

SEDIMENT STRUCTURES

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1- SEDIMENT TRAPS

A DEFINITION

A SMALL EXCAVATED STORAGE AREA, WITHOUT SPECIAL INLET AND OUTLET CONTROLS—OR—DEFINED SIDE SLOPES AND IS LIMITED TO DRAINAGE AREAS OF 10 ACRES OR LESS

B DESIGN CRITERIA

- 1- MINIMUM WIDTH 5 AND MAXIMUM WIDTH 20
- 2- MINIMUM LENGTH 25 AND MAXIMUM LENGTH 200
- 3- MINIMUM DEPTH 2 AND MAXIMUM DEPTH 6

2- SEDIMENT PONDS

A DEFINITION

AN EXCAVATED STORAGE AREA WITH ROCK RIPRAP PLACED IN INLET AND OUTLET AREAS WITH DEFINED SIDE SLOPES AND IS LIMITED TO DRAINAGE AREAS OF 50 ACRES OR LESS

B DESIGN CRITERIA

- 1- INLET AND OUTLET CHANNELS MUST BE LINED WITH RIPRAP
- 2- SIDE SLOPES SHOULD BE 2:1
- 3- LIMITED TO A MINIMUM WIDTH OF 20 AND A MINIMUM DEPTH OF 4 BUT NOT TO EXCEED 10

3- SEDIMENT BASINS

A DEFINITION

CONSISTS OF A DAM CREATED TO IMPOUND WATER WITH OR WITHOUT AN EXCAVATED STORAGE AREA AND LIMITED TO DRAINAGE AREAS OF 200 ACRES OR LESS

B DESIGN CRITERIA

- 1- SHOULD BE DESIGNED TO ACCOMMODATE 1/2 OF RUNOFF FROM THE ENTIRE DRAINAGE AREA THE REQUIRED VOLUME IN CUBIC FEET CAN BE OBTAINED BY MULTIPLYING THE DRAINAGE AREA IN ACRES BY 1815
- 2- THE LENGTH SHOULD BE AT LEAST TWICE THE WIDTH AND A MINIMUM OF 50 LONG AND SHOULD HAVE A MINIMUM DEPTH OF 6
- 3- WHEN POSSIBLE THE MINIMUM AREA OF THE WATER SURFACE AT THE PRINCIPAL OUTLET ELEVATION SHOULD CONFORM TO THE FOLLOWING

$$A \text{ (SQ FT)} = 180 Q \text{ (CU FT PER SEC.)}$$

WHERE Q IS BASED ON A 5-YEAR FREQUENCY IF A Q VALUE IS AVAILABLE FOR THE DRAINAGE AREA FOR A FREQUENCY OTHER THAN 5-YEARS THE Q VALUE FOR A 5-YEAR FREQUENCY CAN BE APPROXIMATE USING THE FOLLOWING TABLE

$$Q_5 = 0.85 Q_{10}$$

$$Q_5 = 0.75 Q_{25}$$

$$Q_5 = 0.65 Q_{50}$$

—IT SHOULD BE NOTED THAT RUNOFF CALCULATIONS TO SIZE PIPE ORDINARILY ASSUME FOREST OR MEADOWS IN RURAL AREAS THEREFORE IF THE DRAINAGE AREA EXCEEDS 20 ACRES AND MORE THAN 25% OF THIS AREA HAS BEEN DISTURBED THE RUNOFF SHOULD BE RECALCULATED BASED ON ACTUAL CONDITIONS

4- GENERAL NOTES

A PURPOSE

SEDIMENT BASINS PONDS AND TRAPS ARE CONSTRUCTED TO TRAP AND STORE SEDIMENT FROM ERODIBLE AREAS IN ORDER TO PROTECT PROPERTIES AND STREAM CHANNELS BELOW THE INSTALLATION FROM EXCESSIVE SILTATION THESE STRUCTURES TRAP AND STORE SEDIMENT THAT UNAVOIDABLY OCCURS IN SPITE OF TEMPORARY EROSION CONTROL MEASURES IN USE

