

ENGINEER'S REPORT

SR 9 Intersection Improvement



**SR 9 at CR 600 N/Hauser Drive, 4.49 Miles North of SR 46
Bartholomew County**

Des. No. 0100774

Prepared By:



Prepared For:

**Engineering Assessment Section
Division of Environment, Planning and Engineering
Indiana Department of Transportation**

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ENGINEER'S REPORT

Des. No. 0100774
Intersection Improvement
SR 9 at CR 600 N/Hauser Drive, 4.49 Miles North of SR 46
Bartholomew County

By: Greg Wendling, P.E.
USI Consultants, Inc.

November 11, 2004/ August 8, 2005

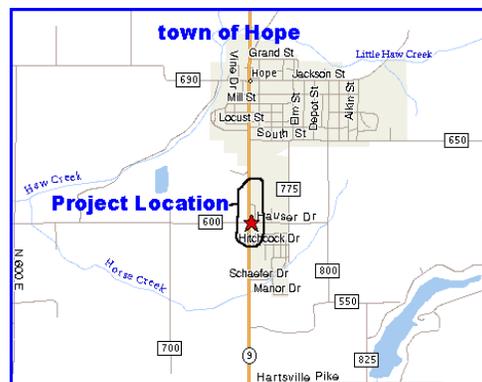
A. PURPOSE OF REPORT:

This Engineer's Report documents the engineering assessment phase, including an outline of the proposal for the intersection improvement on SR 9. This report includes the relevant background data and provides conclusions and recommendations that will guide the ongoing environmental and ensuing survey and design phases.

B. PROJECT LOCATION:

This project is located at the intersection of SR 9 and CR 600 N (Hauser Drive), 4.49 miles north of SR 46 (R.P. 11+46), in Bartholomew County, in the Seymour District. The project lies within the corporate limits of Hope.

The adjacent map and location maps of Appendices A-1 and A-2 depict the project location.



C. PROJECT'S NEED AND PURPOSE:

SR 9 is an arterial roadway with moderately high traffic volumes (2001 AADT = 6920 vpd). No left turn auxiliary lanes are present. Shoulder widths along SR 9 are substandard.

The purpose of this project is to improve overall traffic operation of the intersection by improving geometrics.

D. EXISTING CONDITIONS:

See the ground level photographs, pages A-3 through A-6 of the Appendix and the aerial photograph, in Appendix A-7 & A-8 for existing conditions in the project area.

SR 9 runs from south to north. It is classified as a *Rural Principal Arterial*. SR 9 is not part of the National Highway System (NHS), however, it is included on the National Truck Network, and Indiana's 3R system. CR 600 N is classified as a *Rural Collector*.

Road History:

SR 9	
1925	Gravel road, 14' wide
1932	Widen to 18', Resurface with bituminous mix
1937	Resurface with bituminous mix
1942	Resurface with bituminous mix
1952	Resurface with bituminous mix (BCA)
1958	Resurface with bituminous mix (BCA)
1967	Widen to 24', resurface with hot asphaltic emulsion on flexible base
1978	Resurface with hot asphaltic emulsion surfaced binder
1993	Bituminous resurface (RS-20365)

No roadway design plans were available for this project.

Pavement Condition:

The INDOT's 2003 Pavement Surface Report indicates that the section of SR 9 has a Pavement Condition Rating (PCR) of 92 (excellent condition), average rut depth of 0.10 inch and an International Roughness Index (IRI) of 80 (excellent condition).

No evidence of underdrains or underdrain outlets exists.

Lighting:

No lighting exists at this location.

Road Geometrics:

SR 9 and CR 600 N intersect at a 90° angle. The horizontal alignments for SR 9 and CR 600 N are tangent throughout the project limits. The vertical terrain is considered level. No issues of substandard vertical or horizontal alignment exist within the project area. The following table summarizes existing intersection geometrics.

	North Leg (SR 9)	South Leg (SR 9)	West Leg (CR 600 N)	East Leg (CR 600 N)
Paved Traveled-way Width	36'	36'	24'	20'
Shoulders and Roadside	3' paved (3' usable) shoulders, shallow "V" ditch	3' paved (3' usable) shoulders, shallow "V" ditch	3' paved (3' usable) shoulders, shallow "V" ditch	No shoulders, no ditches

	North Leg (SR 9)	South Leg (SR 9)	West Leg (CR 600 N)	East Leg (CR 600 N)
Lane Configuration	See adjacent figure <div style="text-align: center;"> <p>SR 9 at Hauser Drive Existing Lane Configuration</p> </div>			
Turning Radii	NW Quadrant: 40' w/ taper NE Quadrant: 30'	SW Quadrant: 40' w/ taper SE Quadrant: 45'		
Posted Speed Limit	45 mph	45 mph	Not posted	25 mph
Approximate Existing R/W (Total)	40' half width	40' half width	35' half width	33' total width

Sidewalk exists along the east side of SR 9, beginning at Station 26+00.

Drainage:

Drainage along SR 9 is generally from the north to the south, via shallow “V” ditches, eventually reaching Horse Creek (2400’ south of CR 600 N). Drainage along CR 600 N is from west to east, eventually reaching Horse Creek (2400’ east of SR 9).

Utilities:

The following utilities were observed in the area:

Electric Utilities: Bartholomew REMC, overhead power lines along west side of SR 9.

Cinergy, overhead power lines along east side of SR 9 and south side of CR 600 N. All of their facilities are in existing right-of-way.

Phone: SBC, fiberoptic cable along west side of SR 9 throughout the project. Multiple buried cables exist along the east side of SR 9. Approximate locations are shown on the utility plan (A-9 & A-10). All of their facilities are in existing right-of-way.

Water: Hope Utilities: Water main is located along the east side of SR 9 outside of the existing right-of-way. Water main connects to the Eastern Bartholomew Water Company’s main along the south side of CR 600 N, then turns north along the west side of SR 9.

Eastern Bartholomew Water Company: 8” water main runs along the south side of CR 600 N, then turns south, running along the west side of SR 9. All of their facilities are in existing right-of-way.

Sewer: Hope Utilities: Sewer line runs along the east side of SR 9 within the existing right-of-way.

Fiber Optic: Indiana FiberWorks (Formerly MetroXmit): Fiber cable runs along the west side of SR 9 throughout the length of the project. All of their facilities are in existing right-of-way.

Gas: Vectren: Gas comes into the Town Border Station (Station 18+40, west side) from the west, then splits into 3 lines. A 3” steel line runs north from the station along the west side of SR 9. A 4” plastic and a 3” steel line run south from the station along the west side of SR 9. The Town Border Station is in an easement, all other facilities are in existing right-of-way.

A utility contact list is provided in the Appendix (C-3).

Land Use:

Land use in the area consists of school property in the northeast quadrant, residential subdivision in the southeast quadrant, agricultural in the southwest quadrant, and a mix of residential, agricultural and commercial in the northwest quadrant. See the ground level photographs in Appendix A-3 through A-6, and the aerial photograph in Appendix A-7 for land use throughout the project area.

E. TRAFFIC DATA and CAPACITY ANALYSIS:

Official turning movement counts were supplied by the INDOT Traffic Statistics Unit for the subject intersection. This information is included in the appendix, sheets B-4 & B-5.

A traffic capacity analysis was performed at the unsignalized intersection using the proposed traffic projections and the existing lane configurations, pursuant to the 2000 Highway Capacity Manual’s methodology for unsignalized intersections to determine level of service (LOS) and total delay for each year analyzed. The adjacent table summarizes the findings.

The desirable LOS is C and the minimum LOS is D, per current INDOT 3R standards. As can be seen in the table, the LOS remains at or above the minimum level through the design year.

LOS Analysis (Existing Configuration)		
	SR 9 at CR 600 N	
	AM PEAK LOS (delay)	PM PEAK LOS (delay)
2000	C/B	C/B
2009	C/B	C/B
2029	C/B	C/C
LOS shown as Eastbound/Westbound LOS along SR 9 is A for all periods		

F. CRASH DATA:

The INDOT database shows 7 recorded crashes (accidents) during the period from January 1997 to December 2000, within 1000 feet of the subject intersection. Only one of the 7 reported crashes occurred within 200’ of the intersection. Crash locations are shown on the aerial plan sheets, A-7 & A-8 of the Appendix. Of these, 3 involved personal injury. The following table breaks down the crashes by their type.

Type of Crash	Number of Crashes (PI) (%)
Rear End	2 (2) (29%)
Left Turn	1 (0) (14%)
Deer	1 (0) (14%)
Sideswipe	1 (0) (14%)
Off Road	2 (1) (29%)

The District provided crash information for two other crashes that involved fatalities. The first fatal crash occurred on 7/14/2000, and involved a northbound vehicle attempting a U-turn at the school entrance drive, and proceeding into the path of a northbound vehicle. The 2nd fatal crash occurred on 9/02/03, and involved an eastbound vehicle not slowing down or stopping for the stop condition at the SR 9 intersection, and colliding with a southbound vehicle.

Anticipated improvements such as auxiliary lanes, wider shoulders, advanced signing, and improved radii will reduce the likelihood of future crashes.

