The designer shall include the following items for consideration into the scope of work:
1.Assume removal and replacement of existing guardrail and survey information to achieve this task.
2.If guardrail is determined to be necessary, the designer shall check to see if the box can be extended in lieu of using guardrail.
3.A minimum 4 foot wide shoulder HMA is required between the travel lane and the face of guardrail. Depending on the roadway, additional offset width could be necessary.
4.A water proofing membrane shall be used for RCB installation.
5.Transition milling/overlay shall be extended beyond the patching for the structure. In instances of shoulder widening, the milling and paving of the mainline shall be performed to the extents of the widening.
6.Evaluate embankments for erosion repairs.
7.A vertical grade raise may be necessary depending on the results of the hydraulic analysis.
8.See the attached pdf Summary Sheet and Estimates for more details.

Supporting Documents

Document Type	Document Name	Date
SupportingDocuments	CV 66-74-51.62 Summary Sheet and Estimates.pdf	1/7/2021 12:06:30F
Other	93007883 Score (FY26-66).pdf	1/7/2021 1:09:25P
SupportingDocuments	CV 66-74-51.62 Supporting Documents.pdf	1/7/2021 9:01:22A

Report Prepared By and Approved By

Title	Signature	
Submitted By Asset Engineer	Heile, Jason	1/8/2021
Concur By Scoping Engineer	Decker, Duane	1/8/2021
Approved By SAM	Dughaish, Khalil	1/15/2021

Submittal Type Major Submittal Year 2026

Images


STOP

Duplicate Culvert Inspection Report was removed and can be found earlier in this appendix.

Culvert:	CV 066-074-51 62

Exist. Rise	3 ft
Exist. Span	8 ft
Exist. Length	34 ft
Exist. Opening	24 sft
New Opening	24 sft
Proposed New Rise	4
Proposed Span	10
Proposed Length	50
Cover	2 ft
Pavement Width	32 ft

Total	$1,636,938 57
Subtotal with Contigency (20%)	$1,375,028.40
Subtotal	$1,145,857 00

	%				
Mobilization/Demobilization	5%	LS	$ 81,846 93	1	$81,846 93
Construction Engineering	2%	LS	$ 24,554.08	1	$24,554.08
Maintaining Traffic	3%	LS	$ 40,923.46	1	$40,923.46
Storm Water Management	5%	LS	$ 81,846.93	1	$81,846 93
Clearing R/W	2%	LS	$ 32,738.77	1	$32,738.77

Item No.	Description		Unit	Unit Cost	Quantity	Line tem Cost	
202-51330	Present Structure Remove		LS	$ 23,000.00	1	$23,000.00	
203-02000	Excavation Common		CYS	$ 55.00	1500	$82,500.00	
203-02070	Borrow		CYS	$ 30.00	1500	$45,000.00	
205-11625	Pump Around		LS	$ 10,000.00	1	$10,000.00	
207-08264	Subgrade Treatment Type II		SYS	$ 20.00	525	$10,500.00	
207-09935	Subgrade Treatment Type Ic		SYS	$ 25.00	1494	$37,350.00	
211-09265	Structure Backfill Type 2 for 51.62		CYS	$ 50.00	124	$6,200.00	
211-09268	Structure Backfill Type 5 for 51.62		CYS	$ 125.00	150	$18,750.00	
211-09268	Structure Backfill Type 5 for 51.62 for removal		CYS	$ 125.00	115	$14,375.00	
303-01180	Compacted Aggregate No 53		TON	$ 40.00	120	$4,800.00	
303-01180	Compacted Aggregate No 53 for county road approaches		TON	$ 40.00	320	$12,800.00	
306-08043	Milling Transition		SYS	$ 16.00	2850	$45,600.00	
401-07328	Qc/Qa-Hma 3 64 Surface 9.5 Mm For Mainline Lifting		TON	$ 285.00	176	$50,160.00	
401-07328	Qc/Qa-Hma 3 64 Surface 9.5 Mm		TON	$ 285.00	59	$16,815.00	
401-07390	Qc/Qa-Hma 2 64 Intermediate 19.0 Mm		TON	$ 280.00	98	$27,440.00	
401-07390	Qc/Qa-Hma 2 64 Intermediate 19.0 Mm For lifting		TON	$ 280.00	184	$51,520.00	
401-07423	Qc/Qa-Hma 2 64 Base 19.0 Mm		TON	$ 215.00	313	$67,295.00	
401-07423	Qc/Qa-Hma 2 64 Base 19.0 Mm For Lifting		TON	$ 215.00	350	$75,250.00	
401-10258	Joint Adhesive Surface		LFT	$ 1.50	1600	$2,400.00	
401-10259	Joint Adhesive Intermediate		LFT	$ 1.50	800	$1,200.00	
401-11785	Liquid Asphalt Sealant		LFT	$ 0.90	1600	$1,440.00	
406-05520	Asphalt For Tack Coat		TON	$ 615.00	1	$615.00	
601-02241	Guardrail Remove		LFT	$ 10.00	300	$3,000.00	
601-12281	Guardrail Mgs W-Beam, 6 Ft 3 In Spacing		LFT	$ 25.00	300	$7,500.00	
601-12288	Guardrail Mgs Long Span Type 2		EA	$ 1,500.00	2	$3,000.00	
601-94689	Guardrail End Treatment Os		EA	$ 3,500.00	4	$14,000.00	
601-94689	Guardrail End Treatment Os for county road		EA	$ 3,500.00	4	$14,000.00	
610-07487	HMA for Approaches Type B		TON	$ 200.00	640	$128,000.00	
615-06490	Right Of Way Marker		EACH	$ 170.00	8	$1,360.00	
616-05689	Riprap Class 2		TON	$ 90.00	167	$15,030.00	
616-06405	Riprap Revetment		TON	$ 80.00	40	$3,200.00	
616-12246	GEOTEXTILE FOR RIPRAP TYPE 1A		SYS	$ 5.00	74	$370.00	
621-01004	Mob And Demob For Seeding		EA	$ 1,500.00	2	$3,000.00	
621-06559	Mulched Seeding R		SYS	$ 2.00	1000	$2,000.00	
628-09402	Field Office 8		MOS	$ 1,800.00	8	$14,400.00	
628-11976	Computer System Equipment		EA	$ 700.00	2	$1,400.00	
714-11654	Box Culvert	10x4	LFT	$ 1,250.00	50	$62,500.00	
715-08306	Hma For Structure Installation Type C		TON	$ 200.00	50	$10,000.00	
801-06207	Temporary Pvmt Marking 4 In		LFT	$ 1.00	3500	$3,500.00	
801-06640	Construction Sign A		EA	$ 175.00	15	$2,625.00	
801-08508	Temporary Traffic Barrier Type 2		LFT	$ 65.00	600	$39,000.00	
801-12042	Truck Mounted Attenuator		DAY	$ 450.00	60	$27,000.00	
801-12081	Portable Signal		LS	$ 20,000.00	1	$20,000.00	
808-06713	Line Paint Solid White 4 In		LFT	$ 1.35	600	$810.00	
808-06714	Line Paint Solid Yellow 4 In		LFT	$ 1.40	500	$700.00	
808-75996	Snowplowable Raised Pvmt Marker Remove		EA	$ 71.00	7	$497.00	
808-75998	Snowplowable Raised Pavement Marker		EA	$ 200.00	7	$1,400.00	
	Items below for 51.61 pipe with full structure Replacement						
202-51330	Present Structure Remove		LS	$ 23,000.00	1	$23,000.00	
205-11625	Pump Around		LS	$ 10,000.00	1	$10,000.00	
207-09935	Subgrade Treatment Type Ic		SYS	$ 25.00	60	$1,500.00	$162,555.00
211-09265	Structure Backfill Type 2 for 51.61		CYS	$ 50.00	124	$6,200.00	
211-09268	Structure Backfill Type 5 for 51.61		CYS	$ 125.00	150	$18,750.00	
211-09268	Structure Backfill Type 5 for 51.61 for removal		CYS	$ 125.00	115	$14,375.00	
616-05689	Riprap Class 2		TON	$ 90.00	167	$15,030.00	
616-06405	Riprap Revetment		TON	$ 80.00	40	$3,200.00	
714-11654	Box Culvert	10x4	LFT	$ 1,250.00	50	$62,500.00	
715-08306	Hma For Structure Installation Type C		TON	$ 200.00	40	$8,000.00	

INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N758-Hydraulics
Indianapolis, Indiana 46204

PHONE: (317) 233-2096
FAX: (317) 233-4929

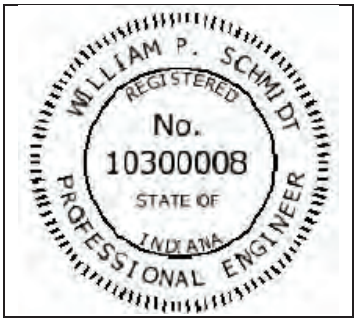
Eric Holcomb, Governor
Joe McGuinness, Commissioner

August 2, 2021

TO: Jason Heile, P.E.
Bridge Asset Engineer
INDOT-Vincennes District

FROM: Clair Bammann, E.I.T.
INDOT Engineer

THROUGH: Bill P Schmidt, PE
INDOT Engineer



SUBJECT: Hydraulic Review
Des. #: No Des
Asset Name: CV 066-074-51.61
County: Spencer County
Location: 1.0 miles E of W JCT SR 161
Crossing: UNT Willow Pond Ditch
DNR CIF Permit Required (Y/N): No
Legal Drain (Y/N): No

This hydraulic memo is an addendum to the memo dated June 10, 2021 for CV 066-074-51.61 (see below for a copy of that memo). This addendum was created to provide a proposal option matching the size of a proposed for CV 066-074-51.62 on a memo dated July 28, 2021. The information provided from the memo dated June 10, 2021 is still valid, and the hydrology used for this memo is the same hydrology that was previously approved. The signature and stamp on this memo are for the new proposal structure only.

Site Parameters		
Drainage Area	0.56	sq. mi.
Q_{100} Discharge	370.50	cfs
Q_{50} Discharge for velocity	333.45	cfs
Q_{100} Tailwater Depth	3.90	ft.
US Edge of Travel Lane	96.31	ft.
Design Roadway Serviceability Elevation	95.31	ft.

100 North Senate Avenue
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Eric Holcomb, Governor
Joe McGuinness,
Commissioner

Parameter	Existing		Proposal 3	
Structure Size & Type	8’ x 4’ RCB		16’ x 4’ RCB	
Q_{100} Headwater Elevation	96.65	ft.	95.47	ft.
Meets Roadway Serviceability @ Q_{100}	No		No	
Backwater	2.95	ft.	1.77	ft.
Minimal Low Structure Elevation (DS)	93.76	ft.	92.76	ft.
Assumed Flowline Elevation (DS)	89.76	ft.	89.76	ft.
Sump Depth	0	in.	12	in.

Existing Conditions and Hydraulic Analysis

The existing structure is an 8’ span by 4’ rise reinforced concrete box (RCB) on SR 66 in Spencer County. The watershed is mainly cropland and forested areas. Flow through the structure is north to south.

Hydrology was completed using TR-20 and the hydraulic analysis was completed using HY-8 Version 7.2. The hydraulic analysis shows the potential for roadway overtopping during the 100-year storm event.

Proposal Options

- Proposal 3: 16’ span x 4’ rise reinforced concrete box (RCB) sumped 12”

Per IDM 203-2.02(10), both proposal options must be sumped 12”, unless it is determined from the waters report that this tributary is not a Waters of the US. Proposal 3 does not meet the serviceability freeboard requirement of 1’ below the travel lane (Per Indiana Design Manual). It has 0.84’ of freeboard and does not overtop the roadway during a 100-year (1% AEP) storm event.

