

TINKER BUGS LOGGING PLAN

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This sale will harvest sawlog, pulp, and cedar product from 633 acres in 18 cutting units. Harvest unit right-of-way volume for leave trees within temporary roads, skid trails or skyline corridors, are not included in this volume estimate and will have to be designated prior to harvest operations beginning. Leave trees in Leave Tree Marked units are designed with a band of orange paint. Units using a Designation by Species (DxSp) will CUT trees based on species. Cutting unit boundaries in ALL UNITS are painted in ORANGE tracer paint. Discernable boundaries exist in units 1, 2, 4, 5, 6, 7, 7A, 9, 9A, 11, 11A, 12, 13, 14A.

Logging systems include skyline, tractor and helicopter. Maximum and average yarding distances are listed in the table below. The skyline/swing portion of unit 14 and other shorter yarding distance units can utilize a tracked, off-road converted excavator-yarder (excaliner) type machine. The potential for intermediate supports in some units was identified with skyline profiles.

Most temporary roads are flagged with pink flagging. Logging has occurred in the past in this sale area. In these areas there are existing road prisms and old skid trails. Skid trails in tractor units should be designed to minimize ground disturbance and to stay below a 15% soil impact requirement. This 15% considers past harvesting; therefore, old skid trails should be used if they don't conflict with other resource objectives, such as riparian management.

All temporary roads will be obliterated following use. Skid trails will be scarified following use.

Likely Skyline equipment:

Yarder: Thunderbird TSY-50, Tower Ht- 50', Carriage Wt.- 1400lbs, Skyline Diameter- 0.8750", Mainline Diameter- 0.6250"

Excaliner: Tower Ht- 40', Carriage Wt. - 372lbs, Skyline Diameter- 0.6250", Mainline Diameter - 0.5"

Logging system breaks will be naturally discernable features (terrain breaks, roads) or painted with yellow tracer paint in a "2 dot" pattern.

Unit	Unit Acres	Volume CCF	Volume per Acre	System Acres					
				Tractor	Skyline	Swing	Cable	Shovel	Helicopter
01	99	5,323	53.8	11	88				
02	101	4,144	41.0	39	62				
04	85	3,488	41.0	85					
05	2	82	41.0	2					
06	3	123	41.0	3					
7	8	430	53.8	4	4				
07A	7	376	53.7	7					
09	6	323	53.8	6					
09A	3	161	53.7	3					
11	75	4,032	53.8	14	61				
12	77	4,140	53.8		77				
13	7	376	53.7						7
14	51	2,742	53.8	25	26	18			
14A	21	1,129	53.8	14	7				
14B	41	2,204	53.8	6	35				
14C	1	53	53.0		1				
8	41	2,204	53.8						41
11A	5	269	53.8						5

Unit	Unit Volume (CCF)						
	Tractor	Skyline	Swing	Cable	Shovel	Helicopter	Total
01	591	4732	0	0	0	0	5323
02	1600	2544	0	0	0	0	4144
04	3488	0	0	0	0	0	3488
05	82	0	0	0	0	0	82
06	123	0	0	0	0	0	123
7	215	215	0	0	0	0	430
07A	376	0	0	0	0	0	376
09	323	0	0	0	0	0	323
09A	161	0	0	0	0	0	161
11	753	3279	0	0	0	0	4032
12	0	4140	0	0	0	0	4140
13	0	0	0	0	0	376	376
14	1344	1398	968	0	0	0	2742
14A	753	376	0	0	0	0	1129
14B	323	1881	0	0	0	0	2204
14C	0	53	0	0	0	0	53
8	0	0	0	0	0	2204	2204
11A	0	0	0	0	0	269	269

