

MINIMUM DESILTING BASIN STANDARD
GENERAL NOTES

A. PURPOSE OF A DESILTING BASIN.

DESILTING BASINS ARE USED TO PROTECT DOWNSTREAM AREAS FROM SEDIMENT DAMAGE BY TRAPPING SEDIMENT-LADEN RUNOFF FROM UPSTREAM AREAS AND SETTLING OUT DAMAGING AMOUNTS OF SEDIMENT. DESILTING BASINS SHOULD BE LOCATED SO THAT FAILURE OF THE BASIN STRUCTURE WILL NOT PRESENT A DANGER TO LIFE OR PROPERTY.

B. HOW A DESILTING BASIN OPERATES.

DESILTING BASINS OPERATE BY INTERCEPTING SEDIMENT-LADEN RUNOFF AND RETAINING IT LONG ENOUGH FOR MOST OF THE DAMAGE-CAUSING SEDIMENT TO SETTLE OUT. THE RETENTION TIME REQUIRED IS PROPORTIONAL TO VELOCITY AND TURBULENCE IN THE BASIN AND INVERSELY PROPORTIONAL TO PARTICLE SIZE.

C. DESIGN CONSIDERATIONS.

1. MINIMAL EROSION PROBLEMS MAY BE HANDLED BY THE USE OF SANDBAG DIKE CONSTRUCTION, SILT FENCES OR STRAWBALE BARRIERS IF APPROVED BY THE CITY ENGINEER.
2. SIZING OF BASIN SHALL BE BASED ON THE TOTAL DRAINAGE AREA TRIBUTARY TO THE BASIN. THE METHOD OUTLINED ON SHEET 5 MAY BE USED TO ESTIMATE VOLUME. IF THIS METHOD IS NOT USED, THE PROJECT ENGINEER SHALL JUSTIFY HIS DESIGN WITH ADEQUATE CALCULATIONS.
3. THE COMBINED PIPE AND SPILLWAY OUTFLOW SHALL NOT EXCEED THE DOWNSTREAM CAPACITY NOR INCREASE THE DOWNSTREAM SEDIMENT LOADS.
4. BASIN MUST BE ACCESSIBLE FOR CLEANOUT DURING SATURATED GROUND CONDITIONS.
5. TO REDUCE TURBULENCE IN THE BASIN, THE BASIN SHALL HAVE AN ENERGY DISSIPATER AT ITS UPSTREAM END AS APPROVED BY THE CITY ENGINEER.
6. THE BASIN SHALL BE LOCATED FOR EFFECTIVELY ACCOMPLISHING ITS PURPOSE, IN ACCORDANCE WITH ENGINEERED PLANS MEETING THE APPROVAL OF THE CITY ENGINEER.
7. BEYOND CERTAIN LIMITATIONS OF EMBANKMENT HEIGHT AND STORAGE CAPACITY, THE DESIGN OF THE BASIN WILL COME UNDER THE JURISDICTION OF, AND REQUIRE THE APPROVAL OF, THE CALIFORNIA DEPARTMENT OF WATER RESOURCES, DIVISION OF SAFETY OF DAMS, 1416 NINTH STREET, P.O. BOX 388, SACRAMENTO, CA 95802, 916-445-7606 (SEE EXHIBIT 1 ON SHEET 2.)
8. INLET TRASH RACKS SHALL BE USED WHERE APPROPRIATE TO REDUCE INTAKE OF LARGE DEBRIS.

