



EMS SCIENTISTS, ENGINEERS, PLANNERS, INC.

393 CenterPointe Cr. ♦ Altamonte Springs, FL 32701 ♦ Phone: (407) 260-0883 ♦ Fax: (407) 331-4176

SR 40 PD&E STUDY – MEETING SUMMARY

Subject: Proposed Wildlife Crossing Evaluation

Date / Time: October 3, 2006 / 10:30 a.m.

Location: Florida Fish and Wildlife Conservation Commission –
Gainesville Office

Attendees: Walt McCown, FFWCC
Terry Gilbert, URS
Tom Roberts, EMS
Ray Emmett, EMS

The meeting was held to evaluate and provide recommendations for wildlife crossing locations along the project corridor. Also considered during the meeting were the type and size of crossing structures, potential land acquisition areas, and fencing. The discussion of wildlife crossing sites focused primarily on the nineteen sites (Sites 2A through 2S) previously identified by the FFWCC or the Task Force, first on those within the proposed four-lane section, then on those within the remainder of the corridor east of 183rd Avenue. Other potential crossing locations were also discussed. Prior to the meeting, EMS had performed an updated evaluation of all proposed wildlife crossings, and the **Appendix** to this memo provides a summary of that effort. Below follows a general summary of the discussion:

CROSSING STRUCTURES – GENERAL DESIRABLE FEATURES

An open area in the median that would allow greater penetration of sunlight / moonlight into the crossing would be desirable. Where crossings are constructed to accommodate bears, a minimum clearance of 7 to 8 feet is needed.

FENCING

As discussed in other meetings, the placement and type of fencing is critical to the successful operation of all crossings. Although the USFS has stated an objection to use of chain link fencing, Terry has seen green, vinyl-coated chain link fencing placed adjacent to wildlife crossings that is visually unobtrusive. There was a brief discussion of several other fencing ideas, concluding that more clear guidance regarding acceptable fencing from the USFS is needed. The SR 40 project team should present the USFS with a graphic selection of the types of fencing available in order to obtain clear guidance on this issue.

FOLLOW-UP STUDIES

A long-term, post-construction study of the effectiveness of all wildlife crossings would be valuable, as well as a road kill survey of the entire project area to help determine appropriate mitigation for any future road widening projects.

SITES AND TYPES OF STRUCTURES – PROPOSED 4-LANE SEGMENT

The six proposed crossing sites within the widening section discussed at the meeting are as follows:

Crossing 2A – the existing creek crossing can be improved for both wetland and upland wildlife species with relatively minimal effort, which is all that is warranted because of substantial human development to the north and east of the site:

- ensure minimum clearance of 7 to 8 feet beneath new bridge
- create elevated side paths beneath new bridge for upland species (increase bridge length as needed to accommodate paths)
- remove fill from floodplain as needed for crossing

Crossing 2B – the proximity of this upland site to undeveloped public and private land figures into its desirability for a wildlife crossing structure. Although considered less important than 2A, 2C, 2D & 2F, it would still be a valuable crossing with the following specifications:

- construct a traditional bear-compatible 100-ft structure
- install wildlife fencing along both sides of road extending at least 0.5 mile if practicable, continuous toward bridge
- acquire substantial land to the north, between CR 315 and the Ocklawaha

Crossing 2C – the existing Ocklawaha Bridge appears to effectively allow wildlife movement, so recommendations for this area were limited to the following:

- design new and existing (if lowered) bridge structures to maintain at least 40 to 50 feet of clearance above the riverbank to allow sunlight for shrubs and small trees below
- the span of the new bridge should be the same as the existing bridge
- construct bridge in a manner that minimizes temporary and permanent impacts to the wildlife corridor below

Crossing 2D – this band of undeveloped upland and wetland habitat includes a branch of the Florida Trail and provides a moderate quality wildlife travel corridor between human development to the east and west:

- construct a traditional bear-compatible 100-ft crossing structure centered on the east side of the existing drainage
- install wildlife fence extending the greatest practicable distance, preferably at least 0.5 mile in both directions, gated if necessary
- acquire land to connect with other public lands, especially to the south
- alignment with the Florida Trail to allow dual use of the crossing structure is acceptable

Crossing 2E – a dedicated wildlife crossing structure was determined infeasible due to substantial human development proximal to the site.

