

AGENDA ITEM 21

Consider awarding bids received for cave gating services for the County Parks & Recreation Department to the low bidder meeting specifications - Mike Wharton and Associates.

Moved: **Commissioner Boatright**

Seconded: **Judge Doerfler**

Motion: To award bids received for cave gating services for the County Parks & Recreation Department to the low bidder meeting specifications - Mike Wharton and Associates.

Vote: **3 – 0. Commissioner Limmer was absent from the dais.**

< Attachment >



Williamson County

Parks and Recreation Department

Memorandum

TO: John Doerfler, Judge
Commissioners
Williamson County

FROM: Jim Rodgers *JMR*
Parks and Recreation

DATE: September 10, 2003,

RE: Bid Award Bid # 03WC525

Cave gating services (Bid # 03WC525) for the seven caves with endangered species in the Regional Park on CR175 were advertised and bids were opened August 21, 2003 by the purchasing department. Specifications denoted design and construction of the gates on site to meet United States Fish and Wildlife (USFW) approval. We received bids from Mike Wharton of Cedar Park and Associates and from Steelco of Waxahachie. The attached spreadsheet indicates the results of the evaluation criteria. I am recommending award of bid to Mike Wharton and Associates due to the following reasons. Wharton and Associates has experience in designing and constructing 250 cave gates in the area, his references, all for the construction of cave gates and most for the construction of endangered species cave gates, were praiseworthy of his design, construction, and acceptance by USFW. A USFW collections permit is held by Wharton and Associates and Mike is recognized as the expert in the field of cave gates.

Steelco has no experience in cave gate design or construction; their references while good were not of cave gates but of fences, security gates and a variety of welding projects. Steelco has no collections permit and when I spoke with Mr. Clifford Fischer he said he was trying to get into the business. Both entities can be finished in an acceptable time.

I visited with Steve Paulsen with aci consulting our cave expert about the risks of selecting a non-experienced builder. Steve's comments reflected our concerns in that "our credibility with Fish and Wildlife is at stake" and that "Wharton has the proven ability to meet Fish and Wildlife's complex demands"

While there is a sizable difference in price I believe that Wharton and Associates price is the acceptable bid. I called three references for each contractor and received good reports from all six. It was evident that Wharton and associates has very credible endangered species cave gate experience. I believe that Steelco is a good welding firm but is not a qualified cave gate designer or builder and his price reflects the lack of qualifications for bidding in this area.

Cave Gating Evaluation Criteria

Evaluation Criteria	Warton and Assoc.	STELCO Industries
Total cost of gates	\$25,025.00	\$6,800.00
Experience in designing and constructing cave gates with endangered species.	250 caves	none
References All called	Brushy Creek MUD Mike Taylor ES Cave Gates Lumbermans Barry Allison ES Cave Gates Mayfield Ranch Blake Magee Cave gates	Highland Park Ronnie Brown steel Bldgs, facilities Tarrant County Mike Grizzle Brazos River Authority Mike Cox security gates, fences
USFW Collections Permit (preferred)	yes Permit TEO22329-0	no
Project Completion	Before Nov. 15, 2003	21 days

Mike Warton & Associates

GEOLOGIST / KARST TERRAINS SPECIALIST / NATIONAL CAVE GATE CONSULTANT
P.O. BOX # 1313 CEDAR PARK, TEXAS 78630-1313
(512) 250-0705 FAX (512) 250-0706
SPECIALIST IN TEXAS' ENVIRONMENTAL KARST RESEARCH & SERVICES

Williamson County Auditor's Office
Purchasing Department
710 Main Street - Suite 303
Georgetown, Texas 78626

Contractor's Bid

CAVE GATING SERVICES FOR THE PARKS AND RECREATION
DEPARTMENT

BID NUMBER: 03WC525

BID OPENING DATE & TIME: AUGUST 21, 2003 - 3:00PM

Introduction:

The following Contractor's Bid is prepared for Williamson County for the purpose of providing Cave Gating Services for SEVEN (7) Caves known to contain the federally endangered invertebrate species " *Texella Reyesi* " (" Bone Cave Harvestman "). The objective of Cave Gating is to provide an environmentally correct method of protection/ preservation of species habitat, while additionally providing effective access control devices (cave gates) to insure continuous conditions of low disturbance of such habitat. Such gates are needed to further facilitate authorized monitorings of habitat, while reducing land ownership liabilities near to areas of public recreational usage, and safety of environment.

Contractor's Mission Statement:

Cave Gating is a highly specialized skill. The success and effectiveness of the skill is critically dependent upon pre-study environmental assessments of caves on a cave by cave basis. As experts in this field, we are committed to quality control and usage of the best current science and technology. All of our gate designs and installations meet, and or exceed all agency written guideline standards and criteria (U.S.Fish & Wildlife Service, & National Speleological Society). I would offer Williamson County nothing less in quality.

Sincerely, 

Mike Warton, National Cave Gate Consultant

REFERENCES:

* Mike Warton & Associates; 1988 to present: 250 Cave Gate installations in the State of Texas.

* For purposes of this bid, only Williamson County references will be used:

1. Melvin Simon & Associates, Inc. 1989 Gating of " Lakeline Cave " (Lakeline Mall Site at U.S.Hwy. 183 & R.M. 20 North), Williamson County, Texas. contact MSSA, inc. Indianapolis, Indiana, Mr. Joe Stallsmith
2. Round Rock Independent School District; 1991 9 caves at 100 acre site at RM 620 North at Great Oaks Drive, 2 caves at Fern Bluff Elementary School Site, 2 caves at Round Rock High School (McNeil rd.), Williamson County, Texas. Contact is Tom Phillips or Don Howard/ Construction Dept. (512) 255-5167
3. Lumbermans Investment Corporation 1992 - 2000: 59 Caves Gated on the " Buttercup Creek " Residential Development Properties (North Bell Blvd. at Buttercup Creek Blvd., Cedar Park, Williamson County, Texas. contact is Mr. Bobby Mann, V.P. (512) 434-5783 / main: 434-5786
4. Sun City Texas; 1995 - 1997: 48 Caves Gated on the Sun City Georgetown Residential Development Community Properties, Georgetown, Williamson County, Texas. Contact is Mr. Todd Jansen or Shannon Barksdale at (512) 931-6887 / main (512) 931-6900
5. City of Georgetown; 1993: Public Works Dept. 2 caves of the Sierra Vista Residential Subdivision Property, Georgetown, Williamson County, Texas. contact is Mr. Terry Jones at (512) 869-364
6. Blake Magee Co., inc. 1994-2001: 7 caves at " Stone Oak " Sub. (Hwy. 1431), caves at " Stone Canyon " Sub., & 11 Caves at " Mayfield Ranch " Sub., Round Rock, Williamson County, Texas. contact is Mr. Blake Magee at (512) 481-0303
7. Villages at Georgetown Development Property (Shell rd.) 2001: Gating of the " Bat Well " Cave, Georgetown, Williamson County, Texas. contact is Mr. Chuck Schmidt
8. Brushy Creek Municipal Utility District 1998 - 2003: 3 caves South of O'Connor Drive & 5 caves North of O'Connor Drive/ Cat Hollow Sub., Round Rock, Williamson County, Texas. Contact is Mike Taylor, general manager, and Ms. Katie Hitchenson, Parks & Rec. at (512) 255-7871
9. City of Cedar Park; 2002: Gating of " Crumley " Cave (Hwy. 1431 West of us. Hwy. 183), Cedar Park, Williamson County, Texas. contact is Mr. Sam Roberts at (512) 258-4121/ ext. 5
10. Hidden Glen Sub.; 2000: 2 caves (Hwy. 3406, Round Rock, Williamson County, Texas. Contact is Mr. Barry Kendricks at (512) 834-9811/ ext. 21

EVALUATION CRITERIA

1. Total Cost of Cave Gates is \$ 25,025.00 Complete.
* Quote is Price Not to Exceed, and is good through Jan. 15,04.
 2. National Cave Gate Consultant: Cave Gate Designs & Installations are approved with National Office of U.S.Fish & Wildlife Service, Washington D.C.
Mike Warton has a total of 31 years of cave gating experience (since 1972), and has gated a Total of 250 caves in the State of Texas. He designed and created the MWA 101-P gate type used on ALL central Texas endangered species habitat caves to date. He is present on each and every gate installation, and leads the construction of every job. No MWA employees are permitted to be on a client site without him.
 3. References: (see sepearate reference sheet)
* Please feel free to contact any listed reference.
 4. USF&WS Collections Permit holder since 1992 (see enclosed copy of Federal Permit No. TE022329-0 * Permit Status is Current to 03/14/2006
* MWA has maintained same insurance coverages for 13 years with No injuries, and No claims.
- * Addendum Criteria: enclosed copies of Professional paper " Solid and Invertebrate Cave Gate Options " presented at the National Bat Gate Design Forum, March 4-6,2002 at the Red Lion Hotel, Austin, Texas
(presentation speaker & exhibitor)
- * Detailed Cave Gate Photography of the MWA 101-P Gate Type for Federally endangered invertebrate species caves (design illustrational).

WILLIAMSON COUNTY BID FORM
CAVE GATING SERVICES FOR THE PARKS AND RECREATION
DEPARTMENT

BID NUMBER: 03WC525

NAME OF BIDDER: Mike Warton / Mike Warton & Associates

-

Mailing Address: P.O. BOX 1313 Cedar Park, Texas 78630

City: Cedar Park State: Texas Zip: 78630

Email Address: mc 5057 @ aol.com

Telephone: (512) 250-0705 Fax: (512) 250-0706

Mobile cell (512) 801-5471

Cost of installation of seven (7) cave
gates \$ 25,025.00 Complete

Number of days required for project completion on or before November 15, 2003

The undersigned, by his/her signature, represents that he/she is authorized to bind the bidder to fully comply with the terms and conditions of the attached Invitation for Bid, Specifications, and Special Provisions for the amount(s) shown on the accompanying bid sheet(s). By signing below, you have read the entire document and agreed to the terms therein.



Signature of Person Authorized to Sign BID

Date of BID: 8/14/03

Printed Name and Title of Signer:

MIKE L. WARTON - NATIONAL CAVE GATE CONSULTANT

DO NOT SIGN OR SUBMIT WITHOUT READING ENTIRE DOCUMENT

Signature required on awarded bid only.

Hon. John C. Doerfler, County Judge
for the Williamson County Commissioners Court

Date

ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY)

05/21/2003

COVER

CARL BURTON INSURANCE AGENCY
3410-B ANDERSON MTL. ROAD
AUSTIN, TEXAS 78729
512-258-4197

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURERS AFFORDING COVERAGE

NAME MIKE WARTON & ASSOCIATES
DBA MICHAEL LEE WARTON
3508 VALLEY PIKE ROAD
CEDAR PARK, TX 78613

INSURER A UNITED FIRE LLOYDS INS CO
INSURER B
INSURER C TEXAS MUTUAL INSURANCE CO
INSURER D
INSURER E

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> GEN'L AGGREGATE LIMIT APPLIES PER <input type="checkbox"/> POLICY <input type="checkbox"/> PROD <input type="checkbox"/> LOC	20303300	5-3-03	5-3-04	EACH OCCURRENCE \$1,000,000. FIRE DAMAGE (Any one loss) \$ 100,000. MED EXP (Any one person) \$ 5,000. PRODUCTS & COMPOUND \$1,000,000. GENERAL AGGREGATE \$2,000,000. PRODUCTS - COMPOUND AGG \$2,000,000.
AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> MIXED AUTOS <input type="checkbox"/> NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Per accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
UMBRELLA LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN EA ACC \$ AUTO ONLY AGG \$
EXCESS LIABILITY <input type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> DEDUCTIBLE RETENTION \$				FLOOD INSURANCE \$ AIRCRAFT \$ \$ \$ \$
WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	SBP1067293	02-20-03	02-20-04	EL EACH ACCIDENT \$100,000.00 EL DISEASE - EMPLOYEE \$100,000.00 EL DISSESS - POLICY LIMIT \$500,000.00
OTHER				

