provided for this crossing.

The American Association of State Highway and Transportation Officials ("AASHTO") Geometric Design of Highways and Streets, 2004, states that the Level of Service characterizes the operating conditions on a facility in terms of traffic performance measures related to speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. This is a measure of roadway congestion ranging from LOS A--least congested--to LOS F--most congested. LOS is one of the most common terms used to describe how "good" or how "bad" traffic is projected to be.

The posted speed limit on Bankard Avenue is 25 mph. Staff records, as well as the FRA's accident/incident records indicate two accidents at this crossing. The first incident occurred on February 21, 1976 when a vehicle stopped on the tracks and was struck by a train, no injuries occurred. The second incident occurred on January 27, 1978 when a vehicle stopped on the tracks and was struck by a train, no injuries occurred.

Alternative routes from this crossing are: to the north 1.0 miles is Calle Sonora, and to the south, State Route ("SR") 82 is 0.25 miles away. SR 82 is a grade-separated crossing, while Calle Sonora is at-grade.

Train Data

Data provided by ADOT, through the Railroad, regarding train movements through this crossing are as follows:

Train Count: 5 trains per day with no passenger service

Maximum Train Speed: 25 mph

Thru Freight/Switching Moves: there are some switching movements through this crossing.

Schools and Bus Routes

The following are schools near these crossings:

- Sunshine Preschool Ranch — 870 N Perkins Ave. Nogales, AZ
- Lourdes Catholic School — 555 E Patagonia Hwy. Nogales, AZ
- Smart Kids Preschool — 939 N Perkins Ave. Nogales, AZ

Per the Santa Cruz Valley Unified School District, Santa Cruz Valley Union High School District and Nogales Unified District – school buses use this crossing 6 times per day.

Hospitals

ADOT gave the following response about hospitals and emergency services vehicles:

Carondelet Holy Cross Hospital is located at 1171 Target Range Rd. Nogales, AZ. Bankard Ave. is not a major emergency service route.

Hazardous Materials

ADOT gave the following response when asked about vehicles transporting hazardous materials through this crossing:

The City of Nogales states that it's not aware of any vehicles carrying hazardous materials utilizing this crossing.

Zoning

Staff requested information from ADOT regarding the type of zoning in adjacent areas from this crossing. The following was the response given:

According to the City of Nogales' current Zoning Map, the areas around the crossing are zoned General Commercial and Multi-Family Residence.

Grade Separation

ADOT gave the following response about grade separation:

Because this project is Section 130 (Highway-Rail Safety), grade separation was not considered. Cost estimates for grade separating this location would be in the $30,000,000 range, due to the urbanized location.

Vehicular Delays at Crossings

The City of Nogales has no information or complaints regarding delays however the delay at the crossing is really a function of the average length of the train and the average speed that it is traveling.

Another commonly used measure outlined in the FHWA Guidelines; is the so-called Crossing Exposure Index (which is simply the product of the number of trains per day multiplied by the number of vehicles crossing daily) is not currently met at this crossing. The current crossing exposure is 12,500 at Bankard far below the 1,000,000 threshold for urban areas. It should be noted that the criteria identified in the FHWA material are not mandates, but guidelines established by the FHWA, which serve to alert those having jurisdiction that potential problems may arise.

Staff has utilized the FHWA Guidelines to determine the potential need for grade separation at this crossing. Based on existing conditions, Bankard meets none of the nine criteria for consideration of grade separation. Staff does not recommend a grade separation at the crossing.

Morley Avenue

Morley Avenue is used for two-way traffic, consisting of one right/left westbound lane and one thru eastbound lane. This crossing is equipped with flashing lights, automatic gates and bells, as well as constant waring time and simultaneous preemption. The proposed project consists of installing new automatic gates with LED flasher units on the outside edge of the curb as well as upgrading to advanced preemption. The proposed measures are consistent with safety measures employed at similar at-grade crossings in the State. The Railroad will maintain the warning devices after the upgrades are completed. The Railroad will maintain their portion of the advance preemption, while ADOT will maintain the traffic signals and their portion of the advance preemption. The total cost for this project is $468,857, funded by FHWA's Section 130 program.

Traffic data for Morley Avenue was provided by ADOT. Per ADOT, in 2012, there were 8,576 vehicles per day ("vpd") at this crossing. No Level of Service ("LOS") was provided for this crossing.