G. PROJECT ALTERNATES AND RECOMMENDATION:

Design Guidelines:

All facets of the project shall be designed in compliance with the Indiana Design Manual, (IDM) Chapter 55, “Geometric Design of Existing Non-Freeways (3R)”, and all other applicable standards. FHWA oversight of design and construction is not required on this project.

The following items are to be included in the final design.

Functional Classification	SR 9 CR 600 N	Rural Principal Arterial Rural Collector
Design Class:	SR 9 CR 600 N	Geometric Design Criteria for Rural Arterials (Table 55-3A) Public Road Approach
Design Speed	SR 9	45 mph
Design Vehicle	WB-20 (desirable), WB-15 (minimum)	
Terrain	Level	
Design Year	2027	
Access Control	None (by drive permit)	
Proposed Cross Section:	See plan sheet (A-7 and A-8)	

Project Alternates:

Three alternates were considered for this project; they are as follows:

ALTERNATE A (A-7 & A-8) Intersection Improvement at CR 600 N

ALTERNATE B (A-11 & A-12) Extension of Alternate A to the north to include left turn auxiliary lanes at the school entrances

No Build

Alternates A and B will be fully developed in this report, prior to making a recommendation. The No-Build alternate, is not recommended because SR 9 is an arterial with high AADT, and the No-build alternate does not meet the projects purpose.

Auxiliary Lanes:

Left turn auxiliary lanes are warranted along SR 9 at the CR 600 N intersection, per section 46-4.01, items 1 & 3. Full deceleration should be provided for the left turn lanes since SR 9 is functionally classified as “rural”, exhibits mostly rural land-use characteristics (only somewhat urban), and no constraints exist to prevent it. The northbound right turn lanes along SR 9 should begin tapering after the Goshen Meadow Drive entrance. It appears that a 380’ of right turn lane can be constructed. The southbound right turn lane should be replaced in kind. Shallow ditches or enclosed drainage may be required adjacent to the right turn lanes in order to minimize right-of-way damages.

Pavement Treatment:

It is anticipated that the existing pavement will be milled and resurfaced. Full depth asphalt is anticipated for the areas of widening. The designer shall consult with the INDOT Pavement Design Engineer for the final pavement design. This project does not meet underdrain warrants (52-10.03).

Intersection Design:

CR 600 N should be reconstructed as a Type “C” Public Road Approach. No auxiliary lanes along the county road are warranted.

Signal Construction:

No signal is currently warranted, or expected as a part of this project. However, the designer should re-coordinate with the Seymour District Traffic Engineer near the time of preliminary design field check.

Drainage Summary:

Drainage patterns for this project will continue to be to the south and to the east. Auxiliary lanes and widened shoulders will necessitate reconstruction of the ditches. A new cross culvert location should be added north of the Vectren station (+/- Station 19+50) to eliminate the need for a ditch in front of the station.

The designer will need to ensure that an adequate ditch outlet to the south (Horse Creek) exists (i.e. minimum slope, adequate capacity).

Sidewalk Design:

No new sidewalk is proposed. Sidewalk is to be replaced only if pavement widening and drainage improvements dictate that the sidewalk gets replaced.

Right-of-Way Summary:

The existing apparent right-of-way along SR 9 is 80' (total width). Along CR 600 N, the existing apparent right-of-way is 70' (total width) west of SR 9 and 33' east of SR 9. Additional permanent and temporary right-of-way will be required to construct any of the improvement alternates. The following table summarizes the amount and type of right-of-way required.

Right-of-Way Summary Table						
	Alternate A		Alternate B		Alternate C	
Land Use	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.
Residential	0.33 acre (10)	0	0.33 acre (10)	0	0	0
Commercial	0 (0)	0	0.08 acre (3)	0	0	0
Agricultural	0.33 acre (2)	0	0.48 acre (3)	0	0	0
School	<u>0.22 acre (1)</u>	<u>0</u>	<u>0.37 acre (1)</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0.88 acre (13)	0	1.26 acre (17)	0	0	0
Notes: Number of parcels affected shown in parentheses (). No relocations are expected.						

Proposed right-of-way requirements presented in this Engineer's Report are approximate, developed using limited information available at this stage. Later phases of project development will establish precise right-of-way requirements. The more refined right-of-way limits generated from these later phases may differ from the estimates presented at this time.

Traffic Maintenance:

If a state detour were to be utilized, the anticipated official state detour would utilize SR 46, I-65, and SR 44. The total detour length is approximately 46.2 miles, however the length of additional travel is approximately 25.6 miles. Assuming 10 percent of the traffic would utilize the state detour, road closure for 900 days and \$0.25 per mile, the estimated user cost of a state detour is approximately \$380,000.

Due to the significant detour length and associated user cost of a state detour, and to the ability given the nature of improvements to carry out phased construction, traffic shall be maintained through the project at all times during project construction. Pavement widening, drainage improvements, and resurfacing can be constructed while maintaining at least one lane of traffic and utilizing flagmen to control traffic during working hours. Specifics of the traffic maintenance plan will be coordinated and developed during the design phase.

Estimated Costs (Year 2004):

	Alternate A (preferred)	Alternate B
Road Construction (including drainage)	\$460,000	\$590,000
<u>Traffic Maintenance</u>	<u>\$20,000</u>	<u>\$30,000</u>
CONSTRUCTION TOTAL	\$480,000	\$620,000
Right-of-Way Services	\$60,000	\$80,000
<u>Right-of-Way</u>	<u>\$40,000</u>	<u>\$70,000</u>
RIGHT-OF-WAY TOTAL	\$100,000	\$150,000
<u>Engineering (Includes Survey)</u>	<u>\$60,000</u>	<u>\$70,000</u>
PROJECT TOTAL	\$640,000	\$840,000

Project Recommendations:

Alternate A is the recommended alternate. Alternate B was considered, however, due to the additional cost, no apparent crash history at the school drives (related to left turning vehicles), and existing traffic flow patterns at the school properties (see aerial displays, A-8 & A-12), it was considered cost ineffective. Alternate A satisfies the essential need and purpose of this project.

Survey Requirements: (Alternate A, preferred)

Full topographic survey along SR 9 should extend a minimum of 1500' to the north and south of the intersection. Length of mainline survey: 3000'. Survey limits along Hauser Drive should extend a minimum of 300' east and west of the intersection. Total length of survey on all lines: 3600'. The survey should extend a minimum distance of 30' past the proposed right-of-way on all legs or enough to encompass back building corners or any other additional information needed to complete the design. Additional survey along SR 9 for ditch improvements should extend from 1500' south of CR 600 N to Horse Creek, a distance of 900'.

H. COORDINATION, CONCURRENCE AND MEETINGS:

This project has involved coordination with the following individuals, among others:

Jim Ude	INDOT, Seymour District, Development
David Dye	INDOT, Seymour District, Development
Terry Summers	INDOT, Seymour District, Traffic
Jeff Drake	Burgess & Niple (B&N), Design Division Representative

These individuals attended the field check meeting held on February 17, 2004 and provided the input into this project. The Environmental Assessment Section was invited. The major issues relative to the field investigation are detailed in the Field Check Minutes, located in Appendix C-1 through C-2.

Draft copies of this Engineer's Report were sent to David Dye, Seymour District Development Engineer; Tom Seeman, INDOT, Design, and Jeff Drake, for their review and comments.

Additional coordination has taken place with Brad Steckler from INDOT's Engineering Assessment Section.

I. ENVIRONMENTAL CONSIDERATIONS:

No major environmental concerns have been identified. The designer should continually coordinate with the environmental scientist as the project develops. The Environmental Assessment Section will continue its review of the project's impacts, and prepare the appropriate environmental document. This document is pre-decisional and deliberative pending completion of environmental study.

Proposed right-of-way dimensions, areas, and number of parcels presented in the Engineer's Report are estimates at this stage in development of the project. Assessment of social, economic, and environmental impacts should account for the unrefined nature of these right-of-way limits by assessing potential impacts a reasonable extent beyond the proposed preliminary limits.

J. RELATED PROJECTS, CONSISTENCY:

The subject project is scheduled as ready for contracts (RFC) in August of 2007. According to the INDOT Project Database (as of 10/08/03), there are two scheduled projects for future construction that may affect this subject project. The projects are as follows:

Des. Number	Project Description	Comments
0014600	Small Structures & Drains Construction, SR 9, Over Tributary to Haw Creek, 5.15 Miles N of SR 46 in Hope, RP 12+00, Bartholomew County	RFC Date: 7/06. This project is 0.5 mile north of the subject project. Coordination efforts will be required to ensure traffic maintenance compatibility.
0201146	Auxilliary Lanes Construction, SR 9 at CR 450 N, 3.65 Miles North of SR 46, RP 9+93, Bartholomew County	RFC Date: 4/09. No conflicts between this project and the subject project are anticipated, however, the design shall coordinate with said project to ensure project compatibility.

The designer shall periodically check for any new projects posted after this date during the design process for compatibility with the proposed work.