Unit	External Yarding Distance Max & Weighted Avg.											
	Tractor		Skyline		Swing		Cable		Shovel		Helicopter	
	AVG	Max	AVG	Max	AVG	Max	AVG	Max	AVG	Max	AVG	Max
01	205	297	606	1153	-	-	-	-	-	-	-	-
02	288	478	518	1115	-	-	-	-	-	-	-	-
04	1259	1880	-	-	-	-	-	-	-	-	-	-
05	0	0	-	-	-	-	-	-	-	-	-	-
06	269	407	-	-	-	-	-	-	-	-	-	-
7	331	402	261	357	-	-	-	-	-	-	-	-
07A	390	556	-	-	-	-	-	-	-	-	-	-
09	726	1084	-	-	-	-	-	-	-	-	-	-
09A	363	374	-	-	-	-	-	-	-	-	-	-
11	652	864	818	1036	-	-	-	-	-	-	-	-
12	-	-	1136	1761	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	2288	2288
14	598	860	636	836	634	634	-	-	-	-	-	-
14A	472	659	504	532	-	-	-	-	-	-	-	-
14B	459	509	599	877	-	-	-	-	-	-	-	-
14C	-	-	254	254	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	3600	3600
11A	-	-	-	-	-	-	-	-	-	-	1000	1000

UNIT DESCRIPTIONS

Unit 1- Logging system: Skyline/Tractor
 Prescription: Regeneration – LTM
 Existing Guy anchor adequate (y/n): Yes
 Existing Tailhold Adequate (y/n): Yes
 Landings Adequate: (y/n): No, see logging system map for potential landing locations.
 Temporary Road: 4 new

This unit can utilize a larger yarder for the skyline portion.

This Unit consists of tractor and skyline logging systems. The unit is located on north side of the 286 road immediately after entering the US Forest Service Boundary. To the west the unit is bordered completely by private land, owned by Inland Empire Inc. This boundary was recently re-surveyed (summer 2020) by USFS. To the east the unit is bounded by the Middle Fork of Tinker Creek and to the south bordered by a young ponderosa pine plantation and the 77746 road.

Nearly all of Unit 1 will be harvested using skyline cable systems. Small portions will be tractor skidded to the 1-1, 1-2 and 1-4 temporary roads. The southern half of the unit will utilize temporary road 1-1 for skyline harvesting and hauling along the southern boundary ridge system. Short punch-out temp roads 1-2, 1-4 will be used to get a skyline machine further out the ridges.

The northern half of the unit will be utilizing Inland Empire's already existing road system for hauling and access to temporary road 1-5 that will be used for skyline yarding. As part of the agreement to use the road, a “tank trap” style earthen barrier will need to be constructed after operations. A small rocky opening exists in this northern part of the unit. Devoid of timber, this opening can be yarded through and acres have been subtracted from the total unit acres. Another old harvest unit now containing a western white pine plantation is in the middle southeast portion of the unit. Unit boundary here is the discernable boundary of the

old harvest unit. Care should be taken not to yard through this area if possible. These acres have been subtracted from the total unit acres. **Two minor areas near the northwest and northeast corners of this old harvest unit may require highbanking, directional felling, side-hill yarding, or pulling behind the tailhold due to terrain.**

Unit 2- Logging system: Skyline/Tractor
Prescription: Regeneration - LTM
Existing Guy anchor adequate (y/n): Yes
Existing Tailhold Adequate (y/n): Yes
Landings Adequate (y/n): No, see logging system map for potential landing locations.
Temporary Roads: 8 new

The western half of the unit will require a yarder capable of longer yarding distances (max. 1115 ft) while the eastern half of the unit could utilize an excaliner.

This unit consists of skyline and tractor systems. This unit is located north of and along the 286 road starting at approximately mile marker 8 and ending near mile marker 9. This unit is bounded on the northern side mainly by large openings unsuitable for harvest and riparian areas. The southern boundary is the 2-8 temp road and 286 road.

The western portion of the unit is accessed from the 286 road by the 2-8 temp road. This is an old logging road with an existing prism. It connects to the 286 road on the east and west side. Some areas of this portion will be skyline yarded up to the 2-8 temp road. From the 2-8 temp road the 2-1 temp road takes off across a bench to a central ridge where timber will be skyline yarded to. A small area of tractor logging below 2-8 temp road will skid trees down to the 2-1 temp road.

Heading north where temp road 2-8 meets the 286 road, a few short jump landings will be needed to access a skyline area. Temp road 2-2 takes off from the 286 road to access the central-west portion of this unit. **Hauling from the end of this temp road may require a short truck assist (400ft @16-18%, 12 loads).** The 2-3 temp road takes off from the 2-2 on top of the ridge, accessing another area of skyline yarding. There is an access point to the 2-3 temp road along the 286 where an old prism takes off to the east.

