Appendix E
Aesthetic Enhancement Guidelines

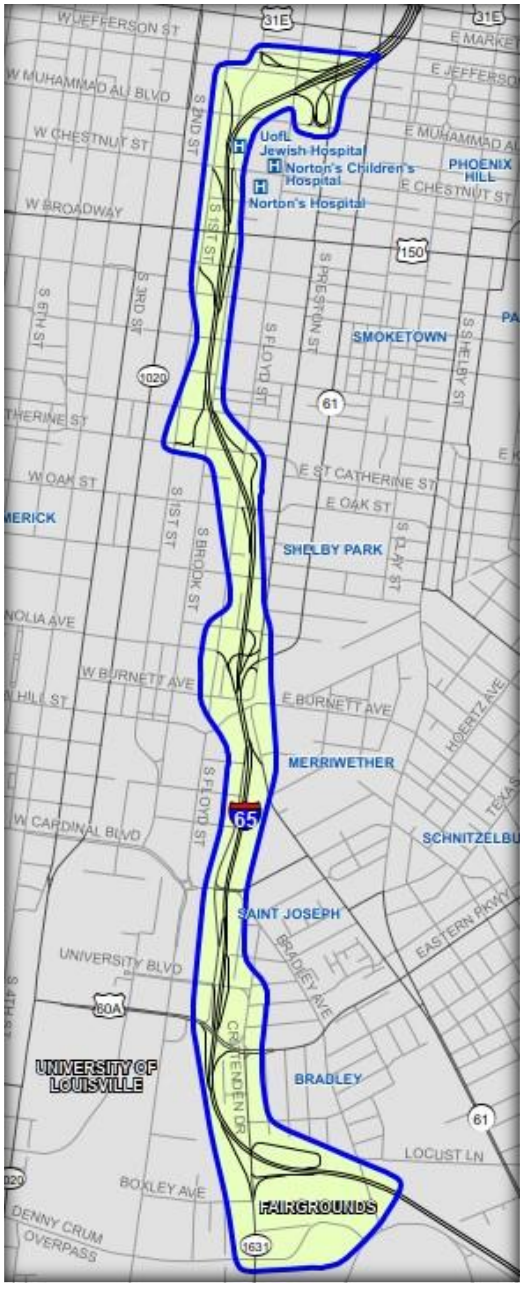
Jefferson County

I-65 Corridor Planning Study

From I-264 to Downtown Louisville

Item No. 5-569.00

October 2021



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Aesthetic Enhancement Guidelines for I-65 in Louisville

Item No. 5-569

An urban interstate corridor is often the travelers' first and last impression of a community. The view from the interstate may be the only opportunity travelers get to see and experience the community's values and culture. Each of us has no doubt experienced a city only through the view from the car window. The appearance of highway facilities—interstate highways such as I-65 through Louisville, Kentucky—also has a lasting impact on the communities along the corridor. These two perspectives—visitors' drive-by view and nearby residents' experiences—are often categorized as "the view from the road" and "the view of the road," each of which warrants a strategic plan for providing safe and appropriate enhancements.

Louisville's 2040 Comprehensive Plan

Louisville's recently adopted *2040 Comprehensive Plan*[1] (2040 Comp Plan), states as a mobility goal: "Transportation facilities are designed to complement the character of surrounding neighborhood" (Mobility Goal 2, Objective h). Subsequent implementation strategies relevant to I-65 include "planting of trees and green infrastructure, tree preservation and enhancement, green infrastructure, green space, landscaping, lighting, …." The 2040 Plan also places emphasis on the City's tourism industry and projects it to grow 19% by 2040, the success of which is dependent upon visitors' "complete experience" while in Louisville, including the city's aesthetic appeal and transportation system.

Basis for Considering Aesthetic Enhancements

A. *Reinforce a sense of regional identity and place.*
B. *Create a quality visual experience for travelers.*
C. *Improve highway drivability and safety.*
D. *Provide visual continuity and internally unify various highway components.*
E. *Integrate the corridor with the local setting.*
F. *Screen and buffer views of the highway from adjacent areas, and screen views from the highway of areas in disrepair.*
G. *Accentuate scenic vistas.*
H. *Protect and improve environmental quality including air and water quality, habitat protection, and erosion control.*
I. *Visually and physically extend and connect public and open space.*
J. *Reduce roadside maintenance.*
K. *Contribute to a consistent definition of community gateways.*

Methodology

This section provides a survey of aesthetic elements to be considered in further project development phases and processes for involving local stakeholders; it does not subscribe specific applications for the corridor. The following sections and recommendations are based on guidance from local aesthetic and enhancement projects—including the I-65 Kennedy Interchange Complex reconstruction in 2015 in downtown Louisville—and on policies and procedures of other state departments of transportation (DOTs), the Federal Highway Administration (FHWA), American Association of State Highway Transportation Officials (AASHTO), and the Transportation Research Board (TRB).

