

To: Tom Barnitz, ODOT D9	
From: Kathryn Gruver, P.E.	Project: SCI-823-6.81
CC: Brad Hyre, P.E., HDR PM	
Date: December 14, 2011	Job No: HDR 45878

**RE: Pre/Post Culvert Flow Rate Analysis
SCI-823-6.81 (Phase 1)
PID 19415**

As requested by ODOT, a pre/post flow rate analysis was conducted on SCI-823-6.81 mainline culvert crossings. Each culvert crossing was analyzed at the point where the culverted stream flow exits the ODOT L/A right of way. The SCS TR-55 method was used to compare pre and post construction flow rates. The flow rates below may differ from those used in the hydraulic design calculations for the culverts. The culverts are designed using hydrology obtained from the regression equation, which is not applicable in pre/post condition analysis. The regression equation does not take into consideration surface conditions.

The table below summarizes the existing and proposed conditions for each of the culverted streams. One culvert, at Sta 504+53, has a significant increase in flow rate due to its relatively small drainage area causing the new construction area to have a greater impact on the overall surface conditions. Improvements were made to the downstream property including a larger drive pipe and channel modification to accommodate the increased flow rate.

Station	Culvert Size	Existing Condition		Post Construction		Percent change	
		50 yr	100 yr	50 yr	100 yr		
353+88	54"	62	68	64	71	4%	
364+36	54"	87	96	86	94	-2%	
375+08	78"	286	313	291	318	2%	
403+76	72"	120	136	122	138	1%	
412+26	48"	41	47	40	45	-4%	
465+00	72"	195	218	200	223	2%	
473+00	54"	103	113	104	115	2%	
504+53	54"	47	54	60	75	21%	Oliver Road Property - Ditch and Drive pipe improvement