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JURISDICTIONAL DAM SIZE

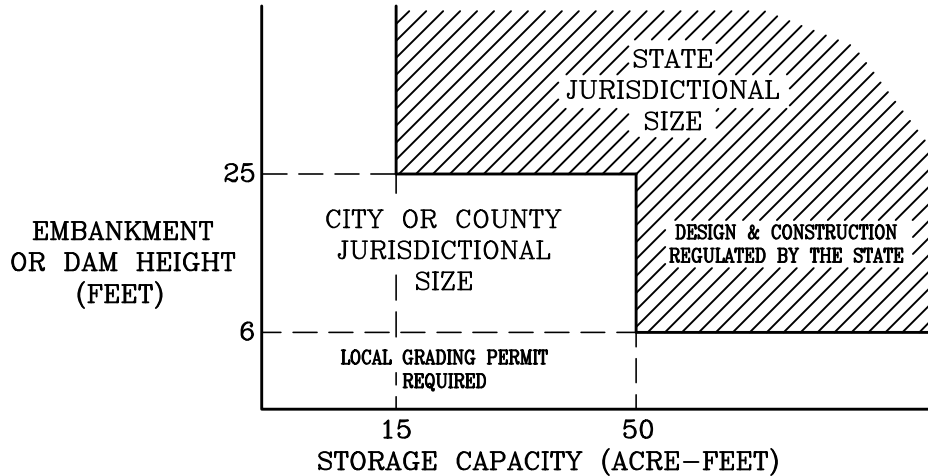


EXHIBIT 1

D. STORAGE

1. STORAGE CAPACITY SHALL BE THE VOLUME BELOW THE TOP OF THE PIPE RISER, AND SHALL BE BASED ON THE AVERAGE SITE SLOPE AND LENGTH OF THE LONGEST FLOW PATH IN THE AREA TRIBUTARY TO THE BASIN. SEE GRAPH ON SHEET 5 FOR DETAILS.
2. THE DESIGN SHALL PROVIDE OPPORTUNITY FOR PERIODIC CLEANOUT IN ORDER TO MAINTAIN BASIN CAPACITY REQUIREMENTS. THE MAXIMUM ALLOWABLE DEPOSITED SEDIMENT BEFORE CLEANOUT SHALL BE 1/2 FULL OR AS DETERMINED BY THE CITY ENGINEER AND PAINTED ON THE PIPE RISER.
3. SEDIMENT FROM BASIN CLEANOUT OPERATIONS MUST BE DISPOSED OF IN SUCH A MANNER AS TO PREVENT ITS RETURN INTO THE DESILTING BASIN OR ITS MOVEMENT INTO DOWNSTREAM AREAS DURING SUBSEQUENT RUNOFFS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATER CREATES A HAZARDOUS CONDITION.

E. DRAIN PIPE AND RISER

1. THE MINIMUM PIPE RISER SHALL BE A 30" CORRUGATED STEEL PIPE (C.S.P.) 14 GA., OR AN ALTERNATE APPROVED BY THE CITY ENGINEER. RISER TO HAVE A CROSS-SECTIONAL AREA AT LEAST 1.5 TIMES THE CROSS-SECTIONAL AREA OF THE HORIZONTAL DRAIN PIPE.
2. THE MINIMUM DRAIN PIPE SHALL BE A 12" C.S.P., 14" GA., OR AN ALTERNATE APPROVED BY THE CITY ENGINEER.

