

Appendix G: Visual Resources Technical Memorandum

State Route (SR) 170

From SR-62 Interchange to SR-9 (US-25W), Anderson County,
Tennessee

Tennessee Department of Transportation

TDOT PIN 124121.00

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1. Introduction

The Tennessee Department of Transportation (TDOT) in cooperation with the Federal Highway Administration (FHWA), has initiated an Environmental Assessment (EA) for the proposed State Route (SR)-170 widening and realignment project in Anderson County, Tennessee (see Figure 1). The proposed improvements would widen the existing two to three-lane typical section into a four to five-lane section with two lanes in each direction with additional improvements that include sidewalks, a shared use path, and turn lanes at strategic intersections.

1.1 Alternatives Under Consideration

A No-Build Alternative and one Build Alternative are being evaluated in the EA. Each alternative is described in the subsequent text below

1.1.1 No-Build Alternative

The No-Build Alternative would retain the existing SR-170 and roadway configuration throughout the project area except for those modifications to the roadway network that have been programmed and approved for implementation, as identified in TDOT's 25-Year Long Range Transportation Policy Plan,¹ State Transportation Improvement Program (STIP),² and the TDOT 10-Year Project Plan and would allow for routine maintenance and safety upgrades.³

1.1.2 Build Alternative

The Build Alternative would include widening the existing two to three-lane typical section to a four-lane typical section (two 12-foot travel lanes in each direction) with a variable median and eight-foot shoulders west of Walnut Valley Road, and a five-lane section (two 12-foot travel lanes in each direction and a center 12-foot two-way left turn lane [TWLTL]) with eight-foot shoulders east of Walnut Valley Road. The project would also include curb and gutter, a five-foot sidewalk to the north, a 10-foot shared-use path to the south, and guardrails as needed. Proposed improvements would also include adding turn lanes at strategic intersections, realigning and reconfiguring several intersections along the corridor, and replacing the existing two-lane bridge over the Clinch River with a four-lane bridge with a painted median.

