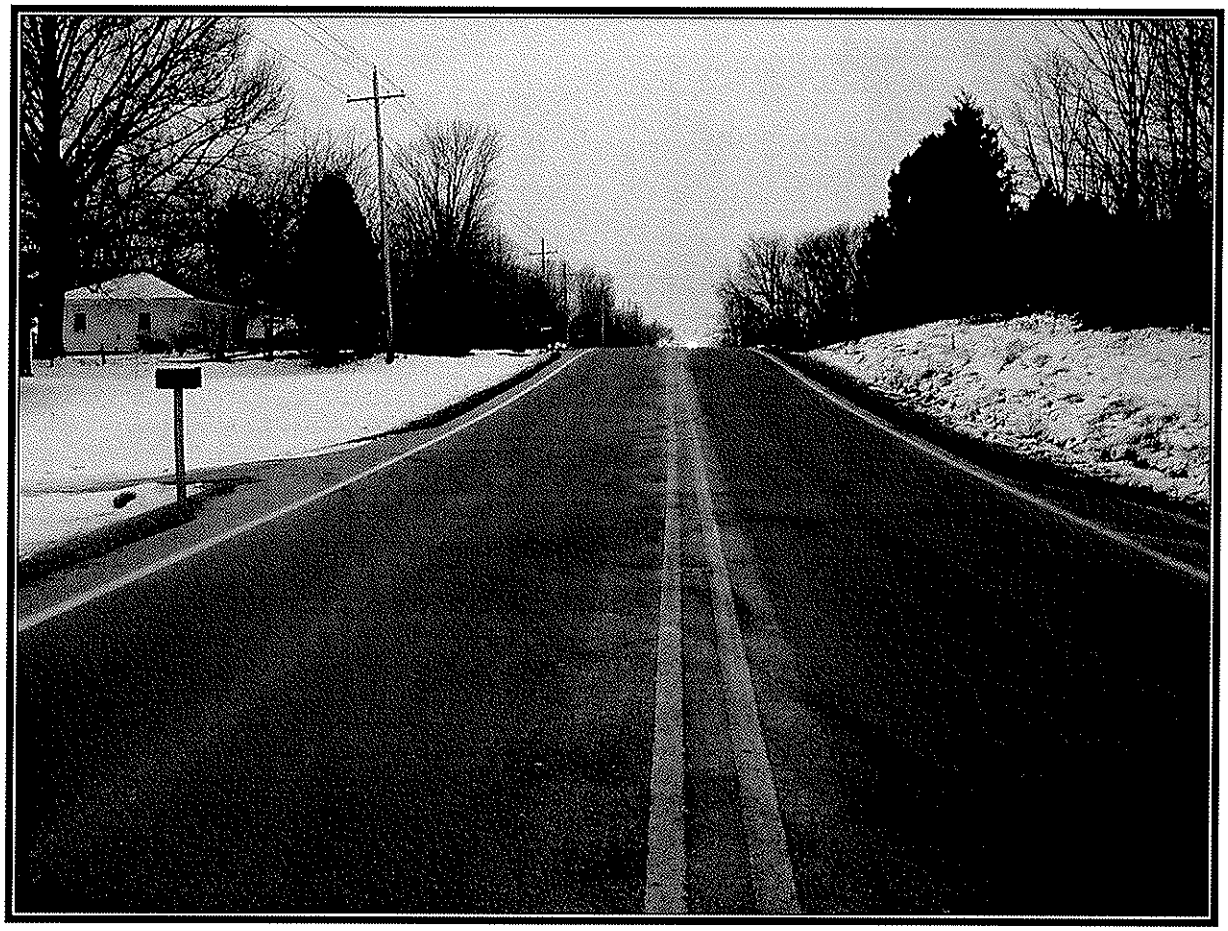
ENGINEER'S REPORT

SR 111 Road Reconstruction



From IU-SE/Klerner Lane to SR 60
Floyd and Clark Counties

Des. No.: 9902540
Project No.: STP-5322( )

Prepared By:

USI CONSULTANTS, INC.
Engineers • Surveyors

Prepared For:

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

December 17, 2001

MEMORANDUM

To: Brad L. Steckler, Manager
Engineering Assessment Section
Division of Environment, Planning and Engineering

Attention: Tarlochan S. Bansi

Thru: Ross E. Snider, PE, Vice-President
USI Consultants, Inc.

From: Gregory R. Wendling, P.E.
USI Consultants, Inc.

Subject: **Engineer's Report**
Des. No. 9902540
Project No. STP - 5322( )
SR 111 Road Reconstruction
From IU-SE/Klerner Lane to SR 60
Floyd and Clark Counties

A. PURPOSE OF REPORT:

This Engineer's Report documents the engineering assessment phase, including an outline of the proposal (scope-of-work) improvements to SR 111. This report includes the relevant background data and provides conclusions and recommendations that will guide the ongoing environmental and ensuing survey and design phases. (This Engineer's Report is a pre-decisional document, pending completion of the environmental study.)

B. PROJECT LOCATION:

This project begins within the City of New Albany at the intersection of SR 111 with IU-SE/Klerner Lane, 1.05 km north of I-265 at RP 30+24. The project continues along SR 111 to the intersection of SR 111 with SR 60, RP 35+94. Project Length: 9.2 km. From the beginning of the project to Chapel Lane (RP 32+50) is within the New Albany Urban Area Boundary (UAB). The first 6.3 km of the project are in Floyd County, and the last 2.9 km are in Clark County. This project falls within the jurisdiction of the Kentuckiana Regional Planning and Development Agency (KIPDA), the local Metropolitan Planning Organization (MPO).

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

C. PROJECT'S NEED AND PURPOSE:

Need for the improvement is based on the facility's substandard geometrics, lack of traffic capacity along the corridor, and crash history. Existing levels of service (LOS) have fallen to substandard levels along the corridor.

The purpose of this project is to improve the traffic flow/mobility and safety of SR 111 by adding capacity and improving geometrics along the corridor.

D. EXISTING CONDITIONS:

See the ground level photographs, pages A-3 through A-12 of the Appendix and the aerial photographs in Appendix A-13 to A-37 for land use throughout the project area. Land use varies from commercial and residential to agricultural.

SR 111 from the beginning of the project at IU-SE/Klerner Lane north 2.3 miles to Chapel Lane is classified as an *Urban Minor Arterial.* From Chapel Lane, north 3.4 miles to SR 60, SR 111 is classified as a *Rural Major Collector.* SR 111 is not part of the National Highway System (NHS), nor is it included on the National Truck Network. It lies on Indiana's 3R Road Network.

CROSS SECTION

The existing SR 111 typical cross section (north of the widened area at IU-SE/Klerner Lane) consists of two 3.6 m lanes bordered by 0.3 m paved shoulders (0.6 m total usable width). Drainage is via shallow open ditches. The existing right-of-way is typically 12.2 m (40') each side of centerline.

The widened section south of IU-SE/Klerner Lane consists of a 5-lane section (2 travel lanes in each direction separated by a flush median) bordered by curb and gutter.

ROAD HISTORY

Road Life Data shows that in 1928, the then Floyd and Clark County gravel roadway was reconstructed to a 5.5 m wide bituminous mix over gravel roadway. The pavement was resurfaced with bituminous mix in 1937,1956, and 1962. In 1969 the roadway was widened to 6.1 m and resurfaced with Hot Asphaltic Concrete. The roadway was widened to7.9 m in 1978 with Hot Asphalt Emulsion. The pavement was resurfaced with hot asphalt emulsion in 1985 and 1997.

Road plans for this corridor are not available at INDOT's central office.

PAVEMENT CONDITION

The last resurface took place in 1997 under contract RS-22658. The INDOT's 2000 Pavement Surface Report indicates that this section of roadway has a Pavement Condition Rating (PCR) of 97 (excellent condition), average rut depth of 3.05 mm (0.12 inches), and a International Roughness Index (IRI) of 96 (excellent condition).

HORIZONTAL AND VERTICAL ALIGNMENTS

The posted speed limit along the corridor is 64 km/h (40 mph) from the beginning of the project north 1.1 km to just north of St. Joseph Road (RP 30+92). From just north of St. Joseph Road to the end of the project, the posted speed limit is 80 km/h (50 mph).

The corridor runs generally in a northerly direction. The horizontal alignment can be seen in the aerial photographs, page A-13 to A-37 of the Appendix. Assuming suitable superelevation is in place, there are two curves that do not satisfy current standards of minimum radius for 80 km/h. The two substandard horizontal alignment locations are at approximate stations 3+930 and 5+000. CEDS for the two substandard horizontal curves are 65 km/h and <30 km/h, respectively. Due to SR 111 paralleling the railroad track prior to crossing it, obtaining proper superelevation for the horizontal curve is not feasible.

The prevailing vertical terrain along the SR 111 corridor is considered level, with the vertical grades ranging from –6.0% to +6.0%. There are numerous locations with vertical curvature for stopping sight distance substandard with respect to 4R K-values. The adjacent table contains desirable minimum values for the rate of curvature, K.

4R K values				
Design Speed	Crest		Sag	
	Des.	Min.	Des.	Min.
60 km/h	21	16	19	16
80 km/h	49	36	33	27

INTERSECTING ROADWAYS

The intersection of SR 111 and IU-SE/Klerner Lane is the only signalized intersection within the project. The intersection of SR 111 and SR 60 is controlled with a flasher, with stop control required for westbound SR 60 vehicles. All other intersections within the project have stop control on the intersecting roadway. Intersecting roadways within the project limits are summarized in the following table:

Intersecting Roadway	**RP (Sta.)**	**Intersecting Angle**	**Intersection Sight Distance (ISD)**	**ISD CEDS (4R)**	**Leg Width**	**Posted Speed Limit**
IU-SE (Lt.) Klerner Ln (Rt.)	RP 30+24 (Sta. 1+086)	96 °	150 m North > 235 m South	62 km/h >80 km/h	10.5m Lt. 9.3 m Rt.	30 mph (48 km/h)
Bald Knob Rd (Lt.)	RP 30+66 (Sta. 1+746)	95 °	190 m North >235 m South	70 km/h >80 km/h	5.5 m	30 mph (48 km/h)
St Joseph Rd (Rt.)	RP 30+92 (Sta. 2+173)	106 °	> 235 m	>80 km/h	6.1 m	30 mph (48 km/h)
St. Joe Station (Rt.)	RP 31+08 (Sta. 2+417)	90 °	> 235 m	>80 km/h	8.5 m	20 mph (32 km/h)
Mel Smith Rd. (Rt.)	RP 31+33 (Sta. 2+818)	90 °	> 235 m North 170 m South	>80 km/h 66 km/h	5.5 m	30 mph (48 km/h)
Durgee Rd. (Lt.)	RP 31+33 (Sta. 2+818)	100 °	> 235 m North 170 m South	>80 km/h 66 km/h	4.3 m	30 mph (48 km/h)
Security Rd. (Rt.)	RP 31+48 (Sta. 3+057)	90 °	> 235 m	>80 km/h	7.9 m	35 mph (56 km/h)
Payne Rd. (Lt.)	RP 31+79 (Sta. 3+616)	53 °	> 235 m North 120 m South	>80 km/h 53 km/h	5.5 m	20 mph (32 km/h)
Chapel Ln. (Rt.)	RP 32+50 (Sta. 4+803)	53 °	150 m North >235 m South	62 km/h >80 km/h	6.1 m	30 mph (48 km/h)
Fairview Knob Rd. (Lt.)	RP 32+86 (Sta. 5+365)	107 °	>235 m North 150 m South	>80 km/h 62 km/h	6.1 m	30 mph (48 km/h)
Dug Knob Rd. (Lt.)	RP 34+14 (Sta. 7+431)	71 °	> 235 m	>80 km/h	6.1 m	30 mph (48 km/h)

Intersecting Roadway	RP (Sta.)	Intersecting Angle	Intersection Sight Distance (ISD)	ISD CEDS (4R)	Leg Width	Posted Speed Limit
St. Joe Rd. (Rt.)	RP 34+14 (Sta. 7+431)	102 °	> 235 m	>80 km/h	6.1 m	30 mph (48 km/h)
Old SR 111 (Rt.)	RP 34+46 (Sta. 7+965)	43 °	> 235 m	>80 km/h	4.3 m	Not Posted
Old SR 111 (Rt.)	RP 34+94 (Sta. 8+709)	90 °	130 m North > 235 m South	56 km/h >80 km/h	7.0 m	Not Posted
Old SR 111 (Rt.)	RP 35+00 (Sta. 8+824)	30 °	235 m North 200 m South	>80 km/h 73 km/h	4.9 m	Not Posted
SR 60	RP 35+94 (Sta. 10+336)	119 °	> 235 m	>80 km/h	7.3 m	55 mph (88 km/h)

RAILROAD CROSSING

SR 111 crosses the CSX railroad at approximate station 4+960. The railroad line consists of a single track. SR 111 crosses the CSX railroad at a 30° angle, within a 100 m radius curve. The railroad crossing is protected with a warning flasher and gates.

DRAINAGE STRUCTURES

Twenty-five culverts (small drainage structures) and one bridge structure have been identified within the project limits. Details of the structures can be found in the report prepared by the INDOT Hydraulics Unit titled *SR 111 Floyd County, Des. No. 9902540 Preliminary Hydraulics*. The following table summarizes the existing cross structures:

Structure # (Station)	Existing Size & Type Rise x Span	Proposed Size & type Rise x Span
1 (Sta. 10+351)	900 mm x 1200 mm RCB	1200 mm x 2700 mm RCB
2 (Sta. 9+998)	980 mm x 1400 mm CMA	900 mm x 1800 mm RCB
3 (Sta. 9+489)	1800 mm x 2800 mm CMA	1500 mm x 2700 mm RCB
4 (Sta. 9+161)	1200 mm Plastic Pipe	1200 mm x 2700 mm RCB
5 (Sta. 8+586)	900 mm CMP	1350 mm CMP
6 (Sta. 7+724)	2100 x 4650 mm RCB	Replace in kind (if req'd)
7 (Sta. 7+184)	1170 mm x 1520 mm CMA	1200 mm x 2700 mm RCB
8 (Sta. 6+950)	Str. No. 111-22-5107	Rehab as necessary
9 (Sta. 6+416)	610 mm x 890 mm CMA	900 mm x 1800 mm RCB
10 (Sta. 6+367)	970 mm x 1450 mm CMA	1200 mm x 2700mm RCB
11 (Sta. 5+959)	900 mm CMP	1350 mm smooth pipe
12 (Sta. 5+472)	900 mm CMP	1350 mm smooth pipe
13 (Sta. 5+382)	970 mm x 1450 mm CMA	Replace in kind (if req'd)
14 (Sta. 5+304)	900 mm CMP	900 mm x 1200 mm RCB
15 (Sta. 5+120)	840 mm x 1240 mm CMA	900 mm x 2400 mm RCB
16 (Sta. 4+973)	840 mm x 1240 mm CMA	900 mm x 2100 mm RCB
17 (Sta. 4+842)	900 mm CMP	1200 mm CMP
18 (Sta. 4+584)	900 mm CMP	840 mm x 1240 mm CMA

19 (Sta. 3+586)	1500 mm x 2060 mm CMA	1600 mm x 2210 mm CMA
20 (Sta. 3+226)	1200 mm CMP	1200 mm x 2400 mm RCB
21 (Sta. 3+011)	1800 mm x 2620 mm CMA	1910 mm x 2840 mm CMA
22 (Sta. 2+865)	900 mm CMP	900 mm x 1800 mm RCB
23 (Sta. 2+343)	2400 mm x 4800 mm RCB	Replace in kind (if req'd)
24 (Sta. 2+180)	970 mm x 1450 mm CMA	900 mm x 1800 mm RCB
25 (Sta. 1+592)	1650 mm CMP	1500 mm x 2400 mm RCB
26 (Sta. 1+366)	900 mm CMP	1200 mm x 2400 mm RCB

Structure No. 111-22-5107 (SR 111 over branch of Elk Run; Sta 6+950,3.4 km south of SR 60) is a 3 span reinforced concrete slab bridge. The structure was built in 1965 and has a clear roadway of 12.5 m. The structure is in good condition. Details of the structure can be found in the condensed bridge report (C-5 &C-6 of the Appendix).

UTILITIES

Various utilities are located within the study limits of this project. Overhead power, cable and telephone lines are located along SR 111 on both sides of the road (intermittently). Underground gas, water, sanitary sewer and telephone lines exist at certain locations throughout the project.

E. TRAFFIC DATA and CAPACITY ANALYSIS:

An outside consultant for the Traffic Statistics Unit prepared a traffic forecast for this project. The results were presented in a report titled *Traffic Volume Forecast; SR 111 from IU SE to SR 60, Floyd and Clark Counties, Des. No. 9902540*, dated April 2001. The report shows traffic forecasts (full intersection movements), given no capactity constraints, for the following major intersections, for the years 2001, 2005, 2010, 2015, and 2025.

1. SR 111 at IU-SE\ Klerner Road
2. SR 111 at St. Joseph Road (south end)
3. SR 111 at Durgee Road/Mel Smith Road
4. SR 111 at Chapel Lane
5. SR 111 at St. Joseph Road (north end)
6. SR 111 at SR 60

Forecast summaries were provided for each of the intersections for both the AM and PM peak hours. A copy of the summaries is located in Appendix B-1 to B-12.

The INDOT Design Railroad Unit has indicated that there are approximately 10 trains per day utilizing the railroad track that crosses SR 111 near Station 4+960.

Projected Average Annual Daily Traffic (AADT) is summarized in the table below. Though it is understood that SR 111 is not characteristically an open-highway facility, capacity analysis on the two-lane highway section from north of IU-SE/Klerner Drive to the just south of the SR 60 intersection was performed for the construction year (2005) and the design year (2025), and is summarized in the adjacent table. The analysis was for a rural highway section, even though the functional classification is as an Urban Arterial. The rural highway analysis was carried out for this section, since there are no intermediate traffic signals along the corridor, thus by definition the SR 111 corridor is not functioning as an arterial street with capacity and LOS essentially established by signalized intersections, at least not under its current signal control.

Existing Configuration						
Roadway Segment	AADT		2005 LOS		2025 LOS	
	2005	2025	AM	PM	AM	PM
North of IU-SE/Klerner	18430	26730	E	E	F	F
North of St. Joseph Road (south end)	15600	22630	E	E	E	E
North of Durgee Road	14190	20580	E	E	E	E
North of Chapel Lane	8130	11810	D	D	E	E
North of St. Joseph Road (north end)	6370	9230	D	D	D	D

A rural multi-lane highway capacity analysis was performed for 2 alternate geometric configurations: a 3-lane section, and a 5-lane section, with the middle lane for each set up as a median/left-turn lane. The LOS summary is shown in the adjacent table. (An analysis of a 4-lane section was not performed. The four-lane section would have heavy, through traffic opposing without a median separation. Additionally, vehicles stopping to turn left would be without refuge from stopping in a through vehicles path. For the above stated operational concerns, a four-lane undivided highway was deemed unreasonable, and so, the analysis was not performed.)

LOS SUMMARY						
Roadway Segment	ALTERNATE ANALYSIS					
	2005		2025			
	3 LANE* SECTION		3 LANE* SECTION		5 LANE * SECTION	
	AM	PM	AM	PM	AM	PM
North of IU-SE/Klerner	E	E	F	F	B/A	B/B
North of St. Joseph Road (south end)	E	E	E	E	B/A	A/B
North of Durgee Road	E	E	E	E	B/A	A/B
North of Chapel Lane	C	D	D	D	A/A	A/A
North of St. Joseph Road (north end)	C	C	D	D	A/A	A/A
* Northbound LOS/Southbound LOS						

Although the LOS for a 3-lane section and 2-lane section appear to be similar, better traffic LOS would be provided by the 3-lane section, since with the 3-lane section there would be no mid-block interference with left-turning vehicles.

INTERSECTION LOS

A capacity analysis was performed at the six intersections along SR 111 that had traffic counts performed, pursuant to the Highway Capacity Manual's (year 2000) methodology for intersections to determine level of service (LOS) and delay during the construction year (2005) and the design year (2025). (Under 4R standards the desirable LOS is B and the minimum is C; for 3R standards, the desirable LOS is B and the minimum is D). The following table

summarizes the findings. The intersection of SR 111 with IU-SE/Klerner Lane is signalized. All of the other intersections are unsignalized.

INTERSECTION LOS SUMMARY								
SR 111 @	Existing Configuration				Proposed Configuration (Alternate D)			
	2005		2025		2005		2025	
	AM	PM	AM	PM	AM	PM	AM	PM
IU-SE/Klerner Lane (Signalized)	A (10 s)	C (25 s)	B (16 s)	F (102 s)	A (7 s)	B (12 s)	A (9 s)	C (23 s)
St. Joseph Road	F (A)	F (A)	F (A)	F (B)	C (A)	E (A)	F (A)	F (B)
Durgee Road/Mel Smith Road*	C/F (A/A)	E/F (A/A)	F/F (B/A)	F/F (A/B)	C/F (A/A)	C/F (A/A)	D/F (B/A)	E/F (A/B)
Chapel Lane	D (A)	C (A)	F (A)	E (B)	C (A)	C (A)	E (A)	D (B)
St. Joe Road*	B/B (A/A)	B/B (A/A)	C/D (A/A)	C/C (A/A)	B/B (A/A)	B/B (A/A)	C/D (A/A)	C/C (A/A)
SR 60	F (A)	F (A)	F (B)	F (B)	F (A)	D (A)	F (B)	F (B)

Note: LOS shown as West approach LOS/East approach LOS
(South Approach (LT) LOS/North approach (LT) LOS)

Principally because of lack of gaps in the mainline traffic stream, the side-street movements at unsignalized intersections (all except St. Joe Road) operate at a poor LOS in base and design years. A capacity analysis was performed at the intersections to determine the LOS as a signalized intersection with the proposed geometrics. The adjacent table summarizes the results. As can be seen in the table, the LOS if the proposed intersections were signalized is acceptable. The designer is instructed to contact the District Traffic Engineer prior to the Preliminary Field Check to determine if signals are warranted at any of the presently unsignalized intersections. There have been no signal warrant studies along SR 111 performed north of IU-SE/Klerner Lane

LOS AS SIGNALIZED INTERSECTIONS		
INTERSECTION	2025 AM PEAK	2025 PM PEAK
St. Joseph Road	A (5s)	A (9s)
Durgee Road/Mel Smith Road	A (9s)	A (6s)
Chapel Lane	B (10s)	A (5s)
St. Joe Road*	N/A	N/A
SR 60	B (15s)	C (29s)

* Signalized Analysis not carried out due to acceptable LOS as unsignalized intersection.

F. CRASH DATA:

The INDOT database shows 129 recorded crashes (accidents) from the intersection of IU-SE/Klerner Lane to SR 60 during the 4 year 8 month period from January 1996 to September 1999.

The following table describes the distribution of crash events by intersection, with the number of crashes shown, followed by the number of crashes resulting in personal injury in parentheses.

Location	Type of Crash									Totals
	Rear end	Head On	Sideswipe	Right Angle	Off Road	Left Turn	Right Turn	Animal	Undetermined	
@ IU-SE/Klerner Lane	2 (0)	0 (0)	1 (1)	5 (3)	1 (0)	2 (2)	0 (0)	0 (0)	0 (0)	11 (6)
@ Bald Knob Road	7 (2)	0 (0)	1 (1)	0 (0)	0 (0)	1 (1)	0 (0)	1 (0)	0 (0)	10 (4)
@ St. Joseph Road	12 (4)	1 (0)	3 (2)	5 (2)	2 (0)	0 (0)	0 (0)	5 (0)	0 (0)	28 (8)
@ Durgee Road/Mel Smith Road	4 (2)	0 (0)	1 (0)	2 (0)	5 (3)	0 (0)	0 (0)	3 (0)	0 (0)	15 (4)
@ Payne Road	1 (1)	0 (0)	0 (0)	1 (0)	5 (3)	0 (0)	0 (0)	0 (0)	0 (0)	7 (4)
@ Chapel Lane	4 (1)	1 (0)	0 (0)	1 (1)	9 (4)	0 (0)	0 (0)	2 (0)	0 (0)	17 (6)
@ Fairview Knob Road	2 (0)	1 (0)	0 (0)	0 (0)	1 (1)	1 (0)	0 (0)	6 (0)	0 (0)	11 (1)
@ Dug Knob Road/ St. Joe Road	0 (0)	0 (0)	1 (0)	5 (1)	3 (0)	1 (1)	0 (0)	4 (0)	0 (0)	14 (2)
@ SR 60	1 (0)	0 (0)	0 (0)	2 (2)	4 (3)	2 (2)	0 (0)	7 (0)	0 (0)	16 (7)
Totals	33 (10)	3 (0)	7 (4)	21 (9)	30 (14)	7 (6)	0 (0)	28 (0)	0 (0)	129 (43)

# of crashes (# of crashes resulting in personal injury)

Sixty-three of the 129 crashes were classified as either rear end or off-road crashes. Absence of turn lanes, particularly for left turns, and substandard horizontal and vertical alignments, likely are contributing factors in the number of these type of crashes. Infrequent gaps in the mainline traffic stream (to accommodate left-turn demand from side streets and drives) and substandard ISD likely are contributing factors in the number of right angle crashes that have occurred (21).

Additional through lanes as well as auxiliary turn lanes, alignment improvements, intersection improvements and an overall update of the cross section is expected to significantly reduce the risk of crashes along SR 111.

G. PROJECT ALTERNATIVES AND RECOMMENDATIONS:

In assessing suitable measures to address needs (deficiencies) of SR 111, several alternatives were considered and are briefly described below.

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

ALTERNATE A — Construct a "5-lane" urban section

ALTERNATE B — Construct a "3-lane" urban section

ALTERNATE C — Construct a "2-lane" rural section with paved shoulders

ALTERNATE D — Construct a "5-lane" section from IUSE/Klerner Lane to Chapel Lane, construct a 3-lane section from Chapel Lane to Fairview Knob Road, and a "2-lane" section from Fairview Knob Road to SR 60. Utilize new pavement and 4R standards for the entire project.

ALTERNATE E Same as Alternate D, except 2-lane section will widen and resurface where feasible and utilize 3R standards.

ALTERNATE F No Build

Alternate A proposes to construct a "5-lane" section throughout the project length. Alignment improvements, additional capacity, ISD and other intersection improvements would be constructed as a part of this project. This alternate addresses all of the deficiencies that exist along the corridor. It is the highest cost alternate. With design year AADT less than 12,000 vpd north of Chapel Lane, and a LOS of D as a 3-lane section, Alternate A (the "5-lane" section) is not warranted. Alternate A is not preferred.

Alternate B proposes to construct a "3-lane" section throughout the project length. This alternate does not adequately address the capacity and operation deficiencies that exist at the south end of this project and therefore is not preferred. See "Traffic Data and Capacity Analysis".

Alternate C proposes to construct a "2-lane" section throughout the project length. This alternate does not adequately address the capacity and operation deficiencies that exist at the south end of this project and therefore is not preferred. See "Traffic Data and Capacity Analysis".

Alternate D proposes to construct a "5-lane" section to Chapel Lane, a "3-lane" section from Chapel Lane to Fairview Knob Road, and a "2-lane" section with paved shoulders to SR 60. This alternate will be a complete pavement replacement and utilize 4R standards. This alternate addresses all of the deficiencies that exist along the corridor, and provides the right-of-way required to build a "5-lane" section north of Chapel Lane if additional capacity is ever warranted. **This Alternate will be further developed in this report.**

Alternate E is similar to Alternate D, except for utilization of 3R standards from Fairview Knob Road to SR 60 (2-lane section). **This Alternate will be further developed in this report.**

Alternate F, the No-Build option, does not address operational and geometric deficiencies that exist along the corridor; therefore it is not a preferred alternate.

All discussion from this point on refers to the Alternates D and E.

This project proposes constructing additional through travel lanes and turn lanes, making horizontal and vertical alignment improvements, and improving intersections from 60 m south of IU-SE/Klerner Lane (Sta 1+010) for a distance of 9343m to SR 60 (Sta. 10+353).

Construction of the proposed roadway should be designed as a 4R project for the 5-lane and 3-lane section, and either 4R or 3R standards for the 2-lane section, depending upon which alternate is developed.

The following table summarizes essential elements of the proposal:

Functional Classification:	Urban Minor Arterial (South of Chapel Lane) Rural Major Collector (North of Chapel Lane)
Design Class:	Multi-Lane Urban Arterial – Suburban (S. of Chapel Lane) (Table 53-6) State Rural Collector Road (N. of Fairview Knob Road) (Table 53-3 or 55-3B)

Terrain:	Rolling
Design Speed:	60 km/h (S. of St. Joseph Rd.) 80 km/h (N. of St. Joseph Rd.)
Access Control:	None
FHWA Oversight:	Not Required

TYPICAL CROSS SECTIONS

A continuous median/left-turn lane (channelized to suit adjacent access/land use, e.g., as a flush TWLTL, channelized single-direction left-turn lane, or conventional median separation) and two through travel lanes each direction, bordered by curb and gutter and borders for placement of sidewalks are being proposed from the start of the project to Chapel Lane. Length of the "5-lane" section: 3.8 km. North of Chapel Lane to Fairview Knob Road, the proposed cross section consists of a continuous median/left-turn land and one travel lane each direction bordered by curb and gutter and borders for placement of sidewalks. Length of the 3-lane section: 0.6 km. North of Fairview Knob Road to SR 60, the proposed cross section consists of undivided two travel lanes bordered by shoulders and drainage ditches. Length of the 2-lane section: 5.0 km. Details of the typical cross sections are shown on page A-38 and A-39 of the appendix.

PAVEMENT RECOMMENDATION

The INDOT preliminary pavement recommendation for Alternate D is to construct new pavement on SR 111. Due to additional travel lanes (south end), widening for shoulders (north end) and alignment improvements, the amount of new pavement required would be over 50% of the project pavement area. The complete pavement recommendation can be found on page C-4 of the Appendix. If Alternate E is developed, the pavement treatment for the 2-lane section should be to widen and resurface where horizontal and vertical geometrics allow.

HORIZONTAL AND VERTICAL ALIGNMENTS
(See Plan & Profile Sheets (A-13 to A-37)

The horizontal alignment begins at the south end of the project at IU-SE/ Klerner Lane, offset approximately 5.7 m north of the existing center line (in order to tie into the existing 5-lane section). The alignment then transitions to the existing centerline and continues on the existing centerline to approximately station 3+900. The alignment then shifts to the east, so that the proposed western right-of-way line abuts the existing railroad right-of-way. The alignment parallels the railroad to approximately station 4+150, then curves to the east on new alignment approximately 120 m east of the existing roadway. The new alignment crosses Chapel Lane and then curves back to the existing alignment. This realignment is done in order to cross the existing railroad at a better angle and outside of the superelevation transition area. The alignment returns to the center of the existing alignment at approximately station 5+000 and remains on the existing centerline to the end of the project.

The vertical alignment corrects numerous substandard vertical curves along the corridor. As shown in the profile the new vertical alignment will meet 4R standards for stopping sight distance and ISD. (Alternate E will utilize 3R standards for the 2-lane section.) (Note: The designer is instructed to make suitable refinements to these conceptual horizontal and vertical alignments.)

HYDRAULIC RECOMMENDATIONS

The INDOT's preliminary hydraulics report for this project indicates that 21 of the 25 listed culvert crossing are hydraulically inadequate. Therefore, it is proposed to replace all 25

of the culverts. The proposed culvert (small drainage structure) sizes are shown in a table in the "Existing Conditions" section of this report. Additionally the INDOT Hydraulics report for this project can be obtained from the INDOT Hydraulics Unit.

The existing bridge structure of Elk Run Branch (Str. No. 111-22-5107) is hydraulically adequate. The horizontal and vertical alignments adjacent to the structure meet geometric standards for the design speed. For Alternate D, it is proposed to widen the structure (approximately 0.84 m each side), construct new barrier rail, and construct a modified concrete deck overlay. For Alternate E, no widening will be necessary, however a modified concrete deck overlay is anticipated since the structure was built in 1965 and has no work done to it since.

Construction of an enclosed drainage system will be required with the curb and gutter section proposed from Station 1+080 to Station 5+360. The proposed storm sewer system will consist of roadway inlets, catch basins, manholes, and pipes. The storm sewer will likely be behind the curb, within the buffer area. The storm sewer will outlet at various locations to side ditches along the corridor. The plan and profile sheets, pages A-13 to A-37 of the Appendix, show possible storm sewer outlet locations.

INTERSECTION TREATMENT

IUSE/Klerner Lane (A-13)

The east approach should be widened to include an exclusive westbound left-turn auxiliary lane and a shared thru-right lane. A northbound right turn lane will be added to the south approach. Since this is an urban, residential area, low speed, and right-of-way will be required to construct the auxiliary lane, all deceleration should occur within the taper.

The signal should be replaced as a part of this project.

St Joseph Road (A-16)

This "T" approach should be widened to include an exclusibe westbound left-turn and right turn auxiliary lane (100' storage). Deceleration should occur within the taper. The existing horizontal alignment should be maintained, improving the horizontal geometrics would possibly impact a residence.

Mel Smith Road (A-18)

The east approach should be widened to include an exclusive westbound left-turn (100' storage) auxiliary lane and a shared thru-right lane. Since this is an urban, residential area and right-of-way will be required to construct the auxiliary lane, all deceleration should occur within the taper. The west approach should be widened, so that the WB through movement does not have an offset alignment.

Payne Road (A-20)

This "T" approach should be realigned to improve its intersecting angle with SR 111. This will require reconstructing the Payne Road crossing of the CSX railroad. No design exceptions will be required, since the design speed is 30 km/h. The existing pavement will be removed.

Chapel Lane (A-23)

Due to the realignment of SR 111, this intersection is being shifted approximately 70 m east. This "T" approach should be widened to include an exclusive westbound left-turn and right turn auxiliary lane (100' storage). Deceleration should occur within the taper. The existing roadway will have a cul-de-sac and extra pavement will be removed.

St Joe Road (A-30)

A northbound left turn auxiliary lane is warranted along SR 111. The southbound left turn auxiliary lane should also be constructed.

Old SR 111 (A-31, STA 7+960)

The existing 48° intersection angle should be retained. This will be a Level 3 design exception.

SR 60 (A-37)

A westbound right turn auxiliary lane should be constructed along the east approach. A northbound right turn auxiliary lane should be constructed along the south approach. A southbound left turn auxiliary lane should be constructed along the north approach. Widening along the south approach will be required to align the southbound through movement.

Other Intersections

The other intersections within the project limits are to be constructed with improved radii as Public Road Approaches. No additional auxiliary turn lanes are to be constructed. See Existing Conditions, Intersecting Roadways, for a list of the minor intersections.

