



CE-4

## APPENDIX L: ADDITIONAL STUDIES/REPORTS

**BRIDGES AND/OR SMALL STRUCTURE(S):**

*If the proposed action includes multiple structures, complete and duplicate for each bridge and/or small structure. Include both existing and proposed bridge(s) and/or small structure(s) in this section.*

Structure/NBI Existing: 150-22-04983 AEBL / 027640  
 Number(s): Existing: 150-22-04983 AWBL / 027650

Sufficiency Rating: 87.6, 2021 Routine Bridge Inspection Report  
 (Rating, Source of Information)

	Existing		Proposed	
Bridge/Structure Type:	Continuous Steel Beam Bridge		Continuous Stringer / Multi-Beam or Girder	
Number of Spans:	4		4	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	18.05 EB and 15.85 WB	ft.	18.05 EB and 15.85 WB	ft.
Curb to Curb Width:	24.0	ft.	24.0	ft.
Outside to Outside Width:	27.5	ft.	27.5	ft.
Shoulder Width:	3 Rt / 3 Lt	ft.	3 Lt / 3 Rt	ft.

*Describe bridges and structures; provide specific location information for small structures.*

Remarks:

These bridges carry US 150 eastbound over I-64 and are located approximately 8.81 miles east of SR 335 (Appendix B, pages 154-155). The existing structures are 4-span, continuous steel beam bridges.

No major work is required for these structures. The structural steel will be cleaned and painted as part of the overall Improve 64 project (Des. Nos. 1800706 and 1800405).

The eastbound bridge (150-22-04983 AEBL) and westbound bridge (150-22-04983 AWBL) are 240.0 feet long and 275 feet wide. The bridges were constructed in 1966. In 1981, the bridges were rehabilitated by repairing the concrete decks and placing overlays. The rehabilitation also included replacement of the joint at the south abutment and repair of the joint at the north abutment of each structure. The bridges are not listed in or eligible for the NRHP.

The proposed work will not result in impacts to water resources.

Will the structure be rehabilitated or replaced as part of the project?

**Yes**
 **No**
 **N/A**

*If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.*

Structure/NBI Number(s): Existing: I64-120-04984 JBEB / 034390  
 Proposed: I64-120-10786 / TBD

Sufficiency Rating: 82.2, 2021 Routine Bridge Inspection Report  
 (Rating, Source of Information)

	Existing	Proposed
Bridge/Structure Type:	Composite Prestressed Concrete I-Beam Bridge	Composite Prestressed Bulb-Tee Beam Bridge
Number of Spans:	3	1
Weight Restrictions:	N/A ton	N/A ton
Height Restrictions:	31 ft.	30.25 ft.
Curb to Curb Width:	40.3 ft.	75.75 ft.
Outside to Outside Width:	43.1 ft.	78.75 ft.
Shoulder Width:	10 Rt / 6.75 Lt ft.	11.67 Min. Rt / 15.86 Min. Lt ft.

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The existing bridge on I-64 EB over Quarry Road, located 0.73 mile east of US 150, will be replaced (Des. No. 1700207).

The existing structure (I64-120-04984 JBEB) is a 3-span composite prestressed concrete I-beam bridge that measures 185.5 feet long by 43.1 feet wide (Appendix B, pages 156-163). The bridge was constructed in 1965. In 1981, the bridge was rehabilitated by placing an overlay. In 1992, the bridge was rehabilitated with a link slab conversion, new bridge railings, partially reconstructed mudwalls, and new expansion joints at the end bents. Portions of the approach slabs were replaced in 2015. The bridge is not listed in or eligible for the NRHP.

Although the structure is in fair to satisfactory condition, it is recommended to replace the entire bridge to accommodate the new roadway geometry, minimize future deck maintenance area, and to reset the life of the structure.

The proposed structure (I64-120-10786) is a single span composite prestressed bulb-tee beam bridge that will measure 90.5 feet long and 78.75 feet wide. Additional work associated with the bridge replacement includes:

- Construction of MSE walls in front of the end bents to minimize the grading and meet both horizontal and vertical clearance requirements along Quarry Road, and
- Crushed aggregate will be placed over geotextile along the MSE walls.

Replacement of a 5-foot diameter corrugated metal pipe that carries the stream beneath I-64 EB and WB bridges, parallel to Quarry Road, may be necessary to accommodate the proposed bridge. Approximately 313 linear feet of permanent impacts to UNT 1 to Little Indian Creek may occur due to structure replacement. Temporary impacts may occur for temporary access and/or the installation of cofferdams for dewatering activities.

Will the structure be rehabilitated or replaced as part of the project?  Yes  No  N/A  
 If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI Number(s): Existing: I64-120-04984 CWBL / 034400  
Proposed: I64-120-10742 /TBD

Sufficiency Rating: 90.1, 2021 Routine Bridge Inspection Report  
(Rating, Source of Information)

	Existing	Proposed
Bridge/Structure Type:	Composite Prestressed Concrete I-Beam Bridge	Composite Prestressed Bulb-Tee Beam Bridge
Number of Spans:	3	1
Weight Restrictions:	N/A ton	N/A ton
Height Restrictions:	20.0 ft.	19.0 ft.
Curb to Curb Width:	56.2 ft.	79.67 ft.
Outside to Outside Width:	59.2 ft.	82.67 ft.
Shoulder Width:	7.5 Rt / 11.75 Lt ft.	17.74 Min. Rt / 13.75 Min. Lt ft.

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The existing bridge on I-64 WB over Quarry Road, located 0.73 mile east of US 150, will be replaced (Des. No. 2200015).

The existing structure (I64-120-04984 CWBL) is a 3-span composite prestressed concrete I-beam bridge that measures 152.6 feet long and 59.2 feet wide (Appendix B, pages 164-171). The bridge was constructed in 1965. In 1981, the bridge was rehabilitated by placing an overlay and replacing the expansion joints. In 1992, the bridge was rehabilitated with a link slab conversion, bent cap and beam patching, new bridge railings, and new expansion joints at the end bents. The bridge was rehabilitated in 2018, and the deck was widened. The 2018 rehabilitation also included a second overlay, new bridge railings, fiber-reinforced polymer beam repairs, widening end bents, interior bent patching, new expansion joints, and new approach slabs including terminal joints and sleeper slabs. The bridge is not listed in or eligible for the NRHP.

