**CHAPTER 41**

**Title: Cableway Safety**

**Issuance Date: 10/11/2016**

**Instruction:** This chapter was revised to address organizational and policy changes. Significant changes include discontinuing load testing of cableway systems, clarifying fall-protection requirements, use of the Site Information Management System (SIMS) Cableway Management System, and clarifying requirements on the use of aircraft warning markers.

**Approving Official:** Jose R. Aragon, Associate Director for Administration

1. **Purpose**.This chapter specifies the minimum Occupational Safety and Health Program cableway safety requirements.
2. **Scope**.
3. A cableway is defined as any permanent bank-supported aerial conveying system suspended above a waterway for the purpose of making hydrologic measurements.  Cableways typically are classified as either:
4. Manned cableways used to traverse a river in a cable car suspended from the main cable to operate measurement equipment.
5. Bank-operated cableways positioned on the stream bank that are used to remotely operate cableway-suspended measurement equipment.
6. This chapter covers all activities and operations involving manned and bank-operated cableways, whether owned or not, if the cableway is used by employees, volunteers, cooperators, and contractors.  The purpose of this policy is to ensure that cableways used by employees are structurally sound, well maintained, and safely used.  The policy describes the levels of cableway inspection, outlines the training requirements of personnel who use cableways and inspect cableways, and defines the planning and review procedures for construction or major rehabilitation of cableways.
7. **Authority/References.**
8. “Stream-Gaging Cableways,” Techniques of Water-Resources Investigations, Book 3, Chapter A21.
9. “Cableway Design Summary,” Appendix II, in “Stream-Gaging Cableways,” Techniques of Water-Resources Investigations, Book 3, Chapter A21.
10. **Requirements**.
11. Cableway Inspection.  Cableways are subject to routine wear, damage, and deterioration from temperature changes, moisture, vandalism, and normal use.  “Normal use” includes the wear and tear from the cable car sheaves rolling back and forth across the main cable, cable car puller gripping the cable, and the finite service life of paint or hot-dip galvanized coatings.  The integrity of the soil supporting the structure and adjoining stream bank may also be threatened by erosion as a result of overland runoff or by flooding.  Because of the threat of erosion, cableways must be carefully monitored on a continuing basis.  All defects must be corrected promptly to ensure that cableways are safe for use.  This includes any cableways not owned by the U.S. Geological Survey (USGS) but used by employees.  Procedures for inspection and testing shall be implemented as follows:
12. Inspection Prior to Use.  Before use, personnel shall perform a visual inspection of the cableway to the extent possible.  A notice must be posted at each field site as a reminder and guide for the visual inspection (Appendix A), in addition to any necessary site-specific information, including date of last inspection and maximum usable stage for manned systems.
13. Annual Inspection.
14. All cableways shall be inspected annually by “trained” personnel.  Trained personnel are individuals who have successfully completed 20 or more hours of USGS-sponsored courses covering theory, components, construction, and inspection of cableways. Cableway inspections are independent activities.  Cableway inspection may be conducted as part of a field trip for other activities where logistics dictate the necessity.  Cableways failing inspection must not be used until the deficiencies are corrected.  Inspection results are valid for 1 year.
15. An inspection sheet, Appendix 41-B, “Stream-gaging Cableways-USGS-Inspection Checklist,” or Appendix 41-C, “Bank-Operated Cableways--USGS-Inspection Checklist,” shall be completed at the time of each annual cableway inspection and submitted to the inspector's supervisor for review.  Deficiencies shall be recorded in the Site Information Management System (SIMS) Cableway Management Interface.  Deficiencies shall be updated every 365 days until corrective action is completed.  SIMS output shall be integrated with the Inspection and Abatement System as appropriate.
16. Training.
17. For all employees (USGS or other) who use cableways.  Information on safety practices and on pre-use inspections shall be provided to all employees, volunteers, cooperators, and contractors who use cableways prior to their first cableway use.  This shall include a combination of on-line and on-site training.  The on-line training, Cableway Pre-Use Inspection (UDT), can be accessed through DOI Talent.  On-site training shall be provided to employees by a senior field technician with previous cableway experience.
18. For those employees who perform the annual inspection.  A training course entitled “Stream-gaging Cableway Principles for Inspectors” is provided for those employees who shall conduct the annual inspections and maintenance.  The course consists of three days of classroom discussions and lectures on the theory, components, construction, and inspection of cableways, including exhibits and photos of actual deficiencies.  The classroom portion is followed by hands-on training conducted in the field at one or more cableway sites where students conduct the inspection procedures.
19. Cableway Construction and Materials.  Cableways must be constructed properly with the proper materials to ensure the safety of those who use them.  All new construction or substantial rehabilitation of cableways shall meet the criteria contained in "Stream-gaging Cableways," Techniques of Water-Resources Investigations, Book 3, Chapter A21.
20. Construction Procedures.  The following procedure shall be followed when new cableways are constructed or when existing cableways undergo a major rehabilitation (upgrade or replacement of items such as mass anchors, footings, A-frames, etc.):
21. A review of cableway construction or rehabilitation design plans by the Regional Cableway Specialist or other qualified personnel as determined by the Regional Cableway Specialist.
