Final
Technical Memorandum

SH 121/Main Street (FM 423) and SH 121/Paige Road Traffic Study
The Colony, Texas

Prepared for:

THE COLONY
City by the Lake

City of The Colony

Prepared by:

HDR

HDR Engineering, Inc.
Texas P.E. Firm # F-754
11171 Preston Road, Suite 200
Dallas, Texas 78248

August 31, 2010

8/31/2010

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1.0 Introduction

The City of The Colony (City) has retained HDR Engineering (HDR) to perform an evaluation of the following intersections for safety and traffic operations:

1. SH 121 and Main Street (FM 423)/ Josey Lane
2. SH 121 and Paige Road/ Plano Parkway

The location of the intersections is shown in **Figure 1.** The evaluation consisted of reviewing the recent accident data at these intersections to identify accident patterns and to provide recommendations in the form of signing, striping, and signal timing to improve safety and reduce accidents at these intersections. This technical memorandum summarizes the review of the accident data and the analysis performed to evaluate the operational impacts of the recommendations to improve safety at the study intersections.

2.0 Data Collection

As part of this study, HDR coordinated with the City to obtain accident records at the study intersections for 2009 and 2010. In addition to the accident reports, HDR collected AM peak (6:00 – 9:00 AM) and PM peak (4:00 – 7:00 PM) turning movement counts at the study intersections on July 13, 2010. Traffic signal timing information was also obtained from the City of Lewisville for both study intersections. A field review was performed to observe traffic operations and to evaluate safety considerations at the study intersections.

3.0 Accident Data Review

The accident data obtained from the City consisted of accident reports from January 2009 to July 2010 for the study intersections. These accidents were summarized in a spreadsheet according to the time and date of accident, type of accident, severity of the accident, and primary and secondary cause of accident. **Tables 1** and **2** provide a summary of the accident reports for the SH 121/Main Street (FM 423), and SH 121/Paige Road intersections, respectively. These accident reports were used to prepare collision diagrams to identify accident patterns at the study intersections. The collision diagrams for SH 121/Main Street, and SH 121/Paige Road are shown in **Figures 2** and **3**, respectively. The detailed accident data spreadsheets are provided in **Exhibit 1** and **2** in the **Appendix**.

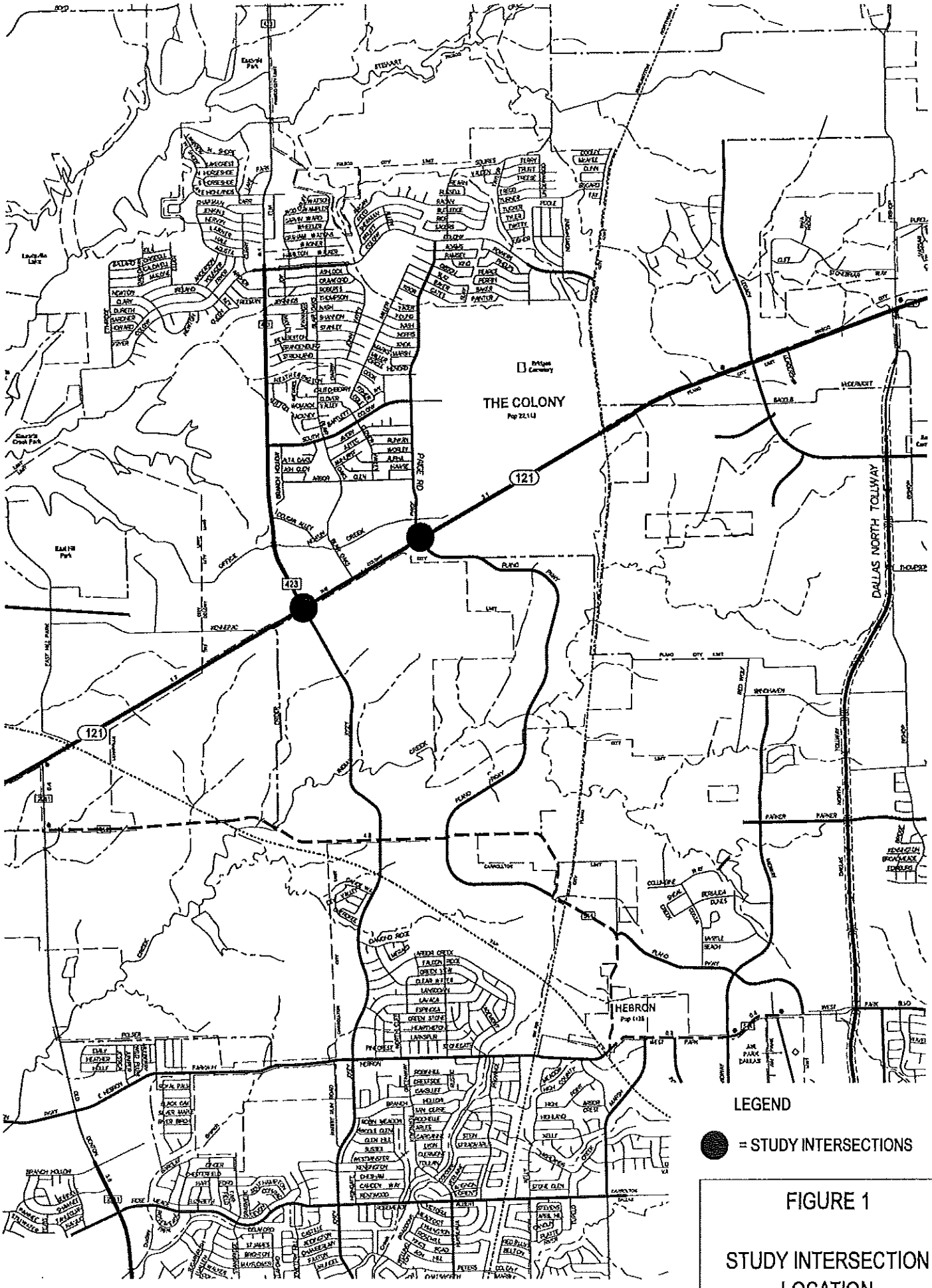


FIGURE 1

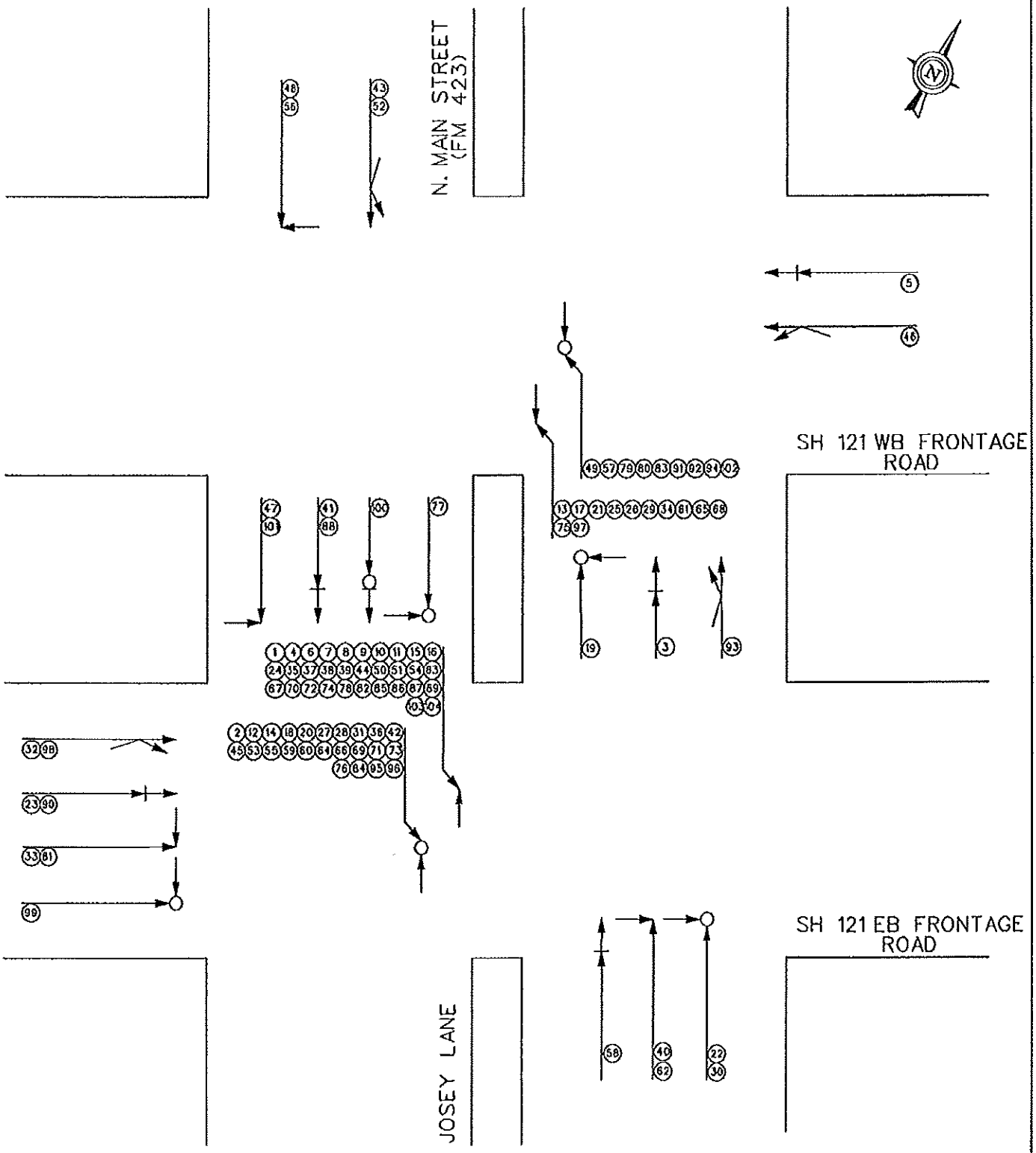
STUDY INTERSECTION LOCATION

Table 1.
Accident Data Summary (January 2009 – July 2010)
SH 121 and Main Street (FM 423)

	Accident Severity			
Accident Type	Fatality	Injury	Property Damage Only	Total
Left-Turn	0	33	42	75
Right-Angle	0	6	8	14
Rear End	0	1	7	8
Side Swipe	0	0	6	6
Right-Turn	0	0	1	1
Total	0	40	64	104

Table 2.
Accident Data Summary (January 2009 – July 2010)
SH 121 and Paige Road

	Accident Severity			
Accident Type	Fatality	Injury	Property Damage Only	Total
Left-Turn	0	20	41	61
Right-Angle	0	5	5	10
Rear End	0	0	4	4
Side Swipe	0	1	13	14
Out of Control	0	1	0	1
Total	0	27	63	90



SYMBOLS

- MOVING VEHICLE (PASSENGER CAR)
- MOVING VEHICLE (TRUCK w/ TRAILER
- FIXED OBJECT
- HEAD-ON COLLISION
- REAR END COLLISION
- RIGHT-ANGLE COLLISION
- LEFT-TURN COLLISION
- SIDESWIPE
- VEHICLE DEFECT/DEBRIS ON ROAD
- OUT OF CONTROL
- FATALITY
- INJURY
- ACCIDENT IDENTIFIER

NOTE:

REFER TO EXHIBIT 1 IN THE APPENDIX FOR ACCIDENT DATA CORRESPONDING TO EACH ACCIDENT IDENTIFIER

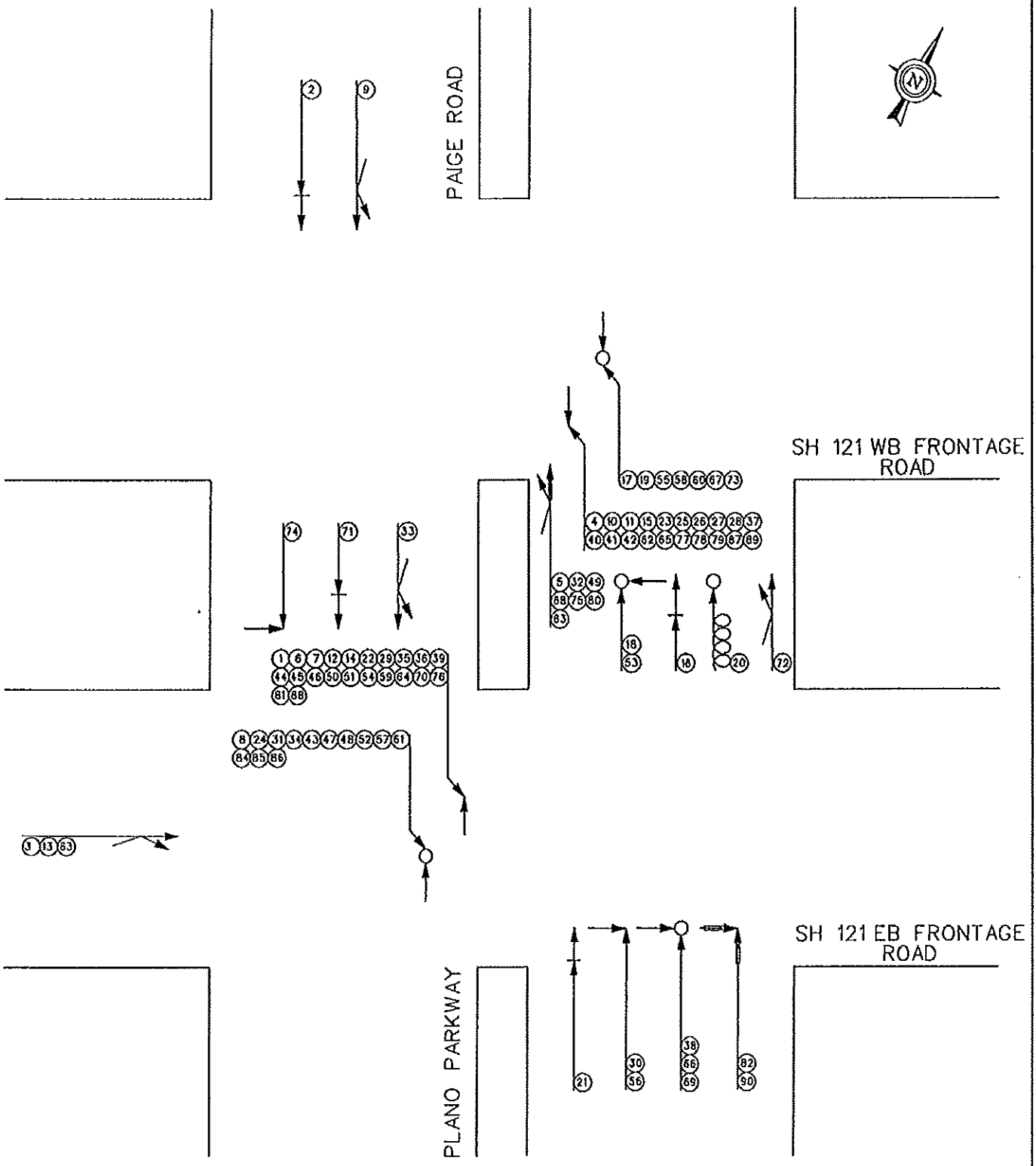
FIGURE 2

SH 121 AND MAIN ST. (FM 423) COLLISION DIAGRAM

JANUARY 2009 - JULY 2010

HDR Engineering, Inc.
17111 Preston Road, Suite 200
Dallas, Texas 75248-1229

TEXAS P.E. FIRM REGISTRATION NO. F-754



SYMBOLS

- MOVING VEHICLE (PASSENGER CAR)
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- FIXED OBJECT
- HEAD-ON COLLISION
- REAR END COLLISION
- RIGHT-ANGLE COLLISION
- LEFT-TURN COLLISION
- SIDESWIPE
- VEHICLE DEFECT/DEBRIS ON ROAD
- OUT OF CONTROL
- FATALITY
- INJURY
- (#) ACCIDENT IDENTIFIER

NOTE:

REFER TO EXHIBIT 2 IN THE APPENDIX FOR ACCIDENT DATA CORRESPONDING TO EACH ACCIDENT IDENTIFIER

FIGURE 3

SH 121 AND PAIGE RD. COLLISION DIAGRAM

JANUARY 2009 - JULY 2010

HDR Engineering, Inc.
17111 Preston Road, Suite 200
Dallas, Texas 75248-1229

TEXAS P.E. FIRM REGISTRATION NO. F-754

As can be seen from **Tables 1** and **2** and also from **Figures 2** and **3**, a vast majority of the accidents are left-turn accidents; 72% at the intersection of SH 121 and Main Street (FM 423), and 68% at the intersection of SH 121 and Paige Road. A further review was conducted of the left-turn accidents to identify if there are any specific patterns such as time of day, age of the driver, etc to determine the potential causes of these accidents. The review indicated that most of these accidents occurred because the left-turning vehicle made a permissive left-turn and failed to yield right-of-way to the oncoming through vehicle.

Further review of **Figures 2** and **3** indicated that at the intersection of SH 121 WB Frontage Road and Paige Road, there were seven side-swipe accidents involving a vehicle with a trailer making a left-turn from northbound Paige Road to westbound SH 121 frontage road from the outer left/through shared lane.

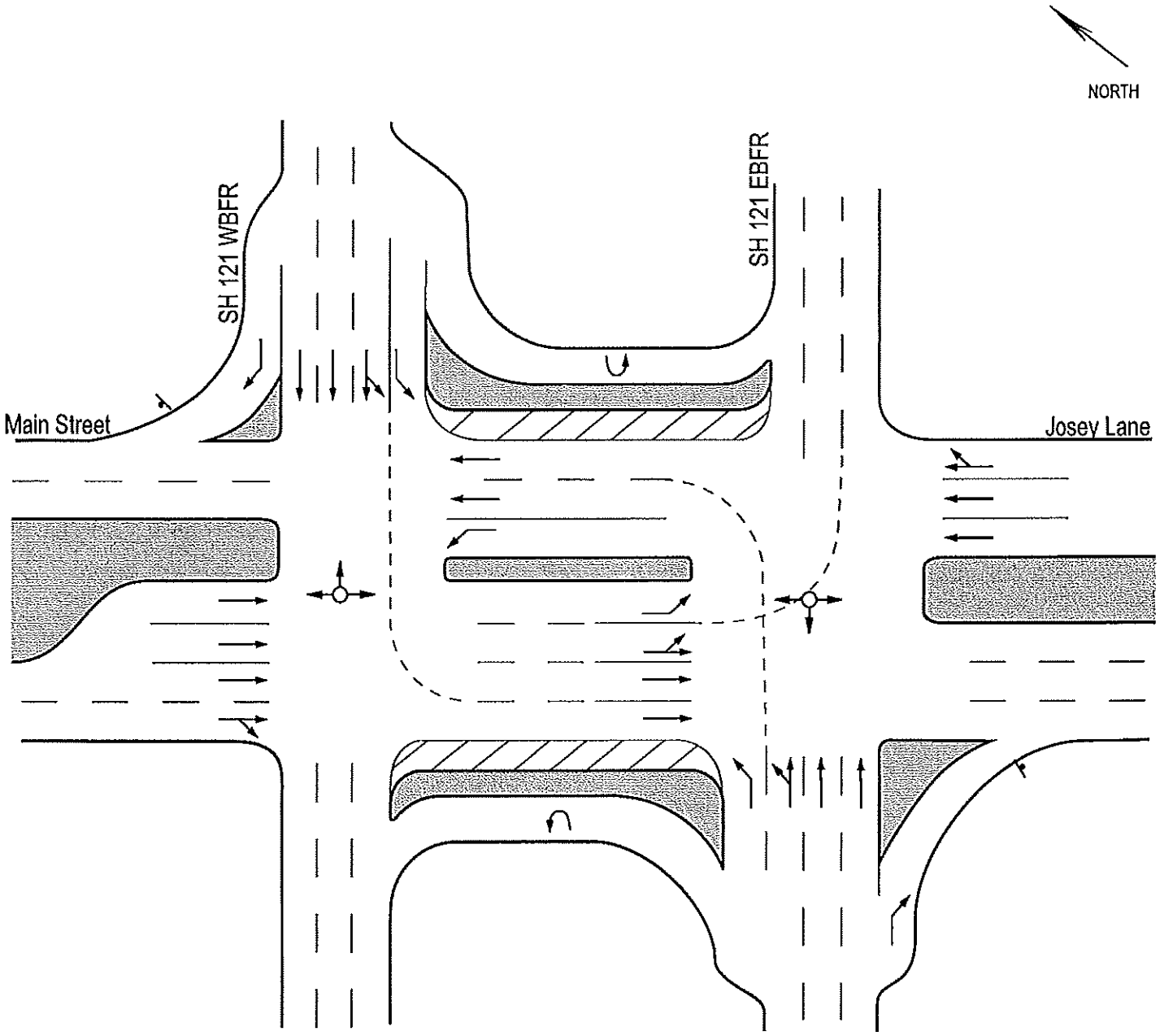
3.0 Traffic Operational Analysis

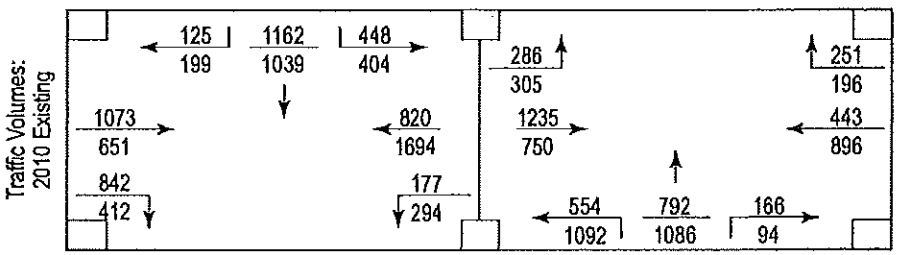
A traffic operational analysis was conducted using Trafficware's Synchro 7.0 ® software (Ref. 1) to determine the impact of signing, striping and signal timing modifications to address the safety issues identified during the review of the accident data. The following is a summary of the traffic operational evaluation conducted as part of this study.

3.1 Existing Conditions

The existing geometry and traffic volume conditions for SH 121/Main Street (FM 423) and SH 121/Paige Road intersections are shown in **Figures 4** and **5**, respectively. The intersections currently operate in a coordinated manner with a 120 second cycle length during the AM and PM peak periods evaluated in this study. The phasing is similar to a three-phase pattern with the frontage road approaches getting a simultaneous green, followed by the cross-street approaches.