The northernmost portion of this unit is accessed by a network of temp roads. Temp road 2-4 leaves the 286 road heading down hill. **This temp road contains a series of potentially difficult switchbacks** to access tractor and skyline areas. A small ~2 acre area below the road will need to be yarded up to the 2-4 temp road. Tractor areas will skid to the 2-4 and 2-5 temp roads. There is a small portion of skyline at the end of the 2-5 road. The discernable boundary in this area is a small rocky opening. The 2-6 temp road spurs off along a narrow, rocky ridge to access a skyline area. **Log trucks may need to back up here as a turn around may not be possible.**

Easternmost portion of unit 2 has a short temp road 2-7 that accesses a small skyline and tractor area.

Unit 4 - Logging system: Tractor
Prescription: Regeneration - LTM
Existing Guy anchor adequate (y/n): N/A
Existing Tailhold Adequate (y/n): N/A
Landings Adequate (y/n): No, see logging system map for potential landing locations.
Temporary Roads: Yes, 2 new

This unit consists of straightforward tractor logging. The unit is located south of the 286 road. The north, west, and east side are bounded by old harvest units or riparian areas while the south side boundary runs along a timbered ridge. Discernable boundary in this unit is from an old clearcut on the northeast corner. Access to this unit is from the 286, 286D, 77776 roads and 4-1, 4-2 temp roads.

Most of the trees will be skidded to existing landings, but they may need to be reconstructed. This area has been tractor logged before and many existing skid trail prisms are present. **There are three small areas where directional felling/cable pulling may be required due to steeper (40%-45%) terrain pitches.**

Unit 5 - Logging system: Tractor
Prescription: Regeneration – Designation by Species
Existing Guy anchor adequate (y/n): n/a
Existing Tailhold Adequate (y/n): n/a
Landings Adequate (y/n): Yes
Temporary Roads: No

This unit is along the north side of the 286 road. The unit is entirely bounded by discernable boundary (old clearcut, 286 road). Logging will be simple directional felling to the road. **There are no marked trees in this unit; species to leave will be Western Larch, Western White Pine and Ponderosa Pine.**

Unit 6 - Logging system: Tractor
Prescription: Regeneration - LTM
Existing Guy anchor adequate (y/n): n/a
Existing Tailhold Adequate (y/n): n/a
Landings Adequate (y/n): Yes
Temporary Roads: No

This unit is a straightforward tractor unit located west of the 286 road. The boundary is riparian area and old harvest unit on the west side. On the eastern side, a large opening and the 286 road make up the discernable boundary. All trees will be skidded to existing landings on either end of the unit, the 286 road or 7-1 temp road. Temp road 7-1 goes through the middle of this unit.

Unit 7 - Logging system: Skyline/Tractor
Prescription: Regeneration - LTM
Existing Guy anchor adequate (y/n): Yes
Existing Tailhold Adequate (y/n): Yes
Landings Adequate (y/n): No, see logging system map for potential landing locations.
Temporary Roads: 2 new

This unit can utilize an excaliner for the skyline portion.

This unit is a skyline and tractor unit. The unit is bounded by an old growth stand on the west side, riparian areas on the eastside, and a discernable boundary along an old clearcut. Access to this unit is on the 7-1 temp road from the 286 road. This temp road is on an existing prism. Temp road 7-2 takes off from the end of temp road 7-1 along a ridge. Trees will be yarded and skidded to the 7-2 temp road.

A potential helicopter landing could be located at the end of the 7-1 temp road to facilitate shorter helicopter yarding distance from unit 8.

Unit 7A - Logging system: Tractor
Prescription: Regeneration - LTM
Existing Guy anchor adequate (y/n): N/A
Existing Tailhold Adequate (y/n): N/A
Landings Adequate (y/n): No, see logging system map for potential landing locations.
Temporary Roads: 1 new

This unit is a tractor unit. The unit is bounded by riparian areas and a discernable boundary along an old clearcut. This unit accessed by temp road 7A-1 which is a spur off the 7-1 temp road. Portions of this temp road run on an old prism. Where this road leaves existing road template it follows an old skid trail. **There are two small areas where directional felling/cable pulling may be required due to steeper terrain pitches.**

Unit 8 - Logging system: Helicopter
Prescription: Regeneration - LTM
Existing Guy anchor adequate (y/n): N/A
Existing Tailhold Adequate (y/n): N/A
Landings Adequate (y/n): No, see logging system map for potential landing locations.
Temporary Roads: No