Key elements discussed herein are aimed at developing a consistent, cohesive, and community-specific "branding" by means of colors, materials, lighting, landscaping, walls, fencing, signage, and other design features. **The goal is to create an interstate corridor with a unique and integrated**

[1] https://louisvilleky.gov/document/plan2040louisvillemetrocomprehensiveplanfinal11-1-18pdf

aesthetic—for both the *view of* and *view from* Louisville's I-65 Gateway Corridor—appealing to visitors and residents alike. The specifics need to be developed with community and stakeholder input during final design of any aesthetic enhancements projects, considered alongside the driver's experience while navigating the interstate corridor.

I-65—A Louisville Gateway Corridor

I-65 is the major gateway corridor to Louisville. The interstate carries approximately double the amount of traffic carried on I-64 or I-71—approximately 120,000 vehicles per day (vpd) on I-65, verses 65,000 vpd on I-64 to the west, 74,000 vpd on I-64 to the east, and 58,000 vpd on I-71 to the northeast. It also serves as a primary entrance to local neighborhood communities, major universities (e.g., University of Louisville, Spaulding University, Jefferson Community and Technical College), the Muhammad Ali International Airport, the Hospital District, the Kentucky State Fair and Exposition Center, the Downtown Convention Center, historic districts, major corporate headquarters, performing arts and sports venues, and other significant points of interest that attract millions of visitors to Louisville each year. A quick visit to these establishments will show they each place a high value on aesthetics and their unique sense of place, and one can conclude the drive to and from them should as well, as implied in Louisville's 2040 Comp Plan.

The northern section of I-65 in Louisville was rebuilt in 2015 as part of the Louisville-Southern Indiana Ohio River Bridges Project. This project incorporated aesthetic designs that should be considered for the rest of the corridor.[2] No other section of the I-65 corridor in Jefferson County has undergone a recent major reconstruction that has allowed for aesthetic enhancements.

Projects Suitable for Aesthetic Enhancements

Types of projects for which aesthetic enhancements should be considered—

- Bridge replacement or rehabilitation not considered minor.
- Retaining wall rehabilitation (including tinting/sealing), replacement, or installation.
- Lighting installation, including bridge underpasses.
- Noise barrier rehabilitation (including tinting/sealing), replacement, or installation.
- Highway rehabilitation/minor widening.
- Fencing installation.
- New signage, including dynamic message signage, tourism focused, destination, and wayfinding.
- Landscape "beautification."

[2] https://www.in.gov/indot/files/East-End-Crossing-Community-Meeting-Final-Aesthetics-Part-2.pdf

Aesthetic Enhancement Guidelines Applicable to I-65 Corridor

GENERAL GUIDELINES—

- Design well-defined, attractive **gateway bridges** into the community.
- Specify **roadside signs** that meet the AASHTO standards but also respond to the local cultural and environmental context.
- Use **earth-toned colors** versus vivid colors (especially red, which fades quickly) to blend structures in with surroundings, weather less, and not appear dingy or faded. More intense colors may be used on areas of a structure that will be in predominant shade to brighten areas below the structure.
- **Plain concrete is a color** and should be used as much as possible, especially in small areas, to reduce initial costs and future maintenance costs.
- **Use form liner finishes** (**Figure 1**, page 2) to add textures and patterns to new concrete—e.g. to abutments, wingwalls, barriers, etc. These provide unlimited effects or textures and can be combined with other effects such as colored coatings and sandblasting.
- Use **color-coated chain-link fencing** for bridge safety as a low-cost alternative to providing long-term protection against unattractive rusty fences.
- At the surface level, **drainage facilitie**s and channels should be incorporated into the overall aesthetic design scheme. Wetlands, detention, and retention basins can be visual assets incorporated as part of the landscape and aesthetics treatment. Plant materials should be selected and placed so that mature specimens will not interfere with drainage channels or structures. Use native vegetation to collect and filter run-off.
- Where ramps connect to surface streets, planting should be done as part of a **comprehensive landscape and aesthetics**