As shown in **Figure 4**, the northbound approach at the intersection of SH 121 westbound Frontage Road and Main Street (FM 423) provides a left-turn lane and two through lanes. This approach presently has a protected/permissive left-turn phasing. The southbound approach at the intersection of SH 121 eastbound Frontage Road and Main Street (FM 423) provides a left-turn lane, a left/through





LEGEND

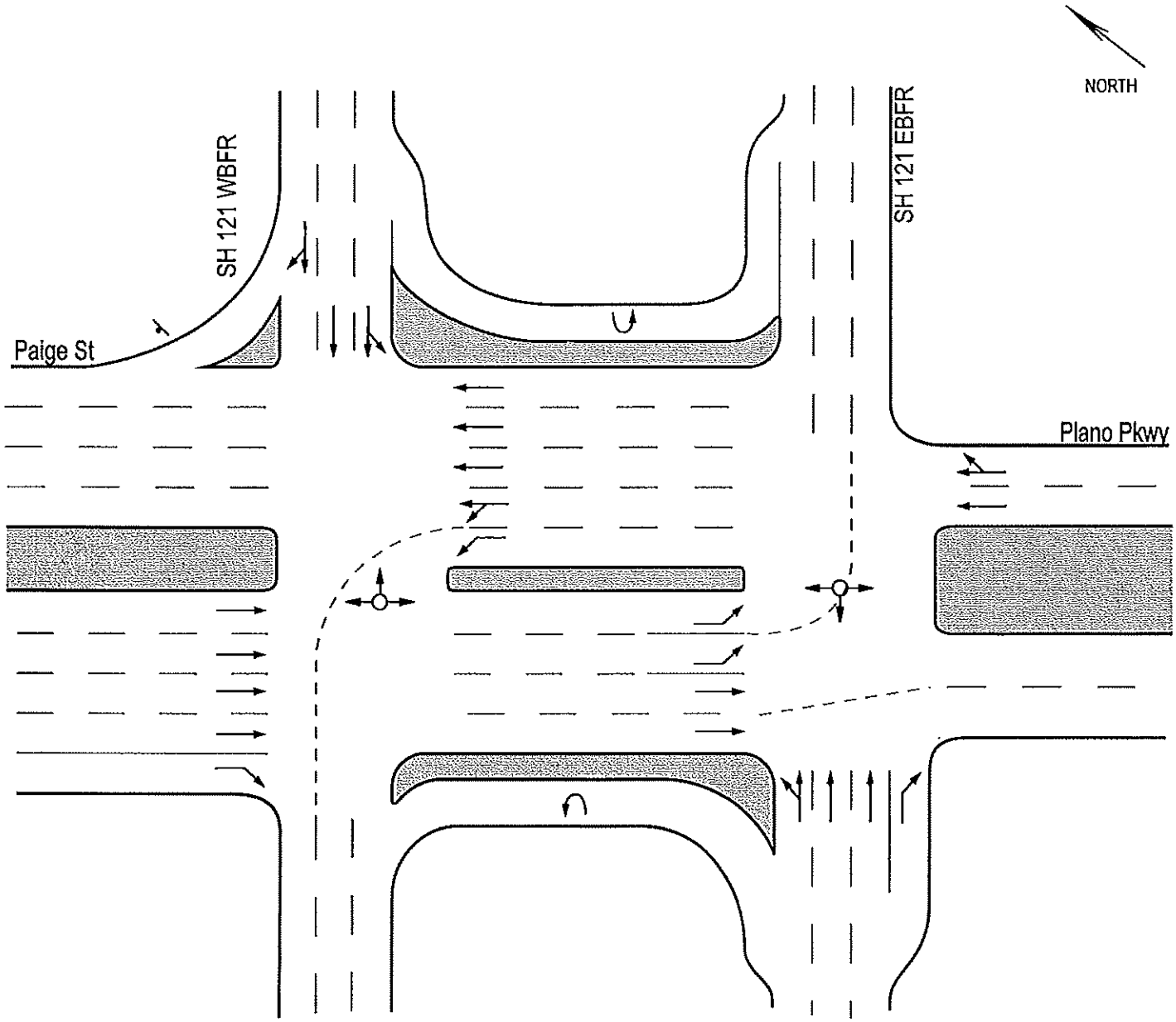
000/000 = AM/PM Peak Hour Volume

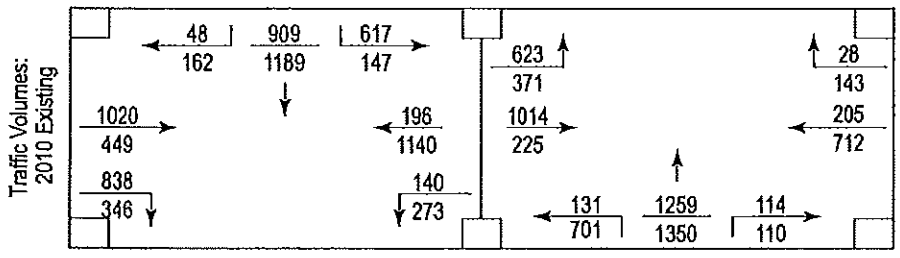
= Traffic Signal

= Yield Sign

FIGURE 4

SH 121 AND MAIN STREET (FM 423)
EXISTING GEOMETRY
AND TRAFFIC VOLUME
CONDITIONS





LEGEND

000/000 = AM/PM Peak Hour Volume

= Traffic Signal

= Yield Sign

FIGURE 5

SH 121 AND PAIGE ROAD
EXISTING GEOMETRY
AND TRAFFIC VOLUME
CONDITIONS

shared lane and two through lanes. This approach presently has a protected/permissive left-turn phasing.

As shown in **Figure 5**, the northbound approach at the intersection of SH 121 westbound Frontage Road and Paige Street provides a left-turn lane, a left/through shared lane and three through lanes. This approach presently has a protected/permissive left-turn phasing. The southbound approach at the intersection of SH 121 eastbound Frontage Road and Paige Street provides two left-turn lanes and two through lanes. This approach presently has a protected/permissive left-turn phasing.

3.2 Proposed Striping Modifications

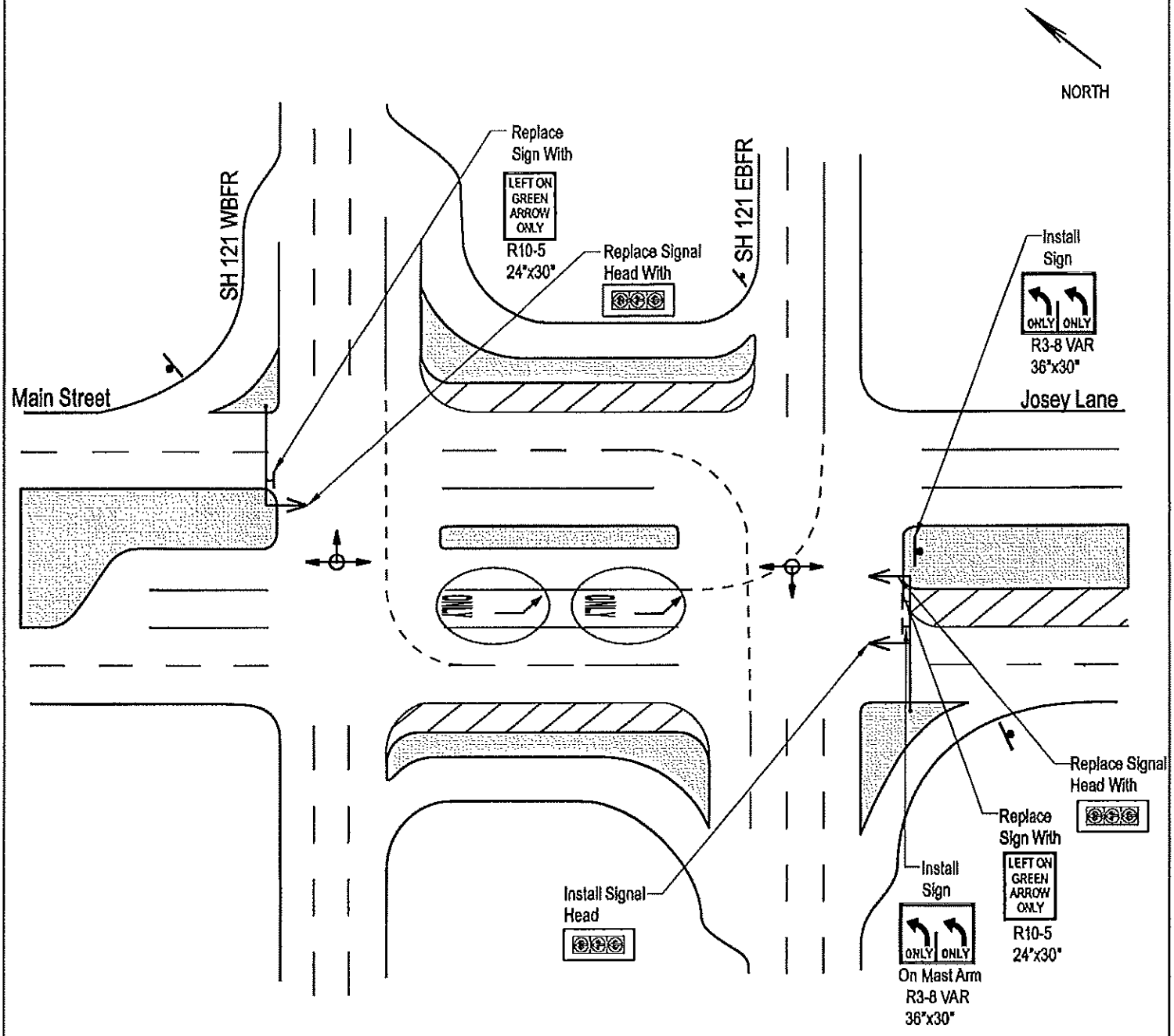
As discussed earlier in section 3, the leading cause of accident was identified as left-turn failing to yield right-of-way to oncoming through traffic during the permissive left-turn phasing. It was therefore determined that changing the northbound and southbound left-turns at both intersections from protected/permissive to protected only should greatly reduce the left-turn accidents at both these study intersections. Protected-only left-turn phasing is not recommended with shared left-turn lanes; therefore, converting to protected-only phasing will necessitate restriping shared left-turn lanes to exclusive left-turn lanes. The proposed striping modifications at SH 121/ Main Street (FM 423) and SH 121/Paige Road are shown in **Figure 6.** City of The Colony has plans to widen the northbound approach at the intersection of SH 121 EBFR and Plano Parkway to provide a four-lane section on this approach. The proposed signing, striping and signal modifications at SH 121/Paige Road under interim conditions (until the widening mentioned above is completed) and the final conditions are shown in **Figures 7** and **8**, respectively.

As shown in **Figure 6**, the southbound approach at the intersection of SH 121 eastbound Frontage Road and Main Street should be restriped to provide two left-turn lanes and two through lanes.

As shown in **Figure 7**, the northbound approach at the intersection of SH 121 westbound Frontage Road and Paige Road should be restriped to provide one left-turn lane and four through lanes in the interim condition until the widening on the northbound approach at the intersection of SH 121 EBFR and Plano Parkway is completed. Additionally, based on the field review and Synchro ® model analysis, it

was determined the frontage road approaches at the intersection of SH 121 and Paige Road provide for single shared left/through lane only. The intersection will operate more efficiently if the frontage road approaches are restriped to provide an exclusive left-turn lane and a shared left/through lane as shown in **Figure 7.**

As shown in **Figure 8**, the northbound approach at the intersection of SH 121 westbound Frontage Road and Paige Road should be restriped to provide two left-turns and three through lanes once the widening on the northbound approach at the intersection of SH 121 EBFR and Paige Road is completed. Additionally, based on the field review and Synchro model analysis, it was determined the frontage road approaches at the intersection of SH 121 and Paige Road provide for single shared left/through lane only. The intersection will operate more efficiently if the frontage road approaches are restriped to provide an exclusive left-turn lane and a shared left/through lane as shown in **Figure 8.**



NOTE:

1. THE PAVEMENT MARKINGS / SIGNING ARE SHOWN AS A SCHEMATIC FOR ILLUSTRATION ONLY. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
2. SIGNAL HEAD ALIGNMENT WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.