DESCRIPTION OF OPERATION, LOCATION, VEHICLE, EXCLUSIONS, COVERAGE BY ENDORSEMENT, SPECIAL PROVISIONS

CERTIFICATE HOLDER

ADDITIONAL INSURED; INSURER LETTER

CANCELLATION

JAMES REDELL
3220 DUVAL ROAD 2602
AUSTIN, TEXAS 78759

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL UNDERTAKE TO MAIL 15 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT. BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE ISSUING, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

Amber J. Kinsey
O ACORD CORPORATION 1988



DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

3-201
(1/97)

FEDERAL FISH AND WILDLIFE PERMIT

1. PERMITTEE

MIKE WARTON AND ASSOCIATES
3508 VALLEY PIKE RD.
CEDAR PARK, TX 78613
U.S.A.

2. AUTHORITY-STATUTES

16 USC 1539(a)

REGULATIONS (Attached)
50 CFR 17.22

50 CFR 13

3. NUMBER

TE022329-0

4. RENEWABLE

☒ YES
☐ NO

5. MAY COPY

☒ YES
☐ NO

6. EFFECTIVE

03/14/2003

7. EXPIRES

03/14/2006

8. NAME AND TITLE OF PRINCIPAL OFFICER (If #1 is a business)

MIKE L. WARTON
PRINCIPAL EXECUTIVE

9. TYPE OF PERMIT

ENDANGERED SPECIES

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED

Travis and Williamson Counties, Texas

11. CONDITIONS AND AUTHORIZATIONS:

A. GENERAL CONDITIONS SET OUT IN SUBPART D OF 50 CFR 13, AND SPECIFIC CONDITIONS CONTAINED IN FEDERAL REGULATIONS CITED IN BLOCK #2 ABOVE, ARE HEREBY MADE A PART OF THIS PERMIT. ALL ACTIVITIES AUTHORIZED HEREIN MUST BE CARRIED OUT IN ACCORD WITH AND FOR THE PURPOSES DESCRIBED IN THE APPLICATION SUBMITTED. CONTINUED VALIDITY, OR RENEWAL, OF THIS PERMIT IS SUBJECT TO COMPLETE AND TIMELY COMPLIANCE WITH ALL APPLICABLE CONDITIONS, INCLUDING THE FILING OF ALL REQUIRED INFORMATION AND REPORTS.

B. THE VALIDITY OF THIS PERMIT IS ALSO CONDITIONED UPON STRICT OBSERVANCE OF ALL APPLICABLE FOREIGN, STATE, LOCAL OR OTHER FEDERAL LAW.

C. VALID FOR USE BY PERMITTEE NAMED ABOVE.

D. Your permit is being renewed for a period of 3 years. The terms and conditions set forth in the previous permit dated March 30, 2000, and any subsequent amendments are hereby superseded by this renewal.

E. Acceptance of this permit serves as evidence that the Permittee agrees to abide by the "General Conditions for Native Endangered and Threatened Wildlife Species Permits" (copy attached).

F. Acceptance of this permit serves as evidence that the Permittee agrees to abide by all conditions stated. Terms and conditions of this permit are inclusive. Any activity not specifically permitted is prohibited.

G. Disposal, transplant, or release of live wildlife/plants or plant parts taken or held under the terms of this permit, unless specifically authorized, requires prior written approval by the species lead U.S. Fish and Wildlife Service (USFWS) office. You must dispose of dead wildlife/plants or plant parts as specified by the terms of this permit. If terms are not specified, they can be destroyed or transferred to a public institution. A copy of the permit and this letter, along with a cover letter referencing your permit number, must accompany each shipment and must be retained with the specimens. The cover letter must specify who will receive the specimens and the numbers

☐ ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12. REPORTING REQUIREMENTS

ANNUAL REPORT DUE: 12/15

ISSUED BY

Alan M. Shantz

TITLE *Noting*
ARD - ECOLOGICAL SERVICES

DATE
03/14/2003

CONTRACTOR EQUIPMENT LIST:

* Vehicle: 1996 Ford F-350 1-ton 4-wheel drive Truck (single cab) with enclosed equipment shell on back/bed. Color is Bluegreen. Tag No. is Texas TU3-169
Registration & inspection are current & truck is in very good condition.

* Equipment Trailer: 16' low boy with side rails. Tag No. 46T-SGV (registration is current & trailer is in good condition).

Other Equipment to be used on site: (all is contractor owned/ No rentals)

Field Welder: 1999 Model Miller Blue Fire 180 w 300' leads capability. (good condition)

Acetylene & Oxygen Cutting Torch Rig (Full Size)/ Good Condition

Large Milwaukee Rotary Hammer Drill/ Thunderbolt Model (Good Condition)

Miscellaneous Hand Tools & Welding supplies,etc.

*** HOT Equiped for welding in areas of natural or undeveloped lands
(Fire extinguishers,etc. aboard)



PROGRAM

BAT GATE DESIGN:

A TECHNICAL INTERACTIVE FORUM

March 4 - 6, 2002

Red Lion Hotel
Austin, Texas

MONDAY, March 4, 2002

- 7:00 AM** **Check in, Coffee and Pastry**
Check in at the Red Lion Hotel, 6121 N. I-35 and U.S. Hwy 290,
Austin, Texas 78752
- 8:00 AM** **Welcome**
Dr. Merlin Tuttle, Bat Conservation International, Austin, Texas
- 8:10 AM** **Introduction and Purpose of Forum**
*Kimery Vories, Forum Chairperson, Office of Surface Mining,
Alton, Illinois*

BAT GATE DESIGN



**MONDAY, March 4, 2002****8:25 AM Session #1 WHY DO WE PROTECT MINES AND CAVES?**

*Session Chairpersons: Val Hildreth-Werker and Jim Werker,
National Speleological Society, Hillsboro, New Mexico*

