

CONTRACT GRADING - BOOM OR BUST

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ABSTRACT

Contract grading of over a million seedlings was accomplished with few complications. Production rates and cull percentages were very similar to the work done by the Nursery crews. Contract grading was about \$1.46/M higher than force account grading.

Lucky Peak Nursery has contracted seedling lifting for many years. In November of 1981, over one million seedlings were contract graded.

As in many organizations, personnel limitations are becoming a stark reality. For the last two years, Lucky Peak Nursery has had a ceiling of 25 work-years with which to operate the nursery. It takes us approximately 6.09 work-years to grade and pack 0 million seedlings. Since we are using about one fourth of our ceiling allotment for grading, we felt a need to see if we could contract grade to free some work-years for other nursery projects. Indications are that our work-year ceilings will be going down in the future. Contract labor does not go against our work-year ceiling.

Contract grading had been discussed off and on at Lucky Peak for at least the last four years. Each time it reared its head, we decided there was no way it could be done. We felt that we could not handle the various grading specifications needed for our operation. During the summer of 1981, while discussing contracting, Don Wermlinger (Assistant Nurseryman) and I decided to "give it a go." This first decision was made with a "can do" attitude and this was probably the most important aspect of the whole contract. The feeling that "we can do it" had the support and conviction of most of the staff at Lucky Peak.

The second decision to be made was "what do we want to contract?" he decided to contract just the grading. All set-up, clean-up, packing, etc., would be done by nursery employees. It was felt that under this set-up, we would have the flexibility to cope with unknown problems that can occur in the packing operation.

Next we chose to start the contract grading after the contract pulling was completed. We wanted to avoid the possibility of running out of stock for the steed due to lifting problems. Fall pulling in November is unpredictable at best. Often the ground is frozen in the mornings, sometimes all day. We do not pull for

over-winter storage until readings from our oscilloscope and cumulative soil temperatures indicate that the stock is dormant. This is usually mid to late November. The time from dormancy until the ground freezes for good, is usually 4 to 10 days.

After the "what" and "when" were decided, we worked on the "bows." The "bows" are the specifications of the contract shown in the appendix. These specifications were derived from several sessions with nursery personnel involved in the packing operation. We separated the grading operation into logical steps and then established specifications to give us our desired product. Infractions of these specifications were identified. Simply stated, we tried to put down what we would and would not accept.

The last decision was economic. Some of the considerations that caused wrinkled foreheads were 1) how we were going to pay for only the good seedlings coming down the belt and not the poor ones, and 2) what about excessive amounts of good seedlings going on the cull pile. Concern #1 was handled by taking a sample of not less than one percent of all graded trees. The percentage of sampled trees meeting specifications was multiplied times the gross daily production volume of the shed. This "net" volume was the actual pay amount. Concern #2 was handled by taking no less than one percent sample of the cull seedlings on the floor. If more than 5 percent satisfactory seedlings were found in the culls, a 10 cent/tree fine was assessed on amounts over the allowable 5%.

After all our preliminary work was done, we sat down with our contracting specialist to "shoot holes" in our contract. This proved beneficial in that we were able to clarify most items. We looked at this contract as a learning process, knowing that we'd have problems come up that weren't anticipated. When the contract was advertised, we had 30 days of wondering "what had we done," "what had we forgot," and "how cost effective would it be."

On September 3, 1981, the bids were opened. We had two bidders. The bid rates were \$9.60/M and \$29.00/M. Both bidders had worked on our pulling contract in the past, so they had some idea of what was involved in the shed operation. A. & L. Reforestation was awarded the contract.

To administer the grading contract, we had one contracting officer's representative and four inspectors - one for each grading table. These people were used solely for the contract. All other activities in the shed were handled by a shed foreman.

Now, what happened!

The contractor had one belt of experienced tree graders (primarily females) and 3 belts of non-experienced people (35 males). The tables in the appendix indicate how the operation went.

#### OBSERVATIONS

1. Contract production volumes can be considered equal to force account.
2. Contractor paid an hourly rate of \$6.50. Force account \$6.22/hour.
3. Belt cull % extremely close, overall.
4. Contract inspection more intense than inspection of force account crew. Inspectors were the same for both operations.
5. Force account work was more efficient/M.
6. Contract did not require or provide eye protection, gloves or aprons.
7. Contracting "saved" .74 work years.
8. Contractor's "non-working" foreman (one/belt) extremely influential to belts output and cull rate.
9. Nursery inspectors need uniformity in interpretations of acceptable and non-acceptable trees. We did not have too much "but the inspector said this tree was OK."
10. Contract production would probably go up if pay was by piece work, or with a bonus for production levels beyond a set amount.
11. Contractor could fire non-productive people on the spot.

