



PRELIMINARY HISTORIC BRIDGE ALTERNATIVE ANALYSIS REPORT BUSINESS 37 NORTH OVER BEANBLOSSOM CREEK

**Location: 0.1 Miles South of I-69, Monroe County, Indiana
BRIDGE FILE #: MONROE NO. 913; NBI #: 5300130**



PREPARED FOR:

MONROE COUNTY BOARD OF COMMISSIONERS

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PRELIMINARY HISTORIC BRIDGE ALTERNATIVE ANALYSIS REPORT
EXISTING BRIDGE NO. 53-00913 (NBI No. 5300130)
BUSINESS 37 NORTH OVER BEANBLOSSOM CREEK
BLOOMINGTON TOWNSHIP, MONROE COUNTY, INDIANA

I. EXISTING STRUCTURE DATA

A. Identification/History

Existing Bridge No.: Monroe No. 913 (53-00913, NBI 5300130)

Project Location: 0.1 mile south of I-69, T-9-N, R-1-W

Latitude: 39° 13' 54.12" N (39.2317° N)

Longitude: 86° 32' 26.84" W (-86.54079° W)

Des. No.: Not Available

Year Built: 1946

Year Rehabilitated: 1969, 1985, and 1995; **Year Repaired:** 2018 and 2023

Most Recent Field Inspection Date: 04/28/2022 (BLN)

Average Daily Traffic (ADT)/Year of ADT: 10,190 VPD / 2029 & 13,752 VPD / 2049

Percentage of Commercial Vehicles: 5% (See current SI&A Report)

Low Volume Road: No

Functional Classification: Minor Arterial

Rural/Urban: Rural

National Highway System: No

National Truck Network: No

Detour Length: 1.5 miles

Load Rating: 21 Ton and 37 Ton H and HS Inventory, respectively (see current SI&A Report)

Sufficiency Rating: 52.7 out of 100 Functionally Obsolete

National Register of Historic Places (NRHP) Status: Eligible

Historic Bridge Prioritization Status: Select

Historic Character-Defining Features: This bridge is eligible under Criterion C as it represents an early or distinctive phase in bridge construction, design, or engineering and it retains the historic integrity necessary to convey its engineering significance. This bridge is distinctive because it exemplifies an uncommon highway bridge type in Indiana. This bridge is eligible under Criterion C because it represents a variation, evolution, or transition that is conveyed through important features or innovations related to bridge construction, design, or engineering, and it retains historic integrity necessary to convey its engineering significance. This bridge displays exceptional overall or main span length for its type representing an innovative design and/or construction method.

B. Structure/Dimensions

MAIN SPANS

Surface Type: 1.75" modified portland cement concrete overlay on 6" precast prestressed concrete deck panels.

Out to Out of Copings: 32'-0"

Out to Out of Bridge Floor: 126' - 6 ¾"

Clear Roadway Width: 28'-0"

Number of Lanes on Structure: Two 12'-0" lanes

Skew: 00 degrees

Type of Superstructure: Steel Parker Pony Truss Bridge

Spans: 1 span @ 125' - 0 3/8"

Type of Substructure/Foundation: Concrete abutments on timber piling

Seismic Design Category: Seismic Design Category A (Preliminary investigation)

APPROACH SPANS

Surface Type: N/A

Out to Out of Copings: N/A

Out to Out of Bridge Floor: N/A

Clear Roadway Width: N/A

Number of Lanes on Structure: N/A

Skew: N/A **Type of Superstructure:** N/A

Spans: N/A **Type of Substructure/Foundation:** N/A

Seismic Zone (only if Zone 2): N/A

C. Appurtenances

Bridge Railing: Miscellaneous aluminum two tube bridge railing connected to the Truss members.

Curbs: The concrete transition rails with curbs.

Sidewalks: N/A

Utilities: Overhead electric and communication lines and buried water line along the west ditch. The buried water line appears to cross the roadway 200 feet south of the bridge. In addition, overhead electric lines are in the southeast quadrant that appear to supply power to a utility building 125 feet from the southeast bridge corner.

Railroad: N/A

D. Approaches

ROADWAY

South Approach Roadway Width: Two, 12'-0" wide lanes with 4'-0" paved shoulders and 4'-0" earth shoulders (8'-0" total usable shoulder outside guardrail limits).

North Approach Roadway Width: North Bound (NB) lane is 16'-0" wide with 4'-0" (left) and 11'-0" (right) paved shoulders and 6'-0" (left) usable shoulder and 13'-0" (right) guardrail offset.

South Bound (SB) lane is 15'-0" wide with 9'-0" (left) and 5'-0" (right) paved shoulders and 12'-0" (left) and 5'-0" (right) usable shoulders.

Surface Type: Bituminous

Guardrail: Aluminum Rail with Steel W-Beam

Guardrail Transition: Aluminum Rail

Guardrail End Treatment: Steel W-Beam Type 1

II. EXISTING CONDITIONS

Photos detailing the existing conditions are included in Appendix B

A. Bridge Deck

General: The overall condition rating of the deck is fair (5 out of 9).

Repair/Maintenance Work: In 1969, the deck rehabilitation involved replacing the existing deck with a 6 1/4" precast pretensioned deck that was post tensioned together. In 1985, the deck was milled and overlaid with a modified portland cement concrete. In 1995, the bridge joints were replaced and ends of deck reconstructed. The joints were reconstructed in 2022. In 2023, a hole was found in the deck and an emergency repair was completed. The repair consisted of removing one full width panel section in Bay 5.

Surface Condition: Delamination and spalls throughout wearing surface. Leaking between panels. Transverse cracks in middle of deck and at edges of precast deck panels.

Overlay: 1.75-inch concrete overlay. East coping spalled at floor beams. Areas delaminated with some minor spalls and some patched with concrete.

Underside Condition: Underside of some panels have spalls with exposed steel. Some panels are missing beam connection clips. East deck coping spalled with exposed strands.

Joints: The joints are rated in satisfactory condition.

Drainage: N/A

Bridge Railing: There is impact damage to southeast bridge rail transition and damage to northeast bridge railing.

B. Superstructure

MAIN SPANS

General: The overall condition rating of the superstructure is fair (5 out of 9).

Repair/Maintenance Work: The 1985 work included cleaning and painting the steel truss and floor system. In 2018, the east exterior steel stringers were replaced.

Deficiencies: Heavy debris had accumulated on the lower chord and at low chord connections. There are areas of heavy pitting and minor section loss on inside of flanges, top of web, and rivet heads of lower chords. Low chord gusset plates have areas of moderate section loss near the center. Some vertical members have moderate to heavy section loss on the inside flange connection to the low chord. Lateral bracing connections with moderate to heavy section loss. Areas of surface rust and minor expansion rust on stringers and floor beams. Expansion bearings are severely rotated to the south and may have seized.

Fracture Critical Members: All of the connections are in fair to good condition. All the members are in satisfactory to good condition, except for lower chord member southwest LOL1, southeast L1L2, and vertical member northeast L1U1 that are in fair condition. No cracks were found in any of the members or connections. An in-depth fracture critical member inspection is required every two years.

Bearings/Pedestals: Northeast bridge seat has spalling that has caused some loss of bearing area. Debris has also collected on the bridge seats.

Damage: N/A

APPROACH SPANS – N/A

C. Substructure and Foundations

General: The existing substructure was rated in fair condition (5 out of 9). The existing substructure consists of concrete abutments on timber piles driven to rock.

Repair/Maintenance Work: N/A

Deficiencies: There is leaking on abutments. Spalling with exposed steel in mud walls at each bridge corner with 3 to 6 inches of section loss. Large spall with loss of bearing at South Abutment.

Drainage: N/A

Scour: According to the current bridge inspection report (see Appendix E), this bridge is considered as Low Risk for Vulnerability for Scour and was recorded as stable for scour conditions. No major scour was visible.

D. Approaches

General: The bridge was built on a short chord since it is within a large horizontal curve that ends approximately 125 north of the bridge. The roadway is fairly level at the bridge. The north approach roadway lanes are separated due to I-69 exit 123 ramps and converge together approximately 125 feet north of the bridge. The I-69 entrance ramp (NB lane) is fairly level and straight. The I-69 exit ramp (SB lane) goes over I-69 within a reverse curve, has superelevation, and comes down to tie into the bridge. The SB lane is

Approach Pavement: There are concrete approach slabs at each bridge end with a bituminous overlay. The existing bituminous approach pavement appears to be in good condition.

Guardrail: A guardrail transition type TGB and w-beam guardrail are at all four corners of the bridge.

Drives and Public Roads: There is a field entrance approximately 125 feet north of the bridge in the northwest quad.

Traffic-control Devices: N/A

E. Slope walls

General: The channel is rated in good condition (7 out of 9) and is well defined. There is no slope wall or channel protection at the abutments and piers. The channel has a weir approximately 300 feet upstream.

Deficiencies: N/A

III. PURPOSE AND NEED

A. Background

This bridge carries Business 37 north over Beanblossom Creek. The project is located approximately 0.1 mile south of I-69 exit 123 in Monroe County. Please see Appendix A for location maps. Specifically, the project is in the northeast quarter of Section 8, Township 9 North, and Range 1 West as shown on the 7.5-minute Bloomington, Indiana USGS quadrangle map. The Beanblossom Creek flows east to west and has an upstream drainage area of approximately 112 square miles. Beanblossom Creek is not a navigable waterway at the intersection with Monroe County bridge 913.

Bridge 913 is a single span pony truss structure constructed in 1946. The existing structure span is 125.6'. The existing clear roadway over the bridge is 28'-0" and consists of two 12'-0" lanes with 2'-0" shoulders. The bridge was rehabilitated in 1969, 1985 and 1995 and repaired in 2018 and 2023. The latest bridge inspection report (4/28/2022, see Appendix E) assigned a bridge sufficiency rating of 52.7 out of a possible 100 and is considered functionally obsolete. The deck and superstructure are currently assessed as being in fair condition. During the past few years the deck and superstructure have continued to deteriorate causing load rating issues, critical findings, and minor repairs; therefore, we anticipate that the deck and superstructure condition ratings will be lowered to poor condition soon. The substructure is currently rated in satisfactory condition. Please see Appendix B for photographs of the existing road and bridge. In addition, additional information on this bridge may be found in the current load rating, and routine and fracture critical inspection reports that are provided in Appendices E and F.

According to the Indiana Historic Bridge Inventory, Bridge No. 913 is listed as a “Select” bridge, eligible for inclusion in the National Register of Historic Places (NRHP) under Criterion C. This bridge is eligible under Criterion C as it represents an early or distinctive phase in bridge construction, design, or engineering and it retains the historic integrity necessary to convey its engineering significance. This bridge is eligible under Criterion C because it represents a variation, evolution, or transition that is conveyed through important features or innovations related to bridge construction, design, or engineering, and it retains historic integrity necessary to convey its engineering significance.

B. Need

Monroe County has identified two needs that will be addressed by this project: the structural deficiencies caused by the deck and superstructure conditions and the substandard bridge geometry.

The bridge’s needs are a result of the deterioration and distress exhibited by some of the truss verticals, diagonals, low chords, stringers, floor beams, and deck. In 2018 the poor condition of the east exterior stringers caused the bridge to be posted for load until the beams were replaced during an emergency repair. During the summer of 2023 a critical finding was issued for a 1 foot diameter hole that was discovered in the bridge deck. The hole was temporarily covered until the portion of deck was able to be repaired and replaced. The deterioration noted has resulted in a deck and superstructure condition rating of fair (5); however, with continued deterioration these condition ratings are expected to be lowered within the next couple inspection cycles. In addition the bridge shoulder width and bridge clear roadway width need improvement to meet current standards.

C. Purpose

The purpose of this project is to improve the overall condition of the bridge’s deck and superstructure to good (7) or better. Improvement of the overall condition will also increase the structural capacity of the deck, truss members, and floor system. In addition the project will improve to bridge geometrics to satisfy current design standards.

D. Other Goals/Objective

In accordance with the Programmatic Agreement among the Federal Highway Administration, INDOT, the Indiana Historic Preservation Officer, and the Advisory Council on Historic Preservation regarding the Management and Preservation of Historic Bridges (HBPA) signed August 11, 2006, Monroe County is planning work on this bridge to follow the Secretary of the Interior’s Standards for Rehabilitation, as specified in the HBPA’s “Standard Treatment Approach for Historic Bridges.”

An objective of this project is to improve the bridge railing test level to provide bridge railing that satisfies the minimum bridge railing test level. The current bridge railing safety performance criteria test level is unknown and assumed to be less than the required TL-5. The substandard bridge railing test level requires a Level Two Design Exception if not improved.

Another goal of this project is to ensure that the roadway has adequate roadway serviceability and that any proposed bridge structures satisfy all INDOT hydraulic requirements.

IV. ALTERNATIVES

The alternatives described in this document are based on the guidance for writing historic bridge Section 4(f) alternatives analysis produced by INDOT, Cultural Resource Office and finalized on December 14, 2012. Per the guidance, alternatives A through F must be analyzed in consecutive order until a feasible and prudent alternative has been determined. Once a feasible and prudent alternative has been determined, the remaining alternatives do not need to be discussed. A feasible alternative is one that is possible to engineer, design, and build. A prudent alternative is one that does not present significantly unique or unusual factors (e.g., cost; social, economic, or environmental impacts; community disruption).

This structure is listed on the INDOT historic bridge inventory list as a “Select” bridge. Per the terms of the “Programmatic Agreement Regarding Management and Preservation of Indiana’s Historic Bridges” (Historic Bridge PA), the Federal Highway Administration–Indiana Division (FHWA) will satisfy its Section 106 responsibilities involving “Select” and “Non-Select” bridges through the Project Development Process (PDP) of the Historic Bridges PA (Stipulation III).

A. The No Build/Do Nothing Alternative

The No-Build/Do-Nothing Alternative was considered as a possible solution for the proposed project. This alternative proposed utilization of the existing facilities with no expenditure of capital funds or improvement of the roadway. The No-Build/Do-Nothing Alternative would not address the overall purpose and need of the project, which is to improve the physical condition of the bridge and prevent further deterioration. If the No-Build/Do-Nothing Alternative would be selected, deterioration of the bridge would continue. If the deterioration is not abated, weight restrictions will eventually be implemented until it becomes impassable to all vehicles. Although this alternative is feasible, it is not prudent to allow the bridge to deteriorate until it is impassable causing a significant community disruption.

B1. Rehabilitation of the Existing Bridge for Continued Vehicular Use (Two-Way Option) Meeting Secretary of Interior's Standards for Rehabilitation

The Secretary of the Interior (SOI) defines rehabilitation as “the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values” (http://www.cr.nps.gov/local-law/arch_stnds_10.htm). The Standards for Rehabilitation follow the Department of Interior regulations 36 CFR 67, which defines rehabilitation as “the process of returning a building (structure) to a state of utility, through repair or alteration, which makes possible an efficient use while preserving those portions and features of the structure and its site and environment which are significant to its historic, architectural, and cultural values as determined by the Secretary”. The 10 standards outlined shall be followed for each rehabilitation project.

Two-Way Option (Bridge Rehabilitation Including Roadway Reconstruction)

This alternative includes the rehabilitation of the existing bridge and the south and north approach roadway to improve the bridge condition but a few of the minimum design standards listed on the Level One controlling criteria checklist will not be met (see Table 1).

The bridge rehabilitation includes the replacement of the concrete bridge deck and aluminum bridge railing. Due to the close proximity to the exit and entrance ramps to I-69 at exit 123, type FT bridge railing will be constructed on a new concrete deck. The new bridge railing will satisfy the required bridge railing test level criteria and will provide additional protection from salt spray and water intrusion onto the steel truss. Rehabilitation of the truss would include replacement in-kind of some low chord members, some gusset plates, splice plates, some verticals, some external sway bracing, some lower lateral bracing, and some lattices. The east exterior stringers and any other stringers in poor condition will also be replaced. Repairs to some vertical and diagonal members and some floor beams will be completed to restore the members back to their original condition. The replacement or resetting of the truss bearings and reconstructing the bridge seats at the bearings will be completed. All connections affected by the rehabilitation will include the replacement of the rivets with high strength bolts. The bolts will have rounded heads to match the appearance of the original riveted construction. The truss would be cleaned and painted. The existing concrete bridge rail transitions and curbs are original, and they will be reconstructed to be like the existing but will satisfy current design standards. Current standard approach guardrail with end treatments would be installed. The roadway's horizontal alignment will satisfy the minimum radius, superelevation rate, and horizontal curve stopping sight distances. At the next design phase, the superelevation transition lengths will be evaluated once a survey of the project area is complete. According to the Indiana Design Manual (IDM) Fig. 412-2A and Fig. 55-3A (see Appendix C), requires an AASHTO design loading of HS-20. Currently the bridge satisfies HS-20 design loading, commercial and emergency vehicle legal loading requirements.

A bridge rehabilitation project requires that a scour analysis be performed for stream crossings to determine if the abutments are scour critical. The scour analysis model will be completed at the next design stage and review and approval by INDOT hydraulic bridge design is anticipated. If the substructure units are deemed scour critical, scour countermeasures shall be installed around the existing substructure units to alleviate any scour concerns. The existing bridge hydraulics were evaluated for the design storm events according to IDM Fig. 203-2C; however, no hydraulic model was created. The existing roadway serviceability at the bridge appears to satisfy the 1 foot of freeboard required above the Base Flood Elevation (BFE). In addition it appears that no over the road flow has been recorded at this location according to existing plans and Monroe County. Hydraulic modeling will be completed at the next design phase to confirm that the existing structure satisfies all hydraulic requirements. Please see Appendix C for additional hydraulic information.

The bridge will be closed approximately 10 months during construction for this alternative. The detour will route traffic onto SR 46 to I-69 exit 120A (1.5-mile detour). The project is considered a mobility significant project since it

would cause a temporary closure of I-69 exit 123. According to IDM Chapter 81-1.02, a transportation management plan (TMP) is anticipated for this project. In addition, an Interstate Highway Congestion Policy Exception Request is anticipated and coordination with INDOT Seymour District traffic will be required throughout the project design and construction. Coordination will be required with all affected utilities in the area. The overhead power lines that are east and west of the bridge are not expected to be affected. There is a water line that crosses the roadway 200 feet south of the bridge and follows the west ditch towards the south. The remainder of the utilities (sewer and fiber optic) have unknown locations. Further discussion and coordination are required for all utilities within the project limits.

The existing right of way is assumed to be located at the edges of pavement. This alternative will require reacquisition of the original right of way (50 feet on either side of the centerline of roadway) to complete this project.

Table 1:

B1. ALTERNATIVE CRITERIA CHECKLIST SUMMARY				
Design Element	Minimum Design Criteria	Existing Condition	Proposed Condition	Design Exception Required
Design Speed	45 mph	45 mph	45 mph	No
Lane Width	12 ft	12 ft	12 ft	No
Usable Shoulder Width	8 ft	8 ft	8 ft	No
Paved Shoulder Width	4 ft	4 ft Approach 2 ft Bridge	4 ft Approach 2.5 ft Bridge	Yes Bridge (Level 1)
Bridge Clear Roadway Width	30 ft	28 ft	29 ft	Yes (Level 2)
Structural Capacity	HS-20	HS-20	HS-20	No
Horizontal Curve, Minimum Radius	960 ft	6139.17 ft	6139.17 ft	No
Superelevation Transition Lengths	*	*	*	No
Stopping Sight Distance Horizontal Curves	360 ft	> 360 ft	> 360 ft	No
Stopping Sight Distance Vertical Curves	360 ft	> 360 ft	> 360 ft	No
Maximum Grade	5%	0%	0%	No
Travel Lane Cross Slope	2.0%	2.0%	2.0%	No
Superelevation Rate	2.0%	2.0%	2.0%	No
Vertical Clearance	N/A	N/A	N/A	N/A
Bridge Railing Test Level	TL-5	Unknown	TL-5	No

*Superelevation transition lengths not evaluated for this option and will be evaluated at the next design stage if this is the chosen alternative.

This structure crosses Beanblossom Creek in a rural area and the ground is mainly tree covered along the banks with some areas of farm fields in the floodplain. A 401/404 permit will be required if scour countermeasures or channel clearing for debris are required. An Indiana Department of Natural Resources (IDNR) construction in a floodway permit will be required because the drainage area is greater than 50 square miles. There are possible wetlands near the project. An IDEM Construction Stormwater General Permit is not anticipated because the land disturbance is expected

to be less than 1 acre. A level 4 CE is required due to the anticipated structure rehabilitation impacts and historical significance of the bridge. No bat or bird habitat was found within the superstructure.

The existing bridge's geometry will not meet INDOT requirements since widening the truss is not prudent if we are to maintain the historic integrity of the existing bridge. The available bridge clear roadway width will not allow 4 foot shoulders over the bridge and would require a Level One Design Exception for shoulder width and a Level Two Design Exception for bridge clear roadway width. Please see Table 1 and Appendix C for the controlling design criteria checklist summary and additional information for required design criteria. This alternative would increase the remaining life of the bridge by 20 years. A plan view of this alternate is provided in Appendix I.

The rehabilitation option would include additional inspection costs versus the replacement alternatives. The bridge warrants replacement if its rehabilitation cost is greater than 80% of the replacement cost per IDM 412-5.04(01) (see Appendix C). The construction costs of the bridge rehabilitation, bridge maintenance, and roadway reconstruction for this alternative is approximately \$3,131,000 (see Appendix D or Section VI) and is approximately 81.8% of the estimated total bridge replacement cost of \$3,810,000 (see Appendix D or Section VI). This alternate is feasible since it may be designed and constructed following the Secretary Standards; however, the bridge would remain geometrically deficient due to the Level One and Two Design Exceptions required. Minimum design controlling standards necessary to rehabilitate the existing bridge cannot be met, and Monroe County does not wish to request design exceptions. The scope of this option does not address all the deficiencies; therefore, preliminarily this alternative is not prudent.

B2. Rehabilitation of the Existing Bridge for Continued Vehicular Use (Two-Way, One Lane Operation) NOT Meeting Secretary of Interior's Standards for Rehabilitation

The issues related to the use of the existing bridge in this alternative would be the same as those noted in the discussion of alternative B1. Consequently, preliminary review of this alternative in greater detail was not completed and this option is also preliminarily expected to be feasible and not be prudent.

C1. Rehabilitation of the Existing Bridge for Continued Vehicular Use (One-Way Pair) Meeting Secretary of Interior's Standards for Rehabilitation with Construction of New One-Way Structure

The issues related to the use of the existing bridge in this alternative would be the same as those noted in the discussion of alternative B1. Consequently, preliminary review of this alternative in greater detail was not completed and this option is also preliminarily expected to be feasible and not be prudent.

C2. Rehabilitation of the Existing Bridge for Continued Vehicular Use (One-Way Pair) NOT Meeting Secretary of Interior's Standards for Rehabilitation with Construction of New One-Way Structure

The issues related to the use of the existing bridge in this alternative would be the same as those noted in the discussion of alternative B1. Consequently, preliminary review of this alternative in greater detail was not completed and this option is also preliminarily expected to be feasible and not be prudent.

D. Bypass (non-vehicular)/ Build New Structure to North without Affecting the Historic Integrity

This alternative would consist of rehabilitating the existing bridge to meet pedestrian standards and construction of new approach roadway on a bypass alignment with a new bridge crossing Beanblossom Creek. All the minimum design standards listed on the Level One controlling criteria checklist would be met (see Table 2) for the new bypass bridge and roadway. The approach roadway would be realigned to meet the 45 mph design speed for the south approach and both the inbound and exit ramps at the north approach.

The new bridge is anticipated to be constructed over Beanblossom Creek approximately 50 feet east of the existing truss. Approximately 650 feet of the south approach, 450 feet of the inbound ramp, and about 1000 feet of the exit ramp would be reconstructed as part of the bypass to the existing structure. This alternative would require more tree clearing and the roadside ditches on the east side of Business 37 will be recut along the new roadway alignments; therefore, more environmental impacts are anticipated with this alternative. In addition, creating a bypass alignment increases the risk of impacting wetlands that are near the project site. See Appendix C for a wetland map of the project site. The bridge length is estimated to be approximately 215 feet, which would provide an opening large enough to meet the required Q100 opening from the hydraulic design calculations. The new bypass structure would consist of

two 12 foot lanes bordered by 8 feet shoulders to provide a clear roadway width of 40 feet. A parking area would be created at the ends of the existing truss bridge. A plan view of this alternate is provided in Appendix I.

Additional right-of-way would be required for this option and the project would be constructed under a full closure utilizing a detour route. A Construction Stormwater General Permit, IDNR construction in a floodplain, and Indiana Department of Environmental Management (IDEM) 401/404 permits are anticipated for this alternative. This alternative would impact the overhead power lines in the southeast quadrant and require demolition of a small utility building. It is unknown at this time if any other utilities would need to be relocated as part of this alternative.

The rehabilitation the existing structure will follow the Interior Secretary’s Standards for Rehabilitation. Rehabilitation of the truss would include replacement in-kind of some low chord members, some gusset plates, splice plates, some verticals, some external sway bracing, some lower lateral bracing, and some lattices. The east exterior stringers and any other stringers in poor condition will also be replaced. Repairs to some vertical and diagonal members and some floor beams will be completed to restore the members back to their original condition. The replacement or resetting of the truss bearings and reconstructing the bridge seats at the bearings will be completed. All connections affected by the rehabilitation will include the replacement of the rivets with high strength bolts. The bolts will have rounded heads to match the appearance of the original riveted construction. The truss would be cleaned and painted. A new concrete deck with pedestrian railing will be constructed.

Table 2:

ALTERNATE D. DESIGN CONTROLLING CRITERIA CHECKLIST SUMMARY				
Design Element	Minimum Design Criteria	Existing Condition	Alt. D Proposed Condition	Design Exception Required
Design Speed	45 mph	45 mph	45 mph	No
Lane Width	12 ft	12 ft	12 ft	No
Usable Shoulder Width	8 ft	8 ft	8 ft	No
Paved Shoulder Width	4 ft	4 ft Approach 2 ft Bridge	4 ft Approach 8 ft Bridge	No
Bridge Clear Roadway Width	40 ft	28 ft	40 ft	No
Structural Capacity	HL-93	HS-20	HL-93	No
Horizontal Curve, Minimum Radius	960 ft	6139.17 ft	960 ft	No
Superelevation Transition Lengths	**	**	**	No
Stopping Sight Distance Horizontal Curves	360 ft	> 360 ft	> 360 ft	No
Stopping Sight Distance Vertical Curves	360 ft	> 360 ft	> 360 ft	No
Maximum Grade	5%	0%	0%	No
Travel Lane Cross Slope	2.0%	2.0%	2.0%	No
Superelevation Rate	**	**	**	No
Vertical Clearance	N/A	N/A	N/A	N/A
Bridge Railing Test Level	TL-5	Unknown	TL-5	No

**Superelevation transition lengths and rate will be evaluated at the next design stage if this is the chosen alternative.

Alternate D is feasible because it can be designed and constructed. This option would meet the purpose and need developed by Monroe County and would also meet the INDOT design standards (See Table 2 below). The existing truss remaining in place would allow for visiting tourist and residents to stop and view the historic truss. The estimated construction cost for the new bypass bridge and roadway is \$5,746,000 and the estimated cost to rehabilitate and maintain the truss for pedestrian use is \$1,565,000. The estimated total cost would be \$7,311,000 (see Appendix D). This option is not prudent as this alternate has more environmental and utility impacts and it is more expensive than Alternate E (Relocate existing bridge and construct new bridge).

E. Relocation of Historic Bridge and New Bridge Construction

This alternative includes the construction of a new bridge and the relocation of the existing bridge. Due to the geometry of the alignment with the existing ramps to the north, minimization of environmental and utility impacts, construction of a new bridge would be on the same horizontal alignment that would reduce construction costs. The roadway alignment would be designed for a 45 mph speed. All the minimum design standards listed on the Level One controlling criteria checklist would be met (see Table 3) for the new bridge and roadway.

The existing bridge will be relocated to an off-site location and placed on new substructure units. This alternative would also consist of rehabilitating the existing structure as close as possible to the Interior Secretary's Rehabilitation Standards to accommodate a pedestrian loading. The existing truss would be disassembled, and match marked, transported, and reassembled at the new location for pedestrian use. Rehabilitation of the truss would include replacement in-kind of some low chord members, some gusset plates, splice plates, some verticals, some external sway bracing, some lower lateral bracing, and some lattices. The east exterior stringers and any other stringers in poor condition will also be replaced. Repairs to some vertical and diagonal members and some floor beams will be completed to restore the members back to their original condition. Portions of the existing truss bearings may be replaced. All connections affected by the rehabilitation will include the replacement of the rivets with high strength bolts. The bolts will have rounded heads to match the appearance of the original riveted construction. The truss would be cleaned and painted. A new concrete deck with pedestrian railing will be constructed.

The new vehicular structure over Beanblossom Creek would consist of two 12 foot lanes and 8 foot shoulders to provide a bridge clear roadway width of 40 feet. The bridge length is estimated to be approximately 215 feet, which would provide an opening large enough to meet the required Q100 opening from the hydraulic design calculations. Approximately 350 feet of the south approach roadway and 200 feet of approach roadway work on the north ramps would be required as part of the new bridge construction. A plan view of this alternate is provided in Appendix I.

Additional right-of-way would be required for this option and the project would be constructed under a full closure utilizing a detour route. A Construction Stormwater General Permit, IDNR construction in a floodplain, and Indiana Department of Environmental Management (IDEM) 401/404 permits are anticipated for this alternate. Coordination will be required with all affected utilities in the area. The overhead power lines that are east and west of the bridge are not expected to be affected. There is a water line that crosses the roadway 200 feet south of the bridge and follows the west ditch towards the south. The remainder of the utilities (sewer and fiber optic) have unknown locations. Further discussion and coordination are required for all utilities within the project limits.

This alternative is feasible because it can be designed and constructed. This option would meet the purpose and need developed by Monroe County and would also meet the INDOT design standards. The estimated construction cost for the new bridge and roadway is \$3,810,000. The estimated cost to relocate and rehabilitate the truss for pedestrian use in a new location is \$1,773,000. The estimated total cost would be \$5,583,000 (see Appendix D). This option is prudent since this is a Select structure.

Table 3:

ALTERNATE E. DESIGN CONTROLLING CRITERIA CHECKLIST SUMMARY				
Design Element	Minimum Design Criteria	Existing Condition	Alt. E Proposed Condition	Design Exception Required
Design Speed	45 mph	45 mph	45 mph	No
Lane Width	12 ft	12 ft	12 ft	No
Usable Shoulder Width	8 ft	8 ft	8 ft	No
Paved Shoulder Width	4 ft	4 ft Approach 2 ft Bridge	4 ft Approach 8 ft Bridge	No
Bridge Clear Roadway Width	40 ft	28 ft	40 ft	No
Structural Capacity	HL-93	HS-20	HL-93	No
Horizontal Curve, Minimum Radius	960 ft	6139.17 ft	6139.17 ft	No
Superelevation Transition Lengths	**	**	**	No
Stopping Sight Distance Horizontal Curves	360 ft	> 360 ft	> 360 ft	No
Stopping Sight Distance Vertical Curves	360 ft	> 360 ft	> 360 ft	No
Maximum Grade	5%	0%	0%	No
Travel Lane Cross Slope	2.0%	2.0%	2.0%	No
Superelevation Rate	2.0%	2.0%	2.0%	No
Vertical Clearance	N/A	N/A	N/A	N/A
Bridge Railing Test Level	TL-5	Unknown	TL-5	No

**Superelevation transition lengths not evaluated for this option and will be evaluated at the next design stage.

F. Replacement – Demolition of Historic Bridge and New Bridge Construction

This option would not be prudent since this bridge is classified as a “Select” structure; therefore, this alternative was not considered.

V. MINIMIZATION AND MITIGATION

A. Minimization

Only the severely deteriorated and substandard portions of the bridge will be replaced. The members and connections that are replaced will be replaced in kind. All in kind replacements refer to replacing a bridge element with the same material and same size or dimensions. Any existing rivets required to be removed would be replaced with round headed bolts. The remaining portions of the bridge would be cleaned and painted to help preserve the bridge. The entire bridge will be rehabilitated to help preserve the bridge.

Per Attachment B (Standard Treatment Approach for Historic Bridges) of the Historic Bridges PA, Monroe County will provide rehabilitation plans to the Indiana SHPO when the design is approximately 30% complete, 60% complete, and when final design plans are complete. Portions of the original and previous rehabilitation plans are provided in Appendix G. The plan view of alternatives B, D, and E are shown in Appendix I.

B. Bridge Marketing

The existing bridge would be advertised to the public for use in a new location for vehicular or non-vehicular use. It is anticipated that public notices would be posted in the local newspapers and on INDOT's website and signage placed at the bridge. Monroe County will maintain a list of serious inquires.

C. Mitigation

Monroe County will coordinate with the SHPO to determine if photo-documentation of the existing bridge is necessary per the Historic Bridge PA. Any requirements for documentation will be included in the INDOT Project commitments database.

VI. PRELIMINARY PREFERRED ALTERNATIVE

The preliminary preferred alternative for this project is Alternate E, relocate the existing bridge and reconstruct a new bridge. The estimated construction costs for all alternatives evaluated are provided in Appendix D and the summary is shown below in Table 4. The maintenance costs Summarized below are costs associated with the maintenance of the existing truss bridge after rehabilitation for a 20 year time period. The maintenance costs include costs for fracture critical inspections, special inspections, and regular cleaning of the truss and bearings. Alternate E is both feasible and prudent and is the preliminary preferred alternative.

Table 4:

ALTERNATE COST SUMMARY							
Alternative	Meets Project Purpose and Need?	Right of Way Amount & Cost	Construction Cost (2029)	Maintenance Cost (2029)	Total Cost (2029)	Other Factors	Feasible & Prudent
A. No Build	No	N/A	\$0	\$0	\$0	Continued deterioration leads to closure	Feasible Not Prudent
B1. Rehabilitation for Continued Vehicular Use (mtg. S.O.I. stds.)	No	\$52,000	\$3,065,000	\$66,000	\$3,183,000	Does not meet all level 1 criteria and roadway serviceability	Feasible Not Prudent
B.2 Rehabilitation for Continued Vehicular Use (not mtg. S.O.I. stds.)	No	N/A	N/A	N/A	N/A	Does not meet all level 1 criteria and roadway serviceability	Feasible Not Prudent
C.1 Rehabilitation for Continued Vehicular Use One-Way Pair (mtg. S.O.I. stds.)	No	N/A	N/A	N/A	N/A	Does not meet all level 1 criteria and roadway serviceability	Feasible Not Prudent
C.2 Rehabilitation for Continued Vehicular Use One-Way Pair (not mtg. S.O.I. stds.)	No	N/A	N/A	N/A	N/A	Does not meet all level 1 criteria and roadway serviceability	Feasible Not Prudent
D. Bypass & Rehabilitation for Non-Vehicular Use	Yes	\$100,000	\$7,311,000*	\$15,000	\$7,426,000	Allows truss to be rehabbed & remain in place.	Feasible Not Prudent
E. Relocate & Replace	Yes	\$52,000	\$5,583,000**	\$15,000	\$5,650,000	Allows truss to be rehabbed & moved to new location.	Feasible and Prudent

Note: Alternative F may Not be considered prudent since this bridge is a select bridge. The cost break down for each alternative and additional cost information are provided in Appendix D.

*Bypass bridge cost is \$5,746,000 and rehabilitated bridge cost is \$1,565,000.

**New bridge cost is \$3,810,000 and relocated & rehabilitated bridge cost is \$1,773,000.

APPENDIX A

Maps

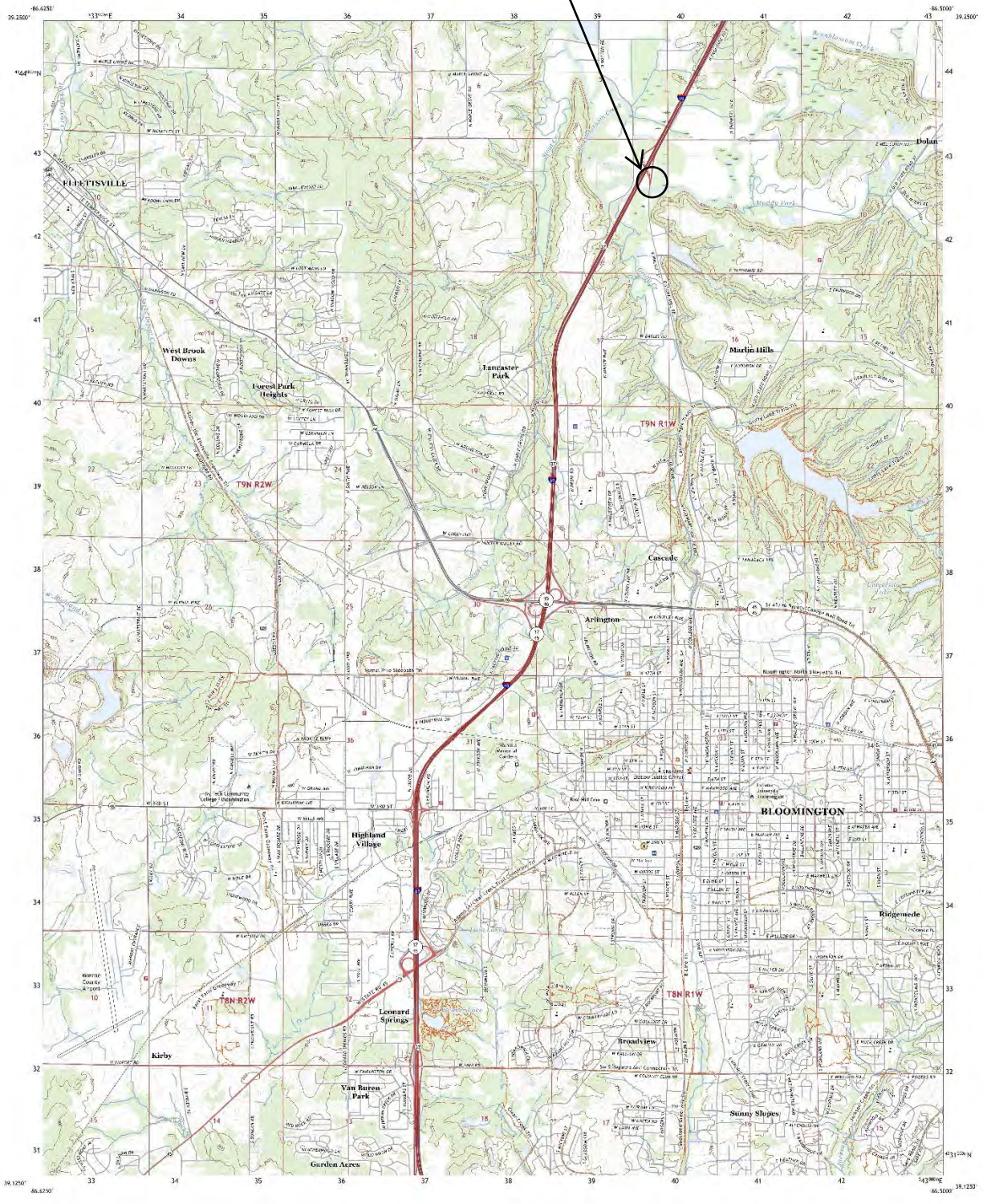
Project Location



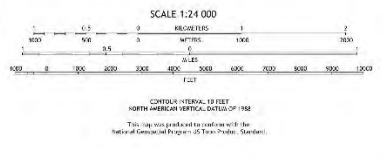
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY



BLOOMINGTON QUADRANGLE
INDIANA - MONROE COUNTY
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
Vertical Control: National Geodetic Survey
Horizontal Control: National Geodetic Survey
Scale: 1:24,000
Projection: UTM
Datum: NAD83
Units: Meters
Elevation: Feet
Contour Interval: 10 Feet
Vertical Datum: Mean Sea Level
Horizontal Datum: North American Datum of 1983
This map was produced as part of the
National Geodetic Survey's Topographic
Map Series.



1	2	3
4	5	6
7	8	9

MONROE 913



Project Location

I-69 SB

I-69 NB

Business 37 N



APPENDIX B

Photographs

**MONROE COUNTY
BRIDGE NO. 00913**



**PHOTO 1: APPROACH
LOOKING NORTH**

**PHOTO 2: APPROACH
LOOKING SOUTH**



**PHOTO 3: APPROACH
LOOKING WEST**

**MONROE COUNTY
BRIDGE NO. 00913**



**PHOTO 4: TYPICAL FLOOR
SYSTEM**

**PHOTO 5: WEST TRUSS
LOOKING FROM DECK**



**PHOTO 6: EAST TRUSS
LOOKING FROM DECK**

**MONROE COUNTY
BRIDGE NO. 00913**



**PHOTO 7: LOOKING AT NORTH
APPROACH FROM BRIDGE**

**PHOTO 8: LOOKING AT SOUTH
APPROACH FROM BRIDGE**



**PHOTO 9: LOOKING AT NORTH
APPROACH FROM END OF
BRIDGE**

**MONROE COUNTY
BRIDGE NO. 00913**



**PHOTO 10: LOOKING AT
SOUTH APPROACH FROM END
OF BRIDGE**

**PHOTO 11: SOUTHWEST
QUADRANT**



**PHOTO 12: NORTHWEST
QUADRANT**

**MONROE COUNTY
BRIDGE NO. 00913**



**PHOTO 13: NORTHEAST
QUADRANT**

**PHOTO 14: SOUTHEAST
QUADRANT**

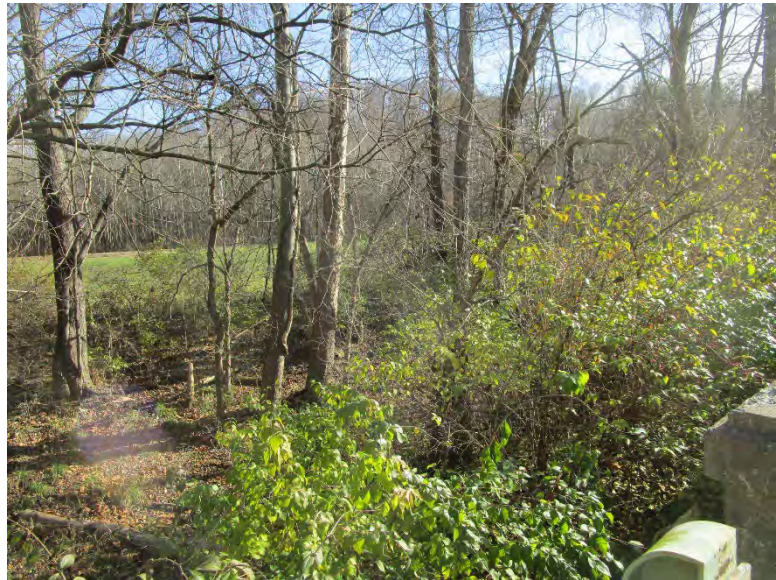


PHOTO 15: NORTH ABUTMENT

**MONROE COUNTY
BRIDGE NO. 00913**



PHOTO 16: SOUTH ABUTMENT

**PHOTO 17: LOOKING
DOWNSTREAM FROM BRIDGE**



**PHOTO 18: LOOKING
UPSTREAM FROM BRIDGE**

**MONROE COUNTY
BRIDGE NO. 00913**



PHOTO 19: SOUTH ABUTMENT

PHOTO 20: NORTH BRIDGE
JOINT



PHOTO 21: SOUTH BRIDGE
JOINT

**MONROE COUNTY
BRIDGE NO. 00913**



**PHOTO 22: OVERLAY SPALL
NORTH END**

**PHOTO 23: OVERLAY SPALL
MIDSPAN WEST COPING**



**PHOTO 24: SOUTH BRIDGE
JOINT**

**MONROE COUNTY
BRIDGE NO. 00913**



**PHOTO 25: TACK WELD
SOUTHWEST L3**

**PHOTO 26: WEST L4
CONDITION**



**PHOTO 27: L4U3 NORTHWEST
PAINT PEELING**

**MONROE COUNTY
BRIDGE NO. 00913**



**PHOTO 28: L2U3 NORTHWEST
PAINT PEELING**

**PHOTO 29: OVER ROTATED
EXPANSION BEARING**



**PHOTO 30: MODERATE
SECTION LOSS IN WEB AT NELO**

**MONROE COUNTY
BRIDGE NO. 00913**



**PHOTO 31: NORTHWEST
ABUTMENT 2 SPALL IN
MUDWALL**

**PHOTO 32: SPALL WITH
EXPOSED REINFORCEMENT IN
DECK**



**PHOTO 33: EXPANSION RUST
AND SECTION LOSS AT NELO**

**MONROE COUNTY
BRIDGE NO. 00913**



**PHOTO 34: SEL1 INTERIOR
ANGLE SECTION LOSS**

**PHOTO 35: SEL1 EXTERIOR
GUSSET PLATE SECTION LOSS**



**PHOTO 36: SEL2L1 INTERIOR
GUSSET PLATE SECTION
LOSS AT DIAGONAL END**

**MONROE COUNTY
BRIDGE NO. 00913**



**PHOTO 37: SEL2L1 EXTERIOR
GUSSET PLATE SECTION LOSS
AT DIAGONAL END**

**PHOTO 38: EL4 WEB
CONNECTION SEVERED FROM
LOW CHORD**



**PHOTO 39: TYPICAL LOW
CHORD SPLICE**

**MONROE COUNTY
BRIDGE NO. 00913**



PHOTO 40: NEL1 60% SECTION
LOSS ON INTERNAL FLANGE OF
VERTICAL

PHOTO 41: TYPICAL
DETERIORATION OF EXTERNAL
SWAY BRACING



PHOTO 42: TYPICAL FLOOR
BEAM DETERIORATION AT TOP
FLANGE

**MONROE COUNTY
BRIDGE NO. 00913**



**PHOTO 43: TYPICAL FLOOR
BEAM DETERIORATION AT
BOTTOM FLANGE**

**PHOTO 44: TYPICAL HEAVY
SECTION LOSS OF STAY PLATES
AND LATTICE BARS ON END
POST**



**PHOTO 45: 45MPH SPEED
LIMIT**

APPENDIX C

**Design Criteria and
Supporting Information**

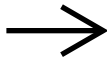
Section 1. Listing of Historic Bridges

Monroe	Bridge No. 00182	NBI No. 5300091	Eligible
	<i>Feature Carried:</i> OLD SR 46	<i>Feature Crossed:</i> BR OF JACKS DEFEAT CREEK	101A Reinforced concrete slab
	<i>Latitude (degrees/minutes)</i> 39 / 13.1	<i>Longitude (degrees/minutes)</i> 086 / 36.2	

This bridge does not appear to possess significance under the National Register evaluation system for Criterion A. No evidence was found during data collection activities to indicate that this bridge possesses a significant association with important historical events or trends. As such, it is recommended not eligible under Criterion A.

This bridge is eligible under Criterion C because it represents a variation, evolution, or transition that is conveyed through important features or innovations related to bridge construction, design, or engineering, and it retains historic integrity necessary to convey its engineering significance.

Rationale: This bridge uses a distinctive construction method to address the engineering challenge of its substantial skew.



Monroe	Bridge No. 00913	NBI No. 5300130	Eligible
	<i>Feature Carried:</i> BUSINESS 37N	<i>Feature Crossed:</i> BEANBLOSSOM CREEK	310A Steel pony truss
	<i>Latitude (degrees/minutes)</i> 39 / 13.9	<i>Longitude (degrees/minutes)</i> 086 / 32.4	

This bridge does not appear to possess significance under the National Register evaluation system for Criterion A. No evidence was found during data collection activities to indicate that this bridge possesses a significant association with important historical events or trends. As such, it is recommended not eligible under Criterion A.

This bridge is eligible under Criterion C as it represents an early or distinctive phase in bridge construction, design, or engineering and it retains the historic integrity necessary to convey its engineering significance.

Rationale: This bridge is distinctive because it exemplifies an uncommon highway bridge type in Indiana.

This bridge is eligible under Criterion C because it represents a variation, evolution, or transition that is conveyed through important features or innovations related to bridge construction, design, or engineering, and it retains historic integrity necessary to convey its engineering significance.

Rationale: This bridge displays exceptional overall or main span length for its type representing an innovative design and/or construction method.

Monroe	Bridge No. 00919	NBI No. 5300135	Eligible
	<i>Feature Carried:</i> HARRODSBURG ROAD	<i>Feature Crossed:</i> BRANCH OF CLEAR CREEK	101A Reinforced concrete slab
	<i>Latitude (degrees/minutes)</i> 39 / 00.9	<i>Longitude (degrees/minutes)</i> 086 / 32.6	

This bridge is eligible under Criterion A as it has a direct and important association with a significant transportation route or is located at an important crossing. Further, it retains the historic integrity necessary to convey its historical significance.

Rationale: Crossing on Dixie Highway demonstrates development of the cross country transportation system.

This bridge does not appear to possess significance under the National Register evaluation system for Criterion C. No evidence was found during data collection activities to indicate that this bridge is an important example of bridge design, engineering, or construction. As such, it is recommended not eligible under Criterion C.