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3. THE UPPERMOST ELEVATION OF THE RISER SHALL BE SUCH THAT FULL FLOW WILL BE GENERATED BEFORE THERE IS DISCHARGE OVER THE EMERGENCY SPILLWAY AND AT LEAST ONE FOOT BELOW THE TOP OF THE EMERGENCY SPILLWAY.
4. THE RISER SHALL BE PERFORATED WITH 1/2" x 12" (MAX.) SLOTS OR 1/2" TO 1-1/2" DIAMETER HOLES, 10 TO 12 INCHES ON CENTER AND STAGGERED. HOLES CUT WITH A WELDING TORCH ARE ACCEPTABLE. THE SMALL HOLES SHALL BE USED ON THE LOWER PORTIONS OF THE RISER.
5. THE DRAIN PIPE SHALL BE PLACED ON A FIRM FOUNDATION.
6. THE RISER SHALL HAVE A BASE ATTACHED WITH A WATERTIGHT CONNECTION AND SHALL HAVE SUFFICIENT WEIGHT TO PREVENT FLOTATION OF THE RISER. TWO RECOMMENDED METHODS ARE:
 - a. A SQUARE CONCRETE BASE 18 INCHES THICK WITH THE RISER EMBEDDED SIX INCHES INTO THE BASE. EACH SIDE OF THE BASE WILL BE ONE DIAMETER OF THE RISER PLUS 24 INCHES.
 - b. A 1/4 INCH MINIMUM THICKNESS STEEL PLATE WELDED ALL AROUND THE BASE OF THE RISER TO FORM A WATERTIGHT CONNECTION. THE PLATE SHALL BE SQUARE WITH EACH SIDE EQUAL TO TWO TIMES THE RISER DIAMETER. THE PLATE SHALL HAVE TWO FEET OF STONE, GRAVEL, OR TAMPED EARTH PLACED ON IT TO PREVENT FLOTATION.
7. A GRATE CONSISTING OF #4 REBAR, 6 INCHES ON CENTER SHALL BE WELDED TO THE TOP OF THE RISER.
8. ANTI-SEEP COLLARS ARE REQUIRED AT 10' INTERVALS FOR PIPE UNDER THE EMBANKMENT (SEE SHEET 8). THE COLLARS SHALL BE WELDED TO THE PIPE.
9. DISCHARGE SHALL BE TO A PAVED STREET, CHANNEL, OR APPROVED DRAINAGE.

F. EMERGENCY SPILLWAY

1. THE SPILLWAY SHALL BE LINED WITH 3-INCH THICK GUNITE, 4-INCH THICK CONCRETE, (EACH REINFORCED WITH 6"x6"-W1.4xW1.4 WELDED WIRE MESH) OR MATERIAL SUCH AS PLASTIC DESIGNED TO FIT THE SITE CONDITION BY THE PROJECT ENGINEER AND APPROVED BY THE CITY ENGINEER EXTENDING A MINIMUM OF 3 FEET DOWN THE UPSTREAM FACE OF THE EMBANKMENT. SPILLWAY WILL BE A MINIMUM OF 18 INCHES DEEP; WITH 1-1/2:1 SIDE SLOPES.
2. THE SPILLWAY SHALL BE DESIGNED TO PROVIDE ONE SQUARE FOOT OF CROSS-SECTIONAL AREA FOR EACH GROSS ACRE TRIBUTARY DRAINAGE AREA.
3. THE MAXIMUM HEIGHT OF THE EARTH DIKE SHALL BE 6' FROM THE TOE OF THE UPSTREAM SLOPE TO THE SPILLWAY CREST.

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G. FREEBOARD

1. FREEBOARD IS THE VERTICAL DISTANCE BETWEEN THE ELEVATION OF THE WATER SURFACE IN THE POND WHEN SPILLWAY IS DISCHARGING AT DESIGNED DEPTH AND THE ELEVATION OF THE TOP OF THE EMBANKMENT AFTER ALL SETTLEMENT HAS TAKEN PLACE.
2. MINIMUM FREEBOARD SHALL BE 1.0 FOOT FOR BASINS WHERE THE MAXIMUM LENGTH OF THE POND IS LESS THAN 660 FEET. FOR MAXIMUM POND LENGTHS OF 660 FEET OR MORE, THE MINIMUM FREEBOARD SHALL BE DETERMINED BY THE CITY ENGINEER.