Riprap Design Recommendations

Riprap Properties		
Parameter	**Proposal 3**	
Outlet Velocity @ Q_{50}	7.09	ft/s
Outlet Riprap Size	Class 1	
Inlet Riprap Needed (Y/N)	Yes	
Natural Channel Velocity @ Q_{50}	0.84	ft/s
Minimal Inlet Riprap Size if Warranted	Revetment	

For this proposal, Class 1 riprap on geotextiles must be used at the outlet and placed according to IDM Figure 203-2J and INDOT Standard Drawing E714-BCSP. This proposal will require inlet protection because the structure is a RCB. Revetment riprap is the minimum size required for this protection. Alternative scour protection designs should be submitted to the INDOT Office of Hydraulics for review and approval.

If you have any questions or comments, please contact Clair Bammann at (317) 232-2901 or CBammann@indot.IN.gov.

INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N758-Hydraulics
Indianapolis, Indiana 46204

PHONE: (317) 233-2096
FAX: (317) 233-4929

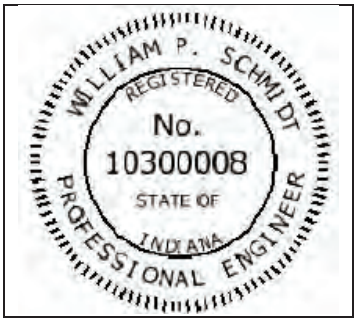
Eric Holcomb, Governor
Joe McGuinness, Commissioner

June 10, 2021

TO: Jason Heile, P.E.
Bridge Asset Engineer
INDOT-Vincennes District

FROM: Clair Bammann, E.I.T.
INDOT Engineer

THROUGH: Bill P Schmidt, PE
INDOT Engineer



SUBJECT: Hydraulic Review
Des. #: No Des
Asset Name: CV 066-074-51.61
County: Spencer County
Location: 1.0 miles E of W JCT SR 161
Crossing: UNT Willow Pond Ditch
DNR CIF Permit Required (Y/N): No
Legal Drain (Y/N): No

Site Parameters		
Drainage Area	0.56	sq. mi.
Q_{100} Discharge	370.50	cfs
Q_{50} Discharge for velocity	333.45	cfs
Q_{100} Tailwater Depth	3.90	ft.
US Edge of Travel Lane	96.31	ft.
Design Roadway Serviceability Elevation	95.31	ft.

Parameter	Existing		Proposal 1		Proposal 2	
Structure Size & Type	8' x 4' RCB		10' x 5' RCB		13' x 5' RCB	
Q_{100} Headwater Elevation	96.65	ft.	96.30	ft.	95.19	ft.
Meets Roadway Serviceability @ Q_{100}	No		No		Yes	
Backwater	2.95	ft.	2.60	ft.	1.49	ft.
Minimal Low Structure Elevation (DS)	93.76	ft.	93.76	ft.	93.76	ft.
Assumed Flowline Elevation (DS)	89.76	ft.	89.76	ft.	89.76	ft.
Sump Depth	0	in.	12	in.	12	in.

INDIANA DEPARTMENT OF TRANSPORTATION

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Eric Holcomb, Governor
Joe McGuinness,
Commissioner

Existing Conditions and Hydraulic Analysis

The existing structure is an 8' span by 4' rise reinforced concrete box (RCB) on SR 66 in Spencer County. The watershed is mainly cropland and forested areas. Flow through the structure is north to south.

Hydrology was completed using TR-20 and the hydraulic analysis was completed using HY-8 Version 7.2. The hydraulic analysis shows the potential for roadway overtopping during the 100-year storm event.

Proposal Options

- Proposal 1: 10' x 5' RCB sumped 12"
- Proposal 2: 13' x 5' RCB sumped 12"

Per IDM 203-2.02(10), both proposal options must be sumped 12", unless it is determined from the waters report that this tributary is not a Waters of the US.

Proposal 1 does not meet the serviceability freeboard requirement of 1' below the travel lane (Per Indiana Design Manual). It has been designed to meet the profile grade and to remove overtopping during a 100-year design storm. Proposal 2 has been designed to meet the freeboard requirement.

Riprap Design Recommendations

Riprap Properties				
Parameter	**Proposal 1**		**Proposal 2**	
Outlet Velocity @ Q_{50}	8.79	ft/s	6.73	ft/s
Outlet Riprap Size	Class 1		Class 1	
Inlet Riprap Needed (Y/N)	Yes		Yes	
Natural Channel Velocity @ Q_{50}	0.84		ft/s	
Minimal Inlet Riprap Size if Warranted	Revetment			

For both proposals, Class 1 riprap on geotextiles must be used at the outlet and placed according to IDM Figure 203-2J and INDOT Standard Drawing E714-BCSP. Each proposal will require inlet protection because the structures are RCBs. Revetment riprap is the minimum size required for this protection.

Alternative scour protection designs should be submitted to the INDOT Office of Hydraulics for review and approval.

If you have any questions or comments, please contact Clair Bammann at (317) 232-2901 or CBammann@indot.IN.gov.

INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
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Indianapolis, Indiana 46204

PHONE: (317) 233-2096
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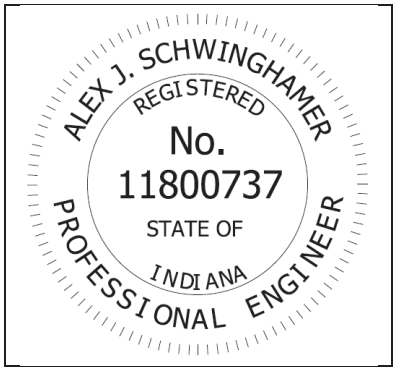
Eric Holcomb, Governor
Joe McGuinness, Commissioner

08/03/2021

TO: Jason Heile
Bridge Asset Engineer

FROM: Meagan Froman, E.I.T.
Hydraulics Engineer

THROUGH: Alex Schwinghamer, P.E.
Hydraulics Engineer



SUBJECT: Hydraulic Review
Des. #: 2100831
Asset Name: CV 066-074-51.62
County: Spencer
Location: 1.01 miles E of west Jct to SR 161
Crossing: UNT to Willow Pond Ditch
DNR CIF Permit Required (Y/N): No
Legal Drain (Y/N): Yes

This hydraulic memo is intended to be an addendum to the memo dated April 5th, 2021 (see pages 5 and 6) and the addendum dated July 28, 2021 (see pages 3 and 4). It was put together to provide a proposal that matches a proposal given for the adjacent structure, CV 066-074-51.61. The information provided in the memo dated April 5th, 2021 and addendum July 28, 2021 is still valid, and the hydrology used in this project is the same hydrology that was previously approved. The signature and stamp on this memo are for the new proposed structure only.