This unit is a helicopter yarding unit. The unit is bounded by riparian areas to the south, old harvest areas to the east and unsuitable harvest areas to the north. **There is a potential helicopter landing location at the end of the 7-1 temp road in unit 7.**

Unit 9 - Logging system: Tractor
Prescription: Regeneration - LTM
Existing Guy anchor adequate (y/n): N/A
Existing Tailhold Adequate (y/n): N/A
Landings Adequate (y/n): Yes
Temporary Roads: No

This unit is a tractor unit. This unit is accessed by the 286A road. This unit is bounded by riparian area to the north, old harvest unit to the south and east. Trees will be skidded to the 286A road. **There are two Western White Pine Plus trees in this unit and one just outside on the southeast corner.**

Unit 9A - Logging system: Tractor
Prescription: Regeneration – Designation by Species
Existing Guy anchor adequate (y/n): N/A

Existing Tailhold Adequate (y/n): N/A
Landings Adequate (y/n): Yes
Temporary Roads: No

This unit is a tractor unit. The unit is accessed by the 286A road. This unit is bounded by cultural, riparian and unsuitable harvest areas. Trees will be skidded to the 286A road. **There are no marked trees in this unit; species to leave will be Western Larch, Western White Pine and Ponderosa Pine. There is one Western White Pine Plus tree in this unit and one just outside on the southwest corner.**

Unit 11 - Logging system: Skyline/Tractor
Prescription: Regeneration - LTM
Existing Guy anchor adequate (y/n): Yes
Existing Tailhold Adequate (y/n): Yes, see note in logging description.
Landings Adequate (y/n): Yes
Temporary Roads: Yes, 1 new

This unit is a skyline and tractor unit. The unit is bounded by riparian and unsuitable harvest areas on the west side while the east side is bounded by previous harvest units. A small portion of boundary runs along the 286A road in the southern portion of the unit. Discernable boundary in the northern part of this unit is an old clearcut and a small rocky opening. A small piece of common boundary is shared with unit 11A.

This unit is accessed from the 286A road. Temp road 11-1 takes off from the 286A road on an existing prism. A short piece of new temp construction will then tie into an existing prism running roughly north-south on the ridge. The tractor and skyline portions of the northern half of the unit will bring wood to the 11-1 temp road. The westernmost dogleg of this unit is partially separated by a zigzag shaped opening. This opening outside the unit is a historic trail location and can be skidded through with review by the zone archaeologist. **The southernmost end of the unit below the 286A road will require the use of intermediate supports (approximately 4 sets, 1 support each). Guyback trees are located along this portion of 286A road but may be more difficult to set up with a steep rocky cutbank. Take care not to use a Western White Pine Plus tree as a guyback (located above 286A road along this portion of the unit).**

Unit 11A - Logging system: Helicopter
Prescription: Regeneration - LTM
Existing Guy anchor adequate (y/n): N/A
Existing Tailhold Adequate (y/n): N/A
Landings Adequate (y/n): No, see logging system map for potential landing locations.
Temporary Roads: No

This unit is a helicopter yarding unit. The unit is located off the northernmost end and shares a common boundary with unit 11. The west side boundary is a historical trail corridor buffer while the east side is bounded by a riparian area and an old clearcut. There may be a survey monument in this unit. **A helicopter landing will need to be established for this unit. Possible locations: end of temp road 11-1 (uphill yarding, shorter haul) or along temp road 12-1 (downhill yarding, longer haul).**

Unit 12 - Logging system: Skyline
Prescription: Regeneration - LTM
Existing Guy anchor adequate (y/n): Yes for most of the sets, see notes below.
Existing Tailhold Adequate (y/n): Yes
Landings Adequate (y/n): No, see logging system map for potential landing locations.
Temporary Roads: Yes, 2 new

This unit will require a medium sized 3-drum yarder such as a Thunderbird TSY50.

This unit is a skyline unit. The unit is accessed by the 12-1 temp road off of the 286A2 road. Boundaries are riparian areas, unsuitable harvest areas and old harvest units. Discernable boundary in this unit is comprised of old clearcut areas. All wood will be yarded to the 12-1 and 12-2 temp roads.