LEGEND

= Proposed Striping Modification

= Traffic Signal

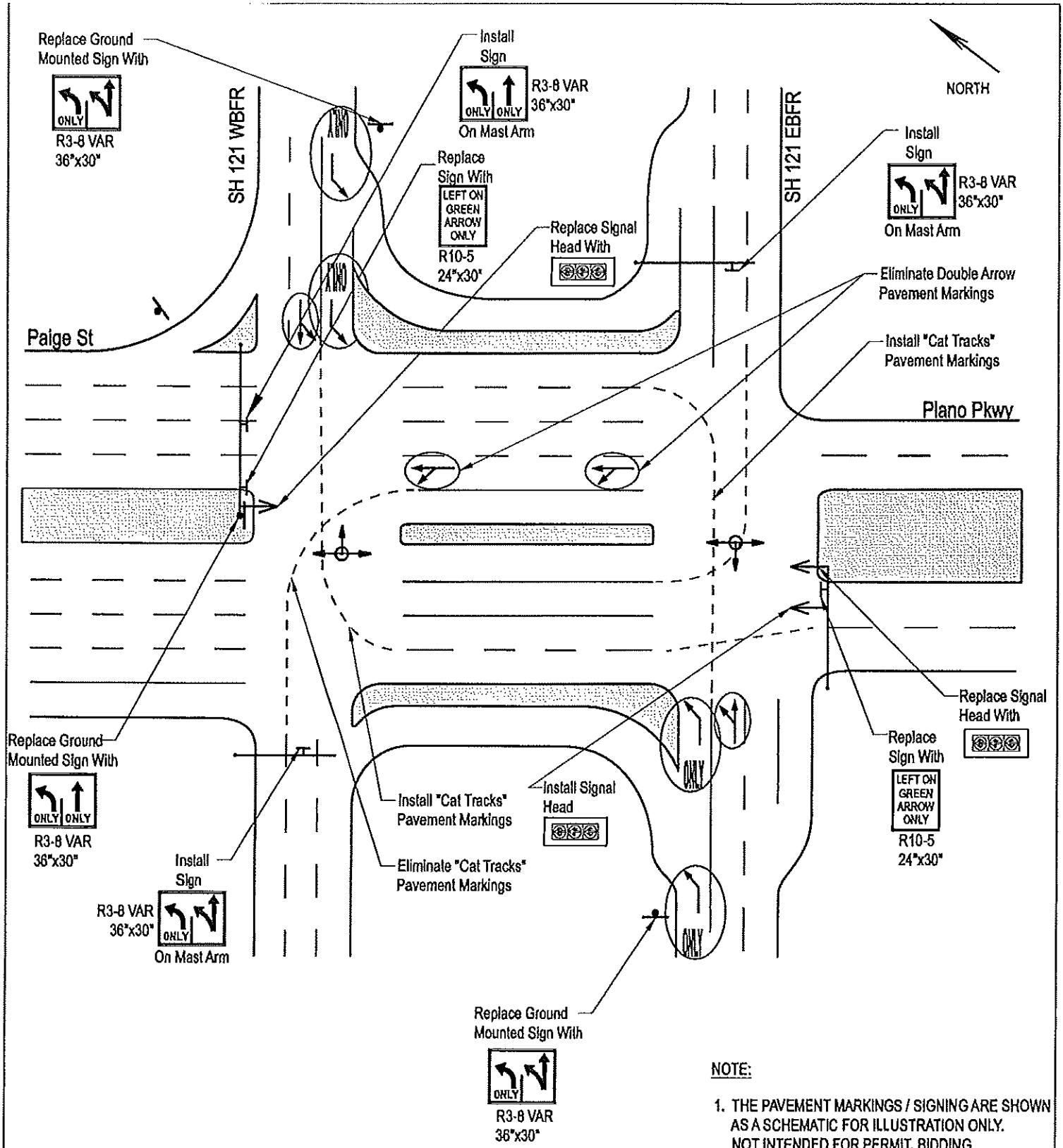
= Ground Mounted Sign

= Overhead Mounted Sign

= Signal Head

FIGURE 6

SH 121 AND MAIN STREET (FM 423)
PROPOSED STRIPING
MODIFICATIONS



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LEGEND

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= Traffic Signal

= Ground Mounted Sign

= Overhead Sign

= Signal Head

FIGURE 7

SH 121 AND PAIGE ROAD
PROPOSED STRIPING/SIGNING MODIFICATIONS
(INTERIM CONDITIONS)

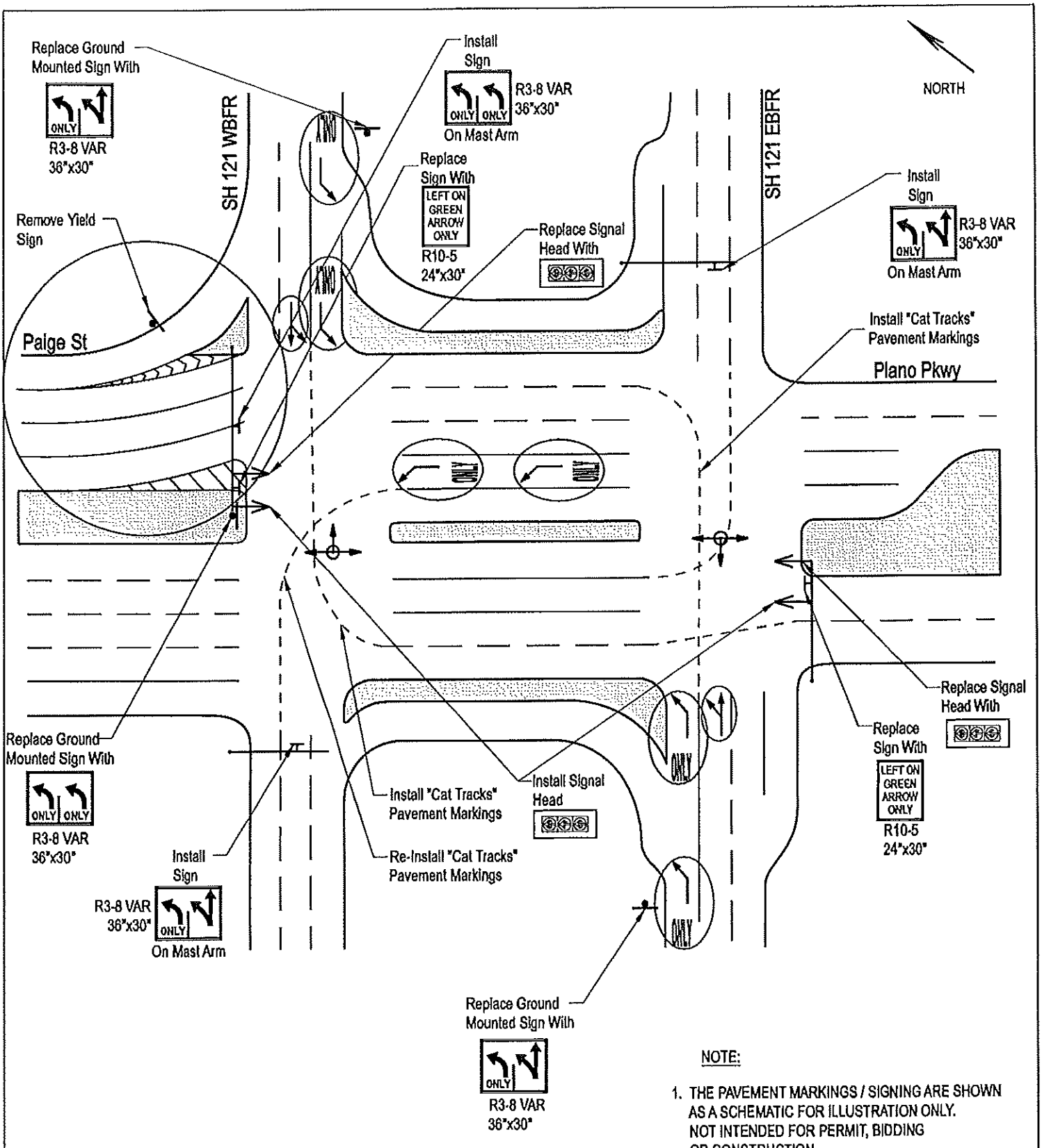

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FIGURE 8

SH 121 AND PAIGE ROAD
PROPOSED STRIPING/SIGNING MODIFICATIONS
(FINAL CONDITIONS)

3.3 Signal Timing Modifications

The proposed striping and left-turn phasing modifications will require modification to signal timing to ensure that green time is appropriately allocated to all the approaches. Two different phasing sequences were evaluated along with the striping and left-turn phasing modifications:

1. 3-Phase Lead-Lag
2. TTI 4-Phase

The phase sequences are described in detail in Federal Highway Administration's *Traffic Control Devices Handbook* (Ref. 2):

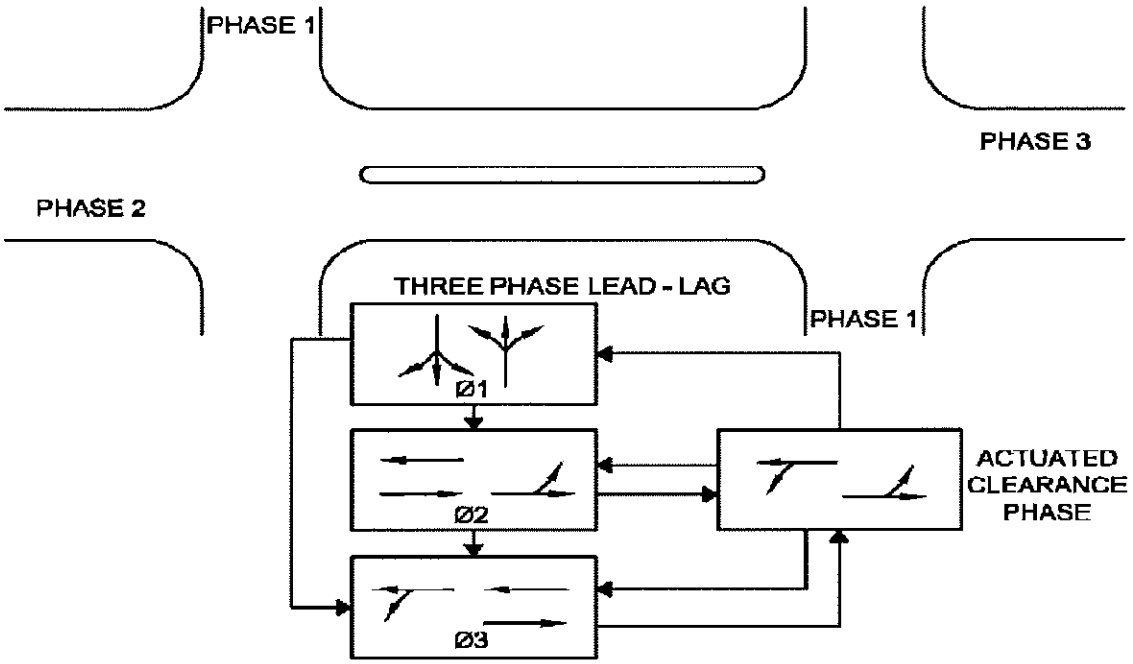
3-Phase Lead-Lag

A 3-phase lead-lag operation in which traffic on both ramp approaches begins simultaneously (Phase 1). Phase 2 follows Phase 3 if there is a demand (detector activation) for the phase. Phase 3 follows Phase 2 if there is a demand for the phase, and Phase 1 follows Phase 3 if there is a demand for that phase. This phase sequence is shown in **Figure 9**.