B CONDITIONS WHERE APPLICABLE

SEDIMENT BASINS PONDS AND / OR TRAPS SHOULD BE CONSTRUCTED AT ALL LOCATIONS WHERE WATER IS CONCENTRATED AND HAS BEEN COLLECTED FROM AN AREA WHERE IT WILL PICK UP PARTICLES SEDIMENT STRUCTURES SHOULD BE CONSTRUCTED AS CLOSE AS POSSIBLE TO THE SOURCE OF SEDIMENT WHEN POSSIBLE SEDIMENT STRUCTURES SHOULD BE BUILT OUTSIDE THE EXISTING WATERCOURSES TO MINIMIZE THE QUANTITY OF WATER TO BE TREATED

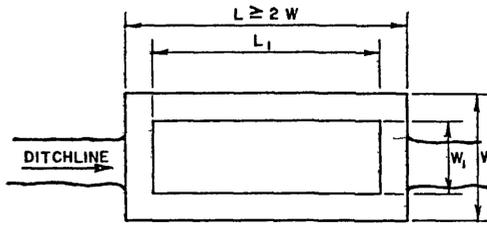
C IN SOME AREAS THE MINIMUM DESIGN CRITERIA AS DEFINED HEREIN MAY BE UNFEASIBLE OR IMPOSSIBLE TO MEET IN THESE CASES SEDIMENT STRUCTURES SHOULD BE CONSTRUCTED AS CLOSE AS POSSIBLE TO THE SPECIFIED DESIGN CRITERIA UNDER THESE CIRCUMSTANCES IT WOULD BE DESIRABLE TO BUILD SEVERAL SMALL SEDIMENT STRUCTURES IN A SERIES TO ELIMINATE THE NEED FOR THE ONE LARGE STRUCTURE

D IN SPECIAL CASES WHERE SEDIMENT WOULD AFFECT HIGH QUALITY STREAMS THE STORAGE VOLUME SURFACE AREA AND DESIGN QUALITY OF DISCHARGE SHOULD BE INCREASED TO ASSURE THE CONTINUED HIGH QUALITY

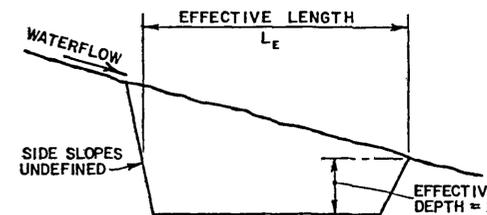
E ALL SEDIMENT STRUCTURES MUST BE LOCATED AND DESIGNED SUCH THAT FAILURE OF THE STRUCTURE WOULD NOT RESULT IN LOSS OF LIFE DAMAGE TO HOMES COMMERCIAL OR INDUSTRIAL BUILDINGS HIGHWAYS AND STREETS OR IN INTERRUPTION OF THE USE OF SERVICE OR PUBLIC UTILITIES

F IN AREAS WHERE SEDIMENT STRUCTURES ARE CONSIDERED BY THE ENGINEER TO BE A SAFETY HAZARD TO THE PUBLIC OR TO CONSTRUCTION WORKERS THEY ARE TO BE PROPERLY FENCED OR PROVIDED WITH ADEQUATE WARNING SIGNS WHICHEVER IS DIRECTED BY THE ENGINEER