Bloomington/Monroe County Metropolitan Planning Organization

Adopted Metropolitan Planning Area (MPA) & Urban Area Boundary (UAB) 2012

Legend

- Metropolitan Planning Area
- Urban Area Boundary
- Incorporated Areas

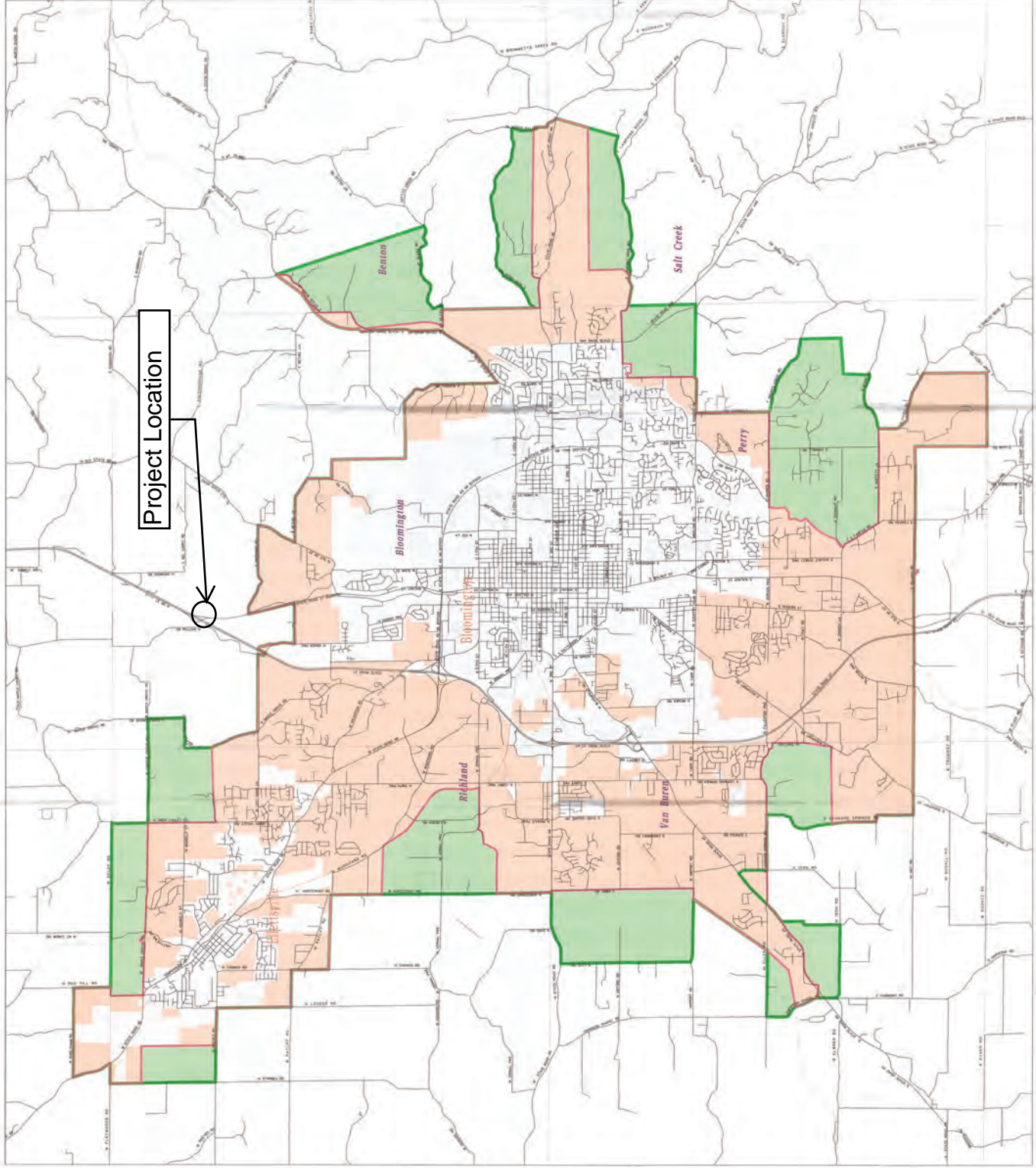
Urban Area Boundary Approvals	
City of Bloomington	2012.03.06.12
Monroe County Board of Commissioners	2012.03.06.12
Indiana State Department of Transportation	2012.03.06.12
Indiana State Department of Health	2012.03.06.12
Indiana State Department of Agriculture	2012.03.06.12
Indiana State Department of Environmental Management	2012.03.06.12
Indiana State Department of Public Safety	2012.03.06.12
Indiana State Department of Transportation	2012.03.06.12
Indiana State Department of Health	2012.03.06.12
Indiana State Department of Agriculture	2012.03.06.12
Indiana State Department of Environmental Management	2012.03.06.12
Indiana State Department of Public Safety	2012.03.06.12
Indiana State Department of Transportation	2012.03.06.12

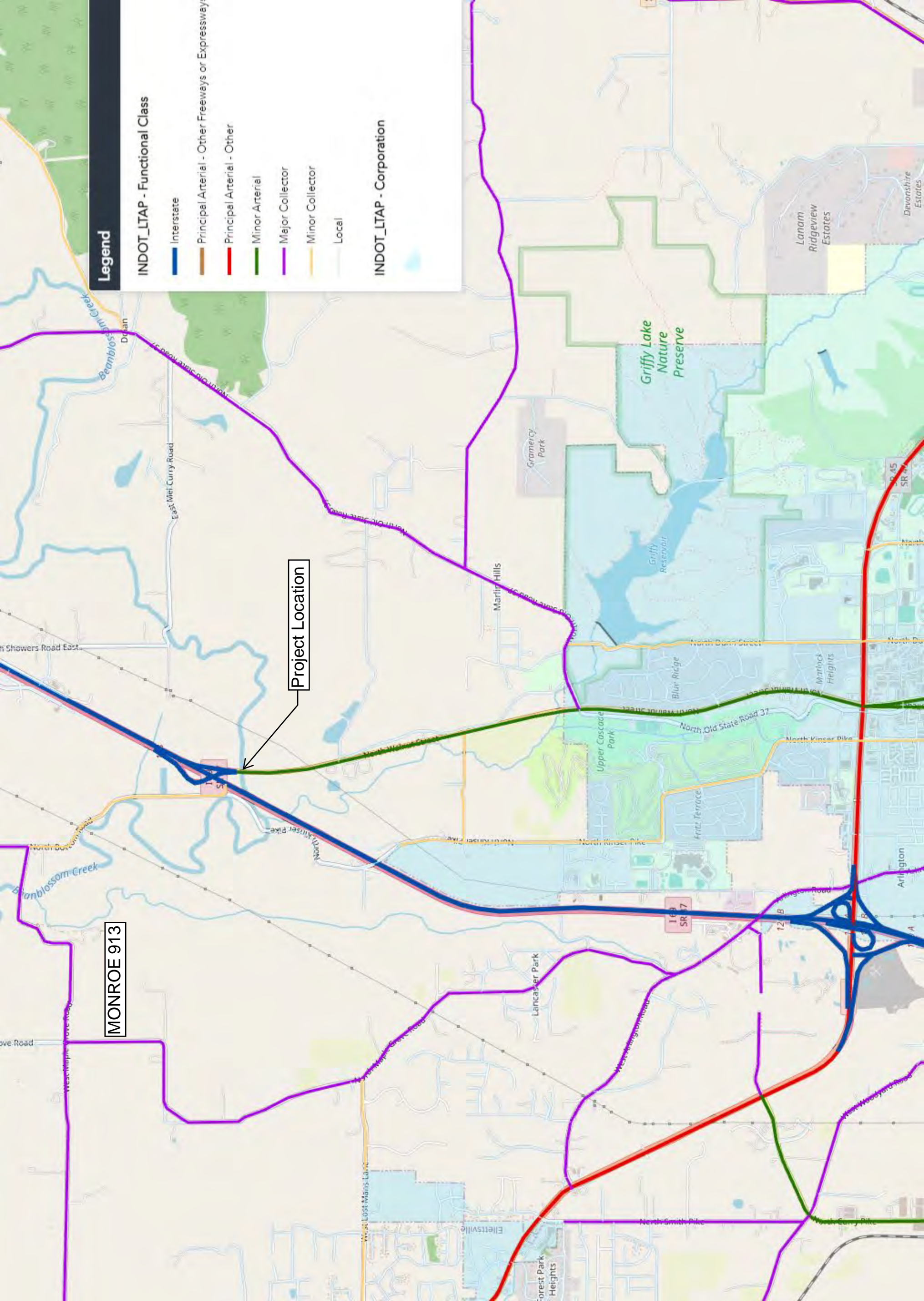
October 3, 2012



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Bloomington Geographic Information System





Legend

INDOT_LTAP - Functional Class

- Interstate
- Principal Arterial - Other Freeways or Expressways
- Principal Arterial - Other
- Minor Arterial
- Major Collector
- Minor Collector
- Local

INDOT_LTAP - Corporation

MONROE 913

Project Location

412-5.01(01) Select Bridge

A Select bridge has been identified as a historic bridge that is an excellent example of its structure type to be a suitable candidate for preservation. The intent of the *PA* is to preserve Select bridges in place for continued vehicular use. If rehabilitation alternatives are not in accordance with Section 412-5.02, and the owner is not granted a design exception or does not request one, the Select bridge must be bypassed or relocated for another use. See the *PA* for further guidance on bypassing or relocating the bridge.

412-5.01(02) Non-Select Bridge [Rev. Sep. 2021]

A Non-Select bridge has been identified as a historic bridge that is not an excellent example of its structure type or is not a suitable candidate for preservation. If the rehabilitation alternatives are not in accordance with Section 412-5.02, and the owner is not granted a design exception or does not request one, the Non-Select bridge must be marketed for re-use. In accordance with the *Programmatic Agreement Among the Federal Highway Administration, the Indiana Department of Transportation, the Indiana State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Management and Preservation of Indiana's Historic Bridges (Historic Bridges PA)*, if no party steps forward to assume ownership of the bridge before the end of the public hearing comment period, the bridge may be demolished. See the *Historic Bridges PA* for further guidance on marketing or demolishing the bridge.

412-5.02 Historic Bridge Alternatives Analysis [Rev. Feb. 2018, Sep. 2021]

Where a project involves a historic bridge, the bridge owner must complete a Historic Bridge Alternatives Analysis. The Historic Bridge Alternative Analysis will serve as the Bridge Rehabilitation Report or Bridge Preventive Maintenance Meeting Minutes in the Stage 1 submittal. The required contents of the analysis, including explanations and tips for discussion of alternatives, is available from the Department's Historic Bridge Inventory Summary & Results webpage, under Historic Bridge Project Development Process Documents. The HBAA requires concurrence from Cultural Resources Office staff in the Division of Environmental Service and the Bridges Division Office of Bridge Design prior to proceeding to the Stage 2 (Preliminary Plans) submittal.

The evaluation of alternatives must address the following alternatives for both Select and Non-Select Bridges. The list is a hierarchy, meaning that the analysis must prove an alternative is either not feasible or prudent prior to proceeding to the next alternative. Note that Select bridges must be preserved as part of the project.

1. No Build/Do Nothing
2. Rehabilitation for continued vehicular use (two-lane or one-lane option), meeting the Secretary of Interiors Standards for Rehabilitation.
3. Rehabilitation for continued vehicular use (two-lane or one-lane option), not meeting the Secretary of Interiors Standards for Rehabilitation
4. Rehabilitation for continued vehicular use (one-way pair option), meeting the Secretary of Interiors Standards for Rehabilitation.
5. Rehabilitation for continued vehicular use (one-way pair option), not meeting the Secretary of Interiors Standards for Rehabilitation.
6. Bypass (non-vehicular use)/Build New Structure
7. Relocation of Historic Bridge and New Bridge Construction
8. Replacement – Demolition of Historic Bridge and New Bridge Construction

In accordance with the *Programmatic Agreement Among the Federal Highway Administration, the Indiana Department of Transportation, the Indiana State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Management and Preservation of Indiana's Historic Bridges (Historic Bridges PA)*, when any of the rehabilitation options are selected as the preferred alternative, the bridge owner is required to provide rehabilitation plans to the Indiana State Historic Preservation Officer (SHPO) when the design is approximately 30% complete (Stage 2 formerly Preliminary Plans), approximately 60% complete (Hearing Plans), and when plans are 100% complete (Stage 3 formerly Final Plans). If the project involves a bypass of the historic bridge, then the plan reviews will include a site plan and design of the new bridge and the historic bridge.

The Historic Bridge Alternatives Analysis document should clearly indicate that three plan reviews will be forthcoming.

Additionally, each of these submittals are reviewed by Cultural Resources Office staff in the Division of Environmental Service before the plans are submitted to the SHPO staff and consulting parties.

The SHPO staff is allotted a 30-day comment period on each plan review. Additionally, each of these submittals are reviewed by Cultural Resources Office staff in the Division of Environmental Service before the plans are submitted to the SHPO staff and consulting parties. See the [INDOT Cultural Resources Manual](#), Part IV, Chapter 2 for more information.

All three plan review submittals are required for all projects for which the preferred alternative is rehabilitation of the historic bridge. Any outstanding plan submittals must be listed as commitments in the environmental document and the Project Commitments Database. These submittals should be completed prior to the submittal of the Environmental Consultation Form (ECF). The ECF cannot be approved until all three plan submittals have been completed.

412-5.03 Design Criteria [Rev. Feb. 2018]

The following design criteria should be used to evaluate if a historic bridge can be rehabilitated for continued vehicular use. The criteria should not be viewed as an absolute, that is, a design exception may be appropriate and should be considered where appropriate.

A historic bridge on low-volume road should be evaluated using the design criteria described herein. A low-volume road is defined as having a design-year ADT of less than or equal to 400 vpd. A historic bridge on roadway with a design-year ADT greater than 400 vpd should be evaluated using the 3R design criteria for the applicable functional classification. See Chapter 55 for 3R criteria. The criteria for Existing Structure to Remain in Place should be used for bridge clear roadway width and structural capacity. These criteria should be used to determine if a historic bridge can be rehabilitated for continued vehicular use.

Design Speed

The existing posted speed should be used as the design speed. If the road is not posted, an engineering speed study should be performed and the road should be posted between logical termini.

Approach Roadways Horizontal and Vertical Alignment

These should be analyzed within 300 ft of either side of the bridge in accordance with AASHTO's *Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT < 400)* or the 3R design criteria, as applicable.

Structural Capacity

The structural capacity should be in accordance with Figure [412-2A](#), Historic Bridge Structural Capacity. The required capacity designations are those described in AASHTO *Standard Specifications for Highway Bridges*.

Bridge Width

The minimum bridge width should be in accordance with Figure [412-2B](#), Historic Bridge Minimum Clear Roadway Width.

Bridge Railing

Bridge railing may be left in place if there is no documented crash history or other evidence of crash history within the past 5 years such as damaged railing or concerns by local police agencies. If only slightly damaged, railing should be replaced in kind. If there is evidence of crash history within the past 5 years, the possible causes should be corrected, or new bridge railing provided as described in Section 404-4.0.

Approach Guardrail

Approach guardrail, if in place, should remain. If not in place, it may be omitted if there is no documented crash history or other evidence of crash history within the last 5 years, such as vehicles hitting the ends of the bridge railing or vehicles leaving the roadway. Crash history, such as that regarding damaged ends of bridge railings, may be an indicator of the need for approach guardrail.

In addition to those guardrails which the Department has standardized, there are others which have passed NCHRP 350 or MASH crash tests for specified test levels. If one of these devices is desired to be used for a specific project, the documentation to be provided is as follows:

1. an FHWA eligibility letter; and
2. complete details for the device as successfully crash tested.

Hydraulic Capacity

Improvements may consist of removal of sand bars or debris, channel clearing, or adding a supplemental structure. If a bridge is to remain in place and its approaches are realigned, the removal of existing roadway fill is an option toward improving the hydraulic capacity.

	Detour Length < 5 mi		5 mi ≤ Detour Length < 10 mi		Detour Length ≥ 10 mi		Detour of Any Length
Design Year ADT	< 100	100 ≤ ADT ≤ 400	< 100	100 ≤ ADT ≤ 400	< 100	100 ≤ ADT ≤ 400	ADT > 400
AASHTO Live Loading	H-15	HS-15	HS-15	HS-15	HS-15	HS-20	3R Criteria for Structural Capacity, Existing Bridge to Remain in Place
Required Capacity	15 tons	27 tons	27 tons	27 tons	27 tons	36 tons	

Notes:

1. Detour length is defined as the total additional travel a through-bound vehicle would experience from closing the bridge. This is determined by the shortest route on which a vehicle with a loading of HS-20 (36 tons) is legally capable of traveling.
2. Vehicles that may use a bridge with AASHTO loading of H-15 (15 tons) or HS-15 (27 tons) include typical farm vehicle (15 tons), school bus carrying up to 84 passengers (15 tons), loaded garbage truck (27 tons), and single-unit fire engine (27 tons).
3. Vehicles that may use a bridge with AASHTO live loading of HS-20 (36 tons) include all of the H-15 and HS-15 vehicles, plus payloaded ready-mix-concrete truck (30 tons), and tractor-apparatus fire engine (36 tons).
4. A bridge on a dead-end road will be considered as having a detour length greater than 10 miles.
5. The annual traffic growth factor used in determining Design Year ADT must be justified.

HISTORIC BRIDGE STRUCTURAL CAPACITY

Figure 412-2A

Minimum Clear Roadway Width ^{2,3}			
Lanes on Bridge	Design Year ADT < 100	100 ≤ Design Year ADT ≤ 400	Design Year ADT > 400
One ¹	15 ft	16 ft	Not Applicable
Two	18 ft	20 ft	3R Criteria for Clear Roadway Width, Existing Bridge to Remain in Place.

Notes:

- ¹ The given values are applicable for rehabilitation of a Select bridge in a one-way pair or two-way configuration. The given values are applicable for rehabilitation of a Non-Select bridge in a one-way pair configuration. The owner must obtain a design exception for rehabilitation of a Non-Select bridge in a two-way configuration, or where the ADT is greater than 400 vpd.
- ² The minimum bridge width is defined as the most restrictive minimum distance between curbs, railings, or other obstructions on the bridge roadway.
- ³ The annual traffic growth factor used in determining Design Year ADT must be justified.

HISTORIC BRIDGE MINIMUM CLEAR ROADWAY WIDTH

Figure 412-2B

412-5.04 Economic and Other Criteria [Rev. Feb. 2018]

412-5.04(01) Select Bridge [Rev. Feb. 2018]

The appropriateness of rehabilitating a Select historic bridge should be determined based on the cultural significance of the bridge. The appropriateness of rehabilitating a Select bridge on a low volume road, as defined above, should further be assessed based on the cost effectiveness as follows:

1. if the initial rehabilitation cost is less than 80% of the replacement cost, rehabilitation is warranted; or
2. if the initial rehabilitation cost is equal to or greater than 80% of the replacement cost, the owner may request further consultation with FHWA to determine rehabilitation eligibility.

The above thresholds should not be viewed as absolute, i.e., if the initial rehabilitation cost is above 80% of the replacement cost, rehabilitation may still be considered a viable alternative. A rehabilitation project should result in a 20-year design life for the rehabilitated bridge.

A Select bridge may be rehabilitated and left in place, and a new bridge and new approaches may be built adjacent to it. This effectively creates one bridge and approaches for each direction of travel. For this situation, the new bridge must meet all design standards for a new bridge or obtain a design exception. Where appropriate, the new one-way bridge must be able to accommodate future widening to provide for two-way travel.

412-5.04(02) Non-Select Bridge [Rev. Feb. 2018]

The appropriateness of rehabilitating a Non-Select historic bridge should be determined based on the cultural significance of the bridge. A Non-Select bridge on a low-volume road, as defined above, should further be assessed based on the cost-effectiveness of the project and other criteria as follows.

If the initial rehabilitation cost is greater than or equal to 40% of the replacement cost, or the bridge meets two or more of the following criteria that cannot be economically corrected as part of a rehabilitation project, then replacement is warranted.

1. The bridge waterway opening is inadequate (i.e., National Bridge Inventory Item 71 is rated 2 or 3).
2. The bridge has a documented history of catching debris due to inadequate freeboard or due to piers in the stream.

3. The bridge requires special inspection procedures (i.e., the first character of National Bridge Inventory Item 92A or 92C is Y).
4. The bridge is classified as scour-critical (i.e., National Bridge Inventory Item 113 is rated 0, 1, 2, or 3).
5. The bridge has fatigue-prone welded components that are expected to reach the end of their service lives within the next 20 years. See Section 412-4.03(04) for information on conducting a fatigue analysis.
6. The bridge has a Sufficiency Rating of lower than 35.

The above cost thresholds should not be viewed as absolute. If the initial rehabilitation cost is above 40% of the replacement cost, rehabilitation may still be considered a viable alternative. A rehabilitation project should result in a 20-year design life for the rehabilitated bridge.

LEVEL ONE CONTROLLING CRITERIA CHECKLIST

Date: 11/20/2023
 Submittal: Prelim. HBAA Report
 Des. No.: Not Applicable
 Is route on the National Truck Network? Yes No

Route: Business 37 N over Beanblossom Creek
 Design Year: 2049 AADT: 13,752
 Functional Classification: Minor Arterial; Rural
 Terrain: Level

Project Scope of Work: 3R Non Freeway Rehabilitation- Bridge Deck Replacement and Truss Rehabilitation	Design Criteria Reference	Existing Condition	Does the proposed design satisfy the criteria? (Enter the value provided in the appropriate column.)		
			Yes	No (1) (2)	N/A
Enter the minimum criteria below.					
1. Design Speed: 45 mph	Fig 55-3A	45	45		
2. Lane Width, Mainline: 12 ft Auxiliary Lanes: N/A ft	Fig 55-3A	12 ft	12 ft		
3. Usable Shoulder Width (uncurbed sections) adjacent to: Mainline: 8 ft Auxiliary Lanes: N/A ft	Fig 55-3A	8 ft	8 ft		
Paved Shoulder Width (uncurbed sections) adjacent to: Mainline: 4 ft Auxiliary Lanes: N/A ft	Fig 55-3A	4 ft Approach 2 ft Bridge	4 ft Approach	2.5 ft (1) Bridge	
4. Bridge Clear Roadway Width 30 ft ⁽³⁾	Fig 55-3A	28 ft		29 ft (3)	
5. Design Loading Structural Capacity HS 20	Fig 55-3A	HS 20	HS 20		
6. Horizontal Curve, Minimum Radius = 960 ft	Fig 43-2A	6139.17 ft	6139.17 ft		
7. Superelevation Transition Length 95 ft ⁽³⁾ Distribution 75/25 % (on tangent/on curve)	IDM 43-3.03	Unknown	Unknown		
8a. Stopping Sight Distance, Horizontal Curve 360 ft	IDM 43-4.02	>360 ft	>360 ft		N/A
8b. Stopping Sight Distance, Vertical Curve (Crest Only) 360 ft	Fig 55-3A	>360 ft	>360 ft		
9. Maximum Grades 5 %	Fig 55-3A	0.5 %	0.5%		
10. Travel Lane Cross Slope: 2 %	Fig 55-3A	2 %	2 %		
11. Superelevation Rate $e_{max} = 2 %$	IDM Fig. 43-3A (3)	2 %	2%		
12. Minimum Vertical Clearance N/A ft	Fig 55-3A	N/A			N/A
13. Americans with Disabilities Act (ADA)	Fig 55-3A	N/A			N/A
14. Bridge Railing Test Level ⁽³⁾ (circle one of the following) TL-2 TL-3 TL-5	IDM 404-4.02	< TL-5	TL-5		

⁽¹⁾ For high speed facilities **and Freeways**, items 1-3, 5-6 & 8-12 require a Level One design exception when minimum criteria are not satisfied.

⁽²⁾ For low speed facilities, items 1, 2(NTN only), 5 & 12 require a Level One design exception when minimum criteria are not satisfied.

⁽³⁾ A Level Two design exception is required for items not referenced in note 1 or 2 when minimum criteria are not satisfied. Include a brief explanation with the design computations.

Are there plan revisions from the previous submittal that affect Level One criteria? Yes No Date

Submitted By Ahmed Elshoura Date 11/20/2023 INDOT location or Consultant: BLN

Checked By Alfred Wessling Date 11/20/2023

INDOT reviewer Click or tap here to enter text. Date Click or tap to enter a date.

Monroe 913 Rehab Alt.

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AE 11/29/23

According to level 1 Design Criteria Suppl. info. shldr. width on

Design Element		Manual Section	2-Lane				Multi-Lane		
Design Controls	Design-Year AADT	40-2.01	< 400	400 ≤ AADT < 3000	3000 ≤ AADT < 5000	≥ 5000	Undivided	Divided	
	Design Forecast Period	55-4.01	20 Years (1)				20 Years (1)		
	*Design Speed, mph (2)	55-4.01	Posted Speed Limit				Posted Speed Limit		
	Access Control	40-5.0	Partial Control / None				Partial Control / None		
	Level of Service	40-2.0	Desirable: B; Minimum: D				Desirable: B; Minimum: D		
Cross-Section Elements	Travel Lane	*Width	12 ft	12 ft	12 ft	12 ft	12 ft.		
		Typical Surface Type (3)	Asphalt / Concrete				Asphalt / Concrete		
	Shoulder (4)	*Width Usable	55-4.05	D: 6 ft M: 2 ft	D: 8 ft M: 3 ft	D: 8 ft M: 6 ft	D: 11 ft M: 8 ft	Desirable: 11 ft Minimum: 8 ft	Rt: D: 11 ft; M: 9 ft Lt: D: 4 ft; M: 4 ft
		*Width Paved	55-4.05	D: 4 ft M: 0 ft	D: 6 ft M: 2 ft	D: 6 ft M: 2 ft	D: 10 ft M: 2 ft	Desirable: 10 ft Minimum: 8 ft	Rt: D: 10 ft; M: 8 ft Lt: D: 4 ft; M: 3 ft
		Typical Surface Type (3)	Ch. 304	Asphalt / Concrete / Sealed Aggregate				Asphalt / Concrete / Sealed Aggregate	
	Cross Slopes	*Travel Lane (5)	55-4.05	2%				2%	
		Shoulder (6)	55-4.05	Paved Width ≤ 4 ft 2%; Paved Width > 4 ft 4% Asphalt / Concrete; 6% Sealed Aggregate				Paved Width ≤ 4 ft 2%; Paved Width > 4 ft 4% Asphalt / Concrete; 6% Sealed Aggregate	
	Auxiliary Lane	Lane Width	55-4.05	Desirable: 12 ft; Minimum: 11 ft				Desirable: 12 ft; Minimum: 11 ft	
		Shoulder Width		Des: Same as Next to Travel Lane; Min: 2 ft				Des: Same as Next to Travel Lane; Min: 2 ft	
	Median Width	55-4.05	N/A				0.0 ft.	Existing	
	Obstruction-Free-Zone Width	55-5.02	See Section 55-5.02				See Section 55-5.02		
	Side Slopes	Cut	Foreshore	2:1 or Flatter (7)				2:1 or Flatter (7)	
			Ditch Width	(7)				(7)	
			Backslope	2:1 or Flatter (7)				2:1 or Flatter (7)	
		Fill	55-4.05	2:1 or Flatter (7)				2:1 or Flatter (7)	
Median Slopes	55-4.05	N/A				Desirable: 8:1; Maximum: 4:1			
Bridges	New or Reconstructed Bridge	*Structural Capacity	Ch. 403						
		*Clear-Roadway Width (9)	55-6.03						
	Existing Bridge to Remain in Place	*Structural Capacity	Ch. 72						
		*Clear-Roadway Width	55-6.02						
	*Vertical Clearance, Arterial Under (10)	New or Replaced Overpassing Bridge	16.5 ft						
		Existing Overpassing Bridge (11)	55-6.0						
Sign Truss / Pedestrian Bridges		New: 17.5 ft; Existing: 17.0 ft							
Vertical Clearance, Arterial Over Railroad (12)	402-6.01	23.0 ft							

Bridge is the greater of IDM Fig. or exist. Paved shldr. outside GR limits ∴ 4 ft is min.

D or Des: Desirable; M or Min: Minimum
* Level One controlling criterion, see page 2 of 4.

GEOMETRIC DESIGN CRITERIA FOR RURAL ARTERIAL, 3R PROJECT
Figure 55-3A (Page 1 of 4)

According to IDM Fig. 412-2A use 3R criteria for exist. Br. to remain in place

According to Fig. 412-2B 3R criteria for Exist. Br. to remain in place is required for Historic Bridge

Br. clr. Rdwy. width = Max { Travelway plus 2 ft each side = 2(12) + 2(2) = 28 ft
OR
30 ft for Arterials or collectors
= 30 ft controls

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Design Element		Manual Section				
Alignment Elements	Design Speed	—	50 mph	55 mph	60 mph	
	*Stopping Sight Distance, Desirable	55-4.02	425 ft	495 ft	570 ft	
	Decision Sight Distance	Speed / Path / Direction Change	42-2.0	750 ft	865 ft	990 ft
		Stop Maneuver		465 ft	535 ft	610 ft
	Passing Sight Distance	42-3.0	Existing	Existing	Existing	
	Intersection Sight Distance, -3% to +3% (14)	55-4.06	P: 630 ft; SUT: 780 ft	P: 730 ft; SUT: 890 ft	P: 840 ft; SU: 1020 ft	
	*Minimum Radius	55-4.03	See Section 55-4.03			
	*Superelevation Rate	55-4.03	See Section 55-4.03			
	*Horizontal Sight Distance	55-4.03	See Section 55-4.03			
	*Vertical Curvature, K-value	Crest	55-4.04	See Section 55-4.04		
		Sag		See Section 55-4.04		
	*Maximum Grade (13)	Level	55-4.04	5%	4.5%	4%
		Rolling		6%	5.5%	5%
Minimum Grade	44-1.03	Desirable: 0.5%; Minimum 0.0%				

* Level One controlling criterion. Except as noted in this chapter, the values shown in AASHTO's *A Policy on Geometric Design of Highways and Streets* (the *Green Book*) may be used as minimum values if they are lower than similar values shown herein. A controlling criterion that does not meet the minimum value is a design exception and is subject to approval. A streamlined design exception may be used for 3R projects. See Section 40-8.0.

GEOMETRIC DESIGN CRITERIA FOR RURAL ARTERIAL, 3R PROJECT
Figure 55-3A (Page 2 of 4)

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- (1) Design Forecast Period. For a partial 3R project, the pavement should be designed for at least a 10 year design life.
- (2) Design Speed. The minimum design speed should equal the anticipated posted speed limit after construction or the legal speed limit, 60 mph, on a non-posted multilane divided highway, or 55 mph on a non-posted two-lane highway.
- (3) Surface Type. The pavement-type selection will be determined by the Pavement Engineering Division or by the local jurisdiction.
- (4) Shoulder. The following will apply:
 - a. On an INDOT facility, the shoulder should be paved to the front face of guardrail. The desirable guardrail offset is 2 ft from the usable shoulder width. In a restrictive situation, the guardrail offset may be 0 ft from the usable shoulder width. See Section 49-4.0 for more information.
 - b. If guardrail is present, the minimum offset from E.T.L. to the front face of guardrail should desirably be equal to the shy-line distance, but should not be less than 4 ft. See Section 49-4.0 for shy-line offsets.
 - c. Usable shoulder width is defined as the distance from the edge of the travel lane to the shoulder break point.
- (5) Cross Slope, Travel Lane. Cross slopes of 1.5% are acceptable on an existing bridge to remain in place.
- (6) Cross Slope, Shoulder. Value is for a tangent section. See Figure 45-1A(1) or Figure 45-1A(2) for more-specific information. See Figure 43-3M or Figure 43-3N for shoulder cross slope on a horizontal curve.
- (7) Side Slopes. Section 55-4.05 provides additional information for side-slope criteria.
- (8) Structural Capacity, New or Reconstructed Bridge. The following will apply:
 - a. Each State-highway bridge within 15 mi of a Toll-Road gate must be designed for Toll-Road loading.
 - b. Each bridge on an Extra-Heavy-Duty Highway must be designed for the Michigan Train truck loading configuration.

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- (9) Width, New or Reconstructed Bridge. See Section 402-6.02(01) for more information. On a State highway, the minimum clear-roadway width should be 30 ft. Otherwise, the bridge clear-roadway width is the algebraic sum of the following:
 - a. the approach traveled-way width;
 - b. the approach usable shoulder width without guardrail; and
 - c. a bridge-railing offset (see Figure 402-6H).
- (10) Vertical Clearance, Arterial Under. Value includes an additional 6 in. allowance for a future pavement overlay. Vertical clearance applies from usable edge to usable edge of shoulders.
- (11) Vertical Clearance, Existing Bridge. See Section 55-6.02 for additional information on minimum allowable vertical clearance.
- (12) Vertical Clearance, Arterial Over Railroad. See Section 402-6.01(03) for additional information on railroad clearance under a highway.
- (13) Maximum Grade. A downgrade that is 1% steeper may be used for a one-way roadway.
- (14) Intersection Sight Distance. For left turn onto a 2-lane road. P = Passenger car; SUT = single unit truck. See Figure 46-10G for value for a combination truck.

Level One Controlling Criteria Checklist Instructions

The Level One Design Criteria checklist should be completed regardless of the high-speed/low-speed or Level One/Level Two designation and included with each submittal. A separate checklist should be completed for the mainline and each S-line, ramp, and phase of maintenance of traffic. **All 10 high-speed controlling criteria apply to freeways and interstates, including exit and entrance ramps, regardless of design speed.** See Design Memo 20-13

See *Indiana Design Manual* Section 40-8.0 for information on design exception documentation.

Submittal. Typically the submittal is either Stage 1, Stage 2, Stage 3, or Final Tracings. Preliminary or Final Plans should be used for Bridge Rehabilitation, Partial 3R, and Traffic projects as appropriate. See IDM 14-2.0.

Des. No. Enter the 7-digit designation number.

Route. Enter the road name. For bridge projects enter the road name and the feature crossed, e.g. US231 over White River.

National Truck Network. Indiana's NTN is comprised of all federal aid primary routes as of 1991. The NTN is available as a separate layer on INDOT's [Road Inventory and Functional Class Viewer](#) (to best view the NTN, other layers should be turned off).

Functional Classification. IDM 40-1.01 describes the various functional classifications – arterial, collector, local road. Enter the functional classification as shown in IDM Figure 14-3C. Include the rural or urban designation. For urban designations, include the sub-designation of suburban, intermediate, or built up. Where the checklist is being used for a ramp, trail, or other unique feature, enter the description.

Design Year and AADT. Typically the design year is 10 to 20 years from the letting date. Enter the year and the corresponding AADT. See IDM 40-2.02

Terrain. Enter either rolling or level as appropriate. Indiana does not have mountainous terrain.

Project Work Type. IDM 40-6.0 describes the project scope of work categories. The scope of work determines which criteria apply to the geometric design of the project. See IDM Figure 14-3C, Project Design Criteria for acceptable entries.

Design Criteria Reference. Enter the *Indiana Design Manual* figure or AASHTO reference used to establish the minimum design criteria. When using an AASHTO reference, include both the title of the reference and the section, e.g. GB Table 5-3. Use the following abbreviations

IDM – *Indiana Design Manual*

GB – AASHTO's *A Policy on Geometric Design of Highways and Streets* (the *Green Book*)

LV – AASHTO's *Geometric Guidelines for Design of Very Low Volume Roads* $ADT \leq 400$

IS – AASHTO's *A Policy on Design Standards, Interstate System*

Existing Condition. Enter the value of the existing condition. This field is mandatory for 3R projects or where an existing substandard condition is being retained.

Proposed Design. Enter the value provided (not an X) in the appropriate column. Where more than one value is needed, e.g. multiple horizontal curves, "see calculations" is acceptable.

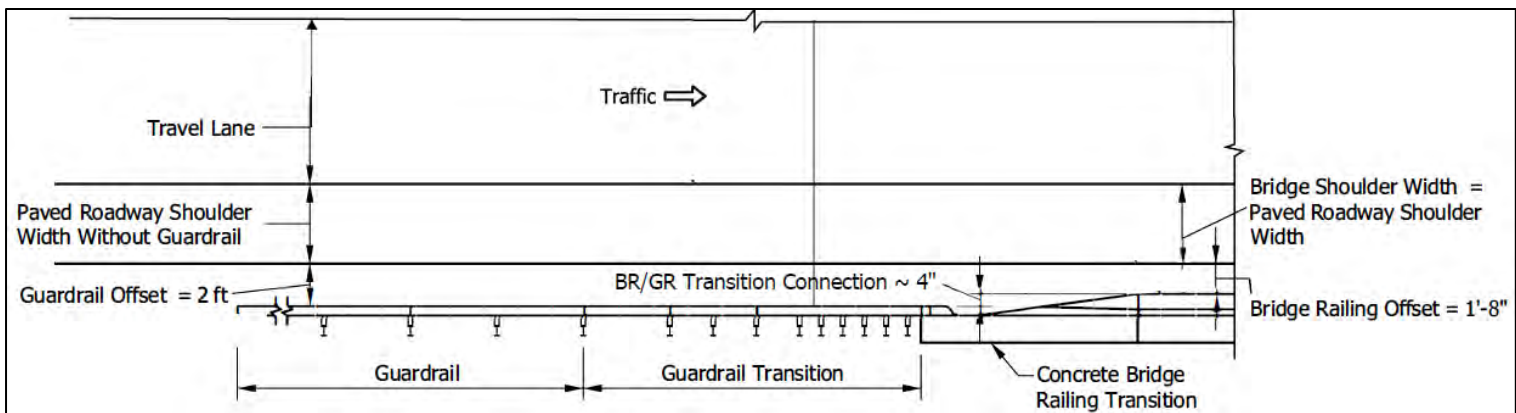
Design Criteria Supplemental Information

Calculations. The documentation for each item should be included in the design computations with the checklist. Calculations must be initialed and dated. Where an existing condition on a 3R project is retained or replaced in kind, the evaluation of crash history and no expansion planned must be included.

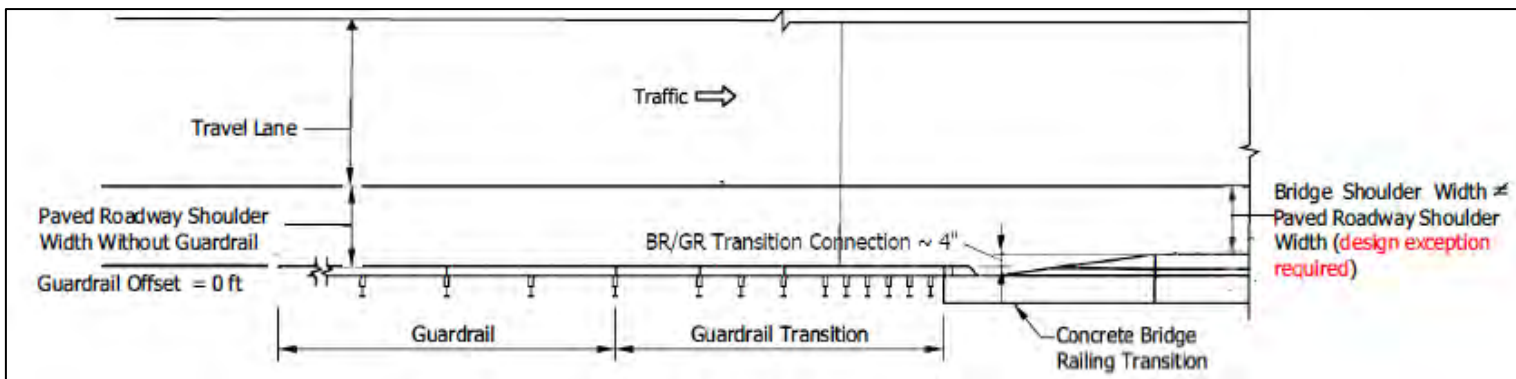
Shoulder Width on a Bridge. The minimum shoulder width on a bridge is the minimum paved shoulder width from the geometric tables or the existing approach roadway paved shoulder width **without guardrail**, whichever is greater. The guardrail offset on the approach roadway should be carried over the bridge. The approximate 4-in loss due to connection of the concrete bridge railing transition/guardrail transition may reduce the offset but may not reduce the minimum paved shoulder width. See Bridge Clear Roadway Width for additional information.

Examples

1. (Desirable) A 2-ft guardrail offset is provided on the approach roadway. The approximate 4-in. reduction at the transition connection will result in a 1'-8" offset on the bridge. The minimum paved shoulder width is not reduced, and a design exception is not required (for shoulder width). Check bridge clear roadway width against minimum required.



2. Zero guardrail offset is provided on the approach roadway. The approximate 4-in. reduction at the transition connection will result in a 4-in reduction to the paved shoulder width on the bridge, and a design exception is required (for shoulder width). Check bridge clear roadway width against minimum required.



Design Criteria Supplemental Information (con'd)

Bridge Clear Roadway Width. Bridge clear roadway width is a Level Two criteria. Where the sum of the lane and shoulder widths is less than 30 ft (arterials and collectors) or 28 ft (local roads), the greater width is the minimum criteria.

Aug. 2022 [Note: "Local roads" is referring to the roadway functional classification, not local ownership of a roadway. The bridge clear roadway width provided should be that which is appropriate based on the site conditions, speed, traffic, needs of the bridge as part of the transportation network, as well as the needs of the community. Where the appropriate width is less than the minimums listed above, a brief explanation should be documented with the design computations.]

Superelevation Transition Length and Distribution. Superelevation transition length and distribution are Level Two criteria. Both the transition length and distribution are important aspects of providing appropriate superelevation.

ADA Criteria. Exceptions to ADA criteria are approved through the ADA Technical Advisory Committee. Exceptions are either a technical inquiry or determination of technical infeasibility.

Bridge Railing Test Level. Bridge railing test level is a Level Two criteria. The project-specific test level needs and site constraints should be included with the design computations. See Design Memo 19-08. Non-standard railing and modifications must be coordinated with the Bridge Design Division prior to use.

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404-4.01 Bridge Railing Criteria [Rev. Sep. 2019]

MASH Implementation. Per the AASHTO-FHWA Joint Implementation Agreement, all new and replacement installations of bridge railing on the National Highway System (NHS), with contract letting date after December 31, 2019, must be evaluated using the AASHTO *Manual for Assessing Safety Hardware* 2016 (MASH) criteria.

FHWA Policy. All new or replacement bridge railing on the NHS must meet MASH crash-test criteria.

New and Replacement Bridge Railing, INDOT. All new and replacement bridge railing on an INDOT bridge should meet MASH crash test criteria, both on and off the NHS. Exceptions should be rare. Exceptions will be considered on a project-by-project basis at the discretion of the Bridge Design Division off the NHS and in cooperation with FHWA on the NHS.

New and Replacement Bridge Railing, LPA. All new and replacement bridge railing on a local agency bridge should meet MASH crash test criteria, both on and off the NHS. On a locally-owned bridge that is not on the NHS, MASH-compliant railing is encouraged, but not required. NCHRP 350-compliant railing may be used at the bridge owner's discretion. The decision to use an NCHRP 350-compliant railing and supporting documentation should be included in the project file.

Existing Bridge Railing. Upgrading existing bridge railing should be considered on bridge preventative maintenance projects where such work is cost-effective. See Chapter 412. In general, existing NCHRP 350-compliant bridge railing in good condition may remain in place.

404-4.02 Test Level Selection [Rev. Sep. 2019]

This section provides guidance on selecting bridge railing test level. The guidance in this section is intended for use on INDOT and LPA bridges. Exceptions are discussed in Section 404-4.02(06).

MASH uses the same six Test Levels established under the previous crash testing criteria, National Cooperative Highway Research Program Report 350 (NCHRP 350) *Recommended Procedures for the Safety Performance Evaluation of Highway Features*.

FHWA Policy. All new or replacement railing on the NHS must meet Test Level 3 (TL-3) crash-test criteria at a minimum.

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E 11/29/23

If ...	And...	The minimum (MASH) test level is	Applicable INDOT Bridge Standards	Notes
Bridge carries interstate mainline or system interchange ramp traffic	Due to close proximity to Exit 4	TL-5	Type FT Type TF-2	Determine the minimum test level. Use the evaluation criteria to below to assess if a higher test level is appropriate.
The design speed is \geq 50 mph	Entrance Ramps of Exit 123	I-69 TL-3	Type FC Type PF-1 Type PS-1	
The design speed is \leq 45 mph	The route is on the NHS	TL-3	Type FC Type PF-1 Type PS-1	A higher test level railing may be used to satisfy lower test level requirements.
The design speed is \leq 45 mph	The route is not on the NHS	TL-2	Type TX (LPA only)	

Consider the following evaluation criteria when selecting the bridge railing test level.

- Highway design speed. Use the greater of posted speed or the design speed to establish the minimum test level. A lower test level may be acceptable for low volume roadways.
- Average annual daily traffic and percent trucks. Higher traffic volumes have inherently higher likelihood of crashes. High truck volumes (truck DDHV is 250 vph) are a consideration for selecting a higher test level.
- Highway geometry (grades and horizontal curvature). Steep grades (sustained longitudinal grades greater than 5%) and sharp curves (horizontal curve radius less than 1,500 ft) are considerations for using a higher test level.
- Type of land use below deck. Roadways under are higher risk than waterways under due to the risk of multiple injuries.
- In-service performance. Unsatisfactory in service performance is a consideration for selecting a higher test level.

LEVEL ONE DESIGN CRITERIA CHECKLIST

Date: 11/20/2023
 Submittal: Prelim. HBAA Report
 Des. No. Not Applicable
 Is route on the National Truck Network? Yes No

Route: Business 37 N over Beanblossom Creek
 Design Year: 2049 AADT: 13,752
 Functional Classification: Minor Arterial; Rural
 Terrain: Level

Project Scope of Work: 3R Non Freeway Bridge Replacement	Design Criteria Reference	Existing Condition	Does the proposed design satisfy the criteria? (Enter the value provided in the appropriate column.)		
			Yes	No ⁽¹⁾ (2)	N/A
Enter the minimum criteria below.					
1. Design Speed: 45 mph	IDM Fig. 55-3A	45	45		
2. Lane Width, Mainline: 12 ft Auxiliary Lanes: N/A ft	IDM Fig. 55-3A	12 ft	12 ft		
3. Usable Shoulder Width (uncurbed sections) adjacent to: Mainline: 8 ft Auxiliary Lanes: N/A ft	IDM Fig. 55-3A	8 ft	8 ft		
Paved Shoulder Width (uncurbed sections) adjacent to: Mainline: 4 ft Auxiliary Lanes: N/A ft	IDM Fig. 55-3A	2 ft Bridge 4 ft Approach	8 ft Bridge 4 ft Approach		
4. Bridge Clear Roadway Width 40 ft ⁽³⁾	IDM Fig. 55-3A	28 ft	40 ft		
5. Design Loading Structural Capacity HL-93	IDM Fig. 55-3A	HS-20	HL-93		
6. Horizontal Curve, Minimum Radius = 960 ft	IDM Fig. 43-2A	6,139.17'	6,139.17'		
7. Superelevation Transition Length 90 ft ⁽³⁾ Distribution 75/25 % (on tangent/on curve)	IDM 43-3.03 IDM 43-3.03	Unknown Unknown	X X		
8a. Stopping Sight Distance, Horizontal Curve 360 ft	IDM Fig. 55-3A	>360 ft	>360 ft		
8b. Stopping Sight Distance, Vertical Curve (Crest Only) 360 ft	IDM Fig. 44-3A	>360 ft	>360 ft		
9. Maximum Grades 5 %	IDM Fig. 55-3A	0.3%	0.5%		
10. Travel Lane Cross Slope: 2 %	IDM Fig. 55-3A	2%	2%		
11. Superelevation Rate $e_{max} = 2 %$	IDM Fig.43-3A(3)	2%	2%		
12. Minimum Vertical Clearance N/A ft		N/A			X
13. Americans with Disabilities Act (ADA)		N/A			X
14. Bridge Railing Test Level ⁽³⁾ (circle one of the following) TL-2 TL-3 TL-5	IDM 404-4.02	< TL-5	TL-5		

⁽¹⁾ For high speed facilities **and Freeways**, items 1-3, 5-6 & 8-12 require a Level One design exception when minimum criteria are not satisfied.

⁽²⁾ For low speed facilities, items 1, 2(NTN only), 5 & 12 require a Level One design exception when minimum criteria are not satisfied.


⁽³⁾ A Level Two design exception is required for items not referenced in note 1 or 2 when minimum criteria are not satisfied. Include a brief explanation with the design computations.

Are there plan revisions from the previous submittal that affect Level One criteria? Yes No Date Click or tap to enter a date.

Submitted By Alfred Wessling Date 11/20/2023 INDOT location or Consultant: BLN

Checked By Ahmed Elshoura Date 11/20/2023

INDOT reviewer Click or tap here to enter text. Date Click or tap to enter a date.



Functional Classification	Allowable Backwater, Annual EP	Roadway Serviceability, Annual EP	Service-ability Freeboard *	Bridge, Allowable Velocity, Annual EP	Culvert, Allowable Velocity, Annual EP
Freeway	1%	1%	2 ft	1%	2%
Ramp	1%	1%	0 ft	1%	2%
Non-Freeway, 4 or More Lanes	1%	1%	2 ft	1%	2%
Two-Lane Facility, AADT > 3000	1%	1%	1 ft	1%	2%
Two-Lane Facility, 1000 < AADT ≤ 3000	1%	4%	0 ft	1%	4%
Two-Lane Facility, AADT ≤ 1000	1%	10%	0 ft	1%	10%
Drive	1%	10%	0 ft	1%	10%

* Required serviceability freeboard is based on the difference between the edge-of-pavement and the structure-headwater elevations throughout the floodplain or watershed. Roadway serviceability should consider backwater effects from a larger downstream waterway.

