

**Appendix A**

**Project 001 - 004. Deferred Road Maintenance to Prevent Sedimentation from Roadway**

**Measure of Accomplishment;** Entire Project

**Quantity:** 1 Item equaling one Project

End Results - Reduce or eliminate erosion and sedimentation by providing for proper drainage across the road prism and associated drainage structures

**Specifications Included by Reference:**

FP-03 and Forest Service Supplemental Specifications as pertaining to Roadway Reconditioning Specifications 230, 303.07, 322 and as described in specified road package for South Lake Thin STWD and/or attached.

<u>Item Number</u>	<u>Road Number</u>	<u>Work Required</u>	<u>Quantity</u>
001	8533-131	BRUSHING	0.72 MILES
002	8533-131	CLEAN CULVERTS	0.72 MILES
003	8533-131	ROADWAY RECONDITIONING	0.72 MILES
004	8533-131	AGGREGATE PLACEMENT	300 CY

**Project 001 - 004 - Deferred Road Maintenance General Notes, Worklist and Narrative**

General Notes:

Reclaim all turnouts, curve widening and road width. Aggregate placement locations will be identified by the Forest Service on the ground, typically where potholing exists. Aggregate shall be from a Forest Service owned stockpile; Niagara Divide is located approximately 2 miles east of the junction of 2210. Aggregate courses shall be compacted using Method B. Average haul distance will be 6 miles from Niagara Divide to the project area. Disposal area needs may be met at the quarry near the 1400/8533 junction.

Worklist:

<u>Road</u>	<u>MP</u>	<u>Worklist</u>
8533-131	0.00	Reference: Junction 8533/8533-131. Begin brushing, culvert cleaning, roadway reconditioning and aggregate placement as staked.
	0.72	End Project work items at trailhead parking area.

Narrative:

Item #1 encompasses the portion of the 8533-131 from the 8533 to the trailhead parking area. Blading shall remove organic materials from the road surface, turnouts and curve widening. Reshape road template to drain with a 5% crown. Spot rock to be placed where rilling or excessive potholing is occurring. Clean ditches and culverts. Spot rock and reshape where needed. Leave a partially vegetated strip in the ditch for 50' above culverts flowing water. Disposal methods 2 and 4 as referenced in the attached specification are preferred. Roadway brushing widths will be 10 feet slope distance on the fill side, measured from the edge of the travel way and 10 feet slope distance on the cut side.; height will be 14 feet measured from the surface of the travel way.

**When:** Any Time, subject to Engineering Staff approval

**Inspected by:** Engineering Staff

**Inspection details:** Base compliance on completion of each of the maintenance items

**Project 001 - Roadside Brushing**

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**230.01 Description.** This work consists of removing limbs, residual slash, roadside brush and small trees within the brushing limits designated in the plans, including turnouts.

**Construction Requirements**

**230.02 General.** Cut all brush and small trees, ( 6 inch diameter or less at the point of cut) within the brushing limits and outside the roadbed no higher than 6 inches above the ground surface or obstructions such as rocks or stumps. Trees beyond the bottom of ditch and beyond the hinge point on the fill slope side, with a diameter larger than 6 inches at a point 14 feet above the ground shall be limbed to a height of ?? feet above the road surface. Cut all brush and trees located in the roadbed. Grub and haul stumps to designated waste areas or as directed by the Contracting Officer. Smooth and shape the disturbed areas where stumps are removed to prevent water ponding.

**230.03 Windfalls.** Cut windfalls lying within or across the brushing limits to a horizontal distance of 10 feet from each shoulder or at the brushing limit, whichever is least. Dispose of windfall material as slash.

**230.04 Slash Treatments.** Remove limbs, chunks, and debris within the roadway in excess of 3 feet in length or 3 inches in diameter, or concentrations which may plug ditches or culverts, from the traveled way, shoulders, ditches and water courses.

Dispose of slash in accordance with one or more of the following methods, as shown in the bid schedule:

- (1) **Scattering.** Scatter slash outside the roadway limits without damaging trees. Do not scatter any material in streambeds, culvert inlets or outlets, drainage ways or cattleguards.
- (2) **Chipping.** Process slash through a chipping machine. Deposit chips on embankment slopes or outside the roadway to a loose depth less than 6 inches.
- (3) **Piling.** Pile slash in designated locations. Place and construct piles so that if the piles are burned, the burning will not damage surrounding trees. Keep piles free of dirt. Cut unmerchantable logs into lengths less than 20 feet.
- (4) **Decking.** Deck logs in excess of 8 feet long and 8 inches in diameter in designated locations. Logs shall be limbed and decks are to be stable and free of brush and soil. Treat other material according to designated slash treatment methods.
- (5) **Placing slash on embankment slopes.** Place slash on embankment slopes as designated in the plans to reduce soil erosion. Place slash as flat as practicable on slope. Do not place closer than 2 feet below shoulder. Priority for use of available slash in for: (1) through fills; (2) insides of curves.
- (6) **Burying.** Bury slash at designated locations. Mat slash down in layers and cover with rock and soil.

- (7) **Piling & burning.** Pile and burn slash in designated locations.  
Construct piles so that burning does not damage remaining trees.

**Measurement**

**230.05** Measure the Section 230 items listed in the bid schedule according to Subsection 109.02. Quantities will be the number of miles and fractions thereof along the road centerline, regardless of the amount of work required.

**Project 005** -Plant and Protect Bareroot Seedlings in Gaps and Underplanting Areas

**NOTE:** Projects 5 and 6 are the same project. The only difference being that Project 5 is for bareroot planting stock and will require only one bamboo on the vexar tube installation, while Project 6 is for containerized stock planting and will require two bamboo on the vexar tube installation. As the Government cannot guarantee which type of stock will be available from the nursery for planting, this project has been planned for a 50% breakout of the two types of seedlings and final payment will be based on the actual percentage of each type of stock provided. See Section 6 of this project for more information.

**End Result:** Increase species diversity in even-aged monoculture plantations by planting tree species that typically make up late successional forest habitat. Plant all of the Government-provided seedlings, distributed throughout the designated subdivisions, to initiate development of an understory canopy layer.

**Measure of Accomplishment:** Number of seedlings satisfactorily planted and protected.

**Quantity:** Plant and protect 4,488 bareroot seedlings on approximately 34 acres - 150 seedling per acre in the gaps and 130 seedlings per acre in the underplanting areas.

