

**Forest Service Manual  
National Headquarters - Washington Office  
Washington, DC**

**Forest Service Manual 7300 – Buildings and Other Structures  
Chapter 7330 – Natural Resource-Based Recreational Facilities**

**Amendment number:** 7300-2023-2

**Effective date:** October 19, 2023

**Duration:** This amendment is effective until superseded or removed.

**Approved by:** Gregory Smith, Associate Deputy Chief, National Forest System

**Date approved:** October 12, 2023

**Responsible Staff:** Washington Office Engineering, Technology, and Geospatial Services

**Last Change:**

**Superseded Document(s):** Amendment 7300-2017-1, December 11, 2017

**Digest:** Following is an explanation of the changes throughout the directive by section.

**Chapter 7330:** Changes chapter title from “Aerial Adventures Courses and Natural Resource-Based Recreation Activities” to “Natural Resource-Based Recreational Facilities” and sets forth direction. Updates chapter in its entirety.

**Section 7330.3:** Aligns policy statements with corresponding clauses in the Ski Area Term Special Use Permit and FSH 2709.11, chapter 50 and accessibility laws.

**Section 7330.4:** Updates section codes, captions, and responsibilities.

**Section 7330.5:** Adds definition for “Natural Resource-based Recreational Facility Monitoring.”

**Section 7331:** Changes section title from “Project Monitoring” to “Natural Resource-Based Recreational Facility Projects” and sets forth direction.

**Section 7331.2 through 7331.4:** Creates separate sections for other applicable standards, new materials and techniques, and exceptions from applicable standards.

**Section 7331.5:** Consolidates minimum procedures for audits, construction, and modifications.

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

**Section 7331.51:** Revises design and audit procedures to address clauses in the Special Uses Handbook that need to be included in special use authorizations.

**Section 7332:** Changes section title from “Aerial Adventure Course and Recreation Facilities Operation” to “Natural Resource-Based Recreational Facilities Operations” and sets forth direction.

**Section 7332.5:** Revises direction on incident notification and review.

Forest Service Manual 7300 – Buildings and Other Structures  
Chapter 7330 – Natural Resource-Based Recreational Facilities  
Amendment number: 7300-2023-2  
Effective date: October 19, 2023  
**Table of Contents**

<b>7330.01 – Authority .....</b>	<b>4</b>
<b>7330.02 – Objectives .....</b>	<b>4</b>
<b>7330.03 – Policy .....</b>	<b>4</b>
<b>7330.04 – Responsibility.....</b>	<b>5</b>
<b>7330.04a – Washington Office, Director of Engineering.....</b>	<b>5</b>
<b>7330.04b – Regional Foresters .....</b>	<b>5</b>
<b>7330.04c – Regional Director of Engineering .....</b>	<b>6</b>
<b>7330.04d – Authorized Officers.....</b>	<b>8</b>
<b>7330.05 – Definitions .....</b>	<b>9</b>
<b>7331 – Natural Resource-Based Recreational Facility Projects .....</b>	<b>12</b>
<b>7331.1 – Natural Resource-Based Recreational Facility Engineering.....</b>	<b>12</b>
<b>7331.2 – Other Applicable Standards Beside ASTM F24 .....</b>	<b>12</b>
<b>7331.3 – New Materials and Techniques .....</b>	<b>12</b>
<b>7331.4 – Exceptions from Applicable Standards .....</b>	<b>12</b>
<b>7331.5 – Minimum Procedures for Audits, Construction, and Modification of Natural         Resource-Based Recreational Facilities .....</b>	<b>14</b>
<b>7331.51a – Audits.....</b>	<b>14</b>
<b>7331.51b – Procedures for Construction and Modification .....</b>	<b>15</b>
<b>7331.51c – Additional Procedures for Construction .....</b>	<b>17</b>
<b>7331.51d – Additional Procedures for Modifications .....</b>	<b>21</b>
<b>7331.51e – Relocation of Portable Natural Resource-Based Recreational Facilities             [Reserved].....</b>	<b>21</b>
<b>7332 – Natural Resource-Based Recreational Facility Operations .....</b>	<b>21</b>
<b>7332.1 – Inspections .....</b>	<b>21</b>
<b>7332.2 – Maintenance .....</b>	<b>21</b>
<b>7332.3 – Testing.....</b>	<b>22</b>
<b>7332.4 – Incident Review and Notification .....</b>	<b>22</b>
<b>7332.5 – Audit and Testing Notification.....</b>	<b>23</b>
<b>7332.6 – Monitoring .....</b>	<b>23</b>

### **7330.01 – Authority**

FSM 2701 lists the Federal laws and regulations that govern use and occupancy of National Forest System (NFS) lands. The principal regulations applicable to Forest Service special use authorizations are found at Title 36 Code of Federal Regulations, Part 251—Land Uses, Subpart B—Special Uses (36 CFR Part 251, Subpart B).

### **7330.02 – Objectives**

Conduct natural resource-based facility monitoring, including monitoring of applicable safety codes, standards, and technical requirements in special use authorizations for the planning, location, design, manufacture, installation, maintenance, operation, modification, and auditing of natural resource-based recreational facilities on NFS lands.