Although the structure is in satisfactory to good condition, it is recommended to replace the entire bridge to accommodate the new roadway geometry, minimize future deck maintenance area, and to reset the life of the structure.

The proposed structure (I64-120-10742) is a single span composite prestressed bulb-tee beam bridge that will measure 90.5 feet long and 82.67 feet wide. Additional work associated with the bridge replacement includes:

- Construction of MSE walls in front of the end bents to minimize the grading and meet both horizontal and vertical clearance requirements along Quarry Road, and
- Crushed aggregate will be placed over geotextile along the MSE walls.

Replacement of a 5-foot diameter corrugated metal pipe that carries the stream beneath I-64 EB and WB bridges, parallel to Quarry Road, may be necessary to accommodate the proposed bridge. Approximately 313 linear feet of permanent impacts to UNT 1 to Little Indian Creek may occur due to structure replacement. Temporary impacts may occur for temporary access and/or the installation of cofferdams for dewatering activities.

Will the structure be rehabilitated or replaced as part of the project?

Yes  No  N/A

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI Existing: I-64-121-04985 RCB / 034410  
 Number(s): Proposed: I64-121-10787 / TBD

Sufficiency Rating: 90.9, 2021 Routine Bridge  
 Inspection Report  
 (Rating, Source of Information)

	Existing		Proposed	
Bridge/Structure Type:	Continuous steel beam bridge		Composite Prestressed Bulb-Tee Beam Bridge	
Number of Spans:	3		2	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	21.34	ft.	27.98	ft.
Curb to Curb Width:	51.8	ft.	61.67	ft.
Outside to Outside Width:	54.8	ft.	64.67	ft.
Shoulder Width:	5.67 Rt / 10.17 Lt		12 Rt / 13.67 Lt	

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The existing bridge on I-64 WB over the I-64 EB Ramp to I-265 EB, located 2.11 miles east of US 150, will be replaced (Des. No. 1702617).

The existing structure (I-64-121-04985 RCB) is a 3-span continuous steel beam bridge that measures 189.0 feet long by 54.8 feet wide (Appendix B, pages 172-179). The bridge was constructed in 1965. The bridge was rehabilitated in 1992 with new truck height bridge railing on the outside coping and FC railing on the inside coping. The ends of the deck, bridge deck joints, and tops of the mudwall were also replaced in 1992. A new concrete overlay was also installed at this time. Plans are not available for the rehabilitation that occurred between 1965 and 1992, but based on the 1992 plans, a concrete overlay was placed. The bridge is not listed in or eligible for the NRHP.

Although the existing structure is in satisfactory condition, the entire bridge must be replaced to accommodate the two-lane ramp from eastbound I-64 to eastbound I-265. The existing substructure cannot accommodate the wider travel way under the bridge.

The proposed structure (I64-121-10787) is a 2-span continuous composite prestressed concrete bulb-tee beam bridge that will measure 232.26 feet long by 64.67 feet wide. The installation of a reinforced shotcrete face to the existing rock at the west end bent and a slope wall at the east end bent will also be required.

Impacts to water resources are anticipated within the I-64/I-265 interchange; however, impacts to water resources are not anticipated as a direct result of this bridge replacement.

Will the structure be rehabilitated or replaced as part of the project?

Yes     
  No     
  N/A

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI  
Number(s):

Existing: N/A  
Proposed: I64-121-10743 EBL / TBD

Sufficiency Rating:

N/A  
(Rating, Source of Information)

	Existing		Proposed	
Bridge/Structure Type:	N/A		Composite Curved Steel Plate Girder Bridge	
Number of Spans:	N/A		3	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	N/A	ft.	16.86	ft.
Curb to Curb Width:	N/A	ft.	49.67	ft.
Outside to Outside Width:	N/A	ft.	52.67	ft.
Shoulder Width:	N/A	ft.	13.67 Rt / 12 Lt	

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The Improve 64 project will construct a new 3-span composite curved steel plate girder bridge on the new alignment of I-64 EB (Des. No. 2200016), located 2.11 miles east of US 150.

The new structure (I64-121-10743 EBL) will be a 3-span composite curved steel plate girder bridge measuring 418.48 feet long by 52.67 feet wide (Appendix B, pages 180-186). The bridge will carry I-64 EB over the I-64 EB Ramp to I-265 EB. The end bent spill slopes will be protected by concrete slopewalls, and a crashwall will be included at the base of the piers.

Impacts to water resources are anticipated within the I-64/I-265 interchange; however, impacts to water resources are not anticipated as a direct result of installation of the new bridge.

Will the structure be rehabilitated or replaced as part of the project?

Yes

No

N/A

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI  
Number(s):

Existing: I64-121-04985 RBB / 034420  
Proposed: I64-121-10788 / TBD

Sufficiency Rating:

91.9, 2021 Routine Bridge  
Inspection Report

(Rating, Source of Information)

	Existing		Proposed	
Bridge/Structure Type:	Continuous Steel Beam Bridge		Continuous Composite Curved Steel Plate Girder Bridge	
Number of Spans:	3		3	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	16	ft.	17.1	ft.
Curb to Curb Width:	51.8	ft.	61.67	ft.
Outside to Outside Width:	54.8	ft.	64.67	ft.
Shoulder Width:	10.17 Rt / 5.67 Lt		13.67 Rt / 12 Lt	

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The existing bridge on I-64 WB over the I-265 WB Ramp to I-64 EB, located 2.20 miles east of US 150, will be replaced (Des. No. 1800721).

The existing structure (I64-121-04985 RBB) is a 3-span continuous steel beam bridge that measures 157.26 feet long by 54.8 feet wide (Appendix B, page 187-194). The bridge was constructed in 1965. The bridge was rehabilitated in 1992 with new truck height bridge railing on the outside coping and FC railing on the inside coping. The ends of the deck, bridge deck joints and tops of the mudwall were replaced in the 1992 rehabilitation. A new concrete overlay was also installed at this time. Plans were not available for the rehabilitation that occurred between 1965 and 1992, but based on the 1992 plans, a concrete overlay was placed. The bridge is not listed in or eligible for the NRHP.

