Sources of Impacts / Activity Definitions

These definitions have been developed by the agencies involved in this agreement and may not coincide with established language in the Standard Specifications for Highway Construction. They were developed to give the project reviewer a better understanding of the activity and its potential effect on endangered species.

Access roads, staging, stockpiling, and borrow sources that are within the Limits of Construction (LOC) and are outside of the Platte River depletion areas are covered under General Conservation Measures found in the Federal and State Listed Species Conservation Conditions document.

Related Activities: Related Activities are those that are often done in conjunction with the listed construction activity but <u>are not always</u> associated with the listed activity and should not automatically be checked in the Activity Checklist. The intent of the Related Activities is to help the preparer of the Activity Checklist to think about all the activities that may be associated with the project.

Construction Equipment: List of potential construction equipment that may be used to perform the activity. The intent of the listed construction equipment is to help the preparer develop an action area for the project.

Asphalt Patching - Patching of small areas of the roadway with hot or cold premix bituminous material using hand tools to correct abrupt depressions, potholes, edge failures, upheavals, and other surface hazards. This activity is performed with pick-ups and dump trucks on the existing roadway and is different from resurfacing in that it does not involve rollers or other heavy equipment.

Related Activities: Armor Coating

Construction Equipment: dump truck, loader, backhoe, grader, skid loader, concrete saw, compactor, roller, paver, pickup truck.

Bank Stabilization - Methods of securing the structural integrity of earthen stream channel banks with structural supports to prevent bank slumping and undercutting and overall erosion prevention. Bank stabilization helps maintain existing or newly constructed earthen banks by using techniques including but not limited to articulated block, riprap, gabions, or brush bundles to keep material in place. This is performed using some type of heavy equipment and may involve surface soil disturbance. Any upland bank/bluff or back slope stabilization work would be considered grading outside the hinge point.

Related Activities: Grading Outside the Hinge Point, Grading Within the Hinge Point, Erosion Control, Bridge Substructure Repair, Culvert Replacement, Extension, Repair

Construction Equipment: dozer, dump truck, excavator, front end loader, pickup truck

Barge Staging - Movement and anchoring of barges into the channel bottom, channel banks, and connecting to other barges. This may also include activities such as launching, docking, and loading.

Related Activities: Piers, Bridge Superstructure/Substructure New and Replacement

Construction Equipment: auger drill rig (if putting in pipe piling), crane, impact pile driver, pickup truck

Bridge Deck Repair - Repairing decks, expansion joints, patching spalled areas, overlaying, and repairing with other material as appropriate to restore the deck from the roadway. Related activities may include but is not limited to timber plank replacement, milling, and resurfacing the roadway, as well as silica fume overlays that do not penetrate the full depth of the deck. This may involve the use of heavy equipment on the bridge deck or roadway as well as methods to capture construction debris from falling into the channel.

Related Activities: Concrete Pavement Repair, Resurfacing, Milling

Construction Equipment: air compressor, concrete mixer truck, concrete pump truck, concrete saw, dump truck, front end loader, generator, jackhammer, pavement scarifier, pickup truck, pneumatic tools, sand blasting, welder/torch

Bridge Deck Replacement - Replacement of the entire deck. This may involve the use of heavy equipment as well as methods to capture construction debris from falling into the channel.

Related Activities: Concrete Repair, Bridge Superstructure New and Replacement, Night-time work with lights

Construction Equipment: air compressor, backhoe, concrete mixer truck, concrete pump truck, concrete saw, crane, dump truck, front end loader, generator, impact pile driver, jackhammer, man lift, pavement scarifier, paver, pickup truck, pneumatic tools, sand blasting, sheers (on backhoe), welder/torch

Bridge Painting - Sandblasting, power wash cleaning, priming, and painting of structure elements to prevent deterioration. Any lead-based paints are stripped and collected for proper disposal.

Related Activities: None identified.

Construction Equipment: air compressor, flatbed truck, generator, man lift, pickup truck, pneumatic tools, sand blasting

Bridge Rail Repair/Replacement - The process of fixing or updating the railing on a bridge. This may include a transition from steel rails to concrete on the existing railing on the bridge.

Related Activities: None identified.

Construction Equipment: air compressor, backhoe, concrete mixer truck, concrete pump truck, concrete saw, crane, dump truck, front end loader, generator, jackhammer, pickup truck, pneumatic tools, sand blasting, welder/torch

Bridge Substructure New, Replacement, or Repair- Ephemeral - Replacement or construction of portions of a bridge below the superstructure including all or part of the following foundation elements: abutments, columns, wall piers, footings, pile caps, precast or auger-cast concrete piles, drilled shafts, etc. over a channel that holds water only during and immediately after rain events.

Related Activities: Cofferdams, Piers, Pile Driving Vibratory, Pile Driving Impact, Temporary Work Platform, Bridge Superstructure New & Replacement, Dewatering, Bank Stabilization, Clearing and Grubbing, De-watering, Drilled Shafts, Guardrail Repair, Lighting, Traffic and Pedestrian Signals, Dynamic

Message Signs, Grading Outside the Hinge Point, Nighttime work with lights, Paving, Pile/Pier Encasement, Removal of Structures and Obstructions, Stream Channel Impact, Wetland Mitigation, Barge Staging

NEW or REPLACEMENT Construction Equipment: auger drill rig, air compressor, backhoe, concrete mixer truck, concrete pump truck, concrete saw, crane, drill rig truck, dump truck, front end loader, generator, impact pile driver, jackhammer, man lift, pickup truck, pneumatic tools, sand blasting, vibratory pile driver, welder/torch

REPAIR Construction Equipment: air compressor, backhoe, concrete mixer truck, concrete pump truck, concrete saw, crane, dump truck, front end loader, generator, jackhammer, man lift, pickup truck, pneumatic tools, sand blasting, welder/torch

Bridge Substructure New, Replacement, or Repair- Intermittent - Replacement or construction of portions of a bridge below the superstructure including all or part of the following foundation elements: abutments, columns, wall piers, footings, pile caps, precast or auger-cast concrete piles, drilled shafts, etc. over a channel that holds water during wet portions of the year.

Related Activities: Cofferdams, Piers, Pile Driving Vibratory, Pile Driving Impact, Temporary Work Platform, Bridge Superstructure New & Replacement, Dewatering, Bank Stabilization, Clearing and Grubbing, De-watering, Drilled Shafts, Guardrail Repair, Lighting, Traffic and Pedestrian Signals, Dynamic Message Signs, Grading Outside the Hinge Point, Nighttime work with lights, Paving, Pile/Pier Encasement, Removal of Structures and Obstructions, Stream Channel Impact, Wetland Mitigation, Barge Staging

NEW or REPLACEMENT Construction Equipment: auger drill rig, air compressor, backhoe, concrete mixer truck, concrete pump truck, concrete saw, crane, drill rig truck, dump truck, front end loader, generator, impact pile driver, jackhammer, man lift, pickup truck, pneumatic tools, pumps, sand blasting, vibratory pile driver, welder/torch

REPAIR Construction Equipment: air compressor, backhoe, concrete mixer truck, concrete pump truck, concrete saw, crane, dump truck, front end loader, generator, jackhammer, man lift, pickup truck, pneumatic tools, pumps, sand blasting, welder/torch

Bridge Substructure New, Replacement, or Repair- Perennial - Replacement or construction of portions of a bridge below the superstructure including all or part of the following foundation elements: abutments, columns, wall piers, footings, pile caps, precast or auger-cast concrete piles, drilled shafts, etc. over a stream or river that holds water throughout the year. This activity will involve the use of heavy equipment and/or barges in river systems.