22. The design shall include the information specified in the “Cableway Design Summary,” Appendix II, in “Stream-gaging Cableways,” Techniques of Water-Resources Investigations, Book 3, Chapter A21.  Examples include sketches of the A-frame or other support structures, A-frame or other support footings, anchorage, and landing platforms; a cross section of the channel from anchor to anchor; and the maximum usable stage.
23. All new construction and major rehabilitation projects shall be coordinated with the local cableway specialist, Collateral Duty Safety Program Coordinator (CDSPC), and (or) the Regional Safety Manager to ensure that all safety aspects of the project have been adequately addressed.
24. Following construction, Science Center management shall provide a letter to the Regional Cableway Specialist, with copies to the Regional Safety Manager or Occupational Safety and Health Management Branch National Programs Safety staff, as applicable, confirming construction in accordance with approved plans and verifying that the installation was inspected by a trained Cableway Inspector.
25. Cable Requirements.  The main cable and backstay cables on cableways shall consist of wire rope or structural strand.  Structural strand may also be called tram or tramway cable.  The preferred cable for most USGS applications is 6x19 classifications Independent Wire Rope Core.  Fiber-core cables shall not be installed on USGS manned cableways or bank-operated systems.  Fiber-core cables may collect and hold moisture, which may cause internal corrosion and early failure.  Fiber-core cables are to be replaced on existing cableways as time and resources allow.
26. Cable Car Requirements.
27. Hydrologic Instrumentation Facility (HIF) cable cars.
28. *HIF sit-down cable cars*.  A HIF reinforcing kit (part number 2602010) must be installed on all HIF sit-down cable cars manufactured prior to September 2007.  The reinforced cable car can be modified per HIF specifications to accommodate sediment and other water-quality samplers.
29. *HIF stand-up cable cars*.  A HIF reinforcing kit (part number 2601030) must be installed on all HIF stand-up cable cars manufactured prior to September 2007.  The reinforced stand-up cable car can be modified per HIF specifications to accommodate sediment and other water-quality samplers.
30. Non-HIF Cable Cars.
31. Non-HIF cable cars need to meet a minimum load carrying capacity of 2,250 pounds or be replaced with HIF cable cars.
32. If a non-HIF cable car is in use, the Regional Cableway Specialist must be consulted so that a determination can be made whether a non-HIF cable car design can safely carry 2,250 pounds.
33. Some cable cars carry additional weight that results from the use of batteries, electrical reels, special sampling equipment, etc.  The Regional Cableway Specialist must be consulted to evaluate and document the capability of any cable car in order to carry a load greater than 2,250 pounds.
34. A-Frame and Platform Requirements.  All A-Frame towers and platforms must conform to the construction standards specified in “Stream-gaging Cableways,” Techniques of Water-Resources Investigations, Book 3, Chapter A21.  In addition, ladders and platform railings must conform to SM 445-2-H.44 Fall Protection.
35. Fixed ladders that are more than 20 feet long must have landing platforms, ladder safety devices, or cages.  Bolt steps are permitted, but distances greater than 20 feet must have a ladder safety device in place.
36. Platform railings shall consist of a top rail, intermediate rail, and posts.  The height of the top railing must be 42 inches.  The top rail shall be smooth surfaced.  The ends of the rails shall not overhang the terminal posts except where the overhang does not make a projection hazard.  The railing shall be capable of withstanding a force of at least 200 pounds applied within 2 inches of the top edge, in any outward or downward direction, at any point along the top edge.
37. Marking.
38. Determine if cableways must be retrofitted with aircraft warning markers.  This applies to all cableways, not just cableways that require markers due to Federal Aviation Administration requirements.
39. The factors listed below shall be considered when determining whether cableways must have warning markers.
40. Length of cable span.
41. Height of cable above water surface.
42. Presence of A-frames or supporting structures that are concealed or obscured.
43. Scenic river reach, sightseeing area, and possible search-and-rescue activity.
44. Area of military training or activity.
45. Area with logging or oil and gas operations.
46. Area of activity for scientific studies.
47. For technical information and specifications for warning marker installation, contact a Regional Cableway Specialist.
48. Cableway Measurements.  When conducting cableway measurements, all employees, volunteers, cooperators, and contractors must wear a United States Coast Guard (USCG)-approved personal flotation device (PFD) as described in SM 445-2-H.26 Personal Protective Equipment.  Depending on the air and water temperatures, a float coat or survival suit for protection against hypothermia is required.  If the protective clothing serves as a USCG-approved Type III or Type V PFD, a separate flotation device need not be worn.  Employees, volunteers, cooperators, and contractors shall use a cableway measurement unless a cableway inspector has inspected and approved the cableway in the past 12 months (365 days).  Additionally, a cableway shall not be used for any purpose unless a pre-use visual inspection has been completed to the extent possible.  Breakaway devices on the sounding reels are required and users shall carry cable shears to cut the sounding cable in an emergency.
49. Replacement of Cableways.  If an existing cableway can be replaced by a bank-operated system or another means of streamflow measurement, replacement must be considered.  Replacement cannot be bi-passed in order to extend the use of a cableway that does not pass the manned cableway inspection.
50. Locked Out of Service.  The cable car must be locked in place using a sturdy lock that cannot be opened with the standard 2640 key.  Keys to the lock shall be secured in the appropriate office until it is determined that the cableway is safe to use.
51. Tagged Out.  A sign stating that the cableway has been "Removed from Service" shall be placed on the cableway in plain view.