**Timeline:** All planting shall be accomplished between February 15 and April 30. All planting and tubing will be performed after snag and down wood creation projects in the Subdivision have been completed, to avoid crushing the newly planted seedlings.

**Table 1**

Subdivision Number	Acres to Plant	# of Cedar Seedlings to Plant	# of Hemlock Seedlings to Plant	# of Douglas-fir Seedlings to Plant
58B Gap	1	50	25	75
58B Underplant	14	420	980	420
58E Gap	1	50	25	75
58E Underplant	26	780	1,820	780
60U Underplant	5	150	350	150
60W Gap - actually 1/2 acre	1	25	25	25
60W Underplant	6	180	420	180
60Z Gap	1	50	25	75
60Z Underplant	14	420	980	420
<b>TOTAL</b>	69	2125	4650	2200

The Contractor shall plant the one-acre gaps designated in the thinning project and the half-acre gap in Subdivision 60W. No seedling are to be planted in the designated half-acre gaps, except in Subdivision 60W. The Contractor shall plant the seedlings identified in Table 1 scattered through the subdivision. Plant at an average spacing of 17' x 17' in the gaps and 18' x 18' in the underplanting areas.

**TECHNICAL SPECIFICATIONS FOR PROJECT #5**

**SECTION 1 - GENERAL**

DESCRIPTION OF PROJECT

The contractor shall provide any and all labor, training, and equipment necessary to perform the mobilization, site preparation, planting, seedling protection, documentation, and clean-up as described in the following sections. Forest Service shall provide the seedlings, seedling protection devices, and self-inspection materials as specified in Section 3.

ACCESIBILITY

Work areas may be reached by Forest roads that are accessible using a stand two-wheel drive pick-up during normal operating seasons, unless otherwise indicated on Contract Areas maps. Vehicles shall not operate off system roads without prior written approval of the Contract Administrator (CA). Inaccessibility due to snow, fallen trees, slides or washouts on roads may or may not be corrected at the option of the Government. If road access is blocked, the Government may: (1) provide an alternate access route, or (2) substitute similar stewardship project. Roads shown on subdivision maps indicate access to subdivisions and are not to suggest the roads are open within the subdivisions or for any further travel. No vehicle shall by-pass any officially blocked road (barrier, locked gates, posted signs, rocks/log/dirt, etc.) without approval of the CA.

**SECTION 2 - DEFINITIONS**

Plantable Spot - An area from which vegetation, ash, duff, and debris has been or can be removed, and a seedling can be planted as specified elsewhere herein. The plantable spot must be at least 10 feet away from any Douglas-fir, western hemlock, western red cedar, or Sitka spruce that is healthy, of good form and vigor, and over one foot tall.

Unplantable Spot - An area within the specified spacing limits, in which it is not possible to plant a seedling in accordance with all planting specifications set forth in this contract.

Satisfactorily Planted Seedling - A seedling planted in full accordance with all planting specifications set forth in this contract.

Unsatisfactorily Planted Seedling - A planted seedling which fails to meet one or more of the specifications for a satisfactorily planted seedling.

Wasted Seedlings - Seedlings which are lost, damaged, destroyed, or handled contrary to the specifications for care of seedlings. Planted seedlings in excess of the maximum number of seedlings creditable as specified elsewhere herein are also considered to be wasted seedlings.

Cotyledon Scar - Lowest point on stem from which branches will grow. Marked by a distinct ring in the bark on most species of seedlings.

Root Length - Root length will be measured from the cotyledon scar to the longest root tip.

Replanting - Any planting work done in a stewardship project, either voluntarily by the Contractor, or as directed by designated CA, after the Contractor has given planting inspection cards to the Government.

Mineral Soil - Where soil content is less than 70 percent coarse rock fragments greater than 2 mm in size.

Microsite Planting - The planting of seedlings in plantable spots most favorable to seedling survival and growth. Favorable microsite features such as logs and stumps protect seedlings from sun, wind, animals, and other damaging agents.

Prepared Sites - An area from which logging slash and competing vegetation has been removed to allow a seedling to be planted in full accordance with all specifications set forth in this contract.

Scalp - The removal of all vegetation, exposing at least 70% mineral soil.

Tree Height - Tree height will be measured from the ground to the tip of the seedling.

Suitable Tree - A tree of good form and vigor which shows no physical damage and which conforms to the size, characteristics, and species specified on the Planting Data Sheets.

**SECTION 3 - PROPERTY AND SERVICES**

GOVERNMENT FURNISHED PROPERTY AND SERVICES	QUANTITY	WHERE, WHEN AND HOW TO BE FURNISHED TO CONTRACTOR
Plug-1 and 2-0 <u>Bareroot</u> Western Red Cedar, Western Hemlock, & Douglas-fir Seedlings	4,488 seedlings	Hebo Ranger District's Sidecamp warehouse as arranged with Contractor
Vexar Tubes, Bamboo, Wire Ties, and Flagging	4,488 24" to 30" vexar tubes <u>4,488</u> bamboo stakes Flagging & twist ties, as needed	Hebo Ranger District's Sidecamp warehouse as arranged with Contractor
Planting Inspection Sheet book, R6-2470-113	One book	Furnished at Pre-work meeting
Contract Area Maps	One set	Furnished at Pre-work meeting

**CONTRACTOR PROVIDED PROPERTY AND SERVICES**

Except for the above designated Government furnished property, the Contractor shall furnish all services, labor, equipment, supervision, training, transportation, supplies, permits, licenses, and incidentals necessary to meet contract specifications. Contractor shall provide the following:

1. PLANTING BAGS:

Planting Bags shall be light color, shall not retain heat, shall have a minimum depth of 15 inches and shall be free of defects or contaminants.

2. PLANTING TOOLS:

Hoedads or shovels shall be capable of making a planting hole at least 10 inches deep and wide enough to fully accommodate the roots of the seedlings to be planted.

3. SEEDLING DIPPING BUCKET:

The bucket for dipping seedling roots shall be at least 15 inches in diameter and 15 inches deep. The Contractor shall also provide clean water for dipping the seedling roots in.

4. SEEDLING TRANSPORT VEHICLE:

The Contractor shall transport seedlings in an enclosed, insulated vehicle to prevent seedlings from heating up during the day. If the enclosed area of the vehicle is not insulated an insulated tarp that fully covers the seedling would be acceptable.