**DESIGN-STORM FREQUENCY
FOR BRIDGE OR CULVERT**

**Figure 203-2C
(Page 1 of 2)**

National Flood Hazard Layer FIRMette



86°32'46"W 39°14'8"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X

OTHER AREAS OF FLOOD HAZARD

- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

Cross Sections with 1% Annual Chance Water Surface Elevation

- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study

OTHER FEATURES

- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS

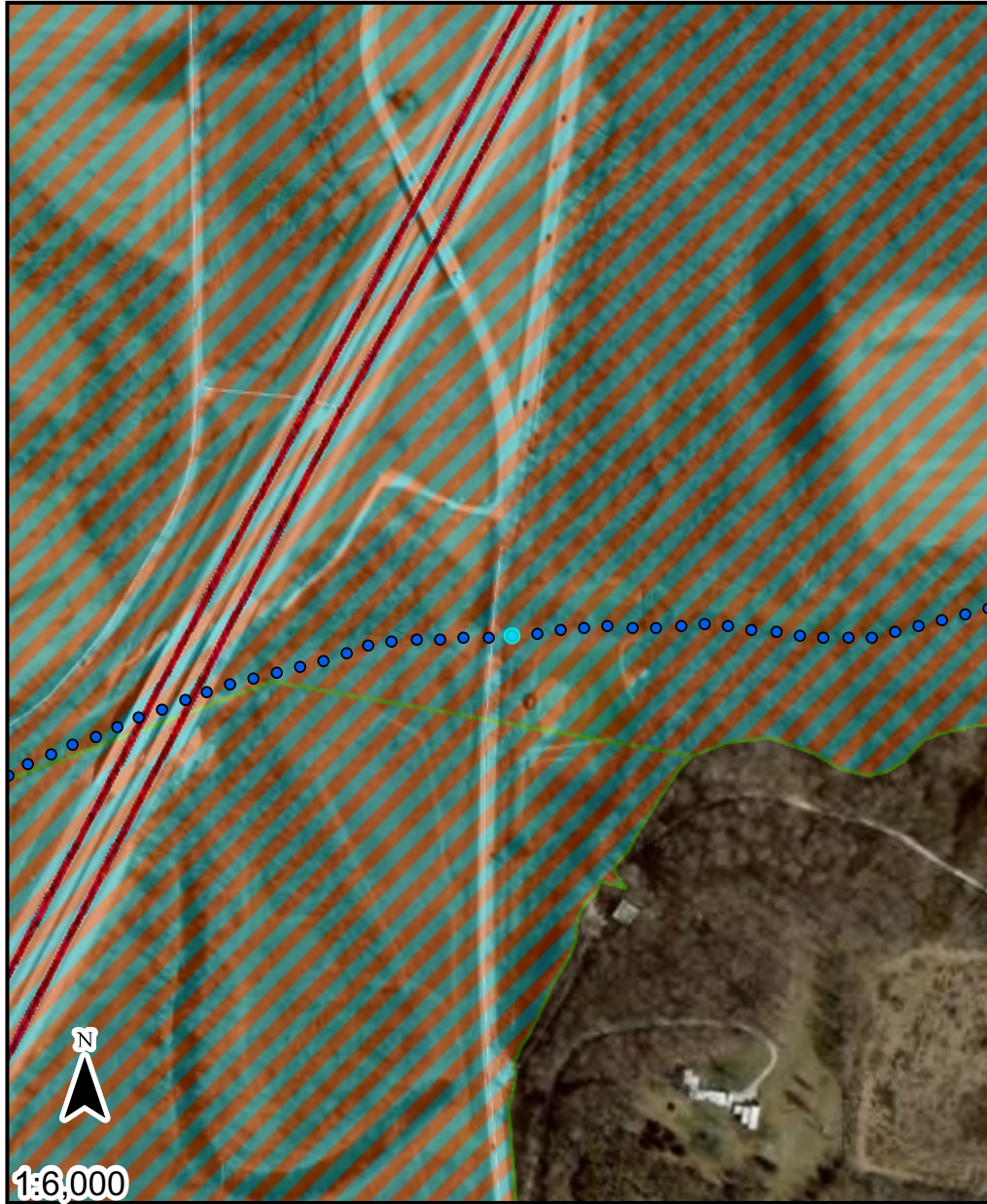
- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/7/2023 at 2:57 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



- Point of Interest
- Base Flood Elevation Point

VERSION

- 1.0

FLD_ZONE, SOURCE_DNR, ZONE_SUBTY

- ▨ FEMA Zone AE Floodway; FEMA Administrative Floodway
- Not Mapped

Long: -86.54074195060406

Lat: 39.231764279781665

The information provided below is based on the point of interest shown in the map above.

County: **Monroe**

Approximate Ground Elevation: **570.0 feet (NAVD88)**

Stream Name:
Beanblossom Creek

Base Flood Elevation: **586.3 Feet (NAVD88)**

Drainage Area: **Not Available**

Best Available Flood Hazard Zone: **FEMA Zone AE Floodway**

National Flood Hazard Zone: **FEMA Zone AE Floodway**

Is a Flood Control Act permit from the DNR needed for this location? **yes**

Is a local floodplain permit needed for this location? **yes-**

Floodplain Administrator: **Tammy Behrman, Senior Planner**

Community Jurisdiction: **Monroe County, County proper**

Phone: **(812) 349-2560**

Email: **tbehrman@co.monroe.in.us**

BFE at upstream coping of Existing Bridge



About

Contact

Meetings & Minutes

AOPA Committee

Rules

Fee Approvals

Nonrule Policy Documents (NPD)

Division of Hearings

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Administrative Review

Shared Neutrals

Related Agencies

Department of Natural Resources

Office of Environmental Adjudication

Roster by Waterway

- [I. Navigability](#)
- [II. Establishing a Roster](#)
- [III. Roster by Waterway](#)
- [IV. Roster by County](#)

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | R | S | T | U | V | W | X | Y

A

Anderson River (including Middle Fork): Navigable in Spencer County from its junction with the Ohio River for 28.4 river miles to the Perry-Spencer County Line. The Middle Fork is navigable from its junction with the Anderson River for 3.3 river miles.

Armuth Ditch: See Black Creek.

Arnold Creek: Navigable in Ohio County from its junction with the Ohio River for 4.4 river miles.

B

Baker Creek: Navigable in Spencer County from its junction with Little Pigeon Creek 1.8 river miles.

Bald Knob Creek: Navigable in Perry County from its junction with Oil Creek for 0.5 river miles.

Banbango Creek: See Baugo Creek.

Bangango Creek: See Baugo Creek.

Baugo Creek: Navigable from its junction with the St. Joseph River in South Bend for 15.2 river miles to the main forks (near Wakarusa).

Bayou Creek: Navigable in Vanderburgh County from its junction with the Ohio River for 1.5 river miles.

Project located upstream of mouth of Griffy Creek; therefore, stream is Not Navigable at our project location.

Beanblossom Creek: Navigable in Monroe County from its junction with the West Fork of the White River for 17.7 river miles to Griffy Creek.



U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands - Monroe 913



U.S. Fish and Wildlife Service, National Standards and Support Team, wetlands_team@fws.gov

November 28, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

APPENDIX D

Cost Estimates

Alternative B

Rehabilitation cost

20-Year Maintenance Costs for Monroe 913

Convert to present worth, assuming a 4% yearly inflation rate

Fracture Critical Inspections (24 month frequency)

$$\begin{aligned}\text{Assume } \$2340 \text{ per inspection} &= \$2340/\text{year} \\ \text{Inflation} &= 0.04 * 2340 = \$94/\text{year} \\ \text{PW} &= A(P/A, 4\%, 20) + G(P/G, 4\%, 20) \\ &= \$2340 * 13.590 + \$94 * 111.564 \\ &= \$42,288 \sim \$43,000\end{aligned}$$

Special Detail Inspection (24 month frequency starting 4th year)

$$\begin{aligned}\text{Assume } \$800 \text{ per inspection} &= \$400/\text{year} \\ \text{Inflation} &= 0.04 * 400 = \$16/\text{year} \\ \text{PW} &= A(P/A, 4\%, 20) + G(P/G, 4\%, 20) \\ &= \$400 * 13.590 + \$16 * 111.564 \\ &= \$7,221 \sim \$8,000\end{aligned}$$

Clean Truss for Maintenance (12 month frequency)

$$\begin{aligned}\text{Assume } \$250 \text{ per cleaning} &= \$810/\text{year} \\ \text{Inflation} &= 0.04 * 810 = \$33/\text{year} \\ \text{PW} &= A(P/A, 4\%, 20) + G(P/G, 4\%, 20) \\ &= \$810 * 13.590 + \$33 * 111.564 \\ &= \$14,690 \sim \$15,000\end{aligned}$$

SUMMARY

$$\begin{aligned}\text{PW Maintenance Costs} &= \$43,000 + \$8,000 + \$15,000 \\ &= \$66,000\end{aligned}$$

4% Compound Interest Factors 4%									
n	Single Payment		Uniform Payment Series				Arithmetic Gradient		n
	Compound Amount Factor	Present Worth Factor	Sinking Fund Factor	Capital Recovery Factor	Compound Amount Factor	Present Worth Factor	Gradient Uniform Series	Gradient Present Worth	
	Find F Given P F/P	Find P Given F P/F	Find A Given F A/F	Find A Given P A/P	Find F Given A F/A	Find P Given A P/A	Find A Given G A/G	Find P Given G P/G	
1	1.040	.9615	1.0000	1.0400	1.000	0.962	0	0	1
2	1.082	.9246	.4902	.5302	2.040	1.886	0.490	0.925	2
3	1.125	.8890	.3203	.3603	3.122	2.775	0.974	2.702	3
4	1.170	.8548	.2355	.2755	4.246	3.630	1.451	5.267	4
5	1.217	.8219	.1846	.2246	5.416	4.452	1.922	8.555	5
6	1.265	.7903	.1508	.1908	6.633	5.242	2.386	12.506	6
7	1.316	.7599	.1266	.1666	7.898	6.002	2.843	17.066	7
8	1.369	.7307	.1085	.1485	9.214	6.733	3.294	22.180	8
9	1.423	.7026	.0945	.1345	10.583	7.435	3.739	27.801	9
10	1.480	.6756	.0833	.1233	12.006	8.111	4.177	33.881	10
11	1.539	.6496	.0741	.1141	13.486	8.760	4.609	40.377	11
12	1.601	.6246	.0666	.1066	15.026	9.385	5.034	47.248	12
13	1.665	.6006	.0601	.1001	16.627	9.986	5.453	54.454	13
14	1.732	.5775	.0547	.0947	18.292	10.563	5.866	61.962	14
15	1.801	.5553	.0499	.0899	20.024	11.118	6.272	69.735	15
16	1.873	.5339	.0458	.0858	21.825	11.652	6.672	77.744	16
17	1.948	.5134	.0422	.0822	23.697	12.166	7.066	85.958	17
18	2.026	.4936	.0390	.0790	25.645	12.659	7.453	94.350	18
19	2.107	.4746	.0361	.0761	27.671	13.134	7.834	102.893	19
20	2.191	.4564	.0336	.0736	29.778	13.590	8.209	111.564	20
21	2.279	.4388	.0313	.0713	31.969	14.029	8.578	120.341	21
22	2.370	.4220	.0292	.0692	34.248	14.451	8.941	129.202	22
23	2.465	.4057	.0273	.0673	36.618	14.857	9.297	138.128	23
24	2.563	.3901	.0256	.0656	39.083	15.247	9.648	147.101	24
25	2.666	.3751	.0240	.0640	41.646	15.622	9.993	156.104	25
26	2.772	.3607	.0226	.0626	44.312	15.983	10.331	165.121	26
27	2.883	.3468	.0212	.0612	47.084	16.330	10.664	174.138	27
28	2.999	.3335	.0200	.0600	49.968	16.663	10.991	183.142	28
29	3.119	.3207	.0189	.0589	52.966	16.984	11.312	192.120	29
30	3.243	.3083	.0178	.0578	56.085	17.292	11.627	201.062	30
31	3.373	.2965	.0169	.0569	59.328	17.588	11.937	209.955	31
32	3.508	.2851	.0159	.0559	62.701	17.874	12.241	218.792	32
33	3.648	.2741	.0151	.0551	66.209	18.148	12.540	227.563	33
34	3.794	.2636	.0143	.0543	69.858	18.411	12.832	236.260	34
35	3.946	.2534	.0136	.0536	73.652	18.665	13.120	244.876	35
40	4.801	.2083	.0105	.0505	95.025	19.793	14.476	286.530	40
45	5.841	.1712	.00826	.0483	121.029	20.720	15.705	325.402	45
50	7.107	.1407	.00655	.0466	152.667	21.482	16.812	361.163	50
55	8.646	.1157	.00523	.0452	191.159	22.109	17.807	393.689	55
60	10.520	.0951	.00420	.0442	237.990	22.623	18.697	422.996	60
65	12.799	.0781	.00339	.0434	294.968	23.047	19.491	449.201	65
70	15.572	.0642	.00275	.0427	364.290	23.395	20.196	472.479	70
75	18.945	.0528	.00223	.0422	448.630	23.680	20.821	493.041	75
80	23.050	.0434	.00181	.0418	551.244	23.915	21.372	511.116	80
85	28.044	.0357	.00148	.0415	676.089	24.109	21.857	526.938	85
90	34.119	.0293	.00121	.0412	827.981	24.267	22.283	540.737	90
95	41.511	.0241	.00099	.0410	1 012.8	24.398	22.655	552.730	95
100	50.505	.0198	.00081	.0408	1 237.6	24.505	22.980	563.125	100

Job: Monroe County Bridge No. 913

DES: AE **DATE:** 11/19/2023

Item: Cost Estimate- Rehabilitation

CK: AVW **DATE:** 11/27/2023

ALTERNATIVE B- BRIDGE REHABILITATION

Item Num.	Pay Item	UNIT	QUANTITY	UNIT PRICE	AMOUNT
105-06845	CONSTRUCTION ENGINEERING	LSUM	1	\$ 70,000.00	\$ 70,000.00
110-01001	MOBILIZATION AND DEMOBILIZATION	LSUM	1	\$ 117,000.00	\$ 117,000.00
201-52370	CLEARING RIGHT OF WAY	LSUM	1	\$ 47,000.00	\$ 47,000.00
202-02240	PAVEMENT REMOVAL	SYS	556	\$ 52.00	\$ 28,912.00
202-51328	PRESENT STRUCTURE, REMOVE PORTIONS	LSUM	1	\$ 150,000.00	\$ 150,000.00
203-02000	EXCAVATION, COMMON	CYS	450	\$ 90.00	\$ 40,500.00
203-02070	BORROW	CYS	300	\$ 68.00	\$ 20,400.00
205-12108	STORM WATER MANAGEMENT BUDGET	DOL	20000	\$ 1.00	\$ 20,000.00
205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	LSUM	1	\$ 10,000.00	\$ 10,000.00
205-12618	SWQCP PREPARATION	LSUM	1	\$ 15,000.00	\$ 15,000.00
207-09935	SUBGRADE TREATMENT, TYPE IC	SYS	1180	\$ 50.00	\$ 59,000.00
214-12239	GEOTEXTILE FOR RIPRAP TYPE 2B	CYS	141	\$ 12.00	\$ 1,692.00
302-06464	SUBBASE FOR PCCP	CYS	36	\$ 181.00	\$ 6,516.00
304-07493	WIDENING WITH HMA, TYPE 2B	TON	88	\$ 251.00	\$ 22,088.00
306-08043	MILLING, TRANSITION	SYS	934	\$ 10.00	\$ 9,340.00
401-07322	QC/QA-HMA, 3, 64, SURFACE, 9.5 MM	TON	175	\$ 253.00	\$ 44,275.00
401-07392	QC/QA-HMA, 3, 64, INTERMEDIATE, 19.0 MM	TON	130	\$ 224.00	\$ 29,120.00
401-07424	QC/QA-HMA, 3, 64, BASE, 19.0 MM	TON	415	\$ 216.00	\$ 89,640.00
401-10258	JOINT ADHESIVE, SURFACE	LFT	1200	\$ 2.00	\$ 2,400.00
401-10259	JOINT ADHESIVE, INTERMEDIATE	LFT	600	\$ 2.50	\$ 1,500.00
401-11785	LIQUID ASPHALT SEALANT	LFT	1200	\$ 1.25	\$ 1,500.00
406-05521	ASPHALT FOR TACK COAT	SYS	1800	\$ 1.00	\$ 1,800.00
601-01700	GUARDRAIL, TERMINAL SYSTEM, W-BEAM, CURVED, 1	EACH	1	\$ 4,080.00	\$ 4,080.00
601-02241	GUARDRAIL, REMOVE	LFT	500	\$ 9.00	\$ 4,500.00
601-02281	GUARDRAIL, MGS W-BEAM, 6 FT 3 IN SPA.	LFT	365	\$ 31.50	\$ 11,497.50
601-12289	GUARDRAIL, MGS, HEIGHT TRANSITION	EACH	2	\$ 1,428.00	\$ 2,856.00
601-12292	GUARDRAIL, MGS TRANSITION WITHOUT CURB	EACH	4	\$ 4,392.00	\$ 17,568.00
601-94689	GUARDRAIL, END TREATMENT, OS	EACH	2	\$ 4,080.00	\$ 8,160.00
609-06259	REINFORCED CONCRETE BRIDGE APPROACH, 12 IN.	SYS	146	\$ 285.00	\$ 41,610.00
616-05688	RIPRAP, CLASS 1	TON	200	\$ 130.00	\$ 26,000.00
616-12248	GEOTEXTILE FOR RIPRAP TYPE 2A	SYS	200	\$ 15.00	\$ 3,000.00
619-11050	CLEAN STEEL BRIDGE, PARTIAL, QP-2, BRIDGE NO.	LSUM	1	\$ 216,000.00	\$ 216,000.00

Job: Monroe County Bridge No. 913
Item: Cost Estimate- Rehabilitation

DES: AE **DATE:** 11/19/2023
CK: AVW **DATE:** 11/27/2023

ALTERNATIVE B- BRIDGE REHABILITATION

Item Num.	Pay Item	UNIT	QUANTITY	UNIT PRICE	AMOUNT
619-12459	DISPOSAL OF CLEANING WASTE HAZARDOUS BRIDGE NO.	LSUM	1	\$ 20,000.00	\$ 20,000.00
619-51859	PAINT STEEL BRIDGE, BRIDGE NO.	LSUM	1	\$ 110,000.00	\$ 110,000.00
621-06553	SEED MIXTURE, R	LBS	35	\$ 7.50	\$ 262.50
621-06574	SODDING	SYS	40	\$ 90.00	\$ 3,600.00
628-09403	FIELD OFFICE, C	MONTH	12	\$ 3,138.00	\$ 37,656.00
703-06029	REINFORCING BARS, EPOXY COATED	LBS	58230	\$ 2.30	\$ 133,929.00
704-51002	CONCRETE, C, SUPERSTRUCTURE	CYS	116	\$ 2,046.00	\$ 237,336.00
706-06351	CONCRETE BRIDGE RAILING TRANSITION, TPF-1	EACH	4	\$ 7,800.00	\$ 31,200.00
706-09962	RAILING, CONCRETE PF-1	LFT	254	\$ 186.00	\$ 47,244.00
706-11404	RAILING, STEEL PF-1	LFT	271	\$ 111.00	\$ 30,081.00
709-51821	SURFACE SEAL	LSUM	1	\$ 4,800.00	\$ 4,800.00
710-09158	PATCHING CONCRETE STRUCTURES	SFT	50	\$ 210.00	\$ 10,500.00
711-05728	REPAIR, GUSSET PLATE	EACH	5	\$ 1,200.00	\$ 6,000.00
711-05728	REPAIR, LOW CHORD	EACH	5	\$ 18,000.00	\$ 90,000.00
711-05728	REPAIR, BEARING	EACH	2	\$ 1,700.00	\$ 3,400.00
711-05728	REPAIR, LOW CHORD SPLICE	EACH	6	\$ 600.00	\$ 3,600.00
711-05728	REPAIR, VERTICAL	EACH	4	\$ 250.00	\$ 1,000.00
711-05728	REPAIR, DIAGONAL	EACH	1	\$ 600.00	\$ 600.00
711-05728	REPAIR, STRUTS	EACH	6	\$ 240.00	\$ 1,440.00
711-51035	STRUCTURAL STEEL	LBS	32543	\$ 16.00	\$ 520,688.00
711-51864	DRILLED HOLE	EACH	600	\$ 54.00	\$ 32,400.00
711-51866	RIVET, REMOVE	EACH	1200	\$ 30.00	\$ 36,000.00
711-96800	STUD SHEAR CONNECTORS	EACH	1728	\$ 7.50	\$ 12,960.00
724-12773	BRIDGE EXPANSION JOINT, PCF	LFT	64	\$ 144.00	\$ 9,216.00
801-04308	ROAD CLOSURE SIGN ASSEMBLY	EACH	4	\$ 374.50	\$ 1,498.00
801-06625	DETOUR ROUTE MARKER ASSEMBLY	EACH	30	\$ 172.00	\$ 5,160.00
801-06640	CONSTRUCTION SIGN, A	EACH	30	\$ 288.00	\$ 8,640.00
801-06775	MAINTAINING TRAFFIC	LSUM	1	\$ 20,000.00	\$ 20,000.00
801-07119	BARRICADE, III-B	LFT	72	\$ 21.00	\$ 1,512.00
808-75052	LINE, PREFORMED PLASTIC, SOLID, WHITE, 6 IN.	LFT	1230	\$ 8.50	\$ 10,455.00
808-75057	LINE, PREFORMED PLASTIC, SOLID, YELLOW, 6 IN.	LFT	1230	\$ 7.50	\$ 9,225.00
808-75996	SNOWPLOWABLE RAISED PAVEMENT MARKER, REMOVE	EACH	7	\$ 61.00	\$ 427.00
808-75998	SNOWPLOWABLE RAISED PAVEMENT MARKER	EACH	16	\$ 213.50	\$ 3,416.00

Subtotal = \$ 2,567,200.00

2023 Cost Estimate \$ 2,567,000.00

2029 Cost Estimate \$ 3,065,000.00

Alternative D
Bypass and Rehabilitation for
Non-Vehicular Use cost

Job: Monroe County Bridge No. 913

DES: AVW **DATE:** 11/28/2023

Item: Cost Estimate- Rehab Truss for Pedestrian Use for Bypass Alter.

CK: AE **DATE:** 11/28/2023

REHABILITATE TRUSS FOR PEDESTRIAN USE FOR BYPASS ALTERNATIVE

Item Num.	Pay Item	UNIT	QUANTITY	UNIT PRICE	AMOUNT
105-06845	CONSTRUCTION ENGINEERING	LSUM	1	\$ 36,500.00	\$ 36,500.00
110-01001	MOBILIZATION AND DEMOBILIZATION	LSUM	1	\$ 50,000.00	\$ 50,000.00
201-52370	CLEARING RIGHT OF WAY	LSUM	1	\$ 20,000.00	\$ 20,000.00
203-02000	EXCAVATION, COMMON	CYS	50	\$ 130.00	\$ 6,500.00
203-02070	BORROW	CYS	100	\$ 77.00	\$ 7,700.00
205-12108	STORM WATER MANAGEMENT BUDGET	DOL	5000	\$ 1.00	\$ 5,000.00
205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	LSUM	1	\$ 5,000.00	\$ 5,000.00
205-12618	SWQCP PREPARATION	LSUM	1	\$ 5,000.00	\$ 5,000.00
207-09935	SUBGRADE TREATMENT, TYPE IC	SYS	50	\$ 113.00	\$ 5,650.00
303-01180	COMPACTED AGGREGATE NO.53	TON	50	\$ 104.00	\$ 5,200.00
306-08043	MILLING, TRANSITION	SYS	100	\$ 26.50	\$ 2,650.00
401-07322	QC/QA-HMA, 3, 64, SURFACE, 9.5 MM	TON	20	\$ 408.00	\$ 8,160.00
406-05521	ASPHALT FOR TACK COAT	SYS	100	\$ 2.00	\$ 200.00
616-05688	RIPRAP, CLASS 1	TON	200	\$ 140.00	\$ 28,000.00
616-12248	GEOTEXTILE FOR RIPRAP TYPE 2A	SYS	200	\$ 12.50	\$ 2,500.00
619-11050	CLEAN STEEL BRIDGE, PARTIAL, QP-2, BRIDGE NO.	LSUM	1	\$ 207,000.00	\$ 207,000.00
619-12459	DISPOSAL OF CLEANING WASTE HAZARDOUS BRIDGE NO.	LSUM	1	\$ 20,000.00	\$ 20,000.00
619-51859	PAINT STEEL BRIDGE, BRIDGE NO.	LSUM	1	\$ 104,000.00	\$ 104,000.00
621-06553	SEED MIXTURE, R	LBS	35	\$ 8.00	\$ 280.00
621-06574	SODDING	SYS	40	\$ 78.00	\$ 3,120.00
628-09403	FIELD OFFICE, C	MONTH	6	\$ 3,300.00	\$ 19,800.00
703-06029	REINFORCING BARS, EPOXY COATED	LBS	41860	\$ 2.35	\$ 98,371.00
704-51002	CONCRETE, C, SUPERSTRUCTURE	CYS	125	\$ 1,840.00	\$ 230,000.00
706-09961	RAILING, CONCRETE PS-1	LFT	254	\$ 173.00	\$ 43,942.00
706-11418	RAILING, STEEL PS-1	LFT	271	\$ 115.00	\$ 31,165.00
709-51821	SURFACE SEAL	LSUM	1	\$ 1,200.00	\$ 1,200.00
711-51035	STRUCTURAL STEEL	LBS	20000	\$ 11.50	\$ 230,000.00
711-51864	DRILLED HOLE	EACH	600	\$ 60.00	\$ 36,000.00
711-51866	RIVET, REMOVE	EACH	2200	\$ 29.00	\$ 63,800.00
711-96800	STUD SHEAR CONNECTORS	EACH	1728	\$ 6.90	\$ 11,923.20
724-12773	BRIDGE EXPANSION JOINT, PCF	LFT	64	\$ 132.00	\$ 8,448.00
801-06775	MAINTAINING TRAFFIC	LSUM	1	\$ 14,000.00	\$ 14,000.00

Total = \$ 1,311,109.20

2023 Cost Estimate \$ 1,311,000.00

2029 Cost Estimate \$ 1,565,000.00

Job: Monroe County Bridge No. 913

DES: AE **DATE:** 11/29/2023

Item: Cost Estimate- New Bypass Bridge

CK: AVW **DATE:** 11/29/2023

NEW BYPASS BRIDGE

Item Num.	Pay Item	UNIT	QUANTITY	UNIT PRICE	AMOUNT
105-06845	CONSTRUCTION ENGINEERING	LSUM	1	\$ 144,000.00	\$ 144,000.00
110-01001	MOBILIZATION AND DEMOBILIZATION	LSUM	1	\$ 239,000.00	\$ 239,000.00
201-52370	CLEARING RIGHT OF WAY	LSUM	1	\$ 144,000.00	\$ 144,000.00
202-02240	PAVEMENT REMOVAL	SYS	1902	\$ 48.00	\$ 91,296.00
202-51328	PRESENT STRUCTURE, REMOVE PORTIONS	LSUM	1	\$ 57,500.00	\$ 57,500.00
203-02000	EXCAVATION, COMMON	CYS	3825	\$ 70.50	\$ 269,662.50
203-02070	BORROW	CYS	11970	\$ 34.00	\$ 406,980.00
205-12108	STORMWATER MANAGEMENT BUDGET	DOL	20000	\$ 1.00	\$ 20,000.00
205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	LSUM	1	\$ 10,000.00	\$ 10,000.00
205-12618	SWQCP PREPARATION	LSUM	1	\$ 20,000.00	\$ 20,000.00
207-09935	SUBGRADE TREATMENT, TYPE IC	SYS	8535	\$ 44.00	\$ 375,540.00
214-12239	GEOTEXTILE FOR PAVEMENT TYPE 2B	SYS	188	\$ 10.00	\$ 1,880.00
302-06464	SUBBASE FOR PCCP	CYS	47	\$ 173.00	\$ 8,131.00
306-08043	MILLING, TRANSITION	SYS	423	\$ 11.00	\$ 4,653.00
401-07322	QC/QA-HMA, 3, 64, SURFACE, 9.5 mm	TON	725	\$ 179.00	\$ 129,775.00
401-07392	QC/QA-HMA, 3, 64, INTERMEDIATE, 19.0 mm	TON	1140	\$ 121.00	\$ 137,940.00
401-07424	QC/QA-HMA, 3, 64, BASE, 19.0 mm	TON	3650	\$ 126.50	\$ 461,725.00
401-10258	JOINT ADHESIVE, SURFACE	LFT	6450	\$ 1.00	\$ 6,450.00
401-10259	JOINT ADHESIVE, INTERMEDIATE	LFT	6150	\$ 1.20	\$ 7,380.00
401-11785	LIQUID ASPHALT SEALANT	LFT	6450	\$ 0.70	\$ 4,515.00
406-05521	ASPHALT FOR TACK COAT	SYS	12500	\$ 0.50	\$ 6,250.00
601-01700	GUARDRAIL, TERMINAL SYSTEM, W-BEAM CURVED, 1	EACH	1	\$ 3,910.00	\$ 3,910.00
601-02241	GUARDRAIL, REMOVE	LFT	1400	\$ 7.20	\$ 10,080.00
601-12281	GUARDRAIL MGS W-BEAM, 6 FT 3 IN. SPACING	LFT	1350	\$ 29.00	\$ 39,150.00
601-12289	GUARDRAIL, MGS, HEIGHT TRANSITION	EACH	1	\$ 1,495.00	\$ 1,495.00
601-12292	GUARDRAIL, MGS, TRANSITION WITHOUT CURB	EACH	4	\$ 4,255.00	\$ 17,020.00
601-94689	GUARDRAIL, END TREATMENT, OS	EACH	3	\$ 3,853.00	\$ 11,559.00
609-06259	REINFORCED CONCRETE BRIDGE APPROACH, 12 IN.	SYS	195	\$ 253.00	\$ 49,335.00
616-05688	RIPRAP, CLASS 1	TON	285	\$ 129.00	\$ 36,765.00
616-12248	GEOTEXTILE FOR RIPRAP TYPE 2A	SYS	285	\$ 9.00	\$ 2,565.00
621-06553	SEED MIXTURE, R	LBS	35	\$ 7.00	\$ 245.00
621-06574	SODDING	SYS	40	\$ 87.00	\$ 3,480.00
628-09403	FIELD OFFICE, C	MONTH	18	\$ 2,933.00	\$ 52,794.00

Job: Monroe County Bridge No. 913
Item: Cost Estimate- New Bypass Bridge

DES: AE **DATE:** 11/29/2023
CK: AVW **DATE:** 11/29/2023

NEW BYPASS BRIDGE

Item Num.	Pay Item	UNIT	QUANTITY	UNIT PRICE	AMOUNT
701-09557	TEST PILE, DYNAMIC, PRODUCTION	LFT	90	\$ 80.00	\$ 7,200.00
701-09559	TEST PILE, DYNAMIC, RESTRIKE	EACH	2	\$ 4,485.00	\$ 8,970.00
701-09683	PILE SHOE, HP 12 X 74	EACH	30	\$ 196.00	\$ 5,880.00
701-95780	PILE, STEEL H, HP 12 X 74	LFT	390	\$ 155.00	\$ 60,450.00
702-51005	CONCRETE, A, SUBSTRUCTURE	CYS	142	\$ 1,495.00	\$ 212,290.00
702-51015	CONCRETE, B, FOOTINGS	CYS	70	\$ 633.00	\$ 44,310.00
702-92857	CONCRETE, C, SUBSTRUCTURE	CYS	40	\$ 1,725.00	\$ 69,000.00
703-06028	REINFORCING BARS	LBS	27526	\$ 2.00	\$ 55,052.00
703-06029	REINFORCING BARS, EPOXY COATED	LBS	124670	\$ 2.00	\$ 249,340.00
704-51002	CONCRETE, C, SUPERSTRUCTURE	CYS	300	\$ 1,610.00	\$ 483,000.00
706-09959	RAILING, CONCRETE FT	LFT	420	\$ 170.00	\$ 71,400.00
706-11621	TRANSITION, TFT	EACH	4	\$ 7,475.00	\$ 29,900.00
707-09865	STRUCTURAL MEMBER, CONCRETE, BULB-T BEAM, 36 IN. X 49 IN	LFT	852	\$ 768.20	\$ 654,506.40
709-51821	SURFACE SEAL	LSUM	1	\$ 2,500.00	\$ 2,500.00
801-04308	ROAD CLOSURE SIGN ASSEMBLY	EACH	4	\$ 359.00	\$ 1,436.00
801-06625	DETOUR ROUTE MARKER ASSEMBLY	EACH	30	\$ 165.00	\$ 4,950.00
801-06640	CONSTRUCTION SIGN, A	EACH	30	\$ 276.00	\$ 8,280.00
801-06775	MAINTAINING TRAFFIC	LSUM	1	\$ 15,000.00	\$ 15,000.00
801-07119	BARRICADE, III-B	LFT	72	\$ 20.00	\$ 1,440.00
808-75052	LINE, PREFORMED PLASTIC, SOLID, WHITE, 6 IN.	LFT	3260	\$ 8.00	\$ 26,080.00
808-75057	LINE, PREFORMED PLASTIC, SOLID, YELLOW, 6 IN.	LFT	3260	\$ 6.00	\$ 19,560.00
808-75996	SNOWPLOWABLE RAISED PAVEMENT MARKER, REMOVE	EACH	24	\$ 59.00	\$ 1,416.00
808-75998	SNOWPLOWABLE RAISED PAVEMENT MARKER	EACH	24	\$ 196.00	\$ 4,704.00

Total = \$ 4,811,739.90

2023 Cost Estimate \$ 4,812,000.00

2029 Cost Estimate \$ 5,746,000.00

Alternative E
Relocation and
Replacement cost

Job: Monroe County Bridge No. 913

DES: AVW **DATE:** 11/27/2023

Item: Cost Estimate- Relocate & Rehab Truss for Pedestrian Use

CK: AE **DATE:** 11/27/2023

RELOCATE AND REHABILITATE TRUSS FOR PEDESTRIAN USE

Item Num.	Pay Item	UNIT	QUANTITY	UNIT PRICE	AMOUNT
105-06845	CONSTRUCTION ENGINEERING	LSUM	1	\$ 45,500.00	\$ 45,500.00
110-01001	MOBILIZATION AND DEMOBILIZATION	LSUM	1	\$ 65,000.00	\$ 65,000.00
201-52370	CLEARING RIGHT OF WAY	LSUM	1	\$ 30,000.00	\$ 30,000.00
203-02000	EXCAVATION, COMMON	CYS	150	\$ 113.00	\$ 16,950.00
203-02070	BORROW	CYS	200	\$ 67.00	\$ 13,400.00
205-12108	STORM WATER MANAGEMENT BUDGET	DOL	5000	\$ 1.00	\$ 5,000.00
205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	LSUM	1	\$ 5,000.00	\$ 5,000.00
205-12618	SWQCP PREPARATION	LSUM	1	\$ 5,000.00	\$ 5,000.00
206-51215	EXCAVATION, X	CYS	56	\$ 345.00	\$ 19,320.00
207-09935	SUBGRADE TREATMENT, TYPE IC	SYS	300	\$ 62.00	\$ 18,600.00
306-08043	MILLING, TRANSITION	SYS	100	\$ 26.50	\$ 2,650.00
401-07322	QC/QA-HMA, 3, 64, SURFACE, 9.5 MM	TON	25	\$ 337.00	\$ 8,425.00
401-07392	QC/QA-HMA, 3, 64, INTERMEDIATE, 19.0 MM	TON	45	\$ 248.00	\$ 11,160.00
401-07424	QC/QA-HMA, 3, 64, BASE, 19.0 MM	TON	50	\$ 218.00	\$ 10,900.00
406-05521	ASPHALT FOR TACK COAT	SYS	500	\$ 1.84	\$ 920.00
616-05688	RIPRAP, CLASS 1	TON	200	\$ 121.00	\$ 24,200.00
616-12248	GEOTEXTILE FOR RIPRAP TYPE 2A	SYS	200	\$ 11.50	\$ 2,300.00
619-11050	CLEAN STEEL BRIDGE, PARTIAL, QP-2, BRIDGE NO.	LSUM	1	\$ 150,000.00	\$ 150,000.00
619-12459	DISPOSAL OF CLEANING WASTE HAZARDOUS BRIDGE NO.	LSUM	1	\$ 20,000.00	\$ 20,000.00
619-51859	PAINT STEEL BRIDGE, BRIDGE NO.	LSUM	1	\$ 75,000.00	\$ 75,000.00
621-06553	SEED MIXTURE, R	LBS	35	\$ 7.00	\$ 245.00
621-06574	SODDING	SYS	40	\$ 92.00	\$ 3,680.00
628-09403	FIELD OFFICE, C	MONTH	12	\$ 2,875.00	\$ 34,500.00
702-51005	CONCRETE, A, SUBSTRUCTURE	CYS	50	\$ 1,550.00	\$ 77,500.00
702-51015	CONCRETE, B, FOOTINGS	CYS	45	\$ 690.00	\$ 31,050.00
703-06028	REINFORCING BARS	LBS	11875	\$ 1.94	\$ 23,037.50
703-06029	REINFORCING BARS, EPOXY COATED	LBS	41860	\$ 2.04	\$ 85,394.40
704-51002	CONCRETE, C, SUPERSTRUCTURE	CYS	125	\$ 1,770.00	\$ 221,250.00
706-09961	RAILING, CONCRETE PS-1	LFT	254	\$ 177.00	\$ 44,958.00
706-11418	RAILING, STEEL PS-1	LFT	271	\$ 109.00	\$ 29,539.00
709-51821	SURFACE SEAL	LSUM	1	\$ 1,200.00	\$ 1,200.00
711-12147	SUPERSTRUCTURE INSTALLATION REASSEMBLE	LSUM	1	\$ 75,000.00	\$ 75,000.00
711-51035	STRUCTURAL STEEL	LBS	20000	\$ 10.00	\$ 200,000.00
711-51864	DRILLED HOLE	EACH	600	\$ 52.00	\$ 31,200.00

Job: Monroe County Bridge No. 913

DES: AVW **DATE:** 11/27/2023

Item: Cost Estimate- Relocate & Rehab Truss for Pedestrian Use

CK: AE **DATE:** 11/27/2023

RELOCATE AND REHABILITATE TRUSS FOR PEDESTRIAN USE

Item Num.	Pay Item	UNIT	QUANTITY	UNIT PRICE	AMOUNT
711-51866	RIVET, REMOVE	EACH	2200	\$ 29.00	\$ 63,800.00
711-96800	STUD SHEAR CONNECTORS	EACH	1728	\$ 6.90	\$ 11,923.20
724-12773	BRIDGE EXPANSION JOINT, PCF	LFT	64	\$ 132.00	\$ 8,448.00
801-04308	ROAD CLOSURE SIGN ASSEMBLY	EACH	2	\$ 356.00	\$ 712.00
801-06775	MAINTAINING TRAFFIC	LSUM	1	\$ 12,000.00	\$ 12,000.00
801-07119	BARRICADE, III-B	LFT	30	\$ 20.00	\$ 600.00

Subtotal = \$ 1,485,362.10

Total = \$ 1,485,362.10

2023 Cost Estimate \$ 1,485,000.00

2029 Cost Estimate \$ 1,773,000.00

Job: Monroe County Bridge No. 913

DES: AE **DATE:** 11/19/2023

Item: Cost Estimate- Replacement

CK: AVW **DATE:** 11/27/2023

3 SPAN CONTINUOUS PRESTRESSED CONCRETE BULB-T BEAM BRIDGE

Item Num.	Pay Item	UNIT	QUANTITY	UNIT PRICE	AMOUNT
105-06845	CONSTRUCTION ENGINEERING	LSUM	1	\$ 87,000.00	\$ 87,000.00
110-01001	MOBILIZATION AND DEMOBILIZATION	LSUM	1	\$ 145,000.00	\$ 145,000.00
201-52370	CLEARING RIGHT OF WAY	LSUM	1	\$ 58,000.00	\$ 58,000.00
202-02240	PAVEMENT REMOVAL	SYS	923	\$ 50.00	\$ 46,150.00
202-51330	PRESENT STRUCTURE, REMOVE	LSUM	1	\$ 230,000.00	\$ 230,000.00
203-02000	EXCAVATION, COMMON	CYS	350	\$ 98.00	\$ 34,300.00
203-02070	BORROW	CYS	575	\$ 53.00	\$ 30,475.00
205-12108	STORM WATER MANAGEMENT BUDGET	DOL	12000	\$ 1.00	\$ 12,000.00
205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	LSUM	1	\$ 10,000.00	\$ 10,000.00
205-12618	SWQCP PREPARATION	LSUM	1	\$ 20,000.00	\$ 20,000.00
207-09935	SUBGRADE TREATMENT, TYPE IC	SYS	1715	\$ 48.00	\$ 82,320.00
214-12239	GEOTEXTILE FOR RIPRAP TYPE 2B	CYS	188	\$ 10.00	\$ 1,880.00
302-06464	SUBBASE FOR PCCP	CYS	47	\$ 173.30	\$ 8,145.10
306-08043	MILLING, TRANSITION	SYS	400	\$ 11.00	\$ 4,400.00
401-07322	QC/QA-HMA, 3, 64, SURFACE, 9.5 MM	TON	175	\$ 241.50	\$ 42,262.50
401-07392	QC/QA-HMA, 3, 64, INTERMEDIATE, 19.0 MM	TON	220	\$ 171.50	\$ 37,730.00
401-07424	QC/QA-HMA, 3, 64, BASE, 19.0 MM	TON	715	\$ 154.00	\$ 110,110.00
401-10258	JOINT ADHESIVE, SURFACE	LFT	1350	\$ 1.50	\$ 2,025.00
401-10259	JOINT ADHESIVE, INTERMEDIATE	LFT	1050	\$ 1.60	\$ 1,680.00
401-11785	LIQUID ASPHALT SEALANT	LFT	1350	\$ 1.00	\$ 1,350.00
406-05521	ASPHALT FOR TACK COAT	SYS	2400	\$ 0.60	\$ 1,440.00
601-01700	GUARDRAIL, TERMINAL SYSTEM, W-BEAM, CURVED, 1	EACH	1	\$ 4,462.00	\$ 4,462.00
601-02241	GUARDRAIL, REMOVE	LFT	500	\$ 8.40	\$ 4,200.00
601-02281	GUARDRAIL, MGS W-BEAM, 6 FT 3 IN SPA.	LFT	365	\$ 30.00	\$ 10,950.00
601-12289	GUARDRAIL, MGS, HEIGHT TRANSITION	EACH	2	\$ 1,380.00	\$ 2,760.00
601-12292	GUARDRAIL, MGS TRANSITION WITHOUT CURB	EACH	4	\$ 4,200.00	\$ 16,800.00
601-94689	GUARDRAIL, END TREATMENT, OS	EACH	2	\$ 3,910.00	\$ 7,820.00
609-06259	REINFORCED CONCRETE BRIDGE APPROACH, 12 IN.	SYS	195	\$ 253.00	\$ 49,335.00
616-05688	RIPRAP, CLASS 1	TON	150	\$ 129.00	\$ 19,350.00
616-12248	GEOTEXTILE FOR RIPRAP TYPE 2A	SYS	150	\$ 14.50	\$ 2,175.00
621-06553	SEED MIXTURE, R	LBS	35	\$ 7.00	\$ 245.00
621-06574	SODDING	SYS	40	\$ 86.50	\$ 3,460.00

Job: Monroe County Bridge No. 913

DES: AE **DATE:** 11/19/2023

Item: Cost Estimate- Replacement

CK: AVW **DATE:** 11/27/2023

3 SPAN CONTINUOUS PRESTRESSED CONCRETE BULB-T BEAM BRIDGE

Item Num.	Pay Item	UNIT	QUANTITY	UNIT PRICE	AMOUNT
628-09403	FIELD OFFICE, C	MONTH	18	\$ 2,933.00	\$ 52,794.00
701-09557	TEST PILE, DYNAMIC, PRODUCTION	LFT	90	\$ 80.50	\$ 7,245.00
701-09559	TEST PILE, DYNAMIC, RESTRIKE	EACH	2	\$ 4,485.00	\$ 8,970.00
701-09683	PILE SHOE, HP 12 X 74	EACH	30	\$ 195.50	\$ 5,865.00
701-95780	PILE, STEEL H HP 12 X 74	LFT	500	\$ 155.50	\$ 77,750.00
702-51005	CONCRETE, A, SUBSTRUCTURE	CYS	142	\$ 1,495.00	\$ 212,290.00
702-51015	CONCRETE, B, FOOTINGS	CYS	70	\$ 632.50	\$ 44,275.00
702-92857	CONCRETE, C, SUBSTRUCTURE	CYS	40	\$ 1,725.00	\$ 69,000.00
703-06028	REINFORCING BARS	LBS	27488	\$ 2.00	\$ 54,976.00
703-06029	REINFORCING BARS, EPOXY COATED	LBS	118640	\$ 2.00	\$ 237,280.00
704-51002	CONCRETE, C, SUPERSTRUCTURE	CYS	300	\$ 1,610.00	\$ 483,000.00
706-06351	CONCRETE BRIDGE RAILING TRANSITION, TPF-1	EACH	4	\$ 7,475.00	\$ 29,900.00
706-09962	RAILING, CONCRETE PF-1	LFT	420	\$ 165.60	\$ 69,552.00
706-11404	RAILING, STEEL PF-1	LFT	438	\$ 100.60	\$ 44,062.80
707-09865	STRUCTURAL MEMBER, CONCRETE BULB-T BEAM, 36 IN. X 49 IN.	LFT	852	\$ 768.20	\$ 654,506.40
709-51821	SURFACE SEAL	LSUM	1	\$ 2,496.00	\$ 2,496.00
801-04308	ROAD CLOSURE SIGN ASSEMBLY	EACH	4	\$ 359.00	\$ 1,436.00
801-06625	DETOUR ROUTE MARKER ASSEMBLY	EACH	30	\$ 165.00	\$ 4,950.00
801-06640	CONSTRUCTION SIGN, A	EACH	30	\$ 276.00	\$ 8,280.00
801-06775	MAINTAINING TRAFFIC	LSUM	1	\$ 15,000.00	\$ 15,000.00
801-07119	BARRICADE, III-B	LFT	72	\$ 20.00	\$ 1,440.00
808-75052	LINE, PREFORMED PLASTIC, SOLID, WHITE, 6 IN.	LFT	654	\$ 9.20	\$ 6,016.80
808-75057	LINE, PREFORMED PLASTIC, SOLID, YELLOW, 6 IN.	LFT	1230	\$ 7.00	\$ 8,610.00
808-75996	SNOWPLOWABLE RAISED PAVEMENT MARKER, REMOVE	EACH	7	\$ 59.00	\$ 413.00
808-75998	SNOWPLOWABLE RAISED PAVEMENT MARKER	EACH	16	\$ 196.00	\$ 3,136.00

Total = \$ 3,191,068.60

2023 Cost Estimate \$ 3,191,000.00

2029 Cost Estimate \$ 3,810,000.00

APPENDIX E

Load Rating Summary and SI&A Inspection Report

MONROE COUNTY BRIDGE NO. 00913

LOAD RATING SUMMARY

Des: KB Date: 6/10/2020
Ck: AVW Date: 6/15/2020

Bridge Identification

8. NBI Number:5300130 27. Year Built:1946
2. District:05 - SEYMOUR 106. Reconstructed:1986
26. Func. Class.:07 - RURAL - MAJOR COLLECTOR 104. Highway System of Inventory Route:0

Bridge Geometrics

52. Deck Width (o-o):32 ft. 43. Main Str. Type:310 - STEEL TRUSS
51. Bridge Rdwy. Width:28 ft. 44. Str. Type-Approach:000 - NONE
48. Max. Span:125 ft. 107. Deck Structure Type:2 - CONCRETE PRECAST
49. Structure Length:126.6 ft. 108A. Wearing Surface:3 - LATEX CONCRETE
34. Skew:0 deg.

Condition

58. Deck:5 - FAIR 60. Substructure:6 - SATISFACTORY
59. Superstructure:5 - FAIR 62. Culvert:N - NOT APPLICABLE

Load Rating Input and Assumptions

L.R. Program: AASHTOWare BrR Program Version: 6.8.3

Load Rating Method: LFR

Railing/Curb: Misc. Alum. with No curbs, assume 40 plf SIP Forms: N/A

Deck/Slab Depth: 6" pretensioned & post tensioned deck panels Wearing Surface Depth: 1.75" Mod. Portland Cement Concrete Overlay

Spans: 125'-0 3/8" CL Brg to CL Brg Span; 126'-6 3/4" structure length; Concrete deck f'_{ci} =4 ksi & f'_{c} =5 ksi;

Deck/Slab Material: 7/16" diam. 270 K pretensioned strands Ult. load= 31 K; 1/2" diam. 270 K coated Post Tensioned Strand Ult. Load=41.3 K

Beam: Original Stringers: west ext. W16x36 & int. W16x40; 2018 Stringers: east ext. Bays 1 & 2 = W18x35 & Bays 3 to 8 = W18x40

Beam/Girder Spacing/Overhangs: Original Floor Beams W36x170 & W36x160 Spaced at 15'-7 1/2"

Beam Material: Original Steel F_y = 33 ksi; 2018 Repair Stringers F_y = 50 ksi

Strands/Rebar: Stringer spa. Int. 6 spa. at 3'-9" = 22.5' Ext. spa.=3'-10" & overhang = 11"; Assume 1/4" Epoxy Mortar Fillet on Stringers

Misc.: 33'-7 1/2" CL to CL Truss; Assume 15% additional dead load for connections/members not in model; 7/8" diameter Rivets per plans

Load Rating Notes

The 1946 original design plans, 1969, 1985, and 1995 rehabilitation plans are on file at the Monroe Highway Department. The original plans indicate a H-20 design loading in accordance with the 1941 AASHTO specifications and checked for H20-S16(44). In 1969 the deck was replaced with a 6.25" prestensioned deck that was post-tensioned together. In 1985 the deck was milled 1/4" and overlaid with 1.75" modified Portland cement concrete and the structural steel was cleaned and painted. In 1995 the joints and the ends of the deck were reconstructed. In 2018 the east exterior stringers were replaced with either a Grade 50 A588 W18x35 or W18x40.

The deck was noted as having some signs of minor distress. There is some leaking between panels. Transverse cracks in middle of deck and at edges of precast deck panels. South joint is failed. Delaminations in deck at northwest corner. Underside of 3rd full panel in bay 5 has multiple delaminations and large spall with 3 strands exposed. Some panels are missing beam connection clips. The east deck coping is spalled with exposed strands.

The superstructure was noted as having some signs of distress. Areas of heavy pitting and minor section loss on inside of flanges, top of web, and rivet heads of lower chords. Lateral bracing connections with moderate to heavy section loss. Areas of surface rust and minor expansion rust on stringers and floor beams.

The substructure was noted as having some signs of distress. There is spalling with exposed steel in mudwalls at each bridge corner with 3 to 6 inches of section loss. The expansion bearings are severely rotated to the south and may have seized. The northeast bridge seat is spalled.

All stringers will assume to have 5% total section loss. All floor beams will assume 5% total section loss for 5 feet at each end unless the fracture critical inspection report indicates differently. Assume stringers are not composite with the deck. The exterior stringer live load (LL) distribution factor (DF) per 2002 AASHTO Specifications 3.23.2.3.1.5 is probably for future bridge widenings; however this bridge will never be widened since it is a truss. Therefore, use the lever rule to determine the appropriate LL DF for the exterior stringers. The "allow plastic analysis" box in the control options was checked for the grade 50 stringers only.