8:30 AM Importance of Protecting Caves
Ronal Kerbo, National Park Service, Denver, Colorado

9:00 AM Importance of Protecting Mines
Scott Altenbach, University of New Mexico, Albuquerque, New Mexico

9:30 AM History of Protection Efforts
Robert Currie, U.S. DOI Fish & Wildlife Service, Asheville, North Carolina

10:00 AM REFRESHMENT BREAK

10:15 AM Legal Issues Associated With Bat Gate Construction
*Jim Nieland, U.S. Forest Service, Amboy, Washington and
Len Meier, Office of Surface Mining, Alton, Illinois*

10:45 AM Management and Protection Issues on Private Land
*Heather Garland, The Nature Conservancy—Tennessee,
Nashville, Tennessee*

11:15 AM Consequences of Not Protecting the Resource
*Mark Mesch, Utah Division of Oil, Gas, and Mining,
Salt Lake City, Utah*

11:45 AM PARTICIPANT INTERACTIVE DISCUSSION

12:05 PM LUNCH (Included in Registration)

BAT GATE DESIGN



MONDAY, March 4, 2002

- 1:05 PM Session #2 PROJECT PLANNING**
Session Chairperson: Len Meier, Office of Surface Mining, Alton, Illinois.
- 1:10 PM Performing a Needs Assessment**
Rick Olson, National Park Service, Mammoth Cave, Kentucky
- 1:40 PM Developing a Project Strategy**
Susanna Henry, Kofa National Wildlife Refuge, Yuma, Arizona
- 2:10 PM Bio-assessment—Determining the Suitability of Mines and Caves for Bats**
Dr. Patricia Brown, University of California at Los Angeles, Bishop, California
- 2:40 PM Developing a Cave or Mine Management Plan**
Amy Fesnock, Pinnacles National Monument, National Park Service, Paicines, California
- 3:10 PM REFRESHMENT BREAK**
- 3:25 PM National Environmental Policy Act (NEPA) Compliance**
Fred Sherfy, Office of Surface Mining, Harrisburg, Pennsylvania
- 3:55 PM Funding a Bat Gate Project**
Joseph Kath, Illinois DNR, Division of Natural Heritage, Springfield, Illinois
- 4:25 PM Cave Gating Partnerships: Success through Careful Planning and Coordination**
Steve Walker, Bat Conservation International, Austin, Texas
- 4:55 PM Training Opportunities for Cave and Mine Gaters**
Jim Kennedy, Bat Conservation International, Austin, Texas
- 5:25 PM PARTICIPANT INTERACTIVE DISCUSSION**
- 5:45 PM ADJOURN AND SOCIAL RECEPTION w/Poster Session**

BAT GATE DESIGN



**TUESDAY, March 5, 2002**

7:30 AM Coffee and Pastry

8:30 AM Session #3 CLOSURE DESIGN: PART 1

Session Chairperson: John Kretzmann, New Mexico Abandoned Mine Land Bureau, Sante Fe, New Mexico

8:35 AM Overview of Closure Strategies

Robert Currie, U.S. DOI Fish & Wildlife Service, Asheville, North Carolina

9:05 AM Soft Closures

Bob and Debbie Buecher, National Speleological Society, Tucson, Arizona

9:35 AM Cable Nets for Bat Habitat Preservation

John Kretzmann, New Mexico Abandoned Mine Land Bureau, Sante Fe, New Mexico

10:05 AM REFRESHMENT BREAK

10:20 AM Solid and Invertebrate Door Gate Option

Mike Warton, Mike Warton & Associates, Cedar Park, Texas

10:50 AM Culvert Closure Design and Construction

Jim Langdon, Idaho Panhandle National Forest, Couer d'Alene, Idaho

11:20 AM Flyover Barriers as a Method for Cave Bat Protection

Blake Sasse, Arkansas Game & Fish, Little Rock, Arkansas

11:50 AM PARTICIPANT INTERACTIVE DISCUSSION

12:10 Noon LUNCH (Provided in Registration)

BAT GATE DESIGN



SOLID AND INVERTEBRATE CAVE GATE OPTIONS

Mike Warton
Mike Warton & Associates
Cedar Park, Texas

Abstract

The gating of caves for the specific purpose of protection and preservation of endangered invertebrate species habitats in Central Texas is a new concept of environmental protection and need. In order for a cave gate to accomplish this, all of the cave's natural ecological functions and feature aspects that scientifically sustain such habitat must be studied, considered, and preserved accordingly. The desired effect and result of the gate is to protect and preserve these natural functions through a "transparency" in gate design, avoiding any significant impacts, as if, no gate were present at all. Such is an additional requirement of gating beyond structural integrity and qualities expected of gating in the past. A new type of gate design that now serves this purpose has evolved from a study process that has well considered the past and present technology of successes and failures of cave gating in the past. Just as bat gates have been specifically designed for bat caves and habitats, presented here is the first gate designed specifically for cave invertebrates.

Cave Ecosystems

In every Cave, there are two ecosystems of important consideration. The first is one that exists at and within the cave's entrance area. The second is within the cave's interior reaches. These can be vastly different. I cannot stress enough the "critical" importance and values of environmental ecological study assessments being well understood and followed prior to the application of cave gating. These study results will identify the ecological aspects of each habitat regime and dictate the requirements needed for a cave gate that would preserve the habitat.