Related Activities: Cofferdams, Piers, Pile Driving Vibratory, Pile Driving Impact, Temporary Work Platform, Bridge Superstructure New & Replacement, Dewatering, Bank Stabilization, Clearing and Grubbing, De-watering, Drilled Shafts, Guardrail Repair, Lighting, Traffic and Pedestrian Signals, Dynamic Message Signs, Grading Outside the Hinge Point, Nighttime work with lights, Paving, Pile/Pier Encasement, Removal of Structures and Obstructions, Stream Channel Impact, Wetland Mitigation, Barge Staging

NEW or REPLACEMENT Construction Equipment: auger drill rig, air compressor, backhoe, concrete mixer truck, concrete pump truck, concrete saw, crane, drill rig truck, dump truck, front end loader, generator,

impact pile driver, jackhammer, man lift, pickup truck, pneumatic tools, pumps, sand blasting, vibratory pile driver, welder/torch

REPAIR Construction Equipment: air compressor, backhoe, concrete mixer truck, concrete pump truck, concrete saw, crane, dump truck, front end loader, generator, jackhammer, man lift, pickup truck, pneumatic tools, pumps, sand blasting, welder/torch

Bridge Superstructure New, Replacement, or Repair- Ephemeral - Replacement or construction of the structure above the substructure. The superstructure includes but is not limited to the deck and roadway for carrying traffic over a channel that holds water, only during and immediately after rain events. This may include silica fume overlays which penetrates the entire thickness of the bridge deck.

Related Activities: Paving, Bridge Substructure New, Replacement, or Repair, Temporary Work Platform, Guardrail Repair Lighting, Traffic and Pedestrian Signals, Dynamic Message Signs, Nighttime work with lights, Barge Staging

NEW or REPLACEMENT Construction Equipment: air compressor, backhoe, concrete mixer truck, concrete pump truck, concrete saw, crane, dump truck, front end loader, generator, jackhammer, man lift, pickup truck, pneumatic tools, pumps, sand blasting, sheers (on backhoe), welder/torch

REPAIR Construction Equipment: air compressor, backhoe, concrete mixer truck, concrete pump truck, concrete saw, crane, dump truck, front end loader, generator, jackhammer, man lift, pickup truck, pneumatic tools, pumps, Rivet Buster/Chipping Gun, sand blasting, welder/torch

Bridge Superstructure New, Replacement, or Repair – Intermittent - Replacement or construction of the structure above the substructure. The superstructure includes but is not limited to the deck and roadway for carrying traffic over a channel that holds water during wet portions of the year.

Related Activities: Paving, Bridge Substructure New, Replacement, or Repair, Temporary Work Platform, Guardrail Repair Lighting, Traffic and Pedestrian Signals, Dynamic Message Signs, Nighttime work with lights, Barge Staging

NEW or REPLACEMENT Construction Equipment: air compressor, backhoe, concrete mixer truck, concrete pump truck, concrete saw, crane, dump truck, front end loader, generator, jackhammer, man lift, pickup truck, pneumatic tools, pumps, sand blasting, sheers (on backhoe), welder/torch

REPAIR Construction Equipment: air compressor, backhoe, concrete mixer truck, concrete pump truck, concrete saw, crane, dump truck, front end loader, generator, jackhammer, man lift, pickup truck, pneumatic tools, pumps, Rivet Buster/Chipping Gun, sand blasting, welder/torch

Bridge Superstructure New, Replacement, or Repair – Perennial - Replacement or construction of the structure above the substructure. The superstructure includes but is not limited to the deck and roadway for carrying traffic over a stream or river that holds water throughout the year. This activity may include the use of heavy equipment or barges in river systems.

Related Activities: Paving, Bridge Substructure New, Replacement, or Repair, Temporary Work Platform, Guardrail Repair Lighting, Traffic and Pedestrian Signals, Dynamic Message Signs, Nighttime work with lights, Barge Staging

NEW or REPLACEMENT Construction Equipment: air compressor, backhoe, concrete mixer truck, concrete pump truck, concrete saw, crane, dump truck, front end loader, generator, jackhammer, man lift, pickup truck, pneumatic tools, pumps, sand blasting, sheers (on backhoe), welder/torch

REPAIR Construction Equipment: air compressor, backhoe, concrete mixer truck, concrete pump truck, concrete saw, crane, dump truck, front end loader, generator, jackhammer, man lift, pickup truck, pneumatic tools, pumps, Rivet Buster/Chipping Gun, sand blasting, welder/torch

Channel Grade Stabilization Structures - Energy dissipation, head-cut control within the stream channel.

Related Activities: Grading Outside the Hinge Point, Pile Driving Vibratory, Pile Driving Impact, Bank Stabilization, Stream Channel Impact

Construction Equipment: backhoe, compressor (air), Concrete Mixer truck, crane, dump truck, excavator, flatbed truck, front end loader, impact pile driver, pneumatic tools, pumps, vibratory pile driver, welder/torch

Channelization, Ephemeral - Modification of stream channel length and/or capacity in a channel that holds water only during and immediately after rain events.

Related Activities: Grading Outside the Hinge Point, Culvert Replacement, Enhancement, Repair, Bank Stabilization, Stream Channel Impact, Temporary Work Platform

Construction Equipment: backhoe, dozer, dump truck, excavator, front end loader, gradall, pickup truck, pumps, roller

Channelization, Intermittent - Modification of stream channel length and/or capacity in a channel that holds water during wet portions of the year.

Related Activities: Grading Outside the Hinge Point, Culvert Replacement, Enhancement, Repair, Bank Stabilization, Stream Channel Impact, Temporary Work Platform

Construction Equipment: backhoe, dozer, dump truck, excavator, front end loader, gradall, pickup truck, pumps, roller

Channelization, Perennial - Modification of stream channel length and/or capacity in a channel that holds water throughout the year.

Related Activities: Grading Outside the Hinge Point, Culvert Replacement, Enhancement, Repair, Bank Stabilization, Stream Channel Impact, Temporary Work Platform

Construction Equipment: backhoe, dozer, dump truck, excavator, front end loader, gradall, pickup truck, pumps, roller

Clearing and Grubbing - Tree and Shrub - This refers to the removal and disposition of all unwanted trees and shrubs and associated roots and stumps. This may be performed manually or using heavy equipment and may involve soil disturbance with root and stump removal.