Although the existing structure is in satisfactory condition, replacement of the entire bridge is necessary to accommodate the new roadway geometry. Two lanes of traffic will be provided under the bridge on the ramp from westbound I-265 to eastbound I-64. The existing structure cannot accommodate the wider travel way under the bridge; therefore, replacement is required.

The proposed structure (I64-121-10788) is a 3-span continuous composite curved steel plate girder bridge that will measure 246 feet long by 64.67 feet wide. The end bent spill slopes will be protected by concrete slopewalls, and a crashwall will be included at the base of the piers.

Impacts to water resources are anticipated within the I-64/I-265 interchange; however, impacts to water resources are not anticipated as a direct result of this bridge replacement.

Will the structure be rehabilitated or replaced as part of the project?

Yes

No

N/A

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI  
Number(s):

Existing: (I64)I265-00-05228 B / 049510  
Proposed: (I64)I265-00-10746 / TBD

Sufficiency Rating:

88.1, 2021 Routine Bridge  
Inspection Report

(Rating, Source of Information)

	Existing		Proposed	
Bridge/Structure Type:	Continuous Composite Welded Plate Girder Bridge		Continuous Composite Curved Steel Plate Girder Bridge	
Number of Spans:	3		3	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	16.25	ft.	16.56	ft.
Curb to Curb Width:	29.2	ft.	47.67	ft.
Outside to Outside Width:	32.2	ft.	50.67	ft.
Shoulder Width:	8.67 Rt / 4.62 Lt		11.67 Rt / 12 Lt	

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The existing bridge carrying I-265 WB Ramp to I-64 EB to I-265 EB, located 0.25 mile east of I-64, will be replaced (Des. No. 2200019).

The existing structure ((I64)I265-00-05228 B) is a 3-span continuous composite welded plate girder bridge that measures 201.3 feet long and 32.2 feet wide (Appendix B, pages 195-201). The bridge was constructed in 1972. The bridge was widened in 1999. To widen the bridge, the deck was replaced, and the end bent was widened. New wingwalls were constructed and the bridge was converted to semi-integral. Lastly, the existing hinges in the steel beams were retrofitted with top flange, bottom flange, and web splice plates. After the 1999 rehabilitation, the bridge was widened. A deck overlay was placed over the bridge in 2018. New FC railing was installed as part of the 1999 rehabilitation. The bridge is not listed in or eligible for the NRHP.

Although the existing structure is in satisfactory to good condition, a bridge replacement is recommended to accommodate the new roadway geometry. Although there is enough room under the main span to accommodate two lanes, the vertical clearance is not sufficient. If the roadway is lowered to provide adequate vertical clearance, the existing substructure would be compromised.

The proposed structure ((I64)I265-00-10746) is a 3-span continuous composite curved steel plate girder bridge that will measure 287.44 feet long and 50.67 feet wide. The end bent spill slopes will be protected by concrete slopewalls, and a crashwall will be included at the base of the piers.

Impacts to water resources are anticipated within the I-64/I-265 interchange; however, impacts to water resources are not anticipated as a direct result of this bridge replacement.

Will the structure be rehabilitated or replaced as part of the project?

Yes

No

N/A

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.



Structure/NBI  
Number(s):

Existing: I64-121-04986 JCEB / 034430  
Proposed: I64-121-10744 / TBD

Sufficiency Rating:

80.4, 2021 Routine Bridge  
Inspection Report

(Rating, Source of Information)

	Existing		Proposed	
Bridge/Structure Type:	Composite Prestressed I-Beam Bridge		Composite Prestressed Concrete Bulb-Tee Beam Bridge	
Number of Spans:	3		1	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	15.7	ft.	19.9	ft.
Curb to Curb Width:	54.3	ft.	78.67	ft.
Outside to Outside Width:	57.2	ft.	81.67	ft.
Shoulder Width:	10 Rt / 5 Lt		13.07 Rt / 8.64 Lt	

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The existing bridge carrying I-64 EB and I-265 WB to I-64 EB ramps over Captain Frank Road, located 0.29 mile east of the junction with I-265, will be replaced (Des. No. 2200017).

The existing structure (I64-121-04986 JCEB) is a 3-span composite prestressed I-beam bridge that measures 123.25 feet long and 57.2 feet wide (Appendix B, pages 202-210). The bridge was constructed in 1965. In 1981, the bridge was rehabilitated by repairing the concrete deck and placing an overlay. This also included replacing the approach slabs, and the interior bent and end bent joints. The bridge was rehabilitated in 1992 with a link slab conversion, bent cap and beam patching, new bridge railings, and new expansion joints at the end bents. In 2018, the bridge was rehabilitated and widened. The 2018 rehabilitation also included a second overlay, new FT bridge railing on the north coping, fiber-reinforced polymer beam repairs, interior bent patching, new expansion joints, and new approach slabs including terminal joints and sleeper slabs. The bridge is not listed in or eligible for the NRHP.

Although the existing structure is in fair to good condition, replacement is required due to the amount of grade raise required over the structure.

The proposed structure (I64-121-10744) is a single span composite prestressed concrete bulb-tee beam bridge that will measure 77.5 feet long and 81.67 feet wide. Additional work associated with the bridge replacement includes:

- Construction of MSE walls in front of the end bents to minimize the grading and meet both horizontal and vertical clearance requirements along Quarry Road, and
- Crushed aggregate will be placed over geotextile along the MSE walls.

Impacts to water resources are anticipated within the vicinity of the proposed bridge replacement; however, impacts to water resources are not anticipated as a direct result.

Will the structure be rehabilitated or replaced as part of the project?