SURVEY REQUIREMENTS

The mainline survey should extend from Station 0+900 to Station 10+500, a minimum of 100 meters to the north and south of the project limits shown on the aerial photographs, A-13 to A-37. The survey should also extend a minimum distance of 10 meters to the east and west past the proposed right-of-way, or farther if additional survey is necessary to encompass other information needed to complete the design. The adjacent table summarizes the survey quantities:

Survey Line	Meters of Survey
SR 111 (mainline)	9600 m
IUSE/Klerner Lane	50 m west & 200 m east
St. Joseph Road	150 m east
Durgee Road/ Mel Smith Road	150 m west & 200 m east
Payne Road	200 m west
Chapel Lane	100 m west & 150 m east
Old SR 111 (Sta. 7+965)	150 m east
SR 60	150 m north & 150 m east
Minor intersections (8 total)	50 m beyond edge of SR 111 travel lane
Total length of survey	**11,650 m**

TRAFFIC MAINTENANCE

Through traffic will be detoured. The cost of temporary widening, running the length of the job is prohibitive. The anticipated official state detour would utilize I-265, SR 311 and SR 60. The total detour length is approximately 8.1 miles, however the length of additional travel is approximately 1.8 miles. Assuming a 50 percent split of local and state traffic, road closure for 360 days and $0.25 per mile, the estimated cost of a state detour is approximately

$1,000,000. Traffic maintenance will be refined during the design phase, to ensure access to all properties during construction.

RIGHT OF WAY SUMMARY

The existing right-of-way along SR 111 is 12.2 m each side of centerline. The widening of SR 111 will require continuous right-of-way acquisition. For the curb and gutter sections, consideration should be given to include the side slope grading in temporary right-of-way. For the purposes of this report (i.e. displays, quantities and costs) the grading for side slopes is included in the permanent right-of-way. The proposed right-of-way will vary from a minimum of 15 m to a maximum of 35 m on each side. The following table summarizes the amount and type of right-of-way required. Temporary right-of-way will be required for construction of some driveways. Exact location of temporary right-of-way requirements will be determined during the design phase.

Land Use (Approximate No. Of Parcels)	**Amount of Permanent R/W Required (Alternate D)**	**Amount of Permanent R/W Required (Alternate E)**
Residential (164)	11.10 hectares	9.80 hectares
Commercial (12)	0.69 hectare	0.68 hectare
Agricultural/Wooded (30)	2.23 hectares	2.03 hectares
Church/School/Cemetery (5)	0.59 hectare	0.59 hectare
Total (211)	14.61 hectares	13.10 hectares

Up to seven relocations are anticipated as a part of this project. Six are residential, and one is a vacated commercial structure. Relocations can be seen on the project aerial photographs, sheets A-13 and A-37 of the Appendix.

ESTIMATED COSTS (Year 2001)

Item Description	**Alternate D**	**Alternate E**
Road Reconstruction:	$12,240,000	$10,990,000
RR Crossings	$200,000	$200,000
Storm Sewer:	$1,200,000	$1,200,000
Signal Work	$70,000	$70,000
Bridge Rehabilitation	$200,000	$150,000
Traffic Maintenance:	$400,000	$400,000
CONSTRUCTION TOTAL	$14,310,000	$13,010,000
Right-of-Way Services	$840,000	$840,000
Right-of-Way	$1,100,000	$1,000,000
Right-of-Way Total	$1,940,000	$1,840,000
Engineering (Includes Survey):	$860,000	$840,000
PROJECT TOTAL	$17,110,000	$15,690,000

It is recommended to proceed with development of Alternate E. Both Alternates D and E satisfy the operational and geometric concerns identified in this report, however Alternate E does so at a lower construction cost and with less impact to the surrounding properties.

H. ENVIRONMENTAL ISSUES:

The primary environmental considerations on this project involve the additional right-of-way requirement and relocations. The INDOT Environmental Assessment Section is preparing the project's environmental document. The designer shall coordinate with the environmental scientist in the Environmental Assessment Section as soon as possible after determining precise impacts to any sensitive sites. It could become necessary to shift slightly the position of SR 111 horizontally or to construct modest retaining structures to avoid impact to significant sites.

I. Related Projects, Consistency:

The subject project is scheduled as ready for letting (RFL) in January 2005, though the scale of work may delay the schedule. According to the *2000 Directory of INDOT Highway Projects* and the INDOT Project Database (as of 08/29/01), there are three future projects scheduled which may affect this subject project. The projects are as follows:

Des. Number	Project Description	Comments
9902900	Added Travel Lanes, SR 311 from SR 60 to I-65, Clark County	RFL date: 12/2001. Project is on the proposed detour route. Coordinate to ensure traffic maintenance and project compatibility.
9611720	Intersection Improvements, SR 311 at various locations from I-265 to I-65, Floyd County	RFL date: 5/03. Project is on the proposed detour route. Coordinate to ensure traffic maintenance and project compatibility.
0100712	Intersection Improvement, SR 60 at E. Jct of St. Joe Road, Clark County	RFL date: 1/07. Project is on the proposed detour route. Coordinate to ensure traffic maintenance and project compatibility.
9902920	Added Travel Lanes, SR 111 from Beechwood Ave to Mt. Tabor Road (4.0 km to 0.5 km S of I-265), Clark County	RFL date: 10/2005. Project is south of the proposed project. No compatibility conflicts are anticipated.

The designer shall check for any new projects posted after this date prior to final plan submittal for compatibility with the proposed work.

J. Coordination, Meetings, Concurrence:

This project has involved coordination with the following individuals:

David Dye	INDOT, Seymour District, Program Development Engineer
Henry Brown	INDOT, Central Office, Design
John Rosenbarger	New Albany, Chief Planner

All of these individuals attended the field check meeting held on January 04, 2001 and provided their input into this project. The major issues relative to the field investigation are

detailed in the Field Check Minutes, located in Appendix C-1 through C-3. Photographs of the project site are located in Appendix A-3 through A-12.

Draft copies were sent to David Dye and Henry Brown for their review and comments.

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

Coordination with Harold Tall of KIPDA and Frank Baukert of INDOT Planning, regarding inclusion of added capacity on this section of SR 111 in the long rang plan has occurred.

Coordination will be required with the CSX railroad during the project development.

K. SCOPE OF WORK CHANGES

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.

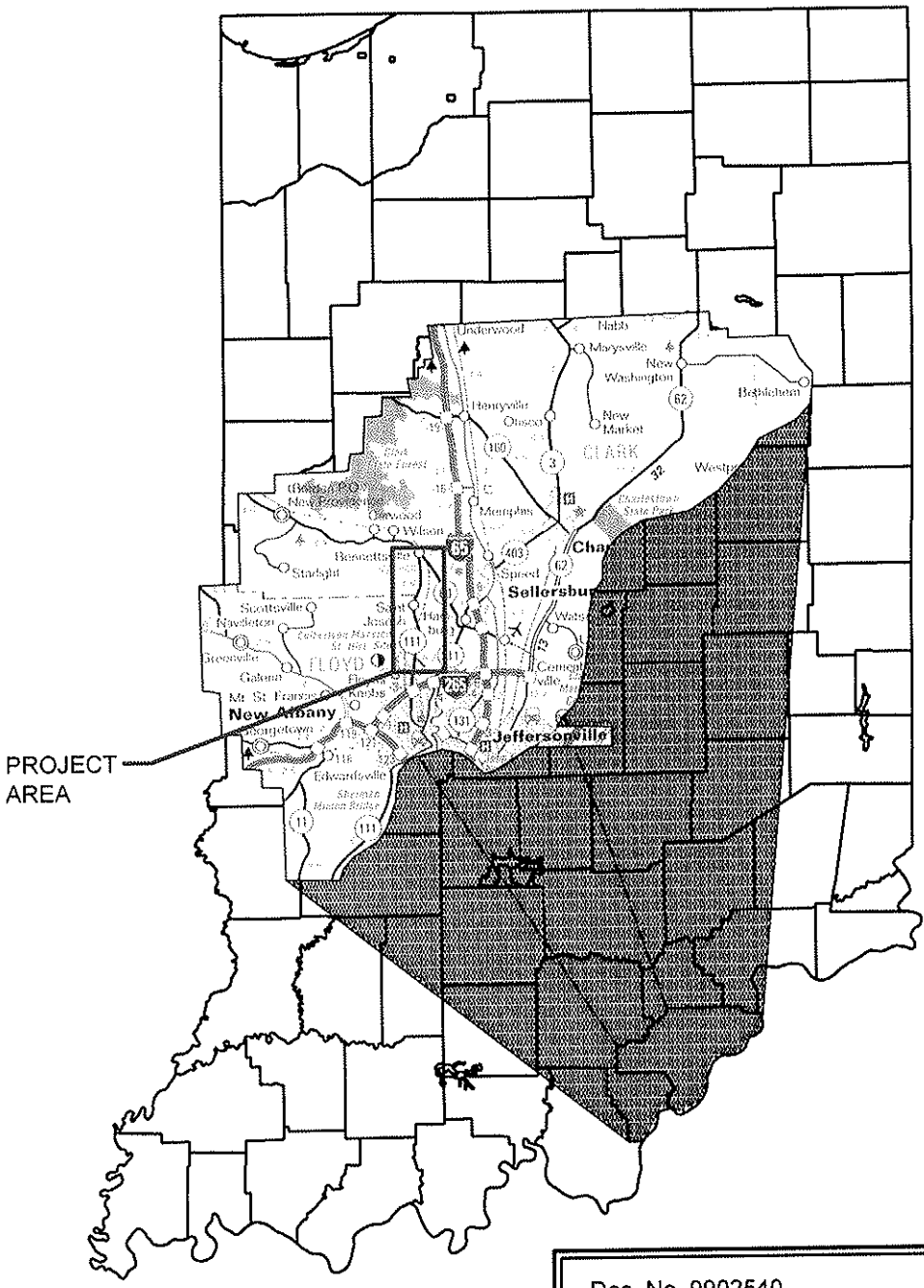
CONCUR: _____ **DATE:** 12-20-01

Brad L. Steckler, Manager
Engineering Assessment Section

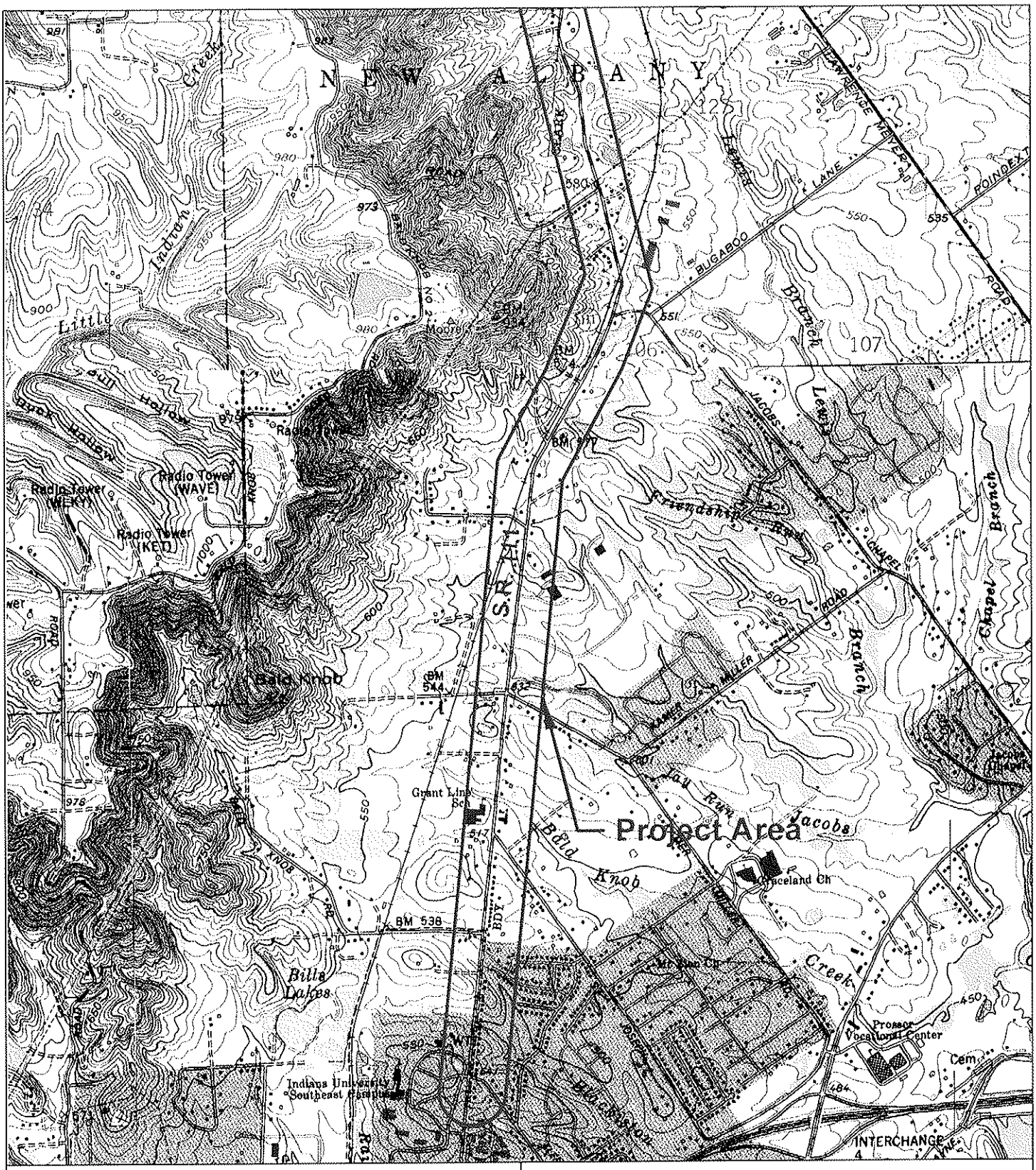
cc:

Hollie Pratt (3), INDOT Project Coordinator
Gary Mroczka (2), INDOT, Design, Specialty Group
Matt Thomas, INDOT, Design, Utilities Engineer
William Schmidt, INDOT Design-Location Survey Section
Jim Juricic, INDOT Environmental Assessment Section
Athar Khan, INDOT Materials & Test, Design
Roberta Johnson, INDOT, Land Acquisition
Jim Ude, INDOT, Seymour, Development
Jack Scriber, KIPDA (MPO)
B. Steckler/T. Bansi/Engineering Assessment Section File
USI File 2000-911

APPENDIX



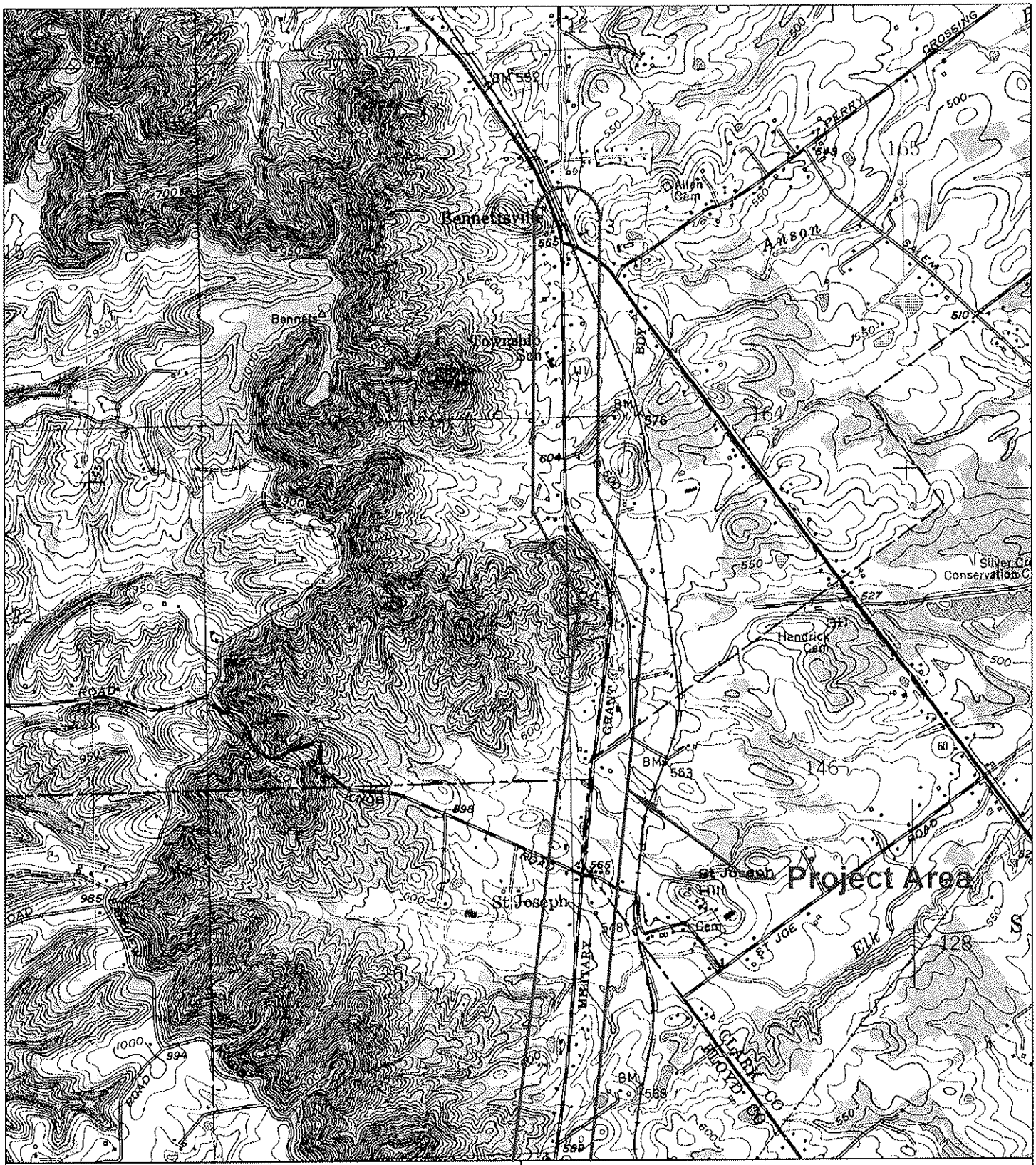
Des. No. 9902540
Project No. STP-5322( )
SR 111 from IU SE/Klerner Lane
to Jct. w/ SR 60
Floyd & Clark Counties



New Albany & Speed,
Indiana Quadrangle
Scale = 1:24,000

Des. No. 9902540
Project No. STP- 5322 ( )
S.R. 111 From I.U. Southeast/
Klerner Lane to Jct. with S.R. 60
Road Reconstruction
Floyd and Clark Counties

A-2a

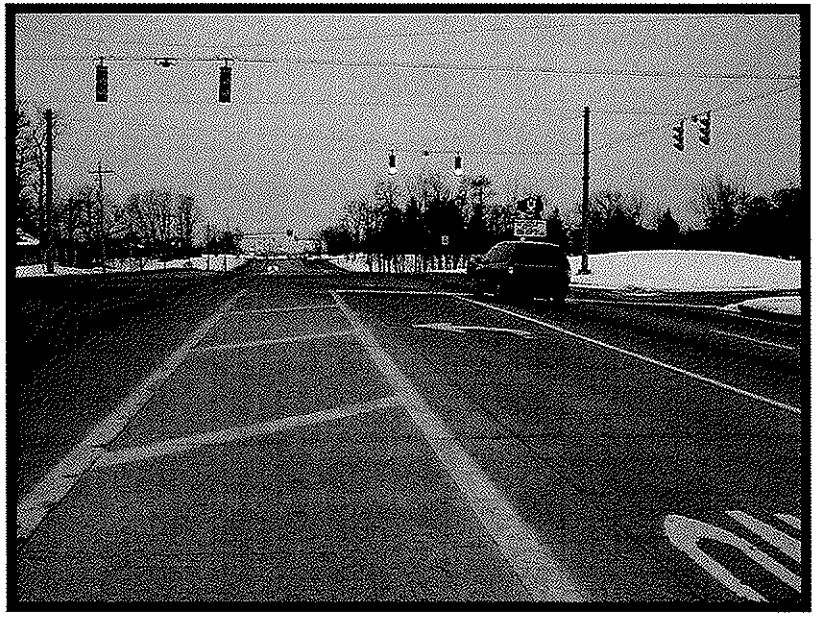


New Albany & Speed,
Indiana Quadrangle
Scale = 1:24,000

Des. No. 9902540
Project No. STP- 5322 ( )
S.R. 111 From I.U. Southeast/
Klerner Lane to Jct. with S.R. 60
Road Reconstruction
Floyd and Clark Counties

A-2b

SR 111 FACING NORTH (STA. 1+069)

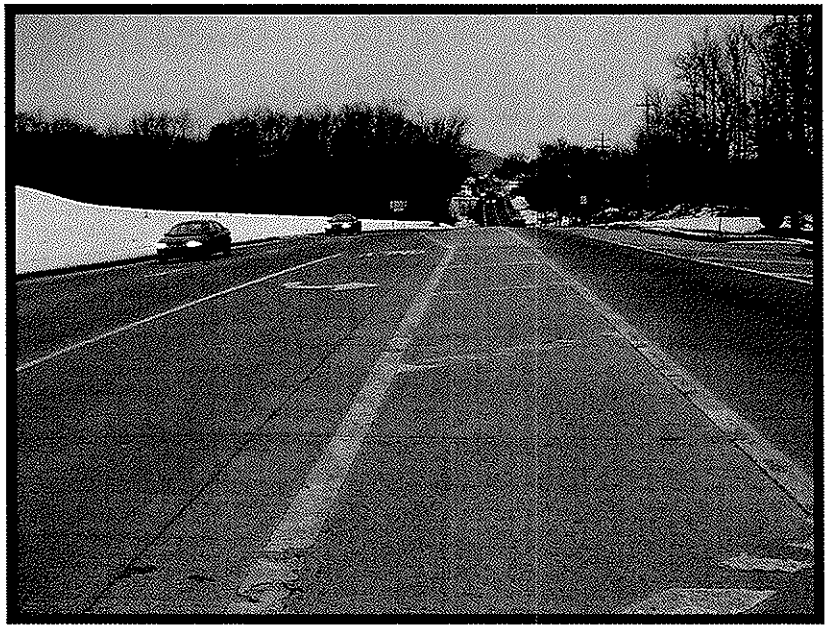


SR 111 FACING SOUTH (STA. 1+140)

FACING EAST ALONG IU-SE

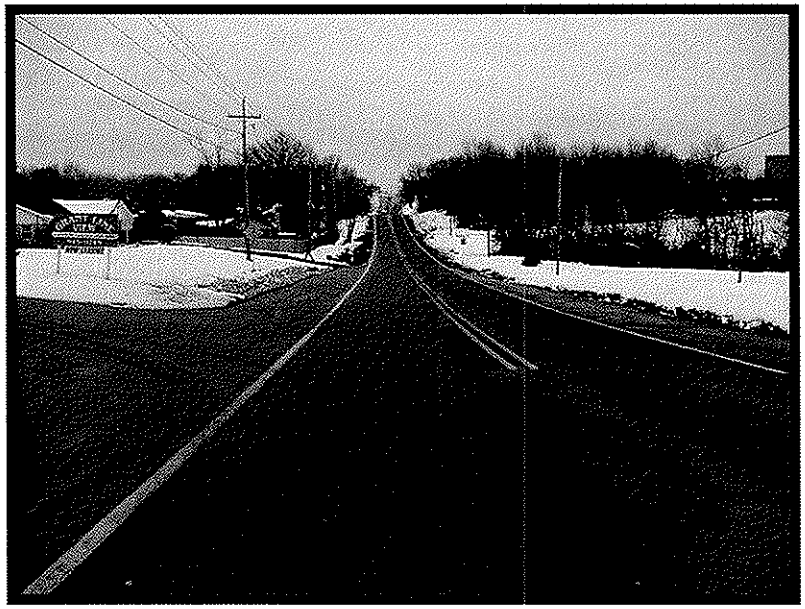
FACING WEST ALONG KLERNER DRIVE

SR 111 Road Rehabilitation



SR 111 NORTHBOUND (STA. 1+200)

SR 111 SOUTHBOUND (STA. 1+560)

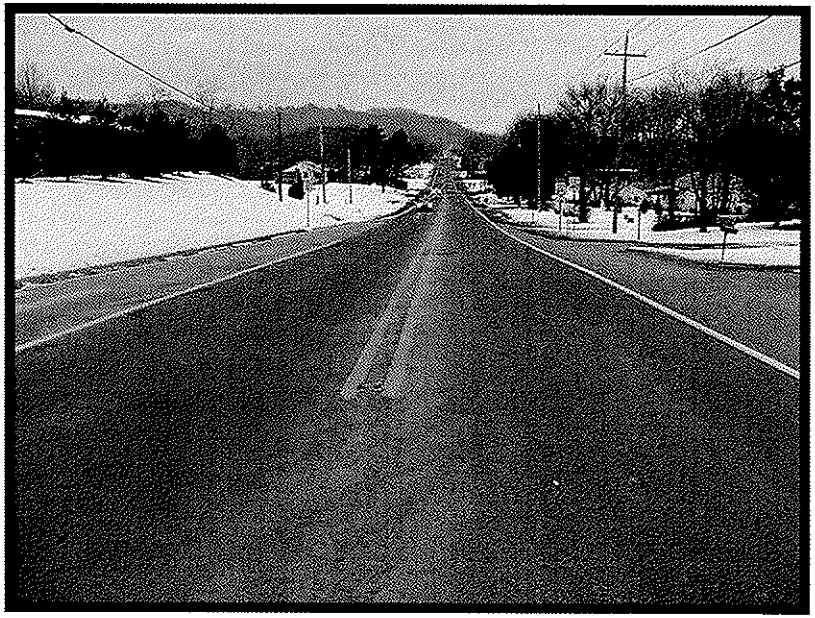


SR 111 SOUTHBOUND (STA. 1+740)

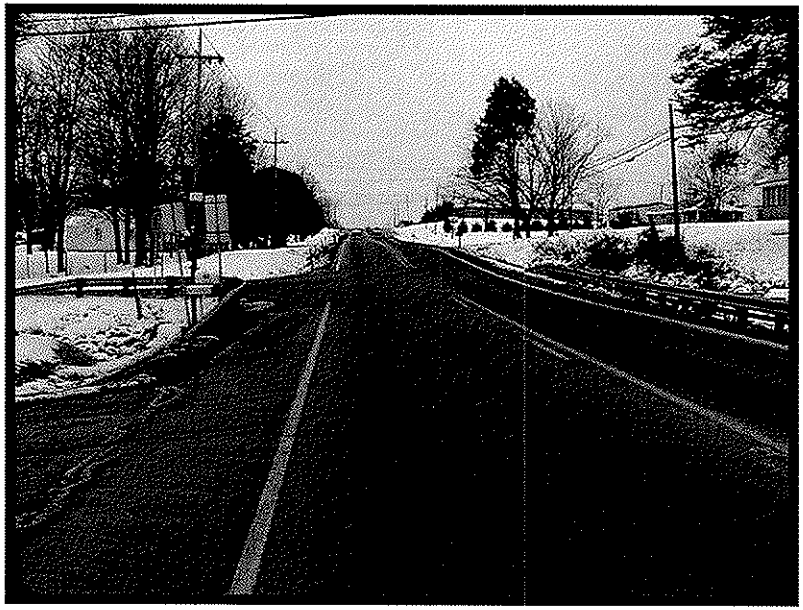
SR 111 NORTHBOUND (STA. 1+740)

SR 111 Road Rehabilitation

FACING WEST ALONG BALD KNOB RD. (STA. 1+740)



FACING NORTH ALONG SR 111 (STA. 1+930)



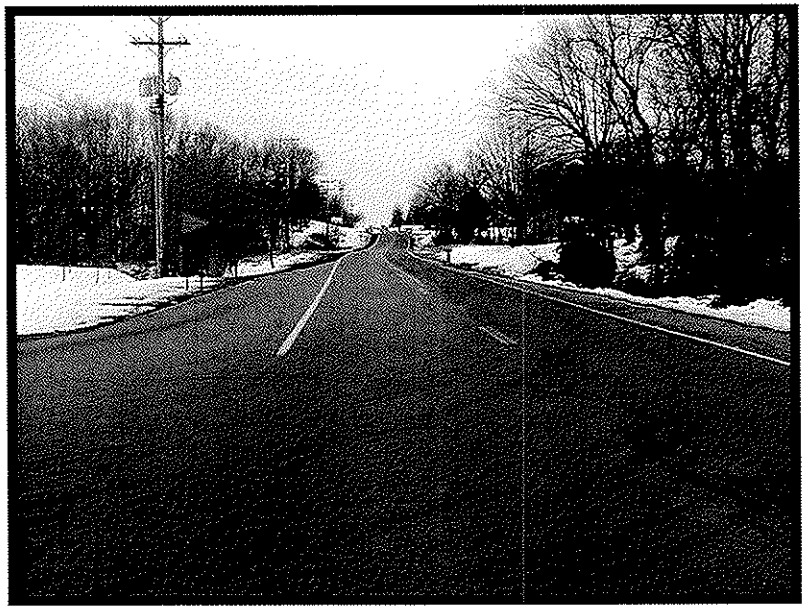
FACING SOUTH ALONG SR 111 (STA. 2+200)

SR 111 FACING NORTH (STA. 2+240)

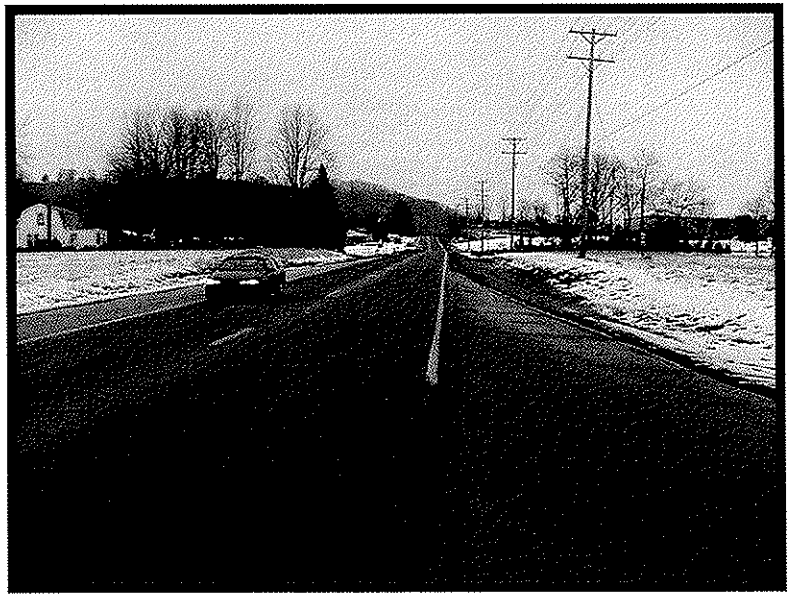
SR 111 Road Rehabilitation

SR 111 OVER BALD KNOB RUN (STA. 2+345)

FACING WEST AT MEL SMITH/DURGEE RD. (STA. 2+815)

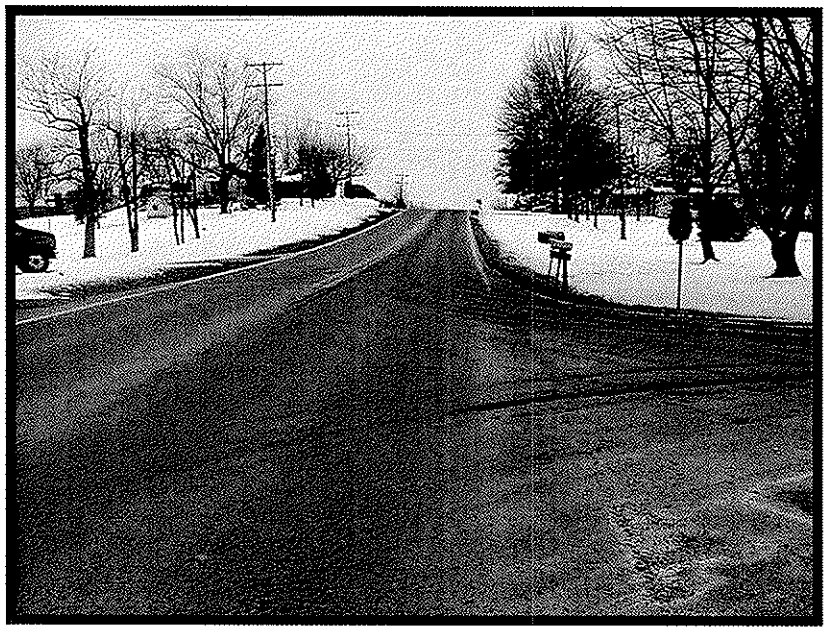


SR 111 SOUTHBOUND (STA. 3+055)

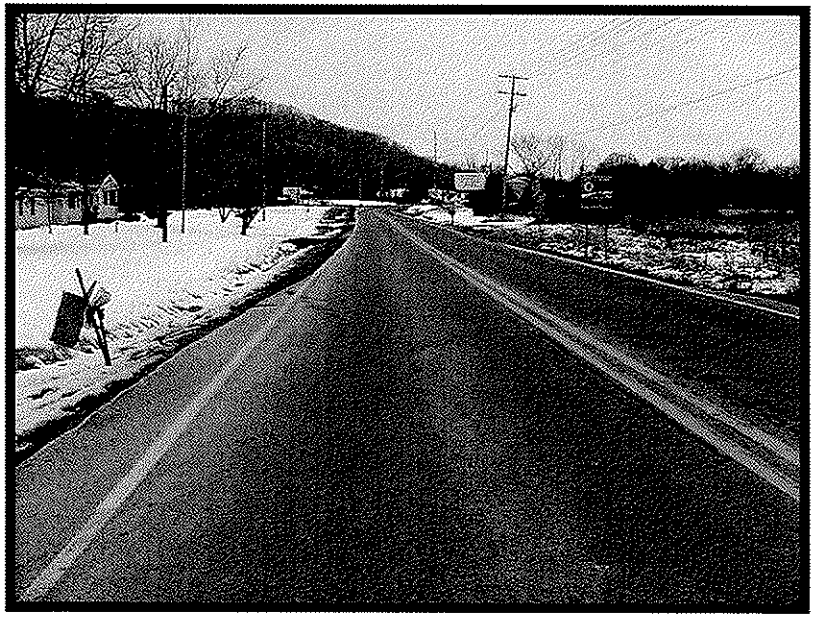


SR 111 NORTHBOUND (STA. 3+055)

SR 111 Road Rehabilitation



SR 111 SOUTHBOUND (STA. 3+570)

