713-B-327 TEMPORARY BRIDGES AND APPROACHES

(Adopted 09-18-25)

The Standard Specifications are revised as follows:

SECTION 713, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 713 – TEMPORARY BRIDGES AND APPROACHES

713.01 Description

This work shall consist of the *design, load rating,* construction*,* ~~and~~ maintenance*, and removal* of temporary ~~pile or timber trestle~~ bridges and approaches in accordance with 105.03. *Temporary pipes used to convey channel flow under traffic shall also be included in this work and shall be designed and load rated as bridges when the length is more than 20 ft as measured in accordance with 101.06.*

MATERIALS

713.02 Materials

Materials shall be in accordance with the following:

Delineator Posts 910.15
Delineators.....926.02
Fence 910.18
HMA for Temporary Pavement.....402
Piling 701
Reinforcing Bars 910.01
Structural Concrete 702
Structural Steel.....910.02
Temporary Pavement Markings 801
Temporary Traffic Barrier 801

CONSTRUCTION REQUIREMENTS

713.03 Design Requirements

The temporary bridge shall be in accordance with the overall minimum span length, clear roadway, and vertical clearance or low structure elevation as shown on the approved plans.

The temporary bridge, including the barriers and railings, shall be designed in accordance with the latest edition of the AASHTO LRFD Bridge Design Specifications and load rated in accordance with the AASHTO Manual for Bridge Evaluation and Part 3 of the INDOT Bridge Inspection Manual. The resulting HL-93 LRFR Design Inventory load rating factor shall be greater than 1.0. The Department will be evaluating and approving overweight permit vehicle loads based on the load ratings provided by the Contractor. Barriers and railings shall satisfy the LRFD Section 13 design forces for traffic railings for railing test level TL-3 and have a minimum height of 32 in., or the test level and minimum height shown on the plans.

The temporary bridge substructure and foundations shall be designed in accordance with the requirements of the Indiana Design Manual.

The vehicular live load used for design shall be HL-93.

The temporary bridge deck wearing surface shall be a durable, skid resistant material.

The materials used to construct the temporary bridge may be salvaged steel subject to inspection and approval by the Contractor. The Contractor's approval of salvaged steel shall be certified by a professional engineer registered in the state of Indiana and submitted to the Engineer for acceptance.

713.04 Working Drawings

The Contractor shall submit working drawings, erection plan, design calculations, bridge load rating calculations and a Load Rating Summary Report in accordance with 105.02 and the following requirements. Working drawings, design calculations, and load ratings shall be signed by and shall bear the seal of a professional engineer and shall be submitted at least 14 calendar days prior to beginning construction of any portion of the temporary bridge. Temporary pipes used to convey channel flow under traffic that are not considered to be bridges in accordance with 101.06 will not require design calculations, bridge load rating calculations, or a Load Rating Summary Report. Temporary bridge or temporary pipe construction operations shall not begin until the Contractor receives written notice that the working drawings are approved by the Engineer.

The temporary bridge design calculations shall include each AASHTO LRFD load combination analyzed. A summary sheet that shows design assumptions and their source, controlling parameters and load combinations, and other pertinent input and output information shall be included with the calculations package. Bridge railing design calculations shall include bridge railing capacity in accordance with the designated test level. The load rating methodology shall be in accordance with the AASHTO Manual for Bridge Evaluation using the LRFD methodology. The Load Rating Summary Report shall be in accordance with the Department's Bridge Inspection Manual.

The working drawings shall include details and design strengths for all structural components including bridge railing with test level verification. Drawings shall include details for the connection of the bridge railing to the approach barrier.

The working drawings shall include all details, dimensions, quantities, and cross-sections necessary to construct the temporary bridge or temporary pipes. They shall include, but shall not be limited to, the following:

(a) Foundations

If the Contractor elects to provide a foundation system for the Temporary Bridge that differs from the recommendations provided by the Geotechnical Report, the Contractor shall be responsible for obtaining any additional subsoil borings and providing a Geotechnical Addendum to the Engineer for review and approval. All field testing of temporary foundations shall be the responsibility of the Contractor.