- no improvements are recommended other than any drainage features that would be constructed in conjunction with roadway realignment through the wetlands

Crossing 2F – this approximately 1.5-mile long segment represents the most desirable portion of the proposed widening section for wildlife crossing structures:

- construct a 1,000-ft crossing structure centered in the upland area along the western portion of this segment to accommodate greater diversity of species
- construct two 100-ft bear compatible crossing structures spaced along the remainder for larger species
- install continuous fencing along the segment between structures and beyond, gated where necessary

SITES AND TYPES OF STRUCTURES – EAST OF THE PROPOSED WIDENING

Crossing 2J and **Crossing 2N** – crossings at both locations appear justifiable from a public safety perspective due to the substantial number of recorded bear roadkills:

- construct a 100-ft bear compatible crossing structure at each site
- install wildlife fence extending greatest practicable distance, preferably at least 0.5 mile in both directions, gated where necessary

Forested Wetland Near Crossing 2O – improvements to the existing SR 40 drainage crossing structure just east of Astor Park to accommodate bears and other wildlife traveling along the adjacent high quality habitat may be justifiable from a public safety perspective due to the substantial number of recorded bear roadkills:

- lengthen the existing bridge or box culvert and increase height to maximum possible, considering surrounding design constraints (7 to 8 feet is desirable)
- acquire land to connect with public lands to the north and south
- install wildlife fencing extending at least 0.5 mile or to the extent practicable

Powerline Crossing Near Central Lookout Tower – sand skink trails and Florida scrub jays have been observed at this location by EMS, perhaps making it a suitable location to conduct a multi-year study of utilization of wildlife crossing structures by these and other scrub-dependent species:

- construct a 100-ft bear compatible crossing structure
- install wildlife fence extending greatest practicable distance, preferably at least 0.5 mile in both directions, gated where necessary

APPENDIX

Proposed Wildlife Crossing Matrix Scoring Sheet Revised 10/06

The following represents a comparative evaluation of various proposed wildlife crossing locations along the SR 40 project corridor. Sites are identified by unique Wildlife Crossing Numbers ranging from “2A” through “2S” developed by Inwood Consulting. For this version of the scoring summary, the score presented for “2O” represents the forested wetland swamp located very near the mapped location of Crossing 2O. Also, the summary matrix now contains the score for the proposed crossing called “Power Line Easement Near the Fire Tower” located between Crossings 2G and 2H.

Each proposed crossing location has been rated in twelve categories, with the sum of the ratings representing the Total Score. Points were awarded for each category following the guidance provided on the scoring sheet (see attached blank copy), as further clarified below. A summary matrix containing the scores for all sites is attached.

Documented Bear Kill Sites were based on scale measurements of mapped record data collected by Florida Fish and Wildlife Conservation Commission. Suitable Habitat -- Localized was determined from recent aerial photography, and basically constitutes woodland, low maintenance pasture, or other land with little evidence of substantial human manipulation or development at or immediately adjacent to the proposed crossing site. Suitable Habitat – Landscape Level – Female Bears and Suitable Habitat – Landscape Level – Male Bears considered the amount of optimal habitat (forested areas), suboptimal habitat (nonforested natural areas), and nonhabitat within a reasonable home-range buffer for female and male bears centered on each proposed crossing. Factors considered to rate Human Use of Structure include proximity to substantial human development, especially residential and recreational. Predicted Wildlife Movement Routes were rated using professional judgment of recent aerial photography overlaid with record and project-specific wildlife occurrence data.

Wildlife Hot Spots – Target Focal Species – Bear and Wildlife Hot Spots – Identified Regional Hot Spots were evaluated using project area maps with an overlay showing the FFWCC’s “Integrated Wildlife Habitat Ranking System” GIS-based data for bears or key species habitat (respectively). The FFWCC characterization of the area at and immediately surrounding each proposed crossing site was taken into account during scoring. Linkage to Public Lands was determined using project specific maps with a GIS-based public lands data overlay obtained through the Florida Geographic Data Library. The Design Constraints category considered any roadway or adjacent features at or very near the site that would prevent or constrain placement of a crossing at that site, such as existing crossroads, human development, and existing bridges. Physical Barriers to Wildlife Movement were defined as any features that would inhibit the free and safe movement of wildlife along a route created by the crossing, such as transportation facilities, large canals or other impediments that would increase risk to the wildlife or decrease the usability of the crossing. Although the scoring sheet uses the term “parallel”, this assessment considered all public roads and other potential impediments, regardless of orientation, near the crossing and the wildlife corridor it would facilitate. The installation of Fencing is important to the effectiveness of a wildlife crossing because it funnels wildlife to the crossing. In general, a half mile of fencing along the four quadrants created by highway-greenway intersection has been considered to be the minimum effective length for large mammal crossings.

Table 1. Summary matrix of the proposed wildlife crossing evaluation. Unless otherwise noted, the rating scale for each criterion is from 0 to 2, with higher scores indicating more favorable conditions for a wildlife crossing. Each of the 12 criteria are equally weighted, except that a “zero” score for Design Constraints indicates a “Fatal Flaw” and means that the crossing is not feasible regardless of the other criterion scores. The Total Scores are additive. P/L = Power line easement near the central fire tower.