Related Activities: Grading Outside the Hinge Point, Grading Within the Hinge Point, Bridge Substructure New and Replacement, Channel Grade Stabilization Structures, Channelization, Culvert Extension, Repair, Replacement, Detention Basin, Guardrail Repair, Overpass, Piers, Pier/Pile Encasement, Removal of Structures and Obstructions, Replacing a Bridge with a Culvert, Sidewalks and Bikeways, Signs with soil disturbance, Stream Channel Impact

Construction Equipment: backhoe, dozer, dump truck, excavator, front end loader, grader, pickup truck, tub grinder

Clearing and Grubbing - Non-woody Vegetation - This refers to the removal and disposition of all unwanted material from the surface, such as non-woody vegetation (ex: grasses), boulders, and trash as well as unwanted material from underground, such as sod, boulders, roots, buried logs, or other debris. This is performed using heavy equipment and can involve soil disturbance in the immediate area.

Related Activities: Grading Outside the Hinge Point, Grading Within the Hinge Point, Bridge Substructure New and Replacement, Channel Grade Stabilization Structures, Channelization, Culvert Extension, Repair, Replacement, Detention Basin, Guardrail Repair, Overpass, Piers, Pier/Pile Encasement, Removal of Structures and Obstructions, Replacing a Bridge with a Culvert, Sidewalks and Bikeways, Signs with soil disturbance, Stream Channel Impact

Construction Equipment: backhoe, dozer, dump truck, excavator, front end loader, grader, pickup truck

Cofferdams - A temporary generally watertight enclosure that is pumped dry to expose the bottom of a body of water so that construction, as of piers, may be undertaken. This activity is performed using heavy equipment and will involve surface soil disturbance.

Related Activities: Pile Driving Impact, Pile Driving Vibratory, Piers, Dewatering, Drilled Shafts, Bridge Substructure New, Replacement, and Repair, Pile/Pier Encasement, Stream Channel Impact, Temporary Work Platforms, Barge Staging

Construction Equipment: backhoe, crane, flatbed truck, generator, impact pile driver, pickup truck, pumps, vibratory pile driver, welder/torch

Concrete Pavement Repair - Patching concrete roadway surfaces by removing faulty surface sections (by jackhammering and sawing), including base or sub-grade material as required, and replacing with concrete and required base material to eliminate potential surface hazards. Sawing, jackhammering, cleaning, and replacing expansion joints with special material to allow expansion and contraction of pavement. This is performed using some type of heavy equipment operated on the roadway and will not involve soil disturbance. This activity may include dowel bar/tie bar retrofit and/or replacement.

Related Activities: Resurfacing, Milling, Grading Within the Hinge Point, Grading Outside the Hinge Point, Crack Sealing/Joint Sealing, Pavement Removal, Paving, Pavement Marking

Construction Equipment: backhoe, compactor, compressor (air), Concrete mixer truck, concrete saw, dump truck, front end loader, generator, hydra break ram, jackhammer, Pavement scarifier, pickup truck, pneumatic tools, sand blasting

Crack Sealing / Joint Sealing - This is a preventative maintenance measure which consists of routing and sealing the joints and cracks in the pavement with a sealant or asphaltic sealing product to prevent the moisture from penetrating into the base and subgrade material**.** Joint sealing may consist of sealing joints between asphaltic concrete surfacing and Portland cement concrete pavement. Cracks and joints are commonly routed and cleaned with compressed air before being sealed. No earthwork is performed with this operation. This is performed using compressors and equipment operated on the roadway and will not involve soil disturbance.

Related Activities: Milling, Resurfacing, Pavement Repair

Construction Equipment: concrete saw, pickup truck, pneumatic tools, pavement router, sandblasting

Culvert New, Replacement, Extension, Repair- Ephemeral - Installation or repair of any structure, not classified as a bridge, which provides an opening under the roadway in a channel that holds water only during and immediately after rain events. This activity may be performed by heavy equipment and may include soil disturbance outside the hinge point *(do not check Grading Within or Outside the Hinge Point in conjunction with this activity). This activity* may include headwall removal and replacement with flared end sections, and rural storm sewer work.

Related Activities: Pipe Jacking and Casing, Erosion Control

- Culvert New-This activity is the installation of a culvert in a location where there was none previously. The activity requires excavation of material, placement of culvert pipe, backfilling around the new culvert, and finish grading. For box culverts, forms are set, and concrete is poured to form the culvert.
- Culvert Replacement- This activity is the installation of a new culvert of the same or different type and size in place of an existing culvert. The activity requires the excavation of material covering the existing culvert and backfilling around the new culvert.
- Culvert Extension- This is an activity where a culvert is lengthened because of an increase in roadway width. For metal culverts, a piece of culvert is attached, often requiring either a concrete collar or metal band for the joint, to the existing culvert and the area around the culvert is backfilled and finish graded. For box culverts, forms are set, and new concrete is poured that extends the culvert to the plan specifications.
- Culvert Repair- This includes but is not limited to slip lining, wingwalls, and box culvert floor repair.

Construction Equipment: backhoe, boring jack power unit, compressor (air), concrete mixer truck, concrete saw, dozer, dump truck, excavator, flatbed truck, front end loader, generator, horizontal boring hydraulic jack, jackhammer, pickup truck, pneumatic tools, sandblasting, welder/torch

Culvert New, Replacement, Extension, Repair- Intermittent - Repairs of any structure, not classified as a bridge, which provides an opening under the roadway in a channel that holds water during wet portions of the year. This activity may be performed by heavy equipment and may include soil disturbance outside the hinge point *(do not check Grading Within or Outside the Hinge Point in conjunction with this activity).* This activity may include headwall removal and replacement with flared end sections.

Related Activities: Pipe Jacking and Casing, Erosion Control

Construction Equipment: backhoe, boring jack power unit, compressor (air), concrete mixer truck, concrete saw, dozer, dump truck, excavator, flatbed truck, front end loader, generator, horizontal boring hydraulic jack, jackhammer, pickup truck, pneumatic tools, pumps, sandblasting, welder/torch

Culvert New, Replacement, Extension, Repair- Perennial - Repairs of any structure, not classified as a bridge, which provides an opening under the roadway on a stream that holds water throughout the year. This activity may be performed by heavy equipment and may include soil disturbance outside the hinge point *(do not check Grading Within or Outside the Hinge Point in conjunction with this activity).* This activity may include headwall removal and replacement with flared end sections.

Related Activities: Pipe Jacking and Casing, Erosion Control

Construction Equipment: backhoe, boring jack power unit, compressor (air), concrete mixer truck, concrete saw, dozer, dump truck, excavator, flatbed truck, front end loader, generator, horizontal boring hydraulic jack, jackhammer, pickup truck, pneumatic tools, pumps, sandblasting, welder/torch

Curb and Flume - A curb is a raised edge of asphalt built along the road to carry water along the side of the road to a flume which is an artificial water channel that carries water off the roadway and onto the shoulder. This activity is performed using heavy equipment and may include soil disturbance outside the hinge point *(do not check Grading Within or Outside the Hinge Point in conjunction with this activity).*

Related Activities: Grading Within the Hinge Point, Paving, Erosion Control

Construction Equipment: compactor (ground), concrete mixer truck, concrete saw, dump truck, flatbed truck, jackhammer, paver, pickup truck, pneumatic tools, skid steer loader

Curb and Gutter - Curb and gutter areas are constructed in urban areas where storm drains exist (urban areas). This activity is performed using heavy equipment and may include soil disturbance outside the hinge point. This could include ADA ramp installation or upgrades *(do not check Grading Within or Outside the Hinge Point in conjunction with this activity).*

Related Activities: Grading Within the Hinge Point, Paving, Erosion Control

Construction Equipment: compactor (ground), concrete mixer truck, concrete saw, dump truck, flatbed truck, jackhammer, paver, pickup truck, pneumatic tools, skid steer loader

Detention Basin - A constructed pond or reservoir incorporated into the watershed for temporary storage (less than 72 hours) of stormwater. Its purpose is to reduce the peak flow into the downstream waterway.

