Delaware Department of Transportation

ENGINEERING INSTRUCTION

EI

BR-14-001

Title: Guidance for Using 265500 - Stream Diversion Specification

9/29/2014

This document provides guidance for designers on Special Provision Item 265500 – Stream Diversion (Lump Sum). It helps in determining proper stream diversion plans, ensuring all items are accounted for and sizing diversion methods. Each project should be evaluated individually and should be designed in accordance with appropriate design standards. This document is guidance to help designers evaluate the potential options available and portray Department preferences.

Stream Diversion Basics:

The plans shall show a complete stream diversion plan per DNREC requirements. The plans should show a diversion method that maximizes the work area within the easements without adversely affecting the movement of manpower and equipment. The proposed plan should be simply constructible and made from common materials, typically available to every contractor. Item sizes and locations shall be accurately shown given consideration for site conditions. Calculations for temporary impacts should be based on the maximum volume anticipated for the diversion method. In many cases, sandbag dikes will be the preferred method to fit this criterion, even though contractors may opt to use steel sheeting. Refer to DelDOT Standard Detail E-20 for sandbag diversion detail.

Diversion Methods:

When choosing a stream diversion method, multiple factors should be considered: volume of stream flow, structure type, site conditions, sequence of construction, and construction duration. Incorporating the existing structure into the diversion should be considered as it often reduces time, impacts and cost. The sequence of construction should minimize the length of time a stream diversion is in place. In general, pipes are preferred over pumps. Pumping should only be used in cases where the flow is very small or pipes are impractical. The quantity of flow designed for the diversion shall be clearly stated in the plans under the sequence of construction, and it should be specified that any alternate plans must meet the designated flow at the minimum. The plans shall designate the size of diversion pipe(s) if they are shown in the plans but shall not designate the size of pump(s) if pumping is the method presented. Weir dimensions and elevations shall be noted for sheeting and sandbags dikes. A method for pumping clean water and for stabilizing the outfall shall be specified. Payment for these items will be included in the lump sum cost of Item 265500 - Stream Diversion.

Contractor Alterations:

The Contractor may choose an alternative stream diversion method, as stated in the special provision. An alternative method must be submitted by the Contractor as an alteration to the plans and approved by the Project Engineer, the Stormwater Engineer and Environmental Studies. The submission shall clearly state any alternate plans and shall demonstrate the capacity to pass the diversion flow stated on the plans. Alterations may not be accepted due to permit restrictions.

Payment:

This is a lump sum item that shall encompass all items required for a complete stream diversion including sandbags, temporary steel sheeting, diversion pipes and/or pumping, stilling wells, and outfall riprap. This should avoid the need for multiple field changes to pay items. Items for dewatering the work area (i.e. Dewatering Bags, Portable Sediment Tank, Sump Pit, etc.) shall still be paid under their respective items.

Stream Diversion Calculations:

Stream diversions shall be sized for a percentage of the 2-year storm. Pumping operations shall only be considered if the design storm does not exceed the capacity of one twelve-inch pump. Pump capacities and design storm calculations are as follows:

Construction Duration	Design Storm for Diversion Operations
1-30 days	15% of the 2-year storm but not less than base flow
31-90 days	25% of the 2-year storm
91-150 days	50% of the 2-year storm
151 days or more	100% of the 2-year storm

Pump Size	Capacity (c.f.s.)
6” pump	3.5
12” pump	9.0