AESTHETIC PERCEPTION ON THE HIGHWAY

Before making specific aesthetic design decisions, a project designer must understand and consider the limitations and abilities of the eye. The relevant principles of vision in motion are:

- ***Seeing takes time.*** It takes about a second to change focus from seeing the speedometer on the dashboard to seeing detail on the road ahead. This time is significant, because at 60 miles per hour the observer is moving at 88 feet per second. Nearby objects move across the field of view very rapidly and may be missed in the interval between one glance and the next.
- ***As speed increases, concentration increases.*** As speed increases, the number of things to be seen and attended to increases proportionately. It becomes increasingly dangerous to observe irrelevant objects and concentration becomes fixed on the approaching ribbon of road.
- ***As speed increases, the point of concentration recedes.*** The eyes are feeling their way ahead of the wheels; the focus point at 25 mph lies approximately 600 feet ahead on the road. This distance increases as speed increases. At 45 mph, the fixation point lies some 1,200 feet ahead; at 65 mph, it is as far as 2,000 feet ahead.
- ***As speed increases, peripheral vision diminishes.*** At 25 mph, the eye encompasses a total horizontal angle of about 100 degrees. This is referred to as the cone of vision. At 45 mph, this narrows down to about 65 degrees; above 60 mph, the angle is less than 40 degrees. This restriction is called "tunnel vision."
- ***As speed increases, foreground detail begins to fade.*** At higher speeds, nearby objects move across the field of view very quickly. Since rapidly moving objects cannot be perceived separately, the driver does not clearly discern them, except at some distance. Objects at medium distances are seen only for a short time. Only distant objects, the sky or horizon, have any permanence and can be clearly understood.

Aesthetic Design Guidelines.
Ohio Department of Transportation. July 2018

plan. Consult with the Urban Forester at the Louisville Metro Division of Community Forestry prior to selecting any species.

- Use **locally available materials**, where appropriate. Use materials that will not show weather and water stains.
- Where **guardrails** are required, simple changes in color and material help lessen their visual impact and can contribute to the cohesiveness of the aesthetic plan.
- Have **project partners review design documents** and plant material selection prior to installation. Some projects have special partnership arrangements, for example, the DOT might require the City, County, University, or other partners to maintain plant communities.
- Conduct a **lifecycle cost analysis** to measure the cost of proposed aesthetic improvements. Signage, plantings, and materials should be included in the analysis to determine the overall lifetime cost of upkeep and maintenance.

Figure 1: Form Liner Options

I-65 INTERCHANGE GUIDELINES

Because interchanges are so important to the overall perception of an urban freeway and adjacent communities, it requires careful attention to landscape and aesthetic design properties. **Figure 2** and **Figure 3** (page 2) provide views of I-65 from I-64 and River Road, showing how simplicity of interchange design reduces the complexity for motorists navigating what was known as "Spaghetti Junction" prior to major redesign of the interchange and construction of the I-65 Abraham Lincoln Bridge, which opened in 2015. The following considerations will affect interchange landscape and aesthetics design decisions.

Figure 2: Gateway Options: I-65 over Louisville and Indiana city streets

- Design elements, such as **night lighting**, must complement the structures and not interfere with operational requirements of the interchange.
- Design elements should **not have reflective surfaces** or be placed so that they cause visual interference with nearby residents.
- **Use uniform lightly painted elements** like superstructures, railings, light poles, and sign supports, to visually unify the interchange.
- **Design of plantings** in interchanges must be done so that it achieves the aesthetic goals for the specific corridor and accommodates maintenance of the interchange.
    - Native Hardwood trees appropriately spaced within the open areas of the interchange provide the best long-term sustainable landscaping and air quality benefits.