Yes

No

N/A

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI  
Number(s):

Existing: I64-121-04986 CWBL / 034440  
Proposed: I64-121-04986 DWBL / 034440

Sufficiency Rating:

87.9, 2021 Routine Bridge  
Inspection Report

(Rating, Source of Information)

	Existing		Proposed	
Bridge/Structure Type:	Composite Prestressed Concrete I-Beam Bridge		Continuous Composite Prestressed Concrete Bulb-Tee Bridge	
Number of Spans:	3		3	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	40.67	ft.	37.92	ft.
Curb to Curb Width:	62.2	ft.	86.5	ft.
Outside to Outside Width:	65.1	ft.	89.5	ft.
Shoulder Width:	10 Rt / 5.67 Lt		13.67 Rt / 12 Lt	

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The existing bridge carrying I-64 WB Captain Frank Road, located 0.29 mile east of the junction with I-265, will be rehabilitated (Des. No. 2200018).

The existing structure (I64-121-04986 CWBL) is a 3-span composite prestressed I-beam bridge that measures 217.90 feet long and 65.1 feet wide (Appendix B, pages 211-220). The bridge was constructed in 1965. In 1981, the bridge was rehabilitated by placing an overlay and replacing the expansion joints. In 1992, the bridge was rehabilitated. The rehabilitation included widening the structure, widening substructure units, a link slab conversion, bent cap and beam patching, new bridge railings, replaced approach slabs, mudwall reconstruction, and new expansion joints at the end bents. In 2018, the bridge was rehabilitated by placing a second overlay, fiber-reinforced polymer beam repairs, interior bent patching, new expansion joints, and replacing the approach slabs and terminate joints. The bridge is not listed in or eligible for the NRHP.

Rehabilitation activities include widening the structure, widening the substructure units, and conversion of the end bents to semi-integral. The existing and proposed spillslopes will be lined with riprap over geotextile. Following the rehabilitation, the proposed structure (I64-121-04986 DWBL) will be a 3-span continuous composite prestressed concrete bulb-tee bridge that will measure 218.75 feet long and is 89.5 feet wide.

Impacts to water resources are anticipated within the vicinity of the proposed bridge rehabilitation; however, impacts to water resources are not anticipated as a direct result of the rehabilitation activities.

Will the structure be rehabilitated or replaced as part of the project?

<b>Yes</b>	<b>No</b>	<b>N/A</b>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI  
Number(s):

Existing: I64-122-04988 C / 034450  
Proposed: I64-122-04988 D / 034450

Sufficiency Rating:

78.1, 2021 Routine Bridge Inspection Report  
(Rating, Source of Information)

	Existing		Proposed	
Bridge/Structure Type:	Prestressed Concrete I-Beam Bridges		Prestressed Concrete I-Beam Bridges	
Number of Spans:	3		3	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	14.92	ft.	14.92	ft.
Curb to Curb Width:	EB – 54.887 and WB – 52.13	ft.	EB – 54.88 and WB – 52.13	ft.
Outside to Outside Width:	EB – 57.46 and WB – 54.71	ft.	EB – 57.46 and WB – 54.71	ft.
Shoulder Width:	EB – 13 Rt and 5.88 Lt and WB 5.88 Rt and 10.25 Lt	ft.	EB – 13 Rt and 5.88 Lt and WB 5.88 Rt and 10.25 Lt	ft.

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The existing bridges carrying I-64 EB and WB over Cherry Street, located 0.85 mile west of SR 111, will receive preventative maintenance (Des. No. 1702614).

The existing structures (I-64-122-04988 C) are 3-span composite concrete I-beam bridges that measure 198.40 feet long and 57.46 feet wide (EB) and 54.71 feet wide (WB) (Appendix B, pages 221-226). The bridges were constructed in 1965. Both bridges were rehabilitated in 1981 with new bridge overlays. Both bridges were again rehabilitated in 1992 with curb removal, new joints were constructed, and new rails were installed. The eastbound bridge was rehabilitated in 2010 when the ends of the deck, bridge deck joints and tops of the mudwall were replaced, and concrete overlay was applied. The bridge was also widened. The bridges are not listed in or eligible for the NRHP.

No significant geometric improvements to I-64 in the vicinity of Cherry Street are required.

Preventative maintenance activities include placing a rigid concrete bridge deck overlay on the deck and approach slabs, and surface seal will be applied to the concrete rails. Following the preventative maintenance activities, the bridge number will be updated to I64-121-04986 DWBL.

No impacts to water resources are anticipated as a result of the bridge preventative maintenance activities.

Will the structure be rehabilitated or replaced as part of the project?

Yes

No

N/A

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/ NBI Number(s): Existing I-265 EB: I265-00-05513 JBEB / 049520  
 Existing I-265 EB Ramp C: I265-00-05513 DRCA / 049535  
 Existing I-265 EB: I265-00-05513 JCEB / 049520  
 Existing I-265 EB Ramp C: I265-00-05513 DRCB / 049535

Sufficiency Rating:

I-265 EB: 87.6, 2022 Routine Bridge Inspection Report  
 I-265 EB Ramp C: 93.4, 2022 Routine Bridge Inspection Report

(Rating, Source of Information)

Existing		Proposed	
Bridge/Structure Type:	Continuous Composite Steel Beam Bridge	Continuous Composite Steel Beam Bridge	
Number of Spans:	3	3	
Weight Restrictions:	N/A	N/A	ton
Height Restrictions:	20.17	20.17	ft.
Curb to Curb Width:	Varies – 64.25 to 81.26	Varies – 84.32 to 101.37	ft.
Outside to Outside Width:	Varies – 67.24 to 84.29	Varies – 87.31 to 104.41	ft.
Shoulder Width:	6.5 Rt / 6.58 Max. Lt	6.5 Rt and 12 Lt Min.	ft.

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The existing bridge carrying I-265 EB and the I-265 EB Ramp over State Street, located 0.84 mile east of I-64, will be rehabilitated (Des. Nos. 2000326 & 2000323).

The existing structure (I265-00-05513 JBEB and I265-00-05513 DRCA) is a 3-span continuous composite steel beam bridge that measures 163.25 feet long with a variable width of 67.24 to 84.29 feet wide (Appendix B, pages 227-234). The bridge was constructed in 1972. In 1981, the bridge was widened to construct the ramp portion of the bridge and the original portion was overlayed. The entire bridge was overlayed in 1998 and the bridge railing was replaced. The bridge was painted in 2016. Although two structure numbers are listed for this bridge, the two decks are connected, and the steel beams are connected through diaphragms. The end bents are connected, but the piers are separate units. The bridge is not listed in or eligible for the NRHP.