Related Activities: Grading Outside the Hinge Point, Erosion Control

Construction Equipment: backhoe, compactor (ground), concrete mixer truck, dozer, dump truck, excavator, front end loader, grader, pickup truck, scraper

De-watering - Removing or draining water from an enclosure or a structure (such as a caisson or cofferdam) placed within a riverbed. Usually involves the use of "dewatering" pumps**.** Temporary diversions of streams or channels to bypass a bridge, culvert, or other work location are also considered de-watering.

Related Activities: Barge Staging, Cofferdams, Piers, Pile Driving (Impact or Vibratory)

Construction Equipment: generator, pickup truck, pumps

Drilled Shafts - A Drilled Shaft is a deep foundation that is constructed by placing fluid concrete in a drilled hole (in channels or upland areas). Typically, they are used for bridges and large structures, where large loads and lateral resistance are major factors. Drill cuttings generally must be discharged per conservation condition.

Related Activities: Barge Staging, Cofferdams, Bridge Substructure New and Replacement, Overpass

Construction Equipment: auger drill rig, concrete mixer truck, concrete pump truck, dump truck, flatbed truck, generator, pneumatic tools

Earth Shoulder Construction - Procedure where material is hauled, compacted, bladed, and shaped to conform to the plan's typical cross sections and compaction requirements. This activity may include shoulder shaping and tapering for mailbox turnouts and superelevation correction. This procedure may occur during the construction of new roadways or existing roadways where design standards require it either within or outside the hinge-point. This is performed using some type of heavy equipment and will involve soil disturbance.

Related Activities: Grading Outside the Hinge Point, Grading Within the Hinge Point, Erosion Control

Construction Equipment: compactor, dump truck, front end loader, grader, pickup truck, scraper

Erosion Control- Barriers - Installing stormwater barriers is a practice used to slow down runoff and allow sediment to settle out. Specific types of barriers include topsoil, mulch, and silt fence. This activity can be performed using some type of heavy equipment and may include soil disturbance.

Related Activities: Any activity that requires soil stabilization.

Construction Equipment: flatbed truck, pickup truck, skid steer loader

Erosion Control- Erosion Checks - Erosion checks are relatively small, temporary structures constructed across a ditch to slow water velocity and capture sediment. Specific types of erosion checks include wattles, earth checks, rock checks and synthetic checks. This activity can be performed using heavy equipment and may include soil disturbance.

Related Activities: Any activity that requires soil stabilization.

Construction Equipment: flatbed truck, pickup truck, skid steer loader

Erosion Control- Inlet/Outlet Protection - Storm drain inlets, curb inlets, and culvert outlets are designed to carry stormwater, but they can also carry sediment to streams, rivers, wetlands, lakes, and sensitive areas if they are not properly protected. These areas can be protected by the installation of wattles, synthetic barriers, and or rip rap in the case of culvert outlets. This activity can be performed using some type of heavy equipment and may include soil disturbance.

Related Activities: Any activity that requires soil stabilization.

Construction Equipment: crane, dump truck, flatbed truck, front end loader, pickup truck, skid steer loader

Erosion Control- Mulching - Mulching is an erosion control practice that uses prairie hay or straw to stabilize slopes and exposed soils although rushes and similar materials may also be considered. This temporary practice can also be used when seeding is not practical due to seasonal constraints and for erosion control prior to a rain event. Mulches assist with establishing vegetation in areas that have been temporarily seeded with a cover crop and for areas seeded with permanent vegetation. Hay is preferred to straw and may contain viable seed. This activity is performed using some type of heavy equipment and may include soil disturbance.

Related Activities: Any activity that requires soil stabilization.

Construction Equipment: flatbed truck, pickup truck, skid steer loader, tractor

Erosion Control- Rolled Erosion Control - Erosion control blankets and turf reinforcement mats are typically used on steep slopes (3:1 or steeper) where the erosion hazard is high and vegetation growth is likely to be too slow to provide adequate stabilization. This activity can be performed using some type of heavy equipment and may include soil disturbance.

Related Activities: Any activity that requires soil stabilization.

Construction Equipment: flatbed truck, pickup truck, skid steer loader, tractor

Erosion Control- Slope Interruption - This is a technique that provides a barrier, diversion, or bypass for storm water to infiltrate or flow down a slope in a less erosive manner. Specific techniques include- soil roughening, slope tracking, berms and diversions, benching, temporary slope drains, and wattles/ compost logs. This activity is performed using some type of heavy equipment and may include soil disturbance.

Related Activities: Any activity that requires soil stabilization.

Construction Equipment: dozer, dump truck, flatbed truck, front end loader, grader, pickup truck, skid steer loader

Erosion Control- Traps and Basins - Silt traps, sediment traps, and sediment basins are depressions or embankments created in the storm water flow path that causes sediment-laden water to slow and pool and allows soil particles to drop out before the water exits the BMP. This activity can be performed using some type of heavy equipment and may include soil disturbance.

Related Activities: Any activity that requires soil stabilization.

Construction Equipment: dozer, dump truck, flatbed truck, front end loader, grader, pickup truck, skid steer loader

Erosion Control- Vegetation - Seeding and sodding are the primary methods of establishing vegetation and stabilizing soils disturbed by construction activity. Specific techniques include cover crop seeding, temporary seeding, permanent seeding, and sodding. This activity is performed using some type of heavy equipment and may include soil disturbance.

Related Activities: Any activity that requires soil stabilization.

Construction Equipment: dozer, dump truck, flatbed truck, front end loader, grader, pickup truck, skid steer loader, tractor

Fencing - Building a barrier or boundary to prevent or direct movement from one area to another. Fencing operations may include clearing vegetation from the fence line and material removal for installation of fence posts. It also includes the erection of wire and posts or other material and may include soil disturbance.

Related Activities: Grading Outside the Hinge Point, Clearing and Grubbing, Erosion Control, Grading Within the Hinge Point

Construction Equipment: dump truck, flatbed truck, front end loader, pickup truck

Grading Within the Hinge Point - Grading associated with resurfacing projects that result in a grade rise of the roadway. Material is placed on the earthen shoulder and graded out to blend the new roadway height with the existing earthen shoulder. This activity will not occur outside the existing hinge point of the shoulder. This activity may include shoulder shaping and tapering for mailbox turnouts and superelevation correction. Hinge point is defined as the shoulder point, where the earth shoulder meets the foreslope, whenever the foreslope is steeper than 6:1. Whenever the safety section grading is 6:1 or flatter, the hinge point is where the safety section grading meets the foreslope. This distance is not to exceed 30 feet from the outside edge of the through driving lane. *See illustrations at the end of the Sources of Impacts document.* This is performed using some type of heavy equipment and will involve surface soil disturbance.