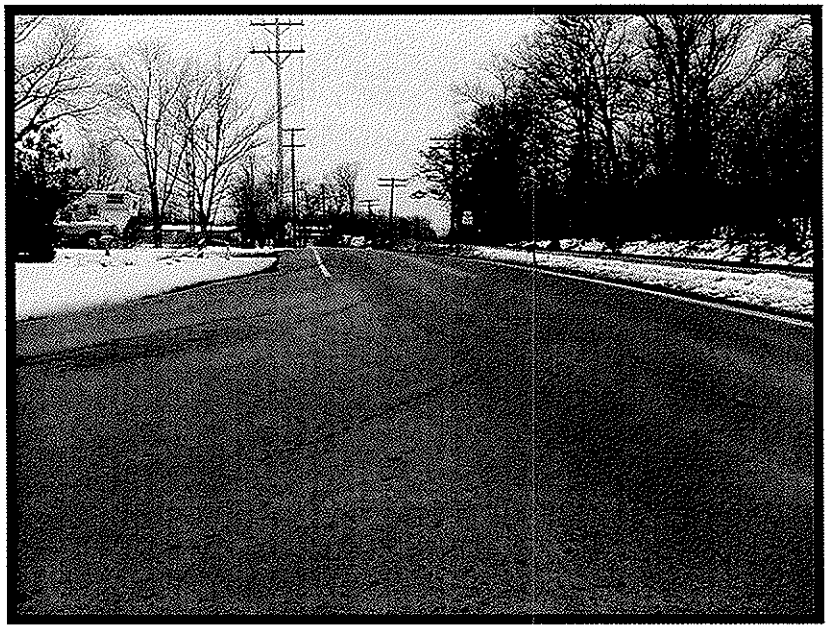


SR 111 NORTHBOUND (STA. 3+640)

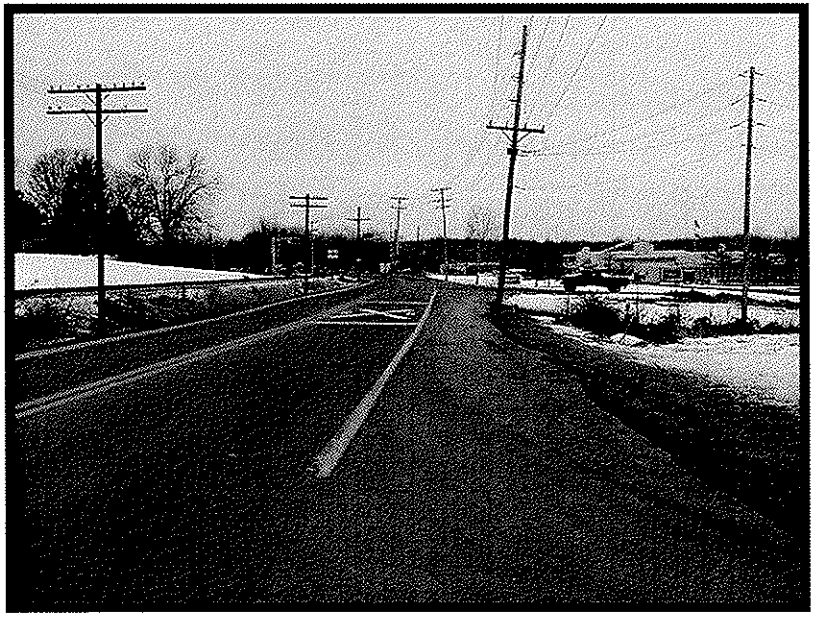
SR 111 SOUTHBOUND (STA. 4+280)

SR 111 NORTHBOUND (STA. 4+280)

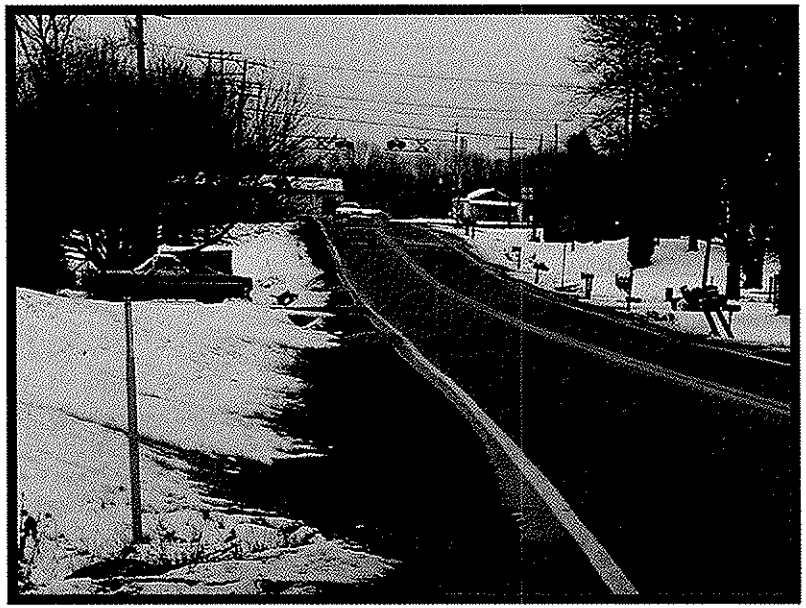
SR 111 Road Rehabilitation



SR 111 SOUTHBOUND (STA. 4+750)



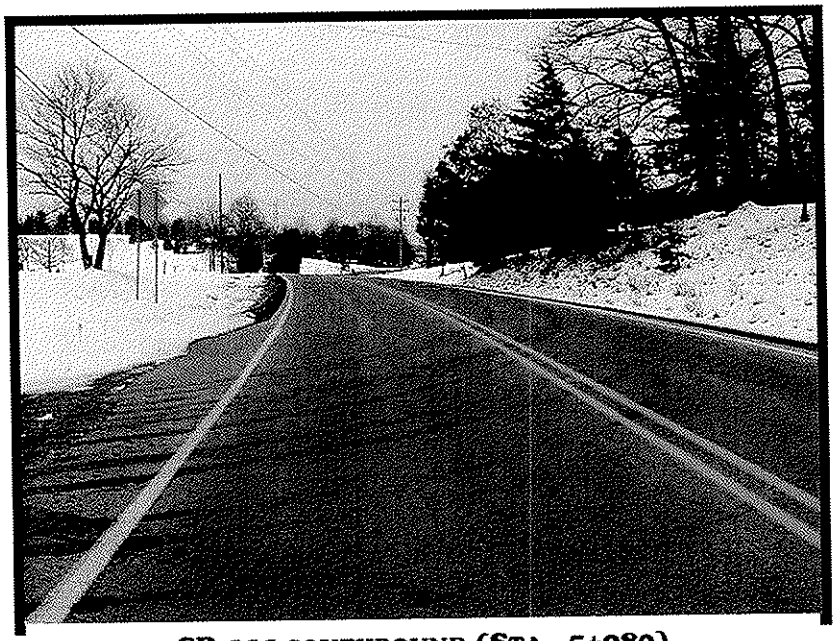
SR 111 NORTHBOUND (STA. 4+880)



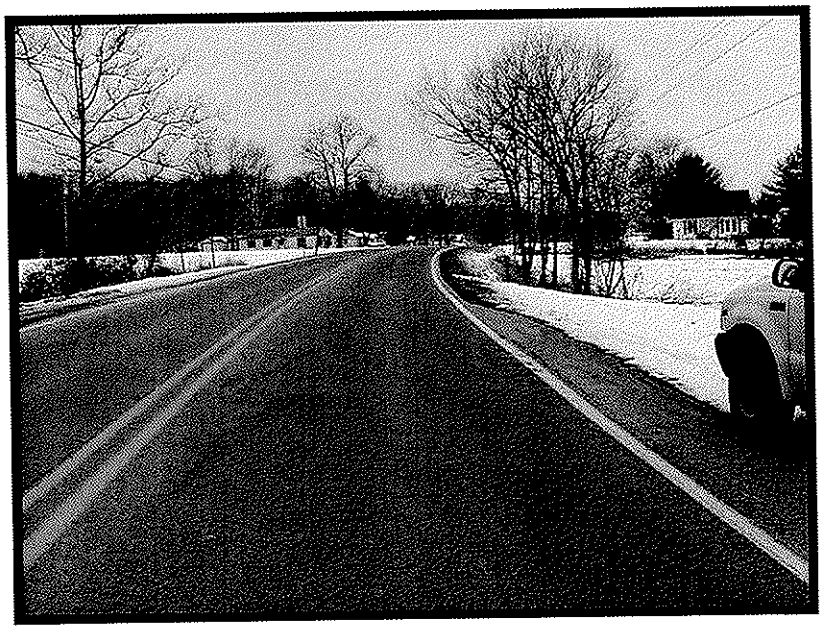
SR 111 SOUTHBOUND (STA. 5+050)

SR 111 NORTHBOUND (STA. 5+500)

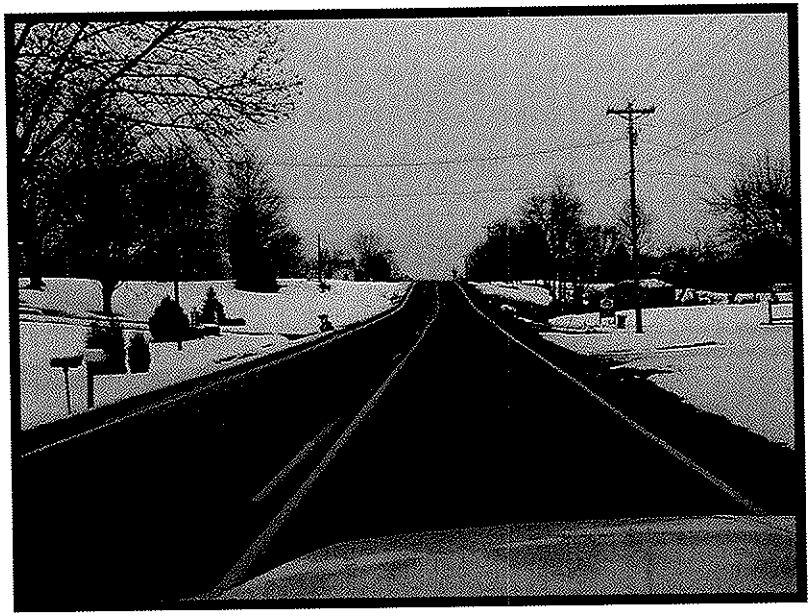
SR 111 Road Rehabilitation



SR 111 SOUTHBOUND (STA. 5+980)



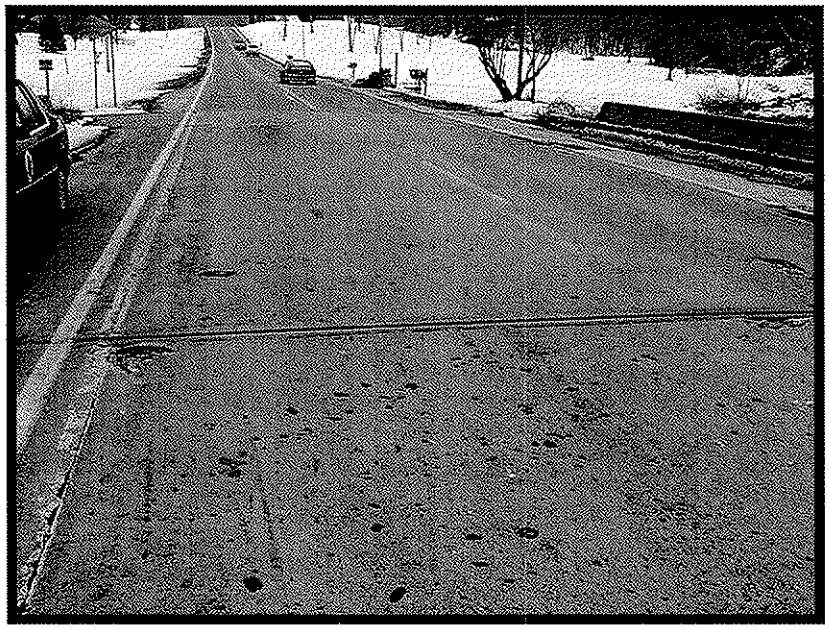
SR 111 NORTHBOUND (STA. 6+000)



SR 111 NORTHBOUND (STA. 6+350)

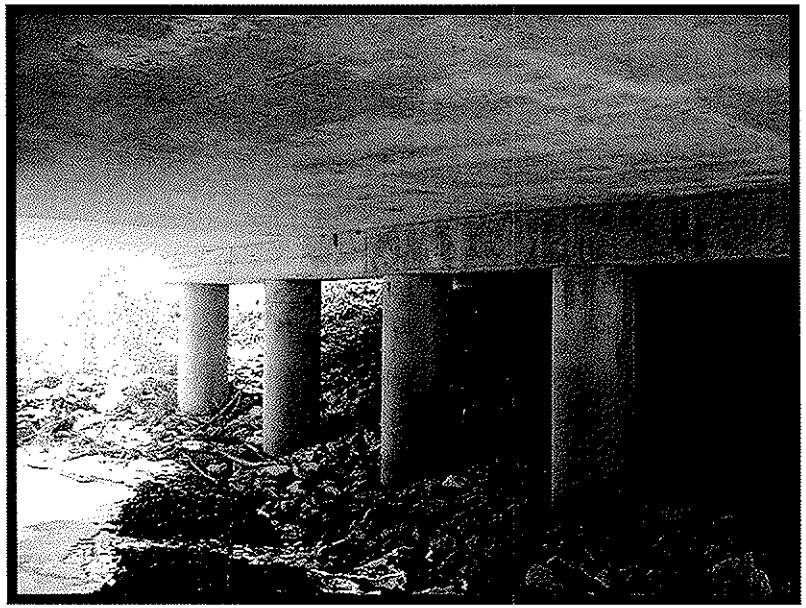
SR 111 SOUTHBOUND (STA. 6+800)

SR 111 Road Rehabilitation

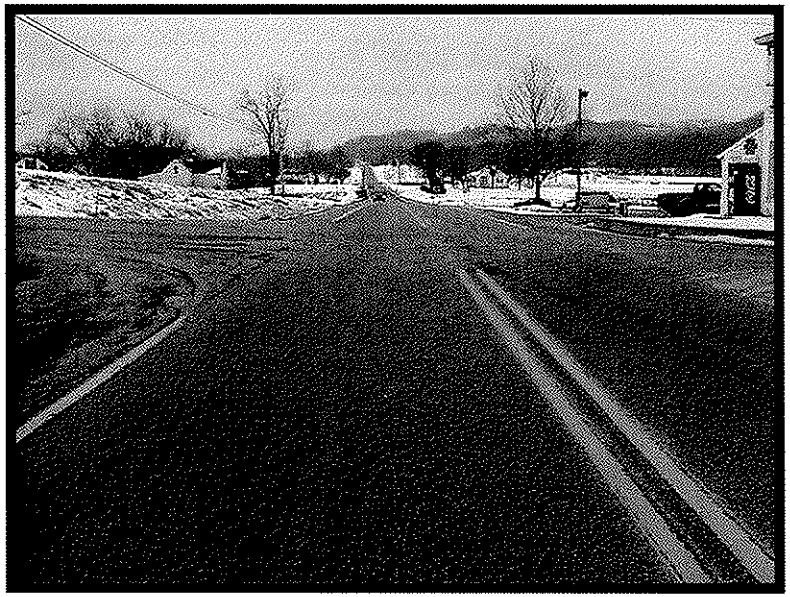


SR 111 SOUTHBOUND (STA. 6+945)

SR 111 NORTHBOUND (STA. 6+945)

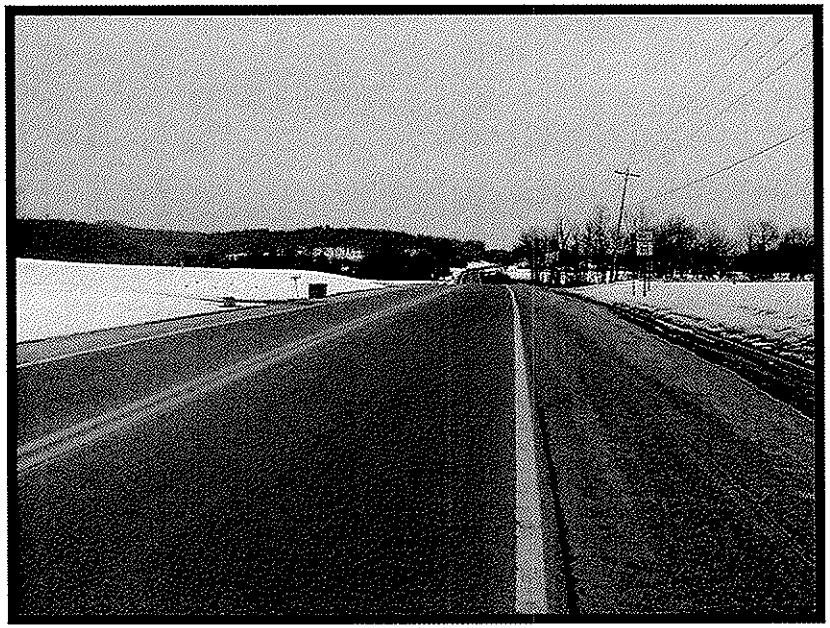


SR 111 BRIDGE OVER ELK RUN BRANCH

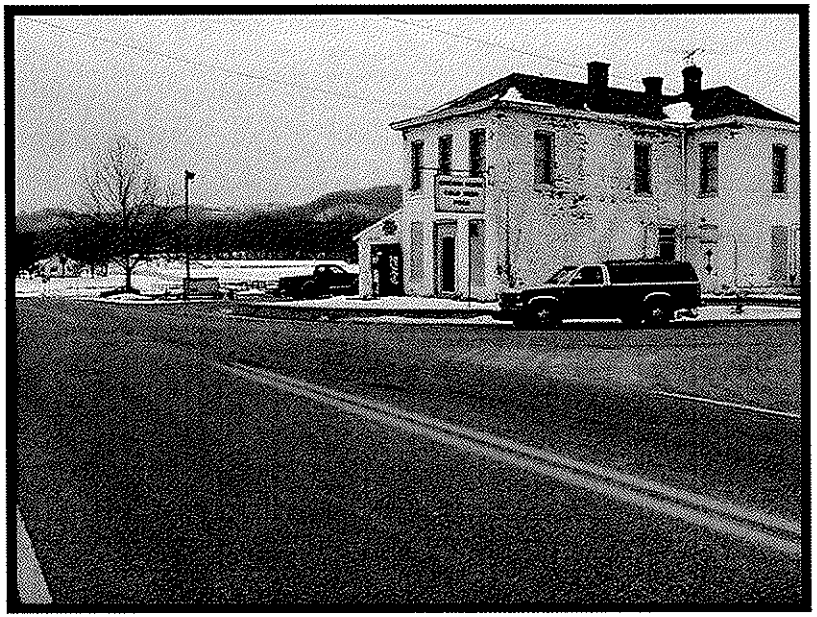


SR 111 SOUTHBOUND (STA. 7+440)

SR 111 Road Rehabilitation

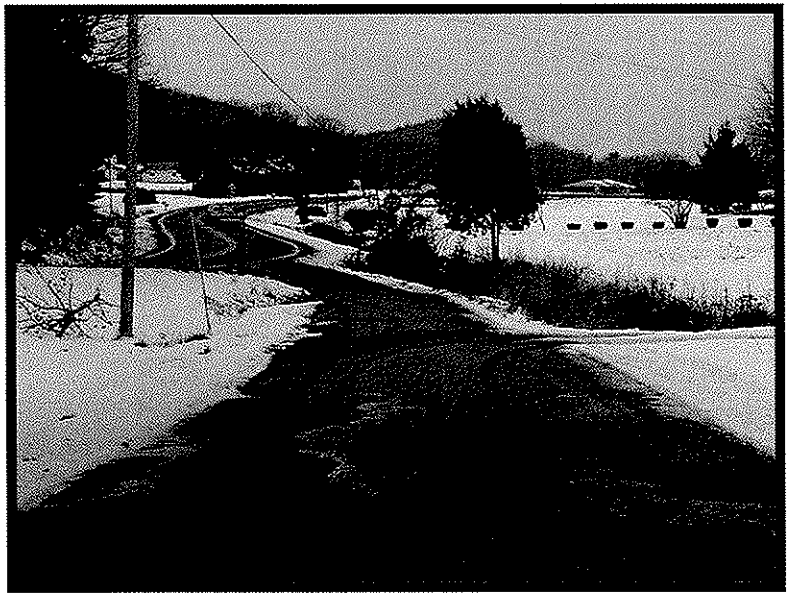


SR 111 NORTHBOUND (STA. 7+440)



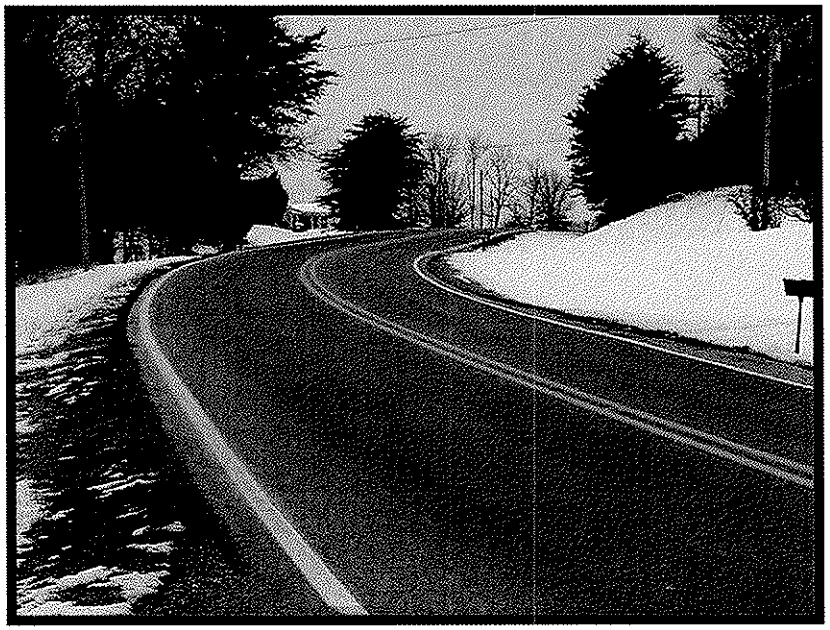
SW QUADRANT OF SR 111 AND ST. JOE RD. (STA. 7+440)

SR 111 NORTHBOUND (STA. 8+500)



SR 111 NORTHBOUND FROM OLD SR 111 (STA. 8+820)

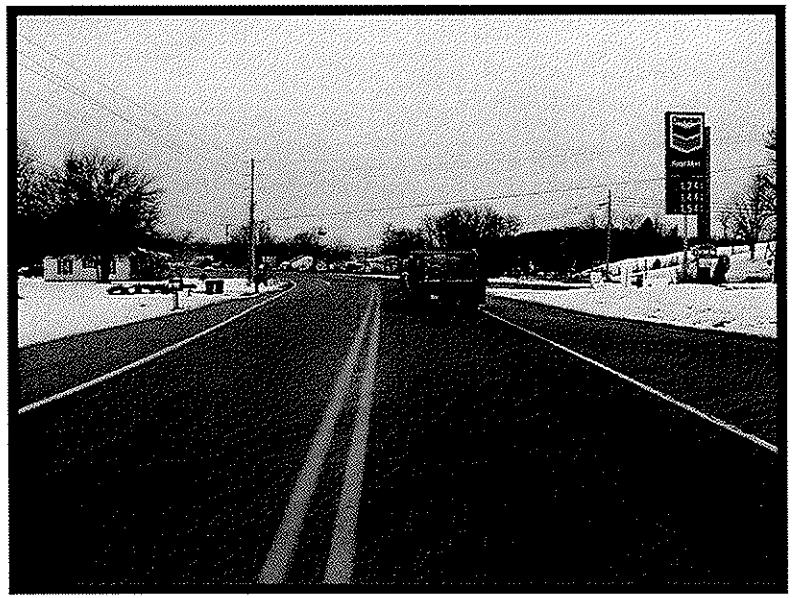
SR 111 Road Rehabilitation



SR 111 SOUTHBOUND (STA. 8+820)

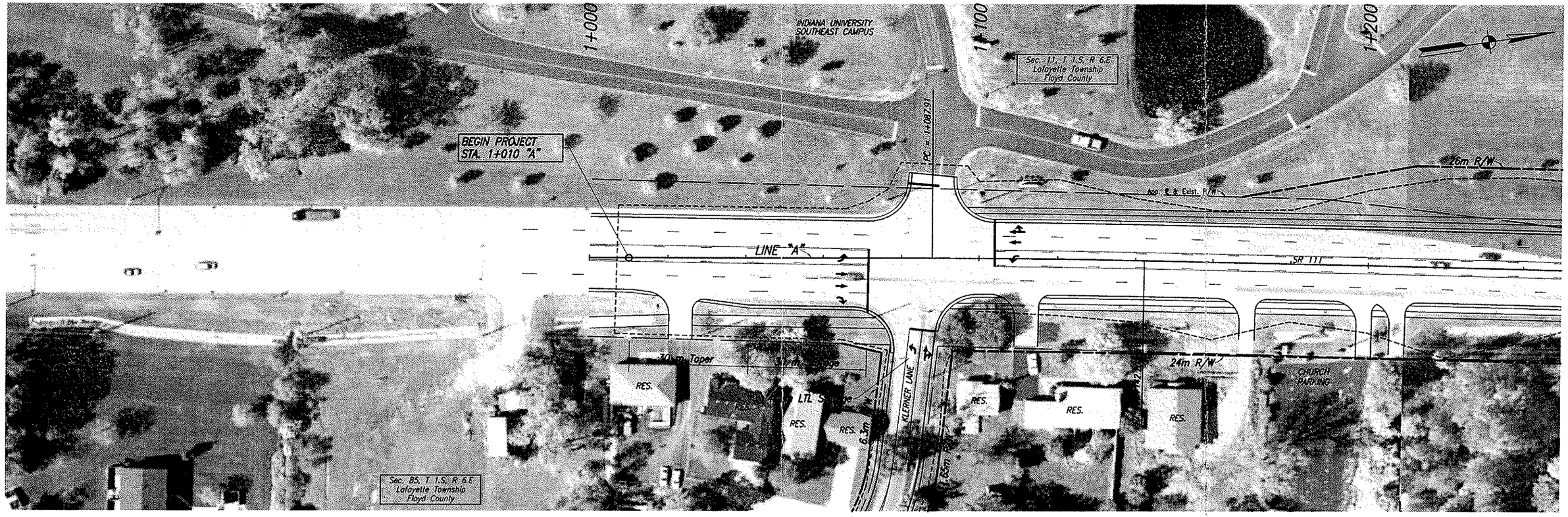
SR 111 NORTHBOUND (STA. 9+200)

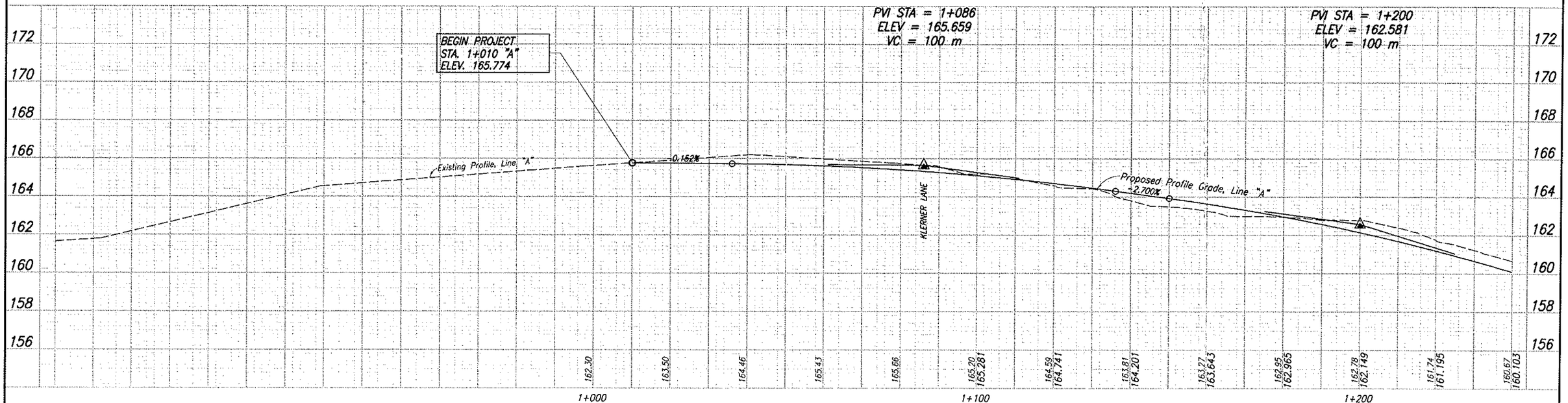
SR 111 NORTHBOUND (STA. 9+550)



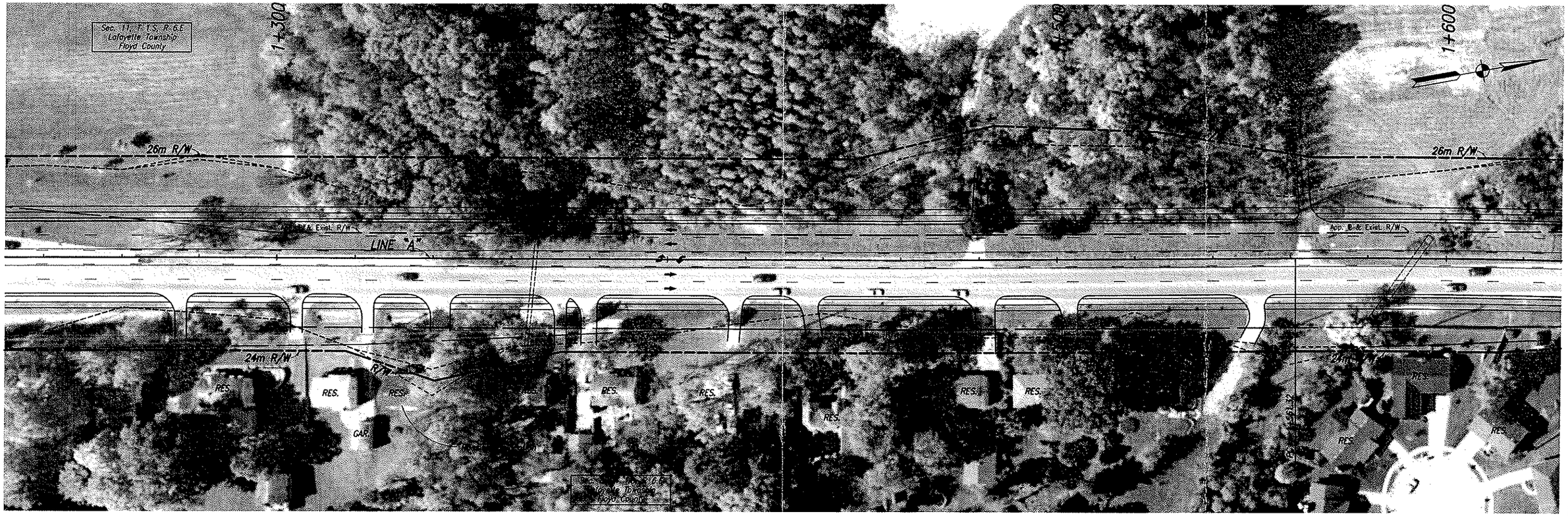
SR 111 NORTHBOUND (STA. 10+200)

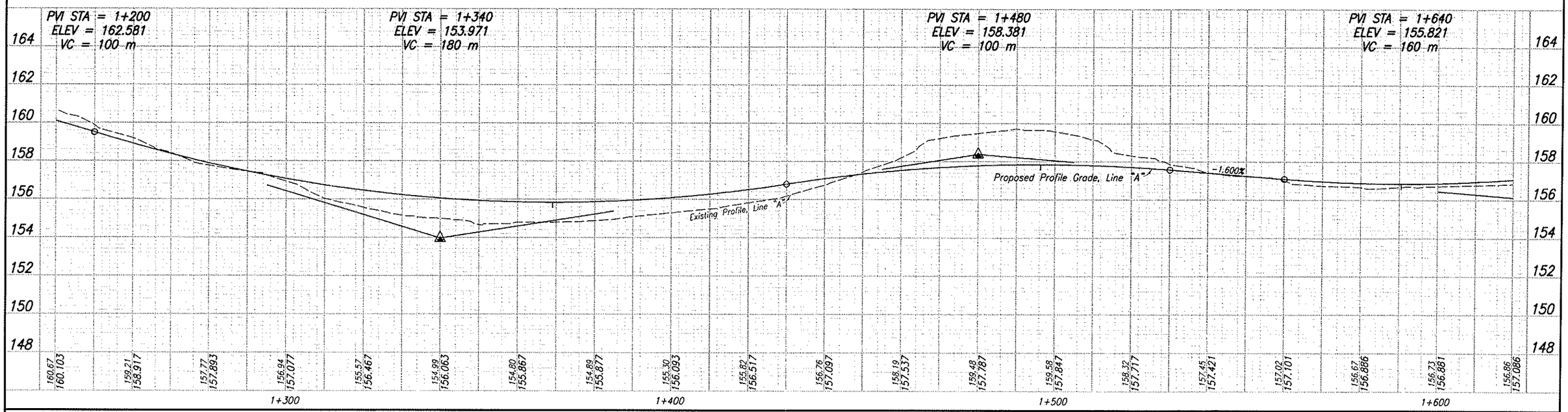
SR 111 Road Rehabilitation





						CONCEPTUAL DRAWING	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1:1000 / BRIDGE FILE
						DESIGNED: GRW / DRAWN: CC	S.R. 111/FLOYD & CLARK COUNTIES BEGIN TO 1+240 "A"	VERTICAL SCALE 1:200 / DESIGNATION 9902540
						CHECKED: DPF / CHECKED: GRW		SURVEY BOOK / SHEETS A-13 of
								CONTRACT / PROJECT STP-5322( )