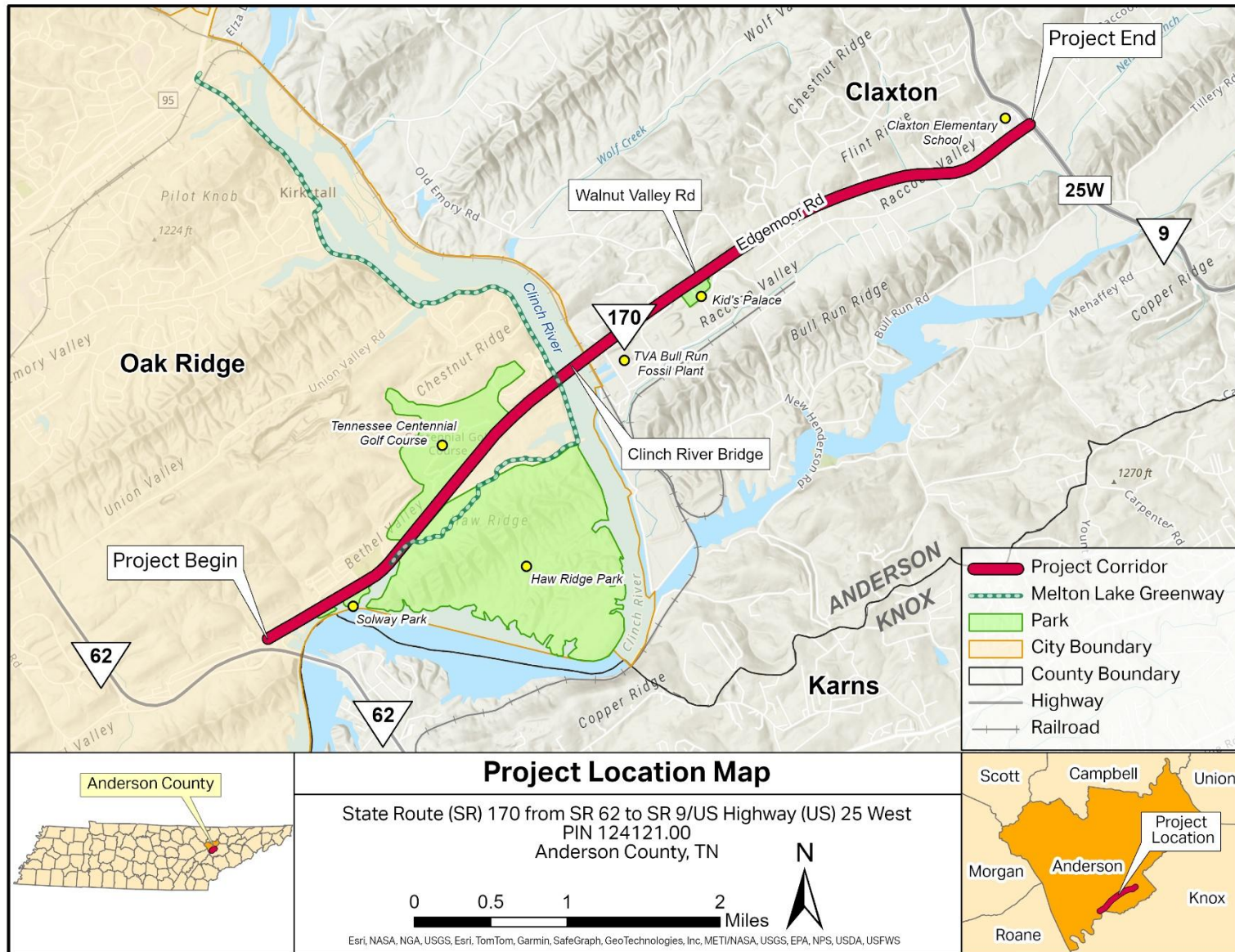
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¹ TDOT's 25-Year Long Range Transportation Policy Plan, <https://www.tn.gov/tdot/long-range-planning-home/25-year-transportation-policy-plan.html> (accessed 6/6/2015)

² State Transportation Improvement Program (STIP), https://www.tn.gov/content/dam/tn/tdot/programdevelopment/2023-2026-stip-draft/Tennessee%20STIP%202023-2026%20Final_R.pdf (accessed 6/6/2025)

³ TDOT's 10-Year Project Plan, <https://www.tn.gov/content/dam/tn/tdot/professional-services-/plans-and-programs/Final%2010yp%20FY-26%202025.pdf> (accessed 6/18/2025)

Figure 1: Project Location Map



2. Focus of this Technical Memorandum

This technical memorandum assesses the existing visual conditions, including the project setting, landscape units, and viewer sensitivity along the SR-170 project corridor. Furthermore, this technical memorandum also evaluates impacts to visual quality under the Build Alternative and provides an estimated impact determination for both the No-Build and Build Alternatives.

3. Regulatory Context

Various federal, state, and local laws and programs that deal with areas throughout the country that have been recognized for their scenic values, include:

- Federal-aid Highway Act of 1970⁴
- National Scenic Byways Program⁵
- National Scenic Areas⁶;
- Wild and Scenic Rivers Act⁷
- National Trails System Act⁸
- National Monuments⁹
- National Historic Preservation Act¹⁰
- Section 4(f) of the U.S. Department of Transportation Act of 1966¹¹
- Section 6(f) of the Land and Water Conservation Fund Act of 1965¹²
- Local zoning ordinances and historic overlay districts

4. Methodology

This Visual Impact Assessment (VIA) Memorandum references the *Guidelines for the Visual Impact Assessment of Highway Projects*¹³ to evaluate the existing visual quality of the project corridor and determine potential visual impacts from the project. The project's visual character is a broad term that encompasses the environment, the people, and their intersection. During the initiation of the visual assessment, the FHWA Visual Impact Assessment Scoping Questionnaire (see *Attachment G.1*) was used to determine the appropriate level of assessment.

