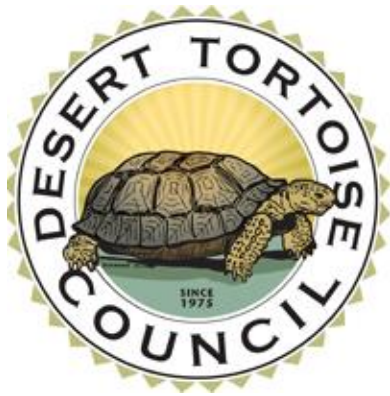




DESERT TORTOISE COUNCIL

3807 Sierra Highway #6-4514

Acton, CA 93510

www.deserttortoise.org

eac@deserttortoise.org

Via email

April 23, 2025

Arizona Department of Transportation Communications

Attn: Five Year Program

1655 W. Jackson, Room 179, MD 126F

Phoenix, AZ 85007

fiveyearconstructionprogram@azdot.gov

RE: 2026-2030 Tentative Program, Arizona Department of Transportation, Five Year Transportation Facilities Construction Program

Dear Director Toth,

The Desert Tortoise Council (Council) is a non-profit organization comprised of hundreds of professionals and laypersons who share a common concern for wild desert tortoises and a commitment to advancing the public's understanding of desert tortoise species. Established in 1975 to promote conservation of tortoises in the deserts of the southwestern United States and northern Mexico, the Council routinely provides information and other forms of assistance to individuals, organizations, and regulatory agencies on matters potentially affecting desert tortoises within their geographic ranges.

Both our physical and email addresses are provided above in our letterhead for your use when providing future correspondence to us. When given a choice, we prefer to receive emails for future correspondence, as mail delivered via the U.S. Postal Service may take several days to be delivered. Email is an "environmentally friendlier way" of receiving correspondence and documents rather than "snail mail."

We appreciate this opportunity to provide comments on the above-referenced project. Given the location of the proposed action in habitats occupied by the Sonoran desert tortoise (*Gopherus morafkai*) (synonymous with Morafka's desert tortoise), our comments include recommendations

intended to enhance protection of this species and its habitat during activities that may be authorized by the Arizona Department of Transportation (ADOT), which we recommend be added to terms and conditions in the authorizing documents [e.g., construction contract, National Environmental Policy Act (NEPA) decision document, etc.] for the proposed action as appropriate. Please accept, carefully review, and include the Council's following comments and attachment for the proposed action in the relevant project file.

The International Union for Conservation of Nature's (IUCN) Species Survival Commission, Tortoise and Freshwater Turtle Specialist Group, now considers the Sonoran desert tortoise, located in Arizona and Sonora, Mexico, to be Vulnerable at this time, but nearly qualifies as Endangered (Averill-Murray et al. 2023). "Steep declines of approximately 54% have occurred in recent years in several formally monitored local subpopulations in Arizona." "Despite evidence that several subpopulations have stabilized or increased, survival rates are predicted to decline with future drought conditions, which are expected to intensify with global climate change." In Mexico, "patterns of rainfall and drought across Sonora mirror those in Arizona and suggest that Sonoran subpopulations likely increased and decreased similarly over time." According to the IUCN, this designation of Vulnerable means that the species is "considered to be facing a high rate of extinction in the wild" and is one step above endangered.

The IUCN identified several threats to the survival of the Sonoran desert tortoise including residential, commercial, and industrial development; ranching and farming; roads and railroads; hunting and trapping; recreational activities; wildfires and fire suppression activities; invasive non-native plant species; and drought/temperature extremes from climate change. The proposed action increases the threats from roads, invasive non-native plant species, and wildfires to tortoises and tortoise habitats.

We appreciate that ADOT contacted the Council directly about the availability of this document for public review and comment.