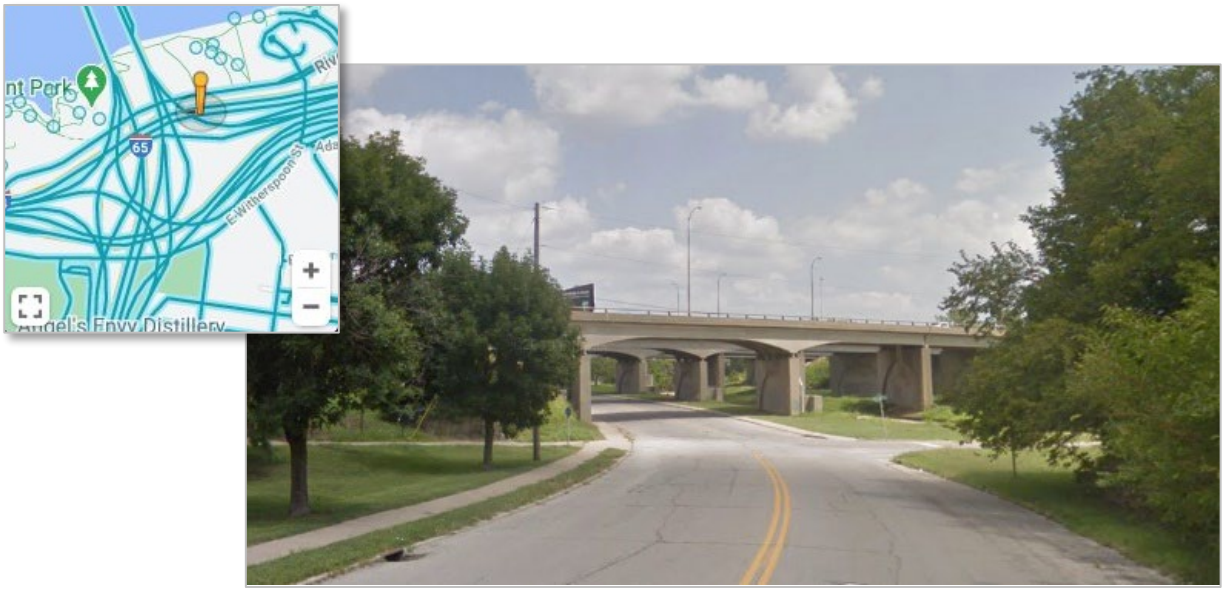

Figure 3: Views of I-65 Interchange Area

***Above:** I-65 overpass from scenic River Road, showing arching bridge structure. **Center Left:** View of I-65 ramps from River Road, with textured retaining wall. **Below:** Views of I-65 ramps leading to the Kennedy and Lincoln bridges. The complexity of the interchange and mainline are reduced in appearance by the simplicity of the structural features and enhanced by plantings taking advantage of natural light between the divided ramps.*

(Source: GoogleEarth)

- Planting is most effective in areas of low slope. Planting on slopes is difficult to maintain and will shade out grass cover, which leads to erosion.
- Planting is most effective when placed in the driver's line of sight and where the background is either sky or light-colored structures. However, care should be taken to

avoid blocking driver sight lines; i.e. vegetation should not limit visibility for making turns to/from ramp termini.

- Design solutions must be sensitive to **deeply shaded areas** and areas that are difficult to access.
    - Provide an attractive, uncluttered, underpass environment for pedestrians and bicyclists. For nearly all underpasses, install appropriate lighting for pedestrian and bicycling safety—typically to the same luminance as the roadway.
    - Bridges and tall embankments will shade areas of an interchange, making the establishment of a vegetative cover nearly impossible—unless the highway is divided in such a way as to allow light to penetrate below, as shown in **Figure 4**. Deeply shaded areas should be either eliminated structurally using walls or surfaced with an appropriate low-maintenance, non-living material (e.g. decorative rock).
    - Shaded areas tend to collect debris, attract graffiti, and are sometimes occupied by transients. These areas should be eliminated structurally if possible. When this is not possible, the views should remain open to allow visual policing.

Figure 4: Example of landscaping of Waterfront Park around and under I-65.

Note: the tops of the cable support structures are in the shape of a 5-sided baseball Homeplate, a nod to Louisville's baseball traditions and our home team, the Louisville Bats, whose stadium is near the interchange.

- **Gore** areas between ramps and weaving lanes often contain crash attenuation barriers that are not particularly attractive. The triangular area between the diverging lanes tends to accumulate trash. Design actions appropriate in these areas are:
    - Use colored pavement that contrast sharply with the driving lane pavement.
    - Avoid rough textures that will trap and hold trash and debris.
- **Group signs** to provide a uniform horizon even if the signs are of different dimensions; such groupings contribute a sense of visual order.
- **Entrance and Exit Ramps**—Extra care must be taken in the design of the areas around a ramp to ensure that nothing will obstruct a clear view of approaching traffic. The aesthetics goal should

focus on ensuring visibility and clarity of traffic-related activities. Several design techniques are available to meet this goal.