TTI 4-Phase

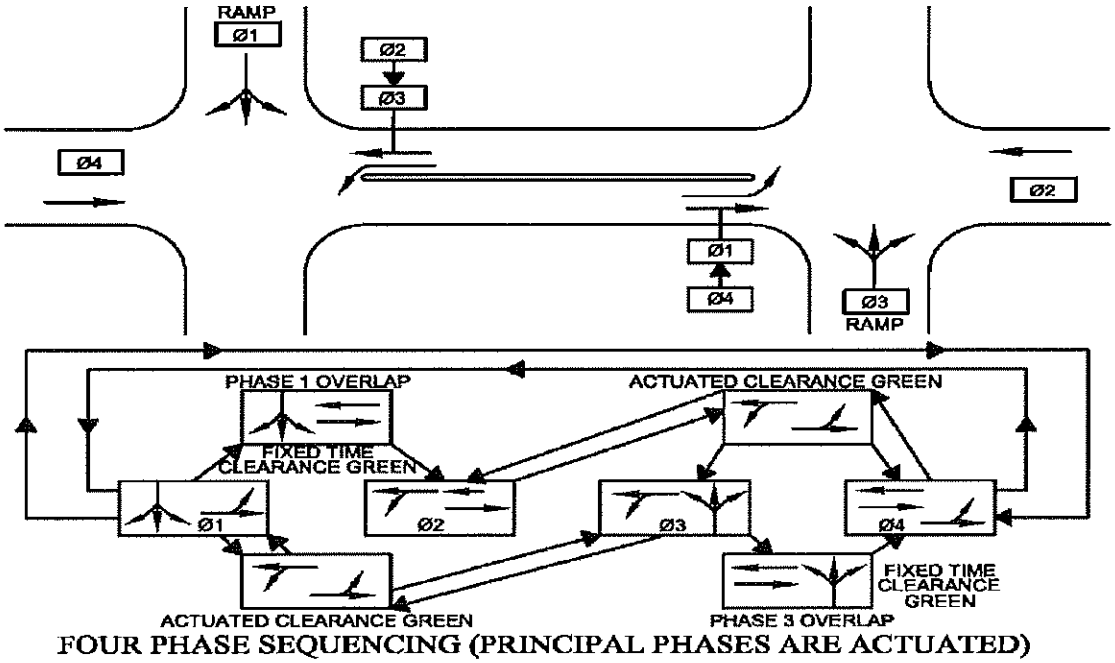
A 4-phase operation with 2 overlaps, in which traffic on one of the ramp approaches is released simultaneously with thru and left-turn traffic (on the intersecting arterial) at the other ramp intersection, thereby clearing any possible internal queue for the traffic turning left from the ramp (Phase 1). From Phase 1, the controller unit moves to Phase 1 overlap, in which the opposing traffic on the arterial (at the, as yet, unserved ramp intersection) is released while the ramp approach green continues. The Phase 1 overlap phase must be of fixed time duration since the running ramp green must be terminated to accommodate the progressive movement of the arterial traffic released at the start of the overlap phase. This fixed time period is determined by the travel time of accelerating arterial traffic from a stop at one ramp intersection, and through the other ramp intersection. The controller unit proceeds then to Phase 2 green to accommodate the above described approaching arterial traffic (thru and left-turns). For Phase 3 initiation, traffic on the arterial (at the, as yet, unserved ramp) is cleared and terminated for release of traffic on the ramp approach. As the diagram shows, flow continues to Phase 3 overlap and on to Phase 4, serving remaining traffic movements. This phase sequence is shown in **Figure 10**.

Figure 9: 3 – Phase Lead – Lag Sequence



Source: FHWA Traffic Control Devices Handbook (Ref. 2)

Figure 10: TTI 4 – Phase Sequence



Source: FHWA Traffic Control Devices Handbook (Ref. 2)

The existing conditions formed the baseline against which the proposed signal timing modifications were evaluated. Both the TTI 4-Phase and 3-Phase Lead-Lag sequences were evaluated for each of the study intersection. The standard used to evaluate traffic conditions at intersections is level of service (LOS), which is a qualitative measure of the effect of a number of factors such as speed, volume of traffic, geometric features, traffic interruptions, freedom to maneuver, safety, driving comfort, convenience, and operating cost.

Signalized intersection LOS is defined in terms of delay, which is a direct and/or indirect measure of driver discomfort, frustration, fuel consumption, and lost travel time. The levels of service have been established based on driver acceptability of various delays. The delay for each approach lane group is calculated based on a number of factors including lane geometrics, percentage of trucks, peak hour factor, number of lanes, signal progression, volume, signal green time to total cycle time ratio, roadway grades, parking conditions, and pedestrian flows.

Because delay is a complex measure, its relationship to capacity is also complex. Analysis was performed using the microcomputer program "Synchro 7.0" by Trafficware (Ref. 1), which is based on the procedures contained in the Highway Capacity Manual (Ref. 3). In general, overall intersection levels of service A to D are typically deemed acceptable, while an overall LOS of E or F is unacceptable.

Table 3 summarizes the levels of service that are appropriate for different levels of average control delay, and a qualitative description for each. The 2000 HCM uses the criteria of average control delay. Average control delay includes initial deceleration, delay, queue move-up time, stopped delay, and final acceleration delay (Ref. 3). The intersection LOS is computed as a weighted average of the vehicle delay; therefore, an intersection may have an overall LOS C or D and have individual movements, which are LOS E or F.

Table 3.
Signalized Intersection: Level of Service Measurement and Qualitative Descriptions

Level of Service	Control Delay Per Vehicle (sec)	Qualitative Description
A	≤ 10	Good progression and short cycle lengths
B	> 10 and ≤ 20	Good progression or short cycle lengths, more vehicle stops
C	> 20 and ≤ 35	Fair progression and/or longer cycle lengths, some cycle failures
D	> 35 and ≤ 55	Congestion becomes noticeable, high volume to capacity ratio
E	> 55 and ≤ 80	Limit of acceptable delay, poor progression, long cycles, and/or high volume
F	> 80	Unacceptable to drivers, volume greater than capacity

The results of the evaluation are shown in **Table 4.**

Table 4.
Intersection Level of Service (LOS)

	Existing		TTI 4-Phase		3-Phase Lead-Lag	
	AM	**PM**	**AM**	**PM**	**AM**	**PM**
SH 121 WBFR and Main Street	D	F	E	F	D	E
SH 121 EBFR and Main Street	C	F	E	F	C	F
SH 121 WBFR and Paige Road	E	E	F	E	E	D
SH 121 EBFR and Paige Road	C	F	F	F	E	D

As shown in **Table 4**, the 3-Phase Lead-Lag provides better traffic operations overall and is therefore recommended at both the intersections. It should be noted however, that at the SH 121/Paige Road intersection, under the interim conditions, the northbound left-turn queue at SH 121 WBFR and Paige Road may spillback to the eastbound frontage road because of the single northbound left-turn lane if the 3-Phase Lead-Lag operation is used. Under interim conditions at this intersection, a TTI 4-phase operation may be required. The signal operations at this intersection should be closely monitored in the field to determine the best operation under interim conditions.

4.0 Conclusions and Recommendations

The study evaluated the safety and traffic operations at SH 121/Main Street (FM 423) and at SH 121/Paige Road intersections. The following recommendations are presented for each intersection:

SH 121/Main Street (FM 423)

- Restripe the southbound approach at SH 121 EBFR and Main Street (FM 423) to provide two left-turn lanes and two through lanes. This will also require updating the ground-mounted lane assignment sign. Installing an overhead lane assignment sign on the mast arm is also recommended.
- Change the southbound left-turn phasing at SH 121 EBFR and Main Street (FM 423) from protected/permissive to protected-only. This will require changing the existing five-section head to a three-section, all arrow signal head and installing a new three-section, all arrow signal head as shown in **Figure 6**. This will also require changes to signal wiring, and replacing the "Left-Turn Yield on Green" sign on the mast-arm with "Left Turn on Green Arrow Only" (R10-5) sign as shown in **Figure 6**.
- Change the northbound left-turn phasing at SH 121 WBFR and Main Street (FM 423) from protected/permissive to protected-only. This will require changing the existing five-section head to a three-section as shown in **Figure 6**. This will also require changes to signal wiring, and replacing the "Left-Turn Yield on Green" sign on the mast-arm with "Left Turn on Green Arrow Only" (R10-5) sign as shown in **Figure 6**.
- Change the signal phasing to a standard 3-Phase lead-lag phasing. The splits will need to be fine-tuned in the field after the recommendations above have been implemented.
- Stripe out the median southbound through lane at SH 121 EBFR and Main Street (FM 423).
- Verify with TxDOT/NTTA that FM 423 improvements accommodate this new configuration and ideally extend the three through lanes and dual-left turn lanes through the interchange.

SH 121/Paige Road (Interim Conditions)

- Restripe the northbound approach at SH 121 WBFR and Paige Road to provide one left-turn lane and four through lanes as shown in **Figure 7**. This will also require updating the ground-

mounted lane assignment sign. Installing an overhead lane assignment sign on the mast arm is also recommended.

- Restripe the eastbound approach at SH 121 EBFR and Paige Road to provide a left-turn lane, a left/through shared lane, one through lane, and one right-turn lane. This will also require replacing the ground-mounted lane assignment sign. Installing an overhead lane assignment sign on the mast arm is also recommended. Installing short-broken line pavement marking ("Cat tracks") as shown in **Figure 7** is recommended.
- Restripe the westbound approach at SH 121 WBFR and Paige Road to provide a left-turn lane, a left/through shared lane, one through lane, and one right-turn lane. This will also require replacing the ground-mounted lane assignment sign. Installing an overhead lane assignment sign on the mast arm is also recommended. Installing short-broken line pavement marking ("Cat tracks") as shown in **Figure 7** is recommended.
- Change the southbound left-turn phasing at SH 121 EBFR and Paige Road from protected/permissive to protected-only. This will require changing the existing five-section head to a three-section, all arrow signal head and installing a new three-section, all arrow signal head as shown in **Figure 7**. This will also require changes to signal wiring, and replacing the "Left-Turn Yield on Green" sign on the mast-arm with "Left Turn on Green Arrow Only" (R10-5) sign as shown in **Figure 7**.
- Change the northbound left-turn phasing at SH 121 WBFR and Paige Road from protected/permissive to protected-only. This will require changing the existing five-section head to a three-section, all arrow signal head and installing a new three-section, all arrow signal head as shown in **Figure 7**. This will also require changes to signal wiring, and replacing the "Left-Turn Yield on Green" sign on the mast-arm with "Left Turn on Green Arrow Only" (R10-5) sign as shown in **Figure 7**.
- Change the signal phasing to standard 3-Phase lead-lag phasing. Monitor the queues in the field, especially the northbound queue at SH 121 WBFR and Paige Road, which may spillback to the eastbound frontage road because of the single northbound left-turn lane. A TTI 4-phase operation may be required at this intersection under the interim conditions if left-turn queue spillback occurs under the bridge. The splits will need to be fine-tuned in the field after the recommendations above have been implemented.

- Install signage restricting heavy vehicles to the inner left-turning lane at the northbound approach at SH 121 WBFR and Paige Road.

SH 121/Paige Road (Final Conditions)

- Restripe the northbound approach at SH 121 WBFR and Paige Road to provide two left-turn lanes and three through lanes. This will also require updating the ground-mounted lane assignment sign. Installing an overhead lane assignment sign on the mast arm is also recommended. Installing short-broken line pavement marking ("Cat tracks") as shown in **Figure 8** is recommended.
- Restripe the eastbound approach at SH 121 EBFR and Paige Road to provide a left-turn lane, a left/through shared lane, one through lane, and one right-turn lane. This will also require replacing the ground-mounted lane assignment sign. Installing an overhead lane assignment sign on the mast arm is also recommended. Installing short-broken line pavement marking ("Cat tracks") as shown in **Figure 8** is recommended.
- Restripe the westbound approach at SH 121 WBFR and Paige Road to provide a left-turn lane, a left/through shared lane, one through lane, and one right-turn lane. This will also require replacing the ground-mounted lane assignment sign. Installing an overhead lane assignment sign on the mast arm is also recommended. Installing short-broken line pavement marking ("Cat tracks") as shown in **Figure 8** is recommended.
- Restripe the departure lanes on the north leg of the intersection at SH 121 WBFR and Paige Road to provide three departure lanes aligned with the three through lanes in the northbound direction as shown in **Figure 8.** This will also allow the westbound right-turn lane a dedicated lane to turn into.
- Change the southbound left-turn phasing at SH 121 EBFR and Paige Road from protected/permissive to protected-only. This will require changing the existing five-section head to a three-section, all arrow signal head and installing a new three-section, all arrow signal head as shown in **Figure 8**. This will also require changes to signal wiring, and replacing the "Left-Turn Yield on Green" sign on the mast-arm with "Left Turn on Green Arrow Only" (R10-5) sign as shown in **Figure 8**.
- Change the northbound left-turn phasing at SH 121 WBFR and Paige Road from protected/permissive to protected-only. This will require changing the existing five-section head

to a three-section, all arrow signal head and installing a new three-section, all arrow signal head as shown in **Figure 8**. This will also require changes to signal wiring, and replacing the "Left-Turn Yield on Green" sign on the mast-arm with "Left Turn on Green Arrow Only" (R10-5) sign as shown in **Figure 8.**

- Change the signal phasing to standard 3-Phase lead-lag phasing. The splits will need to be fine-tuned in the field after the recommendations above have been implemented.
- Install signage restricting heavy vehicles to the inner left-turning lane at the northbound approach at SH 121 WBFR and Paige Road.