TYPICAL SEDIMENT TRAP



PLAN VIEW

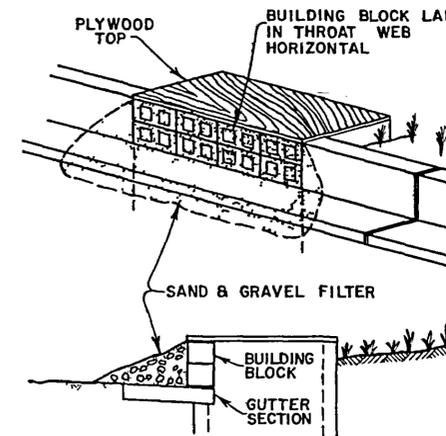


APPROXIMATION OF EFFECTIVE VOLUME

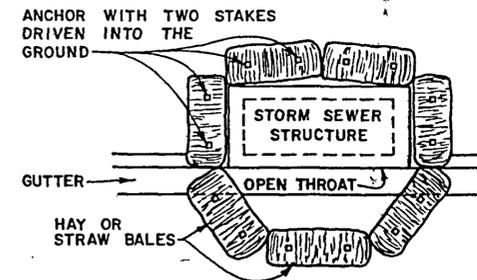
$$\frac{L_E W + L_1 W_1}{2} + D$$

SIDE VIEW

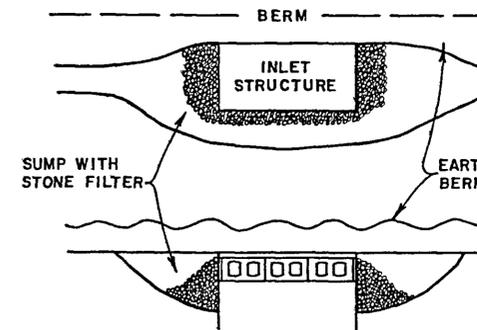
DRAIN INLET SEDIMENT TRAPS



SAND AND GRAVEL FILTER INLET SEDIMENT TRAP

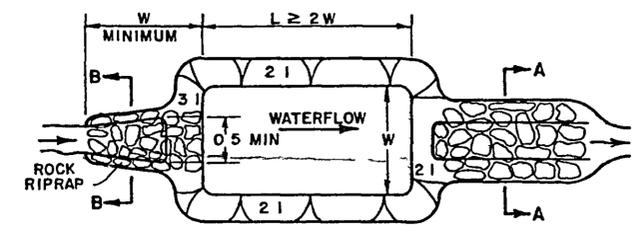


TEMPORARY BARRIER HAY OR STRAW BALES

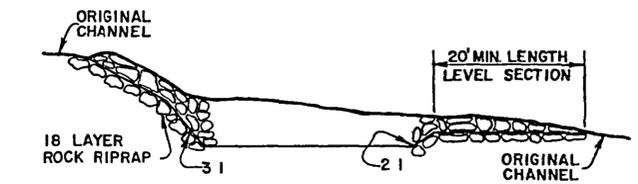


TEMPORARY SUMP - STONE FILTER INLET SEDIMENT TRAP

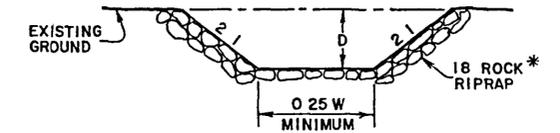
TYPICAL SEDIMENT POND



PLAN VIEW

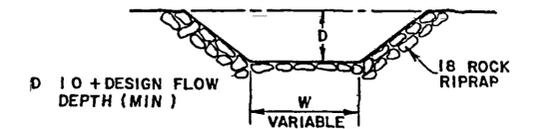


SIDE VIEW



SECTION A-A

* WITH PROPER DESIGN CONSIDERATIONS ROCK RIP-RAP CAN BE ELIMINATED IN OUTLET CHANNEL



SECTION B-B

W_{VARIABLE} - VARIES FROM WIDTH OF STREAM AT INLET TO ONE-HALF WIDTH OF POND AT OUTLET

5-1

Addition # 1 -84

UTAH DEPARTMENT OF TRANSPORTATION

SUPERSEDES		
REVISIONS		
Date	Appr	
RECOMMENDED FOR APPROVAL		
<i>[Signature]</i>		JULY 13, 1976
CHAIRMAN STANDARDS COMMITTEE		
APPROVED		JULY 13, 1976
STATE HIGHWAY ENGINEER		
STD DWG NO 1012		

As Committed
Cream & Nov