**SECTION 4. PERFORMANCE WORK STATEMENT TASKS AND CRITICAL SUBTASKS**

The Contractor shall be responsible for all tasks concerning the handling, planting, and protection of the **bareroot** seedling.

**Planting**

- 1) Locate a suitable planting spot (see SECTION 2 - Definitions).
- 2) Prepare the planting spot by creating 24" X 24" scalps. The Contractor shall remove all vegetation, exposing mineral soil.
- 3) Open a planting hole to fully accommodate seedling roots without bending or bunching.
- 4) Plant seedlings so that roots and stem are vertical (see Exhibit 1) and seedling is planted at the correct depth.
- 5) Fill soil in around the roots so no air pockets remain.

**Seedling Protection**

- 1) The Contractor shall be required to haul all tubes and bamboo to the planting sites.
- 2) Install vexar tubes, supported by **one** 4-foot bamboo, on all planted **bareroot** seedlings.

A. **CARE OF SEEDLINGS**

Contractor shall adhere to the following specifications for care and protection of seedlings:

1. Seedlings shall be protected at all times from drying, heating, smothering, freezing, crushing, drowning, abrasion, rapid temperature fluctuations, or contact with injurious substances.
2. Seedlings stored in boxes, bags, or bundles shall not be exposed to direct sunlight. Punctured or torn bags or boxes shall be promptly resealed. Containers of seedlings shall be opened only in full shade. Bundles, bags, or boxes shall be separated to provide free air movement.
3. Seedlings shall not be removed from shipping containers until needed for preparation for planting.
4. Seedlings shall be planted without further root or top pruning or culling. If pruning or culling is necessary, or if mold, dry roots, evidence of injury, or drying is seen, the condition shall immediately be reported to the CA.
5. Frozen seedlings shall not be handled until completely thawed. They shall be thawed in full shade.
6. Seedlings removed from cold storage facilities shall not be allowed to stand or lay in water or snow or be covered with snow.
7. Seedlings in planting bags shall have only their tops exposed. Burlap wrapped seedlings shall have the wrappings loosened slightly.
8. Seedlings shall not be removed from their planting bag until immediately before planting in a prepared planting hole.
9. Seedlings shall be gently removed, one at a time, to prevent stripping or other injury, and quickly and gently inserted into the planting hole.
10. Seedlings carried in planting bags shall not exceed the amount that can be carried or removed without injury, or which can be planted before critical heading or drying occur. Seedlings placed in planting bags shall be planted out and not returned to

storage. Seedlings in planting bags shall be planted out before extended break, such as lunch.

11. The Contractor shall not touch the roots of the seedlings.
12. The Contractor shall not dig and replant seedlings other than those located on inspection plots, or spot checks of below ground planting quality.
13. Unplanted seedlings shall be returned to the Government at the end of each working day.

B. PLANTING WEATHER GUIDELINES

The Contractor shall plant only under the following weather conditions (see attached Weather Guidelines for Lifting and Planting, Appendix C):

1. Air Temperature between 30 - 65 degrees Fahrenheit.
2. Wind Velocity less than 20 miles per hour.
3. Relative Humidity greater than or equal to 20%.
4. Wet bulb depression (Dry bulb reading minus wet bulb) less than 8 degrees Fahrenheit.
5. Soil temperature greater than or equal to 40 degrees Fahrenheit.

C. PREPATION OF SEEDLINGS

The Contractor shall provide water and a container at least 15 inches wide and 15 inches deep for dipping roots of bareroot seedlings. Water and container shall be kept free of contaminates and used only for dipping. Roots shall be dipped in water to wet them prior to placing seedlings in planting bags. Seedlings shall remain in the water for at least 3 seconds, but not longer than 30 seconds.

D. SPACING AND SPOT SELECTION

1. Seedlings Spacing Requirements:

- a. The specified spacing for this contract shall be 17' X 17' in Gaps and 18' X 18' in Underplant areas. The specified average spacing for individual seedlings may be varied up to 25 percent in any direction to find a suitable planting spot.
- b. Do not plant seedlings within 10 feet of any Douglas-fir, western hemlock, western red cedar, or Sitka spruce that is healthy, of good form and vigor, and over one foot tall.

2. Planting Spot Selection:

- a. Whenever possible, within the 25 percent variance in average spacing, planting spots shall be prepared where stumps, logs, dead brush, and terrain features provide partial protection from the sun, wind, animals, loose debris, and other agents detrimental to seedlings.
- b. Brush patches containing planting spots shall be planted even though this may require spreading stems aside or working around the stems.
- c. Where an unplantable spot is encountered, the planter shall plant in the next closest plantable spot available, meeting planting spacing requirements.

E. PLANTING SPOT PREPARATION

Prior to digging the planting hole, the Contractor shall clear or "scalp" the planting spot of all limbs, snow, bark, rotten wood, and other loose debris and shall scalp ash, duff, sod, crowns of living plants, and roots to moist mineral soil. The scalp shall be a minimum of 24" X 24". If logs, stumps, or large rocks prohibit the specific diameter of scalp, a smaller scalp is acceptable, as long as no live vegetation exists within the 24" X 24" scalp area.

F. PREPARING THE PLANTING HOLE

1. Planting holes shall be located near the center of the prepared planting spot and shall be between perpendicular to the ground surface and true vertical.
2. An open planting hole, broken out as shown in Exhibit 1, is required. It must be deep and wide enough to fully accommodate the roots of the seedlings to be planted.
3. The planting hole shall be broken out on four sides, with the back of the planting hole being broken out after the seedling is suspended in the center of the planting hole.

G. SEEDLING PLACEMENT

Seedlings shall be suspended near the center of the planting hole with roots in a near natural arrangement at a depth such that, after filling, firming, and leveling, the soil comes to a point at or above the cotyledon scar of the seedling. No portion of the roots shall be exposed. Roots shall not be doubled up, twisted, spiraled, or bunched. The root system shall be aligned with the axis of the planting hole with all roots extending downward. See Exhibit 1.

- It is permissible to cover the lowest whorl of branches with uncompacted soil

H. FILLING AND FIRMING

Moist mineral soil shall be filled in and firmed around seedling roots. Dry soil, ash, organic matter, rock, and other foreign material shall be kept out of planting holes. Soil shall be filled in and firmed progressively so no loose soil or air pockets remain and the seedling is as firmly planted as soil conditions will allow. The Contractor shall not wedge the sides of the planting hole. Firming the soil around the roots shall be accomplished in a manner that assures the seedling and its root system is not damaged. After the soil is firmed around the roots, it shall be smoothed out to the level of the surrounding mineral soil surface. After planting, the seedling stem shall be erect and free to grow. The seedling shall not be weighted down with mud or debris.