52. A cableway that is no longer intended for use shall have the cable car immediately removed and permanent dismantling plans developed and documented.  In addition, annual inspections shall continue to be performed and documented until the site is either permanently dismantled or put back in service.
53. Plans to demolish and remove cableways shall include the following:
54. If the property owner is not known, perform deed research to determine ownership and contact the property owner to obtain access permission.
55. If access is approved, obtain the necessary permits.  If access is not approved or the owner does not respond, contact the Science Center management.
56. Perform traffic control if near public roadways.
57. Protect vegetation, including trees, to the extent possible.
58. Remove the cable car; fencing, if applicable; aircraft markers and provide notifications as required; main cable and backstays, if applicable; A-frame or other supporting structure; attaching hardware (U-bars, Eyebolt, etc.).  Either remove or bury concrete anchors no less than 2 feet under grade.  Fill and compact with natural materials to industry standards.  Remove footing, including attaching hardware, and fill and compact with natural materials to industry standards.
59. Dispose of materials based on local, state, and Federal directives.
60. Clear site, remove debris, and match land as close as possible to surroundings.
61. If concrete removal requires drilling and blasting, ensure that appropriate licensing and permit and (or) certification are obtained.
62. Document completion, including before-and-after photographs, with date and time stamps.  At a minimum, there shall be three different views with sufficient detail to see the entire work location.
63. Document that materials were removed and delivered to an approved disposal site.
64. All cableways to be removed need to be entered in the Discontinued Station - Capital Improvement Program.
65. Consult the National Environmental Policy Act (NEPA) Handbook to determine and assess environmental impact(s) during the initial project planning stage to determine the best course of action to meet the purpose and need of the project.
66. **Responsibilities**.
67. Director.  Directs cableway safety program activities through the Designated Agency Safety and Health Official.
68. Associate Directors and Regional Directors.
69. Appoint and ensure appropriate training and funding of at least one Regional Cableway Specialist to review design plans, provide cableway assistance, and inspect cableways for organizations having cableway structures and (or) operations.
70. Ensure that managers and supervisors are accountable for ensuring compliance with cableway safety program requirements.
71. Ensure that cableway deficiencies are abated in a timely manner.
72. Designated Agency Safety and Health Official.
73. Exercises the authority of the Director to establish, develop, direct, and manage an effective cableway safety program.
74. Assigns authority to the Chief, Office of Management Services, for program management and administration.
75. Chief, Office of Management Services.  Supervises the Occupational Safety and Health Program Manager and provides sufficient authority and resources to effectively support and represent the interests of the USGS in the oversight, management, and administration of the cableway safety program.
76. Occupational Safety and Health Program Manager.
77. Provides cableway program oversight and direction.
78. Monitors the cableway inspection process in conjunction with program evaluations.
79. Regional Cableway Specialists.
80. Review and approve cableway construction and rehabilitation design plans.
81. Serve as consultants to field organizations for cableway construction or major rehabilitation and to review new cableway construction design.
82. Maintain design plans, etc.
83. Conduct Cableway Inspector courses in each region annually or as needed.
84. Cableway Inspectors.
85. Complete formal class instruction on cableway technology in accordance with 41.4.B(2)(a) and have field experience in the operation of stream gaging cableways before taking on the role of cableway inspector.
86. Conduct annual cableway system inspections.
87. Document findings on the standard USGS inspection form and provide any supplemental information and photographs as site conditions might dictate.
88. Submit the completed inspection form in a timely manner so findings can be used to report the safety status of cableways.
89. Communicate any findings or uncertainties observed during the inspection that might indicate an unsafe cableway system requiring immediate attention.  The process would typically involve communication with one or more cableway specialty and safety staff, as well as management staff closely involved with local operations.  Staff might include the local cableway specialist, local safety officer, local field office supervisor, and data chief.  The Regional Cableway Specialist and Regional Safety Manager may also be sought for advice.
90. Regional Safety Managers.
91. Monitor the regional cableway inspection process.
92. Review regional cableway inspections to assure accomplishment of appropriate abatement actions and brief the Regional Director on open deficiencies, as appropriate.
93. Collateral Duty Safety Program Coordinators.
94. Monitor the local cableway inspection process and record annual inspection results using the criteria listed in Appendix 41-D.
95. Maintain and track the status of all cableway inspections and abatement actions in the SIMS Cableway Management System.
96. Science Center Directors, Cost Center Managers, and Project Chiefs.
97. Oversee the conduct of cableway inspections and documentation annually using Appendices B and C.  Ensure that annual inspection results (Appendix 41-D) are entered in SIMS prior to October 31 each year.
98. Comply with standards set forth in SM 445-2-H.27 that pertain to cableways, inclusive of height and proximity to airports and cableway marking.
99. Comply with standards set forth in SM 445-2-H.44 of this handbook that pertain to fall protection while working on cableways.
100. Track deficiencies until abated as described in 41.4.A(2)(b).
101. Review organizational open deficiencies or management action plans periodically and establish appropriate corrective action plans inclusive of costs for abating open deficiencies or for rehabilitating cableways suspended from use in conjunction with the CDSPC.