Site Parameters		
Drainage Area	233.19	acres
Q_{100} Discharge	259.20	cfs
Q_{100} Water Surface Elevation	94.35	ft.
Edge-of-Travel Lane Elevation	96.40	ft.
Design Roadway Serviceability Elevation	95.40	ft.

Parameter	Existing		Proposal 3	
Structure Size & Type	8’ x 2.5’ RCB		13’ x 5’ RCB with 24” Sump	
Q_{100} Headwater Elevation	95.70	ft.	95.50	ft.
Meets Roadway Serviceability @ Q_{100} (Y/N)	No		No	
Backwater	1.35	ft.	1.15	ft.
Assumed Flowline Elevation	92.00 ft.			
Sump Depth	0	in.	24	in.

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Eric Holcomb, Governor
Joe McGuinness,
Commissioner

Proposal 3 provides 0.90 feet of serviceability freeboard, which is less than the standard 1 foot, so it does not meet the standard roadway serviceability at the 100-year storm. However, based on the model, overtopping does not occur with this proposal.

Riprap Design Recommendations

Parameter	Proposal 3	
Q_{50} Outlet Velocity	6.34	ft/s
Minimal Outlet Riprap Size	Revetment	
Inlet Riprap Needed (Y/N)	Yes	
Q_{50} Natural Channel Velocity	0.59	ft/s
Minimal Inlet Riprap Size	Revetment	

For Proposal 3, revetment riprap on geotextiles should be placed at the outlet according to IDM Figure 203-2J and Standard Drawing E714-BCSP. Revetment riprap on geotextiles should also be placed at the inlet according to the same figure. Alternative scour protection designs should be submitted to the INDOT Hydraulic Engineering for review and approval.

If you have any questions or comments, please contact Meagan Froman at MFroman@indot.IN.gov.

Attached: July 28, 2021 Addendum and April 5, 2021 Memo

INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N758 - Hydraulics
Indianapolis, Indiana 46204

PHONE: (317) 233-2096
FAX: (317) 233-4929

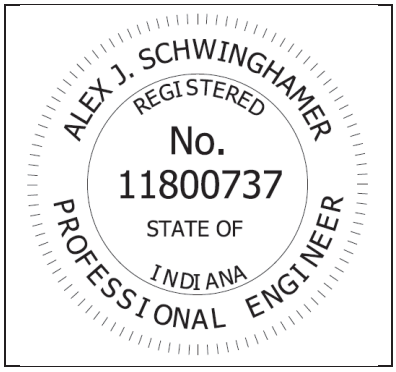
Eric Holcomb, Governor
Joe McGuinness, Commissioner

July 28, 2021

TO: Jason Heile
Bridge Asset Engineer

FROM: Meagan Froman, E.I.T.
Hydraulics Engineer

THROUGH: Alex Schwinghamer, P.E.
Hydraulics Engineer



SUBJECT: Hydraulic Review
Des. #: 2100831
Asset Name: CV 066-074-51.62
County: Spencer
Location: 1.01 miles E of west Jct to SR 161
Crossing: UNT to Willow Pond Ditch
DNR CIF Permit Required (Y/N): No
Legal Drain (Y/N): Yes

This hydraulic memo is intended to be an addendum to the memo dated April 5th, 2021 (see pages 3 and 4) and was put together to provide a proposal that meets the roadway serviceability including the standard serviceability freeboard. The information provided in the memo dated April 5th, 2021 is still valid, and the hydrology used in this project is the same hydrology that was previously approved. The signature and stamp on this memo are for the new proposed structure only.

Site Parameters		
Drainage Area	233.19	acres
Q_{100} Discharge	259.20	cfs
Q_{100} Water Surface Elevation	94.35	ft.
Edge-of-Travel Lane Elevation	96.40	ft.
Design Roadway Serviceability Elevation	95.40	ft.

Parameter	Existing		Proposal 2	
Structure Size & Type	8’ x 2.5’ RCB		16’ x 4’ RCB with 12” Sump	
Q_{100} Headwater Elevation	95.70	ft.	95.36	ft.
Meets Roadway Serviceability @ Q_{100} (Y/N)	No		Yes	
Backwater	1.35	ft.	1.01	ft.
Assumed Flowline Elevation	92.00 ft.			
Sump Depth	0	in.	12	in.

INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
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Indianapolis, Indiana 46204

PHONE: (317) 233-2096
FAX: (317) 233-4929

Eric Holcomb, Governor
Joe McGuinness, Commissioner

Riprap Design Recommendations

Parameter	Proposal 2	
Q_{50} Outlet Velocity	5.82	ft/s
Minimal Outlet Riprap Size	Revetment	
Inlet Riprap Needed (Y/N)	Yes	
Q_{50} Natural Channel Velocity	0.59	ft/s
Minimal Inlet Riprap Size	Revetment	

For Proposal 2, revetment riprap on geotextiles should be placed at the outlet according to IDM Figure 203-2J and Standard Drawing E714-BCSP. Revetment riprap on geotextiles should be placed at the inlet according to the same figure. Alternative scour protection designs should be submitted to the INDOT Hydraulic Engineering for review and approval.

If you have any questions or comments, please contact Meagan Froman at MFroman@indot.IN.gov.