Cave Entrances

In Central Texas, the most common type of cave entrance occurs as a sinkhole, often found along rock joints. Entrance openings are usually positioned on semi-flat ground or along hillside slopes. The orientation of entrance openings is usually and initially vertical. Horizontal development within caves may occur at shallow depths. In this type of cave structure, the key position of a prospective cave gate is usually horizontal, with some degree of recess into the entrance. The concept of gate "transparency" implies specifically that the gate is a non-solid covering that will not impede, block, or prevent the vertical fall of air, water, or natural organic materials from entering the cave similar to what occurs naturally. Thus, the transparent gate is semi-open for these functions. In the cave entrance ecosystem, surface related and nocturnal invertebrate species may regularly pass through the gate in a manner not significantly altered by the presence of the gate. In Texas, endangered invertebrate species are troglobitic in nature, never leave the cave environment, and never use or access the gate. They are critically dependent on

the gate's ability to allow un-impeded wash-in, or transport of organic food source materials to enter and replenish the cave. Up to seven common types of ground mammals also frequent Texas caves and have important natural roles in the cave ecosystem. Their points of access and egress through the cave gate are specific in location. The gate must facilitate their easiest points of access. The access portal design and size are set to an eight-inch diameter or square opening.

Gate Construction

Prior to gate construction, the cave's entrance may require certain preparations for acceptance of the gate. In welded construction where gates are custom built and fitted on site, we use commercially made welding blanket mats draped across the entrance opening in basket position in order to prevent contamination of the cave by slag and welding residues. The gate is a level horizontal grid cover constructed from 2-inch by 2-inch by 3/8-inch steel angle. The most important structural component is the supporting sub-structured arrangement of cross beams and drilled anchor points. Anchors are usually 3/4-inch to 1-inch diameter rebar from 8-inches to 10-inches in length. Horizontal beam supports are built by welding together two pieces of angle iron to form a box-shaped beam that is solid welded to the point set anchors. Once the substructure is completed, the grid panel arrangement of bar angles may begin. The bar angles are placed on their edge sides, with angle peak pointed either to the left or to the right (all pointed in the same direction throughout the gate). By placing the angles on their edge side, the barrier thickness aspect of the gate panel becomes almost three inches thick, instead of the 3/8-inch thickness of the angle. Bar spacing throughout the gate and across the panel are set at 1-1/2 inches. The direction of airflow exchange to and from the cave's entrance, may determine the left or right pointing positions of angle peaks. The angle shape would be turned to such a position that "cups" and promotes the best airflow exchange. It should provide the level of airflow conductivity that is a substantial or prominent characteristic of the cave. In this construction, the location and position of the gate's access and egress door is pre-determined. The access door assembly is: (1) typically 30 inches square in size; (2) transparent in design; (3) a hinged door, and (4) contains a concealed lock mechanism and access point. The access door unit is the only gate component that is produced in the welding shop and then transported to the site for installation as needed.

After the access door is installed, the last stage of the construction is usually the placement of horizontal stiffeners across angle expanses. One-inch or 2-inch wide by 3/8-inch thick flat bar stock is used for the stiffeners. Stiffener spacing usually does not exceed a distance of five feet. Following the completion of all welding, the last stage of gate completion is to apply a protective metal coating with a high quality rust inhibitive paint. This is carefully hand brushed on instead of sprayed. Following gate completion, the under hanging blanket basket is removed and the site thoroughly cleaned of any foreign materials. Following construction of a gate, I generally include a detailed report of completion with photographs to the site owner(s).

In the many gates we have installed, the material of preference has been a "modified" grade of 2-inch by 2-inch by 3/8-inch steel angle, and flat bar. "Modified" steel adds additional carbon so that its yield strength is greater than 50,000 pounds.

Structural Integrity

The permanence of the protection method "specifically" factors in three very important aspects of structural integrity. These are:

- Drilled & dowelled anchors into solid stone walls and surfaces where possible.
- Tension and load bearing anchors that penetrates into non-solid walls and slopes of unconsolidated materials where feasible and possible.
- ALL solid welded connections in overall construction, that is always possible.

The locking access door component of the gate is one that contains a "weakest link" aspect in design. If it ever breached at this point it would facilitate easy and inexpensive repairs. The door hinges are the weak-link point, however, guard plates protect them. These gates offer a maximum level of durability and longevity, with very low maintenance care. With maintenance of protective coatings and lubrication, the best estimate as to the life span of the gate would be 100 years or more. The concealed lock box location in these gates prevents any direct attack. The lock box is designed to house 2-inch wide lock with 3/8-inch shackle. We use "Olympus" Brand locks, for their corrosion resistant brass bodies and tumblers. At only \$10 each, they have proven to be very good locks. As the sky seems to be the limit on lock quality and cost, the Client may upgrade locks at any point desired.

It has been said, "There is no gate ever built that cannot be breached." This is still true today. One of the greatest areas of study in the development of our gates has been the aspects of breaching and vandalism. In almost a "forensics" style of review, it becomes useful to delve into the psychology and motivations of the potential perpetrator. I believe that the key ingredient of a successful surviving gate lies in a design ability that essentially beats the vandal at his own game. This is accomplished by significantly to severely reducing the odds of extremity that they will resort to in a breach attempt. Our gates have been widely monitored by regular site visitations and inspections. There have been many cited breach attempts, however, NONE have been successful without resorting to an uncommon extremity that could breach any gate. We do convey to our clients that such breaches seem limited to three possible modes of extremity. These are:

- An acetylene/Oxygen cutting torch rig
- Explosives, and
- Winching equipment where well in excess of 20,000 pounds of force is applied.

Environmental Impact on Gates

In addressing the concerns of potential environmental and ecological impacts of our gates once installed, we have relied heavily upon 14 years of site monitoring for species habitats performed by a world renowned cave invertebrate specialist, James Reddell. Mr. Reddell was the recipient of the prestigious NSS Science Award in 2001 in

acknowledgement of a lifetime devoted to cave invertebrate research. His assessments of our gate's abilities for acceptances of all animals and invertebrates have been reflective of a good to high habitat quality.

Limitations on Construction

Construction limitations have been very few. Limitations are relative to the aspects of other material usages. It is always a nice situation when close vehicular access to of the cave entrance is possible during gating. However, like other gaters we are no strangers to toting heavy steel and equipment over long distance by foot to gate a cave. Welding far underground in a flowing stream passage and dressed in a wetsuit is not a regular occurrence but we have done it well and safely.