The following information shall be provided for spread footing foundations.

1. *Recommended footing elevations.*
2. *Bearing capacity design calculations and recommendations.*
3. *Estimated footing settlements and differential settlement, if applicable.*
4. *Eccentric loading limit.*
5. *Sliding resistance.*
6. *Overall stability analysis of spread footing locations.*
7. *Method of providing adequate footing scour protection.*

The following information shall be provided for driven pile foundations.

1. *Pile type, size, and steel grade.*
2. *Pile layout and spacing.*
3. *Factored design loads, nominal soil resistance, factored design soil resistance, and nominal driving resistance.*
4. *Method for determining the nominal driving resistance in accordance with 701.05.*
5. *Minimum pile tip elevations.*
6. *Estimated scour depths used in the analysis.*
7. *Pile structural capacity calculations.*
8. *Lateral pile load analysis.*
9. *Pile tip protection.*
10. *Pile uplift capacity, if required.*

The following information shall be provided for drilled shaft foundations.

1. *QCP in accordance with ITM 803 and RSP 728-B-203.*
2. *The Contractor's method of integrity testing.*
3. *Side and tip resistance for drilled shaft rock socket.*
4. *Drilled shaft and column structural capacity.*

(b) Substructures and Bearings

1. *Seat elevations.*
2. *End bent or pier dimensions.*
3. *Reinforcement details.*
4. *Structural capacity calculations.*
5. *Bearing design including out-of-plane loading and anchor bolt capacity.*

(c) Geometry

1. *Clear Roadway.*
2. *Out to Out Bridge Deck.*
3. *Overhead clearance, if applicable.*
4. *Conformance with Roadway Alignment on the plans.*
5. *Vertical and horizontal clearances to the feature crossed.*

(d) Materials

For salvaged or previously used materials, the following shall be provided:

1. *The locations of all known defects which have been determined to be acceptable by the Contractor's engineer, along with supporting design calculations.*
2. *A certification, stamped by the Contractor's engineer, stating that the used material to be incorporated into the temporary bridge has been inspected within the past 24 months and subsequent to its most recent use and has been found to be acceptable.*

713.~~03~~*05* General Requirements

Unless otherwise provided, the right-of-way will be furnished for temporary bridges and approaches.

~~Information indicating the details of the temporary bridge proposed to be built shall be submitted for approval. If this information is not in accordance with the plans, details of the proposed temporary bridge signed by and bearing the seal of a registered professional engineer shall be submitted. These details shall be supplied in triplicate or in such form that may be reproduced readily. Information or details, or both if required, regarding temporary bridges shall be submitted and approved before work is started.~~

The Contractor shall be responsible for amending environmental permits if the construction impacts deviate from what is stated on the approved permits.

The following requirements shall be met prior to opening the temporary bridge to traffic. The Contractor and the Contractor's engineer shall accompany the Engineer on an inspection of the structure to verify that the structure and materials conform to the approved working drawings and specifications. A written statement prepared by the Contractor's engineer shall be submitted to the Engineer by the Contractor confirming the inspection and compliance with the working drawings. The Department's Engineer will notify the District Bridge Inspection Engineer 7 days prior to opening the temporary bridge to traffic. The temporary bridge shall be complete in place for 2 days prior to opening to traffic to allow time for inspection.