Attached: April 5, 2021 Memo

INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N758 - Hydraulics
Indianapolis, Indiana 46204

PHONE: (317) 233-2096
FAX: (317) 233-4929

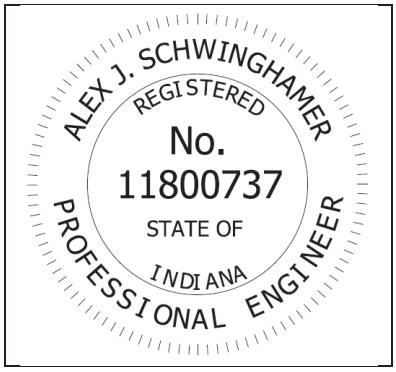
Eric Holcomb, Governor
Joe McGuinness, Commissioner

April 5, 2021

TO: Jason Heile
Bridge Asset Engineer

FROM: Meagan Froman, E.I.T.
Hydraulics Engineer

THROUGH: Alex Schwinghamer, P.E.
Hydraulics Engineer



SUBJECT: Hydraulic Review
Des. #: No Des.
Asset Name: CV 066-074-51.62
County: Spencer
Location: 1.01 miles E of west Jct to SR 161
Crossing: UNT to Willow Pond Ditch
DNR CIF Permit Required (Y/N): No
Legal Drain (Y/N): Yes

Site Parameters		
Drainage Area	233.19	acres
Q_{100} Discharge	259.20	cfs
Q_{100} Water Surface Elevation	94.35	ft.
Design Roadway Serviceability Elevation	95.40	ft.

Parameter	Existing		Proposed	
Structure Size & Type	8’ x 2.5’ RCB		9’ x 3’ RCB with 6” Sump	
Q_{100} Headwater Elevation	95.70	ft.	95.69	ft.
Meets Roadway Serviceability @ Q_{100} (Y/N)	No		No	
Backwater	1.35	ft.	1.34	ft.
Assumed Flowline Elevation	92.00 ft.			
Sump Depth	0	in.	6	in.

100 North Senate Avenue
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Indianapolis, Indiana 46204

PHONE: (317) 233-2096
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Eric Holcomb, Governor
Joe McGuinness, Commissioner

Existing Conditions and Analysis

The existing structure is approximately 38' long and has a rural watershed of predominately crops with some woods, ponds, pavement, and a few industrial and residential areas. Flow through the structure runs north to south, and the downstream channel is lined with weeds.

Hydrology was performed using Windows TR-20, and hydraulic analysis was performed with HY-8 Version 7.2. The tailwater elevation was determined using a cross-section from hydraulic data collection and some LiDAR data, and the cross-section was located about 50' downstream of the existing culvert. The elevations in the table are based on the downstream existing invert and proposed flowline elevation of 92.00 ft. This datum was determined from using field survey and should only be used for hydraulic purposes.

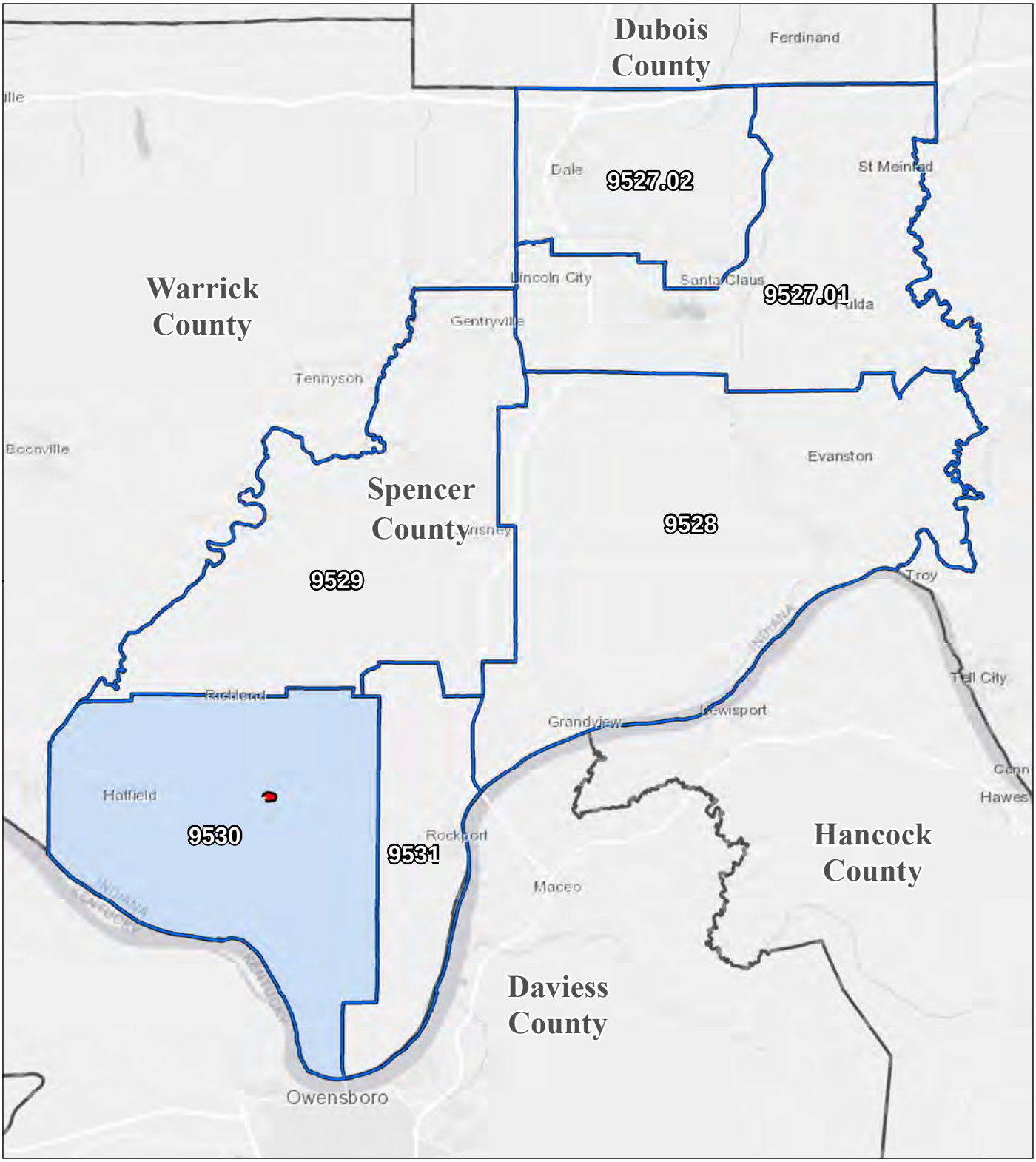
Pipe arch and elliptical replacement options were considered but not proposed due to cover issues. Per IDM 203-2.02(10), the proposed replacement structure for this project must be sumped 6" unless the waters report shows that the watercourse is not a Waters of the United States nor a Waters of the State. Additionally, a design exception is warranted for this structure as a significantly larger structure would be required to meet the roadway serviceability requirements. Due to the site constraints, the structure was designed to match existing conditions.