MONROE COUNTY BRIDGE NO. 00913

LOAD RATING SUMMARY

Des: KB Date: 6/10/2020
 Ck: AVW Date: 6/15/2020

Design Loads

Vehicle	Inventory Rating Factor	Load Capacity (Ton)
HL-93	NA	NA
Fatigue	NA	NA
H-20	1.051	21.020
HS-20	1.046	37.656
HS-25	0.837	37.665

NRL Vehicle not used for Load Capacity >>

For LRFR Only when Span => 200 ft. or Superstructure is Continuous, Input a RF for Lane Type Vehicle Otherwise Input NA >>>>

Legal Loads

# of Axles	Vehicle	Rating Factor	Load Capacity (Ton)	Safe Load Capacity (Ton)
2	EV2	2.517	72.364	72
3	EV3	1.745	75.035	75

EV2 Single Axle (Ton) = 42.2

EV3 Tandem Axle (Ton) = 54.1

# of Axles	Vehicle	Rating Factor	Load Capacity (Ton)	Safe Load Capacity (Ton)
varies	NRL	1.341	NA	NA
2	H-20	1.755	35.100	35
2	Alternate Military	1.510	36.240	36
3	HS-20	1.748	62.928	62
3	AASHTO Type 3	2.086	52.150	52
4	SU4	1.715	46.305	46
5	AASHTO Type 3S2	2.107	75.852	75
5	SU5	1.600	49.600	49
6	AASHTO Type 3-3	2.525	101.000	101
6	Lane-Type	NA	NA	NA
6	SU6	1.456	50.596	50
7 / 8	SU7	1.396	54.095	54

Final Load Rating Results

The stringers were assumed to not have lateral support of the top flange since deck is attached by clips and some clips are missing. The floor beams were given lateral supports at the stringer locations.

The axial compression of the end post diagonal controls the truss load rating. The stringers are controlled by the flexure near midspan of the 1st interior stringer.

The bridge's H-20 inventory load rating is controlled by the flexure near midspan of the interior floor beam 8.

The load capacity was determined using Load Factor Rating (LFR) Analysis according to the Manual of Bridge Evaluation 6B.4.1. Based on the assumptions made using plans, and existing conditions, we recommend a load limit of:

L.R. Program: AASHTOWare BrR Program Version: 6.8.3 L.R. Method: LFR
 Rating Version: Deterioration Deterioration: Yes Click Box Contract No.: Proj. No.: Des. No:
 66B. Inventory (H):21 TONS 66. Inventory:37 TONS 64. Operating:62 TONS
 65. Inventory LR Method:1-Load Factor Rating (LFR) 63. Operating LR Method:1-Load Factor Rating (LFR)
 41. Open,Posted,Closed:A Open 31. Design Load:5-HS 20
 66C. Tons Posted: TONS 70. Bridge Posting:5-Equal to or Above Legal Loads
 66D. Date Posted/Closed:

Toll Road: No / not within 15 mi Extra Heavy Duty Hwy.: No- Do Not Check Box
 This load rating is based upon the routine inspection conducted on 3/11/2020

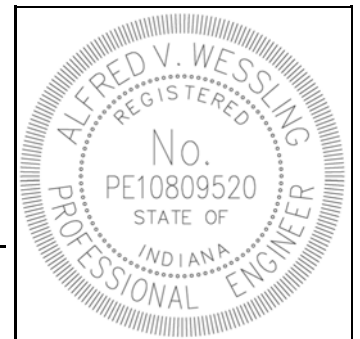
Alfred Wessling

6/15/2020

Engineer

Date

I hereby certify that this report was prepared by me or under my direct personal supervision and that I am a duly Registered Professional Engineer under the laws of the State of Indiana.



STRUCTURE INVENTORY AND APPRAISAL REPORT
MONROE COUNTY BRIDGE NO. 00913 - BUSINESS 37 NORTH OVER BEANBLOSSOM CREEK

APPROACH AND ELEVATION PHOTOS



APPROACH LOOKING NORTH



APPROACH LOOKING SOUTH

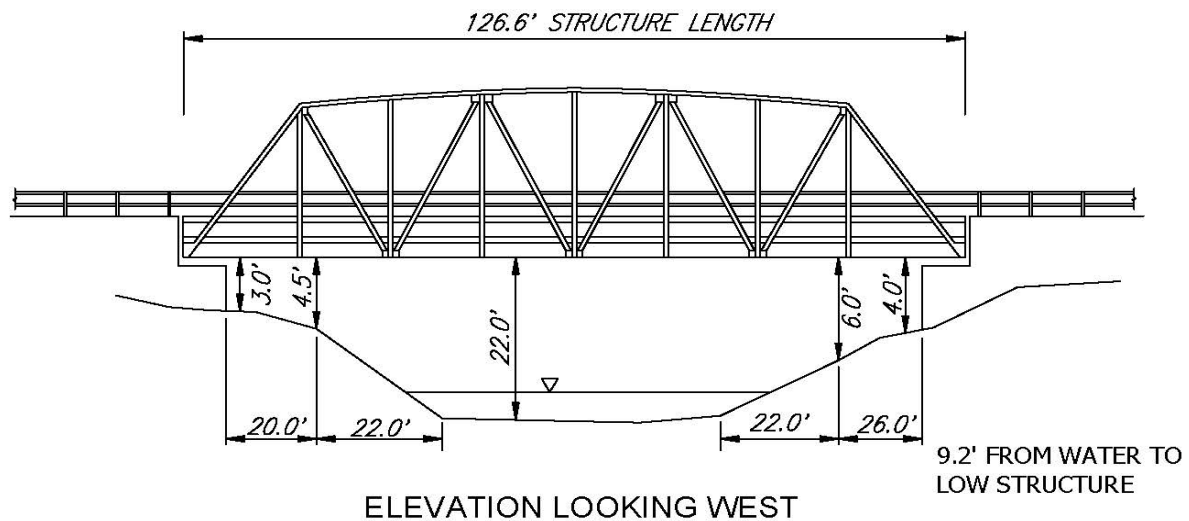


ELEVATION LOOKING WEST



TACK WELD SOUTHWEST L3

MONROE 913



STRUCTURE INVENTORY AND APPRAISAL REPORT
 MONROE COUNTY BRIDGE NO. 00913 - BUSINESS 37 NORTH OVER BEANBLOSSOM CREEK

ADDITIONAL PHOTOS



WEST L4 CONDITION



L4U3 NORTHWEST PAINT PEELING



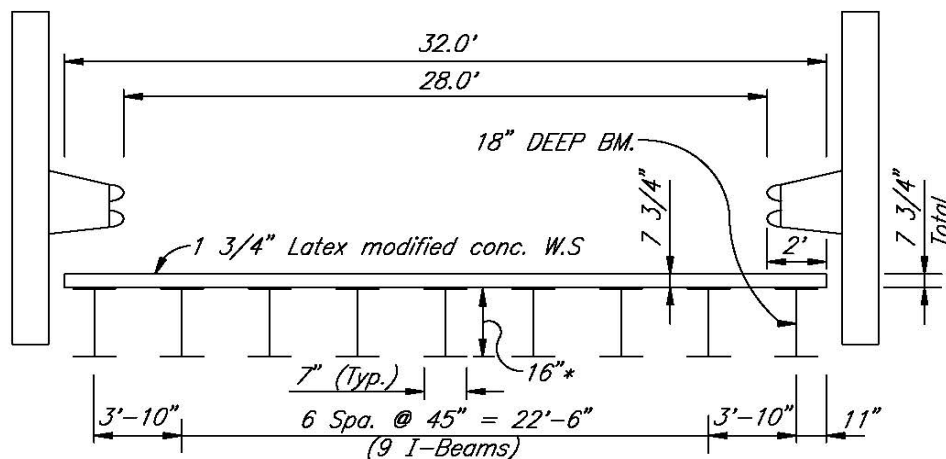
L2U3 NORTHWEST PAINT PEELING



NORTH BRIDGE JOINT

ADDITIONAL PHOTOS AVAILABLE

MONROE 913



* TYP. ALL BEAMS EXCEPT EAST EXT. BM.

CROSS SECTION

STRUCTURE INVENTORY AND APPRAISAL REPORT

MONROE COUNTY BRIDGE NO. 00913 - BUSINESS 37 NORTH OVER BEANBLOSSOM CREEK

IDENTIFICATION

2. District:05 - SEYMOUR	3. County:053 - MONROE
4. City:00000 - N/A	8. NBI Number:5300130
5. Inventory Rte. On:141000370	9. Location:0.1 MILE SOUTH OF I-69
6. Features Intersected:BEANBLOSSOM CREEK	16. Latitude:39.2317 deg
7. Facility Carried:BUSINESS 37 NORTH	17. Longitude:-86.54079 deg

STRUCTURE TYPE AND MATERIAL

43. Main Str. Type:310 - STEEL TRUSS	45. Number of Spans-Main:1
44. Str. Type-Approach:000 - NONE	46. Number of Spans-Appr.:0000
108A. Wearing Surface:3 - LATEX CONCRETE	108B. Membrane:9 - OTHER
107. Deck Structure Type:2 - CONCRETE PRECAST	108C. Protection:9 - OTHER

AGE AND SERVICE

27. Year Built:1946	106. Reconstructed:1986
28A. Lanes On Structure:2	28B. Lanes Under Structure:0
29. ADT:11194 VPD	30. ADT-Year:2014
114. Future ADT:20060 VPD	115. Future ADT-Year:2034
109. Average Truck Traffic:5 %	19. Detour Length:2 mi.

GEOMETRIC DATA

48. Max. Span Length:125 ft.	49. Structure Length:126.6 ft.
50. Sidewalk/Curb: LT.:0 ft.; RT.:0 ft.	32. Appr. Rdwy. Width:26 ft.
51. Bridge Rdwy. Width:28 ft.	52. Deck Width (o-o):32 ft.
47. Total Hor. Cl.-Over:28 ft.	34. Skew:0 deg.
33. Bridge Median:0 - NO MEDIAN	10. Min. Vert. Clearance:99.99 ft.
53. Min. Vert. Clear. over Br. Rdwy:99.99 ft.	54B. Min. Underclearance:0 ft.
56. Min. Lateral Left:0 ft.	55B. Min. Lateral Right:0 ft.

NAVIGATION DATA

38. Navigation Control:0	116. Vertical Clearance - Lift Bridge:
--------------------------------	--

CLASSIFICATION

104. Highway System of Inventory Route:0	12. Base Highway Network:0
26. Func. Class. of Inv. Route:06 - RURAL - MINOR ARTERIAL	102. Direction of Traffic:2 - 2 WAY
37. Historical Significance:2 - ELIGIBLE FOR NAT. REG.	110. Des. Nat. Network:0

INSPECTIONS

90. Inspection Date:4/28/2022	91. Des. Inspection Frequency:24 Mos.
92. Crit. Feat. Inspection: A.Y24	B.N C.N
93. Crit. Feat. Insp. Date: A.4/28/2022	B. C.

LOAD RATING AND POSTING

31. Design Load:5 - HS 20	41. Open, Posted or Closed:A - OPEN, NO RESTRICTIONS
63. Operating LR Method:1 - LOAD FACTOR	66B. Gross Tons or H Rating:21 TONS
65. Inventory LR Method:1 - LOAD FACTOR	66. Inventory Rating:37 TONS
66C. Tons Posted:	64. Operating Rating:63 TONS
66D. Date Posted/Closed:	70. Bridge Posting:5 - EQUAL TO OR ABOVE LEGAL LOADS

APPRAISAL

67. Structural:5	36A. Bridge Railings:0 - NOT ACCEPTABLE
68. Geometry:2	36B. Bridge Railing Transitions:0 - NOT ACCEPTABLE
69. Underclearance:N	36C. Approach Guardrail:0 - NOT ACCEPTABLE
71. Waterway Adequacy:9 - APPEARS ADEQUATE.	36D. Guardrail End Treatments:0 - NOT ACCEPTABLE

STRUCTURE INVENTORY AND APPRAISAL REPORT

MONROE COUNTY BRIDGE NO. 00913 - BUSINESS 37 NORTH OVER BEANBLOSSOM CREEK

PROPOSED IMPROVEMENTS

75. Type of Work:35 - REHABILITATION 1 - CONTRACT	94. Bridge Improvement Costs:\$900 x1,000
76. Improvement Length:127 ft.	95. Road Improvement Costs:\$700 x1,000
97. Year of Cost Estimate:2022	96. Total Improvement Costs:\$1600 x1,000

Proposed Work:

REHABILITATE STRUCTURE DUE TO CONDITION AND LOAD BY REPLACING DECK, REPLACE SOME STRINGERS AND TRUSS MEMBERS, RESET SOUTH ROCKER BEARINGS, CONSTRUCT NEW JOINTS AND CONCRETE APPROACH SLABS, AND CLEAN AND PAINT TRUSS.

Proposed Maintenance: Maintenance Costs:\$46 x1,000

UNTIL REHABILITATED, INSTALL CURRENT STANDARD BRIDGE AND APPROACH RAIL WITH END TREATMENTS. PATCH AND REPAIR JOINTS. PROVIDE REGULAR CLEANING OF TRUSS AND BEARINGS.

CONDITION

58.01. Wearing Surface:5 - FAIR

1.75 INCH CONCRETE OVERLAY - EAST COPING SPALLED AT FLOOR BEAMS. AREAS DELAMINATED WITH SOME MINOR SPALLS AND SOME PATCHED WITH BITUMINOUS.

58. Deck:5 - FAIR

PRESTRESSED CONCRETE PANELS - AREAS OF MINOR BRIDGE RAIL DAMAGE. LEAKING BETWEEN PANELS. TRANSVERSE CRACKS IN MIDDLE OF DECK AND AT EDGES OF PRECAST DECK PANELS. FAILED JOINTS. DELAMINATIONS IN DECK AT NORTHWEST CORNER. UNDERSIDE OF 3RD FULL PANEL IN BAY 5 HAS MULTIPLE DELAMINATIONS AND LARGE SPALL WITH 3 STRANDS EXPOSED. SOME PANELS ARE MISSING BEAM CONNECTION CLIPS. EAST DECK COPING SPALLED WITH EXPOSED STRANDS.

59. Superstructure:5 - FAIR 59.01. Paint Rating:5 - FAIR

STEEL PONY TRUSS WITH STEEL FLOOR SYSTEM - EAST EXTERIOR STRINGERS IN ALL BAYS REPLACED IN 2018. AREAS OF HEAVY PITTING AND MINOR SECTION LOSS ON INSIDE OF FLANGES, TOP OF WEB, AND RIVET HEADS OF LOWER CHORDS. LATERAL BRACING CONNECTIONS WITH MODERATE TO HEAVY SECTION LOSS. AREAS OF SURFACE RUST AND MINOR EXPANSION RUST ON STRINGERS AND FLOOR BEAMS. SEE FRACTURE CRITICAL REPORT FOR ADDITIONAL DETAILS. EXPANSION BEARINGS ARE SEVERELY ROTATED TO THE SOUTH AND MAY HAVE SEIZED.

60. Substructure:6 - SATISFACTORY

CONCRETE ABUTMENTS ON TIMBER PILING - LEAKING ON ABUTMENTS. SPALLING WITH EXPOSED STEEL IN MUDWALLS AT EACH BRIDGE CORNER WITH 3 TO 6 INCHES OF SECTION LOSS. NORTHEAST BRIDGE SEAT SPALLED. DEBRIS ON SOUTH BRIDGE SEAT. EROSION AT SOUTHWEST AND NORTHEAST WINGS.

61. Channel:7 - GOOD

SILT FLOWLINE - NATURAL BANKS - TREES AT EAST COPING TRIMMED IN 2018. NO MAJOR DEFICIENCIES NOTED.

62. Culvert:N - NOT APPLICABLE

NOT APPLICABLE.

113. Scour Critical Bridge: 8 - STABLE - SCOUR ABOVE TOP OF FNDN. BY ASSESS., CALC. OR DESIGNED COUNTERMEASURES

NO MAJOR SCOUR VISIBLE.

72. Roadway Alignment:8 - NO REDUCTION

BITUMINOUS APPROACHES - IN HORIZONTAL AND SAG CURVES, MERGING TRAFFIC TO NORTH - IMPACT DAMAGE TO SOUTHEAST BRIDGE RAIL TRANSITION AND DAMAGE TO NORTHEAST BRIDGE RAILING.

Sufficiency Rating:52.7 - FUNCTIONALLY OBSOLETE

STRUCTURE INVENTORY AND APPRAISAL REPORT
MONROE COUNTY BRIDGE NO. 00913 - BUSINESS 37 NORTH OVER BEANBLOSSOM CREEK

ADDITIONAL PHOTOS



OVERLAY SPALL NORTH END



OVERLAY SPALL MIDSPAN WEST COPING



SOUTH BRIDGE JOINT



DAMAGED EAST GUARDRAIL



OVER ROTATED EXPANSION BEARING



MODERATE SECTION LOSS IN WEB AT NEL0

STRUCTURE INVENTORY AND APPRAISAL REPORT
MONROE COUNTY BRIDGE NO. 00913 - BUSINESS 37 NORTH OVER BEANBLOSSOM CREEK

ADDITIONAL PHOTOS



NORTHWEST ABUTMENT 2 SPALL IN MUDWALL



SPALL WITH EXPOSED REINFORCEMENT IN DECK



EXPANSION RUST AND SECTION LOSS AT NEL0



SEL1 INTERIOR ANGLE SECTION LOSS



SEL1 EXTERIOR GUSSET PLATE SECTION LOSS



SEL2L1 INTERIOR GUSSET PLATE SECTION LOSS AT DIAGONAL END

STRUCTURE INVENTORY AND APPRAISAL REPORT
MONROE COUNTY BRIDGE NO. 00913 - BUSINESS 37 NORTH OVER BEANBLOSSOM CREEK

ADDITIONAL PHOTOS



**SEL2L1 EXTERIOR GUSSET PLATE SECTION
LOSS AT DIAGONAL END**



**EL4 WEB CONNECTION SEVERED FROM LOW
CHORD**



TYPICAL LOW CHORD SPLICE



**NEL1 60% SECTION LOSS ON INTERNAL
FLANGE OF VERTICAL**



**TYPICAL DETERIORATION OF EXTERNAL SWAY
BRACING**



**TYPICAL FLOOR BEAM DETERIORATION AT
TOP FLANGE**

ADDITIONAL PHOTOS



**TYPICAL FLOOR BEAM DETERIORATION AT
BOTTOM FLANGE**



**TYPICAL HEAVY SECTION LOSS OF STAY
PLATES AND LATTICE BARS ON END POST**

APPENDIX F

Fracture Critical Inspection

Report

MONROE COUNTY
FRACTURE CRITICAL INSPECTION REPORT
BRIDGE NO. 913
PHASE I
2022



PREPARED FOR:

MONROE COUNTY, INDIANA

PREPARED BY: BEAM, LONGEST & NEFF



**MONROE COUNTY, INDIANA
BRIDGE INVENTORY RATING
AND
SAFETY INSPECTION
FRACTURE CRITICAL REPORT**

MONROE COUNTY BOARD OF COMMISSIONERS

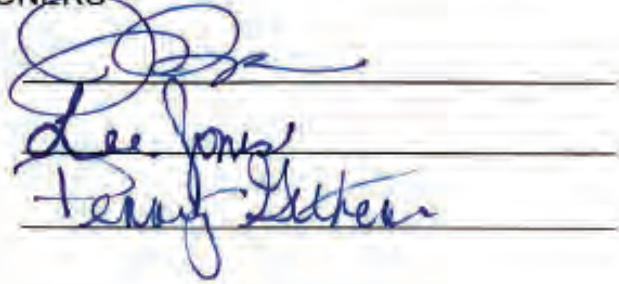
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Penny Githens

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Certified



Alfred V. Wessling, P.E.
Structural Engineer

Date 9/12/2022

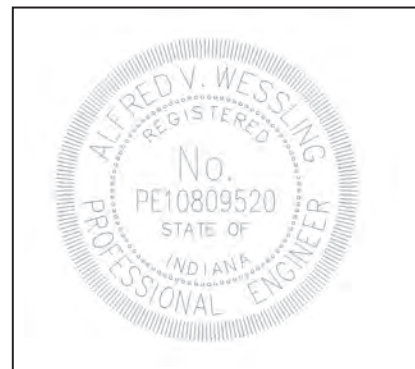


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ABSTRACT

There are three fracture critical structures in Monroe County. Two of these structures are steel pony trusses (bridges 83 and 913) and the other is a steel thru truss (bridge 114). The steel pony trusses range in length from 72' to 127'. The steel thru truss is 100' in length. Plans were available for the original construction and subsequent repairs for Bridge No. 913. Rehabilitation details were also available for Bridge Nos. 83 and 114. In 2019 the Northeast bearing was repaired at Bridge No. 114.

The fracture critical bridge members inspected were non-redundant tension members. An up-close visual inspection was performed to locate possible problem areas in the fracture critical members. If any suspect surface discontinuities were found, a dye penetration test was performed.

STEEL PONY TRUSS BRIDGE NO. 913

All of the connections are in fair to good condition. All of the members are in satisfactory to good condition, with the exception of lower chord member L0L1 and vertical member northeast L1U1 which are in fair condition. Heavy debris had accumulated on the lower chord and at low chord connections.

The evaluation of the field inspection data indicated that the truss had varying amounts of surface rust and pitting. No cracks were found in any of the members or connections.

Aside from the deficiencies listed above, the lower chords and bridge seats of Bridge No. 913 should be cleaned regularly to remove debris. An in-depth fracture critical member inspection is required in two years for Bridge No. 913.

**MONROE COUNTY BRIDGE INSPECTION
PERSONNEL LISTING AND TEAM LEADER STATEMENT**

Biennial Insp.	Fracture Critical	Under-water	Special Detail	Load Rating	NAME AND TITLE	QUALIFICATIONS	RESPONSIBILITIES
					Michael L. McCool Jr., P.E. Bridge Department Manager	P.E. 19700067 Indiana BSAE Purdue University 1991 MSCE Purdue University 1993 Certified Inspection Team Leader, IN000162-2022-LRE 29 Years Bridge Inspection 29 Years Bridge Design	Project Supervision Team Leader QC Inspection/Report
X	X				Alfred V. Wessling, P.E. Senior Bridge Engineer	P.E. 10809520 Indiana BSCE Iowa State University 2002 MSCE Iowa State University 2004 Certified Inspection Team Leader, IN000227-2022-ATL-F-LRE 17 Years Bridge Inspection 17 Years Bridge Design	Project Manager Team Leader Routine Inspections Fracture Critical Insp. Load Ratings Report Development
X					Adam J. Clauss, P.E. Bridge Engineer	P.E. 11800329 Indiana BSCE Purdue University 2013 MSCE Purdue University 2014 Certified Inspection Team Leader, IN000456-2022-ATL-F-LRE 7 Years Bridge Inspection 7 Years Bridge Design	Team Leader Routine Inspections
X					Ryan T. Whelchel, E.I.T Bridge Engineer	BSARE Kansas State University 2015 MSCE Purdue University 2017 Certified Inspection Team Member, IN000697-2022-ATM 2 Years Bridge Inspection 2 Years Bridge Design	Team Leader Routine Inspections
X					Krish Balasubramanian, E.I.T Bridge Engineer	BSCE PSG College of Technology India 2013 MSCE University of Alaska Fairbanks 2016 Certified Inspection Team Member, IN000696-2021-ATM 6 Years Bridge Inspection 6 Years Bridge Design	Team Leader Routine Inspections

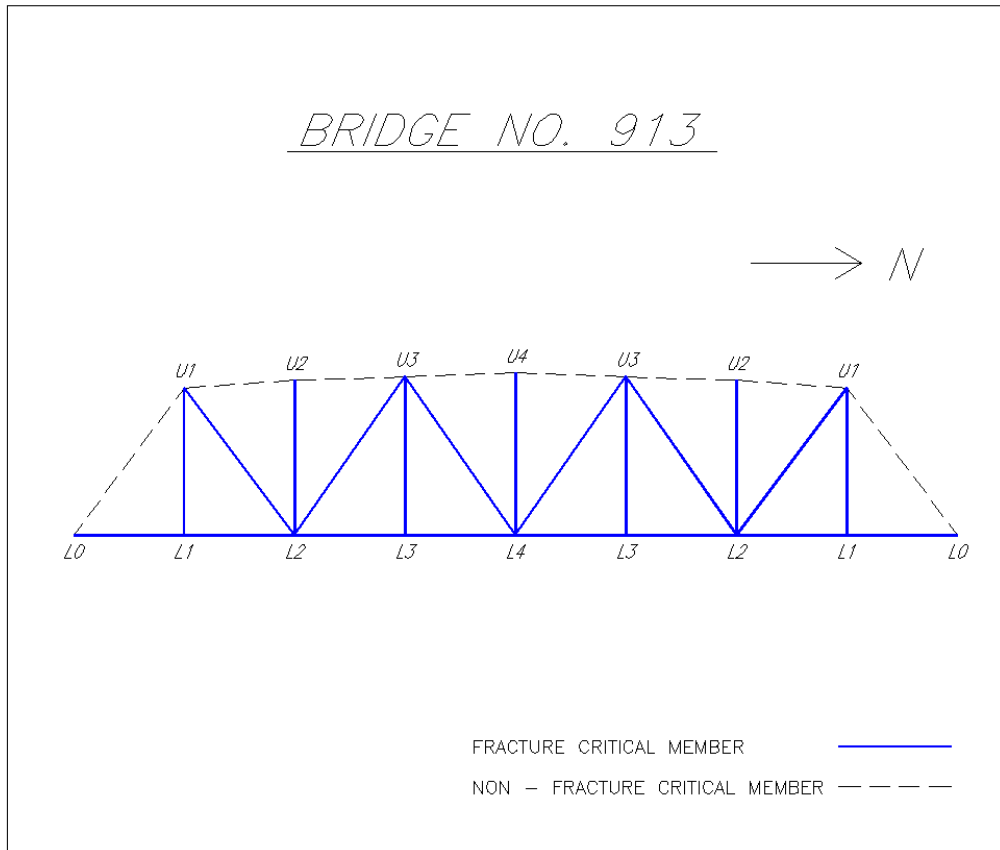
Michael L. McCool Jr., P.E.
Michael L. McCool Jr., P.E.

Alfred V. Wessling, P.E.
Alfred V. Wessling, P.E.

Adam J. Clauss, P.E.
Adam J. Clauss, P.E.

Ryan T. Whelchel, E.I.T
Ryan T. Whelchel, E.I.T

Krish Balasubramanian, E.I.T
Krish Balasubramanian, E.I.T



I. INTRODUCTION

A. Location and Description

Bridge No. 913 is located 0.1 miles south of Interstate 69. The map location is at E-9. The bridge carries traffic on Business 37 over Bean Blossom Creek. The bridge is located at a latitude of N39°13'54.12" and a longitude of W86°32'26.85".

Bridge No. 913 is a single span steel pony truss. The structure is on an approximate zero degree skew. The structure length is 126.6 feet with a maximum span length of 125 feet. The structure has a clear roadway width of 28 feet. The average daily traffic was estimated to be 11,194 vehicles per day in 2014. The bridge has an H inventory rating of 21 tons and is not posted for load.

B. History

The estimated year of construction for Bridge No. 913 is 1946. The bridge was reconstructed in 1986 and repaired in 1995. An emergency repair of the east exterior stringers was completed in April of 2018.

II. FIELD INVESTIGATION

A. Members to be Inspected

The following truss tension members are considered to be non-redundant, fracture critical bridge members:

1. lower chords and lower chord connections
2. diagonals and diagonal connections in tension
3. verticals and vertical connections in tension
4. floor beam connections

The connection rating is based upon the condition of the connection and a ± 1 foot section of the fracture critical member extending away from the connection.

B. Inspection Procedures

An up-close visual inspection was performed to locate possible problem areas in the fracture critical members.

If any suspect surface discontinuities were found, a dye penetration test would be performed. This test can help locate stringers (long, thin laminations), scams (shallow, thin voids), laminations (flat, subsurface discontinuities), and cracks in the base metal. It is also of use in checking for weld-related cracking and porous groove welds. This was not needed at this bridge.

C. Equipment Required for Inspection

Tools and equipment used to inspect each member or connection included a hard hat, safety glasses, chipping hammer, scraper, wire brush, feeler gauges, calipers, tape measure, flashlight, magnifying glass, swivel mirror, camera, and a punch.

A dye penetration kit was available for a more detailed inspection if needed.

D. Bridge Cleaning Requirements

The bearing areas contained heavy dirt and debris. The bearing areas were cleaned by the inspector utilizing a shovel, hand brush and scraper. Additionally, the lower chords were cleaned by the inspectors due to heavy debris build up. The inspectors used a hand brush and scraper to access the lower chords and connections.

E. Traffic Maintenance Requirements

All members were accessible without the use of a traffic closure. Bridge inspection signs and safety cones were utilized to warn oncoming traffic of the inspection.

F. Date and Conditions of Inspection

Date: 04/28/2022

Temperature: 64° F

Conditions: Partly Sunny

G. Other Items

Original and rehabilitation plans were available for the bridge. The Steel truss members are stamped Illinois USA. Field notes and previous inspection reports were also available, in order to monitor the development of any deficiencies at the bridge.

III. SUMMARY OF INSPECTION RESULTS

A. Connections

All of the connections were in satisfactory to good condition with the exception of lower chord connection East and West L4, lower chord connection NEL0L1 and vertical connections SEL1U1 and Northeast L1U1 which are in fair condition. Debris has accumulated at the lower chord connections. No cracks were found

B. Members

All of the members are in satisfactory to good condition, with the exception of lower chord SWL0L1 and vertical member Northeast L1U1 which are in fair condition. Debris has accumulated on the lower chord members. No cracks were found.

IV. NBIS CODING INFORMATION

ITEM	CODE	DESCRIPTION
92A: Fracture Critical Details Inspection (Non-Redundant)	Y24	Fracture critical inspection every 24 months
93A: Fracture Critical Details Inspection Date	04/28/2022	Inspection date, April, 2022

V. SUMMARY OF RECOMMENDATIONS

Programmed Repairs: The truss’s lower chord connections and members should be cleaned regularly to remove debris. Trees and vegetation should be cleared under and around the bridge. The bearings should be reset. The joints should be repaired. An in-depth fracture critical member inspection is required in two years.

Urgent Repairs: None

VI. FIELD NOTES

The following rating system was used to rate the fracture critical members and connections:

- 9 Excellent Condition
- 8 Very Good Condition - No noteworthy deficiencies
- 7 Good Condition - Some minor problems
- 6 Satisfactory Condition - Minor structural deterioration
- 5 Fair Condition - Minor section loss
- 4 Poor Condition - Advanced section loss, deterioration
- 3 Serious Condition - Local failures are possible
- 2 Critical Condition - Advanced deterioration of primary elements
- 1 Imminent Failure Condition - Major deterioration - Structure should be closed
- 0 Failed Condition - Out of service - Bridge condition beyond corrective action

Connection at Southwest L0:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L0L1)	D	6	Surface rust and moderate pitting. Areas of heavy pitting with about 20% section loss on web. Heavy section loss in end 6 inches of web. Approximately 15% section loss of top exterior flange on inside face. Expansion rust at lateral bracing connection. Areas of paint peeling. Less than 10% total section loss. No cracks evident.
Diagonal (L0U1)	D	7	Light surface rust and minor pitting. Surface rust on inside faces. Bottom stay plate and lateral bracing have heavy expansion rust with section loss. Less than 5% total section loss. No cracks evident.
Bearing (expansion)	D	6	Light surface rust and minor pitting. Minor section loss and expansion rust between angles and gusset plates. Interior anchor nuts have moderate to heavy pitting. Bearing near limit of rotation. Less than 10% total section loss. No cracks evident.
Floor Beam	D	6	Light surface rust and minor pitting. Bottom flange coped. Minor expansion rust at bottom connection angle. Areas of moderate pitting and minor expansion rust on bottom flange. Moderate pitting on south face of floor beam web. Less than 5% total section loss. No cracks evident.

Connection at Southwest L1:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L1L0) (continuous)	D	6	Light surface rust and minor pitting. Areas of heavy pitting with minor section loss on top surfaces. Plug weld is present on inside flange. Minor expansion rust between gusset plate and flanges with minor section loss. Expansion rust at lateral bracing connection. Less than 10% total section loss. No cracks evident. 1/2" section loss of flange tip interior bottom flange.
Lower Chord (L1L2) (continuous)	D	6	Light surface rust and minor pitting. Areas of heavy pitting with minor section loss on top surfaces. Plug weld is present on inside flange. Minor expansion rust between gusset plate and flanges with minor section loss. Expansion rust at lateral bracing connection. Less than 10% total section loss. No cracks evident.
Vertical (L1U1)	D	6	Light surface rust and minor pitting. Minor expansion rust and section loss at floor beam connection on inside flange and at exterior lateral bracing. 20% section loss at inside flange at plate connection. Less than 10% total section loss. No cracks evident.
Floor Beam	D	6	Light surface rust and minor pitting. Minor expansion rust at web with about 10% section loss of top flange at gusset plate. Less than 5% total section loss. No cracks evident.

Connection at Southwest L2:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L2L1) (Splice)	D	6	Light surface rust and minor pitting. Areas of surface rust. Areas of heavy pitting on top surfaces and on rivets. 10% section loss of flange and interior gusset plate at connection. Minor out of plane distortion of interior gusset plate due to expansion rust. Expansion rust between splice plate and chord web. Expansion rust at lower lateral bracing connection. Less than 10% total section loss. No cracks evident.
Lower Chord (L2L3)	D	6	Light surface rust and minor pitting. Areas of surface rust. Areas of heavy pitting on top surfaces and on rivets. 10% section loss of flange and interior gusset plate at connection. Minor out of plane distortion of interior gusset plate due to expansion rust. Expansion rust at low lateral bracing connection. Less than 10% total section loss. No cracks evident.
Vertical (L2U2)	D	6	Light surface rust and minor pitting. Areas of heavy pitting and minor section loss on inside flange under railing connection, on web at lower chord splice and on vertical connection plates. Minor out of plane distortion from impact damage below rail on interior flange. Interior gusset plate has heavy section loss on top of north side. Less than 10% total section loss. No cracks evident.
Diagonal (L2U1)	D	6	Light surface rust and minor pitting. Areas of moderate pitting and minor expansion rust at inside gusset plate. Moderate to heavy pitting in gusset plate at end of member. Less than 5% total section loss. No cracks evident.
Diagonal (L2U3)	D	6	Light surface rust and minor pitting. Surface rust on bottom rivets. Areas of heavy pitting and minor expansion rust on interior faces of gusset plate at end of member. Tack welds on top flange edges. Less than 5% total section loss. No cracks evident. Heavy pitting in diagonal at end of connection plate on interior side.
Floor Beam	D	6	Light surface rust and minor pitting. Expansion rust at all floor beam connections. 10% section loss of top flange at gusset plate. Less than 5% total section loss. No cracks evident.

Connection at Southwest L3:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L3L2) (continuous)	D	6	Light surface rust and minor pitting. Areas of moderate pitting and minor section loss on top surfaces and on rivets. Expansion rust on lateral bracing connection. Less than 10% total section loss. No cracks evident.
Lower Chord (L3L4) (continuous)	D	6	Light surface rust and minor pitting. Areas of moderate pitting and minor section loss on top surfaces and on rivets. Expansion rust on lateral bracing connection. Less than 10% total section loss. No cracks evident.
Vertical (L3U3)	D	6	Light surface rust and minor pitting. Areas of heavy pitting on inside flange and web below bridge rail. Moderate expansion rust at inside flange and lower chord connection. Less than 10% total section loss. No cracks evident. Tack weld on southwest and northwest edge between gusset and fill plate.
Floor Beam	D	6	Light surface rust and minor pitting. Minor expansion rust at all floor beam connections. 10% section loss of top flange at gusset plate. Less than 5% total section loss. No cracks evident.

Connection at West L4:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (Southwest L4L3)	D	5	Light surface rust and minor pitting. Areas of heavy pitting and minor section loss on top surfaces and on rivets. Expansion rust and moderate pitting at gusset plate at lower lateral bracing connection. 25% section loss on top interior web angle. 10% section loss on gusset plates. Less than 15% total section loss. No cracks evident. Out of plane displacement exterior gusset plate due to expansion rust.
Lower Chord (Northwest L4L3) (Splice)	D	5	Light surface rust and minor pitting. Areas of heavy pitting and minor section loss on top surfaces and on rivets. Moderate to heavy section loss on rivets at splice. Expansion rust and moderate pitting at gusset plate at lower lateral bracing connection. 25% section loss on top interior web angle. 10% section loss on gusset plates. Less than 15% total section loss. No cracks evident.
Vertical (L4U4)	D	6	Light surface rust and minor pitting. Inside flange at vertical connection plate and interior North face of gusset plate with heavy expansion rust and moderate to heavy section loss. 10% section loss of interior flange. Less than 5% total section loss. No cracks evident.
Diagonal (Southwest L4U3)	D	6	Light surface rust and minor pitting. Areas of heavy pitting on inside flange at filler plate. Minor pitting in interior gusset plate at end of member. Less than 5% total section loss. No cracks evident.
Diagonal (Northwest L4U3)	D	6	Light surface rust and minor pitting. Areas of moderate pitting on inside flange at filler plate. Minor pitting in exterior gusset plate and moderate pitting in interior gusset plate at end of member. Less than 5% total section loss. No cracks evident.
Floor Beam	D	6	Light surface rust and minor pitting. Expansion rust at all floor beam connections. Areas of moderate pitting on bottom flange of web. 10% section loss of top flange at gusset plate. Less than 5% total section loss. No cracks evident.

Notes: Moderate expansion rust on south lower lateral bracing and north lower lateral bracing is severed.

Connection at Northwest L3:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L3L4) (continuous)	D	6	Light surface rust and minor pitting. Areas of heavy pitting and minor section loss on top surfaces and on rivets. Expansion rust at lower lateral bracing connection. Less than 10% total section loss. No cracks evident. Plug weld interior flange.
Lower Chord (L3L2) (continuous)	D	6	Light surface rust and minor pitting. Areas of heavy pitting and minor section loss on top surfaces and on rivets. Expansion rust at lower lateral bracing connection. Less than 10% total section loss. No cracks evident. Plug weld interior flange.
Vertical (L3U3)	D	6	Light surface rust and minor pitting. Areas of heavy pitting on inside flange and web below railing connection. Less than 5% total section loss. No cracks evident. Tack welds between gusset plate and fill plate (exterior) both north and south sides.
Floor Beam	D	7	Light surface rust and minor pitting. Expansion rust at top flange connection. 10% section loss of top flange at gusset plate. Less than 5% total section loss. No cracks evident.

Connection at Northwest L2:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L2L3)	D	6	Light surface rust and minor pitting. Areas of heavy pitting on top surfaces and on rivets. Expansion at lower lateral bracing connection. Minor section loss at gusset plate. Less than 10% total section loss. No cracks evident. Minor out of plane displacement interior/exterior gusset plate due to expansion rust.
Lower Chord (L2L1) (Splice)	D	6	Light surface rust and minor pitting. Areas of heavy pitting on top surfaces and on rivets. Expansion rust at splice plates and lower lateral bracing connection. Minor section loss at gusset plate. Less than 10% total section loss. No cracks evident.
Vertical (L2U2)	D	6	Light surface rust and minor pitting. Areas of heavy pitting on inside flange under railing connection and at vertical connection. Less than 10% section loss of interior flange. Approximately 15% section loss of rivets at connection angle with lower chord. Less than 5% total section loss. No cracks evident.
Diagonal (L2U1)	D	7	Light surface rust and minor pitting. Minor section loss on rivets. Minor expansion rust at filler plates. Moderate pitting in both gusset plates at end of member. 5% total section loss. No cracks evident.
Diagonal (L2U3)	D	6	Light surface rust and minor pitting. Minor pitting on inside flange at filler plate and on top of web. Less than 5% total section loss. No cracks evident. Minor expansion rust between gusset plate and diagonal member.
Floor Beam	D	6	Light surface rust and minor pitting. Minor expansion rust and section loss at all floor beam connections. 10% section loss of top and bottom flanges at gusset plate. Less than 5% total section loss. No cracks evident.

Connection at Northwest L1:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L1L2) (Continuous)	D	6	Light surface rust and minor pitting. Areas of heavy pitting on top surfaces and on rivets. Expansion rust at lower lateral brace connection. Less than 10% section loss at top flange edges at gusset plates. Plug weld on inside of flange. Less than 5% total section loss. No cracks evident.
Lower Chord (L1L0) (Continuous)	D	6	Light surface rust and minor pitting. Areas of heavy pitting on top surfaces and on rivets. Expansion rust at lower lateral brace connection. Less than 10% section loss at top flange edges at gusset plates. Plug weld on inside of flange. Less than 5% total section loss. No cracks evident.
Vertical (L1U1)	D	6	Light surface rust and minor pitting. Minor pitting at flanges at top of floor beam connection and top of external lateral bracing connection. Less than 5% total section loss. No cracks evident.
Floor Beam	D	6	Light surface rust and minor pitting. Minor expansion rust at all floor beam connections. 10% section loss of top flange at gusset plate. Less than 5% total section loss. No cracks evident.

Connection at Northwest L0:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L0L1)	D	6	Light surface rust and minor pitting. Areas of moderate pitting on top surfaces. Less than 5% total section loss. No cracks evident.
Diagonal (L0U1)	D	7	Light surface rust and minor pitting. Area of paint peeling and surface rust. Less than 5% total section loss. No cracks evident.
Bearing (fixed)	D	7	Light surface rust and minor pitting. Moderate pitting at interior base plate nuts. Tack welds at connection angle and gusset plate. Areas of surface rust. Less than 5% total section loss. No cracks evident.
Floor Beam	D	7	Light surface rust and minor pitting. Bottom flange coped. Minor expansion rust at top and bottom flanges and web. Less than 5% total section loss. No cracks evident.

Connection at Southwest U1:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (L1U1)	D	7	Light surface rust and minor pitting. No section loss. No cracks evident.
Diagonal (L2U1)	D	7	Light surface rust and minor pitting. Minor expansion rust at interior gusset plate. Less than 5% total section loss. No cracks evident.

Connection at Southwest U2:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (L2U2)	D	7	Light surface rust and minor pitting. No section loss. No cracks evident. Tack welds between fill plate and vertical, all sides.

Connection at Southwest U3:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (L3U3)	D	7	Light surface rust and minor pitting. Minor surface rust at gusset plates. Areas of paint bubbling and peeling. No section loss. No cracks evident.
Diagonal (L4U3)	D	7	Light surface rust and minor pitting. Minor surface rust at gusset plates. Areas of paint bubbling and peeling. No section loss. No cracks evident.
Diagonal (L2U3)	D	7	Light surface rust and minor pitting. Minor surface rust at gusset plates. Areas of paint bubbling and peeling. No section loss. No cracks evident.

Connection at West U4:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (L4U4)	D	7	Light surface rust and minor pitting. Tack welds at filler plate and flange edges. No section loss. No cracks evident.

Connection at Northwest U3:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (L3U3)	D	7	Light surface rust and minor pitting. Minor surface rust at gusset plate. Areas of paint peeling. No section loss. No cracks evident.
Diagonal (L4U3)	D	7	Light surface rust and minor pitting. Minor surface rust at gusset plate. No section loss. No cracks evident. Areas of paint bubbling.
Diagonal (L2U3)	D	7	Light surface rust and minor pitting. Minor surface rust at gusset plate. Areas of paint peeling. No section loss. No cracks evident.

Connection at Northwest U2:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (L2U2)	D	7	Light surface rust and minor pitting. Tack welds at flange edges. Minor damage to northwest flange tip near connection. No section loss. No cracks evident.

Connection at Northwest U1:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (L1U1)	D	7	Light surface rust and minor pitting. Minor section loss on rivets. No section loss. No cracks evident. Minor paint bubbling. Moderate pitting in gusset plate at end of member.
Diagonal (L2U1)	D	7	Light surface rust and minor pitting. Minor section loss on rivets. Areas of paint peeling. No section loss. No cracks evident. Moderate pitting in gusset plate at end of member.

West Truss Members:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (Southwest L0L1)	B	5	Surface rust and moderate pitting. Areas of heavy pitting on top surfaces and moderate pitting at bottom of drain holes. One drain hole is 2 inch by 3.5 inch and has heavy pitting on underside. Less than 10% total section loss. No cracks evident.
Lower Chord (Southwest L1L2) (Spliced)	D	6	Light surface rust and minor pitting. Areas of heavy pitting on top surfaces and moderate pitting at bottom of drain holes. Minor expansion rust at web splice plate with minor section loss of rivets at splice. Less than 5% total section loss. No cracks evident.
Lower Chord (Southwest L2L3)	A	6	Light surface rust and minor pitting. Areas of heavy pitting on top surfaces and moderate pitting at bottom of drain holes. Less than 5% total section loss. No cracks evident.
Lower Chord (Southwest L3L4)	A	6	Light surface rust and minor pitting. Areas of heavy pitting on top surfaces and moderate pitting at bottom of drain holes. Less than 5% total section loss. No cracks evident.
Lower Chord (Northwest L3L4) (Spliced)	D	6	Light surface rust and minor pitting. Areas of heavy pitting on top surfaces and moderate pitting at bottom of drain holes. Heavy expansion rust and section loss of splice plate and rivets at splice in web only. Less than 5% total section loss. No cracks evident.
Lower Chord (Northwest L2L3)	A	6	Light surface rust and minor pitting. Areas of heavy pitting on top surfaces and moderate pitting at bottom of drain holes. Less than 5% total section loss. No cracks evident.
Lower Chord (Northwest L1L2) (Spliced)	D	6	Light surface rust and minor pitting. Areas of heavy pitting on top surfaces and moderate pitting at bottom of drain holes. Moderate expansion rust at splice plate and rivets at splice in web only. Less than 5% total section loss. No cracks evident.
Lower Chord (Northwest L0L1)	A	6	Light surface rust and minor pitting. Areas of heavy pitting and minor section loss on top surfaces and moderate pitting at bottom of drain holes. Less than 5% total section loss. No cracks evident.

West Truss Members (Continued):

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (Southwest L1U1)	B	7	Light surface rust and minor pitting. Less than 5% total section loss. No cracks evident. Paint peeling.
Vertical (Southwest L2U2)	B	6	Light surface rust and minor pitting. Areas of surface rust and moderate pitting. Minor out of plane distortion of interior flange under bridge rail connection. Less than 5% total section loss. No cracks evident. Paint peeling.
Vertical (Southwest L3U3)	B	6	Light surface rust and minor pitting. Areas of heavy pitting, minor expansion rust, and surface rust. Less than 5% total section loss. No cracks evident. Paint peeling.
Vertical (West L4U4)	B	7	Light surface rust and minor pitting. Areas of surface rust and moderate pitting. Less than 5% total section loss. No cracks evident. Paint peeling.
Vertical (Northwest L3U3)	B	7	Light surface rust and minor pitting. Areas of surface rust and moderate pitting. Less than 5% total section loss. No cracks evident. Paint peeling.
Vertical (Northwest L2U2)	B	7	Light surface rust and minor pitting. Areas of moderate pitting. Areas with paint bubbling and peeling. Less than 5% total section loss. No cracks evident.
Vertical (Northwest L1U1)	B	7	Light surface rust and minor pitting. Less than 5% total section loss. No cracks evident. Paint peeling.

West Truss Members (Continued):

MEMBER	FATIGUE CAT.	RATING	REMARKS
Diagonal (Southwest L2U1)	B	6	Light surface rust and minor pitting. Areas of moderate pitting below railing on interior flange. Less than 5% total section loss. No cracks evident.
Diagonal (Southwest L2U3)	B	6	Light surface rust and minor pitting. Areas of surface rust and moderate pitting. Minor expansion rust with moderate pitting on underside surfaces. Less than 5% total section loss. No cracks evident. Significant paint peeling.
Diagonal (Southwest L4U3)	B	6	Light surface rust and minor pitting. Areas of surface rust and moderate pitting. Less than 5% total section loss. No cracks evident. Significant paint peeling.
Diagonal (Northwest L4U3)	B	6	Light surface rust and minor pitting. Areas of surface rust and moderate pitting. Less than 5% total section loss. No cracks evident. Significant paint peeling.
Diagonal (Northwest L2U3)	B	6	Light surface rust and minor pitting. Areas of surface rust and moderate pitting. Less than 5% total section loss. No cracks evident. Paint peeling.
Diagonal (Northwest L2U1)	B	6	Light surface rust and minor pitting. Areas of surface rust, minor expansion rust, and moderate pitting. Less than 5% total section loss. No cracks evident. Paint peeling.

Note: Heavy debris accumulation on lower chords with water ponding in lower chord webs. There are large areas of paint peeling on members.

Connection at Southeast L0:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L0L1)	D	6	Surface rust and moderate pitting. Heavy pitting on top and bottom of web and insides of flanges with minor section loss. Moderate section loss at web drain hole. Expansion rust at web near connection ends of gusset plate. Expansion rust at lower lateral bracing connection. Less than 15% total section loss. No cracks evident.
Diagonal (L0U1)	D	6	Light surface rust and minor pitting. Heavy pitting on web on interior channel on inside face near bottom flange. Minor expansion rust at gusset plate and top flange of interior channel on inside face. Less than 5% section loss. No cracks evident.
Bearing (expansion)	D	5	Light surface rust and minor pitting. Rocker expanded nearly to maximum extent. Heavy pitting on interior nuts, washers and areas around the connection. Expansion rust at bearing plate below lower chord. Interior stay plate has section loss and moderate section loss of nuts. Less than 10% total section loss. No cracks evident.
Floor Beam	D	6	Light surface rust, minor pitting and expansion rust on top flange. Moderate expansion rust and section loss on top and bottom flanges, especially at bottom of web on the mudwall side. Less than 5% total section loss. No cracks evident.

Connection at Southeast L1:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L1L0) (continuous)	D	6	Surface rust and heavy pitting. Gusset plate and angle connection with expansion rust and section loss. Minor out of plane distortion at angle connection. Section loss of inside of flanges and top of web. Plug welds in interior flange. Expansion rust at lower lateral bracing connection. Less than 10% total section loss. No cracks evident.
Lower Chord (L1L2) (continuous)	D	6	Surface rust and heavy pitting. Gusset plate and angle connection with expansion rust and section loss. Minor out of plane distortion at angle connection. Section loss of inside of flanges and top of web. Plug welds in interior flange. Moderate expansion rust at lateral bracing connection. Less than 10% total section loss. No cracks evident.
Vertical (L1U1)	D	5	Surface rust and moderate pitting. Heavy pitting and 25% section loss on the interior angle of member at connection. Approximately 0.25 inch hole in web. Heavy expansion rust on lower lateral bracing. 10% section loss of gusset plate at exterior connection. Less than 15% total section loss. No cracks evident.
Floor Beam	D	6	Surface rust and moderate pitting. Flanges with moderate expansion rust and less than 10% section loss. Expansion rust and minor section loss at gusset plate and floor beam connection edges. Less than 5% total section loss. No cracks evident.

