ODOT’s Updated Aesthetic Design Guidelines

Overview of Aesthetic Treatments

Tim Keller, P.E.  Administrator, ODOT - Office of Structural Engineering
Dave Holstein, P.E.  Administrator, ODOT - Office of Roadway Engineering
Overview of Aesthetic Treatments

Structures

Bridge Design Manual (BDM)
(2007, Updated July 2018)
Baseline (Parapets):

- Concrete parapets now have baseline formliner pattern options
  - Horizontal groove, dry stack, or ashlar block
  - Options depend on location (interchange; urban/rural)
  - Light-neutral sealer

- If parapet faces are not visible, formliner pattern is not applied
  - Between parallel highway bridges
  - Over many rural streams
Common Enhancements (Parapets):

- Alternate patterns/textures
- Alternate sealer colors

- Avoid red-tinted sealers (poor performance)
- Avoid adding colorant to concrete mix
- Consider graffiti potential
- Consider pattern depth and concrete cover
Baseline (Pedestrian Railing):

- Twin tube steel pedestrian railing now has baseline color option
  - Black or unpainted (galvanized)
  - Options depend on location
  - Mounted on sealed concrete parapet
  - Should match vandal fencing when both are required

- Center posts between parapet expansion joints whenever possible
Common Enhancements (Pedestrian Railing):

- Alternate colors
- Alternate (decorative) railing styles

Must comply with AASHTO’s *Manual for Assessing Safety Hardware* (MASH 2016)
**Baseline:**

- Vandal fencing also now has baseline color option
  - 1” diamond chain link with PVC coating
  - Black or unpainted (galvanized)
  - Options depend on location
  - Should match pedestrian railing when both are required

- Align fence posts with pedestrian railing posts whenever possible
Common Enhancements:

- Alternate colors, decorative fence styles
- Color options/guidance in BDM
- Tether decorative fence panels for safety
- Overpass lettering considered by ODOT - Municipalities, other “major generators”
- Private advertising prohibited
- General Goal: No hanging signs on bridges - Logos, images, lettering must be part of structure
Baseline:

- **Deck Fascia**
  - Deck overhang (creates light/shadow contrast)
  - Light-neutral sealer to match parapet

- **Beams/Girders**
  - Coated steel: painted light green, light blue, or light brown
    - Federal colors listed in ODOT’s CMS
  - Prestressed concrete: seal using same three federal colors
  - Weathering steel, metallized steel, or galvanized steel
    - Environmentally sensitive areas or difficult maintenance situations

- Deck overhang specified in BDM
  - Straight beams on a curved alignment ➔ variable shadow lines

- Beam/girder depth to span width ratio ➔ important consideration
  - 20:1 to 30:1 is typical target

- Maintain consistent beam/girder depth for length of bridge
Baseline (Continued):

- Light Green
- Light Blue
- Light Brown
- Weathering Steel
Common Enhancements:
- Alternate colors
- Alternate girder shapes/treatments

Avoid red paint/sealers

Haunched girders:
- Primarily used for longer-span bridges, or as structural needs/economics warrant
- Visually appealing but typically not used for aesthetic purposes only
- Fascia treatments that mimic haunched girders can be used
Baseline:

- Highway Bridges
  - Cap and column style (36” round columns)
  - Ends of pier caps rounded and beveled
  - Light-neutral sealer (some circumstances)

- Waterway Bridges
  - Capped pile, T-Type, or solid wall piers
  - Light-neutral sealer (some circumstances)

Sealed when exposed to salt spray or highly visible
Common Enhancements:

- Formliner patterns
- Alternate pier shapes and colors
- Logos, images, decorative designs

Avoid red sealers/concrete colorants

Extravagant designs, colors, and patterns
  - Can be costly and distracting
  - Can make substructure look disproportionate

Basic patterns and subtle colors often look best
Abutments and retaining walls now have baseline formliner patterns

- Vertical groove, dry stack, or ashlar block
- Light-neutral sealer

Do not apply formliner patterns to stub or partial-height abutments

Consider maintenance with vertical groove pattern
- Graffiti more difficult to remove
- More susceptible to chipping/damage when close to road
Common Enhancements:

- Alternate formliner patterns
- Alternate materials (stone, brick)
- Alternate colors
- Logos, images, decorative designs

- Avoid red sealers and using concrete colorants
- Consider formliner pattern depth/cover
- Straight walls preferred (limit corners, curves)
- Logo/images too small, too complex = driver distraction!
Baseline:

- Concrete with formliner pattern and color options (ground-mounted)
  - Ashlar block, dry stack, or fieldstone
  - Light gray, beige, or tan

- Fiberglass with horizontal grooves (ground or structure-mounted)
  - Light gray, beige, or tan

- Vegetative Screening
  - Aesthetic treatment only (no noise benefit)

- Clear acrylic (ground or structure-mounted)
  - Can be baseline when sensitive land uses are involved
  - Visual connection required to maintain use

- ODOT’s Noise Manual and BDM list a number of aesthetic considerations
- Public involvement helps determine barrier aesthetics (color, texture)
Baseline (Continued):

Examples.....

- Gray Ashlar
- Beige Dry Stack
- Tan Fieldstone
- Gray Fiberglass
- Vegetative Screening
- Clear Acrylic
Common Enhancements:
- Alternate formliner patterns
- Alternate colors
- Logos, images, decorative designs

- Earthen berms are considered enhancements
  - But are eligible for federal funds
- Current practice no colored sealers on posts
- Logo/images too small, too complex = driver distraction!
Baseline:

- Decorative lighting of bridges not a baseline treatment
  - Roadway/street lighting on bridges discussed later

Common Enhancements:

- Illumination of bridge superstructure and substructure for aesthetic purposes
  - Simple monotone or extravagant multi-colored
  - Can also have pedestrian safety uses
  - Can also be used to illuminate special enhancements on or around bridge

- Driver safety is paramount - must not be distracting to drivers on bridge
- Rapidly changing technologies (hardware, software)
Final Thought - Structures:

- Aesthetic Design Guidelines also includes section on general bridge layout
  - Discussion of aesthetic design ratios
  - Span arrangement considerations

- Reminder.......
  - Structure design is complex
  - Aesthetic guidelines are primarily for designer consideration
  - Not design requirements unless specified in the BDM
  - Some guidelines may not be feasible or practical on a given structure
  - Sound engineering and safety always come first
Questions?

Contact:

Tim Keller, P.E. Administrator
ODOT - Office of Structural Engineering
(614) 466-2463
Tim.Keller@dot.ohio.gov