CHAPTER 41, APPENDIX A

**Cableway Visual Inspection Checklist**

Station Name/Number\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date of last cableway inspection\_\_\_\_\_\_\_\_\_\_\_\_\_ (Do not use the cableway if it has been more than 1 year since last inspection.)

Design unloaded sag for this cable is \_\_\_\_\_\_\_ feet.

Maximum stage for use of this cableway is \_\_\_\_\_\_ feet.

Before using the cableway at this station, please perform the following to the extent possible:

1. Visually check all support devices (the A-frames/towers, cables, cable car, and all connections) for any signs of tampering, vandalism, or deterioration.

2. Visually check the main cable and the cable clips (# of clips: \_\_\_) for proper installation, tightness, or deterioration (rust, corrosion, etc.).

3. Visually check the backstay cables or guy lines which secure the A-frames/towers in the upright position.

Make sure thimbles and the cable clips (# of clips: \_\_\_) are installed properly.

4. Visually check footings, anchors, and U-bar areas. Make sure all connections and fasteners are not buried, loose, bent, badly corroded, or showing signs of metal fatigue.

5. Visually check cable car for loose, badly corroded, bent or broken members. Verify that the car meets U.S. Geological Survey standards (Hydrologic Instrumentation Facility [HIF] cable cars with reinforcing members; or non-HIF cable cars tested for compliance). Make sure that puller, car braking system, sheaves, etc., are in proper working order.

**Caution:** Do not use the cableway if any deficiencies are found.

**Note:** The deficiencies on an inspection checklist and submit the list to your supervisor for inclusion in the Site Information Management System. Do not tighten the cable - reducing the sag - unless the sag diagram and a level are available, and an experienced person is involved. (Check 1-4 above for possible causes of excess sag before adjusting.) Make sure every person in the cable car is wearing a personal floatation device. Never put your hands on the cable when the car is moving. Wear gloves. Always carry a wire-cutting tool when conducting streamflow or other hydrologic measurements