H. EMBANKMENT

1. THE EMBANKMENT MATERIAL SHALL BE TAKEN FROM BORROW AREAS AS STATED ON THE PLANS. ALL BORROW AREAS OUTSIDE THE POOL SHALL BE GRADED, SEEDED AND LEFT IN SUCH A MANNER THAT THEY ARE WELL-DRAINED AND PROTECTED FROM EROSION.
2. THE MATERIAL SHALL BE FREE OF ALL SOD, ROOTS, WOODY VEGETATION, LARGE ROCK (EXCEEDING 12 INCHES IN DIAMETER), AND OTHER DEBRIS.
3. THE EMBANKMENT SHALL BE CONSTRUCTED TO AN ELEVATION WHICH PROVIDES FOR ANTICIPATED SETTLEMENT TO DESIGN ELEVATION (ALLOW 10% FOR SETTLEMENT).
4. THE FOUNDATION FOR THE EMBANKMENT SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL.
5. PLACEMENT OF FILL MATERIAL SHALL BE STARTED AT THE LOWEST POINT OF THE FOUNDATION AND SHALL BE PLACED IN 6-INCH MAXIMUM LIFTS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL AND APPROXIMATELY HORIZONTAL. EMBANKMENT SHALL HAVE A RELATIVE COMPACTION OF AT LEAST 90%.