I. MIXTURE OF PLANTING STOCK

A mixture of planting stock shall be used in each subdivision. The Contractor shall plant these mixtures in locations as required by the designated CA - generally, western red cedar and Douglas-fir should be planted in the more open areas and western hemlock planted in the more shaded areas.

J. VEXAR TUBE INSTALLATION

All planted seedlings shall be protected with a vexar tube.

1. Tubes shall be supported by one 4-foot bamboo, attached with two wire twist ties (see exhibit 2). Wire twist ties should be approximately 6 inches from the top of the tube and 6 inches from the bottom of the tube. However, vary the wire twist tie's location 5 inches either way in order to tie it just below one of the joints/nodes on the bamboo, whenever possible.
2. The bamboo's small end shall be in the ground at least 10 inches to provide stability.
3. Bamboo that are broken or split during installation shall be replaced.
4. The top of the seedling will be vertical and not bunched or curled in the tube. Care shall be taken when installing the tube to prevent damage to the seedling. Skinned bark, or a broken or restricted leader results in an unsatisfactory seedling.

5. The bottom of the tube will be flush with the ground, unless the seedling is taller than the tube. If the seedling is taller than the tube, raise the tube on the bamboo so the top of the seedling is approximately 6 inches below the top of the tube.
6. The completed tube installation shall be vertical. The maximum lean allowed from vertical is two inches. Measure this from the top of the tube to the bottom of the tube with a plumb bob and tape measure.
7. Government provided flagging shall be tied to the top of one of the bamboo to aid in locating the seedling during future tube maintenance and brush release contracts.

**SECTION 5. CONTRACT QUALITY ASSURANCE AND PAYMENT**

CONTRACTOR INSPECTION PROCEDURES

The Contractor shall provide and maintain an inspection system acceptable to the Government covering the projects under this contract. Complete records of all inspection work performed by the Contractor shall be maintained and made available to the Government during contract performance and for as long afterwards as the contract requires.

The Contractor shall inspect the work of their crews in any fashion chosen, so long as the inspection procedure is thorough enough to ensure compliance with all of the planting specifications described herein.

Exhibit 1

**Satisfactory and Unsatisfactory Plantings**

<p><b>SATISFACTORY</b></p> 	<p><b>SATISFACTORY</b></p> 	<p><b>Unsatisfactory</b></p>  <p>Too deep. Needles buried.</p>
<p><b>Unsatisfactory</b></p>  <p>Improper orientation. Not planted into the slope or near vertical.</p>	<p><b>Unsatisfactory</b></p>  <p>"L" roots. Shallow hole.</p>	<p><b>Unsatisfactory</b></p>  <p>"J" roots. Shallow hole. Roots often exposed.</p>
<p><b>Unsatisfactory</b></p>  <p>Jammed roots. Hole too narrow and shallow.</p>	<p><b>Unsatisfactory</b></p>  <p>Hole too shallow. Roots exposed.</p>	<p><b>Unsatisfactory</b></p>  <p>Air pocket because of improper tamping.</p>
<p><b>Unsatisfactory</b></p>  <p>Planted in rotten wood. Roots not in mineral soil.</p>	<p><b>Unsatisfactory</b></p>  <p>"U"- or "J"-shaped tap root.</p>	<p><b>Unsatisfactory</b></p>  <p>Compacted roots. Hole too narrow.</p>

**Exhibit 2**



**Project #6** -Plant and Protect Container Seedlings in Gaps and Underplanting Areas

**NOTE:** Projects 5 and 6 are the same project. The only difference being that Project 5 is for bareroot planting stock and will require only one bamboo on the vexar tube installation, while Project 6 is for containerized stock planting and will require two bamboo on the vexar tube installation. As the Government cannot guarantee which type of stock will be available from the nursery for planting, this project has been planned for a 50% breakout of the two types of seedlings and final payment will be based on the actual percentage of each type of stock provided. See Section 6 of this project for more information.

**End Result:** Increase species diversity in even-aged monoculture plantations by planting tree species that typically make up late successional forest habitat. Plant all of the Government-provided seedlings, distributed throughout the designated subdivisions, to initiate development of an understory canopy layer.

**Measure of Accomplishment:** Number of seedlings satisfactorily planted and protected.

**Quantity:** Plant and protect 4,487 containerized (plug) seedlings on approximately 35 acres - 150 seedling per acre in the gaps and 130 seedlings per acre in the underplanting areas. Payment will be based on the number of acres satisfactorily planted.

**Timeline:** All planting shall be accomplished between February 15 and April 30. All planting and tubing will be performed after snag and down wood creation projects in the Subdivision have been completed, to avoid crushing the newly planted seedlings.

**Table 1**

Subdivision Number	Acres to Plant	# of Cedar Seedlings to Plant	# of Hemlock Seedlings to Plant	# of Douglas-fir Seedlings to Plant
58B Gap	1	50	25	75
58B Underplant	14	420	980	420
58E Gap	1	50	25	75
58E Underplant	26	780	1,820	780
60U Underplant	5	150	350	150
60W Gap - actually 1/2 acre	1	25	25	25
60W Gap	1 (1/2)	25	25	25
60W Underplant	6	180	420	180
60Z Gap	1	50	25	75
60Z Underplant	14	420	980	420

The Contractor shall plant the one-acre gaps designated in the thinning project and the half-acre gap in Subdivision 60W. No seedling are to be planted in the designated half-acre gaps, except in Subdivision 60W. The Contractor shall plant the seedlings identified in Table 1 scattered through the subdivision. Plant at an average spacing of 17' x 17' in the gaps and 18' x 18' in the underplanting areas.

**TECHNICAL SPECIFICATIONS FOR PROJECT #6**

**SECTION 1 - GENERAL**

DESCRIPTION OF PROJECT

The contractor shall provide any and all labor, training, and equipment necessary to perform the mobilization, site preparation, planting, seedling protection, documentation, and clean-up as described in the following sections. Forest Service shall provide the seedlings, seedling protection devices, and self-inspection materials as specified in Section 3.

