



## 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  
Building (Skyway) Bridges over the Public Right of Way**

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The following are required for owners of structures carrying pedestrians over the public right of way that do not serve the general transportation network; but rather are connected to buildings, parking structures, or any other facilities that are intended for human occupancy.

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 *Ohio Basic Building Code (OBBC)* and the *City of Cleveland (CoC) Building Code*, all references cited therein, and all references cited in those, etc.

- Occupancy Class A (Assembly) regardless of the occupancies of adjoining facilities/spaces.
- Risk Category Greater of III (Substantial Risk) or that of any adjoining facility.
- Live Load 100 psf (No reduction for loaded area.)
- Dynamic Behavior Shall be addressed by applicable standards (AISC Design Guide 11 or similar.), the effects minimized, and the space treated as an indoor facility – not a “footbridge” or similar.
- Wind Exposure Category C (Unless justified by wind tunnel studies by qualified professionals.)
- Wind Load OBBC, but not less than CoC Building Code § 3129.03 Wind Load.
- Ground Snow Load 20 psf
- Snow Loads OBBC, but not less than CoC Building Code § 3129.02 Snow Load.
- Ponding/Drifting Shall be addressed.
- 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.
- Construction Loads Shall be addressed per OBBC and the current edition of ASCE 37 *Design Loads on Structures During Construction*.

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

## **GENERAL CRITERIA**

These criteria apply to structures that are enclosed, heated, and cooled to protect against inclement weather. Structures that are exposed to the weather shall have additional requirements as noted herein.

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.

Structures that are open to grade at one or both ends shall have bollards, stairs of at least 48" change in grade, switch-back ramps, 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.

## **BRIDGES EXPOSED TO THE WEATHER**

The following additional requirements apply to bridges, where anywhere along their length, primary structural systems are exposed, un-heated, un-cooled, or otherwise deemed to require this treatment by the City.

If the structure is steel and consists of a steel truss, is framed with three or fewer primary longitudinal elements, or otherwise meets the criteria of a fracture-critical structure by Federal and Ohio DOT standards, then the fracture-critical standards of the current editions of the Ohio DOT *Bridge Design Manual* and *Manual of Bridge Inspection* shall apply to design, materials, 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 an AISC 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.
  - Structure plans of any supporting building(s) or structure(s) showing the coordinated loads from the bridge onto the supporting building(s) or structure(s).
  - 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.
- 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 as required. 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.

Where the bridge is supported on adjoining building(s) or structure(s), the bridge and supporting structure Plans shall clearly show the reactions and their orientation for each load case and combination.

Where separate foundations are required to support the bridge or portions thereof, 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). Registered Architect for architecture. Professional engineer(s) for the structure, cladding, etc. 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.

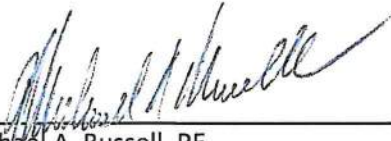
Notify Engineering and Construction whenever AssetWise is updated.

## **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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Michael A. Russell, PE  
Section Chief – Bridges  
Engineering & Construction

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Richard J. Switalski, PE  
Administrative Manager  
Engineering & Construction