ENGINEERING REPORT DRIVEWAY DRAINAGE CROSSING CORREIA / PINE RIDGE DRIVE / ANDOVER, CONNECTICUT

The driveway analyzed for the crossing of an unnamed stream is situated between properties at 68 and 74 Pine Ridge Drive at the cul-de-sac end of the road. Subsequent to its entrance from Pine Ridge Drive, the driveway crosses an intermittent and unnamed stream that runs in a generally southerly direction to join the Hop River and encompasses a watershed of 62.9 acres, or approximately 0.10 square mile. The area is largely covered with densely wooded slopes of approximately 10% grades, and soils that are overall moderately well drained (NRCS Hydrologic Soil Group "B").

The following data was developed using various sources of information, including the DEEP and UConn GIS databases, precipitation data from the National Oceanic and Atmospheric Administration (NOAA) and the Northeast Regional Climate Center at Cornell University, the USGS StreamStats program and various hydrologic and hydraulic software programs (such as Hydro-CAD and FHWA HY-8). The watershed and culvert crossing were analyzed for various storm events, and for the 50-year and 100-year events in particular. The two culverts proposed for this site include a 36inch HDPE pipe and a 3' high by 8' wide concrete box culvert, each with 9 inches of base fill composed of natural stream bottom material excavated from the site during construction. The combined culverts were designed to pass the 100-year storm event, for which occurrence they have a calculated freeboard of 2.3 ft. below the top of the of the driveway surface. Two crossing points were chosen due to the fact that intermittent streambeds approach the crossing from two different portions of the watershed.

Available data and calculations resulted in the following numbers:

Drainage Area:	0.10 sq. mi.
NRCS Runoff Curve No. (RCN):	59
50-Year Flow at Crossing:	74 cfs
100-Year Flow at Crossing:	92 cfs
Proposed:	
(1) Pipe:	36" Dia. HDPE (Smooth Interior)
(2) Box Culvert	3' H x 8' W (Concrete Box Culvert)
	[Note: Each culvert will be filled to a 9-inch depth inside
	its base with natural stream materials.]
Total Flow Capacity (Both Culverts):	192 cfs (at top of driveway level)
100-Year Freeboard: ¹	2.3 ft. (below top of driveway)

¹ The freeboard, as noted here for the 100-year event, is measured from the upstream flood water level surface to the lowest crest point of the driveway crossing.



WATERSHED / CORREIA DRIVEWAY CROSSING / ANDOVER, CT

K.A. / DEC. 2020

BASE MAP SOURCE: CT ECO/DEEP 2016 AERIAL

Summary for Subcatchment 1S: Pine Ridge Driveway Crossing

Runoff = 73.88 cfs @ 12.52 hrs, Volume= 9.568 af, Depth> 1.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs Type II 24-hr 50-Year Rainfall=6.35"

	Area	(ac)	CN	Desc	ription		
*	62.	900	59	Woo	ded		
	62.	900	100.00% Pervious Area				
	Тс	Length	ı	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	49.0	3,196	6 0	.0851	1.09		Lag/CN Method, Pine Ridge Watershed

Subcatchment 1S: Pine Ridge Driveway Crossing



50-YEAR STORM EVENT

Summary for Subcatchment 1S: Pine Ridge Driveway Crossing

Runoff = 91.72 cfs @ 12.51 hrs, Volume= 11.678 af, Depth> 2.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs Type II 24-hr 100-Year Rainfall=7.00"



100-YEAR STORM EVENT



DRIVEWAY CROSSING SECTION / LOOKING DOWNSTREAM FHWA / HY-8 CULVERT ANALYSIS / 100-YEAR EVENT