CHAPTER 41, APPENDIX B

**Stream-Gaging Cableways**

**USGS – Inspection Checklist**

Station Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Number\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Review previous inspection form. List any important notes:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cable Type: EEIP EIP SS Other; Cable diameter\_\_\_\_\_\_\_ in; Clear span\_\_\_\_\_\_\_ ft; Design unloaded sag\_\_\_ ft; Design loaded sag\_\_\_ ft

**Right/Left Bank**

***(cable car side)***

**ANCHOR:**

Anchor Type: Mass – Side hill – Rock (vertical or horizontal / U-bar or Pin) – Tree – Other\_\_\_\_\_\_\_\_\_\_\_

Dimensions: L\_\_ ft W\_\_ ft D\_\_ ft; Height above ground\_\_\_\_\_ ft; Tree species\_\_\_\_\_\_\_; Tree diameter\_\_\_\_\_\_\_\_ ft

U-bar diameter\_\_\_\_\_\_\_\_ in; Installed in the vertical plane? Y N; At correct angle? Y N; \_\_\_\_\_\_\_\_\_\_\_\_\_

Anchors clean of debris? Y NSoil – Weeds – Bushes – Trees – Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration? Concrete Y N; Rock Y N; Tree Y N; Cable connections Y N

If YES, Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fractures? Y N; Movement? Y N; Corrosion on U-bar? Y N

If YES, Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Notes\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**FOOTINGS:**

Footing type: Single – Combined; Dimensions: L\_\_\_\_ ft W\_\_\_\_ ft D\_\_\_\_ ft; or Diameter \_\_\_\_\_\_\_ Depth\_\_\_\_\_\_ ft Height above ground level\_\_\_\_\_\_\_\_\_ ft; Remarks\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Support footings clean of debris? Y NSoil – Weeds – Bushes – Trees – Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration of concrete? Y N; Fractures? Y N; Movement? Y N

Attachments: Pins Bolts Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; Corrosion/Missing Nuts? Y N

Notes\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**MAIN CABLE:**

Measured unloaded Sag\_\_\_\_\_\_\_\_\_\_ ft; Angle to anchor\_\_\_\_\_\_\_\_\_\_ degrees; Cable length (A-frame to anchor)\_\_\_\_\_\_\_\_\_\_ ft

Connection at anchor: Socket – Turnbuckle – Clevis – Direct (must have thimble) – Other\_\_\_\_\_\_\_\_\_\_\_\_\_

Thimbles where required? Y N

Cable clips? Y N; Type\_\_\_\_\_\_\_\_\_\_; Installed properly? Y N; Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cable turn-back length\_\_\_\_\_\_\_\_\_\_\_; Number of clips\_\_\_\_\_\_; Proper torque? Y N

Signs of deterioration? Y N; Cable – Socket – Turnbuckle – Clevis – Thimbles – Clips – Other

If YES, What? Corrosion – Flaking – Broken/Kinked strands – Items missing – Cracks – Other

Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Is main cable span free of debris, brush, and other obstructions? Y N

Are cable car routes from A-frames to banks free of trees, brush, and other obstructions? Y N

Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**BACKSTAY/GUYLINES:**

Cable use: Backstay – Guyline; Cable Type: EEIP EIP SS Other; Cable diameter\_\_\_\_\_\_\_\_\_ in

Do the backstay-guylines require tightening/adjustment? Y N

Auxiliary U-bar(s)? Y N; Connection at A-frame: Eyebolt – Bent steel loop – Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Eyebolt/Loop diameter \_\_\_\_\_; Forged? Y N; Shouldered? Y N; Remarks\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

U-bar to cable: Direct – Other; Thimbles where required? Y N; Cable turn-back length\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ft

Cable clips? Y N; Type\_\_\_\_\_\_\_\_\_\_\_; Installed properly? Y N; Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Number of clips\_\_\_\_\_\_\_; Proper torque? Y N

Signs of deterioration? Y N; Cable – Eyebolt – Thimbles – Clips – Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If YES, What? Corrosion – Flaking – Broken/Kinked strands – Items missing – Cracks – Other

Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**AIRCRAFT WARNING MARKER:**

Is a warning device in place? Y N

**CABLE SUPPORTS:**

Support type: A-frame (steel – pipe – wood) – Tower – Tree

Base width\_\_\_\_\_ ft; Height\_\_\_\_\_ ft; Cross members? Y N; Tree species\_\_\_\_\_\_\_\_\_\_; Tree diameter\_\_\_\_\_\_

Signs of deterioration? Y N; If YES, What? Fatigue – Corrosion – Wood decay

Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Configuration of base: Rigid – Hinge (pin); Are all components in place? Y N; Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Platform? Y N; Material\_\_\_\_\_\_\_\_\_\_\_\_; Bolts/welds: VG G P; Grated? Y N; Handrails? Y N