Where it is necessary to remove existing fence, a temporary fence shall be erected along the temporary right-of-way line~~, if so directed~~. This fence shall be ~~substantially as good as~~*in accordance with 603 and match, or exceed, the height of* the existing fence.~~ It shall be built and maintained satisfactorily.~~

~~713.04 Temporary Bridge~~

~~Unless otherwise provided, the temporary bridge shall have a clear roadway of no less than 28 ft and be designed to carry an HS20 truck loading. The bridge shall be provided with substantial railings which shall be kept painted white. Backwalls shall be built at each end bent to hold the approach fills. Each bent shall have at least four piles or four substantial posts on an adequate mudsill.~~

~~The temporary bridge shall be built to an elevation of not less than that shown on~~

~~the plans. It shall have a clear length opening no less than shown or otherwise designated. All timber and piles may be treated or untreated, unless otherwise specified.~~

713.~~05~~*06* Temporary Pipe

The minimum thickness required for the temporary pipe or pipe-arch shall be as follows:

(a) Corrugated Steel Circular Pipe

Thickness, in.	Pipe Diameter, in.
0.064	48 or less
0.079	54 or less
0.109	72 or less
0.138	78 or less
0.168	84 or less

(b) Corrugated Steel Pipe-Arch, 3 in. by 1 in. Corrugations

Thickness, in.	Pipe-Arch Area, sq ft
0.109	40 or less
0.138	58 or less

(c) Structural Plate Pipe-Arch 6 in. by 2 in. Corrugations

Thickness, in.	Pipe-Arch Area, sq ft
0.111	38 or less
0.140	71 or less
0.170	122 or less
0.188	131 or less

For thicknesses, diameters, or areas not listed above, the Engineer shall be contacted for approval.

713.~~06~~*07* Temporary Approaches

Temporary approaches shall be constructed to a line and grade ~~which will provide a reasonably convenient and safe connection between the temporary bridge and the existing road. The grade and crown elevation shall be as shown on the plans. The roadway and slopes shall be~~ as shown on the *approved* plans. All necessary drainage shall be provided. *Existing drainage shall be maintained, except as shown on the approved plans.* Embankment shall be compacted in accordance with 203. If it becomes necessary to reconstruct the connection of the approaches with the existing roadway, ~~either because of the operations or other cause,~~ such adjustment shall be made as directed. *Subgrade treatment shall be in accordance with 207.*

A temporary reinforced concrete bridge approach slab shall be constructed in accordance with 609 if shown on the approved plans.

~~HMA pavement for temporary approaches shall be in accordance with 402. Temporary pavement markings in accordance with 801.12 shall be placed as shown on the plans. Delineators in accordance with 804 shall be placed as shown on the plans.~~

~~Guardrail and guardrail end treatment shall be provided at each corner of the temporary bridge as shown on the plans or as directed. The furnishing of materials and installation shall be provided in accordance with 601. After removal, the guardrail and guardrail end treatment will remain the property of the Contractor.~~

713.~~07~~*08* Maintenance

Unless otherwise provided, where a temporary bridge is required, traffic over the existing ~~bridge~~*structure* shall be allowed until the temporary bridge and approaches are satisfactorily completed and opened to traffic. They shall be so maintained until the new structure is opened to traffic. The necessary material and labor shall be furnished to repair or replace any portion of the temporary bridge and approaches which may have deteriorated under traffic. ~~During the winter months, salt or other equivalent materials shall be used as directed to prevent slippery conditions.~~

713.~~08~~*09* Removal

When the new work is opened to traffic, all the temporary work*, including temporary drainage features,* shall be removed and the ~~temporary right-of-way~~*site* shall be restored as nearly as possible to its original or satisfactorily altered state. All bents in the stream shall be removed entirely or down to the bed of the stream. All other bents either removed entirely or to 2 ft below the ground surface~~, unless the property owner of the temporary right-of-way consents in writing to have them cut at the ground line~~. Temporary ~~bituminous~~ HMA pavement~~, when no longer required for maintenance of traffic,~~ shall be removed and disposed of in accordance with 203.10.

