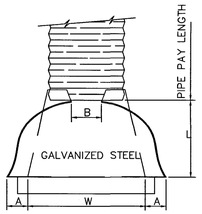
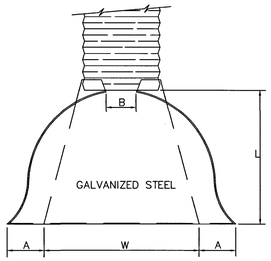
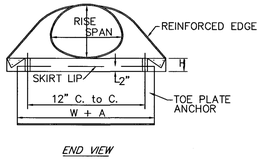


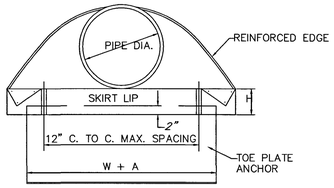
PLAN VIEW



PLAN VIEW



END VIEW



END VIEW

1. END SECTIONS AND TOE PLATE ANCHORS SHALL CONFORM TO ALL APPLICABLE REQUIREMENTS AS SET OUT IN THE INDOT STANDARD SPECIFICATIONS.

2. MULTIPLE PANEL BODIES SHALL HAVE LAP SEAMS WHICH SHALL BE TIGHTLY JOINTED WITH 3/8" DIA. GALVANIZED RIVETS OR BOLTS.

3. THE TOE PLATE ANCHOR SHALL BE CONSTRUCTED OF 0.138" THICKNESS GALVANIZED STEEL AND BE REQUIRED ON ALL STEEL PIPE END SECTIONS. IT SHALL BE MATCHED-PUNCHED TO FIT HOLES IN SKIRT LIP AND SUPPLIED LOOSE, COMPLETE WITH 3/8" DIA. GALVANIZED BOLTS.

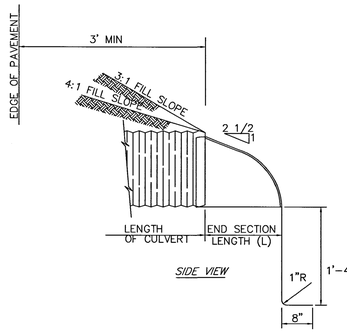
4. PIMPLED CONNECTION BAND MAY BE USED TO CONNECT PIPE END SECTION TO HELICALLY CORRUGATED PIPE.

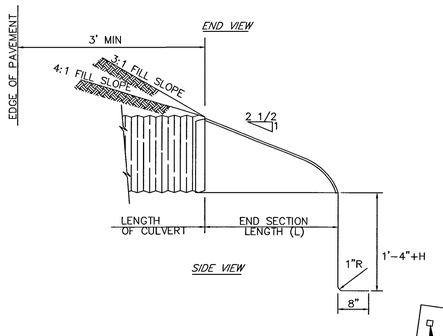
5. IF ALUMINUM ALLOY PIPE CULVERT IS FURNISHED, ALUMINUM ALLOY END SECTIONS SHALL ALSO BE USED AND ALL COMPONENT PARTS SHALL BE ALUMINUM ALLOY AS SET OUT IN THE STANDARD SPECIFICATIONS.

6. END SECTIONS WILL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR EACH DRIVEWAY CULVERT REPLACEMENT COMPLETE IN PLACE AND ACCEPTED.

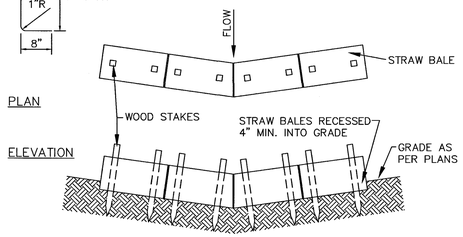
PIPE ARCH DIMENSIONS		T	DIMENSIONS					SLOPE	BODY
SPAN	RISE	in.	A 1"±	B Max.	H 1"±	L 1.5"±	W 2"±	Approx.	
18	11	.064	7	9	6	19	30	2 1/2	1 Pc.
22	13	.064	7	10	6	23	36	2 1/2	1 Pc.
25	16	.064	8	12	6	28	42	2 1/2	1 Pc.
29	18	.064	9	14	6	32	48	2 1/2	1 Pc.
36	22	.079	10	16	6	39	60	2 1/2	1 Pc.
43	27	.079	12	18	8	46	75	2 1/2	1 Pc.

PIPE DIA.	T in.	DIMENSIONS A 1"±	B Max.	H 1"±	L 1.5"±	W 2"±	SLOPE Approx.	BODY
12	.064	6	6	6	21	24	2 1/2	1 Pc.
15	.064	7	8	6	26	30	2 1/2	1 Pc.
18	.064	8	10	6	31	36	2 1/2	1 Pc.
21	.064	9	12	6	36	42	2 1/2	1 Pc.
24	.064	10	13	6	41	48	2 1/2	1 Pc.
30	.079	12	16	8	51	60	2 1/2	1 Pc.
36	.079	14	19	9	60	72	2 1/2	2 Pc.