6. EMBANKMENT SIDE SLOPES SHALL BE NO STEEPER THAN 2:1.

I. SITE PREPARATION

1. THE EMBANKMENT FOUNDATION AREA AND RESERVOIR AREA SHALL BE CLEARED OF ALL TREES, STUMPS, ROOTS, BRUSH, BOULDERS, SOD, AND DEBRIS.
2. ALL TOPSOIL CONTAINING EXCESSIVE AMOUNTS OF ORGANIC MATTER SHALL BE REMOVED

J. EROSION CONTROL PLAN

A SILTATION CONTROL PROGRAM AND PLAN FOR ANY PROPOSED DEVELOPMENT SHALL BE SUBMITTED FOR REVIEW AND APPROVED BY THE CITY ENGINEER PRIOR COMMENCEMENT OF GRADING.

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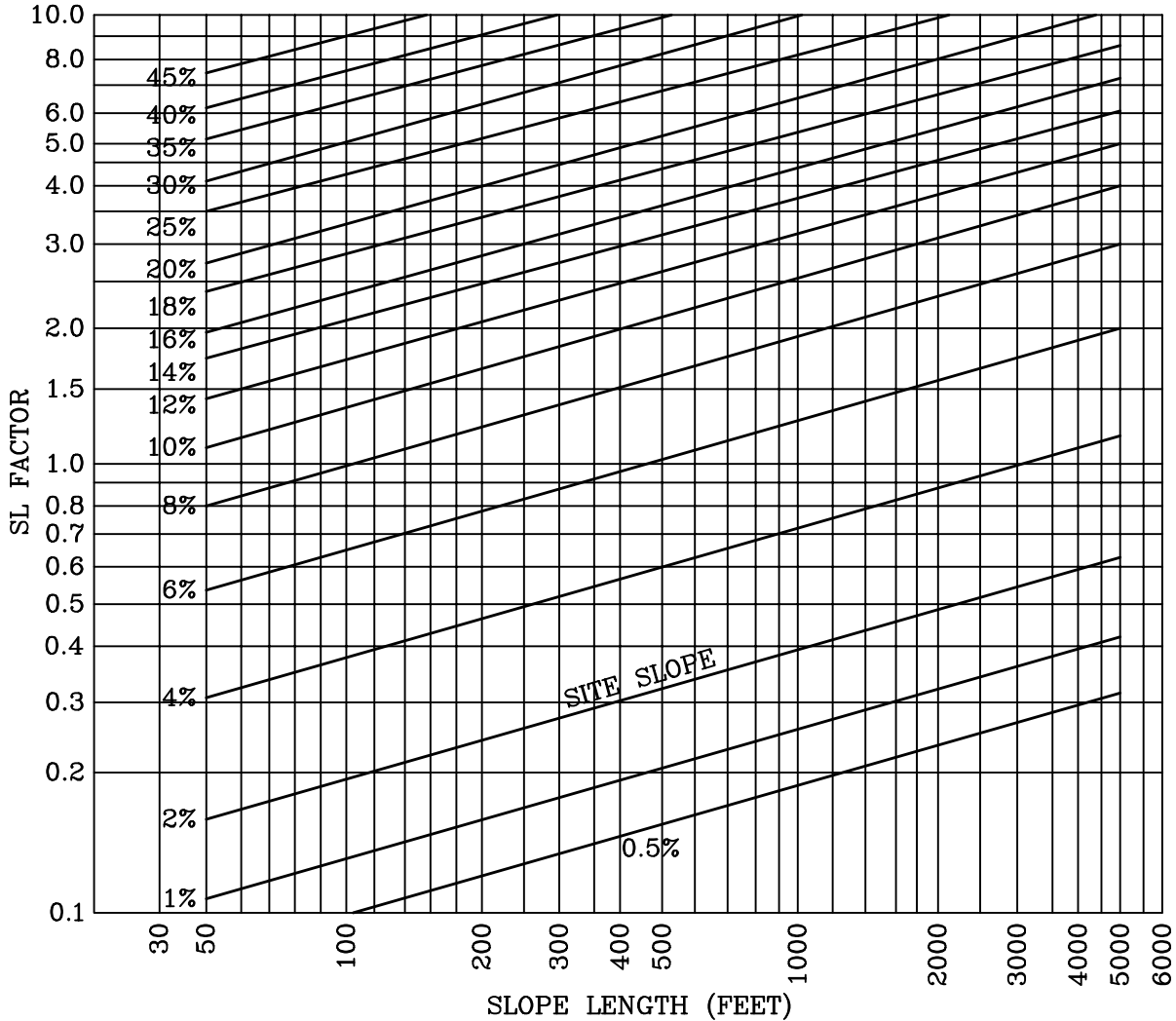
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SL FACTORS FOR SEDIMENT YIELD EQUATION