### **7330.03 – Policy**

1. Ensure that natural resource-based recreational facilities comply with clauses II.B and II.F in form FS-2700-5b, Ski Area Term Special Use Permit, or with the corresponding clause in another special use authorization form and clause C-16 in FSH 2709.11, chapter 50, section 52.3, as applicable, before they are authorized. Require the holder to ensure that buildings and other structures related to natural resource-based recreational facilities authorized by the holder's special use authorization comply with FSH 7309.11, chapter 50, and applicable directive supplements.
2. Require the holder to ensure that natural resource-based recreational facilities authorized by the holder's special use authorization are designed, manufactured, installed, operated, maintained, and audited in accordance with the applicable American Society of Testing and Materials (ASTM) F24, including the standards in F2959, or other applicable industry or State standards (FSM 2721.39, 2721.6, and 7331.2).
3. Prior to initial public operation or after any modification of a natural resource-based recreational facility authorized by a special use authorization, require the holder to submit required plans, designs, calculations, specifications, related data, and certifications, including certification by a qualified engineer that the modification meets the applicable ASTM F24, including the standards in F2959 or other applicable industry or State standards (FSM 2721.39, 2721.6, and 7331.2).
4. Require the holder to have all natural resource-based recreational facilities audited by a qualified engineer or qualified auditor at the holder's expense prior to commencement of the primary season of use and while the facilities are not in use by the public (FSM 7330.5). Require the holder to submit the qualified auditor's name and qualifications for review by the authorized officer and Regional Director of Engineering at least 30 days prior to any scheduled audit. At a minimum, require the holder to have an annual audit conducted in accordance with ASTM F2974 or other applicable industry or State standards (FSM 7331.2), and FSM 7332.6.

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

5. Require the holder to have the annual audit documented in a report and to make the report available for review by Forest Service personnel.
6. Prior to public operation of the natural resource-based recreational facility, require the holder to correct any deficiencies identified in the annual audit report and to submit a written certification that the natural resource-based recreational facility has been audited and is ready for public use as required by clause III.U in form FS-2700-5b, Ski Area Term Special Use Permit, or clause C-17 in FSH 2709.11, chapter 50, section 52.3, as applicable (FSM 7331.51).
7. Conduct natural resource-based facility monitoring even in States where natural resource-based facilities are regulated under State law.
8. Ensure that the holder has established essential eligibility criteria (EEC) in accordance with section 504 of the Rehabilitation Act of 1973 and is requiring all participants meet the EEC established by the holder for each authorized natural resource-based recreational facility (FSM 7330.5).

**7330.04 – Responsibility**

**7330.04a – Washington Office, Director of Engineering**

The Washington Office, Director of Engineering is responsible for:

1. Developing, issuing, reviewing, and maintaining engineering directives, including engineering standards and criteria, for NFS program (FSM 7330.1).
2. Supporting the National Ropeway Services Team and other qualified regional engineering staff in conducting natural resource-based recreational facility monitoring.

**7330.04b – Regional Foresters**

Regional Foresters are responsible for:

1. Providing direction, consultation, assistance, technology transfer, and training to administrative units and ranger districts for all aspects of natural resource-based recreational facility monitoring.
2. Obtaining assistance from the National Ropeway Services Team when the regional engineering staff has insufficient knowledge, experience, and expertise to conduct natural resource-based recreational facility monitoring.
3. Reviewing site development plans, building designs, and construction proposals for natural resource-based recreational facilities to be located on NFS lands under their jurisdiction. In accordance with FSM 7310.42, paragraph 3, the technical responsibility

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

for reviewing and recommending approval of these documents is delegated to the Regional Director of Engineering.

4. Coordinating with appropriate State agencies through a memorandum of understanding in locations where they share responsibilities associated with design, manufacturing, installation, operation, maintenance, and auditing of natural resource-based recreational facilities.

**7330.04c – Regional Director of Engineering**

For special use authorizations for natural resource-based recreational facilities in their region, Regional Directors of Engineering are responsible for assisting authorized officers and special use authorization administrators by:

**1. Existing Natural Resource-Based Recreational Facilities.**

- a. Making recommendations to the authorized officer through the National Ropeway Services Team regarding acceptance of other applicable industry or State standards; any requests by the holder for an exception from the applicable ASTM F24 or other applicable industry or State standards; and acceptance of new materials and techniques not covered by ASTM F24 or other applicable industry or State standards (FSM 7330.44, 7331.2, 7331.3, and 7331.4).
- b. Conducting natural resource-based recreational facility monitoring, including:
  - (1) Monitoring for pre-operational audits, operations, or incident reviews requested by the authorized officer. The authorized officer may use form FS-7300-0004, Forest Service Engineering Services Request Form for Aerial Tramways, Aerial and Surface Lifts, Tows, Conveyors, and Funiculars, Natural Resource-Based Recreational Facilities, and Other Structures and Ancillary Projects, for this purpose.
  - (2) Ensuring that audit reports accurately reflect the condition of natural resource-based recreational facilities.
  - (3) Reviewing the holder's operation and maintenance procedures to ensure compliance with operating plan requirements.
  - (4) Submitting reports documenting any recommendations or noncompliance with the holder's special use authorization identified during natural resource-based recreational facility monitoring and notifying the authorized officer of any corrective actions needed to be taken by the holder.
- c. Assisting authorized officers by maintaining a regional inventory of natural resource-based recreational facilities by type, such as climbing walls, aerial adventure courses, mountain coasters, and via ferratas.