ACCESIBILITY

Work areas may be reached by Forest roads that are accessible using a stand two-wheel drive pick-up during normal operating seasons, unless otherwise indicated on Contract Areas maps. Vehicles shall not operate off system roads without prior written approval of the Contract Administrator (CA). Inaccessibility due to snow, fallen trees, slides or washouts on roads may or may not be corrected at the option of the Government. If road access is blocked, the Government may: (1) provide an alternate access route, or (2) substitute similar stewardship project. Roads shown on subdivision maps indicate access to subdivisions and are not to suggest the roads are open within the subdivisions or for any further travel. No vehicle shall by-pass any officially blocked road (barrier, locked gates, posted signs, rocks/log/dirt, etc.) without approval of the CA.

**SECTION 2 - DEFINITIONS**

Plantable Spot - An area from which vegetation, ash, duff, and debris has been or can be removed, and a seedling can be planted as specified elsewhere herein. The plantable spot must be at least 10 feet away from any Douglas-fir, western hemlock, western red cedar, or Sitka spruce that is healthy, of good form and vigor, and over one foot tall.

Unplantable Spot - An area within the specified spacing limits, in which it is not possible to plant a seedling in accordance with all planting specifications set forth in this contract.

Satisfactorily Planted Seedling - A seedling planted in full accordance with all planting specifications set forth in this contract.

Unsatisfactorily Planted Seedling - A planted seedling which fails to meet one or more of the specifications for a satisfactorily planted seedling.

Wasted Seedlings - Seedlings which are lost, damaged, destroyed, or handled contrary to the specifications for care of seedlings. Planted seedlings in excess of the maximum number of seedlings creditable as specified elsewhere herein are also considered to be wasted seedlings.

Cotyledon Scar - Lowest point on stem from which branches will grow. Marked by a distinct ring in the back on most species of seedlings.

Root Length - Root length will be measured from the cotyledon scar to the longest root tip.

Replanting - Any planting work done in a stewardship project, either voluntarily by the Contractor, or as directed by designated CA, after the Contractor has given planting inspection cards to the Government.

Mineral Soil - Where soil content is less than 70 percent coarse rock fragments greater than 2 mm in size.

Microsite Planting - The planting of seedlings in plantable spots most favorable to seedling survival and growth. Favorable microsite features such as logs and stumps protect seedlings from sun, wind, animals, and other damaging agents.

Prepared Sites - An area from which logging slash and competing vegetation has been removed to allow a seedling to be planted in full accordance with all specifications set forth in this contract.

Scalp - The removal of all vegetation, exposing at least 70% mineral soil.

Tree Height - Tree height will be measured from the ground to the tip of the seedling.

Suitable Tree - A tree of good form and vigor which shows no physical damage and which conforms to the size, characteristics, and species specified on the Planting Data Sheets.

**SECTION 3 - GOVERNMENT FURNISHED PROPERTY AND SERVICES**

GOVERNMENT FURNISHED PROPERTY AND SERVICES	QUANTITY	WHERE, WHEN AND HOW TO BE FURNISHED TO CONTRACTOR
<u>Plug</u> Western Red Cedar, Western Hemlock, & Douglas-fir Seedlings	4,487 seedlings	Hebo Ranger District's Sidecamp warehouse as arranged with Contractor
Vexar Tubes, Bamboo, Wire Ties, and Flagging	4,487 24" to 30" vexar tubes <u>8,974</u> bamboo stakes Flagging & twist ties, as needed	Hebo Ranger District's Sidecamp warehouse as arranged with Contractor
Planting Inspection Sheet book, R6-2470-113	One book	Furnished at Pre-work meeting
Contractor's South Lake Thin STWD Quality Assurance Plan	One set	Furnished at Pre-work meeting
Contract Area Maps	One set	Furnished at Pre-work meeting
Government Quality Assurance Plan	One set	Furnished at Pre-work meeting

**CONTRACTOR PROVIDED PROPERTY AND SERVICES**

Except for the above designated Government furnished property, the Contractor shall furnish all services, labor, equipment, supervision, training, transportation, supplies, permits, licenses, and incidentals necessary to meet contract specifications. Contractor shall provide the following:

1. PLANTING BAGS:

Planting Bags shall be light color, shall not retain heat, shall have a minimum depth of 15 inches and shall be free of defects or contaminants.

2. PLANTING TOOLS:

Hoedads or shovels shall be capable of making a planting hole at least 10 inches deep and wide enough to fully accommodate the roots of the seedlings to be planted.

3. SEEDLING DIPPING BUCKET:

The bucket for dipping seedling roots shall be at least 15 inches in diameter and 15 inches deep. The Contractor shall also provide clean water for dipping the seedling roots in.

**SECTION 4. PERFORMANCE WORK STATEMENT TASKS AND CRITICAL SUBTASKS**

The Contractor shall be responsible for all tasks concerning the handling, planting, and protection of the containerized (plug) seedling.

**Planting**

- 1) Locate a suitable planting spot (see SECTION 2 - Definitions).
- 2) Prepare the planting spot by creating 24" X 24" scalps. The Contractor shall remove all vegetation, exposing mineral soil.
- 3) Open a planting hole to fully accommodate seedling roots without bending or bunching.
- 4) Plant seedlings so that roots and stem are vertical (see Exhibit 1) and seedling is planted at the correct depth.
- 5) Fill soil in around the roots so no air pockets remain.

**Seedling Protection**

- 1) The Contractor shall be required to haul all tubes and bamboo to the planting sites.
- 2) Install vexar tubes, supported by two 4-foot bamboo, on all planted containerized seedlings.