Riprap Design Recommendations

Parameter	Proposed	
Q_{50} Outlet Velocity	6.70	ft/s
Minimal Outlet Riprap Size	Class 1	
Inlet Riprap Needed (Y/N)	Yes	
Q_{50} Natural Channel Velocity	0.59	ft/s
Minimal Inlet Riprap Size	Revetment	

Class 1 riprap on geotextiles should be used at the outlet and placed according to IDM Figure 203-2J and Standard Drawing E714-BCSP. Revetment riprap on geotextiles should be placed at the inlet according to the same figure. Alternative scour protection designs should be submitted to the INDOT Office of Hydraulics for review and approval.

If you have any questions or comments, please contact Meagan Froman at MFroman@indot.IN.gov.



Project area

Census tract boundary, AC-1
COC Spencer County

0 2 4 6 8 10 Kilometers

0 1 2 3 4 5 Miles

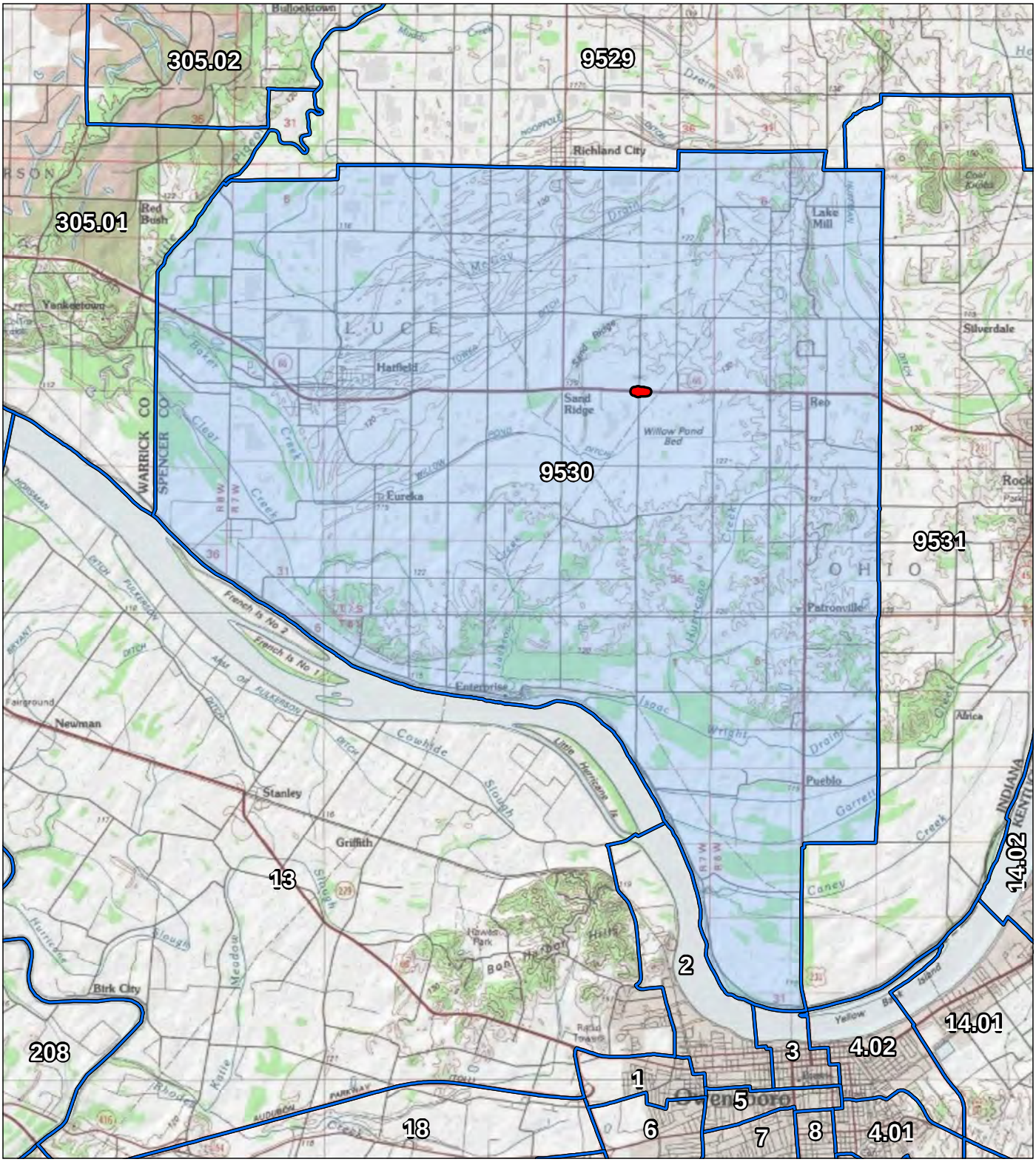
N

Census Tracts

Map of Census Tract 9530 Spencer County, Indiana – Showing Project Area.

Base: US Census Bureau, Geography Division 2023; ESRI 2024

Created by JVT; last saved: 9/23/2024 10:44:36 AM



Project area

Census tract boundary, AC-1
COC Spencer County

0 1000 2000 3000 4000 5000 Meters

0 5000 10000 15000 Feet

N

Census Tracts

Map of Census Tract 9530 Spencer County, Indiana – Showing Project Area.

Base: US Census Bureau, Geography Division 2023; National Geographic Society 2013

Created by JVT; last saved: 9/23/2024 10:03:55 AM

Spencer County Minority Populations
Census Tract: 9530
The project under Des. Nos. 2100830 and 2100831 are within this tract.