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

- d. Assisting authorized officers and special use authorization administrators by providing technical expertise and training on natural resource-based recreational facility monitoring.

**2. New and Modified Natural Resource-Based Recreational Facilities.**

- a. Making recommendations to the authorized officer through the National Ropeway Services Team or qualified regional engineering staff regarding acceptance of other applicable industry or State standards; any requests by the holder for an exception from the applicable ASTM F24 or other applicable industry or State standards; and acceptance of new materials and techniques not covered by ASTM F24 or other applicable industry or State standards (FSM 7330.44, 7331.2, 7331.3, and 7331.4).
- b. Reviewing the sufficiency of required plans, drawings, specifications, related data, and certifications submitted by the holder, including certification by a qualified engineer that a natural resource-based recreational facility meets the applicable ASTM F24, or other applicable industry standard developed and adopted by a consensus organization, or applicable State standards if they are more restrictive (FSM 7331.2).
- c. Recommending to the authorized officer technical approval of plans, specifications, and certifications for all construction and modification of natural resource-based recreational facilities on NFS lands.
- d. Filing plans, drawings, specifications, and other documents for natural resource-based recreational facilities in accordance with regional practices.
- e. Reviewing all supporting documentation for inspection, maintenance, and operation of natural resource-based recreational facilities as constructed or modified for sufficiency and consistency with plan and specification requirements.
- f. Conducting natural resource-based recreational facility monitoring, including:
  - (1) Monitoring construction to ensure that the construction certification and reports accurately reflect the design criteria of the natural resource-based recreational facilities.
  - (2) Documenting the holder's compliance with Forest Service technical requirements for providing plans, drawings, calculations, specifications, and other information regarding natural resource-based recreational facilities to be constructed on NFS lands (FSM 2341.3, 2342.04, para. 2, and clauses governing improvements in forms FS-2700-5, FS-2700-5b, and FS-2700-5c).

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

- (3) Conducting natural resource-based recreational facility monitoring for preconstruction compliance, exception requests, and project compliance requested by the authorized officer. The authorized officer may use form FS-7300-0004 for this purpose.
- (4) Coordinating natural resource-based recreational facility monitoring with the holder to ensure that the holder's representatives are present.
- (5) Submitting natural resource-based recreational facility monitoring reports on the natural resource-based recreational facility installer's construction quality assurance (QA) program and methodology, acceptance tests and inspections, and final documentation.

**3. Additional Responsibilities for New Natural Resource-Based Recreational Facilities.**

- a. Reviewing site development plans for terminals, platforms, stairways, ramps, elevated walkways, and other associated facilities and recommending to the authorized officer whether to require the holder to submit any site-specific studies and other pertinent information, such as documentation of compliance with applicable accessibility and EEC requirements.
- b. Recommending technical approval of site development and ancillary building plans for all natural resource-based recreational facilities to be located on NFS lands.

**4. Additional Responsibilities for Modifications to Natural Resource-Based Recreational Facilities.** Recommending to the authorized officer requirements for plan submittals and certifications for all modifications to natural resource-based recreational facilities on NFS lands under their jurisdiction and providing engineering assistance for the modifications.

**7330.04d – Authorized Officers**

See FSM 2340.5 and FSH 2709.11, chapter 10, section 10.41, for general guidance on authorized officers' responsibilities.

For special use authorizations for natural resource-based recreational facilities in their administrative unit, authorized officers are responsible for:

- 1. Authorizing new or modified natural resource-based recreational facilities and the relocation of portable natural resource-based recreational facilities.
- 2. Ensuring compliance with the terms of the special use authorizations.
- 3. Overseeing and supporting all aspects of administration of special use authorizations for natural resource-based recreational facilities.



**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

4. Obtaining engineering assistance (form FS-7300-0004 may be submitted for that purpose) for:
  - a. Review of plans, specifications, and records for natural resource-based recreational facilities to ensure compliance with the applicable ASTM F24 or other applicable industry or State standards (FSM 7331.2).
  - b. Review and acceptance of changes to operating plans that involve monitoring and incident reporting for natural resource-based recreational facilities (FSM 2341.4).
  - c. Natural resource-based recreational facility monitoring.
  - d. Requesting recommendations from the National Ropeway Services Team regarding corrective actions needed to be taken by the holder based on natural resource-based recreational facility monitoring.
5. Obtaining a recommendation from the Regional Director of Engineering through the National Ropeway Services Team or qualified regional engineering staff regarding acceptance of other applicable industry or State standards; any requests by the holder for an exception from the applicable ASTM F-24 or other applicable industry or State standards; or acceptance of new materials and techniques not covered by ASTM F24 or other applicable industry or State standards (FSM 7330.43, 7331.2, 7331.3, and 7331.4).
6. Ensuring that the holder develops and annually reviews plans for operation, maintenance, inspection, testing, auditing, employee training, safety, and evacuation for each of the holder's natural resource-based recreational facilities on NFS lands.
7. Conducting natural resource-based recreational facility monitoring for compliance with the holder's QA program and methodology in accordance with the applicable ASTM F24 or other applicable industry or State standards (FSM 7331.2).
8. Providing opportunities for Forest Service personnel to obtain sufficient technical expertise and training to conduct natural resource-based recreational facility monitoring.
9. Following direction and procedures in FSM 7331.2, 7331.3, 7331.4, 7331.51, 7331.52, and 7331.53.

