F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
350	57B-31	COOK	62	20
STA. 20+23.42		TO STA. 28+00.00		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

CONTRACT NO. 60440

POSSIBLE COFFERDAM ALTERNATE

WATER INFLATED DAM
PRODUCT SPECIFICATION

(AQUA-BARRIER™ OR EQUIVALENT)

1.1 SPECIFICATION

A WATER-INFLATED TEMPORARY DAM (AQUA-BARRIER™ OR EQUIVALENT) SHALL CONSIST OF THE FOLLOWING:

1) THE WATER INFLATED DAM WILL CONSIST OF A SELF CONTAINED, SINGLE TUBE WITH AN INNER RESTRAINT BAFFLE(S)/DIAPHRAM(S) STABILIZATION SYSTEM. THE WATER-INFLATED DAM MUST HAVE THE ABILITY TO STAND ALONE, WITHOUT ANY ADDITIONAL EXTERNAL MECHANICAL OR GRAVITATIONAL STABILIZATION DEVICES, AS A POSITIVE WATER BARRIER AND WATER MANAGEMENT SYSTEM.

2) THE WATER-INFLATED DAM SHALL BE PRODUCED FROM HEAVY GAUGE POLYVINYL CHLORIDE (PVC) REINFORCED WITH POLYESTER. THE PVC FABRIC USED TO CREATE THE INFLATABLE DAM WILL BE INFIELD REPAIRABLE UTILIZING A VINYL ADHESIVE AND PATCH MATERIAL.

3) THE WATER-INFLATED DAM MUST MAINTAIN MECHANICAL STABILITY IN ADDITION TO PROVIDING ANTI-ROLLING WHEN EXPOSED TO UNEVEN HYDROSTATIC PRESSURE FROM EITHER SIDE.

4) THE SELF-CONTAINED WATER INFLATED DAM SHALL HAVE THREADED FILL PORTS AND DRAIN PORTS FOR RAPID INFLATION AND DRAINING. THE DAM WILL BE EQUIPPED WITH END LIFTING LOOPS USED TO CONTROL THE DAM WITH EQUIPMENT DURING THE INSTALLATION AND REMOVAL PROCESS.

5) METHOD FOR CONNECTING THE INDIVIDUAL UNITS TOGETHER WILL CONSIST OF OVERLAPPING THE END OF THE UNITS A SPECIFIC LENGTH WHICH WILL CREATE A WATERTIGHT CONNECTION. NO OTHER DEVICES OR METHODS FOR CONNECTING THE BARRIERS ARE REQUIRED.

1.2 PRODUCT DESCRIPTION

WATER-INFLATED DAMS ARE USED TO CONTROL INVASIVE WATER IN FLOODWATER SITUATIONS, AS A MEANS OF WATER MANAGEMENT TO PROVIDE ACCESS TO UNDERWATER AREAS FOR CONSTRUCTION AND MAINTENANCE OPERATIONS, HAZARDOUS LIQUID CONTAINMENT, SEDIMENT RETENTION IN ENVIRONMENTALLY SENSITIVE AREAS IN ADDITION TO A CONTINUALLY EXPANDING LIST OF WATER CONTROL RELATED APPLICATIONS.

1.3 DAM SIZE REQUIREMENTS

THE WATER-INFLATED TEMPORARY DAM HEIGHT SHALL BE DETERMINED AS FOLLOWS:

1) STATIC WATER HEIGHT CONDITIONS SHALL NOT EXCEED 75% OF THE PROPERLY FILLED HEIGHT OF THE BARRIER.

2) DYNAMIC WATER HEIGHT CONDTIONS SHALL NOT EXCEED STATED VALUE DURING HYDRODYNAMIC INSTALLTION PROCEDURES (SEE DYNAMIC INSTALLATION INSTRUCTIONS FOR COMPLETE LIST OF REQUIREMENTS.)

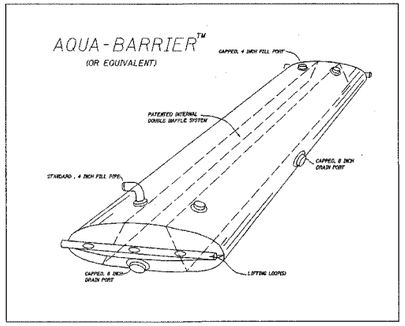
3) INSTALLATION SITE CRITERIA ARE REQUIRED FOR ASSESSMENT OF ALL RELEVANT FACTORS.

