STORMWATER POLLUTION PREVENTION PLANS AND SYSTEM MAINTENANCE
9 ROUTE 103 WARNER, NH

The owner/applicant is to be responsible for maintenance of all drainage structures in the project, including drain pipes. The future owner is expected to be Comet, LLC which is the current property owner. Comet will place a deed restriction on the property outlining the requirements for stormwater system maintenance at the development.

Regular maintenance is to include the following:

1. Inspection of all drainage facilities (pipes and infiltration basins) every three months. During these inspections, the inspector (a person qualified in drainage system inspections) shall look for evidence of the following: structural damage, silt accumulation (near inlet inverts on pipes), and improper function. A report on the system shall be delivered to the Property Owner, with a copy delivered to the Town Engineer.

2. The sand filter shall be inspected to verify proper filtration and condition of filter surface. Existing trash and debris shall be removed and the surface media replaced as required to maintain infiltration.

3. After inspection, if any of the above conditions exist, the inspector shall notify the Owner who shall immediately arrange for all necessary repairs and sediment removal.

4. All graded slopes shall be inspected every spring for erosion. Upon discovery of any failure (ie. erosion, sloughing, rutting), loam and seed shall be put in place and nurtured.

5. Catch basins and sediment forebays shall be cleaned annually or when sediment has accumulated to within 6” of the inlet or outlet inverts. Sediment, sand, and debris shall be removed and disposed of in accordance with New Hampshire regulations.

6. Grassed channel slopes shall be mowed at least monthly to maintain grass cover. Trash and debris shall be removed monthly.

7. Roadway surfaces shall be swept clean at least once per year, preferably in the spring just after snow melt. Sediment, sand, and debris shall be removed and disposed of in accordance with New Hampshire regulations.

13. It is the responsibility of the contractor to maintain and supplement the specified sedimentation controls as necessary to prevent sedimentation of off-site areas and/or any regulated resource areas. Failure by the contractor to control erosion, pollution and/or siltation shall be cause for the owner to employ outside assistance or to use his own means to provide the necessary corrective measure. The cost of such assistance plus project engineering costs will be the contractor's responsibility.

14. In addition to those locations shown on this plan and on the grading and drainage plans, erosion controls shall be installed at the following locations: toe of slope of embankment construction, toe of temporary earthwork stockpiles. Stockpile side slopes shall not exceed 2:1.

15. Erosion and sedimentation control shall be in compliance with New Hampshire Stormwater Manual

STORMWATER POLLUTION PREVENTION PLANS AND SYSTEM MAINTENANCE
9 ROUTE 103 WARNER, NH

The owner/applicant is to be responsible for maintenance of all drainage structures in the project, including drain pipes. The future owner is expected to be Comet, LLC which is the current property owner. Comet will place a deed restriction on the property outlining the requirements for stormwater system maintenance at the development.

Regular maintenance is to include the following:

1. Inspection of all drainage facilities (pipes and infiltration basins) every three months. During these inspections, the inspector (a person qualified in drainage system inspections) shall look for evidence of the following: structural damage, silt accumulation (near inlet inverts on pipes), and improper function. A report on the system shall be delivered to the Property Owner, with a copy delivered to the Town Engineer.

2. The sand filter shall be inspected to verify proper filtration and condition of filter surface. Existing trash and debris shall be removed and the surface media replaced as required to maintain infiltration.

3. After inspection, if any of the above conditions exist, the inspector shall notify the Owner who shall immediately arrange for all necessary repairs and sediment removal.

4. All graded slopes shall be inspected every spring for erosion. Upon discovery of any failure (ie. erosion, sloughing, rutting), loam and seed shall be put in place and nurtured.

5. Catch basins and sediment forebays shall be cleaned annually or when sediment has accumulated to within 6” of the inlet or outlet inverts.

6. Grassed channel slopes shall be mowed at least monthly to maintain grass cover. Trash and debris shall be removed monthly.

7. Roadway surfaces shall be swept clean at least once per year, preferably in the spring just after snow melt.

INVASIVE SPECIES REMOVAL

In the event invasive plant species occupy an open stormwater management practice such as the open sand filter, the invasive plants shall be removed by hand, including the root systems. The material shall be bagged and disposed of in the property waste container.