Description of the Proposed Action

ADOT is requesting comments from the public on the subject 2026-2030 Transportation Facilities Program (Program). The Program identifies numerous projects and their locations to be developed and constructed by ADOT during the next five years on interstates and state highways. Projects range from preservation of existing structures to modernization and improvement of existing structures and expansion of the capacity of structures to deal with increased vehicle use. Federal aid from the Federal Highways Administration (FHWA) provides most of the funding for these transportation projects. The 2026-2030 Program assumes continued federal aid funding at the same levels as in previous years from FHWA.

The Program has identified projects in counties that are within the ranges of the Sonoran desert tortoise, including Mohave, LaPaz, Yuma Yavapai, Maricopa, Gila, Pinal, Pima, and Santa Cruz counties.

Comments on the Program and Identified Projects

Some of the projects listed in the Program do not occur in habitats used by Sonoran desert tortoises for feeding, breeding, shelter, home ranges, or connectivity among populations. For example, the Yuma Port of Entry Scale and Inspection Pit (project #104400) does not occur in habitat for the Sonoran desert tortoise. However, other projects, such as the Cholla Canyon Ranch Road – East Oldeup Hillside rehabilitation project on US 93 in Wikieup, Mohave County (project #104405), are in Sonoran desert tortoise habitat. This highway cuts through a population of Sonoran desert tortoises at this location and along much of this highway's path north of Wickenburg.

Sonoran desert tortoises exist in small populations dispersed throughout the Sonoran Desert where they typically inhabit rocky upland habitat and coalescing alluvial slopes (bajadas; Howland and Rorabaugh 2002, Riedle et al. 2008). Sonoran desert tortoises use areas associated with washes including bursage-dominated habitat on the alluvial slopes above the washes (Reidle et al. 2008), and areas with “a higher percentage of canopy cover, . . . and xeric washes—especially those with exposed caliche refuges” (Grandmaison et al. 2010). In addition, tortoises use intermountain valleys as part of their home ranges and for dispersal of all age classes (Averill-Murray et al. 2020 cited in USFWS 2021). Occasionally low density populations can be found in valleys that provide important shelter resources (Averill-Murray and Averill-Murray 2005). Historically, Sonoran desert tortoises dispersed between mountain ranges and this dispersal and subsequent reproduction and recruitment between populations maintained the exchange of genetic material between populations (Edwards et al. 2004).

However, the current landscape of Arizona in the range of the tortoise contains many recently constructed anthropogenic barriers (Edwards et al. 2004), including roads and highways, that act as linear barriers to tortoise movements within a population and dispersal/connectivity between populations. This has resulted in the obstruction of movements of tortoises within and between populations and disturbed patterns of gene flow (Edwards et al. 2004).

Regarding connectivity between tortoise populations, Sutor et al. (2023) reported that the long-distance movements that once united tortoise populations are now likely impossible because of linear anthropogenic features including roads and highways. Fragmentation resulting from permanent linear barriers (e.g., roads and highways) has been identified as one of the greatest threats to the persistence of the Sonoran desert tortoise (USFWS 2015).

Currently, most mountain ranges likely contain far less than 20,000 adult tortoises (with some only having several hundred). Thus, population levels in any given mountain range are far below that recommended by the population viability analysis generated for Mojave desert tortoises (Edwards et al. 2004). Gene flow among populations is part of the evolutionary history of the desert tortoise and therefore inter-population movements are likely critical to the long-term viability of Sonoran tortoise populations (Edwards et al. 2004). Consequently, gene flow among disjunct populations will help ensure the long-term persistence of Sonoran desert tortoise in Arizona (Edwards et al. 2004). Dispersal events between populations play an important role in the long-term maintenance of these tortoise populations. Inter-population movements are likely critical to the persistence of small tortoise populations (Edwards et al. 2004).

In addition, many roads and highways traverse through Sonoran desert tortoise populations and habitats dissecting each population into two or more smaller populations. When tortoises move within these populations and cross roads/highways, the result is usually tortoise mortality.