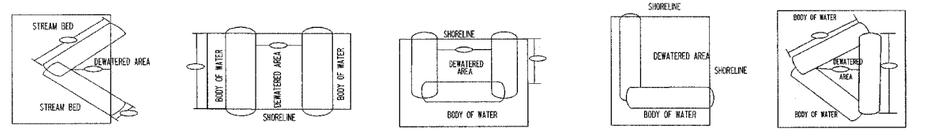
EXCESS SLOPE, HIGH WATER VELOCITIES, DYNAMIC LOADS RESULTING FROM WAVE ACTIONS, MOUNTING SURFACE IRREGULARITIES, AND CHANGES IN INTERRELATED HYDROLOGICAL CONDITIONS CAN INCREASE THE REQUIRED WATER INFLATED DAM HEIGHT VERSES RETENTION HEIGHT REQUIREMENTS.

AQUA-BARRIER STANDARD HEIGHTS & DIMENSIONS

INFLATED HEIGHT (FT)	LAYFLAT WIDTH EMPTY (FT)	LAYFLAT WIDTH INFLATED (FT)	GALLONS PER LINEAR FOOT	100 FT SECTION WEIGHT	MAXIMUM** DEPTH OF WATER (IN)
2 (22 OZ) (30 OZ)	5	4	60	198 320	18
3 (22 OZ) (30 OZ)	6.5	7	158	270 535	27
4 (22 OZ) (30 OZ)	12	10	256	392 600	36
5 (30 OZ)	15	12.5	390	931	45
6 (30 OZ)	18	15	564	1098	54
7 (30 OZ)	21	17.5	770	1224	63
8 (30 OZ)	24	20	1007	1620	72

** THIS DEPTH OF WATER REPRESENTS 75% OF THE HEIGHT OF A FULLY INFLATED AQUA-BARRIER. IT IS REQUIRED THAT A MINIMUM 25% FREEBOARD CAPACITY BE MAINTAINED DURING ALL PHASES OF A PROJECT. EXCESS SLOPE AND GRADE, SOIL COMPOSITION, MOVING WATER, AND RELATED HYDROLOGICAL CRITERIA MAY INCREASE OR DECREASE THE ABILITY OF AN AQUA-BARRIER TO PERFORM AS PROJECTED.





TEE PEE CONFIGURATION | IN-LINE PUMP AROUND CONFIGURATION | IN-LINE PARTIAL BLOCK CONFIGURATION | CORNER CONFIGURATION | BRIDGE PIER CONFIGURATION

AQUA-BARRIER™ CONNECTION REQUIREMENTS

EACH INFLATED AQUA-BARRIER SECTION IS STRAIGHT WITHOUT THE ABILITY TO BEND. WHEN JOINING AQUA-BARRIERS, AN OVERLAPPING TECHNIQUE IS USED. SIMPLY PLACE THE BARRIER TO BE INFLATED ON TOP OF TH END OF THE INFLATED BARRIER AND BEGIN THE INFLATION PROCESS. THE AMOUNT OF OVERLAP WILL BE DETERMINED BY BARRIER HEIGHT.

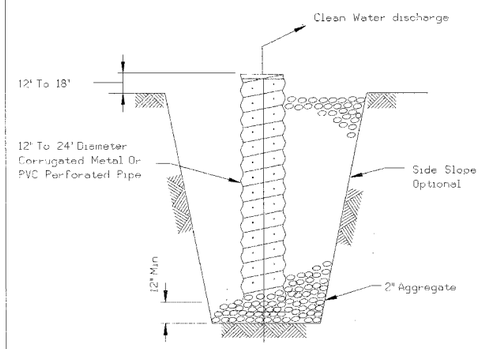
WHEN CONNECTING AQUA-BARRIERS A MINIMUM OF 8FT TO 12FT LOSS OF BARRIER LENGTH WILL BE EXPERIENCED. ALLOWANCES SHOULD BE MADE FOR THE LOSS IN LENGTH OF THE AQUA-BARRIERS DUE TO THE OVERLAP CONNECTION.

AQUA-BARRIER INFLATED HEIGHT (FT)	OVERLAP LENGTH (FT)
2	3
3	4.5
4	6
5	7.5
6	9
7	10.5
8	12

NOTE:

THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING AND CONSTRUCTING A COFFERDAM THAT IS ADEQUATE FOR THE CONDITIONS UNDER WHICH THE COFFERDAM WILL BE USED.

SUMP PIT PLAN (OPTIONAL)



SECTION

NOTES:
1. Pit dimensions are optional.
2. The standpipe will be constructed by perforating a 12"-24" diameter corrugated metal or PVC pipe.
3. A base of 2" aggregate will be placed in the pit to a minimum depth of 12". After installing the standpipe, the pit surrounding the standpipe will then be backfilled with 2" aggregate.
4. The standpipe will extend 12" to 18" above the lip of the pit.
5. If discharge will be pumped directly to a storm drainage system, the standpipe will be wrapped with filter fabric before installation.
6. If desired, 1/4"-1/2" hardware cloth may be placed around the standpipe prior to attaching the filter fabric. This will increase the rate of water seepage into the pipe.