The American Association of State Highway and Transportation Officials ("AASHTO") Geometric Design of Highways and Streets, 2004, states that the Level of Service characterizes the operating conditions on a facility in terms of traffic performance measures related to speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. This is a measure of roadway congestion ranging from LOS A--least congested--to LOS F--most

congested. LOS is one of the most common terms used to describe how "good" or how "bad" traffic is projected to be.

The posted speed limit on Morley Avenue is 25 mph. Staff records, as well as the FRA's accident/incident records indicate no accidents at this crossing.

Alternative routes from this crossing are: to the southwest 0.6 miles is Court Street, and to the northeast, Bankard Street is 0.7 miles away. Both crossings are at-grade.

Train Data

Data provided by ADOT, through the Railroad, regarding train movements through this crossing are as follows:

Train Count: 5 trains per day with no passenger service

Maximum Train Speed: 10 mph

Thru Freight/Switching Moves: there are some switching movements through this crossing when necessary.

Schools and Bus Routes

The following are schools near these crossings:

- Lincoln Elementary School 3652 N Tyler Ave, Nogales, AZ

Per the Santa Cruz Valley Unified District, Santa Cruz Valley High School District and Nogales Unified District, school buses use this crossing 2 times per day.

Hospitals

ADOT gave the following response about hospitals and emergency services vehicles:

Carondelet Holy Cross Hospital is located at 1171 Target Range Rd. in Nogales. Morley is not a major emergency service route.

Hazardous Materials

ADOT gave the following response when asked about vehicles transporting hazardous materials through this crossing:

The City of Nogales states that it's not aware of any vehicles carrying hazardous materials utilizing this crossing.

Zoning

Staff requested information from ADOT regarding the type of zoning in adjacent areas from this crossing. The following was the response given:

According to the City of Nogales' current Zoning Map, the areas around the crossing are zoned Limited Commercial.

Grade Separation

ADOT gave the following response about grade separation:

Because this project is Section 130 (Highway-Rail Safety), grade separation was not considered. Cost estimates for grade separating this location would be in the $30,000,000 range, due to the urbanized location.

Vehicular Delays at Crossings

The City of Nogales has no information or complaints regarding delays, however the delay at the crossing is really a function of the average length of the train and the average speed that it is traveling.

Another commonly used measure outlined in the FHWA Guidelines; is the so-called Crossing Exposure Index (which is simply the product of the number of trains per day multiplied by the number of vehicles crossing daily) is not currently met at this crossing. The current crossing exposure is 42,880 at Morley Avenue far below the 1,000,000 threshold for urban areas. It should be noted that the criteria identified in the FHWA material are not mandates, but guidelines established by the FHWA, which serve to alert those having jurisdiction that potential problems may arise.

Staff has utilized the FHWA Guidelines to determine the potential need for grade separation at this crossing. Based on existing conditions, Morley Avenue meets none of the nine criteria for consideration of grade separation. Staff does not recommend a grade separation at the crossing.

Crossing Closure

The City has stated they would not like to close any of these four crossings. Doing so would negatively impact numerous businesses in the area. Staff believes that closing any of these crossings would not be practical.

FHWA Guidelines Regarding Grade Separation

The FHWA Railroad-Highway Grade Crossing Handbook (Revised Second Edition August 2007) provides nine criteria for determining whether highway-rail crossings should be considered for grade separation or otherwise eliminated across the railroad right of way. The Crossing Handbook indicates that grade separation or crossing elimination should be considered whenever one or more of the nine conditions are met. The nine criteria are applied to this crossing application as follows:

		Baffert Drive	Calle Sonora	Bankard Avenue	Morley Avenue
The highway is a part of the designated Interstate Highway System	Crossing Currently meets the criteria	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No
The highway is otherwise designed to have full controlled access	Crossing Currently meets the criteria	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No
The posted highway speed equals or exceeds 70 mph	Crossing Currently meets the criteria	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No
AADT exceeds 100,000 in urban areas or 50,000 in rural areas	Crossing Currently meets the criteria	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No
Maximum authorized train speed exceeds 110 mph	Crossing Currently meets the criteria	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No
An average of 150 or more trains per day or 300 million gross tons/year	Crossing Currently meets the criteria	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No
Crossing exposure (trains/day x AADT) exceeds 1M in urban or 250k in rural; or passenger train crossing exposure exceeds 800k in urban or 200k in rural	Crossing Currently meets the criteria	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No
Expected accident frequency for active devices with gates, as calculated by the US DOT Accident Prediction Formula including five-year accident history, exceeds 0.5	Crossing Currently meets the criteria	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No
Vehicle delay exceeds 40 vehicle hours per day	Crossing Currently meets the criteria	No	No	No	No
	Crossing meets the criteria by 2030	No	No	No	No