#### **7330.05 – Definitions**

**Aerial Adventure Course.** A type of natural resource-based recreational facility consisting of one or more elevated walkways, platforms, zip lines, nets, wire and fiber ropes, obstacles or other elements that requires the use of personal protective equipment (PPE), connectors, and harnesses.

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

**Annual Audit.** An annual on-site review of a natural resource-based recreational facility to check compliance with applicable sections of ASTM F24, including the audit provisions of F2974, or other applicable industry or State standards (FSM 2716.05, 7331.2).

**Braking Analysis.** An analysis performed by a qualified engineer of a natural resource-based recreational facility to determine compliance with braking or braking system requirements (ASTM F2291, section 13.7).

**Essential Eligibility Criteria (EEC).** The criteria for determining whether a person can participate in an activity based on that person's ability to perform necessary safety and risk management functions associated with that activity.

**Incident.** See FSM 2716.72.

**International European Norm.** A designation for safety regulations that is an industry standard in Europe.

**Modification.** For purposes of this chapter, any change in the structural, mechanical, electrical, or operational characteristics of a natural resource-based recreational facility that alters its performance from the performance specified in the manufacturer's design criteria (see ASTM F747).

**Monitoring.** See 36 CFR 251.51 and FSM 2710.5.

**Mountain Coaster.** A type of natural resource-based recreational facility that is gravity-driven and that has a rail or track and passenger carrier.

**National Ropeway Services Team.** A cadre of Forest Service engineering experts who provide technical expertise nationally in support of monitoring special use authorizations regarding application processing; review of plans, specifications, and exception requests; and construction, acceptance testing and inspection, annual pre-operational inspections and audits, and operation and maintenance of ropeways (FSM 7320.5) and natural resource-based recreational facilities.

**Natural Resource-Based Recreational Facility.** A facility that requires engineering and that supports a recreational activity that occurs in a natural setting where the visitor's experience is interdependent with attributes such as mountains, forests, geology, grasslands, water bodies, flora, fauna, and natural scenery.

**Natural Resource-Based Recreational Facility Monitoring.** On-site monitoring of a special use authorization for a natural resource-based recreational facility, which may include but is not limited to:

1. Conducting spot checks to verify the natural resource-based recreational facility installer's compliance with the applicable construction QA program and methodology.
2. Checking the holder's QA procedures and systems.

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

3. Checking compliance with requirements for acceptance testing and inspection of authorized natural resource-based recreational facilities.
4. Reviewing final engineering documentation such as certifications, as-built plans, and site maps upon completion of construction of natural resource-based recreational facilities.
5. Conducting spot checks of natural resource-based recreation facility operations.

**Personal Protective Equipment (PPE).** For purposes of this chapter, a combination of harnesses, lanyards, carabineers, snap hooks, rapid links, and energy absorption devices that is used to support and protect a person's body while suspended from a pulley or trolley or while attached to a safety line on a natural resource-based recreational facility.

**Quality Assurance (QA) Program.** For purposes of this chapter, a program developed by a natural resource-based recreational facility designer, manufacturer, holder, or installer and utilized to ensure the integrity of the design, manufacture, installation, operation, and maintenance of natural resource-based recreational facilities and compliance with applicable safety standards and technical requirements.

**Qualified Auditor.** A qualified engineer or other professional who is independent from the holder and who has acquired the requisite knowledge, skills, experience, and expertise to perform audits of natural resource-based recreational facilities, including evaluation of compliance with the applicable ASTM F24 or other applicable industry or State standards (FSM 7331.2). For purposes of this definition, "requisite experience" means experience auditing natural resource-based recreational facilities or one of the following certifications:

1. **For All Natural Resource-Based Recreational Facilities:** National Association of Amusement Ride Safety Officials Level II or III, AIMS International Certified Ride Inspector, AIMS International Professional Ride Inspector, or a licensed qualified engineer with amusement ride auditing experience.
2. **For Aerial Adventure Courses Only:** Association for Challenge Course Technology Level 2 or above.

**Qualified Engineer.** For purposes of this chapter, a professional engineer who has acquired the requisite knowledge, skills, experience, and expertise to determine compliance with ASTM F24 or other applicable industry or State standards (FSM 7331.2) and is licensed to practice engineering in the State where a natural resource-based recreational facility is located.

**Regional Ropeway Engineer.** For purposes of this chapter, a Forest Service engineer designated by one or more Regional Directors of Engineering who has acquired the requisite knowledge, skills, experience, and expertise to determine compliance with ASTM F24 or other applicable industry or State standards (FSM 7331.2) and is licensed, certified, or otherwise qualified to provide natural resource-based recreational facility engineering assistance to Regional Foresters, Forest Supervisors, and authorized officers.

**Ride Analysis.** An analysis of how hazards to persons utilizing a natural resource-based recreational facility have been mitigated.

**Via Ferrata.** A guided mountain climbing route equipped with progression aids such as footsteps, handholds, ladders, bridges, and handrails and wire cable safety lines attached to fixed anchor points.