Related Activities: Paving, Milling and/or In-place Recycling, Guardrail repair w/ soil disturbance, Erosion Control, Resurfacing-Fog/Slurry Seal, Armor Coat/Chip Seal

Construction Equipment: compactor, dozer, dump truck, flatbed truck, front end loader, grader, pickup truck, scraper, skid steer loader, tractor

Grading Outside the Hinge Point - Soil disturbance that takes place outside the existing hinge point of the shoulder i.e., the foreslope and backslope. Hinge point is defined as the shoulder point, where the earth shoulder meets the foreslope, whenever the foreslope is steeper than 6:1. Whenever the safety section grading is 6:1 or flatter, the hinge point is where the safety section grading meets the foreslope. This distance is not to exceed 30 feet from the outside edge of the through driving lane. *See illustrations at the end of the Sources of Impacts document.* This is normally associated with projects that include roadway widening, slope shaping, slope stabilization, excavation, work on structures, drainage issues and realignments. This is performed using some type of heavy equipment and will involve soil disturbance.

Related Activities: Resurfacing, Erosion Control, Clearing and Grubbing, Removal of Structures and Obstructions, Detention Basin, Pre-watering, Trenched Widening, Earth Shoulder Construction, Paving,

Curb and Gutter, Curb and Flume, Sidewalks and Bikeways, Channelization, Stream Channel Impacts, Bank Stabilization, Retaining Walls, Noise Walls, Culvert Replacement, Bridge Substructure New and Replacement, Overpass, Guardrail, Lighting w/soil disturbance, Dynamic Message Sign, Underground Conduit, Fencing, Borrow, Plant Sites, Equipment Sites, Staging Sites, Wetland Mitigation

Construction Equipment: compactor, dozer, dump truck, flatbed truck, front end loader, grader, pickup truck, scraper, skid steer loader, tractor

Guardrail repair w/ soil disturbance- Repairing or replacing all types of guardrail, steel beams, steel band or cable, end-treatments including the supporting posts to restore safe driving conditions. Associated work may include placement of new posts, placement of fill and grading to accommodate updated design standards. May occur beyond the hinge-point.

Related Activities: Grading Within the Hinge Point, Grading Outside the Hinge Point, Erosion Control

Construction Equipment: compressor, dump truck, flatbed truck, front end loader, generator, impact pile driver, jackhammer, pickup truck, pneumatic tools, welder/torch

Guardrail repair w/out soil disturbance - Repairing or replacing all types of guardrail, steel beams, steel band or cable, or end-treatments to accommodate updated design standards. Does not include any activity that requires soil disturbance such as digging post holes or grading.

Related Activities: None identified.

Construction Equipment: compressor, dump truck, flatbed truck, front end loader, generator, impact pile driver, jackhammer, pickup truck, pneumatic tools, welder/torch

Habitat Fragmentation, Modification of Connectivity - A change to the habitat of a listed species and/or critical habitat to a threshold that it adversely impacts that species. The following factors could result in habitat fragmentation and/or modification of connectivity: reduction in the total area of the habitat, decrease in the amount or usability of interior habitat, isolation of one habitat fragment from other areas of habitat, disturbing or modifying migration/movement patterns, breaking up of one patch of habitat into several small patches, and decrease in the average size of each patch of habitat.

Related Activities: Erosion Control, Clearing and Grubbing, Removal of Structures and Obstructions, Detention Basin, Pre-watering, Trenched Widening, Earth Shoulder Construction, Paving, Curb and Gutter, Curb and Flume, Sidewalks and Bikeways, Channelization, Stream Channel Impacts, Bank Stabilization, Retaining Walls, Noise Walls, Culvert Replacement, Bridge Substructure New and Replacement, Overpass, Guardrail, Lighting w/soil disturbance, Dynamic Message Sign, Underground Conduit, Fencing, Borrow, Plant Sites, Equipment Sites, Staging Sites, Wetland Mitigation

Construction Equipment:

Landscaping - A term referring to any activity that modifies or enhances the visible features of the project site by shaping the terrain and planting a variety of grasses, trees, or shrubs. This activity may include the use of heavy equipment and will involve soil disturbance.

Related Activities: Erosion Control

Construction Equipment: compactor, dozer, dump truck, flatbed truck, front end loader, grader, pickup truck, skid steer loader, tractor

Lighting, Traffic and Pedestrian Signals, Dynamic Message Signs w/ soil disturbance - A term referring to work that provides roadway illumination, traffic signals, and/or dynamic message boards. The scope may include trenching or boring in electrical service, constructing concrete foundations for light poles, and above ground utility relocation/extension. This includes the use of both Light Emitting Diodes (LED) and High Intensity Discharge (HID)/Sodium Vapor lighting.

Related Activities: Grading Outside the Hinge Point, Grading Within the Hinge Point, Erosion Control, Underground Conduit

Construction Equipment: backhoe, boring jack power unit, compactor, compressor, concrete mixer truck, concrete saw, crane, drill rig truck, drum mixer, dump truck, flatbed truck, front end loader, generator, horizontal boring hydraulic jack, jackhammer, man lift, pickup truck, pneumatic tools, vacuum extractor

Lighting, Traffic and Pedestrian Signals, Dynamic Message Signs w/out soil disturbance - Maintenance of existing lighting structures (replacing poles or mast arms), traffic signals, and/or dynamic message boards that does not include disturbance of the area surrounding the lighting structure. This includes the use of both Light Emitting Diodes (LED) and High Intensity Discharge (HID)/Sodium Vapor lighting.

Related Activities: None identified.

Construction Equipment: backhoe, boring jack power unit, compactor, compressor, concrete mixer truck, concrete saw, crane, drill rig truck, drum mixer, dump truck, flatbed truck, front end loader, generator, horizontal boring hydraulic jack, jackhammer, man lift, pickup truck, pneumatic tools, vacuum extractor

Microsurfacing - A mixture of polymer modified asphalt emulsion, mineral aggregate, mineral filler, water, and other additives, properly proportioned, mixed, and spread on a paved surface. Microsurfacing differs from slurry seal in that it can be used on high volume roadways to correct wheel path rutting and provide a skid resistant pavement surface. This is performed using heavy equipment operated on the roadway and will not involve soil disturbance. Adding a High Friction Surface Course to an already established roadway segment is covered under this activity.