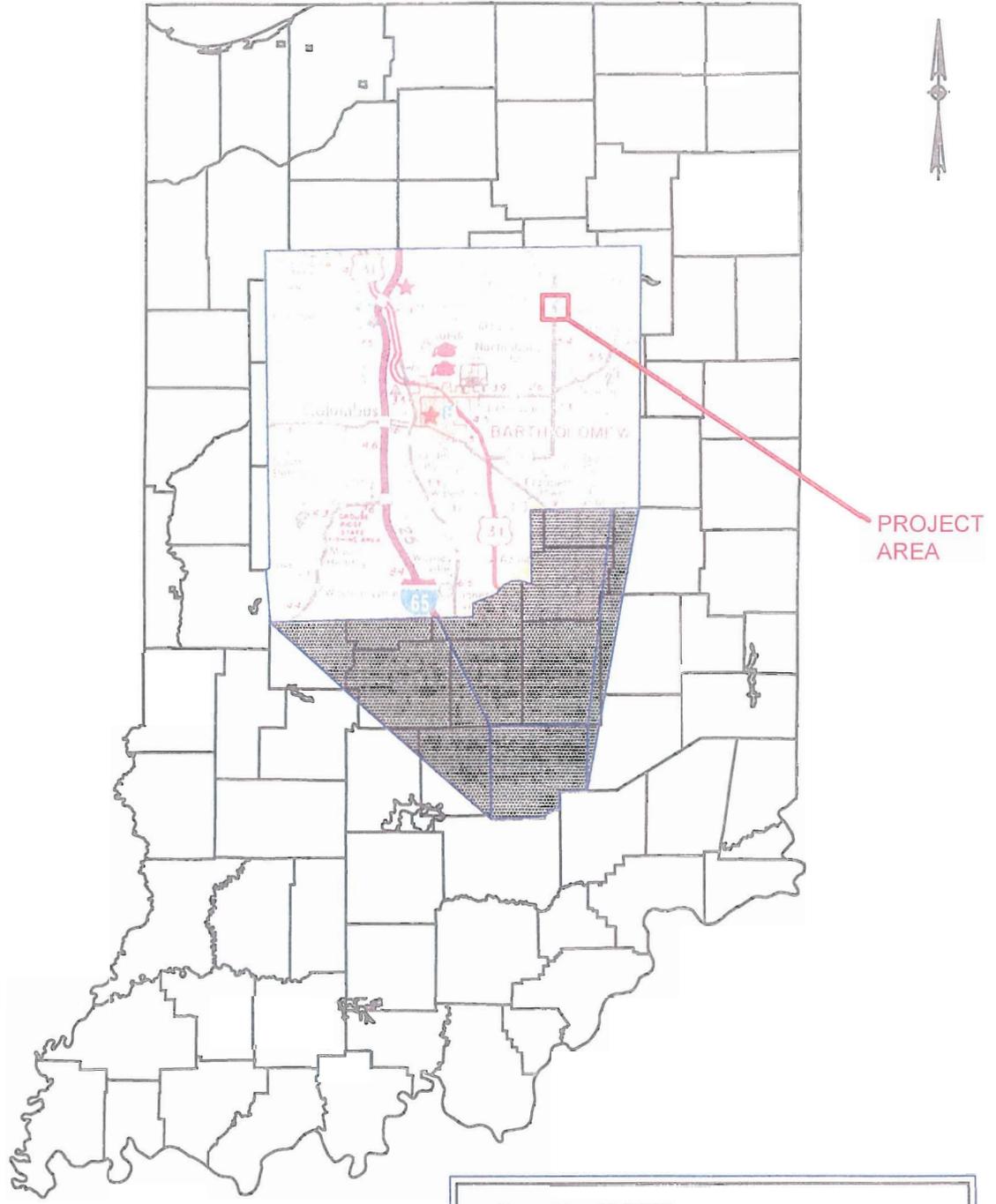
K. CHANGES TO PROPOSAL:

The Engineering Assessment Section shall be consulted if deviation from the proposal (scope of work) is determined to be necessary during a later phase of project development. The person initiating the change should send a memo to the Engineering Assessment Section Manager for concurrence. The designer should route the memo through the Design Division Section Manager. The memo should include justification for the change and the estimated cost difference.

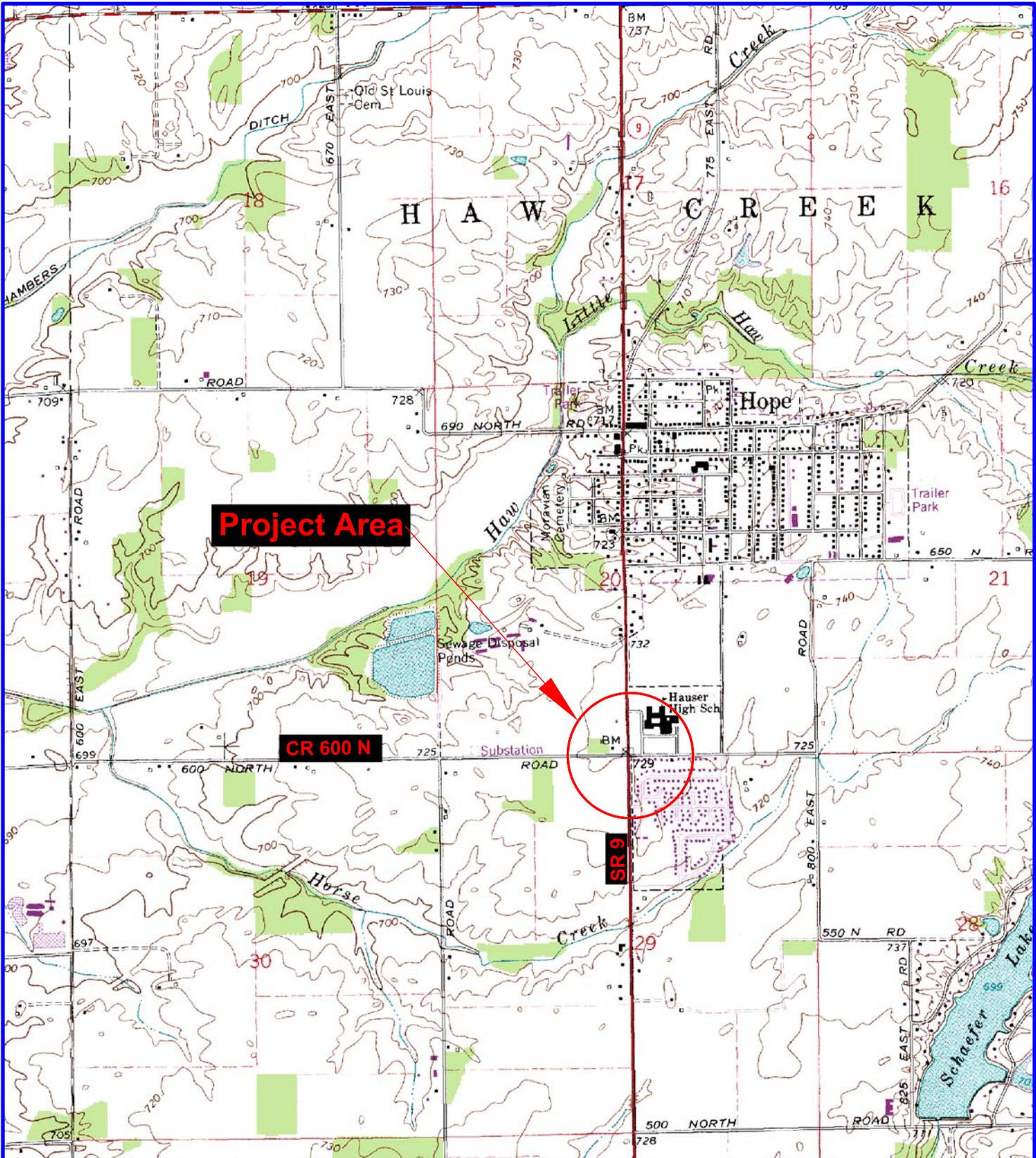
cc:

- Tamera Spokes (3), INDOT Project Coordinator
- Mike Holowaty, Design Division Section Manager
- William Schmidt, INDOT Design-Location Survey Section
- Ben Lawrence, Acting INDOT Environmental Assessment Section
- Athar Khan, INDOT Materials & Test, Design
- Sally Morgan, INDOT, Land Acquisition
- David Dye/ Jim Ude, INDOT, Seymour District
- B. Steckler, INDOT, Engineering Assessment Section File

USI File 2003-930



Des. No. 0100774
Project No. STP-
S.R. 9 at C.R. 600 N. (Hauser Dr.)
Intersection Improvement
Bartholomew County



Hope Quadrangle, IN
Scale = 1" = 2000'

Des. No. 0100774
Project No. STP-()
SR 9 at CR 600 N / Hauser Dr.,
4.49 Mi. North of SR 46
Intersection Improvement
Bartholomew County



FACING SOUTH ALONG S.R. 9, NORTH OF C.R. 600 N.



FACING NORTH ALONG S.R. 9, NORTH OF C.R. 600 N.