## **7331 – Natural Resource-Based Recreational Facility Projects**

### **7331.1 – Natural Resource-Based Recreational Facility Engineering**

The National Ropeway Services Team, qualified regional engineering staff, and other Forest Service engineering technicians and specialists, as appropriate, may assist the authorized officer with assessment of technical requirements associated with all phases of proposed natural resource-based recreational facility projects, including environmental analysis, planning, location, plans and specifications, construction and reconstruction, post-construction, inspection, and acceptance and performance testing.

### **7331.2 – Other Applicable Standards Beside ASTM F24**

The authorized officer may accept other standards besides ASTM F24 for the design, construction, manufacture, installation, operation, maintenance, and audit of natural resource-based recreational facilities only in accordance with the following.

1. **Other Industry Standards.** The authorized officer may accept industry standards developed and adopted by a consensus organization, such as International European Norm or ANSI standards, that have been certified in writing by a qualified engineer to be an acceptable alternative to ASTM F24.
2. **State Standards.** The authorized officer may accept State standards that have been certified in writing by a qualified engineer to be more restrictive than ASTM F24.

### **7331.3 – New Materials and Techniques**

The authorized officer may have to consider technological advances in materials and techniques adopted by natural resource-based recreational facility designers and manufacturers. If a proponent proposes a natural resource-based recreational facility utilizing materials and techniques that are not covered by current industry standards, the authorized officer shall require the proponent to submit design and testing information for or a failure analysis of the new material and techniques that is prepared and certified by a qualified engineer.

### **7331.4 – Exceptions from Applicable Standards**

Strict compliance with ASTM F24 or other applicable industry or State standards (FSM 7331.2) may not be necessary or appropriate in every instance. When deemed necessary or

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

appropriate by the Forest Service, the Forest Service may allow a proponent to use other devices or methods that are comparable to those in ASTM F24 or other applicable industry or State standards or grant other exceptions to applicable industry or State standards for proposed or existing natural resource-based recreational facilities.

The authorized officer's authority to grant exceptions to ASTM F24 or other applicable industry or State standards for proposed and existing natural resource-based recreational facilities on NFS lands is subject to the following procedures.

1. Except as provided in FSM 7331.4, paragraph 2, a proponent's written request for an exception must include:
  - a. A depiction of the current condition via a written description, photographs, a video, or engineering drawings and a statement as to why the current condition does not conform to ASTM F24 or other applicable industry or State standards.
  - b. A description of the work to be performed or the operational conditions that would have to be implemented to meet ASTM F24 or other applicable industry or State standards, including a statement as to how meeting ASTM F24 or other applicable industry or State standards would constitute an unreasonable operational or design condition, and an estimate of the time and cost, for example, engineering, materials, equipment, and labor, that would be involved.
  - c. A statement as to why granting the exception would not create a safety hazard. At a minimum, the statement should include the operational history for an existing natural resource-based recreation facility, any devices or methods that enhance the safety of the natural resource-based recreational facility, the operational history of similar natural resource-based recreational facilities under similar conditions, and design and testing information or failure analysis prepared by a qualified engineer per section 5.1.1.3 of ASTM F2291 or other applicable industry or State standards.
  - d. The work to be performed or the operational conditions that would be implemented by the proponent under the exception if it were granted.
  - e. For a proposed natural resource-based recreational facility, a letter with an original seal, consisting of a rubber stamp, signature, and date of a qualified engineer, attesting that the natural resource-based recreational facility is to be designed, constructed, and operated using devices or methods that are comparable to those required in ASTM F24 or other applicable industry or State standards.
  - f. For an existing natural resource-based recreational facility:

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

- (1) A letter with an original seal, consisting of a rubber stamp and dated signature of a qualified engineer, attesting that the natural resource-based recreational facility is operated using devices or methods that are comparable to those required by ASTM F24 or other applicable industry or State standards; and
  - (2) A written certification from the holder stating that the natural resource-based recreational facility has been operated safely and without any incidents related to the feature for which the exception is requested and stating that the request for an exception is supported by the information required in FSM 7331.4, paragraph 1. A risk assessment of granting the exception may also be required, as appropriate.
2. Authorized officers may grant an exception even if the proponent does not satisfy all the certification requirements in FSM 7331.4, paragraphs 1e and 1f.
3. At a minimum, granting an exception requires a determination by the authorized officer, after consultation with National Ropeway Services Team or regional ropeway engineer (FSM 7330.44), that the exception does not involve changing the applicable equipment design or operating parameters or safety standards certified by a qualified engineer.
4. The authorized officer shall notify the proponent in writing of the grant or denial of an exception. Granting an exception does not obligate the Forest Service to allow the same or similar exception for another natural resource-based recreational facility of the same or similar design. A decision to grant an exception must state whether the approval is for a limited duration and requires renewal upon application by the proponent at a specified time or applies until the authorized officer determines changed conditions or new information indicate that reapproval is required. A decision to grant an exception must also state that the approval is subject to periodic review to determine whether reapproval is needed.
5. To address any concerns associated with granting an exception, the authorized officer may require special tests or review by a qualified engineer who is independent from the holder (FSM 7330.5) and who is agreed upon by the authorized officer and the holder. Any special tests or independent review required shall be conducted at the expense of the proponent requesting the exception.