In no event shall the invasive species be cut and disposed of with other yard waste that could contaminate other areas when disposed of. No waste material or clippings from site maintenance shall be dumped on site in the grass or wetland areas.

WINTER SNOW AND ICE MAINTINANCE

1. Winter snow and ice maintenance shall be performed by a certified Snow Pro Salt Applicator.
2. A de-icing log shall be maintained for all de-icing activities on the property. A sample de-icing log is attached.
3. De-icing should follow the best management practices for storage and application of de-icing chemicals as outlined in the attached publications.

All inspection and maintenance log shall be kept in a log book located at the facility and shall be provided to the New Hampshire DES upon request.

STORMWATER MANAGEMENT SYSTEM
Post-Development Inspection & Maintenance Log

BMP/System Component	Maintenance Required & Frequency	Date of Inspection	Inspection Inspector	Cleaning/Repair Needed (list items/comments)	Date of Cleaning/ Repair	Cleaning/ Repair Performed by
Pavement Sweeping	• Swept clean as required (i.e. visual noticeable build-up). A minimum of once per year, preferably just after snow melt.					
Catch Basin Sumps/Drain Manholes/ Outlet Control Structure	• Inspect and clean annually for the evidence of structural damage, silt accumulation and improper function. • Remove accumulated sediments and debris from sump when sump is more than 25% full, minimum annually just after snow melt.					
Drain Pipes	• Inspect annually for the evidence of structural damage, silt accumulation and improper function.					

BMP/System Component	Maintenance Required & Frequency	Date of Inspection	Inspection Inspector	Cleaning/Repair Needed (list items/comments)	Date of Cleaning/ Repair	Cleaning/ Repair Performed by
	• Clean pipes when sediment occupies more than 20% of pipe diameter.					
Grassed Channels	• Inspect after every major storm during first three months of operation and annually thereafter for the evidence of structural damage, silt accumulation and improper function. • Mow the side slopes, remove trash and debris, grass clippings and accumulated organic dead `matter every six months.					
Buried Detention Structure	• Inspect quarterly for silt accumulation or structural damage.					

BMP/System Component	Maintenance Required & Frequency	Date of Inspection	Inspection Inspector	Cleaning/Repair Needed (list items/comments)	Date of Cleaning/ Repair	Cleaning/ Repair Performed by
Sand Filter	• Inspect Monthly for trash and debris • Clean silt accumulations annually or when silt is closer than 6” to outlet invert.					
Graded Slopes/ Rip-Rap	• Inspect every spring for erosion. Repair any erosion by placing rip-rap/ loam and seed in place and nurtured					

Inspection and Maintenance Log for Parking Lots and Sidewalks

Name of facility: Warner NH Retail/ Dunkin

EXAMPLE

Date of Activity	Start/Stop Time	Location (Building, Lot, etc.)	Snow/Ice Removal	Inspect	Salt, Sand, or Both Applied	Remarks	Your Initials
2/2/18	6:30 AM / 7:15 AM	Main building entrance area, sidewalks and North parking lot	X	X	Both	Lot was plowed and sidewalks shoveled due to a winter storm the night before	EAS

Date of Activity	Start/Stop Time	Location (Building, Lot, etc.)	Snow/Ice Removal	Inspect	Salt, Sand, or Both Applied	Remarks	Your Initials
	/						
	/						
	/						
	/						
	/						
	/						
	/						
	/						
	/						
	/						
	/						
	/						
	/						
	/						
	/						
	/						
	/						
	/						

SNOW REMOVAL TIPS

WHEN TO SHOVEL

As a general rule, property owners can wait a “reasonable time” until after it stops snowing to clear a walking surface from ice and snow. “Reasonable time” can be defined by a factor of various circumstances:

- **Activity:** If an organization is open for service or other activities, the expectation is that it clears ice and snow from parking lots, walkways and steps as soon as possible after the snow has stopped. This could require clearing snow during a storm if heavy foot traffic in and out of a building is anticipated during the actual storm event.
- **Time of day:** The reasonable time span to clear snow is usually hours; not days. Once the sun has risen and the snow has stopped, walking surfaces should be cleared as soon as possible.
- **Amount of snow:** Even light snow can lead to serious accidents, but the more snow there is, the more important it is to remove snow quickly. If heavy snow is expected, it may be prudent to remove snow several times during the storm to reduce back strains that can be caused by removing heavy snow.