CONCEPTUAL DRAWING

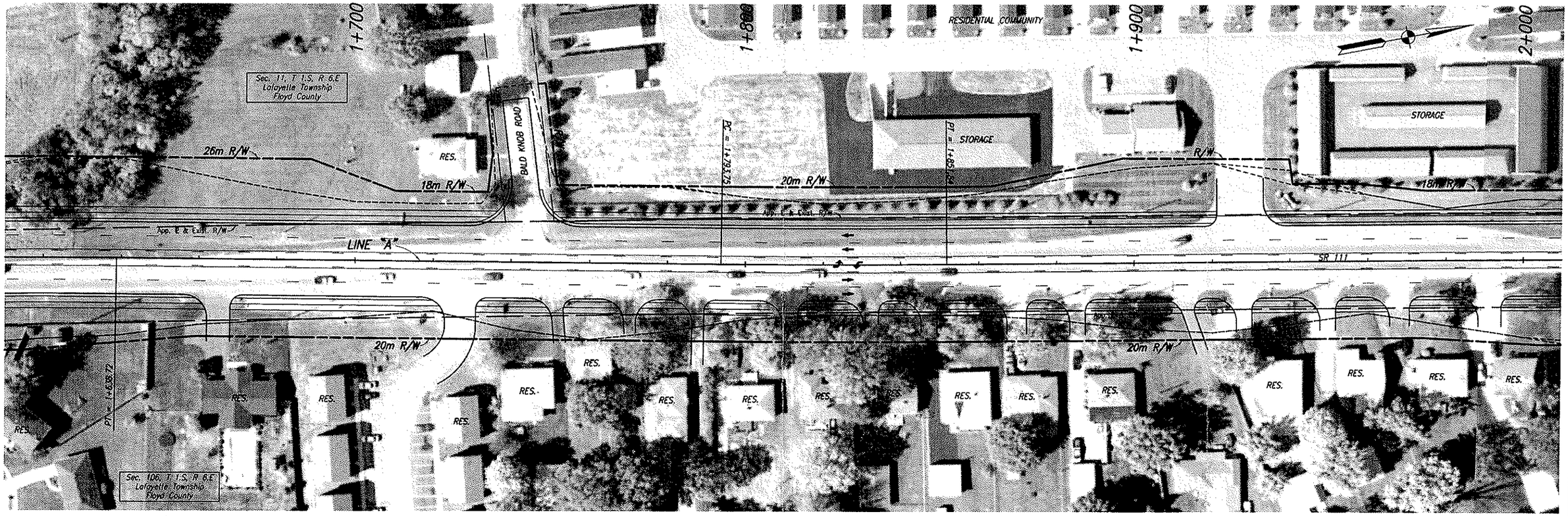
DESIGNED: GRW | DRAWN: CC

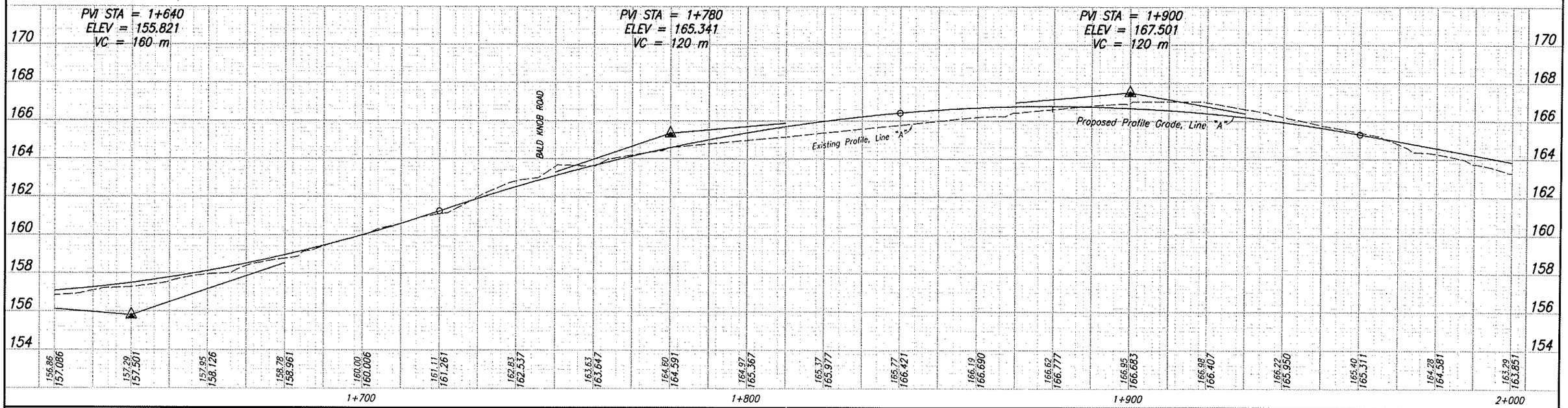
CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 1+240 TO 1+620 "A"

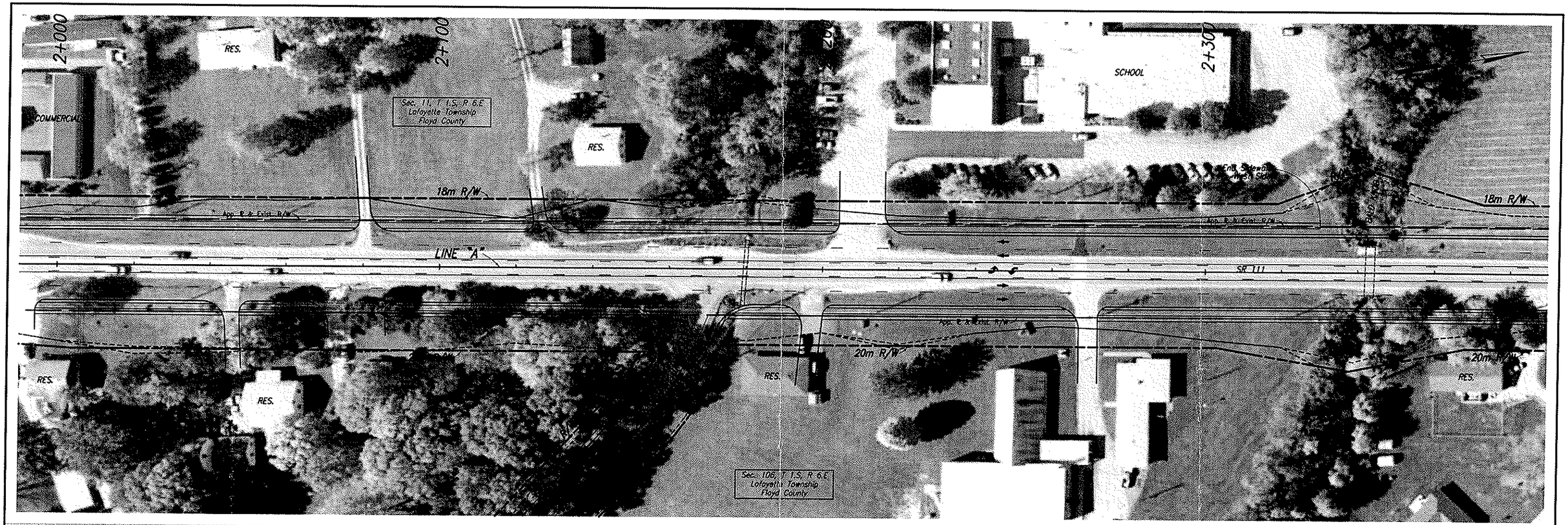
HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-14 of
CONTRACT	PROJECT
	STP-5322( )

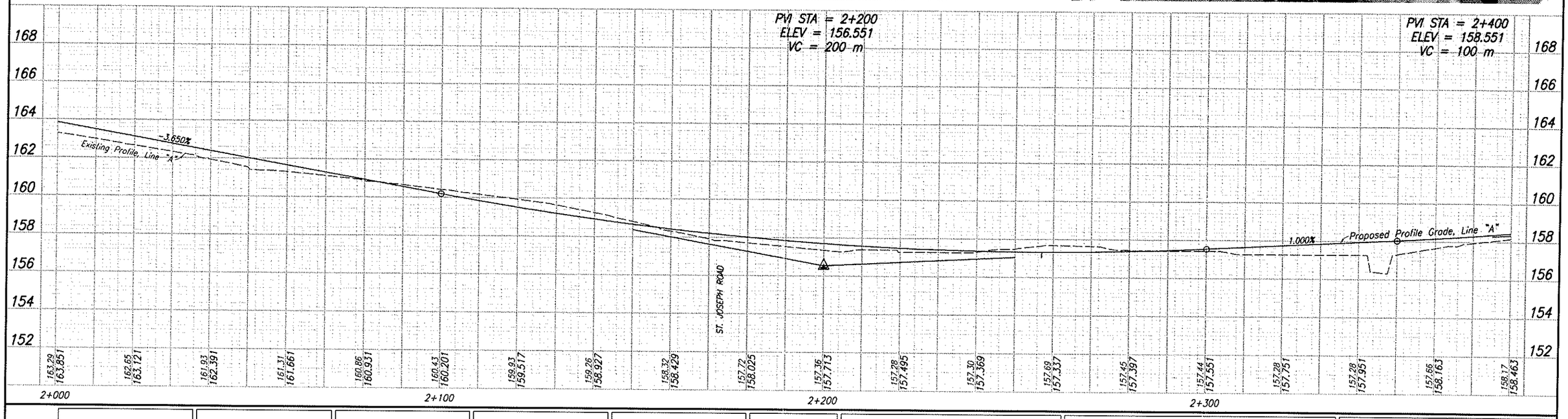




						CONCEPTUAL DRAWING	INDIANA DEPARTMENT OF TRANSPORTATION
						DESIGNED: GRW / DRAWN: CC	S.R. 111/FLOYD & CLARK COUNTIES
						CHECKED: DPF / CHECKED: GRW	STA. 1+620 TO 2+000 "A"

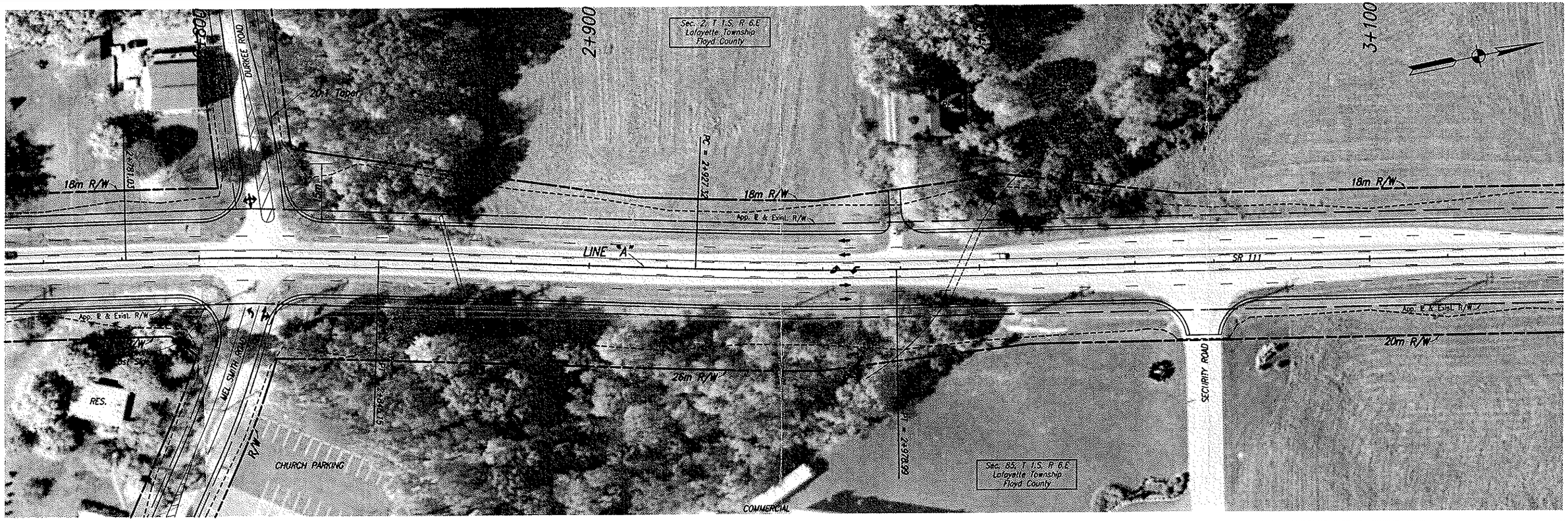
HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-15 of
CONTRACT	PROJECT
	STP-5322( )

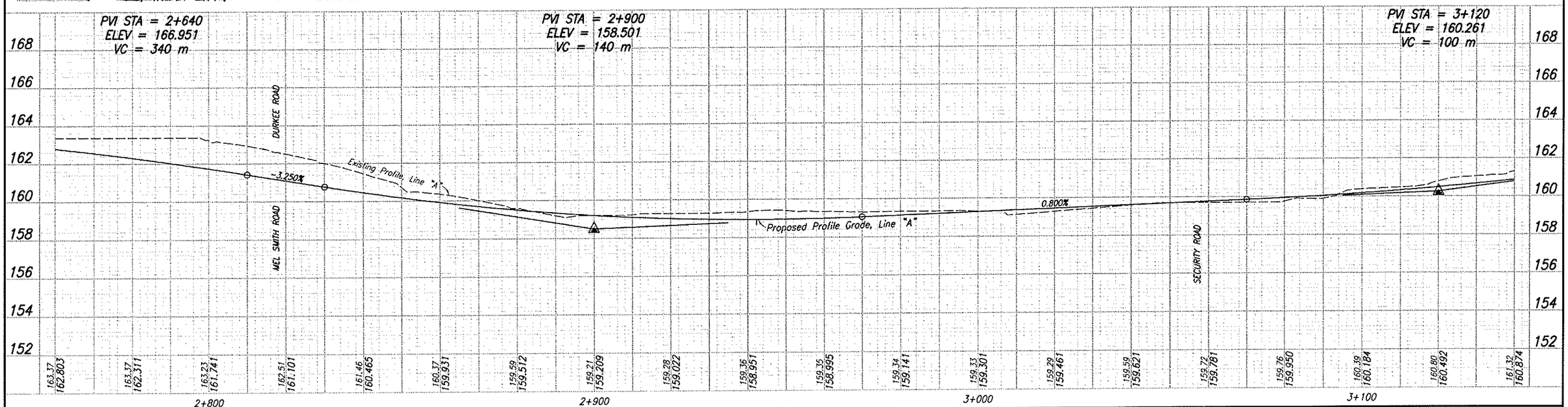




						CONCEPTUAL DRAWING	INDIANA DEPARTMENT OF TRANSPORTATION
						DESIGNED: GRW / DRAWN: CC	S.R. 111/FLOYD & CLARK COUNTIES STA. 2+000 TO 2+380 "A"
						CHECKED: DPF / CHECKED: GRW	

HORIZONTAL SCALE 1:1000	BRIDGE FILE
VERTICAL SCALE 1:200	DESIGNATION 9902540
SURVEY BOOK	SHEETS A-16 of
CONTRACT	PROJECT STP-5322( )





CONCEPTUAL DRAWING

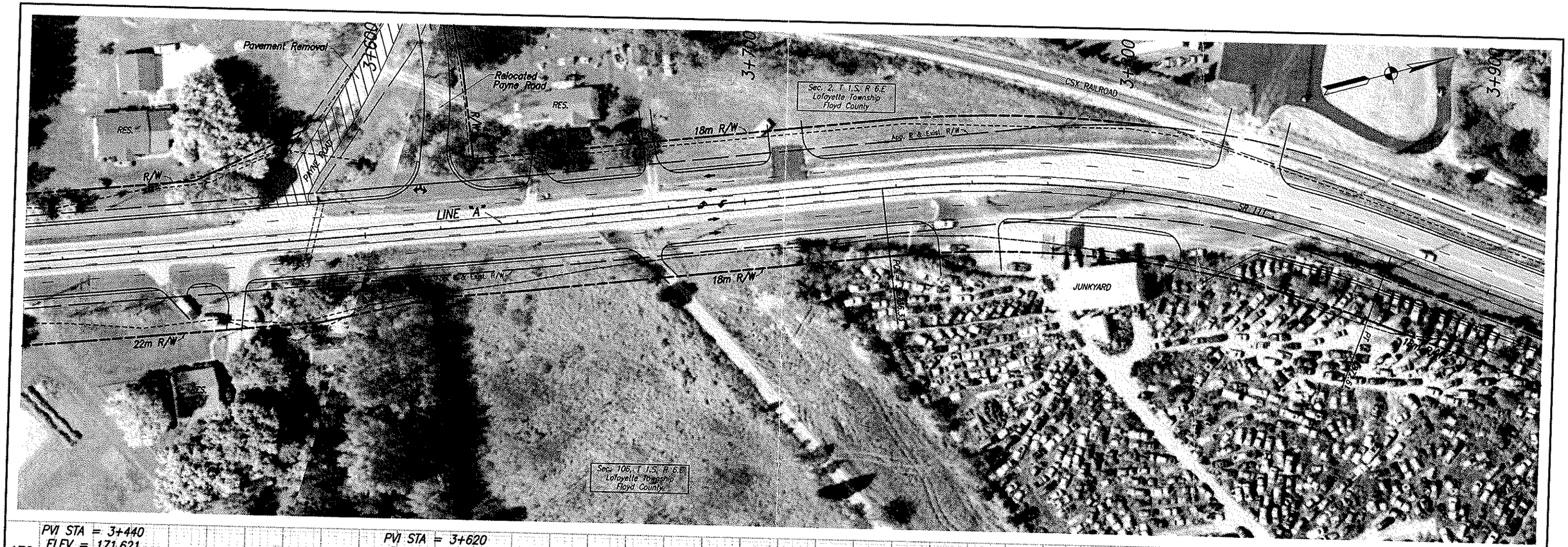
DESIGNED: GRW | DRAWN: CC

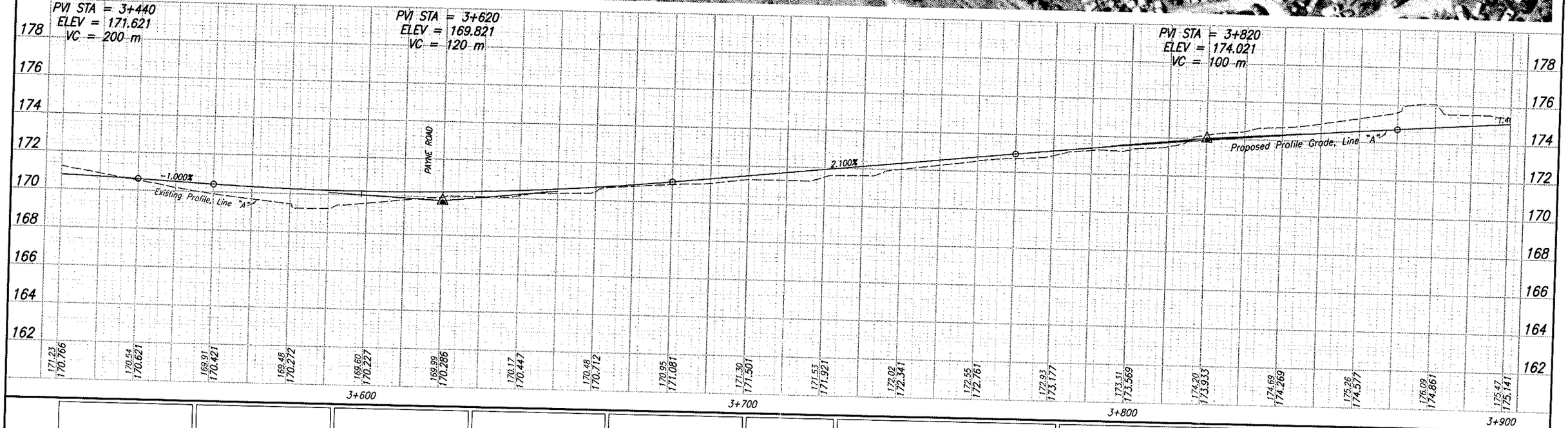
CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 2+760 TO 3+140 "A"

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-18 of
CONTRACT	PROJECT
	STP-5322( )





CONCEPTUAL DRAWING

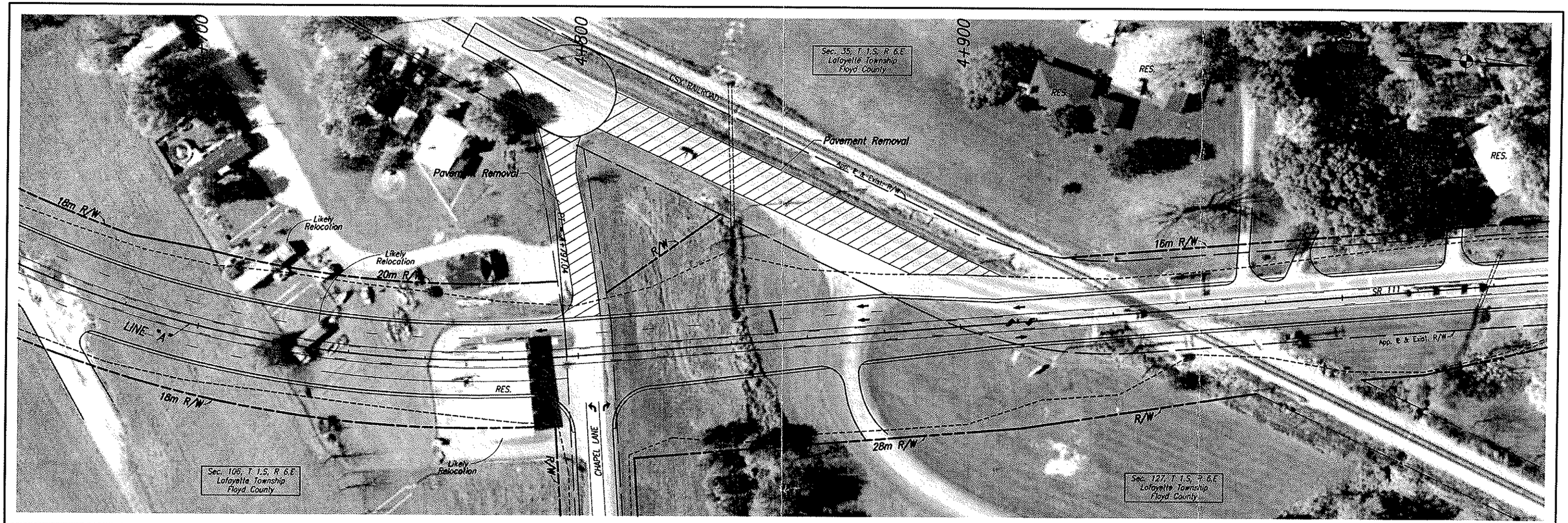
DESIGNED: GRW | DRAWN: CC

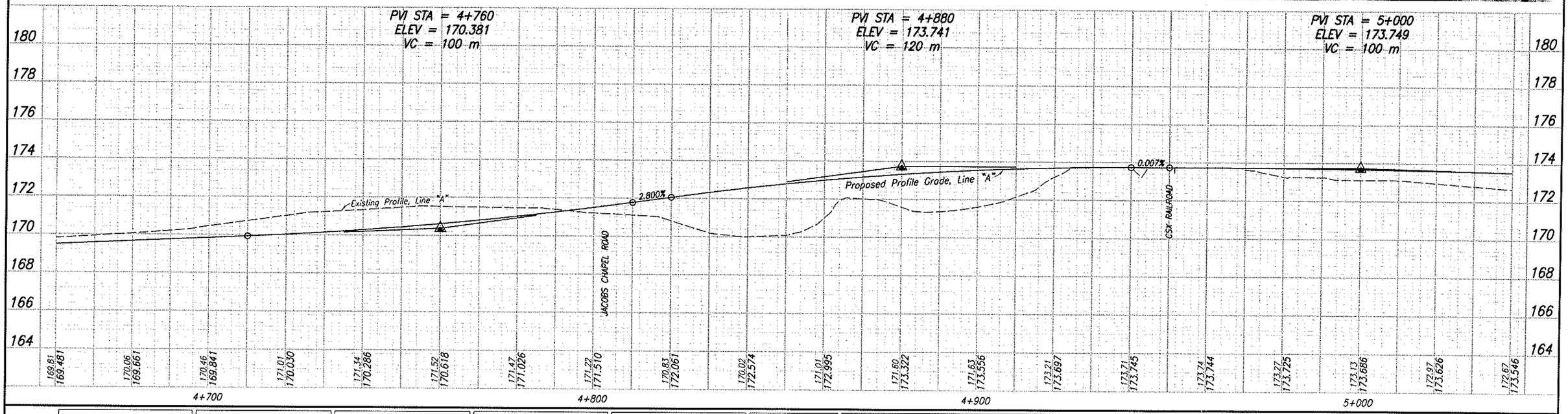
CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 3+520 TO 3+900 "A"

HORIZONTAL SCALE 1:1000	BRIDGE FILE
VERTICAL SCALE 1:200	DESIGNATION 9902540
SURVEY BOOK	SHEETS A-20 of
CONTRACT	PROJECT STP-5322( )





CONCEPTUAL DRAWING

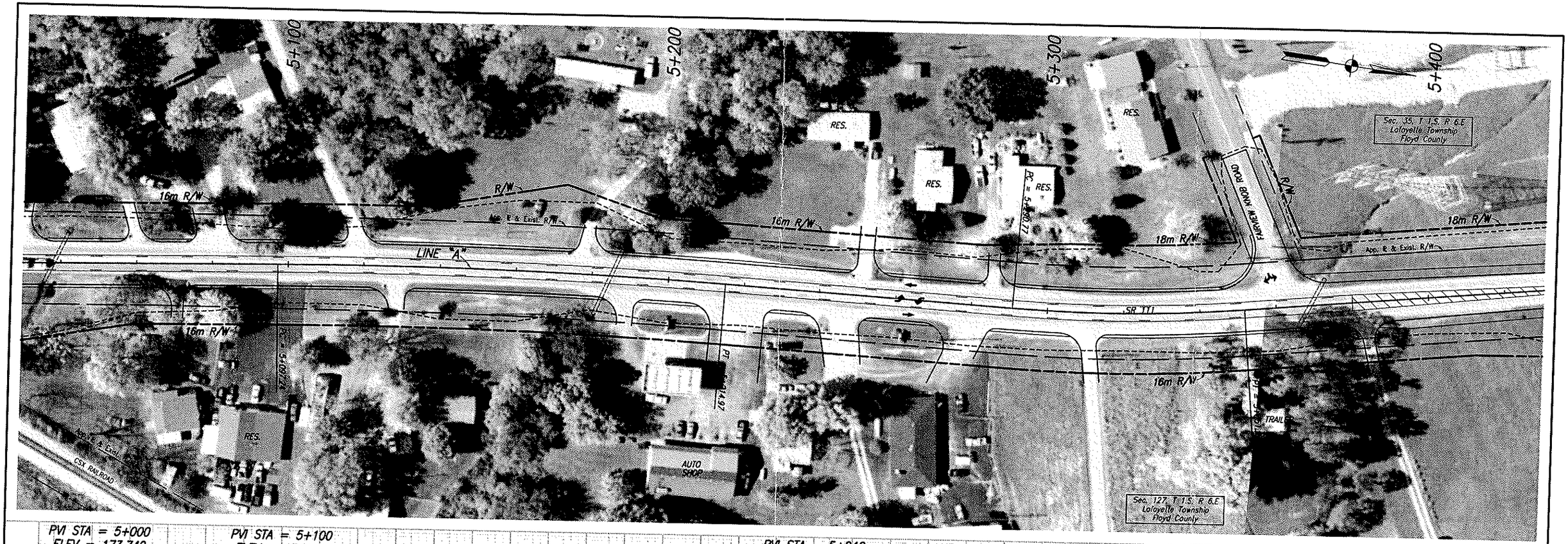
DESIGNED: GRW | DRAWN: CC

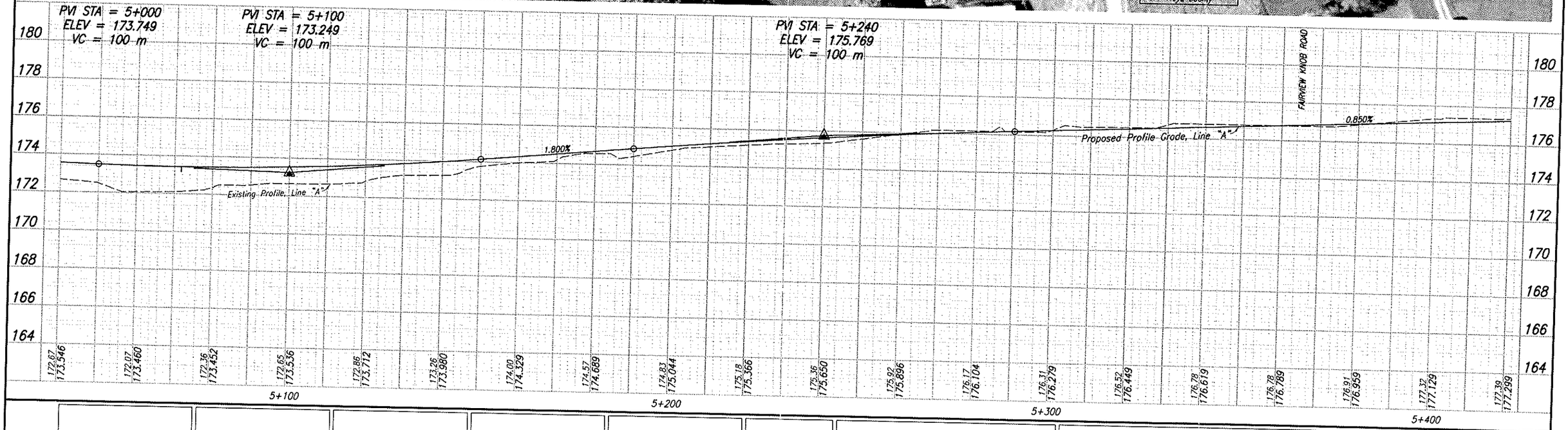
CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 4+660 TO 5+040 "A"

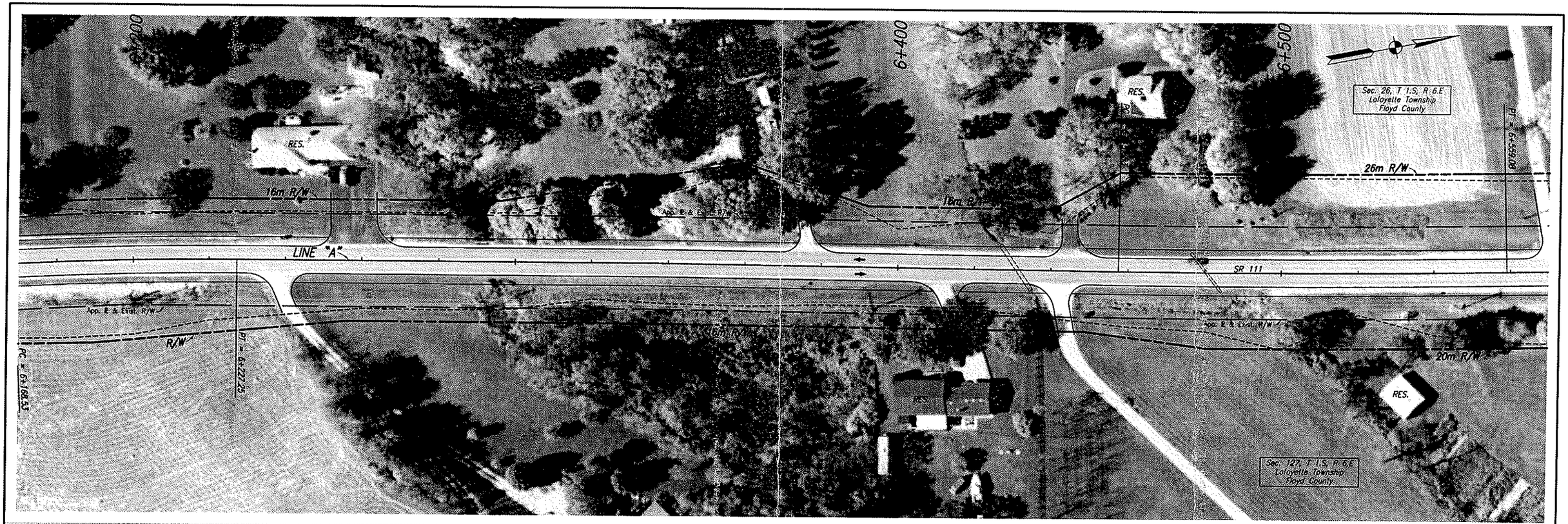
HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-23 of
CONTRACT	PROJECT
	STP-5322( )

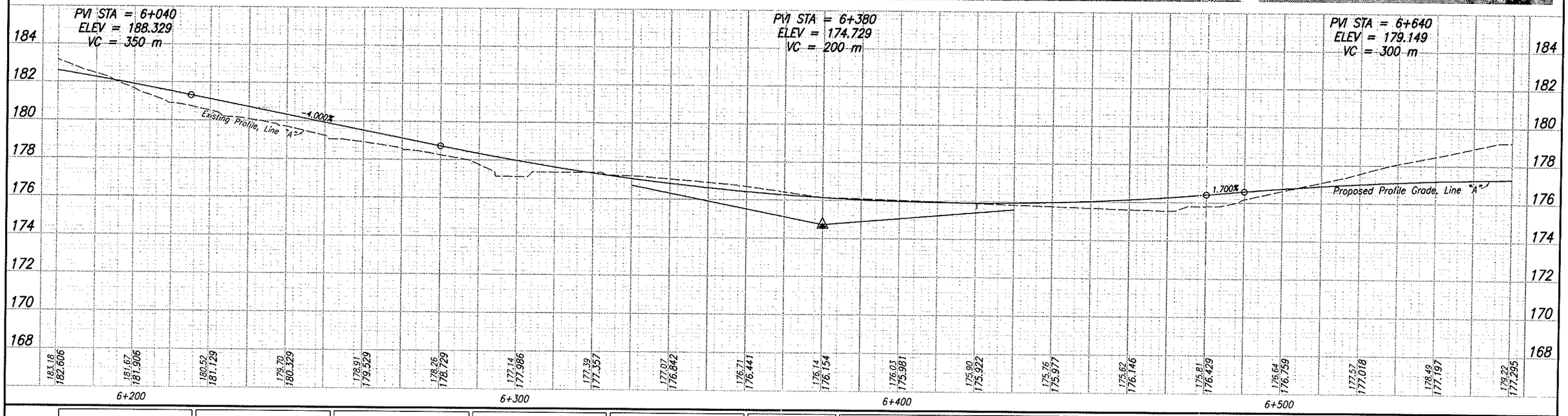




						CONCEPTUAL DRAWING	INDIANA DEPARTMENT OF TRANSPORTATION
						DESIGNED: GRW / DRAWN: CC / CHECKED: DPF / CHECKED: GRW	S.R. 111/FLOYD & CLARK COUNTIES STA. 5+040 TO 5+420 "A"

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-24 of
CONTRACT	PROJECT
	STP-5322( )