SEDIMENT YIELD = 16.4 SL*

EXAMPLE: SLOPE LENGTH = 1000 FEET
 SITE SLOPE = 8%
 GRADED AREA = 56 ACRES

FROM GRAPH IT CAN BE DETERMINED THAT SL = 1.8
 SEDIMENT YIELD = 16.4 x 1.8 = 30 C.Y./ACRE
 TOTAL SEDIMENT = 30 x 56 = 1680 C.Y.
 BASIN SIZE = 1700 C.Y.

* BASED ON UNIVERSAL SOIL LOSS EQUATION FOR ORANGE COUNTY FIELD CONDITIONS.

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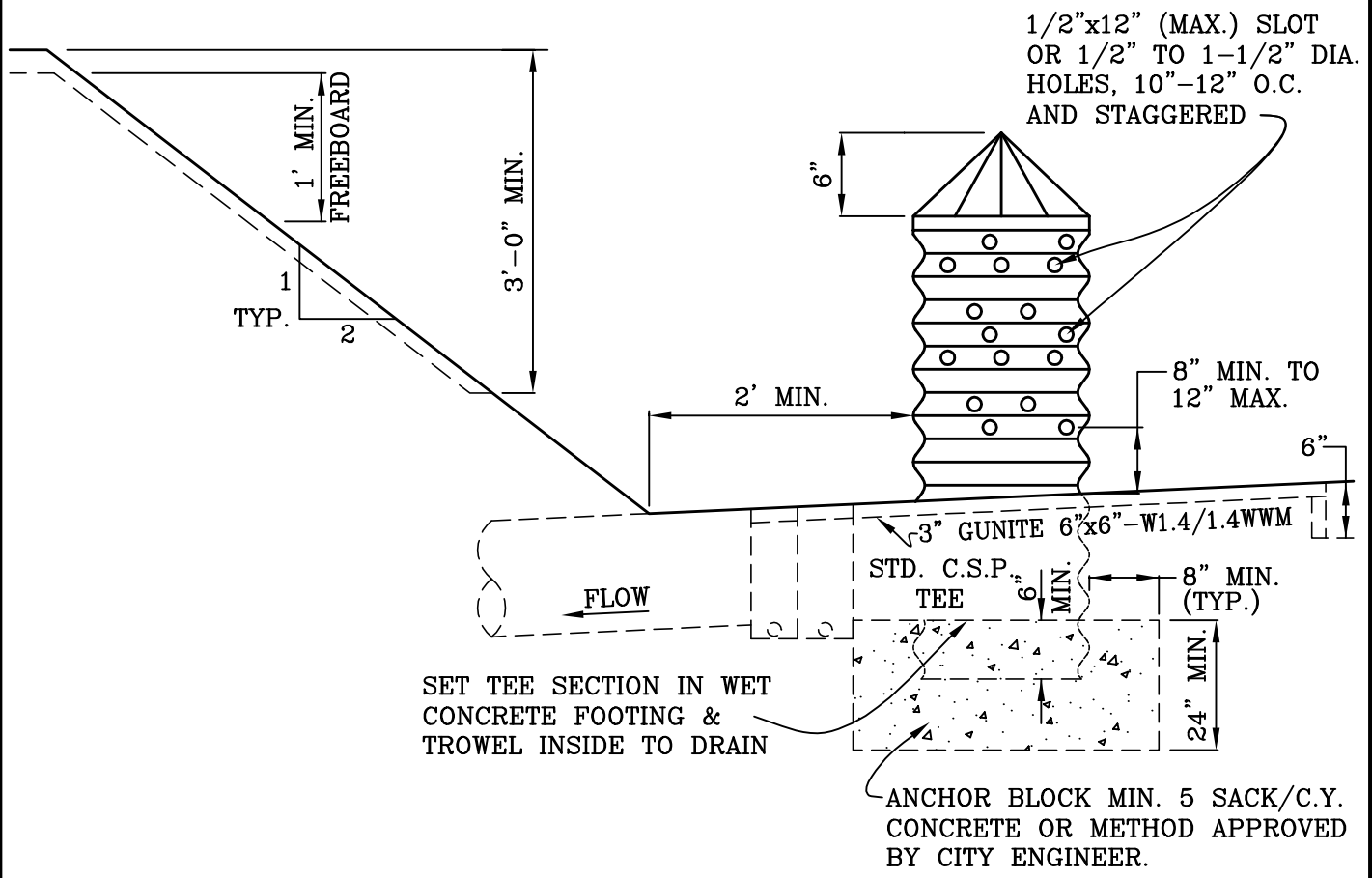
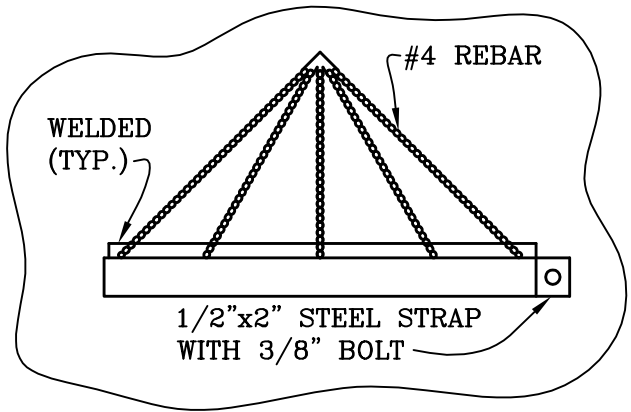
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DRAIN PIPE AND RISER
NO SCALE