Related Activities: Crack Sealing/Joint Sealing

Construction Equipment: dump truck, flatbed truck, front end loader, generator, paver, pavement scarifier, pickup truck

Milling and/or In-place Recycling - This is a process by which existing surface material is removed and salvaged from the roadway. Milling is generally done with a large machine capable of grinding the surface material. The millings are loaded directly into trucks and removed from the project, unless in-place recycling is utilized (where millings are reused for the new surfacing). The surface is generally milled (cut to a certain depth) to remove surface irregularities, including longitudinal wheel ruts; but may be milled to a depth sufficient to provide a base for placement of a new pavement structure. The spoil is collected in the milling operation and hauled off the roadway and recycled into other work whenever practical. Residue may be broomed to the shoulder of the road. This activity may require soil

disturbance up to a foot from the edge of pavement to prevent contamination from milling material. This soil disturbance consists of minimal grading up to 6 inches in depth. This activity may include the installation of rumble safety features (ex: strips, stripes, bars) or diamond grinding and superelevation correction.

Related Activities: Grading Within the Hinge Point, Bridge Deck Repair, Paving, Concrete Pavement Repair, Resurfacing-Fog**/**Slurry Seal, Armor Coat/Chip Seal

Construction Equipment: dump truck, flatbed truck, front end loader, generator, paver, pavement scarifier, pickup truck, tractor (also – trimmer, broom, reclaimer machine, grinder)

Night-time Work with Lights - This applies to any construction activity that takes place at night where temporary construction lighting is required. Activities needing night work includes but is not limited to bridge deck pours, joint cutting, girder placement, etc.

Related Activities: Paving, Bridge Deck Replacement, Bridge Superstructure New and Replacement

Construction Equipment: generator (also – lights) added to whatever equipment necessary for the activity being performed

Noise Walls - Noise walls are solid obstructions built between a roadway and an area where traffic noise is unwanted or needs to be reduced. The construction of noise walls is performed using heavy equipment to perform sub-grade preparation (soil disturbance) and construction of the walls.

Related Activities: Grading Outside the Hinge Point, Erosion Control, Clearing and Grubbing

Construction Equipment: backhoe, compactor, compressor, crane, dump truck, excavator, flatbed truck, front end loader, generator, pickup truck, pneumatic tools

Overpass - A grade separation where the highway passes over a highway or railroad. This activity will include the construction or repair of substructure and/or superstructure and involve heavy equipment and soil disturbance. Installation of lighting, traffic, and pedestrian signals and cameras may be included in work on overpasses.

Related Activities: Grading Outside the Hinge Point, Paving, Erosion Control, Drilled Shafts, Pile Driving-Vibratory, Pile Driving-Impact

Construction Equipment: see bridge superstructure and bridge substructure

Pavement Marking - The process by which paint or other material is placed on the roadway surface to communicate instructions to motorists. This activity includes a truck traveling down the roadway spraying paint onto roadway, but may also include personnel using wheeled sprayers to mark turn arrows etc.

Related Activities: None identified

Construction Equipment: flatbed truck, front end loader, (striper), pavement scarifier

Pavement Removal - The process of removing the roadway (asphalt and concrete, not soil) using equipment such as jackhammers, backhoes, and excavators. Usually done when removing the full depth of roadway material or patching individual panels in a roadway.

Related Activities: Grading Within the Hinge Point, Grading Outside the Hinge Point, Paving

Construction Equipment: backhoe, compressor, concrete saw, dump truck, excavator, front end loader, hydra break ram, jackhammer, mounted impact hammer, pneumatic tools, welder/torch

Paving - Placing of a new full depth roadway of asphaltic concrete or concrete pavement on new or existing alignment. This activity may include existing or construction of new mailbox turnouts in conjunction with the paving project. May include night work requiring lights. May include construction of bridge approach slabs. Will typically include the installation of sub-grade drains or under-drains.

Related Activities: Grading Outside the Hinge Point, Grading Within the Hinge Point, Earthen Shoulder Construction, Night-time work with lights, Pavement Removal

Construction Equipment: compactor, compressor, concrete batch plant, concrete mixer truck, concrete saw, crane, dozer, dump truck, flatbed truck, front end loader, generator, impact pile driver, paver, pickup truck, pneumatic tools, roller (see lighting)

Piers - An intermediate support for the adjacent ends of two bridge/overpass spans. This activity is performed using heavy equipment or barges in rivers and will involve soil disturbance.

Related Activities: Cofferdams, Pile Driving Impact, Pile Driving Vibratory, Bridge Substructure New and Replacement, Barge Staging, Overpass, Drilled Shafts, De-watering

Construction Equipment: (see bridge substructure)

Pile Driving, Impact Method - Delivering repeated blows to the top of a pile for driving it into the ground. This method often uses a diesel pile hammer attached to heavy equipment to impact the pile.

Related Activities: Cofferdams, Channel Grade Stabilization Structures, Temporary Work Platforms

Construction Equipment: crane, flatbed truck, Impact Pile Driver

Pile Driving, Vibratory Method - A machine is lifted and positioned over the pile by means of an excavator or crane and is fastened to the pile by a clamp and/or bolts. Vibratory hammers can either drive in or extract a pile; extraction is commonly used to recover steel "H" piles used in temporary foundation shoring.

Related Activities: Cofferdams, Channel Grade Stabilization Structures, Temporary Work Platforms

Construction Equipment: crane, flatbed truck, vibratory Pile Driver

Pile/Pier Encasement - This process includes excavating around an exposed pile (in channels or upland areas) and encasing it in concrete to improve the structural integrity of the pier. This activity may include the use of heavy equipment and will involve soil disturbance.

Related Activities: Cofferdams, De-watering, Bridge Substructure New, Replacement, or Repair

Construction Equipment: backhoe, compressor, concrete mixer truck, concrete pump truck, crane, dump truck, excavator, flatbed truck, front end loader, jackhammer, man lift, pneumatic tools, sand blasting

Pipe Jacking and Casing - This is a method of tunnel construction where hydraulic jacks are used to push specially made pipes through the ground behind a tunnel boring machine or shield. This technique is commonly used to create tunnels under existing structures, such as roads or railways. This activity is performed using heavy equipment and will involve soil disturbance.

Related Activities: Culvert Replacement, Grading Outside the Hinge Point, Clearing and Grubbing, Underground Conduit

Construction Equipment: backhoe, boring jack power unit, compressor, crane, dump truck, excavator, flatbed truck, front end loader, pneumatic tools, vibratory pile driver, welder/torch

Pre-watering - Contractor may apply water by sprinkler irrigation or ponding methods to achieve optimal moisture content. The natural vegetation growth on the excavation area is preserved until all water has been applied. The soil may be tilled along the contour lines to facilitate the penetration of the water and to minimize run-off. This activity is used for borrow sites.

Related activities: Grading Outside the Hinge Point

Construction Equipment: auger drill rig, flatbed truck, pumps

Removal of Structures and Obstructions - This activity refers to the removal of buildings, old piling/piers, abutments, fences, old roadbeds, and other man-made obstacles in both upland and aquatic environments. This activity is performed using heavy equipment and will involve soil disturbance.

Related Activities: Clearing and Grubbing, Grading Outside the Hinge Point, Bridge Substructure New and Replacement

Construction Equipment: backhoe, blasting (project specific – infrequent), clam shovel, crane, dozer, dump truck, excavator, front end loader, hydra break ram, jackhammer, mounted impact hammer, pneumatic tools, pumps, vibratory pile driver, welder/torch

Replacing a Bridge with a Culvert - The act of replacing an existing bridge with a culvert. This activity will involve the use of heavy equipment and soil disturbance.

