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3.12 CONSTRUCTION IMPACTS

3.12.1 Introduction

US 231 from SR 66 near the Natcher Bridge to I-64 near Dale is an expressway facility. INDOT's decision to remove freeway alternatives from consideration in response to the COVID-19 pandemic, removed the potential for construction impacts along this segment of roadway. Therefore, the Mid-States Corridor alternatives under consideration provide for construction of new and/or upgraded highways between I-64 near Dale and I-69. Highway construction, whether on a new alignment or on an existing facility, includes changes in access and impacts to local communities. This project will alter existing travel patterns, change local travel times and decrease overall travel time for north/south trips.

The Build alternatives included in this Tier 1 study are routes B, C, M, O and P. Each alternative uses existing US 231 from the Ohio River north to I-64 near Dale. The only anticipated modifications to this portion of US 231 are changed signage.

Construction of any Build alternative will have impacts to the existing environment. Construction impacts may include noise from construction equipment operation, air pollution, exhaust emissions, fugitive dust, water pollution from soil disturbance leading to erosion and runoff during rain events and impacts from heavy blasting activities. Construction impacts may also include impacts to karst areas, wetlands, impacts to endangered species, traffic-related impacts, detours affecting businesses and emergency services, congestion in construction zones and potential restrictions for larger trucks and service vehicles.

3.12.2 Analysis

3.12.2.1 Noise

Noise from construction equipment is a common impact. The presence of sensitive noise receptors near the construction limits increases the potential for construction noise impacts. Those impacts are more likely where an alternative follows an existing alignment or passes through an urban or suburban area. The potential for impacts is expected to be greater in the more urbanized areas near the project, such as near the cities of Bedford, Loogootee, Mitchell, Huntingburg and Jasper. These areas are more densely populated with the potential for more noise receptors near to potential construction activity. Construction-related noise is also generated from drilling and blasting of rock with the controlled use of explosives or gas-pressure blasting pyrotechnics to break up rock for excavation.

3.12.2.2 Air Pollution

Fugitive dust is the main component of air pollution from construction activities. Fugitive dust is generated when granular materials such as soil, sand and gravel are disturbed and become airborne due to wind, construction activity or both. Fugitive dust emissions are typically not in a confined flow stream and disperse outside the right-of-way or construction boundary. It is recommended that Best Management Practices (BMPs) be implemented to mitigate fugitive dust emissions. Some examples include wetting down unpaved roads and staging areas, covering open stockpiles for both active and inactive sites, suspending work in windy conditions and limiting speed limits at the construction site when hauling material and using earth moving equipment.

Construction equipment exhaust emissions can contribute to air pollution impacts in the project area. Emissions from construction equipment have the potential to impact human health, especially in some sensitive populations including elderly, children and those with impaired respiratory systems. Diesel-powered equipment emissions are a source of air pollution during the construction activity. Equipment operation generates nitrogen oxides, carbon



monoxide and particulate matter. As with dust emissions, exhaust emissions generated by construction activities can typically be controlled during construction using Best Management Practices (BMPs). Similarly, it is recommended that BMPs be implemented such as idling restrictions, regularly maintaining diesel engines, retiring older vehicles, replacing them with vehicles that meet or exceed the latest USEPA exhaust emission standards and retrofitting engines with exhaust filtration to capture diesel particulate matter.

3.12.2.3 Groundwater and Karst

Karst topography is a distinctive type of landscape that typically forms where layers of soluble bedrock are dissolved by acidic rainwater and water in the soil. Water slowly percolates through fractures, dissolving rock and creating sinkholes, caves and other features that characterize karst. Subterranean drainage through karst geology can limit the presence of surface water in places, explaining the absence of rivers and lakes. Many karst regions display distinctive surface features such as sinkholes or natural pits, fissures or caves. However, distinctive karst surface features may be completely absent where the soluble bedrock is below a deep layer of glacial debris or is below one or more layers of non-soluble rock. Southern Indiana has several well-developed areas of karst landscape with surface karst areas within the project study corridor.

In July 2021, INDOT issued the *Protection of Karst Features during Project Development and Construction* (Procedures). It governs transportation planning and construction activities in the Indiana Karst Region. Each Build alternative is located within the Indiana Karst Region, defined as the area below the Wisconsin Glacial Limit in Southern Indiana. Alternatives M and O are located in areas with high concentrations of karst features. INDOT, Indiana Department of Natural Resources (IDNR), Indiana Department of Environmental Management (IDEM), U.S. Environmental Protection Agency (USEPA), U.S. Fish and Wildlife Service (USFWS) and the Indiana Geological and Water Survey (IGWS) participate in carrying out the provisions of the Procedures. The Procedures guide the identification, study protection and treatment of karst drainage associated with transportation projects. Tier 2 NEPA studies will determine the specific location for the highway and will focus on detailed karst impacts and mitigation. Further evaluation of the project area by a Licensed Professional Geologist and geotechnical investigations may be necessary. Karst terrain is environmentally sensitive. It is geologically and ecologically vulnerable to contamination because of the unpredictability of contaminant transport mechanisms, the exceptional value of the resource and the human or ecological risks that may result from contamination.