Rehabilitation activities include widening the structure, replacing the concrete deck, widening the superstructure with additional rolled steel beams. The substructure will also be widened, and the existing end bents will be converted into semi-integral. The existing and proposed spillslopes will consist of concrete slopewalls. The rehabilitation will not change the structure length or type of the rehabilitated structure (I265-00-05513 JCEB & DRCB). The rehabilitated structure will have a variable width of 87.31 feet to 104.41 feet wide.

No impacts to water resources are anticipated as a result of the bridge rehabilitation activities.

Will the structure be rehabilitated or replaced as part of the project?

Yes  No  N/A

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI  
Number(s):

Existing: I265-00-05513 CWBL / 049530  
Proposed: I265-00-05513 DWBL / 049530

Sufficiency Rating:

90.0, 2022 Routine Bridge Inspection  
Report

(Rating, Source of Information)

	<b>Existing</b>		<b>Proposed</b>	
Bridge/Structure Type:	Continuous Composite Steel Beam Bridge		Continuous Steel Beam Bridge	
Number of Spans:	3		3	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	14.35	ft.	14.35	ft.
Curb to Curb Width:	52.27	ft.	52.27	ft.
Outside to Outside Width:	55.23	ft.	55.23	ft.
Shoulder Width:	5.77 Min. Rt / 10 Min. Lt		5.77 Min. Rt / 10 Min. Lt	

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The existing bridge carrying I-265 WB over State Street, located 0.84 mile east of I-64, will receive preventative maintenance (Des. No. 2000324).

The existing structure (I265-00-05513 CWBL) is a 3-span continuous composite steel beam bridge that measures 135.0 feet long and 55.23 feet wide (Appendix B, pages 235-241). The bridge was constructed in 1972. In 1981, the bridge was widened by one beam line to the west and the remainder of the deck was overlaid. The bridge was widened with another beam line in 1998, the deck was replaced, and the bridge was converted to semi-integral. New approach slabs were also constructed. In December 2014, the west exterior beam was impacted by a vehicle and heat straightened in 2015. The bridge was painted in 2016. The bridge is not listed in or eligible for the NRHP.

There are no significant geometric improvements to westbound I-265 in the vicinity of State Street.

Preventative maintenance activities include placing a rigid concrete bridge deck overlay on the deck and approach slabs, and surface seal will be applied to the concrete rails. Following the preventative maintenance activities, the bridge number will be updated to I-265-00-05513 DWBL.

No impacts to water resources are anticipated as a result of the bridge preventative maintenance activities.

Will the structure be rehabilitated or replaced as part of the project?

Yes

No

N/A

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI Number(s): Existing: I64-123-04689 B / 034480  
 Proposed: I64-123-04689 C / 034480

Sufficiency Rating: 81.0, 2021 Routine Bridge Inspection Report  
 (Rating, Source of Information)

	Existing		Proposed	
Bridge/Structure Type:	Continuous Steel Beam Bridge		Continuous Steel Beam Bridge	
Number of Spans:	3		3	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	16.58	ft.	16.58	ft.
Curb to Curb Width:	59.88	ft.	59.88	ft.
Outside to Outside Width:	62.5	ft.	62.5	ft.
Shoulder Width:	6 Rt / 5.88 Lt		6 Rt / 5.88 Lt	

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The existing bridge carrying I-64 EB and WB over Spring Street, located 0.18 miles west of SR 111, will receive preventative maintenance (Des. No. 2200719).

The existing structure (I64-123-04689 B) is a 3-span continuous steel beam bridge that measure 154.69 feet long 62.5 feet wide (EB) and 62.5 feet wide (WB) (Appendix B, pages 242-248). The bridge was constructed in 1960. A bridge deck overlay was completed in 1979, the bridge deck was replaced in 1991, and the bridge was painted in 2020. The bridge is not listed in or eligible for the NRHP.

There are no significant geometric improvements I-64 EB and WB over Spring Street.

Preventative maintenance activities include placing a rigid deck overlay and converting the existing end bent joints to semi-integral. The scope will also include replacing existing reinforced concrete bridge approaches. Following the preventative maintenance activities, the bridge number will be updated to I64-123-04689 C.

No impacts to water resources are anticipated as a result of the bridge preventative maintenance activities.

Will the structure be rehabilitated or replaced as part of the project?

Yes  No  N/A

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI Existing: I64-123-04688 C / 034470  
 Number(s): Proposed: I64-123-04688 D / 034470

Sufficiency Rating: 88.0, 2021 Routine Bridge Inspection Report  
 (Rating, Source of Information)

	Existing		Proposed	
Bridge/Structure Type:	Reinforced Concrete Girder Bridge		Reinforced Concrete Girder Bridge	
Number of Spans:	3		3	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	14.38	ft.	14.38	ft.
Curb to Curb Width:	39.33	ft.	39.33	ft.
Outside to Outside Width:	42.33	ft.	42.33	ft.
Shoulder Width:	8.67 Rt / 4.67 Lt		8.67 Rt / 4.67 Lt	

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The existing bridge carrying I-64 WB Ramp over I-64 Ramp 123D to I-64 WB (I-64 WB Exit Ramp at Spring/Elm Street), located 0.28 mile west of SR 111, will receive preventative maintenance (Des. No. 2200718).

The existing structure (I64-123-04688 C) is a 3-span reinforced concrete girder bridge that measures 108.61 feet long and 42.33 feet wide (Appendix B, pages 249-253). The bridge was constructed in 1960, a bridge deck overlay was completed in 1980, the bridge deck was replaced in 1991, and the bridge was repaired in 2019. The bridge is not listed in or eligible for the NRHP.

There are no significant geometric improvements needed on I-64 WB over the I-64 Ramp 123D to I-64WB.

Preventative maintenance activities include placing a rigid concrete bridge overlay deck on the deck and approach slabs, and surface seal will be applied on the concrete rails. Following the preventative maintenance activities, the bridge number will be updated to I64-123-04688 D.

