



City of Cleveland

Mayor's Office of Capital Projects
Division of Engineering and Construction
Design Section

DATE: November 17, 2023

RE: **Division of Engineering and Construction Requirements for
Pedestrian or Trail Bridges over the Public Right of Way**

The following are required for owners of structures carrying pedestrians and/or bicycles over the public right of way on trails, multi-use paths, or otherwise convey such traffic.

These requirements are incorporated into all Maintenance, Inspection, and Repair Agreements between Owner and the City.

DESIGN CRITERIA

Design code requirements are:

Current editions of the AASHTO *LRFD Guide Specifications for the Design of Pedestrian Bridges*, AASHTO *Manual for Bridge Evaluation*, the Ohio DOT *Bridge Design Manual*, and ASCE 7 *Minimum Design Loads for Buildings and Other Structures*, all references cited therein, and all references cited in those, etc.

- Live Load 90 psf (No reduction for loaded area.)
H15-44 (Unless vehicles are precluded as provided for herein.)
- Rating Load EV2 (Unless vehicles are precluded as provided for herein.)
- Dynamic Behavior Shall be addressed.
- Wind Exposure Category C (Unless justified by wind tunnel studies by qualified professionals.)
- Wind Load AASHTO, but not less than CoC Building Code § 3129.03 Wind Load.
- Ground Snow Load 20 psf
- Snow Loads ASCE 7, but not less than CoC Building Code § 3129.02 Snow Load.
Snow loads to be treated as DW loads for AASHTO load combinations.
- Drifting Shall be addressed per ASCE 7.
- Seismic Shall be addressed – particularly regarding deflection compatibility with adjoining/supporting structures.
- Foundation Depth 3'-6" min below adjoining grade, but not less than CoC Building Code § 3125.06 Depth of Footings.

Minimum vertical clearance under the lowest element of the bridge 17'-6" over the higher of the existing or proposed roadway.

GENERAL CRITERIA

Drainage off the bridge shall not be concentrated onto the right of way below. Scuppers or other collection devices discharging to the open air are not permitted. Any drainage collected shall be conveyed in a closed drainage system and directed underground to the storm water system.

Structural support is to be provided outside the public right of way unless the City deems it infeasible and grants written permission.

VEHICULAR TRAFFIC

Structures shall be considered as subject to vehicular traffic unless they have bollards, stairs of at least 48" change in grade, or other design features that will preclude any vehicle from entering upon the bridge. Fencing is not adequate. The city may require additional protective features.

Structures subject to vehicular traffic shall be designed by ODOT prequalified Level 2 bridge engineers. Submit ODOT documentation of prequalification status of the firm and the design and reviewing engineers.

Design the bridge for the H15-44 live load per AASHTO.

Load rating shall be performed and documented using the current ODOT report form. The minimum live load rating factors shall be:

H15-44	Inventory RF	1.00
	Operating RF	1.30
EV2	Operating RF	1.25

FRACTURE CRITICAL REQUIREMENTS

If the structure is steel and consists of a truss, is framed with three or fewer primary longitudinal elements, or otherwise meets the criteria of a fracture critical structure by Federal or Ohio DOT standards, then the applicable standards of the current editions of the Ohio DOT *Bridge Design Manual* and *Manual of Bridge Inspection* shall apply to design, materials, fabrication, construction, ongoing safety inspections, and maintenance. A partial list of requirements includes:

- Identifying all fracture critical members (FCMs) on the plans,
- Providing a Fracture Control Plan per AASHTO/AWS D1.5,
- Using ASTM A709 steel with impact resistance testing,
- Using AISC a Certified Bridge Fabricator at the appropriate level and with the Fracture Control Endorsement (FCE).

Ongoing Bridge Inspections shall include fracture critical inspections by qualified bridge inspectors as required by the ORC and Ohio DOT. Results shall be entered into AssetWise.

Structural elements and their connections and supports shall not be covered by finishes or other appurtenances that obscure or interfere with inspection.

DOCUMENTATION REQUIREMENTS

Owner shall submit to the City for review and approval the following.

- Renderings, plans, etc. for City Planning Commission Approval.
- Early Encroachment Permit application with Plats & Survey.
- Submit 30%, 90%, and Final Plans and specifications (electronic format).
 - Include civil/site, architectural, structure, cladding, and any other pertinent discipline(s) for the bridge.
 - Plans shall clearly identify the design criteria including live loads, wind loads on main wind force resisting system, wind loads on cladding, allowances for weight for each system, etc.
- ODOT prequalification documentation for the Structural Engineer of Record (SER).
- Maintenance of Traffic & Traffic Control Plan for Traffic Engineering review and approval.
- Plans shall be to appropriate scale(s) and include bar scale(s).
- Perform and submit lighting design inclusive of under bridge lighting and street lighting.
- Perform and submit sightline study to confirm this bridge will not obstruct motorist view of all adjacent traffic signal lights.
- A Report of Geotechnical Exploration and Recommendations. This Report shall, at minimum, include:
 - Soil sampling (boring) log(s) taken at each foundation location, which shall include:
 - Water level at the end of the last day of sampling at that location, and
 - USCS soil classification for each layer of soil encountered, and at no greater than 3.0' intervals.
 - Other soil testing results,
 - Soil parameters required for retaining structures, if required, and
 - Foundation recommendations.
- As-built plans.

The geotechnical engineer that prepared the Geotechnical Report shall submit a letter certifying that the structure conforms to their design and foundation recommendations.

Final plans and specifications shall be sealed by qualified Ohio design professional(s). Level 2 prequalified bridge engineers for the bridge, professional engineer(s) for the civil/site, etc., landscape architects for landscaping. No work on these structures is considered "incidental" to any other profession or specialty.

BRIDGE MANAGEMENT SYSTEM REQUIREMENTS

Owner shall obtain Structural File Number (SFN), identify all relevant bridge inventory data, and perform Baseline (Initial) Bridge Inspection. Upload these data and report into the ODOT AssetWise Bridge Inventory & Inspection Management System.

Upload the following information to AssetWise as attachments to this structure:

- As-built plans and specifications.
- Geotechnical Exploration and Report; and Geotechnical Engineer’s certification letter.
- Structural design calculations.
- Structural drawings of any adjoining supporting building or structure(s).

Perform Bridge Inspections per ORC 5501.47 and enter into ODOT AssetWise.

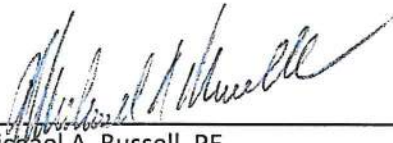
Bridge inspections are intended to assess the structural integrity of the bridge. The owner may include finishes or other appurtenances that obscure key structural elements; but shall promptly remove these whenever directed by the inspector or by the City at no cost.

Notify Engineering and Construction whenever AssetWise is updated.

OTHER REQUIREMENTS

Submit fully executed Maintenance, Inspection, and Repair Agreement between Owner and the City.

Obtain Encroachment Permit and Street Opening Permit for construction. Refer to the City of Cleveland website for permit procedures.



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