Height above ground\_\_\_\_\_\_\_\_ft; Climbing device: Ladder – Bolts – Steps – Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Is fall protection required? Y N (See SM 445-2-H.44)

Main cable support: Saddle block – Sheave – Other\_\_\_\_\_\_\_\_\_; Diameter\_\_\_\_\_\_\_; D/d ratio > 10? Y N

Does groove size match cable diameter? Y N; Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration of saddle block? Y N; If YES, What? Corrosion – Decay – Other\_\_\_\_\_\_

Notes\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CABLE CAR:**

Type: HIF stand up – Sit down; Is retrofit needed? Y N; Installed? Y N

Other: Stand up – Sit down – Power; Material: Steel – Wood – Aluminum – Other\_\_\_\_\_\_\_

Tested per SM 445-2-H.41? Y N; Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration? Y N; If YES, Where? Hanger bars – Sheaves – Seats – Floor – Other \_\_\_\_\_\_

What? Bent – Twisted – Deformed – Cracked – Rotted – Other

Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Bolts/Nuts: Corroded – Loose – Missing – Other; Remarks\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Overall condition based on visual inspection: Good Fair Poor

Notes\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Right/Left Bank**

***(non-cable-car side)***

**ANCHOR:**

Anchor Type: Mass – Side hill – Rock (Vertical or Horizontal/U-bar or Pin) – Tree – Other\_\_\_\_\_\_\_\_\_\_\_\_

Dimensions: L\_\_\_ W\_\_\_ D\_\_\_; Height above ground\_\_\_\_; Tree species\_\_\_\_\_\_\_\_\_; Tree diameter\_\_\_\_\_

U-bar diameter\_\_\_\_\_\_\_; Installed in the vertical plane? Y N; At correct angle? Y N

Anchors clean of debris: Y NOil – Weeds – Bushes – Trees – Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration? Concrete: Y N; Rock: Y N; Tree: Y N; Cable connections: Y N

If YES, Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fractures? Y N; Movement? Y N; Corrosion on U-bar? Y N

If YES, Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Notes\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**FOOTINGS:**

Footing type: Single – Combined; Dimensions: L\_\_\_\_ W\_\_\_\_ D\_\_\_\_; or Diameter\_\_\_\_\_\_; Depth\_\_\_\_\_\_\_

Height above ground level\_\_\_\_\_\_\_\_\_\_\_; Remarks\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Support footings clean of debris? Y NOil – Weeds – Bushes – Trees – Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration of concrete? Y N; Fractures? Y N; Movement? Y N

Attachments: Pins – Bolts – Other\_\_\_\_\_\_\_\_\_\_\_\_; Corrosion/Missing Nuts? Y N

Notes\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**MAIN CABLE:**

Measured Unloaded Sag\_\_\_\_\_\_\_\_; Angle to anchor\_\_\_\_\_\_\_\_; Cable Length (A-frame to anchor)\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Connection at anchor: Socket – Turnbuckle – Clevis – Direct (must have thimble) – Other\_\_\_\_\_\_\_\_\_\_\_\_\_

Thimbles where required? Y N

Cable clips? Y N; Type\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; Installed properly? Y N; Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cable turn-back length\_\_\_\_\_\_\_\_\_\_\_; Number of clips\_\_\_\_\_\_\_\_\_\_; Proper torque? Y N

Signs of deterioration? Y N; Cable – Socket – Turnbuckle – Clevis – Thimbles – Clips – Other

If YES, What? Corrosion – Flaking – Broken/Kinked strands – Items missing – Cracks – Other

Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**BACKSTAY/GUYLINES:**

Cable use: Backstay – Guyline; Cable Type: EEIP EIP SS Other; Cable Diameter \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_inch

Do the backstay-guylines require tightening/adjustment? Y N

Auxiliary U-bar(s)? Y N; Connection at A-frame: Eyebolt – Welded steel loop – Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Eyebolt/Loop diameter\_\_\_\_\_\_; Forged? Y N; Shouldered? Y N; Remarks\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

U-bar to cable: Direct – Other\_\_\_\_\_\_; Thimbles where required? Y N; Cable turn-back length\_\_\_\_\_\_\_\_

Cable clips? Y N; Type\_\_\_\_\_\_\_\_\_\_\_\_; Installed properly? Y N; Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Number of clips\_\_\_\_\_\_\_; Proper torque? Y N

