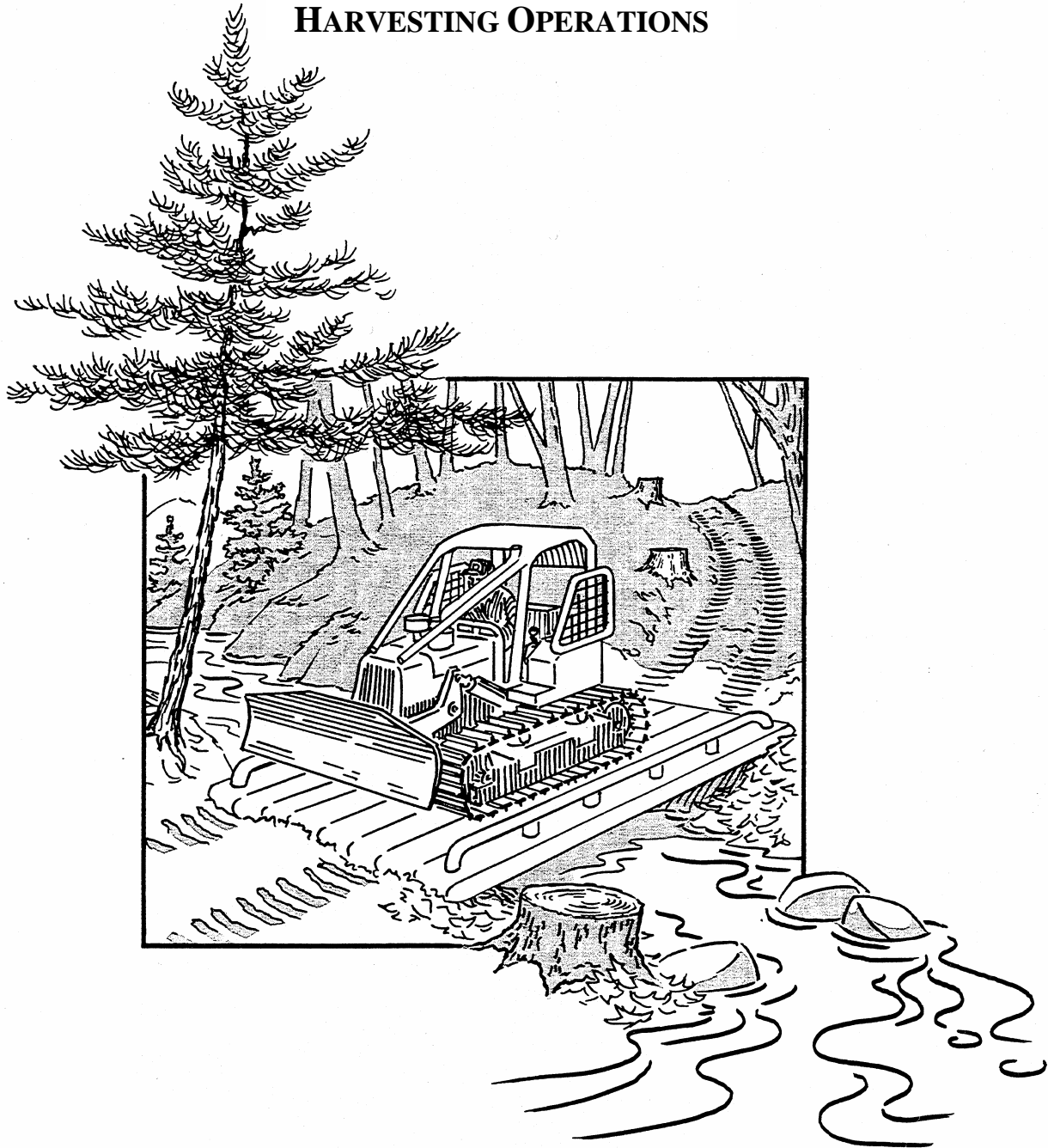


**CONTROLLING EROSION AND SEDIMENT
FROM TIMBER
HARVESTING OPERATIONS**



**PROFESSIONAL TIMBER HARVESTERS
ACTION PACKET**

Recommended Distances for Cross Drain Culverts (*Minimum of 12" culvert)

Road grade (%slope)	Culvert spacing (feet)
2	500
3	400
4	350
5-6	300
7-8	250
9-11	200
12-13	150
14+	