5. Visual Character

The visual character of an area consists of a combination of physical, biological, and cultural attributes that make a landscape identifiable or unique.

⁴ <https://www.govinfo.gov/content/pkg/STATUTE-84/pdf/STATUTE-84-Pg1713.pdf>

⁵ <https://fhwaapps.fhwa.dot.gov/bywaysp>

⁶ <https://uscode.house.gov/view.xhtml?path=/prelim@title16/chapter2/subchapter2&edition=prelim>

⁷ <https://www.govinfo.gov/content/pkg/COMPS-1758/pdf/COMPS-1758.pdf>

⁸ <https://www.nps.gov/subjects/nationaltrailssystem/upload/National-Trails-System-Act-Amended-2019.pdf>

⁹ <https://www.nps.gov/subjects/archeology/national-monument-facts-and-figures.htm>

¹⁰ <https://www.achp.gov/sites/default/files/2018-06/nhpa.pdf>

¹¹ <https://www.govinfo.gov/content/pkg/STATUTE-80/pdf/STATUTE-80-Pg931.pdf>

¹² <https://www.govinfo.gov/content/pkg/STATUTE-78/pdf/STATUTE-78-Pg897.pdf>

¹³ https://www.environment.fhwa.dot.gov/env_topics/other_topics/VIA_Guidelines_for_Highway_Projects.aspx

The existing visual landscape of the project corridor is primarily rural and undeveloped, with scattered residential developments. Open or forested areas are more prevalent west of the Clinch River and include the Tennessee Centennial Golf Course and Haw Ridge Park. The Clinch River separates the City of Oak Ridge and the west side of the SR-170 corridor from unincorporated areas of Anderson County, the community of Claxton, and the east side of the SR-170 corridor. East of the Clinch River, the project area becomes slightly more urbanized with residential communities and businesses becoming more frequent adjacent to the roadway. Overhead utility lines and transmission lines run parallel to SR-170. The TVA Bull Run Fossil Plant is also located directly east of the SR-170 bridge over the Clinch River.

6. Visual Quality and Visually Sensitive Resources

The visual quality of a landscape pertains to the relative excellence of a visual experience. The project corridor's visual quality has been assessed using three criteria recommended by FHWA in their 1981 publication, *Visual Impact Assessment for Highway Projects: Vividness, Intactness, and Unity*. For a landscape to receive a high-quality rating, all three criteria must be rated highly. Vividness refers to the memorable visual impact of landscape components as they combine to create striking and distinctive patterns. Intactness refers to the visual integrity of the landscape. A lesser amount of encroaching (out-of-character) elements means a higher visual integrity. Unity refers to the visual coherence and compositional harmony of the landscape when it is looked at in its entirety.

Visually sensitive resources are those that are visually important for historic, architectural, recreational, or community associations. Any significant natural features that are visually important can also be visually sensitive resources.

6.1 Area of Visual Effect

The FHWA Guidelines for the Visual Impact Assessment of Highway Projects¹⁴ specify that visual impacts should be assessed within a given project's Area of Visual Effect (AVE), which is defined as the area of project visibility. Based on topography, field review, and data availability, the AVE was defined as the area within a half-mile of the Build Alternative (see *Figure 2: Landscape Units*).