Groundwater contamination risk is another potential construction-related impact. Rapid transport of runoff into and under the ground takes place in karst areas. Contaminants in roadway runoff and spills can pass rapidly from the surface into groundwater in karst terrain, with little or no filtration or modification. The interaction between surface runoff and groundwater is a risk to water quality. Similar to construction near surface streams, construction concerns in karst areas include erosion and sediment contamination, as well as contamination from construction vehicles and equipment. In addition to groundwater contamination, soil erosion from a construction site could plug the drainage of a sinkhole, causing flooding. Groundwater protection is a priority when considering how to address stormwater runoff. Design BMPs will be implemented to minimize impacts to the karst area. Typical BMPs include temporary or permanent structures that filter stormwater runoff or seal a feature from future runoff. BMPs can also include using a no-salt/low-salt/low-spray strategy, developing an emergency response plan and using a stop work plan if any potentially federal and/or state listed species are encountered during construction. Features may also be sealed to prevent continued erosion of bedrock underneath or adjacent to a roadway.

3.12.2.4 Wetlands

Wetlands contribute to the overall quality and well-being of the natural environment. They do so by storing floodwaters, controlling erosion, maintaining surface water flow during drought, protecting and improving water quality and protecting shorelines by retaining soil, absorbing water energy and buffering currents. Wetlands also serve as wildlife



habitat, as well as provide areas for recreation, education and aesthetic enjoyment. Construction activities may impact wetland areas within and outside of the proposed right-of-way for this project. During design and planning stages of the project, efforts to avoid and minimize impacts to wetland areas are being incorporated. If impacts to wetland areas are unavoidable, then mitigation, based on the amount of impact and type of wetland impacted, will be necessary. A compensatory mitigation plan for wetlands impacted by the project will be detailed further in Tier 2 NEPA studies and during the Clean Water Act Section 404/401 permitting process. The plan will be developed in cooperation with the United States Army Corps of Engineers (USACE) and will identify threshold determinations for consistency of the preferred alternative with the Clean Water Act Least Environmentally Damaging Practicable Alternative (LEDPA) analyses. Mitigation quantities will be established during post-NEPA permitting activities. Throughout the alternative selection process, alignment development and design phases, impacts to wetlands will be avoided or minimized to the extent practical. For unavoidable impacts, compensatory wetland mitigation is anticipated to address the “no net loss” objective for each of the proposed alternatives, in accordance with the Clean Water Act and Executive Order 11990. The amount of wetland mitigation acreage required typically is dependent upon the type of wetland community impacted. Generally, wetlands that take longer to develop and offer multi-strata habitat, such as forested floodplain wetlands, are mitigated at higher ratios. Less complex systems, such as cattail marshes are mitigated at lower ratios. These ratios may vary based on unique factors and degree of quality of a particular wetland.

3.12.2.5 Erosion Control

Potential for erosion during construction is created by the large-scale clearing of vegetation and the exposure of bare and disturbed soils to wind and rain events. Erosion runoff from the construction site can cause sediment to impact streams, rivers and wetland areas, as well as impact water quality. Rivers and streams supply water for irrigation and public consumption, recreation areas and habitats for terrestrial and aquatic wildlife. Construction site runoff on all routes could adversely affect streams and wetlands unless erosion and sediment control measures are in place. Procedures to reduce the impact of erosion and runoff into streams and wetland areas will be implemented during construction. Specific erosion control BMPs will be used in the construction of this highway to minimize impacts of construction related erosion and help maintain water quality.

3.12.2.6 Traffic

The project will include new alignment construction, and potentially upgrades to existing roadways. Permanent and temporary disruptions of traffic patterns are anticipated. Inconveniences to motorists and businesses, as well as safety concerns, can be extensive where construction activity occurs along existing roadways. Detour routes, lane restrictions, temporary road closures and travel delays along the routes on existing roadways are more likely when existing roads are modified, compared to construction on new terrain routes. The majority of the project area is rural and not densely populated and there is a higher potential for impacts to existing local roadways. Impacts on existing roadways near more urbanized areas present higher potential for traffic delays and loss of access for local businesses, schools and emergency services.