A. CARE OF SEEDLINGS

Contractor shall adhere to the following specifications for care and protection of seedlings:

1. Seedlings shall be protected at all times from drying, heating, smothering, freezing, crushing, drowning, abrasion, rapid temperature fluctuations, or contact with injurious substances.
2. Seedlings stored in boxes, bags, or bundles shall not be exposed to direct sunlight. Punctured or torn bags or boxes shall be promptly resealed. Containers of seedlings shall be opened only in full shade. Bundles, bags, or boxes shall be separated to provide free air movement.
3. Seedlings shall not be removed from shipping containers until needed for preparation for planting.
4. Seedlings shall be planted without further root or top pruning or culling. If pruning or culling is necessary, or if mold, dry roots, evidence of injury, or drying is seen, the condition shall immediately be reported to the CA.
5. Frozen seedlings shall not be handled until completely thawed. They shall be thawed in full shade.
6. Seedlings removed from cold storage facilities shall not be allowed to stand or lay in water or snow or be covered with snow.
7. Seedlings in planting bags shall have only their tops exposed. Burlap wrapped seedlings shall have the wrappings loosened slightly.
8. Seedlings shall not be removed from their planting bag until immediately before planting in a prepared planting hole.
9. Seedlings shall be gently removed, one at a time, to prevent stripping or other injury, and quickly and gently inserted into the planting hole.
10. Seedlings carried in planting bags shall not exceed the amount that can be carried or removed without injury, or which can be planted before critical heading or drying occur. Seedlings placed in planting bags shall be planted out and not returned to

storage. Seedlings in planting bags shall be planted out before extended break, such as lunch.

11. The Contractor shall not touch the roots of the seedlings.
12. The Contractor shall not dig and replant seedlings other than those located on inspection plots, or spot checks of below ground planting quality.
13. Unplanted seedlings shall be returned to the Government at the end of each working day.

B. PLANTING WEATHER GUIDELINES

The Contractor shall plant only under the following weather conditions (see attached Weather Guidelines for Lifting and Planting, Appendix C):

1. Air Temperature between 30 - 65 degrees Fahrenheit.
2. Wind Velocity less than 20 miles per hour.
3. Relative Humidity greater than or equal to 20%.
4. Wet bulb depression (Dry bulb reading minus wet bulb) less than 8 degrees Fahrenheit.
5. Soil temperature greater than or equal to 40 degrees Fahrenheit.

C. SPACING AND SPOT SELECTION

1. Seedlings Spacing Requirements:

- c. The specified spacing for this contract shall be 17' X 17' in Gaps and 18' X 18' in Underplant areas. The specified average spacing for individual seedlings may be varied up to 25 percent in any direction to find a suitable planting spot.
- d. Do not plant seedlings within 10 feet of any Douglas-fir, western hemlock, western red cedar, or Sitka spruce that is healthy, of good form and vigor, and over one foot tall.

2. Planting Spot Selection:

- d. Whenever possible, within the 25 percent variance in average spacing, planting spots shall be prepared where stumps, logs, dead brush, and terrain features provide partial protection from the sun, wind, animals, loose debris, and other agents detrimental to seedlings.
- e. Brush patches containing planting spots shall be planted even though this may require spreading stems aside or working around the stems.
- f. Where an unplantable spot is encountered, the planter shall plant in the next closest plantable spot available, meeting planting spacing requirements.

D. PLANTING SPOT PREPARATION

Prior to digging the planting hole, the Contractor shall clear or "scalp" the planting spot of all limbs, snow, bark, rotten wood, and other loose debris and shall scalp ash, duff, sod, crowns of living plants, and roots to moist mineral soil. The scalp shall be a minimum of 24" X 24". If logs, stumps, or large rocks prohibit the specific diameter of scalp, a smaller scalp is acceptable, as long as no live vegetation exists within the 24" X 24" scalp area.

E. PREPARING THE PLANTING HOLE

1. Planting holes shall be located near the center of the prepared planting spot and shall be between perpendicular to the ground surface and true vertical.
2. An open planting hole, broken out as shown in Exhibit 1, is required. It must be deep and wide enough to fully accommodate the roots of the seedlings to be planted.

3. The planting hole shall be broken out on four sides, with the back of the planting hole being broken out after the seedling is suspended in the center of the planting hole.

F. SEEDLING PLACEMENT

Seedlings shall be suspended near the center of the planting hole with roots in a near natural arrangement at a depth such that, after filling, firming, and leveling, the soil comes to a point at or above the cotyledon scar of the seedling. No portion of the roots shall be exposed. Roots shall not be doubled up, twisted, spiraled, or bunched. The root system shall be aligned with the axis of the planting hole with all roots extending downward. See Exhibit 1.

- It is permissible to cover the lowest whorl of branches with uncompacted soil

G. FILLING AND FIRING

Moist mineral soil shall be filled in and firmed around seedling roots. Dry soil, ash, organic matter, rock, and other foreign material shall be kept out of planting holes. Soil shall be filled in and firmed progressively so no loose soil or air pockets remain and the seedling is as firmly planted as soil conditions will allow. The Contractor shall not wedge the sides of the planting hole. Firming the soil around the roots shall be accomplished in a manner that assures the seedling and its root system is not damaged. After the soil is firmed around the roots, it shall be smoothed out to the level of the surrounding mineral soil surface. After planting, the seedling stem shall be erect and free to grow. The seedling shall not be weighted down with mud or debris.

H. MIXTURE OF PLANTING STOCK

A mixture of planting stock shall be used in each subdivision. The Contractor shall plant these mixtures in locations as required by the designated CA - generally, western red cedar and Douglas-fir should be planted in the more open areas and western hemlock planted in the more shaded areas.

I. VEXAR TUBE INSTALLATION

All planted seedlings shall be protected with a vexar tube.

1. Tubes shall be supported by two 4-foot bamboo, attached with two wire twist ties to each bamboo (see exhibit 2). Wire twist ties should be approximately 6 inches from the top of the tube and 6 inches from the bottom of the tube. However, vary the wire twist tie's location 5 inches either way in order to tie it just below one of the joints/nodes on the bamboo, whenever possible.
2. The bamboo's small end shall be in the ground at least 10 inches to provide stability.
3. Bamboo that are broken or split during installation shall be replaced.
4. The top of the seedling will be vertical and not bunched or curled in the tube. Care shall be taken when installing the tube to prevent damage to the seedling. Skinned bark, or a broken or restricted leader results in an unsatisfactory seedling.
5. The bottom of the tube will be flush with the ground, unless the seedling is taller than the tube. If the seedling is taller than the tube, raise the tube on the bamboo so the top of the seedling is approximately 6 inches below the top of the tube.
6. The completed tube installation shall be vertical. The maximum lean allowed from vertical is two inches. Measure this from the top of the tube to the bottom of the tube with a plumb bob and tape measure.

7. Government provided flagging shall be tied to the top of one of the bamboo to aid in locating the seedling during future tube maintenance and brush release contracts.