ADOT maintains thousands of acres of rights-of-way throughout Arizona, including easements and rights-of-way across lands managed by federal agencies and other state agencies. Many of these lands contain and/or are adjacent to suitable habitat for the Sonoran desert tortoise.

ADOT is a signatory to the Candidate Conservation Agreement (Agreement) for the Sonoran Desert Tortoise (USFWS et al. 2015). In this Agreement ADOT committed to “identify suitable habitat, conduct surveys, assess impacts, and coordinate mitigation efforts for the SDT [Sonoran desert tortoise] on these lands.” “ADOT right-of-way (sic) intersects suitable habitat for the SDT in the southern, central and western portions of Arizona. ADOT has established guidelines to protect SDT populations along state highways and at construction sites. As a signatory to the Agreement, ADOT committed to implement the following mitigation:

- “Promote awareness of the conservation status of the Sonoran desert tortoise within ADOT.
- Collect data on SDT sightings in ADOT right-of-way (sic) and provide that information to AGFD [Arizona Game and Fish Department].
- Partner with AGFD to implement survey and handling procedures, conservation approaches and research related to SDTs.
- Maintain ADOT right-of-way (sic) to minimize invasive plant species and fire risks as authorized.
- Partner with state and federal agencies to address invasive plant species in and adjacent to ADOT right-of-way (sic).
- Coordinate and partner with state and federal agencies and other interested parties to incorporate project design features to minimize SDT habitat fragmentation and vehicle strikes.
- Conduct habitat suitability surveys and analyze potential impacts for projects with a scope of work that could impact SDT habitat.
- Provide awareness training and/or information to ADOT and contractor personnel working on construction and maintenance projects in areas with suitable habitat.
- Follow the most current protocol for relocating any SDT that may be impacted by an ADOT construction or maintenance project.”

In addition, the FHWA requires analysis of project effects on species listed as candidates and those protected by candidate conservation agreements under the federal Endangered Species Act. In the Agreement, ADOT says that “[a]voidance, minimization and mitigation measures are regularly enacted for these [listed and candidate] species on ADOT projects.” Because most of the funding for the projects in this Program are from FHWA, ADOT should comply with this requirement when implementing the projects identified in the Program in and adjacent to tortoise habitats.

The Council requests that ADOT implement the following specific mitigation measures for tortoises for the projects in the Program that are located in and/or adjacent to tortoise habitats including areas needed for connectivity between populations. To comply with ADOT’s mitigation commitment to incorporate project design features to “minimize SDT habitat fragmentation and vehicle strike,” the Council requests that ADOT (1) construct and maintain tortoise exclusion

fencing along with shade structures along the rights-of-way to eliminate mortality of tortoises on roads and highways, and (2) design, construct, and maintain bridges and culverts so they provide access for tortoises under roads and highways for all size classes of tortoises. As mentioned above, washes are important habitat components for tortoises. Thus it is likely that tortoises would use/traverse washes. Ensuring that culverts and bridges are designed and maintained so they convey surface flow, maintain the structural integrity of travel surfaces for vehicles, and allow for tortoise movement under roads and highways (as well as other wildlife) would accomplish several purposes.

To comply with ADOT's mitigation commitment to maintain ADOT rights-of-way to minimize invasive plant species and fire risks, the Council requests that ADOT and its contractors use "clean" vehicles and equipment during construction and maintenance activities, that is, vehicles and equipment that are free of seeds and other plant propagules, and that the rights-of-way on the road/highway side of the tortoise exclusion fencing be mowed as needed to eliminate flower and seed formation by invasive plants in the rights-of-way.