Suggested Temporary Stream Crossing Culvert Sizes, by Acres Drained
Refer to DEP-ESPC Program Manual for design assumptions and restrictions

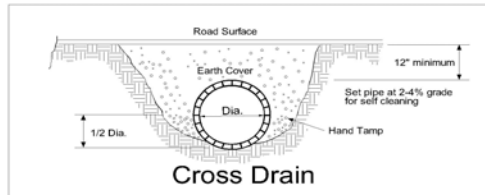
Filter Strip Widths by Slope of Land Between Roads and Perennial Streams

Slope of land between road and stream (%)	Minimum width of filter strip (feet)+
0	25++
10	45++
20	65
30	85
40	105
50	125
60	145
70	165

+ Widths should be doubled when the harvesting activity is located where receiving waters have a designated use/existing use of High Quality or Exceptional Value or within a municipal water supply, source water area.

++ Earth disturbance 50 feet or less from a stream requires a water obstruction and encroachment permit from the appropriate DEP Regional Office, Permitting and Technical Services Section.

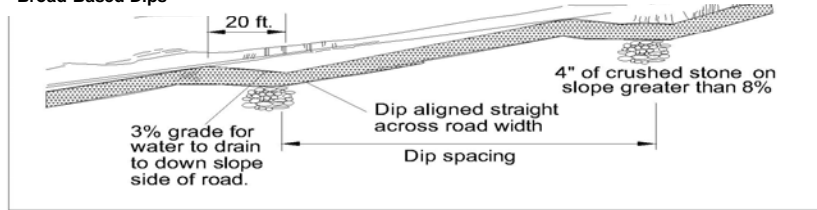
Cross Drain Culvert Installation



Broad-Based Dip Spacing

Road grade (% slope)	Spacing (feet)
2	300
3	250
4	200
5	180
6	170
7	160
8	150
9-10	140

Broad-Based Dips



Suggested Seeding Mixes for Landings, Roads, and Critical Areas

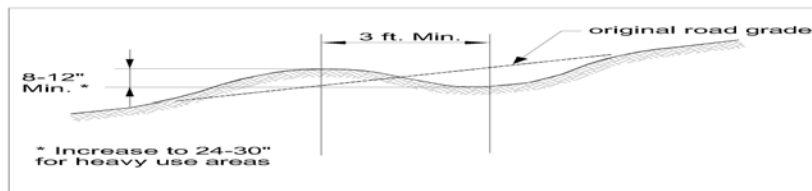
Mixes	Seeding rate (lb/acre)	Mixes	Seeding rate (lb/acre)
Permanent		Temporary	
a. Birdsfoot trefoil*	8	f. Spring oats	96 (3 bu)
Redtop	3	g. Winter wheat	180 (3 bu)
b. Creeping red fescue	30	h. Winter rye	168 (3 bu)
Perennial ryegrass	10	i. Annual rye	40
c. Birdsfoot trefoil	8		
Timothy	4	*Recommended for somewhat poor and poorly drained soils in partial shade to full sunlight.	
d. White clover	1		
Kentucky bluegrass	6		
Timothy	2		
e. Annual ryegrass	10		
Redtop	10		
Birdsfoot trefoil	5		

Note: Birdsfoot trefoil and white clover seed should be properly inoculated.

Waterbar Spacing

Road Grade (% Slope)	Recommended Spacing (feet)
2	250
5	135
10	80
15	60
20	45
25	40
30	35
40	30

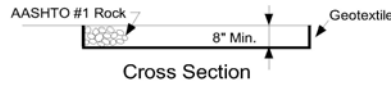
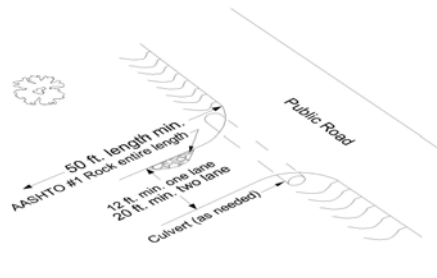
Waterbars



