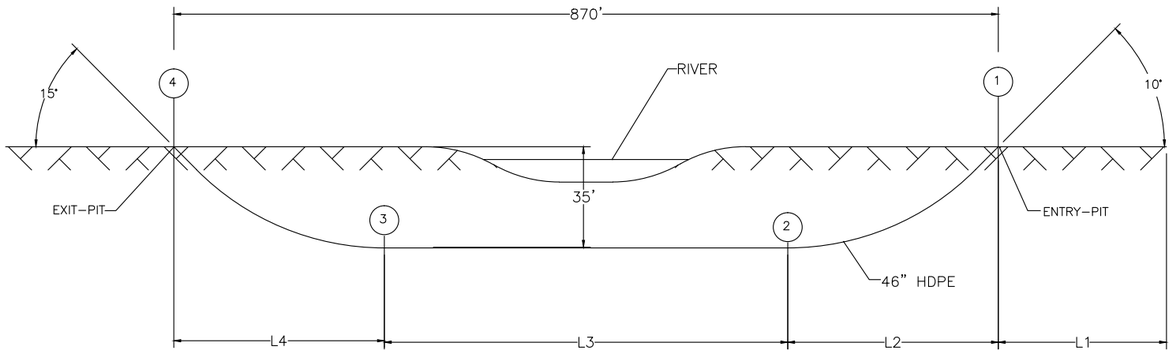
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	~~2011-035-I~~	DUPAGE		
			CONTRACT ~~60P42~~	
FED.ROAD.DIST.NO.	ILLINOIS	FED. AID PROJECT		

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	SPECIFICATION FOR THE INSTALLATION OF HDPE CONDUIT BY THE HORIZONTAL DRILLING SYSTEM (HDD)	DATE: 02-19-08
ELECTRIC STANDARDS		PAGE: 25 OF 25
		C30-1950

PROJECT TITLE: ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION: DETAILS AND STANDARDS			
ENGINEER: BCC	DRAFTING DATE: 8-04-12	MAP #: 4211,4224	SCALE: N.T.S.
GIS DESIGN BY: DL / DRAFTED BY: PSM	REVISIONS DATE:	AT&T JOINT AGREEMENT #: N/A	PROJECT #: EU-12
CHECKED BY:	APPROVED BY:	CAD FILE: 0061123001D34.DWG	SHEET #: 34 OF 40
Naperville — Department of Public Utilities, Electric Division			WORK REQUEST #: 61123