- Use contrasting textures and colors to visually mark different zones of activity such as crosswalks and islands. Such treatments should be compliant with KYTC, FHWA, and MUTCD standards.
- Avoid placing any vertical obstruction between the ramp and the traveled lanes over its entire length. To avoid creating visual obstructions:
  - Maintain appropriate setbacks for plantings or screening structures.
  - Select and place plant materials so that they will not block views of the ramp-surface street intersection as they mature. For example, high branching trees—species that have an ascending branch pattern that will remain at least 6 feet above the ground—are preferred over trees that tend to branch close to the ground. KYTC District 5 should be contacted during the design phase for any planned improvements on state-owned right-of-way.
  - Avoid planting in the zone between the beginning of the ramp and the gore of the acceleration or deceleration lane, or in the gore or zone between active travel lanes and the ramp.
- Landscape excess right-of-way and areas where ramps have been removed.

Initial Steps for Undertaking Aesthetic Enhancement Process

⇨ First and foremost, as with any structural element used in the roadway, aesthetic design must be evaluated by its effect on the transportation function, specifically driver performance and safety.

⇨ Evaluate existing conditions—such as vegetation, hydraulic patterns, topography, wildlife—and the built environment including historic elements, recreational facilities, institutions, businesses, local roadways, neighborhoods, local populations, aesthetic features (built and natural), etc.

⇨ Identify the scale and scope of the project. Given the existing conditions, what are the problems to be solved? What conditions are contributing to the less than desirable image? Is it to be development of a unifying theme along an existing urban interstate, or identification of areas where weeding and litter removal would sufficiently provide aesthetic relief?

⇨ Include procurement for future Final Design and/or Construction services, include a requirement that the contractor and/or consultant submit a Technical Proposal for developing an *Aesthetics and Enhancement Implementation (AEI) Plan* that identifies details in their Technical Proposal. The contractor/consultant should meet the requirements for aesthetics and enhancements management including:

- Identifying a landscape and aesthetics manager.
- Developing graphic support.
- Developing and implementing a landscape and aesthetics plan.
- Collaborating with the KYTC and key stakeholders.

⇨ Assess elements of the AEI Plan considering previously approved or on-going environmental documentation; specifically, Section 106 of the National Historic Preservation Act, Section 4(f) of the U.S. Department of Transportation Act, and the National Environmental Protection Act (NEPA).

⇨ Consult FHWA's *An Integrated Approach to Sustainable Roadside Design and Restoration*[3] and AASHTO's *Context Sensitive Design/Solutions*.[4]

⇨ **Plan for the life of a project:** compare the full lifecycle costs of different strategies and approaches. Roadway design and construction decisions are complex and interwoven. In recent years, infrastructure rating systems have evolved with an emphasis on measuring transportation sustainability. Criteria within these systems pertain to the roadside environment. In addition, specific programs should be consulted as a decision-making tool, such as FHWA's life-cycle cost analysis software, Realcost[5].

⇨ **Identify and communicate with stakeholders** about their goals, priorities, expectations, and perceptions of the roadside environment. Initiate coordination with interested stakeholders early in the design process to develop a shared vision and sustainability goals for the project. Establish a local committee to provide input. Without community buy-in, aesthetic and enhancement measures might well be met with opposition as being insensitive to the wishes/needs of a neighborhood, unattractive, undesirable, etc. Citizens and community groups who daily experience the view of the road value the opportunity to provide input and such input is generally invaluable to the success of a project. User preference surveys using visual examples are useful tools in garnering public input. Local agencies and groups to be considered for committee membership include:

- Louisville Metro - Louisville Forward
- Louisville Metro - Division of Community Forestry
- University of Louisville
- Spaulding University
- Louisville Downtown Development Corporation
- Kentucky Fair and Exposition Center
- Louisville Muhammad Ali International Airport
- Neighborhood Associations adjacent to I-65: e.g., Phoenix Hill, Old Louisville, Shelby Park, Saint Joseph

Photos Source: *Aesthetics & Enhancements Implementation Plan & Record of Recommendations and Decisions*, prepared for Louisville, and Southern Indiana Ohio River Bridges Project, by Walsh Construction. May 2013.

[3] https://www.fhwa.dot.gov/clas/pdfs/IntegratedApproachtoSustainableRoadsideDesign.pdf

[4] *Designing for Environmental Stewardship in Construction & Maintenance*, Chapter 3, Section 3.2, "Context Sensitive Design/Solutions." https://environment.transportation.org/environmental_issues/construct_maint_prac/compendium/manual/3_1.aspx

[5] FHWA: Life-Cycle Cost Analysis Software: https://www.fhwa.dot.gov/infrastructure/asstmgmt/lccasoft.cfm