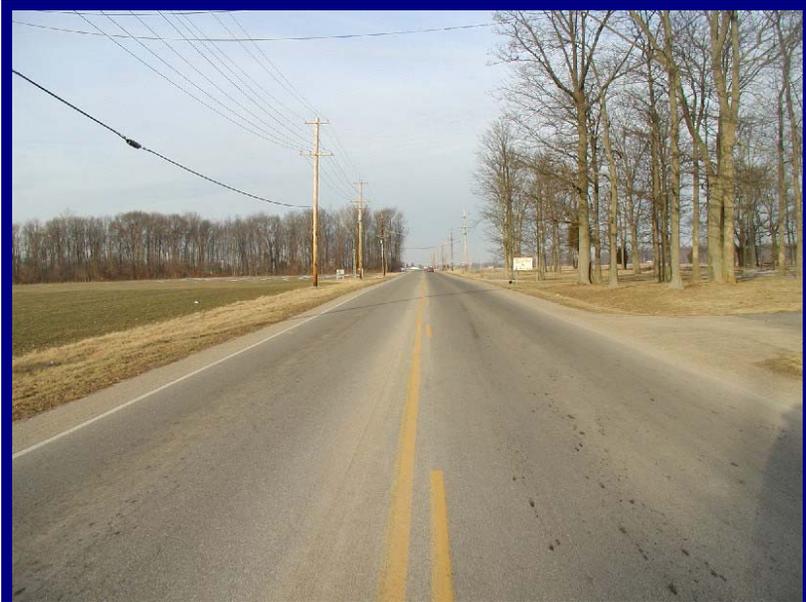


FACING SOUTH ALONG S.R. 9, SOUTH OF C.R. 600 N.



FACING NORTH ALONG S.R. 9, SOUTH OF C.R. 600 N.

S.R. 9 - Intersection Improvement



FACING WEST ALONG C.R. 600 N., WEST S.R. 9



FACING EAST ALONG C.R. 600 N., WEST OF S.R. 9



FACING WEST ALONG C.R. 600 N., EAST OF S.R. 9



FACING EAST ALONG C.R. 600 N., EAST OF S.R. 9



**FACING WEST ALONG NORTHSIDE OF C.R. 600 N.,
WEST S.R. 9**



**FACING SOUTH ALONG WESTSIDE OF S.R. 9,
NORTH OF C.R. 600 N.**



**FACING NORTH ALONG WESTSIDE OF S.R. 9,
SOUTH OF C.R. 600 N.**



**FACING SOUTH ALONG WESTSIDE OF S.R. 9,
FROM C.R. 600 N.**



VECTREN GAS (STA. 18+30, WESTSIDE OF S.R. 9)



WATER LINE (EASTSIDE OF S.R. 9)



FIBER OPTIC VAULT (STA. 15+90, WESTSIDE OF S.R. 9)



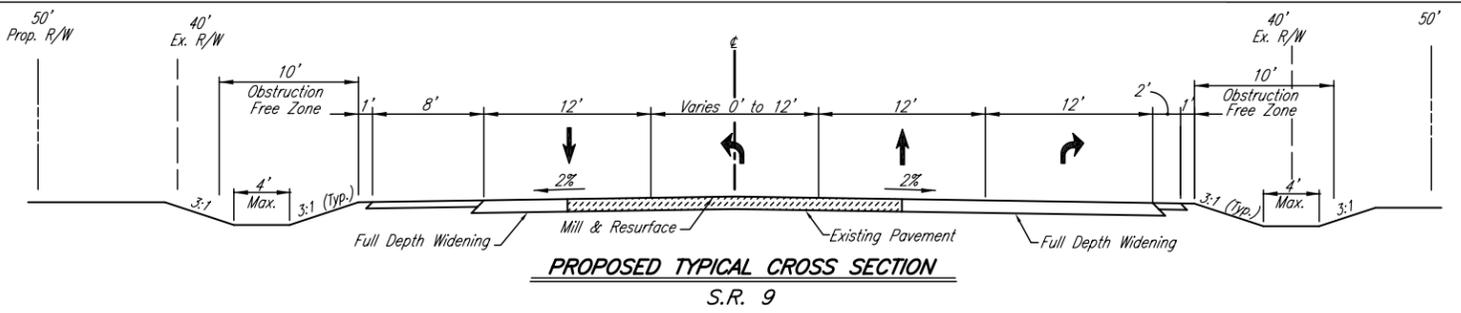
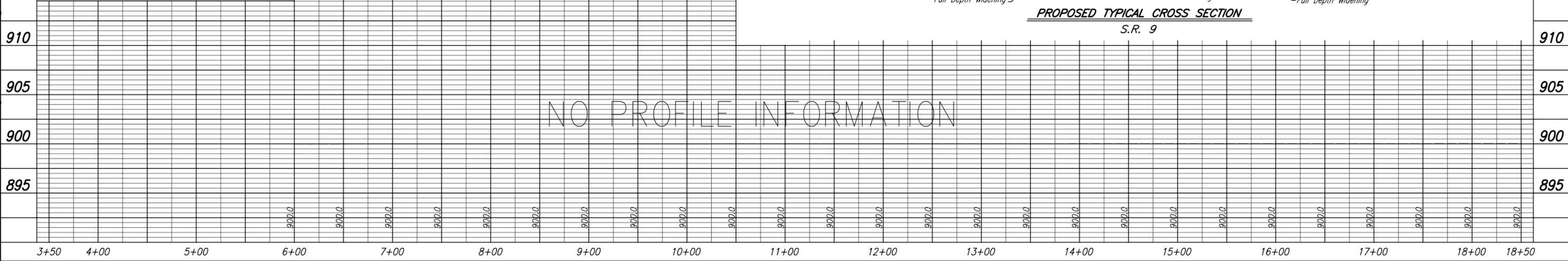
SBC TELEPHONE VAULT (STA. 15+20, EASTSIDE OF S.R. 9)

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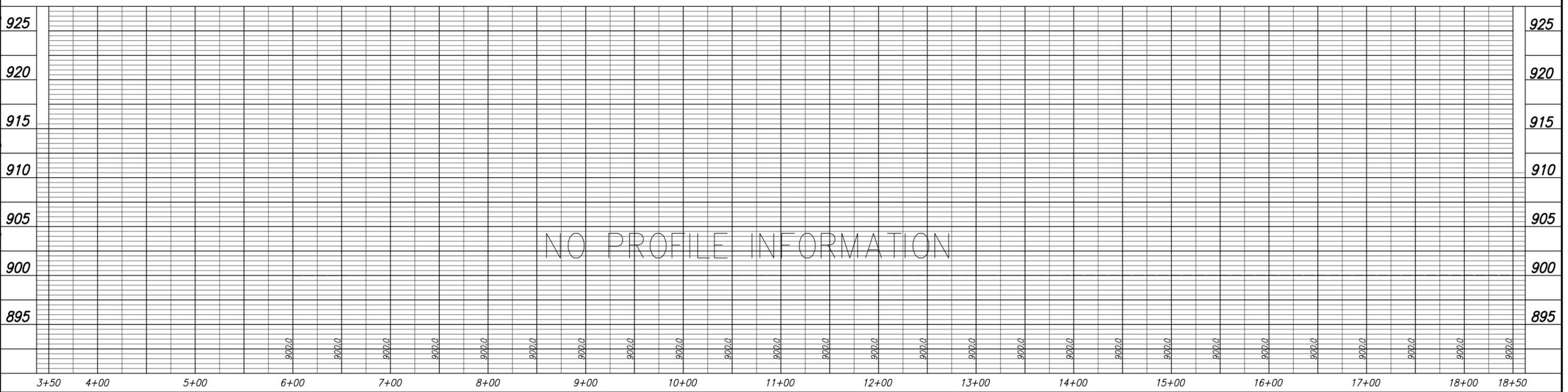
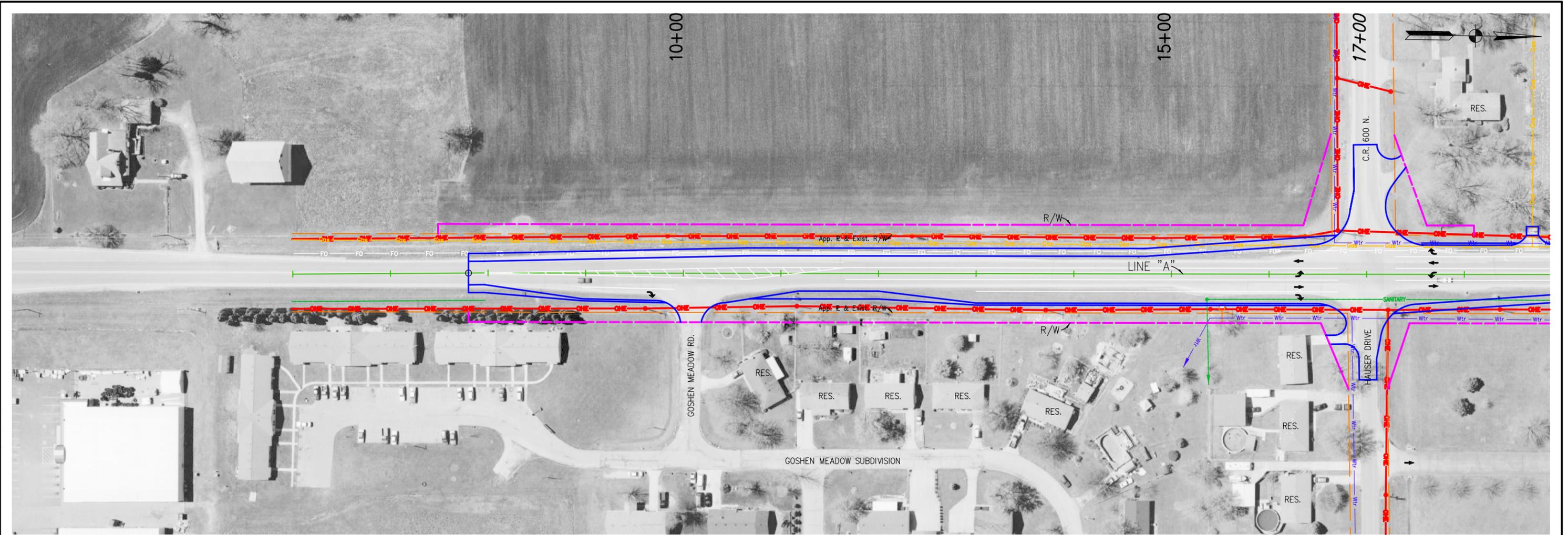
CRASH TYPE LEGEND