DRIVEWAY CULVERT
NOT TO SCALE



STRAW BALE FILTER DETAIL
NOT TO SCALE

NOTES:
1. ALL BALES SHOULD ALL BE EITHER WIRE-BOUND OR STRING-TIED. STRAW BALES SHOULD BE INSTALLED SO THAT BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES (IN ORDER TO PREVENT DETERIORATION OF THE BINDINGS.)
2. THE BARRIER SHOULD BE ENTRENCHED AND BACKFILLED. A TRENCH SHOULD BE EXCAVATED THE WIDTH OF A BALE AND THE LENGTH OF THE PROPOSED BARRIER TO A MINIMUM DEPTH OF 4 INCHES. AFTER THE BALES ARE STAKED AND CHINKED, THE EXCAVATED SOIL SHOULD BE BACKFILLED AGAINST THE BARRIER. BACKFILL SOIL SHOULD CONFORM TO THE GROUND LEVEL ON THE DOWNHILL SIDE AND SHOULD BE BUILT UP TO 4 INCHES AGAINST THE UPHILL SIDE OF THE BARRIER.
3. EACH BALE SHOULD BE SECURELY ANCHORED BY AT LEAST TWO STAKES OF WOOD OR STEEL DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHOULD BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER. STAKES SHOULD BE DRIVEN DEEP ENOUGH INTO THE GROUND TO SECURELY ANCHOR THE BALES.
4. THE GAPS BETWEEN BALES SHOULD BE CHINKED (FILLED BY WEDGING) WITH STRAW TO PREVENT WATER FROM ESCAPING BETWEEN THE BALES.
5. INSPECTION SHOULD BE FREQUENT AND REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED.
6. STRAW BALE BARRIERS SHOULD BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS, BUT NOT BEFORE THE UPSLOPE AREAS HAVE BEEN PERMANENTLY STABILIZED.
7. IN SHEET FLOW APPLICATIONS, BALES SHOULD BE PLACED IN A SINGLE ROW, LENGTHWISE ON THE CONTOUR, WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.
8. IN CHANNEL FLOW APPLICATIONS, BALES SHOULD BE PLACED IN A SINGLE ROW, LENGTHWISE, ORIENTED PERPENDICULAR TO THE CONTOUR, WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER. THE BARRIER SHOULD BE EXTENDED TO SUCH A LENGTH THAT THE BOTTOMS OF THE END BALES ARE HIGHER IN ELEVATION THAN THE TOP OF THE LOWEST MIDDLE BALE TO ASSURE THAT SEDIMENT LADEN RUNOFF WILL BE TRAPPED.

SEASONAL SOIL PROTECTION CHART

STABILIZATION PRACTICE	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
PERMANENT SEEDING			A ———		*///////				*/////* ———			
DORMANT SEEDING	B ———										B ———	
TEMPORARY SEEDING			C ———					D ———				
			E ———		*///////			/* ———				
SODDING			F ** ———		*///////			/* ———				
MULCHING	G ———											

A = KENTUCKY BLUEGRASS 40 LBS/ACRE; CREEPING RED FESCUE 40 LBS/ACRE; PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYEGRASS 20 LBS/ACRE.
B = KENTUCKY BLUEGRASS 60 LBS/ACRE; CREEPING RED FESCUE 60 LBS/ACRE; PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYEGRASS 30 LBS/ACRE.
C = SPRING OATS 3 BUSHEL/ACRE
D = WHEAT OR RYE 2 BUSHEL/ACRE
E = ANNUAL RYEGRASS 40 LBS/ACRE. (1 LB/1000 SQ. FT.)
F = SOD
G = STRAW MULCH 2 TONS/ACRE
//// IRRIGATION NEEDED DURING JUNE, JULY, AND/OR SEPTEMBER.
** IRRIGATION NEEDED FOR 2 TO 3 WEEKS AFTER APPLYING SOD.

EROSION CONTROL PLAN

DURING ALL PHASES OF CONSTRUCTION THE SITE GENERAL CONTRACTOR AND ALL SUB-CONTRACTORS SHALL EXERCISE MEASURES TO PREVENT THE EROSION OF SOILS DUE TO THE ACTION OF WATER AND WIND. THE CONTRACTORS SHALL USE THE FOLLOWING MEASURES TO ACCOMPLISH THIS OBJECTIVE:

A. SURFACE PROTECTION
   1. CLEARING SHALL BE LIMITED SO AS TO EXPOSE THE SMALLEST POSSIBLE AREA OF LAND FOR THE SHORTEST POSSIBLE TIME.
   2. EXPOSED AREAS SHALL BE IMMEDIATELY GRADED AND PROTECTED WITH TEMPORARY OR PERMANENT COVER, SUCH AS SOD, SEED AND MULCH, CROWVETCH, LESPEDEZA OR CREEPER. NEWLY GRADED CHANNELS OR STEEP SLOPES WILL REQUIRE THE USE OF FIBROUS MATTING, NETTING OF SEEDED AND MULCHED AREAS, OR THE STAKING OR SHINGLING OF SOD WHILE VEGETATION IS BECOMING ESTABLISHED.