Connection at Southeast L2:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L2L1) (Splice)	D	5	Light surface rust and heavy pitting. Heavy pitting on top of web and inside top flanges with minor section loss. Expansion rust and section loss at splice plate connection. Section loss on rivets. Areas with approximately 30% section loss in gusset plate on inside faces at ends of L2U1 diagonals. Less than 10% total section loss. No cracks evident.
Lower Chord (L2L3)	D	5	Light surface rust and heavy pitting. Heavy pitting on top of web and inside top flanges with minor section loss. Minor section loss on rivets. Less than 10% total section loss. No cracks evident.
Vertical (L2U2)	D	6	Light surface rust and minor pitting. Some areas of heavy pitting on web faces at end of members. Areas of heavy expansion rust on external sway bracing. Less than 5% total section loss. No cracks evident.
Diagonal (L2U1)	D	6	Light surface rust. Minor expansion rust and section loss at gusset plate connections. Less than 5% total section loss. No cracks evident.
Diagonal (L2U3)	D	6	Light surface rust. Minor expansion rust and section loss at gusset plate connection. Section loss on inside of gusset plates at end of member. Less than 5% total section loss. No cracks evident.
Floor Beam	D	6	Surface rust and minor pitting. Heavy expansion rust on both flanges and at angle connection and minor expansion rust at web connection. Less than 5% total section loss. No cracks evident.

Connection at Southeast L3:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L3L2) (Continuous)	D	6	Surface rust and moderate pitting. Moderate to heavy pitting on top of web and inside flange faces with minor section loss. Lower legs on connection plate with section loss and expansion rust at bottom flange. Section loss in gusset plates above top flange ends. Less than 10% total section loss. No cracks evident.
Lower Chord (L3L4) (Continuous)	D	6	Surface rust and moderate pitting. Moderate to heavy pitting on top of web and inside flange faces with minor section loss. Lower legs on connection plate with section loss and expansion rust at bottom flange. Section loss in gusset plates above top flange ends. Less than 10% total section loss. No cracks evident.
Vertical (L3U3)	D	6	Light surface rust and moderate pitting at interior flange on exterior face. Section loss at interior connection angle. Expansion rust at bottom of member. Areas of heavy expansion rust on external sway bracing. Less than 5% total section loss. No cracks evident.
Floor Beam	D	6	Surface rust and minor pitting. Areas of heavy expansion rust and minor section loss at angle connection and at top and bottom flanges of floor beam. Expansion rust at lower lateral bracing connection. Less than 5% total section loss. No cracks evident.

Connection at East L4:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (Southeast L4L3)	D	5	Light surface rust and moderate pitting. Minor out of plane distortion and section loss of gusset plate at interior connection. Areas of 50% section loss on inside of faces of gusset plate at end of SEL4U3 diagonal. Areas of heavy pitting and minor section loss on top of web and inside flange faces. Several rivets with 75% section loss at top flange. Less than 10% total section loss. No cracks evident.
Lower Chord (Northeast L4L3) (Splice)	D	5	Light surface rust and moderate pitting. Expansion rust and section loss at splice plate connection. Section loss at rivet heads in splice plate. Minor out of plane distortion and section loss of gusset plates. Areas of heavy pitting and minor section loss on top of web and inside flange faces. Several rivets with 75% section loss at top flange. Less than 10% total section loss. No cracks evident.
Vertical (L4U4)	D	5	Surface rust at gusset plate connection. Minor section loss and moderate pitting on interior angle connection. Minor section loss at bottom rivets. Areas of heavy expansion rust on external sway bracing. 100% section loss at web connection to lower chord. Less than 10% total section loss. No cracks evident.
Diagonal (Southeast L4U3)	D	6	Light surface rust and minor pitting. Minor section loss on inside flange at gusset plate. Section loss on inside of exterior gusset plate at end of member. Less than 5% total section loss. No cracks evident.
Diagonal (Northeast L4U3)	D	6	Light surface rust and minor pitting. Minor section loss on inside of exterior & interior gusset plate connections. Minor out of plane displacement of exterior gusset plate. Localized areas of heavy pitting and section loss at inside flange. Less than 5% total section loss. No cracks evident.
Floor Beam	D	6	Surface rust and minor pitting. Minor expansion rust and section loss at angle connection with web. Heavy expansion rust on top and bottom flanges. Minor section loss at plate connection. Lower lateral bracing has heavy section loss and expansion rust. Less than 5% total section loss. No cracks evident.

Connection at Northeast L3:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L3L4) (Continuous)	D	6	Light surface rust and moderate pitting. Minor section loss on some rivets. Areas of heavy pitting and minor section loss on top of web and inside flange faces. Expansion rust on top flanges at connection. Section loss of gusset plate at top of flanges. Less than 10% total section loss. No cracks evident.
Lower Chord (L3L2) (Continuous)	D	6	Light surface rust and moderate pitting. Minor section loss on some rivets. Areas of heavy pitting and minor section loss on top of web and inside flange faces. Expansion rust on top flanges at connection. Section loss of gusset plate at top of flanges. Less than 10% total section loss. No cracks evident.
Vertical (L3U3)	D	5	Light surface rust and moderate pitting. Areas of heavy pitting and 10% section loss on inside flange at angle connection. Areas of heavy expansion rust on external sway bracing. Minor section loss on interior flange at top of floor beam connection. Less than 10% total section loss. No cracks evident.
Floor Beam	D	6	Surface rust and moderate pitting. Areas of heavy expansion rust and section loss at top and bottom floor beam flanges. Minor expansion rust and minor section loss at web and angle connection. Lower lateral bracing has heavy section loss and expansion rust. Less than 5% total section loss. No cracks evident.

Connection at Northeast L2:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L2L3)	D	6	Light surface rust and heavy pitting. Areas of 15% section loss on inside faces of gusset plate at end of NEL2U3. Localized areas of heavy pitting and minor section loss on top of web and flanges. 40% maximum section loss on rivets. Expansion rust at bottom connection plate. Less than 10% total section loss. No cracks evident.
Lower Chord (L2L1) (Splice)	D	6	Light surface rust and heavy pitting. Expansion rust and minor section loss at splice plate connection. Localized areas of heavy pitting and minor section loss on top of web and flanges. 40% maximum section loss on rivets. Expansion rust at bottom connection plate. Less than 10% total section loss. No cracks evident.
Vertical (L2U2)	D	6	Light surface rust and minor pitting. Areas of moderate pitting at gusset connection with minor section loss. Areas of heavy expansion rust on external sway bracing. Less than 10% total section loss. No cracks evident.
Diagonal (L2U1)	D	6	Light surface rust and minor pitting. Areas of moderate pitting at gusset plate. 15% section loss on interior gusset plate on inside face and 10% section loss on exterior gusset plate on inside face at end of diagonal. 10% section loss on flanges at end of gusset plate. Less than 5% total section loss. No cracks evident.
Diagonal (L2U3)	D	6	Light surface rust and minor pitting. Inside face of gusset plates have heavy pitting and 10% section loss. Minor section loss in connection plate. Less than 5% total section loss. No cracks evident.
Floor Beam	D	6	Surface rust and minor pitting. Areas of heavy expansion rust and section loss at top and bottom flanges. Heavy section loss on some rivets. Expansion rust and minor section loss at web and angle connection. Lower lateral bracing has heavy section loss and expansion rust. South lateral bracing is severed. Less than 5% total section loss. No cracks evident.

Note: Tack welds found on top and bottom of Diagonals L2U1 and L2U3 at ends of stay plate.

Connection at Northeast L1:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L1L2) (Continuous)	D	6	Light surface rust and moderate pitting. Areas of heavy pitting and minor section loss on top of web and inside flange faces. Moderate pitting on inside face of gusset plates at top of flanges. Rivets have 50% section loss. Moderate expansion rust at bottom connection plate. Less than 10% total section loss. No cracks evident.
Lower Chord (L1L0) (Continuous)	D	6	Light surface rust and moderate pitting. Areas of heavy pitting and minor section loss on top of web and inside flange faces. Moderate pitting on inside face of gusset plates at top of flanges. Rivets have 50% section loss. Moderate expansion rust at bottom connection plate. Less than 10% total section loss. No cracks evident.
Vertical (L1U1)	D	5	Surface rust and heavy pitting. Interior flange at top of angle connection with 60% section loss and two 1 inch holes through flange. Outside flange with 10% section loss. Areas of heavy expansion rust on external sway bracing. Less than 15% total section loss. No cracks evident.
Floor Beam	D	6	Surface rust and minor pitting. Areas of minor expansion rust and minor section loss at angle connection and heavy expansion rust at top and bottom flanges. Less than 5% total section loss. No cracks evident.

Connection at Northeast L0:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (L0L1)	D	5	Surface rust and heavy pitting. Heavy expansion rust and section loss at rivet connection and gusset plate connection. Heavy pitting on top of web and inside flange faces. Drain hole is approximately 5 inches wide by 11 inches due to web section loss. Heavy surface rust with section loss on lower lateral bracing gusset plate. Less than 20% total section loss. No cracks evident.
Diagonal (L0U1)	D	6	Light surface rust and minor pitting. Areas of 15% section loss in interior gusset plate at end of interior end post channel. Heavy section loss and expansion rust on stay plates and lattices on bottom side. Less than 5% total section loss. No cracks evident.
Bearing (fixed)	D	6	Light surface rust and moderate pitting. Heavy pitting and minor section loss at angle connection and gusset plate. Interior nut with serious section loss. Large spall on bridge seat at edge of bearing. Less than 5% total section loss. No cracks evident.
Floor Beam	D	6	Light surface rust and minor pitting at angle connection. Moderate section loss and expansion rust at top and bottom flange. Minor expansion rust at web connection angle. Less than 5% total section loss. No cracks evident.

Connection at Southeast U1:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (L1U1)	D	7	Light surface rust at gusset connection. Expansion rust on rivets. Areas of paint peeling. Less than 5% total section loss. No cracks evident.
Diagonal (L2U1)	D	7	Light surface rust and minor pitting. Minor expansion rust at exterior flange. Areas of paint chipping. Less than 5% total section loss. No cracks evident.

Connection at Southeast U2:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (L2U2)	D	7	Light surface rust at rivets and angle connection. Minor expansion rust at exterior flange. Less than 5% total section loss. No cracks evident.

Connection at Southeast U3:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (L3U3)	D	7	Light surface rust and minor pitting. Less than 5% total section loss. No cracks evident.
Diagonal (L4U3)	D	7	Light surface rust and minor pitting. Less than 5% total section loss. No cracks evident.
Diagonal (L2U3)	D	7	Light surface rust and minor pitting. Less than 5% total section loss. No cracks evident.

Connection at East U4:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (L4U4)	D	7	Light surface rust and minor pitting. Less than 5% total section loss. No cracks evident.

Connection at Northeast U3:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (L3U3)	D	7	Light surface rust and minor pitting. Less than 5% total section loss. No cracks evident.
Diagonal (L4U3)	D	7	Light surface rust and minor pitting. Less than 5% total section loss. No cracks evident.
Diagonal (L2U3)	D	7	Light surface rust and minor pitting. Less than 5% total section loss. No cracks evident.

Connection at Northeast U2:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (L2U2)	D	7	Light surface rust and minor pitting. Less than 5% total section loss. No cracks evident.

Connection at Northeast U1:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (L1U1)	D	7	Light surface rust and minor pitting. Paint cracking. Less than 5% total section loss. No cracks evident.
Diagonal (L2U1)	D	7	Light surface rust and minor pitting. Paint cracking. Less than 5% total section loss. No cracks evident.

Note: Tack welds found on all upper Diagonal connections at the gusset plate.

East Truss Members:

MEMBER	FATIGUE CAT.	RATING	REMARKS
Lower Chord (Southeast L0L1)	A	6	Light surface rust and moderate pitting. Heavy pitting along inside of lower chord flanges. Section loss on lower chord web near drain holes. Less than 5% total section loss noted. No cracks evident.
Lower Chord (Southeast L1L2)	D	5	Light surface rust and moderate pitting. Localized areas of heavy pitting on outside top of member with minor out of plane distortion of interior flange. Spliced connection plate with moderate expansion rust and pitting of web plate and rivets. Less than 5% total section loss noted. No cracks evident.
Lower Chord (Southeast L2L3)	A	6	Light surface rust and moderate pitting. Localized areas of heavy pitting on top of member web and inside of flanges. Less than 5% total section loss noted. No cracks evident.
Lower Chord (Southeast L3L4)	A	6	Light surface rust and moderate pitting. Localized areas of heavy pitting on top of member web and inside of flanges. Less than 5% section loss noted. No cracks evident.
Lower Chord (Northeast L3L4)	D	6	Light surface rust and moderate pitting. Localized areas of heavy pitting on top of member web and inside of flanges. Section loss on rivets at connection. Approximately 7 rivets with 75% section loss. Moderate pitting at top web splice connection plate. Less than 5% total section loss noted. No cracks evident.
Lower Chord (Northeast L2L3)	A	6	Light surface rust and moderate pitting on top of member web and inside of flanges. Localized areas of heavy pitting. Less than 5% total section loss noted. No cracks evident.
Lower Chord (Northeast L1L2)	D	6	Light surface rust and moderate pitting. Localized areas of heavy pitting on top of member web and inside of flanges. Heavy expansion rust and section loss of top web splice connection plate and rivets. Less than 5% total section loss noted. No cracks evident.
Lower Chord (Northeast L0L1)	A	6	Light surface rust and moderate pitting. Localized areas of heavy pitting on top of member web and inside of flanges. Advanced section loss around north drain hole. Less than 5% total section loss noted. No cracks evident.

East Truss Members (Continued):

MEMBER	FATIGUE CAT.	RATING	REMARKS
Vertical (Southeast L1U1)	B	6	Light surface rust and minor pitting. Localized areas of moderate pitting of web near deck. Less than 5% total section loss noted. No cracks evident.
Vertical (Southeast L2U2)	B	6	Light surface rust and minor pitting. Localized areas of heavy pitting on web south face. Less than 5% total section loss noted. No cracks evident.
Vertical (Southeast L3U3)	B	6	Light surface rust and minor pitting. Localized areas of moderate pitting at interior flange and south web. Less than 5% total section loss noted. No cracks evident.
Vertical (East L4U4)	B	6	Light surface rust and minor pitting. Localized areas of heavy pitting on web south face & 1 on north face. Less than 5% total section loss noted. No cracks evident.
Vertical (Northeast L3U3)	B	7	Light surface rust and minor pitting. No section loss noted. No cracks evident.
Vertical (Northeast L2U2)	B	6	Light surface rust and minor pitting. Localized areas of heavy pitting on web south face with paint peeling. Moderate pitting on north face of web. Less than 5% total section loss noted. No cracks evident.
Vertical (Northeast L1U1)	B	5	Light surface rust and moderate pitting. Areas of heavy pitting on inside of south web with 20% section loss on web. An approximate nickel and 1/4" sized holes in web. Less than 10% total section loss noted. No cracks evident.

East Truss Members (Continued):

MEMBER	FATIGUE CAT.	RATING	REMARKS
Diagonal (Southeast L2U1)	B	7	Light surface rust and minor pitting. Localized areas of moderate pitting at inside of interior flange. Localized areas of surface rust and minor expansion rust on web underside. No section loss noted. No cracks evident.
Diagonal (Southeast L2U3)	B	7	Light surface rust and minor pitting. Areas of minor expansion rust on underside. No section loss noted. No cracks evident.
Diagonal (Southeast L4U3)	B	6	Light surface rust and minor pitting. Localized areas of heavy pitting and surface rust. Section loss on bolt nuts on underside of member. Less than 5% total section loss noted. No cracks evident.
Diagonal (Northeast L4U3)	B	7	Light surface rust and minor pitting. Areas of minor paint peeling on bottom of web. No section loss noted. No cracks evident.
Diagonal (Northeast L2U3)	B	6	Light surface rust and minor pitting. Localized areas of moderate pitting on bottom of web. Section loss on bolt nuts on underside of member. Less than 5% total section loss noted. No cracks evident.
Diagonal (Northeast L2U1)	B	6	Light surface rust and minor pitting. Localized areas of moderate to heavy pitting and expansion rust on underside of flanges and web. Less than 5% total section loss noted. No cracks evident.

Note: Debris accumulation on lower chords with water ponding in lower chord webs. There are large areas of paint peeling on members.

West Truss Gusset Plates:

CONNECTION	THICKNESS	LOCATION/METHOD OF MEASUREMENT
Southwest L0	1/2"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Southwest L1	7/16"	Measured Exterior Connection Plate at plate edge using calipers.
Southwest L2	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Southwest L3	7/16"	Measured Exterior Connection Plate at plate edge using calipers.
West L4	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Northwest L3	7/16"	Measured Exterior Connection Plate at plate edge using calipers.
Northwest L2	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Northwest L1	7/16"	Measured Exterior Connection Plate at plate edge using calipers.
Northwest L0	1/2"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Southwest U1	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Southwest U2	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Southwest U3	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
West U4	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Northwest U3	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Northwest U2	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Northwest U1	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.

East Truss Gusset Plates:

CONNECTION	THICKNESS	LOCATION/METHOD OF MEASUREMENT
Southeast L0	1/2"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Southeast L1	7/16"	Measured Exterior Connection Plate at plate edge using calipers.
Southeast L2	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Southeast L3	7/16"	Measured Exterior Connection Plate at plate edge using calipers.
East L4	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Northeast L3	7/16"	Measured Exterior Connection Plate at plate edge using calipers.
Northeast L2	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Northeast L1	7/16"	Measured Exterior Connection Plate at plate edge using calipers.
Northeast L0	1/2"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Southeast U1	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Southeast U2	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Southeast U3	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
East U4	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Northeast U3	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Northeast U2	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.
Northeast U1	7/16"	Measured Interior and Exterior Gusset Plate at plate edge using calipers.

Truss Floor Beam Members

MEMBER	FATIGUE CAT.	RATING	REMARKS
South L0	D	6	Light surface rust and minor pitting. Less than 5% total shear section loss and no moment section loss. No cracks evident.
South L1	D	6	Light surface rust and minor pitting. Less than 5% total shear section loss and no moment section loss. No cracks evident.
South L2	D	6	Light surface rust and minor pitting. Less than 5% total shear section loss and no moment section loss. No cracks evident.
South L3	D	6	Light surface rust and minor pitting. Less than 5% total shear section loss and no moment section loss. No cracks evident.
L4	D	6	Light surface rust and minor pitting. Less than 5% total shear section loss and no moment section loss. No cracks evident.
North L3	D	6	Light surface rust and minor pitting. Less than 5% total shear section loss and no moment section loss. No cracks evident.
North L2	D	6	Light surface rust and minor pitting. Less than 5% total shear section loss and no moment section loss. No cracks evident.
North L1	D	6	Light surface rust and minor pitting. Less than 5% total shear section loss and no moment section loss. No cracks evident.
North L0	D	6	Light surface rust and minor pitting. Less than 5% total shear section loss and no moment section loss. No cracks evident.

STRUCTURE INVENTORY AND APPRAISAL REPORT
 MONROE COUNTY BRIDGE NO. 00913 - BUSINESS 37 NORTH OVER BEANBLOSSOM CREEK

APPROACH AND ELEVATION PHOTOS



APPROACH LOOKING NORTH



APPROACH LOOKING SOUTH

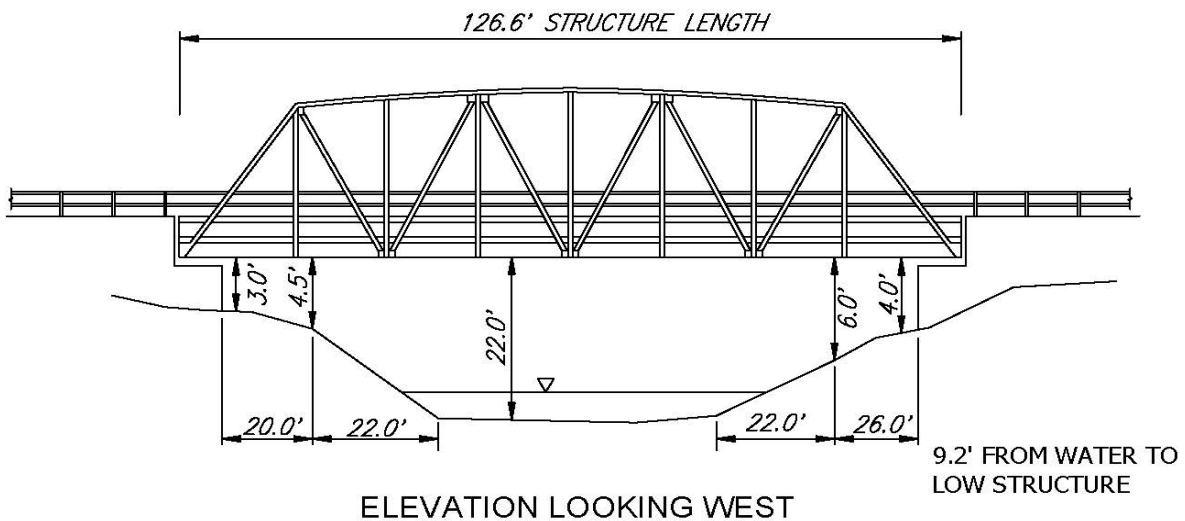


ELEVATION LOOKING WEST



TACK WELD SOUTHWEST L3

MONROE 913



STRUCTURE INVENTORY AND APPRAISAL REPORT
 MONROE COUNTY BRIDGE NO. 00913 - BUSINESS 37 NORTH OVER BEANBLOSSOM CREEK

ADDITIONAL PHOTOS



WEST L4 CONDITION



L4U3 NORTHWEST PAINT PEELING



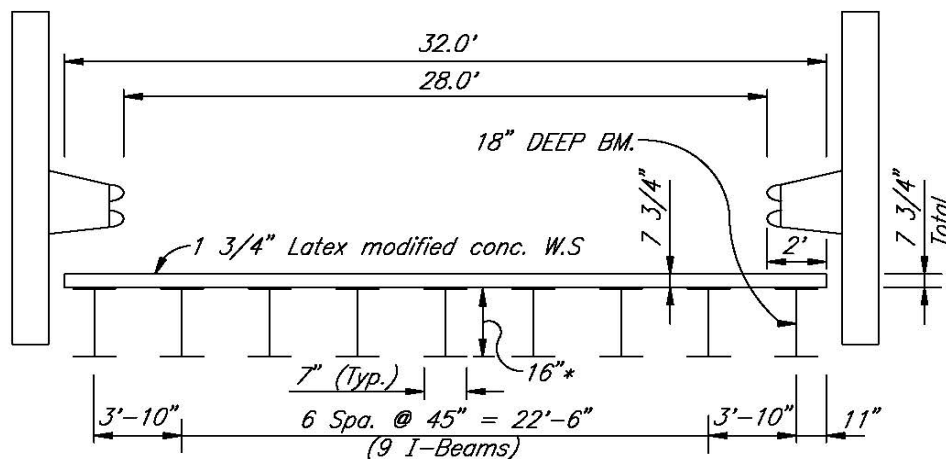
L2U3 NORTHWEST PAINT PEELING



NORTH BRIDGE JOINT

ADDITIONAL PHOTOS AVAILABLE

MONROE 913



* TYP. ALL BEAMS EXCEPT EAST EXT. BM.

CROSS SECTION

STRUCTURE INVENTORY AND APPRAISAL REPORT
MONROE COUNTY BRIDGE NO. 00913 - BUSINESS 37 NORTH OVER BEANBLOSSOM CREEK

ADDITIONAL PHOTOS



OVERLAY SPALL NORTH END



OVERLAY SPALL MIDSPAN WEST COPING



SOUTH BRIDGE JOINT



DAMAGED EAST GUARDRAIL



OVER ROTATED EXPANSION BEARING



MODERATE SECTION LOSS IN WEB AT NEL0

STRUCTURE INVENTORY AND APPRAISAL REPORT
MONROE COUNTY BRIDGE NO. 00913 - BUSINESS 37 NORTH OVER BEANBLOSSOM CREEK

ADDITIONAL PHOTOS



NORTHWEST ABUTMENT 2 SPALL IN MUDWALL



SPALL WITH EXPOSED REINFORCEMENT IN DECK



EXPANSION RUST AND SECTION LOSS AT NEL0



SEL1 INTERIOR ANGLE SECTION LOSS



SEL1 EXTERIOR GUSSET PLATE SECTION LOSS



SEL2L1 INTERIOR GUSSET PLATE SECTION LOSS AT DIAGONAL END

STRUCTURE INVENTORY AND APPRAISAL REPORT
MONROE COUNTY BRIDGE NO. 00913 - BUSINESS 37 NORTH OVER BEANBLOSSOM CREEK

ADDITIONAL PHOTOS



**SEL2L1 EXTERIOR GUSSET PLATE SECTION
LOSS AT DIAGONAL END**



**EL4 WEB CONNECTION SEVERED FROM LOW
CHORD**



TYPICAL LOW CHORD SPLICE



**NEL1 60% SECTION LOSS ON INTERNAL
FLANGE OF VERTICAL**



**TYPICAL DETERIORATION OF EXTERNAL SWAY
BRACING**



**TYPICAL FLOOR BEAM DETERIORATION AT
TOP FLANGE**

ADDITIONAL PHOTOS



**TYPICAL FLOOR BEAM DETERIORATION AT
BOTTOM FLANGE**



**TYPICAL HEAVY SECTION LOSS OF STAY
PLATES AND LATTICE BARS ON END POST**

APPENDIX G
Original and
Rehabilitation Plans

Original Plans

BRIDGES OVER 20' SPAN					
FOR ROAD DIV. NO.	STATE	F. PROJ. NO.	LEGAL YEAR	SHEET NO.	TOTAL SHEETS
4	IND.	428(5)	1946	1	22
		428(6)	1946	1	22

INDEX						
SHEET NO.	SHEET DESIGNATION	SUBJECT				
		PROJECT	STRUCTURE	TYPE	SPAN	OVER
		F-428(5)	3628	R.C. ARCH	1@65'	GRIFFITH CR. BEAN BLOSSOM CREEK
			3630	R.C. GIRDER	4@36'	
1		INDEX & TITLE SHEET				
2	ROAD PLAN SHEET N#8	ROAD PLAN & PROFILE - RD. PROJ. N# F-428(3)				
3	C1 (STRUCTURE 37-J-3628)	LAYOUT				
4	C2	GENERAL PLAN				
5	C3	PLAN, ELEVATION & SECTIONS				
6	C4	FOOTING PLAN & HALF SECTION AT CROWN				
7	C5	BILL OF MATERIAL AND BENDING DIAGRAMS				
8	ROAD PLAN SHEET N#5	ROAD PLAN & PROFILE - RD. PROJ. N# F-428(4)				
9	C1 (STRUCTURE 37-J-3630)	LAYOUT				
10	C2	GENERAL PLAN				
11	C3	BENT N# 1 & 5 DETAILS				
12	C4	BENT N# 2, 3 & 4 DETAILS				
13	C5	SUPERSTRUCTURE DETAILS				
14	C6	SUPERSTRUCTURE DETAILS				
15	ONE SHEET	SUMMARY				
16	BRIDGE STD. A2	STANDARD CONCRETE HANDRAIL (DETAILS - TYPE 'A') (REV. 2-20-42)				
17	BRIDGE STD. C	STANDARD MISCELLANEOUS DETAILS (REV. 6-1-45)				
18	ROAD PLAN SHEET N#2	TYPICAL CROSS SECTIONS - RD. PROJ. N# F-428(3)				
19	ROAD PLAN SHEET N#2	TYPICAL CROSS SECTIONS - RD. PROJ. N# F-428(4)				
20	ROAD STD.	STANDARDS FOR SUPER-ELEVATION & WIDENING OF CURVES (SEPT. 1932)				
21	BRIDGE STD. H4	TYP. DETAILS OF THICK PAVEMENT & LOC. TOE SLOPE AROUND END BENTS (REV. 10-1-44)				
22	BRIDGE STD. M1	STANDARD MISCELLANEOUS APPROACH DETAILS (REV. 11-1-45)				
23	BRIDGE STD. M2	MISCELLANEOUS APPROACH DETAILS (REV. 10-1-44)				
24	BRIDGE STD. S1	TYPICAL DETAILS FOR PLACING SPECIAL FILLING MATERIAL (JUNE 15, 1939)				
25	BRIDGE STD. Z SHEET A	STANDARD DETOUR SIGNS (REV. 12-10-40)				
26	BRIDGE STD. Z SHEET B	STANDARD DETOUR SIGNS (REV. 3-26-43)				
19A	ROAD STD. SHEET MD	MISCELLANEOUS STANDARDS (REV. 5-10-44)				
		F-428(6)	3629	STEEL TRUSS	1@125'	BEAN BLOSSOM CREEK
						205+60
						2716
1		INDEX & TITLE SHEET				
2	ROAD PLAN SHEET N#11	ROAD PLAN & PROFILE - RD. PROJ. N# F-428(3)				
3	ONE SHEET	CHANNEL CHANGE & COUNTY ROAD APPROACH				
4	S1 (STRUCTURE 37-J-3629)	LAYOUT				
5	S2	GENERAL PLAN				
6	S3	ABUTMENT DETAILS				
7	S4	ABUTMENT DETAILS				
8	S5	ABUTMENT DETAILS, BENDING DIAGRAMS & BILL OF MATERIALS				
9	S6	EXP. JOINT DETAILS & BILL OF MATERIALS				
10	S7	SCREEDS, SHOE SETTING DATA & REQUIRED LIST				
11	DRWG. N#1 STD. N#1556	ERECTION PLAN & DESIGN DATA				
12	DRWG. N#2 STD. N#1556	TRUSS DETAILS				
13	DRWG. N#3 STD. N#1556	TRUSS DETAILS				
14	DRWG. N#4 STD. N#1556	FLOOR BEAM & STRINGER DETAILS				
15	DRWG. N#5 STD. N#1556	BRACING & SHOE DETAILS				
16	DRWG. N#6 STD. N#1556	GUARD RAILS				
17	DRWG. N#7 STD. N#1556	(NOT REQUIRED)				
18	DRWG. N#8 STD. N#1556	BILL OF MATERIALS BY SHIPPING PIECES				
19	DRWG. N#9 STD. N#1556	FLOOR DETAILS & BILL OF MATERIALS				
20	DRWG. N#10 STD. N#1556	FLOOR DETAILS				
20	ROAD STD.	STANDARD REINF. CONC. BOX CULVERTS (SQUARE) (REV. 9-1-44)				
21	ROAD STD.	STD. REINF. CONC. BOX CULVERTS (SKEWED END & WING DETLS) 30° SK. (REV. 9-1-44)				
22	BRIDGE STD. B3	STANDARD CONCRETE HANDRAIL (DETAILS - TYPE 'B') (MAR. 20, 1942)				
23	BRIDGE STD. C	STANDARD MISCELLANEOUS DETAILS (REV. 6-1-45)				
24	ONE SHEET	SUMMARY				
25-40	SIXTEEN SHEETS	CROSS SECTIONS				
41	ROAD PLAN SHEET N#2	TYPICAL CROSS SECTIONS - RD. PROJ. N# F-428(3)				
42	ROAD STD. SHEET MD	MISCELLANEOUS STANDARDS (REV. 5-10-44)				
43	ROAD STD.	STANDARDS FOR SUPER-ELEVATION & WIDENING OF CURVES (SEPT. 1932)				
44	BRIDGE STD. H5	TYP. DETAILS OF THICK PAVEMENT & LOC. TOE SLOPE (REV. 10-1-44)				
45	BRIDGE STD. M1	STANDARD MISCELLANEOUS APPROACH DETAILS (REV. 11-1-45)				
46	BRIDGE STD. S1	TYPICAL DETAILS FOR PLACING SPECIAL FILLING MATERIAL (JUNE 15, 1939)				
47	BRIDGE STD. Z SHEET A	STANDARD DETOUR SIGNS (REV. 12-10-40)				
48	BRIDGE STD. Z SHEET B	STANDARD DETOUR SIGNS (REV. 3-26-43)				

STATE OF INDIANA
STATE HIGHWAY COMMISSION

BRIDGE PLANS
FOR SPANS OVER 20 FEET
ON
STATE ROAD NO. 37 SECTION J

F PROJECTS NO. 428 (5) (1946)
NO. 428 (6) (1946)

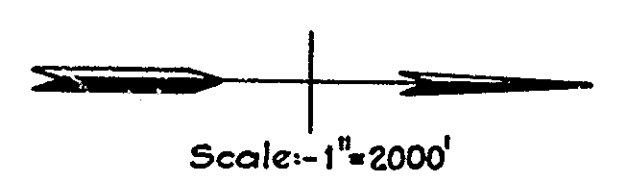
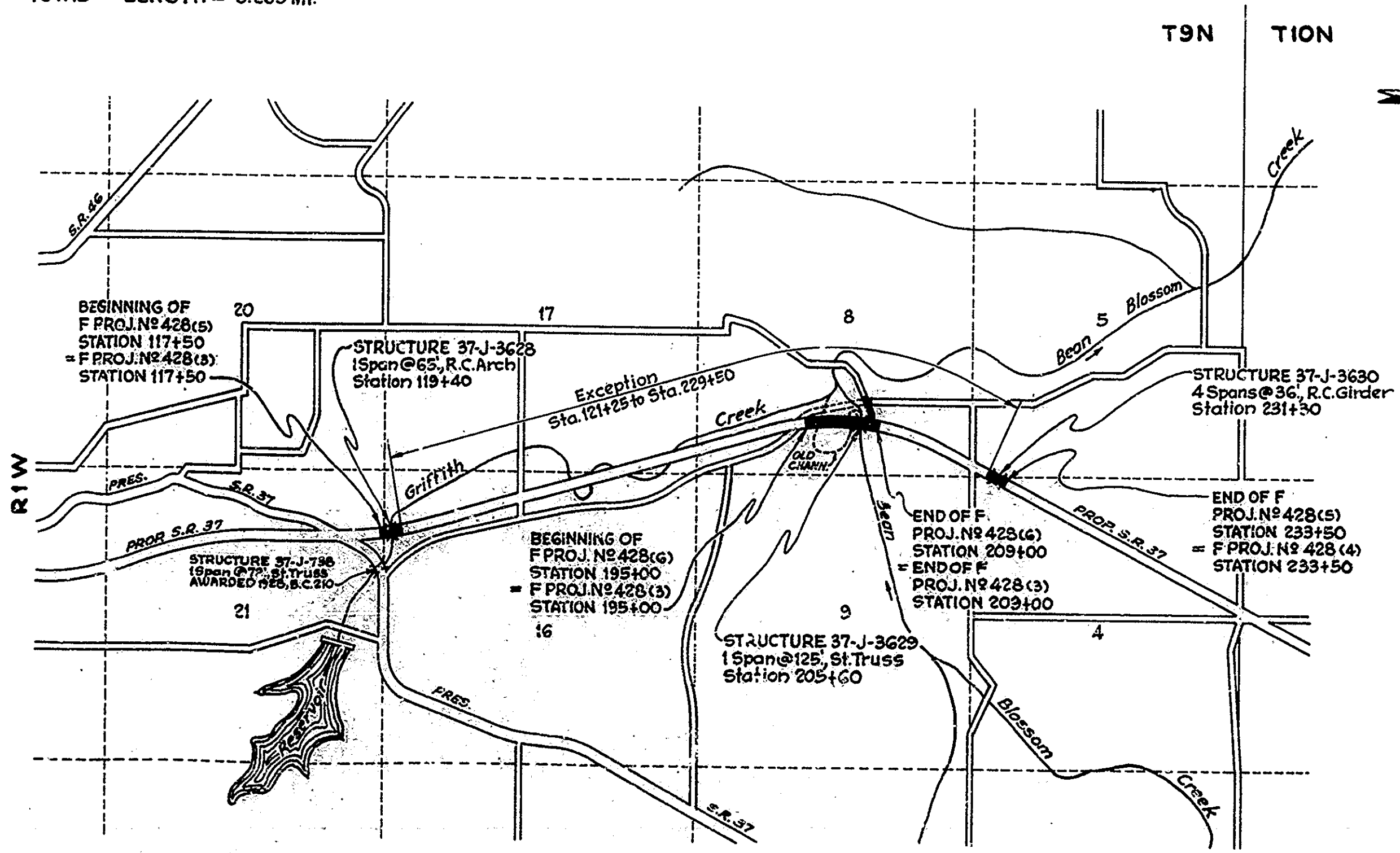
BLOOMINGTON - MARTINSVILLE ROAD

DESCRIPTION OF F PROJECT N# 428(5) (1946) - BEGINNING AT A POINT IN SECTION 21 ON PROPOSED S.R. 37 APPROX. 82' SOUTH OF THE NORTH LINE OF SECTION 21 AND EXTENDING IN NORTHWESTERLY AND NORTHEASTERLY DIRECTIONS A DISTANCE OF APPROX. 11,600' TO A POINT IN SECTION 4 APPROX. 362' NORTHEAST OF THE WEST LINE OF SECTION 4, ALL IN T9N., -R1W, MONROE COUNTY.

GROSS LENGTH = 2.196 MI.	MAX. GRADE = -0.400%
NET LENGTH = 0.146 MI.	ROADWAY LENGTH BRIDGE LENGTH TOTAL LENGTH
	STRUCTURE 37-J-3628 0.071 0.071
	STRUCTURE 37-J-3630 0.046 0.029 0.075

DESCRIPTION OF F PROJECT N# 428(6) (1946) - BEGINNING AT A POINT ON PROPOSED S.R. 37 APPROX. 2282' NORTHWEST OF THE SOUTH LINE OF SECTION 8 AND EXTENDING IN A NORTHERLY DIRECTION A DISTANCE OF APPROX. 1400' TO A POINT ON PROPOSED S.R. 37 APPROX. 3682' NORTHWEST AND NORTHERLY DIRECTIONS OF THE SOUTH LINE OF SECTION 8, ALL IN SECTION 8 - T9N., -R1W, MONROE COUNTY.

ROADWAY LENGTH = 0.241 MI.	MAX. GRADE = 0.200%
BRIDGE LENGTH = 0.024 MI.	
TOTAL LENGTH = 0.265 MI.	



Rev. 8-4-48 For Construction Changes Contr. 2715
Rev. 8-18-48 For Construction Changes Contr. 2716

abandoned to County

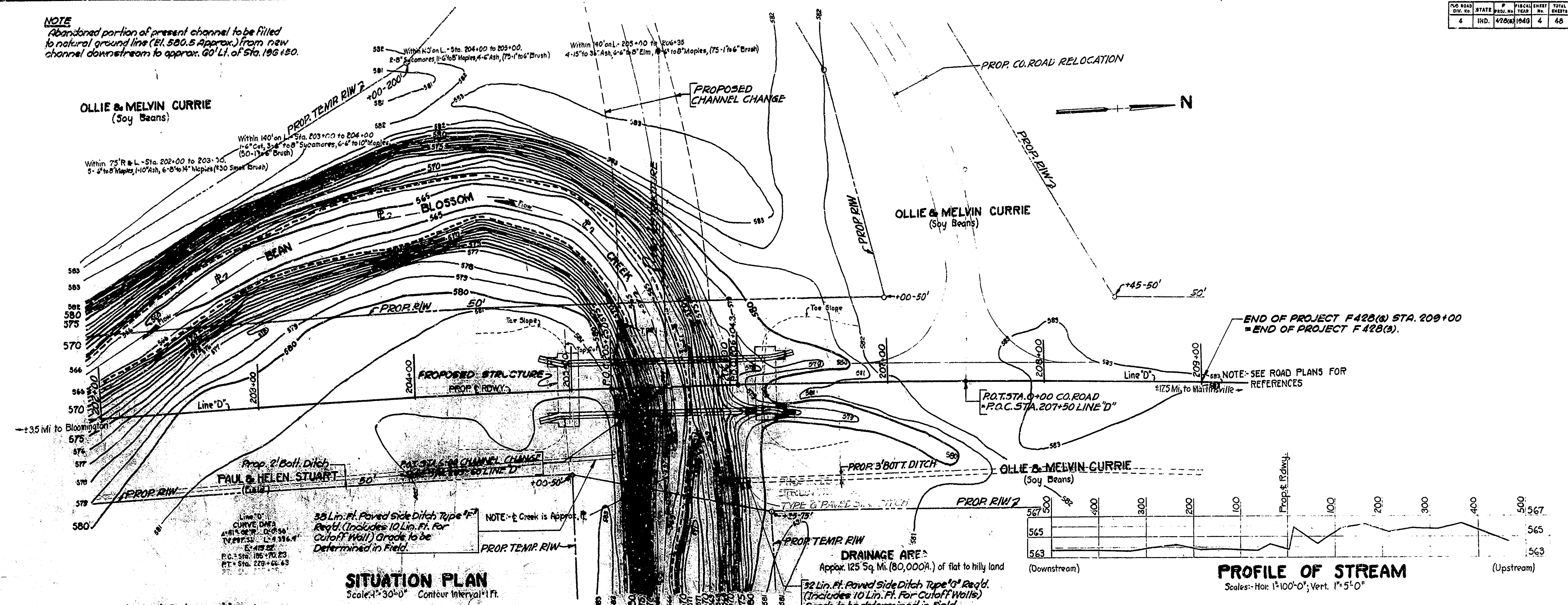
APPROVED AND ADOPTED 5-24-46
BY STATE HIGHWAY COMMISSION OF INDIANA

APPROVED 5-24-46
Carl E. Vogelbein
CHIEF ENGINEER, STATE HIGHWAY COMMISSION OF INDIANA

RECOMMENDED FOR APPROVAL
APPROVED

BRIDGES OVER 20' SPAN						
FILE NO.	STATE	FISCAL YEAR	CHART NO.	TOTAL SHEETS		
4	IND.	1943	1643	4	48	

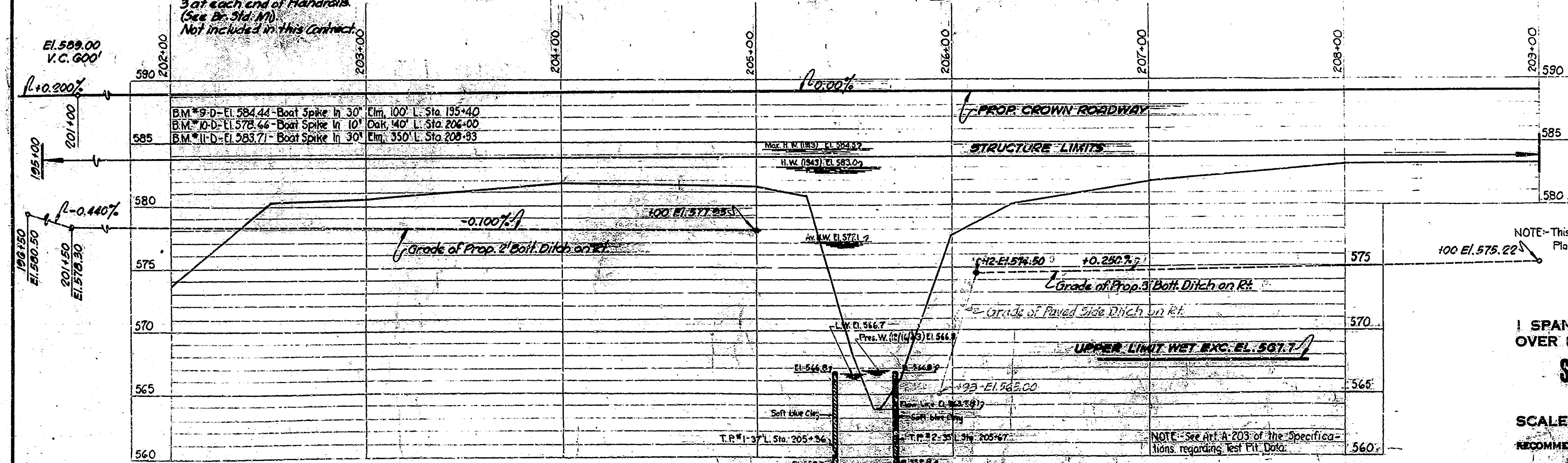
NOTE
Abandoned portion of present channel to be filled to natural ground line (El. 580.5 Approx.) from new channel downstream to approx. 60' Lt. of Sta. 196+80.



SITUATION PLAN
Scale: 1"=30'-0" Contour Interval: 1' Ft.

DRAINAGE AREA
Approx. 125 Sq. Mi. (80,000 A.) of flat to hilly land
32 Lin. Ft. Paved Side Ditch Type 'B' Req'd. (Includes 10 Lin. Ft. For Cutoff Walls) Grade to be determined in field.

12 Guide Posts Type 'A' Req'd. 3 at each end of Handrails (See Dr. 5th. M) Not included in this Contract



PROFILE ON PROPOSED ROADWAY
Scale: Hor. 1"=30'-0" Vert. 1"=5'-0"

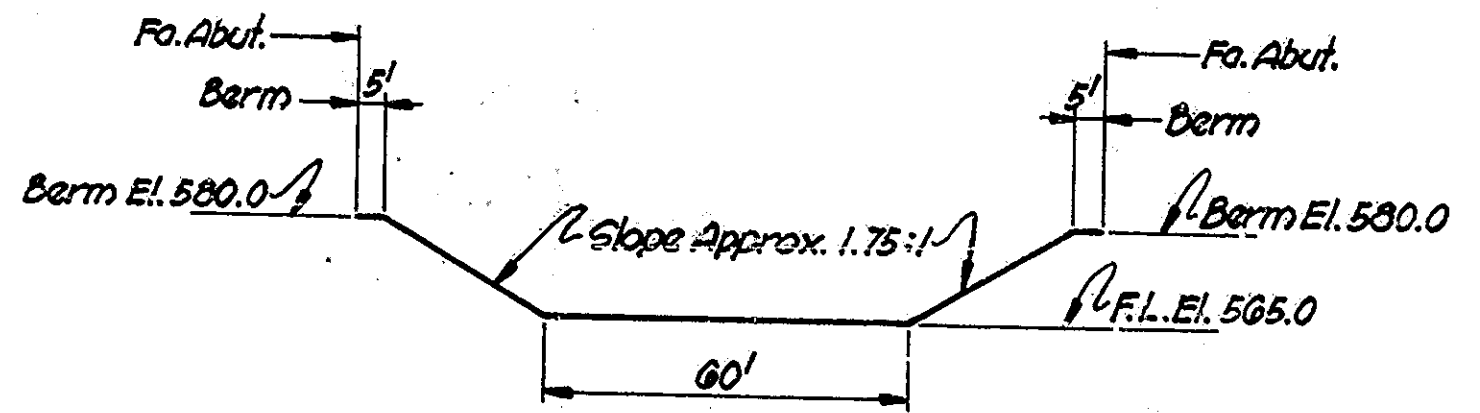
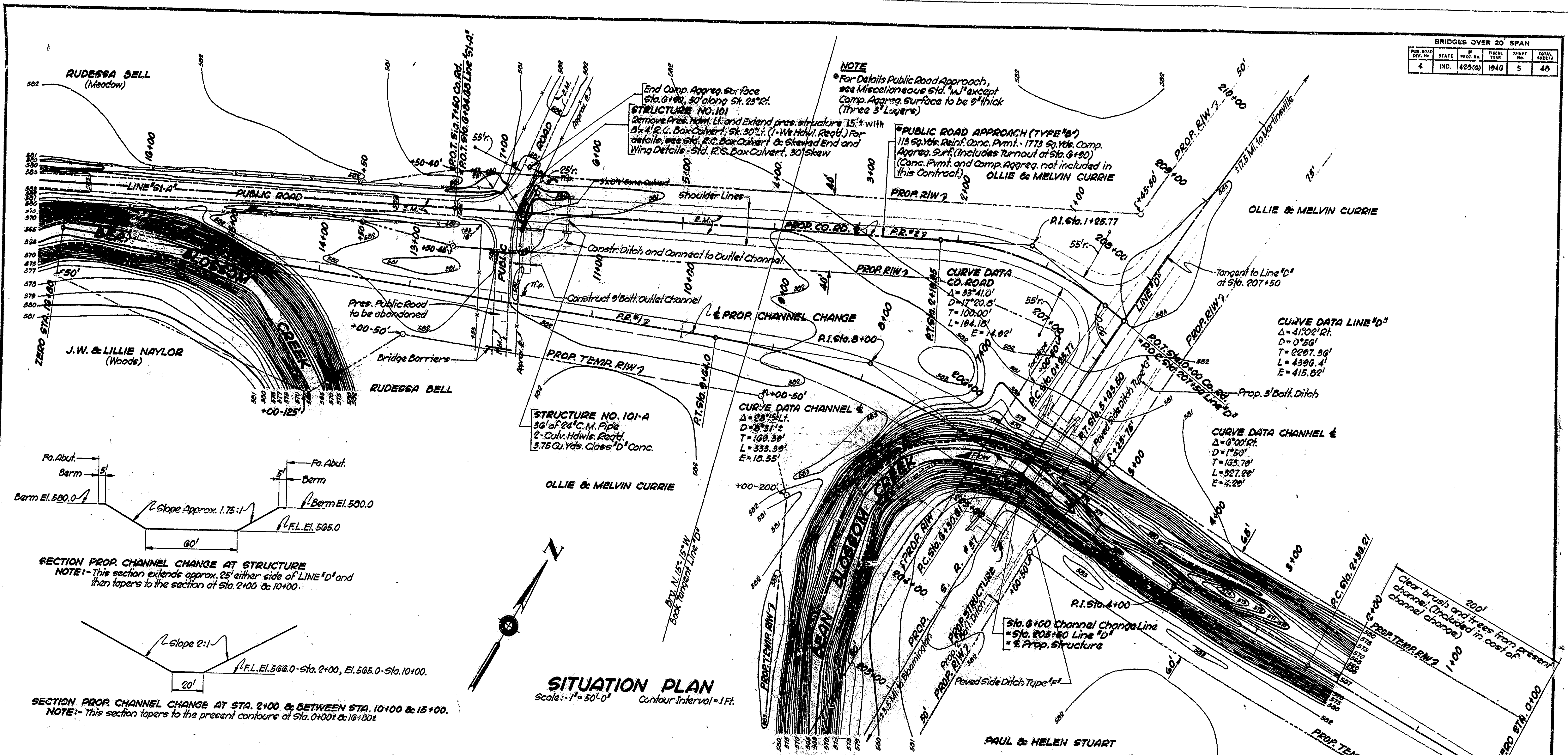
NOTE: This is Str. No. 3 on Road Proj. F 428(s). See No. 11 of the Road Plans for Bench Marks, Grade Line and References.