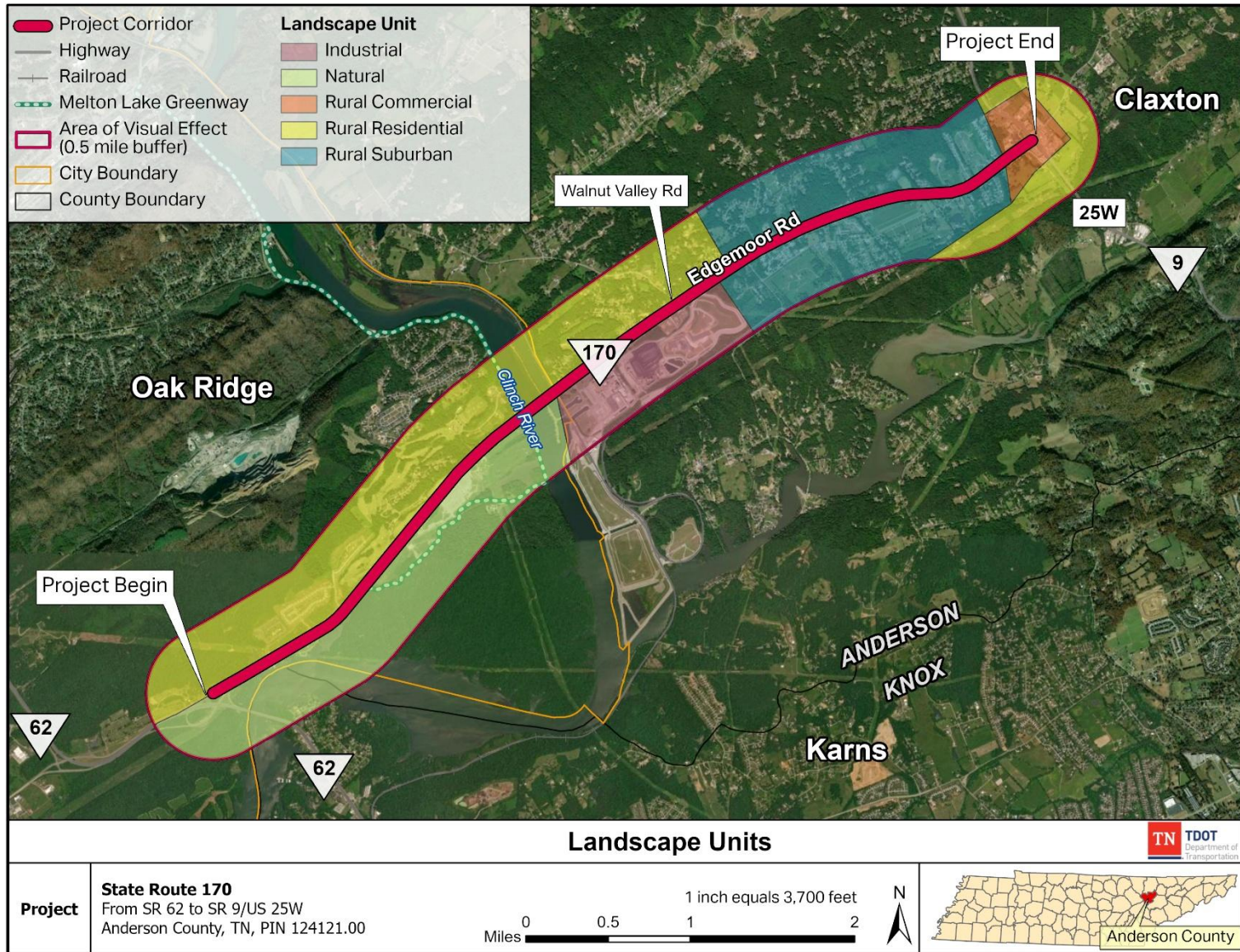
6.2 Landscape Units in the Project Area

Along the project corridor, there are several subcategories or landscaping units. These landscaping units include rural residential, rural suburban, rural commercial, and natural. The landscaping units comprising the project area are relatively large and remain consistent in their visual quality throughout their reach.

A description of each of the landscape units is provided below and shown on *Figure 2: Landscape Units*.