CONCEPTUAL DRAWING

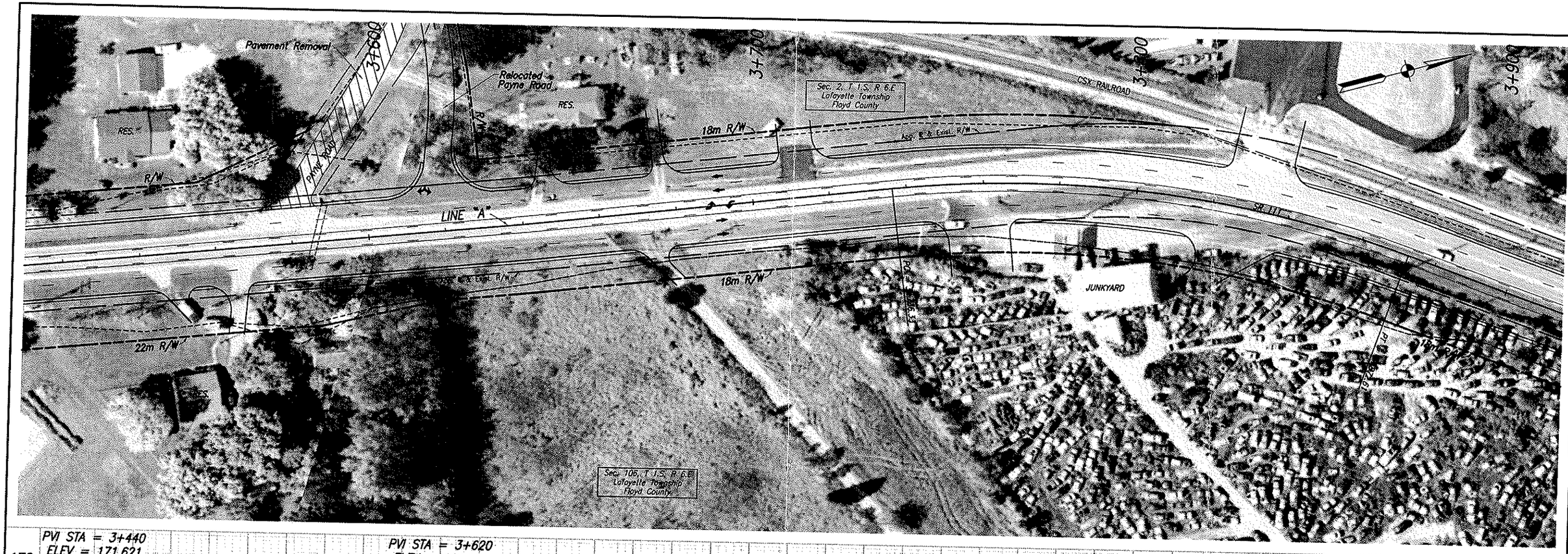
DESIGNED: GRW | DRAWN: CC

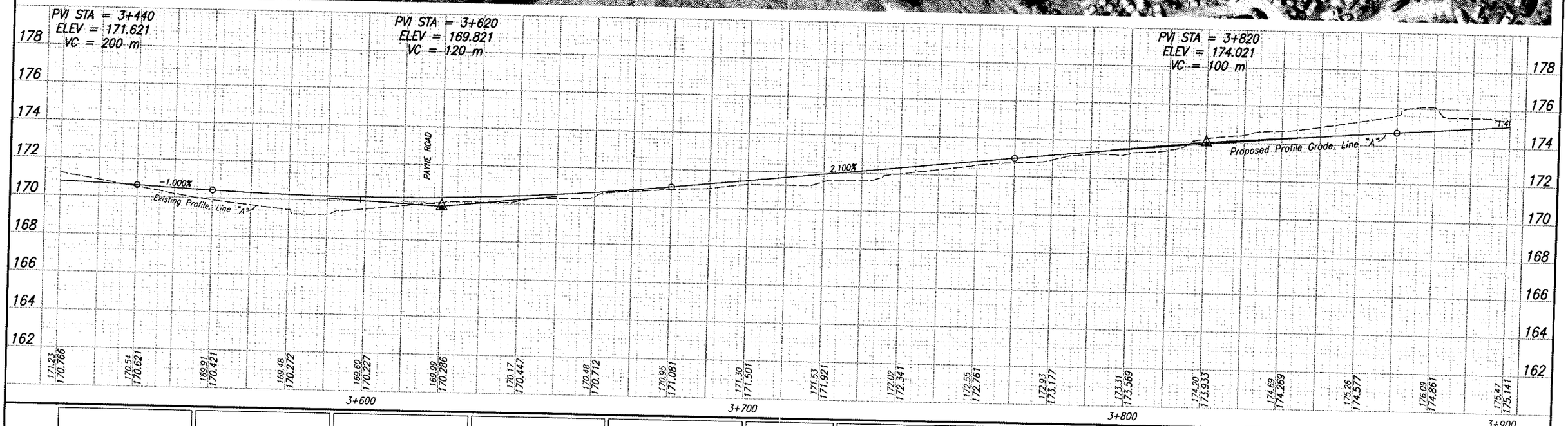
CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 6+180 TO 6+560 "A"

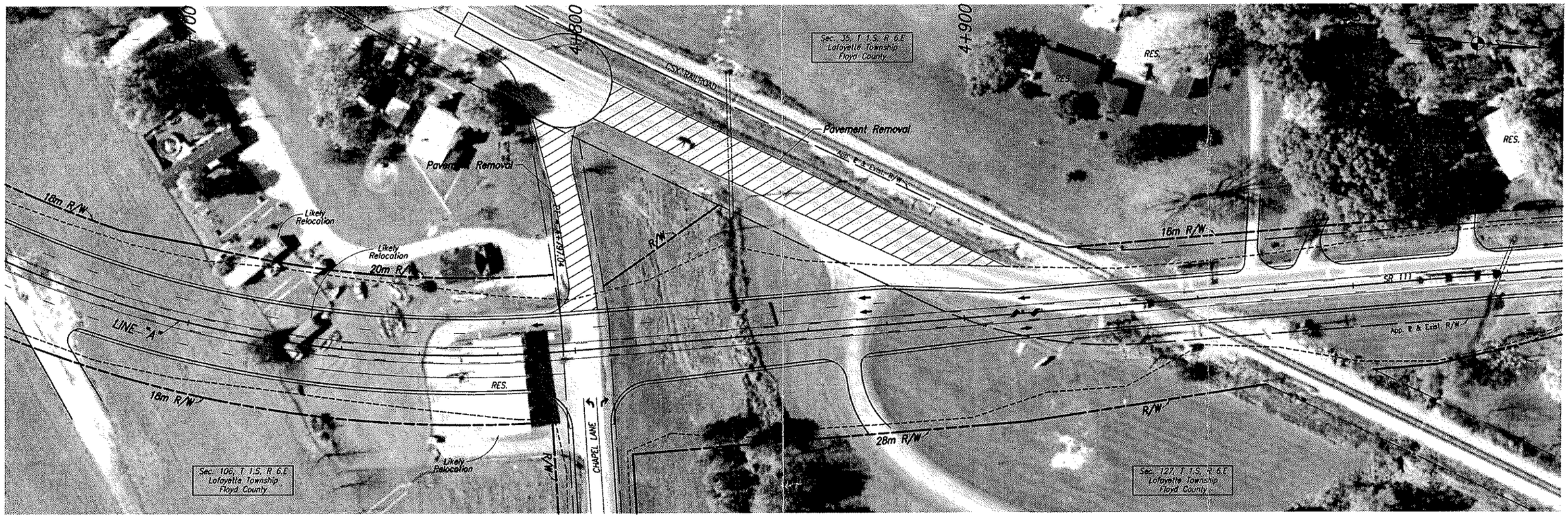
HORIZONTAL SCALE 1:1000	BRIDGE FILE
VERTICAL SCALE 1:200	DESIGNATION 9902540
SURVEY BOOK	SHEETS A-27 of
CONTRACT	PROJECT STP-5322( )

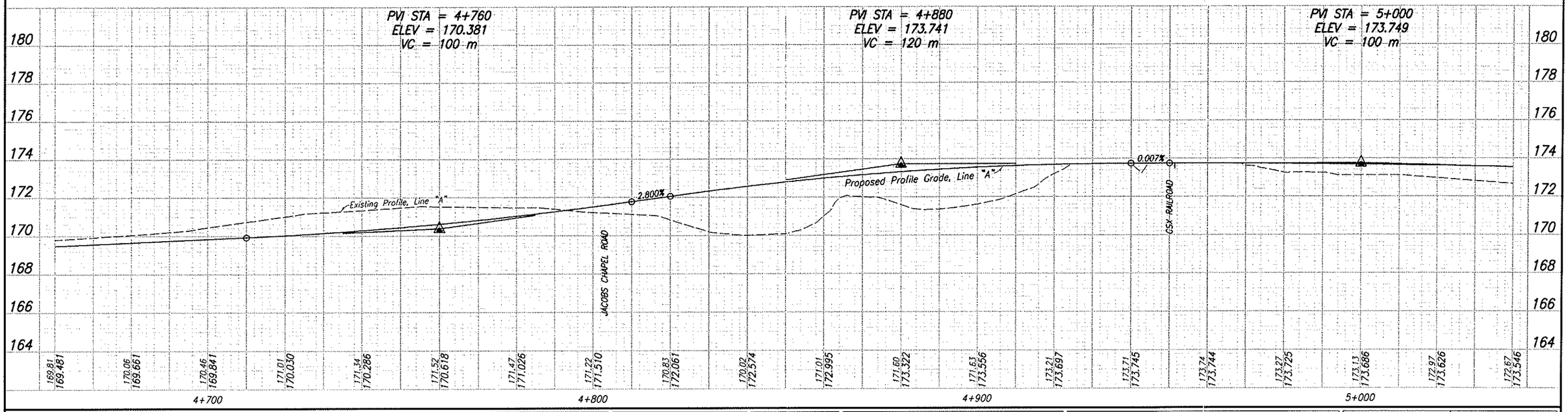




						CONCEPTUAL DRAWING	INDIANA DEPARTMENT OF TRANSPORTATION
						DESIGNED: GRW / DRAWN: CC	S.R. 111/FLOYD & CLARK COUNTIES
						CHECKED: DPF / CHECKED: GRW	STA. 3+520 TO 3+900 "A"

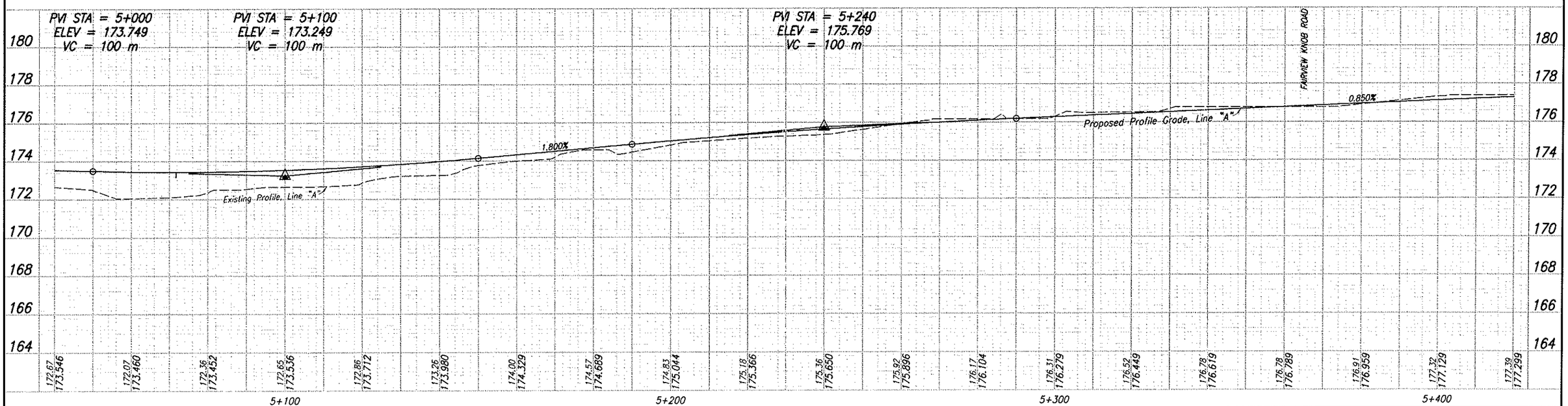
HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-20 of
CONTRACT	PROJECT
	STP-5322( )





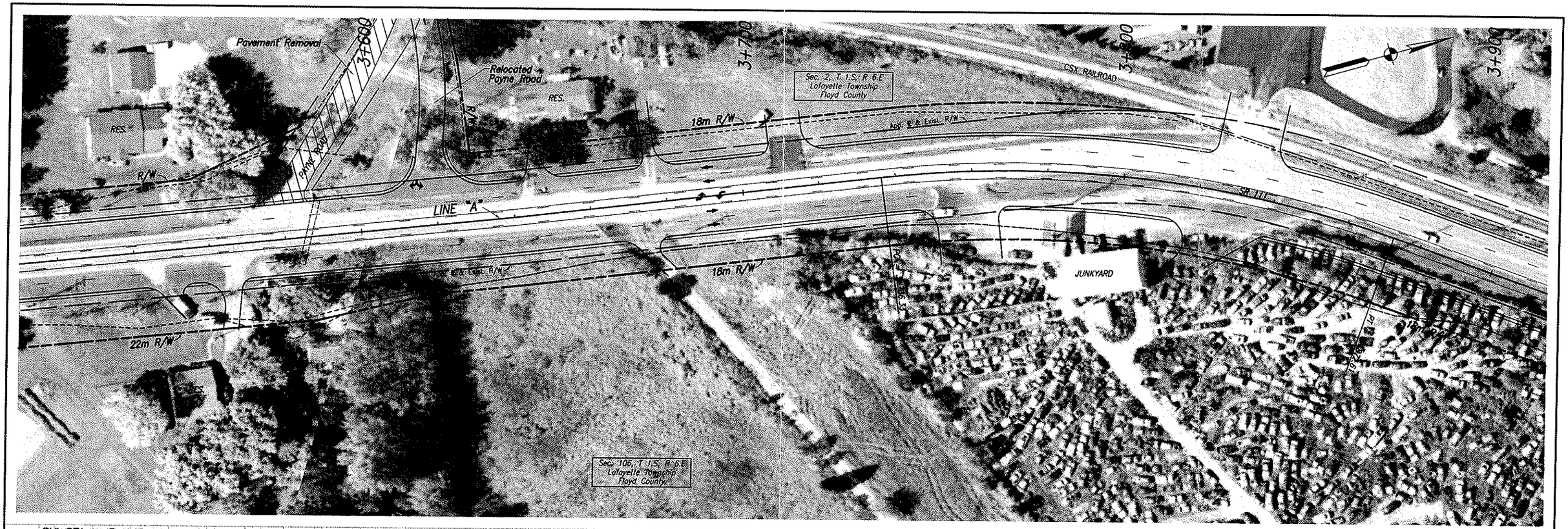
						CONCEPTUAL DRAWING	INDIANA DEPARTMENT OF TRANSPORTATION
						DESIGNED: GRW / DRAWN: CC / CHECKED: DPF / CHECKED: GRW	S.R. 111/FLOYD & CLARK COUNTIES STA. 4+660 TO 5+040 "A"

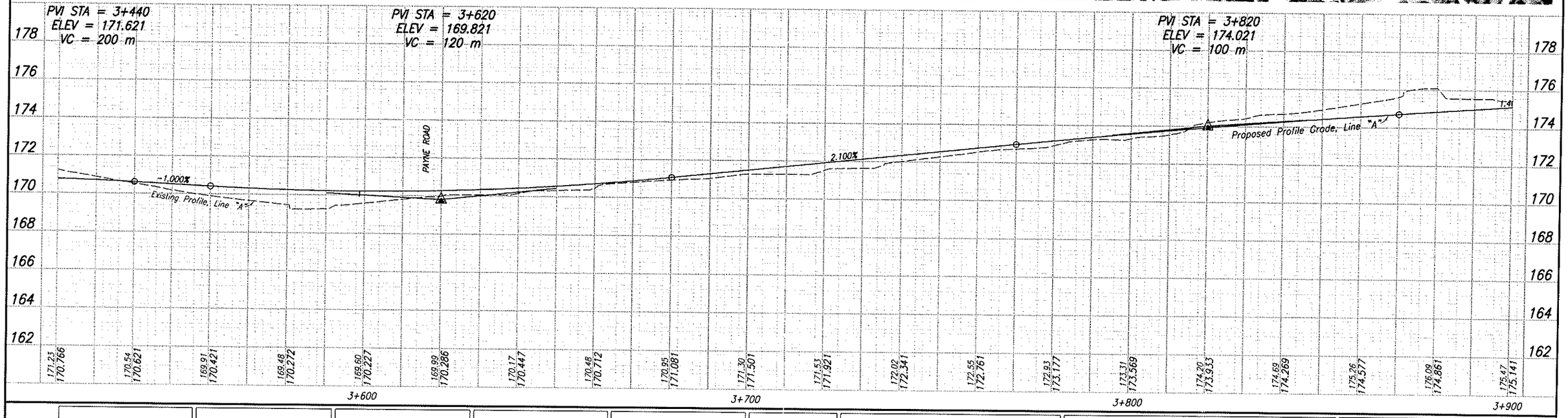
HORIZONTAL SCALE 1:1000	BRIDGE FILE
VERTICAL SCALE 1:200	DESIGNATION 9902540
SURVEY BOOK	SHEETS A-23 of
CONTRACT	PROJECT STP-5322( )



						CONCEPTUAL DRAWING	INDIANA DEPARTMENT OF TRANSPORTATION
						DESIGNED: GRW	DRAWN: CC
						CHECKED: DPF	CHECKED: GRW
						S.R. 111/FLOYD & CLARK COUNTIES STA. 5+040 TO 5+420 "A"	

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-24 of
CONTRACT	PROJECT
	STP-5322( )





CONCEPTUAL DRAWING

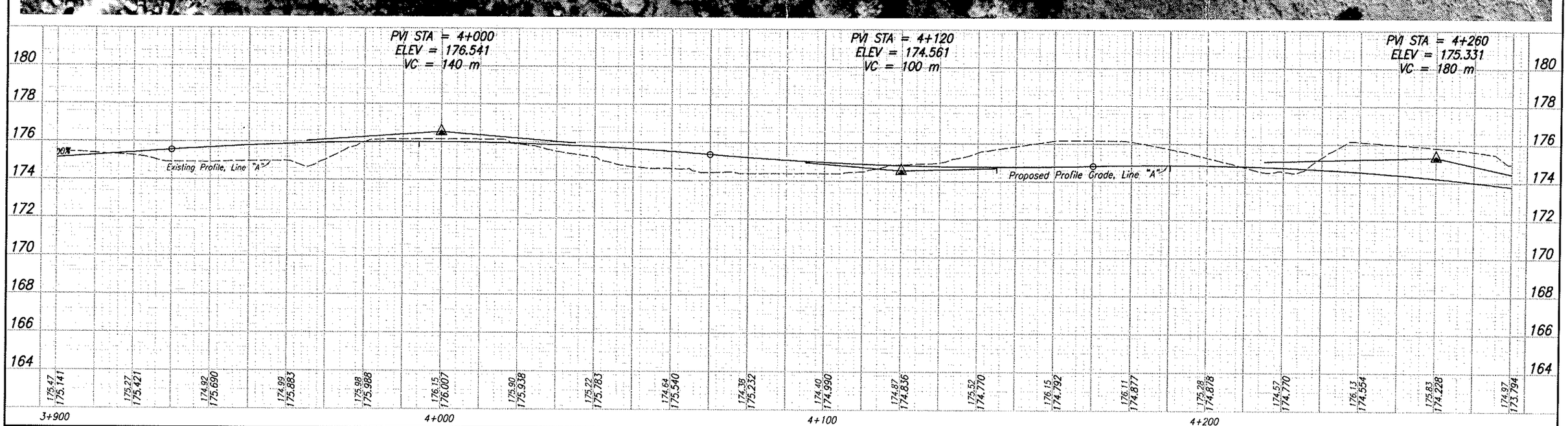
DESIGNED: GRW | DRAWN: CC

CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 3+520 TO 3+900 "A"

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-20 of
CONTRACT	PROJECT
	STP-5322( )



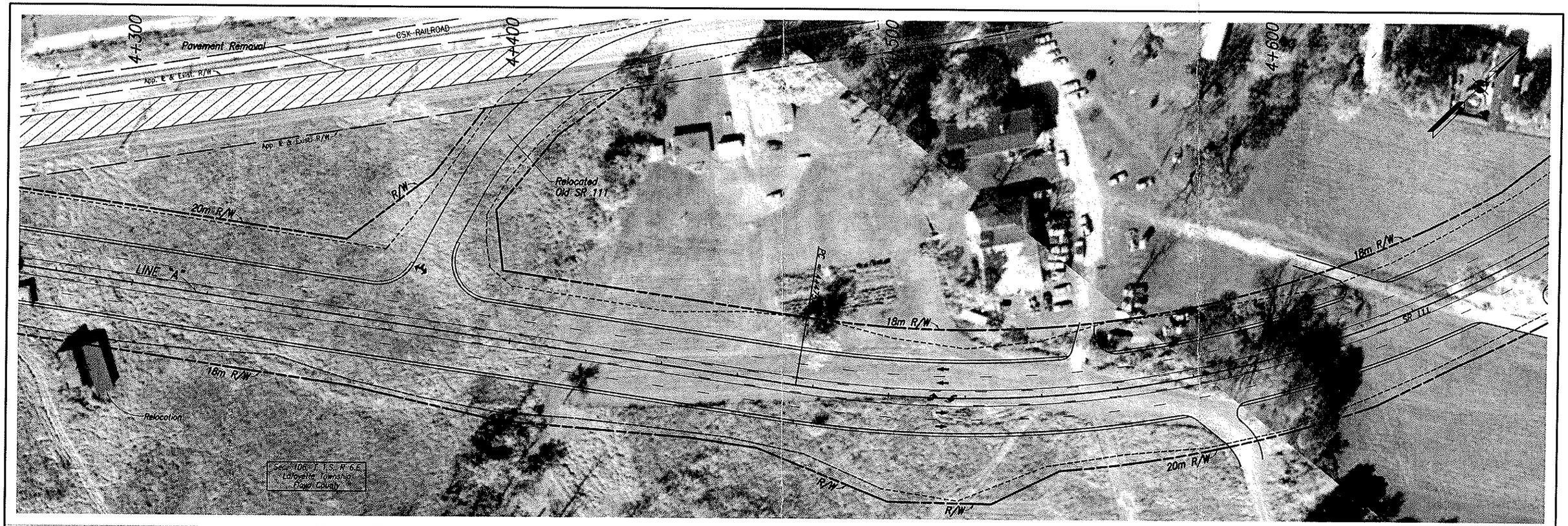
CONCEPTUAL DRAWING

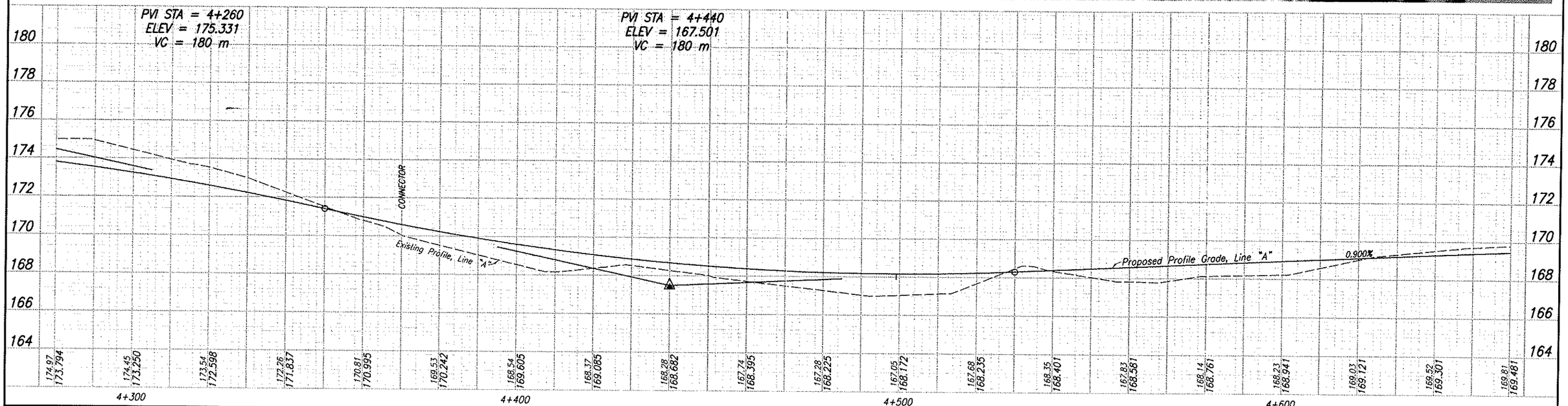
DESIGNED: GRW	DRAWN: CC
CHECKED: DPF	CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 3+900 TO 4+280 "A"

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-21 of
CONTRACT	PROJECT
	STP-5322( )





CONCEPTUAL DRAWING

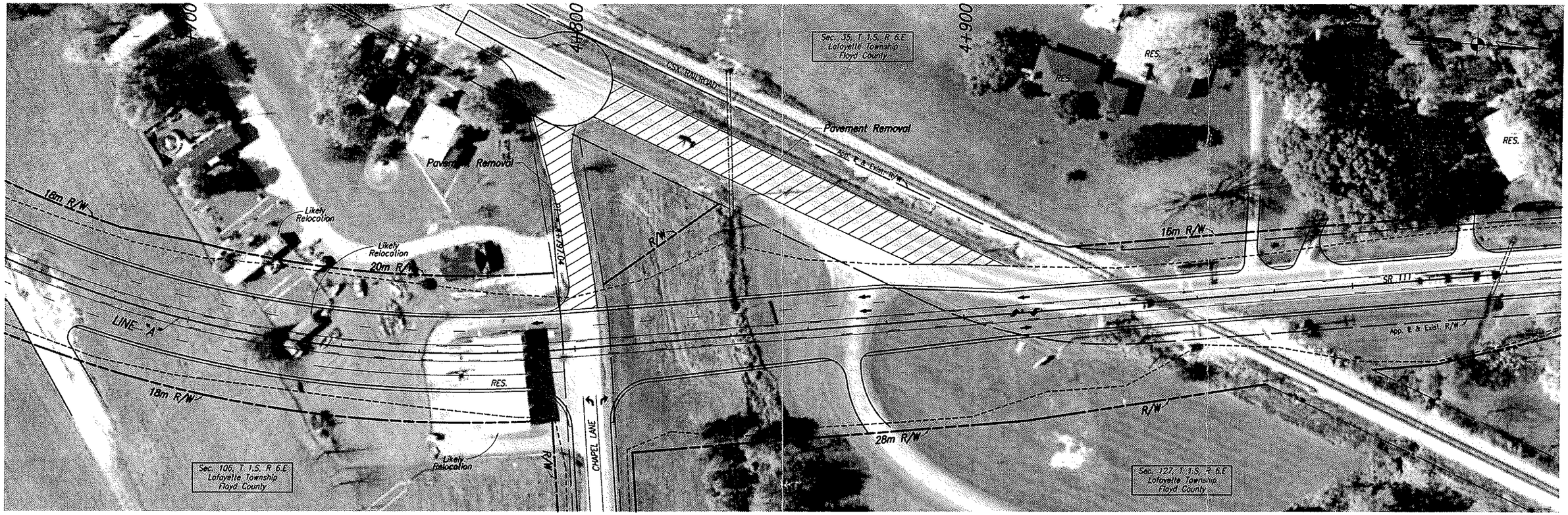
DESIGNED: GRW | DRAWN: CC

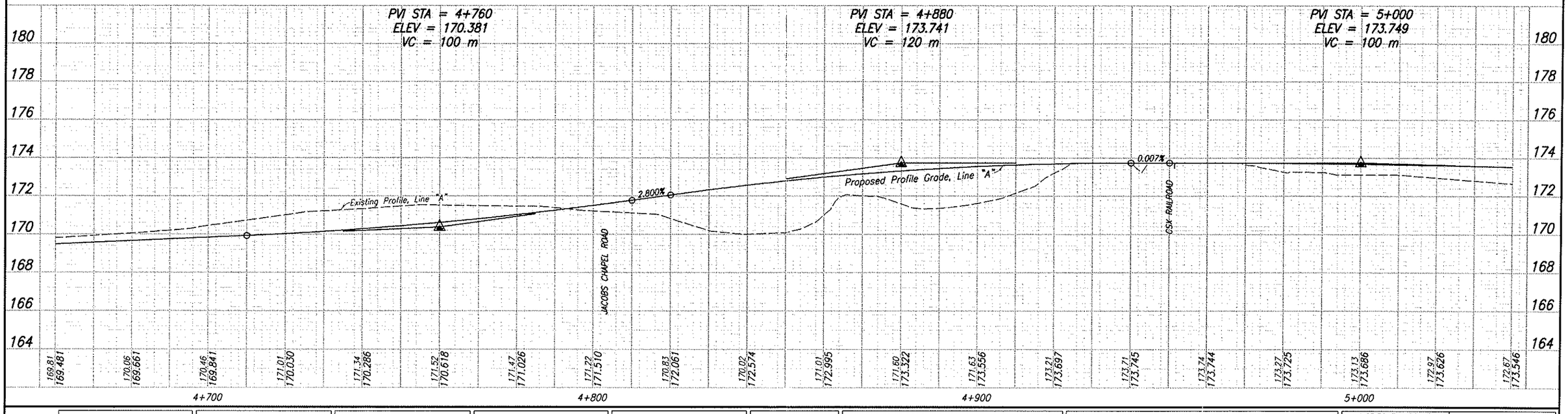
CHECKED: DPF | CHECKED: GRW

INDIANA DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 4+280 TO 4+660 "A"

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-22 of
CONTRACT	PROJECT
	STP-5322( )





CONCEPTUAL DRAWING

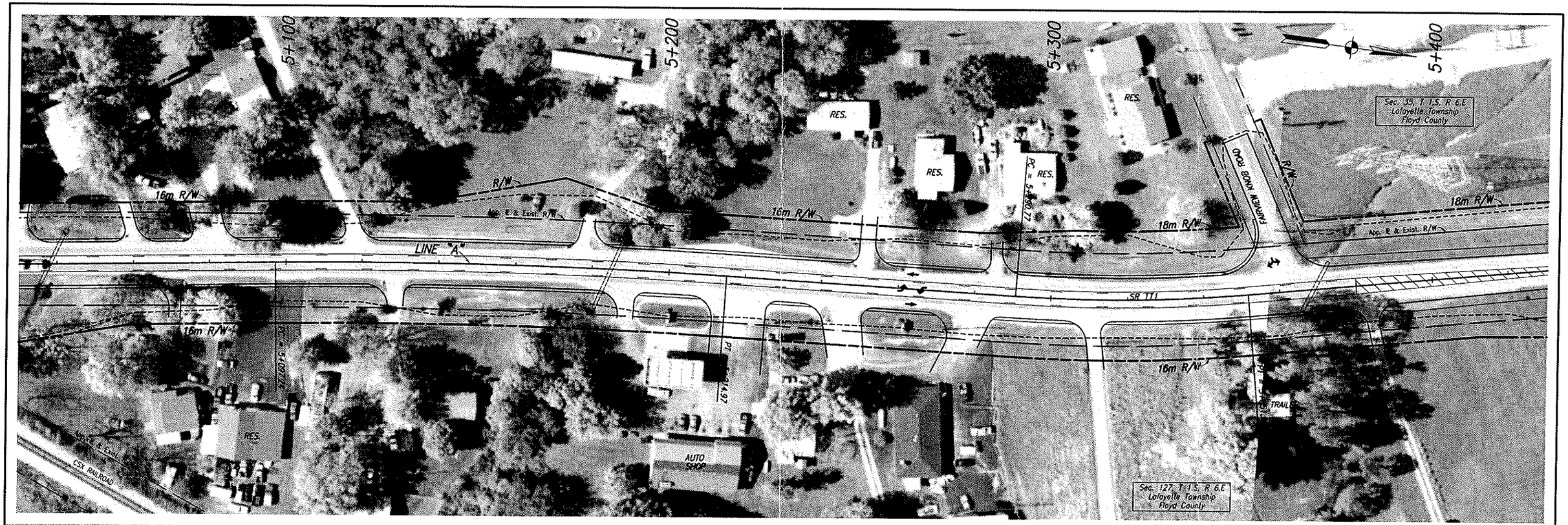
DESIGNED: GRW | DRAWN: CC

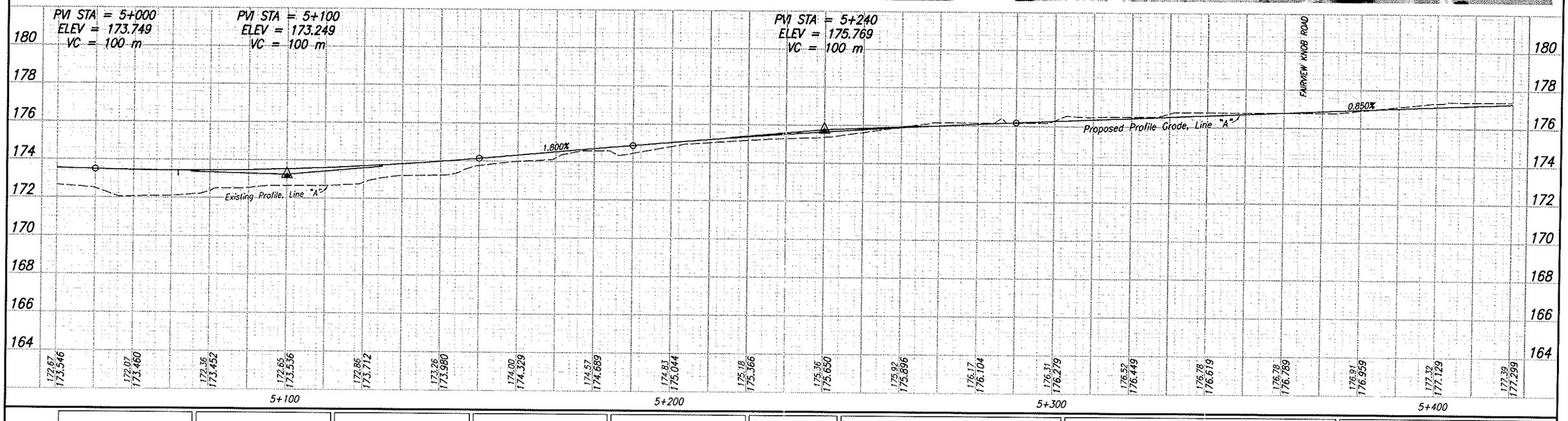
CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 4+660 TO 5+040 "A"

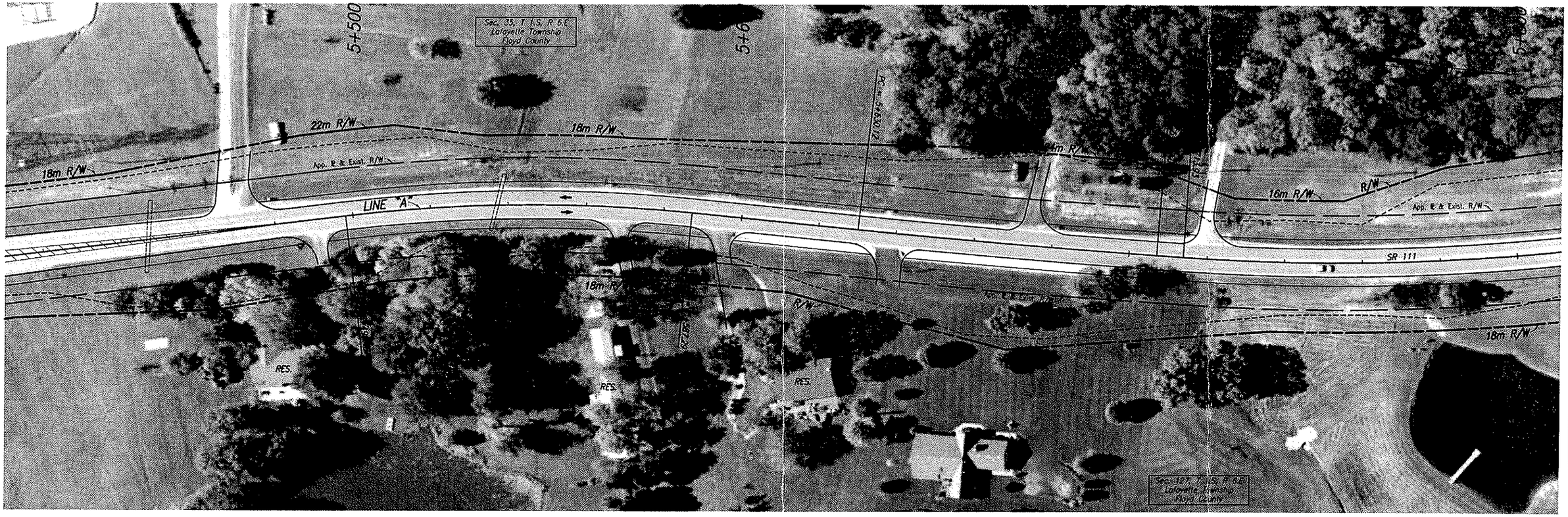
HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-23 of
CONTRACT	PROJECT
	STP-5322( )