HOW MUCH TO SHOVEL

As a best practice, remove snow, slush and ice from the full-paved width of a sidewalk or at least a minimum path of 42 inches. Paths that are at least 42-inches wide will likely allow people to easily walk past one another and use wheelchairs or baby strollers without problems. Be sure to keep access to ADA ramps and fire hydrants cleaned of ice and snow, too.

SALTING AND SANDING

Always shovel, snow blow or plow first, especially if the pavement temperature is 32 degrees F or colder. Spread sand and ice melt on icy patches to make sidewalks, steps and parking lots safer for pedestrians. Also consider salting or sanding walking surfaces before ice forms. This can make future attempts at ice removal much easier. Not all ice melting products are created equal. Various de-icers perform differently at different temperature ranges. Consult the manufacturer’s suggested rate of application. Some ice melting products can damage concrete, corrode metals over time and harm nearby grass and plants. Learn more about salt types by viewing this Ice-Melt Comparison Chart.

Anti-Icing

NH Best Management Practices

GET OUT EARLY

Typically anti-icing is most effective if applied 1-2 hours before the precipitation begins however it can be applied up to 24 hours in advance.

TRY IT FIRST

Trying anti-icing for the first time? Make a 23.3% brine solution and before a storm spray pavement on your own property using a masonry/ plant sprayer. Use this experiment to determine how best to use it with your clients.

LEAVE SOME PAVEMENT BARE

It's always best to use stream nozzles instead of fan tip to avoid creating a slippery condition. If the anti-icing liquid freezes the bare pavement will still provide a traction surface.

USE A FILTER

Having a filter in your liquid dispensing system will reduce clogs in your nozzle. Automotive in line fuel filters work quiet well. If your liquid dispenser is not functioning properly be sure to check the filter first.

A Proactive Treatment

Anti-Icing before a storm is very similar to using a non-stick spray on a pan before cooking. Just like a non-stick spray prevents food from bonding to the pan, anti-icing prevents snow and ice from bonding to the pavement so that it can be plowed away. Anti-icing can save you money as it costs 50% less than reactive deicing.

Make Your Own Salt Brine

When making brine it is important to add enough salt to produce a 23.3% solution which freezes around 0°F. Roughly 2.5lb per gallon of water will produce a 23.3% solution. You can verify using a salometer (~$20) a 23.3% solution will have a specific gravity of 1.176, or 85% salinity. Consult the Brine Making BMP sheet for more info.

How Much Should I Use and When?

You can apply brine up to 24 hours in advance of the storm. Typical application rates range from 0.5 to 0.75 gallon per 1000 sq.ft. (10' x 100' area). Other chemicals such as magnesium are also available—consult your supplier for application rates. Anti-icing is not advised prior to freezing rain events.

Getting Started

Try making your own salt brine by putting 13 lb of salt in 5 gallons of water to get a 23.3% salt brine solution. Mix the brine until all of the salt is dissolved. Using a masonry sprayer apply the liquid several hours before a storm. Start by applying about 0.25—0.5 gallons to a 10' x 50' area. Adjust the application rates based on your experience. Being careful not to over apply and cause a slippery condition.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

New Hampshire Technology Transfer Center

Material Storage and Housekeeping

NH Best Management Practices

IMPERMEABLE SURFACE STORAGE

Store salt and liquids on an impermeable surface to prevent groundwater contamination.

COVERED STORAGE AREAS

If possible, store your salt in a covered shed to prevent runoff. If there is not a shed available, cover your salt pile well with an impermeable membrane or tarp.

SECONDARY CONTAINMENT

Keep your liquids in an appropriate storage container. Secondary containment should be used incase a leak develops in the primary container.

PROPER DRAINAGE & COLLECTION

Protect your ground water supply! A drainage system should be in place to collect runoff from your salt pile, as well as to collect any liquids that may escape containment. Remember, the collected liquid can be used as a base for salt brine.