MATRIX FOR CALCULATING ACRES OF DISTURBED AREA

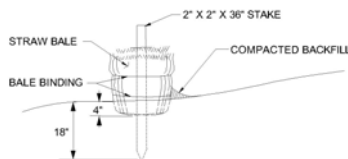
	WIDTH OF DISTURBED AREA (FT.)											WIDTH OF DISTURBED AREA (FT.)										
	20	40	60	80	100	120	140	160	180	200		20	40	60	80	100	120	140	160	180	200	
D											D	210	0.09	0.19	0.28	0.38	0.48	0.57	0.67	0.77	0.86	0.96
I	20	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	I	220	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.01
S	30	0.01	0.02	0.04	0.05	0.06	0.08	0.09	0.11	0.12	S	230	0.10	0.21	0.31	0.42	0.52	0.63	0.73	0.84	0.95	1.05
T	40	0.01	0.03	0.05	0.07	0.09	0.11	0.12	0.14	0.16	T	240	0.11	0.22	0.33	0.44	0.55	0.66	0.77	0.88	0.99	1.10
U	50	0.02	0.04	0.06	0.09	0.11	0.13	0.16	0.18	0.20	U	250	0.11	0.22	0.34	0.45	0.57	0.68	0.80	0.91	1.03	1.14
R											R											
B	60	0.02	0.05	0.08	0.11	0.13	0.16	0.19	0.22	0.24	B	260	0.11	0.23	0.35	0.47	0.59	0.71	0.83	0.95	1.07	1.19
E	70	0.03	0.06	0.09	0.12	0.16	0.19	0.22	0.25	0.28	E	270	0.12	0.24	0.37	0.49	0.61	0.74	0.86	0.99	1.11	1.23
D	80	0.03	0.07	0.11	0.14	0.18	0.22	0.25	0.29	0.33	D	280	0.12	0.25	0.38	0.51	0.64	0.77	0.89	1.02	1.15	1.28
	90	0.04	0.08	0.12	0.16	0.20	0.24	0.28	0.33	0.37		290	0.13	0.26	0.39	0.53	0.66	0.79	0.93	1.06	1.19	1.33
A	100	0.04	0.09	0.13	0.18	0.22	0.27	0.32	0.36	0.41	A	300	0.13	0.27	0.41	0.55	0.68	0.82	0.96	1.10	1.23	1.37
R											R											
E	110	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	E	310	0.14	0.28	0.42	0.56	0.71	0.85	0.99	1.13	1.28	1.42
A	120	0.05	0.11	0.16	0.22	0.27	0.33	0.38	0.44	0.49	A	320	0.14	0.29	0.44	0.58	0.73	0.88	1.02	1.17	1.32	1.46
	130	0.05	0.11	0.17	0.23	0.29	0.35	0.41	0.47	0.53		330	0.15	0.30	0.45	0.60	0.75	0.90	1.06	1.21	1.36	1.51
L	140	0.06	0.12	0.19	0.25	0.32	0.38	0.44	0.51	0.57	L	340	0.15	0.31	0.46	0.62	0.78	0.93	1.09	1.24	1.40	1.56
E	150	0.06	0.13	0.20	0.27	0.34	0.41	0.48	0.55	0.61	E	350	0.16	0.32	0.48	0.64	0.80	0.96	1.12	1.28	1.44	1.60
N											N											
G	160	0.07	0.14	0.22	0.29	0.36	0.44	0.51	0.58	0.66	G	360	0.16	0.33	0.49	0.66	0.82	0.99	1.15	1.32	1.48	1.65
T	170	0.07	0.15	0.23	0.31	0.39	0.46	0.54	0.62	0.70	T	370	0.16	0.33	0.50	0.67	0.84	1.01	1.18	1.35	1.52	1.69
H	180	0.08	0.16	0.24	0.33	0.41	0.49	0.57	0.66	0.74	H	380	0.17	0.34	0.52	0.69	0.87	1.04	1.22	1.39	1.57	1.74
	190	0.08	0.17	0.26	0.34	0.43	0.52	0.61	0.69	0.78		390	0.17	0.35	0.53	0.71	0.89	1.07	1.25	1.43	1.61	1.79
(ft.)	200	0.09	0.18	0.27	0.36	0.45	0.55	0.64	0.73	0.82	(ft.)	400	0.18	0.36	0.55	0.73	0.91	1.10	1.28	1.46	1.65	1.83