Related Activities: Grading Outside the Hinge Point, Erosion Control, Removal of Structures and Obstructions, Bank Stabilization

Construction Equipment: see others as applicable

Resurfacing-Fog/Slurry Seal, Armor Coat/Chip Seal, Overlay- Additional layer of surfacing material placed on top of the existing hard surfaced road. Fog/Slurry Seal includes the preservation of old asphalt surface, sealing small cracks and surface voids by spraying emulsions diluted with clear water. In

the case of Armor Coat/Chip Seal, a thin covering of gravel/crushed stone is placed after the roadway has been sprayed with asphalt. This is performed using heavy equipment operated on the roadway and will not involve surface soil disturbance beyond 12-inches off the surface area. These activities may include the surfacing of mailbox turnouts, the incorporation of beveled edges on the surfacing for safety, and superelevation correction.

Related Activities: Milling and/or In-place Recycling, Bridge Deck Repair, Material Storage

Construction Equipment: see microsurfacing or paving as applicable

Retaining Walls (Not in Water/Wetlands) - A retaining wall is a structure that holds back soil or rock from a building, structure, or area. Retaining walls prevent downslope movement or erosion and provide support for vertical or near-vertical grade changes. This is performed using some type of heavy equipment and will involve surface soil disturbance to shape and backfill the area.

Related Activities: Grading Outside the Hinge Point, Erosion Control

Construction Equipment: backhoe, compactor, compressor, concrete mixer truck, concrete pump truck, crane, dozer, dump truck, excavator, flatbed truck, front end loader, generator, pickup truck, pneumatic tools, pump truck, rock drill, welder/torch

Rock or Gravel Surfacing - The placement of rock or gravel material on unpaved roads, intersections, mailbox turnouts, or drives after final grading in construction situations or as a maintenance practice on existing unpaved roadways.

Related Activities: Grading Outside the Hinge Point, Grading Within the Hinge Point

Construction Equipment: dump truck, grader

Shoo-fly - A shoo-fly is considered a structure for conveyance of traffic detoured around a bridge/culvert construction project (for full crossing of the stream channel from bank to bank). Culverts are covered by earthen fill and seeded or otherwise stabilized. Shoo-flies are part of the project engineering design, are shown on the plans, and are generally paved for traffic use. Shoo-flies are similar to temporary crossings with the addition of traffic safety features and are designed to convey a 2-year storm event, at a minimum. These are removed at the completion of construction.

Related Activities: Resurfacing, Grading Outside the Hinge Point, Erosion Control, Clearing and Grubbing, Removal of Structures and Obstructions, Detention Basin, Paving, Channelization, Stream Channel Impacts, Bank Stabilization, Retaining Walls, Culvert Replacement, Bridge Substructure New and Replacement, Overpass, Wetland Mitigation

Construction Equipment: see grading, gravel surfacing, paving and placement of culverts; as applicable

Sidewalks and Bikeways - Surfacing of sidewalks, bikeways, or non-motorized trails. This activity pertains only to the placement of surfacing material and does not involve ground disturbance. This could include ADA ramp installation or upgrades.

Related Activities: Grading Outside the Hinge Point, Grading Within the Hinge Point, Paving, Clearing and Grubbing, Curb and Gutter, Culverts, Bridges

Construction Equipment: see paving

Signs with soil disturbance - The placement or maintenance of signposts along with the new signage that requires the excavation of soil for installation of footings or sign bases for their installation.

Related Activities: Erosion Control, Grading Within the Hinge Point, Grading Outside the Hinge Point

Construction Equipment: auger drill rig, backhoe, compactor, compressor, concrete mixer truck, concrete pump truck, crane, drum mixer, flatbed truck, generator, pneumatic tools, vacuum excavator, welder/torch

Signs without soil disturbance - The placement or maintenance of signposts along with new signage without disturbing soil or minimal soil disturbance, to include manual installation of signposts. This may include items such as replacing missing or damaged signs.

Related Activities: None identified.

Construction Equipment: flatbed truck (sign truck), generator, pneumatic tools

Stream Channel Impact, Ephemeral - Design and/or construction activities that will change the area below the high-water mark by activities not included in Channelization or Culvert Extension, Replacement, Repair in a channel that holds water only during and immediately after rain events.

Related Activities: Grading Outside the Hinge Point, Culvert Replacement, Enhancement, Repair, Bridge Substructure Repair, Replacement, Channel Grade Stabilization Structure, Replacing a Bridge with a Culvert

Construction Equipment: backhoe, excavator, flatbed truck, gradall, pickup truck

Stream Channel Impact, Intermittent - Design and/or construction activities that will change the area below the high-water mark by activities not included in Channelization or Culvert Extension, Replacement, Repair in a channel that holds water during wet portions of the year.

Related Activities: Grading Outside the Hinge Point, Culvert Replacement, Enhancement, Repair, Bridge Substructure Repair, Replacement, Channel Grade Stabilization Structure, Replacing a Bridge with a Culvert

Construction Equipment: backhoe, excavator, flatbed truck, gradall, pickup truck, pumps, vibratory pile driver

Stream Channel Impact, Perennial - Design and/or construction activities that will change the area below the high-water mark by activities not included in Channelization or Culvert Extension, Replacement, Repair in a channel that holds water throughout the year.

Related Activities: Grading Outside the Hinge Point, Culvert Replacement, Enhancement, Repair, Bridge Substructure Repair, Replacement, Channel Grade Stabilization Structure, Replacing a Bridge with a Culvert

Construction Equipment: backhoe, excavator, flatbed truck, gradall, pickup truck, pumps, vibratory pile driver

Survey and Staking - The action of determining the boundaries, area, or elevations of (land or structures on the earth's surface) by means of measuring angles and distances. Staking refers to slope stakes and/or lath for delineation of right of way and limits of construction. Typically, this would include some vehicle and foot traffic in the survey area.

Related Activities: None identified.

Construction Equipment: pickup truck

Temporary Crossing, Causeway, Work Platforms -

- Temporary Crossing - A temporary crossing consists of a culvert(s) or temporary bridge for full crossing of the stream channel from bank to bank. Culverts are covered by earthen fill, clean granular fill, or rock for the purpose of providing a temporary crossing for workers, equipment, and efficiency of phasing. The sides of the crossing may be armored with rock riprap, sheet pile, or other equivalent. The culverts used in the temporary crossing will allow for normal Ordinary High-Water Mark (OHWM) stream flows with minimal backwater and shall not be placed to dewater the downstream channel area within the OHWM. These are removed at the completion of construction.

- Causeway - A causeway is considered a construction activity using fill and culverts or temporary bridges for partial waterway crossing, not exceeding 50% of normal/ordinary high-water channel width. These are removed at the completion of construction.

- Work Platform - A work platform is a structure used to conduct activities in or adjacent to a stream channel and may include a temporary bridge, causeway, bank platform, and/or work pads. These are removed at the completion of construction.

