ILLINOIS URBAN MANUAL
PRACTICE STANDARD

DEWATERING

(no.)
CODE 813

(Source: Illinois Urban Manual Technical Committee)

DEFINITION

The controlled removal of water from construction sites.

PURPOSE

The purposes of this practice are as follows:

1. To minimize construction impacts in areas with surface water or a high water table.
2. To prevent sediment transport.
3. To provide work site safety.
4. To prevent pollution of groundwater or surface water from suspended soil particles carried in construction site dewatering operations.
5. To preserve down-gradient natural resources and property.

CONDITIONS WHERE PRACTICE APPLIES

Construction sites, including any onsite and offsite excavated areas, where the presence of water creates unsafe conditions, potential damage, or restricts construction operations.

Construction sites where water is present in any form, including stormwater runoff, stormwater ponding, intermittent runoff, streams, standing water, ground water, or other bodies of water.

Where water pumping operations occur.

Where the water table is intercepted.

Where work is performed in-stream.

Where collected stormwater runoff is removed from construction sites.

Not for the removal of water that is polluted by chemicals, fuel, etc. This standard only addresses a suspended solid in the form of uncontaminated sediment.

CRITERIA

Dewatering shall consist of the removal of surface water and/or ground water by diverting and/or removing water from construction sites to perform the required construction in accordance with the plans and specifications.

Discharging sediment to upland vegetated areas shall not be used as a stand-alone sediment control practice during dewatering operations.

Construction projects may be subject to local, county, state and federal rules and regulations.

Accumulated sediment from dewatering operations shall be disposed of in accordance with all applicable laws and regulations.

Diverting Surface Water – Cofferdams, channels, sumps, flumes and temporary diversions shall be built and maintained, according to contract plans, specifications, and respective IUM Practice Standards.

For the installation of cofferdams and sumps, follow the requirements as outlined in Practice Standards COFFERDAM 803 and SUMP PIT 950.

Excess surface runoff shall be diverted from the construction area as outlined in the IUM Practice Standards TEMPORARY DIVERSION 955, TEMPORARY SWALE 980, DIVERSION 815 and DIVERSION DIKE 820.

A permanent stream or other concentrated flow shall be diverted away from the construction area as outlined in Practice Standard TEMPORARY STREAM DIVERSION 976.

Removing Water – Drains, sumps, pumps, casings, well points and all other practices required to dewater the site shall be furnished, installed and maintained according to contract plans, specifications, and respective IUM Practice Standards.

When dewatering by well points and deep wells is utilized, the wells shall be placed at intervals along the construction area as necessary to depress the groundwater table during construction. Monitoring wells shall be installed where measurement of the pumping effectiveness is required. Well point and deep well dewatering shall be terminated and sealed immediately upon completion of the dewatering operation.

Sediment Control - All dewatering activities shall be performed in a manner that does not negatively impact the water quality of the water table, cause erosion, or transport sediment to wetlands, water bodies, water conveyance features, etc. on or off site.

In poorly drained soil areas where well dewatering is not practical, pumping directly from construction trenches is permitted provided appropriate sediment control practices are incorporated with the pumping activity.

All outlets and drainage pathways for dewatering discharges shall be stable and protected from erosion.

Sediment Removal Practices -
Sediment removal shall be provided using the following practices, or combination of practices, depending on the soil type, suitability of dewatering method, volume of sediment to be removed, location, and amount of dewatering.

Practice Standard. TEMPORARY SEDIMENT TRAP 960 shall be used to detain water and remove sediment from pumping and diversion operations where space is available.

Practice Standard, PORTABLE SEDIMENT TANK 895 shall be used to retain sediment during dewatering operations where there is limited space,

Practice Standards POLYACRYLAMIDE (PAM) FOR TURBIDITY REDUCTION AND SEDIMENT CONTROL 894.

Pumps with Sediment Filtration Bags.
Where there is low, intermittent pumping activity, pumps with sediment filtration bags attached to pump discharges shall be used. Sediment filtration bags shall be placed on a stabilized surface area. Sediment filtration bags shall not be

placed, whole or partially, within aquatic areas (wetlands, streams, etc.), or water conveyance features (ditches, swales, etc.). Sediment filtration bags shall be raised above the supporting ground on a surface, or material, that allows water to flow out of the bottom of the bag at the respective design discharge rate for the sediment filter bag selected. The pump discharge rate shall not exceed the design discharge rate for the sediment filter bag.

Materials, structures, etc. that are used to ensure that water flows out of the bottom of a sediment filter bag must be non-erodible and be placed atop a stabilized surface area.