A Traffic Management Plan (TMP) will be implemented consistent with the level of project construction activity. The TMP will mitigate traffic and congestion impacts, reduce hazards of increased truck traffic, manage traffic flow and reduce delays in work zones. Typical TMPs include strategies to manage work zone impacts, such as limiting construction traffic speeds, prominently posting traffic speed and informational signs, providing employee and contractor orientation on the desired construction traffic access route and consulting with community stakeholders. The TMP will address safety for both construction workers and the traveling public and promote efficient construction traffic management to prevent project delays and minimize traffic impacts.

3.12.2.7 Endangered Species

Construction activities also have potential to impact threatened and endangered species primarily during right-of-



way clearing and construction. Work conducted in streams, adjacent riparian corridors and forested areas can impact species directly or indirectly through habitat modification and fragmentation. Indiana is within the range of the Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*), both of which are federally-listed species. Right-of-way clearing needs to take into account summer roost habitat for bats, which primarily consists of large diameter trees with loose and peeling bark. Tree clearing will be limited to times of the year when bats do not use these roost trees. The gray bat is also an endangered species that generally lives within caves year-round. They are found in caves in limestone karst areas of Southern Indiana in or near the project area.

All alternatives cross multiple streams. Stream crossings and construction in and around streams have the potential to impact federal and state listed aquatic species, such as the Fanshell pearly mussel (*Cyprogenia stegaria*). Direct disturbance at the construction site and downstream habitat disruption from sediments can result from in-stream work.

All construction activities with the potential to affect the Indiana bat, northern long-eared bat, gray bat, fanshell pearly mussel and other aquatic species or their habitat will require coordination with the USFWS and IDNR. This could result in project-related commitments and mitigation.

3.12.2.8 Visual Impacts

Highway construction can result in temporary and permanent visual impacts. Temporary visual impacts include the presence of construction equipment, vegetation clearing and traffic congestion. These impacts are detailed in **Section 3.14**. Landowners with homes or businesses near the alternatives can expect temporary visual impacts from construction equipment and fugitive dust

3.12.3 Mitigation

Construction impacts will be minimized and mitigated in accordance with standard INDOT specifications for construction contracts, permit conditions and commitments made during coordination with resource agencies. These specifications address issues such as erosion control, servicing of equipment, spill prevention and containment, blasting, minimization of construction noise and minimization of construction-related air quality impacts. In addition, designers may develop provisions to address special on-site conditions. Traffic impacts will be minimized and mitigated through the development and implementation of an overall traffic management plan for the project. Potential visual impact mitigation includes traffic control measures, quick revegetation of areas cleared during construction and use of appropriate highway lighting.

Typical BMPs to control fugitive dust include wetting active construction areas, minimizing or ceasing construction activity during periods of high winds greater than 20 miles per hour, sweeping or wetting paved areas, wetting unpaved areas, application of dust-suppressant materials, installing wind fencing and phase grading operations, reduced speeds for vehicular traffic and covering open stockpiles of soil. Typical BMPs to help control exhaust emissions include minimizing idling time (either by shutting equipment off when not in use or reducing idling time), posting signage, detailing idling time reduction requirements at job site entrances and maintaining all construction equipment in proper working condition according to manufacturer's specifications.

For groundwater and karst protection, the design of roadside ditches to address roadside runoff can include using grass or other filters to trap contaminants. The use of retention and/or detention basins for spill containment and other structural and non-structural BMPs will be implemented at the time of construction to minimize impacts. These design BMPs prevent contaminants from entering the groundwater. Because drainage features can be difficult to identify in karst areas, timely implementation of erosion control is crucial for construction in and around sinkholes. Additionally, particular care must be taken in identifying areas for construction vehicle maintenance and storage of



construction related materials and chemicals in karst terrain. These areas should not be located within a sinkhole area or any area that drains directly into a karst surface feature.

A compensatory mitigation plan for wetlands impacted by the project will be detailed further in Tier 2 NEPA studies and during the Clean Water Act Section 404/401 permitting process. Mitigation quantities will be established during post-NEPA permitting activities. Throughout the alternative corridor selection process, alignment development and design phases, impacts to wetlands will be avoided or minimized to the extent possible. For unavoidable impacts, compensatory wetland mitigation is anticipated to satisfy the “no net loss” objective for each of the proposed alternatives in accordance with the Clean Water Act and Executive Order 11990. Procedures to reduce the impact of erosion and runoff into streams and wetland areas will be implemented during construction. Specific erosion control BMPs will be used to minimize impacts of construction related erosion and help maintain water quality. The development of a TMP will help mitigate traffic and congestion impacts, reduce hazards resulting from the increased construction traffic, manage traffic flow and reduce delays in work zones.

3.12.4 Summary

The No-Build alternative has no construction impacts. Each build alternative will have construction impacts, some of which are common to all alternatives and others which are unique to a lesser number. The construction impacts assessment identifies the kinds of impacts that are likely to arise during construction and mitigation measures needed to minimize those impacts.