(AN) Animal	(RE) Rear End
(PE) Pedestrian	(RT) Right Turn
(HO) Head On	(SS) Same Direction Sideswipe
(LT) Left Turn	(U) Undetermined
(OD) Opposite Direction Sideswipe	(UT) U-turn
(OR) Off Road	* Injury
(RA) Right Angle	+ Fatality



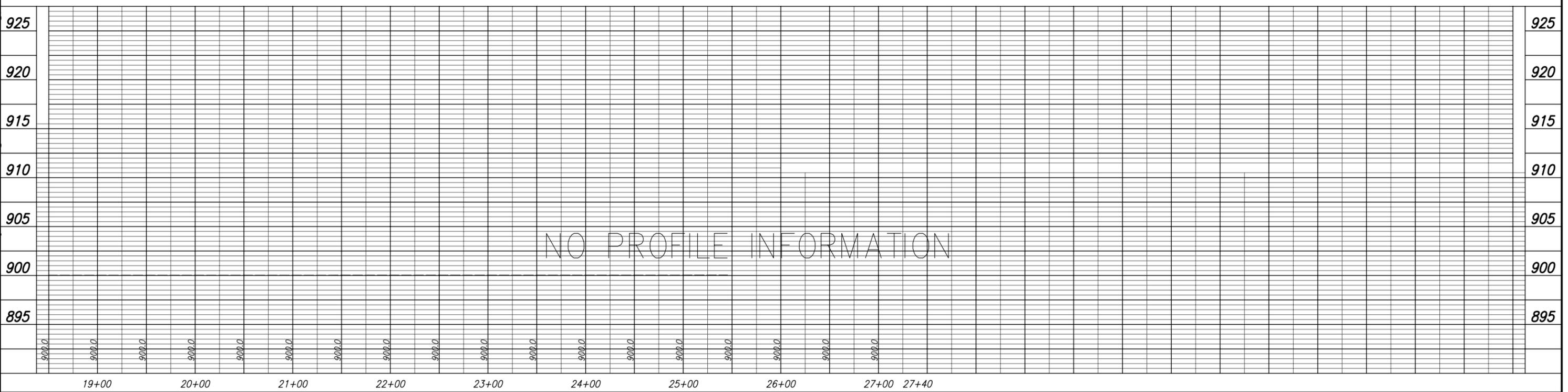
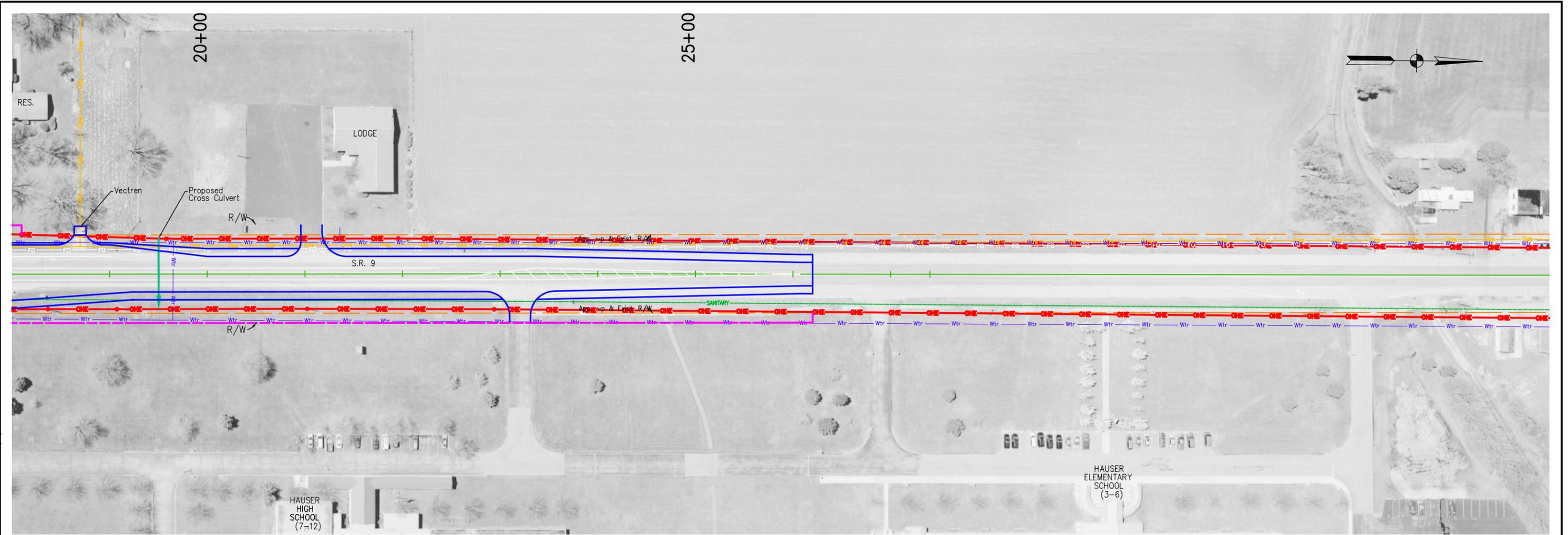
<p>ALTERNATE A</p> <p>DESIGNED: GRW DRAWN: NLC</p> <p>CHECKED: DPF CHECKED: GRW</p>	<p>INDIANA</p> <p>DEPARTMENT OF TRANSPORTATION</p> <p>S.R. 9 – PLAN & PROFILE</p> <p>STA. 6+00 TO 18+50 "A"</p>	<p>HORIZONTAL SCALE 1" = 100'</p> <p>VERTICAL SCALE 1" = 20'</p> <p>SURVEY BOOK SHEETS</p> <p>CONTRACT A-7 of PROJECT</p>
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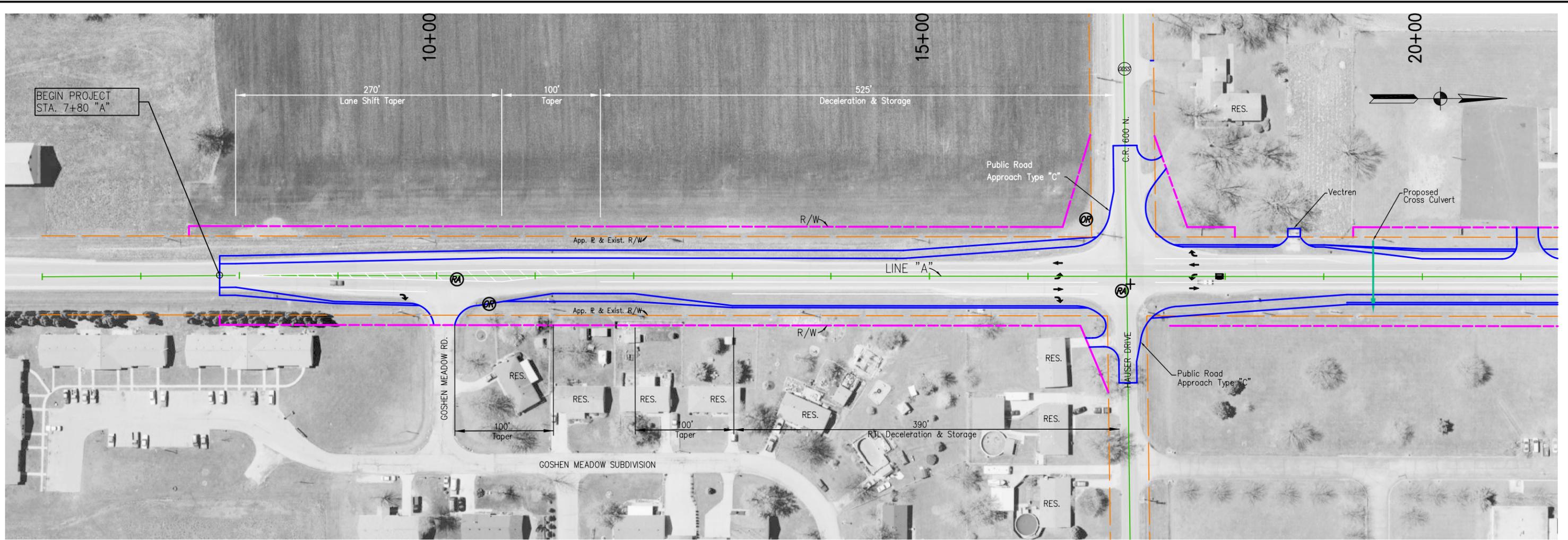