No impacts to water resources are anticipated as a result of the bridge preventative maintenance activities.

Will the structure be rehabilitated or replaced as part of the project?

Yes  No  N/A

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

**Improve 64 Small Structures**

Existing Structure Number	Existing Length (Feet)	Existing Diameter (Feet)	Existing Type	Existing Location	Proposed Work	Proposed Structure Number	Proposed Length (Feet)	Proposed Diameter (Feet)	Proposed Type	Proposed Location	Impacts to Waters
CLV-63785	278	2.5	CMP	Crosses beneath I-64 EB and WB, east of I-64 / US 150 interchange	Structure replacement	CLV-63785	278	3	RCP	Approximately 12 feet west of the existing structure	UNT 2 to Little Indian Creek will be impacted due to relocation, structure replacement, and the installation of riprap.
CLV-63793	480	3.5	CMP	Crosses beneath I-64 EB and WB, west of the I-64 / I-265 interchange	CIPP liner and riprap installation	CLV-63793	480	3.33	CMP with CIPP liner	Same as existing	Wetland 7 will be impacted due to construction access and slope grading. UNT 10 to Valley View Creek will be impacted due to lining the existing structure and riprap installation.
CLV-63804	218	2.5	HDPE	Within the I-64 / I-265 interchange	Structure will remain. Manhole will be added to replace blind-tie	CLV-63804	218	2.5	HDPE with CIPP liner	Same as existing	UNT 8 to Valley View Creek will be impacted due to the installation of riprap at the inlet of the structure.
CLV-63823	220	2	CMP	Within the I-64 / I-265 interchange	Structure replacement	CLV-63823-A	123	3	RCP	Perpendicular to the existing structure	None
CLV-63832	307	3.5	CMP	Crosses beneath I-64 WB, south of the I-64 / I-265 interchange	CIPP liner	CLV-63832	307	3.33	CMP with CIPP liner	Same as existing	UNT 4 will be impacted due to lining the existing structure and riprap installation.
CLV-63841	114	3.5	CMP	Crosses beneath I-64 EB, south of the I-64 / I-265 interchange	Structure replacement	CLV-63841	114	5	RCP	Approximately six feet northwest of the existing structure	UNT 3 to Valley View Creek will be impacted due to relocation, structure replacement, and the installation of riprap.
CLV-63848	265	2	RCP	Crosses beneath I-64 EB and WB, south of I-64 / I-265 interchange	Structure Replacement	CLV-63848	265	3	RCP	Approximately 14 feet north of the existing structure	None
CLV-63857	160	2	CMP	Crosses beneath I-64 EB and WB, south of I-64 / I-265 interchange	Structure replacement	CLV-63857	160	3	RCP	Approximately 14 feet north of the existing structure	None
CV I64-022-121.07	864	7	CMP	Within the I-64 / I-265 interchange	CIPP liner	CV I64-022-121.07	864	6.66	CMP with CIPP liner	Same as existing	Hill Brook Creek will be impacted due to lining the existing structure and riprap installation.
CLV-95256	529	3.66	HDPE	Within the I-64 / I-265 interchange	Structure will remain. Manhole will be added to connect structure with CV I64-022-121.71 EB	CV I64-022-121.61 R	501	3.66	HDPE	Same as existing	None
CV I64-022-121.71 EB	318	4.75	HDPE	Within the I-64 / I-265 interchange	Structure will remain. Manhole and culvert extension will be added to connect structure with CV I64-022-121.61 R	CV I64-022-121.71 EB	318	4.75	HDPE	Same as existing	UNT 7 to Valley View Creek will be impacted due to the installation of a culvert extension.
CV I64-022-122.14 WB	269	4	CMP	Crosses beneath I-64 WB, south of the I-64 / I-265 interchange	HDPE liner	CV I64-022-122.14 WB	269	3.27	HDPE with CIPP liner	Same as existing	UNT 3 to Valley View Creek will be impacted due to relocation, structure replacement, and the installation of riprap.
CV I64-022-122.60	277	4	CMP	Crosses beneath I-64 EB and WB, south of the I-64 / I-265 interchange	CIPP liner	CV I64-022-122.60	277	3.83	CMP with CIPP liner	Same as existing	UNT 2 to Valley View Creek will be impacted due to lining the existing structure and the installation of riprap.
CV I64-022-121.95 EB	190	4	CMP	Crosses beneath I-64 EB, south of the I-64 / I-265 interchange	HDPE liner	CV I64-022-121.95 EB	190	2.7	HDPE with CIPP liner	Same as existing	UNT 4 to Valley View Creek will be impacted due to lining the existing structure and the installation of riprap.
CV I64-022-119.83	481	4.5	CMP	Crosses beneath I-64 EB and WB and the US 150 EB Ramp to I-64 EB, east of the I-64 / US 150 interchange	HDPE liner	CV I64-022-119.83	504	4.25	HDPE with CIPP liner	Same as existing	UNT 3 to Little Indian Creek will be impacted due to lining the existing structure and the installation of riprap.

Notes:  
 CMP - Corrugated Metal Pipe  
 RCP - Reinforced Concrete Pipe  
 CIPP - Cured-in-Place-Pipe  
 HDPE - High-Density Polyethylene



**hydrogeology inc.**

1211 S Walnut St  
Bloomington, IN 47401

**APPROVED**

*Justus McGill*

9/8/21

**I-64 Added Travel Lanes**

**DES 1900162**

**New Albany, Indiana**

## **Karst Feature Survey**

HNTB CORPORATION

Attn: Kia Gillette

111 Monument Circle Suite 1200,

Indianapolis, IN 46204

August 20, 2021



Jason N. Krothe, LPG -2511  
Senior Geologist, President



**Karst Feature Survey**

**I-64 Added Travel Lanes  
DES 1900162  
New Albany, Indiana**

Prepared for:  
HNTB Corporation

Prepared by:  
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Date:  
August 20, 2021

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**Figures and Appendices have been removed to reduce file size.**