The material for the sediment filtration bag shall meet the requirements of Material Specification 592 GEOTEXTILE, Table 2, Class I with a minimum tensile strength of 200 lbs, or Table 1, Class 4 value. The sediment filter bag shall be sized per manufacturer recommendations and based on the size of the pump however, the minimum bag size shall be 10 feet x 15 feet with a usable surface drainage area of 300 square feet (10 x 15 x 2) sides, top & bottom) The largest diameter size pump hose to be used with a sediment filtration bag is 4-inch**.** Multiple hoses/pipes shall not be attached to a single filtration bag inlet sleeve.

Removal of Dewatering Facilities - The temporary dewatering areas shall be removed after they have served their purpose. The dewatering areas shall be graded where necessary, and stabilized with appropriate erosion control practices. Shall not create any obstruction of normal water flow, or any other interference with the operation of, or access to the permanent works.

CONSIDERATIONS

Federal, State, County and local water quality requirements also need to be considered when choosing a dewatering method and may include requirements for sampling and evaluating discharges for clarity.

Base the location, method of dewatering, and configuration on site conditions. The following items should be considered when selecting the proper dewatering method:

1. Amount of water to remove.
2. The amount of sediment to be removed.
3. Maintenance and operation required as a result of the construction operations.
4. Length of time to complete the work.
5. The space available in the work area.
6. Ability to supervise pump operation.

Evaluate function, need, velocity control, outlet stability, and site aesthetics. The location and capacity of temporary diversion and protective works should be based on the characteristics of the site, accessibility, and the potential for off-site, or on-site damage during the construction phase.

Secondary Containment.
Secondary sediment containment practices may be required to ensure that sediment from a dewatering activity does not adversely impact a particular body of water, wetland, or water conveyance feature (ditch, swale, etc.). Secondary containment may be required if the method of sediment removal concentrates the sediment in one location or practice. Secondary containment measures shall be placed

between the area of control and the receiving area and/or aquatic resource.

Winter conditions and freezing temperatures can impact the effectiveness and functionality of sediment filter bags and anionic polymers for sediment removal during dewatering. If dewatering activities are likely to occur over winter, dewatering practices for sediment control should be included in the development of the Stormwater Pollution Prevention Plan that can be effective in freezing temperatures.

An analysis of the effects of dewatering a site should also be considered. For example, permanent dewatering of a site may cause subsidence of surface areas and settlement of foundations and pavements, Additionally, temporary dewatering may create dry areas during construction but the effect of allowing water tables to rise after construction may result in excess pressure on subsurface structures, potentially causing damage and/or excessive sump pump cycling.

PLANS AND SPECIFICATIONS

Plans and specifications for installing and building dewatering facilities shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. At a minimum include:

1. Approximate location and proposed type of dewatering method shown on plans.
2. Drawings, specifications, etc. for all items of work as needed for dewatering.
3. Include the dewatering plan as part of the Storm Water Pollution Prevention Plan (SWPPP) and/or the erosion and sediment control plan, detailing the location of dewatering activities, presence of aquatic areas, equipment, fuel storage, and discharge point.
4. Any total maximum daily load (TMDL) requirements for the receiving waters or turbidity standards shall be stated on the plan set.
5. A brief narrative outlining a construction sequence for the dewatering operation.
6. Drawing details for proper installation of the various dewatering facilities as needed.

All plans shall include installation, inspection, and maintenance schedules with the responsible party identified.

Methods of dewatering shall be constructed to meet the requirements of Construction Specification **REMOVAL OF WATER 11.**

OPERATION AND MAINTENANCE

The frequency of inspections shall depend on the dewatering method, amount of discharge, potential damage, and quality of the receiving bodies of water. The frequency of inspections, responsible party and specific tasks shall be identified.

1. Inspections shall be conducted to ensure proper operation and compliance with all permits and water quality standards.
2. Accumulated sediment shall be removed from the flow area and temporary diversions shall be repaired, as required.
3. Outlet areas shall be checked and repairs shall be made in a timely manner, as needed.

4. Pump outlets shall be inspected for erosion, and sumps shall be inspected for accumulated sediment.
5. Sediment filtration bags shall be removed and replaced when half full of sediment, or when the design flow rate of the filter bag is no longer being maintained.
6. If the receiving area is showing any signs of turbid water, erosion, or sediment accumulation, discharges shall be stopped immediately once safety and property damage concerns have been addressed.
7.

REFERENCES

Maine Department of Environmental Protection, Bureau of Land and Water Quality. Maine Erosion and Sediment Control BMPs. G-3 Construction Dewatering. Augusta, ME. March 2003.

IDOT Erosion and Sediment Control Field Guide for Construction Inspection, July 1, 2010

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