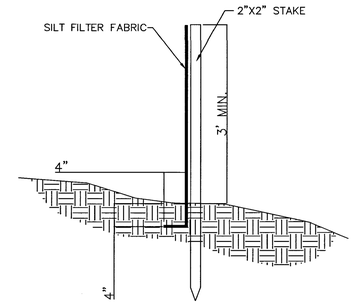
B. RUN- OFF CONTROL
   1. LONG AND/OR STEEP SLOPES WILL REQUIRE CONTOUR BENCHING AND FURROWING, OR BERMS TO REDUCE RUN-OFF VELOCITIES.

C. SEDIMENT TRAPPING
   1. THE TRAPPING OF ERODED PARTICLES WILL BE ACCOMPLISHED BY THE DIVERSION OF RUN-OFF TO SEDIMENT BASINS, EXCAVATION TRAPS, BERMS, STAKED HAY BALES, OR FLOATING SILT CURTAINS.
   2. THE PROPOSED RETENTION AND/OR DETENTION POND(S) ALONG WITH ANY ENVIRONMENTAL BERM(S)/ REAR YARD SWALE(S) SHALL BE CONSTRUCTED FIRST. THE POND(S) AND OUTFALL STRUCTURE(S) MUST BE COMPLETE AND OPERATIONAL PRIOR TO THE PLACEMENT OF ANY IMPERVIOUS SURFACE.
   3. TRAPPING DEVICES SHALL BE PERIODICALLY INSPECTED DURING DRY PERIODS AND AFTER EACH RAINFALL EVENT BY THE SITE CONTRACTOR. TRAPPING DEVICES SHALL BE REPLACED IF DETERMINED TO BE INCAPABLE OF PERFORMING INTENDED FUNCTION OF SEDIMENT TRAPPING.
   4. TRAPPING DEVICES SHALL REMAIN IN PLACE UNTIL A VEGETATIVE COVER HAS ESTABLISHED SUFFICIENTLY TO STABILIZE THE SOILS AND PREVENT EROSION.

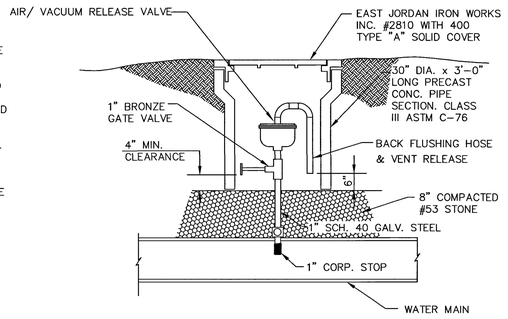
D. SOIL MOISTURE
   1. THE CONTRACTOR SHALL HAVE AVAILABLE ON THE CONSTRUCTION SITE A WATER SOURCE CAPABLE OF APPLYING WATER TO DRY EXPOSED SOIL IN ORDER TO PREVENT WIND EROSION. THE APPLICATION RATE AND MANNER SHALL BE SUCH THAT SOIL MOISTURE IS ATTAINED AND NO SURFACE RUN-OFF IS CREATED.

E. RESPONSIBILITY
   1. THE CONTRACTOR SHALL BE HELD RESPONSIBLE UNTIL THE COMPLETION OF THE PROJECT WARRANTY PERIOD. AFTER THAT, THE OWNER WILL BE RESPONSIBLE FOR MAINTENANCE.

INLET PROTECTION
N.T.S



SILT FENCE DETAIL
N.T.S



AIR / VACUUM RELEASE VALVE
NOT TO SCALE
APCO MODEL 142 OR APPROVED EQUAL - 1" THREADED PIPE INLET WITH 1" BRONZE GATE VALVE.

RECORD DRAWING

This drawing has been revised from the original contract drawings to show minor/ major changes made during construction. This drawing is not warranted to be complete and accurate in all respects.

GRW Engineers, Inc.

Date: 5/2004 By: MSB

NOTES:

NO.	DESCRIPTION	DATE	BY
1	AS-BUILT REVISIONS	5/2004	MSB

REVISIONS

HOOSIER HILLS REGIONAL WATER DISTRICT
DIVISION "F" WATERWORKS SYSTEM IMPROVEMENTS
CONTRACT F-1
DETAILS

GRW PROJECT NO. 2745-04

GREGORY A. WRIGHT REGISTERED No. 19300607 STATE OF INDIANA PROFESSIONAL ENGINEER

GRW Engineers, Inc.
Engineers, Architects, Planners
INDIANAPOLIS, INDIANA
LOUISVILLE & LEXINGTON, KENTUCKY
CINCINNATI, OHIO
NASHVILLE, TENNESSEE
ARLINGTON, TEXAS

DRAWN: BJD	DATE: JULY 2002
FILE NAME: SHEET562	SCALE: AS NOTED
CHECKED:	SHEET NO. 562
APPROVED:	

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