Related Activities: Grading Outside the Hinge Point, Cofferdams, Piers, Pile Driving-Vibratory and Impact, Erosion Control, Pile/Pier Encasement, Clearing and Grubbing, De-watering, Drilled Shafts, Removal of Structures and Obstructions, Detention Basin, Channelization, Stream Channel Impacts, Bank Stabilization, Retaining Walls, Culvert Replacement, Bridge Substructure New and Replacement, Overpass, Wetland Mitigation

Construction Equipment: see shoofly and bridges, as appropriate

Trenched Widening - Procedure used to widen existing roadways that do not meet current design standards. It involves removing soil adjacent to the roadway to a width of 2-feet. The removed material is placed in a windrow on the shoulder. Asphalt or concrete pavement is then placed in the trench, widening the roadway 2-feet. The stockpiled material on the shoulder is used to construct the earthen shoulder at the proper elevation to meet the new roadway elevation. This is performed using some type of heavy equipment and will involve surface soil disturbance within the hinge-point. These activities may include the incorporation of beveled edges on the surfacing for safety.

Related Activities: Grading Outside the Hinge Point, Grading Within the Hinge Point, Erosion Control, Earth Shoulder Construction, Milling and/or in-place Recycling

Construction Equipment: grader, see paving

Underground Utility Conduit Installation/Relocation - *If this work will be done by the project contractor or with federal funds, check this box in the activity checklist.* Conduit installation that includes excavating, backfilling and compacting soil or installation by horizontal boring equipment. Urban storm sewer replacement, relocation, extension, or repair would be included in this activity.

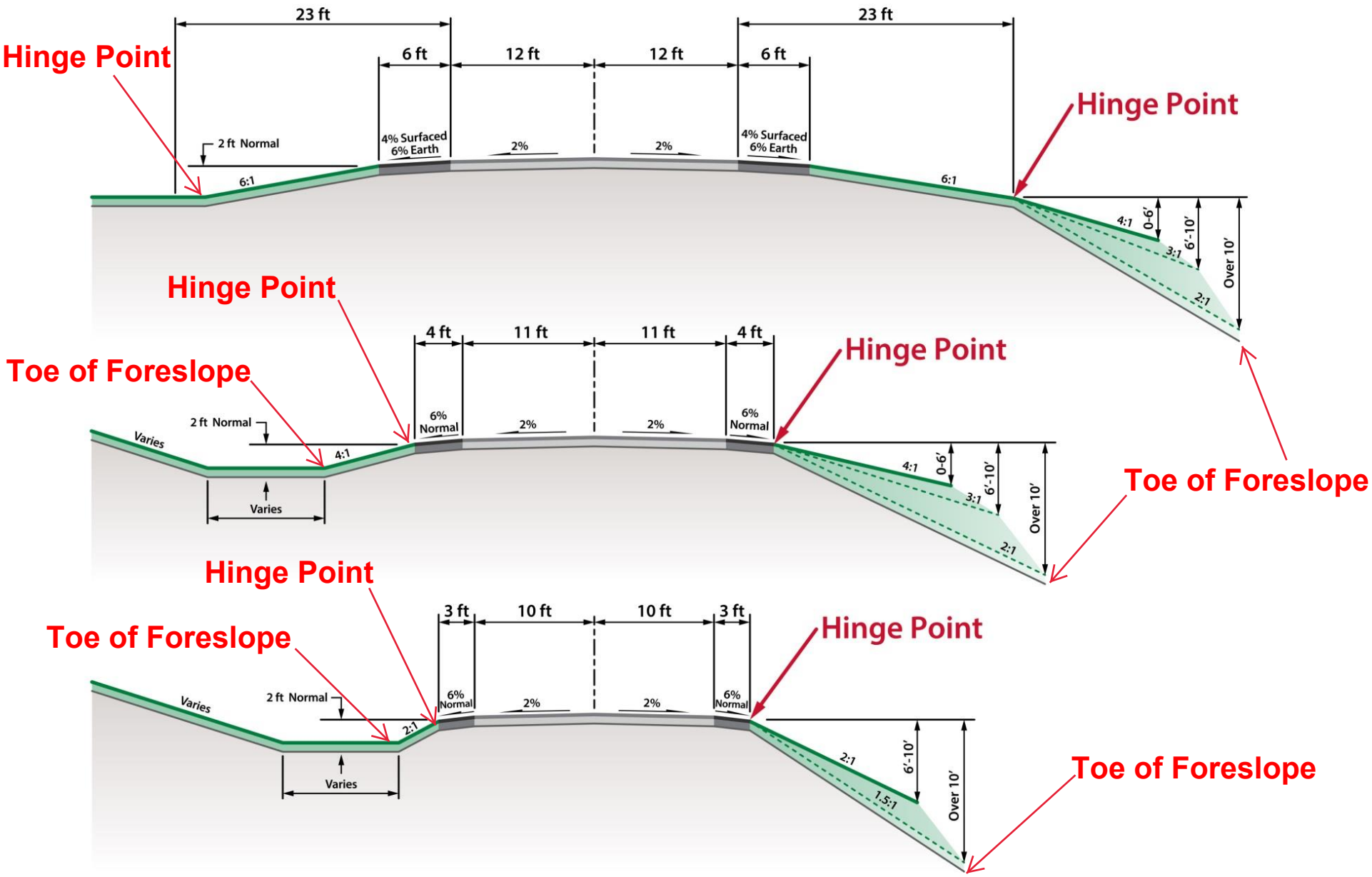
Related Activities: Grading Outside the Hinge Point, Grading Within the Hinge Point, Erosion Control, Signs with soil disturbance, Lighting, Traffic and Pedestrian Signals, Dynamic Message Signs w/ soil disturbance, Pipe Jacking and Casing

Construction Equipment: see culverts

Wetland Mitigation - The creation, restoration, or enhancement of wetlands, to compensate for wetlands that were or will be lost due to regulated activities. This activity only applies to wetland construction for mitigation and does not include the mitigation of wetland impacts at a pre-existing mitigation site (banking). This activity may include the use of heavy equipment and soil disturbance.

Related Activities: Grading Outside the Hinge Point, Erosion Control, Stream Channel Impacts, Bridge Substructure Repair and Replacement, Channelization, Culvert Replacement, Extension, or Repair, Paving

Construction Equipment: see grading and erosion control/landscaping


Hinge Point
23 ft
6 ft
12 ft
12 ft
6 ft
23 ft
Hinge Point
2 ft Normal
4% Surfaced
6% Earth
2%
2%
4% Surfaced
6% Earth
6:1
6:1
4:1
0-6'
6'-10'
3:1
Over 10'
2:1
Hinge Point
4 ft
11 ft
11 ft
4 ft
Hinge Point
Toe of Foreslope
2 ft Normal
6%
Normal
2%
2%
6%
Normal
Varies
4:1
4:1
0-6'
6'-10'
3:1
Over 10'
2:1
Varies
Toe of Foreslope
Hinge Point
3 ft
10 ft
10 ft
3 ft
Hinge Point
Toe of Foreslope
Varies
2 ft Normal
6%
Normal
2%
2%
6%
Normal
2:1
2:1
6'-10'
1.5:1
Over 10'
Varies
Toe of Foreslope