The skill level needed and equipment required is great. An expert knowledge and ability of welding and cutting is required. All workers, including highly experienced cavers, must be trained with some aspects of gating. Aside from general caving experience, background experience that includes some level of environmental karst is preferred.

Our options for access doors are limited to single types for invertebrate gates and bat gates. The typical door opening size for invertebrate gates is 28 inches square. For bat gates, a solid rectangular door is 18 inches by 24 inches and mounted vertically at the least possible point of bat flight interference. With bat gates, if the entrance is small, an above ground structure extending outward of the entrance may alternately be built. Bar spacing in all flight panels are set at 5 and $\frac{3}{4}$ inches. The weight of a completed above ground structure may well exceed 2,000 pounds.

Building Gates as a Business

From personal experience and perspective over the years, I would convey to you that "It is one thing to gate caves as an individual by single contract, grant, or sole purpose fund," but becomes entirely a different creature to do this as a business. For those who would contemplate it as a business, there are numerous hoops and hurdles to deal with. I would feel confident that your insurance carrier would let you know their interpretation and response for coverage the very moment you mention the focus of your work. It will focus on, to them, one of the dirtiest four letter words in the English language "cave." The word mine is bad enough, but mines are man made and more acceptable, but cave? Forget it! It represents the "unknown," and means "High Risk!"

There will be many operational costs to bear as a business, and you will learn that if your prices for gating are not substantial, your business may not survive.

Construction Costs

Our base rate for cave gating services begins at \$2,875.00 for small and uncomplicated entrances, and moves upwards perspective with entrance size, complexity, materials and labor accordingly. Our cost structure does allow us some range of flexibility to accommodate private landowners, but with limitations. In Central Texas, environmental

karst issues and concerns age well off the launch pad. It is predicted that by 2025, our present population in and around Austin will have doubled. Our measures of environmental protection are moving ahead at unprecedented paces as well.

References

- Elliott, William R. 1996. The evolution of cave gating. *American Caves*, 9(2):9-15.
- Hunt, Geoffrey, and Robert R. Stitt. 2981. Caving gating: A handbook. Revised second edition. Huntsville, Alabama: National Speleological Society. 60 pp.
- Warton, Mike. 1993. The "Environmental Kart Management" of Central Texas. National Cave Management Symposium, Carlsbad, New Mexico, October, 1993.

Mike Warton is an Environmental Karst consultant and small business owner in Cedar Park, Texas. He opened his business in 1989 following the inception of Endangered Species Act applications for the central Texas region. He has served in numerous advisory positions and councils on karst-related issues to city, State, and Federal agencies. He is a founding board member of both cave management organizations in Texas. ~~He is a founding board member of both cave management organizations in Texas.~~

Mike Warton & Associates

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SPECIALIST IN TEXAS' ENVIRONMENTAL KARST RESEARCH & SERVICES

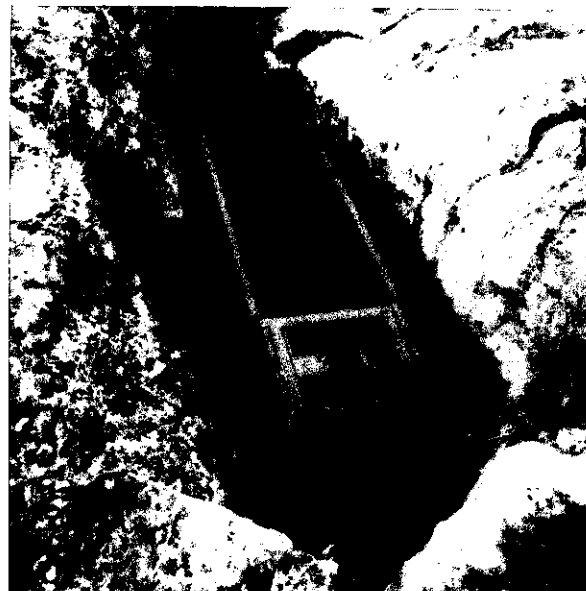
PHOTOGRAPHIC DOCUMENTATION OF THE " MWA 101-P HORIZONTAL GRID PANEL CAVE GATE, WITH HINGED LOCKING ACCESS DOOR " CREATED BY MWA FOR PROTECTION OF ENDANGERED INVERTEBRATE SPECIES CAVE SITES IN THE CENTRAL TEXAS REGION.

MWA



VIEW OF RECESSED INSTALLATION OF THE MWA-101-P HORIZONTAL PANEL GRID CAVE GATE WITH HINGED LOCKING ACCESS DOOR. CONSTRUCTED OF 2X2X3/4" MODIFIED STEEL ANGLE. AIRBUBBLES FOR ALL UNIMPAIRED ECOLOGICAL FUNCTIONS OF THE NATURAL CAVE ENTRANCE.

MWA



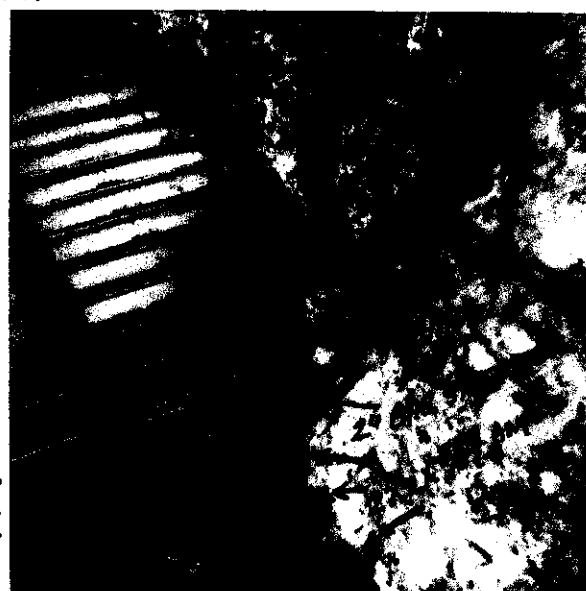
THE MWA 101-P HORIZONTAL GRID PANEL GATE IS A "FLOATING" TYPE OF GATE THAT IS ANCHORED TO EXISTING STONE WALLS OF THE CAVE ENTRANCE, AND PROMOTES ALL ECOLOGICAL FUNCTIONS & UNALTERED INFILTRATION OF ALL NATURAL MATERIAL, BUBBLES, AIR EXCHANGE, ETC.