LAYOUT
STEEL TRUSS BRIDGE
1 SPAN @ 125'-0" 2-2'-0" WALKS @ 28'-0" ROADWAY
OVER BEAN BLOSSOM CREEK ON STATE ROAD- 37-J
STATE HIGHWAY COMMISSION OF INDIANA
MONROE COUNTY
SCALE: AS NOTED APRIL 15, 1946
RECOMMENDED FOR APPROVAL: [Signature]
PROJECT: F 428(s) STATION: 205+00
DRAWING: 81 OF 1 STRUCTURE NO. 3629
BRIDGE CONTRACT NO. 2716
BRIDGE FILE - 37-J-5329

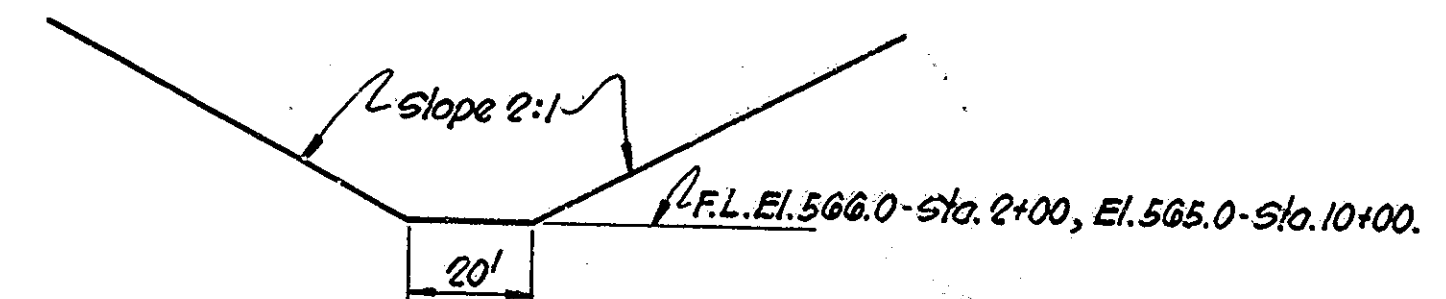
DESIGNED BY: [Name] CHECKED BY: [Name]
DRAWN BY: [Name] IN CHARGE: [Name]

NOTE: See Art. 203 of the Specifications regarding Test Pit Data.

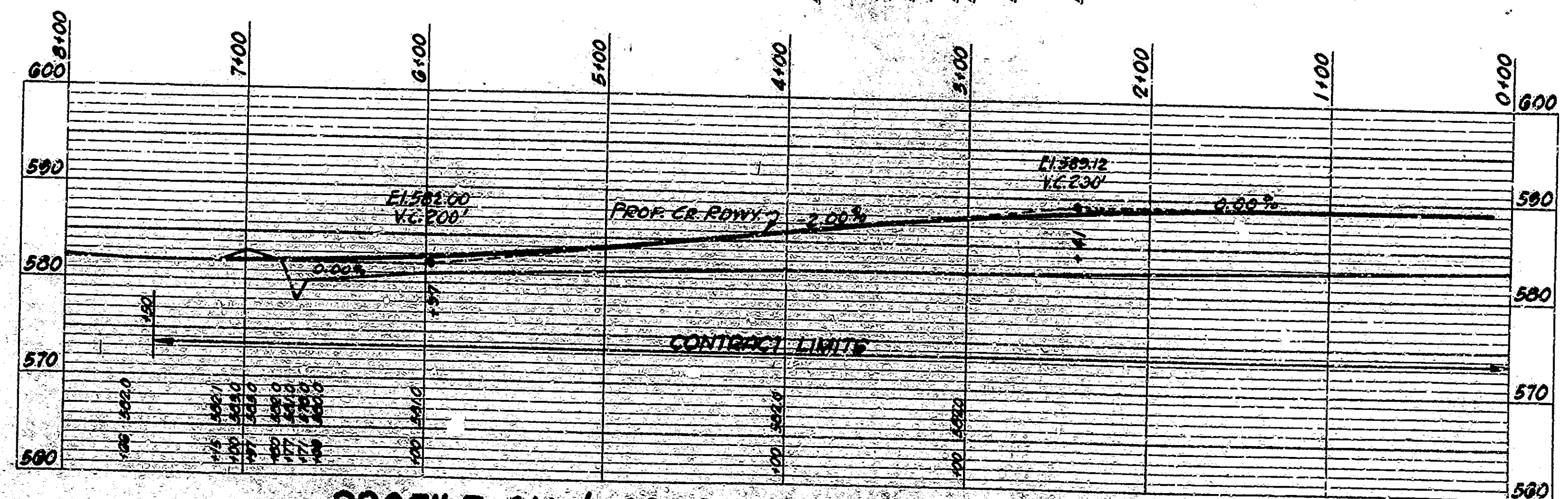
BRIDGES OVER 20' SPAN					
PUB. ROAD DIV. NO.	STATE	FISCAL YEAR	PROJECT NO.	TOTAL SHEETS	
4	IND.	425(6)	1946	5	45



SECTION PROP. CHANNEL CHANGE AT STRUCTURE
 NOTE: - This section extends approx. 25' either side of LINE 'D' and then tapers to the section at Sta. 2+00 & 10+00.



SECTION PROP. CHANNEL CHANGE AT STA. 2+00 & BETWEEN STA. 10+00 & 15+00.
 NOTE: - This section tapers to the present contours of Sta. 0+00 & 16+00.



PROFILE ON E PROP. CO. ROAD RELOCATION
 Scale: - Horiz. 1" = 50.0', Vert. 1" = 10.0'

CHANNEL CHANGE AND COUNTY ROAD APPROACH
 STATE HIGHWAY COMMISSION OF INDIANA

SCALE: AS NOTED
 RECOMMENDED FOR APPROVAL: [Signature]
 PROJECT: F 425(6) STATION: 205+00
 STRUCTURE NO. 3620

APRIL 15, 1946

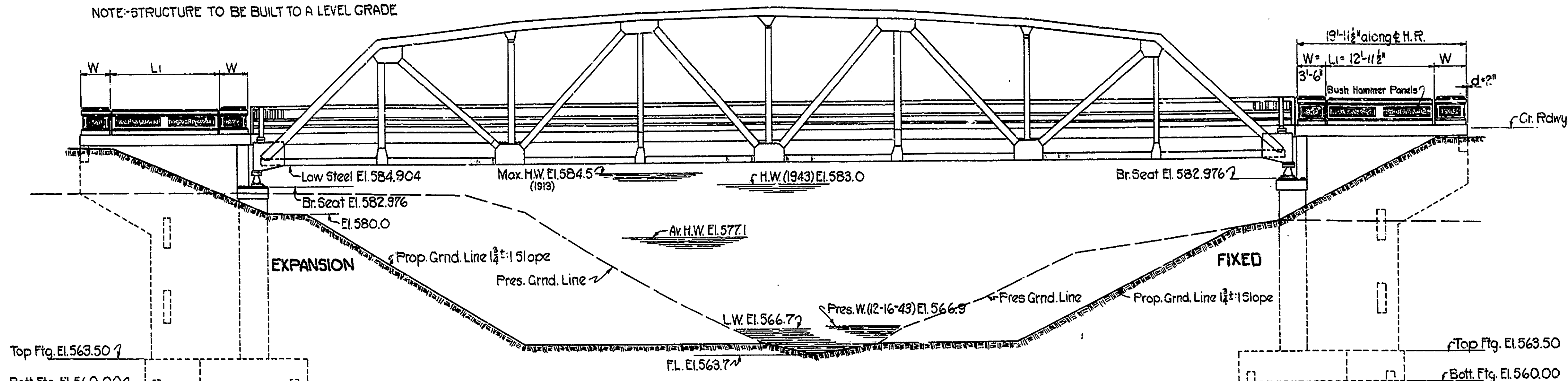
BRIDGE CONTRACT NO. 2716

DESIGNED: W.A.C. 2-3-46
 DRAWN: M.J.L. 5-20-46

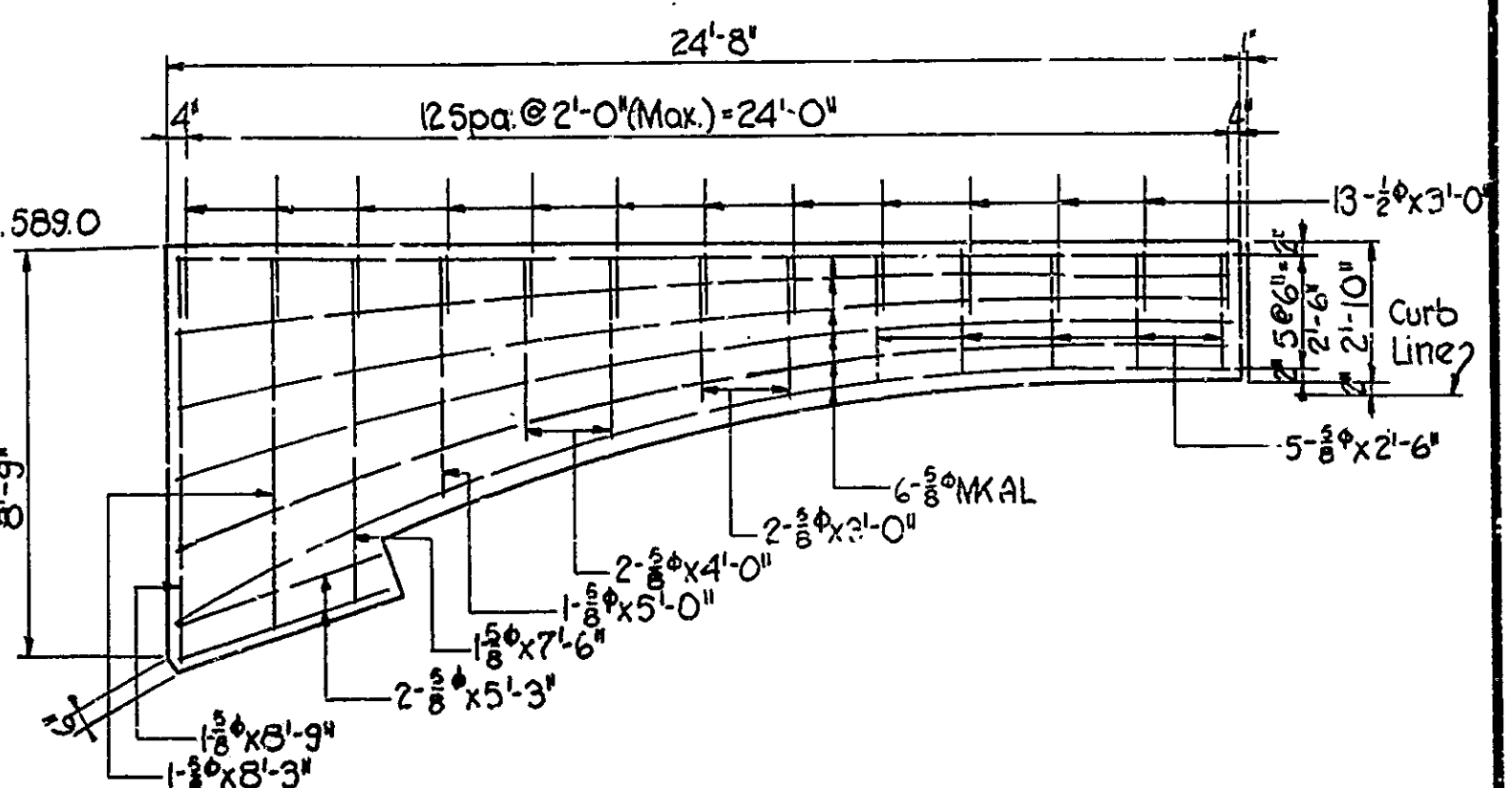
NOTE: Field Notes - Book 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

BRIDGES OVER 20' SPAN				
STATE	F. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IND.	428(6)	1942	5	43

NOTE: STRUCTURE TO BE BUILT TO A LEVEL GRADE



EAST ELEVATION



DETAIL OF THICKENED PAVEMENT

Scale: 1/2" = 1'-0"

GENERAL NOTES

Depth of footings to be extended if found necessary. See Art. B-202 of Specifications.

Piles shall have bearing value shown on Detail Drawings. Determine pile lengths by Arts. D101 and D104 of Specifications.

Reinforcing steel covering shall be 1 inch in floor slabs, 3 inches in footings, except *Bottom Steel* which shall be 4 inches, 2 inches in all other parts unless noted.

All Dimensions on Details & Bending Diagrams for Reinforcing Bars are measured on centerlines of Bars.

Concrete in footings, wingwalls, abutments, and tie beams to be Class "E". Concrete in superstructure, abutment sidewalk, and handrail to be Class "D".

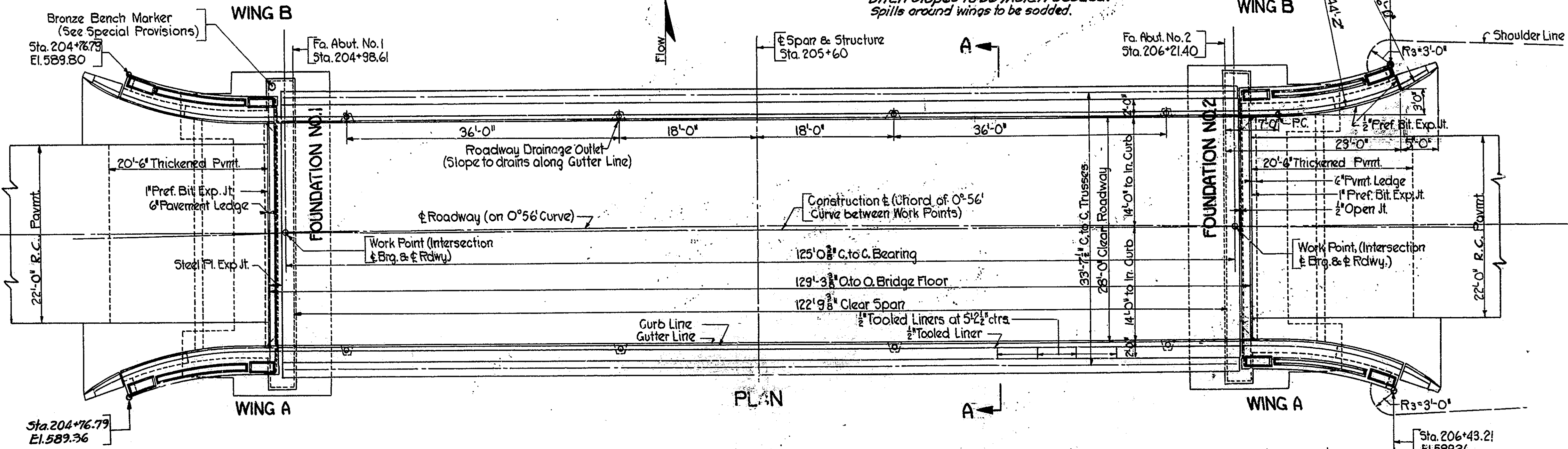
Continuous concrete pours shall be required between construction joints as shown on detail plans.

Waterproof abutments and wingwalls in accordance with Specifications. Bevel forms 1/4 inch under copings and chamfer exposed edges 3/4 inch unless noted.

Roadway Drainage Outlets to be placed as shown on this drawing. See Special Provisions for items included in this contract.

NOTE:
Reinforced Concrete Pavement and Thickened Pavement not included in this Contract.
Roadway Embankment Side Slopes and Ditch Slopes to be Mulch Seeded.
Spills around wings to be sodded.

Both Test Piles Refused Abruptly Indicating Rock At About EL. 551.1



PLAN

NOTE:

For Standard Thickened Pavement, see Br. Std. G

For typical details for locating toe of slope around ends of Structure. See Br. Std. H5

For Miscellaneous Approach details, see Br. Std. M1 & M2

For method of placing Special Filling Material, See Br. Std. S1

TYPICAL CROSS SECTION

USED ON ROAD PROJ. F-428(6)
SEE ROAD PLAN SHEET No. 2

STANDARD DRAWINGS

Superstructure: Use Standard Superstructure details, 125'-0" Span Steel Truss, 28'-0" Roadway with 2'-2" Sidewalks. Drawing Standard No. 1556 Dated Sept. 1, 1945.

Use Standard Concrete Handrail Details, Br. Std. B3 with Type I Posts, dated March 20, 1942.

Use Standard Miscellaneous Details, Br. Std. C, dated October 1, 1943; Revised G-1-45.

PILING RECORD				
Fdn. No.	No. Piles	Longest	Shortest	Average
1	73	14.1'	11.4'	12.42'
2	73	14.1'	8.3'	9.67'

**GENERAL PLAN
STEEL TRUSS BRIDGE**

1 SPAN @ 125'-0" OVER BEAN BLOSSOM CREEK
2'-2"-0" WALKS & 28'-0" ROADWAY ON STATE ROAD - 37-J

STATE HIGHWAY COMMISSION OF INDIANA

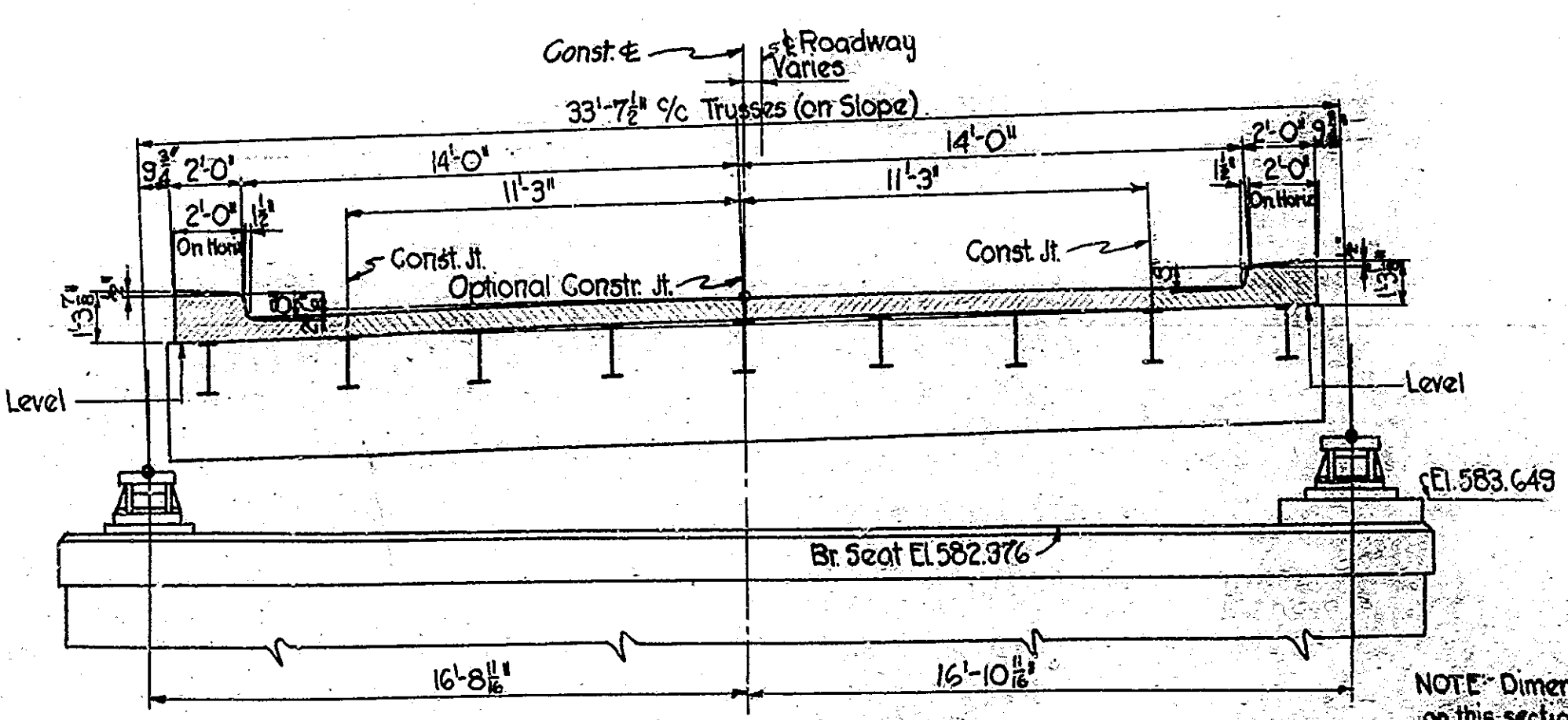
MONROE COUNTY

SCALE: 1/8" = 1'-0" UNLESS NOTED APRIL 15 1942

RECOMMENDED FOR APPROVAL: [Signature]

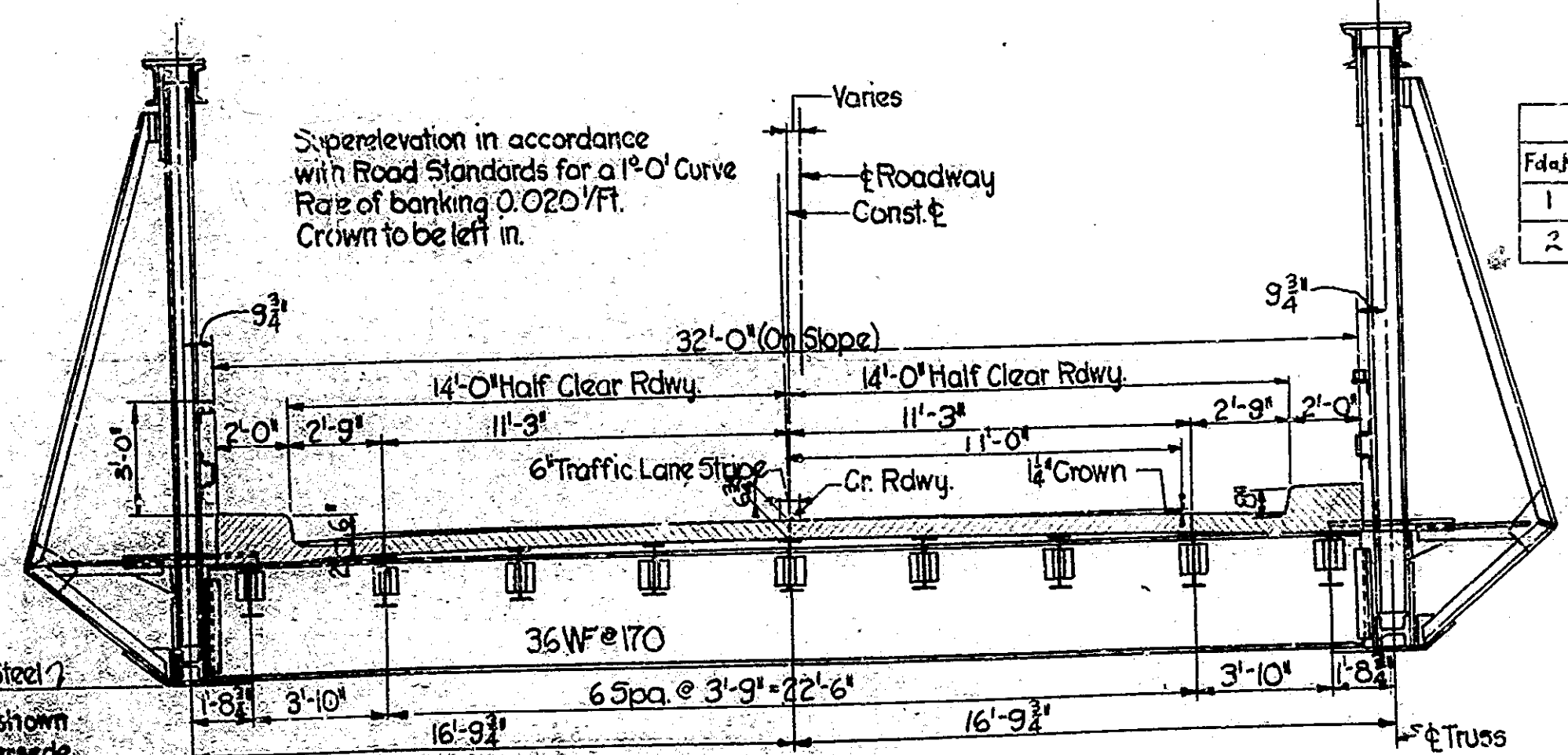
PROJECT: F 428(6) STATION: 205 + 60
STRUCTURE NO. 3626

DRAWING: 92 OF 7 BRIDGE CONTRACT NO. 2716



PART SECTION "A-A"

Scale: 1/4" = 1'-0"



SECTION "A-A"

Scale: 1/4" = 1'-0"

NOTE: Dimensions shown on this section supersede those shown on Section 1 to Roadway shown on drawing 51d:1556

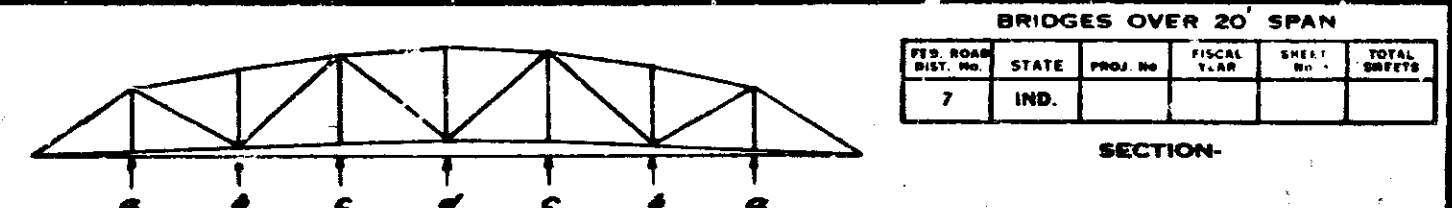
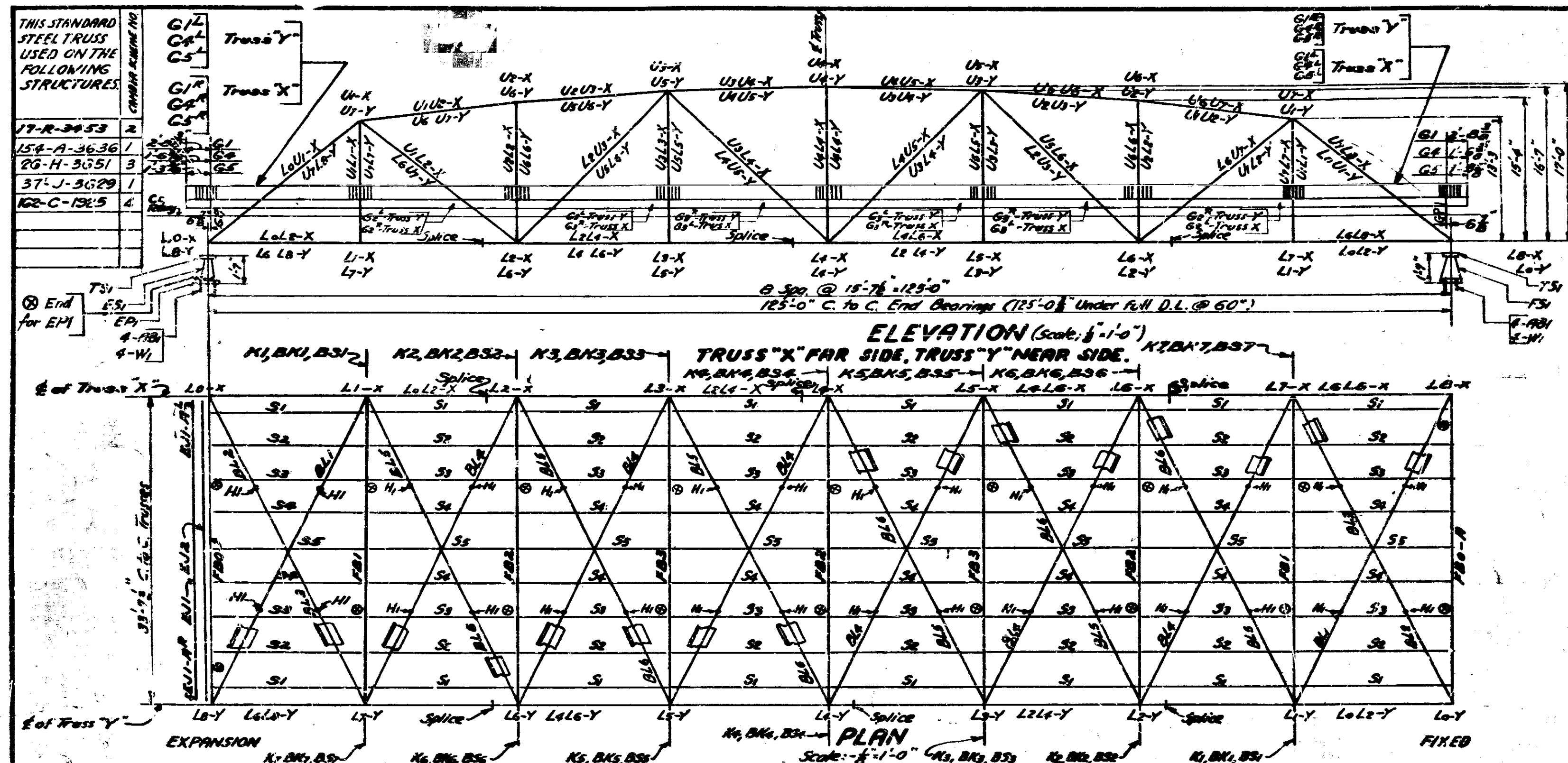
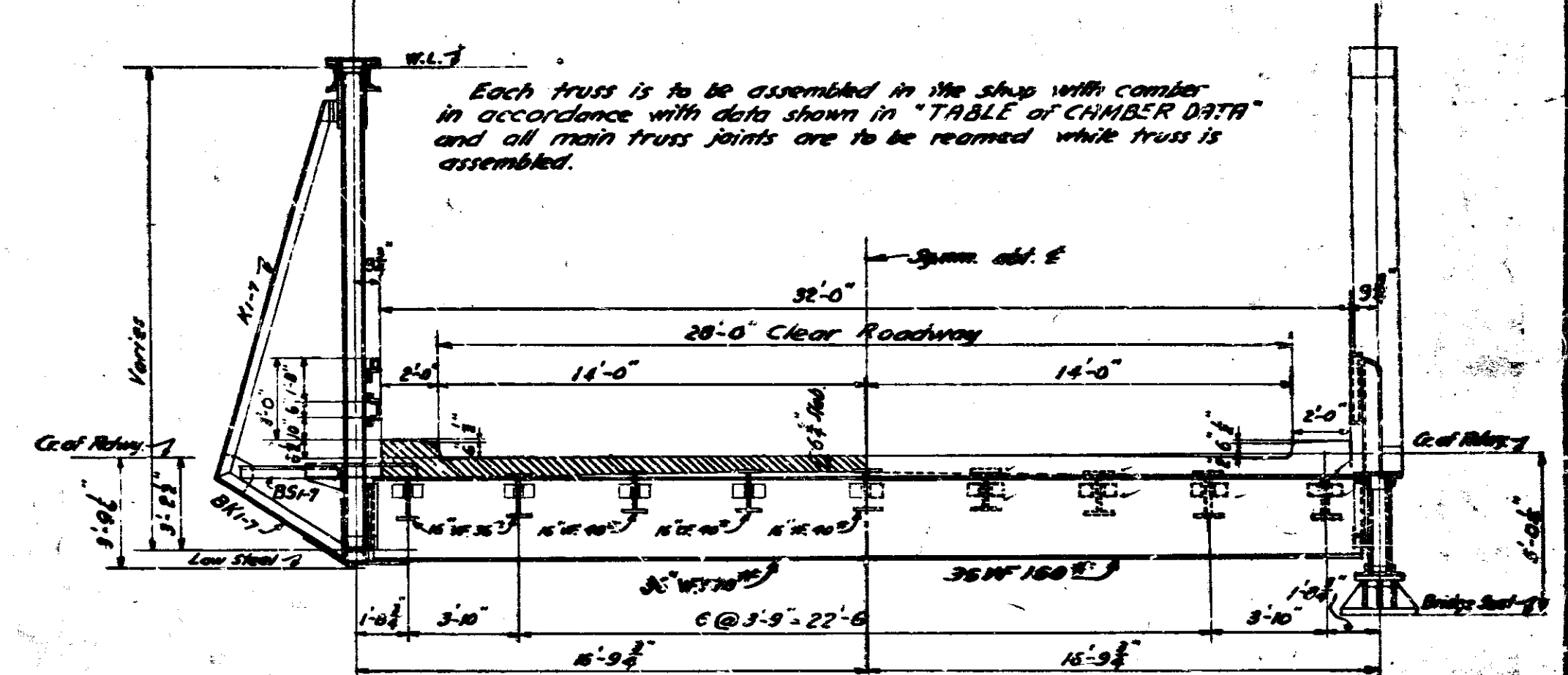


TABLE OF CAMBER DATA

CAMBER SCHEME No.	Rate of change of grade on "C" per ft.			
	1	2	3	4
0	+0.57	+0.57	+0.267	
a	1/8"	1/8"	1/8"	
b	1/8"	1/8"	1/8"	
c	1/8"	1/8"	1/8"	
d	1/8"	1/8"	1/8"	

Note: See Required List for marks of end guard rail sections used on structure

See Scribed sheet for data for setting camber in field.



HALF CROSS SECTION HALF END ELEVATION Scale: 1/2" = 1'-0"

MEMBER	Stresses in Ribs						SECTION	PROPERTIES				AREA REQUIRED				UNIT STRESSES					
	Dead Load	Single LL	Impact	S.W.L.L.	Tot. Single LL	Tot. Double LL		2 (in)	r (in)	I	e (in)	Weight per ft	at Center	at Ends	Allow.	Max.	Min.	Holes Out	Net Area	Net Ends	
LoU1	-251.0	-110.6	-22.1	-5.7	-362.2		10" W 30"	246	3.73	66	1.70	106	26.2	13.91	13.71	26.60					
U1U2	-251.0	-110.9	-22.2	-11.1	-395.0		10" W 30"	199	3.65	51.0	1.56	116	29.1	14.33	13.79	30.22					
U2U3	-248.2	-110.2	-22.0	-11.0	-392.4		10" W 30"	180	3.65	51.5	1.56	118	28.9	14.34	13.79	30.22					
U3U4	-248.7	-132.1	-26.4	-13.2	-478.4		10" W 30"	187.5	3.65	51.5	1.75	132	33.2	14.34	13.87	34.22					
LoL1	+167.7	+84.3	+16.9	+7.4	+276.3		10" W 30"	107.5		0	0	66	15.85	15.35	18.00	17.85	12.41	2.99	2.99	16.62	16.62
L1L2	+207.1	+127.0	+25.4	+12.7	+452.2		10" W 30"	187.5		0	0	112	26.6	25.12	18.00	17.85	32.92	4.99	4.99	27.93	27.93
L2L3	+185.9	+122.0	+11.6	+5.5	+452.2		10" W 30"	246		0	0	49	13.17	12.41	18.00	17.85	14.40	.96	2.23	12.44	12.17
L3L4	+170	+119	+11.9	+11.9	+452.2		10" W 30"	273	2.56	106.7	.10	54	12.5	22.80	20.39	15.00	14.07	.96	2.23	12.44	12.17
U4U5	+325	+40.6	+12.2	+1.9	+460		10" W 30"					33	6.09	5.37	21.00	22.57	2.71	.87	1.73	8.04	7.90
U5U6	+183	+59	+12	+6.6	+210		10" W 30"					33	1.65	1.17	18.00	2.63	2.71	.87	1.73	8.04	7.90
U6U7	+153	+30	+1.4	+0.7	+250		10" W 30"					33	2.02	1.89	18.00	2.47	2.71	.87	1.73	8.04	7.90

NOTES:-
Main truss members are to receive their fabrication marks on the roadway side, while the truss is assembled in the shop, and are to be erected in the same position. Match-mark all loose reamed parts.
All main truss joints to be riveted before span is swung. Bottom members and strainers to be riveted after span is swung.
Rivets to be substituted for field rivets, subject to approval of the engineer, where good rivets cannot be driven.
Guardrail sections to be bolted to guardrail posts and trusses with bolt having square heads and hex nuts, one lock and one cut washer each.
After the concrete has been poured the guard rail is to be adjusted vertically and horizontally to give good alignment.
All structural steel to be painted one coat of shop paint, except anchor bolts.

NOTES (CONT):
LIVE LOAD: Two truck loading with impact and distribution of loads in accordance with 1941 AASHTO Specifications in addition with the stress due to truck live load (including impact) exceeds the stress due to dead load, the truck live load stresses are doubled and the member designed here on basis 20% greater than for single live load.
DEAD LOAD: Actual weight plus 15 pounds per sq. ft. of roadway to provide for future wearing surface.
SLAB: Designed for single live load with impact, and with 1/2" monolithic wearing surface.
Unit Stresses for single live load:
Structural Steel (Tension) 18,000 psi
Structural Steel (Compression) 15,000 psi
Shear on Rivets 12,500 psi
Structural Steel Bearing (See Rivets) 12,500 psi
Bearing Steel on Concrete (Including Chocking and Eccentric Loading) 1,000 psi
Reinforcing Steel (Tension) 20,000 psi
Concrete (Compression) 1,000 psi
(Checked for H20-SIG (1944) Specifications)

REVISIONS	Drawg. No.	Date
1	G-67	9-3-45
2	G-68	9-3-45

TABLE OF MOMENTS AND REACTIONS.

Member	Interior Stringer		N.O.S. Stringer		O.S. Stringer		Interior Deck Slab		End Deck Slab		Span Reaction
	Max. Mom.	Min. Mom.	Max. Mom.	Min. Mom.	Max. Mom.	Min. Mom.	Max. Mom.	Min. Mom.	Max. Mom.	Min. Mom.	
Dead Load	12.65	3.29	12.15	3.29	18.50	4.01	279.7	39.26	167.6	21.00	165.1 K
Live Load	29.76	32.84	78.26	92.84	12.26	3.78	779.6	81.20	700.0	81.20	82.7
Imp.	28.12	9.86	23.68	9.86	3.67	.97	233.0	24.40	290.0	24.40	16.7
S.W.L.L.					5.97	1.33	4.0	2.7	2.7	1.90	7.2
Design	134.3	45.99	115.09	45.99	38.34	9.53	1207.9	140.76	1146.3	127.80	270.6
	16 W 40	2-644	16 W 36	2-563	16 W 36	2-563	16 W 70	2-574	16 W 140	2-541.0	

Reproduced from Drawg. S-1155 and Revised 10-17-45

SECTION THRU MANDRAIL Scale: 1/2" = 1'-0"

NOTE: If fabricator uses these drawings for shop plans he shall check same and assume full responsibility for the accuracy of the work. The fabricator shall contact the nearest District Engineer of the State Highway Commission of Indiana in regard to inspection.

ERECTOR PLAN & DESIGN DATA
STANDARD STEEL TRUSS
STATE HIGHWAY COMMISSION OF INDIANA

SCALE: AS NOTED
RECOMMENDED FOR APPROVAL: *A. D. Dumbell*
SEPTEMBER 1, 1945
SPAN: 125'-0"
28'-0" ROADWAY
2'-0" WALKS
DRAWING: 1 OF 10
STANDARD NO. 1556

INDEX

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SHEET NO. 2	STANDARD CROSS SECTIONS. D-I-G-R Rev. March 1, 1947
SHEET NO. 2A	STANDARD CROSS SECTIONS. C-I-G-R Rev. May 24, 1946
SHEET NO. 3-5	TYPICAL CROSS SECTIONS
SHEET NO. 6	STD. PAVEMENT JOINTS
SHEET NO. 7-20	PLAN AND PROFILE
SHEET NO. 21	BRIDGE AND CULVERT DATA—ESTIMATE OF QUANTITIES
SHEET NO. 22-24	MISCELLANEOUS STANDARDS. Sheet "A" Rev. May 2, 1945; Sheet "B" Adopt. March 1947; Sheet "C" Rev. March 25, 1947
SHEET NO. 25-26	MISCELLANEOUS STANDARDS. Sheet "D" Adopt. March 1947; Sheet "E" Adopt. 1947
SHEET NO. 27-28	MISCELLANEOUS STANDARDS. Sheet "F" Rev. April 1, 1947; Sheet "G" Rev. March 25, 1947
SHEET NO. 29-30	MISCELLANEOUS STANDARDS. Sheet "H" Rev. March 25, 1947; Sheet "I" Rev. May 31, 1947
SHEET NO. 31	STD. STRUCTURE CONNECTIONS FOR EXTENSIONS. Adopt. May, 1934
SHEET NO. 32	STD. REINF. CONC. BOX CULVERT. Rev. May 20, 1948
SHEET NO. 33	SKEWED END AND WING DETAILS FOR STD. R.C. BOX CULV. ON 15° SKEW. Rev. Feb. 7, 1946
SHEET NO. 34	STD. REINF. CONC. CULV.—SLAB TOP TYPE UNDER FILL 1'-0" TO 5'-0" (10'-0" TO 20'-0" SPAN)
SHEET NO. 35	STD. REINF. CONC. CULV.—SLAB TOP TYPE WITHOUT FILL (10'-0" TO 20'-0" SPAN) 15° SKEW.
SHEET NO. 36	STD. REINF. CONC. CULV.—SLAB TOP TYPE UNDER FILL 1'-0" TO 5'-0" (10'-0" TO 20'-0" SPAN) 15° SKEW.
SHEET NO. 37	STD. REINF. CONC. CULV.—SLAB TOP TYPE WITHOUT FILL (10'-0" TO 20'-0" SPAN) 30° SKEW.
SHEET NO. 38	STD. REINF. CONC. CULV.—SLAB TOP TYPE UNDER FILL 1'-0" TO 5'-0" (10'-0" TO 20'-0" SPAN) 30° SKEW.
SHEET NO. 39	STD. REINF. CONC. CULV.—SLAB TOP TYPE WITHOUT FILL (10'-0" TO 20'-0" SPAN) 45° SKEW.
SHEET NO. 40	STD. GUARD RAIL. Adopt. Aug. 1941
SHEET NO. 41	STD. CONC. SLAB RAILROAD GRADE CROSSING
SHEET NO. 42	ALTERNATE STD. CONC. SLAB RAILROAD GRADE CROSSING
SHEET NO. 43	STEEL BEAM GUARD RAIL. Adopt. April 1947
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SHEET NO. 200	

STATE OF INDIANA
STATE HIGHWAY COMMISSION

PLAN AND PROFILE OF PROPOSED
STATE HIGHWAY
F PROJECT NO. 428(11) (1948)

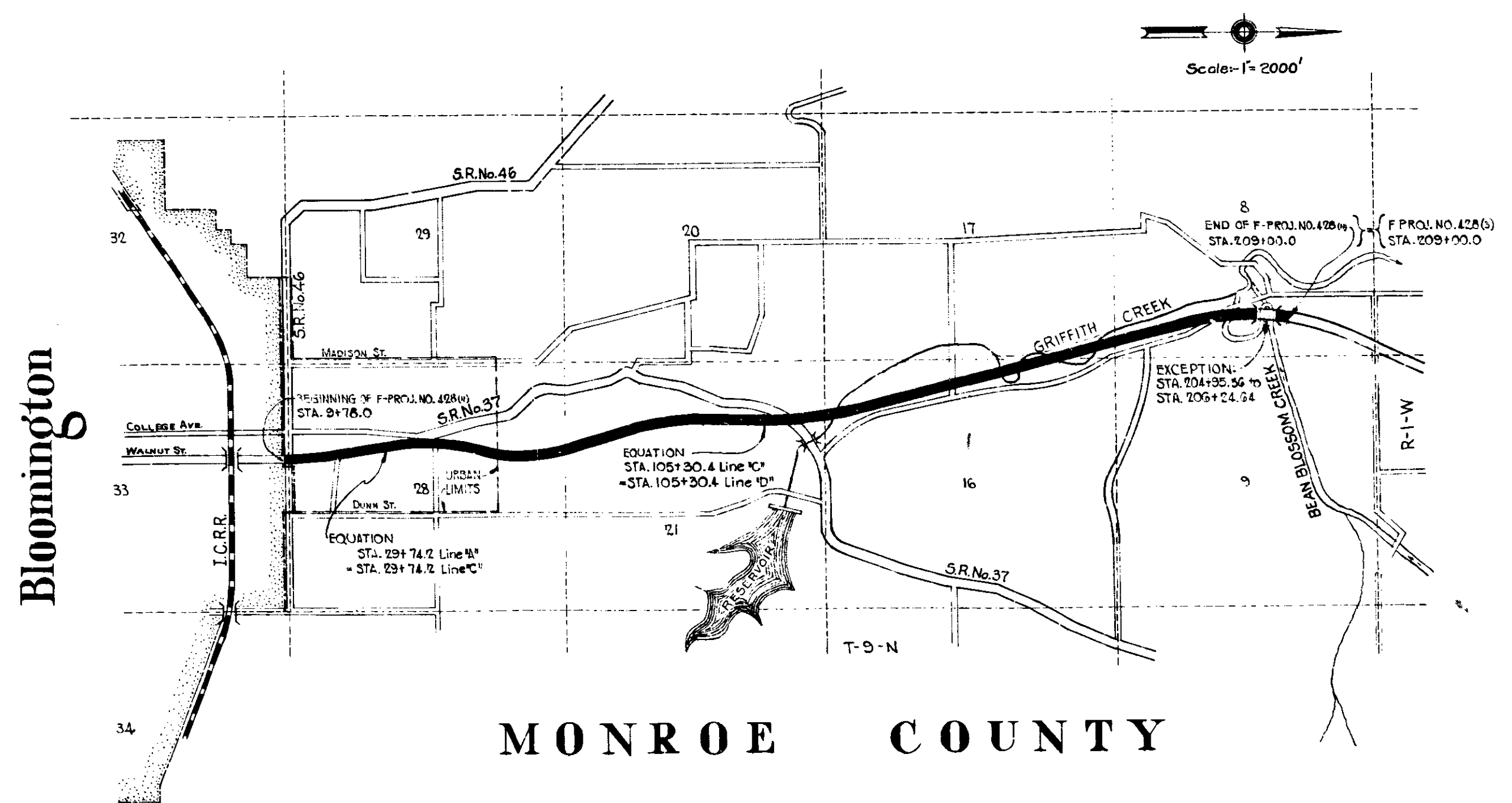
BLOOMINGTON-MARTINSVILLE ROAD

BEGINNING AT A POINT APPROX. 3 FT. NORTH OF THE NORTH CORPORATION LINE OF THE CITY OF BLOOMINGTON AND EXTENDING IN A NORTHWESTERLY DIRECTION TO A POINT APPROX. 3682 FT. NORTH OF THE SOUTH LINE OF SEC. 8-T9N-R1W ALL IN MONROE COUNTY

GROSS LENGTH- 3.773 MI.
NET LENGTH- 3.746 MI.
SCALES-
PLAN LONG- 1" = 50'-100'
TRANS- 1" = 50'-100'
PROFILE HORIZ- 1" = 25'-100'
VERT- 1" = 10'
MAX. GRADE 4.000%

FEDERAL ROAD DIVISION NO.	STATE	PRJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	IND.	428(11)	1948	1	94

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A-13-48	6	E.P.W.
A-14-48	7	E.P.W.
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A-16-48	9	E.P.W.
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A-100-48	93	E.P.W.
A-101-48	94	E.P.W.