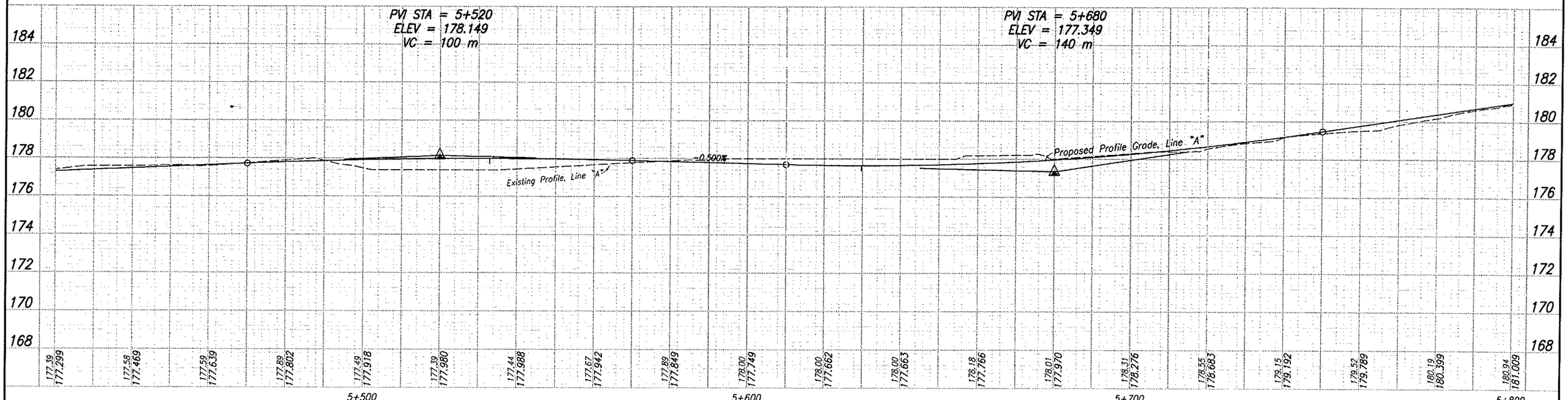




						CONCEPTUAL DRAWING	INDIANA DEPARTMENT OF TRANSPORTATION
						DESIGNED: GRW / DRAWN: CC	S.R. 111/FLOYD & CLARK COUNTIES STA. 5+040 TO 5+420 "A"
						CHECKED: DPF / CHECKED: GRW	

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-24 of
CONTRACT	PROJECT
	STP-5322( )





CONCEPTUAL DRAWING

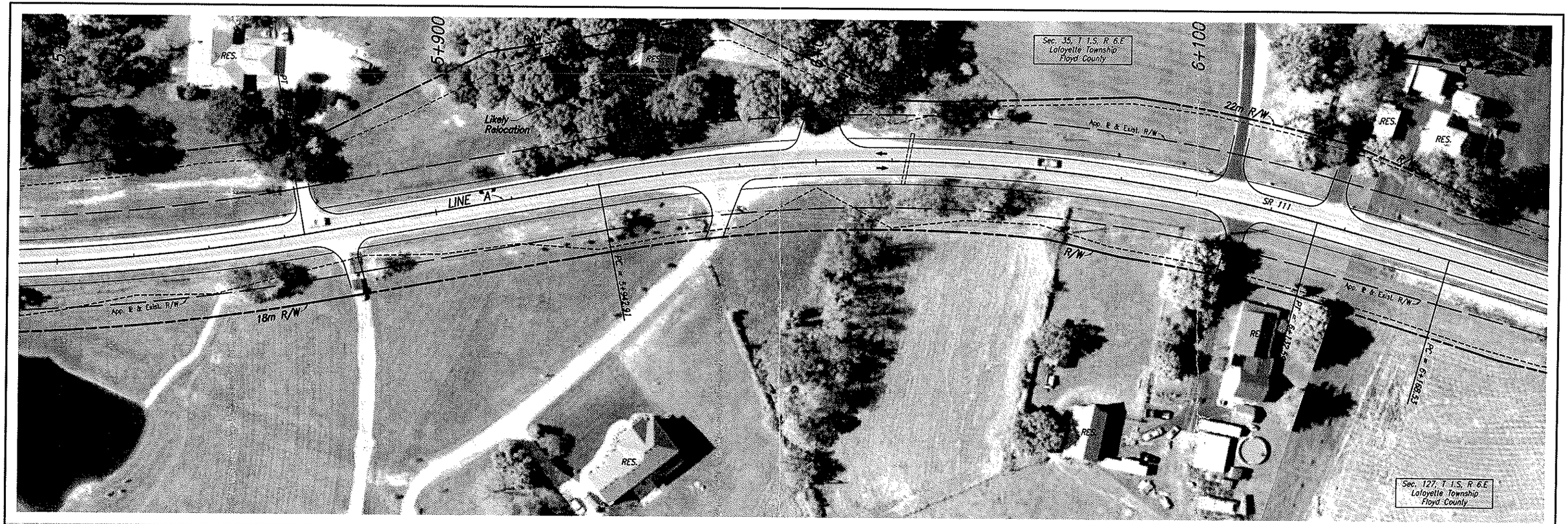
DESIGNED: GRW | DRAWN: CC

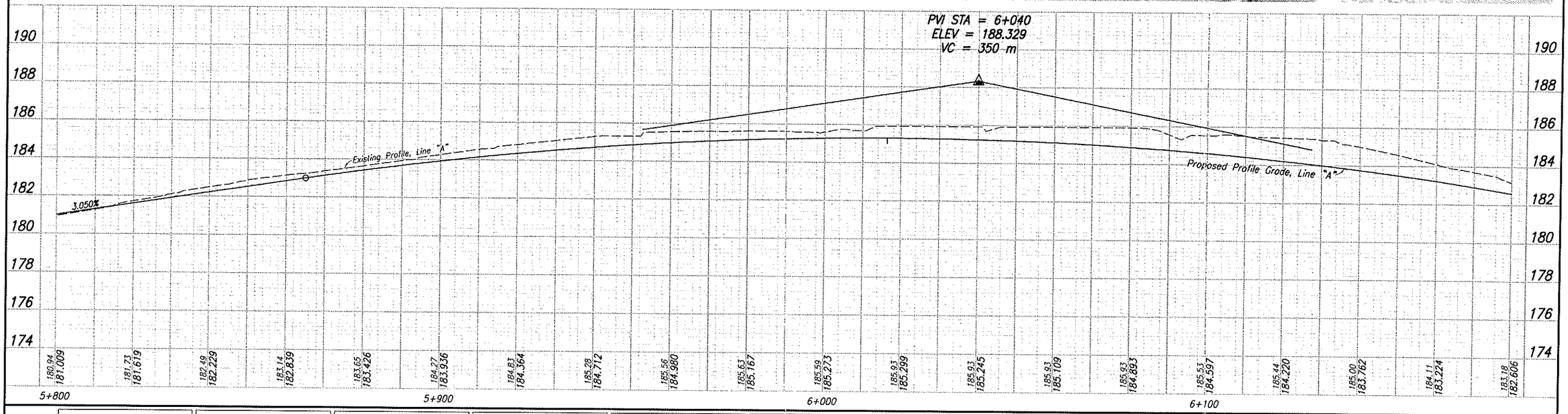
CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 5+420 TO 5+800 "A"

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-25 of
CONTRACT	PROJECT
	STP-5322( )





CONCEPTUAL DRAWING

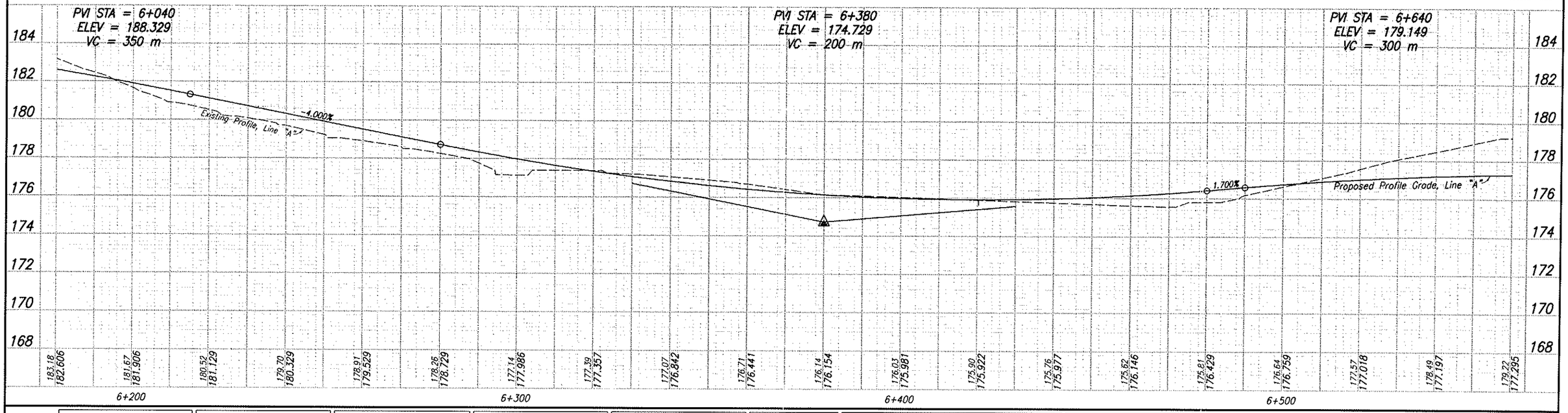
DESIGNED: GRW | DRAWN: CC

CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

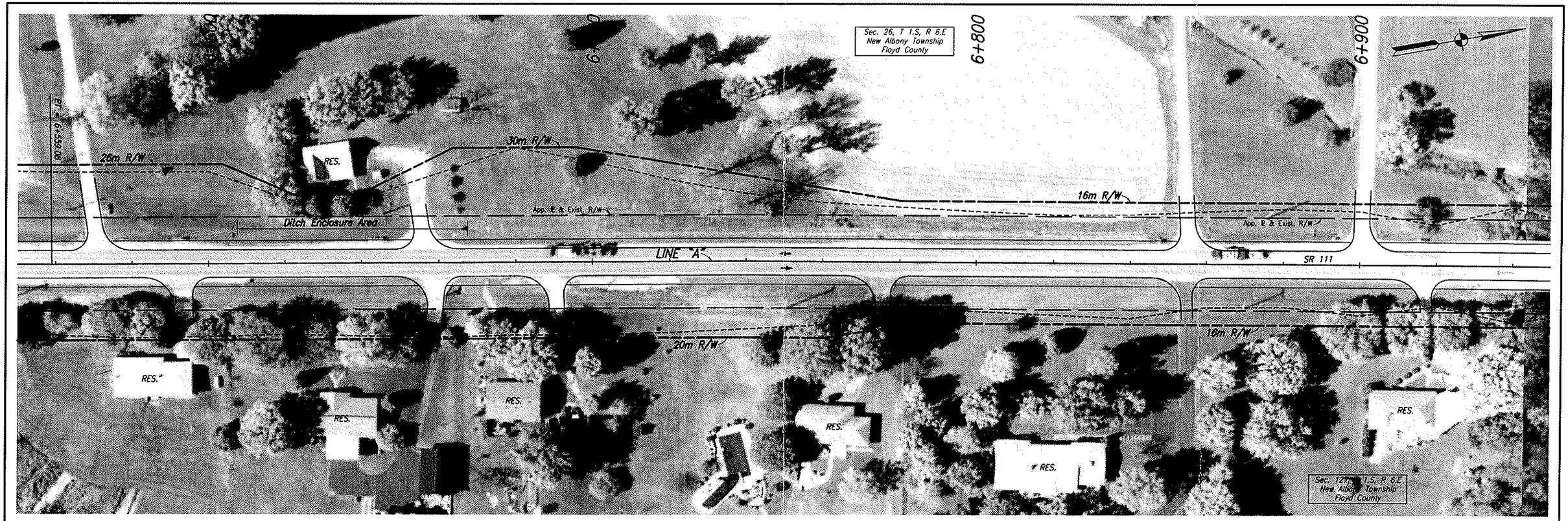
S.R. 111/FLOYD & CLARK COUNTIES
STA. 5+800 TO 6+180 "A"

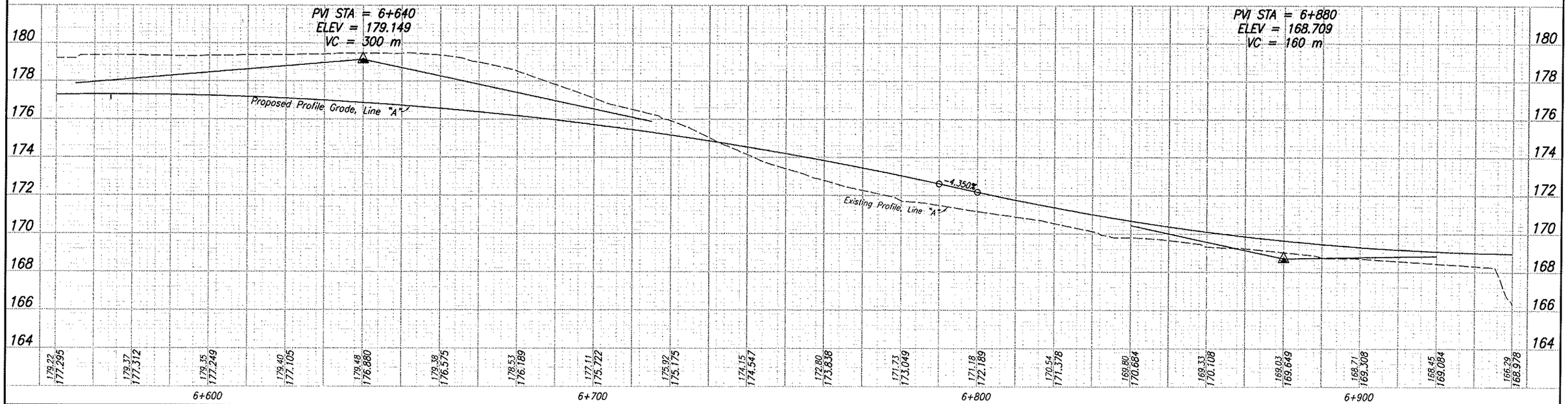
HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-26 of
CONTRACT	PROJECT
	STP-5322( )



						CONCEPTUAL DRAWING	INDIANA DEPARTMENT OF TRANSPORTATION
						DESIGNED: GRW / DRAWN: CC	S.R. 111/FLOYD & CLARK COUNTIES
						CHECKED: DPF / CHECKED: GRW	STA. 6+180 TO 6+560 "A"

HORIZONTAL SCALE 1:1000	BRIDGE FILE
VERTICAL SCALE 1:200	DESIGNATION 9902540
SURVEY BOOK	SHEETS A-27 of
CONTRACT	PROJECT STP-5322( )





CONCEPTUAL DRAWING

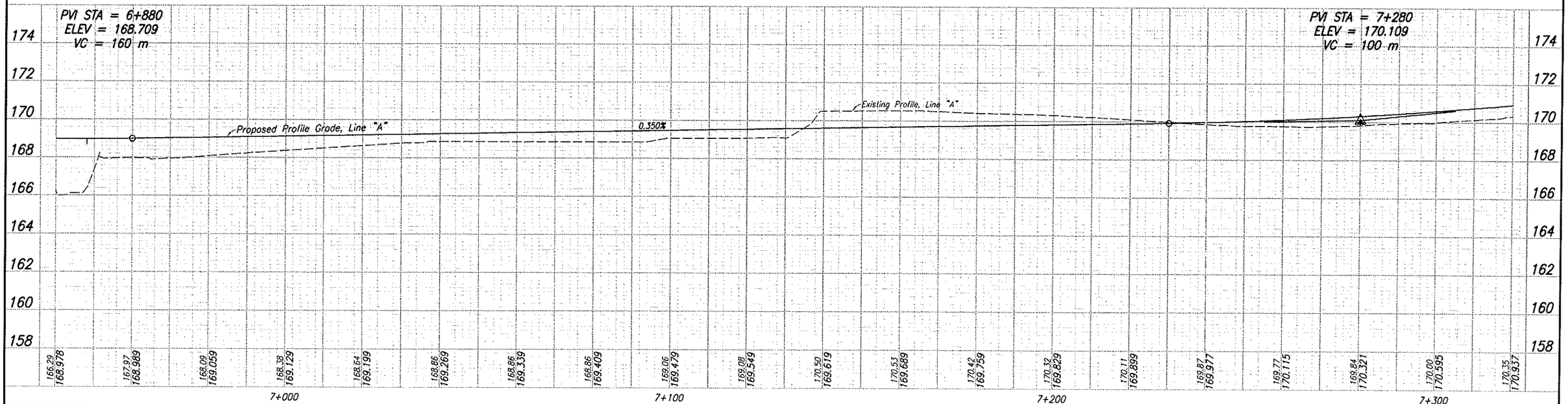
DESIGNED: GRW | DRAWN: CC

CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

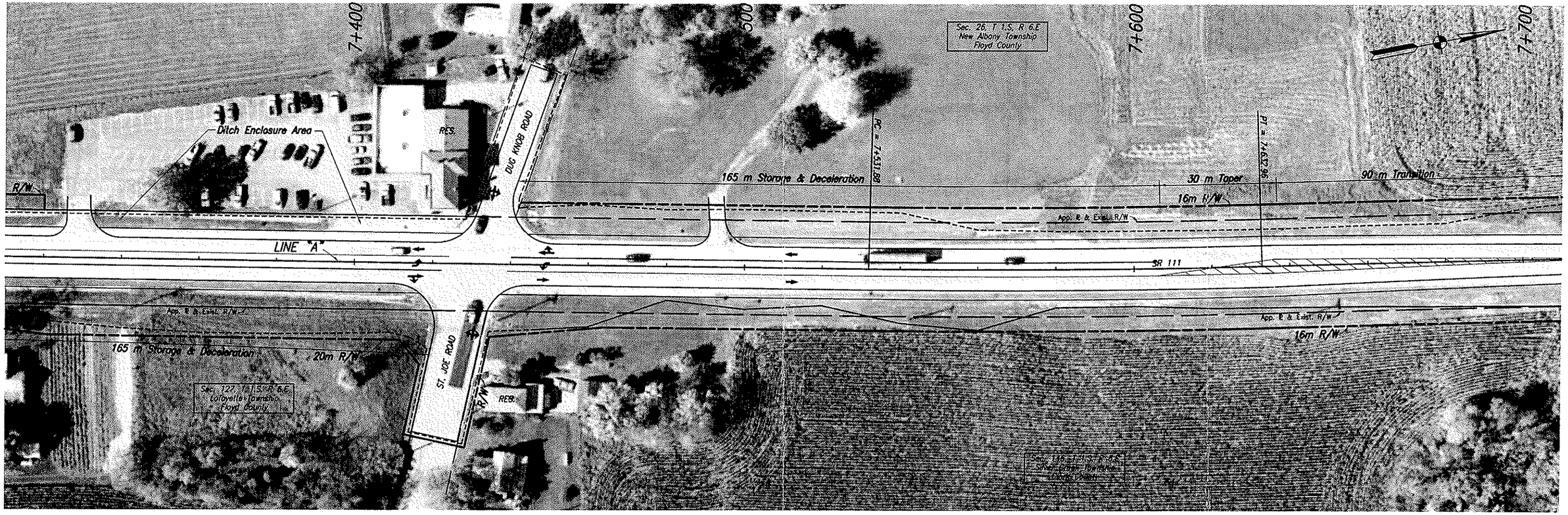
S.R. 111/FLOYD & CLARK COUNTIES
STA. 6+560 TO 6+940 "A"

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-28 of
CONTRACT	PROJECT
	STP-5322( )

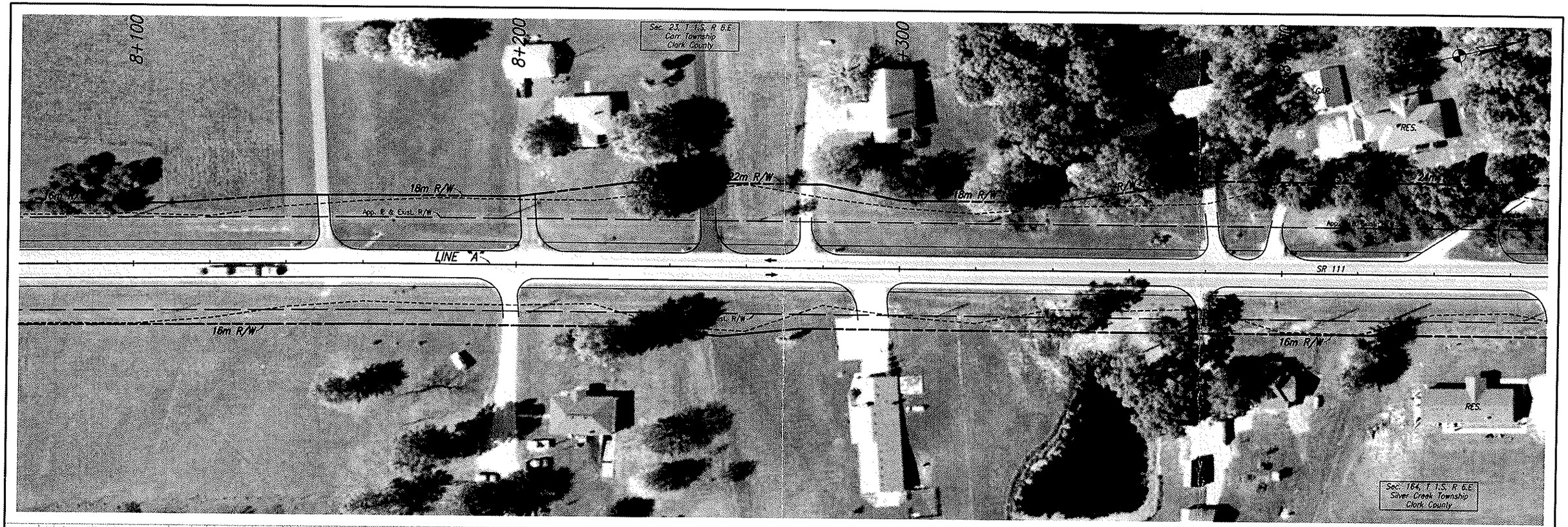


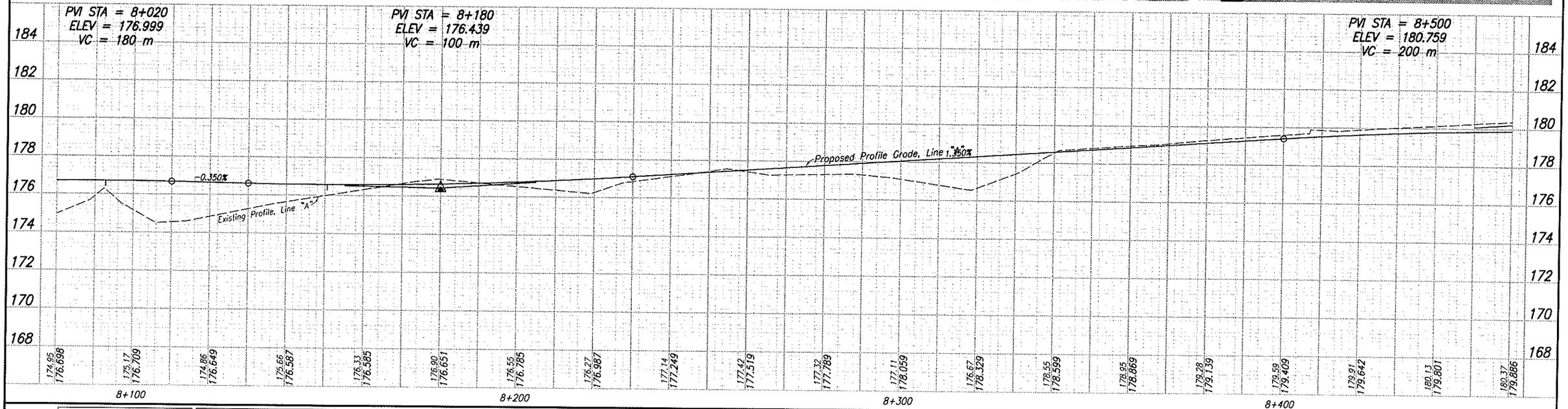
						CONCEPTUAL DRAWING	INDIANA DEPARTMENT OF TRANSPORTATION
						DESIGNED: CRW DRAWN: CC	S.R. 111/FLOYD & CLARK COUNTIES
						CHECKED: DPF CHECKED: CRW	STA. 6+940 TO 7+320 "A"

HORIZONTAL SCALE 1:1000	BRIDGE FILE
VERTICAL SCALE 1:200	DESIGNATION 9902540
SURVEY BOOK	SHEETS A-29 of
CONTRACT	PROJECT STP-5322( )



						CONCEPTUAL DRAWING	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1:1000	BRIDGE FILE
								VERTICAL SCALE 1:200	DESIGNATION 9902540
						DESIGNED: GRW / DRAWN: CC	S.R. 111/FLOYD & CLARK COUNTIES	SURVEY BOOK	SHEETS A-30 of
						CHECKED: DPF / CHECKED: GRW	STA. 7+320 TO 7+700 "A"	CONTRACT	PROJECT STP-5322( )





CONCEPTUAL DRAWING

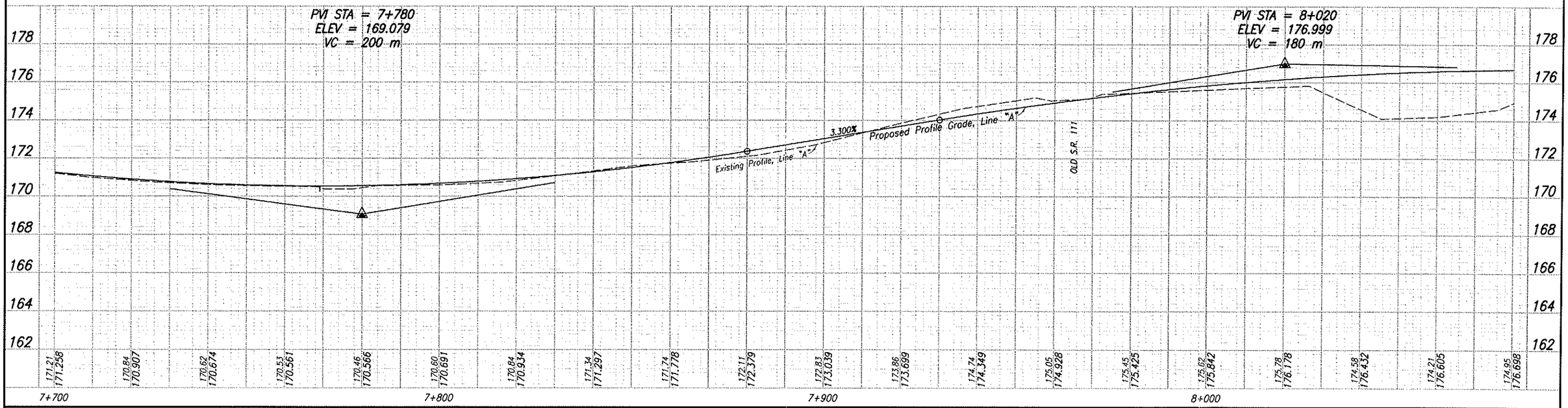
DESIGNED: GRW | DRAWN: CC

CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 8+080 TO 8+460 "A"

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-32 of
CONTRACT	PROJECT
	STP-5322( )



CONCEPTUAL DRAWING

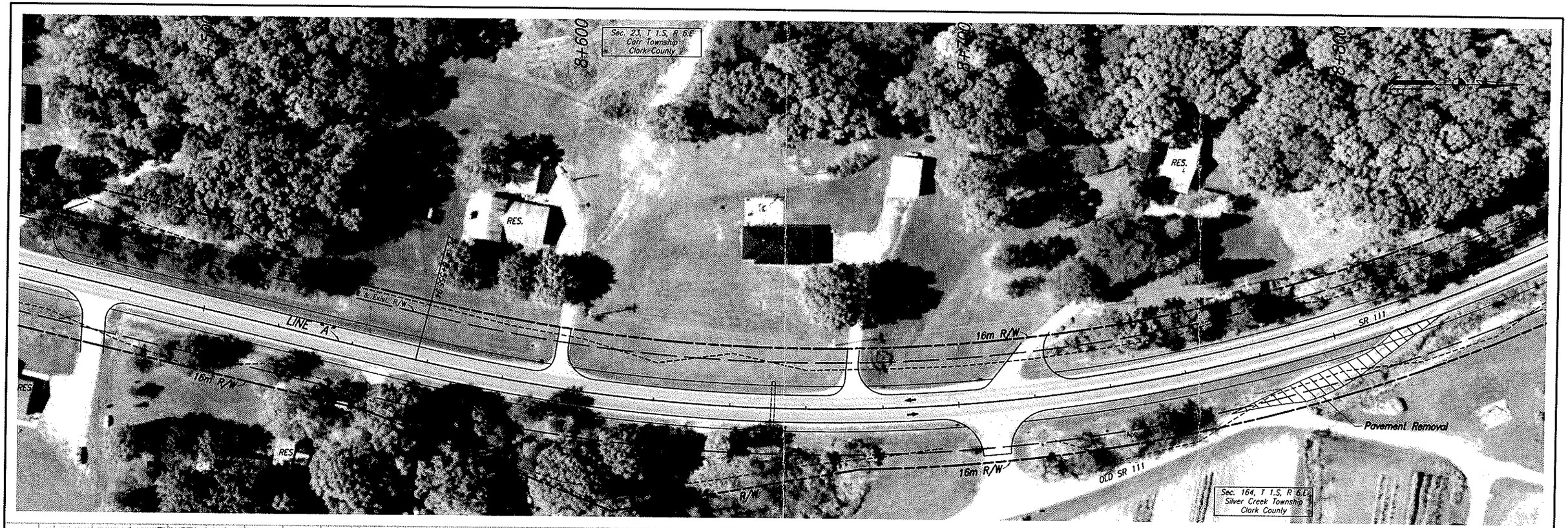
DESIGNED: GRW | DRAWN: CC

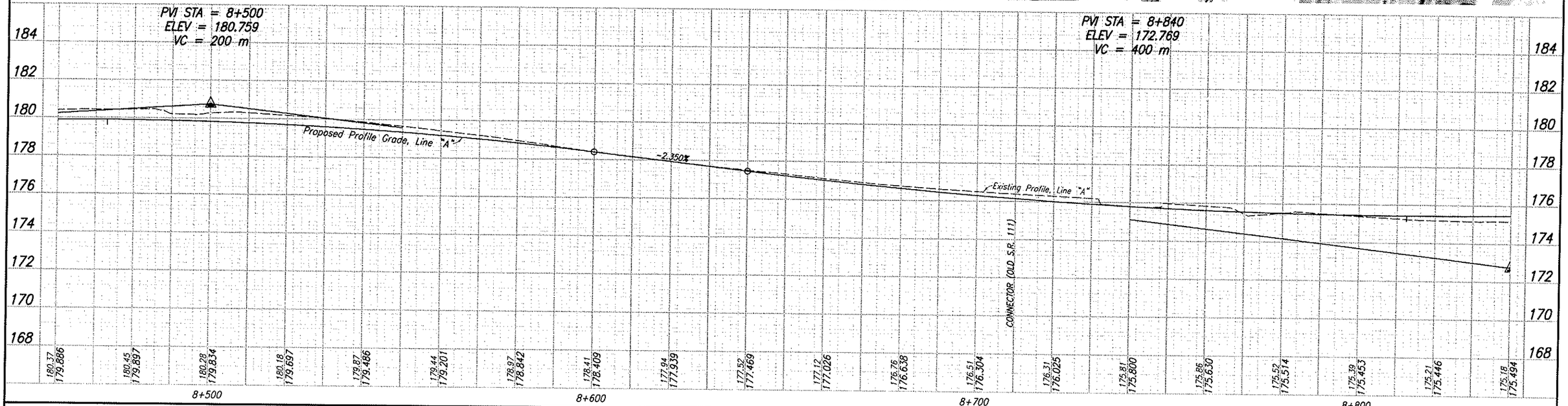
CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 7+700 TO 8+080 "A"

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-31 of
CONTRACT	PROJECT
	STP-5322( )