Starting on the west side of the unit there will be 3-5 sets requiring an artificial guyback for the yarder. In addition, 2 of these sets may require an intermediate support.

Moving to the east, there is an area of approximately 18 acres (~3-5 sets) that has been identified by skyline profiles as requiring longer yarding distances (~1,800 feet of mainline and ~2,700 feet of skyline). Adequate tailholds have been identified on the ground. These tailholds will require protective devices in accordance with C6.4. Short jump out landings from the 12-1 temp road on the flat ridge may be necessary to reach the terrain break.

A truck assist has been identified from the end of the 12-1 temp road (500ft at 15% adverse). Three minor areas in this portion of this unit have been identified as potentially needing intermediate supports.

Unit 13 - Logging system: Helicopter
Prescription: Regeneration - LTM
Existing Guy anchor adequate (y/n): N/A
Existing Tailhold Adequate (y/n): N/A
Landings Adequate (y/n): No
Temporary Roads: No

This unit is a helicopter yarding unit. The boundaries are riparian and unsuitable harvest areas. A small section of discernable boundary is on the southwest corner, along an old harvest unit. **A landing could be developed in unit 14B along the 14B-1 temp road or an old landing could be used along the 286A1 road.**

Unit 14 - Logging system: Skyline/Tractor/Swing
Prescription: Regeneration - LTM
Existing Guy anchor adequate (y/n): Yes
Existing Tailhold Adequate (y/n): Yes
Landings Adequate (y/n): No, see logging system map for potential landing locations.
Temporary Roads: Yes, 1 new

This unit can utilize an excaliner for the skyline portion.

This unit is a skyline, tractor and swing unit. The unit is located at the end of and accessed by the 286A road. Boundaries are old harvest units, riparian, and unsuitable harvest areas. Two areas void of merchantable timber (rocky opening, old fireline) have been identified in this unit and acres subtracted.

Tractor areas in this unit will be skidded to temp road 14-2 and the 286A road. Old skid trail prisms exist in this unit. **Adverse skidding at 20% may be required. Larger trees in the tractor portion of this unit may require hand felling. Small area in the southeast corner of the unit may require directional felling/cable pulling.**

The 14-2 temp road takes off from the 286A road to access the skyline/swing portion of this unit. The 14-1 swing trail takes off from the end of the 14-2 temp road. Timber in this area will be excaliner yarded to the 14-1 swing trail and tractor skidded to the 14-2 temp road.

Unit 14A - Logging system: Skyline/Tractor
Prescription: Regeneration - LTM
Existing Guy anchor adequate (y/n): Yes
Existing Tailhold Adequate (y/n): Yes
Landings Adequate (y/n): No, see logging system map for potential landing locations.
Temporary Roads: Yes, 1 new

This unit can utilize an excaliner for the skyline portion.

This unit is a skyline and tractor unit. The unit is located near the junction of the 286 and 286A1 roads and runs north along the east side of the 286A1 road. Boundaries are mainly the 286A1 road, riparian areas and a discernable boundary running along an old harvest unit running parallel to the 286A1 road. From the southwest corner heading north, there is a short piece (~250ft) of painted boundary before becoming discernable.

The skyline portion of this unit will be yarded to the 14A-1 temp road. The main southern tractor portion of this unit can utilize the ridge to skid along back to the 286A1 road and 14A-1 temp road. **Minor areas along the east side of the unit may require directional felling/cable pulling.** In the northwest tractor portion of this unit there are **2 mapped Western White Pine Plus trees and one just outside the boundary.** Confirm the location and existence of these trees prior to logging as they may be dead and no longer relevant. **This area may need a couple skid trails down a short but steep cutbank to the 286A1 road.**

Unit 14B - Logging system: Skyline/Tractor
Prescription: Regeneration - LTM
Existing Guy anchor adequate (y/n): Yes
Existing Tailhold Adequate (y/n): Yes
Landings Adequate (y/n): No, see notes below and logging system map for potential landing locations.
Temporary Roads: Yes, 1 new

This unit is a skyline and tractor unit and is located near the end of the 286A1 road. Unit boundaries are riparian and unsuitable harvest areas.