**7331.5 – Minimum Procedures for Audits, Construction, and Modification of Natural Resource-Based Recreational Facilities**

**7331.51a – Audits**

Authorized officers shall:

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

1. Require holders to have all audits of their authorized natural resource-based recreational facilities conducted annually by a qualified engineer or qualified auditor prior to commencement of operations of the primary season of use and while the facilities are not in use by the public. Require the annual audits to be conducted in accordance with current auditing requirements of ASTM F24, including the audit provisions of F2974, or other applicable industry or State auditing standards (FSM 7331.2).
2. Require holders to have audits documented in a report that includes the name and location of the natural resource-based recreational facility, the qualified auditor's name, the date of the audit, the results of the audit, and photographs, as needed. Require holders to have their qualified auditor complete any checklists, forms, and any other audit documentation required by ASTM F2974 or other applicable industry or State standards.
3. Require holders to follow the audit requirements for natural resource-based recreational facilities in clause III.U in form FS-2700-5b or clause C-17 in FSH 2709.11, chapter 50, section 52.3, as applicable, to ensure that annual pre-operational audit requirements for natural resource-based recreational facilities are met.
  - a. Require the annual pre-operational audit report to specify any items of noncompliance and any corrective actions needed to be taken by the holder.
  - b. Require the holder to make the audit report available for review by appropriate Forest Service personnel.
  - c. Review and respond to any exception request by the holder for any items of noncompliance in the annual pre-operational audit report.
  - d. Pursuant to clause III.U in form FS-2700-5b or clause C-16 in FSH 2709.11, chapter 50, section 52.3, as applicable, ensure that the holder's written certification of audit is submitted to the Forest Service before the primary season of use.

**7331.51b – Procedures for Construction and Modification**

Prior to public operation of a new, relocated, or modified natural resource-based recreational facility, authorized officers shall, at a minimum, follow the following procedures for submittal of plans, specifications, and records, construction, acceptance and performance testing, and final documentation.

1. Review an application for construction or modification of a natural resource-based recreational facility for compliance with clauses II.A through II.F in form FS-2700-5b or clause C-16 in FSH 2709.11, chapter 50, section 52.3 corresponding clauses in another special use authorization form, as applicable.

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

2. Require the holder to have all plans, design calculations, drawings, and specifications and any revisions to them to be prepared by a qualified engineer and to be submitted, per professional licensure seal requirements in the State where the natural resource-based recreational facility will be located, to the authorized officer and the Regional Director of Engineering at least 45 days prior to commencement of construction or modification. All submitted plans, specifications, and other documents must be in English.
3. The holder may request approval from the authorized officer to accelerate the scheduled construction or modification date. The authorized officer may grant the request, provided that the authorized officer has accepted all required submissions in writing. Approval to accelerate the scheduled construction or modification date must be in writing and must be granted before commencement of construction or modification of any natural resource-based recreational facilities.
4. The holder shall designate a construction engineer and shall require that the facility installer's construction QA program and methodology be followed. The QA program and methodology shall include verification and documentation that the natural resource-based recreational facility installation or modification conforms to the applicable design criteria. Any modification to construction plans and specifications by the natural resource-based recreational facility installer shall be clearly marked on-site and documented in a signed and dated inspection report prepared by the holder's qualified engineer.
5. Ensure that the facility installer's construction QA program and methodology and any other construction-related information supporting verification of compliance with the QA program and methodology include, at a minimum:
  - a. Applicable material certifications, testing, and inspection reports.
  - b. Drawing control procedure to ensure that installation, engineering revisions, and as-built information are documented.
  - c. Change order and component control procedures to ensure that materials, processes, and components meet engineering specifications.
  - d. The construction schedule, name of and contact information for the construction engineer, the name of the laboratory and geotechnical engineering firms utilized, certifications for qualified engineers, and the name and contact information for the holder's representative.
  - e. Procedures to ensure that appropriate inspections are conducted of installed natural resource-based recreational facilities to inform certification of construction by a qualified engineer.



**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

6. Before commencement of construction or modification, ensure that all plans, drawings, specifications, testing records, and related data are reviewed by the Regional Director of Engineering to determine that all required documentation and certifications are sufficient, including the certification that the design for the natural resource-based recreational facility complies with the applicable ASTM F24 or other applicable industry or State standards (FSM 7331.2). All required submissions must be accepted in writing by the Regional Director of Engineering before commencement of construction or modification.
7. Require the holder to furnish any certifications, as-built plans, and maps upon completion of construction, accompanied by a letter documenting that all applicable requirements in paragraphs 1 through 6 of this section have been met.
8. The authorized officer, in consultation with qualified regional engineering staff, must determine whether all required submissions are sufficient and may be accepted. Acceptance of all required submissions in writing by the authorized officer is a prerequisite to authorization of a natural resource-based recreational facility for public operation.

**7331.51c – Additional Procedures for Construction**

Prior to public operation of a new or relocated natural resource-based recreational facility, authorized officers shall follow the following additional procedures for submittal of plans, specifications, and records, construction, acceptance testing and inspection, and final documentation.