To assist ADOT with implementing project design features to minimize Sonoran desert tortoise habitat fragmentation and vehicle strikes for the projects in the Program that are located in/adjacent to tortoise habitat, we are providing you with the link to:

Fairbank, E., M. Huijser, and F. Deffner. 2021. Technical Guidance: Mojave Desert Tortoise Conservation and Recovery Measures Along Roads. Prepared by the Mojave Desert Tortoise Transportation Ecology Task Force.
https://largelandscapes.org/wp-content/uploads/Final-Report_MDT-Technical-Guidance.pdf

This document provides information on the effective and ineffective project design features so that ADOT may successfully implement its commitment to incorporate project design features to minimize Sonoran desert tortoise habitat fragmentation and vehicle strikes. Also attached are the recommended fencing specifications from the U.S. Fish and Wildlife Service (USFWS) for desert tortoise exclusion fencing.

In addition, the Council strongly recommends that ADOT map the locations of tortoise exclusion fencing, shade structures, and the types and locations of crossing structures (i.e., culverts and bridges) using geographic information system (GIS) data so these features may be easily located, monitored, and repaired when needed.

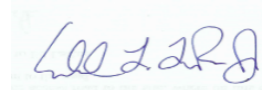
The Council offers assistance to ADOT to help develop, implement, and maintain these features that will contribute to the conservation of the tortoise.

We appreciate this opportunity to provide the above comments and trust they will help protect tortoises during any resulting authorized activities. Herein, we reiterate that the Council wants to be identified as an Affected Interest for this and all other programs or projects funded, authorized, or carried out by the ADOT that may affect desert tortoises, and that any subsequent environmental documentation for this Program and associated projects is provided to us at the contact information listed above. Additionally, we ask that you notify the Council at eac@deserttortoise.org of any

proposed projects that ADOT may authorize, fund, or carry out in the range of any species of desert tortoise in Arizona (i.e., *Gopherus agassizii* and *G. morafkai*) so we may comment on them to ensure ADOT fully considers and implements actions to conserve these tortoises and their habitats.

Please respond in an email that you have received this comment letter so we can be sure our concerns have been registered with the appropriate personnel and office for this Program.

Respectfully,



Edward L. LaRue, Jr., M.S.

Desert Tortoise Council, Ecosystems Advisory Committee, Chairperson

Cc: Heather Whitlaw, Field Supervisor, Arizona Ecological Services Field Office (Phoenix), U.S. Fish and Wildlife Service, heather_whitlaw@fws.gov

Attachment: Desert Tortoise Exclusion Fence Specifications

Literature Cited

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ATTACHMENT: DESERT TORTOISE EXCLUSION FENCE SPECIFICATIONS

From U.S. Fish and Wildlife Service. 2009. Desert Tortoise (Mojave Population) Field Manual: (*Gopherus agassizii*). December 2009. Region 8, Sacramento, California.
<https://www.fws.gov/sites/default/files/documents/Desert-Tortoise-Field-Manual.pdf>

CHAPTER 8. DESERT TORTOISE EXCLUSION FENCE RECOMMENDED SPECIFICATIONS FOR DESERT TORTOISE EXCLUSION FENCING

These specifications were developed to standardize fence materials and construction procedures to confine tortoises or exclude them from harmful situations, primarily roads and highways. Prior to commencing any field work, all field workers should comply with all stipulations and measures developed by the jurisdictional land manager and the U.S. Fish and Wildlife Service for conducting such activities in desert tortoise habitat, which will include, at a minimum, completing a desert tortoise education program.

Fence Construction

Materials

Fences should be constructed with durable materials (*i.e.*, 16 gauge or heavier) suitable to resist desert environments, alkaline and acidic soils, wind, and erosion. Fence material should consist of 1-inch horizontal by 2-inch vertical, galvanized welded wire, 36 inches in width. Other materials include: Hog rings, steel T-posts, and smooth or barbed livestock wire. Hog rings should be used to attach the fence material to existing strand fence. Steel T-posts (5 to 6-foot) are used for new fence construction. If fence is constructed within the range of bighorn sheep, 6-foot T-posts should be used (see New Fence Construction below). Standard smooth livestock wire fencing should be used for new fence construction, on which tortoise-proof fencing would be attached.