**SECTION 5. CONTRACT QUALITY ASSURANCE AND PAYMENT**

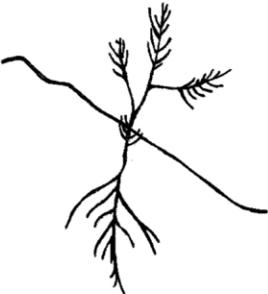
CONTRACTOR INSPECTION PROCEDURES

The Contractor shall provide and maintain an inspection system acceptable to the Government covering the projects under this contract. Complete records of all inspection work performed by the Contractor shall be maintained and made available to the Government during contract performance and for as long afterwards as the contract requires.

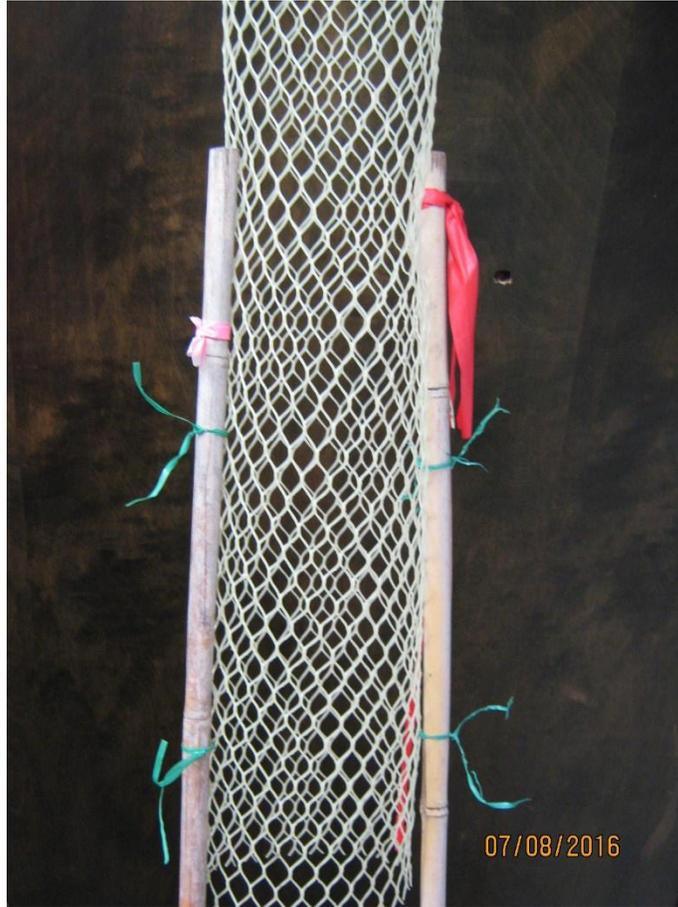
The Contractor shall inspect the work of their crews in any fashion chosen, so long as the inspection procedure is thorough enough to ensure compliance with all of the planting specifications described herein.

Exhibit 1

**Satisfactory and Unsatisfactory Plantings**

<p><b>SATISFACTORY</b></p> 	<p><b>SATISFACTORY</b></p> 	<p><b>Unsatisfactory</b></p>  <p>Too deep. Needles buried.</p>
<p><b>Unsatisfactory</b></p>  <p>Improper orientation. Not planted into the slope or near vertical.</p>	<p><b>Unsatisfactory</b></p>  <p>"L" roots. Shallow hole.</p>	<p><b>Unsatisfactory</b></p>  <p>"J" roots. Shallow hole. Roots often exposed.</p>
<p><b>Unsatisfactory</b></p>  <p>Jammed roots. Hole too narrow and shallow.</p>	<p><b>Unsatisfactory</b></p>  <p>Hole too shallow. Roots exposed.</p>	<p><b>Unsatisfactory</b></p>  <p>Air pocket because of improper tamping.</p>
<p><b>Unsatisfactory</b></p>  <p>Planted in rotten wood. Roots not in mineral soil.</p>	<p><b>Unsatisfactory</b></p>  <p>"U"- or "J"-shaped tap root.</p>	<p><b>Unsatisfactory</b></p>  <p>Compacted roots. Hole too narrow.</p>

**Exhibit 2**



**Project: #7 - SMALL TREE-TOPPING**  
**Project: #8 - DOWN WOOD CREATION**

**End Result:** Improve stand structure and species diversity in even-aged monoculture plantations of Douglas-fir. The end result will create snags, promote cavity development and down logs from trees within units to benefit a variety of wildlife species.

Measure of accomplishment: Number of trees topped and trees felled.

Quantity: 198 small trees topped for Project #7, 207 trees felled for down wood creation for Project #8

- **For operating restrictions, use felling restrictions described in K-G.3.1.5# PROJECT OPERATION SCHEDULE**

Subdivision Numbers	Subdivision acres	Project #7 Number of trees to top	Project #8 Number of trees to fall
58B	16	37	37
58C	10	25	25
58E	28	65	65
58G	2	5	5
58H	4	0	9
60U	5	13	13
60W	8	19	19
60Z	15	34	34
TOTAL	88	198	207

**TECHNICAL SPECIFICATIONS FOR PROJECT # 7**

**SECTION 1 - GENERAL**

**DESCRIPTION OF THE PROJECT**

The contractor shall provide all labor, training, and equipment necessary to perform the mobilization, tree topping, tree felling, documentation as described in the following sections. Forest Service shall provide the Wildlife Tree Signs and Aluminum number tags as specified in Section 2.

**ACCESSIBILITY**

Work areas may be reached by forest roads that are accessible using a standard two-wheel drive pick-up truck during the normal operating seasons, unless otherwise indicated on Contract Area maps. Vehicles shall not operate off system roads without prior written approval of the Contract Administrator or CA. Inaccessibility due to snow, fallen trees, slides, washouts on roads may or may not be corrected at the option of the Government. If road access is blocked, the Government may: 1) provide an alternate access route, or 2) substitute similar stewardship projects. Roads shown on subdivision maps indicate access to

subdivisions and are not to suggest the roads are open within subdivisions or for any further travel. No vehicle shall by-pass any officially blocked road (barrier, locked gates, posted signs, rocks/dirt/logs, etc.) without approval of the CA.