STABILIZE ROAD ENTRANCE



STRAW BALE BARRIER

CROSS SECTION



NOTE: This BMP requires a lot of maintenance

FILTER FABRIC FENCE

CROSS SECTION



MATRIX FOR CALCULATING ACRES OF DISTURBED AREA

	WIDTH OF SKID TRAIL OR HAUL ROAD (FT.)									
	8	10	12	14	16	20	25	30	35	40
50	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.04	0.04
100	0.01	0.02	0.02	0.03	0.03	0.04	0.05	0.06	0.08	0.09
150	0.02	0.03	0.04	0.04	0.05	0.06	0.08	0.10	0.12	0.13
200	0.03	0.04	0.05	0.06	0.07	0.09	0.11	0.13	0.16	0.18
250	0.04	0.05	0.06	0.08	0.09	0.11	0.14	0.17	0.20	0.22
300	0.05	0.06	0.08	0.09	0.11	0.13	0.17	0.20	0.24	0.27
350	0.06	0.08	0.09	0.11	0.12	0.16	0.20	0.24	0.28	0.32
400	0.07	0.09	0.11	0.12	0.14	0.18	0.22	0.27	0.32	0.36
450	0.08	0.10	0.12	0.14	0.16	0.20	0.25	0.30	0.36	0.41
500	0.09	0.11	0.13	0.16	0.18	0.22	0.28	0.34	0.40	0.45
550	0.10	0.12	0.15	0.17	0.20	0.25	0.31	0.37	0.44	0.50
600	0.11	0.13	0.16	0.19	0.22	0.27	0.34	0.41	0.48	0.55
650	0.11	0.14	0.17	0.20	0.23	0.29	0.37	0.44	0.52	0.59
700	0.12	0.16	0.19	0.22	0.25	0.32	0.40	0.48	0.56	0.64
750	0.13	0.17	0.20	0.24	0.27	0.34	0.43	0.51	0.60	0.68
800	0.14	0.18	0.22	0.25	0.29	0.36	0.45	0.55	0.64	0.73
850	0.15	0.19	0.23	0.27	0.31	0.39	0.48	0.58	0.68	0.78
900	0.16	0.20	0.24	0.28	0.33	0.41	0.51	0.61	0.72	0.82
950	0.17	0.21	0.26	0.30	0.34	0.43	0.54	0.65	0.76	0.87
1000	0.18	0.22	0.27	0.32	0.36	0.45	0.57	0.68	0.80	0.91
1050	0.19	0.24	0.28	0.33	0.38	0.48	0.60	0.72	0.84	0.96
1100	0.20	0.25	0.30	0.35	0.40	0.50	0.63	0.75	0.88	1.01
1150	0.21	0.26	0.31	0.36	0.42	0.52	0.66	0.79	0.92	1.05
1200	0.22	0.27	0.33	0.38	0.44	0.55	0.68	0.82	0.96	1.10
1250	0.22	0.28	0.34	0.40	0.45	0.57	0.71	0.86	1.00	1.14
1300	0.23	0.29	0.35	0.41	0.47	0.59	0.74	0.89	1.04	1.19
1350	0.24	0.30	0.37	0.43	0.49	0.61	0.77	0.92	1.08	1.23
1400	0.25	0.32	0.38	0.44	0.51	0.64	0.80	0.96	1.12	1.28
1450	0.26	0.33	0.39	0.46	0.53	0.66	0.83	0.99	1.16	1.33
1500	0.27	0.34	0.41	0.48	0.55	0.68	0.86	1.03	1.20	1.37
1550	0.28	0.35	0.42	0.49	0.56	0.71	0.88	1.06	1.24	1.42
1600	0.29	0.36	0.44	0.51	0.58	0.73	0.91	1.10	1.28	1.46
1650	0.30	0.37	0.45	0.53	0.60	0.75	0.94	1.13	1.32	1.51
1700	0.31	0.39	0.46	0.54	0.62	0.78	0.97	1.17	1.36	1.56
1750	0.32	0.40	0.48	0.56	0.64	0.80	1.00	1.20	1.40	1.60
1800	0.33	0.41	0.49	0.57	0.66	0.82	1.03	1.23	1.44	1.65
1850	0.33	0.42	0.50	0.59	0.67	0.84	1.06	1.27	1.48	1.69
1900	0.34	0.43	0.52	0.61	0.69	0.87	1.09	1.30	1.52	1.74

THE PROFESSIONAL TIMBER HARVESTER

- IS COMMITTED TO WISE STEWARDSHIP OF NATURAL RESOURCES
- PLANS, IMPLEMENTS AND MAINTAINS SOUND EROSION AND SEDIMENT POLLUTION CONTROL MEASURES

For more information, contact:

Department of Environmental Protection
 Bureau of Watershed Management
 Division of Waterways, Wetlands and Stormwater Management
 P.O. Box 8775
 Harrisburg, PA 17105-8775
 Phone: 717-787-6827

For more information, visit www.depweb.state.pa.us, keyword: Erosion Control.