MWA



CLOSE UP VIEW OF GATE ACCESS DOOR THAT IS INSET INTO THE SURROUNDING HORIZONTAL PANEL. ALL CONNECTION POINTS ARE SOLID WELDED. LITTLE MINERAL AND ORGANIC MATERIAL ARE CAUGHT BY

MWA



CLOSE UP DETAIL OF GROUND MAMMAL ACCESS POINT 3" CONFIGURATION FOR ACCESS. MAMMAL USE HAS BEEN OBSERVED WITH THIS GATE.

MWA - Gate Detail

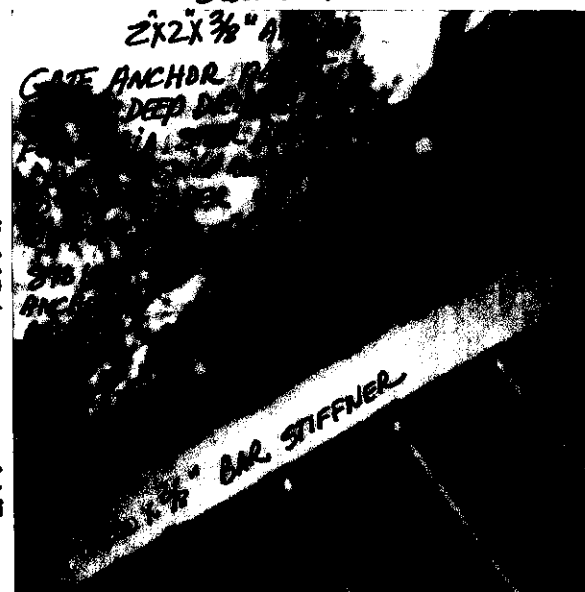


1998-2000 Period

Photo by: M. WILSON

1.5" WIRE BAR SPACINGS
ANGLES POSITIONED TO CUP AND PROMOTE AIR-
FLOW EXCHANGES

MWA - Gate Detail



1998-2000 Period

Photo by: M. WILSON

SUB-MEMBER SUPPORT
SUB-MEMBER CROSS-BAR SUPPORT

MWA -



1998-2000 Period

Photo by: M. WILSON

GATE #2 VARIATION OF SAME GATE TYPE
(101-P Horizontal grid panel w/locking access
door. Angles are cupped in direction of air-flow
exchanges.

MWA



1998-2000 Period

Photo by: M. WILSON

GATE #2 VARIATION OF SAME GATE TYPE (101-P)
VIEW IS FROM OPPOSITE ANGLE. INFLUX OF ALL
NATURAL WATER INTAKE ORGANICS OCCURS UN-
IMPEDED INTO CALE AT ALL EDGES.

TMWA

HAND ACCESS HOLE FOR REACHING LOCK



1998-2000 Period

ground
mammal access
point

Photo by: M. WILSON

SAME Gate, Detail of Ground Mammal Access Point. THIS ONE IS HIGHLY USED BY RACOONS, AND HAS BEEN OBSERVED.

TMWA

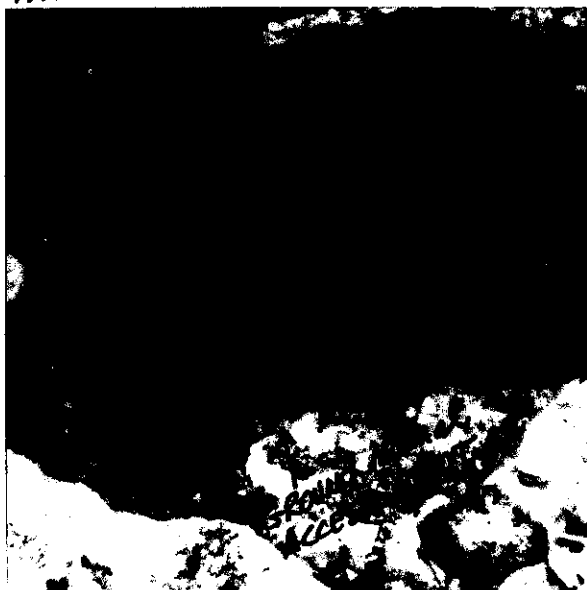


1998-2000 Period

Photo by: M. WILSON

Close up view of Ground Mammal Access Point Evidencing High degree of Regular Usage. Surface of Rock has light coat of mud left from Raccoon paws.

TMWA



1998-2000 Period

Photo by: M. WILSON

GATE #3 VARIATION OF SAME GATE TYPE (101-P) NOTE NOW INFLUX OF ORGANICS & WATER & AIR OCCUR NATURALLY AROUND ALL EDGES OF THE CASE GATE.

TMWA



1998-2000 Period

Photo by: M. WILSON

GATE #3 - SAME / Close up of Ground Mammal Access Point. Semi-insulated & shadowy conditions below the gate allow good environment for moisture affinity plants to grow wall, such as FERNS.

MWA

1998-2000 Period



Photo by: M. W. WERNER

Gate #4 - SAME TYPE - NOTE THE CONDITIONS BELOW THE GATE DOOR. A HOLEY TREE FERNS TO FLOURISH IN THEIR NATURAL STATE/CONDITION. THE GATE DOOR PRESENCE HELPS TO PROMOTE THIS MOISTURE REGIME.