¹⁴ https://www.environment.fhwa.dot.gov/env_topics/other_topics/VIA_Guidelines_for_Highway_Projects.aspx

Figure 2: Landscape Units



Rural Residential:

This landscape unit consists of a mix of rural and residential land uses, which can be seen especially towards the western terminus of the project, in the City of Oak Ridge. The landscape within this section of the project corridor consists mostly of scattered residences throughout the rural stretch of the corridor. There are a few residential communities that branch off from the corridor, but there are no densely populated neighborhoods. This development is common for the built-up areas near small towns and does not indicate visual sensitivity or unique visual importance. The visual quality of this landscape unit is moderate.



Rural Residential Landscape

Rural Suburban:

This landscape unit features more densely populated rural and suburban areas. As the project continues east towards the unincorporated community of Claxton and rural land gets converted to medium-density suburban neighborhoods and commercial and small industrial developments, more of this landscape appears. The section of the project corridor approaching the eastern terminus of the project aligns closest with this landscape unit. This development is common for the built-up areas near small towns and does not indicate visual sensitivity or unique visual importance. The visual quality of this landscape unit is low.



Rural Suburban Landscape

Rural Commercial:

This landscape unit is made up of scattered or small clusters of commercial and small industrial buildings that specifically serve the local rural community. The visual sensitivity of the landscape is considered low, as the components are fairly common in rural areas and do not generally combine in striking and distinctive visual patterns. The visual quality of this landscape unit is low.



Rural Commercial Landscape

Industrial:

This landscape unit consists of large industrial facilities and includes the land used for TVA Bull Run Fossil Plant facility. The visual sensitivity of the landscape is considered low.



Industrial Landscape

Natural:

This landscape unit consists of the natural areas, primarily west of the Clinch River. Within the landscape unit, there are views of rolling hills, rivers, and forested areas. The Melton Lake Greenway runs along the western bank of the Clinch River, providing some natural harmony. Views along the greenway south of SR-170 are slightly interrupted by elements out of context with the natural landscape unit, including overhead transmission lines, bridges, and the TVA Bull Run Fossil Plant infrastructure. Haw Ridge Park is located south of SR-170. The park includes several miles of trails, some with views of the SR-170 bridge over the Clinch River. This landscape is generally intact with a high degree of unity. The visual quality of this landscape is considered moderate to high since the components usually combine in striking and distinctive visual patterns.



Natural Landscape

6.3 Visually Sensitive Resources

There are no officially designated scenic areas along the project corridor. The Clinch River offers noteworthy views of the river and background rolling hills, with little to no visual intrusions west of SR-170. The TVA Bull Run Fossil Plant is located on the eastern bank of the river, south of SR-170, interrupting the harmony of the scenic views facing east. The Clinch River is not a part of the National Wild and Scenic Rivers System.



Melton Lake Greenway facing south towards SR 170

7. Viewer Groups

Viewer groups are divided into two main categories: those who can see the surrounding area from the new roadway and those who can see the new roadway from the surrounding area. The visual quality of an area is assessed by considering different viewer groups, the number of viewers in each group, the duration and frequency of their exposure, their distance from the road, and their sensitivity level, which is influenced by their activity or purpose while using the road.

The viewers who would be traveling through the project corridor include:

- **Local users** who have long-term familiarity with the area's visual resources and will be aware of changes.
- **Commuters** who are somewhat less aware of their surroundings due to the repetitive nature of their activity.
- **Tourists or travelers** who generally have a high awareness of visual resources but are less sensitive to specific changes in an unfamiliar environment.

Viewers of the corridor include local residents, tourists visiting the City of Oak Ridge or recreational resources in the area, and employees and customers of commercial or industrial facilities.

8. Potential Visual Impacts

As discussed in FHWA’s *Guidelines for the Visual Impact Assessment of Highway Projects*¹⁵ visual impacts refer to changes to the environment or to viewers. This is measured by the compatibility of the impact and sensitivity to the impact. These impacts can be classified as minimal, moderate, or significant and are described in *Table 1*.