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DESIGNED: GRW		DRAWN: NLC						
CHECKED: DPF		CHECKED: GRW						

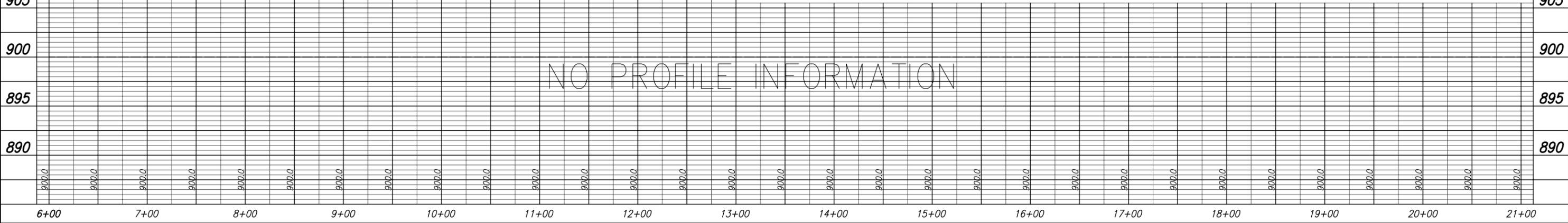
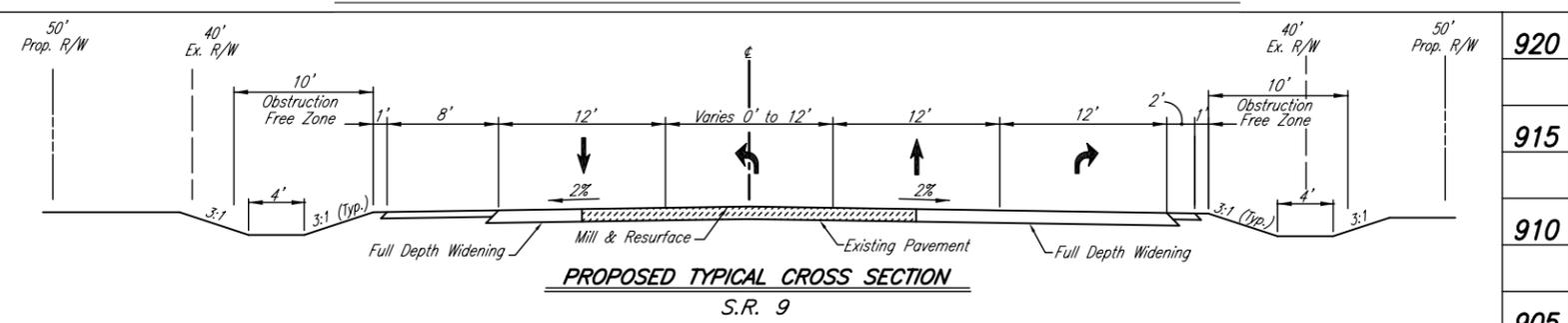
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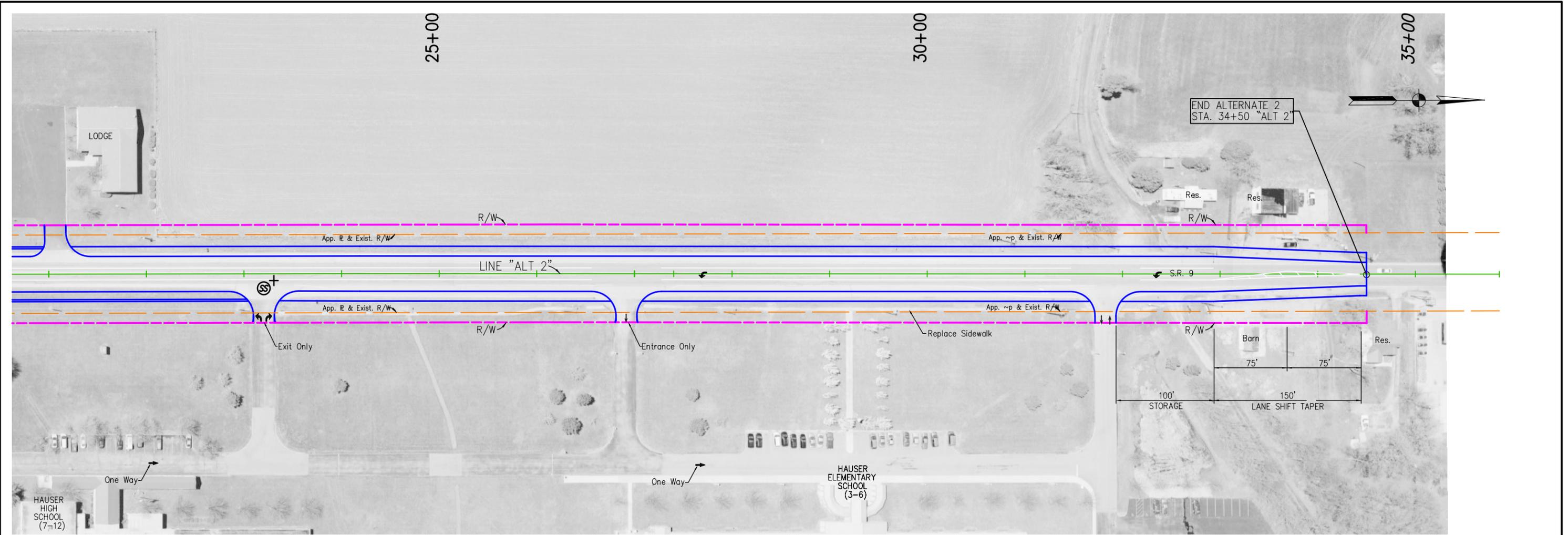
												INDIANA DEPARTMENT OF TRANSPORTATION		HORIZONTAL SCALE 1" = 100' VERTICAL SCALE 1" = 20' SURVEY BOOK CONTRACT		BRIDGE FILE DESIGNATION 0100774 SHEETS A-10 of PROJECT	
												DESIGNED: GRW CHECKED: DPF		DRAWN: NLC CHECKED: GRW		S.R. 9 - UTILITY LOCATIONS STA. 18+50 TO END LINE "A"	



CRASH TYPE LEGEND	
(AN) Animal	(RE) Rear End
(PE) Pedestrian	(RT) Right Turn
(HO) Head On	(SS) Same Direction Sideswipe
(LT) Left Turn	(U) Undetermined
(OD) Opposite Direction Sideswipe	(UT) U-turn
(OR) Off Road	* Injury
(RA) Right Angle	+ Fatality