TECHNICAL ASSISTANCE

It is best to seek technical assistance first from the County **Conservation District**. District offices or headquarters are generally located in the county seat. Conservation districts offer technical assistance on soils, erosion and sediment control, water obstruction and encroachment permits and conservation planning for best land use.

PENNSYLVANIA FISH AND BOAT COMMISSION

Waterways conservation officers are responsible for technical assistance and supervision in carrying out fish and aquatic life conservation activities and enforcement of fish and boating laws, and other state laws and regulations under memorandums of understanding with other governmental agencies.

NATURAL RESOURCES CONSERVATION SERVICE (NRCS)

The NRCS, formerly the Soil Conservation Service (SCS), is the technical branch of the US Department of Agriculture. The agency provides technical services for establishing conservation practices, making reviews and recommendations, and developing soil and water conservation projects. The NRCS generally works through and in support of County Conservation Districts and has offices in most counties.

PENN STATE COOPERATIVE EXTENSION (PSU-CE)

Agents and resource specialists are located in Cooperative Extension offices in each county seat. Extension has close ties with The Pennsylvania State University and the agricultural community. Extension offices can provide assistance in soil testing, lime and fertilizer requirements, and seed mixtures.

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (DCNR) BUREAU OF FORESTRY - DISTRICT FORESTRY OFFICE

State service foresters are available, when requested, to assist with workshops organized by County Conservation Districts on timber harvesting erosion and sediment control; to help timber harvesters individually become familiar with the preparation of erosion and sediment control plans; and to provide technical assistance for resolving unusual problems of timber harvesting erosion and sediment control. State service foresters may be reached by contacting the appropriate District Forestry office. Addresses and telephone numbers for those offices are available from the County Conservation District office.

CONSULTANT AND INDUSTRIAL FORESTERS

Many private consulting and industrial foresters have considerable experience in timber sale administration and logging road design. A list of these foresters can be obtained from the state service forester.

DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) BUREAU OF WATERSHED MANAGEMENT (DEP - BWM)

DEP-BWM, working through County Conservation Districts, is responsible for the administration of the Erosion and Sediment Control Program, as well as for policy development and training. The DEP-BWM staff works in coordination with DEP Regional Offices, as well as, other state, federal and local agencies.

DEP REGIONAL OFFICE - PERMITTING AND TECHNICAL SERVICES SECTION

The Permitting and Technical Services Section of each regional office provides technical assistance, permit issuance, and enforcement for stream crossings and earth disturbance activities.

DEP DIVISION OF WATERWAYS, WETLANDS AND STORMWATER MANAGEMENT (DEP - WWSM)

WWSM administers laws and regulations related to flood plain management, water obstructions, wetlands and erosion and sediment control.

U.S. FOREST SERVICE (USFS)

Allegheny National Forest rangers are available for consultation on USFS policy and cooperation. They can be reached through the Forest Supervisor's office in Warren, PA.

U.S. ARMY CORPS OF ENGINEERS (COE)

Three Army Corps districts encompass Pennsylvania: Baltimore, Philadelphia and Pittsburgh. The COE is responsible for developing studies, programs and construction projects affecting land and water resources.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION (PennDOT)

Pennsylvania has 11 PennDOT district offices. The Department is responsible for issuance of entranceway and road bond permits for state roadways.

LOCAL MUNICIPALITY

Check with the local municipality for ordinances regulating timber harvesting activities and municipal roadway usage.

THIS PUBLICATION WAS DEVELOPED IN COOPERATION WITH:

**THE PENNSYLVANIA STATE UNIVERSITY
COLLEGE OF AGRICULTURE
COOPERATIVE EXTENSION
UNIVERSITY PARK, PA**

AND

**THE CAMBRIA COUNTY CONSERVATION DISTRICT,
EBENSBURG, PA**