APPROVED AND ADOPTED 5-19-48
By STATE HIGHWAY COMMISSION OF INDIANA

John A. Lamm
STATE HIGHWAY ENGINEER, COMMISSION OF INDIANA

APPROVED 5-18-48
Carl E. Fogelberg
CHIEF ENGINEER, STATE HIGHWAY COMMISSION OF INDIANA

RECOMMENDED FOR APPROVAL _____ DATE _____

DISTRICT ENGINEER
PUBLIC ROADS ADMINISTRATION
FEDERAL WORKS AGENCY

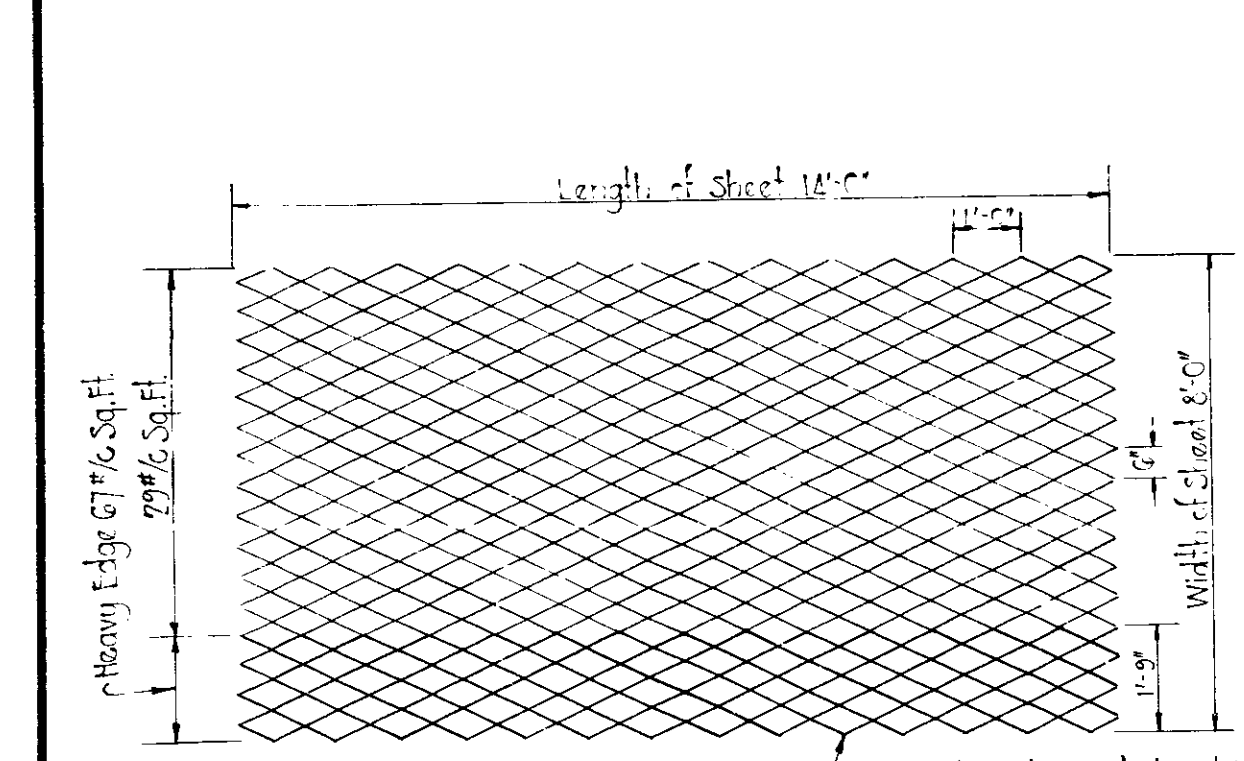
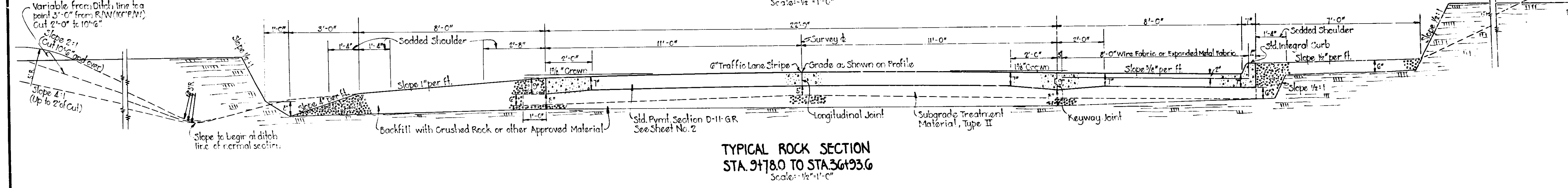
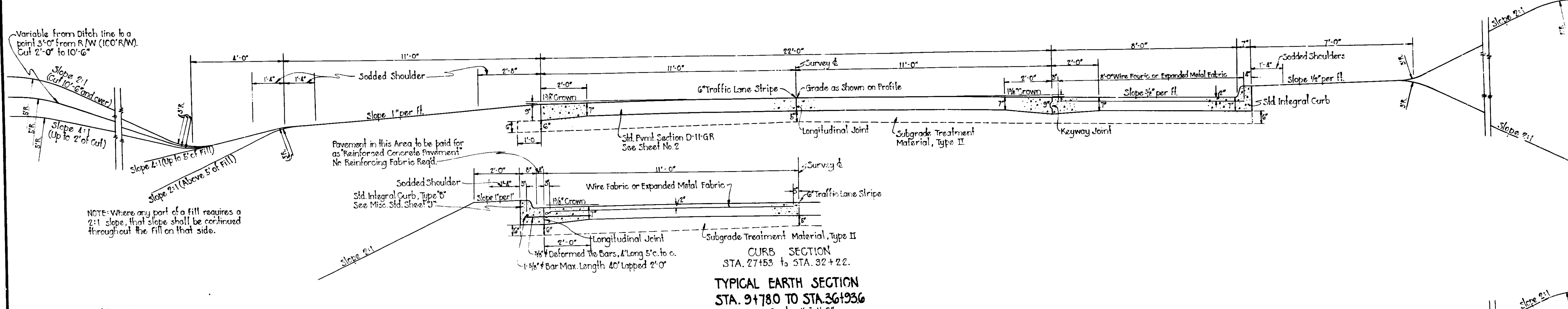
APPROVED _____ DATE _____

DIVISION ENGINEER
PUBLIC ROADS ADMINISTRATION
FEDERAL WORKS AGENCY

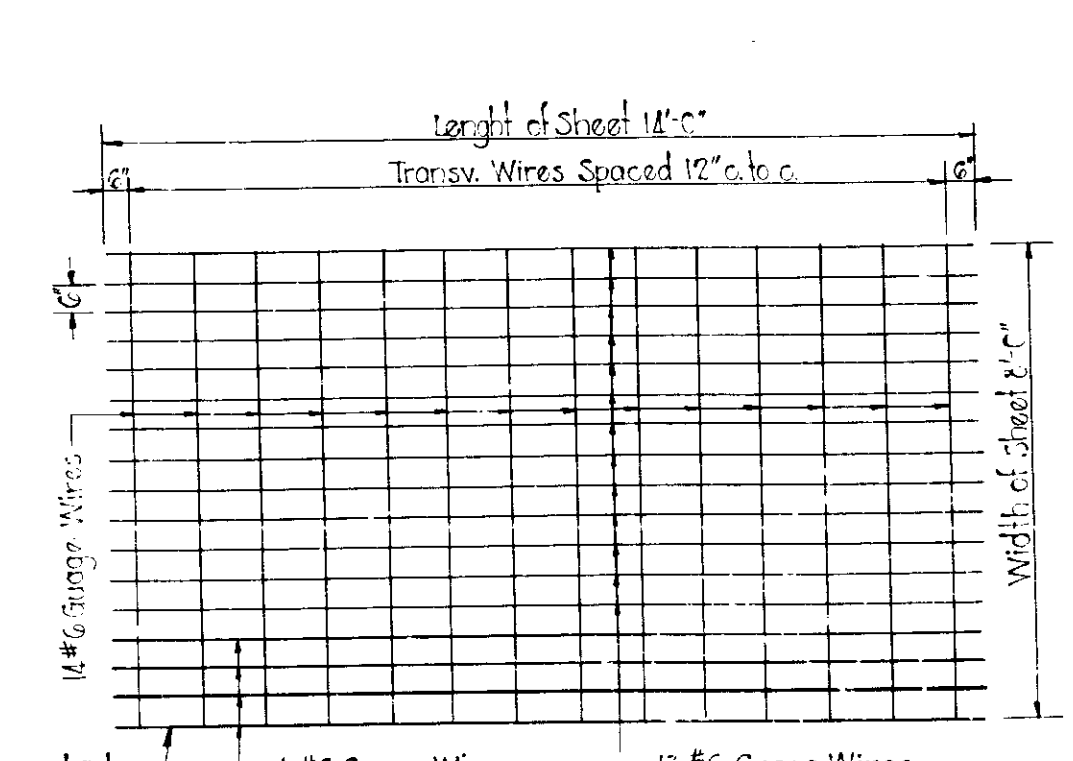
STATE HIGHWAY COMMISSION OF INDIANA
STANDARD SPECIFICATIONS DATED 1946
BASED WITH THESE PLANS.

RECOMMENDED FOR APPROVAL 8-17-45
5-18-48
W. H. Roberts
ENGINEER OF ROAD DESIGN, STATE HIGHWAY COMMISSION OF INDIANA

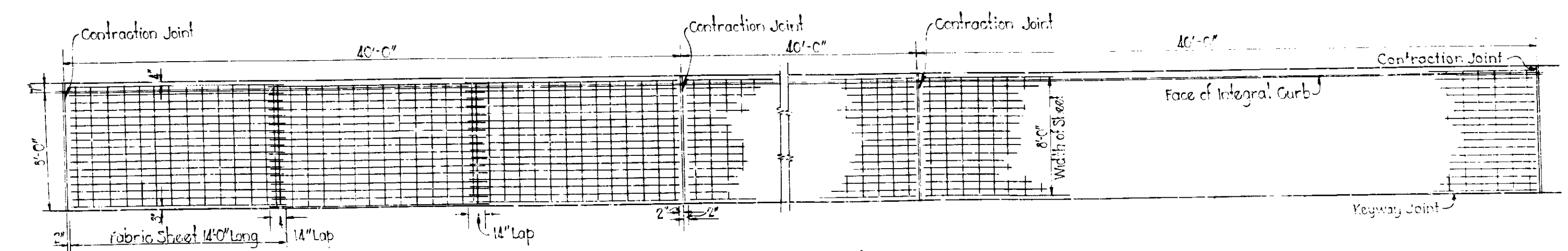
FEDERAL ROAD DIVISION No.	STATE	F. PROJ. NO.	F. CAL. YEAR	SHEET NO.	TOTAL SHEETS
4	IND.	42803	1948	3	34



TYPICAL SHEET EXPANDED METAL FABRIC FOR WIDENED PORTION ONLY
Scale: 3/16"=1'-0"



TYPICAL SHEET WIRE FABRIC FOR WIDENED PORTION ONLY
Scale: 3/16"=1'-0"



PLAN OF REINFORCED CONCRETE SLAB FOR WIDENED PORTION ONLY
Scale: 3/16"=1'-0"

TYPICAL CROSS SECTIONS

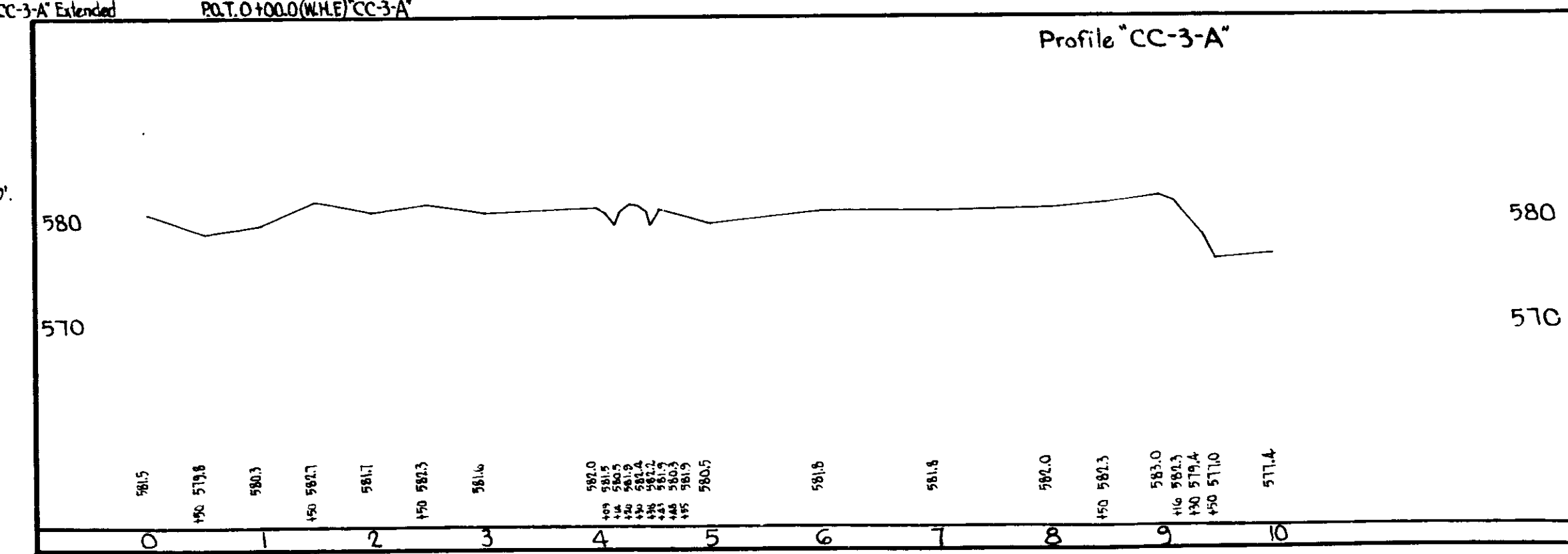
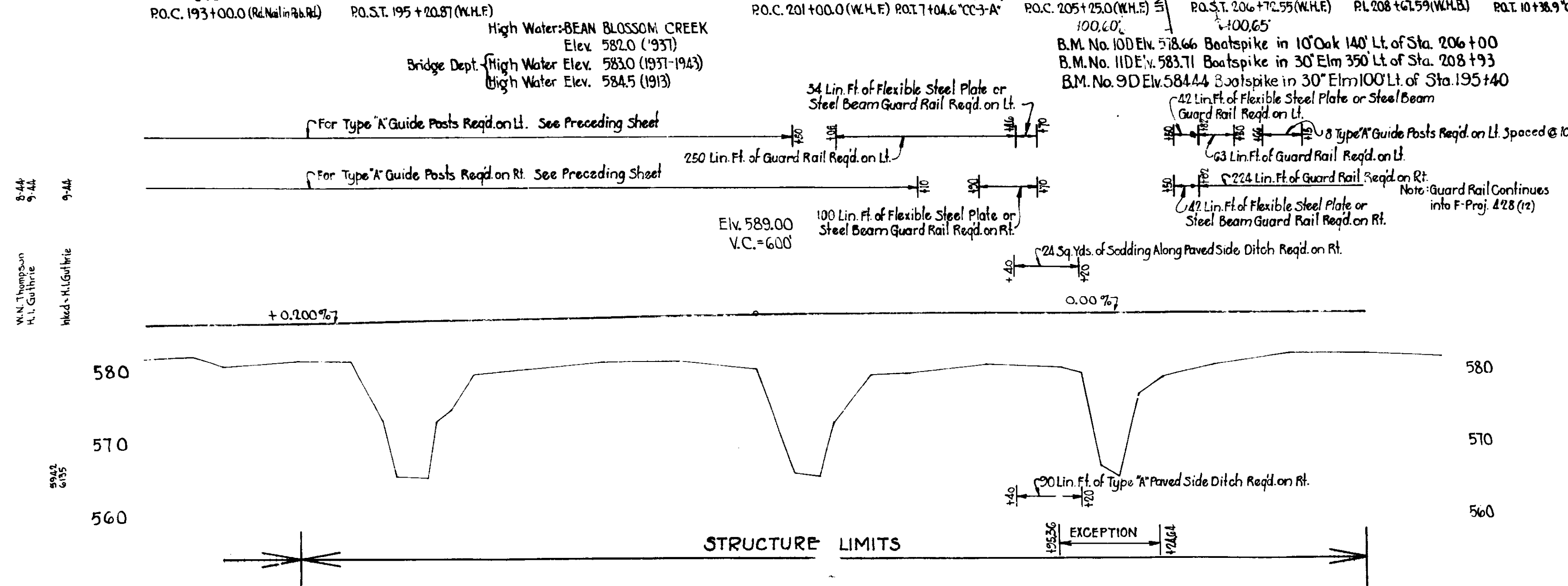
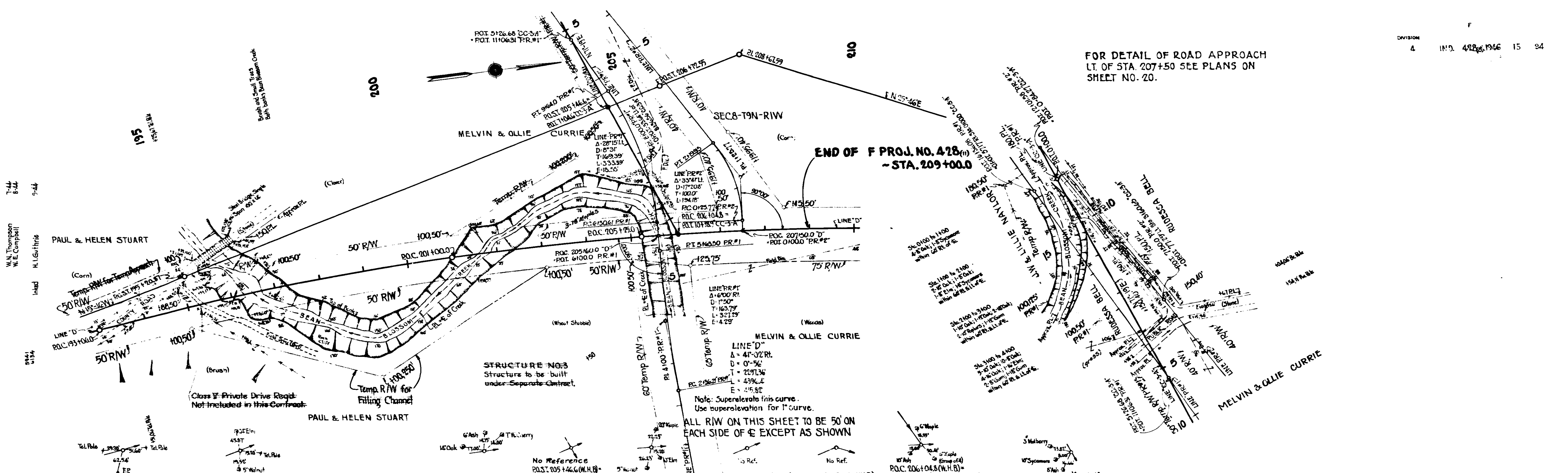
SCALE: AS SHOWN

APPROVED *John A. Lamm*
CHIEF ENGINEER

APPROVED *Carl E. Vogelsang*
CHIEF ENGINEER

RECOMMENDED FOR APPROVAL 5-18-48
W. H. Behrens

FOR DETAIL OF ROAD APPROACH
LT. OF STA. 207+50 SEE PLANS ON
SHEET NO. 20.



93	94	95	96	97	98	99	200	01	02	03	04	205	06	07	08	09	210
582.0	583.0	584.5	585.0	585.5	586.0	586.5	587.0	587.5	588.0	588.5	589.0	589.5	590.0	590.5	591.0	591.5	592.0

Rehabilitation Plans - A

BRIDGES OVER 20' SPAN				
PUBLIC ROAD REGION NO.	STATE	PROJECT NO.	FISCAL YEAR	TOTAL SHEETS
4	IND.	HPR 1(7)	1969	22

INDEX						
PROJECT	STRUCTURE	TYPE	SPAN	OVER	STATION	CONTRACT NO.
HPR 1(7)	37-53-3629A	REPAIRS TO STEEL TRUSS	125'	BEAN BLOSSOM CREEK	205 + 60	B-8230
SHEET NO.	SHEET DESIGNATION	SUBJECT				B.P.R. APPROVAL
1	S 1 (STR. 37-53-3629A)	INDEX & TITLE SHEET				
2	S 2	GENERAL PLAN				
3	S 3	SLAB LAYOUT				
4	S 4	SLAB DETAILS				
5	S 5	DETAILS				
6	S 6	DETAILS				
7	S 7	ALUMINUM RAILING DETAILS				
8	S 8	ALUMINUM RAILING DETAILS				
9	S 9	TYPE A EXPANSION JOINT DETAILS				
10	S 9	SUMMARY				
11	ONE SHEET					

STATE OF INDIANA
INDIANA STATE HIGHWAY COMMISSION

BRIDGE PLANS

FOR SPANS OVER 20 FEET

ON

STATE ROAD NO. 37 SECTION

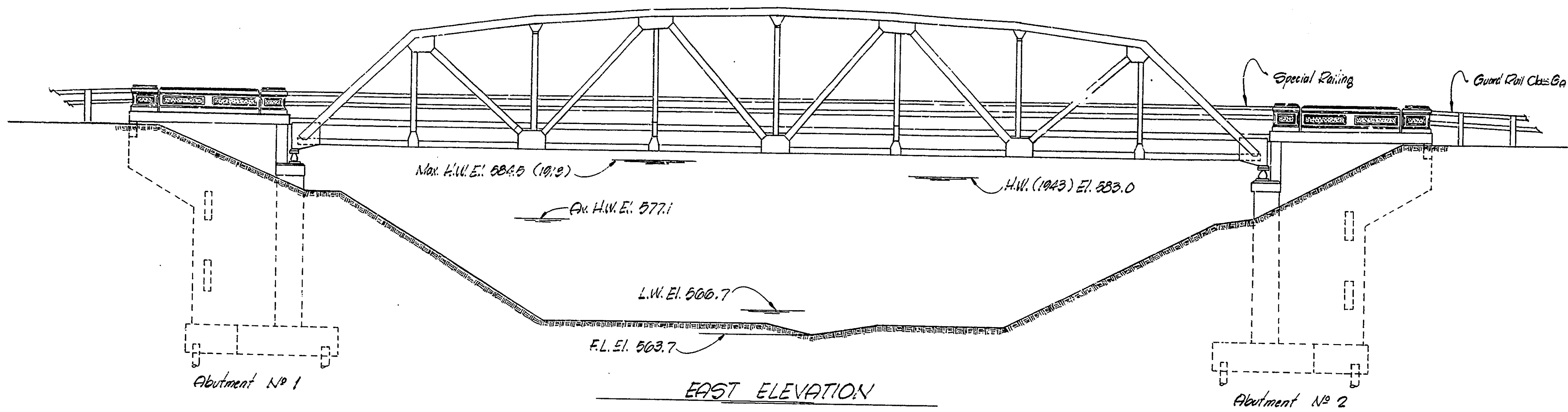
F.A. PROJECT NO. HPR 1(7) RE. & CONST.

BLOOMINGTON-MARTINSVILLE ROAD

STRUCTURE 37-53-3629A IS LOCATED AT A POINT ON PRESENT S.R. 37 APPROX. 3345' NORTHWEST OF THE SOUTH LINE OF SECTION 8, T.9N.-R.1W., MONROE COUNTY.

INDEX CONTINUED				
STANDARD DRAWINGS				
SHEET NO.	SHEET DESIGNATION	SUBJECT	B.P.R. APPROVAL	ADOPTED REVISION
12	BRIDGE STD. C1	STANDARD MISCELLANEOUS DETAILS		R-10-1-69
	BRIDGE STD. C2	STANDARD MISCELLANEOUS DETAILS		
	BRIDGE STD. D	CASTING DETAILS ROADWAY DRAINS		
	BRIDGE STD. F	ROADWAY DRAIN OUTLET DETAILS		
	BRIDGE STD. J	EXPANSION JOINT		
	BRIDGE STD. M	MISCELLANEOUS APPROACH DETAILS		
	BRIDGE STD. M4	R.C. BRIDGE APPROACH TURNOUT DETAILS-12'-6" SHOULDERS		
	BRIDGE STD. M5	SLOPEWALL AND DRAINAGE DETAILS		
	BRIDGE STD. P8	PRESTRESSED CONCRETE TYPE I BEAMS		
	BRIDGE STD. P8B	PRESTRESSED BOX BEAMS		
	BRIDGE STD. P8C	PRESTRESSED COMPOSITE BOX BEAMS WIDE		
	BRIDGE STD. P8D	TOLERANCES FOR FABRICATION OF PRESTRESSED BEAMS		
	BRIDGE STD. P8E	ELASTOMERIC BEARING PAD DETAILS		
	BRIDGE STD. P8F	ALUMINUM RAILING-TYPE 5		
	BRIDGE STD. P8G	ALUMINUM RAILING DETAILS		
	BRIDGE STD. P8H	STEEL RAILING-TYPE C		
	BRIDGE STD. P8I	BRIDGE LIGHTING DETAILS		
13	BRIDGE STD. BR1	ALUMINUM BRIDGE RAILING	9-26-69	R-8-1-69
14	BRIDGE STD. BR2	ALUMINUM BRIDGE RAILING DETAILS	9-26-69	R-8-1-69
	BRIDGE STD. S1	TYPICAL DETAILS FOR PLACING GRADE "B" SPECIAL BORROW		
	BRIDGE STD. S2	TYPICAL DETAILS FOR PLACING GRADE "B" SPECIAL BORROW		
	BRIDGE STD. T SHEET A	STANDARD TEMPORARY BRIDGE		
	BRIDGE STD. T SHEET B	STANDARD TEMPORARY BRIDGE		
15	ROAD STD. SHEET A	STANDARD PAVEMENT JOINTS		R-11-3-69
16	ROAD STD. SHEET MA	MISCELLANEOUS STANDARDS	8-27-69	R-4-1-69
	ROAD STD. SHEET MB	MISCELLANEOUS STANDARDS		
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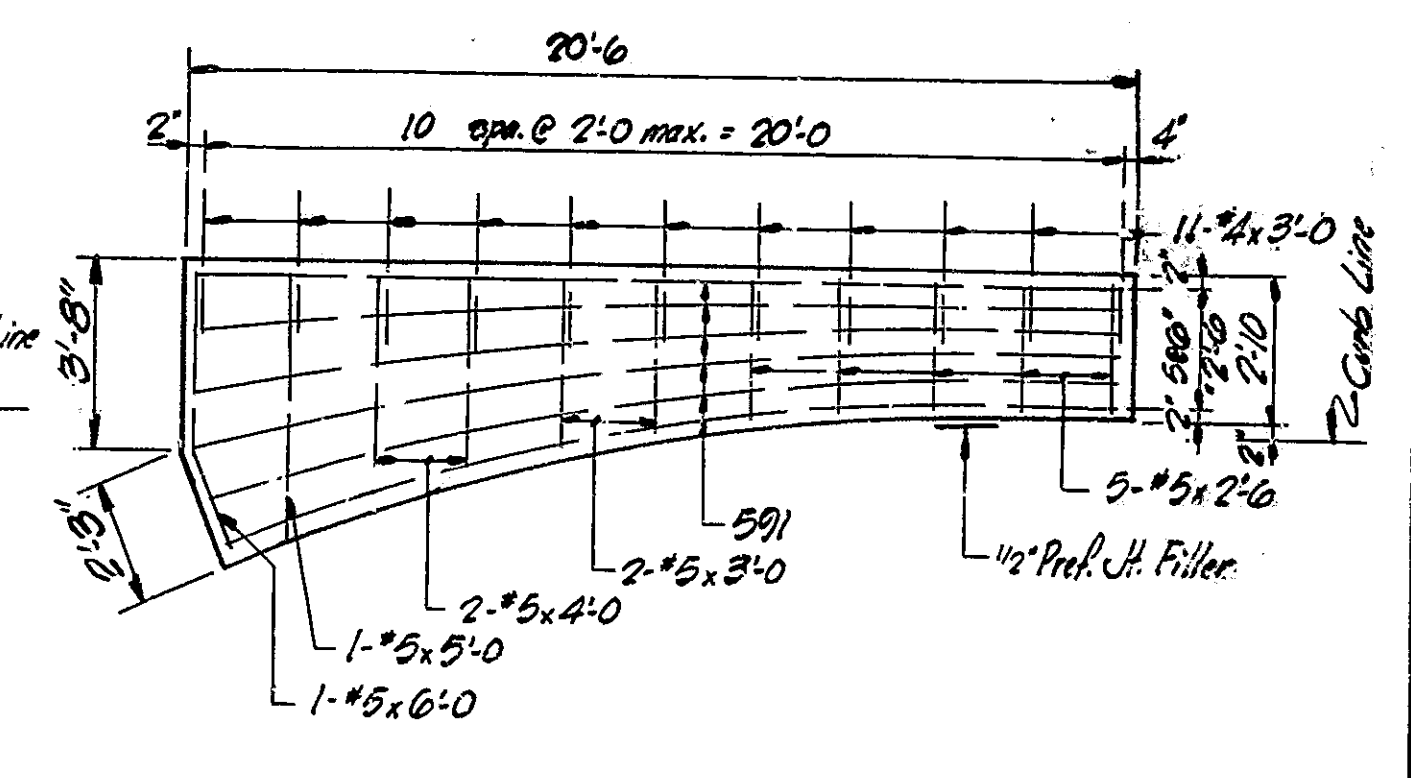
BRIDGES OVER 20' SPAN					
PUB. ROAD RES. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	IND.	HRP 1(7)	1970	2	22



CONSTRUCTION PROCEDURE

- Remove Bridge floor out to out structure. Do not damage structural steel.
- Remove R.C. Pavement at each end of structure for a distance of 50'. If in the opinion of the Engineer the settlement at ends of bridge is enough to prevent a dip, the removal shall be limited to the 20'-6" R.C. Bridge Approach.
- Remove mudwalls as shown on details, leaving vertical steel in place undamaged. The steel may be bent aside as necessary to clear Jacking Equipment for Post Tensioning the slabs.
- Cut the Metal Plate Expansion Joint at Gutter line and grind smooth.
- Place Epoxy Mortar on floor Beams and outside Stringers as set out on Drwg 59.
- Place the Precast Prestressed Slab as set out on the Detail Plans. Post Tension the slabs together and secure to stringers and floor beams.
- Fill the joints between slabs and place Epoxy Mortar between between interior stringers and slabs as set out on Drwg 55.
- Pour the blockouts on slab 5B1.
- Repair the mudwalls and place the Rubber Expansion Joint.

Note: 89' of Guard Rail Class C-6 with Curved End Reg'd. at each Corner of Structure.



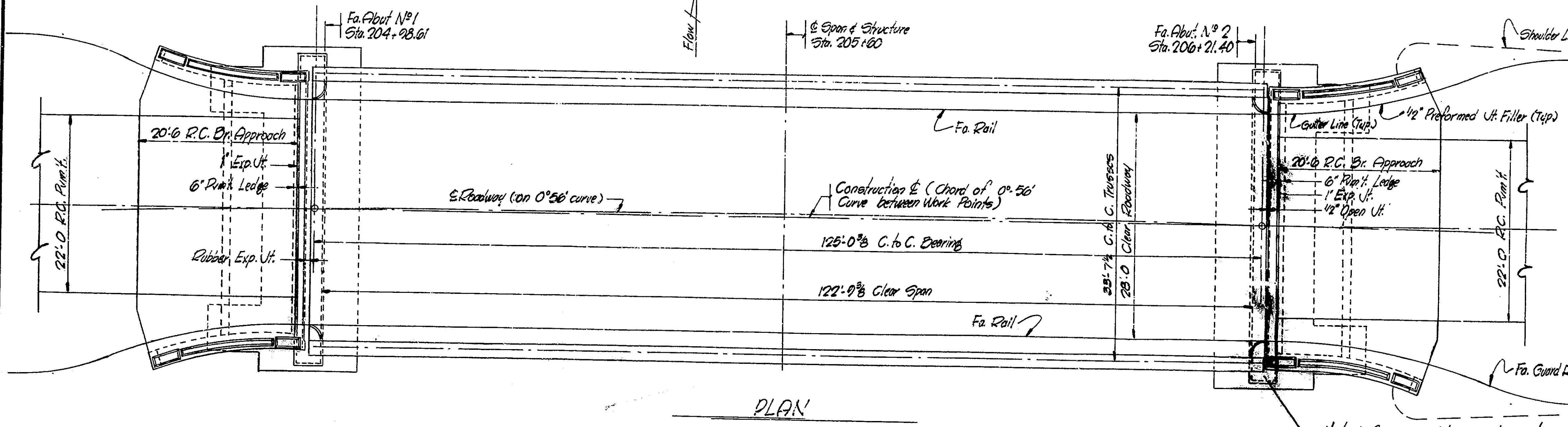
DETAIL OF WIDENED PAVEMENT

Scale: 1/4" = 1'-0"

BILL OF MATERIALS

(Includes R.C. Br. Approach)

REINFORCING STEEL			
SIZE & MARK	NO OF BARS	LENGTH	WEIGHT (LBS)
#3	112	20'-6"	
#5	22	21'-6"	
#5	4	6'-0"	
#5	4	3'-0"	
#5	2	4'-0"	
#5	3	3'-0"	
#2	20	7'-6"	
Total #5			3494
#4	44	3'-0"	88
Total Steel			3582

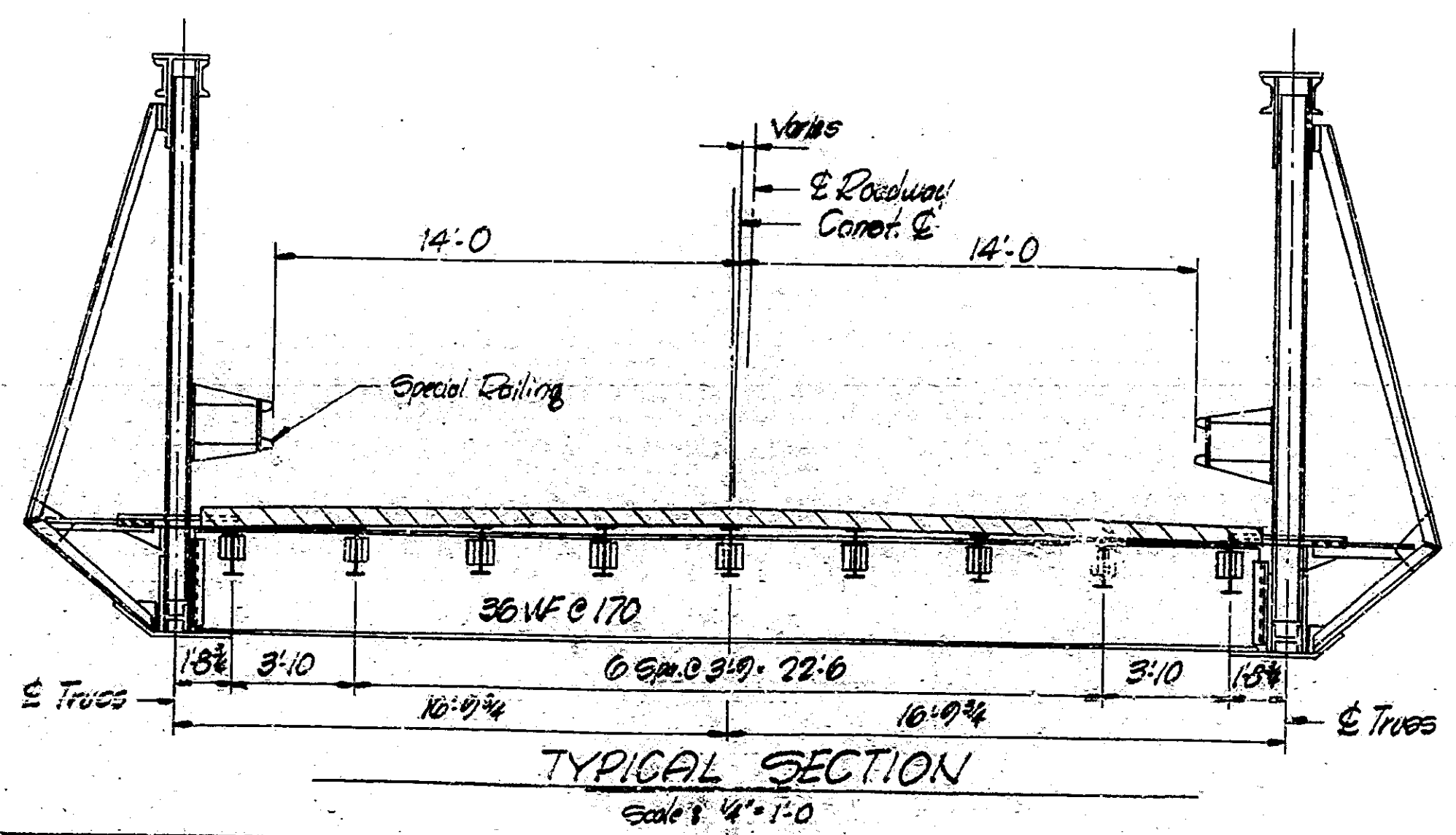


PLAN

Note: Repair Bridge Seat East End Approx. 35' Painting Concrete Masonary.

STANDARD DRAWINGS

Br. Std.	Ref. Std.	Purpose
B21		Aluminum Bridge Railing
B22		Aluminum Bridge Railing Details
C1		Rein. Bar Notes, 1" Exp. Jt.
A		Panel Joints and Details
MR		R.C. Bridge Approach
GR4		Guard Rail
GR2		Guard Rail
St. #1		Std. Detour Signs
St. #2		Std. Detour Signs
St. #3		Std. Detour Signs
St. #4		Std. Detour Signs
St. #5		Special Signs



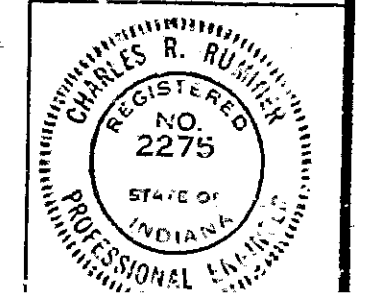
TYPICAL SECTION

GENERAL PLAN
 REPAIRS TO STEEL TRUSS BRIDGE
 1 SPAN @ 125'-0" 28'-0" ROADWAY
 OVER BEAN BLOSSOM CREEK ON STATE ROAD 37
 INDIANA STATE HIGHWAY COMMISSION
 MONROE COUNTY

SCALE: 1/8" = 1'-0" UNLESS NOTED JULY 25 1969

RECOMMENDED FOR APPROVAL: *Ch. Rummey*

DRAWING: 51 of 9
 PROJECT: HRP 1(7)
 BRIDGE CONTRACT NO. B-8230
 BRIDGE FILE: 57-53-3020 A



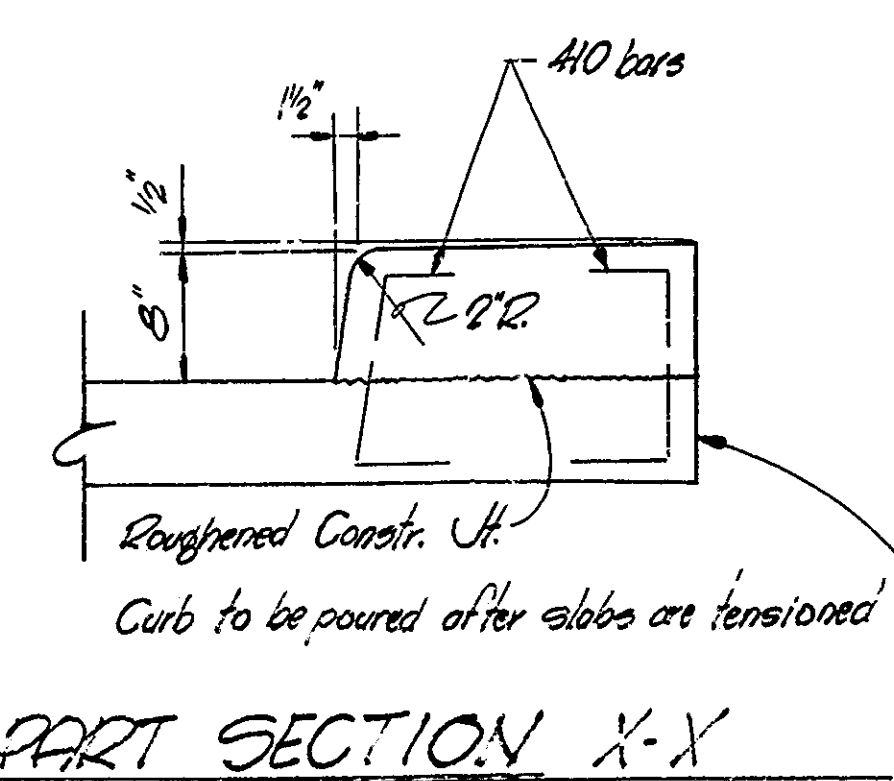
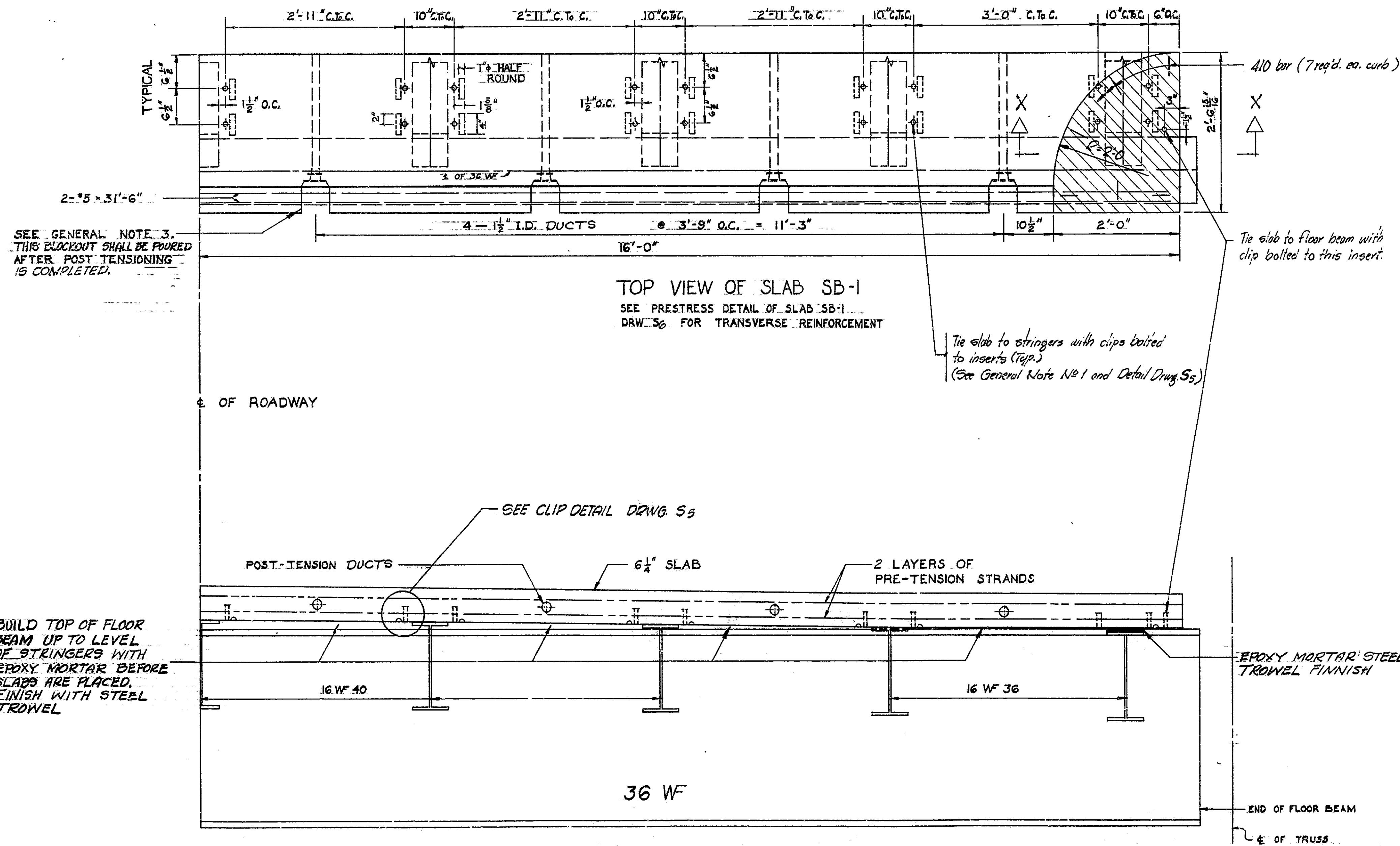
DESIGNED: _____ CK'D: _____
 DRAWN: LRS 7-69 CK'D: _____
 TRACED: _____ CK'D: _____

Rev. 12/2/69 ~ Painting Masonary

BRIDGES OVER 20' SPAN					
PUB. ROAD REG. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	IND.	HPR 1(7)	1970	4	22

GENERAL NOTES

- SLABS SHALL BE PLACED FROM THE NORTH END TO THE SOUTH END. SLAB SB-4 SHALL BE ANCHORED TO STRINGER S-5. SUCCEEDING SLABS SHALL BE PLACED AND PULLED TIGHT AGAINST PREVIOUSLY PLACED SLAB AND CLAMPED LOOSELY TO STRINGER S-5. AFTER ALL SECTIONS ARE PLACED THEY SHALL BE POST TENSIONED AND ANCHORED TO THE REMAINING STRINGERS AND FLOOR BEAMS.
- PRESTRESSED SLABS, EPOXY MORTAR, CLIPS, POST TENSIONING STRANDS, ANCHORS, GROUT, MORTAR, JT. SEALANT, AND ALL OTHER MATERIALS, EQUIPMENT, AND LABOR NECESSARY TO BUILD AND PLACE THE SLABS SHALL BE INCLUDED IN THE COST OF "CONCRETE STRUCTURAL MEMBERS."
- FABRICATOR SHALL PROVIDE SHOP DRAWINGS WHICH SHOW POST TENSION ANCHORAGE SYSTEM AND OTHER NECESSARY DETAILS.



HALF-VIEW OF SECTION 1-1 (SEE DRAW S2)

SLAB DETAILS INDIANA STATE HIGHWAY COMMISSION

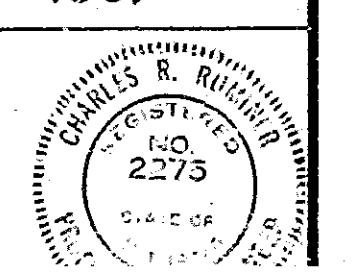
SCALE: NOT TO SCALE

JULY 25 1969

RECOMMENDED FOR APPROVAL:

Charles R. Rimmer
ENGINEER OF BRIDGE DESIGN

DRAWING: S3 OF 9
PROJECT: HPR 1(7)
BRIDGE CONTRACT NO. B-2220



RIGHT OF WAY PLANS

STATE OF INDIANA

INDIANA STATE HIGHWAY COMMISSION

PLAN AND PROFILE OF PROPOSED STATE HIGHWAY

ST - F - 428 ~~(16) PE~~
~~(17) R/W~~
~~(18) CONST.~~
~~(19) UTIL.~~

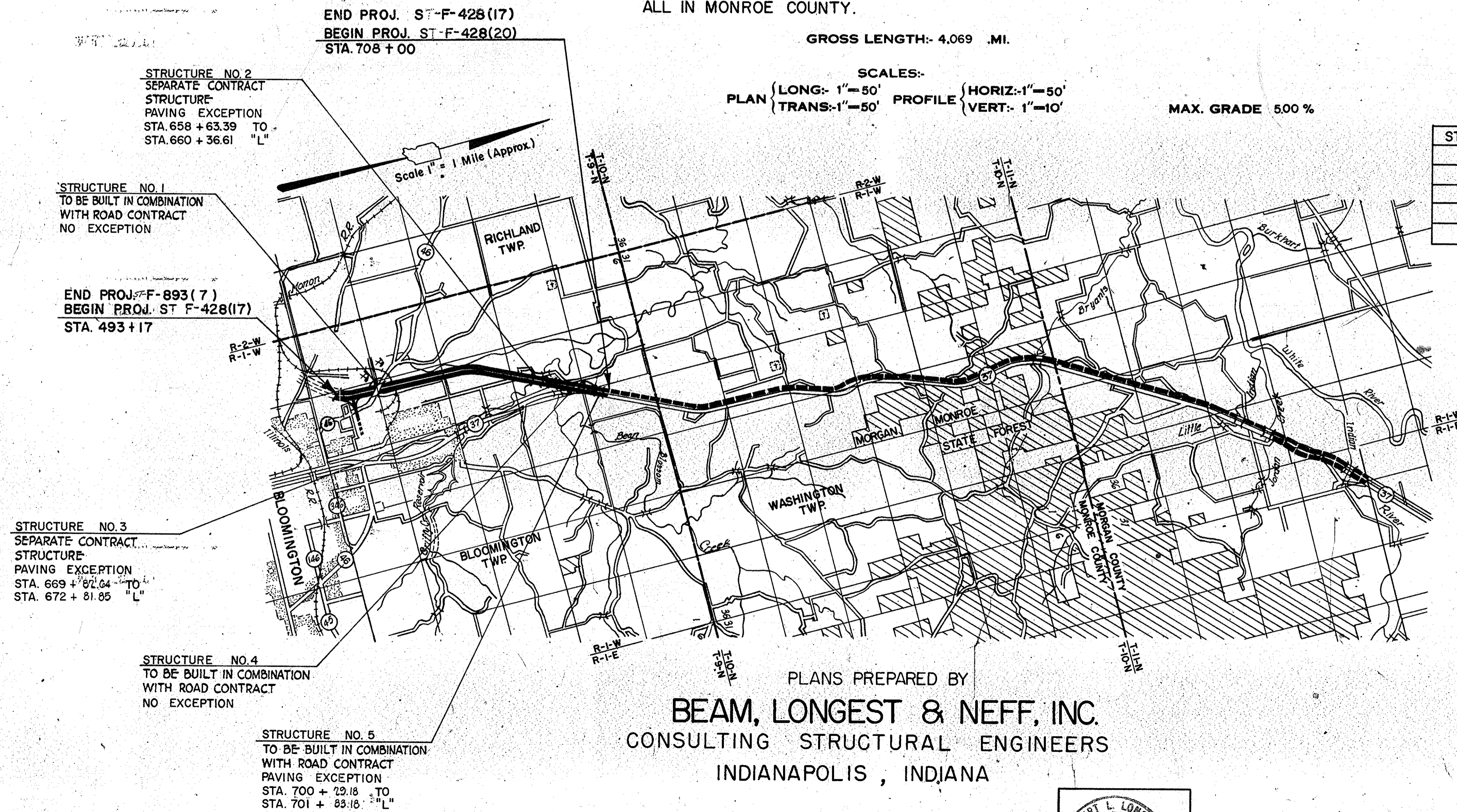
ST - F - PROJECT NO. 428

Code No. 0936

BEGINNING AT A POINT APPROXIMATELY 2584 FEET SOUTH OF SR. NO. 46 APPROXIMATELY ONE MILE EAST OF THE WEST LINE OF BLOOMINGTON TOWNSHIP AND RUNNING NORTHEASTERLY A DISTANCE OF 21,483 FEET TO A POINT ALONG THE WEST RIGHT-OF-WAY LINE OF SR. NO. 37 APPROXIMATELY 618 FEET NORTH OF THE STRUCTURE OVER BEAN BLOSSOM CREEK OVERFLOW ALL IN MONROE COUNTY.

GROSS LENGTH: 4.069 MI.