This unit utilizes temp road 14B-1 running along a main ridge to access the unit. Skyline and tractor portions will be yarded to this temp road. **Due to difficult terrain this temp road hits the 286A1 road in the opposite haul direction. A landing area at the end of the 286A1 road will need to be reconstructed/widened to turn trucks around (is also landing area for unit 14C). There is a cost allowance made for this. There are two areas in the northern skyline portion possibly requiring the use of an intermediate support. This unit has areas of lower volume/birch/brush. A helicopter landing for unit 13 could be constructed along the 14B-1 temp road.**

Unit 14C - Logging system: Skyline
 Prescription: Regeneration – Designation by Species
 Existing Guy anchor adequate (y/n): Yes
 Existing Tailhold Adequate (y/n): N/A
 Landings Adequate (y/n): No, see notes below.
 Temporary Roads: No

This unit can utilize an excaliner.

This unit is a skyline unit. This unit is located at the end of the 286A1 road. Unit boundaries are riparian and unsuitable harvest areas. All trees will be yarded to the landing area at the end of the 286A1 road. **This landing will need to be reconstructed/widened to accommodate a truck turn around area for unit 14B(there is a cost allowance made for this). There are no marked trees in this unit; species to leave will be Western Larch, Western White Pine and Ponderosa Pine.**

C 6.4# Conduct of Logging Provision Wording

<u>Cutting Unit</u>	<u>Conduct of Logging</u>
<u>ALL</u>	Trees shall be felled, insofar as safety permits, to angle in the direction of skidding.
	Trees designated for cutting and/or logs will be left as rub trees along skid trails (all skidding and yarding methods) as needed to protect young growth and leave trees.
	<i>Tractor Units</i>
<u>All Tractor Units</u>	The location of tractor skid trails shall be designated on the ground by Purchaser and approved by Forest Service in advance of falling.
	Logs shall be tractor skidded with the leading end free of the ground.
	Tractors shall be restricted to approved tractor roads and skid trails.
	Tractor roads and tractor skid trails shall be no less than 80 feet apart, except where converging.

	Skidding shall only occur during dry soil conditions as determined by the Forest Service. OR Tractor Skidding is allowed only over 12 inches of settled snow or frozen ground.
	<i>Cable/Skyline Units</i>
<u>All Skyline Units</u>	The location of all skyline corridors shall be designated on the ground by Purchaser and approved by Forest Service in advance of falling. Where topography will permit, skyline corridors shall be spaced not less than 150 feet apart nor more than N/A feet apart at the point of widest divergence within the cutting unit. Except for lateral yarding, logs shall be yarded with the leading end free of the ground. Skyline corridors shall have only those trees cut that are necessary to allow the safe free passage of the carriage and turn of logs.
<u>Unit 12</u>	When rigging is attached to residual trees, tree plates or similar protective devices shall be used and removed when rigging is removed.
	<i>MULTI-SPAN</i>
	When setting where it is not possible to suspend the leading end of the log during inhaul, an intermediate support will be required. The support must be sufficient to suspend the leading end of the turn as the carriage traverses the skyline. Notwithstanding other designations for cutting, all trees used to support multispan jacks shall be left uncut.

C 6.41# - SPECIAL FELLING REQUIREMENTS:

Cutting Unit	Item or Area to be protected	Protection Measure
ALL	SOIL	Mechanical falling will be allowed on slopes up to 45% within tractor and skyline units.

C6.43# – OFF ROAD SKYLINE YARDER / SWING (1/18).

Portions of cutting unit **14** identified with a logging system break and designated “**ORSY**” on the Sale Area Map require yarding of Included Timber with an Off Road Skyline Yarder capable of traveling on slopes less than 35 percent. Logging system breaks are identified on-the-ground with **N/A** flagging.

Off-road skyline yarders must be capable of skyline yarding distances up to **800** feet. Except for lateral yarding, logs shall be yarded with the leading end free from the ground.

The skyline logging system shall provide for lateral yarding distances up to **75** feet. The carriage must maintain a fixed position on the skyline while lateral yarding. During the lateral yarding phase, logs shall be yarded along a path, which minimizes damage to residual trees. Skyline corridors shall be located and approved in advance of felling.

A tractor swing is required to move the logs from the log landing to the road. Tractors used to swing logs must be capable of skidding logs uphill on slopes up to 20 percent and downhill on slopes up to 35 percent with the leading end of the log suspended above the ground.