References

1. David Husch, John Albeck, "Synchro 7.0", Trafficware, Sugar Land, Texas, June 2006.
2. *Traffic Control Devices Handbook* Federal Highway Administration, http://ops.fhwa.dot.gov/publications/fhwahop06006/fhwa_hop_06_006.pdf .
3. Highway Capacity Manual, (SR 209), Transportation Research Board, Washington, D.C., 2000.

Appendix

Exhibit 1 - Main Street and Highway 121 Accident Data

HDR ID#	Date	Time	Accident #	Location	2nd Location	3rd Location	Primary Cause	Secondary Cause	Type of Accident	Pavement Conditions	Light Condition	Weather	Driver's Age	Accident Severity
1	01/03/09	19:37	2009-133	4700 SH 121	3500 Main St	EB	37		LT	1	3	1	47	N
2	01/06/09	18:30	2009-255	4700 SH 121	3500 Main St	EB	37		LT	1	3	1	27	C
3	01/10/09	1:51	2009-374	3700 Main St	4700 SH 121	WB	20		RE	1	3	1	20	N
4	01/14/09	15:39	2009-539	4700 SH 121	3500 Josey Ln	EB	37		LT	1	1	1	35	N
5	01/15/09	17:20	2009-583	4700 SH 121	3600 Main St	WB	44		RE	1	6	1	18	N
6	01/17/09	19:13	2009-672	4600 SH 121	3700 Main St	EB	37		LT	1	3	1	28	N
7	02/08/09	0:30	2009-1654	3500 Main St	4700 SH 121	EB	37		LT	1	3	1	17	N
8	02/10/09	11:15	2009-1776	4600 SH 121	3600 Main St	EB	37		LT	2	3	1	23	N
9	02/13/09	23:11	2009-1933	4700 SH 121	3500 Main St	EB	37		LT	1	3	1	38	N
10	02/13/09	23:26	2009-1934	4700 SH 121	3500 Main St	EB	37		LT	1	2	1	22	N
11	02/25/09	9:43	2009-2490	4700 SH 121	3500 Main St	EB	37		LT	1	1	1	48	N
12	02/28/09	7:30	2009-2644	3500 Main St	4700 SH 121	EB	37		LT	1	1	1	40	A
13	03/05/09	9:44	2009-2888	4600 SH 121	3700 Main St	WB	37		LT	1	1	1	69	N
14	03/07/09	2:59	2009-2992	3700 Main St	4700 SH 121	EB	37		LT	1	3	1	25	C
15	03/21/09	19:20	2009-3682	4700 SH 121	3600 Main St	EB	37		LT	1	1	1	49	N
16	03/25/09	21:44	2009-3897	4700 SH 121	3500 Main St	EB	37		LT	2	3	1	18	N
17	03/26/09	14:51	2009-3918	3600 Main St	4600 SH 121	WB	37		LT	1	1	1	59	N
18	04/16/09	21:47	2009-4969	3600 Main St	4700 SH 121	EB	37		LT	1	3	1	22	C
19	04/21/09	12:08	2009-5229	4700 SH 121	3700 Main St	WB	16		RA	1	1	1	56	C
20	04/22/09	21:04	2009-5302	3500 Main St	4600 SH 121	EB	37		LT	1	3	1	29	B
21	04/25/09	9:12	2009-5420	3700 Main St	4600 SH 121	WB	37		LT	1	1	1	34	N
22	04/26/09	23:08	2009-5516	4700 SH 121	3700 Main St	EB	16		RA	1	3	1	16	B
23	05/04/09	17:47	2009-5925	4700 SH 121	3600 Main St	EB	20		RE	1	1	1	24	N
24	05/06/09	0:22	2009-5986	3500 Main St	4700 SH 121	EB	37	66	LT	1	3	1	32	N
25	05/24/09	2:40	2009-6935	3500 Main St	4700 SH 121	WB	37	45	LT	1	3	1	33	N
26	06/05/09	21:45	2009-7623	4700 SH 121	3500 Main St	WB	37		LT	1	3	1	39	N
27	06/21/09	0:36	2009-8492	3600 Main St	4700 SH 121	EB	37	66	LT	1	3	1	24	C
28	06/21/09	13:57	2009-8515	4700 SH 121	3600 Main St	EB	37		LT	1	1	1	59	C
29	06/25/09	13:32	2009-8699	4600 SH 121	3600 Main St	WB	37		LT	1	1	1	59	N
30	06/27/09	21:14	2009-8848	4600 SH 121	3600 Main St	EB	15		RA	1	4	1	21	B
31	06/30/09	11:25	2009-8961	4700 SH 121	3500 Josey Ln	EB	37		LT	1	1	1	27	B
32	07/13/09	7:22	2009-9637	4600 SH 121	3600 Main St	EB	4		SS	1	1	1	21	N
33	07/26/09	8:20	2009-10350	4600 SH 121	3600 Main St	EB	15		RA	1	1	1	34	N
34	07/29/09	16:10	2009-10493	3600 Main St	4600 SH 121	WB	37		LT	1	1	1	40	N
35	08/04/09	15:06	2009-10793	3600 Main St	4700 SH 121	EB	37		LT	1	1	1	16	N
36	08/06/09	10:30	2009-10865	4700 SH 121	3600 Main St	EB	37		LT	1	1	1	65	B
37	08/06/09	14:10	2009-10874	4700 SH 121	3500 Main St	EB	37		LT	1	1	1	54	N
38	08/06/09	17:35	2009-10884	4700 SH 121	3500 Main St	EB	37		LT	1	1	1	38	N
39	08/13/09	8:04	2009-11230	4700 SH 121	3600 Main St	EB	37		LT	1	1	1	27	N
40	08/13/09	16:28	2009-11258	4700 SH 121	3500 Main St	EB	16		RT	1	1	1		N
41	08/29/09	14:17	2009-12072	4900 Main St			44		RE	1	1	1	61	N
42	08/31/09	21:03	2009-12185	4600 SH 121	3600 Main St	EB	37		LT	1	3	1	26	C
43	09/09/09	12:30	2009-12612	4700 SH 121	3600 Main St	EB	4		SS	1	1	1	74	N
44	09/13/09	0:51	2009-12770	3500 Main St	4600 SH 121	EB	37		LT	2	3	2	21	N
45	09/13/09	19:57	2009-12804	3600 Main St	4700 SH 121	EB	37		LT	2	3	2	44	C
46	09/25/09	10:00	2009-13239	4700 SH 121	3700 Main St	WB	4		SS	1	1	1	77	N
47	09/26/09	7:41	2009-13289	3600 Main St	4600 SH 121	EB	15		RA	1	1	1	37	N
48	10/06/09	6:38	2009-13760	3700 Main St.	4600 SH 121	WB	16	20	RA		3	1	47	N
49	10/06/09	11:53	2009-13775	3600 Main St.	4700 SH 121	WB	37		LT	2	1	2	18	C
50	10/07/09	6:55	2009-13799	4700 SH 121	3500 Main St.	EB	37		LT	2	5	2	20	N
51	10/11/09	0:20	2009-13989	3600 Main St.	4700 SH 121	EB		37	LT	1	3	1	19	N
52	10/13/09	7:50	2009-14089	4700 SH 121	3600 Main St.	EB	4		SS	2	1	2	35	N
53	10/25/09	9:00	2009-14671	4700 SH 121	3700 Main St.	EB	37		LT	1	1	1	50	C
54	10/25/09	18:43	2009-14692	4700 SH 121	3500 Josey Ln.	EB	37		LT	1	1	1	30	N
55	10/27/09	12:47	2009-14743	3600 Main St.	4700 SH 121	EB	37		LT	1	1	1	47	C
56	11/08/09	3:04	2009-15346	4600 SH 121	3600 Main St.	WB	15		RA	1	3	1		N
57	11/10/09	19:21	2009-15465	4600 SH 121	3700 Main St.	WB	37		LT	1	3	1	34	C
58	11/16/09	20:22	2009-15743	3500 Main St.	4700 SH 121	EB	19	22	RE	1	3	1	18	N
59	11/20/09	23:15	2009-15888	4700 SH 121	3600 Main St.	EB	16	72	LT	2	3	2	26	B
60	11/26/09	5:58	2009-16137	4700 SH 121	3500 Main St.	EB	37		LT	1	3	1	18	B
61	11/28/09	11:38	2009-16207	4700 SH 121	3600 Main St.	WB	37		LT	1	1	1	41	N
62	11/29/09	19:03	2009-16267	4700 SH 121	3600 Josey Ln.	EB	38		RA	1	4	1	28	N
63	12/03/09	7:16	2009-16360	4700 SH 121	3600 Main St.	EB	37		LT	1	1	1	23	N

Key

Primary/Secondary Cause

2	Animal on road - wild
3	Backed without safety
4	Changed lane when unsafe
15	Disregard stop and go signal
16	Disregard stop sign or light
17	Disregard turn marks at intersection
19	Distraction in vehicle
20	Driver inattention
22	Failed to control speed
27	Failed to pass to right safely
37	Failed to yield ROW-left turn
38	Failed to yield ROW-turn on red
44	Followed too closely
49	Improper start from parked position
65	Turned improperly- wrong lane
67	Under influence- Alcohol

Type of Accident

LT	Left Turn
OC	Out of Control
RA	Right Angle
RE	Rear End
SS	Side Swipe

Pavement conditions

1	Dry
2	Wet
6	Ice

Light Condition

1	Daylight
3	Dark, Lighted
4	Dark, Unlighted
6	Dusk

Weather

1	Clear/Cloudy
2	Rain
5	Fog

Accident Severity

N	Not injured
C	Possible Injury
B	Non Incapacitating Injury
A	Incapacitating Injury