SCALES:
PLAN { LONG: 1"=50' TRANS: 1"=50' } PROFILE { HORIZ: 1"=50' VERT: 1"=10' } MAX. GRADE 5.00 %



STRUCTURE NO. 2
SEPARATE CONTRACT
STRUCTURE
PAVING EXCEPTION
STA. 658 + 63.39 TO
STA. 660 + 36.61 "L"

STRUCTURE NO. 1
TO BE BUILT IN COMBINATION
WITH ROAD CONTRACT
NO EXCEPTION

END PROJ. ST-F-893(7)
BEGIN PROJ. ST-F-428(17)
STA. 493 + 17

STRUCTURE NO. 3
SEPARATE CONTRACT
STRUCTURE
PAVING EXCEPTION
STA. 669 + 87.64 TO
STA. 672 + 81.85 "L"

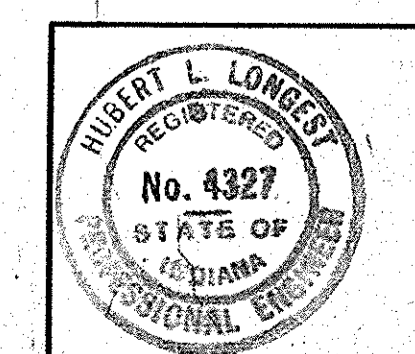
STRUCTURE NO. 4
TO BE BUILT IN COMBINATION
WITH ROAD CONTRACT
NO EXCEPTION

STRUCTURE NO. 5
TO BE BUILT IN COMBINATION
WITH ROAD CONTRACT
PAVING EXCEPTION
STA. 700 + 29.18 TO
STA. 701 + 83.18 "L"

PLANS PREPARED BY
BEAM, LONGEST & NEFF, INC.
CONSULTING STRUCTURAL ENGINEERS
INDIANAPOLIS, INDIANA

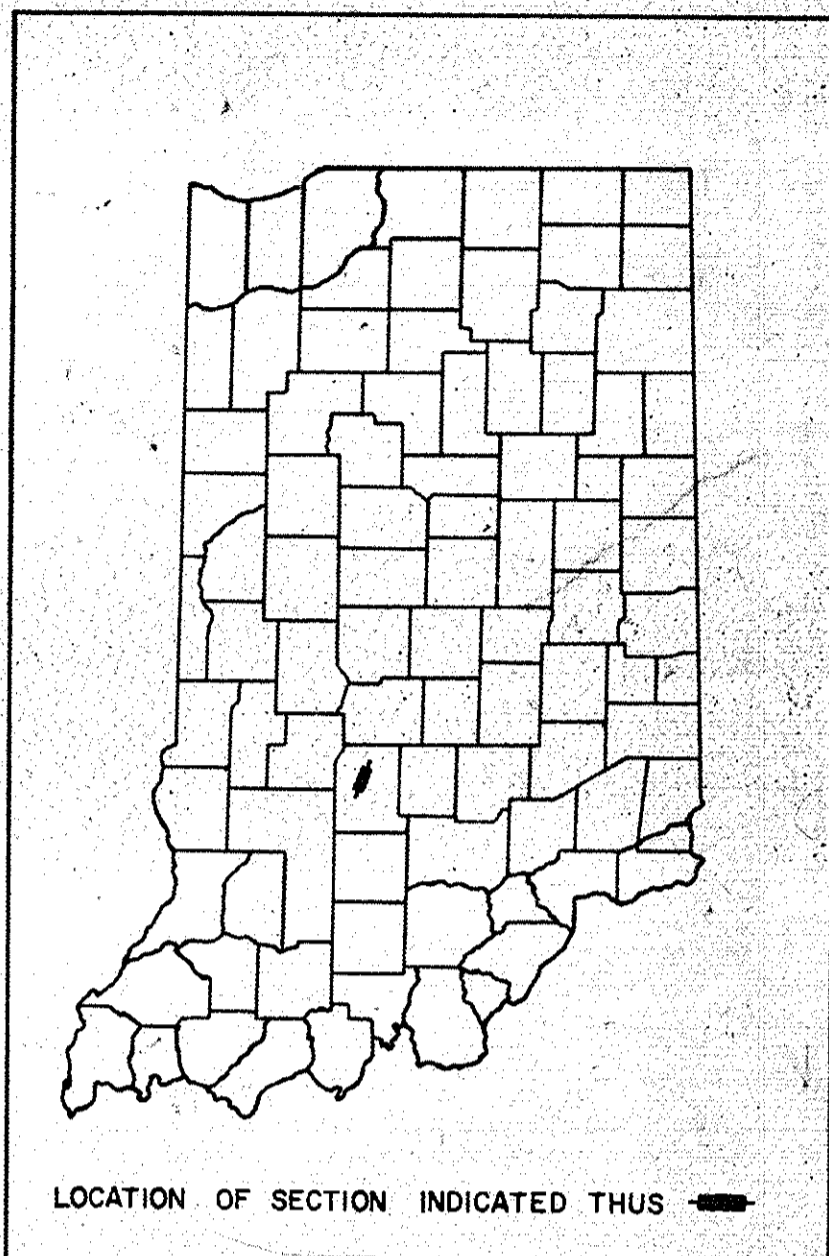
SUBMITTED FOR APPROVAL DATE November 6 1968

SIGNED Hubert L. Longest
BEAM, LONGEST & NEFF, INC.



FEDERAL ROAD REGION NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	IND.	ST-F-428(17)	1968	1	

DESIGN DATA	
ADT (1970)	9490 V.P.D.
ADT (1990) PROJECTED	18,840 V.P.D.
D.H.V. (1990)	2100 V.P.H.
DIRECTIONAL DISTRIBUTION	52 %
TRUCKS D.H.V.	8 % A.D.T. 19 %
DESIGN SPEED	70 M.P.H.
ACCESS CONTROL	PARTIAL



R/W PLANS FOR THIS PROJECT INCLUDES R/W FOR SEPARATE AND COMBINED CONTRACT STRUCTURES

STR. NO.	PROJECT	BRIDGE FILE
1	ST-F-428(18)	46-F-5766
2	ST-F-428()	37-J9-5963
3	ST-F-428()	37-J9-5964
4	ST-F-428(18)	37-J-5986
5	ST-F-428(18)	37-J-3630 A 37-J-3630 J

LEGEND

- (A) BARRICADE TYPE "A"
- (B) BARRICADE TYPE "B"
- (C) TYPICAL SIGN STANDARDS
- (D) CONSTRUCTION IDENTIFICATION SIGN

DESIGNED BY _____

SQUAD CHIEF _____

RECOMMENDED FOR APPROVAL _____

ASSISTANT ENGINEER OF PLANS AND SPECIFICATIONS _____

RECOMMENDED FOR APPROVAL _____

ENGINEER OF PLANS AND SPECIFICATIONS - INDIANA STATE HIGHWAY COMMISSION _____

APPROVED _____

CHIEF ENGINEER - INDIANA STATE HIGHWAY COMMISSION _____

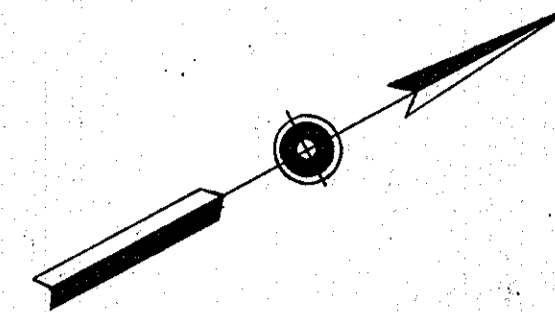
INDIANA STATE HIGHWAY COMMISSION
STANDARD SPECIFICATIONS DATED 1963
TO BE USED WITH THESE PLANS.

BUREAU OF PUBLIC ROADS DEPARTMENT OF COMMERCE	
APPROVED	
DIVISION ENGINEER	DATE

ROAD FILE :-

PROJECT NO.	LINE	SHEET NO.	TOTAL SHEETS	FILE
ST-F-428(17)	"L"	1		

FEDERAL ROAD REGION NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	IND.	37-F-423(17)	1968	44	

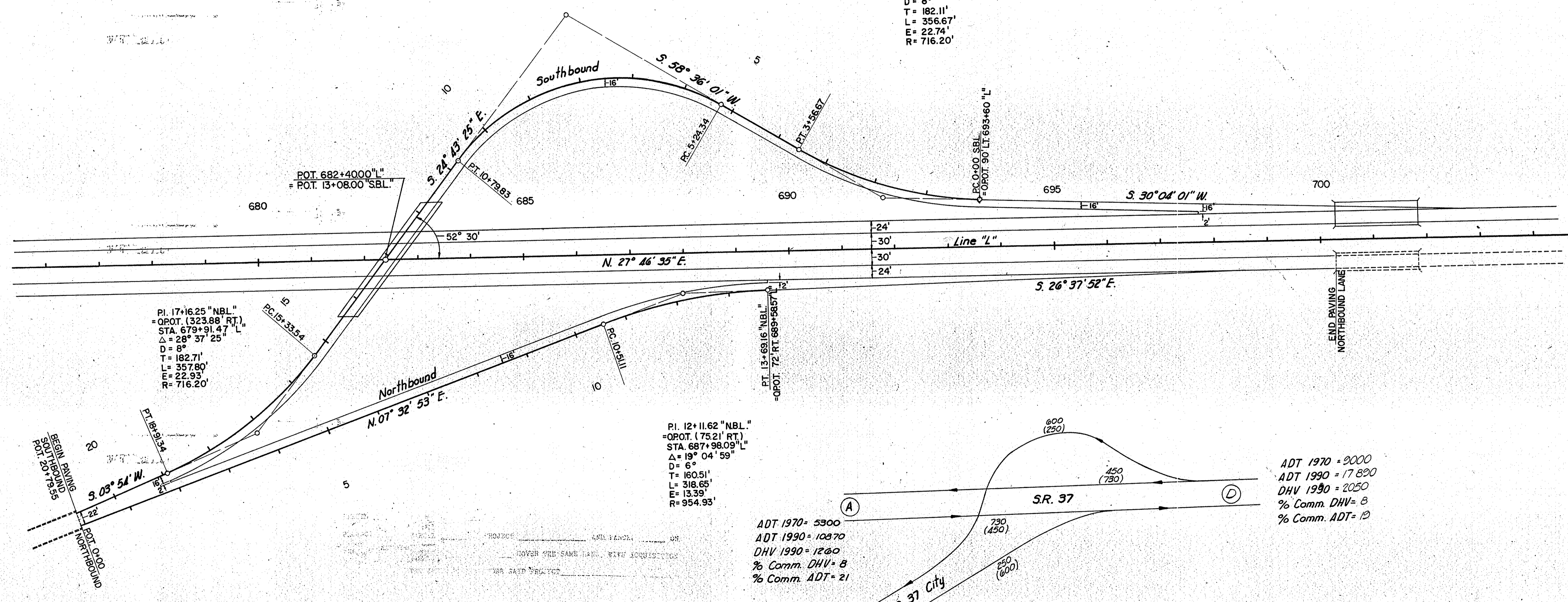


PI. = 8+64.21 "SBL."
 = OPOT. (450.66' LT.)
 STA. 685+85.80 "L"
 $\Delta = 83^\circ 19' 26''$
 $D = 15^\circ$
 $T = 339.87'$
 $L = 555.49'$
 $E = 129.30'$
 $R = 381.97'$

PI. 1+82.11 "SBL."
 = OPOT. (97.28 LT.)
 STA. 691+78.03 "L"
 $\Delta = 28^\circ 32'$
 $D = 8^\circ$
 $T = 182.11'$
 $L = 356.67'$
 $E = 22.74'$
 $R = 716.20'$

PI. 17+16.25 "NBL."
 = OPOT. (323.88' RT.)
 STA. 679+91.47 "L"
 $\Delta = 28^\circ 37' 25''$
 $D = 8^\circ$
 $T = 182.71'$
 $L = 357.80'$
 $E = 22.93'$
 $R = 716.20'$

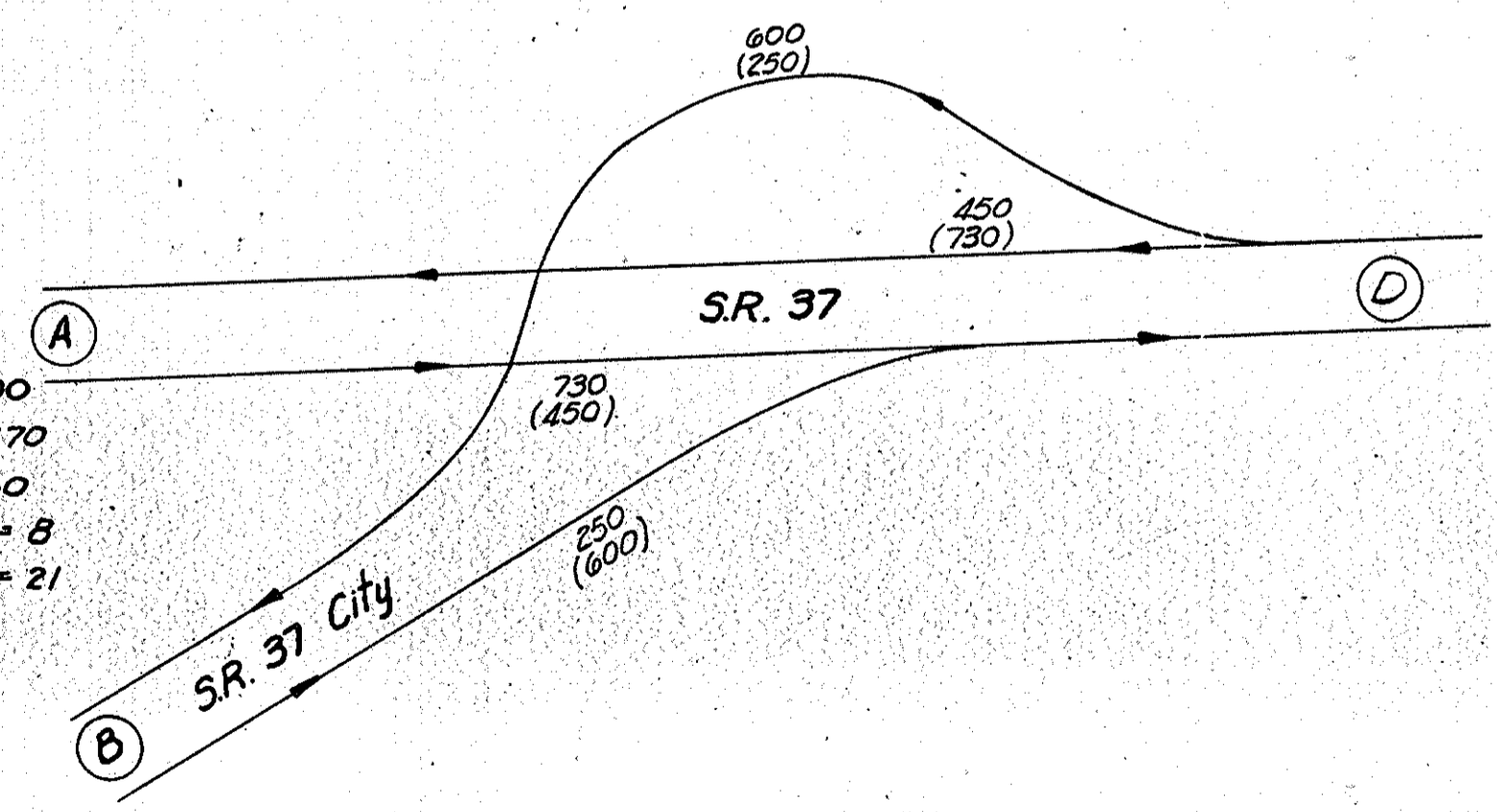
PI. 12+11.62 "NBL."
 = OPOT. (75.21' RT.)
 STA. 687+98.09 "L"
 $\Delta = 19^\circ 04' 59''$
 $D = 6^\circ$
 $T = 160.51'$
 $L = 318.65'$
 $E = 13.39'$
 $R = 954.93'$



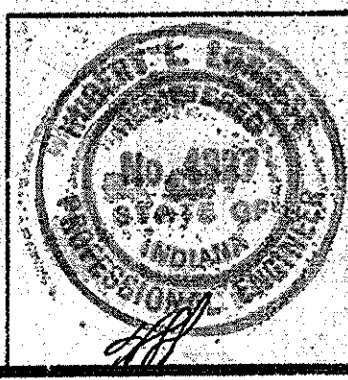
ADT 1970 = 5300
 ADT 1990 = 10370
 DHV 1990 = 1260
 % Comm. DHV = 8
 % Comm. ADT = 21

ADT 1970 = 4300
 ADT 1990 = 8180
 DHV 1990 = 940
 % Comm. DHV = 7
 % Comm. ADT = 17

ADT 1970 = 9000
 ADT 1990 = 17820
 DHV 1990 = 2050
 % Comm. DHV = 8
 % Comm. ADT = 19



INTERCHANGE GEOMETRICS
 S.R. 37 WITH
 EXISTING S.R. 37
DETAILS
 SCALE: 1" = 100'



November 6, 1964

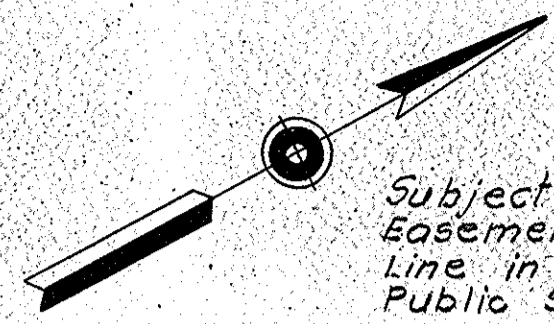
PROJECT NO.	LINE	SHEET NO.	TOTAL SHEETS	FILE
37-F-423(17)	L1	44		

FEDERAL ROAD REGION NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	IND	ST-F-428(17)	1968	45	

Revised P.L. on Bean Blossom Creek & Co. Road 9-3-69 Victor L. Risch
 APPROVED BY DESIGN 11-12-69 R.L. DODDEK

SECTION 5
 T9N - R1W
 MONROE COUNTY

PI. = 8+64.21" SBL"
 = O.P.O.T. (450.66' LT.)
 STA. 685+85.80" L"
 $\Delta = 83^\circ 19' 26''$
 D = 15'
 T = 339.87'
 L = 555.49'
 E = 129.30'
 R = 381.97'

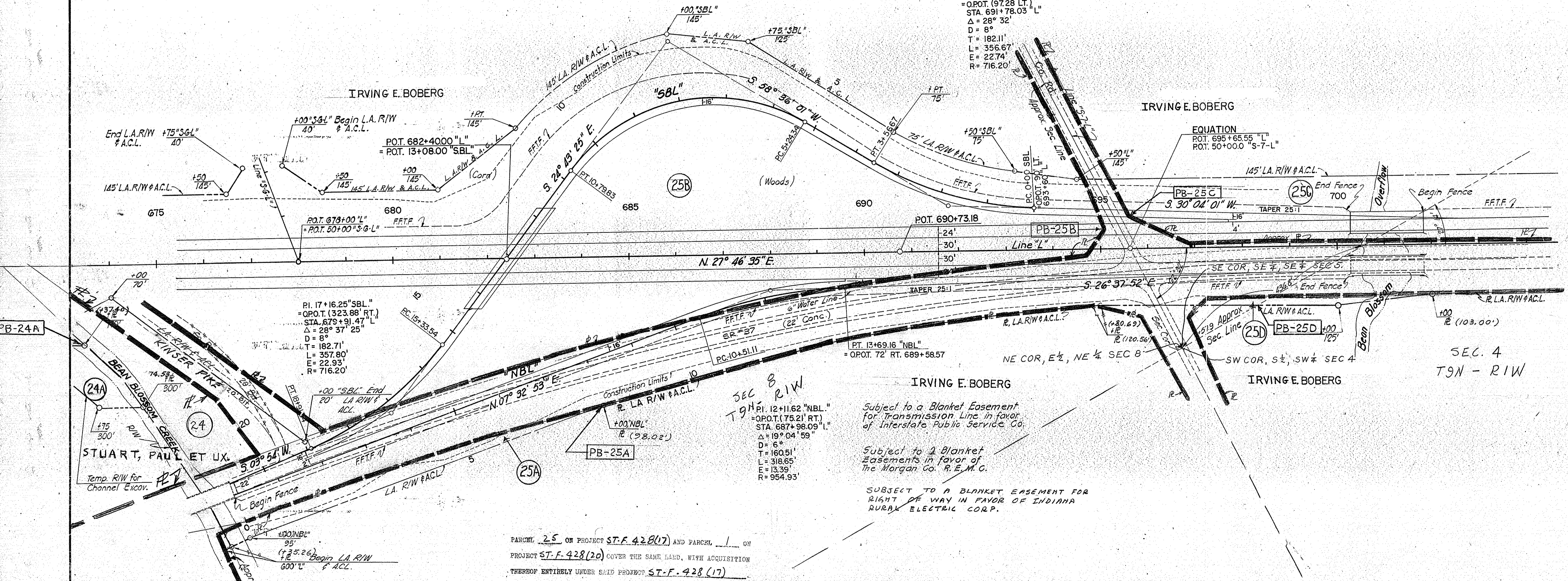


Subject to a Blanket Easement for Transmission Line in favor of Interstate Public Service Co.

Subject to 2 Blanket Easements in favor of The Morgan Co. R.E.M.C.

SUBJECT TO A BLANKET EASEMENT FOR RIGHT OF WAY IN FAVOR OF INDIANA STATEWIDE RURAL ELECTRIC CORP.

PI. 1+82.11" SBL"
 = O.P.O.T. (97.28 LT.)
 STA. 691+78.03" L"
 $\Delta = 28^\circ 32'$
 D = 8'
 T = 182.11'
 L = 356.67'
 E = 22.74'
 R = 716.20'



PB-24A

STUART, PAUL ET UX.

Temp. R/W for Channel Excav.

24A

24

24

24

24

24

24

24

24

24

24

24

24

24

24

PARCEL 25 ON PROJECT ST-F-428(17) AND PARCEL 1 ON PROJECT ST-F-428(20) COVER THE SAME LAND, WITH ACQUISITION THEREOF ENTIRELY UNDER SAID PROJECT ST-F-428(17)

SEC 8
 T9N - R1W

PI. 12+11.62" NBL"
 = O.P.O.T. (75.21' RT.)
 STA. 687+98.09" L"
 $\Delta = 19^\circ 04' 59''$
 D = 6'
 T = 160.51'
 L = 318.85'
 E = 13.39'
 R = 954.93'

Subject to a Blanket Easement for Transmission Line in favor of Interstate Public Service Co.

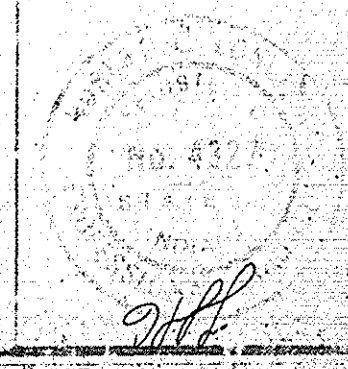
Subject to 2 Blanket Easements in favor of The Morgan Co. R.E.M.C.

SUBJECT TO A BLANKET EASEMENT FOR RIGHT OF WAY IN FAVOR OF INDIANA RURAL ELECTRIC CORP.

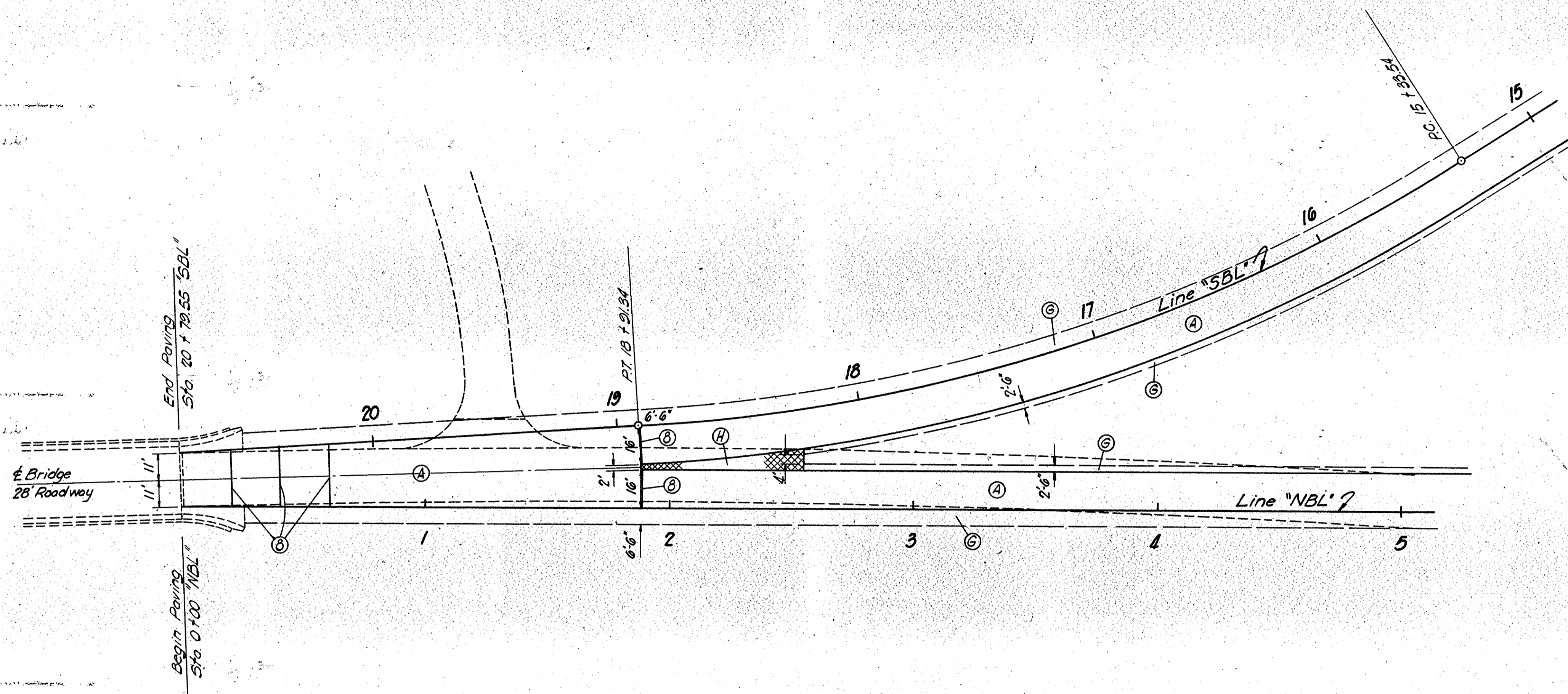
SEC 9
 T9N - R1W

INTERCHANGE RIGHT OF WAY
 SR. 37 WITH
 EXISTING SR. 37

DETAILS
 SCALE 1" = 100'



FEDERAL ROAD REGION NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	IND.	STF-428(17)	1968	50	



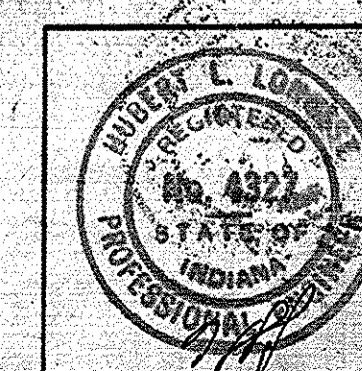
LEGEND

- ⊕ 1" Prefared Expansion Joint With Load Transfer
- Ⓐ 8" Reinforced Concrete Pavement
- ⊙ 3" Bituminous Shoulder
- Ⓜ 5" Bituminous Shoulder

**INTERCHANGE
S.R. 37 WITH EXISTING S.R. 37**

DETAILS

Scale 1" = 30'

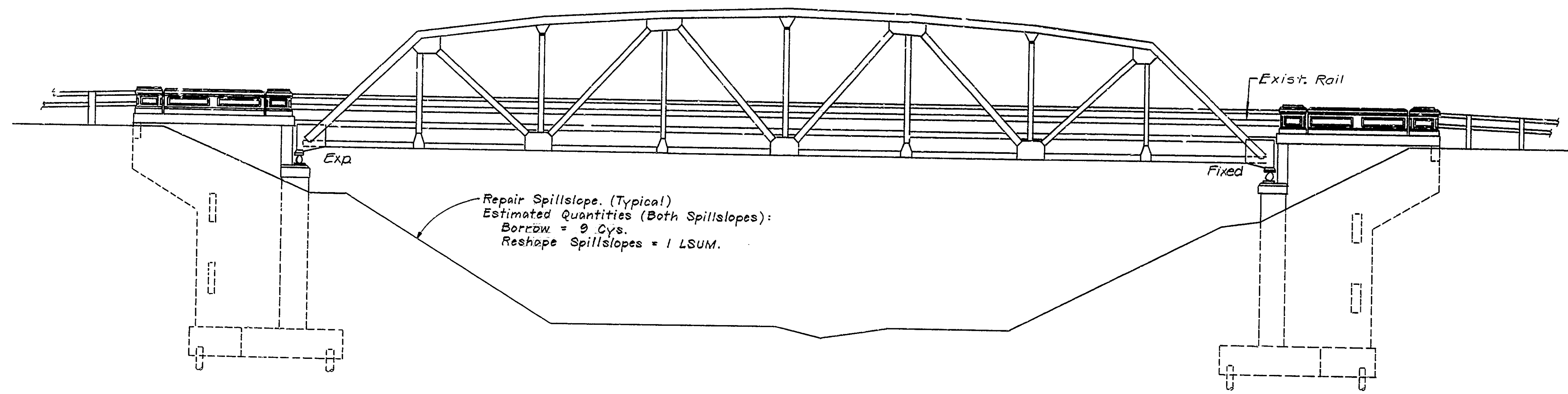


November 6, 1964

PROJECT NO.	LINE	SHEET NO.	TOTAL SHEETS	FILE
STF-428(17)	"L"	50		

Rehabilitation Plans - B

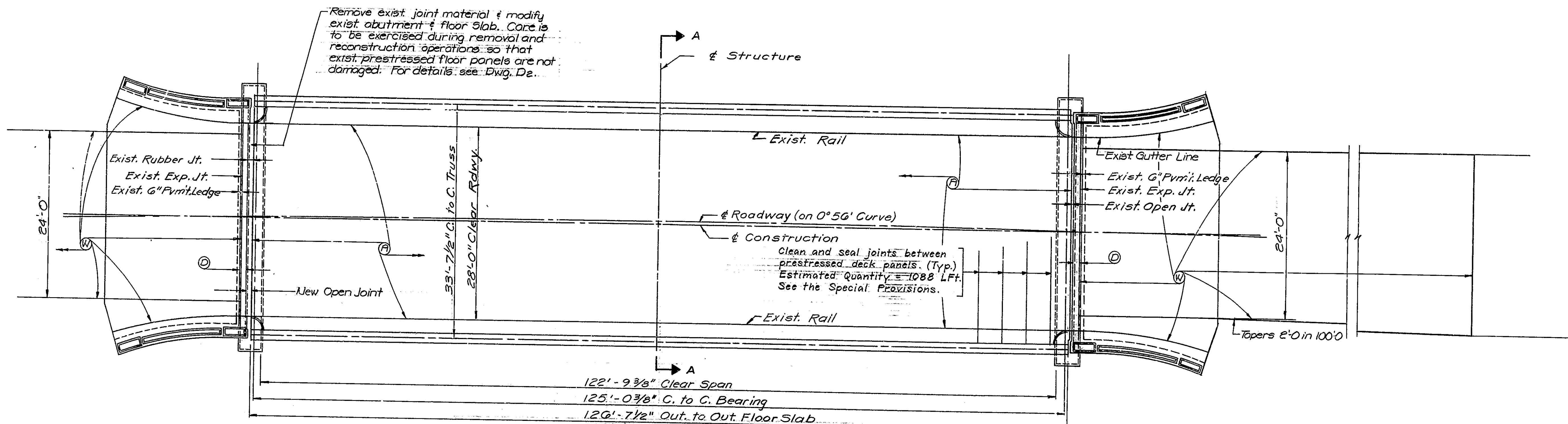
For Longitudinal Section
See Dwg. De.



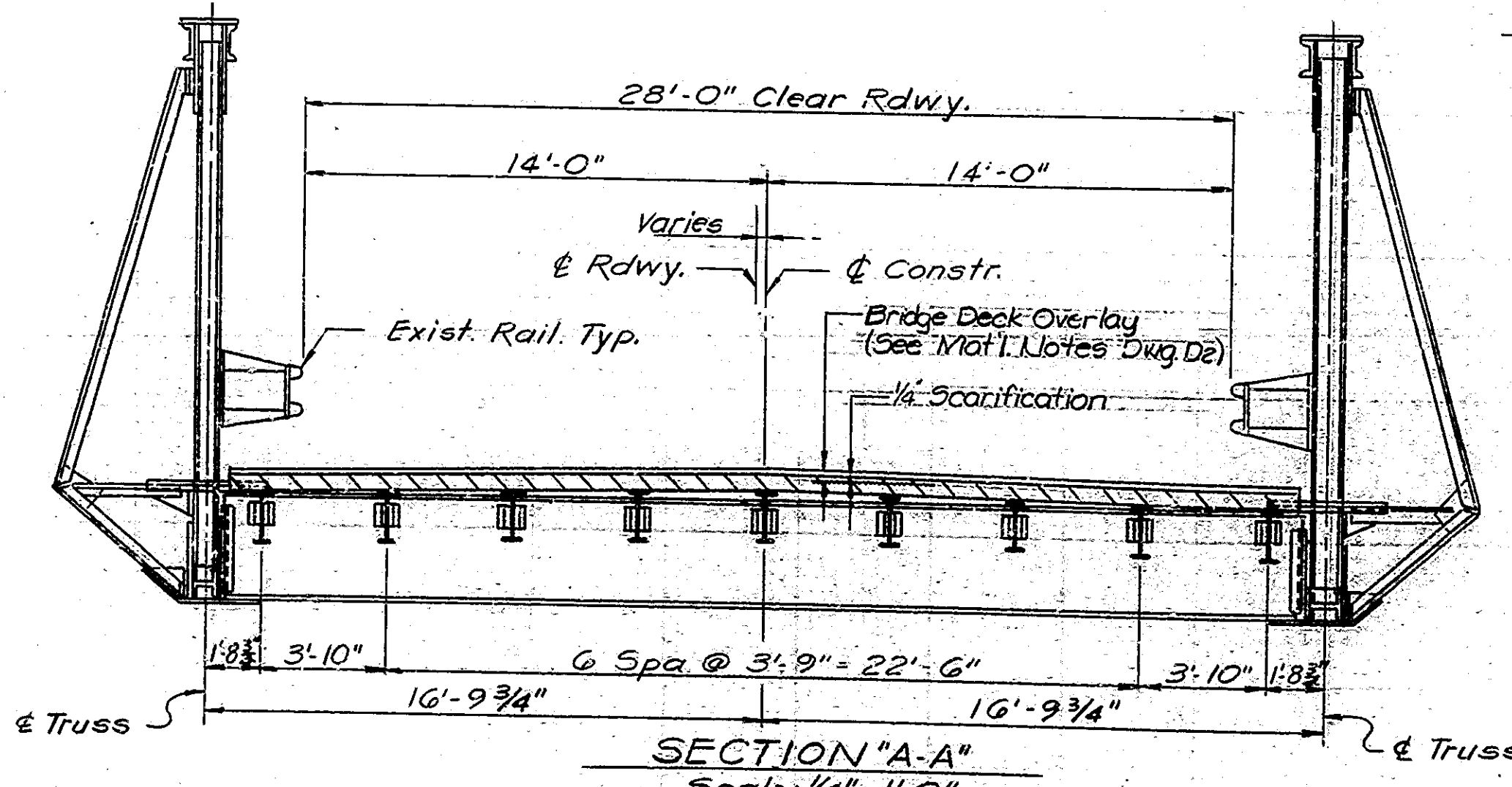
ABUTMENT NO. 1

ELEVATION
Scale: 1/8" = 1'-0"

ABUTMENT NO. 2



PLAN
Scale: 1/8" = 1'-0"



SECTION "A-A"
Scale: 1/4" = 1'-0"

- LEGEND**
- ⓐ Bridge deck overlay & limits of scarification
 - ⓓ Overlay Dam
 - Ⓦ Bituminous Wedge

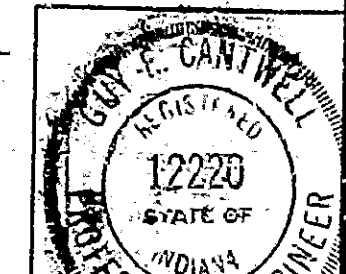
Note:
Clean and paint all Structural Steel in accordance with Section 619 of the Standard Specifications. 1 coat of inorganic zinc silicate primer & 1 coat of vinyl finish paint req'd. Primer & paint shall conform to the provisions of section 908 of the standard specifications.

GENERAL PLAN
DECK REPAIRS AND RESTORATION TO
STEEL TRUSS BRIDGE
1 SPAN - 28'-0" CLEAR RDWY.
OLD S.R. 37 OVER BEAM BLOSSOM CREEK.
INDIANA DEPARTMENT OF HIGHWAYS
MONROE COUNTY

SCALE: As Noted DATE: October 29, 1985

Ray E. Cantwell

DRAWING: D1 OF 2 SHEET: 2 OF 11
PROJECT: ST 8953 (A)
CONTRACT NO: B-15378
BRIDGE FILE: 37X-52-3629B



DESIGNED: P.E.B. C'KD: DTL
DRAWN: TFS C'KD: FEB
TRACED: C'KD:

Rehabilitation Plans - C

APPENDIX H

Traffic and Accident Data

JOB Monroe 913
 ITEM Traffic Data

DES. AE DATE 11/6/23
 CK. AVW DATE 11/27/23

Traffic Data:-

✓ Per INDOT Traffic Count Database, (See Attached next)

$$AADT (2022) = 9,175 \text{ Vpd} \checkmark$$

✓ Assume growth rate = 1.51% Per IDN (407-4A) ✓
 For undivided Rural Arterial ✓

✓ For construction year 2029

$$AADT 2028 = (1.0151)^{2029-2022} * 9175 = 10,190 \text{ Vpd}$$

← For Design Year 2049

$$AADT 2048 = (1.0151)^{2049-2022} * 9175 = 13,752 \text{ Vpd}$$



Disclaimer: The data is provided pursuant to the Indiana Open Records Act. It represents accurate reproductions of the records on file with the Indiana Department of Transportation; however, [... more](#)

List View

All DIRs

	Record			1			of 1	Goto Record	<input type="text"/>	<input type="button" value="go"/>	
Location ID	L01p566				MPO ID	p566					
Type	SPOT				HPMS ID						
On NHS	No				On HPMS	No					
LRS ID	35300000549000001				LRS Loc Pt.	1.4327					
SF Group	R2_SWGA				Route Type	County Road					
AF Group	R2_SWGA				Route	Local					
GF Group	R2_SWGA				Active	Yes					
Class Dist Grp					Category						
Seas Class Grp											
WIM Group											
QC Group	Default										
Funct'l Class	Minor Arterial				Milepost						
Located On	Business 37 North North of Whisnand Rd.										
Loc On Alias	SR 37 BUSINESS (IR 549)										
More Detail											
STATION DATA											

Directions:

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2022	9,175 ³						Grown from 2021
2021	9,343 ³						Grown from 2020
2020	8,402 ³						Grown from 2019
2019	9,073 ³						Grown from 2018
2018	9,028						

Travel Demand Model										
Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV	
No Data										

VOLUME COUNT			
Date	Int	Total	
No Data			

VOLUME TREND	
Year	Annual Growth
2022	-2%
2021	11%
2020	-7%
2019	0%

SPEED				
Date	Int	Pace	85th	Total
No Data				

CLASSIFICATION			
Date	Int	Total	
No Data			

WEIGH-IN-MOTION				
No Data				

PER VEHICLE				
Date	Axles	85th	Total	
No Data				

Facility	Annual Growth Rate
Rural or Urban Freeway	3.07 %
Divided Rural Non-Freeway	1.51 %
Divided Urban Non-Freeway	1.32 %
Undivided Rural Arterial	1.51 %
Rural Collector or Local Road	2.45 %
Undivided Urban Facility	1.32 %

ANNUAL TRAFFIC GROWTH RATE

Figure 407-4A

Master Record Number	Agency	Local Code	County	Township	City	COLLDTE
902674106	MONROE SD	M16A5832	MONROE	BLOOMINGTON	BLOOMINGTON	3/21/2016
901627056	MONROE SD	M11A1259	MONROE	BLOOMINGTON	BLOOMINGTON	5/3/2011
901618432	MONROE SD	M11A1065	MONROE	BLOOMINGTON	BLOOMINGTON	4/14/2011
901717544	MONROE SD	M11A3059	MONROE	BLOOMINGTON	BLOOMINGTON	10/22/2011
901696948	MONROE SD	M11A2783	MONROE	BLOOMINGTON	BLOOMINGTON	9/24/2011
902664286	ISP BLOOMINGTON 33	201600051364	MONROE	BLOOMINGTON	BLOOMINGTON	2/19/2016
902355509	MONROE SD	M14A9684	MONROE	BLOOMINGTON	BLOOMINGTON	12/17/2014

Master Record Number	Collision Time	Vehicles Involved	Trailers Involved	Number Injured	Number Dead	Number Deer
902674106	1657	2	0	0	0	0
901627056	1004	1	0	0	0	0
901618432	1604	2	0	0	0	0
901717544	1006	1	0	1	0	0
901696948	1840	1	0	0	0	0
902664286	0927	1	0	0	0	0
902355509	1045	1	0	0	0	0

Master Record Number	Roadway Name	Roadway Suffix	Roadway Id	Intersecting Road	Corporate Limits?	Property Type
902674106	BUSINESS 37 NORTH	RD	BUSINESS 37 NORTH RD	WHISNAND	N	OTHER
901627056	BUSINESS 37 NORTH	RD	BUSINESS 37 NORTH RD	WHISNAND	N	OTHER
901618432	BUSINESS 37 NORTH	RD	BUSINESS 37 NORTH RD	WHISNAND	N	OTHER
901717544	BUSINESS 37 NORTH	RD	BUSINESS 37 NORTH RD	WHISNAND	N	OTHER
901696948	BUSINESS 37 NORTH	RD	BUSINESS 37 NORTH RD	WHISNAND	N	OTHER
902664286	BUSINESS 37 NORTH	RD	BUSINESS 37 NORTH RD	WHISNAND	N	PRIVATE
902355509	BUSINESS 37 NORTH	RD	BUSINESS 37 NORTH RD	WHISNAND	N	OTHER

Master Record Number	Feet From	Direction	Latitude	Longitude	Roadway Class	Aggressive Driving?
902674106			39.22466017	-86.53976999	LOCAL/CITY ROAD	N
901627056	600	N	39.22466017	-86.53976999	UNKNOWN	N
901618432	50	N	39.22466017	-86.53976999	COUNTY ROAD	N
901717544	2000	N	39.22466017	-86.53976999	LOCAL/CITY ROAD	N
901696948	1500	S	39.22466017	-86.53976999	COUNTY ROAD	N
902664286	1500	N	39.22466017	-86.53976999	COUNTY ROAD	N
902355509	500	S	39.22466017	-86.53976999	UNKNOWN	N

Master Record Number	Hit and Run?	Locality	School Zone?	Rumble Strips?	Construction?	Light Condition
902674106	Y	RURAL	N	N	N	DAYLIGHT
901627056	N	RURAL	N	N	N	DAYLIGHT
901618432	N	RURAL	N	N	N	DAYLIGHT
901717544	N	RURAL	N	N	N	DAYLIGHT
901696948	N	RURAL	N	N	N	DAYLIGHT
902664286	N	URBAN	N	N	N	DAYLIGHT
902355509	N	RURAL	N	N	N	DAYLIGHT

Master Record Number	Weather Conditions	Surface Condition	Type of Median	Roadway Junction Type	Road Character	Roadway Surface
902674106	CLEAR	DRY	NONE	T-INTERSECTION	STRAIGHT/LEVEL	ASPHALT
901627056	CLOUDY	WET	NONE	NO JUNCTION INVOLVED	CURVE/LEVEL	ASPHALT
901618432	CLEAR	DRY	NONE	NO JUNCTION INVOLVED	STRAIGHT/LEVEL	ASPHALT
901717544	CLEAR	DRY	NONE	NO JUNCTION INVOLVED	STRAIGHT/GRADE	ASPHALT
901696948	CLOUDY	WET	NONE	NO JUNCTION INVOLVED	STRAIGHT/LEVEL	ASPHALT
902664286	CLEAR	DRY	NONE	NO JUNCTION INVOLVED	STRAIGHT/LEVEL	ASPHALT
902355509	CLEAR	DRY	NONE	NO JUNCTION INVOLVED	STRAIGHT/LEVEL	ASPHALT

Master Record Number	Primary Factor	Damage Estimate	Manner of Collision	Time Notified	Time Arrived	Investigation Complete?
902674106	FOLLOWING TOO CLOSELY	\$5001 TO \$10000	REAR END	1702	1719	Y
901627056	OVERCORRECTING/OVERSTEERING	\$5001 TO \$10000	RAN OFF ROAD	1004	1014	Y
901618432	FAILURE TO YIELD RIGHT OF WAY	\$2501 TO \$5000	LEFT/RIGHT TURN	1604	1624	Y
901717544	OVERCORRECTING/OVERSTEERING	\$5001 TO \$10000	RAN OFF ROAD	1006	1010	Y
901696948	RAN OFF ROAD RIGHT	\$2501 TO \$5000	RAN OFF ROAD	1840	1850	Y
902664286	RAN OFF ROAD RIGHT	\$2501 TO \$5000	RAN OFF ROAD	0941	0941	Y
902355509	DRIVER ASLEEP OR FATIGUED	\$1001 TO \$2500	RAN OFF ROAD	1047	1052	Y

Master Record Number	Photos Taken?	Officer Last Name	Officer Id	Unique Location Id	State Property Damage?	Traffic Control
902674106	Y	GREENE	5392	BUSINESS37RDWHISNANDRD	No	NONE
901627056	N	MULLIS	5329	BUSINESS37NORTHHWYWHISNANDRD	No	NO PASSING ZONE
901618432	Y	MULLIS	5327	BUSINESS37NORTHRDWHISNANDROW	No	NO PASSING ZONE
901717544	Y	SCUDDER	5375	BUSINESS37NORTHRDWHISNANDRD	No	NONE
901696948	N	MULLIS	5327	BUSINESS37RDWHISNANDRD	No	NO PASSING ZONE
902664286	N	MILLER	6911	BUSINESSSR37HWYWHISNANDRD	No	NO PASSING ZONE
902355509	N	HALE	5377	BUSINESS37NSTATERDWISNANDRD	No	NONE

Master Record Number	Narrative
902674106	D1 stated that she was driving north on business 37 when she came to a stop at Whisnand Rd due to traffic slowing in front of her. V2 was traveling directly behind v1 when she collided with the rear of v1. V1 rolled forward a little and v2 collided with v1 again. V2 left the scene with heavy front end damage and possible facial injuries. D2 was described as a blonde female. D1 refused medical treatment on the scene. My body worn camera was activated during this investigation.
901627056	D-1 stated he was going south on business 37 north and he wasn't paying attention and got off the right side of the road and then overcorrected and went off the left side of the road and hit the ditch and embankment and went over the driveway and landed in the water.
901618432	Driver of vehicle # 1 was looking for the entrance to Castle Mulch, when she jerked the wheel of her vehicle and crossed the center line. After she crossed the center line she struck vehicle # 2 in the drivers side rear door. Driver of Vehicle # 2 could not avoid being struck.
901717544	D1 was traveling northbound in the 5200 block of N. Business 37. D1 stated another motor vehicle entered her lane of travel. At that time D1 swerved to the right to avoid a collision. After swerving right, D1 went back left and over corrected. V1 then went off the east side of the roadway and overturned. Skid marks began on the roadway approximately 80 feet from where V1 left the roadway. W1 also stated that D1 over corrected and left the roadway. W1 stopped to help D1. D1 was transported to Bloomington Hospital Emergency Department where I later met her. D1's major complaint was of pain to the head. There were non-life threatening injuries.
901696948	Driver # 1 looked down for a moment and ran off of the right side of the roadway striking a no passing sign.
	V1 was traveling north on Business SR37 north of Whisnand Road. V1 traveled off the east, right, side of the roadway for an unknown reason. V1 struck several small trees with the passenger side of V1. V1 struck a street sign post with the front left corner of V1. V1 came to final rest along the east side of Business SR37.
	D1 stated she was traveling north on Business SR37. D1 stated she swerved to avoid impact with a deer and traveled off the right side of the roadway.
	W1 stated he was a passenger in the vehicle driven by W2. W1 stated they were traveling north on Business SR37 behind V1. W1 stated V1 was swerving left of center into the southbound lane of Business SR37 causing vehicles to swerve to avoid impact. W1 stated V1 traveled off the right side of the roadway for an unknown reason and came to rest along the side of the roadway. W1 stated he exited the vehicle to check on D1. W1 stated the driver was a white male and was the sole occupant of V1. W1 stated D1 appeared disoriented and indicated he did not need assistance.
902664286	W2 stated she was driving a vehicle behind V1 north on Business SR37. W2 stated V1 was swerving left of center into the southbound lane of Business SR37. W2 stated V1 traveled off the right side of the roadway for an unknown reason and came to final rest along the side of the roadway. W2 indicated she believed the driver was a white male but she did not make contact with him.
	Both W1 and W2 stated they did not observe any deer in the roadway prior to V1 traveling off the right side of the roadway.
	Evidence shows V1 traveled off the right, east, side of the road before striking several small trees and a street sign. Evidence shows damage to the passenger side and front left corner of V1.
	A black Jeep SUV was stopped behind V1 upon my arrival. The Jeep had Indiana registration, RXC169. A white male subject was sitting in the driver's seat who identified himself with an Indiana ID card as DAVID LEE EADS, DOB 1-05-1988 and OLN 3138-81-5250. A white female was sitting in the front passenger seat who identified herself with an Indiana driver's license as BAHIA BUNGE. The Jeep was registered to Bunge. Bunge indicated she was the driver of V1. Eads stated he drove Bunge's Jeep after learning of the collision. Eads denied driving V1 as reported by W1 and W2. I inquired how Eads learned of the collision. Eads indicated Bunge called his cell phone after the collision. I asked for consent to look at both Eads' and Bunge's call history. Eads made an outgoing call to Bunge at approximately the same time of the collision. It is my belief that Eads was actually the driver of V1 based on information provided by both W1 and W2 as well as inconsistent information provided by Eads. V1 is registered to Stephanie P. Rodriguez the mother of Eads roommate, Charles Rodriguez.
902355509	Driver 1 ran off the roadway due to being drowsy and struck several trees

APPENDIX I
Alternative Plan View
Exhibits



		RECOMMENDED FOR APPROVAL _____	DESIGN ENGINEER _____	DATE _____	INDIANA DEPARTMENT OF TRANSPORTATION		HORIZONTAL SCALE _____	BRIDGE FILE _____
		DESIGNED: _____	DRAWN: _____		ALTERNATE B REHAB TRUSS		VERTICAL SCALE _____	DESIGNATION _____
		CHECKED: _____	CHECKED: _____				DRAWING NO. _____	SHEETS _____ of _____
							CONTRACT _____	PROJECT _____



RECOMMENDED FOR APPROVAL _____	DESIGN ENGINEER _____ DATE _____	INDIANA DEPARTMENT OF TRANSPORTATION		HORIZONTAL SCALE	BRIDGE FILE
		ALTERNATE D REHAB TRUSS & NEW BYPASS BRIDGE		VERTICAL SCALE	DESIGNATION
DESIGNED: _____	DRAWN: _____	DRAWING NO.	SHEETS	of	
CHECKED: _____	CHECKED: _____	CONTRACT	PROJECT		



RECOMMENDED FOR APPROVAL _____	DESIGN ENGINEER _____ DATE _____	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE	BRIDGE FILE
			VERTICAL SCALE	DESIGNATION
DESIGNED: _____	DRAWN: _____	ALTERNATE E RELOCATE TRUSS & NEW BRIDGE	DRAWING NO.	SHEETS
CHECKED: _____	CHECKED: _____		CONTRACT	of PROJECT