713.~~09~~*10* Method of Measurement

Temporary bridges, temporary pipes *used to convey channel flow under traffic*, and *embankment for* approaches will not be measured for payment unless otherwise specified. *Temporary reinforced concrete bridge approaches will be measured by the square yard as computed by the dimensions shown on the approved plans. Reinforcing bars used in temporary reinforced concrete bridge approaches will be measured by the pound as shown on the approved plans. Subgrade treatment will be measured in accordance with 207.05. Placement of* HMA ~~mixtures~~ for temporary pavement will be measured ~~by the ton~~*in accordance with 402.19*. Guardrail of the type specified will be measured by the linear foot along the top of rail *in accordance with 601.13*. Guardrail end treatments will be measured ~~per each of the type specified~~*in accordance with 601.13. Temporary drainage structures will be measured in accordance with 715.13 and 720.06.* Temporary ~~pavement markings~~*traffic control devices* will be measured in accordance with 801.17. ~~Seeding and sodding will be measured in accordance with 621.13. The removal and disposal of temporary HMA pavement will not be measured for payment~~*Temporary surface stabilization will be measured in accordance with 205.10. No measurements will be made for maintenance of temporary bridge and approaches. Removal of temporary bridges, temporary pipes, temporary embankment, and temporary drainage structures will not be measured for payment.*

713.~~10~~*11* Basis of Payment

The accepted quantities of temporary bridge and approaches~~, or temporary pipe and approaches~~ will be paid for at the contract lump sum price for the work, complete in place and later removed as specified. *Temporary pipes used to convey channel flow under traffic will be paid for as temporary bridge and approaches, regardless of length. Subgrade treatment will be paid for as the type specified, in accordance with 207.06.* HMA ~~mixtures~~ for temporary pavement will be paid for as the type of mixture specified in accordance with ~~610.06~~*402.20*, complete in place. Guardrail installed along approaches will be paid for at the contract unit price per linear foot *in accordance with 601.14*. Guardrail end treatment will be paid for at the contract unit price per each for the type specified *in accordance with 601.14*. *Temporary reinforced concrete bridge approaches will be paid for in accordance with 609.14. Reinforcing bars used in temporary reinforced concrete bridge approaches will be paid for in accordance with 703.08. Temporary drainage structures and temporary pipe culverts will be paid for in accordance with 715.14 and 720.07.* Temporary ~~pavement markings~~*traffic control devices* will be paid for in accordance with 801.18.

~~Seeding and sodding will be paid for in accordance with 621.14.~~*Temporary surface stabilization will be paid for in accordance with 205.11.*

~~If adjustment of approach embankments is necessary, the additional excavation and borrow will be paid for in accordance with 203.28.~~

Payment will be made under:

Pay Item	**Pay Unit Symbol**
~~Guardrail End Treatment, _____, Temporary ~~ ~~type~~ ~~Bridge Approaches~~	~~EACH~~
~~Guardrail, W-Beam, ____ ft. ____ in. Spacing, Temporary Bridge Approaches~~	~~LFT~~
Temporary Bridge and Approaches	LS
~~Temporary Bridge~~	~~LS~~
~~Temporary Pipe and Approaches~~	~~LS~~
~~Temporary Pipe~~	~~LS~~

The cost of excavation, embankment, backfill, removal and disposal of temporary HMA pavement, delineators, and temporary fence, shall be included in the cost of the pay item~~s~~.

The cost of furnishing, installation, and removal of guardrail and guardrail end treatment *for bridge approaches* shall be included in the cost of the pay item~~s~~.

The cost of installing and removing any riprap or geotextiles placed on the spill slopes for temporary bridge scour protection shall be included in the cost of the pay item.

The cost of designing the temporary bridge and foundations, working drawings, and

inspections shall be included in the cost of the pay item.

The cost of furnishing, installation, and removal of the bridge wearing surface shall be included in the cost of the pay item.

No additional payment will be made for the cost of maintaining the temporary bridge and approaches, including the pavement and drainage.

If the Contractor elects to build a longer bridge*, larger reinforced concrete bridge approaches,* or *larger* approaches than specified, such work shall be ~~done~~*accomplished* with no additional payment. If such work requires additional right-of-way, it shall be provided with no additional payment.