64	12/08/09	19:11	2009-16580	4700 SH 121	3500 Josey Ln.	EB	37		LT	1	3	1	36	C
65	12/11/09	20:07	2009-16681	3600 Main St.	4800 SH 121	WB	37		LT	1	3	1	35	N
66	12/16/09	19:24	2009-16891	4700 SH 121	3600 Main St.	EB	37		LT	1	3	1	37	B
67	12/17/09	12:00	2009-16914	4700 SH 121	3600 Main St.	EB	37		LT	1	1	1	62	N
68	12/17/09	20:30	2009-16937	4700 SH 121	3600 Main St.	WB	65		LT	1	3	1	68	N
69	02/09/10	14:14	2010-1615	4700 SH 121	3500 Main St.	EB	37		LT	1	1	1	42	C
70	01/05/10	22:24	2010-196	3600 SH 121	4700 Main St.	EB	37		LT	1	3	1	56	N
71	02/13/10	11:15	2010-1764	4700 SH 121	3600 Main St.	EB	37		LT	2	1	1	50	B
72	02/14/10	23:18	2010-1819	3700 Main	4600 SH 121	EB	37	66	LT	1	3	1	26	N
73	02/18/10	23:37	2010-1985	4700 SH 121	3600 Main St.	EB	37		LT	1	3	1	34	B
74	02/19/10	11:23	2010-1999	3600 Main	4600 SH 121	EB	37		LT	1	1	2	56	N
75	03/08/10	10:02	2010-2768	4700 SH 121	3600 Main St	WB	37		LT	1	1	2	29	N
76	03/11/10	8:10	2010-2905	4600 SH 121	3600 Main St	EB	37		LT	1	1	1	37	B
77	03/13/10	19:24	2010-3033	4600 SH 121	3600 Main St	EB	67	15	RA	1	3	1	26	B
78	03/15/10	22:32	2010-3153	4600 SH 121	3700 Main st	EB	37		LT	1	3	1	16	N
79	03/20/10	2:13	2010-3366	4600 SH 121	3700 Main St	WB	37		LT	1	2	3	25	A
80	03/24/10	6:02	2010-3525	3500 Main St	4700 SH 121	WB	37		LT	1	3	2	28	C
81	03/24/10	6:30	2010-3526	4700 SH 121	3500 Main St	EB	27		RA	1	3	1	53	N
82	03/28/10	18:54	2010-3789	3600 Main St	4700 SH 121	EB	37		LT	1	1	1	22	N
83	03/30/10	11:06	2010-3843	4600 SH 121	3600 Main St	WB	15		RA	1	1	1	30	A
84	04/05/10	2:19	2010-4151	3600 Main St	4600 SH 121	EB	37		LT	1	3	1	24	B
85	04/09/10	13:36	2010-4375	4700 SH 121	3600 Main St	EB	37		LT	1	1	1	25	N
86	04/13/10	22:05	2010-4588	3600 Main St	4600 SH 121	EB	37		LT	1	3	1	44	N
87	05/08/10	6:49	2010-5804	3600 Main St	4600 SH 121	EB	37		LT	1	1	1	55	N
88	05/11/10	9:05	2010-5976	3500 Main St	4600 SH 121	WB	3		RE	1	1	1	51	N
89	05/11/10	21:00	2010-6011	3500 Main St	4700 SH 121	EB	37		LT	1	3	1		N
90	05/16/10	13:14	2010-6227	4700 SH 121	3500 Main St	EB	49		RE	1	1	2	25	N
91	05/27/10	22:50	2010-6882	3600 Main St	4600 SH 121	WB		37	LT	1	3	1	21	C
92	05/28/10	13:09	2010-6912	4600 SH 121	3600 Main St	WB	37		LT	1	1	1	36	B
93	05/31/10	12:47	2010-7088	3500 Main St	4600 SH 121	WB	17		SS	1	1	2	45	N
94	06/01/10	21:34	2010-7153	3500 Main St	4700 SH 121	WB	37		LT	1	1	3	31	C
95	06/03/10	8:19	2010-07212	4700 SH 121	3500 Main St	EB	37		LT	1	1	1	45	B
96	06/06/10	17:30	2010-07404	4700 SH 121	3500 Main St	EB	37		LT	1	1	1	26	B
97	06/10/10	21:34	2010-7631	3600 Main St	4600 SH 121	WB	15		RA	1	3	1	39	N
98	06/11/10	7:34	2010-7656	4700 SH 121	3500 Main St	EB	98		SS	1	1	1	34	N
99	06/22/10	10:54	2010-8251	4700 SH 121	3500 Main St	EB	2		RA	1	1	1	45	B
100	06/24/10	7:41	2010-8347	3600 Main St	4600 SH 121	EB	22		RE	1	1	1	24	C
101	07/01/10	13:40	2010-8767	3600 Main St	4600 SH 121	EB	3		RA	1	1	1	27	N
102	07/03/10	23:32	2010-8907	3600 Main St	4600 SH 121	WB	37		LT	1	3	2	19	B
103	07/05/10	0:02	2010-8977	3700 Main St	4700 SH 121	EB		37	LT	1	3	1	26	C
104	07/15/10	22:30	2010-9553	4700 SH 121	3500 Main St	EB	37		LT	1	3	1	31	N

Exhibit 2 - Paige Road and Highway 121 Accident Data

HDR ID#	Date	Time	Accident #	Location	2nd Location	3rd Location	Primary Cause	Secondary Cause	Type of Accident	Pavement Conditions	Light Condition	Weather	Driver's Age	Accident Severity
1	01/01/09	10:00	2009-28	5200 SH 121	3900 Paige Rd	EB	37	20	LT	1	1	1	20	N
2	01/20/09	5:29	2009-815	5300 SH 121	3800 Paige Rd	WB	22	45	RE	1	1	1	62	N
3	01/26/09	15:37	2009-1070	5300 SH 121	3800 Paige Rd	EB	65		SS	2	1	2	55	B
4	01/28/09	5:15	2009-1134	5200 SH 121	3900 Paige Rd	WB	37		LT	6	3	1	39	N
5	01/29/09	18:00	2009-1175	3600 Plano Pkwy	5300 SH 121	WB	66		SS	2	1	5	41	N
6	02/06/09	21:22	2009-1588	5300 SH 121	3800 Plano Pkwy	EB	37		LT	1	3	1	24	N
7	02/15/09	17:10	2009-2024	5300 SH 121	3800 Plano Pkwy	EB	38		LT	1	1	1	25	N
8	02/16/10	9:09	2009-02061	3900 Paige Rd	5300 SH 121	EB	37		LT	1	1	1	74	B
9	02/23/09	8:40	2009-2379	3700 Paige Rd	5200 SH 121	EB	4		SS	1	1	1	39	N
10	02/25/09	12:36	2009-2499	3700 Paige Rd	5200 SH 121	WB	37		LT	1	1	1	48	N
11	04/01/09	16:53	2009-4210	5200 SH 121	3900 Paige Rd	WB	37		LT	1	1	1	59	N
12	04/13/09	6:36	2009-4810	5300 SH 121	3900 Paige Rd	EB	37		LT	1	5	1	42	N
13	04/21/09	14:24	2009-5234	5200 SH 121	3900 Paige Rd	EB	65	17	SS	1	1	1	23	N
14	05/07/09	14:33	2009-6070	3900 Paige Rd	5300 SH 121	EB	37		LT	1	1	1	47	N
15	05/09/09	7:12	2009-6168	3700 Plano Pkwy	5300 SH 121	WB	37		LT	1	1	1	84	N
16	05/12/09	18:23	2009-6333	3800 Plano Pkwy	5200 SH 121	WB	22		RE	1	1	1	49	N
17	05/15/09	19:02	2009-6493	3800 Paige Rd	5300 SH 121	WB	37		LT	1	1	1	58	B
18	05/23/09	11:41	2009-6891	3800 Paige Rd	5300 SH 121	WB	15		RA	1	1	1	45	B
19	05/28/09	20:59	2009-7168	5200 SH 121	3800 Plano Pkwy	WB	37		LT	1	3	1	34	C
20	05/28/09	22:40	2009-7172	3800 Plano Pkwy	5300 SH 121	WB	22		OC	1	3	1	19	C
21	05/28/09	19:10	2009-7154	5300 SH 121	3500 Plano Pkwy	EB	22		RE	1	1	1	56	N
22	05/29/09	14:52	2009-7197	3700 Paige Rd	5300 SH 121	EB	37		LT	1	1	1	57	N
23	06/12/09	9:59	2009-8010	3800 Paige Rd	5200 SH 121	WB	37		LT	1	1	1	34	N
24	06/13/09	11:40	2009-8084	3800 Plano Pkwy	5300 SH 121	EB	37		LT	1	1	1	64	B
25	06/16/09	11:45	2009-8225	5200 SH 121	3900 Paige Rd	WB	37		LT	1	1	1	60	N
26	06/17/09	11:42	2009-8280	5300 SH 121	3600 Paige Rd	WB	37		LT	1	1	1	39	N
27	06/18/09	15:02	2009-8353	5300 SH 121	3800 Plano Pkwy	WB	37		LT	1	1	1	83	N
28	06/20/09	21:51	2009-8482	3900 Paige Rd	5200 SH 121	WB	37		LT	1	3	1	31	N
29	06/20/09	10:04	2009-8451	3800 Plano Pkwy	5300 SH 121	EB	37		LT	1	1	1	26	N
30	06/28/09	2:09	2009-8868	5300 SH 121	3800 Plano Pkwy	EB	15	45	RA	1	1	1	22	N
31	07/07/09	22:42	2009-9378	3800 Paige Rd	5300 SH 121	EB	37		LT	1	3	1	17	B
32	07/08/09	10:43	2009-9400	5200 SH 121	3800 Paige Rd	WB	4		SS	1	1	1	57	N
33	07/10/09	15:04	2009-9516	3900 Paige Rd	5200 SH 121	EB	66		SS	1	1	1	25	N
34	07/10/09	7:20	2009-9499	3800 Plano Pkwy	5300 SH 121	EB	37		LT	1	1	1	44	C
35	07/15/09	8:20	2009-9753	3800 Plano Pkwy	5300 SH 121	EB	37		LT	1	1	1	18	N
36	07/25/09	20:38	2009-10327	3800 Plano Pkwy	5300 SH 121	EB	37		LT	1	6	1	27	N
37	08/03/09	10:30	2009-10742	5200 SH 121	3900 Paige Rd	WB	37		LT	1	1	1	44	N
38	08/07/09	23:21	2009-10952	5200 SH 121	3900 Paige Rd	EB	16		RA	1	3	1	17	B
39	08/15/09	14:41	2009-11378	5300 SH 121	3500 Plano Pkwy	EB	37		LT	1	1	1	18	N
40	08/22/09	16:54	2009-11733	5300 SH 121	3900 Paige Rd	WB	37		LT	1	1	1	25	N
41	08/27/09	17:23	2009-11979	5300 SH 121	3900 Paige Rd	WB	37		LT	1	1	1	43	N
42	08/28/09	15:18	2009-12012	5300 SH 121	3900 Paige Rd	WB	37		LT	1	1	1	56	N
43	08/30/09	14:10	2009-12123	5300 SH 121	3800 Paige Rd	EB	37		LT	1	1	1	74	C
44	09/08/09	17:06	2009-12576	5300 SH 121	3800 Paige Rd	EB	37		LT	1	1	1	25	N
45	09/09/09	22:06	2009-12639	3700 Plano Pkwy	5300 SH 121	EB	37		LT	1	1	1	26	N
46	09/11/09	8:35	2009-12696	3600 Plano Pkwy	5300 SH 121	EB	37		LT	1	1	1	57	N
47	09/12/09	17:50	2009-12763	3800 Plano Pkwy	5300 SH 121	EB	37		LT	2	1	2	18	C
48	09/15/09	14:37	2009-12856	5300 SH 121	3800 Paige Rd	EB	37		LT	1	1	1	24	B
49	09/16/09	9:04	2009-12883	3800 Paige Rd	5200 SH 121	EB	4		SS	1	1	1	40	N
50	09/17/09	14:30	2009-12932	5300 SH 121	3800 Plano Pkwy	EB	37		LT	2	1	1	34	N
51	09/24/09	20:03	2009-13221	3700 Plano Pkwy	5300 SH 121	EB	37		LT	1	3	1	33	N
52	10/07/09	17:52	2009-13817	3900 Paige Rd.	5300 SH 121	EB	37		LT	2	1	1	16	C
53	10/18/09	17:47	2009-14363	5300 SH 121	3800 Paige	WB	29	22	RA	1	1	1	53	C
54	10/20/09	21:08	2009-14455	5300 SH 121	3800 Paige	EB	37	19	LT	1	3	1	26	N
55	10/24/09	1:57	2009-14598	3800 Paige Rd.	5200 SH 121	WB	37	45	LT	1	3	1	28	B
56	10/24/09	7:50	2009-14600	5300 SH 121	3800 Plano Pkwy.	EB	15		RA	1	1	1	64	N
57	10/24/09	16:22	2009-14623	3800 Paige Rd.	5300 SH 121	EB	37		LT	1	1	1	42	C
58	10/26/09	17:12	2009-14729	3900 Paige Rd.	5200 SH 121	WB	37		LT	2	1	2	31	C
59	10/29/09	5:46	2009-14825	3800 Plano Pkwy.	5300 SH 121	EB	37		LT	2	3	2	59	N
60	11/01/09	18:41	2009-15023	5200 SH 121	3900 Paige Rd.	WB	37		LT	1	3	1		B
61	11/03/09	18:11	2009-15133	5300 SH 121	3800 Plano Pkwy.	EB	37		LT	1	1	1	34	B
62	11/24/09	19:14	2009-16077	3900 Paige Rd.	5200 SH 121	WB	37		LT	1	3	1	24	N
63	11/26/09	9:20	2009-16142	5200 SH 121	3700 Plano Pkwy.	WB	65		SS	1	1	1	24	N
64	12/09/09	12:46	2009-16597	3800 Plano Pkwy.	5300 SH 121	EB	37		LT	1	1	1	59	N
65	12/16/09	13:24	2009-16874	5200 SH 121	3900 Paige Rd.	WB	37		LT	1	1	1	37	N
66	01/11/10	10:00	2010-402	5200 SH 121	3700 Plano Pkwy.	EB	15		RA	1	1	1	64	A