CONCEPTUAL DRAWING

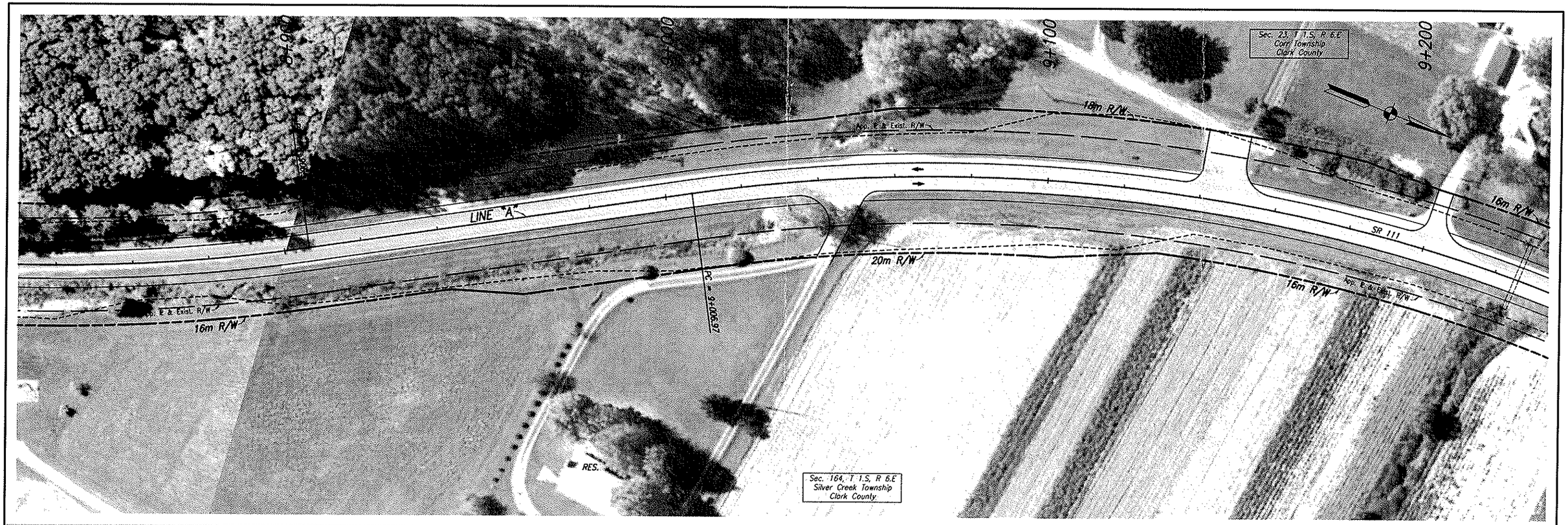
DESIGNED: GRW | DRAWN: CC

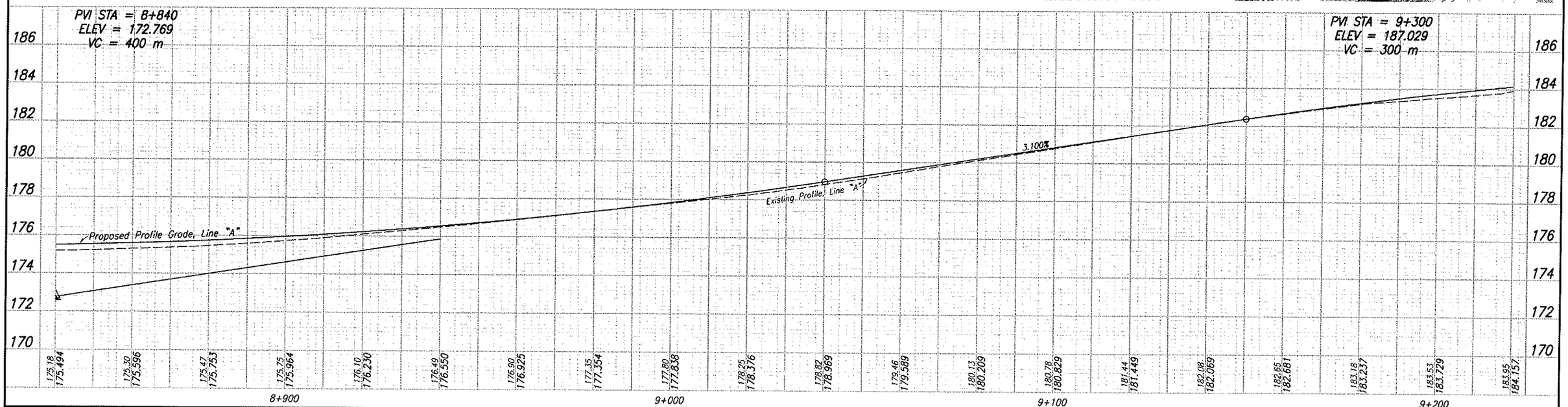
CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 8+460 TO 8+840 "A"

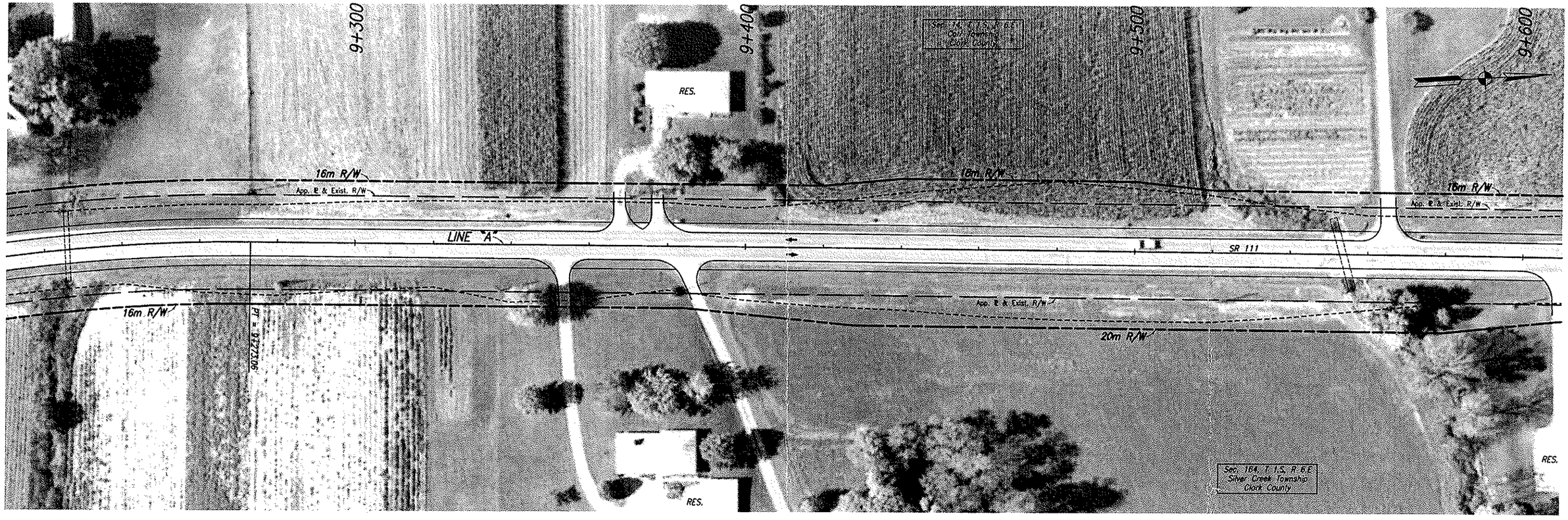
HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-33 of
CONTRACT	PROJECT
	STP-5322( )

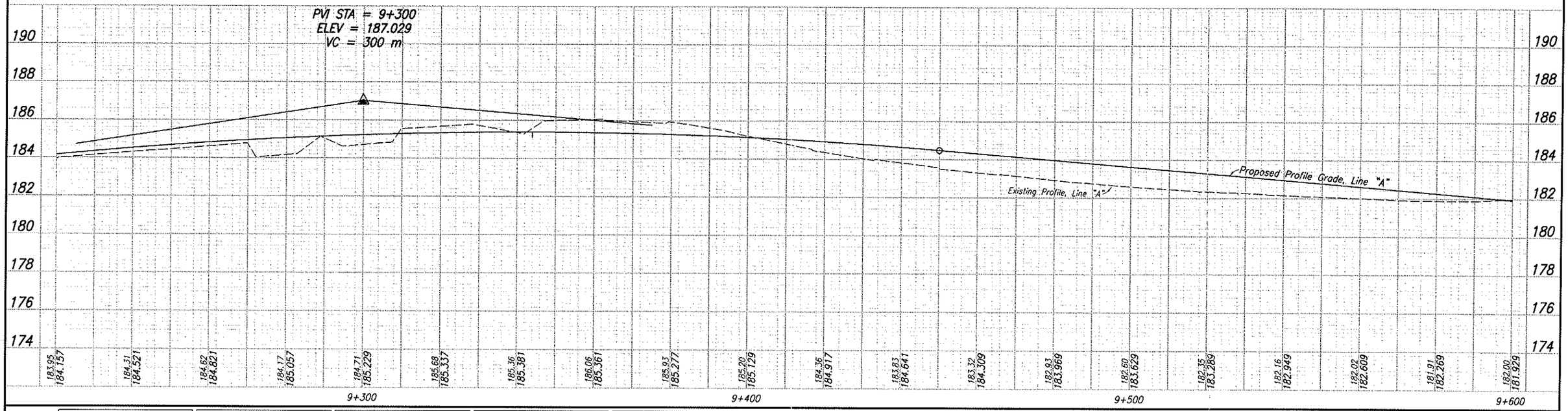




						CONCEPTUAL DRAWING	INDIANA DEPARTMENT OF TRANSPORTATION
						DESIGNED: GRW / DRAWN: CC	S.R. 111/FLOYD & CLARK COUNTIES
						CHECKED: DPF / CHECKED: GRW	STA. 8+840 TO 9+220 "A"

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-34 of
CONTRACT	PROJECT
	STP-5322( )





CONCEPTUAL DRAWING

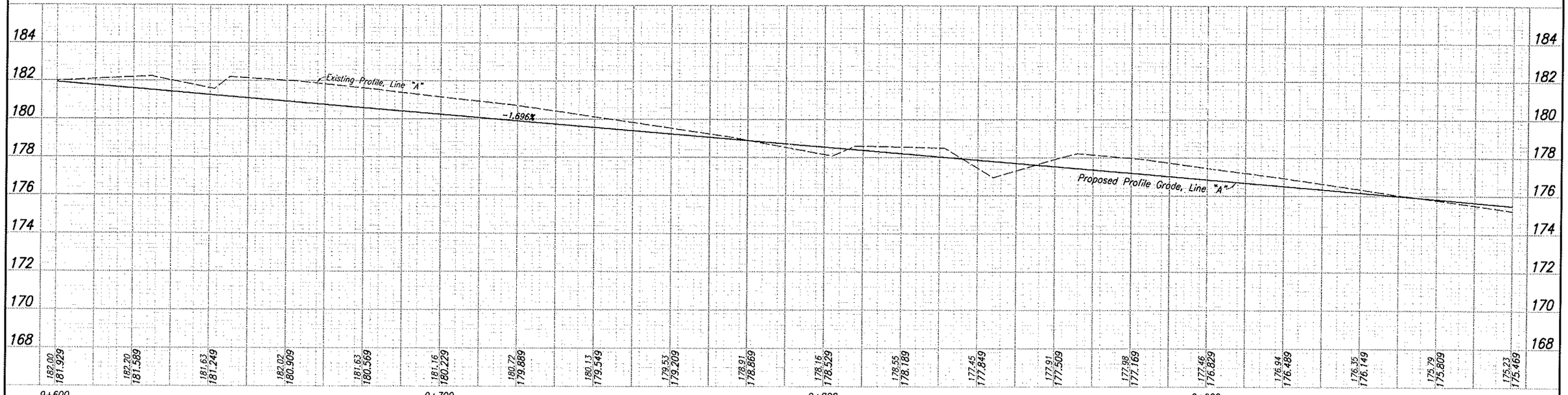
DESIGNED: GRW | DRAWN: CC

CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 9+220 TO 9+600 "A"

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-35 of
CONTRACT	PROJECT
	STP-5322( )



CONCEPTUAL DRAWING

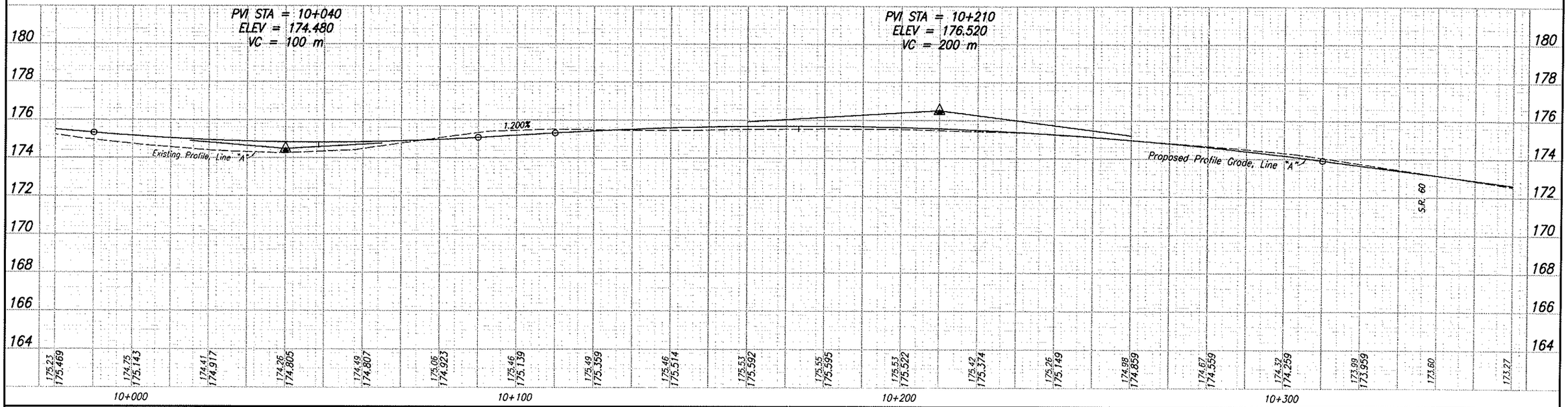
DESIGNED: GRW | DRAWN: CC

CHECKED: DPF | CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 9+600 TO 9+980 "A"

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-36 of
CONTRACT	PROJECT
	STP-5322( )



CONCEPTUAL DRAWING

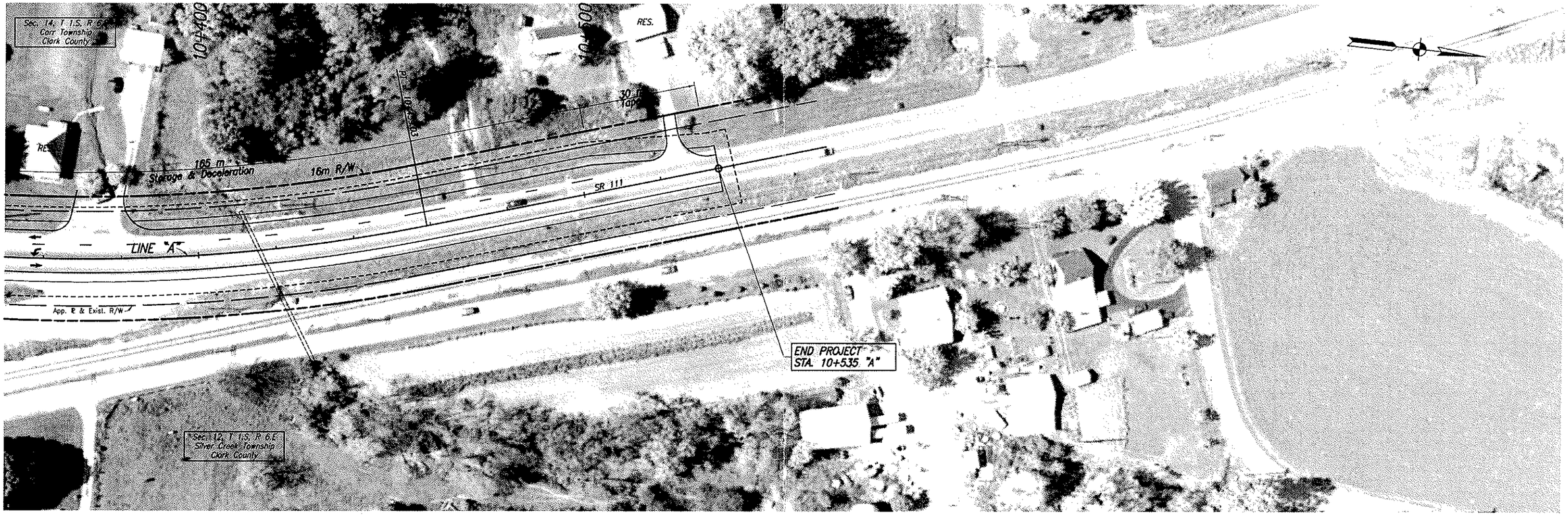
DESIGNED: GRW DRAWN: CC

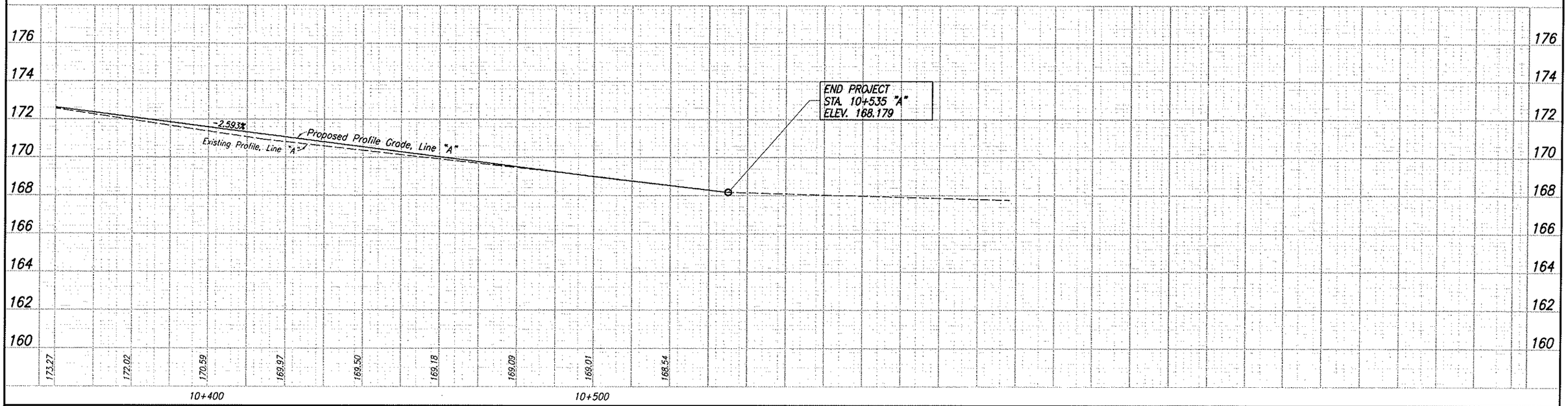
CHECKED: DPF CHECKED: GRW

INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 9+980 "A" TO END

HORIZONTAL SCALE	BRIDGE FILE
1:1000	
VERTICAL SCALE	DESIGNATION
1:200	9902540
SURVEY BOOK	SHEETS
	A-37 of
CONTRACT	PROJECT
	STP-5322( )



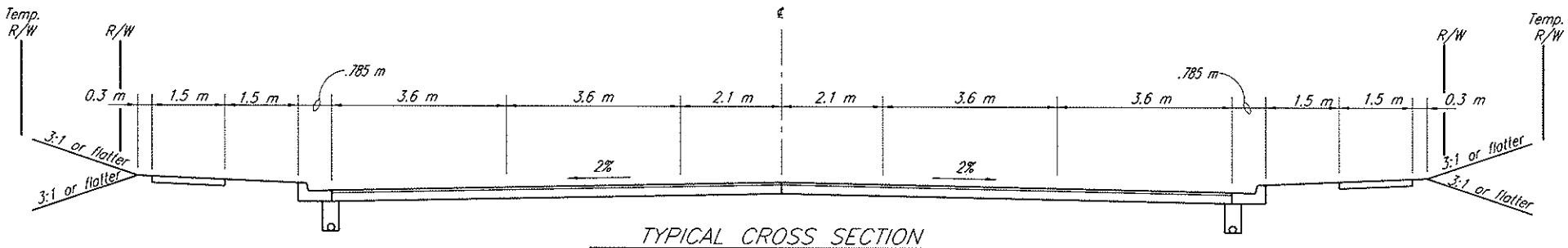


DESIGNED: GRW | DRAWN: CC
CHECKED: DPF | CHECKED: GRW

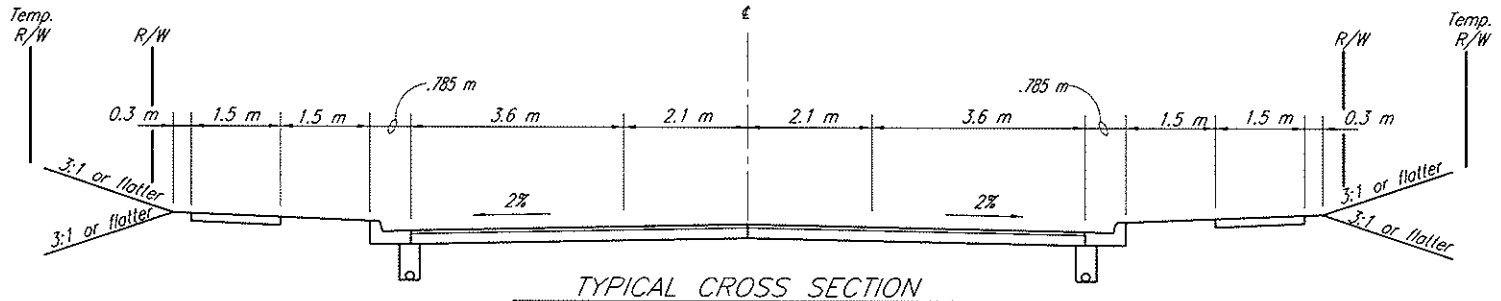
INDIANA
DEPARTMENT OF TRANSPORTATION

S.R. 111/FLOYD & CLARK COUNTIES
STA. 10+360 TO END LLINE "A"

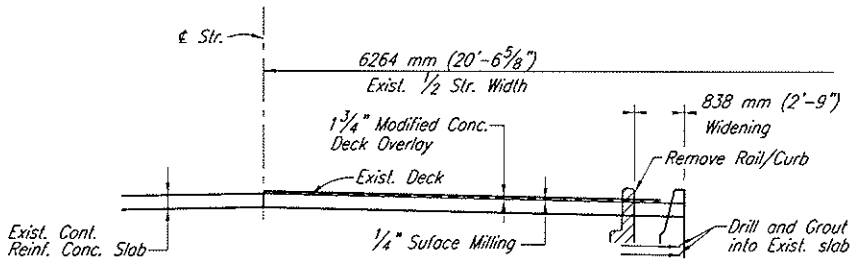
HORIZONTAL SCALE 1:1000	BRIDGE FILE
VERTICAL SCALE 1:200	DESIGNATION
SURVEY BOOK	SHEETS A-37a of
CONTRACT	PROJECT



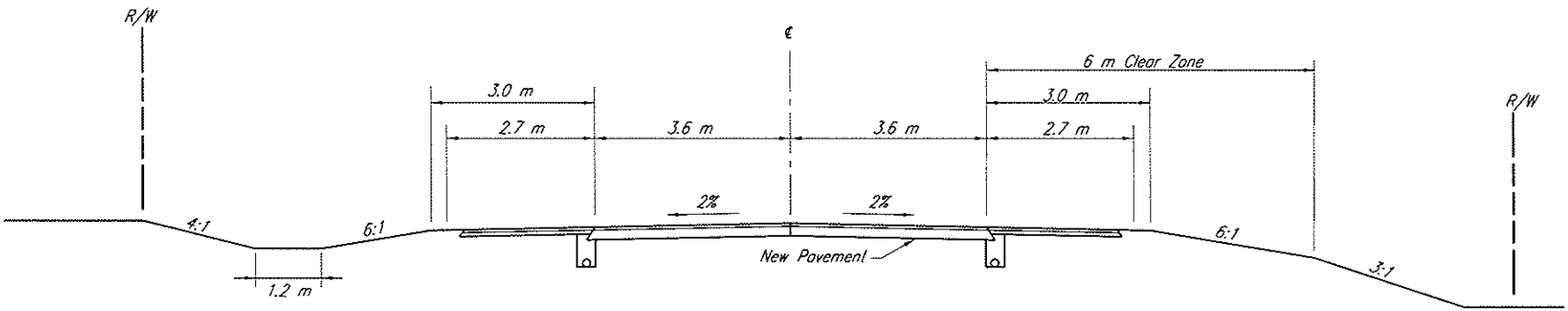
TYPICAL CROSS SECTION
S.R. 111
IU-SE/Klerner Lane to Chapel Lane



TYPICAL CROSS SECTION
S.R. 111
Chapel Lane to Fairview Knob Road

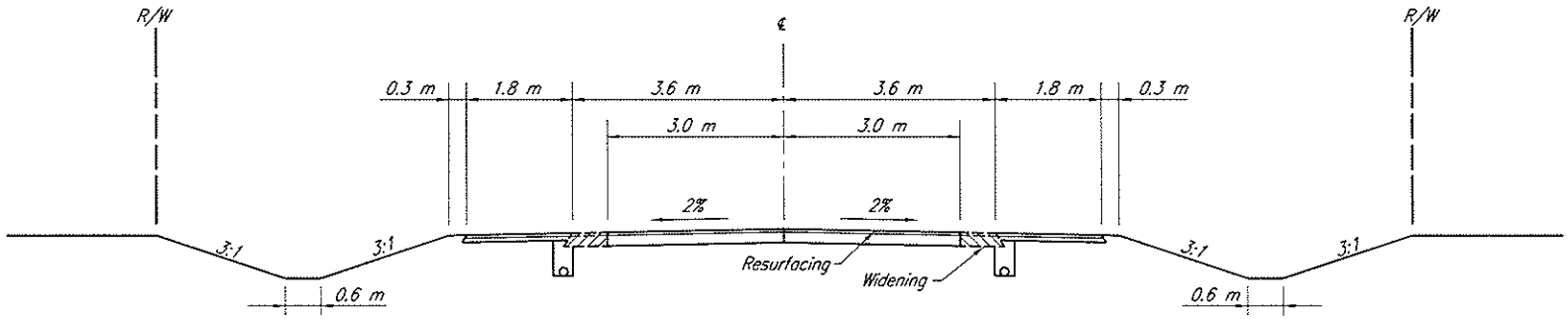


TYPICAL BRIDGE SECTION
S.R. 111 over Branch of Elk Run
(Alternate D shown,
Alternate E does not require widening)



TYPICAL CROSS SECTION

S.R. 111
Fairview Knob Road to S.R. 60
(Alternate D, 4R)

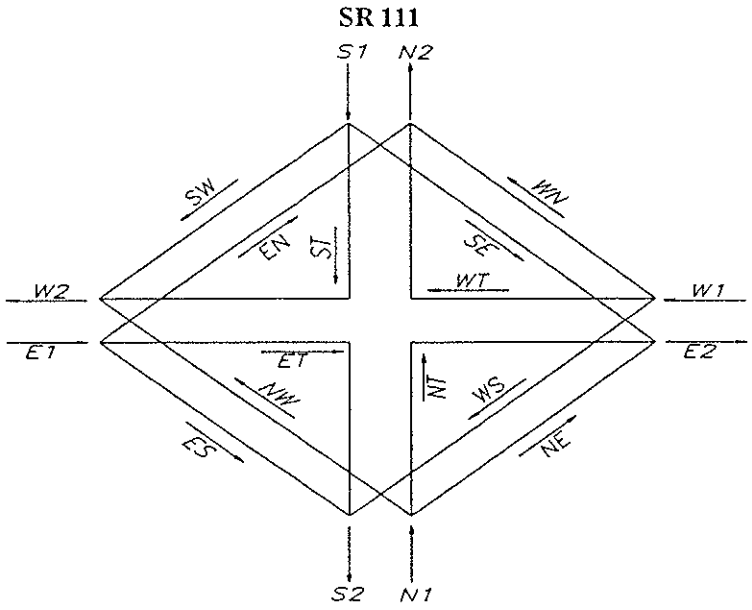


TYPICAL CROSS SECTION

S.R. 111
Fairview Knob Road to S.R. 60
(Alternate E, 3R)

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

Date: April 2001
Project: Des. No. 9902540
Route: State Road 111 at IU SE / Klemer Road
County: Floyd & Clark Counties
Other Info: AM-DHV



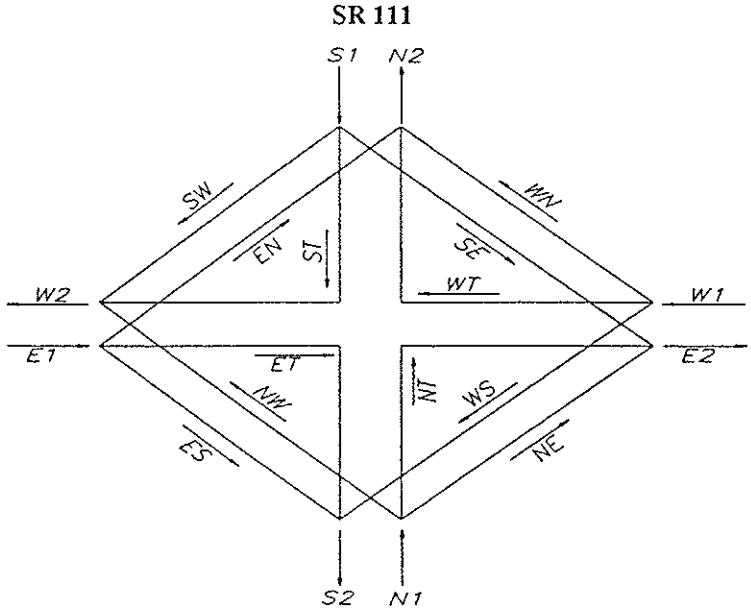
IU Southeast

Klerner Road

Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2001	2005	2010	2015	2025		% AADT	% DHV
NE	1670	1790	1990	2200	2600	4	6	5
NW	510	550	610	670	790	0	5	4
NT	7730	8290	9230	10160	12040	5	8	8
SE	510	550	610	670	790	19	6	5
SW	80	90	100	110	120	1	5	4
ST	8220	8820	9810	10810	12800	10	9	9
ES	570	610	680	750	890	1	5	4
EN	80	90	100	110	120	1	5	4
ET	550	590	660	720	860	1	4	3
WN	550	590	660	720	860	18	6	5
WS	1900	2040	2270	2500	2960	7	6	5
WT	560	600	670	740	870	1	4	3
N1	9910	10630	11830	13030	15430	5	8	7
S2	10690	11470	12760	14060	16650	9	8	8
S1	8810	9460	10520	11590	13710	10	9	9
N2	8360	8970	9990	10990	13020	6	8	8
E1	1200	1290	1440	1580	1870	1	5	4
W2	1150	1240	1380	1520	1780	1	5	4
W1	3010	3230	3600	3960	4690	8	6	5
E2	2730	2930	3260	3590	4250	6	6	5

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

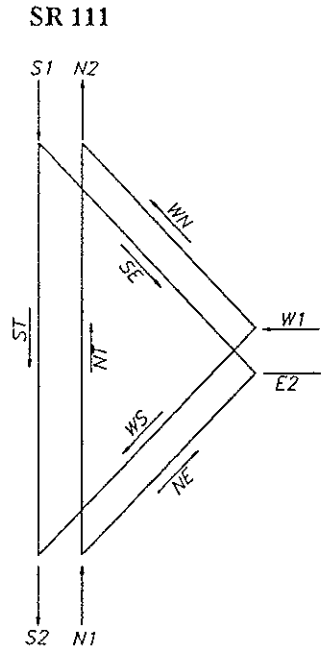
Date: April 2001
Project: Des. No. 9902540
Route: State Road 111 at IU SE / Klemer Road
County: Floyd & Clark Counties
Other Info: PM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2001	2005	2010	2015	2025		% AADT	% DHV
NE	1670	1790	1990	2200	2600	13	6	5
NW	510	550	610	670	790	17	5	4
NT	7730	8290	9230	10160	12040	11	8	5
SE	510	550	610	670	790	6	6	5
SW	80	90	100	110	120	8	5	4
ST	8220	8820	9810	10810	12800	7	9	5
ES	570	610	680	750	890	16	5	4
EN	80	90	100	110	120	11	5	4
ET	550	590	660	720	860	13	4	3
WN	550	590	660	720	860	8	6	5
WS	1900	2040	2270	2500	2960	12	6	5
WT	560	600	670	740	870	13	4	3
N1	9910	10630	11830	13030	15430	11	8	5
S2	10690	11470	12760	14060	16650	8	8	5
S1	8810	9460	10520	11590	13710	7	9	5
N2	8360	8970	9990	10990	13020	10	8	5
E1	1200	1290	1440	1580	1870	14	5	4
W2	1150	1240	1380	1520	1780	14	5	4
W1	3010	3230	3600	3960	4690	11	6	5
E2	2730	2930	3260	3590	4250	12	6	5

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

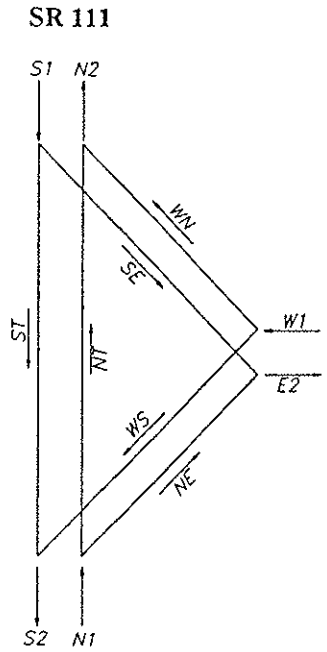
Date: April 2001
Project: Des. No. 9902540
Route: State Road 111 at St. Joseph Road (North)
County: Floyd & Clark Counties
Other Info: AM-DHV



Turning Movements	AADT 2001	2005	2010	2015	2025	DHV %	COMMERCIAL VEHICLES % AADT	% DHV
NE	990	1060	1180	1300	1540	4	6	5
NW								
NT	7110	7630	8490	9350	11070	6	8	8
SE	100	110	120	130	160	6	6	5
SW								
ST	7230	7760	8630	9510	11260	11	9	9
ES								
EN								
ET								
WN	90	100	110	120	140	7	6	5
WS	900	970	1070	1180	1400	8	6	5
WT								
N1	8100	8690	9670	10650	12610	6	8	8
S2	8130	8730	9700	10690	12660	11	9	9
S1	7330	7870	8750	9640	11420	11	9	9
N2	7200	7730	8600	9470	11210	6	8	8
E1								
W2								
W1	990	1070	1180	1300	1540	8	6	5
E2	1090	1170	1300	1430	1700	4	6	5

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

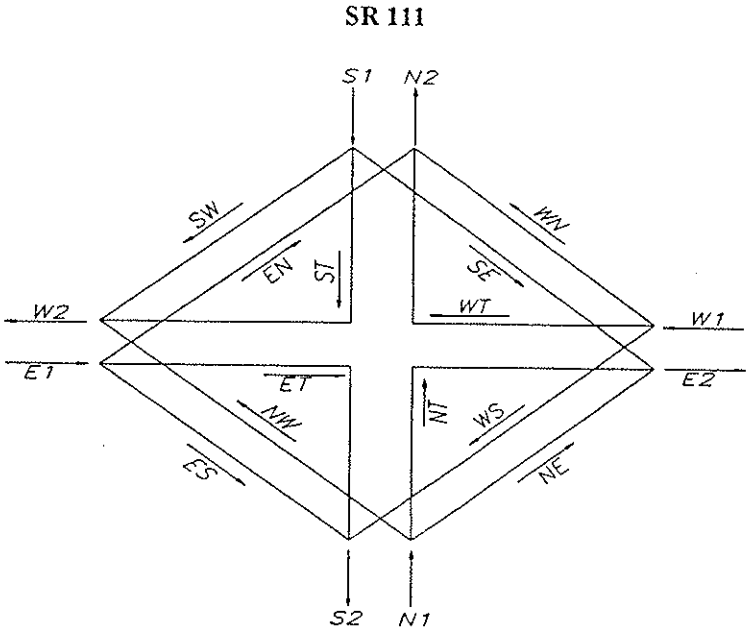
Date: April 2001
Project: Des. No. 9902540
Route: State Road 111 at St. Joseph Road (North)
County: Floyd & Clark Counties
Other Info: PM-DHV



Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2001	2005	2010	2015	2025		% AADT	% DHV
NE	990	1060	1180	1300	1540	10	6	5
NW								
NT	7110	7630	8490	9350	11070	10	8	5
SE	100	110	120	130	160	20	6	5
SW								
ST	7230	7760	8630	9510	11260	8	9	5
ES								
EN								
ET								
WN	90	100	110	120	140	14	6	5
WS	900	970	1070	1180	1400	6	6	5
WT								
N1	8100	8690	9670	10650	12610	10	8	5
S2	8130	8730	9700	10690	12660	8	9	5
S1	7330	7870	8750	9640	11420	8	9	5
N2	7200	7730	8600	9470	11210	10	8	5
E1								
W2								
W1	990	1070	1180	1300	1540	7	6	5
E2	1090	1170	1300	1430	1700	11	6	5

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

Date: April 2001
Project: Des. No. 9902540
Route: State Road 111 at Durgee Road / Mel Smith Road
County: Floyd & Clark Counties
Other Info: AM-DHV

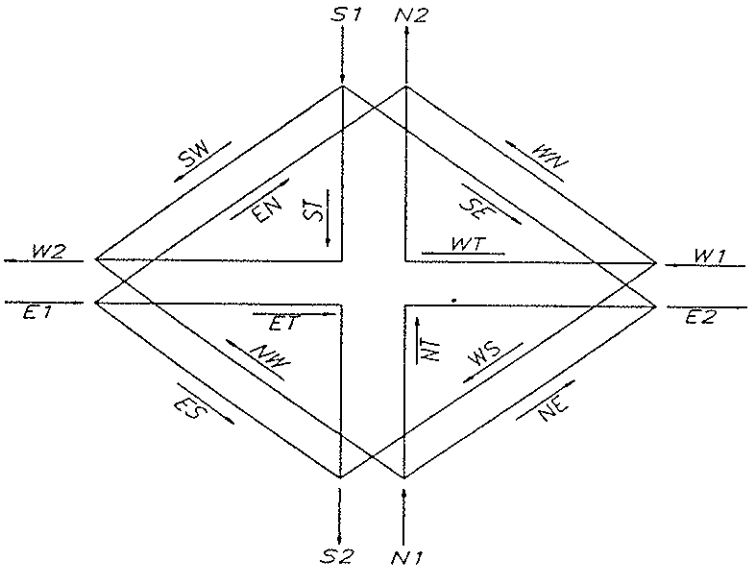


Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2001	2005	2010	2015	2025		% AADT	% DHV
NE	1020	1090	1220	1340	1590	5	6	5
NW	100	110	120	130	160	1	6	5
NT	5980	6420	7140	7860	9310	7	8	8
SE	470	500	560	620	730	6	6	5
SW	20	20	20	30	30	5	6	5
ST	6250	6710	7460	8220	9730	10	9	9
ES	100	110	120	130	160	3	6	5
EN	20	20	20	30	30	5	6	5
ET	50	50	60	70	80	2	5	4
WN	480	520	570	630	750	12	6	5
WS	1090	1170	1300	1430	1700	15	6	5
WT	60	60	70	80	90	2	5	4
N1	7100	7620	8480	9330	11060	6	8	8
S2	7440	7990	8880	9780	11590	11	9	8
S1	6740	7230	8040	8870	10490	10	9	9
N2	6480	6960	7730	8520	10090	7	8	8
E1	170	180	200	230	270	3	6	5
W2	180	190	210	240	280	2	5	5
W1	1630	1750	1940	2140	2540	14	6	5
E2	1540	1640	1840	2030	2400	5	6	5

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

Date: April 2001
Project: Des. No. 9902540
Route: State Road 111 at Durgee Road / Mel Smith Road
County: Floyd & Clark Counties
Other Info: PM-DHV

SR 111



Durgee Road

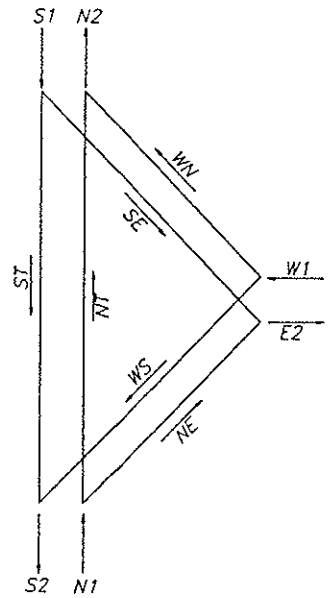
Mel Smith Road

Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2001	2005	2010	2015	2025		% AADT	% DHV
NE	1020	1090	1220	1340	1590	13	6	5
NW	100	110	120	130	160	8	6	5
NT	5980	6420	7140	7860	9310	10	8	5
SE	470	500	560	620	730	8	6	5
SW	20	20	20	30	30	5	6	5
ST	6250	6710	7460	8220	9730	8	9	5
ES	100	110	120	130	160	8	6	5
EN	20	20	20	30	30	5	6	5
ET	50	50	60	70	80	8	5	4
WN	480	520	570	630	750	6	6	5
WS	1090	1170	1300	1430	1700	8	6	5
WT	60	60	70	80	90	5	5	4
N1	7100	7620	8480	9330	11060	10	8	5
S2	7440	7990	8880	9780	11590	8	9	5
S1	6740	7230	8040	8870	10490	8	9	5
N2	6480	6960	7730	8520	10090	9	8	5
E1	170	180	200	230	270	8	6	5
W2	180	190	210	240	280	7	5	5
W1	1630	1750	1940	2140	2540	7	6	5
E2	1540	1640	1840	2030	2400	11	6	5

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

Date: April 2001
Project: Des. No. 9902540
Route: State Road 111 at Chapel Road
County: Floyd & Clark Counties
Other Info: AM-DHV

SR 111



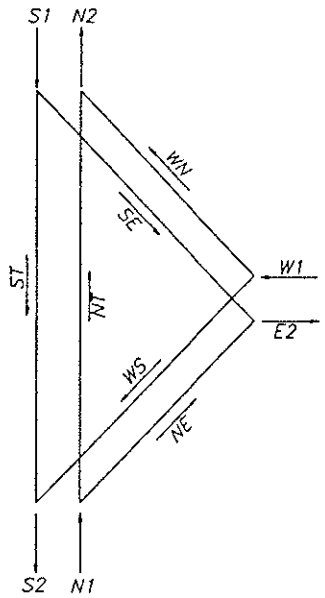
Chapel Road

Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2001	2005	2010	2015	2025		% AADT	% DHV
NE	1200	1290	1430	1580	1870	4	6	5
NW								
NT	3630	3890	4330	4770	5650	4	8	8
SE	180	190	210	240	280	12	6	5
SW								
ST	3610	3870	4310	4750	5620	12	9	9
ES								
EN								
ET								
WN	170	180	200	220	260	16	6	5
WS	1110	1190	1330	1460	1730	17	6	5
WT								
N1	4830	5180	5760	6350	7520	4	8	7
S2	4720	5060	5640	6210	7350	13	8	8
S1	3790	4060	4520	4990	5900	12	9	9
N2	3800	4070	4530	4990	5910	4	8	8
E1								
W2								
W1	1280	1370	1530	1680	1990	17	6	5
E2	1380	1480	1640	1820	2150	5	6	5

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

Date: April 2001
Project: Des. No. 9902540
Route: State Road 111 at Chapel Road
County: Floyd & Clark Counties
Other Info: PM-DHV

SR 111



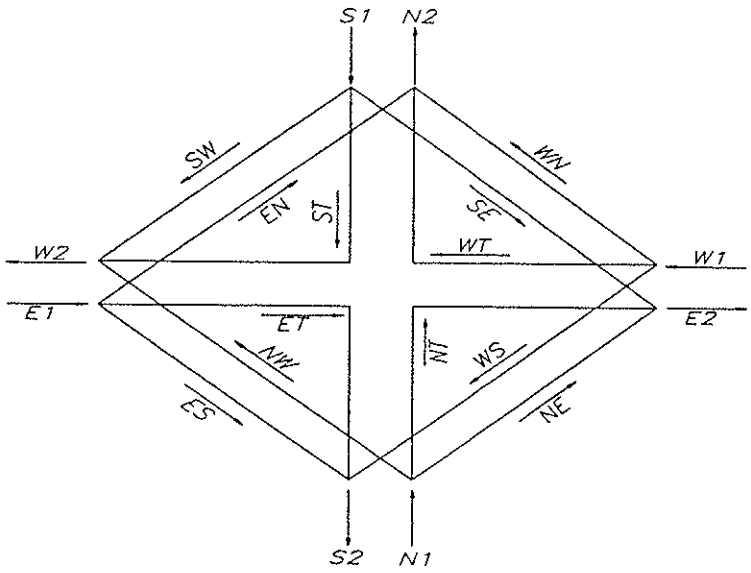
Chapel Road

Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2001	2005	2010	2015	2025		% AADT	% DHV
NE	1200	1290	1430	1580	1870	14	6	5
NW								
NT	3630	3890	4330	4770	5650	13	8	5
SE	180	190	210	240	280	4	6	5
SW								
ST	3610	3870	4310	4750	5620	5	9	5
ES								
EN								
ET								
WN	170	180	200	220	260	5	6	5
WS	1110	1190	1330	1460	1730	6	6	5
WT								
N1	4830	5180	5760	6350	7520	13	8	5
S2	4720	5060	5640	6210	7350	5	8	5
S1	3790	4060	4520	4990	5900	5	9	5
N2	3800	4070	4530	4990	5910	12	8	5
E1								
W2								
W1	1280	1370	1530	1680	1990	6	6	5
E2	1380	1480	1640	1820	2150	13	6	5

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

Date: April 2001
Project: Des. No. 9902540
Route: State Road 111 at St. Joseph Road (South)
County: Floyd & Clark Counties
Other Info: AM-DHV

SR 111



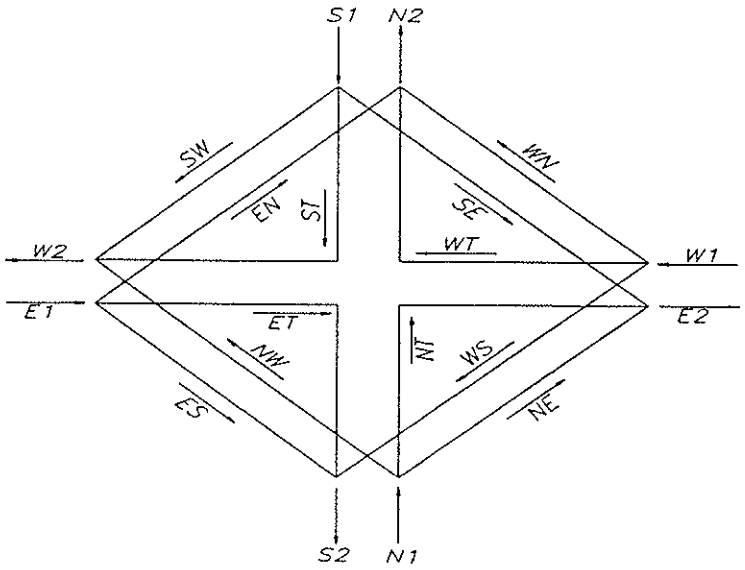
St. Joseph Road (South)

Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2001	2005	2010	2015	2025		% AADT	% DHV
NE	260	280	310	340	400	6	6	5
NW	290	310	350	380	450	3	6	5
NT	2610	2800	3120	3430	4060	4	8	8
SE	170	180	200	220	260	12	6	5
SW	190	200	230	250	300	6	6	5
ST	2540	2730	3030	3340	3950	12	9	9
ES	310	330	370	410	480	14	6	5
EN	210	230	250	280	330	10	6	5
ET	220	240	260	290	340	15	5	4
WN	210	230	250	280	330	9	6	5
WS	320	340	380	420	500	11	6	5
WT	260	280	310	340	400	6	5	4
N1	3160	3390	3780	4150	4910	4	8	7
S2	3170	3400	3780	4170	4930	12	8	8
S1	2900	3110	3460	3810	4510	12	9	9
N2	3030	3260	3620	3990	4720	5	8	8
E1	740	800	880	980	1150	13	6	5
W2	740	790	890	970	1150	5	6	5
W1	790	850	940	1040	1230	9	6	5
E2	650	700	770	850	1000	10	6	5

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

Date: April 2001
Project: Des. No. 9902540
Route: State Road 111 at St. Joseph Road (South)
County: Floyd & Clark Counties
Other Info: PM-DHV

SR 111

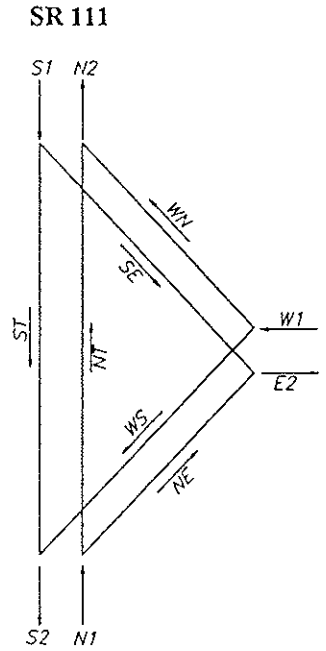


St. Joseph Road (South)

Turning Movements	AADT					DHV %	COMMERCIAL VEHICLES	
	2001	2005	2010	2015	2025		% AADT	% DHV
NE	260	280	310	340	400	8	6	5
NW	290	310	350	380	450	11	6	5
NT	2610	2800	3120	3430	4060	13	8	5
SE	170	180	200	220	260	6	6	5
SW	190	200	230	250	300	7	6	5
ST	2540	2730	3030	3340	3950	5	9	5
ES	310	330	370	410	480	5	6	5
EN	210	230	250	280	330	9	6	5
ET	220	240	260	290	340	6	5	4
WN	210	230	250	280	330	10	6	5
WS	320	340	380	420	500	6	6	5
WT	260	280	310	340	400	8	5	4
N1	3160	3390	3780	4150	4910	13	8	5
S2	3170	3400	3780	4170	4930	5	8	5
S1	2900	3110	3460	3810	4510	5	9	5
N2	3030	3260	3620	3990	4720	13	8	5
E1	740	800	880	980	1150	6	6	5
W2	740	790	890	970	1150	9	6	5
W1	790	850	940	1040	1230	8	6	5
E2	650	700	770	850	1000	7	6	5

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

Date: April 2001
Project: Des. No. 9902540
Route: State Road 111 at State Road 60
County: Floyd & Clark Counties
Other Info: AM-DHV

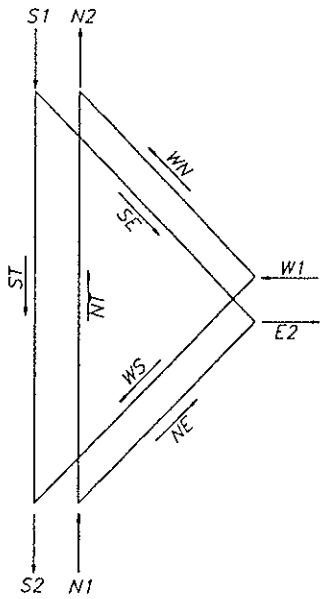


Turning Movements	AADT 2001	2005	2010	2015	2025	DHV %	COMMERCIAL VEHICLES % AADT	% DHV
NE	620	670	740	820	970	9	7	6
NW								
NT	2520	2700	3010	3310	3920	3	8	8
SE	4240	4550	5060	5580	6600	12	7	6
SW								
ST	2370	2540	2830	3120	3690	11	9	9
ES								
EN								
ET								
WN	4200	4510	5010	5520	6540	4	7	6
WS	580	620	690	760	900	10	7	6
WT								
N1	3140	3370	3750	4130	4890	5	8	8
S2	2950	3160	3520	3880	4590	11	9	8
S1	6610	7090	7890	8700	10290	12	8	7
N2	6720	7210	8020	8830	10460	4	7	7
E1								
W2								
W1	4780	5130	5700	6280	7440	5	7	6
E2	4860	5220	5800	6400	7570	12	7	6

TRAFFIC VOLUME FORECAST FOR INTERSECTIONS

Date: April 2001
Project: Des. No. 9902540
Route: State Road 111 at State Road 60
County: Floyd & Clark Counties
Other Info: PM-DHV

SR 111



SR 60

Turning Movements	AADT 2001	2005	2010	2015	2025	DHV %	COMMERCIAL VEHICLES % AADT	% DHV
NE	620	670	740	820	970	8	7	6
NW								
NT	2520	2700	3010	3310	3920	13	8	5
SE	4240	4550	5060	5580	6600	5	7	6
SW								
ST	2370	2540	2830	3120	3690	5	9	5
ES								
EN								
ET								
WN	4200	4510	5010	5520	6540	11	7	6
WS	580	620	690	760	900	6	7	6
WT								
N1	3140	3370	3750	4130	4890	12	8	5
S2	2950	3160	3520	3880	4590	5	9	5
S1	6610	7090	7890	8700	10290	5	8	6
N2	6720	7210	8020	8830	10460	12	7	6
E1								
W2								
W1	4780	5130	5700	6280	7440	11	7	6
E2	4860	5220	5800	6400	7570	6	7	6

CONSULTANTS, INC.
Engineers • Land Surveyors

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
D. Scott Bordenet, PE
Lyle D. Branson, PLS
Michael P. Breach, PE
Michael J. Obergfell, PE
Mark A. Schepers, PLS
Brent L. Smith, PLS
Gregory R. Wendling, PE
Donald R. West, PLS

January 5, 2001

MEMORANDUM

To: Mr. Brad Steckler, PE,
INDOT Engineering Assessment Manager

From: Gregory R. Wendling, PE GRW
Project Engineer
USI Consultants, Inc.

Re: **Minutes of Field Check**
Des. No.: 9902540
Project No.: STP –5322( )
Route No.: SR 111
Location: From IU Southeast/Klerner Lane to Jct with SR 60
County: Floyd and Clark
Work Type: Road Reconstruction

This memorandum is a summary of the observations and recommendations made at a field check held at the project on Thursday, January 04, 2001. 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 Dist., Development	812-522-5649
Henry Brown	INDOT, Central Office, Design	317-232-5153
John Rosenbarger	City of New Albany, Chief Planner	812-948-5333
Tom Flanagan	USI Consultants, Inc.	317-253-4996
Greg Wendling	USI Consultants, Inc.	317-253-4996

The following issues were discussed at the field check:

1. This portion of SR 111 is a two lane urban minor arterial. It is not on the National Highway System (NHS); nor is it on the National Truck Network. The posted speed limit is 40 mph from Klerner Lane to north of Bald Knob Road and 50 mph from that point to the end of the job at SR 60.

2. This portion of the SR 111 corridor has 3.66 m travel lanes bordered by 0.6 m shoulders. The vertical alignment is very rolling, with numerous locations with substandard Stopping Sight Distance (SSD). Intersection Sight Distance (ISD) at many of the intersections is substandard. The horizontal alignment has several locations of apparent substandard horizontal curvature.

3. It is being proposed to tie into the widened section on the north side of the Klerner Lane intersection. Consideration for added travel lanes for a portion of the project will be included in this project. The location for a

OFFICE
8415 East 56th Street
Indianapolis, Indiana 46216
Phone: 317-544-4996
Fax: 317-544-4997
Web Address: www.usiconsultants.com
E-mail: postoffice@usiconsultants.com

lane drop, will be developed after receipt of the INDOT turning movement counts.

4. Mr. Rosenbarger discussed current developments along the corridor. Much of the corridor is developing into industrial uses. The city has plans for constructing a roadway that parallels SR 111 on the west, from the south end of the project to north of Durgee Road/Mel Smith Road, the roadway then turns east and ties into SR 111 at Security Road. Development along this corridor is expected to be industrial. Consideration for this impending development will be considered in the development of the project.

5. Mr. Rosenbarger indicated that all roadways in New Albany are being constructed with a sidewalk. He would like to see sidewalk on this project. It was discussed that the portion of the job that has added travel lanes would probably be constructed with curb and gutter, and construction of a sidewalk or inclusion of a buffer zone (future sidewalk location) would be possible. For the north end of the job where travel lanes are not being added, construction will include a widened shoulder, but no sidewalk.

6. Due to the numerous locations of pavement replacement, due to substandard geometrics, Kumar Dave, Pavement Design Engineer, anticipates that the pavement design would call for a complete pavement replacement.

7. Greg Wendling will investigate the use of 3R versus 4R standards for the design of this project. There are numerous residents throughout the corridor. Utilizing 3R standards would help to minimize the right-of-way impact along the corridor.

8. The state detour route for traffic maintenance is I-265 to SR 311 to SR 60. This detour route would not cause much delay. Even if SR 111 is officially detoured during the construction process, maintaining traffic to the residents and businesses along the corridor will be required.

9. There are over 20 cross culverts within the project limits. It is proposed to replace all of the culverts. The one existing bridge structure (Str. # 111-22-5107), SR 111 over Elk Run Branch has a clear roadway of 12.5 m. The deck is showing some signs of deterioration, however the substructure is in excellent condition.

10. The following utilities were noted in the area:

- GTE Telephone (buried and overhead
- Buried Gas lines
- Overhead Electric
- Water lines

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

GRW:gw

cc: Attendees

File 2000-911

Indiana Department of Transportation

Materials and Tests Division
120 South Shortridge Road P.O. Box 19389
Indianapolis, Indiana 46219-0389
Phone: (317) 232-5280 Fax: (317) 356-9351

March 6, 2000

MEMORANDUM

TO : Mr. Karl Leet
Engineering Assessment Section
Division of Pre-Engineering and Environmental

THRU: Mr. David H. Andrewski DHA
Materials Engineer

FROM: Mr. Kumar P. Dave KPD
Pavement Design Engineer

RE : Preliminary Pavement Design
Des No : 9902540
District : Seymour
Route : SR 111 - From Klerner Lane to SR 60 in Floyd and Clark Counties.

A Preliminary Engineering Scoping Field Check was held on 11-18-99. SR 111 within the project limits is a two-lane 6.7 m wide bituminous roadway. SR 111 is a 5 lane road which transitions into a 2 lane road at Klerner Lane, 0.8 km north of I-265. This transition is on a crest vertical curve which appears to be substandard in regard to the required intersection sight distance at Klerner lane. Traffic volumes are expected to increase significantly within the next 20 to 25 years. There are 13 public road intersections, one RR crossing and one bridge in the project limit. Several intersections have sight distance problems and probably need left turn lanes at all legs. There exists significant geometric deficiencies within the southern two-thirds of this project. The existing pavement was resurfaced in 1997 and is in good condition.

Because of the significant number of geometric deficiencies that require grade changes; and therefore, new pavement the existing pavement should be replaced. If during the scoping process it is identified that the geometrics do not require upgrading please resubmit for further evaluation of the pavement design.

For preliminary pavement design for a new pavement or widening use 375 + /-75 mm of HMA pavement or 275 + /-25 mm of concrete pavement. The final pavement design will be given after completion of the geotechnical investigation and traffic data submitted.

KPD
File

GENERAL BRIDGE DATA: A SORT #: 026540

008 STRUCTURE #: 111-22-05107 008B CONDENSED BRIDGE #: 05107

002 DISTRICT: 05 ---SEYMOUR---- 008C DESIGNATION:
003 COUNTY: 22 ---FLOYD---
004 CITY: 00000
005B ROUTE #: 0111 005D UND:
005A INVENTORY ROUTE: 1 3 1 00111 0 005C UND:
011A LOGMILE: 017.60 011B UND:
007 FACILITY CARRIED: SR 111
006A FEATURE INTERSECTED: BRANCH ELK RUN 006B CRITICAL FEATURE:
009A LOCATION: 2.10 S SR 60 009B MAP LOCATION:

027A YEAR BUILT: 1965 106A YEAR RECONSTRUCT: 0000
106B DATE WIDENED: 106C DATE LAST REPAIR:
B CONTRACT #: B 06734
029A ADT OVER: 003870 VEHICLES PER DAY: 030A YEAR: 94
029B ADT UNDER: VEHICLES PER DAY: 030B YEAR:
019A BYPASS DETOUR LENGTH: 04 MILES 019B TYPE INTERCHANGE: N NOT APPLICABLE

104A HIGHWAY SYSTEM OV: 0 NON-NHS 104C FAS/FAU:
104B HIGHWAY SYSTEM UND: 104D FAS/FAU:
026A FUNCTIONAL CLASS OV: 07 RURAL MAJOR COLLECTOR
026B FUNCTIONAL CLASS UND:
028A # OF LANES: OVER: 02 028B UNDER: 00
033 MEDIAN: 0 NO MEDIAN 034 SKEW: 00

043A.01 MAIN SPAN STR MATL: 2 CONCRETE CONTINUOUS
043A.02 MAIN SPAN STR TYPE: 01 SLAB
043B STR TYPE, MAIN SPAN-ENG: CRCS
043C MAIN WIDENING TYPE-ENG:
044A.01 APPROACH SPAN MATL: 0 OTHER
044A.02 APPROACH SPAN TYPE: 00 OTHER
044B STR TYPE, APPR.PRIM.ENG:
044C OTHER APPROACH CODES: N

045 # OF MAIN SPANS: 003
046 # OF APPROACH SPANS: 0000
048 MAXIMUM SPAN LENGTH: 22.0 FEET
049 STRUCTURE LENGTH: 57 FEET

STRUCTURE INFORMATION:

107A DECK STRUCTURE TYPE: 1 CONCRETE CAST IN PLACE
107B CONCRETE FORMS: N
107C METAL FORMS: N
107D DECK THICKNESS: 011

WEARING SURFACE/PROTECTIVE SYSTEM:
108A TYPE OF WEARING SURFACE: 1 CONCRETE
108B TYPE OF MEMBRANE: 0 NONE
108C DECK PROTECTION: 0 NONE
108D DECK THICKNESS OF OVERLAY/ASPHALT: INCHES

TOTAL HORIZ. CLR/OVER: 047A E/N: 41.1 FT 047B W/S: FT
TOTAL HORIZ. CLR/UNDER: 047C E/N: FT 047D W/S: FT
053 MIN. VERT. CLR/OVER: 99 FT 99 IN
054B MIN. VERT. CLR/UNDER: 00 FT 00 IN
055B MIN. LAT. UNDERCLR (RIGHT): 99.9 FT 054A: N FEATURE NOT A HGWY OR RR
056 MIN. LAT. UNDERCLR (LEFT): 00.0 FT 055A: N FEATURE NOT A HGWY OR RR
032 APPROACH ROADWAY WIDTH: 028 FT
SIDEWALK/CURB WIDTH: 050A LEFT 00.5 FT 050B RIGHT 00.5 FT
051 BRIDGE WIDTH (C-C): 041.1 FT
052 DECK WIDTH (O-O): 044.0 FT
031 DESIGN LOADING: 5 HS 20
066A INVENTORY RATING: 2 HS LOADING 30 TONS
064A OPERATING RATING: 2 HS LOADING 43 TONS

```
065B GROSS TONS:                  24 TONS
064B RATING CHECK DIGIT:          2 UP TO DATE RATING
038    NAVIGATIONAL CONTROL:       0 NO NAVIGATION CONTROL
       NAVIGATIONAL CLEARANCE:   039 VERTICAL: 000 FT 040 HORIZONTAL: 0000 FT
116    NAV VERT CLR LIFT:              FT
```

INSPECTION INFORMATION:

```
090A DATE OF LAST INSPECTION:     04 27 99
090B CENTRAL OFFICE INSPECTION:
091    FREQUENCY OF INSPECTION:     24 MONTHS
092A FRACTURE CRIT. INSPECTION: N FREQ.     MTHS    093A LAST INSPECT:
092B UNDERWATER INSPECTION:       N FREQ.     MTHS    093B LAST INSPECT:
092C SPECIAL INSPECTION:          N FREQ.     MTHS    093C LAST INSPECT:
610    BRIDGE TYPE INSPECTION:
```

ESTIMATED REMAINING LIFE OF:

```
063A SURFACE:                     05 YEARS
063B DECK:                        20 YEARS
063C JOINTS:                      05 YEARS
063D SUPERSTRUCTURE:              20 YEARS
063E SUBSTRUCTURE:                20 YEARS
063F APPROACH:                    20 YEARS
063G CHANNEL:                     20 YEARS
063H CULVERT:                     NA YEARS
```

PROPOSED IMPROVEMENTS:

```
073    YEAR NEEDED:
075A TYPE OF WORK:              NO WORK NEEDED OR MINOR MAINT
075B WORK TO BE DONE BY:
076    LENGTH OF IMPROVEMENT:         FEET
114    FUTURE ADT:                      115 YEAR:
008E NEW BRIDGE #:
008D DES #:
```

PROJECTED COSTS: (IN THOUSANDS OF DOLLARS)

```
094    BRIDGE IMPROVEMENT COST:
095    ROADWAY IMPROVEMENT COST:
096    TOTAL PROJECT COST:
097    YEAR OF IMPROVEMENT COST:
```

INSPECTION:

```
058 COND OF DECK:        7 GOOD CONDITION - MINOR MAINTENANCE
059A COND OF SUPERSTR:    7 GOOD CONDITION - MINOR MAINTENANCE
060 COND OF SUBSTR:      7 GOOD CONDITION - MINOR MAINTENANCE
061 COND OF CHAN PROT: 7 BANK PROTECTION - NEEDS MINOR REPAIRS
111 COND OF PIER/ABUT:    N/A
062 COND OF RET WALLS: N NOT APPLICABLE - NOT A CULVERT (U.F. BRIDGE)
065 COND OF APPRO RDWY: 7 GOOD CONDITION/SLIGHT DETERIORATION

067 APPR OF STR COND:    6 EQUAL TO PRESENT MINIMUM CRITERIA
068 APPR OF DECK GEO:    6 EQUAL TO PRESENT DESIRABLE CRITERIA
069 APPR OF UNDERCLR:    N NOT APPLICABLE
070 BRIDGE POSTING:      5 EQUAL TO OR ABOVE LEGAL LOADS, NO POSTING REQUIRED
071 APPR OF WATER ADEQ: 7 SLIGHT CHANCE OF OVERTOPPING BRIDGE
072 APPR OF APPRO ALGN: 4 MEETS MINIMUM TOLERABLE LIMITS
113A SCOUR CRIT. BRIDGE: 8 FOUNDATIONS DETER TO BE STABLE FOR CALC SCOUR COND
TRAFFIC SAFETY FEATURES: 036A (.01 - .04)
 .01 BR RAILING: 0 STANDARDS NOT MET  .02 TRANSIT: 0 STANDARDS NOT MET
 .03 APPRO GRDRL: 0 STANDARDS NOT MET  .04 TRM END: 0 STANDARDS NOT MET
036B BRIDGE RAILING TYPE: F MISCELLANEOUS CONCRETE RAILINGS
```

STECKLER, BRAD

From: STECKLER, BRAD
Sent: Thursday, December 20, 2001 8:01 PM
To: 'Greg Wendling'
Cc: BAUKERT, FRANK
Subject: FW: SR 111 from 0.65 Mile N of I-265 to SR 60, Des. 9902540, Road Reconstruction

Greg,

I met today with Frank Baukert, one of the planners in the Long Range Transportation Planning Section.

All seems clear now to publish your recommendation for the multi-lane section from 0.65 mile N of I-265 to Chapel Lane, and the 3-lane section from Chapel Lane to Fairview Knob Road. Those elements have just been inserted into INDOT's Long Range Plan, and I understand from Frank's statements that the MPO is agreeable to the expansion.

-----Original Message-----
From: STECKLER, BRAD
Sent: Thursday, November 29, 2001 5:28 PM
To: BAUKERT, FRANK
Cc: SMITH, STEVE; BANSI, TARLOCHAN; BANSI, TARLOCHAN; 'gwendling@usiconsultants.com'; UDE, JIM; DYE, DAVID
Subject: SR 111 from 0.65 Mile N of I-265 to SR 60, Des. 9902540, Road Reconstruction

Frank,

I think you're the INDOT planner "responsible" for KIPDA now? If not, please forward this to the appropriate planner in your Section.

The project is programmed as routine Road Reconstruction, not Added Travel Lanes. The schedule shows a total project cost of $8.5 million, all for construction. (There is no R/W line in the schedule, or PE line.) Our latest estimate, that in the 1st draft of the Engineer's Report, shows a full project cost of near $16.4 million (though that could come down by a few million, depending on pavement treatment in the section that's to remain 2 lanes), with CN = $13.7 million, RW = $1.9 million, PE = $0.8 million.

My Section (actually, our consultant, USI Consultants, Inc., Greg Wendling) is nearly finished with the Engineer's Report for the subject project on SR 111. The favored proposal is to expand (add through travel lanes) to SR 111 from the project's south terminus, 0.65 mile N of I-265, at the intersection with Klerner Lane/IU-SE campus drive), to Chapel Lane. The length from Klerner to Chapel: 2.26 miles. In this segment of the project we favor providing a 5-lane section (4 through lanes plus continuous median/left-turn lane). This is, clearly, a form of "expansion" to the existing 2-lane road.

Then in the next section to the north, a short, 0.36-mile run from Chapel Lane north to Fairview Knob Road , the preference is to build a 3-lane section (2 through lanes plus continuous median/left-turn lane). I think you guys call this "capacity enhancement," or some such phrase.

The remainder of the job, from Fairview Knob Road north3.08 miles to SR 60, is slated to remain a 2-lane facility, with better shoulders, ditches, etc.

So, why is that a big deal. The draft INDOT Long Range Plan Update does not show expansion over the next 25 years for this stretch of SR 111. And I doubt—though I haven't confirmed it—that the MPO's (KIPDA's) plan shows expansion either.

The year 2005 (RFL) projected ADT's are 18,000 to 14,000 from Klerner Lane (the south project terminus) north to Chapel Road, then 8,000 to 6,000 from Chapel Road north to SR 60. Year 2025 (design year) projected ADT's are 27,000 to 20,000 from Klerner Lane to Chapel Road, then 12,000 to 9,000 from Chapel Road to SR 60. (This is, obviously, an unconstrained capacity projection.)

For a lot of other suburban roads around the state, we typically trigger a move to expand up to 4 lanes (2 per direction, usually with median) when the ADT climbs to near 13,000 to 16,000 vpd. SR 111's traffic load from Klerner Lane to Chapel Lane exceeds this threshold/trigger, with plenty to spare.

I've directed my Section's consultant, specifically Greg Wendling, to confer with you. I think this is a legitimate case for modifying the MPO's long-range plan and INDOT's draft long-range plan to "allow" this expansion to take place from Klerner Lane to Chapel Lane.

Tarlochan Bansi and I have just finished reviewing the 1st draft of the project's Engineer's Report. It will be returned to the consultant today, so that he may make revisions. I'd like by the time the 2nd draft comes back, normally 2-3 weeks, to have this coordination with the planners ironed out. Providing the 5-lane, 3-lane, and 2-lane improvements to existing 2-lane SR 111 from Klerner Lane to SR 60 will have heavy R/W impacts, including near 7-10 residential/business relocations and 15 hectares (you can convert to English...something near 35 acres) of right-of-way acquisition. We may well relocate (shift horizontally) a short section of the corridor to improve the intersection angle with the at-grade RR crossing.

Thank you, ahead of time.