



**Indigo Land Design, LLC**  
 40 Elm Street, 2<sup>nd</sup> Floor  
 Old Saybrook, CT 06475

860.388.9343 Phone  
 860.391.8854 Fax  
[jwren@Indigo-Land.com](mailto:jwren@Indigo-Land.com) E-mail  
[www.Indigo-Land.com](http://www.Indigo-Land.com)

August 26, 2025

Re: DeSautels 4-Lot Resubdivision  
 257 Chesterfield Road (Tax Map 29 Lot 66)  
 Montville, CT 06370

**DRAINAGE DESIGN PARAMETERS**

Existing Conditions:

An existing 18-inch HDPE stormwater drainage pipe, owned and maintained by the Town of Montville, currently outlets from 296 Chesterfield Road onto the subject property at 257 Chesterfield Road. The outlet discharges to a riprap plunge pool in absence of a recorded drainage easement. Stormwater flows downgradient toward the on-site inland wetland. From provided survey map information invert elevations were estimated at 396' (inlet) and 394' (outlet).

Proposed Conditions:

The existing 18-inch HDPE stormwater drainage pipe will remain in place. The existing plunge pool will be removed and replaced with a precast Type 'C' catch basin and paved apron. From this structure, 80 lineal feet of 18-inch HDPE corrugated pipe will be installed to discharge to a proposed 6' x 6' pre-formed scour hole. A defined swale and grade-to-drain will direct runoff from the pre-formed scour hole overland on the subject property toward the on-site inland wetland.

Hydraulic calculations were performed using Manning's Equation (conservatively assuming full pipe flow):

$$V = \frac{1.49}{n} \times R_{\text{pipe}} \times \sqrt{S}$$

Where:

- V = Outlet velocity (fps)
- n = Manning's roughness coefficient (0.024 for HDPE corrugated pipe)
- R = Hydraulic radius (0.375 ft)
- S = Slope (0.0625)

The calculated outlet velocity is 8.04 fps.

$$Q = VA \quad Q = 8.04 \times \pi r^2 = 14.2 \text{ cfs}$$

In accordance with the Connecticut DOT Drainage Manual (Table 11-12.1), the proposed 6' by 6' pre-formed scour hole provides energy dissipation capacity in excess of the minimum requirements for the computed discharge velocity. This feature ensures the proposed design will mitigate potential erosion at the pipe outlet and protect downstream resources. Furthermore, the proposed drainage improvements at 257 Chesterfield Road provide a stable and controlled discharge for the existing town stormwater system. The replacement of the plunge pool with a catch basin and scour protection structure will enhance long-term functionality, reduce erosion potential, and ensure compatibility with the natural hydrologic conditions of the inland wetland.

OUTLET PROTECTION - OUTLET VELOCITY ≤ 14 feet/sec

DISCHARGE (cfs)	OUTLET PIPE DIAMETER OR SPAN (in)									
	12	15	18	24	30	36	42	48	54	60
0-5	10	10	USE							
6	12	11								
7		13	12							
8		14	13	12		MINIMUM				
9			14	13						
10			15	13						
11				14					LENGTH	
12				14						
14				16	14					
16				17	15	14				OUTLINED
18				18	16	15				
20					17	15	14			
22		USE			18	16	15			
24					17	15	14			
26					17	16	15			
28					18	16	15			
30					19	17	16			
35					20	18	17	16		
40						20	18	17	16	
45						21	19	18	16	
50						22	20	18	17	
55							21	19	18	
60							22	20	19	
65							24	21	20	
70						SCOUR	25	22	20	
75							26	23	21	
80								24	22	
90								26	24	
100								28	25	
110									27	
125										HOLE
130										30

Table 11-12.1 - Length - L<sub>s</sub> (feet)  
 Type A Riprap Apron