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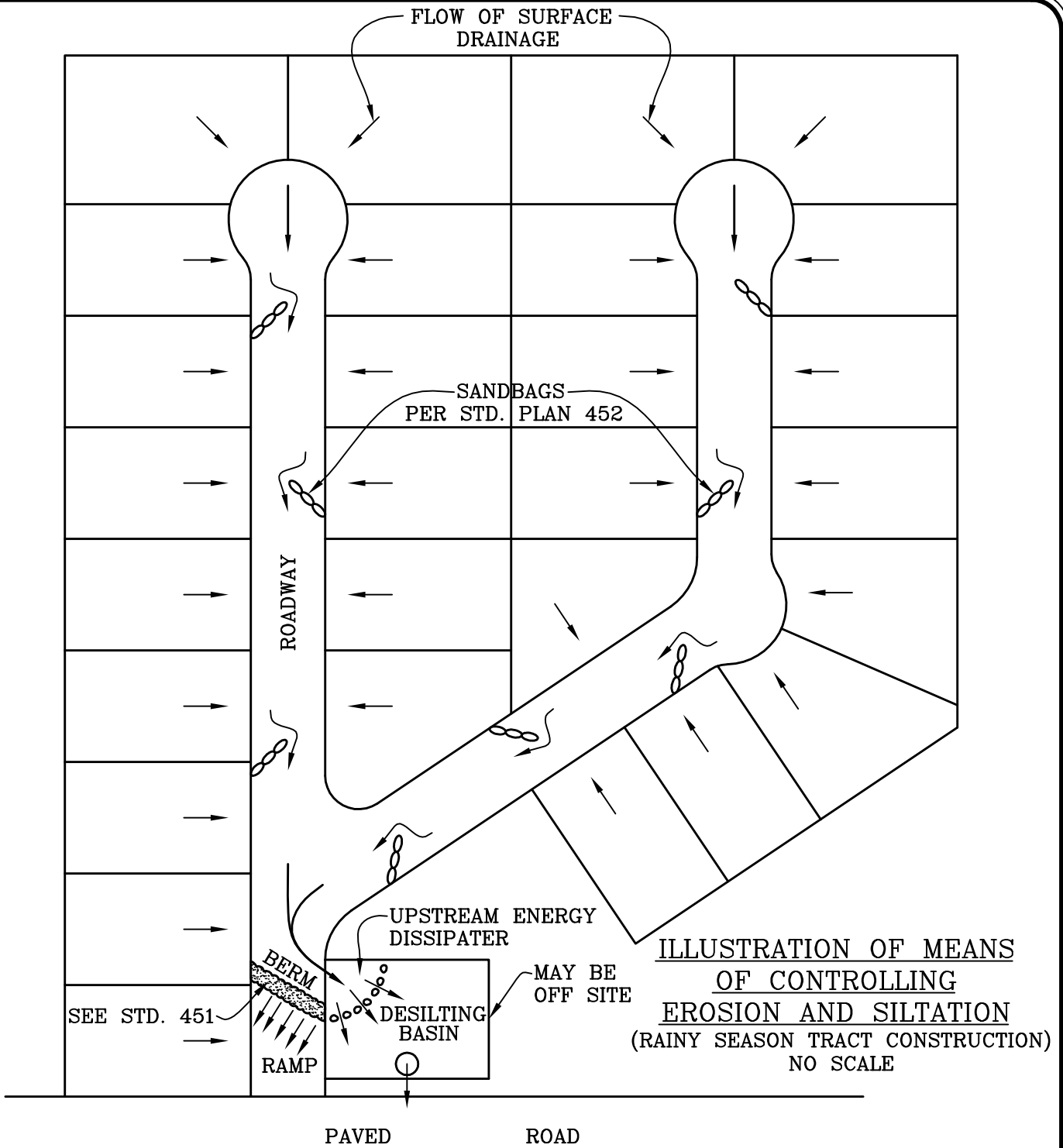
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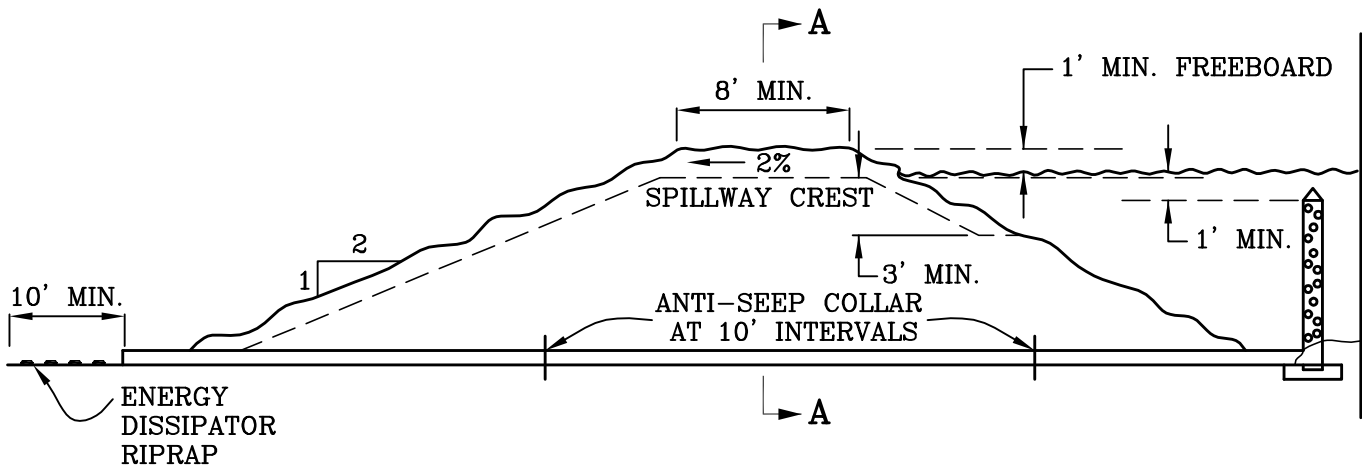