1. Require the holder to submit site development and ancillary building plans showing the location of all proposed natural resource-based recreational facilities to be located on NFS lands.
2. Require the holder to have a ride analysis performed by a qualified engineer that specifies design and risk reduction requirements to mitigate any potential hazards posed by the natural resource-based recreational facilities. The ride analysis shall be conducted in accordance with ASTM F2291, section 5, or other applicable industry or State standards (FSM 7331.2) and shall and be made available for review by qualified regional engineering staff and a qualified auditor.
3. Require the holder to have a failure analysis performed by a qualified engineer of all safety systems, including all distance control and braking systems. The failure analysis shall include either a fault tree analysis, a failure mode and effects analysis, or other applicable industry engineering failure analysis methods.
4. When a braking system is determined to be necessary by a ride or failure analysis, require the holder to:

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

- a. Have a braking analysis performed by a qualified engineer that includes at a minimum any braking system and landing zone requirements;
  - b. Ensure that the natural resource-based recreational facility is designed so that use of the braking system does not result in an injury as defined in ASTM F747; and
  - c. Ensure that the braking system has at least one fail-safe brake and is designed in accordance with ASTM F2291 or other applicable industry or State standards (FSM 7331.2).
5. Require the holder to submit profile and design drawings including the location and alignment of natural resource-based recreational facilities and any adjacent infrastructure and features that may affect their operation, such as electric powerlines and their supports, adjacent structures and cables, crossing of other natural resource-based recreational facilities or ropeways (FSM 7320.5), and control of airspace below, above, and adjacent to other natural resource-based recreational facilities.
6. Require the holder to submit the initial drawing log.
7. Require the holder to submit design and calculations documentation including:
  - a. Engineering analysis of the performance characteristics of structural, mechanical, and electrical components of natural resource-based recreational facilities such as trees, wooden poles, wire and fiber ropes, towers, platforms, ramps, stairways, elevated walkways, terminal structures, end connections, tensioning and braking systems, bollards, anchoring devices, operator controls, personal rigging equipment, pulleys, trolleys, and wheel carts, as well as any potential adverse forces that would be exerted on passengers.
  - b. The design weight and procedures to verify maximum safe design loads and operational limits under the most adverse conditions, as determined by a qualified engineer.
  - c. Documentation of developmental testing of materials and maximum safe design loads, including at a minimum consideration of static and dynamic loads, possible impact loads, static properties, fatigue endurance, resistance to brittle fracture, temperature, and protection against corrosion.
8. Require the holder to submit the design certification by one or more qualified engineers.
9. A preconstruction review meeting may be held as needed prior to authorizing the holder to begin construction. A preconstruction review meeting should include the holder and the holder's construction representative, a Forest Service qualified engineer, and the Forest Service special use authorization administrator.

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

10. Prior to installation and material, operational and component, acceptance and performance, and other required testing, require the holder to submit or make available for review upon request the following:
  - a. Testing procedures at least 14 days in advance of testing.
  - b. The final drawing log.
  - c. Component nondestructive testing (NDT) and fatigue testing results.
  - d. Documentation of acceptance of the main electrical service disconnect by an electrical utility or by a licensed electrical engineer, if applicable.
  - e. Certification of construction, including:
    - (1) Verification by a qualified engineer of compliance with the construction specifications prescribed by the natural resource-based recreational facility design and the design engineer's construction specifications for the foundation (for example, for soils, concrete compressive strength tests, rebar, anchor bolts, backfill, and a compaction test).
    - (2) An as-built profile documenting proper location of the natural resource-based recreational facility and associated terminals, platforms, stairways, and elevated walkways and proper clearance from other structures.
  - f. Material testing certification for concrete, personal rigging equipment, cables, welding, fastenings, pulleys, trolleys, poles, wire and fiber ropes, rock anchors, passenger vehicles, and other materials in accordance with the applicable ASTM 24 or other applicable industry or State standards (FSM 7331.2).
  - g. A manual containing maintenance instructions, procedures, and specifications, including routine maintenance requirements, recommended by the natural resource-based recreational facility designer or manufacturer or qualified engineer.
  - h. Per ASTM F24, F770, or other applicable industry or State standards (FSM 7331.2), a manual containing operating and loading and unloading instructions, riding restrictions, daily test run procedures, emergency procedures, communications procedures, training and other requirements for operators and attendants, and orientation for passengers on connecting and disconnecting, braking, deceleration, and other functions.
  - i. An evacuation or rescue plan that addresses evacuation and rescue methods and equipment for all types of passengers, procedures on proper use of equipment, procedures for providing first aid and ground care of passengers in the event of

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

abnormal conditions or an interruption of service, and the frequency of evacuation or rescue drills. During acceptance and performance testing, require the holder to:

- (1) Test evacuation and rescue equipment and procedures at all adverse locations.
- (2) Ensure that fall arrest and evacuation and rescue equipment comply with industry breaking strength requirements.
- (3) Ensure that a qualified engineer verifies compliance with the specifications for evacuation and rescue equipment in ASTM F2959 and F770 or other applicable industry or State standards (FSM 7331.2).

11. Require the holder to submit or make available for review upon request the following prior to public operation of a natural resource-based recreational facility:

- a. The certification of electrical system acceptance tests by a qualified engineer, if applicable.
- b. The final acceptance and performance testing report, including certification that the natural resource-based recreational facility complies with the original design criteria.
- c. Final required audit reports.
- d. The final evacuation and rescue plan.
- e. Documentation of the training program for maintenance employees per the applicable ASTM F24 or other applicable industry or State standards (FSM 7331.2).
- f. Documentation of the training program for operators and attendants per the applicable ASTM F24 or other applicable industry or State standards (FSM 7331.2).
- g. Safety rules and accessibility, EEC, and instructional signage to be posted for accessing and using the natural resource-based recreational facility.
- h. Documentation of the QA program per the applicable ASTM F24 or other applicable industry or State standards (FSM 7331.2).
- i. Software security procedures developed by the natural resource-based recreational facility designer or manufacturer or a qualified engineer, if applicable.