## Executive Summary

On behalf of the HNTB Corporation (HNTB) Hydrogeology Inc. (HGI) conducted a karst survey for the added travel lanes on I-64 (DES 1900162) in New Albany, Indiana, Floyd County (the Site). The project will include the addition of a travel lane in each direction on I-64 from US 150 to Spring Street, except for westbound I-64 between I-265 and Spring Street where no lanes will be added. In most areas, the additional lanes will be added to the median. Rock cuts will be necessary in some areas. The median may also be widened in some areas. The Site is underlain by bedrock of the Borden Group, which is primarily siltstone and shale, with some thin, discontinuous limestone layers. A desktop review of available karst resources showed zero previously documented karst features within 0.5 miles of the karst survey area. Two caves (Spickert Knob and Highway 150 Cave) were identified outside of the 0.5-mile search area. A karst field survey was conducted on March 10 and April 2, 2021. No karst features were identified during the field survey. Limestone bedrock was identified at an elevation of approximately 835 feet on the north side of I-64. The limestone in this location had been eroded due to upstream surface flow. This location should be avoided during construction activities. Other lenses of limestone bedrock are possible at the Site. Eight non-karst springs were identified during the karst field survey. Flow from these springs should be perpetuated with a spring-box or other appropriate engineered structure. The karst field survey was limited to surface investigation, no subsurface investigations were conducted or available for review. Any potential karst feature identified during construction activities should be protected with erosion and sediment control measures within the construction limits and inspected by a karst expert.

## 1.0 Project Overview

### 1.1 Introduction

This survey was conducted to identify any karst features that could be impacted by adding travel lanes on I-64 (DES 1900162) (the Site) near New Albany, Floyd County, Indiana- Figure 1. The project will include the addition of a travel lane in each direction on I-64 from US 150 to Spring Street, except for westbound I-64 between I-265 and Spring Street where no lanes will be added. In most areas, the additional lanes will be added to the median. Rock cuts will be necessary in some areas. The median may also be widened in some areas. The Site is in Township 2 South: Range 6 East, Sections 22 and 27-34 and Township 3 South: Range 6 East, Sections 2 and 3, coordinates 38.18092, -85.52183. The Site is in the Georgetown and New Albany, IN 7.5-minute Quadrangle United States Geological Survey (USGS) (Figure 2) and near the known karst area of Indiana (Figure 3). The survey was conducted by Hydrogeology Inc. (HGI) of Bloomington, Indiana to satisfy the objectives of INDOT's karst guidelines entitled "Protection of Karst Features during Project Development and Construction".

### 1.2 Methodology

The study methodology was developed and conducted to ensure adherence to those guidelines (in italics below) in the following manner:

#### *Conduct Background Research and Field Check:*

Background sources reviewed for this project included: the Indiana Geological Survey (IGS), Indiana Cave Survey, Indiana Karst Conservancy, National Speleological Society, and karst experts knowledgeable about the area. Specific karst studies and mapping for the study area were examined and field checked, including cave maps and other karst feature data and mapping. Additional resources included high resolution aerial photography, LIDAR, and USGS topographic maps.

A field survey was conducted to verify the location of mapped karst features and identify any previously unmapped karst features.

### 1.3 Karst Survey Area

The karst survey area (KSA) for this project consisted of the proposed construction limits and appropriate areas outside (Figure 4). The KSA was limited to the western portion of the Site due to the lack of karst forming bedrock in the eastern portion. The entirety of the KSA was within existing INDOT right of way (ROW). The KSA depicted in Figure 4 is approximate.

#### 1.4 Geology / Physiography

The KSA is in the Norman Upland physiographic region. The bedrock in the karst study area is the Mississippian aged Borden Group (Figure 5). The Borden Group is primarily gray siltstone and of shale, with some sandstone (Rexroad, 1986). Discontinuous lenses of limestone are also present (Rexroad, 1986). The Borden Group in Floyd County can be up to 600 feet and typically thins as it dips to the southwest. Depth to bedrock is generally 5 to 20 feet, but can be up to 70 feet deep, especially near the Ohio River and in areas with small, buried valleys (Maier, 2006).

#### 1.5 Hydrogeology

The Borden Group is primarily siltstone and shale, which limits the availability of groundwater at the Site. Shallow groundwater movement occurs through unconsolidated overburden materials. The Borden Group does contain some sandstone which can produce small springs, typically where sandstone overlies impermeable siltstone or shale.

#### 1.6 Karst Desktop Review

A desktop review was conducted prior to field survey to identify any previously mapped karst features at the Site. Topographic maps, LIDAR data, IDNR Water Well Database and GIS data were utilized to identify sinkholes, caves and springs within 0.5 miles of the survey area. No previously identified karst features were found within 0.5 miles of the KSA (Figure 6). Two known caves (Spickert Knob and Highway 150 Cave) are located outside of 0.5-mile search area in the Floyds Knob area (Figure 6). They are two of the only known caves in Indiana that have developed in the Borden Group. Spickert Knob Cave has surveyed length of approximately 40 feet and a maximum height of 7 feet (Eckerty, 1967). No published survey data was located for Highway 150 Cave.

#### 1.7 Geotechnical

Geotechnical work for this project is in progress and being conducted by K&S Engineering and Terracon, Inc. Rock cores are being taken on the inside and outside shoulder of east-bound I-64 and inside shoulder of west-bound I-64 (Figure 7). Verbal communication from Kyle Zak of Terracon, Inc. indicated the borings have shown only siltstone bedrock.

## 2.0 Karst Field Survey Results

### 2.1 – Field Survey

The field survey was conducted on March 10 and April 2, 2021. No karst features were identified within the KSA. Limestone bedrock was observed at an elevation of approximately 835 ft on the north side of I-64 (Figure 8; Appendix A, Page 55). The limestone in this location has been eroded by upstream surface flow. This location should be avoided during construction activities. It is possible that other lenses of limestone are present at the Site. Eight non-karst springs were identified during the field survey and are described below (Figure 8, Table 1). Photographs of the field survey can be seen in Appendix A.

SP-1: Spring SP-1 is a sandstone spring with a flow of approximately 2 gallons per minute (gpm). Iron-oxidizing bacteria was visible in portions of the spring flow (Appendix A, Pages 14-15).