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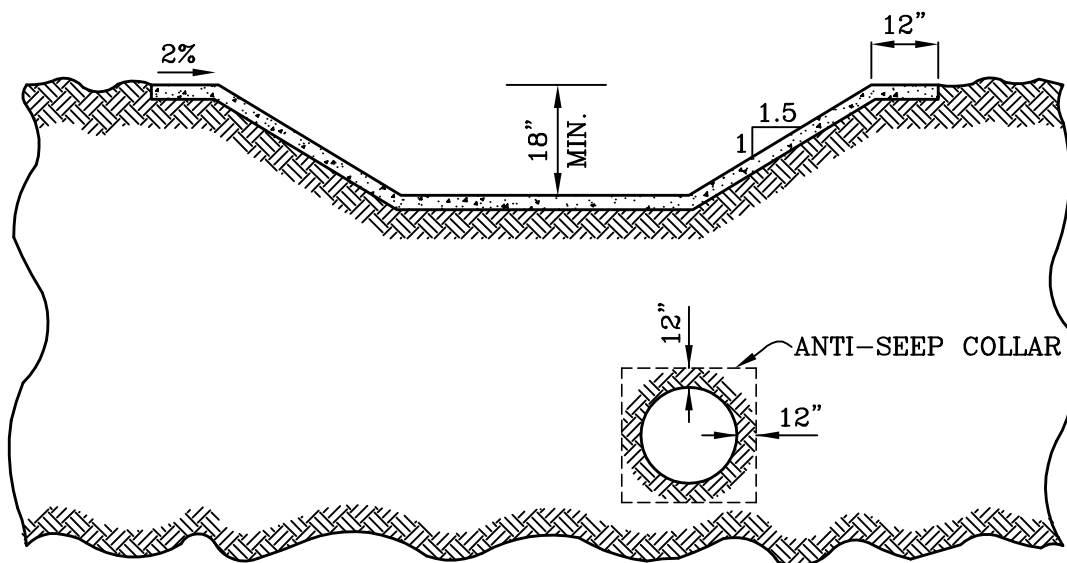
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SECTION THROUGH EMBANKMENT
NO SCALE



SECTION A-A

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