Proper Material Storage

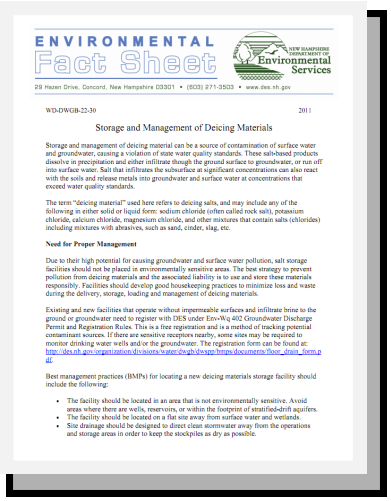
Proper storage of materials (especially chemicals) is essential. If impermeable surfaces are NOT used in your storage facilities and brine infiltrates the ground or groundwater, you need to register with the DES under the Groundwater Discharge Permit and Registration Rules, Env-Wq 402. It is a free registration used for tracking potential contaminant sources.

Liquid Storage

Brine stored using holding tanks must be managed so that there are no releases to drains, groundwater or surface water.

Secondary Containment

Secondary containment for your liquid storage is a HIGHLY recommended technique to help reduce soil and groundwater contamination. If a tank Begins leak, the secondary containment prevents liquid from seeping into sensitive environments.



ENVIRONMENTAL Fact Sheet

Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WD-DWGB-22-30 2011

Storage and Management of Deicing Materials

Storage and management of deicing material can be a source of contamination of surface water and groundwater, causing a violation of state water quality standards. These salt-based products dissolve in precipitation and either infiltrate though the ground surface to groundwater, or run off into surface water. Salt that infiltrates the subsurface at significant concentrations can also react with the soils and release metals into groundwater and surface water at concentrations that exceed water quality standards.

The term "deicing material" used here refers to deicing salts, and may include any of the following in either solid or liquid form: sodium chloride (often called rock salt), potassium chloride, calcium chloride, magnesium chloride, and other mixtures that contain salts (chlorides) including mixtures with abrasives, such as sand, cinder, slag, etc.

Need for Proper Management

Due to their high potential for causing groundwater and surface water pollution, salt storage facilities should not be placed in environmentally sensitive areas. The best strategy to prevent pollution from deicing materials and the associated liability is to use and store these materials responsibly. Facilities should develop good housekeeping practices to minimize loss and waste during the delivery, storage, loading and management of deicing materials.

Existing and new facilities that operate without impermeable surfaces and infiltrate brine to the ground or groundwater need to register with DES under Env-Wq 402 Groundwater Discharge Permit and Registration Rules. This is a free registration and is a method of tracking potential contaminant sources. If there are sensitive receptors nearby, some sites may be required to monitor drinking water wells and/or the groundwater. The registration form can be found at: http://des.nh.gov/organization/divisions/water/dwgb/dwgbp/bmps/documents/floor_drain_form.pdf

Best management practices (BMPs) for locating a new deicing materials storage facility should include the following:

- The facility should be located in an area that is not environmentally sensitive. Avoid areas where there are wells, reservoirs, or within the footprint of stratified-drift aquifers.
- The facility should be located on a flat site away from surface water and wetlands.
- Site drainage should be designed to direct clean stormwater away from the operations and storage areas in order to keep the stockpiles as dry as possible.