Mitigation: At the current time, the construction limits for the project have not been finalized. If SP-1 is located under a fill area, flow from the spring should be perpetuated with a spring box or other engineered method.

SP-2: Spring SP-2 had a flow of approximately 1 gpm. No bedrock was visible in the area surrounding the spring (Appendix A, Page 17). The spring flows out of soil and does not appear to be karst related.

Mitigation: At the current time, the construction limits for the project have not been finalized. If SP-2 is located under a fill area, flow from the spring should be perpetuated with a spring box or other engineered method.

SP-3: Spring SP-3 is a sandstone spring with a flow of approximately 2 gpm (Appendix A, Pages 19-20).

Mitigation: At the current time, the construction limits for the project have not been finalized. If SP-3 is located under a fill area, flow from the spring should be perpetuated with a spring box or other engineered method.

SP-4: Spring SP-4 had a flow of approximately 0.5 gpm. No bedrock was visible in the area surrounding the spring (Appendix A, Page 24). The spring flows out of soil and does not appear to be karst related.

Mitigation: At the current time, the construction limits for the project have not been finalized. If SP-4 is located under a fill area, flow from the spring should be perpetuated with a spring box or other engineered method.

SP-5: Spring SP-5 had a flow of approximately 0.5 gpm. No bedrock was visible in the area surrounding the spring (Appendix A, Page 41). The spring flows out of soil and does not appear to be karst related.

Mitigation: At the current time, the construction limits for the project have not been finalized. If SP-5 is located under a fill area, flow from the spring should be perpetuated with a spring box or other engineered method.

SP-6: Spring SP-6 had a flow of approximately 1 gpm. No bedrock was visible in the area surrounding the spring (Appendix A, Page 46). The spring flows out of soil and does not appear to be karst related.

Mitigation: At the current time, the construction limits for the project have not been finalized. If SP-6 is located under a fill area, flow from the spring should be perpetuated with a spring box or other engineered method.

SP-7: Spring SP-7 had a flow of approximately 1 gpm. No bedrock was visible in the area surrounding the spring (Appendix A, Page 53). The spring flows out of soil and does not appear to be karst related.

Mitigation: At the current time, the construction limits for the project have not been finalized. If SP-7 is located under a fill area, flow from the spring should be perpetuated with a spring box or other engineered method.

SP-8: Spring SP-8 had a flow of approximately 1 gpm. No bedrock was visible in the area surrounding the spring (Appendix A, Page 65). The spring flows out of soil and does not appear to be karst related.

Mitigation: At the current time, the construction limits for the project have not been finalized. If SP-8 is located under a fill area, flow from the spring should be perpetuated with a spring box or other engineered method.

## 2.2 Karst Feature Management Plan

No karst features were identified within the KSA. The following are general mitigation measures for karst features:

- 1.) Avoidance –When possible, avoidance of karst features is the preferred mitigation measure. If a sinkhole is avoided any drainage from the project area to the sinkhole should flow through the appropriate erosion and sediment control measures.
- 2.) Aggregate Cap – Any sinkhole within the construction limits, that cannot be avoided, and is not under pavement should receive an aggregate cap.
- 3.) Concrete Cap – Any sinkhole under pavement should receive a concrete cap.
- 4.) Best Management Practices (BMPs) – BMPs installed for karst features or springs will be entered into INDOT's MS4 database and maintained to ensure they continue to function as intended.



### 2.3 Study Limitations

The study was limited to surface investigation for karst features. Unidentified karst features are possibly present in the subsurface at the Site. Thick vegetation and undergrowth were present within the karst survey area. Vegetation and undergrowth can obscure karst features. Vegetation clearing was beyond the scope of work for this project.

### 2.4 Additional Work

HGI anticipates reviewing finalized geotechnical reports produced by Terracon Inc. and K&S Engineering for indications of karst features. Additionally, any potential karst features identified during construction activities will be inspected and documented.

## 3.0 Summary and Conclusions

The Site is located near the karst areas of Indiana with bedrock of Borden Group. The Borden Group is primarily siltstone and shale, with some sandstone and discontinuous limestone layers. There are two known caves in the Borden Group near the Site. No previously identified karst features were identified within 0.5 miles of the Site. Geotechnical borings conducted at the Site have shown siltstone bedrock.

The karst field survey identified zero karst features. Limestone bedrock was identified at an elevation of approximately 835 feet on the north side of I-64. The limestone in this location had been eroded due to upstream surface flow. This location should be avoided during construction activities. Other lenses of limestone are possible at the Site. Eight, non-karst springs were identified during the karst field survey. If any of these springs are located under a fill area, flow from the spring should be perpetuated with a spring box or other engineered method. The karst field survey was limited to surface inspection, no subsurface investigations were conducted. If any potential karst feature is discovered during construction activities, the feature should be protected by erosion and sediment control measures and inspected by HGI.

## 4.0 References

Eckerty, D., 1967, Spickert Knob Cave: Bloomington Grotto Newsletter Vol. 7, No. 1, p. 1-5.

Maier, R., 2006, Bedrock Aquifer Systems of Floyd County, Indiana: Division of Water, Resource Assessment Section.

Rexroad, C. B., 1986, Borden Group, in Shaver, R. H., Ault, C. H., Burger, A. M., Carr, D. D., Droste, J. B., Eggert, D. L., Gray, H. H., Harper, Denver, Hasenmueller, N. R., Hasenmueller, W. A., Horowitz, A. S., Hutchison, H. C., Keith, B. D., Keller, S. J., Patton, J. B., Rexroad, C. B., and Wier, C. E., Compendium of Paleozoic rock-unit stratigraphy in Indiana—a revision: Indiana Geological Survey Bulletin 59, p. 17-18.

**Land and Water Conservation Fund (LWCF) County Property List for Indiana (Last Updated March 2022)**

ProjectNumber	SubProjectCode	County	Property
1800285	1800285	Floyd	Edwardsville Park
1800405	1800405E	Floyd	Brock Sampson Ridge Nature Preserve
1800546	1800546	Floyd	Budd Road Woodlands Park

\*Park names may have changed. If acquisition of publically owned land or impacts to publically owned land is anticipated, coordination with IDNR, Division of Outdoor Recreation, should occur.