Forest Road Planning

Good Roads & Forest Health Workshop



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Planning 101

What do we have?

What do we need?





What do we need them for anyway?



Grandfir FPA





Map out important features on the ground first...



...then lay out the roads, trails, etc.

Asset or Liability?

Asset values

- Initial investment & replacement cost
- Emergency access
- Management access

Liabilities

- Delivery
- Garbage dumping
- Man-caused fire
- Maintenance costs
 - RMAP upgrade costs

Constructing Forest Roads

Old method



Modern method





What does a road cost?

- Permits
- Right-of-Way
- Grubbing/Clearing
- Drilling/Shooting
- Pioneering
- Culvert installations
- Rocking



~\$65,000/mile

RMAP

Road Storage vs Upgrade

Example: Thirty years before harvest entry with 5 crossings per mile. Four out of five crossings need upgrade.

	Abandon one mile	Maintain one mile
B/C Ratio	3.16	4.08
Cash Flows (number)	5	53
Composite Rate of Rerturn (%)	10.15	11.08
Internal Rate of Return (%)	1.09	N/A
Investment Length (yrs)	30	30
Net Annual Equivalent (\$)	\$3,229.72	\$3,563.64
Present Net Value (\$)	\$44,456.55	\$49,052.87
PV-Benefits (\$)	\$65,000.00	\$65,000.00
PV-Costs (\$)	(\$20,543.45)	(\$15,947.13)

Set An Appropriate Design Standard Standard should match expected use "All-Weather" hauling desired? Administrative vehicles? Under what conditions? Consider: "Most-Weather" design standards Maintenance vehicles? 11



WHEN TO USE

- On high use roads.
- When the road, ditches and other drainage structures can be routinely maintained.
- On double-lane main hauling roads.
- During periods of slippery or icy road conditions.
- Effective on any road grade.





Where constructing

- and maintaining ditches is not possible.
- On low use or unused roads.
- In areas where the outslope can be maintained to prevent rutting.

WHEN TO USE

- Surface drainage needs to be carried to a ditch.
- If outsloping would cause fill erosion.
- To avoid runoff from directly entering a stream.
- Slippery road conditions.
- On steeper road grades.









One way BMPs minimize impacts to water quality is by dispersing concentrated water flow. Circles indicate where BMPs disperse flow to the undisturbed forest floor.

"Most-Weather" Designs Incorporate

- Minimize changes to natural hydrologic pattern
 - Minimal ditch volumes
- Avoid combining water sources

 Springs, seep, ground water, overland flows, etc.

 Utilize outslope, inslope, and crown designs
- High tolerance for roadside vegetation
 Promote low-growing vegetation

Springs not accumulated

IS ODC

Filter for Surface flows Filter for Overland flows

















Rocked Dips







Improve Crossing Self-Maintenance





Guidelines

- Water flows downhill.
- Reduce volumes and velocity of intercepted water to reduce erosion potential.
- Maintain natural pattern of water flow.
- "Cut the head, load the toe"
- Nothing goes over the side unless it can be compacted in place.
- Consider where flows will go if design is compromised or exceeded.
- Self-maintaining design preferred.
- Only use ditches when necessary...they can amplify failures.