REFERENCE		STANDARD DWG. NO.
Project		IL-650
Designed	Date	SHEET 1 OF 1
Checked	Date	DATE 8-11-94
Approved	Date	

NRCS Natural Resources Conservation Service

PRACTICE STANDARD
SUMP PIT

CODE 950

DEFINITION

A TEMPORARY PIT WHICH IS CONSTRUCTED TO TRAP AND FILTER WATER FOR PUMPING WATER INTO A SUITABLE DISCHARGE AREA.

PURPOSE

THE PURPOSE OF THIS PRACTICE IS TO REMOVE EXCESSIVE WATER IN A MANNER THAT IMPROVES THE QUALITY OF THE WATER BEING PUMPED.

CONDITIONS WHERE PRACTICE APPLIES

SUMP PITS ARE CONSTRUCTED WHEN WATER COLLECTS DURING THE EXCAVATION. THIS PRACTICE IS PARTICULARLY USEFUL IN URBAN AREAS DURING EXCAVATION FOR BUILDING FOUNDATIONS.

CRITERIA

A PERFORATED VERTICAL STANDPIPE IS PLACED IN THE CENTER OF THE PIT TO COLLECT FILTERED WATER. THE STANDPIPE WILL BE A PERFORATED 12 TO 24 - INCHE DIAMETER CORRUGATED METAL OR PVC PIPE. WATER IS THEN PUMPED FROM THE CENTER OF THE PIPE TO A SUITABLE DISCHARGE AREA. THE PIT WILL BE FILLED WITH COURSE AGGREGATE MEETING THE REQUIREMENTS OF IDOT STANDARDS FOR GRADATIONS OF CA-2 OR CA-4.

CONSIDERATIONS

DISCHARGE OF WATER PUMPED FROM THE STANDPIPE SHOULD BE TO A SUITABLE PRACTICE SUCH AS PRACTICE STANDARD IMPOUNDMENT STRUCTURE-ROUTED 842, PORTABLE SEDIMENT TANK 895, TEMPORARY SEDIMENT TRAP 960, OR STABILIZED AREA.

IF WATER FROM THE SUMP PIT WILL BE PUMPED DIRECTLY TO A STORM DRAINAGE SYSTEM, FILTER FABIC WILL BE WRAPPED AROUND THE STANDPIPE TO ENSURE CLEAN IF WATER DISCHARGE. THE FABRIC, IF USED, SHALL MEET THE REQUIREMENTS AS SHOWN IN MATERIAL SPECIFICATION 592 GEOTEXTILE TABLE 1 OR 2 CLASS 1 WITH AN EQUIVALENT OPENING SIZE OF AT LEAST 50 FOR NON-WOVEN OR 50 FOR WOVEN. IT IS RECOMMENDED THAT 1/4 TO 1/2 INCH HARDWARD CLOTH WIRE BE WRAPPED AROUND AND SECURED TO THE STANDPIPE TO ATTACHING THE FILTER FABRIC. THIS WILL INCREASE THE RATE OF WATER SEEPAGE INTO THE STANDPIPE.

PLANS AND SPECIFICATIONS

PLANS AND SPECIFICATIONS FOR INSTALLING AND UTILIZING SUMP PITS SHALL BE IN KEEPING WITH STANDARD AND SHALL DESCRIBE THE REQUIREMENTS FOR APPLYING THE PRACTICE TO ACHIEVE ITS INTENDED PURPOSE.

THE CONTRACTOR OR RESPONSIBLE REVIEWING AUTHORITY WILL DETERMINE THE NUMBER OF SUMP PITS AND THEIR LOCATIONS.

STANDARD DRAWING IL-650 SUMP PIT PLAN MAY BE USED AS A PLAN SHEET.

ALL PLANS SHALL INCLUDE THE INSTALLATION, INSPECTION, AND MAINTENANCE SCHEDULES WITH THE RESPONSIBLE PARTY IDENTIFIED.

OPERATION AND MAINTENANCE

THE SUMP PIT MAY HAVE TO BE REPLACED IF THE PIT AND FILTER FABRIC PLUGS WITH SEDIMENT.

ALL WORK DESCRIBED ABOVE WILL NOT BE PAID FOR SEPARATELY BUT RATHER CONSIDERED INCIDENTAL TO THE CONTRACT.

NRCS IL AUGUST 1994

PATRICK ENGINEERING INC. LISLE, ILLINOIS

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

ILLINOIS ROUTE 50 (CICERO AVENUE) OVER NORTH BRANCH CHICAGO RIVER

EROSION CONTROL DETAILS SHEET 1

SCALE: VERT. 1"=5' HORIZ. 1"=50' DRAWN BY: RJW

DATE: AUGUST 18, 2006 CHECKED BY: ADJ

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