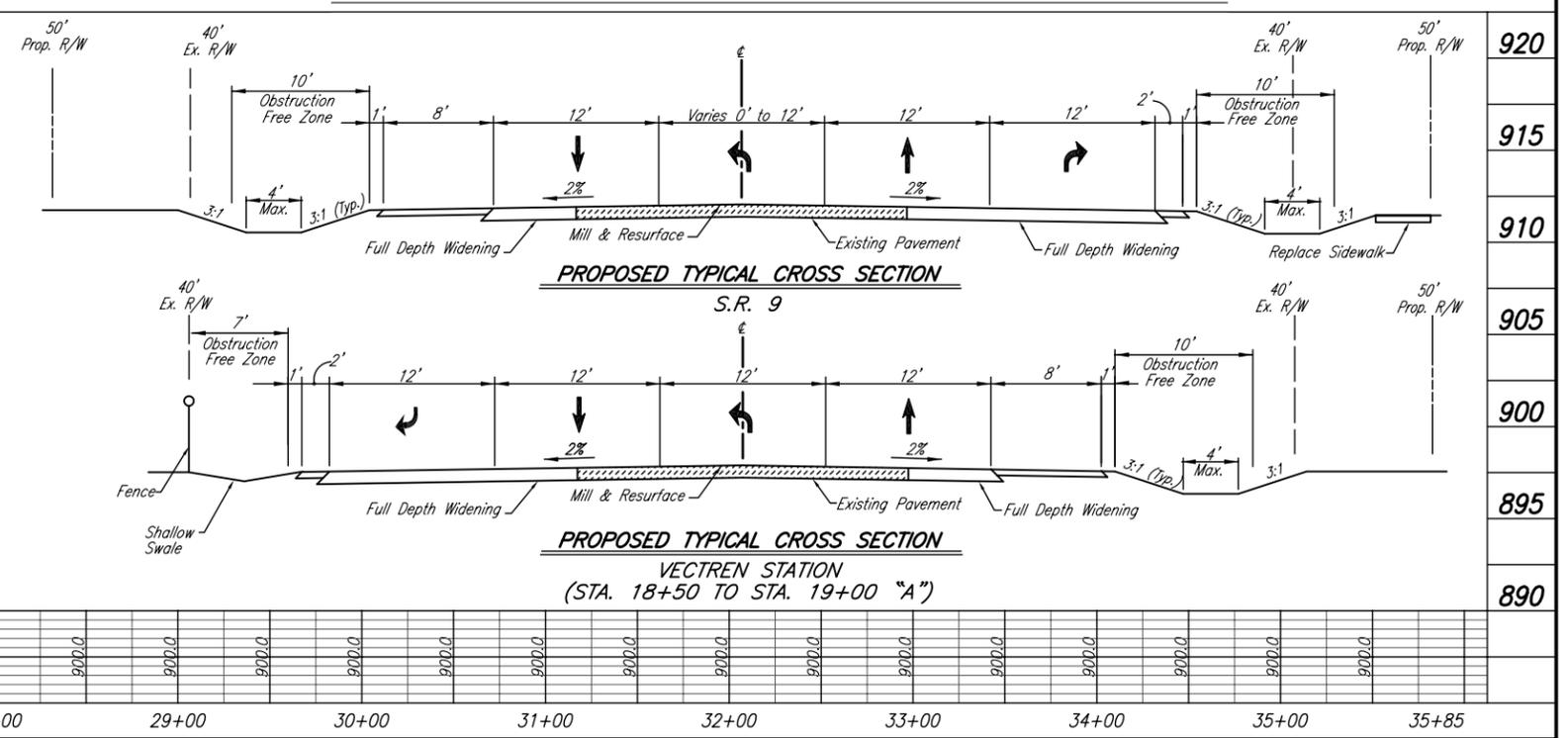


ALTERNATE B		INDIANA DEPARTMENT OF TRANSPORTATION	
DESIGNED: GRW	DRAWN: NLC	S.R. 9 – PLAN & PROFILE STA. 6+00 TO STA. 21+00 "A"	
CHECKED: DPF	CHECKED: GRW	HORIZONTAL SCALE 1" = 100'	BRIDGE FILE
		VERTICAL SCALE 1" = 20'	DESIGNATION 0100774
		SURVEY BOOK	SHEETS
		CONTRACT	A-11 of PROJECT



CRASH TYPE LEGEND	
(AN) Animal	(RE) Rear End
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(HO) Head On	(SS) Same Direction Sideswipe
(LT) Left Turn	(U) Undetermined
(OD) Opposite Direction Sideswipe	(UT) U-turn
(OR) Off Road	* Injury
(RA) Right Angle	+ Fatality

NO PROFILE INFORMATION	
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ALTERNATE B	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1" = 100' VERTICAL SCALE 1" = 20' SURVEY BOOK CONTRACT
DESIGNED: GRW CHECKED: DPF	DRAWN: NLC CHECKED: GRW	BRIDGE FILE DESIGNATION 0100774 SHEETS A-12 of PROJECT
S.R. 9 - PLAN & PROFILE		STA. 21+00 TO STA. 35+85 "A"

FORM T-40
 2:58 to 3:00 pm
 POLICE
 3:13 (Lead time)
 3:13 (Lead time)
 3:13 (Lead time)

INDIANA STATE HIGHWAY COMMISSION

TRAFFIC COUNT SUMMARY SHEET

Weather: Clear Cloudy Rain Snow
 Pavement: Dry Wet Icy
 OTHER CONDITIONS: OK
 Counted by: AK
 Sum. by: _____
 City or County: HOPE, BARTHOLOMEW W.
 Day: THURS MORN. 11/14/57 Date: Y. 10 Y. 17, Y. 18, 2002
 Intersection: SR-9 CR-600
 (Route No. and names of Streets and roads) HANSEK DRIVE

PERIOD BEGINNING AT	N ON SR-9				S ON SR-9				E ON HANSEK DR				W ON				TOTAL TRAFFIC ENTERING FROM				TOTAL P + T	
	AND GOING		TOTAL	E	AND GOING		TOTAL	E	AND GOING		TOTAL	S	AND GOING		TOTAL	N	E + W	(N+B) + (E+W)				
	W	B			E	N			W	B			E	N					S	E		N
P																						
T																						
7 AM	59	182	81	322	43	121	15	179	53	14	13	80	6	37	27	70	501	150	651	693		
T	4	14	6	24	3	8	0	11	2	0	2	4	1	1	1	3	35	7	42			
8 AM	45	131	11	187	11	97	8	116	7	8	3	18	5	6	32	43	303	61	364	416		
T	3	19	2	24	2	18	0	20	0	0	0	0	3	3	2	8	44	8	52			
P																						
T																						
11 AM	30	163	16	209	4	122	5	131	18	7	4	29	6	5	41	53	340	82	422	457		
T	0	15	2	17	1	12	0	13	1	2	0	3	0	1	1	2	30	5	35			
12 PM	24	156	21	201	8	154	6	168	11	4	6	21	7	13	35	55	369	76	445	481		
T	1	16	0	17	0	13	0	13	0	0	0	0	4	1	1	6	30	6	36			
1 PM	18	141	22	181	12	147	12	171	6	8	4	18	9	5	12	26	352	44	396	426		
T	0	12	1	13	0	14	0	14	0	0	1	1	0	0	0	0	27	3	30			
2 PM	27	119	32	178	17	144	5	166	17	8	6	31	15	5	23	43	344	74	418	464		
T	4	12	3	19	0	17	1	18	0	0	0	0	2	1	5	7	37	14	51			
3 PM	22	168	20	210	14	211	13	238	46	21	22	89	8	6	29	43	448	132	580	630		
T	2	21	4	27	2	17	0	19	3	2	2	7	1	0	1	2	41	9	50			
4 PM	38	188	43	269	15	253	11	279	18	6	2	26	8	12	60	80	548	106	654	675		
T	2	12	0	14	0	7	0	7	0	0	0	0	0	0	0	0	21	0	21			
5 PM	22	198	59	279	18	248	5	271	10	8	15	33	13	22	50	85	550	118	668	690		
T	0	10	0	10	1	8	2	11	0	0	0	0	0	0	1	1	21	1	22			
P																						
T																						
P + T																						
TOTAL																						

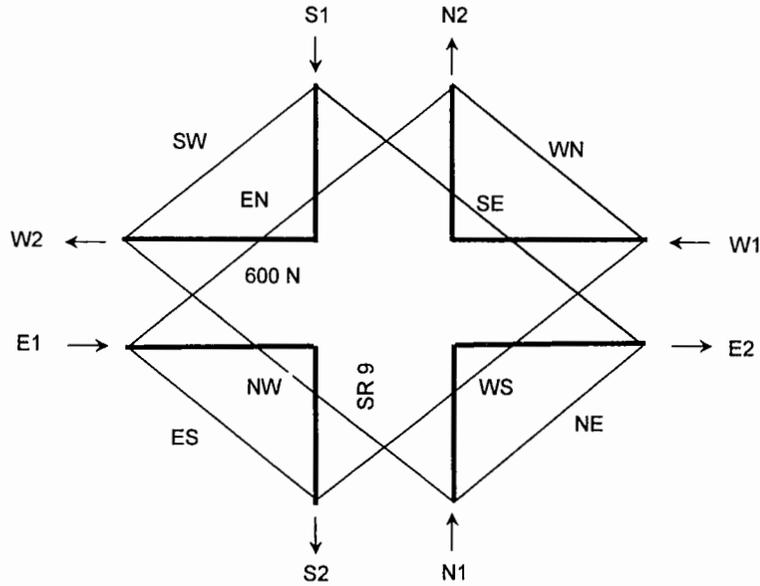
**Division of Roadway Management
Traffic Statistics Unit
Traffic Estimate Worksheet**

Date: January 6, 2005
Des. No. 0100774
Route: SR 9
County: Bartholomew

2009 Growth Factor:
1.050 (1.0%/yr)

2019 Growth Factor:
1.150 (1.0%/yr)

2029 Growth Factor:
1.250 (1.0%/yr)



LOCATION: SR 9 at 600 N
AM PEAK

	2004 AADT	2009 AADT	2019 AADT	2029 AADT	% DHV	COMMERCIAL VEHICLES	
						%AADT	%DHV
N1	3,460	3,630	3,980	4,330	5%	9%	9%
S2	3,610	3,790	4,150	4,510	7%	10%	8%
S1	4,080	4,280	4,690	5,100	8%	9%	7%
N2	3,690	3,870	4,240	4,610	3%	8%	8%
E1	800	840	920	1,000	8%	5%	4%
W2	730	770	840	910	10%	5%	4%
W1	490	510	560	610	12%	6%	3%
E2	800	840	920	1,000	21%	5%	1%
NE	260	270	300	330	27%	8%	2%
NW	180	190	210	230	11%	6%	3%
NT	3,020	3,170	3,470	3,780	3%	9%	9%
SE	390	410	450	490	15%	5%	2%
SW	430	450	490	540	9%	5%	3%
ST	3,260	3,420	3,750	4,080	7%	10%	9%
ES	200	210	230	250	5%	10%	10%
EN	450	470	520	560	2%	4%	4%
ET	150	160	170	190	27%	1%	1%
WN	220	230	250	280	9%	5%	3%
WS	150	160	170	190	20%	7%	2%
WT	120	130	140	150	8%	8%	6%