Retrofitting Existing Livestock Fence

Option 1 (see enclosed drawing). Fence material should be buried a minimum of 12 inches below the ground surface, leaving 22-24 inches above ground. A trench should be dug or a cut made with a blade on heavy equipment to allow 12 inches of fence to be buried below the natural level of the ground. The top end of the tortoise fence should be secured to the livestock wire with hog rings at 12 to 18-inch intervals. Distances between T-posts should not exceed 10 feet, unless the tortoise fence is being attached to an existing right-of-way fence that has larger interspaces between posts. The fence must be perpendicular to the ground surface, or slightly angled away from the road, towards the side encountered by tortoises. After the fence has been installed and secured to the top wire and T-posts, excavated soil will be replaced and compacted to minimize soil erosion.

Option 2 (see enclosed drawing). In situations where burying the fence is not practical because of rocky or undigable substrate, the fence material should be bent at a 90° angle to produce a lower section approximately 14 inches wide which will be placed parallel to, and in direct contact with, the ground surface; the remaining 22-inch wide upper section should be placed vertically against the existing fence, perpendicular to the ground and attached to the existing fence with hog rings at 12 to 18-inch intervals. The lower section in contact with the ground should be placed within the enclosure in the direction of potential tortoise encounters and level with the ground surface. Soil and cobble (approximately 2 to 4 inches in diameter; can use larger rocks where soil is shallow) should be placed on top of the lower section of fence material on the ground covering it with up to 4 inches of material, leaving a minimum of 18 inches of open space between the cobble surface and the top of the tortoise-proof fence. Care should be taken to ensure that the fence material parallel to the ground surface is adequately covered and is flush with the ground surface.

New Fence Construction

Options 1 or 2 should be followed except in areas that require special construction and engineering such as wash-out sections (see below). T-posts should be driven approximately 24 inches below the ground surface spaced approximately 10 feet apart. Livestock wire should be stretched between the T-posts, 18 to 24 inches above the ground to match the top edge of the fence material; desert tortoise-proof fencing should be attached to this wire with hog rings placed at 12 to 18-inch intervals. Smooth (barb-less) livestock wire should be used except where grazing occurs.

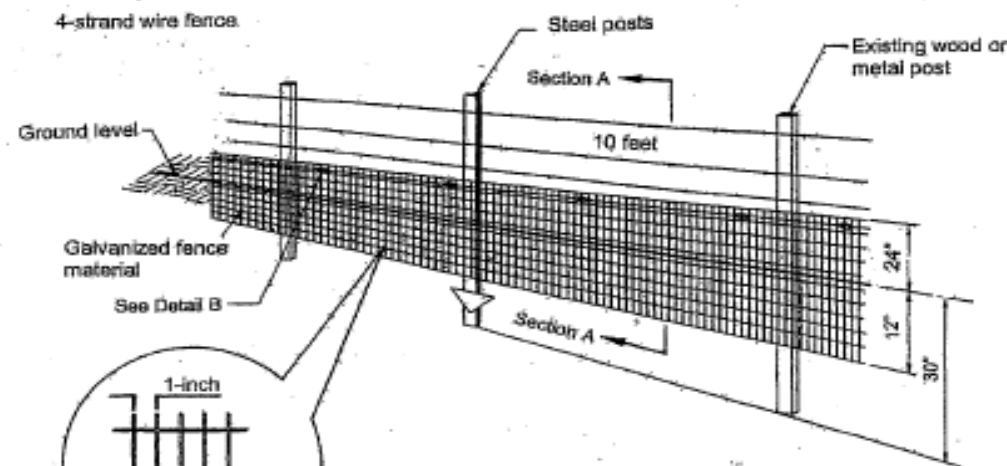
If fence is constructed within the range of bighorn sheep, two smooth-strand wires are required at the top of the T-post, approximately 4 inches apart, to make the wire(s) more visible to sheep. A 20 to 24-inch gap must exist between the top of the fence material and the lowest smooth-strand wire at the top of the T-post. The lower of the top two smooth-strand wires must be at least 43 inches above the ground surface.