Staff Conclusions

Having reviewed all applicable data, Staff supports ADOT's application. Staff believes that the upgrades are in the public's interest and are reasonable. Staff believes that the measures proposed by ADOT are consistent with other similar at-grade crossings in the State and will provide for the public's safety. Therefore, Staff recommends approval of ADOT's applications.

Brian H. Lehman
Railroad Safety Supervisor
Safety Division

Originator: BHL

Original and thirteen (13) copies
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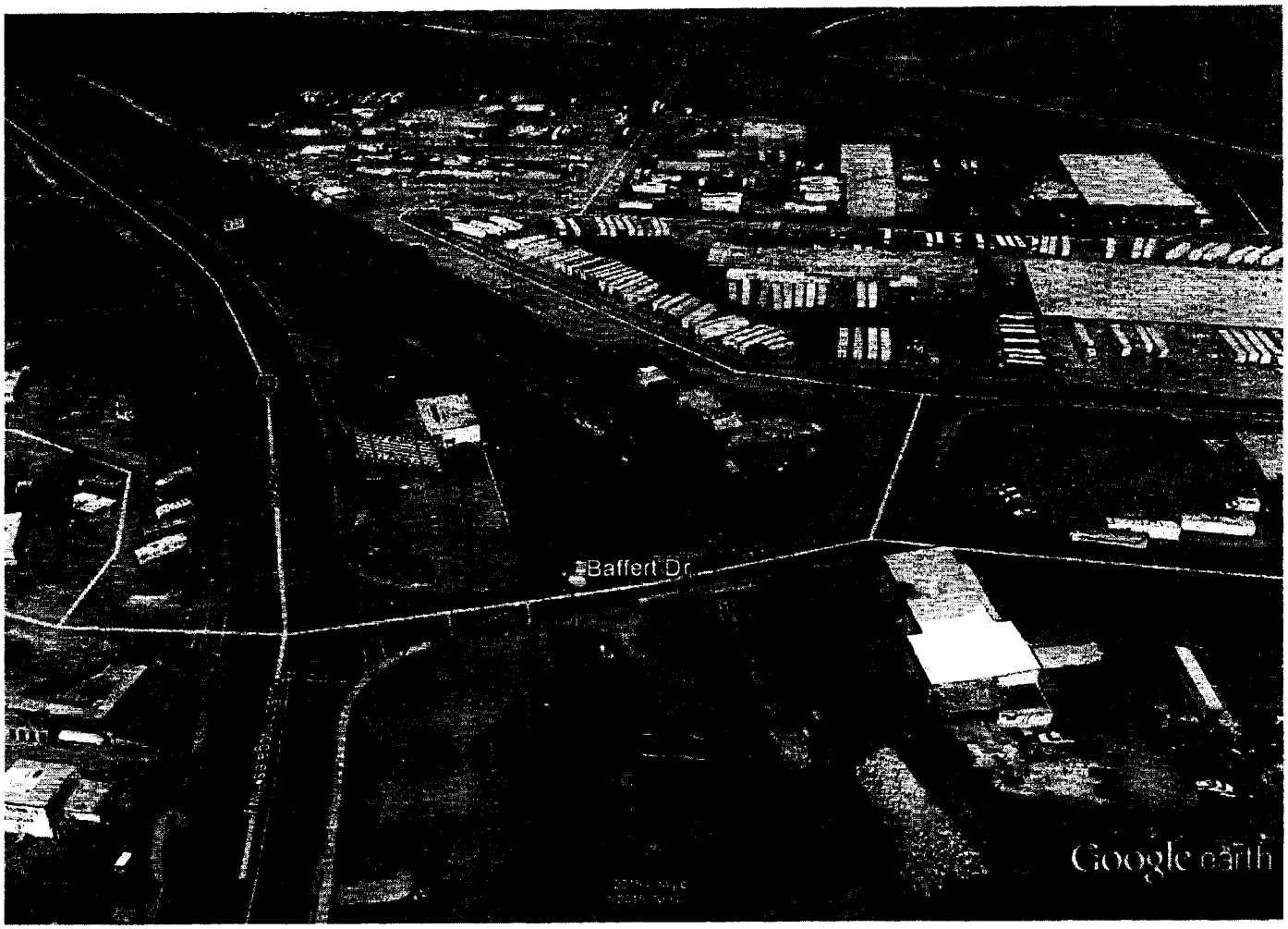