Table 1: Levels of Visual Impact

Minimal	Existing transportation facilities are already part of the viewshed, and the view contains few or no visually sensitive resources. The project would introduce few, if any, noticeable changes to the viewshed.
Moderate	Changes to the existing viewshed would be noticeable but not significant; visually sensitive resources would experience a noticeable change in view.
High	Substantial changes to the existing viewshed would result in a significantly altered view; visually sensitive resources would undergo a major change in view.

8.1 No-Build Alternative

The No-Build Alternative would neither introduce nor eliminate transportation elements within the visual setting of the project corridor. It would not directly alter the form, character, or quality of the visual environment along the project corridor.

8.2 Build Alternative

The visual impact of the Build Alternative is anticipated to be minimal as transportation facilities are already part of the viewshed. The proposed Build Alternative would add to the scale of existing features; however, viewer groups are accustomed to viewing the elements of transportation infrastructure in the project area. Viewers would notice the changes along the project corridor, but the changes would not substantially degrade existing views. No areas of high visual quality or visually sensitive resources exist along the project corridor. Views from the Melton Lake Greenway would be slightly degraded due to the addition of infrastructure, however, the existing bridge and surrounding overhead utilities interrupt the natural harmony of existing views. Land use in Oak Ridge is guided by the 2019 Oak Ridge City Blueprint,¹⁶ which is a comprehensive, community-driven plan that will guide the city's growth and development over the coming decades. The Blueprint is structured around six core themes including a Land Use and Infrastructure theme, which seeks to align land use with infrastructure capabilities, promoting sustainable development and efficient use of resources. While the SR-170 widening project is not mentioned in any of the recommendations in the land use core theme, the improvements associated with the proposed project would not conflict with any of the recommendations.

Construction activities inherently involve the introduction of temporary visual and physical elements along the project corridor. These could include, but would not be limited to, highly visible safety measures like orange construction fencing, the presence of large and heavy machinery, temporary lighting installations for nighttime work, and the unavoidable disturbance of the ground surface. These impacts are temporary and would be coordinated with the local community to minimize disruption. Effective mitigation strategies should be implemented to minimize their duration and extent.

The overall visual quality of the landscape units is anticipated to remain the same, therefore, the visual impacts would be considered minimal and neutral.

¹⁵ https://www.environment.fhwa.dot.gov/env_topics/other_topics/VIA_Guidelines_for_Highway_Projects.aspx#chap62

¹⁶ <https://oakridgeblueprint.info/plan/>

Attachments

G.1: Visual Impact Assessment Questionnaire

G.1 Visual Impact Assessment Questionnaire

1. Project Description

The Tennessee Department of Transportation (TDOT), in cooperation with the Federal Highway Administration (FHWA), proposes to widen and realign State Route (SR) 170 from the SR-62 (Oak Ridge Highway) interchange (L.M. 0.00) to SR-9 (US-25W, Clinton Highway) (L.M. 6.18) in Anderson County, Tennessee for approximately 6.18 miles.

1.1 Build Alternative

The Build Alternative would include widening the existing two (2) lane typical section to a four (4) lane typical section (two (2) 12-foot travel lanes in each direction) with a variable median and 8-foot shoulders west of Walnut Valley Road, and a five (5) lane section (two (2) 12-foot travel lanes in each direction and a center 12-foot two-way left-turn lane) with 8-foot shoulders east of the Walnut Valley Road. The project would also include a curb and gutter, a 5-foot sidewalk to the north, a 10-foot shared-use path to the south, and guardrails as needed. Proposed improvements would also include adding turn lanes at strategic intersections, realigning and reconfiguring several intersections along the corridor, and replacing the existing two (2) lane bridge over the Clinch River with a four (4) lane bridge.

2. Questionnaire

2.1 Part A: Environmental Compatibility

1. Will the project result in a noticeable change in the physical characteristics of the existing environment? (Consider all project components and construction impacts – both permanent and temporary, including landform changes, structures, noise barriers, vegetation removal, railing, signage, and contractor activities.)