(72-inch T-posts: 24 inches below ground + 18 inches of tortoise fence above ground + 20 to 24-inch gap to lower top wire + 4 inches to upper top wire = 66 to 70 inches).

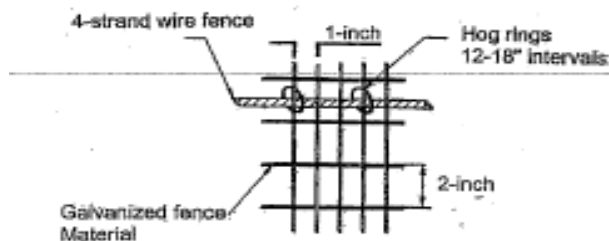
Inspection of Desert Tortoise Barriers

The risk level for a desert tortoise encountering a breach in the fence is greatest in the spring and fall for Mojave desert tortoises and spring and summer for Sonoran desert tortoises, particularly around the time of precipitation including the period during which precipitation occurs and at least several days afterward. All desert tortoise fences and cattleguards should be inspected on a regular basis sufficient to maintain an effective barrier to tortoise movement. Inspections should be documented in writing and include any observations of entrapped animals; repairs needed including bent T-posts, leaning or non-perpendicular fencing, cuts, breaks, and gaps; cattleguards without escape paths for tortoises or needed maintenance; tortoises and tortoise burrows including carcasses; and recommendations for supplies and equipment needed to complete repairs and maintenance.

DESERT TORTOISE EXCLUSION FENCE (2005)



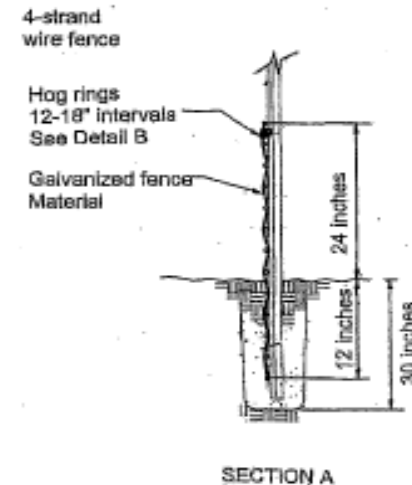
DETAIL A



DETAIL B

RECOMMENDED DESIGN FOR DESERT TORTOISE EXCLUSION FENCE GENERAL NOTES:

1. Ensure that fence posts and materials conform to the standards approved by the U.S. Fish and Wildlife Service.
2. Ensure that the height above ground level is no less than 18 inches and no higher than 24 inches.
3. Ensure that the depth of fence material below ground level is about 12 inches but no less than 6 inches. (See SECTION A above)
4. Install additional steel posts when span between existing fence posts exceed 10 feet.
5. Attach fence material to existing fence or wire using hog rings at 12-inch intervals.
6. Fasten fence material to posts with 3 tie wires with a wire near the top, bottom, and center of the fence material.
7. Backfill trenches with excavated material and compact the material.
8. Attach fence material to all gates. Ensure that clearance at base of gate achieves zero ground clearance.
9. Substitute smooth wire for barbed wire if additional support wires are necessary.
10. The number and placement of support wires may be modified to allow sheep and deer to pass safely.
11. Erosion at the edge of the fence material where the fence crosses washes may occur and requires appropriate and timely monitoring and repair.
12. Tie the fence into existing culverts and cattleguards when determined necessary to allow desert tortoise passage underneath roadways.



SECTION A

From: U.S. Fish and Wildlife Service. 2009. Desert Tortoise (Mojave Population) Field Manual: (*Gopherus agassizii*). December 2009. Region 8, Sacramento, California. <https://www.fws.gov/sites/default/files/documents/Desert-Tortoise-Field-Manual.pdf>