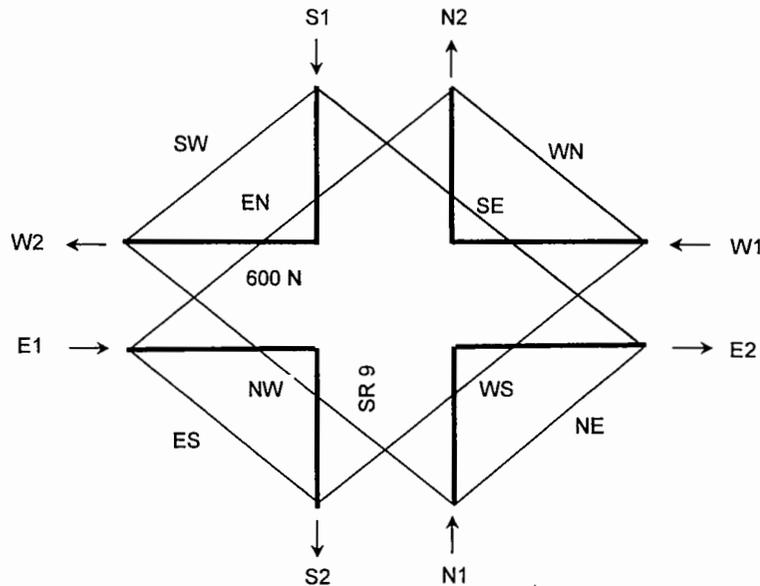
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1.150 (1.0%/yr)

2029 Growth Factor:
1.250 (1.0%/yr)



LOCATION: SR 9 at 600 N
PM PEAK

	2004	2009	2019	2029	% DHV	COMMERCIAL VEHICLES	
	AADT	AADT	AADT	AADT		%AADT	%DHV
N1	3,460	3,630	3,980	4,330	9%	9%	6%
S2	3,610	3,790	4,150	4,510	9%	10%	7%
S1	4,080	4,280	4,690	5,100	7%	9%	8%
N2	3,690	3,870	4,240	4,610	8%	8%	6%
E1	800	840	920	1,000	10%	5%	3%
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W1	490	510	560	610	6%	6%	6%
E2	800	840	920	1,000	8%	5%	4%
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NW	180	190	210	230	11%	6%	3%
NT	3,020	3,170	3,470	3,780	9%	9%	6%
SE	390	410	450	490	5%	5%	5%
SW	430	450	490	540	5%	5%	5%
ST	3,260	3,420	3,750	4,080	8%	10%	8%
ES	200	210	230	250	15%	10%	4%
EN	450	470	520	560	7%	4%	4%
ET	150	160	170	190	13%	1%	1%
WN	220	230	250	280	1%	5%	5%
WS	150	160	170	190	20%	7%	2%
WT	120	130	140	150	1%	8%	8%



February 17, 2004

MEMORANDUM

OFFICERS

Daniel R. Woo, PLS, President
Philip D. Beer II, PE, PLS, Vice-President
Alejandro L. de Gortari, CPA, Treasurer
Ross E. Snider, PE, Vice-President
Kathy M. Hall, Secretary

PROFESSIONALS

Robert M. Coop, PE
Jeff J. Franciski, PLS
Michael J. Halterman, PE
Nicole C. Hipp, PE
Michael J. Obergfell, PE
Mark A. Schepers, PLS
James D. Smale, PLS
Brent L. Smith, PLS
Harrison R. Smith, PE
John H. Vamer, PLS
Gregory R. Wendling, PE
Donald R. West, PLS

To: Mr. Brad Steckler, P.E.
INDOT Engineering Assessment Manager

From: Nicole Hipp, P.E.
Project Engineer
USI Consultants, Inc.

NCH

Re: Minutes of Field Check
Des. No.: 0100774
Project No.: STP - 0
Route No.: SR 9
Location: At CR 600 N (Hauser Dr.), 4.49 Miles North of SR 46
County: Bartholomew
Work Type: Intersection Improvement

This memorandum is a summary of the observations and recommendations made at a field check held at the project on Tuesday, February 17, 2004. The field check was held to review the existing conditions and determine the scope of work for this engineering assessment. The following individuals were in attendance:

David Dye	INDOT, Seymour District, Development	812-522-5649
Jim Ude	INDOT, Seymour District, Development	812-522-5649
Terry Summers	INDOT, Seymour District, Traffic	812-522-5649
Jeffrey Drake	B&N, Design Review Representative	317-237-2760
Nicole Hipp	USI Consultants, Inc.	317-544-4996
Greg Wendling	USI Consultants, Inc.	317-544-4996

The following issues were discussed at the field check:

1. This portion of SR 9 is a two lane rural principal arterial. It is not on the National Highway System (NHS), however it is included on the National Truck Network. The posted speed limit through the project limits is 45 mph. The prevailing existing cross section consists of 2-12' travel lanes with 3' paved shoulders and V-ditches.
2. CR 600 N is a local rural road. The posted speed limit along the east leg is 25 mph. Existing cross section for the east leg consists of 2-9.5' travel lanes and no shoulders. A substantial ditch lies along the north side. No ditches exist along the south side. Speed limit is not posted on the west leg. Existing cross section for the west leg consists of 2-12' travel lanes with 3' paved shoulders. Shallow V-ditches exist along both sides of the roadway.
3. The existing intersection of SR 9 with CR 600 N (Hauser Dr.) is a 2-way stop controlled intersection. The stop control is along the county road.

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Minutes of Field Check
Des. No. 0100774

Left turn lanes are currently warranted for the north and south approaches. Right turn lanes currently exist. Improvements will include opposing left turn lanes on SR 9 with improved radii and standard public road approaches at the county road. Sufficient radii for bus turning movements will be addressed (Hauser Jr./Sr. High School is located in the northeast quadrant). USI will also examine the need for auxiliary lanes on the county road.

4. There were 3 crashes within 500' of the intersection during the 4 year period from 1997 to 2000. 2 of these were off road crashes with 1 resulting in personal injury. The other crash involved a rear end collision with injury. There is evidence of a fatal crash at this intersection (fatality cross located in southwest quadrant). USI will examine if this crash occurred after the year 2000.
5. Horizontal and vertical alignment through the project intersection appears adequate. Intersection sight distance also appears adequate.
6. Traffic maintenance issues were discussed. It is preferred to maintain traffic through the project intersection. If a detour were utilized, the likely state detour would include SR 46, I-65 and SR 44. The total detour length would be 46.2 miles, with an additional travel length of 18.6 miles.
7. Utilities will play a vital part in this project. There are numerous utilities located at the subject intersection. The following utilities were noted in the area:
 - Buried gas lines (Vectron) with fenced gas valve station in northwest quadrant
 - Overhead Electric
 - Buried telephone (Ameritech) with service vault in southeast quadrant
 - Buried fiber optic (MetroXmit) cable with underground vault in southwest quadrant
 - Buried water line

This completed the items discussed. If there are any questions, additions, or revisions necessary concerning the items listed above, please contact the author.

NCH:nh

cc: Attendees
Jim Juricic, INDOT, Environmental Assess Manager

File 2003-930

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SR 9 at Hauser Drive Utility Contact Sheet

Utility Contact List			
Utility Name	Contact Person	Phone #	Address
Vectren (Gas)	Chris Baldwin	812-348-6710	4324 Middle Road, Columbus, IN 47203
SBC (Telephone)	Beth Sullivan	812-376-2855	420 7 th Street, Columbus, IN 47201
Eastern Bartholomew Water Corp (Water)	Don Smith	812-526-9777	2413 W 700 N, Taylorsville, IN 47280
Hope Utilities (Water and Sewer)	Ernie Holt	812-546-5469	529 Mill Street, Hope, IN 47246
Bartholomew County REMC (electric)	Walt Caldwell	812-375-6232	801 2 nd Street, Columbus, IN 47201
Cinergy (electric)	Derek Carr	812-375-2004	2727 Central Avenue, Columbus, IN 47201
Indiana FiberWorks (fiber cable)	Jim Andrews	317-524-5711	N/A

INDIANA DEPARTMENT OF TRANSPORTATION
INDIANAPOLIS, INDIANA 46204-2249
INTER-DEPARTMENT COMMUNICATION

4/25/2005

MEMORANDUM

TO: Brad Steckler, Manager
Engineering Assessment

THRU: Mike Holowaty, Manager 
Specialty Projects Group
Design Division

FROM: Gary Pence
Specialty Projects Group

SUBJECT: Scope Comments
SR 9 at CR 600N
Bartholomew County
Des No 0100774

Brad,

Here is a list of my comments for this project.

1. On Page 8, the project recommendation states that there is no apparent crash history at the school drives, but the crash data on page 5 states there was a Fatal at that location. How does this affect the preferred alternate.
2. The air-photo shows existing sidewalks by the school, do we need to incorporate pedestrian crossings and sidewalks in the design?
3. On Sheet B-4, why does the AADT drop from the year 2019 to 2029? Does this affect the design?
4. Can we get approval from the county engineer to set a speed limit or design speed for the west leg of CR 600N? If we don't get info, we must design for 55 mph.
5. We will need to upgrade both legs of CR 600N to design standards. Plan accordingly for the environmental.
6. Do we need turn lanes on the CR 600N approaches?

MAH/GP
Cc: file