	Estimated Total	Estimated Total of Non-Minority Populations (White Alone)	Estimated Total of Minority Populations	% Minority	125% COC
COC – Spencer County, Indiana	20,364	19,233	1,131	5.55%	6.94%
AC-1 – Census Tract 9530, Spencer County, Indiana	3,992	3,896	96	2.40%	3.01%

Spencer County Minority Populations
Census Tract: 9530
The project under Des. Nos. 2100830 and 2100831 are within this tract.

	Estimate Total Population	Estimated Total Income Past 12 Months Below Poverty Level	% Low Income	125% COC
COC – Spencer County, Indiana	20,097	1,636	8.14%	10.18%
AC-1 – Census Tract 9530, Spencer County, Indiana	3,982	499	12.53%	15.66%

HISPANIC OR LATINO ORIGIN BY RACE

United States® Census Bureau

Note: The table shown may have been modified by user selections. Some information may be missing.

DATA NOTES	
TABLE ID:	B03002
SURVEY/PROGRAM:	American Community Survey
VINTAGE:	2020
DATASET:	ACSDT5Y2020
PRODUCT:	ACS 5-Year Estimates Detailed Tables
UNIVERSE:	Total population
MLA:	U.S. Census Bureau. "HISPANIC OR LATINO ORIGIN BY RACE." American Community Survey, ACS 5-Year Estimates Detailed Tables, Table B03002, 2020, https://data.census.gov/table/ACSDT5Y2020.B03002?q=B03002&g=010XX00US_020XX00US2_040XX00US18_050XX00US18147_1400000US18147953000&y=2020. Accessed on August 7, 2024.
FTP URL:	None
API URL:	https://api.census.gov/data/2020/acs/acs5
USER SELECTIONS	
TABLES	B03002
GEOS	Indiana; United States; Midwest Region; Census Tract 9530; Spencer County; Indiana; Spencer County, Indiana
VINTAGES	2020
EXCLUDED COLUMNS	None
APPLIED FILTERS	None
APPLIED SORTS	None
PIVOT & GROUPING	
PIVOT COLUMNS	None
PIVOT MODE	Off
ROW GROUPS	None
VALUE COLUMNS	None
WEB ADDRESS	https://data.census.gov/table/ACSDT5Y2020.B03002?q=B03002&g=010XX00US_020XX00US2_040XX00US18_050XX00US18147_1400000US18147953000&y=2020
TABLE NOTES	
	Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, for 2020, the 2020 Census provides the official counts of the population and housing units for the nation, states, counties, cities, and towns. For 2016 to 2019, the Population Estimates Program provides estimates of the population for the nation, states, counties, cities, and towns and intercensal housing unit estimates for the nation, states, and counties.
	Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section.
	Source: U.S. Census Bureau, 2016-2020 American Community Survey 5-Year Estimates
	Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see ACS Technical Documentation). The effect of nonsampling error is not represented in these tables.
	The Hispanic origin and race codes were updated in 2020. For more information on the Hispanic origin and race code changes, please visit the American Community Survey Technical Documentation website.
	The 2016-2020 American Community Survey (ACS) data generally reflect the September 2018 Office of Management and Budget (OMB) delineations of metropolitan and micropolitan statistical areas. In certain instances, the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB delineation lists due to differences in the effective dates of the geographic entities.
	Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.
	Explanation of Symbols:- The estimate could not be computed because there were an insufficient number of sample observations. For a ratio of medians estimate, one or both of the median estimates falls in the lowest interval or highest interval of an open-ended distribution.N The estimate or margin of error cannot be displayed because there were an insufficient number of sample cases in the selected geographic area. (X) The estimate or margin of error is not applicable or not available.median- The median falls in the lowest interval of an open-ended distribution (for example "2,500-")median+ The median falls in the highest interval of an open-ended distribution (for example "250,000+").** The margin of error could not be computed because there were an insufficient number of sample observations.*** The margin of error could not be computed because the median falls in the lowest interval or highest interval of an open-ended distribution.***** A margin of error is not appropriate because the corresponding estimate is controlled to an independent population or housing estimate. Effectively, the corresponding estimate has no sampling error and the margin of error may be treated as zero.
COLUMN NOTES	None

	Spencer County, Indiana		Census Tract 9530, Spencer County,	
Label	**Estimate**	**Margin of Error**	**Estimate**	**Margin of Error**
Total:	20,364	*****	3,992	±407
Not Hispanic or Latino:	19,760	*****	3,969	±406
White alone	19,233	±75	3,896	±397
Black or African American alone	131	±35	4	±6
American Indian and Alaska Native alone	16	±26	16	±26
Asian alone	73	±19	18	±27
Native Hawaiian and Other Pacific Islander alone	0	±23	0	±12
Some other race alone	69	±74	0	±12
Two or more races:	238	±44	35	±33
Two races including Some other race	15	±18	0	±12
Two races excluding Some other race, and three or more races	223	±40	35	±33
Hispanic or Latino:	604	*****	23	±26
White alone	474	±62	0	±12
Black or African American alone	0	±23	0	±12
American Indian and Alaska Native alone	1	±2	0	±12
Asian alone	0	±23	0	±12
Native Hawaiian and Other Pacific Islander alone	0	±23	0	±12
Some other race alone	51	±35	8	±13
Two or more races:	78	±60	15	±21
Two races including Some other race	78	±60	15	±21
Two races excluding Some other race, and three or more races	0	±23	0	±12

POVERTY STATUS IN THE PAST 12 MONTHS BY SEX BY AGE

United States® Census Bureau

Note: The table shown may have been modified by user selections. Some information may be missing.