NHDES Fact Sheet DWGB-22-30

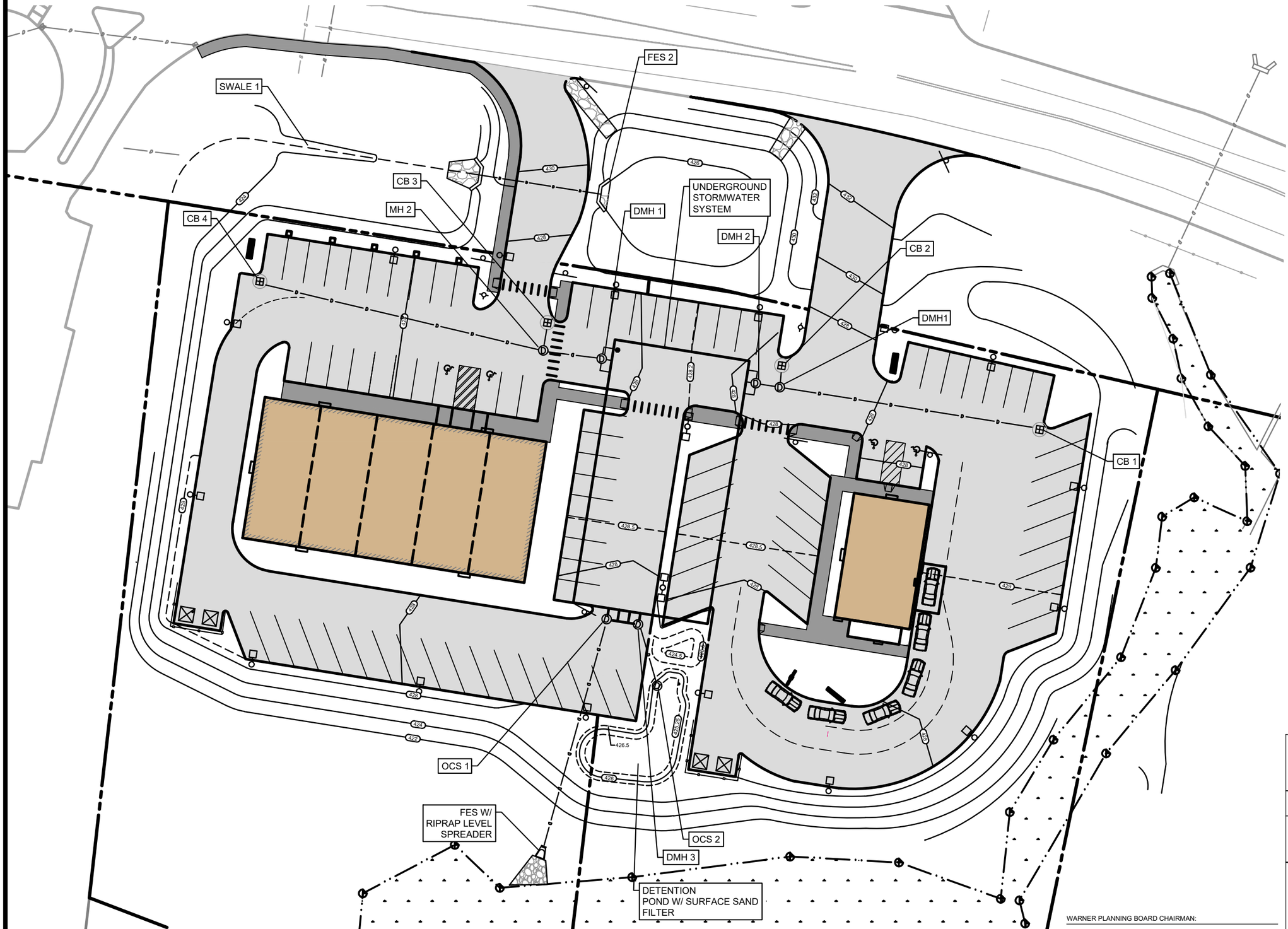
This fact sheet outlines the basic required specifications for salt and chemical storage facilities. For additional information, please contact the Drinking Water and Groundwater Bureau at (603)271-2513 or dwgbinfo@des.nh.gov, or visit their website at: http://des.nh.gov/organization/divisions/water/dwgb/index.html. *The Salt Storage Handbook* contains more information and guidelines that should be referenced.

Produced in partnership with:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

New Hampshire DOT

T2 New Hampshire Technology Transfer Center



12/28/2020	1	09/14/2020 DES REVIEW COMMENTS	BCO
07/10/2020	1	FINAL REVIEW COMMENTS	BCO
DATE	NO.	REVISIONS	BY

SITE PLAN

ROUTE 103 WEST, WARNER NH,

ASSESSOR'S MAP 35 LOTS 4-1 & 4-2

OWNER: COMET, LLC
355 MIDDLESEX AVE, SUITE 7 WILMINGTON, MA 01887

MAINTENANCE PLAN
SK104

Ranger Engineering Group, Inc.
13 Branch Street, Suite 101
Methuen, MA 01844
Tel: 978-208-1762
rangereng.com

WARNER PLANNING BOARD CHAIRMAN:

DATE:

DATE: 2020-05-06 | SCALE: 1" = 40' | SHEET 1 OF 1