### **7331.51d – Additional Procedures for Modifications**

Prior to public operation of a modified natural resource-based recreational facility, authorized officers shall follow the following additional procedures for submittal of plans, specifications, and records, construction, acceptance testing and inspection, and final documentation.

1. Require the holder to address all aspects of the proposed modification, including changes to equipment, platforms, terminals, and other associated buildings.
2. Require the holder to submit any testing procedures developed by the natural resource-based recreational facility designer or manufacturer or a qualified engineer and to conduct acceptance testing for any modification when required by the natural resource-based recreational facility designer or manufacturer, a qualified engineer, or a State agency with authority to regulate natural resource-based recreational facilities.
3. Require a modification audit in accordance with ASTM F2974 or other applicable industry or State auditing standards (FSM 7331.2).

### **7331.51e – Relocation of Portable Natural Resource-Based Recreational Facilities [Reserved]**

## **7332 – Natural Resource-Based Recreational Facility Operations**

### **7332.1 – Inspections**

The authorized officer shall require the holder to:

1. Have all natural resource-based recreational facility supporting structures and equipment inspected as specified by the designer or manufacturer and according to the frequency and methods specified in the designer's or manufacturer's maintenance manual.
2. Have an inspection program that is consistent with the applicable ASTM F24 or other applicable industry or State standards (FSM 7331.2) and that specifies inspection requirements, frequency, and retirement criteria for wire and fiber rope, wire and fiber rope hardware and anchoring devices, PPE, support structures and hardware, rock anchors, and any other components in the primary load path.
3. Maintain and file inspection documentation consistent with ASTM F770, F1193, or other applicable industry or State standards (FSM 7331.2).

### **7332.2 – Maintenance**

The authorized officer shall require the holder to:

1. Have all-natural resource-based recreational facility supporting structures and equipment maintained as specified by the designer's or manufacturer and according to

the frequency and methods specified in the designer's or manufacturer's maintenance manual.

2. Conduct a maintenance program consistent with the procedures specified in ASTM F770, F1193 or other applicable industry or State standards (FSM 7331.2).
3. Maintain and file maintenance documentation as required by the natural resource-based recreational facility designer or manufacturer or a qualified engineer and ASTM F1193 or other applicable industry or State standards (FSM 7331.2).

### **7332.3 – Testing**

For new and modified natural resource-based recreational facilities, the authorized officer shall require the holder to:

1. Conduct testing specified by the natural resource-based recreational facility designer or manufacturer or a qualified engineer.
2. Conduct developmental, installation, performance, operational, and modification acceptance testing and component NDT consistent with the specifications prescribed by the natural resource-based recreational facility designer or manufacturer or a qualified engineer and in accordance with the procedures in ASTM F2291 and F1193 or other applicable industry or State standards (FSM 7331.2).
3. Have NDT testing performed by a qualified NDT inspector in accordance with ASTM F2974 and American Society for Nondestructive Testing (ASNT) Recommended Practice E543, ASNT Recommended Practice SNT-TC-1A, or both or other applicable industry or State standards (FSM 7331.2).
4. Have the NDT inspector certify in writing to the holder that the testing has been performed in accordance with the most current NDT plan and the criteria specified by the natural resource-based recreational facility designer or manufacturer or a qualified engineer.
5. Maintain and file testing documentation as required by the natural resource-based recreational facility designer or manufacturer or a qualified engineer and ASTM F1193 or other applicable industry or State standards (FSM 7331.2).
6. Replace all equipment consistent with the recommendations of the natural resource-based recreational facility designer or manufacturer or a qualified engineer and ASTM F1193 or other applicable industry or State standards (FSM 7331.2).

### **7332.4 – Incident Review and Notification**

1. See FSM 2716.7 for requirements related to incidents generally, including incidents involving natural resource-based recreational facilities. Provisions specified in

**Forest Service Manual 7300 – Buildings and Other Structures**  
**Chapter 7330 – Natural Resource-Based Recreational Facilities**  
**Amendment number: 7300-2023-2**  
**Effective date: October 19, 2023**

FSM 2716.72 relating to notification of incidents shall be included in all operating plans for natural resource-based recreation facilities.

2. Authorized officers may use form FS-7300-0004 to request engineering support for incident reviews.

#### **7332.5 – Audit and Testing Notification**

The authorized officer shall require the holder to:

1. Notify the authorized officer of all audits and acceptance testing as soon as possible but no later than 7 days in advance.
2. Ensure that the name and qualifications of the qualified auditor are provided to the authorized officer and Regional Director of Engineering for review and acceptance at least 30 days before any audit.

#### **7332.6 – Monitoring**

The National Ropeway Services Team, Regional Ropeway Engineer, qualified engineer, special use authorization administrators, and other specialists shall assist the authorized officer in monitoring special use authorizations for natural resource-based recreational facilities, including audit requirements.