EVALUATION CRITERION	PROPOSED WILDLIFE CROSSING NUMBER																			
	2 A	2 B	2 C	2 D	2 E	2 F	2 G	P/L	2 H	2 I	2 J	2 K	2 L	2 M	2 N	2 O	2 P	2 Q	2 R	2 S
Bear Kill Sites	1	1	0	1	1	1	0	1	0	0	2	1	1	1	2	2	0	0	0	0
Suitable Bear Habitat - Local	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Suitable Bear Habitat – Landscape – Female (0 – 5)	4	4	5	3	2	3	5	5	5	5	5	4	5	5	4	4	2	2	2	3
Suitable Bear Habitat – Landscape – Male (0 – 5)	2	5	4	3	3	3	4	5	5	4	5	5	5	5	5	5	4	2	2	2
Likely Human Use of Crossing Structure	1	2	1	1	1	2	2	2	2	2	1	2	2	2	1	1	1	2	1	1
Predicted Wildlife Travel Rtes (0 – 1)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Wildlife Hot Spots – Bear	2	2	2	2	2	0	2	2	2	2	2	2	2	2	0	2	1	2	2	2
Wildlife Hot Spots – General	2	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2	2	2	2	2
Public Lands Linkage	1	0	0	2	1	2	2	2	2	2	2	2	2	2	2	0	1	2	1	1
Design Constraints	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
Phys Barriers to Wildlife Travel	2	1	2	2	1	2	2	2	2	2	1	2	0	0	1	1	2	2	2	2
Suitability for Wildlife Fencing	1	1	1	1	1	2	2	1	1	2	1	2	1	1	1	1	1	1	1	1
TOTAL SCORE	21	23	22	22	19	22	26	27	26	26	25	27	25	23	23	23	19	20	18	19

**Proposed Wildlife Crossing
Matrix Scoring Sheet (SAMPLE)**

Project: SR 40 PD&E Study
Project Location: Marion, Lake & Volusia Counties

Wildlife Crossing Number:
Scoring Date: 10/06

CRITERION	SCORE
Documented Bear Kill Sites	
No recorded bear kills within 1,500 feet = 0	
Five or less recorded bear kills within 1,500 feet = 1	
More than five recorded bear kills within 1,500 feet = 2	
Suitable Habitat -- Localized	
Suitable habitat not present on either side of crossing = 0	
Suitable habitat present on one side of crossing = 1	
Suitable habitat present on either side of crossing = 2	
Suitable Habitat – Landscape Level – Female Bears (2.8-Mile Buffer): Sum of...	
2 x forested upland & wetland (categorized by % coverage)	
1 x all other undeveloped upland, wetland & open water (categorized by % coverage)	
0 x all developed & disturbed land	
Suitable Habitat – Landscape Level – Male Bears (6.0-Mile Buffer): Sum of...	
2 x forested upland & wetland (categorized by % coverage)	
1 x all other undeveloped upland, wetland & open water (categorized by % coverage)	
0 x all developed & disturbed land	
Human Use of Structure	
Moderate / regular use of structure anticipated = 0	
Low / infrequent use of structure anticipated = 1	
No use of structure anticipated = 2	
Predicted Wildlife Movement Routes	
Not lying within a predicted wildlife movement route = 0	
Lying within a predicted wildlife movement route = 1	
Wildlife Hot Spots – Target Focal Species¹ - Bear	
Habitat Score < 4 = 0	
Habitat Score 4 - 6 = 1	
Habitat Score > 6 = 2	
Wildlife Hot Spots – Identified Regional Hot Spots²	
Potential for focal species < 3 = 0	
Potential for focal species 3-4 = 1	
Potential for focal species > 4 = 2	
Linkage to Public Lands	
Public lands not present on either side = 0	
Public lands present on one side = 1	
Public lands present on both sides = 2	
Design Constraints	
Design constraints lead to a fatal flaw = NO BUILD	
Design constraints exist = 1	
No obvious constraints exist = 2	
Physical barriers to wildlife movement	
Bear kills documented along parallel facility/ large physical barrier = 0	
Bear kills may occur along parallel facility/ physical barrier = 1	
Parallel facility/ physical barrier not present in proposed pathway = 2	
Fencing	
Less than ½ mile of fencing in all quadrants = 0	
At least ½ mile of fencing in 1 or more quadrants = 1	
At least ½ mile of fencing in all quadrants = 2	
TOTAL SCORE	

¹From FFWCC's Integrated Wildlife Habitat Ranking System

²From FFWCC's Integrated Wildlife Habitat Ranking System