A. PURPOSE: To define a method by which rope/ cordage / threads will be examined and / or compared.

B. **RESPONSIBILITY:**

Forensic Science Examiner who has successfully completed tape training is accordance with the Trace Section Training Manual (SOP-TR-01)

The Director or Supervisor may act as the co-signor of a report which includes rope / cordage / thread comparisons.

C. SAFETY:

The appropriate measures for the proper handling of biohazard materials, sharps instruments and chemicals will be used according to the Connecticut State Forensic Science Laboratory Safety Manual.

D. PROCEDURE: Set up

1. The examiner will use his / her discretion to assess the probative value of the evidence; as well as, determine the types and extent of the examinations conducted.
2. The examiner may deem it necessary to vary from the set rope /cordage / thread analysis protocol based on the evidence submitted. If a variation in the rope /cordage / thread analysis procedure is necessary, the submitting agency will be notified.
3. If at any time during the comparison of a known and an unknown rope /cordage / thread the examiner determines a significant difference, no further examinations will be conducted and the rope / cordage / thread will be deemed "dissimilar".

E. PROCEDURE: Documentation

1. Evidence will be documented. (SOP-TR-05) Evidence Documentation.
2. Evidence and rope /cordage / thread samples examined in the Trace Section will be documented on the appropriate Quality Record Worksheet. The required information will be recorded. These worksheet will remain in the case jacket.
3. The examiner may photo document tape- rope /cordage / thread-type evidence.

F. PROCEDURE: Collection

1. Questioned and known rope /cordage / thread samples may be submitted to the laboratory as piece(s) of rope /cordage / thread or on a roll or as a component of fabric.

2. rope /cordage / thread evidence may be transferred from other sections of the Laboratory to the Trace Section for further examination.

3. rope /cordage / thread may be removed from other types of evidence during examination within the Trace Section.

4. The examiner will determine the best method to remove rope /cordage / thread from an item of evidence based on the evidence submitted.

G. PROCEDRUE: Analysis and Comparison

1. Topical debris which is adhering to rope /cordage / thread evidence may be removed prior to analysis.
2. Upon comparing a questioned and a known rope /cordage / thread sample the examiner may first attempt to determine if a physical match of the rope /cordage / thread may be made. The examiner will determine if two samples may be physically matched together. If two samples are physically matched together the examiner may photograph the "matched" area and may include this photograph in the report.
3. If an examiner determines that two samples are a physical match, thus the two items were once one continuous piece, no further examinations may be necessary.
4. When comparing an unknown and a known rope /cordage / thread sample the following scheme will generally be followed, based on the examiner's discretion – all or some of the following may be used: Comparison of-
   a. Gross Overall Physical Characteristics – Macroscopic / Microscopic Examination
   b. Physical Characteristics of the Structure :twist / braid structure of each construction unit
   c. Composition of the plies, strands or fibers ie. fiber type
   d. Instrumental analysis may be used : FT-IR

<u>*The rope /cordage / thread sample used for visual-type examinations will then be used for instrumental analysis.</u>

5. Supplemental examinations may be utilized at the discretion of the examiner for the determination of location, recovery, collection, identification or comparison of rope /cordage / thread. These examinations may include UV light, alternate light source (Crime Lights-brand), florescence microscopy, microspectrophotometery, solubility or SEM EDAX. If one or more of these supplemental forms of examination are utilized, their use will be documented in the case jacket.

   ** If a rope /cordage / thread -type sample will be examined via SEM EDAX, an examiner from the Chemistry Section of the Forensic Science Laboratory may perform the analytical analysis needed and provide the data/ results/ images to the Trace Evidence Examiner. The data / results / images provided will be included in the case jacket for the case examined.

H. PROCEDURE: Storage

1. Rope /cordage / thread samples may be packaged / stored on a paper fold plastic sleeve or between glass microscope slides or a similar method. The examiner will determine the best method to secure rope /cordage / thread -type evidence for examination and / or storage. A variation of the previously listed methods may be used.
2. Retained rope /cordage / thread evidence from a case will be placed in a sealed envelope with the examiner's initials across the seal and stored in the appropriate long-term storage area.

I. PROCEDURE: Report Writing

1. The examiner will assess the macroscopic / microscopic optical results and comparisons and analytical data (instrumental analysis) along with utilizing their training and experience to determine if two ropes /cordages / threads are similar or dissimilar.
2. Upon the completion of a rope /cordage / thread comparison, the examiner may utilize wording similar to those listed below. The examiner will use their training and experience to draft a report, which reflects the results obtained on a case-by-case basis.

   Typical statements used when writing a report may include:

   *Submission #1 consisted of a white braided rope.

   * Submission #1 consisted of white braided rope.
   A. Item #1 measured approximately 12" in length.
   B. The outer most construction of item #1 was composed of 8 braided plies.
   C. Within these 8 braided plies was a core consisting of 16 braided white plies.
   D. Within these 16 braided plies was a core consisting of a white non-woven fabric around a single white thread.

*Based on a comparison of the construction characteristics examined, submission #1 (piece of rope) and submission #2 (rope) exhibited similar construction characteristics.

or

*Submission #1 (rope) exhibited similar compositions and construction characteristics to submission #2 (rope from car).

* Polyester threads composing the fabric of submission #1 (fabric from the crime scene) exhibited similar composition and construction as submission #2 (threads from the suspect's car).

The examiner will consult with the co-signer to draft a report, which best reflects the results obtained.