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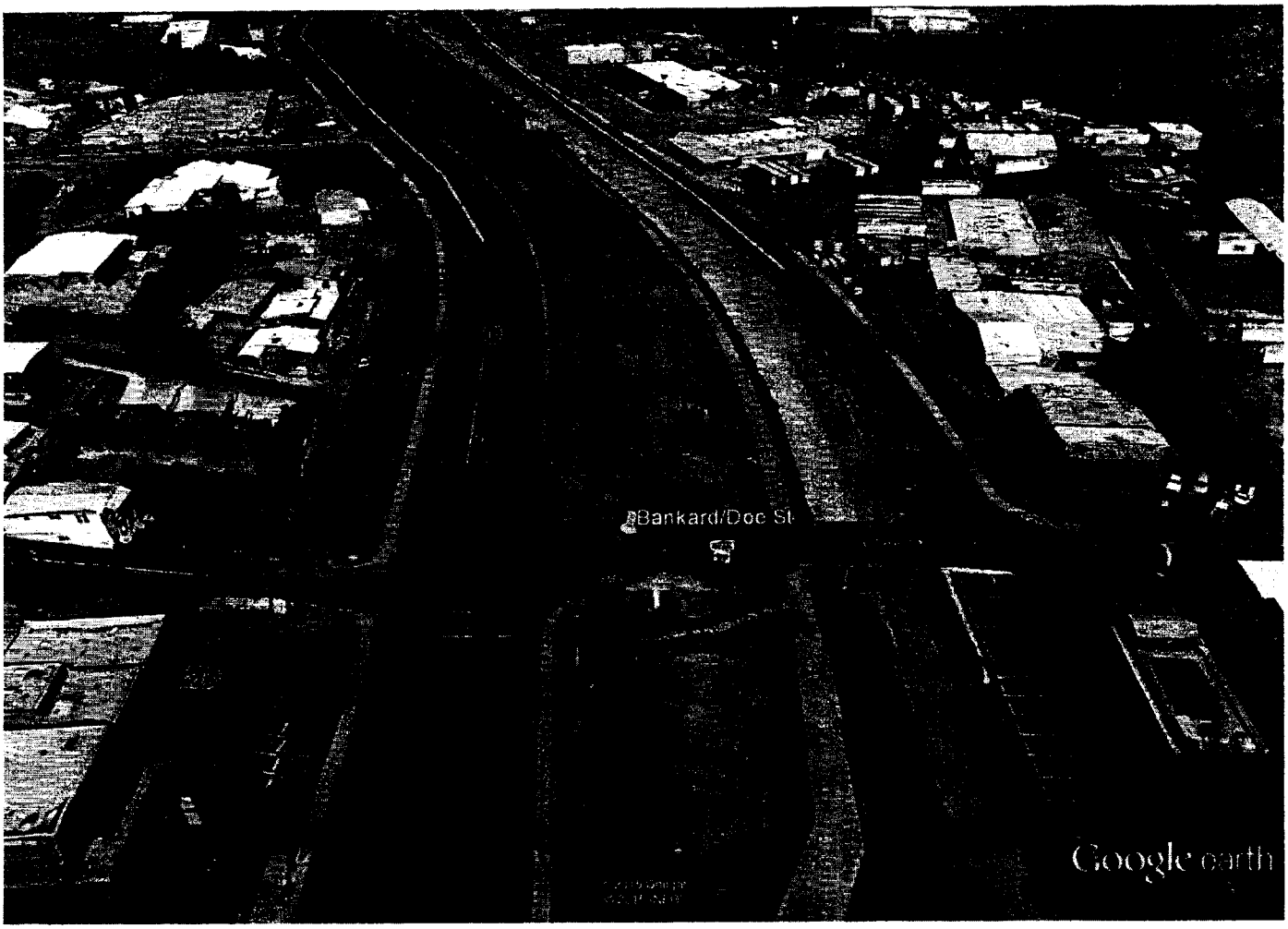

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