Signs of deterioration? Y N; Cable – Eyebolt – Thimbles – Clips – Other

If YES, What? Corrosion – Flaking – Broken/Kinked strands – Items missing – Cracks – Other

Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CABLE SUPPORTS:**

Support type: A-frame (steel – pipe – wood) – Tower – Vertical beam – Tree

Base width\_\_\_\_\_; Height\_\_\_\_\_; Cross members? Y N; Tree species\_\_\_\_\_\_\_; Tree diameter\_\_\_\_\_\_\_\_\_

Signs of deterioration? Y N; If YES, What? Fatigue– Corrosion – Wood decay

Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Configuration of base: Rigid – Hinge (pin); Are all components in place? Y N; Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Platform? Y N; Material\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; Bolts/welds: VG G P; Grated? Y N; Handrails? Y N

Height above ground\_\_\_\_\_\_\_\_\_; Climbing device: Ladder – Bolts – Steps – Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Is Fall Protection required? Y N (SM 445-2-H.44)

Main cable support: Saddle block – Sheave – Other\_\_\_\_\_\_\_\_\_\_; Diameter\_\_\_\_\_\_\_; D/d ratio > 10? Y N

Does groove size match cable diameter? Y N; Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration of saddle block? Y N; If YES, What? Corrosion – Decay – Other\_\_\_\_\_\_\_\_

Notes\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Are office records describing this cableway system complete and accurate? Y N (Update as required)

What is the maximum stage this cableway can be safely used? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Is this stage posted in the gage house? Y N; Is this stage posted on the cableway? Y N

Is the cable car locked in place to prevent unauthorized use? Y N; Type of lock\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Warning signs in place? Y N; Describe (number, type, etc.): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Is USGS contact information clearly visible on cableway? Y N

Explanation for any of the above items that need to be addressed:

**1**.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2**.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3**.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**4**.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**5**.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6**.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**INSPECTION RESULTS: THIS CABLEWAY IS SAFE TO USE: Y N**

**If a cableway system is determined to be UNSAFE, it must be removed from service until repairs can be made. Lock the cable car with a sturdy lock and/or remove the cable car completely at this time.**

I certify that the inspection was conducted on this date; all elements of the cableway were checked; deficiencies were noted on the hazard elimination log; and, if necessary, the cable car was either locked or removed until repairs can be made.

Inspection Completed by\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Title\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_

Supervisory Review by\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Title \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_

CHAPTER 41, APPENDIX C

**Bank-Operated Cableways**

**USGS – Inspection Checklist**

Station Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Number\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Review previous inspection form. List any important notes\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cable Type: IWRC – Other\_\_\_\_\_\_\_\_\_\_\_\_\_; Cable diameter\_\_\_\_\_\_\_\_\_ in; Clear span\_\_\_\_\_\_\_\_\_\_\_\_ ft

**Right/Left Bank**

**ANCHOR:**

Anchor Type: Mass – Side hill – Rock (vertical or horizontal/U-bar or pin) – Tree – Other\_\_\_\_\_\_\_\_\_\_\_\_

Anchors clean of debris? Y N; Soil – Weeds – Bushes – Trees – Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration? Concrete Y N; Rock Y N; Tree Y N; Cable connections Y N

If YES, Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fractures? Y N; Movement? Y N; Corrosion on U-bar? Y N

If YES, Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**FOOTINGS:**

Support footings clean of debris? Y N; Soil – Weeds – Bushes – Trees – Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration of concrete? Y N; Fractures? Y N; Movement? Y N

Notes\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**MAIN CABLE:**

Design unloaded sag\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ft; Design loaded sag\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ft

Cable length (A-frame to anchor)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Connection at anchor: Socket – Turnbuckle – Clevis – Direct (should have thimble) – Other\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration? Y N; Cable – Socket – Turnbuckle – Clevis – Thimbles – Clips – Other

If YES, What? Corrosion – Flaking – Broken/Kinked strands – Items missing – Cracks – Other

Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**BACKSTAY/GUYLINES:**

Cable use: Backstay – Guyline; Cable Type: IWRC – Other \_\_\_\_\_; Cable Diameter\_\_\_\_\_\_\_\_\_ in

Do the backstay – guylines require tightening/adjustment? Y N

U-bar to cable: Direct – Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration? Y N; Cable – Eyebolt – Thimbles – Clips – Other

If YES, What? Corrosion – Flaking – Broken/Kinked strands – Items missing – Cracks – Other

Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**AIRCRAFT WARNING MARKER:**