High concern (3)

Moderate concern (2)

Low concern (1)

Negligible project features (0)

Reasoning: *The Build Alternative follows the existing SR-170 alignment, with only minor horizontal and vertical adjustments. While the project includes roadway widening, pedestrian improvements, and potential noise barriers, it does not introduce a significant alignment shift. These modifications will alter certain physical characteristics, such as the roadway footprint and surrounding environment, but the overall impact remains moderate. The proposed construction activities, vegetation removal, and potential structural changes as part of the project contribute to some level of concern, though not substantial enough to classify as high. Therefore, the Build Alternative would present moderate concern to the physical characteristics of the existing environment.*

2. Will the project complement or contrast with the visual character desired by the community? (Evaluate the scale and extent of the project features compared to the surrounding scale of the community. Is the project likely to give an urban appearance to an existing rural or suburban community? Do you anticipate that the change will be viewed by the public as positive or negative? Research planning documents or talk with local planners and community

5. *Will this project, when seen collectively with other projects, result in an aggregate adverse change (cumulative impacts) in overall visual quality or character? (Identify any projects [both state and local] in the area that have been constructed in recent years and those currently planned for future construction. The window of time and the extent of area applicable to possible cumulative impacts should be based on a reasonable anticipation of the viewing public's perception.)*

- Cumulative impacts likely: 0-5 years (3) **Cumulative impacts unlikely (1)**
 Cumulative impacts likely: 6-10 years (2)

Reasoning: Due to the recent rescission of the CEQ NEPA regulations (40 CFR 1500-1508), which established the regulatory definitions of requirement to assess transportation projects for potential indirect and cumulative effects, TDOT does not intend to evaluate cumulative effects as part of the proposed project. Based on these changes, TDOT believes that the scope of this question exceeds the scope of the intended level of review anticipated for the proposed project. However, because the NEPA process does still require the evaluation of reasonably foreseeable effects, which will be part of TDOT's NEPA effort for this project, we have gone ahead and provided an answer to this question with these kinds of potential effects in mind. Based on TDOT's preliminary review of the visual quality and character of the project area, as well as preliminary information on further planned commercial development along the project route, reasonably foreseeable effects are not anticipated for the proposed project.

2.2 Part B: Viewer Sensitivity

1. *What is the potential that the project proposal may be controversial within the community, or opposed by any organized group? (This can be researched initially by talking with the state DOT and local agency management and staff familiar with the affected community's sentiments as evidenced by past projects and/or current information.)*

- High potential (3) **Low potential (1)**
 Moderate potential (2) No potential (0)

Reasoning: During the public meeting, the project team received numerous comments, with the majority expressing strong support for the proposed project. No significant opposition or concerns were raised by any organized groups through the public meeting process or early coordination efforts. Additionally, a review of past projects in the region indicates that similar infrastructure improvements have generally been well received, with no history of strong public or organizational resistance. The project's alignment with community planning efforts and its anticipated benefits, such as improved connectivity and safety and pedestrian enhancements, further reduce the likelihood of controversy. Therefore, the potential for community opposition or organized resistance is low.

2. *How sensitive are potential viewer-groups likely to be regarding visible changes proposed by the project? (Consider among other factors the number of viewers within the group, probable viewer expectations, activities, viewing duration, and orientation. The expected viewer sensitivity level may be scoped by applying professional judgment, and by soliciting information from other DOT staff, local agencies and community representatives familiar with the affected community's sentiments and demonstrated concerns.)*

- High sensitivity (3) **Low sensitivity (1)**
 Moderate sensitivity (2)

Reasoning: *The primary viewer groups include local residents, commuters, and recreational users, who are already accustomed to the transportation infrastructure in the area. The Build Alternative would be primarily located along the existing SR-170 alignment and would not result in substantial changes to the visual character. Given that the project does not introduce drastic visual alterations, such as large-scale structures or significant landscape modifications, viewer expectations are unlikely to be disrupted. Therefore, it is anticipated that potential viewer-groups would experience low sensitivity to the changes that would result from the Build Alternative.*

