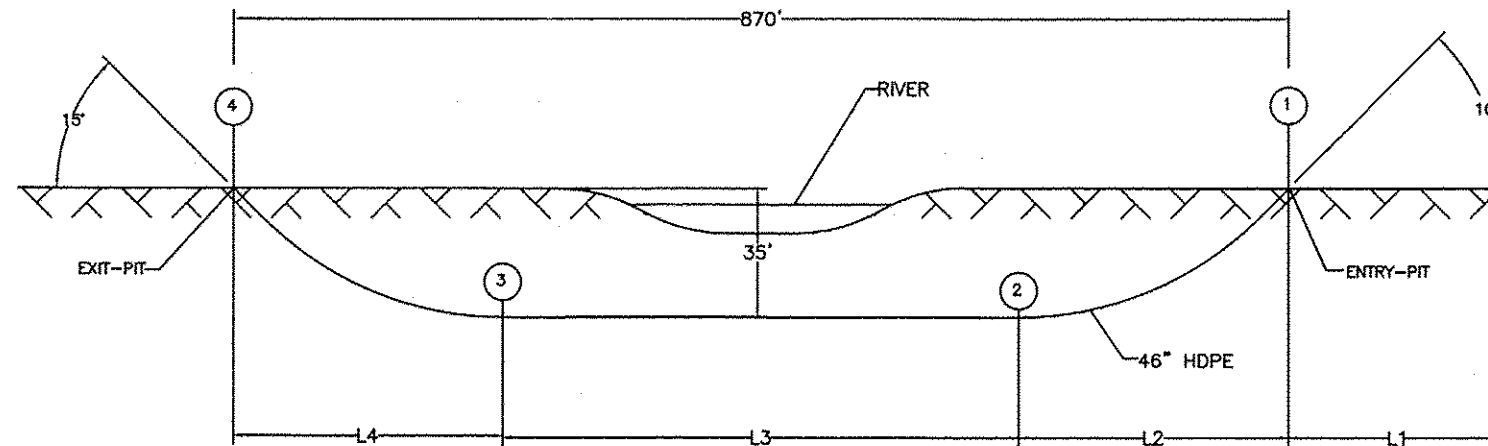


F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-1-	DUPAGE		
FED.ROAD.DIST.NO.			ILLINOIS	
			CONTRACT 60P42	
			FED. AID PROJECT	

GUIDED HORIZONTAL DRILLING SYSTEM (HDD) (CONTINUED)

TYPICAL BORE FOR A CROSSING RIVER



TYPICAL RIVER CROSSING, ASSUME THE HDPE PIPE IS 35' DEEP AND APPROXIMATELY 870' LONG WITH A 10 DEG. ENTRY ANGLE AND A 15 DEG. EXIT ANGLE. ACTUAL PULL BACK FORCE WILL VARY DEPENDING ON HACKREAMER SIZE SELECTION, AND USE; BORE HOLE STAYING OPEN; SOIL CONDITIONS; LUBRICATION WITH BENTONITE, DRILLER EXPERTISE, AND OTHER APPLICATION CIRCUMSTANCES.

- L1 = 100' DRAG.
- L2 = DISTANCE TO ACHIEVE DEPTH
- L3 = 870-L2-L4
- L4 = DISTANCE TO ACHIEVE DEPTH

MINIMUM BEND RADIUS AS A FUNCTION OF DIAMETER AND STANDARD DIMENSION RATIO

SDR 13.5				
SIZE	OD in.	WALL in.	MIN. RADIUS in.	WALL in.
3	3.500	.259	40.9	.226
5	-	-	-	-
6	6.625	.491	54.4	.427

OVALIZATION IS INDEPENDENT OF TENSILE STRENGTH OF MODULUS, BUT IS CONTROLLED BY DIAMETER, WALL THICKNESS AND BENDING RADIUS. THE RADIUS LISTED ABOVE ARE ESTIMATED, AS THE MINIMUM UNSUPPORTED BENDING RADIUS REQUIRED PRODUCING A 5% OVALIZATION. THE VALUES IN THE ABOVE TABLE ARE CALCULATED BASED ON MINIMUM WALL THICKNESS AND ARE A FIRST APPROXIMATION TO OVALITY IN THE BENDING CONDUIT (ACTUAL BENDING RADIUS MAY BE SLIGHTLY SMALLER).
 OVALITY IS CALCULATED AS: OVALITY = [(MAX. OD-MIN. OD)/AVG. OD] X 100.

NAPERVILLE PUBLIC UTILITIES DEPARTMENT ELECTRIC STANDARDS	SPECIFICATION FOR THE INSTALLATION OF HDPE CONDUIT BY THE HORIZONTAL DRILLING SYSTEM (HDD)	DATE: 02-19-08 PAGE: 25 OF 25 C30-1950
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PROJECT TITLE					ROUTE 59 ROAD IMPROVEMENTS				
PROJECT DESCRIPTION					DETAILS AND STANDARDS				
ENGINEER	DRAFTING DATE	MAP #	SCALE						
BCC	5-11-12	4211,4212,4223	N.T.S.						
DESIGN BY	DRAWN BY	REVISIONS DATE	AT&T JOINT AGREEMENT #	PROJECT #					
DL	PSM		N/A	EU-12					
CHECKED BY	APPROVED BY	CAD FILE	SHEET #						
		0060648001D152.DWG	52 OF 63						
Naperville			Department of Public Utilities Electric Division		WORK REQUEST # 60468				