#### CONCLUSIONS

Contract grading is a viable option for the nursery manager. A positive attitude of nursery personnel is important. Contracting can give you comparable quantity and quality, for a price. As a contractor gains experience in grading, and competition increases, the cost of contracting may be competitive with a force account operation.

APPENDIX 1

TABLE 1					
DATE	11/19	11/20	11/23	11/24	TOT. OR AVE.
Contract min. production	350M	288M	336M	350M	1250M
Gross production	276.23M	305.54M	359.63M	334.04M	1275.44M
% Bad Trees on Belt	8.03%	9.31%	10.86%	12.98%	10.53%
% Good Trees on Floor	9.74%	7.43%	5.76%	7.61%	7.39%
# Trees Sampled From Belt	2440	3180	4410	3490	13,520=1.1% Sample
# Trees Not Meeting Specs.	196	296	479	453	1,424
# Trees Sampled From Floor	3223	4200	5120	2720	15,263
# Good Trees From Floor Sample	314	312	295	207	1,128

TABLE 2 BELT CULL RATE					
DATE	11/19	11/20	11/23	11/24	Average
Belt 1, Exper. 13 Grdrs.	3.97%	7.7%	7.5%	9.0%	7.04%
Belt 2 11 Grdrs.	11.27%	11.51%	13.81%	14.02%	12.65%
Belt 3 11 Grdrs.	12.68%	9.73%	12.21%	23.81%	14.61%
Belt 4 13 Grdrs.	5.43%	8.07%	11.54%	10.62%	8.91%

TABLE 3 FLOOR SAMPLES - % GOOD ON FLOOR					
DATE	11/19	11/20	11/23	11/24	Average
Belt 1	10.0%	7.5%	2.34%	6.04%	6.47%
Belt 2	13.89%	8.78%	10.74%	8.85%	10.57%
Belt 3	6.69%	7.31%	5.26%	5.38%	6.21%
Belt 4	7.8	5.83%	5.1%	7.82%	6.66%

TABLE 4 PRODUCTION							
DATE	GROSS				GROSS TOTAL VOLUME	AVE CULL%	NET TOT. VOLUME
	11/19	11/20	11/23	11/24			
Belt 1	83.9M	86.179M	103.12M	84.92M	357.119M	7.04%	331.97M
Belt 2	61.9M	79.35M	102.08M	129.988M	373.318M	12.65%	326.09M
Belt 3	58.34M	63.92M	63.75M	40.97M	226.98M	14.61%	193.81M
Belt 4	72.09M	76.091M	91.68M	78.16M	318.021M	8.91%	298.68M

TABLE 5 PAYMENT	
Gross Volume Packed	1275.438M
Cull Rate	10.53% = 134.303M
Net Pay Volume	1,141.135M
Gross Pay	\$10,954.90
Floor Fee	\$36.50
Penalties	7.00
Total Pay To Contractor	\$10,911.40

TABLE 6 FALL 1981 CONTRACT GRADING VRS SPRING 1982 FS GRADING		
	CONTRACT	FORCE ACCOUNT
Ave. Cull on Belt	10.53%	10.8%
Ave. Prod/Person/Day	6.937	6.954
Cost/M Trees	\$8.55	\$7.09*
Ave. Good Trees on Fl.	7.39%	4.01%

\* Includes a 20 Cent/M Admin. Cost

APPENDIX 2

PART II - SCHEDULE OF ITEMS

Grading and counting will start at the completion of the fall portion of the contract. Minimum daily production will be:

1st day of grading - 250M  
2nd day of Grading - 288M  
3rd day of grading - 336M  
4th day of grading - 350M

All work will be performed during the hours of 8:00 a.m. and 4:30 p.m. No weekend work is anticipated. During the fall and spring portions of the lifting work, there may be instances of middle to late morning starting times due to frozen soil conditions. During the spring portion of the lifting, there may be instances of early afternoon shutdowns due to hot dry windy weather.

SPECIFICATIONS

110 Scope of contract

The services covered in this contract include the furnishing of all labor, supervision, transportation and incidentals to perform all work necessary to lift seedlings from seedbeds, box tree seedlings, and grade and count (fall only) seedlings in a packing shed. When deemed necessary by the Contracting Officer or his representative, further loosen soil by hand spading to free seedlings for boxing, in compliance with all terms, specifications, conditions and provisions of this contract.

130 Government-furnished Property and Services

e. 4 grading tables to grade and count on. There are 48 total grading locations.

150 Restrooms

Although the Government will provide the restroom facilities, the Contractor will be required to provide restroom supplies and to clean restroom on a daily basis.