3. *To what degree does the project's aesthetic approach appear to be consistent with applicable laws, ordinances, regulations, policies or standards?*

- Low compatibility (3) **High compatibility (1)**
 Moderate compatibility (2)

Reasoning: *The proposed Build Alternative's design as well as aesthetic approach will align with all applicable laws, ordinances, regulations, policies, and standards; hence the project will be highly compatible.*

4. *Are permits going to be required by outside regulatory agencies (i.e., Federal, State, or local)?* (Permit requirements can have an unintended consequence on the visual environment. Anticipated permits, as well as specific permit requirements – which are defined by the permitter, may be determined by talking with the project environmental planner and project engineer. Note: coordinate with the state DOT representative responsible for obtaining the permit prior to communicating directly with any permitting agency. Permits that may benefit from additional analysis include permits that may result in visible built features, such as infiltration basins or devices under a storm water permit or a retaining wall for wetland avoidance or permits for work in sensitive areas such as coastal development permits or on Federal lands, such as impacts to Wild and Scenic Rivers.)

- Yes (3)** No (1)
 Maybe (2)

Reasoning: *Yes, permits will be required from outside regulatory agencies due to project activities impacting the Clinch River, Melton Hill Reservoir and federally managed lands under the jurisdiction of the Tennessee Valley Authority (TVA).*

5. *Will the project sponsor or public benefit from a more detailed visual analysis in order to help reach consensus on a course of action to address potential visual impacts?* (Consider the proposed project features, possible visual impacts, and probable mitigation recommendations.)

- Yes (3) **No (1)**
 Maybe (2)

Reasoning: *The Build Alternative is not expected to cause substantial changes to the visual character, has received low public concern, and remains compatible with the existing environment. Therefore, a more detailed visual analysis is not necessary at this time.*

Total score: 13

2.3 Determining the Level of Visual Impact Assessment

Total the scores of the answers to all ten questions on the Visual Impact Assessment Scoping Questionnaire. Use the total score from the questionnaire as an indicator of the appropriate level of VIA to perform for the project. Confirm that the level suggested by the checklist is consistent with the project teams' professional judgments. If there remains doubt about whether a VIA needs to be completed, it may be prudent to conduct an Abbreviated VIA. If there remains doubt about the level of the VIA, begin with the simpler VIA process. If visual impacts emerge as a more substantial concern than anticipated, the level of VIA documentation can always be increased.

The level of the VIA can initially be based on the following ranges of total scores:

Score **25-30**

An *Expanded VIA* is probably necessary. It is recommended that it should be proceeded by a formal visual scoping study prior to beginning the VIA to alert the project team to potential highly adverse impacts and to develop new project alternatives to avoid those impacts. These technical studies will likely receive state-wide, even national, public review. Extensive use of visual simulations and a comprehensive public involvement program would be typical.

Score **20-24**

A *Standard VIA* is recommended. This technical study will likely receive extensive local, perhaps state-wide, public review. It would typically include several visual simulations. It would also include a thorough examination of public planning and policy documents supplemented with direct public engagement processes to determine visual preferences.

Score **15-19**

An *Abbreviated VIA* would briefly describe project features, impacts and mitigation requirements. Visual simulations would be optional. An Abbreviated VIA would receive little direct public interest beyond a summary of its findings in the project's environmental documents. Visual preferences would be based on observation and review of planning and policy documents by local jurisdictions.

Score **10-14**

A *VIA Memorandum* addressing minor visual issues that indicates the nature of the limited impacts and any necessary mitigation strategies that should be implemented would likely be sufficient along with an explanation of why no formal analysis is required.

Score **6-9**

No noticeable physical changes to the environment are proposed and no further analysis is required. Print out a copy of this completed questionnaire for your project file to document that there is no effect. A *VIA Memorandum* may be used to document that there is no effect and to explain the approach used for the determination.