

New Jersey Department of Transportation QUALITY IMPROVEMENT ADVISORY

QUALITY MANAGEMENT SERVICES

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QIA No. QIA036

Approved: B. Strizki

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Subject: Dewatering Basins

Process Affected:

☐ Scope ☒ Design ☐ Right of Way ☐ Utilities ☒ Environmental ☐ Historic ☒ Construction

Bureaus Affected:

All Consultant Designers
In - House Production Units
Construction Personnel

Procedure(s) Affected:

Design Development
Construction

Nature of Issue(s):

During dewatering containment operations, water being pumped must be deposited into a sediment basin enabling sand, silt, and fines to settle and filter before the water is pumped back into the stream or river. The design and material to be used to form the sediment basin is the responsibility of the Contractor.

At several 70-90% Completion Meetings contractors stated that they encountered difficulties determining which type of sediment control design is appropriate for a given project. The meeting reports identified that the difficulties range from identifying the requirements that are needed for dewatering, to physical constraints encountered at the construction site. These contractors have requested additional direction for the design requirements of dewatering basins. On three of the projects where the problems were encountered, a product utilizing a sediment control bag made from geotextile fabric was used as an alternative. This product was used in lieu of conventional hay bales, aggregates on containers, and stone check dams for sediment control. The use of this type of system was reported to have worked well on these contracts.

Recommendation(s):

Designers and Resident Engineers are advised that sediment control bags are available and have been utilized with success in dewatering operations on other NJDOT contracts. Their use has especially been beneficial where space constraints prevent the use of other sediment control devices. These bags are available in a variety of sizes. They are for single use only and should be used and disposed of in accordance with the manufacturer's instructions. Consideration should be given to using this type of product if field conditions are appropriate at the project site and when applicable, designers should specify a generic name (e.g.-silt bag or sediment bag). Below is some helpful information concerning the use of these bags:

- Sediment control bags should be installed on a gentle slope or grade so incoming water flows downhill through the bag without creating more erosion.
- To increase the efficiency of filtration, the bag can be placed on an aggregate or haybale bed to maximize water flow through the surface area of the bag. Stone size of the aggregate bed should be small enough so as not to puncture the fabric of the bag.
- Flow rates will vary depending on the size of the bag, the type and amount of sediment discharged into the bag, the type of ground, rock or other substance under the bag and the degree of the slope on which the bag lies. To ensure the bag is performing efficiently, it should

be monitored periodically.

Designers are advised that they must evaluate their projects to ensure that there is sufficient room for dewatering operations prior to specifying the item "dewatering basin". This evaluation must be made from a constructibility standpoint, and the designer should be prepared to support whatever method they propose. To assist designers further, an item will be added to the QA Checklist.

The Landscape and Urban Design Unit is currently updating the NJDOT version of the Soil Erosion and Sediment Control Manual. New specifications and details will be added to the manual that will include dewatering basins. The Manual will also include a detail for sediment control bags for use in sediment containment measures. Until these changes are incorporated into the Manual, standards relative to the requirements for dewatering can be found in the "Standards for Soil Erosion and Sediment Control in New Jersey". These standards are adopted by the New Jersey State Soil Conservation Committee. Chapter 14 of this publication entitled "Standards for Dewatering" covers sediment containment measures. Additional guidelines may be found in Article 7-47 (Dewatering Methods for Excavation) of the 3rd edition of the Standard Handbook for Civil Engineers.

Resident Engineers are advised to seek further assistance from the Environmental Services and Support Unit, as this unit's function is to perform routine environmental inspections on projects.

These guidelines should prove to be helpful in the design and construction of dewatering basins and should be effective in controlling sediment during dewatering operations on applicable construction contracts.

Implementation: *Immediately*

Impact Assessment:

☒Schedule ☒Quality ☐Cost ☐Scope

Cost Impact:

N/A