MWA

1998-2000 Period

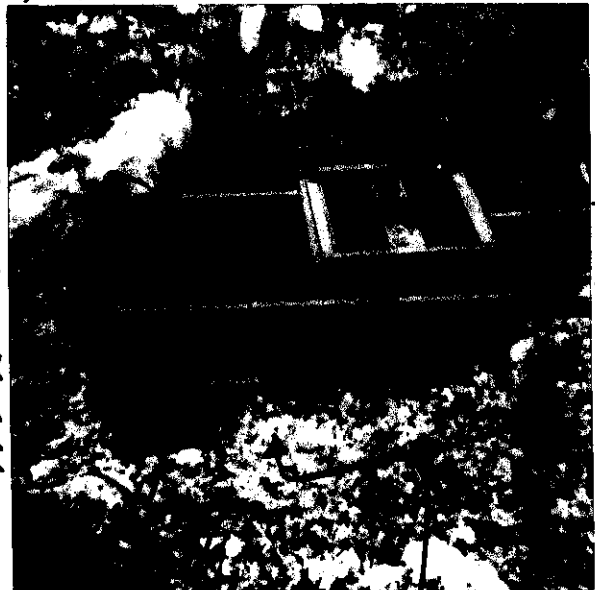


Photo by: M. W. WERNER

Gate #5 - SAME TYPE - Variation (101-P) IN THIS VIEW, NOTE HOW THE BAR EDGES EXTEND INTO & OVER LAP WITH EDGES COMPOSED OF SOIL & ROCK FILL (NOW SOLID EDGE/WALL)

MWA

1998-2000 Period

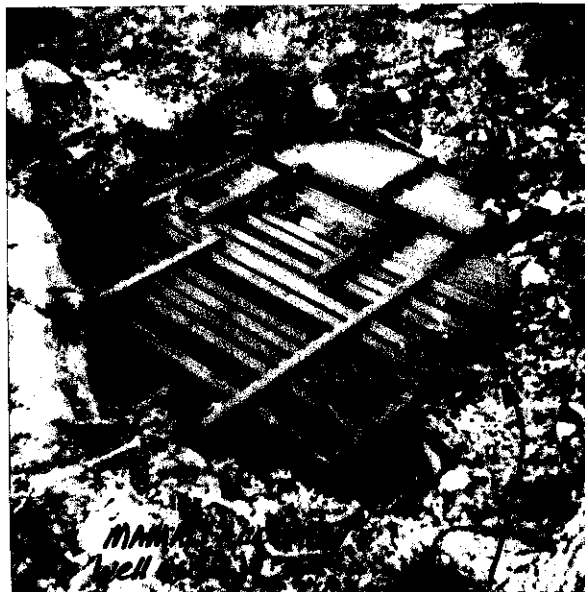


Photo by: M. W. WERNER

Gate #5 - SAME TYPE Variation (101-P) NOTE HOW EDGES OF ANGLES EXTEND INTO & OVER LAP NOW-SOLID WALL EDGES.

MWA

1998-2000 Period

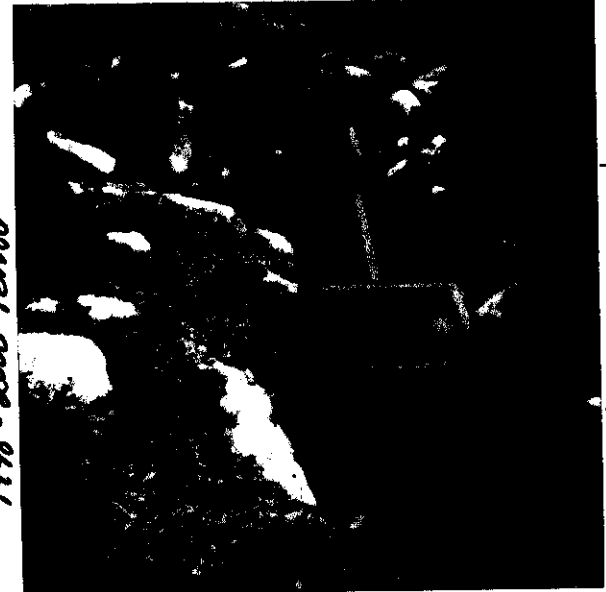


Photo by: M. W. WERNER

Gate #6 - SAME TYPE Variation (101-P) FOR LINEAR ENTRANCE & RECESSED. ENTRANCE WALLS ALONG LEFT SIDE ARE NOW-SOLID.

AGENDA ITEM 22

Consider approving Change Order No. 7 on CR 175 for HNTB.

This item was tabled until next week.

AGENDA ITEM 23

Consider and approve resolution to TxDOT requesting cost participation to perform roadway improvements on US 79.

This item was tabled until next week.

AGENDA ITEM 24

Discuss and take appropriate action on road bond program.

Commissioner Boatright spoke on changes proposed to Cedar Breaks bridge and PBSJ is prepared to send a letter of acceptance.

AGENDA ITEM 25

Discuss and take appropriate action on jail/courthouse annex expansion.

Ed Lee addressed the court regarding interior and exterior work being done on the expansion of the jail/courthouse annex expansion, specifically addressing the installation of corrections furniture and the work being done to compensate for unexpected soil conditions at the construction site.

COMMISSIONERS' COURT ADJOURNED TO EXECUTIVE SESSION AT 11:51 A.M. ON TUESDAY, SEPTEMBER 23, 2003.

AGENDA ITEM 26

Discuss real estate (EXECUTIVE SESSION as per VTCA Govt. Code sec. 551.071 consultation with attorney.)

There was no action taken in Executive Session.

AGENDA ITEM 27

Discuss pending litigation: Charles Edward Lincoln, III, individually and as next friend to Charles Edward Lincoln, IV VS. Williamson County. (EXECUTIVE SESSION as per VTCA Govt. Code sec. 551.071 consultation with attorney.)

There was no action taken in Executive Session.

COMMISSIONERS' COURT RECONVENED FROM EXECUTIVE SESSION AT 12:08 P.M. ON TUESDAY, SEPTEMBER 23, 2003.

AGENDA ITEM 28

Discuss and take appropriate action on real estate.

Moved: **Commissioner Boatright**

Seconded: **Judge Doerfler**

Motion: To authorize Judge Doerfler to sign an agreement with Union Pacific Railroad for an easement on McNeil Road.

Vote: 3 – 0. **Commissioner Limmer was absent from the dais.**