240 Separating When Grading

Each seedling will be separated from a group of seedlings in such a manner that all branches and roots of each small seedling are free from any other seedling. The root systems will be down.

250 Grading

Each seedling will be graded to ensure that it meets acceptable standards. Any seedling not meeting standards will be discarded

on the floor. The crew size for grading will be limited to no more than 52 people.

251 Damage

Any seedling showing damage (ripped roots and/or mechanical damage to the stem, branches, or buds in excess of 25 percent of the diameter of the seedling at the place of damage) will be culled.

252 Shoot/Root

The shoot/root ratio for acceptable seedlings will be no greater than 2:1. The volumetric displacement of the seedling top will not be more than 2 times greater than the root system. Groundline will divide the shoot and root systems. Any seedling not meeting this standard will be culled.

253 Root Length

Root measurement will be from groundline to the end of the root system of the suspended seedling. Roots will not be pulled taut to check for root length. See "Grading Standards" below for minimum root length standards.

254 Root Composition

Minimum root composition will be at least 4 main side roots. No "carrot" or single tap root systems will be acceptable for conifer seedlings.

255 Shoot Height

Height will be measured from groundline to the tip of the terminal bud. See "Grading Standards" below for minimum shoot height.

250 Color

Conifer seedlings will be green in color. Undue yellowish seedlings will not be acceptable. A specific color standard can be better determined at grading.

257 Diameter

The diameter at groundline will be at least 2 millimeters.

258 Form

General form for satisfactory seedlings will be free of forked - top seedlings, kinked root systems, and groundline swelling. Due to some genetic characteristics and traits, acceptable form characteristics for one seedling source may be unacceptable for another.

259 Grading Standards

	Minimum Root Length*	Minimum Shoot Height*	Maximum Caliper*
Douglas fir	7 inches	2 1/2 inches	2mm
Englemann spruce	7 inches	2 inches	2mm
White fir	7 inches	2 inches	2mm
Southwestern white pine	7 inches	3 inches	2mm

\*These sizes may change depending on the extent of growth during the growing season. Actual specifications will be determined for each source at the time of grading. The above standards are estimates, not guaranteed standards.

260 Counting

All acceptable seedlings will be counted in groups of ten. When a group of ten acceptable seedlings has been counted, the group will be placed on the belt in such a manner that all the root systems face the same direction and the groundline of seedlings in the group coincide.

270 Final Handling

271 Tubs

Contractor will be responsible for taking tubs of seedlings from the upper roller conveyor next to the grading belt. Empty tubs will be placed on the lower roller conveyor. All tubs will be empty before placing on the lower roller conveyor.

272 Covering Seedlings

The wet burlap covering the seedlings will cover the seedlings during any work break, such as lunch, coffee break, trips to the restrooms, etc.

273 Seedling Source Change

No grading will be started until authorized by the inspector. This will eliminate the possibility of mixing sources.

274 Cull Seedlings

No more than one half of one percent satisfactory seedlings may be discarded in the grading; operation.



DIVISION 300 - INSPECTION AND ACCEPTANCE

310 Inspection Procedure

Pursuant to Clause 13, Part A, Form 6300-38, General Provisions, the Government will determine and record the Contractor's daily accomplishment by lineal foot during the period of the lifting portion of the contract. For the grading portion of the contract, the Government will determine and record the Contractor's daily accomplishment by each 1,000 group of seedlings that are graded and counted.

320 Quality - Inspection Requirements

Lifting quality inspection will be in compliance with the technical provision of Division 200, Subdivision 220.

Grading and counting quality inspection will be in compliance with the technical specifications of Division 200, subdivision 250. No less than 1 percent of the cull seedlings will be inspected for satisfactory seedlings. Inspection will be made in groups of 40 seedlings. If more than 5 percent satisfactory seedlings are found in the sampled culls, a 10 cents per seedling fine will be assessed.

Should any of the following infractions occur, deductions from payments will be made for property damage at an assessed penal sum of \$3.50 per incident:

Grading and Counting

- a. Leaving tree tubs uncovered.
- b. Leaving seedlings in boxes.
- c. Abuse of seedlings to remove excess soil.
- d. Groundlines do not coincide.
- e. Seedlings not separated.

The inspector will promptly notify the Contractor or his representative at the time the infraction is observed. The infraction will be promptly recorded in the COR's daily diary.

DIVISION 400 - MEASUREMENT AND PAYMENT

Grading and Counting - A sample of not less than 1 percent will be taken of all seedlings coming over the belt. The percentage of sampled trees not meeting the specifications is then multiplied times the gross daily production volume. This amount plus any fines assessed for the above-listed infractions will then be deducted from the gross daily production volume to arrive at the total amount to be paid for at the applicable bid price.