DATA NOTES	
TABLE ID:	B17001
SURVEY/PROGRAM:	American Community Survey
VINTAGE:	2020
DATASET:	ACSDT5Y2020
PRODUCT:	ACS 5-Year Estimates Detailed Tables
UNIVERSE:	Population for whom poverty status is determined
MLA:	U.S. Census Bureau. "POVERTY STATUS IN THE PAST 12 MONTHS BY SEX BY AGE." American Community Survey, ACS 5-Year Estimates Detailed Tables, Table B17001, 2020, . Accessed on August 7, 2024.
FTP URL:	None
API URL:	https://api.census.gov/data/2020/acs/acs5
USER SELECTIONS	
TABLES	B17001
GEOS	Indiana; United States; Midwest Region; Census Tract 9530; Spencer County; Indiana; Spencer County, Indiana
VINTAGES	2020
EXCLUDED COLUMNS	None
APPLIED FILTERS	None
APPLIED SORTS	None
PIVOT & GROUPING	
PIVOT COLUMNS	None
PIVOT MODE	Off
ROW GROUPS	None
VALUE COLUMNS	None
WEB ADDRESS	https://data.census.gov/table/ACSDT5Y2020.B17001?q=B17001:%20Poverty%20Status%20in%20the%20Past%2012%20Months%20by%20Sex%20by%20Age&g=010XX00US_020XX00US2_040XX00US18_050XX00US18147_1400000US18147953000&y=2020
TABLE NOTES	
	Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, for 2020, the 2020 Census provides the official counts of the population and housing units for the nation, states, counties, cities, and towns. For 2016 to 2019, the Population Estimates Program provides estimates of the population for the nation, states, counties, cities, and towns and intercensal housing unit estimates for the nation, states, and counties.
	Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section.
	Source: U.S. Census Bureau, 2016-2020 American Community Survey 5-Year Estimates
	Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see ACS Technical Documentation). The effect of nonsampling error is not represented in these tables.
	The 2016-2020 American Community Survey (ACS) data generally reflect the September 2018 Office of Management and Budget (OMB) delineations of metropolitan and micropolitan statistical areas. In certain instances, the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB delineation lists due to differences in the effective dates of the geographic entities.
	Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.
	Explanation of Symbols:- The estimate could not be computed because there were an insufficient number of sample observations. For a ratio of medians estimate, one or both of the median estimates falls in the lowest interval or highest interval of an open-ended distribution.N The estimate or margin of error cannot be displayed because there were an insufficient number of sample cases in the selected geographic area. (X) The estimate or margin of error is not applicable or not available.median- The median falls in the lowest interval of an open-ended distribution (for example "2,500-")median+ The median falls in the highest interval of an open-ended distribution (for example "250,000+").** The margin of error could not be computed because there were an insufficient number of sample observations.*** The margin of error could not be computed because the median falls in the lowest interval or highest interval of an open-ended distribution.***** A margin of error is not appropriate because the corresponding estimate is controlled to an independent population or housing estimate. Effectively, the corresponding estimate has no sampling error and the margin of error may be treated as zero.
COLUMN NOTES	None

	Spencer County, Indiana		Census Tract 9530, Spencer County, Indiana	
Label	**Estimate**	**Margin of Error**	**Estimate**	**Margin of Error**
Total:	20,097	±95	3,982	±406
Income in the past 12 months below poverty level:	1,636	±330	499	±255
Male:	565	±174	160	±112
Under 5 years	95	±62	38	±34
5 years	17	±21	0	±12
6 to 11 years	60	±61	27	±57
12 to 14 years	17	±18	0	±12
15 years	6	±10	0	±12
16 and 17 years	10	±14	8	±13
18 to 24 years	34	±38	28	±40
25 to 34 years	57	±43	25	±33
35 to 44 years	23	±19	9	±14
45 to 54 years	45	±28	5	±7
55 to 64 years	71	±39	5	±9
65 to 74 years	36	±22	5	±9
75 years and over	94	±76	10	±16
Female:	1,071	±204	339	±167
Under 5 years	57	±52	7	±10
5 years	84	±92	65	±89
6 to 11 years	79	±45	41	±37
12 to 14 years	79	±56	46	±52
15 years	0	±23	0	±12
16 and 17 years	3	±5	0	±12
18 to 24 years	156	±78	45	±42
25 to 34 years	153	±65	57	±42
35 to 44 years	35	±28	0	±12
45 to 54 years	121	±64	17	±16
55 to 64 years	124	±49	33	±34
65 to 74 years	100	±52	0	±12
75 years and over	80	±44	28	±31
Income in the past 12 months at or above poverty level:	18,461	±349	3,483	±338
Male:	9,579	±195	1,690	±225
Under 5 years	452	±68	45	±41
5 years	72	±47	5	±12
6 to 11 years	581	±81	47	±46
12 to 14 years	547	±97	75	±48
15 years	164	±60	48	±48
16 and 17 years	236	±59	16	±20
18 to 24 years	711	±41	188	±66
25 to 34 years	1,066	±57	170	±84
35 to 44 years	1,168	±40	197	±55
45 to 54 years	1,327	±34	223	±60
55 to 64 years	1,501	±41	368	±99
65 to 74 years	1,127	±48	195	±58
75 years and over	627	±84	113	±55
Female:	8,882	±209	1,793	±189
Under 5 years	468	±70	75	±58
5 years	51	±34	9	±13
6 to 11 years	615	±109	117	±45
12 to 14 years	302	±88	91	±59
15 years	162	±50	81	±46
16 and 17 years	222	±51	19	±20
18 to 24 years	566	±93	100	±60
25 to 34 years	924	±64	89	±43
35 to 44 years	1,111	±35	203	±51
45 to 54 years	1,197	±66	214	±62
55 to 64 years	1,443	±52	502	±97
65 to 74 years	1,053	±62	201	±46
75 years and over	768	±84	92	±43

Jennifer Rhodes

From: Fair, Terri <TFair@indot.IN.gov>
Sent: Friday, September 27, 2024 12:12 PM
To: Cameron Berry
Subject: Des No. 2100830 & 2100831, Small Structures Replacement Environmental Justice Analysis Review
Attachments: EJ Analysis Des No's 2100830 & 2100831.pdf

INDOT-Environmental Services Division (ESD) has reviewed the project information along with the Environmental Justice (EJ) Analysis for the above referenced project. With the information provided, the project may require right-of-way, requires no relocations, and would not disrupt community cohesion or create a physical barrier. With the information provided, INDOT-ESD would not consider the impacts associated with this project as causing a disproportionately high and adverse effect on minority and/or low-income populations of EJ concern relative to non-EJ populations in accordance with the provisions of Executive Order 12898 and FHWA Order 6640.23a. No further EJ Analysis is required.