Is warning device in place? Y N

**CABLE SUPPORTS:**

Support type: A-frame (steel – pipe – wood) – Tower – Tree – Other\_\_\_\_\_\_

Base width: \_\_\_\_\_\_ ft; Height\_\_\_\_\_\_ ft; Cross members? Y N; Tree species\_\_\_\_\_\_\_\_\_; Tree diameter\_\_\_\_\_\_

Signs of deterioration? Y N; If YES, What? Fatigue – Corrosion – Wood decay

Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Right/Left Bank**

**ANCHOR:**

Anchor Type: Mass – Side hill – Rock (vertical or horizontal/U-bar or pin) – Tree – Other\_\_\_\_\_\_\_\_\_\_\_\_

Anchors clean of debris? Y N; Soil – Weeds – Bushes – Trees – Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration? Concrete Y N; Rock Y N; Tree Y N; Cable connections Y N

If YES, Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fractures? Y N; Movement? Y N; Corrosion on U-bar? Y N

If YES, Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**FOOTINGS:**

Support footings clean of debris? Y N; Soil – Weeds – Bushes – Trees – Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration of concrete? Y N; Fractures? Y N; Movement? Y N

Notes\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**MAIN CABLE:**

Design Unloaded Sag\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ft; Design loaded gag\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ft

Cable Length (A-frame to anchor)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ft

Connection at anchor: Socket – Turnbuckle – Clevis – Direct (should have thimble) – Other\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration? Y N; Cable – Socket – Turnbuckle – Clevis – Thimbles – Clips – Other

If YES, What? Corrosion – Flaking – Broken/Kinked strands – Items missing – Cracks – Other

Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**BACKSTAY/GUYLINES:**

Cable use: Backstay – Guyline; Cable Type: IWRC – Other \_\_\_\_\_; Cable Diameter\_\_\_\_\_\_\_\_\_ in

Do the backstay – guylines require tightening/adjustment? Y N

U-bar to cable: Direct – Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signs of deterioration? Y N; Cable – Eyebolt – Thimbles – Clips – Other

If YES, What? Corrosion – Flaking – Broken/Kinked strands – Items missing – Cracks – Other

Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CABLE SUPPORTS:**

Support type: A-frame (steel – pipe – wood) – Tower– Tree – Other\_\_\_\_

Base width\_\_\_\_\_; Height\_\_\_\_\_; Cross members? Y N; Tree species\_\_\_\_\_\_\_\_\_\_\_\_; Tree diameter\_\_\_\_\_

Signs of deterioration? Y N; If YES, What? Fatigue – Corrosion – Wood decay

Explain\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Are office records describing this cableway system complete and accurate? Y N (Update as required)

Warning signs in place? Y N; Describe (number, type, etc.)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

I certify that the inspection was conducted on this date; all elements of the cableway were checked; deficiencies were noted on the hazard elimination log; and, if necessary, the cable car was either locked or removed until repairs can be made.

Inspection Completed by\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Title\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_

Supervisory Review by\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Title\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_

CHAPTER 41, APPENDIX D

**Annual Inspection Designations**

The annual inspection report collected and maintained in the Site Information Management System should reflect as accurately as possible the status of all cableways. The cableways are to be categorized as follows:

A. *Active*.Manned systems currently in use.

B. *Removed from service; repairs*.Manned systems located at active gaging stations that will be used as soon as repairs and/or upgrades have been completed.

C. *Inactive.* Manned systems located at active or discontinued gaging stations that are not in use but will notbe removed in anticipation of future use; repairs may or may not be needed.

D. *Inactive; awaiting removal*.Manned systems not in use and to be removed.

E. *Bank-operated cableways*.Unmanned systems.

F. *Transferred.* Cableways transferred to another agency or cooperator.

Every cableway must be accounted for using one of the five (A, B, C, D, or E) designations.

Total number of cableways **= A + B + C + D + E**

The following additional information should be provided as a supplement to the annual inspection report:

* Total number (#) of cableways constructed this fiscal year (FY).
* Total number (#) of cableways removed (taken down) this FY.
* Total number (#) of manned/bank-operated cableways transferred to cooperators this FY.
* Total number (#) of manned cableways converted to bank-operated cableways this FY.

The relation for computing total number of cableways can be applied to compute the total number of cableways in the previous year (Total Previous FY ), which can then be used with the additional information defined above to compute the total number of cableways in the current year (Total Current FY) according to:

**Total** Current FY = **Total** Previous FY + **# Constructed** Current FY– **# Removed** Current FY – **# Transferred** Current FY