Key

Primary/Secondary Cause	
3	Backed without safety
4	Changed lane when unsafe
15	Disregard stop and go signal
16	Disregard stop sign or light
17	Disregard turn marks at intersection
19	Distraction in vehicle
20	Driver inattention
22	Failed to control speed
23	Failed to drive in single lane
29	Failed to stop at proper place
37	Failed to yield ROW-left turn
38	Failed to yield ROW-turn on red
45	Had been drinking
63	Turned inproperly- cut corner on left
65	Turned improperly- wrong lane
66	Turned when unsafe
Type of Accident	
LT	Left Turn
OC	Out of Control
RA	Right Angle
RE	Rear End
SS	Side Swipe
Pavement conditions	
1	Dry
2	Wet
6	Ice
Light Condition	
1	Daylight
3	Dark, Lighted
5	Dawn
6	Dusk
Weather	
1	Clear/Cloudy
2	Rain
5	Fog
Accident Severity	
N	Not injured
C	Possible Injury
B	Non Incapacitating Injury
A	Incapacitating Injury

67	01/18/10	19:06	2010-758	5200 SH 121	3900 Paige Rd.	WB	37	19	LT	1	3	1	20	C
68	01/26/10	10:28	2010-01054	5200 SH 121	3900 Paige Rd.	WB	3		SS	1	1	1	33	N
69	01/18/10	7:59	2010-727	5300 SH 121	3900 Paige Rd.	WB	16		RA	1	1	1	50	B
70	02/04/10	15:40	2010-1415	5300 SH 121	3900 Paige Rd.	EB	37		LT	2	1	2	30	N
71	02/10/10	8:18	2010-1641	5300 SH 121	*	WB	20		RE	1	1	1	53	N
72	02/12/10	10:24	2010-1720	3700 Plano Pkwy.	SH 121	WB	23		SS	2	1	2	47	N
73	03/12/10	5:34	2010-2940	3800 Main St	5200 SH 121	WB	37		LT	1	3	1	20	C
74	03/17/10	0:05	2010-3204	5200 SH 121	3900 Paige Rd.	EB	20		RA	1	3	1	20	N
75	03/23/10	12:12	2010-03496	5300 SH 121	3800 Paige Rd.	WB	23		SS	1	1	1	45	N
76	03/25/10	10:55	2010-3584	5300 SH 121	3800 Paige Rd.	EB	37		LT	1	1	2	18	N
77	04/26/10	9:14	2010-05179	5200 SH 121	3900 Paige Rd.	EB	63		SS	1	1	1	57	N
78	04/29/10	19:39	2010-05333	5300 SH 121	3800 Paige Rd.	WB	37		LT	1	1	1	28	N
79	05/01/10	21:43	2010-5462	5200 SH 121	3900 Paige Rd.	WB	37		LT	1	3	1	29	N
80	05/13/10	9:14	2010-6066	3800 Main St	5200 SH 121	WB	4		SS	1	1	1	56	N
81	05/25/10	9:52	2010-6721	5300 SH 121	3800 Paige Rd.	EB	37		LT	1	1	1		N
82	06/01/10	12:17	2010-07135	5300 SH 121	3800 Paige Rd.	EB	38		RA	1	1	1	36	N
83	06/02/10	15:15	2010-07178	5300 SH 121	3800 Paige Rd.	WB	23		SS	1	1	1	61	N
84	06/10/10	15:58	2010-07603	5300 SH 121	3800 Paige Rd.	EB	37		LT	1	1	1	25	C
85	06/18/10	9:38	2010-8049	3800 Main St	5200 SH 121	EB	37		LT	1	1	1	31	C
86	06/30/10	16:17	2010-08718	5300 SH 121	3800 Paige Rd.	EB	37		LT	1	1	2	16	C
87	07/04/10	18:43	2010-08948	5200 SH 121	3900 Paige Rd.	WB	37		LT	1	1	2	23	N
88	07/04/10	20:20	2010-8955	3800 Main St	5200 SH 121	EB	37		LT	1	1	1	23	N
89	07/18/10	13:01	2010-9669	5200 SH 121	3900 Paige Rd.	WB	37		LT	1	1	1	26	N
90	07/20/10	5:47	2010-9756	5300 SH 121	3800 Paige Rd.	EB	15		RA	1	2	1	38	N

ENGINEER'S OPINION OF PROBABLE COST
SH 121 and FM 423 (Main Street) Intersection
THE COLONY, TEXAS

ITEM #	DESC	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
636	2003	ALUMINIUM SIGNS (TY O)	SF	25	$ 16.71	$ 417.75
666	2036	REFL PAV MRK TY I (W) 8" (SLD)(100MIL)	LF	250	$ 0.61	$ 151.44
666	2054	REFL PAV MRK TY I (W) (ARROW) (100MIL)	EA	2	$ 82.26	$ 164.51
666	2096	REFL PAV MRK TY I (W) (WORD) (100MIL)	EA	2	$ 104.29	$ 208.58
666	2153	REF PAV MRK TY II (W) 8" (SLD)	LF	250	$ 0.29	$ 72.36
666	2160	REF PAV MRK TY II (W) (ARROW)	EA	2	$ 30.50	$ 61.00
666	2173	REF PAV MRK TY II (W) (WORD)	EA	2	$ 38.15	$ 76.30
677	2001	ELIM EXT PAV MRK & MRKS (4")	LF	250	$ 0.35	$ 86.40
677	2009	ELIM EXT PAV MRK & MRKS (DBL ARROW)	EA	2	$ 57.82	$ 115.63
682	2001	BACK PLATE (12 IN) (3 SEC)	EA	3	$ 3.00	$ 9.00
682	2021	VEH SIG SEC (12 IN) LED (HOUSING ONLY)	EA	9	$ 170.31	$ 1,532.79
682	2022	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	3	$ 191.06	$ 573.19
682	2024	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	3	$ 179.77	$ 539.32
682	2026	VEH SIG SEC (12 IN) LED (RED ARW)	EA	3	$ 190.65	$ 571.95
684	2033	TRF SIG CBL (TY A) (14 AWG) (7 CONDR)	LF	150	$ 1.29	$ 193.50
					Sub Total	**$ 4,773.72**
					Mobilization (10%)	$ 477.37
					Total Project Cost	**$ 5,251.09**

*TxDOT STATEWIDE 12 MONTH AVERAGE LOW BID PRICES USED FOR COST ESTIMATE

ENGINEER'S OPINION OF PROBABLE COST
SH 121 and Paige Street/Plano Parkway Intersection (Interim)
THE COLONY, TEXAS

ITEM #	DESC	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
636	2003	ALUMINIUM SIGNS (TY O)	SF	55	$ 16.71	$ 919.05
666	2006	REFL PAV MRK TY I (W) 4" (DOT)(100MIL)	LF	290	$ 0.92	$ 267.79
666	2054	REFL PAV MRK TY I (W) (ARROW) (100MIL)	EA	4	$ 82.26	$ 329.03
666	2069	REFL PAV MRK TY I(W)(DBL ARROW)(100MIL	EA	4	$ 121.79	$ 487.14
666	2096	REFL PAV MRK TY I (W) (WORD) (100MIL)	EA	4	$ 104.29	$ 417.17
666	2143	REF PAV MRK TY II (W) 4" (DOT)	LF	290	$ 0.33	$ 96.24
666	2160	REF PAV MRK TY II (W) (ARROW)	EA	4	$ 30.50	$ 121.99
666	2165	REF PAV MRK TY II (W) (DBL ARROW)	EA	4	$ 50.62	$ 202.49
666	2173	REF PAV MRK TY II (W) (WORD)	EA	4	$ 38.15	$ 152.60
677	2009	ELIM EXT PAV MRK & MRKS (DBL ARROW)	EA	6	$ 57.82	$ 346.89
682	2001	BACK PLATE (12 IN) (3 SEC)	EA	4	$ 3.00	$ 12.00
682	2021	VEH SIG SEC (12 IN) LED (HOUSING ONLY)	EA	4	$ 170.31	$ 681.24
682	2022	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	4	$ 191.06	$ 764.26
682	2024	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	4	$ 179.77	$ 719.10
682	2026	VEH SIG SEC (12 IN) LED (RED ARW)	EA	4	$ 190.65	$ 762.60
684	2033	TRF SIG CBL (TY A) (14 AWG) (7 CONDR)	LF	150	$ 1.29	$ 193.50
					Sub Total	**$ 6,473.08**
					Mobilization (10%)	$ 647.31
					Total Project Cost	**$ 7,120.38**

*TxDOT STATEWIDE 12 MONTH AVERAGE LOW BID PRICES USED FOR COST ESTIMATE

ENGINEER'S OPINION OF PROBABLE COST
SH 121 and Paige Street/Plano Parkway Intersection (Final)**
THE COLONY, TEXAS

ITEM #	DESC	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
636	2003	ALUMINIUM SIGNS (TY O)	SF	7.5	$ 16.71	$ 125.33
666	2006	REFL PAV MRK TY I (W) 4" (DOT)(100MIL)	LF	160	$ 0.92	$ 147.75
666	2036	REFL PAV MRK TY I (W) 8" (SLD)(100MIL)	LF	1300	$ 0.61	$ 787.46
666	2042	REFL PAV MRK TY I (W) 12"(SLD)(100MIL)	LF	100	$ 2.16	$ 216.24
666	2054	REFL PAV MRK TY I (W) (ARROW) (100MIL)	EA	2	$ 82.26	$ 164.51
666	2096	REFL PAV MRK TY I (W) (WORD) (100MIL)	EA	2	$ 104.29	$ 208.58
666	2123	REFL PAV MRK TY I (Y) 8" (SLD)(100MIL)	LF	200	$ 0.66	$ 132.90
666	2126	REFL PAV MRK TY I (Y) 12"(SLD)(100MIL)	LF	100	$ 2.54	$ 254.46
666	2143	REF PAV MRK TY II (W) 4" (DOT)	LF	160	$ 0.33	$ 53.10
666	2153	REF PAV MRK TY II (W) 8" (SLD)	LF	1300	$ 0.29	$ 376.26
666	2155	REF PAV MRK TY II (W) 12" (SLD)	LF	100	$ 1.14	$ 114.12
666	2160	REF PAV MRK TY II (W) (ARROW)	EA	2	$ 30.50	$ 61.00
666	2173	REF PAV MRK TY II (W) (WORD)	EA	2	$ 38.15	$ 76.30
666	2182	REF PAV MRK TY II (Y) 8" (SLD)	LF	200	$ 0.31	$ 61.49
666	2183	REF PAV MRK TY II (Y) 12" (SLD)	LF	100	$ 0.99	$ 98.77
677	2001	ELIM EXT PAV MRK & MRKS (4")	LF	1000	$ 0.35	$ 345.61
					Sub Total	**$ 3,223.87**
					Mobilization (10%)	$ 322.39
					Total Project Cost	**$ 3,546.26**

*TxDOT STATEWIDE 12 MONTH AVERAGE LOW BID PRICES USED FOR COST ESTIMATE
**Assumes interim conditons recommendations have been implemented