## SECTION 2. PERFORMANCE WORK STATEMENT TASKS AND CRITICAL SUBTASKS

- 1) Trees selected for treatment will consist only of plantation trees that are not marked with orange or pink bands, and will be distributed following the criteria described below in the identified subdivisions.
- 2) Chainsaws will be used for all tree-topping and down wood creation. Other methods of tree topping such as blasting or girdling are not permitted.
- 3) All trees selected will be live Douglas-fir or hemlock trees. Hemlock will not be cut where this species is less than 50% of the specific treatment area. Trees selected will be sound: shall not have forked or broken tops, crooked boles, large scars, or other unique structural characteristics.
- 4) **Distribution shall be clumped or grouped. Groups and clumps shall be at least 100' from a stream or open road and at least 75' uphill and 50' downhill from any other road.**
  - a) Mingle topped trees and down wood (Tree Falling) in large clumps, but combined opening size should not exceed  $\frac{1}{2}$  acre; for example 120' wide and 200' long.
  - b) Clump is defined as an area containing 10 or more treated trees that are within 50' of another treated tree of the same clump. Clumped trees should be a combination of felled or topped trees. Total affected area when mingling treatments shall not exceed  $\frac{1}{2}$  acre; Minimum size of a clump should be 10 treated trees; such as 5 felled and 5 topped. Distance between clumps with more than 10 treated trees shall be 400-800 feet.
  - c) Group is defined as 2 to 9 treated trees that are within 50' of another treated tree of the same group. Distance between groups shall be 200-400 feet.
  - d) Location of treatment areas should be along secondary ridges and gentler slopes where possible. Locate clumps first around any big leaf maple trees - if present, second around large alder (> 8" dbh) - if present, and third around one or two "dominant" live conifer trees.
- 5) Within **300 feet** of trees marked with three (3) orange tracer paint slashes at breast height around the bole with an orange tracer paint mark below stump height, only create **groups** of 2-9 topped trees and down wood (alone or in combination). In these areas **no clumps** (10 or more treated trees) shall be created.

**Project #7: Small tree topping:** general intent is to create snags and live topped trees in equal proportion, but a ten percent tolerance is acceptable; e.g., 40% snags and 60% live topped or vice versa.

- 6) **Tree topping: Snag trees.** Intent is to create a dead tree/snag.
  - a) **Snag trees will have two to four live limbs over five feet in length and the snag will be at least 35' tall.**
  - b) Remove epicormic branches, limbs shorter than 5 feet and any other live limbs below treatment except the 2-4 required.
  - c) The sawed surface will have 4 grooves, each at least 4 inches deep. Grooves will be created in a tic-tac-toe grid formation.

- 7) **Tree topping: Live trees.** The intent is to promote development of a stove-pipe cavity in a live tree. Topping to the specified standards will provide good conditions for fungi that cause heart-rot, and retaining adequate amount of live limbs below topping site should keep the tree alive and allow upper most limbs to grow vertically and eventually provide cover over the developing cavity.
  - a) Live trees will be in the largest size class available.
  - b) Live trees shall retain at least 15 live limbs that are at least five feet in length. Retain all epicormic branches and shorter live limbs.
  - c) Live tree diameter at topping height shall be greater than 6 inches.
  - d) Live trees will have a minimum of 1-foot of bole area above the last whorl of green limbs. This will facilitate rot development above last live whorl of branches. The sawed surface will have 4 grooves, each at least 4 inches deep. Grooves will be created in a tic-tac-toe grid formation.
  - e) Trees meeting these specifications (a, b, c and d) for Live trees will generally be dominant trees with full crowns (30-50% crown ratio).

**Project #8: Down Wood Creation:****8) Down wood: Tree felling**

- a) At least 70% of felled trees shall be felled side-hill (within fifty degrees of horizontal). Over-lap felled trees where possible. **Felled trees should be smaller in diameter than the topped trees.**
- b) Minimum diameter at breast height (dbh) of felled trees will be 10". **Felled trees should be smaller in diameter than the topped trees.**

**9) Marking Clumps and groups: Tree topping and Down Wood**

- a) Contractor will mark an untreated tree centrally located in each group or clump with the unique group or clump identifier which corresponds to the datasheet (example: C1, or G1). Contractor will mark the tree on the uphill side with orange paint, or on a durable, waterproof surface that is securely nailed, stapled etc. to the untreated tree that is easily read with standard binoculars from a distance of 150 feet

**10) Marking treated trees - Tree topping**

- a) **"Wildlife Tree" signs and numbered aluminum metal tags will be placed at dbh.** All trees within a unit must have a unique number, with no duplicates in a unit. The numbered tag will be attached with one of the nails used for the "wildlife tree" sign to minimize nail holes. Nails shall not be completely nailed into the tree to allow for continued diameter growth on all live trees.

**11) Marking treated trees - Down Wood: Tree felling**

- a) Paint individual felled trees with an identification number that matches the number on the datasheet and indicate the species. Paint the identifier on the tree after felling, and in a place where it is visible such as the cut face of felled trees, or on a visible place on the bole. For example, if you fell 4 trees in a group (G1), around a leave tree, the felled trees should be painted with numbers 1 through 4 on the cut end of the bole after felling, and the leave tree will have the group identifier (G1) painted on it, and flagged with a color to be determined by the CA and identified on the datasheet. Collect and record on the datasheet a gps coordinate for each Group of felled trees

- 12) **The Contractor will furnish** paint, flagging, signing material and aluminum nails. **Government will furnish** "Wildlife Tree" signs and numbered tags.

- 13) **Contractor will map** location of each clump/group with GPS. GPS location

of individual trees is not required. Coordinates are NAD 83, UTM's. Contractor must provide an electronic and written file of coordinates to the Contract Administrator (CA). Electronic transfer can be accomplished by submitting a CD or by sending an email with the attached file(s). Acceptable electronic methods are listed below and shall include coordinates and corresponding name, number, and clump number for each clump. These methods are:

- a) **Preferred method:** Provide government with a GPX or GDB file with locations of clumps.
  - b) Contractor submit a CD with spreadsheet containing X column and Y column coordinates (which need to be in NAD 83 UTM).
- 14) The Contractor is REQUIRED to submit a weekly plan of work at least two days before implementing each weekly plan. This plan shall be submitted to the project CA.
  - 15) Contractor is required to notify the CA of plan of operations 10 days in advance of start of operations of projects #7 and #8.
  - 16) The Contractor is REQUIRED to inform the project CA within 7 days of when a subdivision has been accomplished and provide a completed tree register form with signature and a map showing accurate location of clumps or groups of treated trees and their corresponding tree-numbers. See attached example of completed map and tree register form.



### Example Sale - Unit 6

